January 2010

Front End Specifications and the Propagation of Construction Claims

Sidney Hymes
Washington University in St. Louis

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Department of Civil Engineering

Dissertation Examination Committee:

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Dr. James E. Koeh, PE
Dr. Kevin Truman

FRONT END SPECIFICATIONS AND THE
PROPAGATION OF CONSTRUCTION CLAIMS

by
Sidney J. Hymes

A dissertation presented to the School of Engineering
of Washington University in partial fulfillment of the
requirements for the degree of

DOCTOR OF SCIENCE

December 2010
Saint Louis, Missouri
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Sidney J. Hymes

2010
ABSTRACT OF THE DISSERTATION

Front End Specifications and the Propagation of Construction Claims

by

Sidney J. Hymes

Doctor of Science

Washington University in St. Louis, 2010

Research Advisor: Professor Thomas Browdy

Front End Specifications represent the administrative, organizational, performance and payment requirements for construction projects. The vast majority of construction contracts use Front End Specifications, either from an independent source or prepared in-house. In spite of the crucial role of Front End Specifications, little is known regarding whether Front End Specifications increase or decrease claims in construction. Further, no published reports to date have investigated whether construction claims are systematically related to Front End Specification complexity, partnering, business size or document authorship.

In the present quantitative study, participants (n = 150) from the construction industry, including contractors, subcontractors, designers and owners, completed an on-line survey of sixteen multi-part questions detailing common Front End Specifications and the impact of those specifications on claims.

Results indicate that disputes and claims from Front End Specifications impose significant costs on construction projects, with scheduling specifications/requirements, summary
(scope) of the work and coordination being the most common causes of claims. Perceptions of claims were not related to business size or document authorship. Partnering participants trended towards perceiving Front End Specifications as decreasing claims. Regulatory Requirements were generally perceived as too complex and participants who perceived Front End Specifications Regulatory Requirements as too complex were significantly more likely to believe that Front End Specifications would cause more claims.

Results are discussed in the context of ConsensusDOCS® library of construction forms, practical implications for construction project management, limitations of the present study and areas for future research.
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Chapter 1

Introduction

Front End Specifications are a crucial, integral component of construction documentation. Little is known regarding whether Front End Specifications increase or decrease claims in construction. Further, whether construction claims are related to Front End Specification complexity, partnering, business size or document authorship has been unclear.

Determining the impact of Front End Specifications on claims is important. Construction is a very complex process requiring the cooperation and coordination of many skilled professionals from multiple organizations. For example, a small to medium-sized ($5-10 million) project may require fifty or more contractors and organizations (LePatner 2007). With so many participants and activities occurring at any given time, managing the construction process requires more than technical skills. Business acumen and organizational expertise can dictate the ultimate success of a project, but only if all parties agree to their roles in advance. Therefore, it is important for the parties to agree to specifications before work begins.

Modern construction documentation incorporates both procedural (“administrative”) and technical requirements to establish the policies and procedures necessary to govern the project’s lifecycle. The administrative and organizational requirements are contained in the first part or parts of the project specifications and are commonly referred to as the “Front End” specifications. Specifically, the Front End Specifications delineate the rights and responsibilities of the parties involved in the contract, as well as their subcontractors and the way in which the contract will be administered.

1 The phrase “General Conditions” is synonymous with Front End Specifications.
As an experienced construction lawyer, the author has a long-standing professional interest in how construction contracts are administered and managed. It has been the author’s experience that the Front End Specifications can often complicate an already complex situation with “fine print”. Rather than reduce or eliminate confusion and uncertainty, specifications may have the contrary result. However, the anecdotal experiences of the author are no substitute for the scientific application of objective measures with representative samples of multiple levels of job titles within the construction industry, including contractors, subcontractors, designers and owners.

The purpose of the present study was to objectively determine whether Front End Specifications have a tendency to increase or decrease claims in the construction industry and further, to determine whether construction claims are related to Front End Specification complexity, partnering, business size and document authorship. The present study addressed the following research questions:

- Do the Front End Specifications cause disputes and claims?
- If Front End Specifications do cause claims, which are the most significant and have the most significant impact on projects?
- Do significant costs or lost profits result from claims?
- Are Front End Specifications perceived as being either too simple or too complex?
- Would the use of performance-based Front End Specifications increase or reduce disputes and claims?
- Is Partnering related to perceptions of whether the Front End Specifications increase or decrease claims?
- Is document authorship significantly related to perceptions of whether Front End Specifications increase or decrease disputes and claims?
- What methods are used to resolve claims?
This doctoral dissertation is arranged in five (5) chapters. In Chapter 2, the Literature Review, with a primer in Front End Specifications, is provided in the context of modern construction documentation. Next, representative Front End Specifications are compared, including Front End Specifications in use at Washington University in St. Louis. Causes of disputes and claims follow. This chapter ends with a summary of the literature and an overview of the present study.

Chapter 3, the Research Methodology, details the design, participants, instrumentation and determination of which Front End Specifications to include in the present study, and those procedures and data analyses used to address the research questions.

Chapter 4 begins with descriptives of participants. Then the research results for each of the research questions are detailed, including analyses to objectively address the research questions.

Chapter 5 discusses the present findings towards improving Front End Specifications and then provides a critique of a recently-released standardized documents protocol (ConsensusDOCS®). Suggestions for future research and the conclusions of the present study are then offered.

To guide the reader, Glossary and Acronyms are presented in Appendix G.
Chapter 2

Literature Review

This Literature Review begins with a primer in Front End Specifications in the context of modern construction documentation. Front End Specifications vary greatly and a side-by-side comparison of Front End Specifications from Washington University and Rochester Institute of Technology highlight the stark differences in Front End Specifications. This chapter ends with a Summary of the Literature Review and an overview of the present study.

2.1 A Primer in Front End Specifications

The purpose of this section is to define and discuss the role of the Front End Specifications in the context of modern construction documentation and project administration.

The purpose of the Front End Specifications is to provide guidance and direction for the non-technical aspects of the work by addressing numerous administrative issues. Examples include specifying the executive and senior-level individuals (such as project manager and senior scheduler) that a contractor (whether designer, construction manager or prime contractor) must provide for the job, the physical spaces (such as offices and work cubicles) to be provided for the benefit of the owner and the company employees or consultants and often the scheduling software that will be utilized. Other project management requirements may direct the type and number of copies of reports
to be produced, to what extent a contractor may change its work sequence without the prior written approval of the owner and in what form and format the contractor will keep its books of account and project records. Similar directives regarding the administration of the project (notice requirements and addresses, form of notice, approval requirements, etc.) are also commonly included.

In an attempt to reduce inconsistencies as well as reduce costs, the Front End Specifications are frequently recycled from one project to another and from one owner to another; it is thought that such “standardized” language removes or minimizes the effects of uncertainty from one project to the next (Patterson 2001). If this were true, the language would be so precise that it would eliminate the possibility of (or need for) claims and litigation over the meaning of the “standardized” specifications. As is well documented, claims and litigation have increased over the years; it is conceivable that the language an owner inserts into the contract documents as protective measures may, in fact, be responsible for the same disagreements that the owner sought to avoid in the first place.

These disagreements may result because the “administrative” provisions are in conflict with project execution. For example, owners generally state (and the specifications often provide) that the contractor is solely responsible for the “means and methods” of the

---

2 “Of particular interest are the general conditions (boilerplate) that tend to be used unaltered from project to project.” Hinze and Tada (1993)

3 This is not unique to the construction and engineering world: see, for example, Faustle, Fugini & Damiani 1996 (software) and Whittle 2002 (manufacturing).

4 Standardized specifications, as distinguished from commonly-used Front End Specifications, are discussed in Chapter 5.


6 A brief general background review is contained in Appendix I.
In practice, project requirements may be construed by constructors as dictates by the owner amounting to an assumption of the “means and methods” by the owner and any problems that result are arguably the responsibility and financial obligation of the owner (Klinger and Susong 2006; Mincks and Johnson 2004).

One must look at the process in its entirety to find the common denominator that may lead to disputes and claims. While poorly drafted plans and construction documents contribute to disputes, little investigation into what this means has been conducted (Netherton 1983). It is conceivable that overly restrictive Front End Specifications may be contributing to these problems.

It is appropriate to discuss some of the more common Front End Specifications (see Table 2.1 below) and review their use in actual project examples. Since even with the “standard forms” there are variations in the actual language utilized on any particular contract, it is not possible to dissect every variation of such examples.

As was briefly introduced in the opening paragraphs, the Front End Specifications provide the general organizational and administrative directives for the project (Bubshait and Almohawis 1994). In reality, there are no minimum requirements for Front End Specifications; indeed, a construction contract need only meet the basic legal requirements (offer, acceptance, consideration, legality, mutuality, capacity to contract) in order to be binding. As noted in the well-known Schexnayder and Mayo (2004) publication, Construction Management Fundamentals, typical topics (in no particular order) in a “short form” example may include:

---


8 See, for example, Hinze and Tada (1993)

9 A potential for additional research could be analyzing the variations in any one owner’s utilization of its own “standard form” documents.

• Administration of the contract
• Terms and Definitions
• Changes in the Work
• Time and Schedules
• Payments and Completion
• Safety
• Insurance and Bonding
• Corrections to the Work
• Terminations and Suspension of the Work

Table 2.1: Front End Specifications for a Complex Project

<table>
<thead>
<tr>
<th>Summary of Work</th>
<th>Use of Owner’s Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement and Payment</td>
<td>Coordination</td>
</tr>
<tr>
<td>Coordination with Owner’s Operation</td>
<td>Cutting and Patching</td>
</tr>
<tr>
<td>Connections to Existing Facilities</td>
<td>Field Engineering</td>
</tr>
<tr>
<td>References</td>
<td>Applications for Payment</td>
</tr>
<tr>
<td>Equipment Rental Rates</td>
<td>Project Meetings</td>
</tr>
<tr>
<td>Progress Schedule</td>
<td>Survey Data</td>
</tr>
<tr>
<td>Project Submittal Requirements</td>
<td>Samples</td>
</tr>
<tr>
<td>Construction Photographs</td>
<td>Quality Control</td>
</tr>
<tr>
<td>Construction Facilities and Temporary Controls</td>
<td>Control of Work</td>
</tr>
<tr>
<td>Construction Aids</td>
<td>Security</td>
</tr>
<tr>
<td>Protection of the Work and Property</td>
<td>Access Roads and Parking Areas</td>
</tr>
<tr>
<td>Soil Erosion and Sedimentation Control</td>
<td>Maintenance and Protection of Traffic</td>
</tr>
<tr>
<td>Project Identification and Signs</td>
<td>Field Offices, Sheds and Communications Equipment</td>
</tr>
<tr>
<td>Material and Equipment</td>
<td>Starting and Placing Equipment in Operations</td>
</tr>
<tr>
<td>Contract Closeout</td>
<td>Cleaning</td>
</tr>
<tr>
<td>Project Record Documents</td>
<td>Operating and Maintenance Manual</td>
</tr>
<tr>
<td>Warranties and Bonds</td>
<td>Spare Parts, Maintenance Items and Tools</td>
</tr>
<tr>
<td>Training</td>
<td></td>
</tr>
</tbody>
</table>

11 Source: City of Detroit River Rouge Reconstruction project.
At the other end of the spectrum, and most often utilized on complex projects, a detailed topical listing may contain the topics shown in Table 2.1 above. The standard form advocated by the Construction Management Association of America (CMAA) has fifteen topical titles as shown in Table 2.2 below:

<table>
<thead>
<tr>
<th>Contract Documents</th>
<th>Protection of Persons and Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Designer</td>
<td>Insurance</td>
</tr>
<tr>
<td>The Owner and Construction Manager</td>
<td>Changes</td>
</tr>
<tr>
<td>The Contractor</td>
<td>Uncovering and Correction of Work</td>
</tr>
<tr>
<td>Subcontractors</td>
<td>Termination</td>
</tr>
<tr>
<td>Work by the Construction Manager or by</td>
<td>Dispute Resolution</td>
</tr>
<tr>
<td>Separate Contractors</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Other Provisions</td>
</tr>
<tr>
<td>Payments and Completion</td>
<td></td>
</tr>
</tbody>
</table>

It must first be recognized that more topical content together with additional detail does not guarantee a better document. Moreover, topical titles, even if identical, do not automatically result in identical content. How and to what extent the various subjects are handled may vary significantly from document to document and project to project, even if utilized by the same owner or builder (Hinze and Tada 1993). Even within a project there can be major differences, both coordinated and conflicting, as prime contractors strive to follow the owner’s rules and then pass those same rules, together with their own, on to the subcontractors on the project. This remains true regardless of the project’s owner and whether the owner is private or public. To the extent that the rules become more complex or cumbersome (admittedly, a subjective term), such as with the Federal Acquisition Regulations (“FARs”), the costs associated with such complexities become part of the contract price, whether itemized or not.

Before starting this research, it was appropriate to first determine if persons other than the author saw the Front End Specifications as a potential source of disputes and claims. During this same time frame, the Construction Management Association of America (“CMAA”) issued a “Request for Grant Proposal” solicitation, which focused on how a professional construction manager could reduce claims on a project. CMAA’s interest in the topic remained high and discussions with Bruce D’Agostino, Executive
Director of CMAA, resulted in CMAA assisting in the distribution of research instruments for this research project.\textsuperscript{12}

To further determine if the proposed research had merit beyond CMAA’s interest, a short survey of twenty-four (24) construction professionals (the details of which are included as Appendix B) was conducted by the author during a claims avoidance presentation and training session at the American Subcontractors Association’s 2005 Business Forum and Convention in Orlando, Florida on March 17, 2005. The ASA is a national organization whose membership is comprised primarily of commercial specialty trade contractors.\textsuperscript{13}

In response to the opening question asking if the contract or specifications’ language itself caused claims or disputes, 92\% of the attendees answered in the affirmative. With one exception (an attorney), the attendees were all specialty contractors and may have had one or more claims experiences that added some bias to their perspectives. Comments by the participants convinced the author that additional research, which would include owners, prime and specialty contractors and construction managers, was warranted.

This research project was undertaken to determine if commonly used Front End Specifications promote or reduce the number of construction claims. Additionally, the findings of this research complement recent efforts to establish wide acceptance for standardized Front End Specifications that address many of the concerns identified by survey participants. Two major advantages result by utilizing standardized Front End Specifications. First, the cost of creating “new” Front End Specifications is eliminated,

\textsuperscript{12} Discussion with Bruce D’Agostino, Executive Director of CMAA, February 23, 2005, in San Antonio, Texas, while the author was attending the mid-year meeting of the American Council of Construction Education.

\textsuperscript{13} For clarification, a subcontractor is one who performs work for a prime or general contractor. A specialty contractor, also frequently called a “trade contractor”, performs a limited scope of work such as mechanical, steel erection or concrete work. A specialty contractor can be either a subcontractor or a prime contractor; the status is defined by the contractual relationship between the parties and this is true regardless if the project is public or private, commercial, industrial or residential.
thereby reducing initial project document drafting costs. Second, the use of consistent language, accepted in advance by the endorsing participants, should reduce the problems which arise from inconsistent interpretation of “new” language introduced by an unfamiliar set of Front End Specifications. With consistent usage and understanding, fewer disputes and claims should result. To demonstrate the extent of the problem, the next section compares Front End Specifications between universities.

2.2 Front End Specifications Compared

With the many forms of Front End Specifications available, drawing a comparison between similar project documents places the problem in context. To that end, the author acquired copies of “standard” form Front End Specifications from a number of educational institutions, rationalizing that many universities have common goals in their building programs. For example, all schools, public or private, are cost-conscious, safety-aware, have the need for accessible facilities and generally want the construction completed by a specific date, often tied to the beginning of the school year or a semester break. The Front End Specifications from four educational institutions¹⁴ (including Washington University in Saint Louis, Los Angeles Community Colleges, UC Berkeley and the Rochester Institute of Technology) were selected for comparison purposes; a review of those four documents (See Table 2.3) yields interesting discussion points.¹⁵ A comparison of selected provisions from the AIA, EJCDC and ConsensusDOCS® follows the institutional comparison.

¹⁴ These particular school documents were selected based on the length of the specifications, similarities to the AIA form document and page counts. The two California schools were selected to contrast with the more comprehensive building codes and litigious nature of the state.

¹⁵ Copies of each of the referenced documents are included in the Appendices.
Comparing the total number of pages (or another arbitrary classification) does not rate content or completeness of the documents. "Quality is more important than quantity" applies in the case of both legal and construction documentation. Nonetheless, it is of interest that there is such a large difference in the relative sizes of the various documents, primarily given the arguably consistent goals of each institution.

