



- Start Immediately
- Available 24/7
- Come and go as you please
- Print certificate upon completion

This 18-hour continuing education package includes the following courses:

1. Envelope Failure: A Better Weatherization Design (3 Hours HSW) #AIABLT201
2. Harnessing Resources: New Construction Opportunities (3 Hours HSW) #AIABLT202
3. Hazardous Work Zones I (3 Hours HSW) #AIABLT203
4. Hazardous Work Zones II (3 Hours HSW) #AIABLT204
5. Technological Innovation: Building “Green” Into the Budget (3 Hours HSW) #AIABLT205
6. Preventing Foundation Failure: Soils, Concrete, Reinforcement and Layout (3 Hours HSW) #AIABLT206

Course Package Syllabus

Envelope Failure: A Better Weatherization Design

Course # AIABLT201

Credit(s) earned on completion of this course will be reported to AIA CES for AIA members. Certificates of Completion for both AIA members and non-AIA members will be available to print upon completion of this course. This course is registered with AIA CES for continuing professional education.

Course Description

Building homes that are well protected from the weather should be a priority for any building professional. The majority of problems stem from improper procedures and workmanship, but often the problem is found in the design of a home. This three hour continuing education offering will explore factors that contribute to exterior shell failure, and identify practical solutions that will preserve the integrity of the building envelope.

After completing this course participants will be able to:

- Identify the components of the building as a system, its performance requirements, and how these features must be integrated to prevent building envelope failure.
- Describe how a properly constructed building envelope will keep out weather related moisture and stop uncontrolled movement of energy due to loss of conditioned air.
- Outline at least one design strategy based on "best practices" for the construction of buildings in areas with relatively high humidity.
- Summarize the options available to the consumer that may have been injured by, or suffered a financial loss by construction defects and the resultant failure of the building envelope.

Course Syllabus

Weatherization I

Building Exterior Shell Training

***Learning Objective:** Explore how poor building practices are often contributing factors to exterior shell failure, and identify practical solutions that contractors can apply to improve overall workmanship.

1. Rationale
2. Primary Warranty and Insurance Claims
3. Solutions
4. Experience
5. Contractor Responsibilities
6. Insurance Availability and Affordability

Assessment

Building Envelope System

***Learning Objective:** List the four major physical components of the building envelope system, the performance objectives of those components, and the specific mistakes that result in system failure.

1. Building Envelope System
2. Performance Objectives
3. Physical Components
4. Sources of Moisture Intrusion
5. Results of Failure

Assessment

Foundation Construction

***Learning Objective:** Identify and implement proven methods that will effectively divert moisture from the foundation of a structure.

1. Thermal and Moisture Protection
2. Groundwater
3. Gutters
4. Crawl spaces
5. Damp proofing and Waterproofing
6. Girders and Beams

Assessment

Weatherization II

Wall Construction

***Learning Objective:** Determine causes of high humidity in a structure and evaluate wall construction "best practices" to maximize performance.

1. Wall Framing
2. Vapor Diffusion Problems
3. Recommendations
4. House Wrap and Underlayment
5. Window and Door Openings
6. Flashing and Caulking
7. Siding

Assessment

Roof Construction

***Learning Objectives:** List and describe at least three specific installation techniques and/or materials that contribute to a properly constructed roof system.

1. Skylights
2. Moisture Penetration
3. Roof Valleys
4. Shingles and Shakes
5. Roof Sheathing
6. Repairs
7. Flashing

Assessment

Window and Door Installation

***Learning Objective:** Demonstrate proper window and door installation techniques that preserve the integrity of the building envelope.

1. Windows, Doors and Skylights
2. Proper Flashing
3. Door and Window Installation

Assessment

Weatherization III

Ventilation System Installation and Requirements

***Learning Objective:** Summarize the key elements (either natural or mechanical) of a properly ventilated structure.

1. Code
2. Attic Ventilation
3. Heating, Ventilation and Air Conditioning

Assessment

Building Envelope Best Practices

***Learning Objective:** Cite at least four "best practices" and describe how these strategies support an effective envelope design.

