1. A Case Study of Logan International Airport's Terminal C to e Connector: Structural Challenges and Risks for Existing Building Projects

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Author affiliation: (1) WSP / Parsons Brinckerhoff, 75 Arlington St., Boston; MA; 02116, United States Abstract: This paper explores some of the key challenges and risks faced by structural engineers when working with existing building structures as well as identifies potential cost- and schedule-saving approaches that can streamline the design process and maintain the integrity of the anticipated scope and project quality. Often times, structural engineers enter into the design phase with incomplete existing documentation and limited access to carry out the full-scale site investigations needed to observe and record the existing structural conditions. Utilizing a case study of the recently completed \$54 million Logan International Airport Terminal C to E (C2E) Connector project, this paper explores various approaches that structural engineers can use during the design phase to expedite the building systems coordination through the use of building information modeling (BIM) tools, laser scanning, and selective localized demolition. These approaches can help minimize unforeseen conditions when the construction begins, thus ultimately helping to mitigate costly change orders and schedule delays that would be required to accommodate these unknown conditions. Successful completion of the C2E project required in-depth understanding of the original construction, subsequent renovations of both terminals (C and E), coordination between adjacent concurrent construction projects, and collaborative construction sequencing to ensure minimal disruptions to airport operations, while maintaining containment of post-security areas. Additionally, early engagement and integrated project team collaboration with the Contractor can serve to identify critical enabling packages and project milestones. This facilitates efficient and timely completion of the structural design and the complex phasing required to satisfy operation of a fully active project site open to the public and coordination with overlapping scope of adjacent projects. Throughout this paper, a number of project-specific items are explored to further support the impact of the above-described design approaches and efforts as a way to minimize the challenges and risks faced by structural engineers when working with existing building structures. © ASCE. (1 refs)

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