In terms of inclusiveness, the Washington University and Rochester Institute of Technology Front End Specifications are comparable. They are of similar length and their language often closely parallels that of the AIA documents. The two larger documents are from institutions in California and go into much more detail (as well as covering additional topics) than the non-California institutions. It is beyond debate that a good lawyer keeps a client out of court by anticipating issues and providing mechanisms for resolution beforehand; hence, the lengthy LACCD document tries to address all potential problems, including those unique to California law.

To demonstrate the similarities and differences between the two documents, selected sections are highlighted in the following tables. By presenting the comparable provisions side-by-side, one can see the nuances in document drafting. We begin by comparing the topic of “defined terms” which is set forth in Table 2.4 below.

Headings alone do not provide a complete description of the contents of each section. For example, not only does Washington University define “as-built drawings” in its

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Table 2.3: Quantitative Specifications Summary

<table>
<thead>
<tr>
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<th>LACC</th>
<th>UC Berkeley</th>
<th>RIT</th>
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<td>47</td>
<td>32</td>
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<tr>
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<td>9</td>
<td>15</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td># of Sections</td>
<td>29</td>
<td>378</td>
<td>100</td>
<td>43</td>
</tr>
<tr>
<td>Definitions</td>
<td>13</td>
<td>157</td>
<td>39</td>
<td>20</td>
</tr>
</tbody>
</table>

Note. LACC = Los Angeles Community Colleges, RIT = Rochester Institute of Technology

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16 This is not surprising: California has some of the most comprehensive construction codes, statutes and court decisions in the nation and is a very litigious venue.
definition section, there is a section (GC-4) devoted exclusively to the subject. Similarly, RIT has a section (9.9) on the topic but does not include it in its definitional area and its coverage is somewhat less than that of Washington University.

Table 2.4: Comparison of Defined Terms

<table>
<thead>
<tr>
<th>Washington University</th>
<th>Rochester Institute of Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract Documents</td>
<td>The Contract Documents</td>
</tr>
<tr>
<td>The Contract</td>
<td>The Contract or Agreement</td>
</tr>
<tr>
<td>The Work</td>
<td>The Work</td>
</tr>
<tr>
<td>Owner</td>
<td></td>
</tr>
<tr>
<td>Architect/Engineer</td>
<td></td>
</tr>
<tr>
<td>Contractor</td>
<td></td>
</tr>
<tr>
<td>Subcontractor</td>
<td></td>
</tr>
<tr>
<td>Furnish</td>
<td>Furnish</td>
</tr>
<tr>
<td>Install</td>
<td>Install</td>
</tr>
<tr>
<td>As-Built Documents</td>
<td></td>
</tr>
<tr>
<td>Shop Drawings</td>
<td></td>
</tr>
<tr>
<td>Samples</td>
<td></td>
</tr>
<tr>
<td>General Conditions</td>
<td>The Project</td>
</tr>
<tr>
<td></td>
<td>Approved</td>
</tr>
<tr>
<td></td>
<td>Provide</td>
</tr>
<tr>
<td></td>
<td>Specifications</td>
</tr>
<tr>
<td></td>
<td>Requirements</td>
</tr>
<tr>
<td></td>
<td>Drawings</td>
</tr>
<tr>
<td></td>
<td>Final Completion</td>
</tr>
<tr>
<td></td>
<td>Governmental Authority</td>
</tr>
<tr>
<td></td>
<td>Hazardous Materials</td>
</tr>
<tr>
<td></td>
<td>Product</td>
</tr>
<tr>
<td></td>
<td>Project Manual</td>
</tr>
</tbody>
</table>

*Note.* Items in the RIT documentation have been re-ordered for comparison purposes.
Beyond the headings, the content is most important. Looking at some of these provisions in more detail (Table 2.5), we find that the definitions of Contract Documents are very similar:

<table>
<thead>
<tr>
<th>Washington University</th>
<th>Rochester Institute of Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Contract Documents consist of the Agreement between Owner and Contractor, these General Conditions, Drawings, Project Manual and Specifications, addenda issued before execution of the Agreement, other documents listed in the Agreement, and modifications issued after execution of the Agreement. A modification is a written amendment signed by both parties, a change order, a construction change directive, or a written order for a minor change in the Work issued by the Architect/Engineer.</td>
<td>The Contract documents consist of: the Advertisement/Request For Proposal, Form of Proposal, Owner-Contractor Construction Agreement, General Conditions of Contract for Construction, Supplementary General Conditions of the Contract for Construction (and all Enclosures, Appendices and Exhibits thereto), Specifications, Drawings, and any Addenda issued prior to the execution of the Owner-Contractor Agreement and all Modifications thereto. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a written interpretation issued by the Architect pursuant to Subparagraph 2.2.5, or (4) a written order for a minor change in the Work issued by the Architect pursuant to Paragraph 12.4.</td>
</tr>
</tbody>
</table>

The differences are subtle with the RIT definition being more inclusive. In addition to the actual contract for construction, the “Contract Documents” (i.e., all the components of the agreement) include the general conditions (i.e., the Front End Specifications) as well as the supplemental conditions and addendum, together with any modifications and change orders together with “written order[s] for minor work.” Drawings are also included. The RIT document also includes both the solicitation for and the contractor’s response (proposal) but not the project manual. Washington University’s definition does not include the solicitation or proposal and does include the Project Manual as well as any “construction change directive”. Washington University’s provision is similar to the language in the AIA document:

The Contract Documents consist of the Agreement between Owner and Contractor (hereinafter the Agreement), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to
the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include other documents such as bidding requirements (advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or portions of Addenda relating to bidding requirements). (2005, GC-3)

There is no significant difference between the Washington University provision and that of the AIA form while the RIT specification essentially mimics the AIA language and specifically includes the solicitation and responsive documentation.

Compared next is the “Contract for Construction” language (Table 2.6). This provision defines what documents comprise the "contract" as a whole, beyond the single document which carries the title of "Agreement" or "Contract" or even "Contract for Construction".

<table>
<thead>
<tr>
<th>Table 2.6: Contract for Construction Language Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Washington University</strong></td>
</tr>
<tr>
<td>The Contract Documents form the Contract for construction and represent the entire integrated Agreement between the Owner and Contractor, and shall not be construed to create a contractual relationship of any kind between any parties other than the Owner and the Contractor.</td>
</tr>
</tbody>
</table>

In essence, the RIT specification includes all of the language included in the Washington University provision, supplemented by how the contract can be modified. The AIA language is even broader:

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification as defined in Subparagraph 1.1.1. The Contract Documents shall not be construed to create any contractual relationship of any kind between the Architect and the Contractor, but the Architect shall be entitled to performance of obligations intended for his benefit, and to enforcement thereof. Nothing contained in the Contract Documents shall create any contractual relationship between the Owner or the Architect and any Subcontractor or Sub-subcontractor.
modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Architect and Contractor, (2) between the Owner and a Subcontractor or Sub-subcontractor, (3) between the Owner and Architect or (4) between any persons or entities other than the Owner and Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

Neither the RIT nor Washington University specifications address relationships with any lower tier contractors (referred to as either subcontractors or sub-subcontractors), the effect of which should insulate each institution from direct claims by subcontractors. Note that the AIA document also includes language making the Architect a third-party beneficiary under the contract between the Owner and the Contractor. Finally, as within the definitional areas of these documents, compare “The Work” (Table 2.7). The Work defines what is to be done and is also known in the industry by the terms "scope of work" and "summary of the work", which are used interchangeably in this document. If the work is not fully defined, problems arise and claims and disputes follow. While it would be preferable to have all the details of the contractor's obligations in one place, that is not practicable.

<table>
<thead>
<tr>
<th>Table 2.7: “The Work” Defined</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Washington University</strong></td>
</tr>
<tr>
<td>The Work comprises the completed construction required by the Contract Documents and includes all labor necessary to produce such construction and all materials and equipment incorporated in such construction.</td>
</tr>
</tbody>
</table>

Both documents’ definitions are nearly identical and closely parallel the AIA language:

17 Some jurisdictions do not require privity of contract for a subcontractor to enforce a claim directly against an owner. The discussion of this topic is beyond the scope of this paper. See, for example, Cameron, John G., *A Practitioner’s Guide to Construction Law*, New York: ALI-ABA, 2000.
The "Work" means the construction and services required of the Contractor by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

The reader may wonder whether the nuances justify the use of custom forms when a readily available “generic” document such as the AIA or ConsensusDOCS® forms (discussed in Chapter 5) is readily available.

Construction contracts would be improved, and claims avoidance success increased, by better aligning the interests of owners and contractors. By better defining and documenting what is expected, the uncertainty is, to a great extent, eliminated and the contractor can focus on getting the project constructed. As CII noted:

... negotiating a contract [to establish] the intent and effect of [contract] clauses [will result in] language [that] can be adopted that both parties agree is clear and appropriate for the work at hand. (CII 1986, 6)

Changes occur during the course of the project, for any one of a number of reasons. As a result, it is necessary to revise the drawings to reflect the various changes. Looking at the content of the "as-built drawings" requirement more closely, Table 2.8 provides a side-by-side comparison of the relevant language.

Table 2.8: Comparison: As-Built Drawings Specification

<table>
<thead>
<tr>
<th>Washington University</th>
<th>Rochester Institute of Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>GC-4 AS-BUILT DRAWINGS</td>
<td>1. AS BUILT DRAWINGS</td>
</tr>
<tr>
<td>A. Contractor shall maintain on-site and submit for approval of Owner's Representative upon completion of the work, a complete set of &quot;As-Built&quot; drawings and specifications of the Contract Documents which clearly show with dimensions any variation from working drawings in the installation of materials and equipment.</td>
<td>9.9.1 The Contractor shall red mark blue line prints of the project indicating all changes to the drawings and submit them to the A/E prior to submitting final request for payment.</td>
</tr>
<tr>
<td>B. On-Site Requirements: Contractor shall maintain a complete bound set of all drawings,</td>
<td>9.9.2 Where coordination drawings have been prepared in CAD format, the Contractor shall also submit these CAD files.</td>
</tr>
<tr>
<td>4.11 DOCUMENTS AND SAMPLES AT THE</td>
<td>4.11 DOCUMENTS AND SAMPLES AT THE</td>
</tr>
</tbody>
</table>

18 See, for example, the Construction Industry Institute (1986) study cited in the Literature Review.
specifications, addenda, approved shop drawings, change orders and other modifications of the Contract Documents for inspection at any time by Owner's Representative. Contractor shall mark up the on-site set each day to record measurements, changes and deviations from the design and additions and deletions thereto, as approved, as well as existing facilities encountered in the course of the work, which are not shown on the drawings. It is mandatory that the on-site set of record drawings be kept up-to-date by Contractor.

C. Form of Submittals: "As-Built" drawings submitted by Contractor to Architect or Engineer for approval shall be red-lined prints, fully marked up to show all changes approved by Change Orders, approved Field Change Requests or changes approved by Owner's representative. SITE:

4.11.1 The Contractor shall maintain and make available at the site for the Owner and Architect one record copy of all Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to record all changes made during construction, and approved Shop Drawings, Product Data and Samples. These shall be delivered to the Owner upon completion of the Work. In addition, Contractor shall be responsible for providing the Architect with record drawings on a CAD disk.

The AIA language is similar to that contained in subparagraph 4.11.1 of the Washington University document:

The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to record field changes and selections made during construction, and one record copy of approved Shop Drawings, Product Data, Samples and similar required submittals.

As noted earlier, the differences are minor and utilization of a generic, standardized form would satisfy the needs of either institution.

These provisions have subtle differences. The topic is covered in one singular location by Washington University's documentation; RIT's document addresses the same topic in two sections some ten (10) pages apart. Separated as such, the opportunity to miss something exists by virtue of being addressed in two separate locations. Also, note that §4.11.1 requires the contractor to mark up the drawings “currently” while §9.9.1 has no requirement of contemporaneous preparation. While a minor point, this always has the potential of being an issue of contention should a dispute arise between the parties. It would be better to include all the language in one place under the singular topic as in the example below:
The Contractor shall maintain and make available at the site for the Owner and Architect one record copy of all Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently in red on the blue line prints of the project to record all changes made during construction, and approved Shop Drawings, Product Data and Samples. The Contractor shall submit the marked up drawings to the A/E (on behalf of the Owner) prior to submitting its final request for payment.

The language is similar, but with everything regarding the topic in one place, there is less chance of overlooking the additional language. The point of this discussion is that consistency defines standardization and standardization will reduce claims by eliminating the uncertainty inherent in variations on a theme (See the comments contained in Appendix F).

The project schedule is, without a doubt, one of if not the most important document created after the contract is signed. It provides the basis for measuring progress and, when there are delays, a basis for determining the effect of the delay(s). Compare the project schedule and weather specifications are next compared in Tables 2.9 and 2.10.

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19 While this change might simplify the specification, allowing it to remain split does not relieve the contractor of the need to fully review and understand the contract documents.
The AIA document references the construction schedule in no less than six places, providing an impediment to simplification and understanding. By way of example,
§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Other until subsequently revised.

Notably absent from the AIA specification is any mention of the type of schedule to be provided or the level of detail required. While a small, simple project may justify the use of a simple bar chart (timeline), larger complex projects, especially those with long overall durations, require the use of more complex scheduling techniques such as Critical Path or Linear schedules. The RIT specification references the project critical path; the Washington University document is silent on the topic.  

The weather specifications (Table 2.10) are again similar. Depending somewhat upon the length and location of the project, as well of the specifics (e.g., interior or exterior or both), the weather provisions may or may not be actually necessary, though a good draftsperson would include the language in any event.

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20 Issues surrounding scheduling methodologies and techniques are outside the scope of this study. Countless references to those and related subjects are available in libraries and on the Internet.
Table 2.10: Weather Specifications

<table>
<thead>
<tr>
<th>Washington University</th>
<th>Rochester Institute of Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Weather)</td>
<td>(Weather)</td>
</tr>
<tr>
<td>J. Contractor shall revise the Project schedule whenever Owner requests. Contractor may revise the Project Schedule at any time. Revised Project Schedules are subject to Owner's approval. The Project Schedule shall be revised and resubmitted when the project is 15 percent, 40 percent, 75 percent and 90 percent complete.</td>
<td></td>
</tr>
<tr>
<td>K. The project schedule shall include an allowance of 63 bad weather days per year. This allowance is divided into the following monthly breakdown:</td>
<td></td>
</tr>
<tr>
<td>January 8 days</td>
<td>12.3.4 Owner shall not be liable to any Contractor or Subcontractor for damages caused by any breach of contract, delay in performance or other act of neglect by any other Contractors or Subcontractors having Contracts for performance of any portion of the Work or by bad weather, or any causes designated Acts of God or force majeure by any court of law or any cause outside Owner's reasonable control.</td>
</tr>
<tr>
<td>February 8 days</td>
<td></td>
</tr>
<tr>
<td>March 8 days</td>
<td></td>
</tr>
<tr>
<td>April 6 days</td>
<td></td>
</tr>
<tr>
<td>May 5 days</td>
<td></td>
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<tr>
<td>June 3 days</td>
<td></td>
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<tr>
<td>July 3 days</td>
<td></td>
</tr>
<tr>
<td>August 3 days</td>
<td></td>
</tr>
<tr>
<td>September 3 days</td>
<td></td>
</tr>
<tr>
<td>October 4 days</td>
<td></td>
</tr>
<tr>
<td>November 5 days</td>
<td></td>
</tr>
<tr>
<td>December 7 days</td>
<td></td>
</tr>
</tbody>
</table>

In the event that weather-related conditions preclude performance of 60% of critical path activities scheduled for a particular day, the day may be claimed by the contractor as a weather day and charged against the allowance included for that project. If good weather conditions prevail throughout the contract period and the allowed number of weather days are not encountered, the Contractor will not be required to complete the contract correspondingly ahead of the contract completion date. If poor weather conditions prevail such that all of the allowed bad weather days are exceeded, a no cost change order extending the date of scheduled completion will be executed.

In the event that weather-related conditions preclude performance of 60% of critical path activities scheduled for a particular day, the day may be claimed by the contractor as a weather day and charged against the allowance included for that project. If good weather conditions prevail throughout the contract period and the allowed number of weather days are not encountered, the Contractor will not be required to complete the contract correspondingly ahead of the contract completion date. If poor weather conditions prevail such that all of the allowed bad weather days are exceeded, a no cost change order extending the date of scheduled completion will be executed.
A much more pronounced difference in content and potential for disagreement is evident in these specifications. It is a given that both Rochester, New York, and St. Louis, Missouri get “winter” weather (snow, ice, etc.) on a regular basis.\textsuperscript{21} Rochester does not define what constitutes “bad weather”; in contrast, Washington University allows for 19” of rain between March and May even though 33” is the “norm” (NOAA 2007).\textsuperscript{22} Granted, contractors can often work in adverse weather conditions; however, leaving “normal” undefined invites dispute.

