



**ALFA International**  
THE GLOBAL LEGAL NETWORK

## 2022 Construction Seminar

July 27-29, 2022

### THE BRAVE NEW WORLD OF PREVENTION THROUGH DESIGN

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**Sometimes the Third Time's a Charm** Using Hindsight and Perseverance to Build Into the Future

ALFA INTERNATIONAL 2022 CONSTRUCTION LAW SEMINAR



**Prevention through  
Design – It's the Future**

# Mission Statement

- The mission of the Prevention through Design National initiative is to prevent occupational injuries, illnesses, and fatalities through the inclusion of prevention considerations in all designs that impact workers. The mission can be achieved by:
- Eliminating hazards and controlling risks to workers to an acceptable level “at the source” or as early as possible in the life cycle of equipment, products, or workplaces.
- Including worker safety and health in design, redesign and retrofit of new and existing work premises, structures, tools, facilities, equipment, machinery, products, substances, work processes and the organization of work.
- Enhancing the work environment through the inclusion of prevention methods in all designs that impact workers and others on the premises.



## What are our priorities?

The National Institute for Occupational Safety and Health (NIOSH) Prevention through Design (PtD) Initiative works with partners in industry, labor, trade associations, professional organizations, and academia. The program focuses on preventing illness, injury, and fatality by “designing out” occupational hazards and risks.

## What do we do?

- **Research** the effectiveness of current PtD interventions, investigate additional solutions for existing design-related challenges, and identify future research needs.
- **Educate** and motivate others to use PtD priorities and processes in collaborative design and redesign of facilities, work processes, equipment and tools by:
  - Helping universities integrate PtD principles into engineering curricula.
  - Encouraging professional accreditation bodies to include PtD in their assessments.
- Making business leaders aware of potential cost savings from PtD.
- Increase **practice** of PtD by sharing case studies of real-life PtD solutions, and encouraging stakeholders to apply them and share further.
- Encourage business, labor, government, academic, and consensus standards organizations to integrate PtD into **policy** revisions.
- Produce concise, practical PtD guides and checklists for **small businesses**, their insurers,

## What have we accomplished?

- The U.S. Green Building Council published a *Leadership in Energy & Environmental Design (LEED) PtD pilot credit* for building certifications after four years of **policy** work with the NIOSH PtD and Construction programs. The pilot credit, developed by NIOSH, prompts the use of PtD methods to design out worker hazards for both the construction phase and operations & maintenance phase of a building's life cycle.
- Completed **research** and development of a Business Case Developer software tool that helps business managers and safety and health professionals develop proposals on the business advantages of transitioning to a PtD design process.
- Provided **education** in PtD methods at 17 events to over 1,000 influencers in business, safety, health, government, academia, and labor.
- Published safe **practice** outcomes of the 2012 “Safe Nano Design” workshop organized by the NIOSH PtD program, the NIOSH Nanotechnology Research Center, and the State University of New York at Albany. The focus is on safer design of both molecules and manufacturing processes.
- Published two Workplace Design Solution documents on PtD business value and noise reduction. These brief documents are especially helpful to **small businesses**.

## What's next?

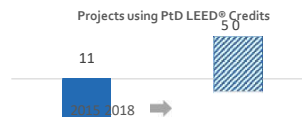
- Publish Capital Projects Processes web site with checklists and case studies showing how to incorporate PtD methods in large building projects, including Green Building.
- Publish a Business Case journal article that shows how to use the free Business Case Developer software. It can be used to make financial and non-financial proposals for adoption of PtD processes in a business.
- Develop 8 or more case studies that provide more examples of how to use the Business Case Developer software.
- Publish 3 educational slide decks with speaker notes and instructor guides on PtD for Engineering undergrad programs in:
  - Agricultural Engineering
  - Capital Projects Process
  - Manufacturing and Industrial Engineering
- Develop model language for incorporating PtD into liability insurance policies for designers and constructors.
- Develop model contract language that incorporates PtD roles and responsibilities into design and construction contracts.
- Serve on the American Society of Safety Engineers' workgroup to revise the ANSI/ASSE Z590.3 Prevention through Design standard. Revisions will provide guidance to better enable businesses to use PtD design methods.
- Publish two Workplace Design Solutions for nanotechnology manufacturing with the NIOSH Nanotechnology Research Center.

