14th Annual Public Works Continuing Education Conference

Purchasing Update
Development & Preparation of Specifications
"The Beat Goes On"

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HOW SPECIFICATIONS LIVE FOREVER

The U.S. Standard railroad gauge, (distance between the rails) is 4 feet, 8.5 inches. That’s an exceedingly odd number. Why was that gauge used? Because that’s the way they built them in England, and the U.S. railroads were built by English expatriates. Why did the English people build them like that? Because the first rail lines were built by the same people who built the pre-railroad tramways, and that is the gauge they used.

Why did “they” use that gauge then? Because the people who built the tramways used the same jigs and tools that they used for building wagons, which used that wheel spacing. Okay! Why did the wagons use that odd wheel spacing? Well, if they tried to use any other spacing, the wagons would break on some of the old, long distance roads, because that’s the spacing of the old wheel ruts. So who built these old rutted roads? The first long distance roads in Europe were built by Imperial Rome for the benefit of their legions. The roads have been used ever since. And the ruts? The initial ruts, which everyone else had to match for fear of destroying their wagons, were first made by Roman war chariots. Since the chariots were made for or by Imperial Rome, they were all alike in the manner of wheel spacing.

Thus, we have the answer to the original questions. The U.S. standard railroad gauge of 4 feet, 8.5 inches derives from the original specification for an Imperial Roman army war chariot. Specifications and Bureaucracies live forever. So, the next time you are handed a specification and wonder what horse’s behind came up with it, you may be exactly right. Because the Imperial Roman chariots were made to be just wide enough to accommodate the back-ends of two war horses.

Source: Unknown
I. Specifications For Public Procurement

A. Introduction

1. Specifications began when mankind first tried to describe to other people the kind of things needed.

2. Earliest specifications are found in the Bible for products such as boats, buildings, and food.

3. One of the oldest (circa 1300 B.C.) is a prescription which measures the quantity of chemical ingredients.

4. The influence of the specialization of the Industrial Revolution, the coming of the Scientific Revolution, and the new environments in the Space Age, all caused an upswing in specification writing.

5. The upswing was due to a need for consistent and uniform quality and to insure compatibility of similar components manufactured at different geographical locations.

B. What is a Specification?

1. It is a concise statement of a set of requirements to be satisfied by a product, material, or a process indicating whenever appropriate, the procedure by means of which it may be determined whether the requirements given are satisfied, and prescribing the methods of inspection and testing.

C. The Important of the Term - Specifications

1. Specifications are one of the most important elements of the purchasing process, and it is probably the most difficult function in the process.

2. Specifications represent a fine line between necessary features and unnecessary "frills."

3. Specifications act as a communication media between a buyer and a seller.

4. Specifications serve as a basis on which bids and proposals are prepared.

5. Bidders learn from the specifications not only the information as to the nature
amount of the work which they will be called upon to do if their bid is accepted, but, they may also form some idea of the fairness of the parties who have prepared the plans and specifications and the treatment they can expect to receive during the progress of the work.

6. The term specifications serves as a point of reference to that section or part of a solicitation that describes the "characteristics" of a good or service sought.

D. Primary Responsibilities of Public Officials

1. The Thought Process
   a. Q uestion the Requirements.
   b. U nderstand the Requirements (User Need).
   c. A ssure Conformance.
   d. L isten to the Marketplace.
   e. I ntegrate Quality, Cost, and Schedule.
   f. T hink - - For
   g. Y ou as the Purchaser are Responsible.

2. The Six Rs - Factors to Consider
   a. The right quality
   b. The right quantity
   c. The right price
   d. The right source
   e. The right manner
   f. The right time

3. Familiarity with organizational requirements for goods or services as related to the availability in the marketplace is a necessity.
4. Contracting units seldom can dictate exact characteristics because of open competitive bidding requirements established by statute. Writing specifications is a challenge to every contracting unit.

II. Development of a Specification

A. Guidelines of a General Nature

1. Do not use provisions of a technical or legal nature developed by a profession or business other than your own legal counsel.

2. How old are your contract documents - "they are always a work in progress."

3. Be careful in the use of discretion in your development. Adhere to a general theme of when in doubt stay close to statutory "intent and spirit."

B. Considerations before a Specification Can be Developed

1. Ascertain what the user's requirements are. What are the actual needs? How much money is available?

2. Availability of the end user's requirements through market resource. Contact manufacturers and suppliers in the marketplace and what is the current pricing structure.

