Drawings or blueprints?

Shop drawings are far more complex than the architect's drawings, which usually provide front rear and side elevations, a floor plan, a roof plan, and basic plumbing and electrical schematics. Architect's drawings are NOT the drawings the contractor works from; they do not have enough detail. The contractor works from blueprints, more correctly called Shop Drawings.

The following article will explain some of the process and some common terms:

A shop drawing is a drawing or set of drawings produced by the contractor, supplier, manufacturer, subcontractor, or fabricator. Shop drawings are not produced by architects and engineers under their contract with the owner. The shop drawing is the manufacturer's or the contractor's drawn version of information shown in the construction documents. The shop drawing normally shows more detail than the construction documents. It is drawn to explain the fabrication of the items to the manufacturer's production crew. The style of the shop drawing is usually very different from that of the architect's drawing. The shop drawing's primary emphasis is on the particular product or installation and excludes notation concerning other products and installations, unless integration with the subject product is necessary. Information required to be included in **Shop Drawings**

Comparison information for the architect and engineer The shop drawings should include information for the architect and engineer to compare to the specifications and drawings. The shop drawing should address the appearance, performance, and prescriptive descriptions in the specifications and construction drawings. The **shop drawing** often is more detailed than the information shown in the construction documents to give the architect and engineer the opportunity to review the fabricator's version of the product, prior to fabrication. References to the construction documents, drawings, and specifications assist the architect and engineer in their review of the shop drawings. Attachment of manufacturer's material specifications, "catalog cut sheets," and other manufacturer's information may be helpful to accompany these drawings. Because shop drawings facilitate the architect's and engineer's approval of the product, they should be as clear and complete as possible. Notes of changes or alterations from the construction documents Notes concerning changes or differences from the original documents should be made on the shop drawing for the architect's and engineer's approval. Ultimately, they are responsible for changes in these drawings and should have the opportunity to analyze any modifications. A dialogue should occur between the fabricator and the architect and engineer about any areas needing clarification. Successful installations are the result of collaboration between the designer, fabricator, and contractor. Information needed to fabricate the product

Dimensions, manufacturing conventions, and special fabrication instructions should be included on the shop drawing. It should be clear to fabrication personnel what will be manufactured from the shop drawings alone. The construction documents are rarely used as a reference in fabrication, with the fabricators relying on the shop drawing for all information.

Indication of dimensions needing verification from the jobsite

Most jobsite dimensions, such as the dimensions between two surfaces on the jobsite, need to be verified. A dimension may be shown on the construction drawings, but the

actual dimension may vary, from very small to large increments, depending on jobsite conditions. It is extremely important that the fabricated item arrive on the jobsite ready to be installed without field modification. Special care must be taken by the contractor to measure and verify dimensions. In new construction, plan dimensions usually are sufficient for ordering many fabricated items such as structural steel or precast concrete.

In remodelling and renovation work, it is essential that field dimensions be verified prior to fabrication. Some fabricators, such as cabinet and casework suppliers, prefer not to rely on the contractor's verification and will verify the dimensions with their own personnel.

Placement or installation information

Some fabricators and manufacturers will provide symbols, data, or instructions concerning installation. This can include a list of other materials, such as fasteners or adhesives, appropriate but not included for the product. Samples Some fabrications will require a sample submittal with the shop drawing, primarily for color and texture selection of finishes.

Reviews

Because writing comments on eight to ten copies is a tedious process and a waste of time for the architect and engineer, many times they will specify other methods for distributing their comments. Quick review is essential during the approval process. Any method that facilitates this, while providing ample opportunity for comment and complete distribution, should be considered. Although a procedure may be specified in the contract drawings, most architects and engineers are open to suggestions and innovations that speed up the process.

Shop drawings are required, in various forms, depending upon the practice of the architect and engineer. A specific number of copies may be required by the specification. An example, distribution of the completed and corrected shop drawings may include the:

* Owner—file or inspection copy * Architect—file copy * Architect—field copy or inspection copy * Consulting

engineer—file copy * Consulting engineer—inspection copy * Contractor—file copy * Contractor—field copy * Supplier—original copy or one copy

Submittal of one or two copies of the shop drawing Corrections are made by the architect and engineer, and the shop drawing is corrected by the supplier, then the appropriate number of copies is distributed. This method can be time consuming, as the shop drawing is not approved until the corrections are made on it. Submittal of a copy that can be reproduced.

The architect and engineer make comments on the reproducible, then copies are distributed. This method facilitates the timely approval and distribution of the shop drawing. Review comments usually are obvious on the reproducible copy. When sepia copies are used, the reproduction of the sepia often is not as clear as a normal blue-line print.

Compatible CAD software

When the supplier and designer have compatible CAD software, the review can be made from a diskette or a modem-facilitated transfer. Comments can be made by the designer in a bold font or changes can be boxed for emphasis.

Shop drawings in concrete reinforcing Concrete reinforcing is one of the many items requiring specialized shop drawings for the fabrication of the material. Concrete reinforcing is custom-fabricated from 60- foot-long reinforcing bars. The reinforcing bars are cut to length and bent to specific configurations. The shop drawing and the accompanying “cut sheet” lists the quantity, sizes, lengths, and shapes of the reinforcing bar. This information is provided for review by the structural engineer to ensure that sufficient reinforcing is being supplied; fabrication of the bar by the supplier’s shop; an inventory list for the contractor, upon delivery the typical project has thousands of pieces of reinforcing steel that need to be organized for storage and installation; and placement by the ironworker. The Concrete Reinforcing Steel Institute(CRSI) has developed standard symbols, graphics, and formats for shop drawings and cut sheets that generally are used by reinforcing steel fabricators. Each fabricator, has particular style for shop drawings and cut sheets, depending on the draftspeople and computer-aided drafting systems.

General contractor, organization or individual that contracts with another organization or individual (the owner) for the construction of a building, road or other facility.

A subcontractor is an individual or in many cases a business that signs a contract to perform part or all of the obligations of another's contract. A subcontractor is hired by a general contractor (or prime contractor) to perform a specific task as part of the overall project.

An architect is a person who is involved in the planning, designing and oversight of a building's construction.

An engineer is someone who is trained or professionally engaged in a branch of engineering. Engineers use technology, mathematics, and scientific knowledge to solve practical problems.

Specification is an explicit set of requirements to be satisfied by a material, product, or service. Use of a specification In engineering, manufacturing, and business, it is vital for suppliers, purchasers, and users of materials and product,.

Plans are a set of two-dimensional diagrams or drawings used to describe a place or object, or to communicate building or fabrication instructions.

Designer is a broad term for a person who designs any of a variety of things. That usually implies the task of creating or of being creative in a particular area of expertise.

Structural steel is steel construction material, a profile, formed with a specific shape or cross section and certain standards of chemical composition and strength. Structural steel shape, size, composition, strength, storage, etc, is regulated in most industrialised countries.

Precast concrete is an ancient type of construction material made with concrete cast in a reusable mold or "form" and cured in a controlled environment, then transported to the construction site and lifted into place.

Submittals in Construction Management are shop drawings, material data, and samples. Product data submittals, samples, and shop drawings are required primarily for the architect and engineer to verify that the correct products will be installed on the project.

Rebar, a portmanteau for reinforcing bar or reinforcement bar, is common steel bar, an important component of reinforced concrete and reinforced masonry structures. A structural engineer is an engineering professional who practices structural engineering. Structural engineers inspect, analyze, design, plan, and research structural components and structural systems.

Inventory or BOQ (Bill of Quantities) is a list for goods and materials, or those goods and materials themselves, held available in stock by a business. I