

EAST HANTS AQUATIC CENTRE

East Hants, Nova Scotia



Project summary

The Municipality of East Hants is focused on developing facilities, transportation routes, and green spaces that meet the recreation requirements of its growing community. The East Hants Aquatic Centre represents one of the largest infrastructure builds in the history of East Hants, with a total budget of \$19 million. The Government of Canada contributed \$5.8 million with the Municipality of East Hants providing \$13.2 million.

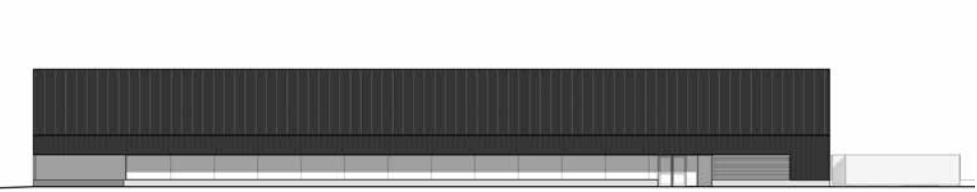
Completed in 2020, the new 2,700 sq.m (29,063 sq.ft) aquatic centre provides aquatic and recreation programming and serves as a hub for the community, all contributing to the social, physical and community well-being of the residents of East Hants.

Facilities include a six-lane, 25-metre lap pool, an accessible leisure spray pool, a lazy river resistance moving-water pool, outdoor splash park, slide, climbing wall, hot tub, community room, kitchenette adjacent to the multi-purpose room, and a public lobby and a pool viewing area.

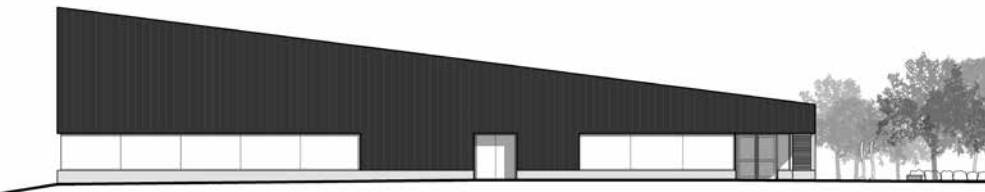
1. The east elevation. The East Hants Aquatic Centre is a hub for the community, contributing to the social, physical, and community well-being of residents.



Floor plan
1 Splash pad 3 Leisure pool 5 Lap pool
2 Hot tub 4 Lazy river



West elevation



North elevation

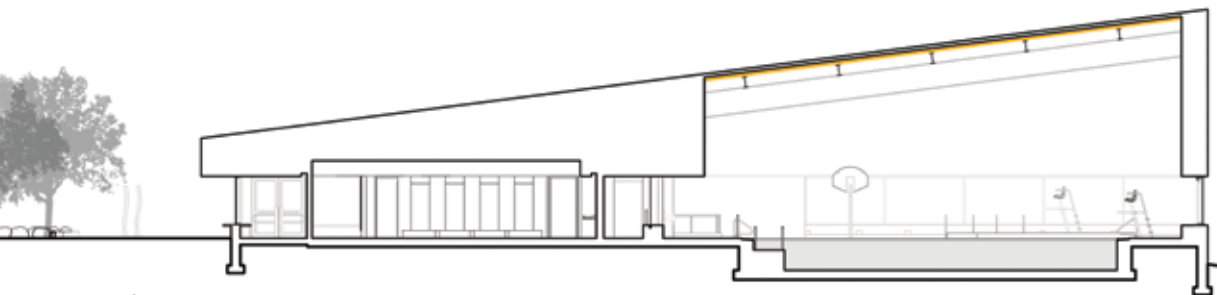
During the design and construction of the East Hants Aquatic Centre the Municipality of East Hants was committed to the use of locally-sourced products for as many building elements as possible.

The aquatic centre was designed by an integrated team led by MacLennan Jaunkalns Miller Architects, nationally and internationally recognised as pre-eminent designers of community pools and recreation centres, in association with TEAL Architects+Planners, known for its commitment to use locally-sourced lumber systems as much as possible.

