



Value Creation Through LOM Extension: A Granite Quarry Case Study

June 2020



About Kelmic

Kelmic Consulting helps organizations capture opportunities and dramatically improve their operations.

Helping our clients improve their operations since 2002

We partner with our clients to drive bottom-line impact by addressing and dramatically improving efficiencies in People, Processes, and Property. Our exceptional people draw upon more than 100 years of combined experience to bring you the right perspectives and expertise to help you tackle complex challenges and realize your strategic ambitions.



Background

About the Client

- Granite quarry nearing end of life
- Previous mine plans based on past poor production and old sales prices did not reflect current break-even
- Continuing demand in area justified significant capital investment
- Current operations were becoming too deep and stability and access was in question

Stone quarry nearing its

end of life

Due to significant recent demand and increased output this stone quarry was nearing its end of life. Previous studies had demonstrated further expansion to be unprofitable. Current quarry operations were reducing access and creating safety concerns for continuing production. Access was becoming difficult for haul trucks.

The previous mine expansion studies had been undertaken in-house more than 8 years previously and were based on drill hole test results that were over 15 years old. Economics were completely different with different outputs, equipment, labour rates, etc.

The local market was still buoyant and demand was increasing. Little competition existed in the local area.

Cycle times were increasing due to longer haul times. LOM was estimated in months so no additional equipment could be justified. Loaders were standing for long periods waiting for haulers that would arrive in groups.

Test hole results showed significant overburden stripping would be required to expand the quarry. Management could not conceive a workable plan for the quarry's expansion.

A detailed analysis showed a discrepancy between existing visually observable overburden depths and drill results. Also, previously completed localised stripping depths did not agree with the existing development plan projections.

Senior management were keen to extend the LOM to capitalise on the current high demand, projected to continue for several years. Capital was available for development provided economics justified the investment.

Implemented Solution

New test holes were drilled in strategic locations to develop a revised overburden profile.

In conjunction with consulting engineers, a 3D mine development model and simulation was developed.

Revised economics were developed based on various scenarios for overburden stripping costs, improved access, increased productivity, reduced cycle times, etc.

A full revised LOM plan was developed with multi-stage overburden stripping and mine development phases.

The crusher location was revised for improved cycle time.

Contactors were sourced and the overburden contract bid with the resulting contract was awarded at 30% below initial planned estimates. Removal was completed 3 months ahead of schedule and production commenced earlier than originally anticipated.

LOM was extended by over 35 years at full production. A new capital equipment plan was implemented and additional haul trucks were added for increased production efficiencies.

35

Years LOM extension

175,000t

economic overburden removed enabled by way of revised plan



Key Results Achieved

- Reworked LOM plan and quarry development plan
- Developed 3D mine development model with economics
- Re-drilled test holes to revise overburden stripping requirements
- Developed multi-stage quarry expansion plan
- Implemented 1st stage stripping of over 175,000 t overburden
- Completed the project and commenced operations within 4 months
- Project ROI > 7:1 within 12 months

ROI

7:1

175,000
tons

Overburden removal

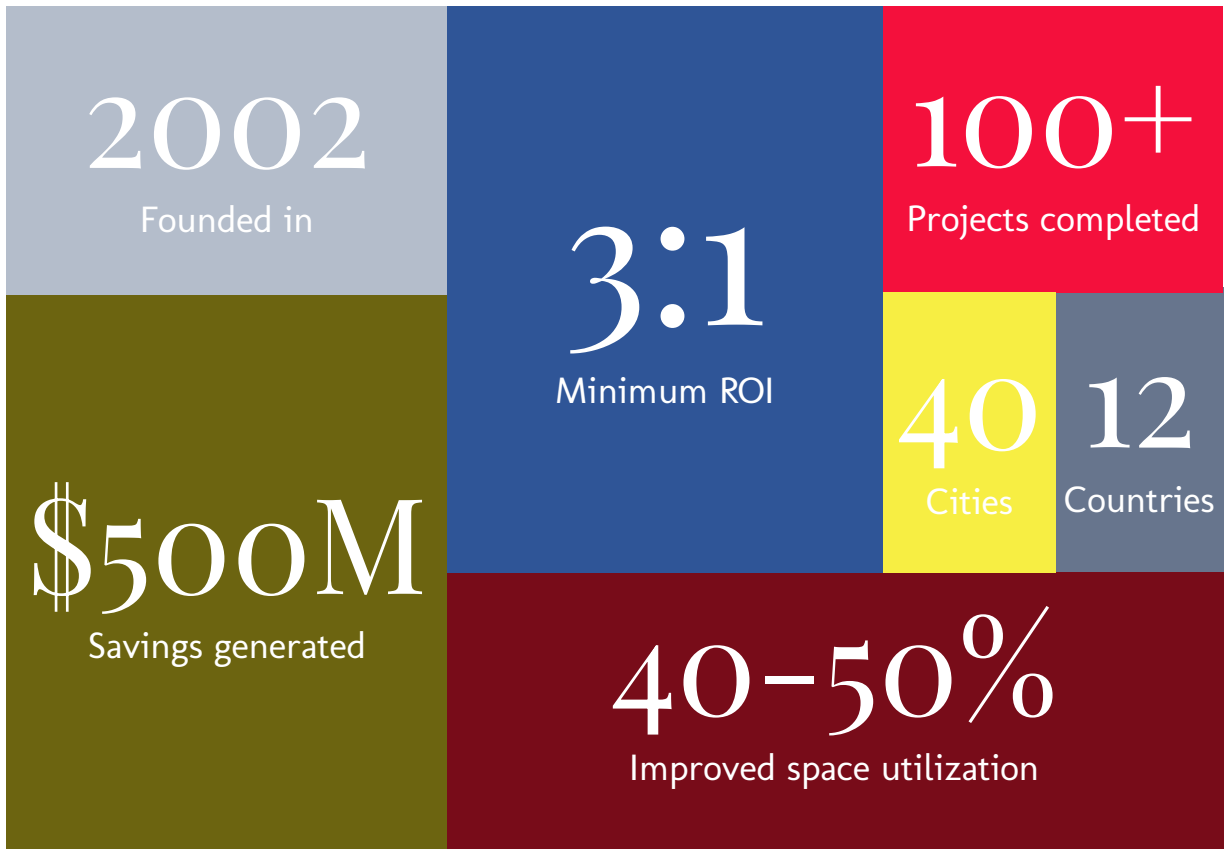
35
years

LOM extension

4
months

Project duration

Kelmic at a Glance





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