## At-A-Glance

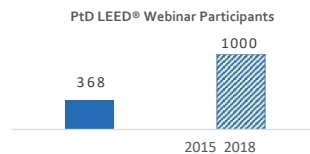
The Prevention through Design (PtD) Initiative's mission is to prevent or re-duce occupational injuries, illnesses, and fatalities through the inclusion of prevention considerations in all designs that impact workers. This snap-shot shows recent accomplishments and upcoming work.



Source: NIOSH program records

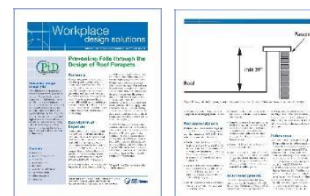


Source: NIOSH program records



Source: NIOSH program records

## Publication Spotlight: Workplace Design Solutions



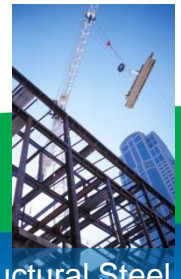
# Construction Hazards

- Cuts
- Electrocution
- Falls
- Falling objects
- Heat/cold stress
- Musculoskeletal disease
- Tripping

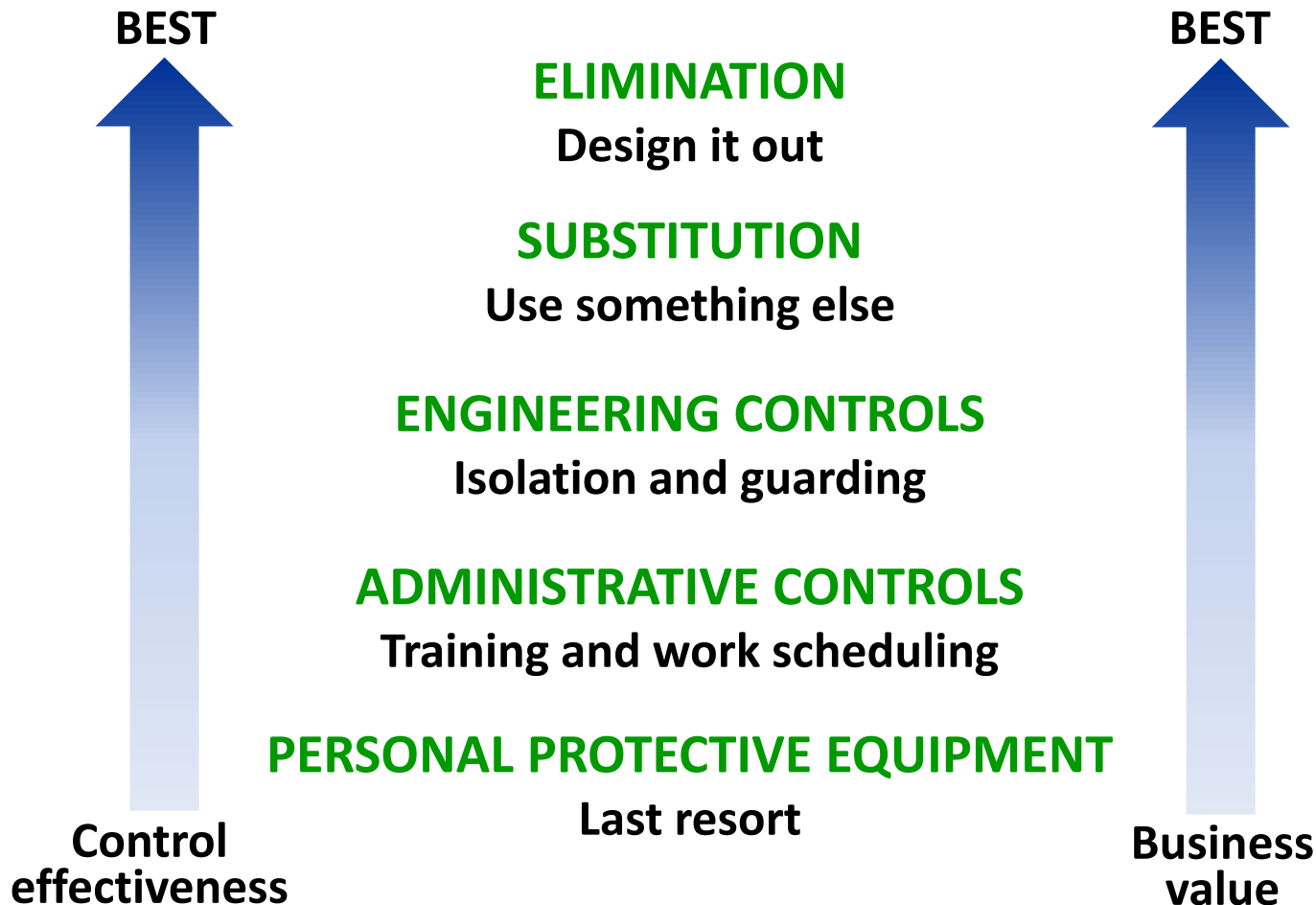
[BLS 2006; Lipscomb et al. 2006]



