

# Case Study

## MRM Construction: Bharuch to Surat BOT Project from Km.198/0 to Km 263/0 on NH-8

### Client

MRM (Modern Road Makers Pvt Ltd) is one of the subsidiaries of IRB Infrastructure Developers Ltd.

IRB Infrastructure Developers Ltd. was incorporated to fund the capital requirements of the IRB Group initiatives in the infrastructure sector. The company undertakes development of various infrastructure projects in the road sector through several Special Purpose Vehicles. (Businesses of holding co. and its subsidiaries will be implemented under superintendence, direction and control of the board of holding company, with the objective of maximizing value for all stakeholders.)

The company, along with its subsidiaries has constructed or , operated and maintained around 1200 kms of road length so far and one of the major road developers in the country.

### Project

Bharuch –Surat road is 65 kms in length. The project has a construction period of 30 months. The project has a concession period of 15 months.

The project comprises of six lane construction of Carriageway which is 47.35 kms in length, Improvement to Four Lane Road which is 15.700 kms in length, Improvement and widening of major bridges which is 12 in number, Improvement and widening of minor bridges which is 33 in number, construction of new flyovers which is 6 in number, reconstruction & widening of culverts which is 83 in number, construction of new pedestrian under passes which is 10 in number, construction of R.O.B which is 2 in number, construction of cattle crossing which is 4 in number, improvement of minor intersection which is 117 in number, providing 8 mtr service road which is 27.511 kms in length, providing bus bays which is 3 in number, providing bus shelters which is 15 in number, providing rest area which is 1 in number, providing base camp which is 1 in number, construction of toll plaza complex which is 1 in number, providing highway lighting, adequate road furniture, operation and maintenance till end of concession period.

### Project Team

The project was handled by V.D.Mahaiskar as managing director, A.P Deshmuk as head of projects, Shrikanth N Joshi as General Manager, Raj Sharma as senior manager, M.L Gupta as technical director, Mohan A Gokhale as accounts manager, K.Bhaskaran as chief project coordinator, Laxman Surve , Pankaj Dua, N.S.Vaidya, Akash

Gawai as deputy general managers, Narendrasinh.J.Zala as manager, Bharath as quality manager and Vikas as store manager.

### **Challenges in managing the project**

The selection of the right people for the right job is essential to keep the project in par with the project schedule. The challenge of keeping the project on track is made greater with weather causing serious problems in execution of work and constraints blocking project progress.

Unstructured BOQ was an issue. Only the passed quality control test data was maintained and hence failure analysis could not be done.

Collection of data from the different departments was slow and delayed which was resulting in bottlenecks and difficulties in meeting their turnaround targets.

Calculating and generating the respective reports, once the data was ready consumed a lot of time.

With various documents, drawings and approval items being exchanged between the client, consultant and contractor, it was resulting in project progress delay with factors like file size restriction in email and the communication through hard copies blotting progress delays. KMC identified that these issues would only escalate as the project ramped up.

### **Solution**

Vyavastha project management system was implemented by MRM to control project progress and connect the project team online. Vyavastha project management system is a web-based platform that enables all internal project participants to plan, monitor, assure quality and manage contract administrative works like variation orders, claims, constraints, compliances and billing. The dashboard of Vyavastha project management system enables any project participants with rights, to view the project progress at any time during the execution of the project in terms of time, money, quality, constraint, compliance, project visuals and also generate the respective reports.

Since Vyavastha Project management system is web based, all authorized project participants can log in to the system and have full access to the information based on the rights their organization has assigned to them This helps in enhancing and meeting the required security, reliability and performance standards.

Vyavastha project management system enables records maintained in MS Project and MS Excel to be directly imported; as a result minimal IT resources were required for implementing an ongoing project.

## Result

As a result of Implementing Vyavastha Project management system, MRM was able to derive promised deliverables in various fields. Some of the key highlights are listed below.

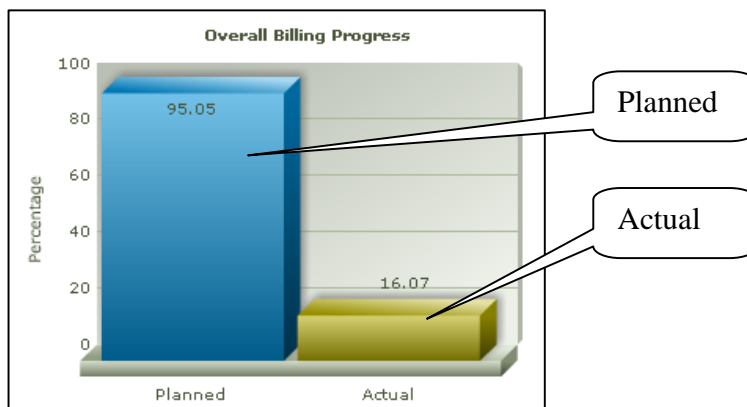
### Overall Physical Progress



MRM was able to monitor the physical progress of the project in a lot more detail. The graph above shows that the physical progress of the project was 16.62% against planned progress of 95.05%.

