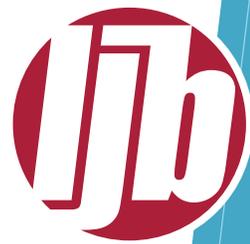
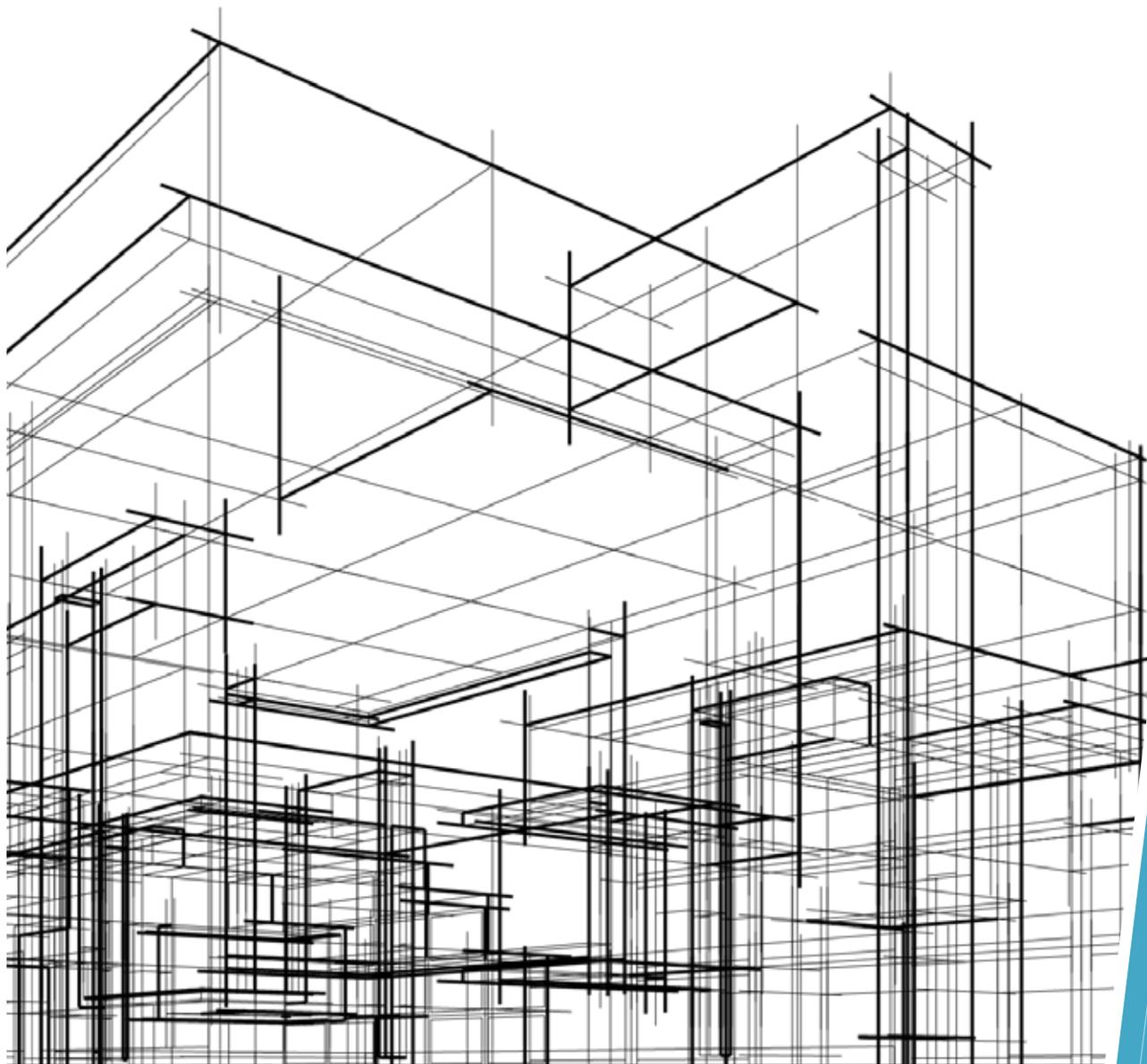


The ROI of Prevention through Design: Delivering Safer, Smarter Projects



Organizations who have applied Prevention through Design programs have proven meaningful results: life-threatening work hazards are reduced, productivity is improved, and costs are lowered.



