

Struck by Checklist for Architects and Design Engineers Building Construction

[FINAL DRAFT SDCHOI]

Use this checklist to prevent through design many common struck by exposures during the construction and maintenance of buildings. Prevention through Design (PtD) recognizes that architects and design engineers working closely with construction teams have the ability to proactively "design out" potential hazards to eliminate or minimize the risk and improve workers' safety and health. Hence, this checklist, during the planning and design phase and beyond, should help architects and design engineers identify and eliminate commonly found hazards in building construction and maintenance.

Design Engineer Codes: CE = Civil, ME = Mechanical, SE = Structural, PE = Project

Component	Design Risk	PtD Controls	Architect	Design Engineer
Pip	<			
		Specify markings or warning signs on low clearance overhead objects		ME, SE
Piping and ductwork (erection)	Large pipe or ductwork sections, which lack adequate connection points for lif	ME, SE		
Vehides striking objects	s œ œ	— a A s		
		<ul style="list-style-type: none"> Specify safety barriers to protect LPG storage areas as well as goalposts, bunting and barriers where there is a risk of overhead services and other hazards being struck by vehicles 		ME, PE
		<ul style="list-style-type: none"> Specify reflective hazard markings on hard to see objects and structures 		PE
		<ul style="list-style-type: none"> Designate vehicle traffic lanes for deliveries and for equipment used on site Clearly mark travel lanes for both day and night operations 		PE
Vehicle and heavy equipment traffic	Pedestrians are at risk of being struck by heavy equipment, construction vehides and their loads.	<ul style="list-style-type: none"> Establish primary pedestrian routes that provide safe access to work areas away from main vehicle routes 		CE, PE
		<ul style="list-style-type: none"> Specify physical protection where pedestrians are at risk of being struck by vehides or their loads 		PE

		<ul style="list-style-type: none"> Establish pedestrian crossing points and pedestrian control measures where necessary 		PE
		<ul style="list-style-type: none"> Establish an Internal Traffic Control Plan (ITCP) to route construction traffic away from pedestrians 		PE
		<ul style="list-style-type: none"> Design ITCPs to minimize backing 		PE
		<ul style="list-style-type: none"> Design temporary traffic control devices to slow vehicle traffic 		PE
Powered industrial trucks (PIT)	Pedestrians or workers can be struck or crushed by PITs (forklifts), or hit by objects falling from a forklift.	<ul style="list-style-type: none"> Design pedestrian safety zones around PIT operation areas 		CE, PE
		<ul style="list-style-type: none"> Specify bollards/guardrails at potential pedestrian/forklift conflict areas 		PE
Precast and Prefabrication Elements; Steel Beams and other structural elements	Large and heavy precast structures need a wide lifting radius and pose struck by hazards.	<ul style="list-style-type: none"> Specify U shaped precast beams with cast in situ infill concrete to reduce the crane load 		CE, SE
		<ul style="list-style-type: none"> Design precast shell columns with cast in situ infill concrete to reduce the crane load 		CE, SE
Concrete Masonry Units (Concrete Blocks)	Crowded and confined areas below elevated masonry work increase the risk of workers being struck by falling bricks.	<ul style="list-style-type: none"> Specify large, limited access zones below elevated masonry work to minimize the risk of workers being struck by falling objects 		CE, PE
Hoists	Workers can be struck by the platform, the load, or other moving parts of the hoist.	<ul style="list-style-type: none"> Design an enclosed hoistway in areas where the worker could be struck (e.g., working platforms or window openings) 		CE, PE
		<ul style="list-style-type: none"> Design adequate lighting and access to the hoist area 		PE
		<ul style="list-style-type: none"> Design gates at all landings and at ground level 		PE
		<ul style="list-style-type: none"> Design hoist controls at a location that will prevent being struck by a falling load, or a broken cable or chain in the case of a mechanical failure 		PE
		<ul style="list-style-type: none"> Specify a hoist rated for all possible loads to be used, and include below the hook components to prevent the use of non conforming components 		ME, PE
		<ul style="list-style-type: none"> Design hoists in areas that will minimize nearby foot traffic, or install guardrails to prevent anyone from walking beneath an elevated load 		PE
		<ul style="list-style-type: none"> Specify misalignment detection to a 		

		centered below the hoist which could result in uncontrolled swinging of the load		
Building exterior	Loose materials and equipment can lead to struck by and other safety hazards for workers.	<ul style="list-style-type: none"> Specify impact resistant windows, doors and shields at occupied spaces in high wind areas 		CE, PE
General (overhead)	Overhead construction can lead to struck by or other safety hazards for workers.	<ul style="list-style-type: none"> Design components to facilitate prefabrication at grade and erection as complete assemblies 		CE, PE
		<ul style="list-style-type: none"> Design adequate exclusion zones to prevent entry 		PE
Exits and doorways	Blind exit passageways, vehicular exit ways, or blind door swings can lead to struck by or safety hazards for workers.	<ul style="list-style-type: none"> Specify mirrors, warning bells or other warning devices 		CE, PE
		<ul style="list-style-type: none"> Specify bollards or physical barriers to protect workers on foot exiting blind passageways 		PE
		<ul style="list-style-type: none"> Design one way pathway where swinging doors are installed 		PE

Sources/References

This checklist was in part adapted from J. Timmerman's Prevention Through Design Checklist (spread sheets), and subsequently modified and revised by Professor Sang D. Choi, PhD, MPH, MS, CSP, CPE (2023).

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