The Construction supervision team was able to monitor the progress milestone wise, area wise, activity wise, and drill down to the list of Request For Inspection (RFI) contributing towards that progress which allowed them to do better planning and management of the project.

### Money



MRM was able to monitor the billing progress of the project in a lot more detail. The graph above shows that the billing progress of the project was 16.07% against planned billing progress of 95.05%.

The Construction supervision team was able to monitor the progress milestone-wise, area-wise, major activity group wise, subcontract-wise, activity-wise and also in terms of unit costing and cash flow.

## Earned Value Analysis

The Construction supervision team was able to view the actual cost involved in the project and the earned value amount in the project. They were able to view Schedule Performance Index (SPI), Schedule variance (SV), Cost Performance Index (CPI) and Cost Variance (CV). Further they were able to view Budget at Completion (BAC), Estimate at Completion (EAC), and Estimate to Completion (ETC)

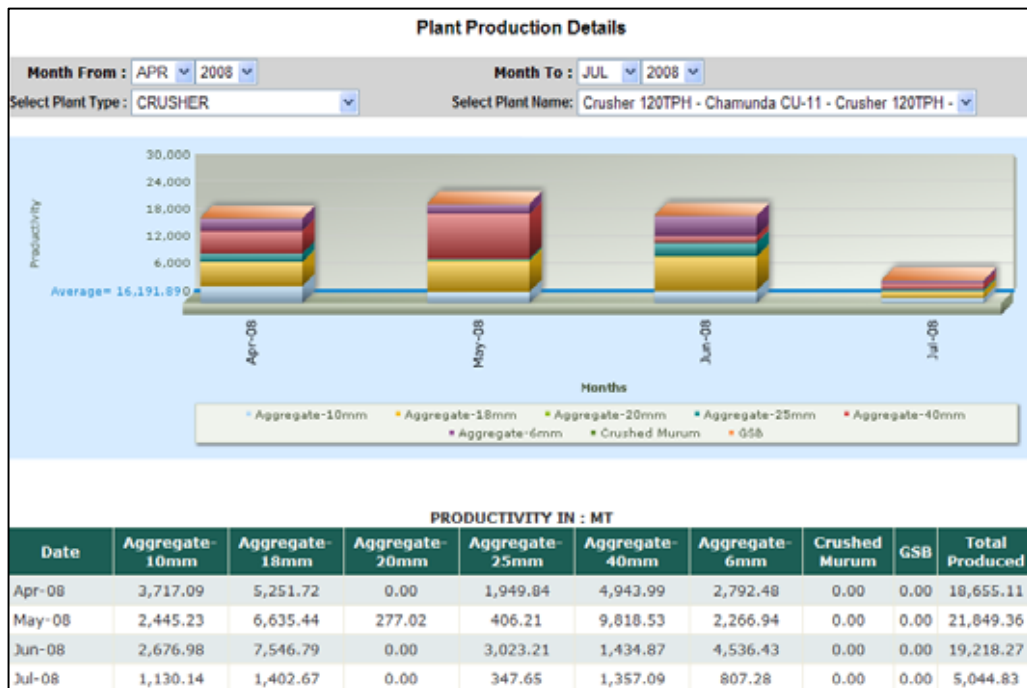
They were also able to view the planned value, earned value and actual cost involved in the project month wise.

## Resource Monitoring

The Contractors could do resource planning for the project using Vyavastha Project Management System. The Contractor could compare daily resources productivity with theoretical productivity and view his resource productivity and utilization details on a daily basis.

Plant and Equipment breakdown and maintenance details were monitored. Analysis on worked hours break down hours and idle hours for each equipment was available giving its utilization and productivity job-wise.

