AMERICAN SOCIETY OF PROFESSIONAL ESTIMATORS

ESTIMATING TODAY

May/June 2019

Simply Preconstruction Estimating, or Is It?

How to Estimate the Cost of Solar Water Heaters

Bidding Mistakes – Part 3

Annual Summit

ASPE

Specifications and Estimating: A New Vision for Better Outcomes

By David Stutzman, FCSI, CCS, AIA

"The writing of architects' specifications is a task approached by many with trepidation, by some with the careless confidence of ignorance and by a few with the studious determination to succeed."
By Goldwin Goldsmith, Ph.B., FAIA, Architects' Specifications – How to Write Them, 1948, quoting the opening of a 1918 lecture series

Not much has changed in the last 100 years. Estimators must make do with whatever specifications they are handed, including those that are obviously cobbled together at the end of the project. Producing well-written specifications, like estimating, takes time, care, and skill. A recent national study, in which this author consulted and participated, showed that specifications get very little attention, especially compared to drawings. Of the survey respondents, 60% indicate less than 5% of design fees are used for specifications, and 17% of respondents indicate less than 1% of design fees are used for specifications. This means contractors are paying far more for porta-potties[i] than architects pay to produce specifications for the same project. Is it any wonder that "studious determination to succeed" is clearly in the minority for specifications writing?

The drawings identify the relationships and quantitative aspects of the project, everything that can be counted and measured, requiring the estimator's takeoff skill. The specifications include administrative procedures and the qualitative aspects of the project – what products are required, how the products are installed, generally where the products are installed, and what performance must result – requiring the estimator's care. Combining the estimator and specifier's time, care, and skill will give owners a new confidence that project expectations will be met.

Despite the common notion held by architects that the contractor does not read the specs, estimators do read the specs - no, must read the specs because the importance of missing one significant word can mean the difference between success and failure. The result is that estimators know the spec content far better than most project architects do. Estimators must know the content to assemble the correct team, define the crews, and parse the scopes of work without missing or duplicating anything in the process. Because estimates and specifications are so intertwined, it is only natural that estimators and specifiers be joined at the hip, always working together.

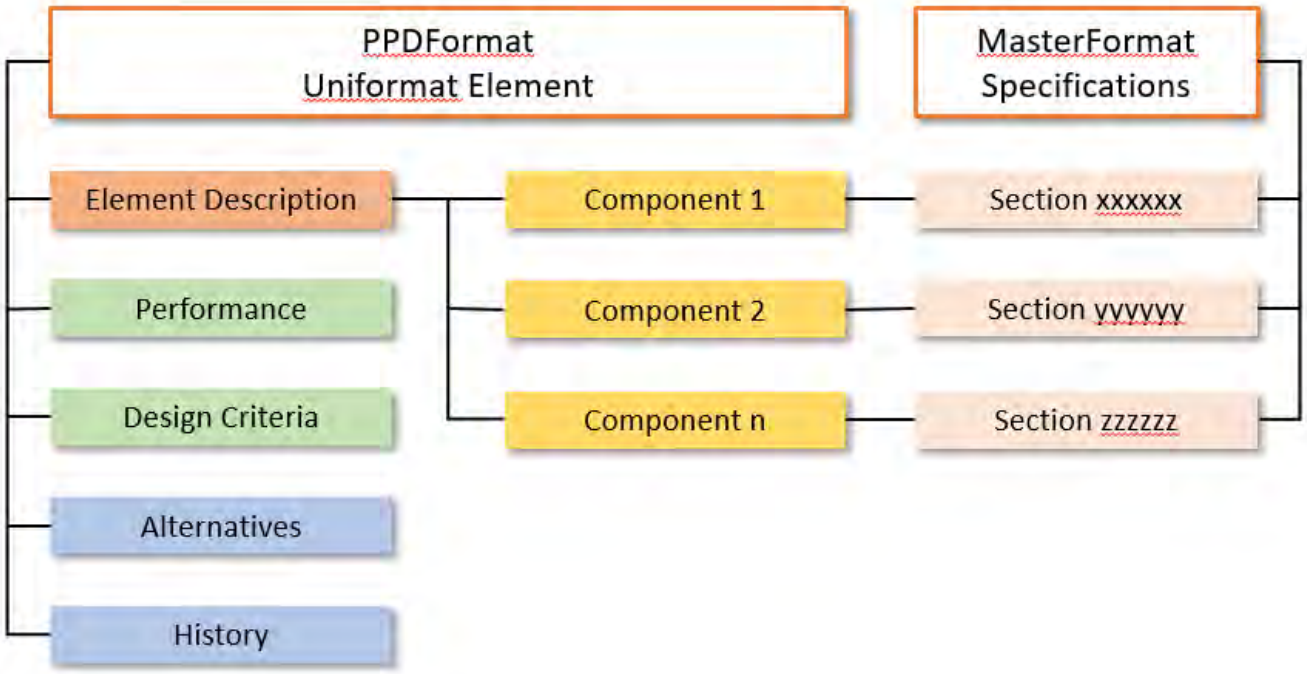
A Brief History of Construction Specification:
MasterFormat® was originally introduced in the 1960s as a 5digit, 16division organization as a radical new idea. Then about 40 years later, in 2004, morphed to the current document. Full adoption of the newer format lagged about 10 years. Today's CSI 3Part Format[ii] construction specifications are organized with 6digit section numbers and titles in 50 divisions according to MasterFormat[iii]. According to the current MasterFormat, specifications describe work results – what the contractor must build to satisfy the contract.