C. What is your Expertise?

1. A specification writer must be accurate, clear and economical.

2. Specifications produced by an end user oftentimes over-state the case or requirements.

3. Profile of an "Expert"

   a. Complete knowledge of the laws and regulations under which one must operate in the purchasing environment.

   b. What and who is out there in the marketplace.

   c. What is the purchasing process to be used in obtaining the goods or services? There is a method for all purchases.
4. One must have the ability to "recompose" the specification material sent by a using agency. "Recompose" specs after receiving them.

   a. One must read well (sometimes between the lines!!)
   b. One must write well (concise, to the point!!)
   c. One can verbally describe their needs (requirements)
   d. One can understand verbalizing by a using agency, but always insisting that it must be followed in writing.

5. A general knowledge of what you are buying.

6. Do you have a working knowledge of the testing/inspection/evaluation as to how the award is to be made?

7. In your efforts to "recompose" the specifications you have made them fair to all contractors/vendors in the marketplace.

D. Basic Concepts in Preparing Specifications

1. Separate sections to greatest extent possible.

2. Avoid supplementary sections.

3. Say it once, and if you must say it again, say it exactly the same way every time.

4. Prepare a statement addressing which controls in the event of inconsistencies or ambiguities.

5. Define all terms and use consistently: e.g. Contract Documents should be used throughout -- Specifications, Detailed Specifications, Project Manual, Legal Conditions, etc.

6. Write in simple terms and be organized in format.

7. The use of the English language should be clear, accurate and exact.
   a. The technical terms common to a particular trade to which the specifications apply may be used, but they must be understood and used correctly.
b. When technical terms are used, they must be defined for this is the basis on which they will be legally interpreted.

c. Clearness in all details is a protection for the public owner and the successful contractor. There is a need for a balance between risk and exposure.

d. It is essential that specifications' description must be as brief as is consistent with completeness and exactness.

e. Only those features should be specified which are essential in order to secure the desired results.

f. Any paragraph, sentence, or word which can be omitted without "material" effect on the complete understanding of the subject should be omitted.

III. Types of Specifications

A. Introduction to Broad Groupings of Specifications

1. Specifications can be standard -- that is developed for repeated use.

2. Specifications can be nonstandard -- that is prepared for a particular procurement for a one-time use.

3. Specifications can require something to be custom-made or custom-built.

4. Specifications can seek goods that are ready-made, off-the-shelf and commercially available.

B. Particular Types of Specifications

1. Brand-name

   a. Limiting the bidding to a single good or service.

   b. Is the most restrictive.

   c. Only one good or service will meet an intended need.

   d. A need for limited standardization (residential water meters).

   e. In the LPCL the application of proprietary specification is authorized, but requires the receipt of bids.
2. Brand name or equal
   a. Such specification should clearly state that the brand(s) designated is for
      reference purposes only, not a statement of preference.
   b. Such specification cites one or more brand names, model numbers, or other
      designations that identify the specific products of a particular manufacturer
      as having the characteristics of the item desired.

3. Design specifications
   a. A purchase description characterized by detail as to how the product is to
      be manufactured or work is to be performed.
   b. Appropriate for a unique product or custom work.
   c. Such specifications are poorly suited for the purchase of many commercial
      products.

4. Performance specifications
   a. A specification describing the performance characteristics sought in a
      product or service; desiring performance over design; a functional rather
      than a generic specification.
   b. It is an approach that has less interest in dimensions, materials and
      configurations and more interest in what a product does.

5. Standard specifications
   a. A specification established through a prescribed process and used for all or
      most purchases of the item involved.
   b. The size of electric outlets is standard throughout the country. The
      dimensions of certain light sockets are standard throughout the industry.

IV. Characteristics of a Good Specification

A. The Four Characteristics

1. It identifies the minimum requirements of the end user (suitability and
   acceptability).
2. It allows for a competitive bid; invites maximum reasonable competition.

3. Is a reproducible test/inspection method provided for in the specification?

4. Provides equitable award at lowest responsible/responsive price.

B. Checking To Determine if the Four Characteristics Are Met in Specifications

1. As simple as is consistent with exactness, but specific enough that a loophole will not allow a bidder to evade any of the provisions and thereby take advantage of competitors or of the purchaser.