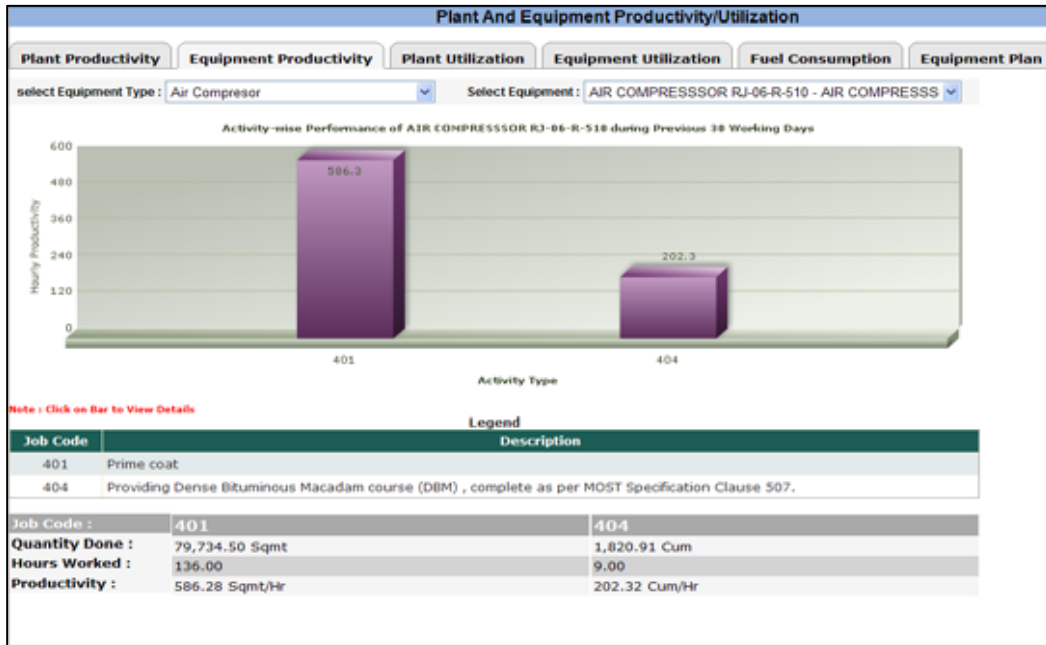
## Plant Productivity:



The Contractor could monitor his productivity for his Batching Plant on a daily basis, monthly basis with production and consumption details. He could view Total production, Total hours worked, Average productivity for any selected Plant .

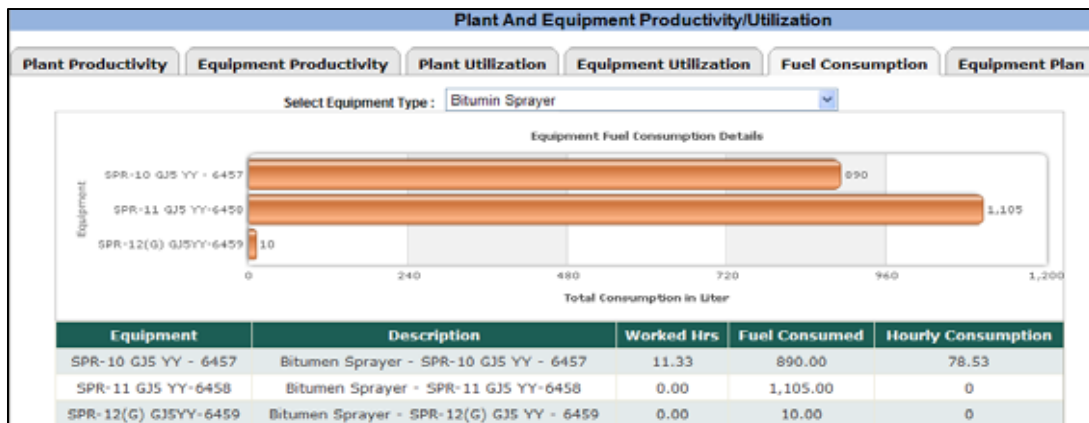
Plant Performance	
<b>Total Production :</b>	<b>62,991 MT</b>
<b>Total Hours Worked :</b>	<b>798 Hrs</b>
<b>Average Productivity :</b>	<b>78.97 MT/Hr</b>