*Graphic courtesy of OSHA*



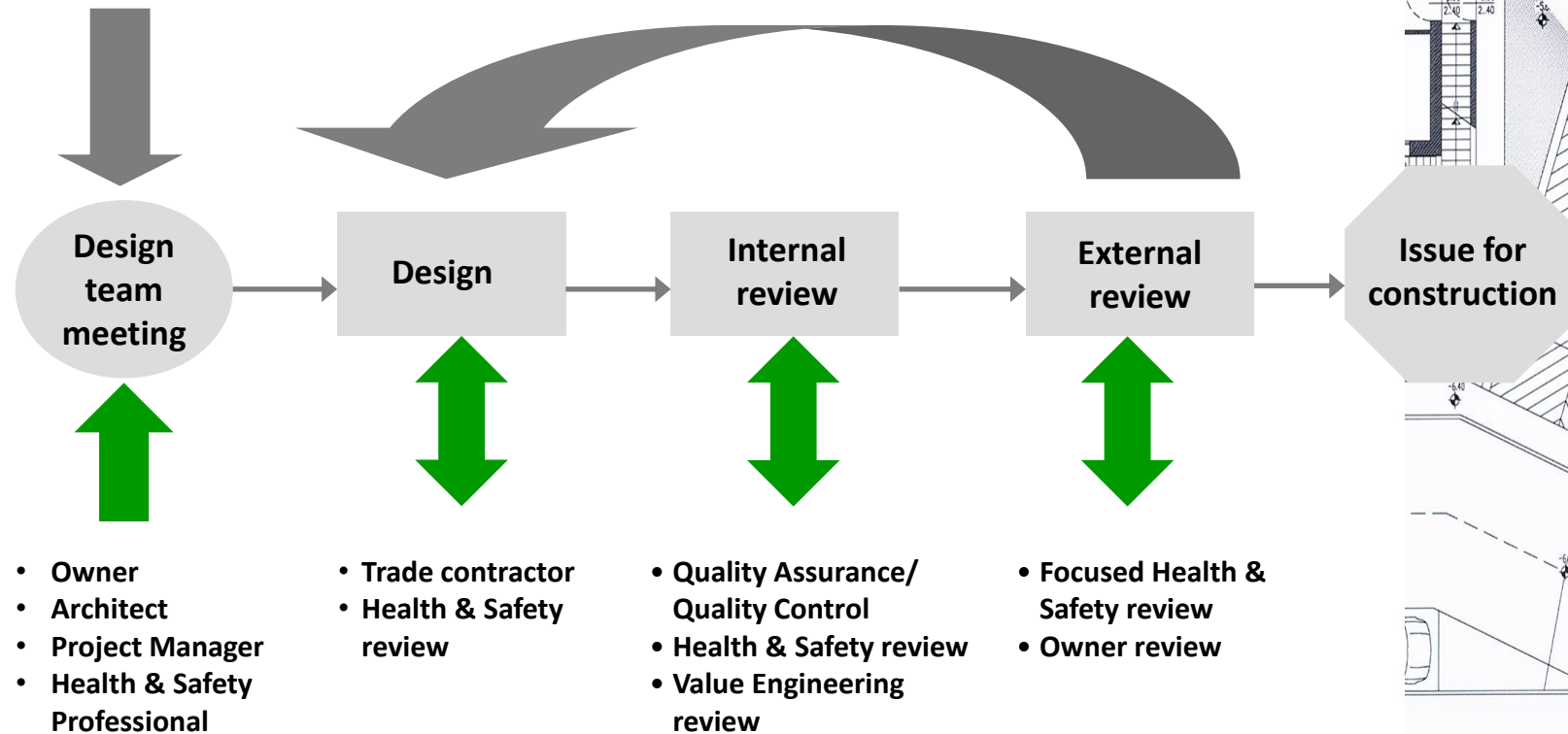
# Hierarchy of Controls per ANSI/AIHA Z10-2005