How do estimators have a part in this history?

In 1993 ASTM published, ASTM E1557 UNIFORMAT II[iv], an organizational structure for building elements, created by estimators and economists to describe buildings by systems and assemblies. This organization allowed estimators to develop costs of complete building elements for comparative analysis of alternative elements early during the design process. The advantage was to enable informed decisions about building elements considering aesthetics, performance, and cost all with respect to the owner's budget.

Shortly afterward, CSI introduced the concept of Preliminary Project Description (PPD)[v], relying on UNIFORMAT II organization, to describe a project during concept and schematic design phases. CSI introduced its own version of UniFormat[vi] that included an introduction to collect information that applies to a project as a whole such as program data, code requirements, and design criteria. For the remainder of this paper, the term Uniformat will be used to represent both the ASTM and CSI documents, collectively.

Well-structured data is powerful. The notion of preliminary project description persisted and was formalized in PPDFormat[vii] that showed how to organize project data in a consistently structured way to describe elements by performance, design criteria, and individual components. The ASTM E06.81 Building Economics subcommittee[viii] responsible for ASTM E1557 praised the PPD concept from the beginning and continuously recommended its use in conjunction with preliminary cost estimates. Today estimators use Uniformat organization for early project estimates[ix]. Unfortunately, design teams rarely use PPDs, favoring informal, unstructured design narratives, instead.



PPDFormat with connection to MasterFormat Specifications

Meanwhile, at the turn of this century, USGBC introduced LEED and building commissioning[x]. Commissioning necessitated developing Owner Project Requirements (OPR) as the basis for performing building commissioning. OPR is a formalization of a project program to document design criteria and building performance.