1. Moisture Retarding Construction
2. Capillary Breaks
3. House Wrap Installation
4. Window and Door Installation
5. Siding Installation
6. Roofing Best Practices

Assessment

Consumer Remedies

***Learning Objective:** Correctly identify preventative measures that should be taken by both the consumer and the contractor to reduce disputes surrounding envelope failure.

1. Common Mistakes
2. Preventative Measures
3. Warranties
4. Complaints
5. Arbitration and Dispute Resolution

Assessment

Course instructors will be available by email or telephone between 9am and 5pm Eastern Standard Time. They will assist you with questions regarding course content.



- Start Immediately
- Available 24/7
- Come and go as you please
- Print certificate upon completion

Harnessing Resources: New Construction Opportunities

#AIABLT202

Credit(s) earned on completion of this course will be reported to AIA CES for AIA members. Certificates of Completion for both AIA members and non-AIA members will be available to print upon completion of this course. This course is registered with AIA CES for continuing professional education.

Course Description

Even as technological innovation creates new construction possibilities, incorporating energy-efficiency into building projects can not only provide a better quality of life, but also protect the environment. A comprehensive approach to resource and energy efficiency is the best method to achieve a resource and energy efficient building.

Renewable energy is contributing more and more to the world's ever-rising energy demands. Solar energy generation systems are about to reach a level of affordability that will allow them to be considered equal to conventional power generation systems like fossil fuel plants and hydro-electric dams. Industry experts should know what products are on the market, and what rebates and incentives are available for customers who want to take advantage of new energy efficient resources

and components. This three hour **online video course** will explore new and innovative considerations for resource and energy efficiency.

After completing this course participants will be able to:

- Identify innovative design considerations incorporating energy efficient resources and components.
- Describe the design and development of solar energy, and how it compares to more conventional systems.
- Identify and describe the benefits that small business and home owners can realize when resource efficient designs are incorporated into their project.
- Evaluate the structural considerations when installing/mounting these new systems.

Course Syllabus

Energy Efficient Building

****Learning Objectives:*** 1) Have an appreciation for energy consumption and the need for healthy, "green" energy. 2) Understand the importance of building placement on the lot, "Brownfield" site clean-up methods and the need for soil erosion control and basic methods. 3) Have an understanding of material properties, recycling and finally, the process for LEED certification.

1. Environmental Concerns and Implications
2. Evaluating the Site and Remediation Strategies: Building orientation, erosion, water
3. "Green" power generation: solar, performance, varying sources
4. Photovoltaic, geothermal, recycling, air quality, LEED Rating System

Assessment

Solar Energy Use I

****Learning Objectives:*** 1) Understand the difference between "passive" and "active" solar energy use. 2) Know what PV stands for, and how PV solar energy collection varies from traditional solar heat collection. 3) Gain an awareness of the benefits of solar energy: for residential and commercial use as well as how solar energy benefits the environment.

1. Solar Energy: Passive/Active
2. Solar Photo Voltaic

3. Industry Acronyms and Terms
4. Residential and Small Business Solar Use
5. Rebates and Incentives

Assessment

Solar Energy Use II

**Learning Objectives:* 1) Understand some small business or home owner advantages. 2) Realize there is a price to pay for clean, green energy. 3) Recognize pros and cons when considering solar.

1. Small Business Systems
2. Residential Use
3. Solar Pros and Cons
4. Structural Considerations
5. Installation and Mounting Considerations

Assessment

Solar Energy Use III

**Learning Objectives:* 1) Be aware of the history of man harnessing the sun's energy. 2) Know the amount of solar energy versus conventional fuel produced energy in the United States. 3) Learn some new terms and gain an appreciation for what "green energy" really means.

1. Solar Harvesting
2. Solar Power Plants
3. Industry Acronyms and Terms

Assessment

Course instructors will be available by email or telephone between 9am and 5pm Eastern Standard Time. They will assist you with questions regarding course content.