The AIA specification takes yet a third approach, requiring the contractor to meet three requirements:

If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

Meeting these requirements should be straightforward for the contractor. Reference to historical data (such as that maintained by NOAA) establishes abnormality and addresses the issue of anticipation. Simple analysis would address the impact on the scheduled construction. This language also addresses an issue that could arise under the Washington University specification: what happens if all the "allowed" rainfall occurs at an unexpected time? The ability to "carry back" or "carry forward" un-utilized weather days could address the issue and avoid potential disputes.

In the next example, Table 2.11, the Schedule of Values specifications are compared. RIT’s language is straightforward while Washington University’s borders on micromanagement. In the end, both institutions will acquire the same product,

\textsuperscript{21} According to records maintained by the National Oceanic and Atmospheric Administration (NOAA), Rochester averages about 85-93” of snowfall and 160” of rain while St. Louis can reasonably expect 19” of snow and 108” of rain per year.

regardless of the language, provided that the individuals reviewing the reports understand the underlying process and procedures.

### Table 2.11: Comparison of Schedule of Values; Payments

<table>
<thead>
<tr>
<th>Washington University</th>
<th>Rochester Institute of Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>GC-26 SCHEDULE OF VALUES</td>
<td>9.2 SCHEDULE OF VALUES</td>
</tr>
<tr>
<td>A. Contractor shall submit to Owner for approval a breakdown showing portions of the Contract Sum as the value of each item of the work.</td>
<td>9.2.1 At least 30 days before the first Application for Payment, the Contractor shall submit to the Owner and the Architect for approval a schedule of values which in the aggregate equals the total Contract Sum, divided so as to facilitate payments to Subcontractors, supported by such data or evidence of correctness as the Architect may direct or as required by the Owner. This schedule, when approved by the Architect and Owner, shall be used to monitor the progress of the Work and to compute the amounts of the various payments requisitioned on the Certificates For Payment. All items with entered values will be transferred by the Contractor to the &quot;Application and Certificate For Payment,&quot; and shall include the latest approved Change Orders. Change Order values shall be broken down to show the various subcontracts. The Application For Payment shall be on a form as provided by the Architect and approved by Owner. Each item shall show its total scheduled value, value of previous applications, value of the application, percentage completed, value completed and value yet to be completed. All blanks and columns must be filled in, including every percentage complete figure. No Application for Payment shall be required to be approved until after the Schedule of Values has been approved by the Owner and Architect.</td>
</tr>
<tr>
<td>B. Contractor's schedule of values shall be subdivided for each item of work identified in the Contract Documents and additional value subdivisions for each subcontractor.</td>
<td>9.2.2 The Schedule of Values and Applications for Payment shall be prepared by the Contractor using a modified version of A.I.A. Forms G-702 and G-703, &quot;Application &amp; Certification for Payment&quot;. The Schedule of Values shall be submitted to the Owner and the Architect for approval a minimum of thirty (30) days before the first Application for Payment. A milestone payment schedule may be required by the Owner, and shall be made a part of the Schedule of Values when agreed upon by the parties. Profit and general office overhead shall be included in each item. All Applications for Payment, Change Orders, and other documents involving monetary statements shall have totals rounded off to the whole dollar amount for 0 cents through 50 cents. All items above 50 cents through 99 cents to the next dollar.</td>
</tr>
<tr>
<td>GC-9 PROGRESS PAYMENTS</td>
<td></td>
</tr>
<tr>
<td>A. Owner shall pay Contractor value of work in place and materials stored on site upon approval of Application for Progress Payments submitted by Contractor not more than once per month. The Owner will attempt to make payment within ten days of receipt of invoice to Contractors that have sub-contracted with MBE and WBE firms. Direct payment will be made to the MBE and WBE firms. The application for payment shall be submitted on AIA Document G702 or it's equivalent with continuation sheets. The continuation sheets shall be complete showing individual lines for each specification section and contractor.</td>
<td></td>
</tr>
<tr>
<td>B. Owner shall retain ten (10%) percent of each scheduled value of each payment to contractor to ensure the proper performance of the contract.</td>
<td></td>
</tr>
<tr>
<td>C. With application for Progress Payment Contractor(s) shall furnish notarized waivers of lien for the value of the progress payment, and subcontractors and material suppliers shall furnish notarized waivers of lien for the prior progress payment, conforming to the requirements of Chapter 429 RSMo.</td>
<td></td>
</tr>
<tr>
<td>D. With Application for Progress Payment, Contractor shall submit a copy of the Construction Progress Schedule, which shall show the portions of the work claimed as completed for payment as related to the Schedule of Values. Application for payment shall show retainage as a line item for each scheduled value.</td>
<td></td>
</tr>
<tr>
<td>E. Storage of Materials Off site and Payment (1) The Contractor and his Subcontractors shall obtain prior written approval from the Owner through the Architect for permission to store only materials to be incorporated in and made a permanent part of the Work, for which Progress Payments will be requested, at off site locations. Any and all charges for storage, including insurance, and any and all</td>
<td></td>
</tr>
</tbody>
</table>
charges for transportation to the site shall be borne solely by the Contractor. Before approval, Owner requires that off-site materials be stored in an approved warehouse, with proper proof of insurance and a letter stating the following information. (a) The name of the Contractor and/or Subcontractor leasing the storage space. (b) The location of such leased space. (c) The leased area: the entire premises or certain areas of a warehouse giving the number of floors or portions thereof. (d) The date on which the material was first stored. (e) The value of the material stored. (2) The Contractor and his Subcontractors shall notify the Architect and the Owner, at least once each month, to visit the warehouse where the materials are being stored. (3) The Contractor and his Subcontractors shall mark each sealed carton with the name of the project and the Architect. (4) A perpetual inventory shall be maintained for all materials held in storage for which payment has been requested. (5) Payments for materials stored off site in an approved warehouse and insured shall be at the sole discretion of the Owner. Any additional costs to the Owner resulting from storage of material off site for which payment is requested, such as, but not limited to, travel expenses and time for inspectors, shall be back charged to, and paid by the Contractor. Title to materials stored off site shall be transferred to the Owner when the Owner pays for such stored materials. F. All applications for payment shall be submitted on AIA document G702, Application and Certificate for Payment. Applications for payment shall reflect all items detailed in the approved schedule of values with corrections made for new items or Contractors as Work progresses. G. On projects greater than $300,000 in value, Contractor shall furnish a bound monthly project report with the Application for Progress Payment. The report shall contain the following information: (1) A cover letter describing the general status of construction activities as they relate to the project schedule and description of activities anticipated during the next month. (2) An activity report describing items completed during the month for each individual construction task. Include a log of daily weather conditions and temperatures. (3) A manpower summary for the month indicating daily manpower levels for each contractor and trade. (4) A minority report summarizing the daily workforce composition by ethnic group and gender for the month. (5) A log of change requests. (6) A log of submittals. (7) A log of requests for information. (8) All project meeting and conference call notes for the month. (9) Engineers’ certifications for the month. (10) Four 8-inch by 10-inch color
photographs of work progress recorded during the month. (11) List of unresolved issues that may impede meeting project milestones or schedule.

H. In the event Contractor or any subcontractor tenders substitute security, the following shall apply: (1) All such substitute security shall be solely in the name of “Washington University”. (2) Contractor at its sole cost shall cause all substitute security to at all times be held by a financial institution, title company or other third party custodian in the St. Louis, Missouri metropolitan area acceptable to Owner under terms which permit Owner to take immediate possession of any or all substitute security on demand at any time during normal business hours with or without cause. (3) Contractor at its sole cost and as agent for Owner shall administer any and all substitute security as required by applicable law including without limitation making release thereof and payment of interest and income thereon to itself and/or to subcontractors as and when required by the Contract Documents and applicable law. (4) Not less often than monthly, Contractor at its sole cost shall provide Owner a written certification and report of all substitute security itemized by subcontractor and in detail reasonably satisfactory to Owner. (5) Contractor hereby agrees to indemnify, defend and hold harmless Owner and its trustees, officers and employees against any and all claims, demands or liabilities arising out of the negligent or otherwise improper administration by Contractor of substitute security and/or any negligence of the custodian.

I. Applications for Progress Payment shall not include costs for items that are not a direct expense of the work. Costs that are not authorized include, but are not limited to the following: (1) Professional dues for contractors and their employees. (2) Cumulative rental costs for equipment that exceeds their purchase price. (3) Workers’ Compensation Insurance credits – Credits given by the insurance company shall be reflected as a credit to the Owner.

The Washington University provision is seemingly simple and to the point. In actuality, when read in conjunction with the Progress Payment specification (GC-9), it is much lengthier than the corresponding RIT provision. It is very detailed as to how payments are to be made, varies the requirements somewhat based on contract size, requires lien releases with each payment, and, in the final section, specifically excludes certain items. It requires the contractor to provide progress photographs with each payment.
application (neither the RIT nor AIA documents have comparable requirements) and discusses “substitute security”\textsuperscript{23} for the contractual obligations. Again, both the AIA and RIT have no similar language.\textsuperscript{24} From Washington University’s perspective this appears to be beneficial, yet there is a potential claim, if not a lawsuit, in the language. Looking at section GC-9.H(2), Washington University (Department of Facilities Planning and Management 2005, p. GC-8) has claimed the right to

\begin{quote}
“... take immediate possession of any or all substitute security on demand at any time during normal business hours with or without cause.” (Emphasis added)
\end{quote}

On its face, the language allows Washington University to arbitrarily claim the security for any reason whatsoever, appearing to be penal in nature. It is unlikely that the University would exercise that power in the absence of compelling facts (at least from its perspective). While the University is a non-public institution and not subject to the same due process claims as a public body, a court could easily find that the language is against public policy, at least to the extent that cause is not required for the University to act, and a contractor subjected to its application might well raise the issue even though it voluntarily signed the contract document. A minor change in the language might possibly avoid having the language stricken:

\begin{quote}
... take immediate possession of any or all substitute security on demand at any time during normal business hours \textit{when the Owner has a good faith belief that performance of the contract is jeopardized and possession of the security is necessary to protect its interests.}
\end{quote}

While there is no guarantee that the suggested change will avoid any potential dispute, it does serve to eliminate the argument that the University has acted capriciously.

\textsuperscript{23} Substitute security is a mechanism for protecting the owner’s interest. The most common security is a performance bond; substitutes (alternatives) could be cash, assignments of interest or receivables or similarly acceptable assets.

\textsuperscript{24} The language in the AIA specifications runs some three pages in length. The end result is similar with the most significant difference being that approvals are performed by the architect and not the owner as is the case with the RIT and Washington University requirements.
There is always the issue of too little versus too much detail. There is no one right answer; the decision is often driven by business and legal considerations. Table 2.12 compares the level of overall detail in the RIT and Washington University specifications:

<table>
<thead>
<tr>
<th>Washington University</th>
<th>Rochester Institute of Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. GENERAL PROVISIONS</td>
<td>2. CONTRACT DOCUMENTS</td>
</tr>
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<td>SPECIFICATIONS</td>
<td>6. 2. ARCHITECT</td>
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<td>GC-3 Contract Drawings and Specifications</td>
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<td>11.2 Commercial General Liability Policy</td>
<td>11.3 Certificates of Insurance</td>
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<td>11.3 Certificates of Insurance</td>
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<td>11.6 Miscellaneous Provisions</td>
<td>12. CHANGES IN THE WORK/SUBSTITUTIONS</td>
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<td>12.</td>
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</tbody>
</table>
It is possible that each of these sets of specifications has been developed and evolved as a result of the experiences of the institution and the people who represent it. Certainly, also at play is the influence of the institutions’ respective legal counsels whose role and goal is to protect the institutions’ interests. This is no different, of course, from the role legal counsel plays in any other enterprise, regardless of the nature of the business. However, adding complexity does not automatically result in improved results. Tailoring specifications to a particular project was recommended by the 1986 CII study. Long, “boilerplate” documents such as the Washington University (and, to a greater extent, the even longer AIA document) add additional bulk and complexity to a project’s documentation.

2.3 Identifying the Sources of Claims

A “claim” need not be reduced to a matter in arbitration or litigation. A “claim” starts with notice to the superior participant (e.g., from subcontractor to prime, from prime contractor to owner, etc.) of a potential demand for additional time, money or both. Many times the notices are provided on an “abundance of caution” basis; most construction contracts require that notice be provided within a given number of days of knowledge or occurrence of an event, incident or awareness. For example, a Front End specification may provide the following:
Notwithstanding any other provision of the Contract, if the Contractor intends to claim any additional payment pursuant to any Clause of these Conditions or otherwise, he shall give notice of his intention to the Engineer, with a copy to the Employer, within 28 days after the event giving rise to the claim has first arisen (Federation Internationale Des Ingenieurs-Conseils 1987, 1988, 1992, §20.).

In this section, previous research efforts focusing on the Front End Specifications are reviewed and, where appropriate, the effect on this research is noted. While much time and effort has gone into research about construction claims, little has been documented about the role of Front End Specifications in that arena.

Project specifications are divided into two general categories. The largest category is comprised of the design or building specifications (requirements) such as soil compaction requirements, interior finishes and plumbing and mechanical requirements. These technical specifications have traditionally been set forth as Divisions Two through Sixteen of the construction specifications, following the guidelines of the Construction Specifications Institute (CSI 2003). The other category is comprised of the administrative requirements, which are most often contained in Division One of the contract specifications (Jellinger 1981; Rosen 1974). These Division One specifications are known as the Front End Specifications and are also referred to as the General Conditions.  

2.3.1 Background

Reams of paper have been devoted to the related topics of construction disputes and claims. Washington University’s library system contains no less than eighty volumes. Few of the publications (less than 10%) specifically discuss Front End Specifications to any significant extent, though there are often generalized references to the contract specifications. While these non-judicial published materials tend to focus on the

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25 “Division One” refers to the location of the provisions in the format developed by the Construction Specifications Institute. For more information, please visit CSI’s website at http://www.csinet.org.
technical specifications, court cases resulting from the disputes and claims process often emphasize the Front End Specifications as the basis for a case’s outcome. The “disconnect” between the two focus areas frames the hypothesis addressed in this paper.

Reported court decisions analyze the one or two issues underlying the subject dispute, sometimes identifying the manifestation of the problem (e.g., late payment, delay, alleged construction defect), and sometimes reproducing the actual document language in dispute, if any. What limits the extensive analysis of the reported decisions is the fact that courts generally only discuss items that allow them to dispose of the case, even if issues (major or otherwise) remain unaddressed (See, e.g., National Cable & Telecommunications Association, Inc. v. Gulf Power Company (2002) 534 U.S. 327). In addition, it is not easily determined how many disputes made it into the court system but not beyond the trial court level.26 For the many disputes resolved outside of the courtroom, either by settlement or some form of alternative dispute resolution such as mediation or arbitration, the facts are not available since these are resolved privately, often barred from disclosure by confidentiality agreements. Professional commentary, therefore, is based primarily on the available published judicial decisions.

To make available the court decisions and professional analyses and opinions, publishers such as Matthew Bender and Company, Aspen Publishing, the American Society of Civil Engineers and McGraw-Hill provide extensive libraries of construction-specific publications. Additionally, the American Bar Association and American Institute of Architects, among others, publish treatise-length materials as well as monthly and quarterly publications, often addressing various aspects of the construction dispute arena. Additionally, dozens of commentators routinely write about dispute topics, and together with groups such as the American Arbitration Association, present single and multi-day seminars on the prevention, prosecution and defense of

26 It is estimated that about 97% of civil litigation is settled prior to trial. Cohen, Thomas H., “Civil Justice Survey of State Courts, 2001”; U.S. Department of Justice, January 2005; NCJ 207388.
construction claims, often focusing on one narrow topic or a recent published court decision.27

Yet, with less than a handful of exceptions, these widely available materials focus on the effect, rather than the root cause, of the dispute. Almost in lockstep, authors and commentators address what happened rather than why it happened, often with nary a mention as to the basis of the dispute.