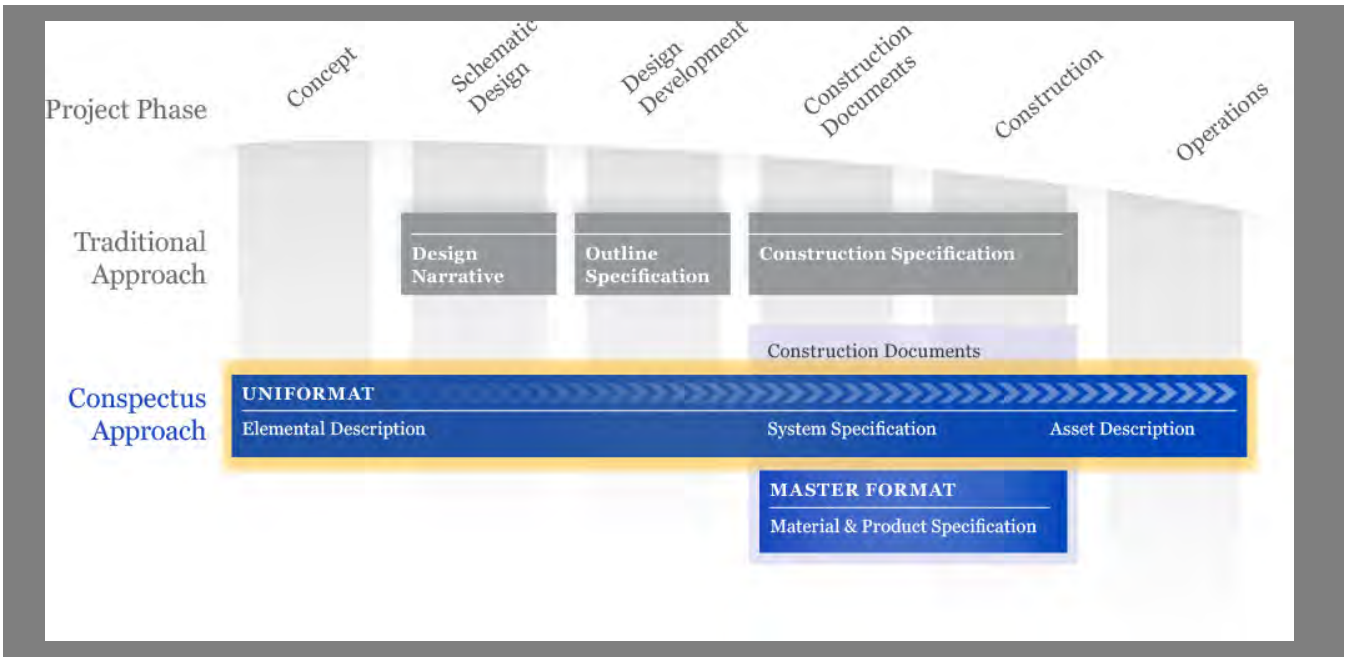
Now, the industry uses MasterFormat, Uniformat, design narratives, and OPR to document project requirements. The disparate systems lead to gaps in both specifications and estimates, where all too often critical information goes missing. These gaps are difficult to identify and nearly impossible to close because they exist at the intersection of the multiple different systems.

What comprises specifications today evolved from prior thinking about specifications and attempts to effectively organize data for construction contracts. And so too, today's specifications will evolve to better suit the industry needs. This paper will explore the idea of applying existing concepts and documents in a new way to produce a better result for the owners – those that bear all the risk of design and construction.

The Future of Specifications and Estimates:

The next evolution in specifications will leverage all the existing organizational formats and resulting documents including OPR, PPD, Uniformat, and MasterFormat, but use them in a new way. When starting a new project, begin with Uniformat specifications to describe OPR and the building elements. Plug in MasterFormat construction specifications to define materials and installation needed to get the project built. Then name both Uniformat and MasterFormat specifications as contract documents to incorporate the complete project qualitative requirements.

Uniformat Project Approach



Uniformat Project Approach

Estimators recognized Uniformat's usefulness during the early design phases[xi]. CSI recognized its usefulness as the structure for PPDs to collect OPR and document design criteria before the design is actually started. Uniformat's value is greater. Therefore, Uniformat must be the overarching document that extends over the complete life cycle of design and the resulting building.

