

Study Session

3

Basic Code Enforcement, Part 3 **Technical Aspects of Code Enforcement**

OBJECTIVE: To become familiar with the technical aspects of code enforcement: first, by learning to recognize the basic construction documents necessary for a building plan review; then, by examining the construction documents for compliance with zoning ordinances and building code requirements; and finally, by learning the various types of inspections and the procedures for verifying code compliance.

REFERENCE: *Basic Code Enforcement*, pages 117 through 245

- KEY POINTS:**
- What are construction documents?
 - What are some typical architectural symbols and abbreviations?
 - What are some of the typical views in a set of architectural plans?
 - What scales are used for the various elements in a set of plans?
 - What are specifications and engineering details?
 - What is the purpose of plan review?
 - What are the responsibilities of the code official, the plan reviewer and the inspector in respect to building plan review?
 - Why is a plan review record necessary?
 - What code requirements must generally be checked during building plan review?
 - Why inspect a building?
 - What are the various types of inspections?
 - What is the typical sequence of inspections during the course of construction?
 - Why is it important to document inspections?
 - What are field correction notices and notices of violation?
 - How are complaint inspections handled?

Text: *In order for the code official to determine that proposed construction is in compliance with code requirements, it is necessary that sufficient information be submitted for review. This information typically consists of drawings and specifications describing the proposed work. These are the construction documents. Construction documents is the term that replaces the less descriptive “plans and specifications” used in earlier codes.*

Discussion and Commentary: Construction documents assist the staff of the Building Safety Department in determining if a building or structure is in compliance with the jurisdiction’s regulations. The Zoning Department will review the site plans for compliance with minimum setbacks and other zoning regulations. The building plans examiner will review the submitted building plans to see if the project complies with maximum height and area, means of egress, light and ventilation, HVAC, plumbing, electrical, structural, accessibility and fire suppression/detection. The specifications will also be reviewed to determine types of materials, window and door hardware and other detailed information not shown on the plans. Structural calculations and soils reports may also be submitted as part of the construction documents.



Drawings are graphic representations of the proposed work and serve to illustrate the physical relationship of materials to each other, including sizes, shapes, quantity, locations and connections. Drawings also include schedules of structural elements, equipment, finishes and similar items.

Specifications are written descriptions which specify the qualitative requirements for products, materials and workmanship for the proposed work, including installation, testing and performance criteria.

It is imperative that those responsible for accepting construction documents, typically Permit Technicians, ensure that a complete submittal is received. Otherwise those that are conducting the review will not be able to properly complete their tasks, which will result in delays.

Topic: Symbols and Abbreviations

Category: Technical Aspects of Code Enforcement

Reference: *Basic Code Enforcement*, Part 3

Subject: Reading Construction Documents

Text: *When you review construction documents to determine if a proposed building conforms to the building code, you will be reading architectural symbols which are pictorial representations of construction materials. Properly identifying the materials being represented is essential to determine construction materials being proposed for use.*

Discussion and Commentary: In addition to architectural symbols, standard abbreviations are used to describe various structural, architectural and mechanical systems. Abbreviations assist in keeping the plans less cluttered. Plans should include a legend that will identify what each of the abbreviations represents.

