I
efficiencies exist in the design-bid-build
delivery of typical commercial construc-
tion projects. There is a solution that
requires little additional effort by the
design team. The object is to provide bids
that are more accurate, create less haggling
over change orders, generate a better relationship
between the contractor and the design team,
and ultimately lead to a less costly project. For
brevity, this article focuses on an example project
and follows the path of a contractor with respect
to reinforced concrete scope. Before diving into
the example project, an overview of the typical
design and construction process for a design-bid-
build commercial project is presented.

An Overview

An owner typically engages an architect in
developing the schematic design for the build-
ing. Once the program and general massing
of the building are agreed upon, the architect
or owner engages a structural, MEP, and civil
engineer, and begins progressing towards the
construction documents. The design team pre-
parves drawings and specifications, or specs,
which collectively constitute the construction documents, to communicate their design
with the potential contractor. The drawings typically
include general notes, floor plans, sections, and
details. Specs typically include administrative,
product, quality assurance, submittal, and execu-
tion requirements. Before submission of the
construction documents, the architect collects
the relevant specs from each sub-consultant
and compiles them into a project specification,
which even on relatively small projects can
easily reach thousands of pages.

The creation of a spec for a project typically
begins with a master spec that is created and
maintained either by the design firm or by
a national source such as MasterSpec, CSI
Manu-Spec, or SpecText. These specs gener-
ally follow the Construction Specifications
Institute’s (CSI) MasterFormat standard which
is an indexing system for organizing construc-
tion data, particularly specifications. The
master spec will generally contain every mate-
rial, product, and scenario that could pertain
to the subject of the spec. On a typical project,
as much as 50% of the master spec could be
irrelevant to the project at hand. The national
sources typically include features that assist
in refining the spec for the project. However,
some manual editing is typically required. For
example, the structural reinforced concrete
spec (03 30 00 CSI MasterFormat) includes
everything from standards for cementitious
materials, reinforcement, hot and cold weather
crete, and welding of reinforcement. Items
such as the cementitious and reinforcement
standards usually apply to all projects; however,
items such as welding of reinforcement only
apply to a small number of projects. Prudent
designers edit the master spec until it is tail-
ored for the project; this includes adding any
special requirements as well as removing any
portion that does not apply to the project.
Unfortunately, standard practice in the indus-
try is for the spec book to be bloated with
numerous items that do not pertain to the
project since it is less effort for the designer
to leave superfluous items in the spec.

Once the construction documents are sub-
stantially complete, they are typically issued as
a “Bid Set” when the project is to be delivered
via the conventional design-bid-build arrange-
ment. At this point, the general contractors
who wish to bid on the project have a few
weeks to compile bids from their sub-con-
tractors. Due to the short bid period, the
general and sub-contractors rely heavily on
the drawings and largely ignore the spec book.

After the contract has been awarded and con-
struction begins, the general contractor issues
submittals, as required by the specifications, such
as shop drawings, product data, and calculation
packages with the intent to show the design team
how they plan to construct the building and that
this plan adheres to the construction documents. The design team reviews the submittals to assess
whether they are in general conformance with
the construction documents. If items are found
to be non-compliant, the design team indicates
the non-compliant items to be corrected in
the subsequent “For Construction” submittals.
Alternatively, if the items are more severe, the
design team requires the contractor to correct
the non-compliant items and resubmit their
plan for an additional review.

Correction of non-compliant items is rarely
a no-cost affair. If the non-compliant issue
is derived from the specifications and is outside
normal practice, then it is likely a cost that the
contractor is not willing to absorb. Especially
if the issue results from a conflict between
the drawings and specifications, wherein the
design team defaulted to the standard note: “If
conflicting requirements exist in the construction
documents then the most stringent application
shall apply.” Regardless of whether the con-
tractor absorbs this cost or issues a change
order, the relationship between the design
and construction teams will likely be strained
moving forward.

