Dossier pour ACI Excellence in Concrete Construction Awards

CHATEAU HAUT-BAILLY
Chai Château Haut-Baillly
48 rue de la Liberté
33 850 Léognan

Project quantities
[Built surface: 23,000 m3 of earth excavated - 2,000 m2 of floor space - 4,500 m2 of total surface area

Concrete quantity: 3000m3

Duration of the concrete works: 14 months
Completion of the structural works: [20 NOVEMBRE 2020]

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Description of the project (< 300 words)

The renewed winery building for Haut-Bailly, one of most famous Pessac-Léognan properties in Bordeaux vineyard, should preserve the heritage of the existing buildings and combined vine/garden scenery of the estate. The new complex should yet efficiently house the vinification, ageing and storage cellars. Three major challenges were addressed:

- integrate the new modern building into its landscape, fitting into the existing volumetric continuity and complex arrangement, while retaining the central image of the château. However, the functional aspect of the building required large volumes of space. This led to a circular building integrating an ascending landscape.

- ensure structural efficiency of the 38 m-span vault which dominates the vat room at a height of 8.80 meters, without posts, and supports a 2,400 m^2 hanging garden. The use of concrete makes this architectural feat possible and gives the building its timeless style. Concrete offers a plastic, sculptural, monolithic aspect that allows several aesthetics to be explored.

- manage the spatial approach, the visitors' flow and sensory experience. The circulation is gentle because the shapes are soft, and contribute to the feeling of well-being that the building provides. The sensory memory of visitors should be marked by the place, just as it is marked by the estate's wines. The feeling of expansion, compression and suspension provided by the architecture then resonates with what one experiences during a tasting.

The project is organized around a circular vat room that allows for optimized integration of logistical movement. Discovering the winery from above, we overlook the grape harvest reception area from a

footbridge. Then, reaching the vat room, the visitor physically perceives expansion of the vat room and then compression while passing between the vats. This movement gently makes an impression, just as wine can provide an array of sensations and memories during a tasting.

Concrete in the project (< 500 words)

The 38-metre diameter reinforced concrete dome culminates at 8.80 meters above the floor of the vat room without any posts or supporting structure. Covering an area of 1,500 m^2, it was constructed in a single pour and in a single night to guarantee the homogeneity of the concrete and the absence of cracks. Special forms were necessary due to the sine-spiral shape of the structure, which bears a roof garden as an extension of the château's one, including shading trees, and comprises 6.5 m-cantilevers giving continuity to the gardens.

Below this continuous mineral roof, access to the harvest reception area, technical rooms, two cold chambers, the cellar master's office and laboratory find their place. The roof offers protection against thermal variations. Therefore, concrete was also selected for the winery structure itself. Due to concrete thermal inertia, the vat room needs neither heating nor cooling and a high level of hygrothermal comfort is achieved.

At the mezzanine level is the main pedestrian access to the winery from the garden, with walkways over the 1,500 m^2 vat room comprising 54 vats, among which 26 double-walled concrete truncated cone vats. The curved design of these tanks was drawn to fit the shape of the building perfectly. Those are real sculptures, 4 meters-high and 2,5 meters in diameter, weighing more than 10 tons when empty. Concrete intrinsic stability has been applied even for their inner face, since only tartaric acid naturally produced by vine has been sprayed to constitute a tight overlay. Two suspended aerial curved white concrete staircases lead to the underground barrel cellar, with a capacity of 900 barrels when stacked.

Since 2019, Haut-Bailly has been HVE (High Environmental Value) certified. This certification attests that the techniques implemented by the château preserve biodiversity and that its agricultural practices have a limited environmental impact. The new winery had to keep this environmental ambition. Being at the heart of the project, this led obtaining the HQE (High Environmental Quality) label for the building, covering many requirements. Remarkable features directly benefit of concrete contribution:

- Eco-construction: To achieve harmonious extension of the garden onto the building and optimal integration into the landscape, the height of the cellar roof has been made as low as possible, leading to a technical achievement for the reinforced concrete dome.
- Energy management: In addition to high-performance equipment that optimizes electricity consumption. the building uses heat pumps for heating and cooling, which are part of the renewable energies. Partly underground situation and concrete thermal inertia are beneficial, also.
- Visual comfort and quality: All permanently occupied rooms, offices and the tasting room benefit from optimized daylight supply. In other rooms, lightning provides a pleasant sensation for visitors and users alike. Light concrete facings contribute to it. In fact, concrete has been selected for its mineral durable aspect consistently with the historical heritage context of the whole property. While classical concrete mix-design was used, white aggregate and refined formworks give a monumental rendering to the scenic inner spaces.

Photos

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

Film

N°1 « ARA HB Film »