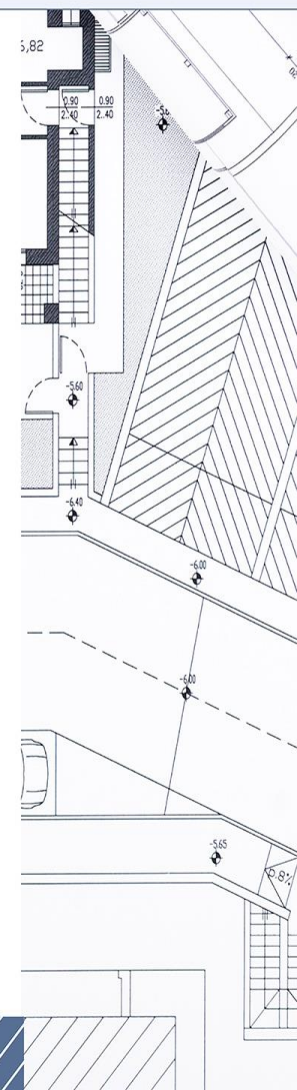
# PtD Process

[Hecker et al. 2005]

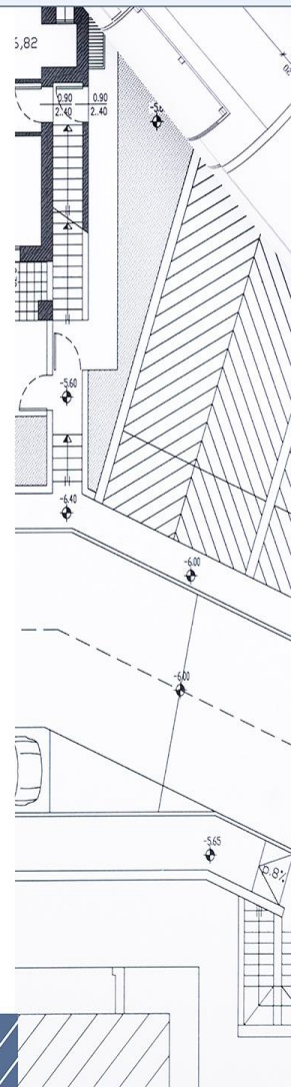
- Establish PtD expectations
- Include construction and operation perspective
- Identify PtD process and tools



















