

Lesson 2: Understanding a Plan of Procedure

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This lesson will provide information about how to develop a plan of procedure and produce material lists, also called bills of materials. Different types of material lists and their uses will also be explored.

Steps in Making a Plan of Procedure

A plan of procedure is the order in which everything concerning the eventual completion of a planned project is identified, listed, and then arranged in a logical order from the first step to the last step. A good place to start is with a review of the printed construction plan. From this, the exact material requirements can be determined.

A good plan will need to follow a logical order suitable for the project. The first step in developing a plan of procedure is identifying every factor that may affect the project and then arranging all the identified elements in a logical order. With some projects, this process may be lengthy. Factors such as code specifications, site, financing stipulations, and insurance requirements can affect some plans of procedure.

More complicated structures might require extensive site preparation before construction of the foundation, or perhaps utilities must be placed before concrete is poured. A variety of circumstances and situations may need to be considered. A good plan requires careful attention and forethought. Visualizing and writing out each step of the project's construction can be of value in formulating a plan.

The second step in developing a plan of procedure is considering the type and grade of materials appropriate for the project. Each project may have unique circumstances that might influence these choices. The person doing the planning must evaluate the purpose of the structure and select materials with this information in mind. Other factors to be considered are resources and their availability. Materials come in a variety of grades of quality, each of which is suited to a specific set of circumstances. Retailers of specific products are knowledgeable and can be of help in selecting materials for construction.

The third step in the planning process is putting together a list of the materials required. This type of list is called a bill of materials. This list will need to be developed from the information assembled so far and by studying the plan drawings.

The final step involves the purchase of materials and the assembly of the structure. After the needed materials have been bought, any necessary cutting of the materials is done. The project can then be assembled in a logical order.

The Importance of a Bill of Materials

A bill of materials is a list of all the components included in a proposed project. The materials need to be identified by amount, size, and kind. Also, for convenience, they are usually separated into broad categories of supplies, such as lumber, plumbing materials, electrical materials, etc. These lists are necessary for purchasing the correct amount of materials and for obtaining cost estimates. For projects requiring a significant amount of materials, a common practice is to submit a bill of materials to different suppliers and receive quotes on the exact cost from each supplier. These estimates can vary considerably.

Cutting and Purchasing Bills of Materials

Bills of materials are often divided into two types of lists, a cutting bill of materials and a purchasing bill of materials. Many materials used in construction of agriculture structures come from suppliers in standard sizes and dimensions, particularly plumbing supplies and lumber. These standard sizes make it necessary to purchase more material than will be used in the project. The materials are then cut to the exact dimensions needed during construction. Careful consideration must be given to the purchase of materials to minimize waste and keep costs as low as possible.

A cutting bill of materials is a list of all the materials, in the actual sizes or dimensions needed, that will need to be cut to size during the construction of the project. For most projects, depending on the material type and size of the project, the cutting list is developed before the purchasing list to reduce waste when purchasing materials.

Working with Plans

The purchasing bill of materials can be developed from the information identified in the cutting bill of materials and from the drawings of a structure. This list should include the materials identified on the cutting bill of materials in their standard sizes. It will also list all other materials needed to construct the project, such as fasteners, hinges, wire, etc.

The following example illustrates developing a plan of procedure with a cutting and purchasing bill of materials. The selected example is a sawhorse, illustrated in Figure 2.1. Developing a plan of procedure involves first studying the elevation drawings and noting the dimension lines to determine the details of the project.

As noted on the drawings, the project consists of 2" x 4" boards in different lengths, two sections of 1" x 6" board, and screws for fasteners. Wood is the material used for this project. The next step of the process is to inventory the parts of the project and develop a cutting bill of materials.

Inventory:

inch section left over. The end braces consist of 1" x 6" lumber, and although a total of only 22 inches is required for the project, the purchase of a standard 8-foot board will usually be necessary.

The remainder, a section 74 inches in length, can be used for a future project. Wood screws will be used to assemble this project, requiring eight 3-inch general purpose wood screws and twelve 1½-inch general purpose wood screws. To complete this project, the materials should be purchased. They can then be cut to size and assembled.

Purchasing bill of materials:

Top - 36-inch length of 2" x 4" material

Legs (4) - 22-inch length of 2" x 4" material (totaling 88 inches in length)

End braces (2) - 11-inch length of 1" x 6" material

Wood screws - Eight 3-inch screws and twelve 1½-

material (to twelve 1½-

Cutting bill of materials:

One 2" x 4" board, 36 inches in length

Four 2" x 4" boards, 22 inches in length

Two 1" x 6" boards, 11 inches in length

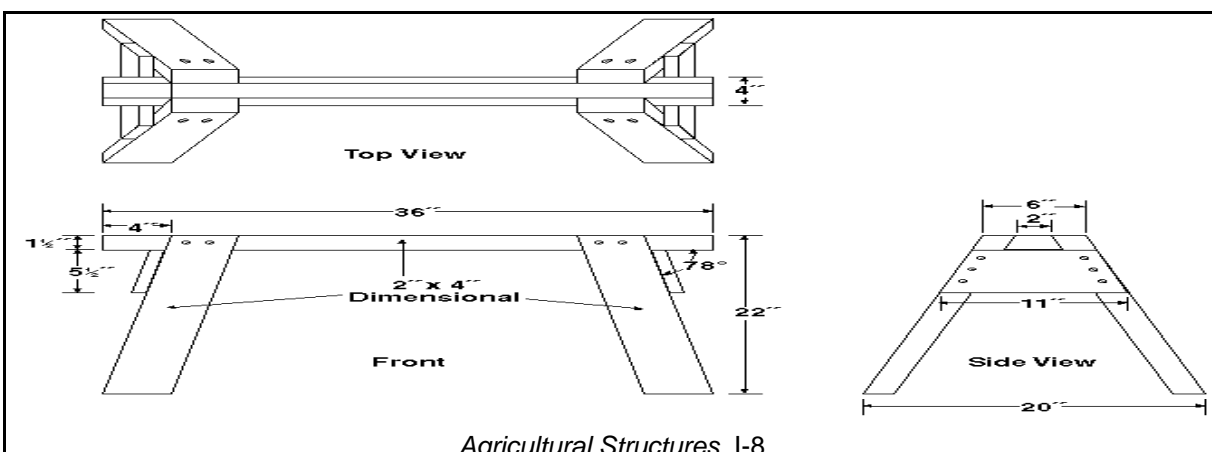
The purchasing bill of materials can now be composed from the above information, keeping in mind the need to minimize waste and the standard sizes of lumber. A total of 124 inches of 2" x 4" lumber is needed (36 inches for the top plus 88 inches for the legs). Lumber is available starting at 8 feet in length and increasing in increments of two feet, so one 12-foot (144-inch) board will provide enough material for the project with a 20-

Eight 3-inch wood screws

Twelve 1½-inch wood screws

One 2" x 4" board, 12 feet in length

One 1" x 6" board, 8 feet in length



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Summary

This lesson outlines four basic steps that can be applied to agricultural structures to develop a plan of procedure. By following the steps carefully, precise material needs can be determined to successfully complete a project from beginning to end.

Credits

Taylor, Robert L. *Builders Estimating Databook*.
Blue Ridge Summit, Pa.: Tab Books, 1990.

