Accelerated Building Construction

The ABC’s of an Advanced Sustainable Construction

Precast Concrete: A Paradigm Shift

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Webinar Begins in:
Accelerated Building Construction

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Precast Concrete A Paradigm Shift
Accelerated Building Construction (ABC)

ABC is a paradigm shift in project planning, design, procurement, construction and commissioning that seeks to gain the benefits of minimizing the mobility impacts for on-site construction by setting pre-construction processes and systems to a higher priority. This ABC ‘shift’ allows for the realization of intrinsic benefits such as:

- Lowering capital costs,
- Shortening overall timelines,
- Improving site safety and security,
- Gaining in project quality,
- Enhancing project durability,
- Offering more opportunity engage new technologies into the project,
- Reducing long-term operational costs,
- Limiting social impact costs, AND
- Limiting environmental impacts in the short and long term.
Accelerated Building Construction (ABC)

ABC is building construction with such advanced, sustainable and suitable materials as manufactured precast concrete that enables the use of innovative planning, design, materials and construction methods, especially in the realm of universal and specific modularization. ABC delivers projects in a safe, time saving, cost effective manner that optimizes resources in labour and materiel while nearly eliminating waste. ABC improves:

- Complete design integration,
- Site constructability,
- Site security during building,
- Total project delivery time,
- Project-zone safety for workers and the public alike,
- Project durability, AND
- Access to leading technologies for buildings.
Accelerated Building Construction (ABC)

ABC is building construction that uses innovative planning, design, materials and construction methods, especially in the realm of universal and specific modularization. ABC delivers projects in a safe, time saving, cost effective manner that optimizes resources in labour and materiel while nearly eliminating waste. ABC reduces:

- Construction interference with the public,
- Traffic impacts,
- On-site construction time,
- Material wastage on and off site,
- Site lay-down, staging and storage areas along with this coordination,
- Weather related time delays, AND
- Overall financing and borrowing costs.

*Let's see what a totally ABC precast concrete solution means for our communities!*
Accelerated Building Construction (ABC)
Accelerated Building Construction (ABC)

The ABC process is endorsed by many private and public organizations such as the U.S. Department of Transportation – Federal Highway Administration.
Accelerated Building Construction (ABC)

The ABC process provides great flexibility across a wide variety of project types.
Accelerated Building Construction (ABC)

Yet, the ABC process is also used in the most common project types.
Accelerated Building Construction (ABC)

The ABC process allows unique solutions not offered by site-built approaches.
Accelerated Building Construction (ABC)

The ABC process allows building methods to be more logically rethought.
Accelerated Building Construction (ABC)
The ABC process offers your clients opportunities not available to them otherwise.
Accelerated Building Construction (ABC)

The ABC process is only limited by the team imagination as to what it offers.
Accelerated Building Construction (ABC)

The ABC process was critical in the overall development of a major community for Western Canada in Fort McMurray Alberta back in 2006. To make this dream come true, 9 prototypical condominium apartment buildings were erected using lightweight prefabricated precast wall, floor and roof assemblies.

The Eagle Ridge development highlights include:

- primarily 6 storeys tall, 150,000 SF in GFA with 1 level of underground parking
- each fully finished building was completed in just 55 calendar days by a crew of 6 for approximately 2/3 the cost of standard construction
- in the photos that follow, note how clean the construction sites are

Due to its diversity, this same major residential development used the ABC process again to replace the original $20 million budget design on an overpass that spanned a large, busy, 4 lane arterial road. By using advanced prefabricated lightweight precast elements this bridge was completed for only $6 million with a much smaller crew in a fraction of the time allotted for the original design.
Accelerated Building Construction
Eagle Ridge Apartments & Condos in Fort McMurray …
Accelerated Building Construction (ABC)

The ABC process used in this condominium delivered top quality from the outside..
Accelerated Building Construction (ABC)

Inward. Let's hear from an architect who captured this quality on their project.
Accelerated Building Construction (ABC)
Accelerated Building Construction (ABC)
Point Towers, Phase 5 at the Barrel Yards, Waterloo ON…
Accelerated Building Construction (ABC)

Reaching for the sky, the ABC process was recognized as an opportunity by a client for an Eastern Canadian suburban project in Waterloo Ontario. The demands of this savvy owner had the design team switch to a fully precast concrete ABC solution early in the construction of the first of two tower projects.

