CEDARS-SINAI MEDICAL CENTER PHARMACY EXHAUST TOWER
CATEGORY 2: SPECIAL-USE STRUCTURE

Rarely thought of as a design feature, an exhaust tower is a necessary building component that supports critical infrastructure. Cedars-Sinai Medical Center’s Pharmacy exhaust tower is centrally located on the hospital’s campus with site conditions that require construction above a functioning loading dock. Our forward-thinking client desired a solution that would be functional, resilient and aesthetically pleasing. Architect, Perkins + Will, and Structural Consultant, Degenkolb Engineers, designed an exhaust tower that met all of our client’s criteria and was able to be installed over an existing structure with minimal disruption to the existing infrastructure.

The tower structure is a combination of a robust primary steel structure and a lightweight secondary steel structure supported via a series of outriggers. Large sections of the secondary structure were fabricated and assembled off-site, reducing construction cost and disruption to the existing function by eliminating field welding and minimizing the number of connections completed on-site. Slotted connections were carefully crafted to allow for field adjustments during construction to accommodate the structure’s complex geometry.

To minimize disruption and comply with the low-overhead installation requirements, the team selected an innovative solution in the form of Tubex grout-injection piles. The use of the Tubex piles limited downtime, effectively reducing the burden on the facility. The exhaust tower became one of the first OSHPD approved projects using Tubex grout-injection piles.

The designers were proud to produce a structure that adds to the beauty of the hospital campus, and improves the quality of the environment for patients and staff.

PROJECT TEAM
Owner: Cedars-Sinai Medical Center
Engineer of Record: Degenkolb Engineers
Architect of Record: Perkins + Will
General Contractor: Pacific National Group

CONNECTION OF CLADDING TO SECONDARY FRAME
The designers specified return on the cladding in order to hide the connection bolts, maintaining the desired sleek exterior.

GUSSET PLATE CONNECTION AT BRACING RODS
Bracing rods were chosen in order to provide an elegant support frame for the perforated aluminum cladding.

INTEGRATION OF NEW AND EXISTING FOUNDATION
Care was taken to avoid conflict with the existing foundation. Where conflict was unavoidable, the design team devised a system to maintain the integrity of the existing structure.

SECTION AT NEW PILE CAP
An effort was required to locate and avoid existing spread footings, sloping grade beams, and retaining wall footings.

SYSTEM EFFICIENCY
The secondary frame was kept as lightweight as possible, allowing for fewer columns and piles, reducing cost and construction time.

SECONDARY FRAME CONCEPT
Two separate but complimentary systems were used - a primary HSS moment frame structure connected to a lightweight secondary braced frame.

SPECIAL-USE STRUCTURE

SEAOSC/SEAOC 2017 EXCELLENCE IN STRUCTURAL ENGINEERING AWARDS

Degenkolb