Structural Frame Design and Foundations for Duct Additions

CertainTeed Corporation
Kansas City, Kansas

The CertainTeed Corporation called upon **DRG** to design a support for frame for a new 7'-6" diameter duct addition to bypass the existing K-12 exhaust stack and connect to a new 185' exhaust stack on their site in the Fairfax District of Kansas City Kansas. The duct had to be supported above the roof of the fiberglass insulation production building and across the drive area to the new stack. The total span to be supported was over 260'. The centerline of the duct was to be approximately 18' above the roof and 36' above the concrete drive. A new sub frame was designed to be supported off of the existing roof trusses and bents were added above the sub frame. New auger cast pile and foundations were added in the drive area and braced bents were designed between the building and stack.

In addition to the new duct framing and supports, a 48 cubic yard reinforced foundation was designed for a new 38,500 lb fan and motor supplying draft air from the duct to the stack. **DRG** also designed a new electrical equipment building to house the electrical switchgear for the fan motor. **DRG** also secured the required authorization from the FAA to erect the 185' stack. The stack is located only a few miles from the downtown Kansas City, Missouri airport and required obstruction hazard lighting, which had to be coordinated with the owner and FAA.

DR&G

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