2. The exposed roof over the pool uses nail laminated timber (NLT) panels which lend a warm, 'handcrafted' effect to the interior, and perform well in high humidity environments.

Bird Construction led the construction of the new facility which was intended to be a local leader in accessibility, quality and energy efficiency.

The large, exposed roof over the pool uses nail laminated timber (NLT) panels which lend a pleasing, 'handcrafted' effect to the interior. Had there been opportunity earlier in the design stage to review the structural system, the use of mass timber could also have been considered for the support beams as well. Mass timber performs well in high humidity environments such as swimming pools.



Building section A-A



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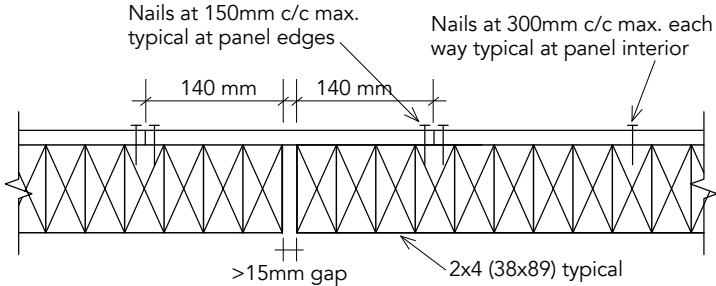
Structural use of wood

Research compared nail laminated timber (NLT) panels with glue laminated (GLT), laminated veneer (LVL) and cross laminated (CLT) panels. Also, the team considered the possibility of a metal roof decking system as the exposed bottom layer. The tight budget dictated the most economical roof, and the design concept was to make the fun-filled pool hall feel as non-institutional as possible. Wood roof panels met both of these important criteria.

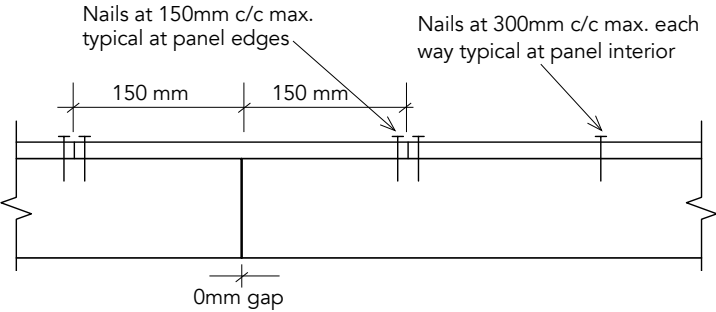
The decision to use NLT panels was driven by the focus on building local capacity in the design and construction of wood systems. NLT is an old construction method which gets its strength from the nails that fasten individual pieces of dimension lumber, stacked on edge, into a single structural element.

Bird Construction National Mass Timber Manager, Patrick Crabbe, partnered with a local saw-miller, Elmsdale Lumber, in collaboration with Bird's Celtic labour division, to manufacture 125 panels at 12ft x 8ft, and 50 panels at 10ft x 8ft. The basic material was locally milled 12-foot long 2x4 studs nailed together using precision hand nailers and very precise jigs. The top faces of the panels were then surfaced with 600 sheets of 4ft x 8ft x 1/2-in. plywood to provide in-plane shear capacity, allowing for use in shear wall or structural diaphragm applications. The structural NLT deck saved building costs as it reduced by half the number of the purlins that would have been needed for a non-structural steel deck.

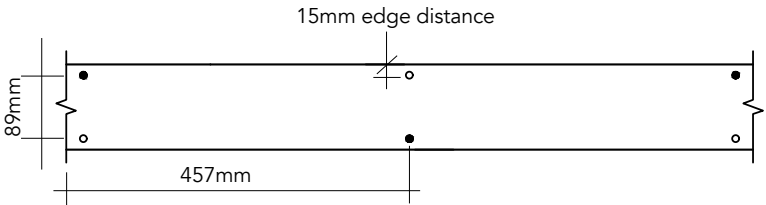
3. Kiln-dried 2x4 lumber ready for assembly into NLT panels.
4. View of the installed NLT panels showing the expansion gap between panels.



