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Module 3: Specifications

Managing Performance through Specifications

Introduction

Construction specifications are a contract document that provide the details of a construction project, including specific products or materials, installation process, quality or work and procedures of work, including procedures for making changes. Specifications are sometimes referred to as ‘materials and methods.’ When purposefully done, they can ensure that intentional and thoughtful building design considerations are maintained throughout construction. They can clearly outline project intent, goals, sustainability objectives, as well as how those concepts get executed. Putting the right guardrails in place in the specifications will facilitate quality control during Construction Administration.

Most architects will start from a template specification set (e.g. MasterSpec or CSI format) and customize based on the project design. Whether the architect authors original specifications from scratch or follows a template document, requirements that support compliance with the District’s Building Energy Performance Standards (BEPS) can be referenced implicitly or explicitly.

One of the measures that can be taken to manage building performance during Construction Administration is to embed the process of validating energy



performance within Division 1 of the Specifications. The following are examples of how compliance with BEPS can be supported in Division 1 specifications using a MasterSpec template format:

Table of Contents

- 012500 Substitution Procedures
- 012500a Attachment - Substitution Request Form
- 012600 Contract Modification Procedures (Change Orders)
- 013300 Submittal Procedures
- 014000 Quality Requirements
- 016000 Product Requirements
- 018113 Sustainable Design Requirements

Embedding Building Performance into Division 1 Sections

012500 Substitution Procedures

During construction, substitutions may be requested or necessitated by the unavailability of materials or products, long lead times, contractor-submitted substitution requests client- led changes, cost overruns, and value engineering (VE) exercises. These may result in changes in the original design that could ultimately affect the anticipated energy performance of the completed building. This section requires completion of a Substitution Request Form. It also requires documentation including:

- Statement explaining why the original product cannot be used
- A “detailed comparison of significant qualities or performance of proposed substitution with those of the work specified.”
 - o Note: Those qualities may include ‘performance’ as well as ‘sustainable design characteristics’. It is up to the Architect to determine if they would like to explicitly include reference to the sustainable project objective (in the owner-architect agreement) or ‘BEPS compliance’ or the energy performance indicated by the As-Designed Energy Model.
- “Research/Evaluation reports evidencing compliance with building code in effect for Project...”
 - o Note: It is up to the architect to determine if they would like to explicitly include reference to the As-Designed Energy Model or a performance standard. It should be noted BEPS is not a building code, nor was it developed by a model code organization such as the International Codes Council, so template specification language may not be sufficient.



- Contractor's certification that the proposed substitution complies with requirements in the Contract Documents, except where indicated in the request, and is appropriate for applications indicated

This section also states that by requesting the substitution, the contractor is warranting that it will satisfy the requirements of the original product, material or equipment, including, but not limited to: performance, standards, code compliance, and sustainability.

This section includes conditions for substitutions. The architect may include a condition that explicitly states the requested substitution must provide energy characteristics that the original specified product provided for achieving BEPS.

012500a Attachment - Substitution Request Form

This form could include an additional affirmative statement in the list of things that "The Undersigned certifies" including that the "proposed substitution does not affect compliance with a building code or performance standard in effect for Project."

012600 Contract Modification Procedures (Change Orders)

A change order is a modification or change to works agreed upon in the contract, in other words an alteration to the contractual agreement that adds, alters or deletes work from the original scope. This section reviews the procedures for making such a change, either initiated by the owner or the contractor. The architect (and owner) may wish to include reference to BEPS here, or may wish to leave it to other sections.

013300 Submittal Procedures

Submittals may include samples, drawings, product data sheets, manufacturer safety and data sheets, shop drawings, or other product information that are sent to the architect. Submittals include 'Action Submittals' and 'Informational Submittals'. Action submittals require action or approval from the architect. Informational submittals do not require action or a response, but still may be rejected for not complying with requirements.

Submittal requirements are usually spelled out in greater detail in each specification section. Submittal requirements already include:

- Products: 1) Manufacturers product specifications, and 2) statement of compliance with referenced standards
- Shop drawings: 1) compliance with specified standards, and 2) design calculations
- Design data: 1) compliance with performance criteria, 2) assumptions and summary of loads, and 3) name and version of software used for calculations

In each section, the architect can include BEPS as a referenced or specified standard, or performance criteria, as relevant to support submittals with sufficient information for approvals.



014000 Quality Requirements

This section describes testing, inspections, mockups, sampling, quality assurance and quality control procedures, repair and protection. It may be coordinated with commissioning activities, or may be separate. It may include laboratory testing as well as field testing. This section may include reference to energy performance related systems or components, testing, or to the [Enclosure Commissioning](#) section.

Section 016000 Product Requirements

This section describes administrative and procedural requirements including the selection of products, substitutions, and comparable products.

This includes how a specific manufacturer's product and its performance characteristics may be included as a basis-of-design product specification. This section defines a comparable product as one "that is demonstrated and approved" through the submittal or product substitution process "to have indicated qualities related to.... in-service performance...that equal or exceed those of the specified product." In this case, a comparable product is one that has the same qualities, including in-service performance, and may be submitted by the contractor to the architect for approval.

If a specific product is critical to the energy performance outcome of the project, the architect may want to explicitly require a submittal for that product that directly references its energy performance characteristics, such as a product data sheet or even an energy model. However, such a requirement is implicitly required to demonstrate equal or better performance to the basis-of-design product, and the architect may reject a product without such a submittal or without documentation of equivalent performance.

Examples of building products that contribute to overall energy performance could include any of the following: insulated glazing unit, light fixture or control, rigid foam insulation, thermally broken clip for attaching exterior cladding panels, high performance water fixture, air barrier, moisture barrier, roof membrane, fan motor, duct insulation, window gasket, appliances, occupancy sensor, or any one of the thousands of other building materials, products or pieces of equipment that comprise total building performance.

Substitution requests occur when there is a named product that the contractor would like to replace with an alternate product. This happens for a variety of reasons. The product may no longer be manufactured, or it may be temporarily unavailable. There may be extremely long lead times. Volatility in the market may have led to a significant jump in price. There may be conflicts with other products that cause warranty issues.

In order to make a substitution request, the contractor must provide several pieces of documentation, including:





- “Detailed comparison of significant qualities of proposed substitutes with those of the Work specified. Significant qualities may include attributes such as performance...” and
- “Research/evaluation reports evidencing compliance with building code in effect for project, from a model code organization acceptable to authorities having jurisdiction”

This language may be adapted to 1) require additional documentation, such as energy model reports, 2) provide evidence that the proposed substitution is compliant with building code and performance standards, and 3) include reference to the local code or building performance standard development body.

The architect may request additional information or may reject the substitution request. Should the architect accept the substitution request, it becomes a change order. This section notes “the Architect us the sole judge of equality and acceptability of products and manufacturers submitted as equals” and that the architect should take care not to approve any substitutions without verifying that they would not impact the agreed-upon performance targets for the project.

018113 Sustainable Design Requirements

Section 018113 is for sustainable design requirements and related submittals. This is often used for third party certifications, such as LEED or WELL. However, there is no reason why it cannot also incorporate a Building Performance Standard, ENERGY STAR Target Finder summary or Energy Model report to use as a reference point for comparable products or substitution requests. If incorporating BEPS, it is recommended that the targeted building energy performance (using energy use intensity and/or ENERGY STAR score), performance milestones, and supporting documentation is included.