The opportunity discovered for Point Towers, Phase 5 at the Barrel Yards project include these highlights:

- two 25 storey towers of 357 living units totalling 450,290 SF
- design intent maintained during transition between the design team and precast concrete specialist engineer
- even giving up a 6 month head start due to design transitioning from a cast-in-place concrete tower to an advanced precast concrete tower, this first tower finished 4 months ahead of a comparable nearby cast-in-place concrete tower
- the architects were willing to accommodate all minor adjustments needed to switch from cast-in-place concrete to a fully precast concrete solution significantly saving both time and money, especially in project financing costs
Accelerated Building Construction (ABC)
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Accelerated Building Construction (ABC)
Belmont Trio Kitchener, Ontario, ON...
Accelerated Building Construction (ABC)

The success of the ABC process was recognized and utilized for a 2016 Eastern Canadian suburban project in Kitchener Ontario where the architect used it for the very first time with spectacular results culminating in a recognizable and distinctive 3 tower project gracing the Kitchener skyline.

The Belmont Trio project highlights include:

- up to 14 storeys tall for Building ‘A’ while similar Buildings ‘B’ and ‘C’ were slightly smaller and included separate precast concrete above-grade parking
- Building ‘B’ started in March and was completed to the top 10th floor by May
- Building ‘A’ used a total of 1,290 advanced precast elements with the heaviest element typically being the 164 SF balcony
- Building ‘B’ used a total of 1,100 advanced precast elements
- Building ‘C’ used a total of 860 advanced precast elements
- the total floor area across Buildings ‘A’, ‘B’ and ‘C’ was 39,540 SF
Accelerated Building Construction (ABC)
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Accelerated Building Construction (ABC)
OneFortyNine Hamilton, ON …
Accelerated Building Construction (ABC)

The ABC process was called upon once again for a recent Eastern Canadian urban project in Hamilton Ontario where the demands of a limited site and strict design protocols favoured a fully precast concrete ABC solution.

The OneFortyNine project highlights include:

- 7 storeys tall with 73 one and two bedroom units ranging from 530-800 SF
- site burdened with extraordinarily tight site restrictions and access
- each 9,000 SF floor with 7,600 SF of exterior wall installed in 5 working days
- each prefinished exterior panel installed created that ‘almost ready’ look at every level of installation helping the client with pre-sales and rentals
- traffic congestion was minimized to help create a positive image of the project with the community well before its speedy completion

Moreover, City of Hamilton required the building finishes to match the surrounding properties therefore a stone and brick form liner was used for the project. The end result was a modern building with a traditional historic look.
Accelerated Building Construction (ABC)

Interesting Technical Facts from the OneFortyNine project include:

- 52,000 SF of 8” load bearing and non-load bearing precast concrete wall panels
- 2,800 SF of 15” load bearing insulated panels for exterior elevator shaft walls
- 64,100 SF of 10” precast concrete Hollowcore floors
- 1,000 SF of precast concrete landings
- 25 flights of precast concrete stairs
- 115 LF of structural precast concrete columns
- 286 LF of precast concrete decorative cornice

It’s important to remember that all exposed precast concrete elements such as insulated wall panels, landings, stairs and decorative cornice were prefinished at the manufacturing plant prior to installation saving both in time and cost while improving in the overall quality control of the finished project. Again note how tidy this very tight site is in the following photos.
Accelerated Building Construction (ABC)

The ABC process used in this condominium demonstrated an ‘almost ready’ look on a tight site.
Accelerated Building Construction (ABC)