There is wide consensus as to “why” certain claims occur: differing site conditions, failure to meet schedule milestones and deadlines, changes in scope (real or perceived) and “defective” plans and specifications, among others. In turn, many have written about how to address these issues; Jon Wickwire and James Zack, for example, discussed the issues surrounding scheduling (Wickwire 2007; Zack 1991, 1995). While scheduling requirements, for example, are frequently delineated in fine detail in the Front End Specifications, overall administration of the schedule remains within the purview of human intervention and requires experience and judgment. How people administer those specifications, and the resulting impact on any resulting claims, has only been superficially explored in the past. This lack of detailed exploration, discussed in the balance of this chapter, identified the need for this research effort.

2.3.2 Previous Research
A number of studies have been conducted over the years to answer the question of why claims arise in construction (and engineering) projects. None has focused on a particular area; for example, the factors that make a specification "defective" or the association between particular conditions within Front End Specifications and construction claims. Only a few studies, for example, the CII (Construction Industry Institute) study and the...
Yogeswaran study (Yogeswaran, Kumaraswamy, and Miller 1997) have focused on a narrow area of interest.

One of the earliest efforts at research focusing on the administration of construction contracts and specifications was the Construction Industry Institute (CII) study entitled “Impact of Various Construction Contract Types and Clauses on Project Performance” (CII 1986). The stated purpose of the study was to “seek ways of increasing construction cost effectiveness” (CII 1986, v) based on project delivery methods and contractual relationships. Conducted some twenty years ago by the University of Texas affiliated organization, the study produced two salient recommendations:

- Identify mechanisms to more closely align the objectives of the owner and the contractor, and Changes in the Work
- Develop a better understanding of options for allocating risk and techniques for adapting [contract language] to any particular project.

Addressing the Front End Specifications, the CII analysis (CII 1986, v) concluded that contract clauses most often involved in construction problems and disputes dealt with scope, changes and project control issues.

It should be first noted that the CII study (1986) did not examine “model” clauses, that is, clauses found in standard form contracts and specifications such as the AIA (AIA Document 201) or AGC documents (AGC 2000). CII (1986) focused on proprietary agreements at the owner and prime contractor level and, by design, ignored issues of interest to subcontractors, as well as the specific wording of individual clauses. The CII survey (1986) population was limited to thirty-six (36) member companies (twenty-one owners and fifteen prime contractors) and further limited each respondent to a discussion of one discrete project. Conversely, the parameters for this research project did not limit the study population.

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28 A short glossary is contained in Appendix VII.
The CII study statistically reviewed forty-one of ninety-six clauses. The primary clauses, each of which is a significant component of the Front End Specifications, generally relate to cost, schedule, quality and safety (CII 1986, 4). The review found three (3) problematic areas:

- scope definition: omissions, ambiguities, inconclusiveness
- change clauses
- project control clauses

Table 2.13 details the allocation among these groups.

<table>
<thead>
<tr>
<th>Work Scope</th>
<th>Omissions</th>
<th>Ambiguity/Definition</th>
<th>Inconsistency</th>
</tr>
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<tbody>
<tr>
<td>Work Scope</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Change Clauses</td>
<td></td>
<td>X</td>
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<tr>
<td>Project Controls</td>
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<td>X</td>
<td></td>
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<tr>
<td>Risk Allocation</td>
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<td>X</td>
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</tr>
</tbody>
</table>

As noted above, the study did not analyze individual clauses. It did offer some generalizations about the various contract and Front End Specifications clauses it reviewed:

- contract clauses may create conflicts of interest
- by definition, given the competing interests of the owner and contractor, a fixed price contract creates a potentially adversarial relationship since by its very nature, a fixed price contract expects the contractor to anticipate all potential variables
- change clauses, then, become that much more important
  - clauses needing the most improvement were
    - from the owner's perspective: rework, scope definition, mechanical completion, change clauses [and]
    - from the contractor's perspective: incentives, cost reporting and control, care of the site, scope definition

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29 CII (1986), Section 3.
The CII study “acknowledged” that developing a job-specific, tailored agreement was not practiced in the norm (CII 1986, 7). Owners continually attempt to drive down costs by cutting back on planning and design fees. In doing so, owners often attempt to shift design costs to the contractor through the shop drawing process which, in some respects, converts a fixed price, construction contract to a form of design-build contract. While doing so, though, the owner retains the authority to approve the design without being responsible; the general contractor, similarly, attempts to pass this same responsibility to the subcontractor. This long-held premise is challenged by the ConsensusDOCS® discussed in Chapter 5.

Excerpts from the study (CII 1986) highlight its relevance to this Front End Specifications research project, finding that

Contract language should be tailored to fit the circumstances of each individual project. "Standard" clauses should be used with care, giving consideration to contractor input. It is vital that both owner and contractor representatives reach a complete and common understanding of both the content and the intent of the agreement between the parties at the outset of the project. (CII 1986, 10, Recommendations)

While standard forms and other documents containing “boilerplate” language are all too common, they are just as frequently one-sided and inherently unfair (Mumma 2007). Whether the specific document is appropriate for the project is often speculative; until a project is totally completed, no one can be certain that all issues and contingencies were adequately covered. Drafting project documentation specific to the particular project should result in a more relevant and potentially less contentious package. Indeed, CII (1986, 6) recognized this:

These findings highlight the need for further discussion at the time of negotiating a contract of the intent and

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30 The application of this recommendation is more fully explored in Chapter 5.
effect of these clauses, so that language can be adopted that both parties agree is clear and appropriate for the work at hand.

The CII (1986) study also noted that

The ideal contract - the one that will be most cost-effective - is one that assigns each risk to the party that is best equipped to manage and minimize that risk, recognizing the unique circumstances of the project.

Moving beyond the generalities of the CII (1986) study and utilizing an approach similar to that used in this research project, Yogeswaran, et al (1997) focused on two existing sets of conditions commonly used in Hong Kong. The results of the Yogeswaran (1997) study were based on questionnaire responses from fifty-six construction professionals; the results were tabulated and weights assigned to various clauses in order to rank the perceptions of the various participants. Earlier studies relied upon by Yogeswaran as a basis for his research lumped all specifications into one group, i.e., "specification problems" (Yogeswaran 1997, 4) without specificity.

The Yogeswaran, et al, study, the purpose of which was to “study possible ways to minimize the frequencies and magnitudes of construction claims in civil engineering projects in Hong Kong”, utilized a questionnaire survey directed to “senior construction industry” personnel “well-versed with construction claims” (Yogeswaran, et al, 1997, 3). The study, which considered the specifications (administrative and technical) and the contract documents as a single group, ranked "specification problems" in the middle of perceived causes of construction claims and offered no way forward. Even with such a prominent position in the rankings, Yogeswaran did not address the Front End Specifications for further investigation as a source of claims.31

31 Without a doubt, the specifications are a part of the contract documents, all of which are a subset of the project documentation. The contract documents set the tone of the project since they are developed early, often prior to or in conjunction with the construction drawings and technical requirements.
Following Yogeswaran (1997), Kumaraswamy (1998) analyzed 91 projects in Hong Kong. Unlike Yogeswaran, Kumaraswamy looked behind the results into the origins, attempting to trace the roots of common disputes and claims (Kumaraswamy 1998, 3). Interestingly, the study noted early on that the root cause of many claims is built into the construction documentation,32 yet Kumaraswamy did not delve further.

The Kumaraswamy (1998) study includes two tables, one entitled "Frequencies and Magnitudes of Time Claims in the surveyed sample" [sic] and the second entitled "Frequencies and Magnitudes of Cost Claims in the surveyed sample" [sic]. In neither table are the specifications (general or technical) mentioned; in one instance, "ambiguity in documents" is listed and in the overall rankings assigned as sources of claims, "ambiguity in contract documents" and "inadequate contract documentation" rank sixth of the "top ten" categories (Kumaraswamy 1998, 5). In the second study discussed by Kumaraswamy, "specification interpretation" ranked equally with "inadequate site investigation" as one of the "relatively more significant sources" of claims (Kumaraswamy 1998, 8). Unfortunately, Kumaraswamy did not pursue the discussion beyond the statistic. Thus, while including the Front End Specifications in their respective discussions, neither Kumaraswamy nor Yogeswaran looked at the Front End Specifications beyond the summary conclusion that the Front End Specifications contributed to claims and they instead focused on the technical specifications.

In the few discussions truly focused on claims causation, one widely cited study is that conducted by Diekmann and Nelson (1985). The authors looked at twenty-two Federally funded and administered projects that gave rise to some 427 claims. The purpose of the study was to "ascertain the frequency, severity, and possible causal factors of various types of construction claims" (Diekmann and Nelson 1985, 74). The definition used by the authors in that study, however, was markedly different from other researchers: Diekmann and Nelson (1985, 74) defined a claim as the

32 Citing Matyas, which in turn cited Rubin's 1992 study, it notes that bad documentation, drawings and contractual risk allocation often give rise to claims and disputes.
seeking of consideration or change, or both, by one of the parties to a contract based on an implied or express contract provision. Once the claim has been presented, the owner and contractor can come to an agreement concerning the claim and, thereby, create a change order or a modification, or they may disagree and create a construction contract dispute.

What makes the above discussion significant is that the authors went on to state that "since the majority of claims result in change orders or modifications" (Diekmann and Nelson 1985, 74), they disregarded any claims which were not resolved by agreement, i.e., involved mediation, arbitration, or the courts. The authors provided no basis in support of the claim that the "majority" of claims (as defined by them) were settled without resort to third-party intervention. Moreover, they separated “claims” from “disputes,” a unique result when compared to the literature in the field (Carmichael 2000; Rose 1992).

Front End Specifications are a contractual component of the project that may establish the basis for and outcome of disputes, whether resolved amicably or otherwise. Not unexpectedly, Diekmann and Nelson found that one cause for claims was the ubiquitous "ambiguity in plans and specs" (Diekmann and Nelson 1985, 75) though that was not identified as a basis for claims within the body of the report. To the extent that the Front End Specifications are “ambiguous”, they will be part of the problem and not of the solution, a result not inconsistent with Diekmann and Nelson’s conclusions.

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33 For purposes of this research, "claims" and "disputes" were used interchangeably.

34 While not germane to the instant research, the authors found that design "error" or owner initiated changes accounted for 72% of the claims.

35 It should be noted that whether a specification or other provision is “ambiguous” is often less than clear and may ultimately be decided by an arbiter, judge or jury.
Other authors similarly touched on the subject without further exploration. In an early discussion of the use of “standard” forms,\(^{36}\) Hart (1976) recognized that the then-current AIA (no date specified)\(^{37}\) forms contained a number of contract provisions that would lead to problems and left the topic at that point; he made no suggestions as to revisions or substitutions that could lead to a reduction in construction claims.

Similarly, another oft-cited publication in the claims arena, Rubin (1983) discussed the review, analysis and presentation of a construction claim without looking beyond the end result, citing an American Society of Civil Engineers’ survey on contract provisions and the results of a paper prepared by the Los Angeles Public Works Department. The ASCE study, discussed in “Can better specifications cut construction costs?” [sic] (1979), focused on the technical specifications and only discussed the general requirements (Front End Specifications) in one short section. Moreover, no survey of the Front End Specifications was discussed; the entire review of that section incorporated the comments of one individual.

In the Los Angeles paper (contained in Rubin’s (1983) book), there was a general discussion of changes that could be made to various contract documents, based on the Department’s perspective. As with the ASCE study, no external evidence validated the stated conclusions.

Given that virtually every construction contract has administrative specifications and requirements, it was surprising to find a dearth of publications on the topic. In one of the very few titles that focuses exclusively on the drafting of construction project specifications, Rosen (1974) paid scant attention to the general requirements sections, devoting the vast bulk of his efforts to the technical specifications. Unfortunately, his interpretation of those non-technical specifications inaccurately concludes that they are

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\(^{36}\) In this context, “standardized” forms refer to prepared (e.g., preprinted or “fill in the blank”) documents such as those available from the AIA, CMAA and others.

\(^{37}\) American Institute of Architects.
“legal” (that is, having the effect of statutes) rather than merely being contractual in nature and frequently modified (successfully) by the issuance of “Supplemental Conditions.”

Moreover, he opined that having withstood the “test of time” (at 83), the specifications are for the most part fully acceptable to all parties on most projects. Given the hundreds of pages listing the thousands of published court decisions contained in the AIA Citator, as well as the hundreds of court cases interpreting non-AIA but comparable provisions, his position is unsupportable and was also called into serious doubt by the CII study discussed earlier.

One document that specifically considered a common provision of the Front End Specifications is the recently published "Planning for Concealed Site Conditions" (Russell 2007), a guide written for architects to deal with the ever-difficult subject of differing site conditions. Two of the suggestions contained in the practice guide directly address issues identified in this study's research.

The first recommendation is to coordinate the construction documents to avoid inconsistencies. The suggestion is not limited to the Front End Specifications alone; it goes (appropriately) to a number of areas where potential problems can arise:

... it is important that the construction documents are consistent. Site work specifications, site work drawings, structural specifications, structural drawings, "Front End" specifications, and unit price specifications should all be coordinated in terminology and should not include contradictory information that may contribute to a dispute regarding the contractor's scope of work (Russell 2007, 3).

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38 "Legal" means that the law mandates compliance, hence the reference to statutory compliance.

39 The AIA Citator, contained in two volumes of the Construction Law multi-volume treatise available from Aspen Publishers, tracks reported decisions mentioning provisions of the AIA documents.

40 The reader will later see that differing (or concealed) site conditions is a documented recurring source of claims and disputes.
The other recommendation addresses a commonly discussed topic: that of timely preparation of change orders. This timing issue is frequently addressed in the Front End Specifications, though not consistently. For example, one school of thought argues that all change orders should be deferred until the end of the project and resolved through a "global" settlement. Many advocates of this position take into account the fact that most owners and contractors do not extensively document a project on a day-to-day basis and, absent documentation, the other party may be hard-pressed to "prove up" its position, especially if litigation is on the horizon. This group believes that money (sometimes large sums) can be saved using this method (Russell 2007).

The other school, and the one endorsed in the practice guide, argues that the timely preparation and approval of change orders is preferable. As the guide notes (Russell 2007, 3),

One reason to process timely paperwork is to avoid memory loss. It is easier and more accurate to document agreed conditions when the event or subject is fresh in your mind.

The guide (Russell 2007, 2) similarly acknowledges that unaddressed concealed site condition issues can lead to disputes and delay claims, recognizing that

... allowing weeks or months to pass can lead to disagreement as parties to the original agreement produce different recollections of procedures, scope, terms, costs, and schedule.

Summarizing Russell, the AIA guide states that inconsistency between construction documentation and the failure to document and submit change orders on a timely basis can lead to claims. Both of these potential issues are generally addressed in the Front End Specifications. Other publications similarly discuss claims in generic terms.

For example, Zwick & Miller (2004), writing in the Journal of Construction Engineering and Management, opined that the general contractor verifies the completeness of the
subcontractor’s bid and, at the end of the “buyout” period,\textsuperscript{41} the two parties sign a contract that “defines [the] ambiguities in the scope of work and they together set a negotiated price for the work” (Zwick and Miller 2004, 245). The research results discussed below contradict this statement. Experienced construction people know that contract forms (especially in the public works arena) are often not open to negotiation; similarly, general contractors often present subcontractors with documents to sign on a “take it or leave it” basis.

According to Zwick (2004, p 245, citing Mincks and Johnson 1997),

\begin{quote}
\ldots each bid is reanalyzed to ensure that the sum of all the scopes of work provides adequate coverage for the entire project as specified in the bid documents.
\end{quote}

If this statement is literally true, there would be no basis for litigation during or after the project is completed. Zwick’s (2004) position appears to be in conflict with an earlier publication discussing the role of the construction manager’s contract administration challenges wherein Barrie (1981, 331-332) pointed out that

\begin{quote}
Claims almost always arise because the contract provisions are not clear. It is the owner's opinion that certain work is a part of the contractor's obligation under the contract and the contractor thinks otherwise. In this situation the burden of proof is on the contractor, for he usually is required by the provisions of the contract document to do the work first and attempt to recover his cost later. A contractor who attempts to coerce the owner into making a settlement before the work is done on the threat of not carrying out the work runs the risk of a serious default under his contract that can easily have much greater repercussions than an attempt to recover for the disputed work.
\end{quote}

Subcontractors have always been claims-conscious. Looking at claims occurrence from the subcontractor’s perspective, Teets (1976, 135) advocated a defensive posture:

\textsuperscript{41} The transitional period between contract award and the start of construction. (Zwick & Miller 2004).
The legal recourses established in the contract are made available on the most part to the owner and/or general contractor in the event of specific failures by the subcontractor. The subcontractor must prevent these recourses from being executed by preventing the failures. To prevent the failures, he must be aware of the legal recourses available to the owner and/or general contractor. When evaluating the contract, the subcontractor should make a list of all these legal recourses and a list of the legal recourses available to him against others. The subcontractor must realize that all the provisions of a contract have, at one time or another, been legally enforced against some other subcontractor and that he is not immune from such enforcement. He must be prepared to prevent or defend himself against all the legal recourses established in the contract.

