



Commercial Building Inspection Course Summary

Introduction

The goal of the Carson Dunlop Weldon and Associates (CDW Engineering), Commercial Building Inspection Course (CBIC) is:

- To help experienced real estate professionals, engineers and architects expand their knowledge base of commercial building structures and systems.
- To help experienced home inspectors expand their business to include commercial building inspections.
- To assist all in understanding the scope of work for performing a Property Condition Assessment (PCA), in accordance with the ASTM Standard E2018-15.

The course covers a wide variety of material including technical topics, business issues, the scope of work, fee quoting, proposal and report writing, cost estimating and risk management. A recurring theme in the course is the use of the TEAM (Technical Experts And Management) approach for performing PCAs.

The following modules are included in the course:

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|-----------------------|----------------------------|-----------------------|
| Business Issues | Consultants – The TEAM | Scope of Work |
| Roofing | Exterior | Structure |
| Plumbing | Electrical | Heating |
| Ventilation | Air-Conditioning | Interior & Insulation |
| Proposals & Contracts | Risk Management | Report Writing |
| Cost Estimating | Specialty Inspection Areas | Quoting Fees |

Business Issues

The business issues module covers topics such as:

- Why get into the commercial inspection business
- The TEAM approach
- Who your client and why they want an inspection
- What types of building get inspected

Consultants-The TEAM

Due to complex nature of commercial properties, it is not realistic to expect one person will perform the inspection of all systems. Thus it is important early on to assemble a team of experts who will assist you in performing the inspection and report writing. This module covers topics such as:

- Selecting the TEAM
- Who the team members are
- Dealing with consultants' fees and marking up the fees
- Dealing with consultants' reports

Scope of Work

The scope of work for performing the Property Condition Assessment is the ASTM Standard E2018-15. This standard was written specifically for inspecting commercial property as part of the due diligence process, during a real estate transaction. This module will provide general information about the ASTM Standard and discuss how to perform the PCA in accordance with the Standard.

Roofing

Commercial roofing systems are much more complex than residential systems. There are also many different types of roof membrane systems that are common on commercial buildings, but not residentially. This module covers topics such as:

- The common types of commercial roofing materials
- Common conditions found on commercial roofs
- A procedure for performing the roof inspection
- Types of further detailed investigations and when further investigation may be warranted

Exterior

The cladding systems on commercial buildings are must withstand more significant wind loads and pressure differentials. There are also greater safety concerns with cladding systems to ensure components do not fall off during heavy winds or seismic active. This module covers topics such as:

- Different types of cladding materials
- Common conditions found on cladding systems
- Window and door systems
- A procedure for inspecting these components



Structure

Commercial buildings are more often than not constructed of steel and concrete. These materials are very different in their properties, and as equally different as compared to wood-frame construction. Identifying the type of structural system in place, and more importantly indications of non-performance or conditions that could lead to non-performance requires experience and knowledge of these systems. This module covers topics such as:

- The common types of commercial structural systems
- Common conditions found with each system type
- A general procedure for inspecting the structure
- Various structural systems and configurations, which should always be reviewed by a structural specialist
- Types of further detailed investigations and when further investigation may be warranted

Plumbing

Commercial plumbing systems are still bound by the same laws of physics, which apply to residential systems. However, due to taller buildings, fire separations, and different types of environments, pipes used in commercial plumbing systems are of much different sizes and materials. Further, there are significant domestic hot water production systems and components, such as grease interceptors in commercial kitchens that are very different than residential systems. This module covers topics such as:

- Differences between commercial and residential plumbing systems
- Booster pumps
- Domestic hot water production and recirculation loops
- Common problems found with the commercial plumbing systems\
- A general procedure for inspecting the plumbing system

Electrical

Apart from the obvious differences in commercial systems, such as the use of transformers, three-phase power, and higher voltages, there are also greater safety concerns associated with the review commercial electrical systems. As electrical power requirements are crucial to some business owners, knowing all the factors that influence the power available to the building is paramount. This module covers topics such as:

