

Interim* Fall Prevention Checklist for Architects and Design Engineers

**This checklist is currently in the process of being finalized and will be re-released once updated.*

Use this checklist to prevent many common fall exposures during commercial construction and maintenance of buildings. Prevention through Design (PtD) recognizes that architects and design engineers 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 assist architects and design engineers in order to identify and eliminate some of the potential hazards most commonly found in building construction and maintenance.

Component	Design Risk	Potential Hazard	PtD Controls	Action by
Roof Openings (skylights, roof hatches, solar tubes, exhaust fans, etc.)	Falling through the roof openings during installation or maintenance.	No or inadequate fall protection systems for fall from elevation (roof openings).	<ul style="list-style-type: none"> • Permanent guardrails around openings • Skylights to have guardrails, load bearing mesh, or certified glass covers • Group roof openings together to create one larger opening rather than many smaller openings • Safety grab bar for hatch access • Locate roof access away from leading edges • Adequate space around roof hatch to allow personnel movement 	<input checked="" type="checkbox"/> Architect <input checked="" type="checkbox"/> Design Engineer (structural)
Roof Edges (elevated levels/changes in elevations)	Falling off the open edges during construction if they are not adequately guarded.	No or inadequate fall protection systems for fall from elevation (roof edges).	<ul style="list-style-type: none"> • Design minimum 42” height parapets or railings at all roof edges • Include embedded anchor points: <ul style="list-style-type: none"> - located to enable the end user to perform regular maintenance tasks safely - Get a fall protection supplier/designer involved in the plan review • Provide safe access directly to all roof levels or from level to level (protected ladder, ships ladder, stairs) 	<input checked="" type="checkbox"/> Architect <input checked="" type="checkbox"/> Design Engineer (structural)
Windows, Balconies, Elevated Patios	Prior to installation of upper story windows, low sill heights add to the chance of falling through the window openings, or fall from	No or inadequate fall protection system for fall from elevation.	<ul style="list-style-type: none"> • Design windowsills to be 42” minimum above the floor level (i.e., act as guard rails during construction) • Include window washing equipment safety anchorage points in design, and 	<input checked="" type="checkbox"/> Architect <input checked="" type="checkbox"/> Design Engineer

	elevated balconies/ patios.		<p>engineered in structural drawings</p> <ul style="list-style-type: none"> • Use a window washing consultant to evaluate safe window/building washing post construction maintenance • Allow the permanent window washing system (davits and tiebacks) used for construction activities (exterior skin installations, painting, final cleaning, etc.) • Include fall protection anchorage points for workers during the construction of balconies/elevated patios 	
Mechanical/ HVAC (equipment location)	The location of mechanical and HVAC systems can lead to fall and other safety hazards for workers.	No or inadequate fall protection or unsafe access to HVAC near the openings or edges.	<ul style="list-style-type: none"> • Locate rooftop mechanical/HVAC equipment away from the structure's edge and skylights—locate within parapet walls • Include slip-resistant walk pads to access serviceable equipment • Ensure safe transition between mechanical penthouses and roof surfaces with no steps greater than 18" 	<input checked="" type="checkbox"/> Architect <input checked="" type="checkbox"/> Design Engineer (structural)
Mechanical/ HVAC (equipment supports)	Mechanical and HVAC systems and their supports that are not designed to withstand all anticipated construction loading may present collapse and fall hazards for workers.	No or inadequate equipment supports.	<ul style="list-style-type: none"> • Design overhead equipment and their supports to hold the weight of several construction workers -Get consultation with the manufacturers • Install HVAC equipment only <i>after</i> the floor is complete, and permanent guard rails and anchor points are installed 	<input type="checkbox"/> Architect <input checked="" type="checkbox"/> Design Engineer (mechanical)
Stairs, Ladder, Ramp (usages and materials)	Frequent use of ladders by construction and maintenance workers to move material and equipment increases the possibility of falling.	<ul style="list-style-type: none"> • Improper means of moving material and equipment • Inadequate stair, ladder and ramp materials 	<ul style="list-style-type: none"> • Allow permanent stairways to be built as soon as possible in the construction phase (for use by construction personnel) • Consider stairs rather than a ladder where end users frequently move material and equipment • Consider using prefabricated or ground-assembled stairways 	<input checked="" type="checkbox"/> Architect <input checked="" type="checkbox"/> Design Engineer (civil/safety)

