



## Mill construction experts

**B.C.'s Salem Contracting has proven its construction—and demolition—expertise year after year, with its most recent project being a \$19 million upgrade at Interfor's Grand Forks sawmill in southeastern B.C.**

*By Paul MacDonald*

When it comes to sawmill upgrades, Prince George, B.C.-based Salem Contracting has pretty much been there and done that.

And their decades of experience have paid off.

One of the attributes Salem Contracting brings to the table and to sawmill projects, says Monty Belsham, owner of the company with brother, Rod, is a focus on minimizing mill downtime.

“It all comes down to downtime,” says Belsham, who is a veteran of dozens of mill projects. “The companies that own the sawmills have money invested in their facilities, and an upgrade often involves shutting it down. So when they do their project budget, they are going to enter X number of days of shutdown into that budget.” Salem Contracting’s job is to ensure that goal is met, or if possible, surpassed. And when the new sawmill equipment is installed, the goal is to get it up to speed as soon as possible, as efficiently as possible.

But there is no compromise on safety, says Belsham.

“We offer the best way to take what they have now in the mill apart, and put the new equipment in, in the safest way. It takes a certain amount of time to get things out, and put new equipment in, and if you push it beyond that, people get hurt. The bottom line for us is we want everyone to go home at the end of the day.”

Belsham noted that while sawmilling technology is still advancing, it is not advancing quite as quickly as perhaps a decade or so ago. “Ten years ago, it was moving hard and fast. Now, it’s more a case of refining the equipment.” Back then, they were installing equipment that was running 500 feet per minute, a huge jump from existing production line numbers. “Now, we’re installing equipment that runs 600 or 700 feet per minute.”

The sawmilling process is now more automated than ever, with employees taking on the running of more equipment. And that equipment can be very high tech. With the equipment involved in upgrades, compared to what was there before, the technology can be dramatically different, to deliver efficiencies.

“Let’s face it, the world is computer driven, and cost driven, these days. That 2 by 4 produced at the sawmill has to hit the market at a certain price or a customer will go somewhere else. You have to get your costs in line, and technology helps to achieve that.”



Like the companies it works for, Salem Contracting runs lean. On a project, they often won't even have a job site trailer, working out of an office at the mill, if possible.

The keys to a well-run and efficient upgrade project is, first and foremost, safety, followed by having good project management, delivered by Salem and their clients, choosing the right equipment and choosing the right suppliers, says Belsham.

Salem has been steadily working on a number of upgrade projects lately, and it has noticed equipment suppliers have been ramping up operations. "It can be a bit of a juggling act, making sure you get all the equipment you need for the mill at the right time. With the downturn of the last few years, you couldn't just pick up equipment off the shelf. There was a five year downturn in the industry, and it's taken a while for equipment suppliers to get ramped up again. It's better now, though, than it was a year ago."

While a mill upgrade project is months, and sometimes years, in the planning, Belsham says the really intense planning usually starts about 30 days out from a construction start. "You're looking at what pieces of equipment have to come out and go in, and when, and other issues, such as whether you might need to take a roof off—and it goes on from there."

Keeping a project on target once work starts involves daily meetings. "That's when you look to see the hurdles that might be coming at you, as far out as six weeks. So when you get to that point, you know what you need to do." As the project advances, and construction reaches a peak, meetings will be held several times a day. At that point, Salem Contracting might have as many 80 people on site.

And at some points, the work is being managed by the hour.

"The mill could shut down at midnight, and I'll know we have to have X number of pieces of equipment going in or out, and that it has to be done by noon the next day," says Belsham. "Or on a Friday, you know that you have to get the logs running by Sunday. That's how it works sometimes, and you have to stay on top of that."

"That's why shutdowns and start-ups can be so intense for us, and the companies we work for. You can literally be micro-managing hour by hour to make sure every little piece of equipment is staged and ready to go. The chains are ready to go, the structural steel, the electricians have all the cable trays they need. Sometimes we'll have entire mill pieces built and ready to lift in, and that will make the process that much quicker."

Equipment staging can definitely pay off. He noted that on a recent West Fraser project, they had a 50' by 50' deck ready to be lifted into the sawmill scanning area. "It was pre-fabbed, had 10 foot legs on it, and already had a lot of the cable trays underneath it. We lifted it into place with two cranes, and with the scanning system in place, it was done in just 36 hours. If we had to piecemeal that together, it would have taken three days."

One of the company's latest projects has been the upgrade of Interfor's Grand Forks sawmill, in southeastern B.C. They started work on the project in October, with an April 1 target date for completion.

The changes at the Grand Forks mill are part of \$24 million Interfor is investing in its operations in southeastern B.C.



Some \$19 million is being directed to Grand Forks and \$5 million to the company's mill in Castlegar. The upgrades at Grand Forks include a new small log line, replacing an existing two-line facility, and funding for an automated lumber grading system. The investment at Castlegar includes the installation of an automated lumber grading system allowing for increased lumber recovery.

Reports from Interfor illustrate the Grand Forks project's progress. The mill had a three week shutdown starting in November, with the upgrades being ahead of schedule. The new sawmill line commenced start up procedures in mid-December.

The upgrade is expected to deliver a 10 per cent increase in production. It will allow the company to transition from a three shift operation to two shifts, and still be able to achieve the production increase.

Interfor has made a number of investments in the Grand Forks mill over the past two years, with key goals being cost reduction, timber recovery improvement and production flexibility.

