



## STRATUS VINEYARDS

Niagara-on-the-Lake,  
Ontario

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Dofasco Steel Design, 2005)

### Design and Construction Team

**Owner:** David Feldberg  
Stratus Vineyards  
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**Architect:** Les Andrew  
Andrew Incorporated Architect  
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**Consulting Engineer:** Alan Greer  
Sandwell Consulting Engineers Ltd.  
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**Project Manager:**  
Adrian Pembroke/ Doug Newman  
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### Photos:

1. Stratus Vineyards was the first building in Canada and the first winery in the world to receive full LEED® accreditation.
2. Extensive use of sheet steel cladding and tubular steel in both the processing and barrel areas.



## Steel Building Systems are Strong, Plus Attractive to the Environmentally Conscious

The construction industry is becoming increasingly environmentally conscious. It is indicative of the emphasis on 'greening' in many areas of society today. Environmentally friendly construction materials and methods are undoubtedly the way of the future, and for some have already arrived.

Such is the case with Stratus Vineyards in Niagara-on-the-Lake, Ontario. Officially opened in June 2005, the 1870m<sup>2</sup> (22,000 sq.ft.) winery was designed to provide efficiency, sustainability and flexibility, producing limited quantities of wine via a true gravity-flow system. Originally conceived as post & beam construction with conventional steel, the project was switched to include a steel building system (SBS) to avoid projected budget overruns. What evolved became an impressive example of what can happen when a steel building manufacturer is invited to collaborate at the beginning of a project. Namely, the architect was able to maximize the features and benefits of steel-building system design on behalf of the client. In this case it not only kept the project within budget but also contributed to Stratus becoming the first building in Canada and the first winery in the world to receive full LEED® (Leadership in Energy and Environmental Design)

accreditation from the Canada Green Building Council (CaGBC). The LEED® Canada New Construction Rating System recognizes leading-edge buildings that incorporate design, construction and operational practices that combine healthy, high-quality and high-performance advantages with reduced environmental impacts. Points are awarded for meeting specific performance criteria that exceed typical standard practice.

The winery is very complex relative to its size. It comprises two structures: the retail area which is glass and site-framed conventional steel post & beam; and



**Photo:**

3. Hot dipped galvanized steel was used throughout the main structure framing to avoid the use of paint and accommodate the humid atmospheres present.



attached to it the main structure – a barrel cellar and winemaking area contained in a pre-engineered FLEX-SYS® steel building system designed and fabricated by Behlen Industries. The SBS was purpose-built to accommodate the ultra-modern equipment including an 18-ton dual pressure vessel hoist in the barrel cellar. The SBS's inherent

strength allowed that, as well as 28-metre (92-ft) clear spans in the production area. Any other form of construction would have been less economical and required more interior space to be occupied by structural components. Maximizing the space and tying in the main and retail areas' two different construction methods required close collaboration between Behlen's design engineers, the project

architect, and the consulting engineers. The end result facilitated the interior activities and equipment while achieving the desired exterior appearance.

### The Steel Building System

The FLEX-SYS system comprised primary structural steel, or rigid frames, secondary structural steel (roof purlins and wall girts). The roof employed a Thermal Guard assembly for the installation of thicker insulation and increased R values. The exterior roof sheeting was a high performance SSR 24 standing seam roof system plus eavestrough and rainwater leaders. Exterior wall cladding was 26 gauge (.0179") AWR, with interior wall and ceiling lining a Vapour Barrier liner package. All these items were part of the 'system' provided by Behlen, as was the floating mezzanine, cat walks and truck-dock canopy – thus offering the additional benefit of dealing with a single-source supplier.

**Roof:** SSR 24 Standing Seam Roof System – .0239" (24 ga.) Galvalume™

**Wall:** AWR profile .0179" (26 ga) Galvalume™. Completely covered over by cedar siding for an exterior architectural finish providing a 'barrel feel'.

**Canopy:** Behlen provided support for custom canopy over loading dock.

**Interior Liner:** Behlen Vapour Barrier liner package installed on ceiling (under purlin) and full height on all walls. AWR profile .0179" (26 ga) Galvalume™.

**Special Coatings:** All rigid frames, columns, Crane beams and catwalks, were hot dipped galvanized to avoid the use of paint and to accommodate the humid atmospheres present.

**Special Welding:** All frames were seal welded on each side prior to hot dip galvanizing to ensure no voids in the coating.

**Material Handling:** 7000kg capacity top running crane.

**Load Capacity:** Behlen designed in extra load capacity for a monorail crane, catwalks, mezzanine, and miscellaneous winery equipment.