- Start Immediately
- Available 24/7
- Come and go as you please
- Print certificate upon completion

Hazardous Work Zones: Implementing Occupational Safety I

#AIABLT203

Credit(s) earned on completion of this course will be reported to AIA CES for AIA members. Certificates of Completion for both AIA members and non-AIA members will be available to print upon completion of this course. This course is registered with AIA CES for continuing professional education.

Course Description

Construction is a high hazard industry that comprises a wide range of activities involving construction, alteration, and/or repair. Examples include residential construction, bridge erection, roadway paving, excavations, demolitions, and large scale painting jobs. Construction workers engage in many activities that may expose them to serious hazards, such as falling from rooftops, faulty ladders, unguarded stairs and scaffolds, and improperly designed egress routes. OSHA safety standards are designed to reduce on-the-job injuries; health standards to limit workers' risk of developing occupational disease. This three hour **online video course** is designed to assist those in the industry to identify, reduce, and eliminate construction-related hazards.

After completing this course participants will be able to:

- Recognize the role of OSHA in the workplace and describe the causes of the most common workplace injuries.
- Identify the hazards that prompt the use of fall protection for workers at the jobsite.
- Outline at least three procedures that must be followed in order to control and minimize workplace hazards.
- Create a working emergency action and fire prevention plan.

COURSE OUTLINE

Chapter 1- Introduction

***Learning Objectives:** 1) Recognize the role of OSHA in the workplace 2) Distinguish between employer and employee rights and responsibilities 3) Know the employer record keeping responsibilities.

- A. Role of OSHA
- B. Record Keeping
- C. Employee/Employer Rights & Responsibilities
- D. Inspections
- E. OSHA Resources

Chapter 2 - Personal Protective Equipment

***Learning Objectives:** 1) Describe the causes of the most common workplace injuries 2) Name the Personal Protective Equipment (PPE) most often used to protect workers.

- A. Protecting Employees
- B. Head Injuries
- C. Eye Protection
- D. Hearing Protection
- E. Foot Protection
- F. Hand and Body Protection

Chapter 3 - Falls in Construction

***Learning Objectives:** 1) Describe methods of fall protection available to workers. 2) Identify the hazards that prompt the use of fall protection for construction workers.

- A. Fall Protection
- B. Personal Fall Arrest Systems
- C. Guardrails and Safety Nets
- D. Skylights and Other Openings
- E. Excavations
- F. Roofs
- G. Training
- H. OSHA's Fall Protection Policies for Residential Construction Video

Chapter 4- Stairways and Ladders

***Learning Objectives:** 1) Describe safety guidelines and requirements for stairways used at a construction site. 2) List safe practices and requirements for ladders used at a construction site.

- A. Stairs/Dangers
- B. Ladder Safety
- C. Assembly & Use

Chapter 5 - Scaffolds

***Learning Objectives:** 1) Recognize the hazards associated with different types of scaffolds. 2) Understand the procedures that must be followed in *order to control and minimize those hazards*.

- A. Types/Hazards
- B. Fall Protection
- C. Safe Scaffold Construction
- D. Types of Scaffolds
- E. Inspections/Training
- F. Assembly & Use

Chapter 6 - Egress/Fire Protection

***Learning Objectives:** 1) Describe OSHA requirements for proper fire prevention, egress, and equipment. 2) Be able to create a working emergency action and fire prevention plan.

- A. Emergency Action Plans
- B. Exits
- C. Fire Prevention
- D. Equipment & Training



- Start Immediately
- Available 24/7
- Come and go as you please
- Print certificate upon completion

Hazardous Work Zones: Implementing Occupational Safety II

Course #AIABLT1204

Credit(s) earned on completion of this course will be reported to AIA CES for AIA members. Certificates of Completion for both AIA members and non-AIA members will be available to print upon completion of this course. This course is registered with AIA CES for continuing professional education.