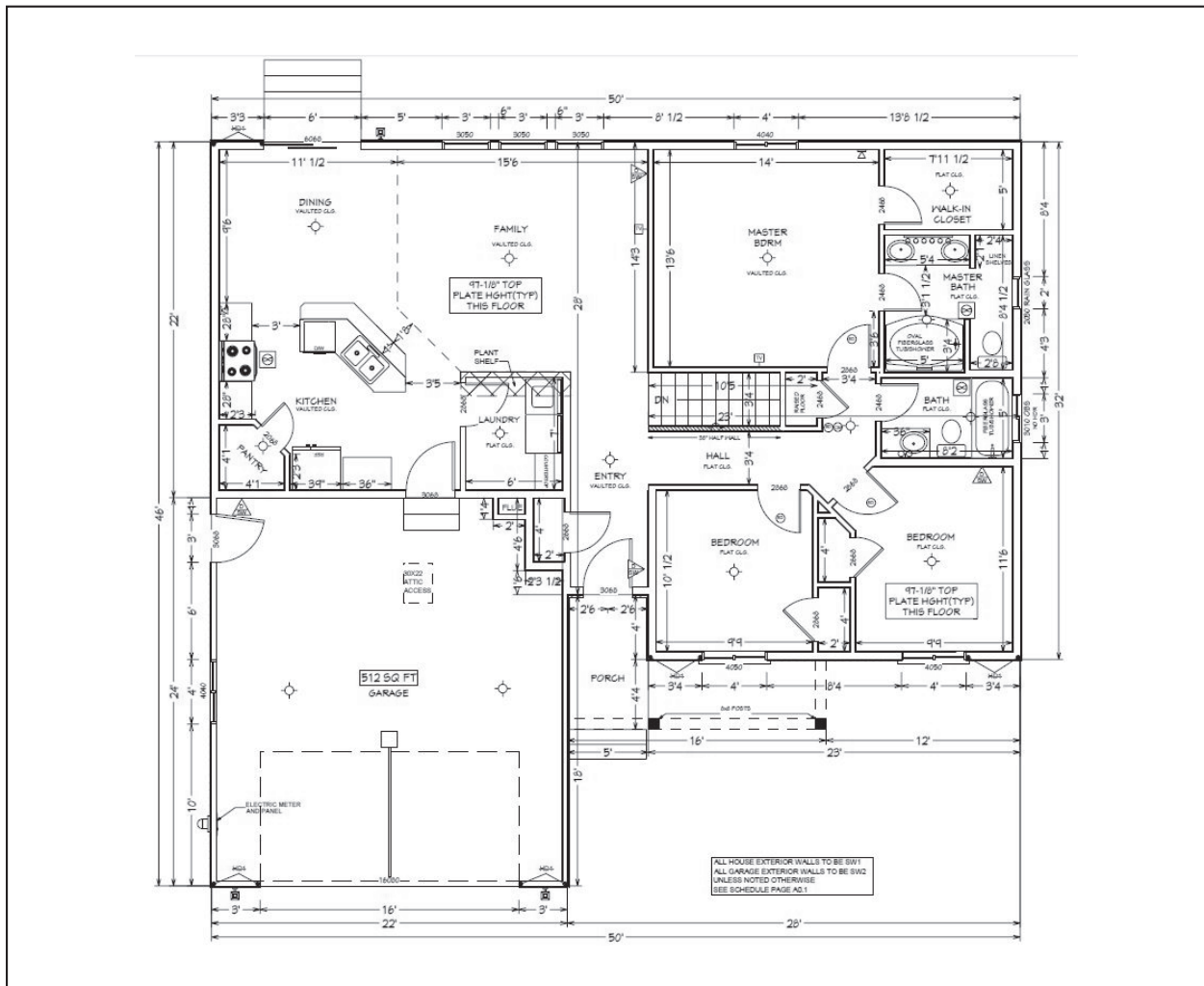
Legend

| | | | |
|-----------------------|-----------|---------------------------|-------------|
| Above finished floor | AFF | Lavatory | LAV |
| Anchor bolt | AB | On center | OC |
| Concrete masonry unit | CMU | Polyvinyl chloride | PVC |
| Diameter | DIA | Property line | PL |
| Elevation | ELEV | Roof drain | RD |
| Finished floor level | FFL | Smoke detector | SD |
| Footing | FTG | Square feet | SQ FT or SF |
| Foundation | FDN | Switch | SW |
| Gypsum wallboard | GWB | Underwriters Laboratories | UL |
| Height | HT or HGT | Weatherproof | WP |
| Junction box | JB | Welded wire fabric | WWF |

Some abbreviations such as ftg, fdn, dia, sf and oc are fairly typical whereas others such as ffl, (finish floor change line), apc (as per code) and cbif (carpenter-built in field) may be unique to a specific set of plans. A legend is often necessary for an accurate review of the plans.

