Customer Profile

- “Peabody Quarry” Peabody Massachusetts USA
- Located north of Boston, Mass
- Established in 1932
- Owned by Aggregate Industries, one of the top twenty largest producers of aggregates and ready mixed cement in the USA
- Production target – 400,000 short tons of crushed stone per year
- Portable crusher fed by loader over 550 feet from the face
- No haul trucks

The Situation

- The quarry is in very close proximity to the neighbourhood and must be extremely careful about vibration and airblast levels
- As they expand the quarry they are getting closer to the neighbours
- The face is getting increasingly higher
- They were going to smaller shots or breaking up the shots into smaller, more frequent blasts in an effort to reduce the vibration impact on the neighbours
- Strict city and state regulatory compliance for vibration and airblast required a city-issued blasting permit. Violation of vibration and airblast limit is cause for immediate permit revocation

Mining Issues

- Face is up to almost 70 ft. high and only 500 ft. from the neighbours
- Decking the holes didn’t work – the rock is very seamy and the production rate went down because shots became too tight to dig
- Splitting the face would require two additional loaders and operators

Technical Solutions

- Introduced i-kon™ System in August, 2000
- Initially replicated existing pyrotechnic timing to establish a benchmark
- Went from single row blasts to 2 and 3 row blasts
- i-kon™ System allowed the quarry to vary timing pattern and verify that the pattern was optimal for production and blast induced vibration levels

Demonstrated Benefits

- Lower vibration, and shift to higher frequencies, yet bigger, less frequent blasts (1 or 2 per week)
- Better, more consistent fragmentation
- Full 70ft face blasts with no split benches, no Decking
- Lower production costs (saved 2 machines & 2 operators)
- Better diggability, leading to faster loader turnaround, greater crusher throughput, & increased production
- Less backbreak
- Cleaner face on the highwall
- Expansion of the reachable/blastable quarry assets
Case Study
Improving Total Quarry Productivity While Minimising Environmental Impacts
Peabody Quarry, SA

- Use of “latest technology available” to improve quality of life in the neighbourhood

Testimonial copy

“It’s allowed us to increase our productivity and lower our airblast, lower the vibration levels and increase the fragmentation of the shot. We’re able to shoot larger shots and still have lower vibration levels. It’s been tremendous for us.”

Jon Kalivas, Quarry Manager
Peabody Quarry
Aggregate Industries

“I can honestly say that earlier in the year I said that there would be no way that we would be shooting this high a face that close to the neighborhood and we’ve been able to maintain the same readings that we had 400 feet ago.”

Doug Burns
Q&C Account Representative
Orica USA

“A lot better fragmentation. The digging’s been a lot better. Now we’re getting better production. They never dreamed I’d be going 600 feet for a bucketful. Nobody figured beyond 450 feet. That’d be about it.”

Chuck Bishop, Loader Operator
Peabody Quarry
Aggregate Industries

“We initially just replicated the timings they were using, and that had an immediate impact on the vibration and frequencies that we were producing in the rock. It was very dramatic. Just by providing very accurate timing.

Dave Proudfoot
i-konÔ System Specialist
Orica Canada