Unfortunately, this was as close as Teets came to discussing the contract documents as a source of claims. Of all the published material reviewed, the most in-depth analysis was found in a National Transportation Research Board report (Netherton 1983, 1). Netherton’s analysis was that

Although data on causation and settlement of contract claims are not systematically compiled or published nationally, a sampling of contractor and contracting agency experience indicates that the occurrence of claims increases with the levels of risk present in construction contracts.

Netherton (1983, 5) went on to say that

Although perceived to be substantial, the 'claims problem' is not documented by any regularly or rigorously complied statistics. There is an almost total lack of nationwide data on the claims experience of highway agencies and construction contractors from which general conclusions can be drawn or trends predicted.
While his statements were made in the context of highway construction, the same is arguably true for all segments of the industry. Netherton (1983, 8-10) made the following statements to help define the research:

Claims may also be classified by reference to sections of the contract documents or the law that authorizes remedies and prescribe criteria for relief (e.g., 'changed Conditions clause' claims, or liquidated damages).

... 

Closely related to excessively narrow interpretations is a perception that some specifications are more restrictive than necessary to achieve their construction objectives -- that they are more prescriptive than end-result oriented.

While informative reading, Netherton’s conclusions (1983) were based on “personal communications” and not on “hard” data, the same approach used by Zwick and Miller (2004).

While information regarding construction starts and building permits issued is available from public sources, the same cannot be said for how many construction projects utilized either one form of contract or another or even if a written contract was utilized at all.

### 2.4 Partnering

Partnering is a cooperative relationship between two or more parties (Hj, 2008; Mak, 2005; Zhang, 2008). Partnering may impact disputes leading to claims related to Front End Specifications. Because partners share mutual objectives (Mak, 2005), and because partnering fosters cooperative problem resolution (Mak, 2005), partnering relationships may reduce claims (Roe & Jenkins 2003), and foster dispute resolution at the lowest possible level (Zhang, 2008) and as quickly as possible (Zhang, 2008).
Zhang (2008) suggests that the best strategy for dispute resolution is to prevent those disputes and conflicts from ever occurring. While successful partnering depends on proper partner selection and clear agreement among partners (Hj, 2008), partnering can help ensure clear terms and conditions in advance (Hj, 2008) and thereby reduce dependence on adversarial contracts and legal assistance (Kubal 1994). It is possible that partnering reduces claims and dependence on legal assistance in dispute resolution. This presents an empirical question addressed in the present research.

Further, while Roe and Jenkins (2003) suggest that partnering can lower costs associated with disputes in general, no published reports to date systematically explore the relationship between partnering and disputes related to Front End Specifications. Further, no reports to date investigate whether partnering participants, with the cooperative expertise from multiple sources that would not otherwise be combined without the partnering relationship, perceive Front End Specifications as less complex than participants who have not engaged in partnering.

### 2.5 Literature Summary and Overview of the Present Study

#### 2.5.1 Summary of Literature Review

This review of current construction management literature demonstrates that Front End Specifications are an integral part of construction management. However, Front End Specifications vary greatly. The side-by-side comparison of the Washington University and Rochester Institute of Technology documents highlight the stark differences in Front End Specifications.

Published reports on the impact of Front End Specifications as a source of claims failed to explore specific provisions beyond generic, all-inclusive, higher level categories (Bubshait, 1994; CII 1986; Hinze 1993). For example, Yogeswaran and colleagues (1997) utilized a higher level category of "specification problems" to encompass all
administrative and technical specifications in contract documents, failing to provide the crucial lower-level breakdown of specific provisions such as project scope, schedules, use of symbols, closeout procedures, coordination, regulatory requirements and payment. Similarly, Kumaraswamy (1998) used a category of “inadequate contract documentation” without isolating whether the inadequate contract documentation was in the area of project scope or submittals or the scheduling of specific project procedures. Further, no published reports have systematically investigated added costs from disputes and claims or profit that would have been retained because of disputes and claims arising from Front End Specification provisions.

Perceived ambiguity of Front End Specification provisions may be related to the complexity of provisions, claims from Front End Specifications may be related to document authorship and partnering may reduce Front End Specification disputes and claims because partnering fosters clarity and cooperation, but these empirical questions are not answered in the current construction industry literature.

2.5.2 Overview of the present study
The objective of the present research was fill the gaps in the construction claims literature by determining whether commonly used Front End Specifications promote or reduce claims, in addition to determining the possible effects of partnering, business size, document authorship and Front End Specification complexity on claims in construction management. Derived from the literature review and in consultation with doctoral committee members, the goal of the research was to address the following questions:

- Do the Front End Specifications cause disputes and claims?
- If Front End Specifications do cause claims, which are the most significant and have the most significant impact on projects?
- Do significant costs or lost profits result from claims?
- Are Front End Specifications perceived as being either too simple or too complex?
• Would the use of performance-based Front End Specifications increase or reduce disputes and claims?
• Is Partnering related to perceptions of whether the Front End Specifications increase or decrease claims?
• Is document authorship significantly related to perceptions of whether Front End Specifications increase or decrease disputes and claims?
• What methods are used to resolve claims?

In the next chapter we address the research methodology utilized to answer these questions.
Chapter 3

Research Methodology

This chapter details the methodology employed in the present study. This chapter is arranged in five parts. Following a review of the research design and the needs analysis methodology, participants are detailed, followed by the instrumentation, including the methodology employed towards identification of provisions to include in the formal data collection instrument. Procedures include recruitment and data collection. This chapter ends with an overview of the analytical means used to measure the survey results.

3.1 Research Design

The research included a preliminary survey of 24 construction individuals with a seminar-style interview immediately following, a web-based survey derived from the preliminary survey (Appendix B) and a follow-on survey targeting construction claims specialists. The methodology used in constructing the project was based on a multi-method approach similar to that outlined by Robert K. Yin (Yin 2003). In addition to the cited materials, general background information used to frame and develop the research instruments was obtained from various American Bar Association publications, including “The Construction Lawyer”, “Under Construction,” and the “Public Contract Law Journal.” The survey design followed the processes discussed by Weber and Oppenheim but was modified to reflect the nature of the research goals (Oppenheim 1992; Weber 1990). Similar methodologies have been utilized in the past by CII (1986) and Barnes and Mitrani (1992). The needs analysis methodology for the present study is displayed in Figure 3.1 beginning with the initial survey, the literature review and project file review towards formulating a dissertation proposal for formal defense, to the
research methodology delineated in the present chapter, leading towards the results chapter and then the integrations and recommendations in the discussion chapter.

Figure 3.1: Needs Analysis Methodology
3.2 Participants

To reach a diverse cross-section of the construction population, assistance in distributing notice of the survey by email through national trade and professional organizations within the industry was solicited. Assistance was provided by AACEI (also known by its previous name of the Association for the Advancement of Cost Engineering International), the Associated Builders and Contractors (ABC), the American Subcontractors Association (ASA), the Construction Management Association of America (CMAA) and the National Association of Women in Construction (NAWIC). Additionally, WPL Publishing (publisher of online and print materials relating to construction claims as well as project controls) made the survey available to its subscribers and mailing list members. Of 220 who responded to the survey request, seventy had either no claims experience or didn’t complete the survey, providing a final sample size of N = 150 participants for analysis.

3.3 Instrumentation

3.3.1 Survey Instrument

The primary measuring instrument for the present study was a 16-item survey (Appendix D). This survey instrument was developed using multiple sources of cogent information, consistent with the procedures outlined by Zeller and Carmines (1980) and based on the foundational works of Nunally (1967) and Cronbach and Meehl (1955). The present survey instrument was developed from four sources: the literature reviewed in Chapter 2, input from construction industry members (See Appendix B, seminar presentation, American Subcontractors Association Annual Meeting, Orlando, Florida, March 17, 2005), input from dissertation committee members and the manual charting of Front End Specification provisions which follows.
3.3.2 Identification of Provisions

To identify appropriate Front End Specification provisions for the present study, 76 contract documents were considered. These documents were chosen to reflect a cross-section of use across the country, to address both public and private works of improvement and to encompass vertical and horizontal construction contracts without regard to regional limitations or licensing issues. Government contracts (n = 30), educational contracts (n = 20), commercial contracts (n = 22) and generic contracts (n = 4) were included for this determination. Provisions that were common (topically as opposed to having identical or near-identical language) across documents were selected for inclusion in the study. Table 3.1 outlines the contract documents used by the author to initially identify the specifications utilized in the research instrument.

<table>
<thead>
<tr>
<th>Table 3.1: Front End Specifications Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of documents reviewed</td>
</tr>
<tr>
<td>Generic</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>Summary (Scope) of the Work</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>Allowances</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>Measurement &amp; Payment</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>Alternates/Alternatives</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>Coordination</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>Field Engineering</td>
</tr>
<tr>
<td>M</td>
</tr>
<tr>
<td>Regulatory Requirements</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>Abbreviations &amp; Symbols</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>Identification Systems</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>Reference Standards</td>
</tr>
<tr>
<td>M</td>
</tr>
<tr>
<td>Special Project Procedures</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>Project Meetings</td>
</tr>
<tr>
<td>F</td>
</tr>
<tr>
<td>Submittals</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>Scheduling</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>Contract Closeout Procedures</td>
</tr>
<tr>
<td>N</td>
</tr>
</tbody>
</table>

Legend:  
All – all specification sets reviewed contained relevant language  
Most – between 76-99% contained relevant language  
Some – between 25-75% contained relevant language  
Few – less than 25% contained relevant language  
None – not contained in any of the reviewed documents
From this exploration of existing contracts, together with readings and the researcher's experience as a construction lawyer, it was determined that sixteen (16) Front End Specification provisions would be included in the formal study. Summary (Scope) of the Work, Allowances, Measurement & Payment, Alternates/Alternatives, Coordination, Field Engineering, Regulatory Requirements, Abbreviations & Symbols, Identification Systems, Reference Standards, Special Project Procedures, Project Meetings, Submittals, Scheduling Specifications/Requirements and Contract Closeout, plus an additional category of Other Project Control Requirements to ensure that no provision would be excluded because of inadequately comprehensive categories.

3.4 Procedures

3.4.1 Recruitment

The assistance of national trade and professional organizations within the industry was solicited to recruit participants for the present study. Assistance was provided by AACEI (also known by its previous name of the Association for the Advancement of Cost Engineering International), the Associated Builders and Contractors (ABC), the American Subcontractors Association (ASA), the Construction Management Association of America (CMAA) and the National Association of Women in Construction (NAWIC). Additionally, WPL Publishing (publisher of online and print materials relating to construction claims as well as project controls) made the survey available to its subscribers and mailing list members.

3.4.2 Data Collection

Data for the present study were collected through SurveyMonkey, an on-line survey tool (www.surveymonkey.com). The present survey was first entered into SurveyMonkey, then after piloting the look and feel of the interface and accuracy of downloads utilizing a dozen associates, potential participants were invited to log in to the survey site and formal data collection began. SurveyMonkey downloads are datasets in spreadsheet format, including a record of the time and Internet address to aid in detection of
participants who chose to take the survey more than once. Confidentiality of participants was ensured because no names or uniquely identifying personal information was asked of participants and because SurveyMonkey uses firewall and intrusion prevention and encoded password protection for any downloads.

Prospective participants were contacted by electronic mail and asked to complete a web-based survey. Participants clicked on an email link, which brought them directly to the survey via their internet browser and then participants used their computer keyboard and mouse clicks to complete survey questions. The survey took roughly fifteen minutes to complete. Participants were thanked for their time; no additional compensation was provided. Upon survey completion, data were downloaded for statistical analysis.

### 3.5 Data Analysis

Descriptive data are expressed as means, standard deviations (SD), frequency counts and percentages, as appropriate, in text and in tables. For example, in some instances, weighting factors were assigned and the data reexamined to determine impacts and rankings.

In the next chapter, the survey results and analysis are presented.

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42 The researcher was not provided with a listing of the recipients of the various emails due to the proprietary nature of the organizations' membership lists. We also don't know the "bounce" rate, that is, bad email addresses and the like, of the multiple mailings. It was confirmed that between WPL Publishing and AACE, at least 6657 emails were sent. AACE stated that its average bounce rate was 10-12%; WPL did not make that information available.
Chapter 4

Research Results

This chapter begins with the assumptions and limitations of the survey process and participant descriptives (Section 4.1) towards demonstrating that the present sample is adequate to investigate the research questions. The results of the research are then presented beginning with answering the baseline question. First, in asking whether Front End Specifications ("FES") cause claims (4.2), the research documents that the FES do cause claims. Having determined that the FES do cause claims, we then look at the frequency at which various FES lead to claims and which FES have the most significant impact on projects. The results indicate that the coordination, scheduling and scope of work clauses are both the most frequent and have the highest impact on projects (4.3). The additional costs arising from claims is then explored; not surprisingly, 90% of the respondents reported that claims increased costs by as much as 40% (4.5). Next, the research looked to the possible relationships between FES complexity and claims (4.6) and determined that most Front End Specification provisions were acceptable to a high percentage of survey participants, an unexpected result. The use of performance-based FES was next investigated, resulting in no significant statement of preference for their use (4.7). The effects of partnering on claims was next considered with the result being an almost even split on opinion. Finally, methods of claims resolution, with and without the use of partnering, is analyzed with a finding that partnering is beneficial in claims resolution (4.8). This Research Results chapter ends with a summary and brief preliminary discussion of the present research results (4.9) to prepare the reader for the full Discussion Chapter that completes this dissertation.
4.1 Survey Assumptions, Limitations, and Participant Descriptives

This subchapter sets forth the assumptions and limitations of the survey method utilized, followed by participant descriptive statistics. Participant employment sectors, business size, subsidiary status, job title, number of projects, the values of those projects and the authorship of Front End Specifications documents are described in frequencies, percentages, means and standard deviations or graphical displays, as appropriate. This descriptives section ends with a summary of the appropriateness of this sample for investigating the research questions.

4.1.1 Assumptions and Limitations

The present survey focused on claims which were not resolved during the course of the project’s execution period and prior to closeout. This choice was made to highlight contentious matters with the potential for third-party resolution (through mediation, arbitration or litigation) if resolution between parties could not be achieved. In conducting the survey, assumptions included:

1. That the observations of participants regarding claims and their resolution would be generally representative of the respondents' overall historical outcomes without belaboring details of specific individual claims. Inherent in this assumption is that survey respondents would have sufficient recall of projects and their experiences to provide accurate responses.

2. Since each construction project has the potential to spawn zero claims or numerous claims, it was assumed that the number of projects would differ from the number of claims.

3. That the majority of the responses would come from contracting and consulting personnel more than from owners. This was because contractors, not owners, generally have the burden of pursuing a claim under most construction contracts. Owners do pursue claims, often for late completion or lost profits;
contractors, though, pursue the vast majority of claims and have the most experience with claims resolution.

4. To reach a broader audience and obtain distributed responses, national organizations were solicited to help with the survey process. Discussions with knowledgeable professionals helped identify those organizations. It was assumed that the responses received would reflect a national, rather than a regional, perspective.

Certain limitations were also inherent in the survey process:

1. Only broadly-based information was acquired from participants, with no tracking of any individual claim or dispute. Therefore, the effects of individual claims and the manner of pursuing any given claim was not explored. Thus, the resulting data provides us with tendencies rather than absolutes in addressing claims effects of the Front End Specifications, either as a whole or by component.

2. This investigation was limited to data regarding projects and claims between January 1, 1995 until November 20, 2005, which may or may not be representative of other timeframes due to any number of factors, including economic conditions.

3. Initial project contract values were used as a means to measure the frequency and impact of the Front End Specifications, but no direct measure of FES claims values were included.

4. The outcome of any particular claim may hinge on very specific facts. It was the goal of the research to get overall “dimensions” of the problems, or perceived problems, rather than specifics.