Day one, when the owner decides a building is needed, start the data collection. Invite the entire project team to participate - owner, designer, SPECIFIER AND ESTIMATOR, contractor, installer, and supplier to leverage all available expertise. (As specifier, I want to bring an estimator with me. What I write affects cost, and costs inform design decisions I document. It is far better to know the cost implications as decisions are made rather than after the fact. Call me selfish. I want to avoid Value Engineering and massive rework, later.) Make the entire specification process transparent by inviting questions from the team and openly soliciting input, and resolving the questions as the process happens.

Say what you know, when you know it. Develop the estimate and specification detail consistent with the design progress. Describe the work results in short, concise statements that paint a mental picture of each building element so everyone understands. With the picture, estimators will know what will be required even without drawing details. At schematic design, estimators can easily price descriptions such as this description with only a plan and elevation drawing to set quantities.

B2010 -Exterior Wall
Description: Terra cotta clad continuously insulated rain screen wall with air barrier, sheathing and framed structural back up at podium level.

Use the process to identify and analyze viable options rather than including placeholders for cost purposes. Verify compliance with the owner's project requirements and the budget. Discuss pros and cons, and obtain the owner's informed consent for the optimal solution before committing significant design documentation resources. This process can be accomplished with minimal drawings and with Uniformat specifications only.

When it is time to bid, buy subcontracts, and get something built, the MasterFormat construction specifications will be written to identify component technical requirements. This allows the contractor to purchase and install the correct products required for each Uniformat specified element. For instance, Uniformat specs will describe the interior partition as a whole with all its

components including the studs, gypsum board, acoustic insulation, and acoustic sealant making up the partition. The MasterFormat spec will set the gypsum board product quality standard, the submittal requirements, the installation requirements, and other technical requirements not included in the Uniformat specifications.

Maintain the Uniformat specification throughout the design process. Update and augment the data as more is learned about the design and the project requirements. Record the design process, including decisions affecting the design along with the rationale. Document design and performance criteria necessary to commission and ultimately operate the building successfully to achieve the predicted performance.

Leverage transparency and cooperation. Stakeholders, given the opportunity, will make the project better by protecting their own interests and lending their expertise. Contractors want effective sequencing to simplify logistics. Subcontractors need easily buildable designs. Material suppliers want their products to be used correctly. Given the opportunity to participate, many if not all, requests for information and change orders may be eliminated, minimizing risk, while improving profitability for all.

Uniformat specifications must be delivered as record documents for the owner's use. Since MasterFormat specifications do not represent what was actually installed, they will be of little value. Because Uniformat specifications contain design and performance criteria, they will prove invaluable to the facility operations, maintenance, and future modification.

With this new project approach starting early and remaining active throughout the design process, estimators, joined with specifiers, can actually make a difference. We can allow owners to explore options and make informed decisions about what is important to them rather than reluctantly accepting value engineering cost reductions after the fact.

Avoiding VE will minimize the massive amounts of rework and coordination gaps the rework creates when design documentation is revised. Avoiding VE will improve profitability for all stakeholders. Making informed decisions will allow design to proceed with confidence that the design will meet the owner's project requirements, including budget. With this confidence will come improved cooperation among the project team to make the project a success.

Imagine the future when the owner actually gets what is expected and all stakeholders are profitable.

Read more about the Conspectus Approach at https://www.conspectusinc.com/

[i] Independent specifier Beth Stroshane the Managing Partner at Applied Building Information LLC first used the cost comparison between porta-potties and specifications.

[ii] "SectionFormat Structure," in SectionFormat™ / PageFormat™ The Recommended Format for Construction Specifications Sections (The Construction Specifications Institute Construction Specifications Canada, 2008) This format prescribes the standard arrangement known as the 3-Part format using Part 1 – General, Part 2 – Products, and Part 3 – Execution. The format also includes standard article titles within each part for a consistent order of information within each specification.