The ABC process used in this condominium fits seamlessly within the community. Let’s hear from a contractor on what it’s like to work with ABC precast solutions.
Accelerated Building Construction (ABC)

VIRTUAL TOUR
St. Teresa Place
Continuing Care Facility
Alberta, Canada
Accelerated Building Construction (ABC)
Champagne - Quarry Park, Calgary AB ...
Accelerated Building Construction (ABC)

Back in Western Canada a fully precast concrete ABC process was seen as a cost effective alternative to a brownfield suburban rejuvenation development project in Calgary Alberta. This striking post French Provincial design held a prominent and visible position within the city’s development landscape which required an unparalleled fit and finish that precast concrete was ideal to deliver.

The Champagne project at Quarry Park highlights include:

- 4 and 5 storeys tall with a unique upper level leading to a distinct appearance along a public greenspace
- Special attention paid to the building envelope system leading to 86,000 SF of R20 insulated exterior walls and windows installed at the manufacturing plant to eliminate winter hoarding
- Large windows and balconies incorporated wherever possible
- 2 levels of interconnected underground parking
- Precast concrete was chosen also for its inherent resilience and fire resistance
Accelerated Building Construction (ABC)
Accelerated Building Construction (ABC)

The ABC process used in this condominium demonstrated the advantage of precast concrete to deliver superior quality, fit and finish quickly and affordably.
Accelerated Building Construction (ABC)

The ABC process was called upon once again in 2014 for an Eastern Canadian luxury suburban project in Cambridge Ontario where previous work favoured a fully precast concrete ABC solution for this project. In this case, the client understood the advantages of a fully precast concrete ABC solution to provide the high level of quality needed at an affordable costs in a timely manner.

The Saginaw Gardens Apartment project highlights include:

- 7 storeys tall with 122 exceptionally appointed suites with the highest quality demanded by the tenants (such as fit and finish, efficiency, soundproofing, etc.)
- A total precast solution was selected because of the above as well as its ability to deliver impressive speed of construction, overall efficiency, improved safety, exceptional quality, impressive aesthetics & unparalleled ease of maintenance.
- This multi-unit apartment included over 1,200 advanced precast elements
- The 10” Hollowcore floor alone used was approximately 154,000 SF
- The project also included one level of underground parking
Accelerated Building Construction (ABC)

The ABC process used in this condominium demonstrated the advantage of precast concrete to deliver superior quality, fit and finish quickly and affordably.
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Accelerated Building Construction (ABC)

The ABC process used in this condominium completed quickly and efficiently. Let's see another example on how advanced ABC fully precast concrete systems excel.
Accelerated Building Construction (ABC)

St. Teresa Place
Continuing Care Facility
Accelerated Building Construction (ABC)
Luxembourg Condos, Quebec City, QC …
Accelerated Building Construction (ABC)

The additional advantage of a precast concrete ABC process is that it is easy to hybridize with other complimentary systems to meet new requirements required for modern buildings. Once again in Eastern Canada this project in Quebec City, Quebec required a slim floor structure with long spans. A precast concrete solution was matched to an advanced metal beam and precast concrete wall systems to do just this and more. The success of this project has this client planning for more.

The Luxenbourg Condos project highlights include:

- 6 storeys tall with 90,000 SF of ultra-modern floor space
- using the ‘DeltaBeam’® Frame System from the Finnish-based company Peikko Group, developed a slim floor slab system with 10” Hollowcore precast concrete allowing for minimum overall building height
- increased the clear bay size to 26 feet by 36 feet
- larger bays allowed for more parking stalls in the underground parking
- advanced ‘SlenderWall’® precast wall system improves the building envelope
Accelerated Building Construction (ABC)

The speed and commensurate cost savings of this hybrid ABC system was evident early on. The project was built at a rate of one 12,000 SF floor every 3-4 days producing a fire rating for the floor system of up to 4 hours and 2 hours for the columns. The cost for this performance? Only $22.37/SF for all the ‘DeltaBeam®’ components, all precast concrete elements, concrete topping and erection.