Text: In the context of construction documents, the term “plan” applies to various types of architectural and engineering drawings that are used by the builder, building official and plan reviewer. But it has another meaning, too. Strictly speaking, plan refers to the way you are looking at, or viewing, the proposed construction. The “plan view” shows the proposed construction as if it were being viewed from the air.

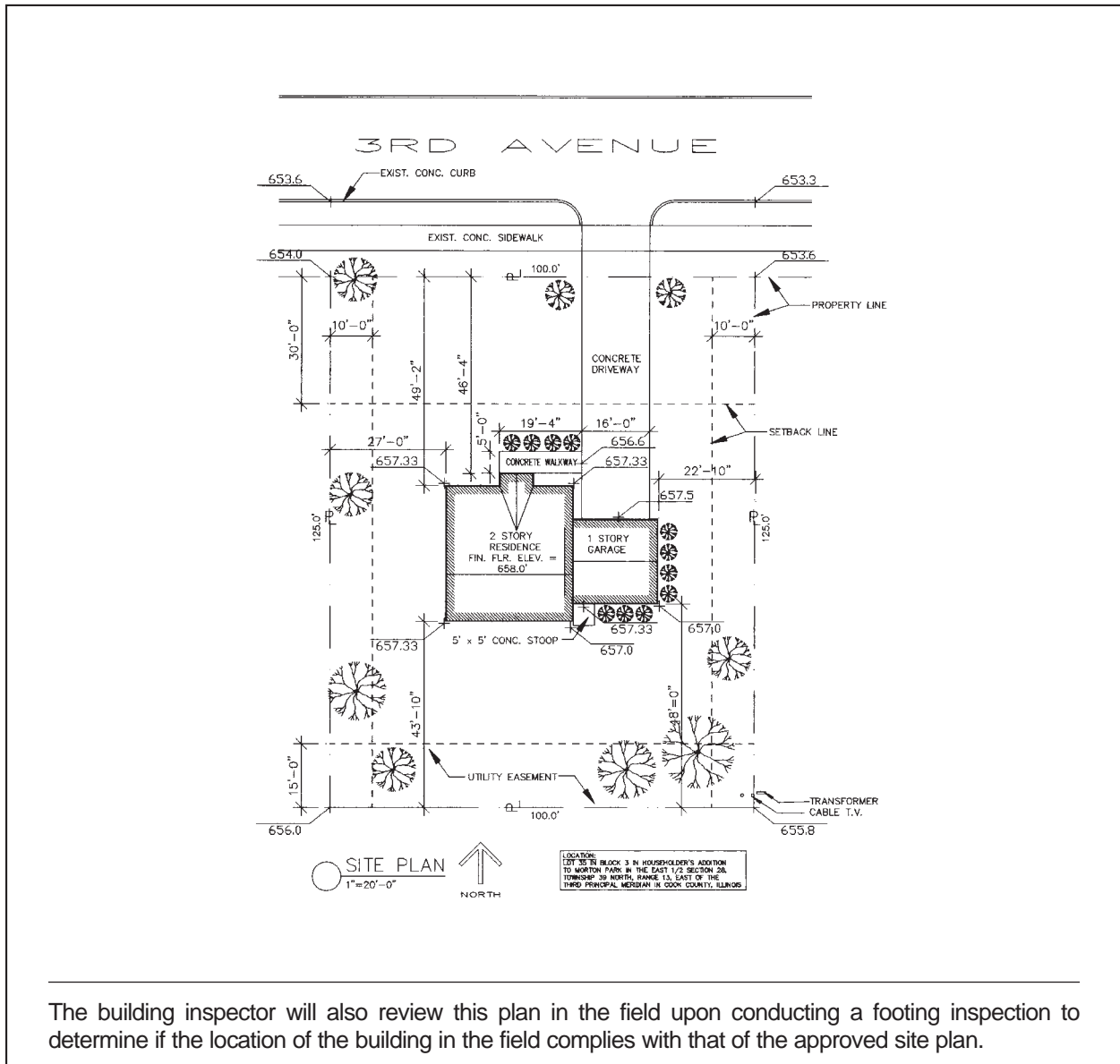
Discussion and Commentary: Floor plans are probably the most important of all construction documents because they represent the layout, dimensions and uses of the rooms and include window locations, beams and header locations, plumbing fixtures and other required information. Certain areas on the floor plan may be circled to indicate that there will be a detailed drawing of the area located on the Details page of the plans.