What Is Prevention through Design?

The Prevention through Design (PtD) method embeds hazard mitigation at the earliest stages of design, transforming how we build and maintain the environments where people live and work.



Source: "Safety Through Design" by Wayne Christensen. Originally published by the National Safety Council

PtD ensures that safety measures are evaluated and implemented during the programming and design phases of a project. In addition to increased safety, incorporating safety at this stage saves money because designers don't even need to erase lines on their drawings – the safety aspects are simply programmed into the design.

Evolution of PtD

PtD is grounded in decades of engineering and safety best practices, but in the U.S., the practice is not as integral as its value warrants. Applying PtD is transformative because it truly puts safety on equal footing with other considerations of a project during design—rather than reacting to hazards once construction ends.

While PtD is not mentioned by OSHA, it aligns with the intent of the General Duty Clause—to provide a place of employment free from recognized hazards. The use of PtD is also supported by other recognized authorities and agencies:

- **United States:**
 - Introduced by the National Safety Council in 1995
 - Strategic goal of the National Institute of Occupational Safety and Health (NIOSH), who offers information, training resources and design guides
 - National Consensus Standard ANSI Z590.3: Guidelines for Addressing Occupational Hazards and Risks in Design (2012; updated 2021)
- **United Kingdom:** Requirement established in 1994 and passed into code through CDM Regulations (2015)
- **Australia:** 1 of 5 priorities in National OHS Strategy (2002)

Did you know?

PtD can even be considered Biblical:

- "When you build a new house, make a parapet around your roof so that you may not bring the guilt of bloodshed on your house if someone falls from the roof."

-Deuteronomy 22:8
New International Version



The Business Case for PtD:

Why PtD Makes Economic Sense

PtD can be applied to any safety subject, and its application to fall protection is highlighted here due to the significant cost and risk ramifications of not implementing during the design phase.

While it may be easier to see fall hazards in an existing structure, it is more cost effective to implement fall protection before structures or processes are built. The cost of hazard abatement grows exponentially the later it is addressed. When safety professionals are brought in at the beginning of a project, safety issues can be eliminated or addressed within the project's original timeline and budget.

Plus, addressing a safety issue after a facility or process is operational is problematic and costly for an operations team. With proactive safety planning, you can increase productivity throughout the life of the facility.



A study completed by a large consumer products company showed that addressing a fall hazard after construction can cost up to 10,000x more than addressing the same hazard during design.



When considering whether to evaluate fall protection during design, the question should be "How much can we save if the hazards are abated at the beginning?" not "What will it cost to implement safety now?"



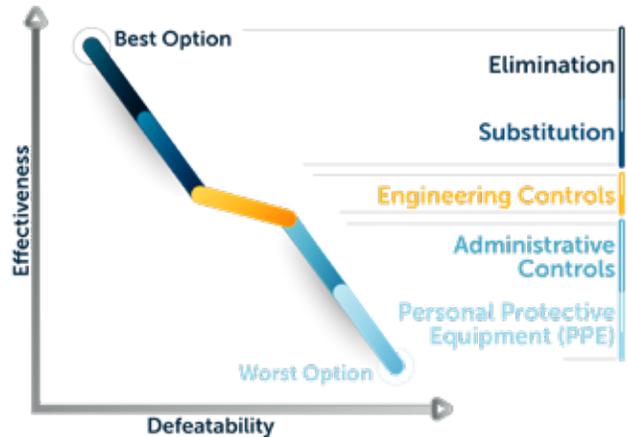
Safety First. Literally.

Evaluating and implementing safety measures early in a project creates optimal safety for workers—from construction into operations, and throughout ongoing maintenance.

PtD + Hierarchy of Control = Safer Workplaces

Ideally, organizations follow the Hierarchy of Controls when selecting fall protection solutions. Using this method ensures that the most effective and least defeatable option is applied to a given hazard.