5. It is important to note that variations in state and federal laws and the number of jurisdictions in the United States may limit the generalization of present findings. Contract law is most often determined by state law. Federal Courts will apply either state or federal law, depending on the facts and circumstances of individual cases. As a result, it is potentially misleading to assume that the law of one jurisdiction will apply in all instances with similar facts.43

43 Law students take a class in conflicts of law to address questions related to jurisdiction and application of laws in specific instances. Advice of counsel is advised to determine which law or laws will apply to any dispute.
4.1.2 Employment Sectors Represented

To reach a broad segment of the construction industry involved in the claims and claims resolution processes (see assumption number 4, *supra*), invitations to participate were sent to members of AACEI\(^4\), the Associated Builders and Contractors (ABC), the American Subcontractors Association (ASA), the Construction Management Association of America (CMAA) and the National Association of Women in Construction (NAWIC). Additionally, WPL Publishing (publisher of online and print materials relating to construction claims as well as project controls) made the survey available to its subscribers and mailing list members. These groups count among their membership contractors, subcontractors and owners and, in many cases consultants, and were selected to reach a wide national audience. The majority of participants were employed in the private sector with the remaining participants employed by governmental and not-for-profit agencies. Employment sector representation is summarized in Table 4.1.

<table>
<thead>
<tr>
<th>Employment</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not-for-profit Agency</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Federal Agency</td>
<td>3</td>
<td>2.0</td>
</tr>
<tr>
<td>State Agency</td>
<td>5</td>
<td>3.3</td>
</tr>
<tr>
<td>Municipal Agency</td>
<td>9</td>
<td>6.0</td>
</tr>
<tr>
<td>Private Entity</td>
<td>131</td>
<td>87.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>150</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

4.1.3 Business Size

Participants in the private sector were asked to classify the size of their business utilizing one of three definitions:

- Small: Annual revenues less than $10,000,000 per year
- Medium: Annual revenues between $10,000,000 and $100,000,000 per year
- Large: Annual revenues in excess of $100,000,000 per year

\(^4\) AACEI was formerly known as the Association for the Advancement of Cost Engineering International.
Participants were well-divided among large-, medium- and small-sized businesses. Business Size descriptives are displayed in Table 4.2.

<table>
<thead>
<tr>
<th>Size</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>31</td>
<td>21</td>
</tr>
<tr>
<td>Medium</td>
<td>57</td>
<td>38</td>
</tr>
<tr>
<td>Large</td>
<td>47</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>135</td>
<td>90</td>
</tr>
<tr>
<td>No Response</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>100</td>
</tr>
</tbody>
</table>

Graphically, the business size by segment is as shown in Figure 4.1 below:

**Figure 4.1: Business Size (by segment)**

![Size of Business](image)

*Note: Percentages based on 150 participants.*

### 4.1.4 Subsidiaries

Participants were asked if they worked for an entity that was a subsidiary of a larger company. The majority of participants (118/150, 79%) were not working for a subsidiary of a larger company, while 27 of 150 (18%) reported working for a subsidiary of a larger company, and 5 of 150 (3%) did not respond to this survey question.
Participant frequencies and percentages by Subsidiaries are summarized in Table 4.3 below.

<table>
<thead>
<tr>
<th>Subsidiary</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>118</td>
<td>79</td>
</tr>
<tr>
<td>Yes</td>
<td>27</td>
<td>18</td>
</tr>
<tr>
<td>No Response</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.1.5 Employment Role (Job Title)

More than one-third (57) of the participants identified themselves as being a contractor’s project or construction manager. The next largest group consisted of project and construction managers for owners followed by owners or representatives of owners. Claims consultants were represented by twelve percent (12%) of the participants and the legal profession had four (4) persons participating. Only one person represented her/himself as a representative of the financial or surety profession and twenty-five (25) persons did not identify their employment role or job title. The results of this inquiry are set forth in Table 4.4.

<table>
<thead>
<tr>
<th>Job Title</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project/Construction</td>
<td>57</td>
<td>38.0</td>
</tr>
<tr>
<td>Owner's Project/Cons</td>
<td>26</td>
<td>17.3</td>
</tr>
<tr>
<td>No Response</td>
<td>25</td>
<td>16.7</td>
</tr>
<tr>
<td>Owner</td>
<td>19</td>
<td>12.7</td>
</tr>
<tr>
<td>Consultant</td>
<td>18</td>
<td>12.0</td>
</tr>
<tr>
<td>Attorney</td>
<td>4</td>
<td>2.7</td>
</tr>
<tr>
<td>Surety or Financial</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>100.0</td>
</tr>
</tbody>
</table>
4.1.6 Number of Projects

Participants were requested to identify the number of projects in which they were involved during the study period, approximating the number if necessary. More than forty percent stated that their company or agency had been involved with 300 or more projects in the period from January 1, 1995 until November 20, 2005. The balance were somewhat evenly divided amongst the choices. The spread of the number of projects is shown in Table 4.5.

Table 4.5: Number of Projects

<table>
<thead>
<tr>
<th>Number of Projects</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-50</td>
<td>22</td>
<td>15</td>
</tr>
<tr>
<td>51-100</td>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td>101-200</td>
<td>29</td>
<td>19</td>
</tr>
<tr>
<td>201-300</td>
<td>17</td>
<td>11</td>
</tr>
<tr>
<td>300+</td>
<td>63</td>
<td>42</td>
</tr>
<tr>
<td>Total</td>
<td>N=150</td>
<td>100</td>
</tr>
</tbody>
</table>

4.1.7 Contract (Project) Values

Participants were asked the initial value of project contracts described in the survey. Contract values were highest for the smallest project size (<$100k, M = 415.5), with successively lower values for each succeeding larger size category up to the largest size category (>=$50m, M = 18.7). The summary of project value responses is shown in Table 4.6.
Table 4.6: Project Value Summary

<table>
<thead>
<tr>
<th>Descriptive</th>
<th>&lt;$100k</th>
<th>$100k-$1m</th>
<th>$1m-$10m</th>
<th>$10m-$50m</th>
<th>&gt;$50m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>415.7</td>
<td>365.0</td>
<td>70.3</td>
<td>40.5</td>
<td>18.7</td>
</tr>
<tr>
<td>N</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>SD</td>
<td>3755.7</td>
<td>3672.1</td>
<td>100.2</td>
<td>72.9</td>
<td>55.1</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Max</td>
<td>45000*</td>
<td>45000*</td>
<td>500</td>
<td>500</td>
<td>300</td>
</tr>
<tr>
<td>SEM</td>
<td>306.7</td>
<td>299.8</td>
<td>8.2</td>
<td>6.0</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Note. N = Number of participants. One respondent claimed a total for 45,000 projects.

Bonding ability (see Glossary) often dictates the size of a project that a company can undertake – larger companies may take on bigger projects since they generally have a greater bonding capacity. All other things being equal, the large companies, and especially the largest of the big firms, do not undertake small projects. In general, this is because of their overhead and corporate structures as well as their desire to devote their resources to large, long-duration projects. Figure 4.2 reflects the respondents’ description of the contract values (project sizes) undertaken within each of the three groups.

Not surprisingly, Figure 4.2 reflects that the larger companies take on a greater number of larger value contracts than their smaller competitors. This can be attributed to the higher capital requirements and more extensive organizational infrastructure necessary to support larger projects. While the medium-sized company responses reflect the anticipated project spread, which was anticipated, what was not expected was the number of large value contracts undertaken by the smaller contractors, given their generally reduced ability to bond and finance large projects.

45 While this number appears questionable, certain specialty contractors could have high project counts and, most likely, relatively low project values. For example, roofing, siding and plumbing contractors may have ten or fifteen (or more) crews in the field at any given time. Since the identity of the respondent reporting this figure is unknown, it was decided to accept the number as being accurate.
The distribution of project values was consistent with expectations, with one exception. At the larger extreme, projects over $50,000,000 are common, but not plentiful and because of bonding requirements, attract a limited number of contractors. At the other extreme, smaller projects are more plentiful and often serve as an "incubator" for smaller companies. As companies grow, the desire (and ability) to take on larger projects increases, so the relatively steep climb to the apex of the data plot was expected. What was surprising, given the economies of scale and the bonding requirements of larger jobs, was how many smaller companies reported taking on larger projects. This could be due to the number of research participants within each study group or the practices of those companies. This suggested tendency could be the topic of further empirical
research. To summarize these findings, companies take on different project values, regardless of company size.

4.1.8 Authorship of Front End Specifications Documents

Every construction project utilizes a contract of some sort. Many contractors and owners use preprinted forms supplied by trade associations and groups such as the American Institute of Architects (AIA), the Engineers Joint Contract Documents Committee (EJCDC) and the Associated General Contractors (AGC). The intent of this question was to see the relative usage of each of the document forms rather than to determine the extent (percentage) of usage. In this context, the following question was asked of the survey respondents:

*Which contract form do you encounter most often on your projects?*

Respondents could select from six choices: "AGC; AIA; EJCDC; CMAA; Owner, Designer or CM-created; Contract documents created by/for your own organization; or Other". A respondent could use one type of form one-third or 80% of the time within the definition of "most often"; no attempt at scaling was being attempted. The data show that the source (that is, "document authorship") of the contract documents is not related to perceptions of whether Front End Specifications increase claims.

Forty three percent (43%) of the respondents reported using the forms published by the American Institute of Architects ("AIA"), with roughly one-third (34%) using owner, designer or CM-created documents. Neither the forms published by the Associated General Contractors ("AGC") (2%) nor the Engineers Joint Contract Documents Committee (5%) were well represented. Even though CMAA members participated, none reported using CMAA's own forms. Figure 4.3 presents this information graphically.
As the following graph (using log values) shows, the AIA documentation is used extensively on smaller projects and decreases significantly as the project value increases, while non-AIA authored documents were essentially flat across project value categories (Figure 4.4).

Figure 4.4: Authorship by Project Value
These results were expected. Architects are utilized primarily on "vertical" construction, that is, buildings. Infra-structure projects (highways, bridges, water/wastewater treatment facilities, etc.) are designed by civil and structural engineers who do not, as a rule, use the AIA documents. With larger vertical construction projects, owners and developers often develop and utilize their own documents. Another possibility is that many larger projects are "multi-prime" (that is, a construction manager oversees the project's development rather than a general contractor) and different contract forms are used by different vendors such as electrical and plumbing contractors. Given the high usage of AIA documents for projects less than $50,000,000, the anticipated relationship between claims and the use of AIA documents does not exist.

4.1.9 Summary of Participant Descriptives

Of 150 participants, most were engaged in the private sector. Small, medium and large sized businesses were well represented. Half were project and construction managers. Most had been involved in more than 100 projects during the research period of ten years, with four-in-ten stating that they had been involved in more than 300 projects during that same time period. Project sizes varied greatly, as did the consolidated contract values per participant. Contract document authorship was divided among AIA and owner created categories. These data thus provide a diverse sample sufficient to address the substantive inquiry goals of the present study.

We next address the survey questions which addressed the Front End Specifications and claims: Do Front End Specifications ("FES") cause claims (Hypothesis 1; §4.2); Do some FES cause more claims than others (Hypothesis 1a) and which FES have the greatest impact on projects (Hypothesis 1b; §4.3); Do claims arising from the FES impose additional costs or lost profits on companies (Hypothesis 2; §4.4); Is the complexity of FES provisions related to claims (Hypothesis 3; §4.5); Would the use of performance-based front end specifications ("PB-FES") increase or reduce claims (Hypothesis 4; §4.6); Does partnering affect the incidence of claims from the FES (Hypothesis 5; §4.7); and
4.2 Do Front End Specifications Cause Claims? (Hypothesis 1)

Construction projects generally utilize some form of Front End Specifications ("FES"). These FES are often contained in a set of standard form (boilerplate) documents. As part of the project contract documentation, it is incumbent on the participants to understand each obligation imposed upon them, including those in the FES. Yet, with the time constraints often imposed on bidders, it is not unusual for contractors and others to skim or even ignore the FES, focusing on the plans and technical specifications.

It is possible that FES cause claims, but this must be empirically established before proceeding. To determine if FES cause claims and, if so, which FES cause the most frequent claims and which FES have the most impact on the project, participants were asked about the frequency of claims, segregated by project value, which arose from the categories of Non-Technical Specifications, Technical Plans, Plan Mistakes and Jurisdictional disputes. These are then discussed in series to establish the relative frequency and impact of each identified specification. These are discussed as hypotheses (expressed as tendencies) beginning with the following question:

For the projects identified in the preceding question, please indicate if claims or disputes arose for any of the following reasons and indicate the appropriate contract value amounts. Multiple answers are allowable.

Answers to this question provided data for separate analyses, addressed as Hypothesis 1a and 1b. The FES as a source of claims is discussed as Hypothesis 1a; the frequency
by which specific FES generate claims and those FES that have the most impact is covered in Hypothesis 1b. That the FES are responsible for a significant percentage of claims provides a telling statistic given that the purpose of the FES is to provide administrative guidance and set forth the ground rules for execution of the project. By all rights the FES should be clear enough to not cause controversy in their own right, but such is not the case. As Table 4.7 (below) shows, the FES may cause claims as often as the technical specifications or bad plans, in any given instance.

Hypothesis 1a: The top line of data in Table 4.7 shows that claims from Non-Technical Specifications (the Front End Specifications) occurred in 37% of projects initially valued at less than $100,000 to 13% of initial project values greater than $50 million. Over 25% of claims (236 of 923) reported here were from FES. These data demonstrate that the Front End Specifications tend to cause, rather than reduce, claims.

Table 4.7: Frequency of Claims by Project Value

<table>
<thead>
<tr>
<th>Source</th>
<th>Claims from</th>
<th>&lt;$100k</th>
<th>$1k-$1m</th>
<th>$1m-$10m</th>
<th>$10m-$50m</th>
<th>&gt;$50m</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>FES</td>
<td>NonTechnical Specs</td>
<td>56</td>
<td>37</td>
<td>58</td>
<td>39</td>
<td>54</td>
<td>36</td>
</tr>
<tr>
<td>Other</td>
<td>Technical Plans</td>
<td>51</td>
<td>34</td>
<td>59</td>
<td>39</td>
<td>77</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>Plan Mistakes</td>
<td>48</td>
<td>32</td>
<td>64</td>
<td>43</td>
<td>72</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Jurisdiction</td>
<td>81</td>
<td>54</td>
<td>28</td>
<td>19</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>236</td>
<td>209</td>
<td>219</td>
<td>171</td>
<td>88</td>
<td></td>
</tr>
</tbody>
</table>

Note: Multiple responses were allowed, so total exceed 100%. n = number of responses.

This finding that FES causes claims justifies the present study as a valid area of inquiry, and provides adequate empirical evidence to proceed with further investigation, beginning with a demonstration that FES claims impose significant costs or reduce profits that would have been retained. Even with FES as a source of claims, this investigation can only be worthwhile in the real world if it can be shown that FES claims have a meaningful impact.
4.3 Which Front End Specifications Cause Claims? (Hypothesis 1b)

The results for Hypothesis 1b, the determination of which Front End Specifications cause claims, is presented in three parts. First, the raw frequency and percent of claims by FES is discussed. Second, the weighting and normalization process is presented. Third, the normalized data are presented, ranked from highest to lowest, such that the highest rankings indicate which FES cause the most claims. These normalized rankings are presented for small, medium, and large sized companies. This section ends with a summary of which FES have the greatest claims impact. Based on the Review of Literature, sixteen (16) Front End Specification categories (with their abbreviations in parentheses) were included in the present survey:

- Summary (Scope) of the Work (SCOPE)
- Allowances (ALLOW)
- Measurement & Payment (MEAS)
- Alternates/Alternatives (ALT)
- Coordination (COORD)
- Field Engineering (FIELD)
- Regulatory Requirements (REG)
- Abbreviations & Symbols (ABRV)
- Identification Systems (IDENT)
- Reference Standards (REF)
- Special Project Procedures (SPECL)
- Project Meetings (MEET)
- Submittals (SUBMT)
- Scheduling Specifications/Requirements (SCHED)
- Other Project Control Requirements (OTHRP)
- Contract Closeout (CLOUT)

To determine which Front End Specifications cause claims, participants were asked:

_The following questions are intended to elicit your claims and disputes experiences with certain non-technical specifications generally found in most engineering, construction and construction management agreements and specifications. For each enumerated item, please identify the frequency (expressed as a percentage of the_

46 The data were normalized to account for the fact that the number of survey responses was inconsistent.
This question solicited the frequency of unresolved claims at the end of the project for each of sixteen (16) Front End Specification categories, segregated by project value.

### 4.3.1 Raw Front End Specification Claims by Cause

The raw data presented in Table 4.8 shows that Coordination had the tendency to result in the highest frequency of unresolved claims at a project's conclusion. Scheduling was similarly high in unresolved claims. At the lower end of the frequency scale, abbreviations and identification were identified most often as leading to unresolved claims (Table 4.8).