Basic projects such as room additions may also show electrical receptacles, lights and switches, plumbing lines and heat ducts on the floor plan instead of on separate drawings for each type of work. Furniture and other movable items do not typically need to be shown on a floor plan.

Text: A site plan depicts the location of the building on the lot, the size of the lot, the distance from the property lines to the building and the outline of the building. It does not show any interior building details.

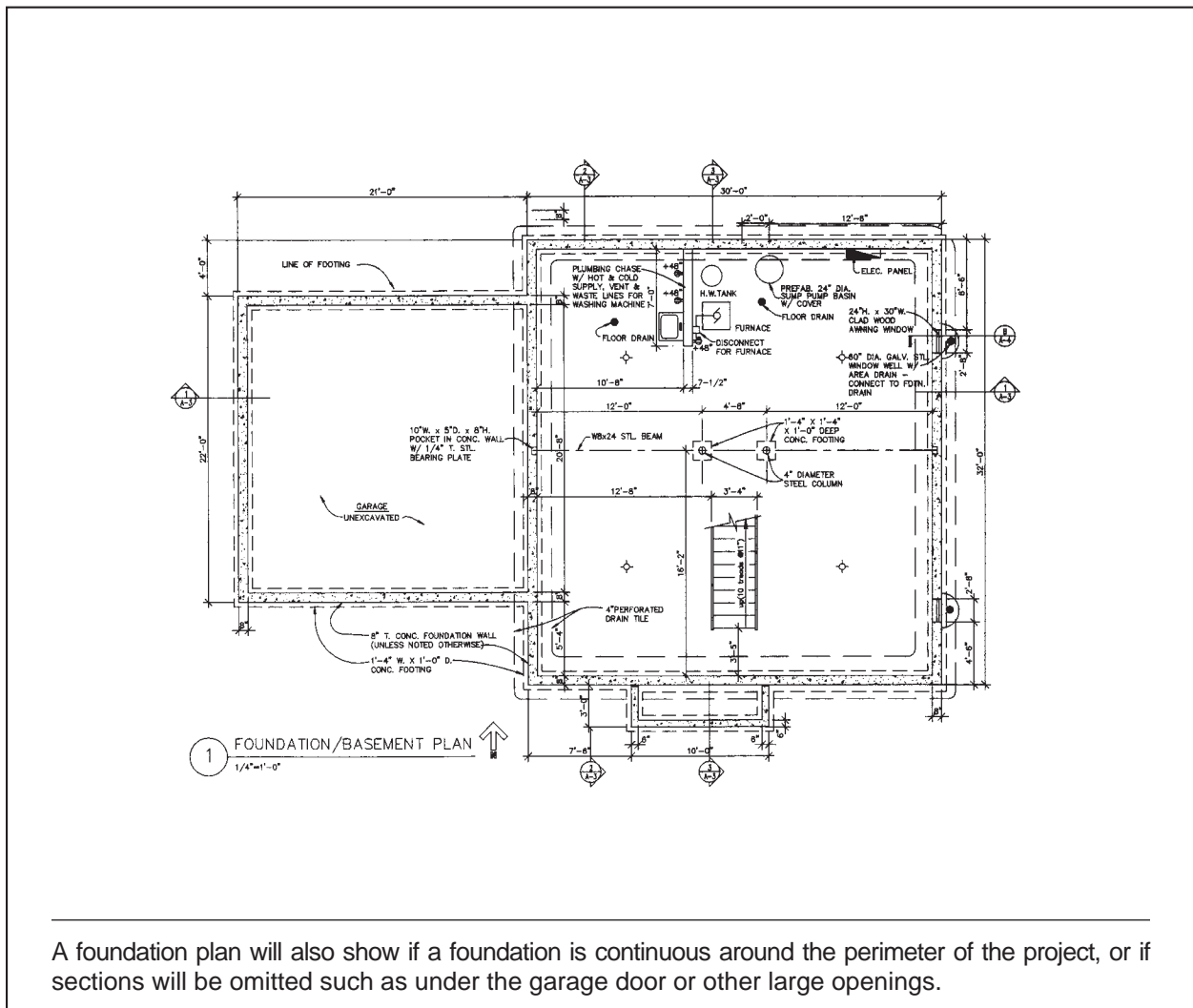
Discussion and Commentary: The site plan, or plot plan, is important to the zoning code official to verify that the building use is appropriate for the zone and that the building is located properly on the lot. Front, side and rear yard setbacks will be checked, as well as driveway location, sufficient off-street parking areas and locations of utility easements. Some site plans, known as landscaping plans, will show what plants will be on the property and where they are located.