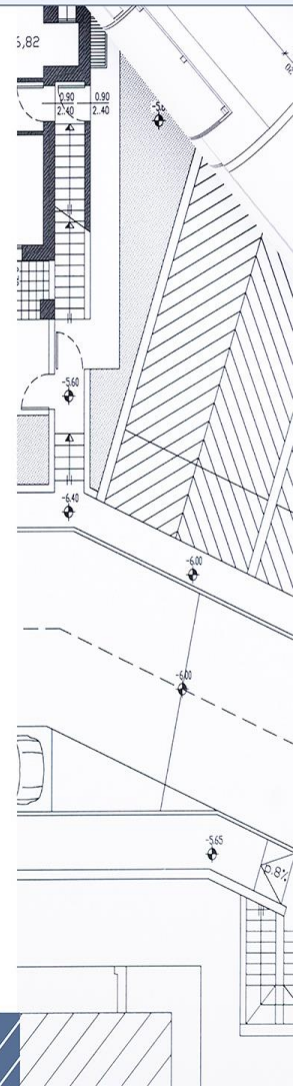
# Column Safety

- Column splices
- Tabs/Holes for safety lines
- Base plates

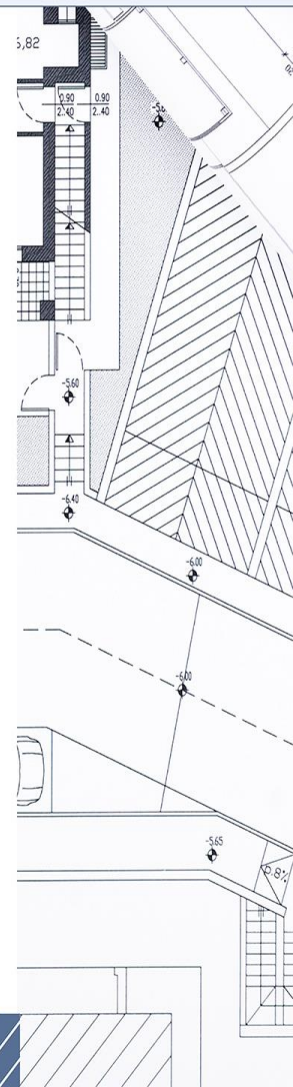


Photo courtesy of Thinkstock

# Rebar Tying

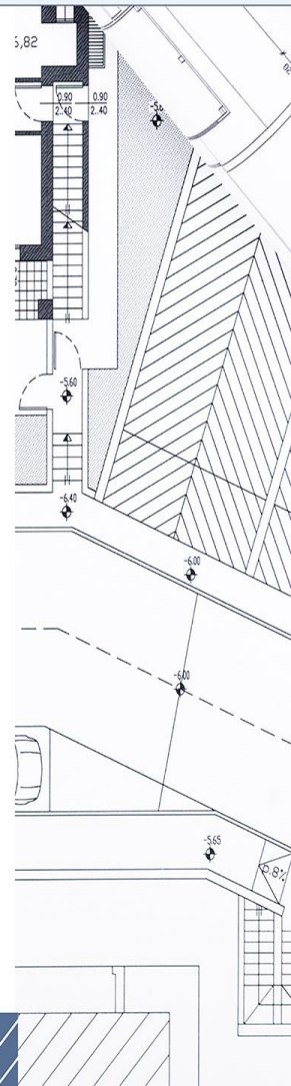




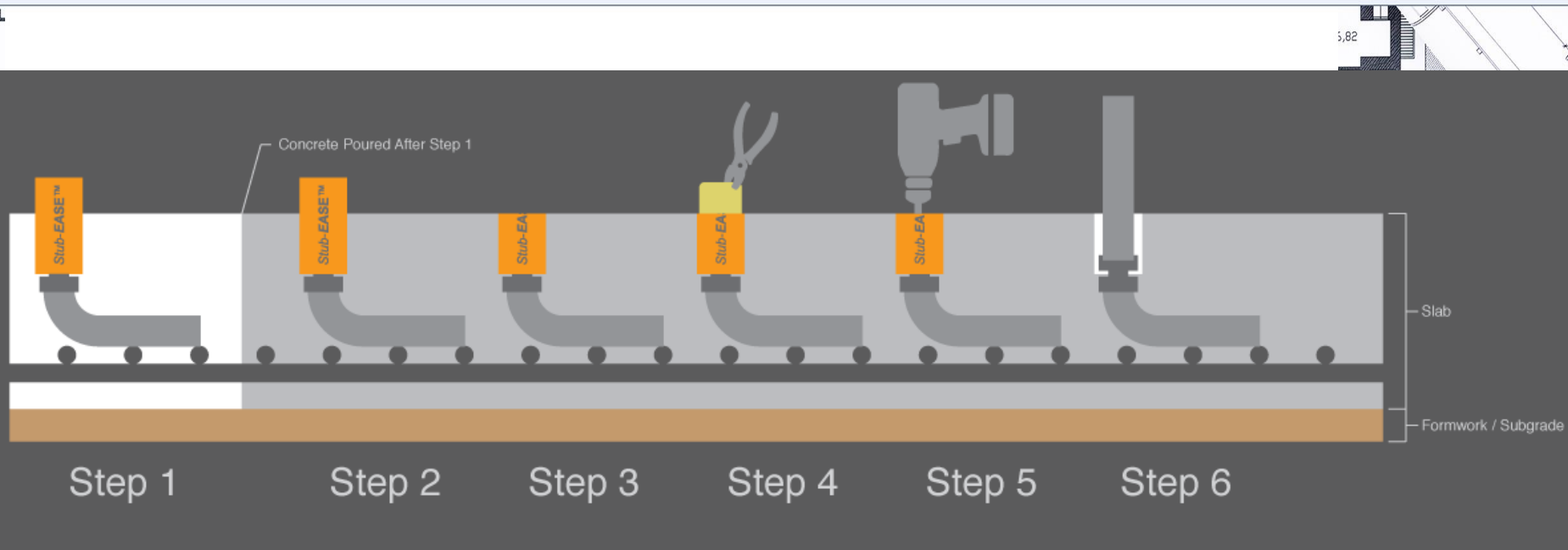




# Conduit stub up



# Stub-Ease <sup>TM</sup>



# The Construction (Design and Management) Regulations 2015 UK

## Duties of designers

- 9.—(1) A designer must not commence work in relation to a project unless satisfied that the client is aware of the duties owed by the client under these Regulations.
- (2) When preparing or modifying a design the designer must take into account the general principles of prevention and any pre-construction information to eliminate, so far as is reasonably practicable, foreseeable risks to the health or safety of any person—
  - (a) carrying out or liable to be affected by construction work;
  - (b) maintaining or cleaning a structure; or
  - (c) using a structure designed as a workplace.
- (3) If it is not possible to eliminate these risks, the designer must, so far as is reasonably practicable—
  - (a) take steps to reduce or, if that is not possible, control the risks through the subsequent design process;
  - (b) provide information about those risks to the principal designer; and
  - (c) ensure appropriate information is included in the health and safety file.
