Fort McMurray International Airport
The new Fort McMurray International Airport responds to unique challenges while seeking to define a meaningful place for a growing community whose identity is continually evolving. The building showcases both wood’s ephemeral qualities—an inviting, culturally significant material with universal appeal—and its practical characteristics—a renewable, sustainable and adaptable product.

Major public areas are defined by a mass timber structure comprised of seven-ply spruce-pine-fir cross-laminated timber (CLT) panels in combination with glue-laminated (glulam) wood beams and plywood. The airport is currently the largest application of CLT in North America. The architect and code consultant worked out an alternative solution under the building code for the use of mass timber in a non-combustible building.

The issue of building technique is paramount. Due to the scale of the industrial projects in the region and general labor shortages, construction costs are inflated by 30 per cent to sometimes 80 per cent when compared to major centers. In response, the terminal building is designed to maximize the amount of off-site fabrication to the greatest degree possible.

The CLT system was quick to erect and was resilient in terms of construction tolerances where it was required to tie into the other structural systems. The system also provided a number of thermal advantages. For example, the simple detail of a CLT panel on edge creates a parapet detail with superior thermal performance and eliminates the problematic voids associated with a steel stud assembly.

The depth of the assembly enabled the integration of a number of other systems.

In particular, the cavities or chases created between the top of the glulam and the underside of the plywood allowed the architect to carefully coordinate the plethora of systems that compete for real estate on a ceiling. Sprinklers, PA speakers, CCTV, lighting, and smoke detection are all housed in these chases.
1. check-in hall
2. arrivals hall
3. services
4. art screen wall
5. security checkpoint
6. passenger waiting area
7. retail, food and beverage
8. offices
9. departures curb
10. arrivals curb
11. entrance tunnel
The building form uses simple means to generate an iconic and memorable presence in the landscape, exemplifying modesty and directness to resonate with the community it serves. A collection of robust volumes are deployed to express their programmatic functions, further stratified to facilitate easy expansion with minimal disruption to airport operations.

The exterior has a robust material palette derived from the industrial landscape to withstand heavy abuse, both from the ground service equipment on the air side, as well as from the occupants on the land side. Precast concrete insulated sandwich panels were used on the first floor where the potential for damage from airport vehicles was highest. On the second and third floor, the envelope is wrapped primarily in a painted steel cladding with pre-weathered steel cladding incorporated at a number of key areas.

These tough materials are complemented with more sophisticated yet durable materials to soften the interior spaces: unitized triple glazing, terrazzo flooring, acoustic wood panels, and an exposed mass timber structure. The finish on the exposed wood contains the minimum quantity of pigment while still providing adequate UV protection for the wood. The matte finish appears natural, with just enough gloss to help avoid dust collecting on the surface.

The concept of reduction informed the building throughout the design process. Wherever possible, measures were taken to build with less and minimize the resources necessary to create a robust, durable and efficient building responsive to its use and setting.

The design centers on the most meaningful building practices applicable to an airport typology, including passive solar orientation, energy optimization, super-insulated building envelope assemblies, in-floor radiant heating, displacement ventilation, and sophisticated heat recovery systems. Low-emitting materials are used throughout to promote a healthy interior environment for passengers and employees.

The building’s orientation was pre-determined by its relationship to the runway, however, special consideration was given to the location of the programmatic elements in order to optimize the relationship to the energy of the sun. A large south-facing courtyard is complemented by expansive western-oriented glazing to passively harness the energy of the sun. In addition to reducing the energy consumption of the building, the glazing ensures arriving passengers will be greeted with generously day-lit spaces with direct physical and visual access to a landscaped courtyard, a welcome change from the dark and compressed basement-like arrivals spaces found in many more conventional airports.

**ARCHITECT**
Completed by office of mcfarlane biggar architects + designers (omb).
Commenced as mcfarlane green biggar architecture + design.
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**PHOTOGRAPHY**
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**PROJECT FACTS**

| **Project Value** | $258 million |
| **Project Size** | 86,500 sq.ft. |
| **Completion** | October 2014 |