Course Description

Construction is a high hazard industry that comprises a wide range of activities involving construction, alteration, and/or repair. Examples include residential construction, bridge erection, roadway paving, excavations, demolitions, and large scale painting jobs. Construction workers engage in many activities that may expose them to serious hazards, such as excavation cave-ins, unguarded machinery, being struck by heavy construction equipment, electrocutions, and hazardous materials. OSHA safety standards are designed to reduce on-the-job injuries; health standards to limit workers' risk of developing occupational disease. This three hour ***online video course*** is designed to assist those in the industry to identify, reduce, and eliminate construction-related hazards.

After completing this course participants will be able to:

- Name factors that pose a hazard to employees working in excavations, and identify how to reduce those hazards.
- Outline at least three procedures that must be followed in order to control and minimize on-the-job injuries.
- Summarize "best practices" for proper handling, storage, use and disposal of hazardous materials.
- Recognize the role of OSHA in the workplace and describe the causes of the most common workplace injuries.

COURSE OUTLINE

Chapter 1 - Excavations

***Learning Objectives:** 1) State the greatest risk that is present at an excavation. 2) Describe the three primary methods of protecting employees from cave-ins. 3) Name factors that pose a hazard to employees working in excavations, and how to reduce those hazards. 4) Describe the role of a competent person at an excavation site.

- A. Overview
- B. Hazards
- C. Safe Working Conditions
- D. Protective System Design
- E. Inspections
- F. Soils & Testing

Chapter 2 - Electrical Safety

***Learning Objectives:** 1) Describe the basics of electrical safety and the injuries that can be caused by improper contact. 2) Identify the hazards of electricity on a construction site and the best way to prevent those hazards from occurring.

- A. Electricity
- B. Injuries
- C. Hazards
- D. Power Tools
- E. Best Practices
- F. Employer Responsibilities

Chapter 3 - Hazard Communication

***Learning Objectives:** 1) Identify employer responsibilities towards reducing workplace hazards. 2) Be familiar with the information provided in Material Safety Data Sheets.

- A. Employer Responsibilities
- B. Labeling
- C. Material Safety Data Sheets
- D. Training

- E. Protocol
- F. Disposal

Chapter 4 - Tool Safety

***Learning Objectives:** 1) Describe the hazards surrounding the use of hand and power tools. 2) List the important safety tips associated with Powder-Actuated Tools. 3) Explain the basic procedures for safe jack handling.

- A. Hazards
- B. Safety Rules/Precautions
- C. Abrasive Wheels
- D. Radial Saws
- E. Pneumatic Tools
- F. Powder Actuated Tools
- G. Employer Responsibility
- H. Training

Chapter 5 - Materials Handling

***Learning Objective:** 1) Identify, avoid, and control hazardous materials through proper handling, storage, use and disposal 2) Describe the risks associated with the use of cranes, and the necessary precautions that can reduce risk when cranes are at the jobsite.

- A. Hazards
- B. Manual Material Handling
- C. Mechanical Handling (Cranes)
- D. Training
- E. Rigging
- F. Stacking and Storing
- G. Disposal



- Start Immediately
- Available 24/7
- Come and go as you please
- Print certificate upon completion

Technological Innovation: Building "Green" Into the Budget

Course #AIABLT1205

Credit(s) earned on completion of this course will be reported to AIA CES for AIA members. Certificates of Completion for both AIA members and non-AIA members will be available to print upon completion of this course. This course is registered with AIA CES for continuing professional education.

Course Description

This three hour *online video course* will bring attention to methods of green building that allow homes to have less impact on the environment, while providing a greater economic benefit to the homeowner. As technological innovation creates new construction possibilities, incorporating energy-efficiency into building projects can not only provide a better quality of life, but also protect the environment. However, energy efficient building requirements can be stringent and cost prohibitive. It is a challenge to provide customers with the latest energy efficient systems--all within a budget that homeowners are willing to provide. This course will help industry professionals identify important considerations and then apply those principles to a specific project.

After completing this course participants will be able to:

- Accurately define energy conservation and generation concepts, and describe at least three efficient use of materials that will save building and operation costs.
- Identify the techniques used in alternative wall systems, and explore the benefits of each.
- Demonstrate many uses of both EPS and XPS insulation sheathing.
- Outline at least one application of energy efficient design in indoor systems.

