**WRITING A PERFORMANCE SPECIFICATION**

***what do I need to know?***

**Background**

There are many ways to categorize specifications. In the Department of Defense’s “Guide for Performance Specifications”, it states that specifications can be categorized by the entity that develops them: for example, government specifications, industry specifications, and company specifications. They can be categorized by geographic origins: for example, international specifications, regional specifications, and national specifications. They can be categorized by functional use: for example, system specifications, component specifications, software specifications, and material specifications. And, they can be categorized by the way they state requirements: for example, performance specifications and detail specifications.

This document explains the difference between performance specifications and detail specifications and provides guidance on what to consider when writing a performance specification.

**Description of Performance Specifications and Design Specifications**

A ***performance specification*** describes the work broadly by form, fit and function instead of using detailed drawings, specifications, and standards. A performance specification states requirements in terms of the required results with criteria for verifying compliance, but without stating the methods for achieving the required results. A performance specification defines the functional requirements for the item, the environment in which it must operate, and interface and interchangeability characteristics. Generally, it is considered preferable to state requirements in performance terms to give contractors the flexibility to provide innovative, technologically advanced, best-value solutions to meet the customer’s requirement.

Performance specifications can broaden the number of potential suppliers, especially commercial suppliers, since the requirements are not built around specific solutions that only a limited number of suppliers may be able to meet. Having more potential suppliers usually means reduced costs, better product availability and support, a stronger and more reliable industrial base, and fewer obsolescence issues. Using performance specifications also shifts the design risk to the contractor since the Government is not telling the contractor how to meet a requirement.

Performance specifications usually require less document maintenance than do detail specifications. This is especially true in areas that experience rapid changes in products and technologies, such as electronics and information technology, where it would be difficult, expensive, and require greater resources to keep a detail specification current.

A ***detail specification*** provides predetermined solutions to requirements and describes exactly how an item is to be produced. A detail specification identifies materials to be used, specific parts and components, and how the item is to be fabricated and assembled. Detail specifications places a greater risk on the government if the item fails to satisfy the required purpose because the government has specified the materials, parts, components, and fabrication and assembly processes.

The citing of a detail specification as a requirement does not automatically mean that a specification is not performance, but it is a strong indicator that it may not be performance based. Performance specifications should not cite any detail specifications as a requirement if it demands a specific design solution. But performance specifications may cite a detail specification if it relates to a physical or operational interface requirement. For example, it would be permissible to have a requirement in a performance engine specification that required the engine to operate with specific substances, such as lubricating oil or fuel, which conform to detail specifications. The requirement that the engine be able to operate on a specific type of fuel is an operational interface requirement and does not dictate the specific design of the engine. It would not, however, be permissible in a performance specification to require that the engine be made of certain materials or that the various engine components conform to detail specifications, since such requirements would dictate specific design solutions instead of stating the performance expected.

**GUIDANCE FOR WRITING A PERFORMANCE SPECIFICATION**

A performance specification shall be used to the greatest extent practicable. Offerors should be free to meet the requirements in any way they can. This increases NASA’s access to commercial, state-of-the-art technology. Requirements are expressed in terms of minimum acceptable performance standards and place maximum responsibility for performance on the contractor. Additional information, such as standards, may be referenced as information to providers to improve understanding, but should be clearly distinguished/separated from requirements.

Specifications need to remain vendor neutral. FAR 11.105 states that “Agency requirements shall not be written so as to require a particular brand name, product, or a feature of a product, peculiar to one manufacturer, thereby precluding consideration of a product manufactured by another company…” An exception to this rule is allowed only if there is a written justification and a “…particular brand name, product, or feature is essential to the Government’s requirements, and market research indicates other companies’ similar products, or products lacking the particular feature, do not meet, or cannot be modified to meet, the agency’s needs.” Rather than issue brand name specifications, agencies should either articulate a benchmark for performance or specify the requirements for applications and interoperability.

The use of brand name specifications limits competition and diminishes the likelihood the agency purchased the best value product. Contract specifications should emphasize the necessary physical, functional and performance characteristics of a product, not brand names.

Performance specifications are where the more detailed requirements are generally found but even then, the performance specifications should state tolerances, quality control requirements or other features that must be met. You still don’t dictate to the contractor how to meet these requirements. If we dictate to the contractor how to build something and it doesn’t meet the tolerances then it is our fault. If we just tell the contractor to meet the tolerances then they have to come up with a process until they do meet the tolerances.

A performance specification also requires results, with criteria for verifying compliance without stating methods for achieving the required results. By not specifying an approach in manufacturing, design, or quality assurance to be used by the contractor, it permits a wide variety of contractor methods; thereby potentially increasing the number of contractors who can satisfy the requirement. Contractors can use their creative and innovative skills to the maximum.

Nevertheless, this does not preclude highly descriptive specifications, which (if expressed in performance terms) accurately and inclusively describe what we want done or delivered.

In writing outcome driven specifications, avoid the following:

1. Performance specified at the subsystem or component level when it could be more appropriately specified at a higher level (e.g., the reliability of the system or vehicle should be specified instead of specific components with the system).
2. Requirements that are not measureable or verifiable.
3. Statements that constrain the solution to a single solution (e.g., “shall be fabricated from composite material”).
4. Orphan requirements (i.e., requirement statements that are not traceable to a specific performance or verification requirement statement in the specification).
5. Requirement statements that are not appropriate for an effort in this phase of development or production.
6. Specifications relying solely on directives to define performance, not the mission requirements.
7. Citing standards and processes when performance standards can be developed.
8. Requirements that are vague (e.g., “in accordance with commercial practices” in lieu of citing a commercial standard).
9. Language in the specification that belongs in the Statement of Work.