<table>
<thead>
<tr>
<th>Specification</th>
<th>1-20% n</th>
<th>1-20% %</th>
<th>21-40% n</th>
<th>21-40% %</th>
<th>41-59% n</th>
<th>41-59% %</th>
<th>60-79% n</th>
<th>60-79% %</th>
<th>80-100% n</th>
<th>80-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>coord</td>
<td>43</td>
<td>38.1%</td>
<td>24</td>
<td>21.2%</td>
<td>24</td>
<td>21.2%</td>
<td>15</td>
<td>13.3%</td>
<td>7</td>
<td>6.2%</td>
</tr>
<tr>
<td>sched</td>
<td>49</td>
<td>43.4%</td>
<td>26</td>
<td>23.0%</td>
<td>15</td>
<td>13.3%</td>
<td>14</td>
<td>12.4%</td>
<td>9</td>
<td>8.0%</td>
</tr>
<tr>
<td>scope</td>
<td>49</td>
<td>47.1%</td>
<td>23</td>
<td>22.1%</td>
<td>11</td>
<td>10.6%</td>
<td>14</td>
<td>13.5%</td>
<td>7</td>
<td>6.7%</td>
</tr>
<tr>
<td>specl</td>
<td>55</td>
<td>52.4%</td>
<td>24</td>
<td>22.9%</td>
<td>20</td>
<td>19.0%</td>
<td>6</td>
<td>5.7%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>submt</td>
<td>59</td>
<td>53.2%</td>
<td>24</td>
<td>21.6%</td>
<td>20</td>
<td>18.0%</td>
<td>4</td>
<td>3.6%</td>
<td>4</td>
<td>3.6%</td>
</tr>
<tr>
<td>othrp</td>
<td>54</td>
<td>51.9%</td>
<td>19</td>
<td>18.3%</td>
<td>15</td>
<td>14.4%</td>
<td>11</td>
<td>10.6%</td>
<td>5</td>
<td>4.8%</td>
</tr>
<tr>
<td>meas</td>
<td>68</td>
<td>60.2%</td>
<td>29</td>
<td>25.7%</td>
<td>6</td>
<td>5.3%</td>
<td>8</td>
<td>7.1%</td>
<td>2</td>
<td>1.8%</td>
</tr>
<tr>
<td>field</td>
<td>58</td>
<td>56.9%</td>
<td>19</td>
<td>18.6%</td>
<td>19</td>
<td>18.6%</td>
<td>3</td>
<td>2.9%</td>
<td>3</td>
<td>2.9%</td>
</tr>
<tr>
<td>clout</td>
<td>63</td>
<td>58.3%</td>
<td>19</td>
<td>17.6%</td>
<td>12</td>
<td>11.1%</td>
<td>9</td>
<td>8.3%</td>
<td>5</td>
<td>4.6%</td>
</tr>
<tr>
<td>alt</td>
<td>64</td>
<td>64.6%</td>
<td>24</td>
<td>24.2%</td>
<td>8</td>
<td>8.1%</td>
<td>1</td>
<td>1.0%</td>
<td>2</td>
<td>2.0%</td>
</tr>
<tr>
<td>ref</td>
<td>66</td>
<td>66.0%</td>
<td>22</td>
<td>22.0%</td>
<td>10</td>
<td>10.0%</td>
<td>2</td>
<td>2.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>reg</td>
<td>67</td>
<td>66.3%</td>
<td>30</td>
<td>29.7%</td>
<td>3</td>
<td>3.0%</td>
<td>1</td>
<td>1.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>allow</td>
<td>62</td>
<td>71.3%</td>
<td>16</td>
<td>18.4%</td>
<td>7</td>
<td>8.0%</td>
<td>1</td>
<td>1.1%</td>
<td>1</td>
<td>1.1%</td>
</tr>
<tr>
<td>meet</td>
<td>76</td>
<td>78.4%</td>
<td>12</td>
<td>12.4%</td>
<td>5</td>
<td>5.2%</td>
<td>2</td>
<td>2.1%</td>
<td>2</td>
<td>2.1%</td>
</tr>
<tr>
<td>ident</td>
<td>88</td>
<td>90.7%</td>
<td>9</td>
<td>9.3%</td>
<td>0</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>abrv</td>
<td>91</td>
<td>93.8%</td>
<td>4</td>
<td>4.1%</td>
<td>2</td>
<td>2.1%</td>
<td>0</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Mean</td>
<td>102.8</td>
<td>68.6%</td>
<td>24.3</td>
<td>16.1</td>
<td>13</td>
<td>8.7</td>
<td>6.6</td>
<td>4.5</td>
<td>3.4</td>
<td>2.3</td>
</tr>
<tr>
<td>SD</td>
<td>20.5</td>
<td>13.6</td>
<td>7.7</td>
<td>5.2</td>
<td>8.1</td>
<td>5.4</td>
<td>6.4</td>
<td>4.2</td>
<td>2.8</td>
<td>2.8</td>
</tr>
</tbody>
</table>

**Note:** SCOPE = Summary (Scope) of the Work, ALLOW = Allowances, MEAS = Measurement & Payment, ALT = Alternates/Alternatives, COORD = Coordination, FIELD = Field Engineering, REG = Regulatory Requirements, ABRV = Abbreviations & Symbols, IDENT = Identification Systems, REF = Reference Standards, SPECL = Special Project Procedures, MEET = Project Meetings, SUBMT = Submittals, SCHED = Scheduling Specifications/Requirements, OTHRP = Other Project Control Requirements, CLOUT = Contract Closeout. n = number of responses.
Looking at the five most common claims arising from the FES, the tendency appears to
be that no one topic is responsible for a majority of claims more than 20% of the time.
In other words, the frequency of claims occurrence drops off quickly after the 1-20%
incidence rate. This finding is graphed in Figure 4.5 below.

**Figure 4.5: Top Causes of Claims, by Percent**

To further hone in on the claims impact from the Front End Specifications, we next
look at that data after normalization and weighting. Without normalization and
weighting, the raw values could potentially be misleading in determining the leading
causes of FES claims.

### 4.3.2 Front End Specification Claims, Normalized

To determine which FES cause claims, data were weighted and normalized. Using the
weighting values shown in Table 4.9, the responses were re-expressed to incorporate the
import of a particular specification relative with the degree of risk perceived by the
respondents. The methodology used here is derived from the works of Diekmann and
Nelson (1985), Kumaraswamy (1998) and Naoum (2003). These rankings indicate the
propensity of each of the identified specifications to give rise to a claim. Rankings are based on the number of responses measured against the total number of respondents.

<table>
<thead>
<tr>
<th>Likelihood of Unresolved Claim Generation</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-20%</td>
<td>1</td>
</tr>
<tr>
<td>21-40%</td>
<td>2</td>
</tr>
<tr>
<td>41-59%</td>
<td>3</td>
</tr>
<tr>
<td>60-79%</td>
<td>4</td>
</tr>
<tr>
<td>80-100%</td>
<td>5</td>
</tr>
</tbody>
</table>

### 4.3.3 Impact of Front End Specification Claims, Normalized

*Hypotheses 1b* is also concerned with the impact of claims arising from the FES. Using the weighting values from Table 4.9 and applying those to the small, medium and large companies, and then by calculating overall results, each of the specifications was ranked on a normalized, weighted basis, then ranked from highest to lowest, as shown in Table 4.10. This ranking equates to the impact factor of each of the specific specifications.

The participants reported that coordination and scheduling had the greatest impact of all Front End Specifications; that is, those two specifications had the highest tendency as the basis for an unresolved claim. The scope of work (summary) specification was the third-highest specification tending to result in an unresolved claim. At the other end of the scale were abbreviations & symbols and identification systems, having the least tendency to result in unresolved claims. These data express all companies together, so we next turn to the normalized rankings of specification claims for small, medium and large companies.
Table 4.10: Normalized Claims Rankings, All Companies

<table>
<thead>
<tr>
<th>Rank</th>
<th>Specification</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coordination</td>
<td>1.55 *</td>
<td>1.47 *</td>
<td>1.46 *</td>
<td>1.49 *</td>
</tr>
<tr>
<td>2</td>
<td>Scheduling</td>
<td>1.50 *</td>
<td>1.45 *</td>
<td>1.30 *</td>
<td>1.42 *</td>
</tr>
<tr>
<td>3</td>
<td>Summary (Scope) of the Work</td>
<td>1.22</td>
<td>1.23</td>
<td>1.32 *</td>
<td>1.25</td>
</tr>
<tr>
<td>4</td>
<td>Other Requirements</td>
<td>1.19</td>
<td>1.23</td>
<td>1.12</td>
<td>1.18</td>
</tr>
<tr>
<td>5</td>
<td>Submittals</td>
<td>1.09</td>
<td>1.20</td>
<td>1.19</td>
<td>1.16</td>
</tr>
<tr>
<td>6</td>
<td>Contract Closeout</td>
<td>1.17</td>
<td>1.19</td>
<td>1.04</td>
<td>1.13</td>
</tr>
<tr>
<td>7</td>
<td>Special Project Procedures</td>
<td>1.04</td>
<td>1.05</td>
<td>1.24</td>
<td>1.11</td>
</tr>
<tr>
<td>8</td>
<td>Measurement &amp; Payment</td>
<td>1.24</td>
<td>1.05</td>
<td>0.98</td>
<td>1.09</td>
</tr>
<tr>
<td>9</td>
<td>Field Engineering</td>
<td>0.98</td>
<td>0.96</td>
<td>1.04</td>
<td>0.99</td>
</tr>
<tr>
<td>10</td>
<td>Alternates/Alternatives</td>
<td>0.88</td>
<td>0.92</td>
<td>0.98</td>
<td>0.92</td>
</tr>
<tr>
<td>11</td>
<td>Reference Standards</td>
<td>0.78</td>
<td>0.89</td>
<td>0.85</td>
<td>0.84</td>
</tr>
<tr>
<td>12</td>
<td>Project Meetings</td>
<td>0.75</td>
<td>0.75</td>
<td>0.85</td>
<td>0.78</td>
</tr>
<tr>
<td>13</td>
<td>Regulatory Requirements</td>
<td>0.70</td>
<td>0.77</td>
<td>0.73</td>
<td>0.73</td>
</tr>
<tr>
<td>14</td>
<td>Allowances</td>
<td>0.72</td>
<td>0.70</td>
<td>0.63</td>
<td>0.69</td>
</tr>
<tr>
<td>15</td>
<td>Identification Systems</td>
<td>0.62</td>
<td>0.58</td>
<td>0.63</td>
<td>0.61</td>
</tr>
<tr>
<td>16</td>
<td>Abbreviations &amp; Symbols</td>
<td>0.57</td>
<td>0.58</td>
<td>0.65</td>
<td>0.60</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>Standard Deviation (SD)</td>
<td>0.30</td>
<td>0.28</td>
<td>0.26</td>
<td>0.28</td>
</tr>
</tbody>
</table>

Note. * = Score >= 1 SD.
SCOPE = Summary (Scope) of the Work, ALLOW = Allowances, MEAS = Measurement & Payment, ALT = Alternates/Alternatives, COORD = Coordination, FIELD = Field Engineering, REG = Regulatory Requirements, ABRV = Abbreviations & Symbols, IDENT = Identification Systems, REF = Reference Standards, SPECL = Special Project Procedures, MEET = Project Meetings, SUBMT = Submittals, SCHED = Scheduling Specifications/Requirements, OTHRP = Other Project Control Requirements, CLOUT = Contract Closeout.

4.3.3.1 Normalized Specification Claims Rankings, Small Sized Companies

For small companies, coordination, scheduling, measurement & payment and summary (scope) of the work were the highest ranked sources of claims (Table 4.11).
Table 4.11: Normalized Claims Rankings, Small Companies

<table>
<thead>
<tr>
<th>Rank</th>
<th>Specification</th>
<th>n</th>
<th>Weighted Score</th>
<th>Normalized Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coordination</td>
<td>25</td>
<td>60</td>
<td>1.55</td>
</tr>
<tr>
<td>2</td>
<td>Scheduling</td>
<td>27</td>
<td>58</td>
<td>1.50</td>
</tr>
<tr>
<td>3</td>
<td>Measurement &amp; Payment</td>
<td>26</td>
<td>48</td>
<td>1.24</td>
</tr>
<tr>
<td>4</td>
<td>Summary (Scope) of the Work</td>
<td>23</td>
<td>47</td>
<td>1.22</td>
</tr>
<tr>
<td>5</td>
<td>Other Requirements</td>
<td>24</td>
<td>46</td>
<td>1.19</td>
</tr>
<tr>
<td>6</td>
<td>Contract Closeout</td>
<td>26</td>
<td>45</td>
<td>1.17</td>
</tr>
<tr>
<td>7</td>
<td>Submittals</td>
<td>24</td>
<td>42</td>
<td>1.09</td>
</tr>
<tr>
<td>8</td>
<td>Special Project Procedures</td>
<td>25</td>
<td>40</td>
<td>1.04</td>
</tr>
<tr>
<td>9</td>
<td>Field Engineering</td>
<td>23</td>
<td>38</td>
<td>0.98</td>
</tr>
<tr>
<td>10</td>
<td>Alternates/Alternatives</td>
<td>24</td>
<td>34</td>
<td>0.88</td>
</tr>
<tr>
<td>11</td>
<td>Reference Standards</td>
<td>23</td>
<td>30</td>
<td>0.78</td>
</tr>
<tr>
<td>12</td>
<td>Project Meetings</td>
<td>22</td>
<td>29</td>
<td>0.75</td>
</tr>
<tr>
<td>13</td>
<td>Allowances</td>
<td>22</td>
<td>28</td>
<td>0.72</td>
</tr>
<tr>
<td>14</td>
<td>Regulatory Requirements</td>
<td>22</td>
<td>27</td>
<td>0.70</td>
</tr>
<tr>
<td>15</td>
<td>Identification Systems</td>
<td>22</td>
<td>24</td>
<td>0.62</td>
</tr>
<tr>
<td>16</td>
<td>Abbreviations &amp; Symbols</td>
<td>22</td>
<td>22</td>
<td>0.57</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td></td>
<td>38.63</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>Standard Deviation (SD)</td>
<td></td>
<td>1.65</td>
<td>0.30</td>
</tr>
</tbody>
</table>

*Note*: * => Score => 1 SD. Normalized scores based on mean weighted score value of 38.63. SCOPE = Summary (Scope) of the Work, ALLOW = Allowances, MEAS = Measurement & Payment, ALT = Alternates/Alternatives, COORD = Coordination, FIELD = Field Engineering, REG = Regulatory Requirements, ABRV = Abbreviations & Symbols, IDENT = Identification Systems, REF = Reference Standards, SPECL = Special Project Procedures, MEET = Project Meetings, SUBMT = Submittals, SCHED = Scheduling Specifications/Requirements, OTHRP = Other Project Control Requirements, CLOUT = Contract Closeout. n = number of responses.

4.3.3.2 Normalized Specification Claims Rankings, Medium Sized Companies

For medium-sized companies, (Table 4.12), coordination, scheduling, and summary (scope) of the work were the highest ranking sources of claims.
Table 4.12: Normalized Claims Rankings, Medium Sized Companies

<table>
<thead>
<tr>
<th>Rank</th>
<th>Specification</th>
<th>n</th>
<th>Weighted Score</th>
<th>Normalized Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coordination</td>
<td>47</td>
<td>109</td>
<td>1.47 *</td>
</tr>
<tr>
<td>2</td>
<td>Scheduling</td>
<td>49</td>
<td>108</td>
<td>1.45 *</td>
</tr>
<tr>
<td>3</td>
<td>Summary (Scope) of the Work</td>
<td>48</td>
<td>91</td>
<td>1.23</td>
</tr>
<tr>
<td>4</td>
<td>Other Requirements</td>
<td>41</td>
<td>91</td>
<td>1.23</td>
</tr>
<tr>
<td>5</td>
<td>Submittals</td>
<td>44</td>
<td>89</td>
<td>1.20</td>
</tr>
<tr>
<td>6</td>
<td>Contract Closeout</td>
<td>48</td>
<td>88</td>
<td>1.19</td>
</tr>
<tr>
<td>7</td>
<td>Special Project Procedures</td>
<td>49</td>
<td>78</td>
<td>1.05</td>
</tr>
<tr>
<td>8</td>
<td>Measurement &amp; Payment</td>
<td>42</td>
<td>78</td>
<td>1.05</td>
</tr>
<tr>
<td>9</td>
<td>Field Engineering</td>
<td>42</td>
<td>71</td>
<td>0.96</td>
</tr>
<tr>
<td>10</td>
<td>Alternates/Alternatives</td>
<td>45</td>
<td>68</td>
<td>0.92</td>
</tr>
<tr>
<td>11</td>
<td>Reference Standards</td>
<td>39</td>
<td>66</td>
<td>0.89</td>
</tr>
<tr>
<td>12</td>
<td>Regulatory Requirements</td>
<td>42</td>
<td>57</td>
<td>0.77</td>
</tr>
<tr>
<td>13</td>
<td>Project Meetings</td>
<td>38</td>
<td>56</td>
<td>0.75</td>
</tr>
<tr>
<td>14</td>
<td>Allowances</td>
<td>37</td>
<td>52</td>
<td>0.70</td>
</tr>
<tr>
<td>15</td>
<td>Identification Systems</td>
<td>38</td>
<td>43</td>
<td>0.58</td>
</tr>
<tr>
<td>16</td>
<td>Abbreviations &amp; Symbols</td>
<td>38</td>
<td>43</td>
<td>0.58</td>
</tr>
</tbody>
</table>

Mean: 42.94, Weighted Score: 74.25, Normalized Score: 1.00

Note. * = Score >= 1 SD. Normalized scores based on mean weighted score value of 74.25.