COURSE OUTLINE

Chapter 1. Heat Transfer and Thermal Imaging (30 Minutes)

***Learning Objectives:** 1) Recognize the impact of energy consumption. 2) Understand energy conservation and generation concepts. 3) Identify types of heat transfer. 4) Describe the uses of thermal imaging cameras and blower door equipment.

I. Energy Consumption

- A. Energy
- B. Resources
- C. Building Systems

II. Energy Conservation

- A. Reduced consumption, emissions
- B. Energy Efficiency Standards and Methods

III. Diagnostic Testing

- A. Thermal Imaging
- B. Blower Door Testing

Chapter 2. Advanced Framing Techniques (30 Minutes)

***Learning Objectives:** 1) What is advanced framing, and what are some of the techniques used? 2) List the uses of insulated headers and energy heel trusses. 3) Understand the benefits of pre-fabricated walls.

I. Advanced Framing Techniques

- A. 2 x 6 studs
- B. Headers
- C. Raised Heel Trusses

II. Raised Heel Trusses

- A. Full height insulation
 - B. Cost efficient
- III. Double 2 x 4 Walls
- A. Thicker insulation
 - B. Drawbacks
- IV. Prefabricated Walls
- A. Reduced waste
 - B. Higher quality

Chapter 3. Air Barriers (30 Minutes)

***Learning Objectives:** 1) Apply the benefits of energy efficient building. 2) Describe the purpose of air barriers and what materials are typically used. 3) List the uses of SIPs and ICFs.

- I. Design and Implementation of Energy Efficient Design
- A. Design phase
 - B. Subs and employees
 - C. Training
- II. Air Sealing
- A. Finding leaks
 - B. Materials
- III. Airtight Drywall
- A. Methods
 - B. Drawbacks
- IV. Prefabricated Walls
- A. Reduced waste
 - B. Higher quality
 - C. SIPs
 - D. ICFs

Chapter 4. Insulation (25 Minutes)

***Learning Objectives:** 1) Recognize the pros and cons of fiberglass and cellulose insulation material. 2) Describe the proper installation of fiberglass insulation. 3) Apply proper installation of cellulose insulation.

I. Fiberglass Batts

- A. Uses
- B. Various configurations: high density, standard density
- C. Installation

II. Cellulose Insulation

- A. Uses
- B. Various configurations: dense packed, dry spray

III. Roof Installation

- A. Methods
- B. Baffles

Chapter 5. Foam Insulation/Sheathing (30 Minutes)

***Learning Objectives:** 1) Identify different types of foam insulation available. 2) Understand the pros and cons of polyisocyanurate and polyurethane spray foam. 3) Demonstrate the many uses of both EPS and XPS insulating sheathing.

I. Spray Foam

- A. Urea Formaldehyde
- B. Cementitious
- C. Phenolic
- D. Polyisocyanurate or polyiso
- E. Polyurethane

II. Various configurations

A. Open cell, Closed cell

III. Insulating Sheathing

A. Uses

B. Examples: expanded, extruded

Chapter 6. U-Factor/R-Value (25 Minutes)

**Learning Objectives:* 1) Recognize the uses of and effectiveness of radiant barriers. 2) Identify and define what the National Fenestration Rating Council does. 3) Formulate U-Factor and R-Value conversions. 4) Explore different methods to increase U-Factor.

I. Radiant Barrier Sheathing

A. Benefits

B. Heat Transfer

C. Types

II. Window selection

A. NFRC

B. SHGC

C. Low E coatings

D. Inert gas

E. Visible Transmittance

F. Air Infiltration Rate

III. U-Factor/R-Value

A. Definitions/Conversions

Chapter 7. Lighting/Duct Design (25 Minutes)

***Learning Objectives:** 1) What are the positives and negatives of incandescent or compact fluorescent lighting? 2) Understand the amount of energy wasted by poor duct design 3) Determine proper duct design and installation.