- (4) A designer must take all reasonable steps to provide, with the design, sufficient information about the design, construction or maintenance of the structure, to adequately assist the client, other designers and contractors to comply with their duties under these Regulations.



[illegible]

- 
- Architectural drawing of a building section. The drawing shows a staircase on the left with a landing area. Elevation markers are present: 5.82, 5.90, 2.40, 0.90, -5.60, -4.40, -6.00, and -5.65. A large, hatched triangular area is shown on the right. A dashed line indicates a slope of 0.8%.





- **Prevention through Design (PtD)** is an emerging process for saving lives, time, and money.
- PtD is the smart thing to do and the right thing to do.
- Although site safety is the contractor's responsibility, the designer has the ethical duty to create drawings with good constructability.
- There are tools and examples to facilitate PtD.





# AIA A201-2017 General Conditions

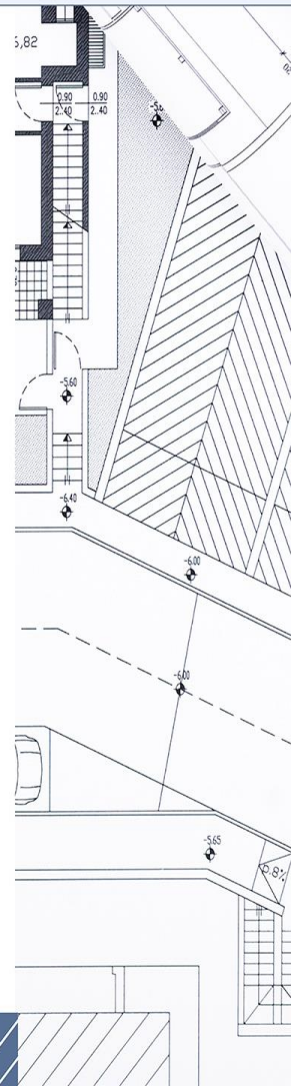
- Section 4.2.2: The architect will not have control over, charge of or responsibility for the construction means, methods, techniques, sequences or procedures or for the safety precautions and programs in connection with the Work, since these are solely the Contractors rights and responsibilities under the Contract Documents.