An example on how a typical floor progressed on this project would include:

- **DAY 1** – Installation of composite columns, DeltaBeam® and precast concrete shafts for the entire floor
- **DAY 2** – Installation of 6,000 SF of 10” precast concrete Hollowcore floor slabs complete with all grouting
- **DAY 3** – Installation of 6,000 SF of 10” precast concrete Hollowcore floor slabs complete with all grouting
- **DAY 4** – Concrete topping of the floor and miscellaneous works
Accelerated Building Construction (ABC)
Accelerated Building Construction (ABC)
Accelerated Building Construction (ABC)
Hilton Palacio del Rio Hotel, San Antonio, TX …
Accelerated Building Construction (ABC)

ABC has history on its side. The ABC process was touted by the Modular Building Institute (MBI) for this hotel built in San Antonio TX in 1968. Only one short block from the convention center is a 21-storey example of modular construction that has become a part of the historical landscape of San Antonio, as well as an early and ever-present example of the engineering feats modular construction can undertake.
Accelerated Building Construction (ABC)

The Hilton Palacio del Rio Hotel is proudly pointed out to visitors as a 'modular' hotel with a history worthy of landing it on the famed Riverwalk boat tour for review and discussion. This original story written in 1968 about the project upon its construction. Interestingly, the piece is timeless in that the application could happen just as easily today.
Accelerated Building Construction (ABC)

The Hilton Palacio del Rio Hotel project is 230 feet tall and all of the 496 rooms were fully manufactured off site with lightweight precast concrete and fully fitted out with all finished and fixed furnishings. The rooms were installed in 46 days, with an average of 17 units per day being installed by a relatively small crew. Most of the workforce operated safely in a clean, climate controlled manufacturing plant just 8 miles from the site.
Accelerated Building Construction (ABC)

Modular and prefabricated elements for construction are used to replace traditional, inefficient in-situ construction methods.

Modular and prefabricated elements address critical groups of activities that are either considered Fundamental or Comprehensive in nature.

Habitat 67 MONTREAL, QC. - COMPLETED 1966 Habitat, the central feature of Canada’s Expo ‘67 World’s Fair, is well known for its “original, bold design, which showcased construction techniques unheard of at the time.” In 2009, Habitat was designated as an historic monument by the Quebec government. Total Precast Modular construction
Accelerated Building Construction (ABC)

The ABC process relies heavily on incorporating modular and prefabricated elements for construction methods to replace traditional, inefficient in-situ construction methods.

This approach can be used for the design and construction of permanent and/or moveable facilities that address critical groups of activities key to the success or failure of any project.
Accelerated Building Construction (ABC)

The ABC process embraces modular and prefabricated elements for construction. Modular and prefabricated elements address critical groups of activities and enables ABC to its full effect. What is important to remember is that modularity comes in degrees as noted below.

Time for paradigm shift? **ABSOLUTELY!**
Accelerated Building Construction (ABC)

The ABC process begins at the inception of any project with:

- Project Charter
- Project Team
- Business Case
- Sub-Tendering and
- Job Order Contracting (JOC).