I. Incandescent Lighting

A. Benefits/Flaws

II. Compact Fluorescent Lighting

A. Benefits/Flaws

III. Light Emitting Diodes

A. Benefits/Flaws

IV. Duct Design

A. Best Practices

B. Duct Sealing

C. Installation

D. Common Problems

Chapter 8. Green Appliances (35 Minutes)

***Learning Objectives:** 1) Understand how to read energy guide labels. 2) Define heat/energy recovery ventilation. 3) Identify sealed combustion appliances. 4) List different types of water heaters. 5) Define and be able to understand what a SEER rating is.

I. Energy Guide Labels

A. What does it all mean?

II. Energy Recovery Ventilation

A. Benefits/Costs

III. Sealed Combustion Heating Appliances

A. Description

B. Benefits

IV. Water Heaters

A. Standard tank

B. Condensing

C. Tankless

D. Common Problems

V. Seasonal Energy Efficiency Ratio (SEER)



- Start Immediately
- Available 24/7
- Come and go as you please
- Print certificate upon completion

Preventing Foundation Failure: Soils, Concrete, Reinforcement and Layout

Course #AIABLT206

Credit(s) earned on completion of this course will be reported to AIA CES for AIA members. Certificates of Completion for both AIA members and non-AIA members will be available to print upon completion of this course. This course is registered with AIA CES for continuing professional education.

Course Description

Quality construction begins with a strong foundation. Soil conditions, proper foundation layout and design, along with high performance concrete and concrete reinforcement will have a large effect on the productivity and profitability of the project. This three hour course is useful for anyone involved in foundation design and construction decisions, including contractors, architects, and engineers. The steps involved in foundation preparation and design are outlined through text, integrated videos, diagrams and slides.

After completing this course participants will be able to:

- Differentiate between soil types and determine load bearing capacity of a foundation based on soil classifications.
- List and describe specific admixtures that are used to create a desired effect to improve setting time, workability and strength of concrete.
- Identify the different types of forms, and the advantages of one over another depending on the specifics of the job.
- Summarize the advantages of post-tensioned pre-stressed concrete, and describe common applications in the construction industry.

COURSE OUTLINE

Chapter 1 - Soil Testing

***Learning Objectives:** 1) Describe the methods by which soil and rock deposits are classified and analyzed. 2) Be able to identify and conduct basic soil compaction and density tests. 3) Determine load bearing capacity of a foundation based on soil classification.

- A. Soil Types and Classification
- B. Tests
- C. Soil Compaction
- D. Soil Density
- E. Dewatering

Chapter 2 - Concrete and Concrete Reinforcement

***Learning Objectives:** 1) Explain the difference between chemical and mineral admixtures, and describe the several different types used. 2) Explain the process of, and importance of compressive strength testing. 3) Discuss how to construct proper concrete joints. 4) Describe and define 5 types of problems that typically occur with concrete.

- A. Admixtures
- B. Compressive Strength Testing: 7 Day Test
- C. Joints: Isolation, Expansion and Construction
- D. Reinforcement: Placement, Ties
- E. Post Tensioned Prestressed Concrete

F. Problems: Scaling, Curling, Spalling

Chapter 3 - Footings and Foundations

***Learning Objectives:** 1) Identify and understand the components and methods to footing and foundation construction. 2) Understand the purpose of steel reinforcement in walls. 3) Recognize the importance of protecting foundation walls from water infiltration.

A. Layout Process

B. Foundation Types: Basement, Crawl, Slab-on-Grade and others

C. Displacement and reinforcement: Steel reinforcement, Columns and Pilasters

D. Concrete Formwork

E. Dampproofing and Waterproofing

-
- Credit(s) earned on completion of this course will be reported to AIA CES for AIA members. Certificates of Completion for both AIA members and non-AIA members are available to print upon completion of the course.
 - This course is registered with AIA CES for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA or any material of construction or any method or manner of handling, using, distributing, or dealing in any material or product.
 - Course instructors will be available by email at info@traininginstitutesedu.com, or telephone (800-727-7104) between 9am and 5pm Eastern Standard Time. They will assist you with questions regarding course content.