# Standard CGL CG 00 01

## Excludes



**Contractual Liability**  
**Employer Liability**  
**Your Work**  
**Your Product**  
**Professional Liability**





## COMMERCIAL GENERAL LIABILITY CG 22 43 04 13

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

### EXCLUSION – ENGINEERS, ARCHITECTS OR SURVEYORS PROFESSIONAL LIABILITY



This endorsement modifies insurance provided under the following:  
COMMERCIAL GENERAL LIABILITY COVERAGE PART

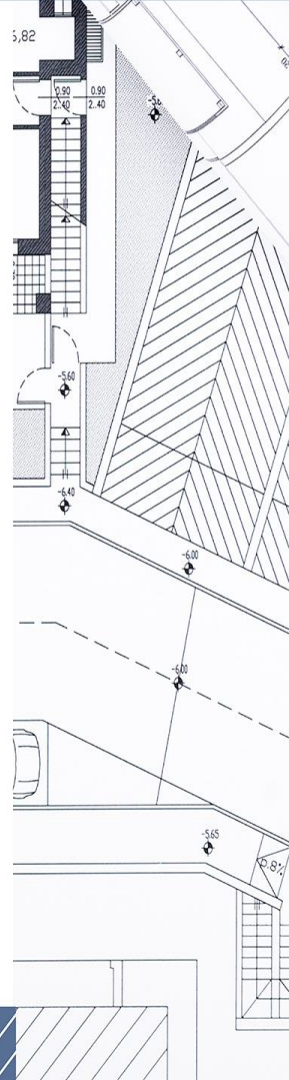
The following exclusion is added to Paragraph 2. Exclusions of Section I – Coverage A – Bodily Injury And Property Damage Liability and Paragraph 2. Exclusions of Section I – Coverage B – Personal And Advertising Injury Liability:

This insurance does not apply to "bodily injury", "property damage" or "personal and advertising injury" arising out of the rendering of or failure to render any professional services by you or any engineer, architect or surveyor who is either employed by you or performing work on your behalf in such capacity.

Professional services include:

1. The preparing, approving, or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; and
2. Supervisory, inspection, architectural or engineering activities.

This exclusion applies even if the claims against any insured allege negligence or other wrongdoing in the supervision, hiring, employment, training or monitoring of others by that insured, if the "occurrence" which caused the "bodily injury" or "property damage", or the offense which caused the "personal and advertising injury", involved the rendering of or failure to render any professional services by you or any engineer, architect or surveyor who is either employed by you or performing work on your behalf in such capacity.





**THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.**  
**EXCLUSION – CONTRACTORS –**  
**PROFESSIONAL LIABILITY**

**This endorsement modifies insurance provided under the following:**  
**COMMERCIAL GENERAL LIABILITY COVERAGE PART**



**COMMERCIAL GENERAL LIABILITY**

The following exclusion is added to Paragraph 2. Exclusions of Section I – Coverage A – Bodily Injury And Property Damage Liability and Paragraph 2. Exclusions of Section I – Coverage B – Personal And Advertising Injury Liability:

1. This insurance does not apply to "bodily injury", "property damage" or "personal and advertising injury" arising out of the rendering of or failure to render any professional services by you or on your behalf, but only with respect to either or both of the following operations:
2. Providing engineering, architectural or surveying services to others in your capacity as an engineer, architect or surveyor; and
  - a. Providing, or hiring independent professionals to provide, engineering, architectural or surveying services in connection with construction work you perform.