**INPUTS TO DEVELOP PROJECT CHARTER**

- PROJECT STATEMENT OF WORK (SOW)
  - EXPLAINS THE BUSINESS NEEDS
  - CLARIFIES THE PRODUCT OF THE PROJECT
  - TELLS HOW THE PROJECT ALIGNS WITH ORGANIZATION'S STRATEGIC PLAN
- BUSINESS CASE
  - FINANCIAL BENEFITS – REVENUE COST REDUCTION
  - NON FINANCIAL BENEFITS – CUSTOMER LOYALTY, INNOVATION
- AGREEMENT – IF THE PROJECT IS BASED ON CONTRACTUAL AGREEMENT LIKE MOU, LETTER OF INTENT
  - CONTRACT STATEMENT OF WORK
  - CONTRACTUAL REQUIREMENT, TERMS & CONDITION
- ENTERPRISE ENVIRONMENTAL FACTORS (EEF)
  - INTERNAL EEF SUCH AS ORG STRUCTURE, HUMAN RESOURCE CAPABILITIES, PHI POLICIES, RISK DATABASES
  - EXTERNAL EEF SUCH AS COMPETITIONS, REGULATIONS, INDUSTRY STANDARDS, GOV'T POLICIES, MARKET ETC
- ORGANIZATIONAL PROCESS ASSETS (OPA)
  - POLICIES, PROCEDURES, TEMPLATES, MUCH PROJECTS, INTRANETS, PAST PROJECT DOCUMENTS
Accelerated Building Construction (ABC)

ABC provides an opportunity to enhance the Integrated Design Process (IDP) which is commonly engaged on complex real estate and infrastructure projects today.

Why Integration Works
Common understanding develops EARLY!

Business as usual

Integrated project delivery
Accelerated Building Construction (ABC)

Both Sub-Tendering and JOC incorporating ABC processes helps reduce unnecessary levels of engineering and design by placing that scope of work specifically with each subject matter expert for modular and prefabricated systems. This will not only speed up the design process, but will improve the quality of the information in the design.
Accelerated Building Construction (ABC)

Under construction, ABC with modular or prefabrication really takes on a new and exciting set of opportunities.

Clearly, ABC sites are cleaner, safer, more secure, more organized and MORE efficient because they have to be. Logistics is the key.
Accelerated Building Construction (ABC)

Advancements in building technologies are now more accessible using ABC processes as collaboration with the experts in modularity and prefabrication will open multiple opportunities unavailable to traditional, inefficient in-situ construction.

Advancements in related industries such as ship building, can offer technologies that will easily mesh with your ABC project.

During this project the windows were pre-installed, and smoke tested in precast concrete manufacturing facility which allowed for quicker enclosure of the structure.
Accelerated Building Construction (ABC)

Inspection and payment for ABC processes using modular or prefabricated elements is quite a bit different than traditional in-situ construction.

Protocols for inspecting an ABC modularized project include Project Team representatives regularly visiting the manufacturing location(s) to check on both progress and quality control.
Accelerated Building Construction (ABC)

Erection and installation of products for an ABC modularized project include methods that are designed specifically to protect the elements being installed.
Accelerated Building Construction (ABC)

Commissioning and turnover of a project using ABC processes are also minimized as well.

The final turnover of an ABC modularized project is now just a matter of course and a very much simplified process when compared to the usually long and convoluted process inherent with traditional, inefficient in-situ construction.
Accelerated Building Construction (ABC)

Operating, maintaining and upgrading of an ABC modularized project is easier and less problematic when compared to a traditional in-situ construction project.

Finally being an ABC modularized project critical parts and entire comprehensive modular elements may even be replaced and upgraded efficiently therefore economically extending the serviceable life of the facility.
Accelerated Building Construction (ABC)

As a facility comes to the end of its effective economic life an ABC modularized project has more opportunities and less downside when compared to a traditional in-situ construction project.

Often, the modular elements themselves could actually be revamped, repurposed and reused for another project, especially if they are made with robust materials such as lightweight precast concrete.

One of the design features was to integrate reused precast concrete insulated wall panels from two Quebec Canadian Tire Stores. These panels cover OVER 50% of exterior wall surfaces.
In conclusion a precast ABC modularized project has more opportunities and less downside when compared to a traditional in-situ construction project when taking everything into consideration. Properly engaged, ABC modularized projects can also allow great artistic expressions in architecture and engineering by allowing normally uneconomic projects to proceed. Furthermore ABC offers the greatest opportunity to engage new technologies and new thought in better building.
Thank you for your time today

Hanscomb Limited

Questions to and Answers from:
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