Descriptive Specification

A descriptive specification consists of a detailed written description of the required properties of a product, material, or piece of equipment and the workmanship required for its proper installation. It is important to remember that proprietary or brand names of manufactured products shall not be used in descriptive specifications and that the burden of performance is assumed by the specifier. This method of specifying, while once widely used, has declined in popularity because writing a descriptive specification is very tedious and time-consuming. Descriptive specifications are used when the use of proprietary names is prohibited by law (such as with federally funded projects) or it is not possible to write a reference standard specification due to a lack of reference standards.

To write a descriptive specification, the specifier needs to adhere to certain basic steps:

- Research available products that will be included in the section.
- Research the critical features that will be required in the section, and analyze and compare these requirements with the products that are available.
- Review the features that are required and determine those features that are best described by the specification and those features that would be best shown on the drawings.
- Describe those features that are considered to be critical and the minimum acceptable requirements that must be met by the products to be supplied.

The designer should take care not to select and specify unique features from different products and manufacturers (i.e., pick features from one product and combine them with features from other products). This could create a descriptive specification of a particular product that does not exist. Unnecessary features and minutely detailed requirements should also be avoided.

Performance Specification

A performance specification includes a statement of the required results with the criteria that the specifier is requiring to verify compliance. Criteria for verifying compliance include measurement, test evaluation, or other means as required by the designer to ensure that the standards of performance have been met. All desired end results the specifier wants must be spelled out completely, but the performance specification should not contain unnecessary limitations on the methods for achieving the required results. An incomplete performance specification will result in the designer losing control over the quality of materials, equipment, and workmanship that will go into the project. To maintain control over the outcome of the project, the specification should include at least three manufacturers' names and model numbers of products or include products with recognized material standards, such as ASTM, to be incorporated into the project. (See Chapter 2 for a list of standards developing organizations and associated standards.)

When the performance specification is the primary method of design and contracting, specialized contract documents will be required that are far more complex and often will involve a variety of participants in the contract proceedings. The design team should include schematic drawings to help identify site conditions and utility locations. With both performance specifications and schematic drawings, the design team can produce working drawings that meet the design intent of the owner.

Reference Standard Specification

A reference standard specification involves the use of a nationally or internationally recognized standard to specify a product, materials, or workmanship instead of writing a detailed description. A standard is a set of requirements developed by a recognized authority, such as a trade association, professional society, or governmental organization, using a consensus process. Standards usually are authored by a committee that includes architects, engineers, scientists, technicians, manufacturers, and product users who are very knowledgeable about a particular subject area.

The reference-based standards commonly used when writing a specification are:

- Basic material standards
- Product standards
- Design standards
- Workmanship standards
- Test method standards

An example of a basic material standard is ASTM B88: Standard Specification for Seamless Copper Water Tube; of a product standard is ASME B16.22: Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; of a design standard is ASPE 45: Siphonic Roof Drainage; of a workmanship standard is ASTM B828: Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; and of a test method standard is ASTM E53: Standard Test Method for Determination of Copper in Unalloyed Copper by Gravimetry.

When referring to a standard in a specification, it is not necessary to include the entire text of the standard. The specifier can simply use the standard's number and/or title. The most common form is to cite the standard's sponsoring organization and the number, such as ASTM B88-02. The last two digits are the date the standard was written or last revised. A lowercase "a" after the date indicates an amendment to the standard. These cited standards become part of the specification just as if the standard's entire text were included.

When using a reference standard specification, the designer should be thoroughly familiar with the standards they plan to use and how to incorporate these standards into the document correctly, as well as how to enforce the requirements of the standard once it has been included. Some standards may contain requirements of which the designer is unaware, and many standards meet only the minimum requirements; thus, their inclusion in the specification may cause myriad problems during enforcement of the contract conditions. Also, indiscriminate use of standards within the specification can result in duplication, contradiction, and general chaos for the designer, contractor, and owner.

Due to the possible conflicts between the language of the written standard and the general conditions of the contract, the designer should include a clause in the supplementary conditions stating that the contract conditions shall govern over the requirements of the cited reference standards. Another clause should be included stating that the more stringent requirement shall apply should a conflict or discrepancy arise between a reference standard and another cited reference and the specifications. Once the standard has been specified, it becomes necessary for the designer to be able to enforce its requirements once the project begins. The most common means to ensure compliance with a material, product, design, or testing standard is to check the shop drawings and other submittals, including manufacturer literature, samples, and test reports. Making regular site visits can help ensure compliance with workmanship standards.

