Presentation Title: "Prevention through Design Concept and Practice"

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Abstract:
Whether working on or just walking across a construction site, construction workers are exposed to many safety and health hazards. In many countries, the rate of injuries and fatalities in construction is significant compared to other industries, reflecting the hazardous nature of construction work. The construction industry takes many steps to address safety on its construction sites. However, the safety performance across all sectors of the construction industry is not consistent. For example, the safety-conscious culture and efforts within the petro-chemical sector are not duplicated within the single-family housing market. Further reducing the number of construction injuries and fatalities across the entire construction industry requires innovations in occupational safety and health. One means to improving construction safety and health is to look beyond just the constructor and the construction means and methods to those who design the facilities. This practice is known as prevention through design (PtD), and also commonly referred to as "design for safety" (DfS) and "safety in design" (SiD).

PtD recognizes that, in some cases, safety and health hazards may be "designed into the project" as a result of the design features. That is, the features of the permanent facility may be designed such that they create a hazardous work environment for workers who construct the design. The safety and health hazards to which workers are exposed on a building containing a masonry façade, for example, may be greater and more numerous than if the building was designed with a precast concrete panel exterior. Following safety-focused pre-planning and design review, altering the design may eliminate safety and health hazards from the jobsite. By addressing safety and health during the design phase, hazards can be eliminated or reduced during construction, thereby improving construction site safety and health performance. This is the prevention through design concept as applied to construction worker safety and health.

This presentation will provide an in-depth description of the PtD concept, current research, and its application in practice. Given the complex nature of many construction projects and the construction industry, implementing PtD in construction can be difficult. The presentation will cover background research and activities related to the PtD concept within the construction industry. Learning from research in the US, UK, and Australia, moving forward to enhance and diffuse PtD throughout the construction industry requires building a strong foundation for PtD. The foundation should include aspects that relate to the following key attributes: culture, risk, organizational and project structure, physical form and function, and resources, tools, and processes. Some examples of activities that the construction industry should take to establish the foundation, a number of which are currently being undertaken, are:

- Integrate PtD into designer education and training
- Establish an expectation of discipline integration/collaboration within the project team
- Develop model contracts and insurance policies that include PtD
- Establish designer PtD responsibilities and expectations
- Promote integrated project delivery
- Engage owners/clients in PtD
- Develop and disseminate safe designs
- Develop model PtD review processes and tools, and a design risk rating system
- Incorporate PtD into design codes and sustainability practices

Case study descriptions of how construction projects have been designed to improve worker safety and health will be provided along with example PtD processes. The presentation will include opportunities for discussion of the PtD concept and how to facilitate its acceptance and dissemination throughout the construction industry.