This exclusion applies even if the claims against any insured allege negligence or other wrongdoing in the supervision, hiring, employment, training or monitoring of others by that insured, if the "occurrence" which caused the "bodily injury" or "property damage", or the offense which caused the "personal and advertising injury", involved the rendering of or failure to render any professional services by you or on your behalf with respect to the operations described above.

**THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.**  
**EXCLUSION – CONTRACTORS –**  
**PROFESSIONAL LIABILITY**

**This endorsement modifies insurance provided under the following:**  
**COMMERCIAL GENERAL LIABILITY COVERAGE PART**



**COMMERCIAL GENERAL LIABILITY – (Continued)**

**2.** Subject to Paragraph **3.** below, professional services include:

- a) Preparing, approving, or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders, or drawings and specifications; and
- b) Supervisory or inspection activities performed as part of any related architectural or engineering activities.

**3.** Professional services do not include services within construction means, methods, techniques, sequences and procedures employed by you in connection with your operations in your capacity as a construction contractor.

**CG 22 79 04 13**



**THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.**  
**LIMITED EXCLUSION – CONTRACTORS –**  
**PROFESSIONAL LIABILITY**

**This endorsement modifies insurance provided under the following:**  
**COMMERCIAL GENERAL LIABILITY COVERAGE PART**



**COMMERCIAL GENERAL LIABILITY**

The following exclusion is added to Paragraph 2. Exclusions of Section I – Coverage A – Bodily Injury And Property Damage Liability and Paragraph 2. Exclusions of Section I – Coverage B – Personal And Advertising Injury Liability:

This insurance does not apply to "bodily injury", "property damage" or "personal and advertising injury" arising out of the rendering of or failure to render any professional services by you, but only with respect to your providing engineering, architectural or surveying services in your capacity as an engineer, architect or surveyor.

Professional services include:

- 1.Preparing, approving, or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders, or drawings and specifications; and
- 2.Supervisory or inspection activities performed as part of any related architectural or engineering activities.

This exclusion applies even if the claims against any insured allege negligence or other wrongdoing in the supervision, hiring, employment, training or monitoring of others by that insured, if the "occurrence" which caused the "bodily injury" or "property damage", or the offense which caused the "personal and advertising injury", involved the rendering of or failure to render any professional services by you with respect to your providing engineering, architectural or surveying services in your capacity as an engineer, architect or surveyor.

This exclusion does not apply to your operations in connection with construction work performed by you or on your behalf

**CG 22 80 04 13**

# PROFESSIONAL LIABILITY

Recall CGL policies exclude Professional Liability  
Separate policies cover work of professionals like Architects  
and Engineers;  
Typically, “claims made” policies rather than “occurrence”  
based policies;  
Often include SIR and typically “eroding” policies;



**THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.**



- **CONSTRUCTION MEANS AND SITE-SAFETY EXCLUSION**
- **EXCLUSIONS**, Section 4. is amended to include the following:  
Construction Means and Site-Safety
- This Policy does not apply to any **Claim(s)** based upon or arising out of directly or indirectly construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with any project.
- **ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED**

# References

- William Quatman, *Prevention through design*, Issue 1315 The Zweig Letter, Oct. 2019, at 11-12 (you'd add the URL at the end but I couldn't find it online)
- Richard Korman, Scott Van Voorhis, *When the Construction Project Team Made 122 Design Changes in the Name of Safety*, ENR New England, March 2021, <https://www.enr.com/articles/51479-when-the-construction-project-team-made-122-design-changes-in-the-name-of-safety>.
- T. Michael Toole, Karen Erger, *Prevention through Design: Promising or Perilous?* 11 J. Leg. Aff. Dispute Resolut. Eng. Constr., Nov. 2018 1, <https://ascelibrary.org/doi/pdf/10.1061/%28ASCE%29LA.1943-4170.0000284>.



# References Continued

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- <https://www.legislation.gov.uk>
- <https://www.legislation.act.gov.au>
- [AIA A201-2017](#)
- [Insurance Services Offices, Inc.](#)