

Train Station Ventilation System Design



Project Summary

ALDEN designed the ventilation system to support the Boston South Station overbuild project.

The project goal was to design a station ventilation system to ensure public health and safety.

Client

PB Americas

Hines

Kendall/Heaton Associates

Year

2007

Project Overview

The South Station Transportation Center (SSTC), located in Boston, MA, consists of a train terminal, regional bus terminal, and a public parking garage. Currently the bus terminal and parking garage are located above the south portion of the train platforms. The section of the tracks and platforms between the north end of the SSTC and the head house, which ranges in length from about 365 to 525 feet, is currently uncovered and open to the atmosphere.

The Boston South Station Project proposed to build high rise structures and to expand the bus terminal over the existing platform areas of South Station. In effect, the development will fully enclose the station tracks and platforms with the exception of the south "portal" area and the east edge of the development along Track 13.

Work Performed

Three locomotive/track arrangements were modeled using ANSYS-Fluent®. These cases were selected to provide a representation of the "worst case" conditions with respect to the collection of the main and HEP engine diesel exhausts and cooling fan flows.

The efficacy of multiple exhaust hoods were evaluated to meet target health and safety standards while trains were parked at idle at the head end of the tracks. Specifically, the analyses were performed to ensure that the proposed track exhaust and general ventilation systems were able to maintain safe levels of train engine emissions concentrations and ambient air temperature while the trains were parked and idling in the station.

Project Highlights

- ALDEN evaluated multiple scenarios to develop a robust system that could handle a variety of station situations.
- ALDEN used CFD modeling to show compliance with specification and code requirements.

FOR MORE INFORMATION,

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