[iii] MasterFormat® 2016 Update- Master List of Numbers and Titles for the Construction Industry (The Construction Specifications Institute Construction Specifications Canada, 2016). This standard includes nearly 9,000 numbers and titles used for construction specifications, detailed estimating, relating drawing notations to the specifications, and data filing. See http://www.masterformant.com. CSI membership or a recent purchase of MasterFormat is required for access.

[iv] Standard Classification for Building Elements and Related Sitework—UNIFORMAT II (ASTM International, ASTM E1557, 2009 Reapproved 2015). The original UNIFORMAT was developed jointly by the General Services Administration (GSA) and the American Institute of Architects (AIA) in 1972 for estimating and design cost analysis. UNIFORMAT II was first published in 1993 and enhanced the original, especially for the mechanical, electrical, plumbing, and fire protection elements. See http://www.uniformat.com for document background and application discussion.

[v] "Fundamentals and Formats Chapter FF/180 Preliminary Project Description (PPD)," in CSI Manual of Practice (The Construction Specifications Institute, 1996) PPDs are prepared to describe the scope and relationships of major project elements and are organized in terms of building elements and components.

[vi] UniFormat™ A Uniform Classification of Construction Systems and Assemblies (The Construction Specifications Institute Construction Specifications Canada, 2010). This is a system for arrangement of construction information based on physical parts of a facility called functional elements, otherwise known as systems and assemblies.

[vii] PPDFormat™ A Guide for Developing Preliminary Project Descriptions (The Construction Specifications Institute, 2010). This is a guideline document for preparing and using Preliminary Project Descriptions (PPD). PPDFormat provides detailed information on preparing written documents to accompany Schematic Design phase drawings as contract deliverables and suggestions for other uses during early phases of the design of a facility. This author was responsible, in part, for developing PPDFormat.

[viii] ASTM E06.81 Building Economics Subcommittee previously chaired by Harold E. Marshall economist with National Institute of Science and Technology (NIST) and with the staunch UNIFORMAT II proponent and estimator Robert P. Charette, PE, CVS, PQS. This subcommittee developed standards to help evaluate building projects and reduce costs throughout the life cycle. This author acted as the CSI liaison to the ASTM committee relative to developments involving UNIFORMAT II and UniFormat.

[ix] Use of Uniformat estimates is evidenced by current project estimates for notable projects such as the Obama Presidential Library where three separate estimators furnished Uniformat estimates at the end of Schematic Design.

[x] "EA Prerequisite: Fundamental Commissioning and Verification," in LEED v4 for Building Design and Construction (U.S. Green Building Council, 2016) When LEED was first introduced required fundamental commissioning as a prerequisite. This commissioning initially required a Basis of Design document to establish the criteria by which the building energy systems were commissioned. Today LEED requires Owner Project Requirements in addition to the Basis of Design as documentation to support commissioning.

[xi] Harold E. Marshall, Harold E, and Charette, Robert P. UNIFORMAT II Elemental Classification for Building Specifications, Cost Estimating, and Cost Analysis (National Institute of Science and Technology, NISTIR 6389, 1999). This paper was written to ensure consistency in the economic evaluation of building projects over time and from project to project, and it enhances project management and reporting at all stages of the building life cycle. See http://portal.ct.gov/-/media/DAS/Office-of-School-Construction-Grants/Task-188—Required-Forms-Regarding-Plan-Review-and-Approval/FORM-SCG-2020-UNIFORMAT-II-classification-for-building-cost-estimating-4-24-17-KD.pdf

ASPE CORE VALUES

EDUCATION:

ASPE educates and mentors professional estimators for the sustainability of the construction industry.

PROFESSIONALISM:

ASPE promotes the lifelong pursuit of excellence and credibility in professional estimating.

FELLOWSHIP:

ASPE develops a fellowship of professional estimators that connects and leads the construction industry.

ASPE

2525 Perimeter Place Drive, Suite 103 • Nashville, Tennessee 37214 • 615.316.9200 • ASPEnational.org