NLT panel edge longitudinal

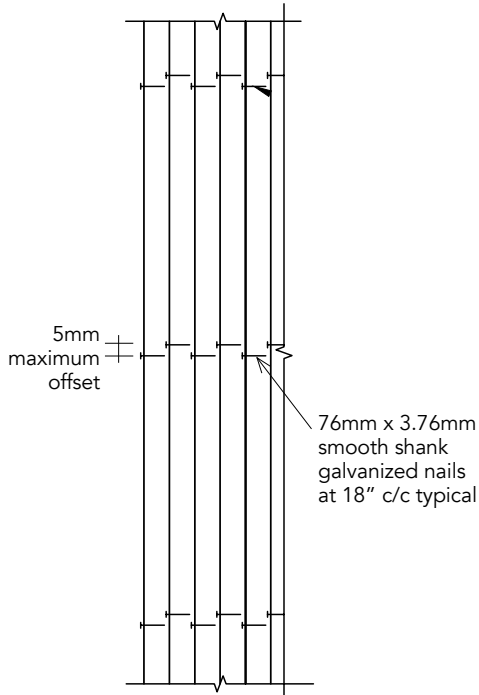


NLT panel edge transversal



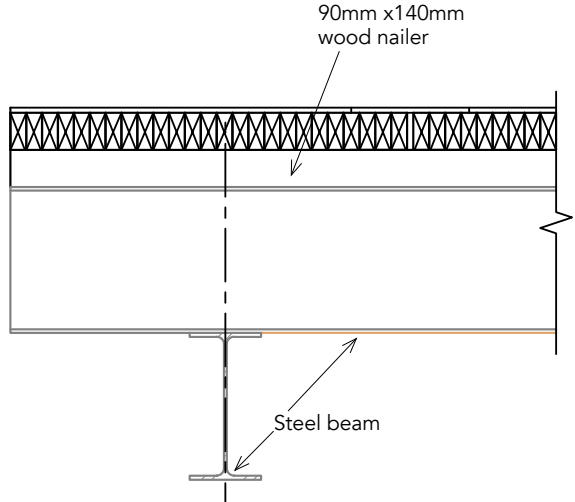
- Nailing in face layer
- Nailing in layer beyond

NLT nail pattern (side view)

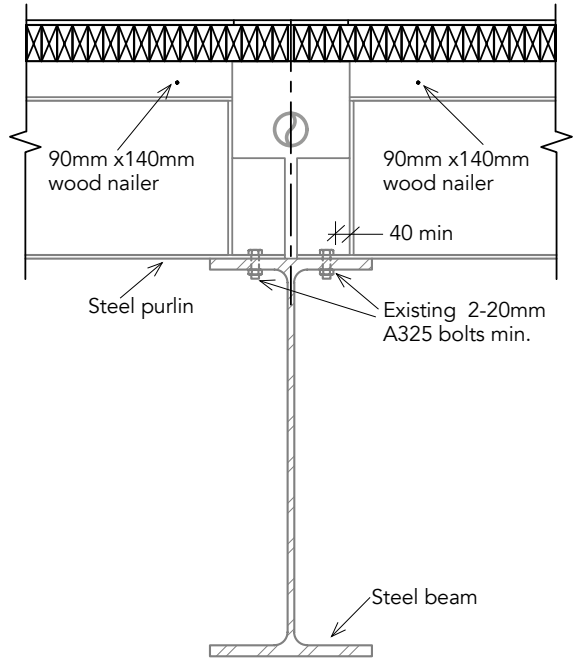


NLT nail pattern (plan view)

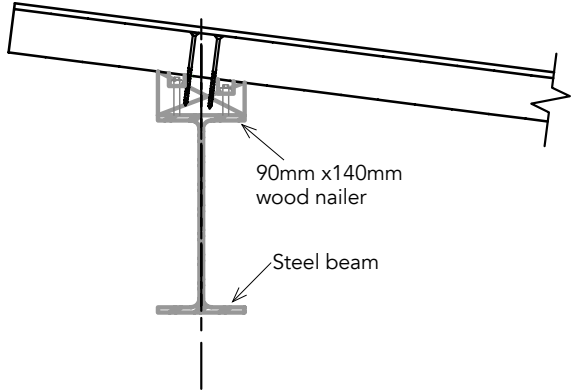
- NOTES
1. All lumber shall be no.1/no.2 grade SPF.
2. NLT panels are to be protected from weather during fabrication, transportation, installation and construction.
3. Individual NLT laminations are to be nominal 2x4 (38x89).
4. Individual NLT laminations are to be continuous from end to end of the panel. No butt joints are permitted.
5. Roof sheathing shall be plywood nailed at 150mm c/c at at all edges and at 300mm c/c through the remainder of the plywood sheet.