The building inspector will also review this plan in the field upon conducting a footing inspection to determine if the location of the building in the field complies with that of the approved site plan.

Text: Foundation plans vary from one region to the next depending on climatic conditions.

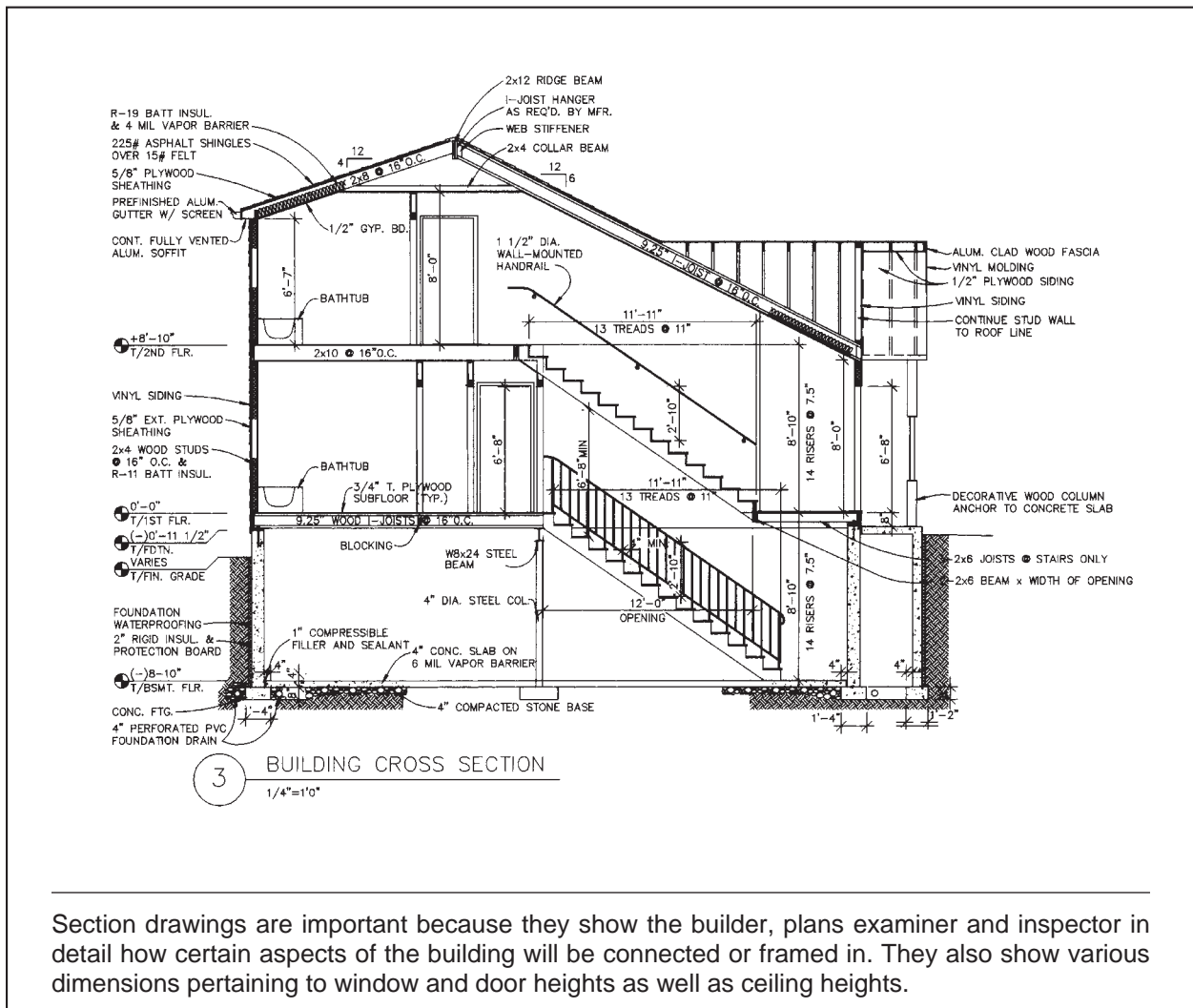
Discussion and Commentary: If a foundation is installed incorrectly, all additional work on the project will suffer. A proper foundation plan is critical for a plans examiner so that he or she can verify if footings are large enough based on local soil conditions, if proper reinforcing bars are installed based on soil or seismic conditions, if foundation or stem walls are sufficient to carry the anticipated loads, and if the location and sizes of interior footings that may be carrying loads from columns or bearing walls are proper.