### Equipment Productivity:



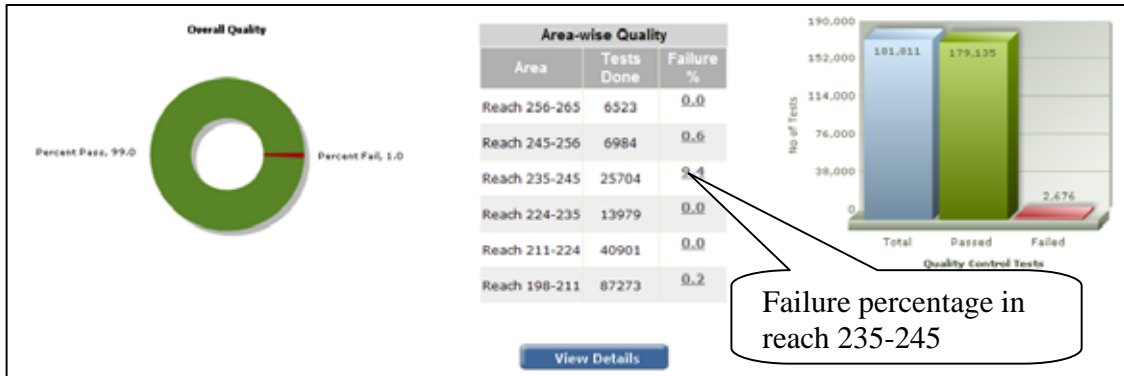
The Productivity of equipment against different activities during project execution was monitored by the contractor on a regular basis

### Fuel Consumption:



The Overall fuel consumption for each plant and equipment details per hour consumption details were monitored by the contractor

## Quality



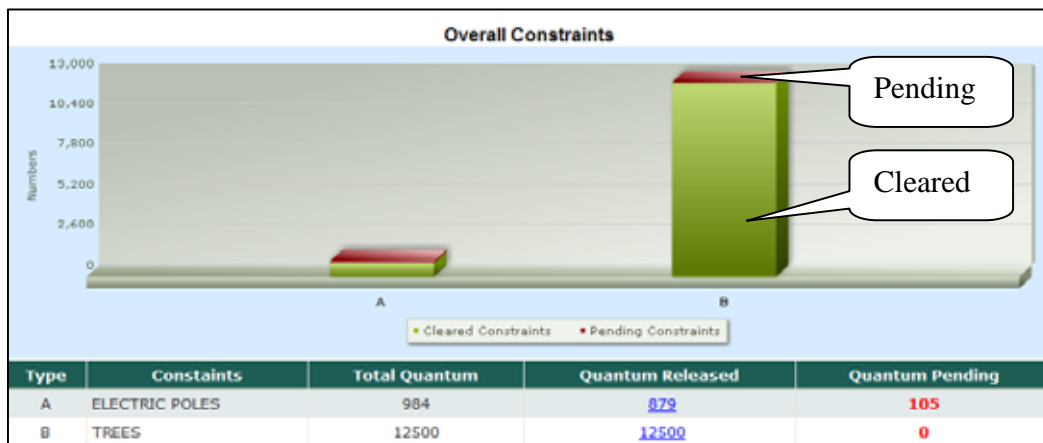
As on March 2008 MRM had conducted about 182000 Quality Control tests for the project.

The Construction supervision team was able to comply with the ISO Standards on all the Quality tests and have also done the failure analysis.

The Failure analysis showed that the failure rate was highest in Reach 235-245. It also identified that Density of Compacted Layer(FDD) test in OGL work showed the maximum of failures and also indicated the location of these failures.

The ready analysis available in the software helped them to make the necessary changes.

## Constraints



Various Project constraints details could be highlighted and each constraint type could be monitored and the constraint clearance history could be traced for each location.

## Compliances

MRM were also able to monitor the softer aspects of the project.

The construction supervision team was able to monitor the compliance details for traffic diversion, Environment Protection and Safety measurements. This insured that the project working area was well indicated with sign boards and barricades, the workers working in the area were adequately protected with safety apparel and the environment was protected as per standards.

They were able to compare the compliances at the site within the parameters required as per guidelines and specification. They were able to rate each compliance under traffic, environment and safety from a scale of 1 to 5 and specifying areas where improvement was needed with adequate remarks.

## Visuals



The Progress photos of Up gradation of Ahmedabad - Mumbai Section from Km.198/0 to Km 263/0 on NH-8 were uploaded on Vyavastha Project Management System regularly. MRM and other stake holders were able to view the current progress visuals of the project.

## Reports

MRM was able to generate any required report at any point of time during the execution of the project with more than 100 reports to choose from in the software. The reports included Daily progress report, Weekly progress report, Monthly progress report, Financial progress reports, Quality control reports, Compliance reports, Encumbrance or Constraint reports and other project related reports.

### **Implementation Training and support**

Backend Bangalore Pvt Ltd had implemented and trained the MRM staff with Vyavastha management staff in 15 days. Backend Bangalore Pvt and MRM worked together to ensure that existing data was uploaded onto the project management system. From then onwards, the project management tool was the default tool for managing the MRM project. To ensure that project members are adept at using the system, Backend Bangalore Pvt Ltd ran customized training modules for all participants and supplemented these with unlimited help desk and online support.