			<p>which can be erected as one assembly</p> <ul style="list-style-type: none"> • Stairway materials should be selected with consideration of the anticipated construction work area and surrounding conditions to minimize deterioration of the stairways and fall potential • Interior stairs: include warning strips at top and bottom of each run in a contrasting color 	
Structural Steel Framing (steel erection)	Falling from steel beams, purlins, girts, utility bridge, etc. during the erection process.	No or inadequate fall protection system for fall from elevation.	<ul style="list-style-type: none"> • Provide holes in the webs of beams above piping for attachment of supports and lifelines • Contract drawings should show clear locations of attachment and how many lifelines each beam can support • Columns should be provided with holes at 21" and 42" above the floor level to provide support locations for lifelines and guardrails • All columns are erected with retractable lanyards attached before erection. All beams fly with stanchions and safety lines already installed 	<input checked="" type="checkbox"/> Architect <input checked="" type="checkbox"/> Design Engineer (structural)
Outdoor Platforms/Walkways	Slips, trips and falls on/from unguarded or unsafe platforms and walkways.	No or inadequate fall protection systems in outdoor platforms and walkways.	<ul style="list-style-type: none"> • All platforms and walkways located above ground level include appropriate guard rails • Provide non-slip walking surfaces (slip resistant floor materials) on walkways and platforms exposed to the weather. In cold climates, consider ice melting cabling • Locate exterior stairs and ramps on the sheltered side of the structure to protect them from rain, snow, and ice 	<input checked="" type="checkbox"/> Architect <input checked="" type="checkbox"/> Design Engineer
Concrete Slab on Grade	Concrete floor finishes and concrete stairway and ladder landings should be designed to prevent	No or inadequate fall protection systems for fall from elevated concrete slab-on-grade.	<ul style="list-style-type: none"> • Design and schedule slabs-on-grade, sidewalks, roadways, and other flatwork around elevated structures to be constructed as early as 	<input checked="" type="checkbox"/> Architect <input checked="" type="checkbox"/> Design Engineer (civil/safety)

	falls and obstructions.		possible and available for use by construction personnel. <ul style="list-style-type: none"> • Concrete floor finishes and concrete stairway and ladder landings should be designed to prevent falls and obstructions • All stairways and landings located above ground level include appropriate guard rails 	
General Arrangement/ Project Layout	A building's floor plan can lead to fall hazards if there are numerous offsets of varying sizes, floor levels varying in size or shape.	No or inadequate floor plan.	<ul style="list-style-type: none"> • Group floor openings together to create one larger opening rather than many smaller openings -Provide permanent guard rails around floor opening located above ground level • Design floor plans with limited offsets of varying sizes, floor levels varying in size or shape, etc. 	<input checked="" type="checkbox"/> Architect <input checked="" type="checkbox"/> Design Engineer (structural)

Sources/References

This checklist was adapted from J. Timmerman's Prevention-Through-Design-Checklist (spread sheets).

Construction Design and Management [CDM] 2015 (2019). Client Contractor Checklist, June 2019.

Health and Safety Executive [HSE] (2020). Health and safety in roof work (Fifth Edition). TSO@Blackwell. United Kingdom for the Stationary Office.

Health and Safety Executive [HSE] (2006). Health and safety in construction (Third Edition). The National Archives, Kew, London, U.K.

Health and Safety Executive [HSE] (2014). Working at height: A brief guide. This is a web-friendly version of leaflet INDG401(rev2), published 01/14U.K. <https://www.hse.gov.uk/pubns/indg401.htm>

The Institution of Engineers, Singapore (n.d.). Technical Resources. <https://www.ies.org.sg/Publication/Technical-Resources>

Reese Fortin, CSP, CHST: Sundt Construction (2023)