A foundation plan will also show if a foundation is continuous around the perimeter of the project, or if sections will be omitted such as under the garage door or other large openings.

Text: Imagine for a moment that you are reviewing the plans for a single-family dwelling that has an attached garage and that you need to verify that the garage has the proper thickness of gypsum wallboard as required by code. You can check for this on the building section that is included on the plans. Building sections are commonly known as longitudinal sections or transverse sections. A longitudinal section is cut through the long axis of the structure and a transverse (or cross) section is cut through the short axis.

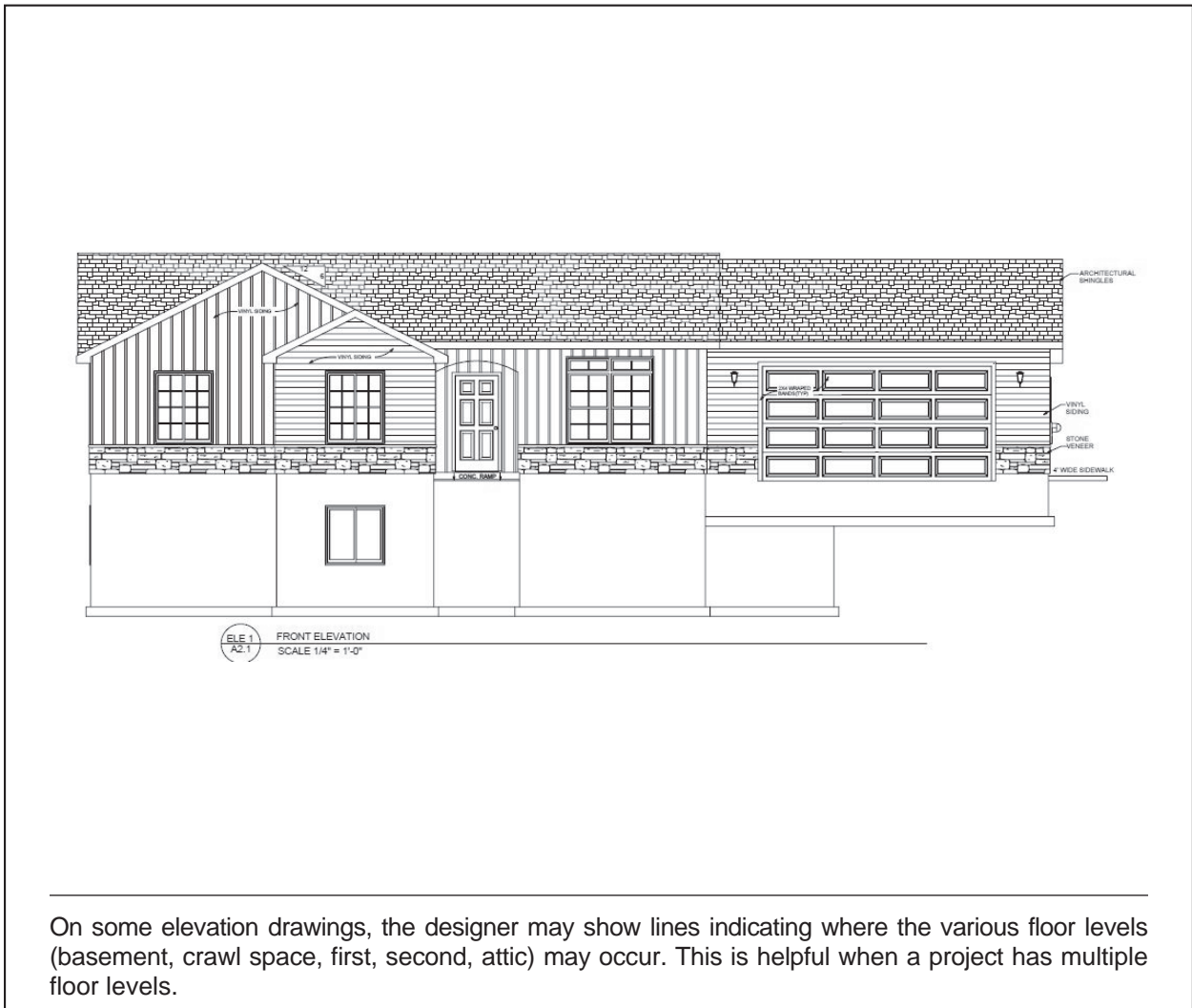
Discussion and Commentary: Although a longitudinal or transverse section (below) may be drawn at $1/4" = 1'-0"$, most detailed section drawings are drawn at a larger scale than floor plans, such as $1/2" = 1'-0"$, so greater detail can be shown. These drawings can show various connections, anchorage, header and beam details, thicknesses of finish materials (drywall and exterior coverings), wall and roof sheathing type and thickness, flashing and other information that would not be depicted on a floor or foundation plan. The floor plans should indicate the location where the sections are taken.



Section drawings are important because they show the builder, plans examiner and inspector in detail how certain aspects of the building will be connected or framed in. They also show various dimensions pertaining to window and door heights as well as ceiling heights.

Text: Another way of viewing the proposed construction is to stand on the ground and look at it. This is called the **elevation view**. Exterior elevation views may also be viewed from the sides and rear. The designer prepares elevations views to help the builder visualize the proposed construction from the outside.

Discussion and Commentary: If an overall, or longitudinal, section is similar to the open side of a dollhouse, an elevation drawing would be similar to looking at the front or the sides of a dollhouse. Like the cover of a jigsaw box, it shows what the project is intended to look like once it is completed.



On some elevation drawings, the designer may show lines indicating where the various floor levels (basement, crawl space, first, second, attic) may occur. This is helpful when a project has multiple floor levels.