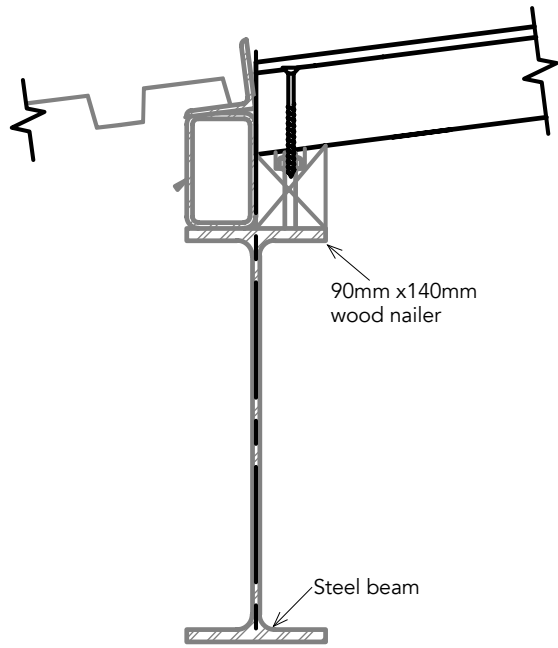
Longitudinal NLT panel supported on steel beam



Longitudinal NLT panel supported on steel beam and purlins



Transverse NLT panel supported on steel beam



NLT panel support at perimeter



The 175 NLT panels of the 148 sq.m (1,600 sq. ft) roof deck were built in four weeks, installed in two weeks, and significantly reduced the roof construction schedule. The Canadian Wood Council's measurement tools showed that this construction approach, compared with alternative systems using non-wood products, resulted in potential carbon benefit equivalent to keeping 42 cars off the road for one year.

The lumber for the NLT panels was harvested within 10 kilometres of the local sawmill. Bird's self-perform team manufactured the NLT panels straight from the sawmill planers. It also installed the roof. The wood will perform very well in the aquatic environment due to its hygroscopic properties – meaning it gains or loses water vapour to balance with the humidity of its surrounding environment without condensation occurring on the wood surface.

- 5. Assembling the 175 NLT panels took four weeks.
- 6. Wood finish on the ceiling adds warmth to the main corridor along the west side of the building. The NLT panels were used only on the roof of the pool.
- 7. and 8. Bird Construction installed the NLT panels in two weeks.



The architectural team took extra care to expose as much of the beauty of the wood, and eliminate clutter in recreation hall ceilings. Lights, ducts, sprinkler systems and other essential elements were carefully concealed and integrated. The interior views of the wood panelled ceiling are framed by the simple steel beam and purlin system. Beyond bearing the dead and live roof loads the NLT panels provide structural stability for resisting the torsion of the roof frame.

9. Looking toward the pool from near the change rooms.
10. Natural light through the large window in the east elevation illuminates the leisure pool, lazy river and hot tub.
11. View to green space and outdoor splash pad. Also see back cover photo.



CLIENT The Municipality of East Hants
ARCHITECT MJM Architects and TEAL Architects+Planners
CONSTRUCTION Bird Construction
NLT FABRICATOR Bird Construction
CIVIL ENGINEER Strum Consulting
STRUCTURAL ENGINEER Campbell Comeau Engineering
MECHANICAL AND ELECTRICAL ENGINEER Smith + Andersen
LANDSCAPE ARCHITECT MJM Architects
BUILDING CODE CONSULTANT RICAS Engineering
BUILDING COST CONSULTANT Altus Group
PHOTOS Julian Parkinson and Bird Construction (photos 3, 5, 7 and 8)



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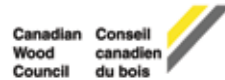


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