An Example Scenario

Instead of looking only at this process in the
abstract, it is beneficial to consider a specific
scenario. A $5M commercial project has just
been issued for bid. The construction docu-
ments consist of 100 drawing sheets and a
2,000-page (plus) specification (spec) book
between the architect, structural, MEP, and civil
engineers. The prospective contractors have two
weeks to submit qualifications and bids to the
owner before a general contractor is selected.
The general contractor sends out the construc-
tion documents to a list of sub-contractors for
the items he/she will not self-perform. For the
reinforced concrete, the estimating department
dives into the drawings, assessing quantities,
materials, degree of difficulty, and time required,
to determine the cost and schedule associated
with that scope. They also scan through the spec
book to identify items such as the required type
of vapor retarder, submittal requirements, and
materials testing required. After they compile all
their numbers, the contractor submits a bid and,
if the bid is low, he/she is awarded the project.
As the project kicks off, the contractor receives
his concrete mix design submittal from the local
ready-mix plant, which he ultimately submits
to the design team. After a week or two, the
submittal is returned “Revise and Resubmit”
with a comment from the structural engineer
that expansive hydraulic cement is required
for the structural slab in lieu of traditional
Portland cement, as indicated in section 2.1 of
specification 03 30 00, to control and reduce
drying-shrinkage cracks for the architecturally
exposed concrete floor. The contractor notifies
the ready-mix plant of the requirement, and the
plant responds with a $50,000 change order.
In reality, the contractor may have already
been aware of this requirement but decided to ignore
it with the thought that other contractors may
miss it and thus come in with a lower bid, or that
there would be a chance to request a substitution
once construction kicked off. Regardless, at this
point, the contractor has to decide whether to

Universal Specifications

A Step in the Right Direction

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absorb this cost or issue a change order. The chances of getting a change order approved are slim since the requirement was clearly listed in the specifications; however, the contractor could argue that items of such significant cost implication should have been explicitly noted in the drawings. Regardless of the path taken, the relationship between the contractor and design team is now soured and may have detrimental consequences to the remainder of the project.

A Reasonable Solution
The exact scenario described above is not common on the majority of projects; however, it is not uncommon for cost or schedule sensitive items to be brought to the attention of the contractor after the project has been awarded. Moreover, they usually come from requirements buried somewhere in the spec. A plausible solution to this issue is for owners or authorities having jurisdiction (AHJ) to adopt a universal set of specifications that are to be used on every project within their domain. The design team would still be allowed to modify, add, or delete items from the universal specifications as long as these items are highlighted in some fashion. Once they become familiar with the universal specs, this process would allow contractors to quickly scan through the spec book to identify items that are out of the ordinary. The additional effort required by the design team to highlight these items would be minimal. Potential benefits include less overhead for the contractor since estimating is now a quicker and more certain process resulting in more accurate bids, less costly surprises during construction, and a better relationship between the construction and design team. Owners in other markets such as universities, K-12 school districts, and State Departments of Transportation (DOT’s) have already recognized the benefit that universal specifications provide and require a process similar to the one proposed above. It is understandable that large owners who oversee numerous projects every year are in a better position to create and maintain universal specifications than a small business owner or a real estate developer who may oversee one or two projects every year. Nonetheless, small-scale owners could benefit from their AHJ adopting universal specifications that are tailored for their jurisdiction. The process of creating and maintaining a set of universal specifications would not be foreign to AHJ’s which already undertake a similar process when they adopt a version of the International Building Code with jurisdiction-specific amendments. Ideally, the AHJ’s would engage local developers, contractors, architects, and engineers in the creation and maintenance process so the specs would reflect best practices in the region. This approach would provide a quasi-construction management at-risk (CMAR) environment in which all parties that have a stake in the project are engaged to balance design, cost, and constructability to find the optimum solution.

Ultimately, the adoption of universal specifications is by no means an all-encompassing remedy for the myriad of difficulties inherent in the commercial building process; however, it is a step in the right direction. There will still be contractors who selectively ignore requirements within the specifications to gain a pricing advantage and subcontractors who provide their bids minutes before the deadline with qualifications and exclusions instead of quoting the project as specified in the construction documents. However, universal specifications with added, deleted, or modified sections that are highlighted will make these types of actions harder to defend and with time become less frequent.

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