- The basics of three-phase power
- Typical commercial line voltages
- The basics of transformers
- Common conditions found in electrical systems
- A general procedure for inspecting the electrical system
- Electrical areas that require a specialist



Heating

More often than not, heating systems for large commercial buildings will employ hot water to distribute heat. Thus, there is need to understand how boiler systems, which produce hot water or steam, work, as well as large air handling systems that eventually deliver that heat. Further, there is a need to understand the concept of probability of failure and how that would apply to mechanical systems. This module covers topics such as:

- The different types of commercial heating systems
- Probability of failure
- Common conditions found in heating systems
- A general procedure for inspecting the heating system

Ventilation

The need for ventilation in commercial buildings is often misunderstood. Sometimes ventilation equipment is intentionally shutdown to save money. There is a distinction between the requirement for exhaust ventilation and fresh air makeup. Knowing when one expects to see the two different types of ventilation is important. This module covers topics such as:

- Areas that require ventilation
- The relationship between exhaust ventilation and fresh air makeup
- Common conditions found in ventilation systems
- A general procedure for inspecting the ventilation system

Air-Conditioning

Air-conditioning systems in commercial properties are complex. Not only is the equipment different (such as water chillers and cooling towers), but the means of distributing the air through the building is also very complex. Large air distribution systems commonly use variable air volume (VAV) terminal boxes and direct digital control (DDC) systems for controlling and monitoring these components. This module provides a good introduction to the following topics:

- Different types of commercial air-conditioning systems
- Common conditions found in air-conditioning systems
- A general procedure for inspecting the air-conditioning system
- Air distribution systems
- Air-conditioning systems that require a specialist

Interior and Insulation

While not an overly technical section, the interior and insulation module discusses the necessary requirements in order to perform a Property Condition Assessment. One of the main concepts stressed in this section is the need to be able to identify and evaluate phenolic foam insulation used on top of steel roof structures. Not understanding the implication of phenolic foam insulation can be disastrous. This module covers topics such as:

- General inspection procedure of interior components
- Common conditions found with the interior systems
- Different types of flat roof insulation and their implications



Proposals and Contracts

It is safe to assume that you will be competing with other companies when quoting on commercial projects. As such, it is imperative to prepare a written proposal, which looks professional and is sent to the client promptly after the inquiry. The proposal can greatly enhance your company image and get you the job. This module covers topics such as:

- Why provide a proposal
- What the proposal should contain
- How to use the proposal as a method of risk management

Risk Management

Due to the size of commercial buildings, there is much more at stake when performing Property Condition Assessments. This does not only mean that adequate insurance coverage is required, but it also means there are precautions that must be exercised during the course of business. This module covers topics such as:

- Common methods used to reduce your liability
- How to deal with your consultants from a risk management point of view
- Tips on preparing reports from a risk management point of view

Report Writing

The written report is the only way the client can judge the quality of your service. A well written, easy to follow report, assists the client in understanding your findings and greatly enhances your credibility and image. Reports are also a last line of defense from a risk management point of view. This module covers topics such as:

- The purpose of the report
- Who writes the report
- What the report should contain
- General reporting tips

Cost Estimating

It is essential that the report contains cost estimates for major repairs or replacements. Commercial clients very often will only read the recommendation and costing section of your report. This module covers topics such as:

- Different ways of determining repair or replacement costs
- Commercially available cost estimating books
- The difference between units costing and assembly costing
- Examples of how to apply different costing methods

Specialty Inspection Areas

There are some systems in commercial buildings that we do not see in residential properties. As such, it will likely be necessary to engage specialists for these systems. This module introduces topics such as:

- Fire protection and life safety systems
- Elevators
- Environmental Site Assessments
- Indoor air quality



Quoting Fees

The criteria to consider when quoting a fee for a Property Condition Assessment is very different than for home inspections. There are critical questions that should be asked to determine if and when specialists will be required to assist in the project. Collating this information and scheduling the consultants can be complicated. This module covers topics such as:

- What criteria should be considered when quoting the fee
- When to engage specialists based on building descriptions
- Typical turn-around times for preparing the proposal, performing the site visit and submitting the final report