Salem Contracting was familiar with the Grand Forks mill site, since they did an upgrade, and installed a planer in 2006, when it was owned by Pope & Talbot. Interfor purchased the Grand Forks and Castlegar sawmills in 2008. The mills produce both specialty and commodity grade lumber.

"Over the years, we did a whole bunch of work at the Grand Forks mill," says Belsham. "When we are done this time, we will have essentially revamped the entire mill site, over a seven-year period.

"It was helpful for us and Interfor, I think, because we know the mill—and we know what Interfor expects of us. The bottom line on mill projects with Interfor and with us is safety; nobody wants to get hurt. As mentioned before, that's the biggest thing we focus on."

The work schedule for a mill upgrade is generally two weeks on, one week off. "So every other turnaround, we'll be doing an overlap, with two crews," says Belsham.

The Grand Forks sawmill was changed from an older two-line mill, to a state-of-the-sawmill industry high-speed one line mill, featuring the most efficient technology, and well trained employees. For example, two groups of employees from the mill travelled to equipment manufacturer USNR for training on the Lineal High Grader automated planer mill. USNR says training is one of the ways companies such as Interfor can take advantage of all the "bells and whistles" advanced sawmill technology has to offer, and achieve the maximum return on their investments in employees and equipment.

It's clear that Interfor firmly believes good employee training is essential to efficient operations.

From his experience, Belsham notes that with new equipment being installed as part of an upgrade, employees can come back to a mill workplace where almost nothing is familiar to them. What they had been working with for years is gone, and they have to get their head, and their skills, around new equipment and technology.

Anthony-Seaman was involved in the project, and it began by working with Interfor's management to develop conceptual designs for the modernization of the Grand Forks sawmill. The first step was to review the log supply available to the mill



and then develop a process that would result in the highest production and recovery. Once the process and primary equipment decisions were made, Anthony-Seaman completed a detailed capital estimate for the project.

When the project was approved, Anthony-Seaman was responsible for supplying all of the detailed engineering to Interfor and its contractors including: materials handling equipment, structural machine support steel and building design as well as electrical power distribution and coordinating the information from process control vendors with the electrical contractor.

On the supplier side, Baum Pneumatics Inc. designed a new 60 tons/hour 12” blowing system 850 feet long for sawmill wood chips, replacing the 10” line. Its new design included stepping up the line stepping up the line inside.

diameter in several places, a new flat teeinjector, a tight clearance 30” x 35” chip feeder and low resistance silencers. The existing blower was rebuilt to tighter specifications to run faster and more efficiently, all resulting in a reduction in the horsepower required, enabling the mill to run twice the chip capacity that it had with the 10” line, while still using the original 200 hp motor and starter, says Baum Pneumatics.

The mill reused their existing surge bin, and added additional surge control on any chips that were to bypass the surge bin.

Other benefits of a larger line include improved chip quality, less overall horsepower per ton required (3.3:1), and room in the line for future capacity increases.

Porter Engineering’s scope on the Interfor Grand Forks project included CTL infeed decks, the in-line debarker, the Optimil four-sided canter with horizontal quad arbor edger (quad circle saws) and downstream in-line vertical dual arbor edger.

The optimization system included Porter’s signature RT3 optimization software with optimum log rotation. Multiple Zone Scanning was implemented to reduce overall machine length while still performing a complete re-optimization on the infeed so as to not adversely impact recovery. Four scan zones, two on the ARC and two on the infeed, were fitted with Hermery SL-1880 high density, true shape scanners. Optimized solutions were generated by Porter’s scalable Next Generation rack mount computers.

The PLC control system is based on the Rockwell Automation Control Logix platform. Delta Computer Systems RMC150 Motion Controllers were used to control 36 axes of setworks and rotary motion. New gapping algorithms from CTL infeed to VDA, seven zones in total, were included in the PLC ladder logic.

Before all this new equipment was installed, the first thing on the To-Do list for Salem Contracting at Grand Forks was dismantling the old mill, of course. “Because of the way the mill was structured, we had to work our way out, so we dismantled the mill from the inside out,” explained Belsham.

While the construction part and installation of new equipment certainly requires a high attention to safety, Belsham says demolition requires its own special kind of expertise and safety awareness. “You need to have a well-trained crew to do



this safely. You need to know how to take it apart because essentially it's a gigantic puzzle. The building needs to be sectioned off, and you need to know the right piece of equipment to use. It's not just a matter of pushing stuff down."

Interfor has said the upgrade at Grand Forks has gone well. Since resuming operations in early December, the mill has been moving through its start-up processes and was running at approximately 97 per cent of its design capacity, by mid-February. The two mills have a combined capacity of 375 million board feet on a two-shift basis.

With sawmill production in B.C. picking up, Salem Contracting is very active, working on other mill upgrades through the balance of this year, and into 2014. Even through the downturn, the company was able to keep busy. Belsham says a big part of the reason for that is the approach they take to their customers. It's very straightforward, he notes. "You have to make sure you are doing the best you can for them—and doing it efficiently, and safely."

### **Companies involved with the Grand Forks upgrade**

A number of companies were involved in Salem Contracting's latest mill upgrade at Interfor-Grand Forks. They included:

- Optimil
- USNR
- Anthony Seaman
- Porter Engineering
- K2 Electric
- Baum Pneumatics