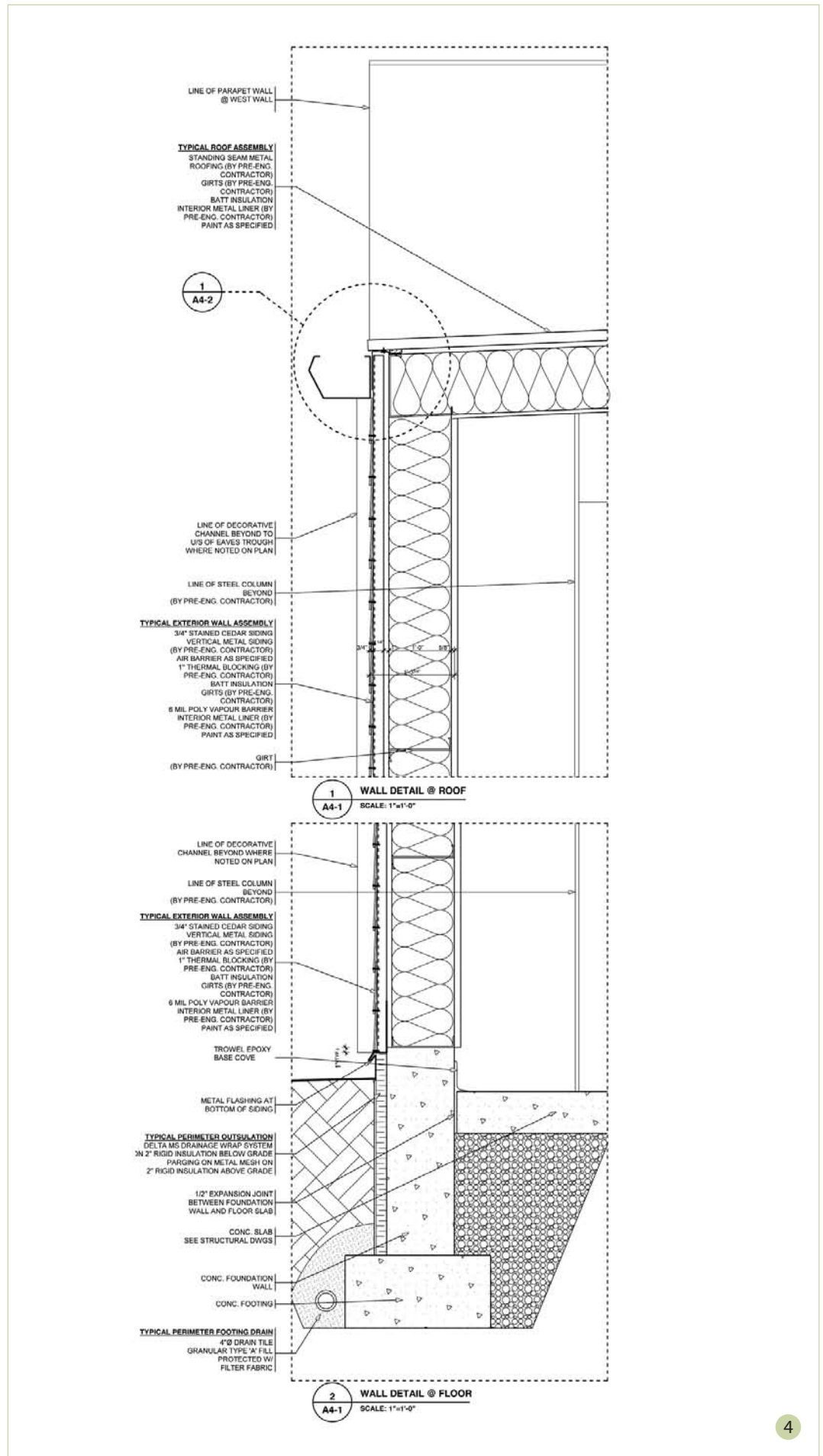
**Primary Structural Steel** (rigid frames), three plate weld, 6' X 3/8", 8"x 5/8", webs up to 40" deep.

**Secondary Structural Steel** (purlins & girts) G90 galvanized steel, 25,300 lbs.

By insisting on an environmentally friendly approach – that includes temperature control by 24 geothermal wells 68m beneath the surface – and combining it with an old-school approach to winemaking, owner David Feldberg has a winery that, according to its Director of Marketing and Sales, receives as many tour requests from architecture enthusiasts as from wine lovers. Besides environmental benefits, the steel building system made a significant contribution to the project by reducing costs and minimizing the construction schedule.

**Detail:**

4. Wall Section Detail



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