Proprietary Specification

The last method of specifying is the proprietary specification, which identifies each product to be used by the manufacturer's name, brand name of the product, model number, type designation, and/or unique characteristics. A specification is considered proprietary if the product to be specified is available from a single source.

The proprietary specification has advantages and disadvantages. Advantages include closer control in the selection of products, more detailed and complete drawings due to the more precise information from the product suppliers, shorter specifications that result in less production time, the removal of product pricing as a major variable, and a simplified bidding process. Disadvantages to the use of this method include the elimination or narrowing of the competition. Also, the contractor might be forced to work with a product with which they have little or no prior experience, which could result in poor performance by the contractor. A last disadvantage is the potential to specify a product that is no longer available.

The two types of proprietary specifications are open and closed. The difference between them is how substitutions of the specified products are addressed. An open specification typically allows substitution with products that can be shown to be equal to the specified item, while the closed specification does not allow any substitutions.

The closed proprietary specification allows the design to be completed with a higher level of detail while reducing the variables, thus promoting more accurate bids. It will not protect against a supplier of a specified product taking an unfair advantage of their proprietary position and increasing the price. In many cases where only one manufacturer is acceptable, the client will require a single-source bid request to be submitted by the architect or engineer during design. These requests typically must be accompanied by a business case justification.

The closed proprietary specification can list one product or multiple products as the designer sees fit without allowing substitutions, and the designer can control product selection using the instructions found in Section 012500–Substitution Procedures and Section 016000–Product Requirements (or Section 01630 under the old 16-division format) if Division 01 is included in the front-end documents.

Under a closed proprietary specification, when only a single product is specified, the substitution of another product is not allowed, and the bids submitted must be based on the specified product only. When products by several different manufacturers are specified, the substitution of other products by unlisted manufacturers will not be permitted; the bids submitted should be based only on the products specified. The successful bidder is usually required to submit a list of the product or products that they intend to use within a specified time following the bid for approval prior to purchase and installation.

In many cases, the client will allow closed proprietary specifications if three or more acceptable manufacturers are named. If three products are named and competition is achieved in the bid process, the designer must make sure the products specified are equal and acceptable for the purpose for which they are being specified.

The open proprietary specification specifies or names products or materials in the same manner as the closed specification. The difference is that alternatives for the specified products or materials also are listed. The bidder must bid on the specified items and may also provide prices for the alternative items specified. These prices are usually included

on the bid form in the spaces provided. To clarify the bidding process, the designer could include instructions to the bidder such as the following: "When the product is specified to only one manufacturer, substitution of products will not be permitted. If alternates to the base bid are requested, then the bidder may submit bids for the alternative items. These bid prices shall include the amount required to incorporate the alternate products into the project. Requests for additional monies for alternate products or materials shall not be considered after the agreement has been executed." Open proprietary specifications remove the problem of overpricing, which is common in sole-source product or material bids, by allowing for the selection of alternate items and price quotations for those items.

The major problem with the use of proprietary specifications is the attempts made by some bidders to introduce products or materials that are of inferior quality to those originally specified. This problem is the greatest when the bidder is allowed to specify substitutions after the award of the contract, which leads to the practice known as "bid shopping." This practice is unfair to those who originally submitted bids, and pressure can be put on the designer to accept these substitutions of inferior products. The designer must maintain control over the bidding process by including requirements similar to the following in the specifications:

- All substitution requests are to be in writing from the bidders only, and any requests from manufacturers and suppliers will not be considered.
- The submission of substitution requests by the bidder shall be made at a minimum of 10 days prior to the bid opening.
- All requests for substitutions shall be submitted with the request for approval.
- Submissions without supporting documentation shall not be considered.

The designer shall review all submissions and issue notification of any accepted substitutions to all bidders by addendum. The period between the deadline for requests and the addendum is at the discretion of the designer, but should not be less than three days to allow proper examination of the submitted materials.

The federal government and other public authorities forbid the use of the proprietary or other exclusionary specifications except under special conditions.