2. Identified when possible, with some brand or specification already on the market.

3. Capable of being checked. It should describe the method of checking (test/inspection) which will govern acceptance or rejection. A specification which cannot be checked is of little value, and where checking methods vary in accuracy, only confusion can result.

4. Reasonable in tolerances. Unnecessary precision is expensive.

5. As fair to the vendor as possible.

6. Capable of being met by several bidders for the sake of competition.

7. Clear, understandable to both the buyer and the seller. Misunderstandings are expensive.

8. Flexible; inflexible specifications defeat progress

9. Legible and concise.

10. Simple, but exact.
"I felt exactly how you would feel if you were getting ready to launch and knew you were sitting on top of 2 million parts — all built by the lowest bidder on a government contract."

Attributed to John Glenn
APPENDIX
The Source for the next five pages is:

National Institute of Governmental Purchasing Seminar

Standardization and Specification Writing
September 24-25, 1992
Ramada Inn
Raritan Center
Good Specification Writing Techniques

- Determine user needs

- Market research - collect accurate, exact data

- Write-to outline, logical, emphasize the essential

➢ ABC's:

  + Accurate

  + Brief

  + Clear

➢ KISS:

  + Keep It Simple and Short
Essentials of a Solicitation

- Quality Specifications
  - Allows for product and price competition
  - Identifies minimum user requirements
  - Provides test/inspection method
- Methodology for an Equitable Award
- General and special terms and conditions
Needs Determination vs. Wants

- **Step 1:** Identify the user
  - Who

- **Step 2:** Define the true needs of the user (value analysis)
  - What
  - When
  - Where
  - How
  - Why

- **Step 3:** Write the specifications and prepare for the solicitations of bids or proposals.
NEEDS VS. WANTS

A. Requirements Determination

1. Identify the user

WHO:

- Is requesting the item?
- Is the user?

2. Define the true need of the user

WHAT:

- Has been requested?
- Quantity is needed?
- Is its intended use?
- Are conditions of use?
- Job (or service) must it do?
- Size, color, etc., must it be?
- Functions must it perform?
- Are special environmental needs?
- Are safety needs?
- Are documentation needs?
- Are delivery needs (frequency of service)?
- Are installation needs?
- Are inspection and testing needs?
- Are warranty/maintenance needs?
- Are training needs?
- Are User's perceptions of "quality/value?"

WHEN:

- Is it needed?
WHERE:

➢ Is it going to be used?

HOW:

➢ Must it be built?
➢ Must it be powered?
➢ Must it do specific tasks?
➢ Must the service be performed?
➢ Must it be maintained?
➢ Must it be supported (supplies)?

WHY:

➢ Is the item or service needed?
➢ Is it worth its cost (value analysis)?
➢ Won't alternatives meet the user's needs?

3. Write the specifications and prepare for the solicitation of bids or proposals.
SPECIFICATION WRITING

One of the biggest causes of disagreement on the meaning of specification content is the use of words and phrases which are not definite as to their meaning or which have two or more meanings. Such words or phrases are ambiguous. The following is a list of some ambiguous words or terms to be avoided in specification writing:

1. To the satisfaction of the contracting officer
2. In accordance with instructions of the contracting officer
3. In the opinion of the contracting officer
4. In the judgment of the contracting officer
5. To furnish if requested by the contracting officer
6. All reasonable requests of the contracting officer shall be complied with
7. Photographs shall be taken when and where directed by the contracting officer
8. In strict accordance with
9. In accordance with best commercial practices
10. In accordance with best modern standard practices
11. In accordance with the best engineering practices
12. Workmanship shall be of the highest quality
13. Workmanship shall be of the highest grade
14. Accurate workmanship
15. Securely mounted
16. Skillfully fitted
17. Properly connected
18. Properly assembled
19. Good working order
20. Good materials
21. In accordance with applicable published specifications
22. Products of a recognized reputable manufacturer
23. Tests will be made unless waived
24. Materials shall be of the highest grade, free from defects or imperfections, and of grade approved by the contracting officer
25. Knicks and bends may be cause for rejection
26. Carefully performed
27. Neatly finished
28. Metal parts shall be cleaned before painting
29. Suitably housed
30. Smooth surfaces
31. Pleasing lines
32. Of an approved type
33. Of standard type
34. Excessive vibration
35. Easily removable
36. Dimension: + or -