

CASE STUDY

ECI Strategy and Modularization Create Success at Mosaic's K3 Mine Expansion Project

OWNER:
THE MOSAIC COMPANY

LOCATION:
ESTERHAZY, SASKATCHEWAN, CANADA

CHALLENGE

For this major mining expansion project, innovative strategies were sought to optimize the entire build process. The large financial investment created a strong incentive for finding ways to reduce total installed costs (TIC), as well as to improve quality, safety, and the scheduled timeframe.

The new shaft and headframe steel would be primary components of the mine. Saskarc was challenged to help the project owner, and their engineering consultant, determine the business value of a modular approach and, subsequently, to manage the highly efficient final design and fabrication process.

STRATEGIES

In the early stages of planning for the Mosaic Company's Esterhazy K3 mining project, Saskarc was invited by Hatch, the owner's engineering representative, to present the advantages of modular off-site fabrication for the new shaft and headframe. Hatch facilitated this process of Early Contractor Involvement (ECI), which allowed Saskarc to recommend a winning solution to the owner from the start.

As a result of this meeting, Mosaic and Hatch decided to embark on a modularization approach for building the North shaft and headframe steel structure. The scope of the project would include 1,000 tons of structural steel and platework: 500 tons for the large modules to create an above-ground headframe, and another 500 tons for the pre-assembled units (PAUs) installed down the shaft.

The overall project strategy phases for the K3 Mine headframe would involve:

- Design and constructability planning
- Completion of the Request For Proposal (RFP) package for competitive bidding
- Fabrication and modularization of the structural and platework modules
- Transportation and installation

To complete the first phase, Hatch engaged Saskarc to provide technical assessment and expertise for the design and constructability planning. This early involvement by Saskarc – applying ECI strategies – would prove to help avoid both added time and cost to the final project.

During the initial design phase, Saskarc provided consultation and analysis through emails, design drawings, conference calls and online meetings. As the plan was further developed, Hatch, on behalf of Mosaic, contracted one of Saskarc's

technical experts to spend three months at their engineer's office to review and provide input on the design, schedule and execution plan. This more detailed input provided the project owner with a highly-experienced perspective related to the fabrication, off-site modularization, transportation and installation processes.

Upon completion of the planning phase, the RFQ package was prepared and issued to the market for competitive bid. Saskarc, together with their partners, Procon and Waiward, also participated in the bidding process. The submittal put forward was competitive, and it provided a solid execution plan, with professionally presented details of the proposed process.

In the end, Saskarc was successful in winning the contract. Ultimately, the Saskarc team was responsible for the materials supply, fabrication, coatings, modularization, and delivery and installation of all the large modules (both platework and structural) for the new headframe at the K3 Mine site.



The completed modules for the Mosaic project were very large - up to 29 feet tall x 23 feet wide x 61 feet long - and weighing up to 90 tons. An important part in the project scope involved the test-fit of the modules off-site before delivery. This would confirm that all the fabricated components fit together as designed – and that the process could be repeated, with no fit-up issues on site during installation.

RESULTS

The final shaft and headframe modular fabrication project for the Mosaic K3 Mine expansion site in Esterhazy was completed as planned. Saskarc maintained the highest level of quality and safety, met the construction schedule, and lowered the project owner's total installed costs.

Saskarc's dedicated approach to working as a team from start to finish - with the owner (Mosaic), their engineering consultant (Hatch), and partners Procon and Waiward - ensured the most efficient and successful completion of this large industrial project.

Mosaic was highly pleased with the results of Saskarc's services in all phases of this project.

"We highly recommend Saskarc for providing their expertise through early contractor involvement, modularization input, as well as for metal fabrication and modularization projects of any large-scale project."

