COE/EE 1195:

How to convey the FUNCTIONAL REQUIREMENTS – ENGINEERING SPECIFICATIONS – DESIGN TARGETS, in the Functional Requirements and Engineering Specifications Report.

Standardizing and Streamlining the presentation of Projects' design parameters (obtained from the House of Quality), please follow the format described within. Within the appropriate section of the formal written report, initiate the presentation of the design parameters via a LIST (of each Functional Requirements and each Engineering Specifications) (in written List or Bullet List form), **and include the necessary information (i.e., several sentences) to answer the WHAT and the WHY (additional details follow).** Subsequently, following these descriptive lists, include a TABLE SUMMARY (example provided as TABLE 1: *Functional Requirements and Engineering Specifications Summary*).

<u>FUNCTIONAL REQUIREMENTS:</u> Must answer WHAT and WHY. Elaborate on the Requirements, and explain WHY it is important. If customer requirements are too vague (e.g., product must be durable), flesh these out a little more in the customer's words. Consider a common Functional / Customer Requirement: Durable. What is "durability"? Does that mean you can jump up and down on it? Does it mean that it lasts more than a minute? For example, WHAT is durability, and WHY is it important?

<u>ENGINEERING SPECIFICATIONS:</u> Must also answer WHAT and WHY. Also, include a discussion on the Engineering Design Target (e.g. the "Delighted" target), and the Engineering Threshold Target (i.e., the "Disgusted" target). Note: DO <u>NOT</u> USE THE textbook terms "DELIGHTED" and/or "DISGUSTED" in the written report. Elaborate on the Specification, and explain WHY the Specification is important. These specifications are the restatement of the design problem (i.e., the ENGINEERING FORMULATION) in terms of parameters that can be measured and have target values. These specifications are a translation of the voice of the customer into the voice of the engineer. Every effort must be made to find as many ways as possible to measure customers' requirements. If there are no measurable engineering parameters for customers' requirements, then the customer's requirement is not well understood. Each Engineering Specification should measure at least one customers' requirement at the strong relationship level. Ideally, **each Engineering Specification should measure multiple Functional Requirements.**

Succinctly, in the report, LIST each Functional Requirements and Engineering Specifications (in List or Bullet List form), and include the necessary information to answer the WHAT and the WHY. Following these descriptive lists, include a SUMMARY, in TABLE format:

Table 1: Functional Requirements and Engineering Specifications Summary

ENGINEERING SPECIFICATION • Related Functional Requirements	UNITS	DIRECTION ↑ ↓	DESIGN TARGET	DESIGN THRESHOLD
ENGINEERING SPECIFICATION 1 • Related Functional Requirement 1 • Related Functional Requirement 2 • List all measured Functional Requirements				
ENGINEERING SPECIFICATION 2				
ENGINEERING SPECIFICATION 3				