Using PtD gives organizations more flexibility to implement solutions higher in the Hierarchy. When fall hazards are eliminated or managed through engineering control solutions, there are fewer fall protection issues to contend with through the life of a facility.



When you apply PTD to new building projects, you have many opportunities to impact not only safety, but overall risk and investment.

   	<p>Eliminate</p> <p>Substitute Processes</p> <p>Apply Engineering Controls</p> <p>Plan for PPE Systems</p>	<ul style="list-style-type: none"> • No safety investment • Minimize safety investment • Increased safety, less future maintenance cost • Install anchorages/systems to minimize future building alterations
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If You Don't Implement PtD...

- **Abatement options are limited**
 - No opportunity to eliminate or substitute
 - Options limited by existing interferences
 - More connection and layout issues to overcome in design and construction
- **Over reliance on least effective solutions (PPE)**
 - Engineering controls no longer feasible
 - Greater residual risk – PPE solutions have many opportunities to fail
- **Higher operational costs**
 - Ongoing equipment and maintenance costs
 - Increased need for training and re-training
 - More elements to manage



Applying Prevention through Design

PtD is rooted in collaboration—where all stakeholders share information and ideas for optimal outcomes. This integrated approach ensures that safety is not an afterthought—it’s a design criterion considered at each stage of project development.



What Happens When You Implement PtD?

Teams who implement PtD see impressive and meaningful results, both at a project level and as an organization.

Project Outcomes

- Encourages discussion on hazard elimination
- Plans for maintenance access and task performance
- Relocates equipment to avoid obstructions
- Avoids interferences
- Maximizes use of standard equipment
- Eliminates secondary project mobilization to address safety

Organizational Outcomes

- Reduces overall risk
- Designs for ease of maintenance and operations
- Improves compliance and audit readiness
- Reduces or eliminates costly field modifications
- Avoids operational downtime
- Minimizes legal and insurance liabilities
- Improves project timelines and employee morale

PtD Lessons Learned:

To make the most of the PtD approach, keep these recommendations in mind:

- **Manage expectations**
 - Building function will always be primary driver
 - Not all hazards can be designed out
- **Encourage teamwork**
 - Owner, design team and safety personnel are on the same team
 - Contractor must honor design; not improvise in the field
- **Consider timing**
 - Educate and engage design team ASAP
 - But, virtual assessment can be done too early if design is in flux
- **Apply technology wisely**
 - BIM is great for collaboration, but models are not real life
 - Highlights hazards, but doesn’t solve the problem



Case Studies: Designing for Safety and Value

Gulf Coast Petrochemical Facility



Issue:

In a high-risk new industrial setting, PtD was used to address confined space access and elevated work hazards during the design of a tank maintenance system.

Solution:

By incorporating engineered platforms and permanent access stairs into the original design, the facility avoided \$500K in projected retrofit costs and significantly reduced long-term permit-required confined space entries.

Government Office Building Renovation

Issue:

For a high-profile renovation of a historic government facility, the design team engaged a safety consultant early in the design process. For the complex facility, the team wanted to plan ahead to reduce risk for maintenance and operational tasks.

Solution:

Use of Building Information Modeling (BIM) allowed early hazard visualization and team collaboration, enabling equipment relocation and maintenance access planning—all before construction began.



New University Hospital



Issue:

When a large university was developing a new heart hospital, the leadership knew they wanted to create a safe environment for all stakeholders in the facility, including staff, maintenance and building operations teams, visitors, and, of course, patients.

Solution:

A safety consultant was included on the design team to review the design documents at each stage of design. The consultant also developed a written fall protection plan based on the findings of the design review and reviewed the construction installation to ensure that implementation conformed to the specifications and recommendations developed by the design team.





Engineering
Building Partnerships

Let's build it right, from the start.

Prevention through Design is more than a compliance strategy—it's a smarter way to build. When safety is integrated early, organizations gain a triple benefit: lower costs, reduced risk, and better project outcomes.

LJB invites you to partner with us to make safety a core value of your next project.

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