SCOPE = Summary (Scope) of the Work, ALLOW = Allowances, MEAS = Measurement & Payment, ALT = Alternates/Alternatives, COORD = Coordination, FIELD = Field Engineering, REG = Regulatory Requirements, ABRV = Abbreviations & Symbols, IDENT = Identification Systems, REF = Reference Standards, SPECL = Special Project Procedures, MEET = Project Meetings, SUBMT = Submittals, SCHED = Scheduling Specifications/Requirements, OTHRP = Other Project Control Requirements, CLOUT = Contract Closeout. n = number of responses.

4.3.3.3 Normalized Specification Claims Rankings, Large Sized Companies

For large companies, coordination, summary (scope) of the work, scheduling, and special project procedures were the highest ranking sources of claims, as shown in Table 4.13.
### Table 4.13: Normalized Claims Rankings, Large Companies

<table>
<thead>
<tr>
<th>Rank</th>
<th>Specification</th>
<th>n</th>
<th>Weighted Score</th>
<th>Normalized Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coordination</td>
<td>39</td>
<td>90</td>
<td>1.46 *</td>
</tr>
<tr>
<td>2</td>
<td>Summary (Scope) of the Work</td>
<td>33</td>
<td>81</td>
<td>1.32 *</td>
</tr>
<tr>
<td>3</td>
<td>Scheduling</td>
<td>39</td>
<td>80</td>
<td>1.30 *</td>
</tr>
<tr>
<td>4</td>
<td>Special Project Procedures</td>
<td>38</td>
<td>76</td>
<td>1.24</td>
</tr>
<tr>
<td>5</td>
<td>Submittals</td>
<td>39</td>
<td>73</td>
<td>1.19</td>
</tr>
<tr>
<td>6</td>
<td>Other Requirements</td>
<td>39</td>
<td>69</td>
<td>1.12</td>
</tr>
<tr>
<td>7</td>
<td>Field Engineering</td>
<td>37</td>
<td>64</td>
<td>1.04</td>
</tr>
<tr>
<td>8</td>
<td>Contract Closeout</td>
<td>38</td>
<td>64</td>
<td>1.04</td>
</tr>
<tr>
<td>9</td>
<td>Measurement &amp; Payment</td>
<td>38</td>
<td>60</td>
<td>0.98</td>
</tr>
<tr>
<td>10</td>
<td>Alternates/Alternatives</td>
<td>37</td>
<td>60</td>
<td>0.98</td>
</tr>
<tr>
<td>11</td>
<td>Reference Standards</td>
<td>38</td>
<td>52</td>
<td>0.85</td>
</tr>
<tr>
<td>12</td>
<td>Project Meetings</td>
<td>38</td>
<td>52</td>
<td>0.85</td>
</tr>
<tr>
<td>13</td>
<td>Regulatory Requirements</td>
<td>34</td>
<td>45</td>
<td>0.73</td>
</tr>
<tr>
<td>14</td>
<td>Abbreviations &amp; Symbols</td>
<td>37</td>
<td>40</td>
<td>0.65</td>
</tr>
<tr>
<td>15</td>
<td>Allowances</td>
<td>23</td>
<td>39</td>
<td>0.63</td>
</tr>
<tr>
<td>16</td>
<td>Identification Systems</td>
<td>37</td>
<td>39</td>
<td>0.63</td>
</tr>
</tbody>
</table>

Mean: 36.50, SD: 3.98

Note: * = Score => 1 SD. Normalized scores based on mean weighted score value of 61.50.

SCOPE = Summary (Scope) of the Work, ALLOW = Allowances, MEAS = Measurement & Payment, ALT = Alternates/Alternatives, COORD = Coordination, FIELD = Field Engineering, REG = Regulatory Requirements, ABRV = Abbreviations & Symbols, IDENT = Identification Systems, REF = Reference Standards, SPECL = Special Project Procedures, MEET = Project Meetings, SUBMT = Submittals, SCHED = Scheduling Specifications/Requirements, OTHRP = Other Project Control Requirements, CLOUT = Contract Closeout. n = number of responses.

### Table 4.14: Top Five Normalized Claims Rankings, All Companies

<table>
<thead>
<tr>
<th>Rank</th>
<th>Specification</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coordination</td>
<td>1.55*</td>
<td>1.47*</td>
<td>1.46*</td>
<td>1.49*</td>
</tr>
<tr>
<td>2</td>
<td>Scheduling</td>
<td>1.50</td>
<td>1.45*</td>
<td>1.30</td>
<td>1.42</td>
</tr>
<tr>
<td>3</td>
<td>Summary (Scope) of the Work</td>
<td>1.22</td>
<td>1.23</td>
<td>1.32</td>
<td>1.25</td>
</tr>
<tr>
<td>4</td>
<td>Other Requirements</td>
<td>1.19</td>
<td>1.23</td>
<td>1.12</td>
<td>1.18</td>
</tr>
<tr>
<td>5</td>
<td>Submittals</td>
<td>1.09</td>
<td>1.20</td>
<td>1.19</td>
<td>1.16</td>
</tr>
</tbody>
</table>
The items highlighted by asterisks in Table 4.14 above warrant additional discussion. Coordination generally covers two situations on a construction project. The first, and most common, is the coordination between trades, for example, plumbers and electricians. Briefly stated, when the trades attempt to operate in the same work space, conflicts can arise due to order of installation, priorities and supplies and equipment "being in the way". Coordination is less of a problem when a single prime (general) contractor is in charge; the potential for dispute is much stronger on a multi-prime job. Coordination problems can frequently be avoided by proper planning in conjunction with the trade contractors.

Scheduling issues arise from poor planning, bad estimates, lack of coordination, delayed and late deliveries, weather and many other reasons. Problems may also arise where the contractor does not fully understand its reporting obligations under the contract. Originally a planning tool, the schedule has become both a sword and a shield to owner and contractor alike, oftentimes being utilized to justify liquidated damages for late performance or claims for additional amounts for extended overhead and the like. Like coordination issues, scheduling problems can often be avoided by involving contractors in the schedule development process.

4.3.4 Summary of Which Front End Specifications Cause Claims

overall, coordination, scheduling, and summary (scope) of the work were the highest ranking sources of claims, as indicated by both raw and normalized data. For small companies, measurement & payment category ranked high; Measurement & payment does not appear to be a significant concern for larger companies. This may be a reflection of capitalization values and the financial strength of the larger companies or that the larger companies contract more frequently with public agencies and larger clients where the ability to pay is less often an issue. Special project procedures ranked higher for large companies than for medium or small companies, possibly because large companies encounter special project procedures more often than do smaller companies. Across company size, coordination, scheduling, and summary (scope) of the work were
the highest ranking source of claims. With sources of claims identified, we next turn to
the economics of claims arising from the Front End Specifications.

4.4 Front End Specifications Claims: Additional Costs Incurred and Profits Lost
(*Hypothesis 2*)

To document the impact of claims on company costs and profits (*Hypothesis 2*),
participants were asked to estimate the additional costs (expressed as a percentage of the
total project value) of resolving claims. Additionally, participants were asked to estimate
the additional profit that would have been retained had there been no claims on
projects:

*For Non-Private Agency Entities, Including All Indirect Costs (that is, included in your normal costs such as salaries, etc.), What Is Your Estimate of the Additional Costs (expressed as a percentage of the total) That Resolving Claims and Disputes Cost?*

and

*For Private Businesses, and Including All Indirect Costs (that is, included in your normal costs such as lost time, salaries, etc.), What Is Your Estimate of the Additional Profit (expressed as a percentage of the total) That You Would Have Retained Had There Been No Claims or Disputes on Your Projects?*

These are two separate questions. All entities have costs, though not all entities have
profits. For example, many governmental entities have no independent revenue stream,
being funded by a legislature or Congress. Others cover their costs, in whole or in part,
by generating revenues from third-parties, e.g., state and federal parks. Private sector
entities need to generate both revenues and profits in order to survive. To recognize
these differences, the questions were presented separately.
4.4.1 Additional Costs

While 69% of participants reported that FES claims add 1-20% in additional costs (Table 4.15, top left), it is important to note that the remaining 31% of participants reported that FES claims are responsible for more than 20% in additional costs. In 8% of cases, more than 41% was added in additional costs because of FES claims, including one participant who reported that FES claims add 80-100% in additional costs.

<table>
<thead>
<tr>
<th>Cost</th>
<th>1-20%</th>
<th>1-20%</th>
<th>21-40%</th>
<th>21-40%</th>
<th>41-59%</th>
<th>41-59%</th>
<th>60-79%</th>
<th>60-79%</th>
<th>80-100%</th>
<th>80-100%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Costs</td>
<td>103</td>
<td>69</td>
<td>32</td>
<td>21</td>
<td>9</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>147</td>
</tr>
<tr>
<td>Lost Profit</td>
<td>103</td>
<td>69</td>
<td>28</td>
<td>19</td>
<td>15</td>
<td>10</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>149</td>
</tr>
</tbody>
</table>

The additional costs were expected: professional services (attorneys, consultants, etc.) cost money.

4.4.2 Profits Lost

Data regarding additional profit that would have been retained had there been no claims mirrored the additional costs data, showing that 31% of participants reported that more than 20% of additional profit would have been retained if not for FES claims. The bottom of Table 4.8 shows that one-eighth of participants (12%) reported that more than 40% in profit would have been retained in the absence of claims.

The collected data establish that the costs of claims are significant and that profits correspondingly suffer. This is not surprising: claims take time and money to resolve. Some of the costs involved are direct (e.g., legal and consulting fees) while others are indirect (for example, lost productivity and management distraction). Not only do these costs impact the project burdened with the claim, the potential interference with obtaining new work as a result of management distraction or damage to reputation can also result. Moreover, and depending upon the situation, a company could spend more
pursuing a claim than the claim is worth. This possibility mandates the need for informed management decision making.

### 4.5 Complexity and Front End Specifications (*Hypothesis 3*)

To address the questions raised by *Hypothesis 3*, Participants were asked the following question:

*How Would You Rate Each of the Following General Requirements Specifications?*

Respondents could choose from four choices: Too Simplistic; Of Acceptable Complexity; Too Complex; and Not Required.

#### 4.5.1 Front End Specifications and Complexity, All Companies

Utilizing a three-point scale (Too Simple = -1, Acceptable = 0, Too Complex = +1), participants indicated their perceptions of FES complexity by category. These data were then normalized to account for variations in the number of responses; the results are shown in Table 4.16 with primary sorting based on acceptability.

Table 4.16 details the normalized perceived complexity of the enumerated Front End Specifications across all companies. On average, FES were considered to be of acceptable complexity by two-thirds of participants (67%). Regulatory requirements ranked first as too complex (29%), while scope of work (summary) was the least-often cited as being too complex (4%).
Table 4.16: Normalized Complexity Response Proportions, All Companies

<table>
<thead>
<tr>
<th>TOTAL</th>
<th>n</th>
<th>Too Simple</th>
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</tr>
<tr>
<td>Specl</td>
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<tr>
<td>Othrp</td>
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</tr>
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<tr>
<td>Scope</td>
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</tr>
<tr>
<td>Submt</td>
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<td>13%</td>
<td>71%</td>
<td>16%</td>
</tr>
<tr>
<td>Meet</td>
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<td>22%</td>
<td>71%</td>
<td>6%</td>
</tr>
<tr>
<td>Allow</td>
<td>120</td>
<td>21%</td>
<td>73%</td>
<td>7%</td>
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<tr>
<td>Meas</td>
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<td>10%</td>
<td>81%</td>
<td>9%</td>
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<tr>
<td>Ident</td>
<td>118</td>
<td>11%</td>
<td>82%</td>
<td>7%</td>
</tr>
<tr>
<td>Abrv</td>
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<td>12%</td>
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<td>5%</td>
</tr>
<tr>
<td>Mean</td>
<td>123.9</td>
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<td>67%</td>
<td>12%</td>
</tr>
<tr>
<td>SD</td>
<td>2.8</td>
<td>8%</td>
<td>10%</td>
<td>7%</td>
</tr>
</tbody>
</table>

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The tendency to describe the Front End Specification regarding regulatory regulations as being overly complex reflects the inconsistencies between designers and governmental jurisdictions in aligning the various building and construction requirements. It is not unknown for a building department, for example, to approve a set of drawings only to have an inspector reject the work due to personal perspectives.47

The fact that roughly one-quarter of the participants found almost half (7 of 16) of the FES too simple suggests that either those participants want or need more definitive direction or that they don't truly understand the stated requirements. With scheduling and coordination being rated too simple by one-third of the respondents and those

47 This has nothing to do with nefarious activities on the part of the inspector. The inspector may interpret the code requirements differently than the office staff. While this is something that should be resolved internally by the government organization, often times it falls on the contractors to get the matter resolved.
topics being available for a significant number of claims and subsequent litigation, there is clearly a disconnect between the written language and the actions taken based on the contract terminology.

Overall, these findings suggest that over-simplicity may be a problem. However, this analysis is insensitive to potential differences in FES and complexity based on company size. Therefore, we next turn to FES and complexity for small, medium and large companies.

4.5.2 Front End Specifications and Complexity, Small Sized Companies

For small businesses, 69% of sources were considered to be of acceptable complexity. On balance, responses of too simple (23%) were of greater abundance than responses of too complex (9%). Two Front End Specifications stood out for this group: Some participants perceived contract closeout and alternates/alternatives as too simple, while other participants considered them as too complex (Table 4.17).
Table 4.17: Normalized Complexity Response Proportions, Small Companies

<table>
<thead>
<tr>
<th>SMALL</th>
<th>n</th>
<th>Too Simple</th>
<th>Acceptable</th>
<th>Too Complex</th>
</tr>
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<td>48%</td>
<td>17%*</td>
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<td>Alt</td>
<td>28</td>
<td>29%</td>
<td>54%</td>
<td>18%*</td>
</tr>
<tr>
<td>Coord</td>
<td>28</td>
<td>43%</td>
<td>54%</td>
<td>4%</td>
</tr>
<tr>
<td>Clout</td>
<td>29</td>
<td>21%</td>
<td>55%</td>
<td>24%*</td>
</tr>
<tr>
<td>Field</td>
<td>28</td>
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<td>57%</td>
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<td>27</td>
<td>33%</td>
<td>63%</td>
<td>4%</td>
</tr>
<tr>
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<td>Reg</td>
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<td>75%</td>
<td>18%</td>
</tr>
<tr>
<td>Ref</td>
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<td>Scope</td>
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<td>75%</td>
<td>0%</td>
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<tr>
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<td>10%</td>
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<td>0%</td>
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<td>Meet</td>
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</tr>
<tr>
<td>Abrv</td>
<td>26</td>
<td>12%</td>
<td>88%</td>
<td>0%</td>
</tr>
<tr>
<td>Mean</td>
<td>27.8</td>
<td>23%</td>
<td>69%</td>
<td>9%</td>
</tr>
</tbody>
</table>

Note: SCOPE = Summary (Scope) of the Work, ALLOW = Allowances, MEAS = Measurement & Payment, ALT = Alternates/Alternatives, COORD = Coordination, FIELD = Field Engineering, REG = Regulatory Requirements, ABRV = Abbreviations & Symbols, IDENT = Identification Systems, REF = Reference Standards, SPECL = Special Project Procedures, MEET = Project Meetings, SUBMT = Submittals, SCHED = Scheduling Specifications/Requirements, OTHRP = Other Project Control Requirements, CLOUT = Contract Closeout. n = number of responses. * = More than one standard deviation (SD) above the mean.

Identified in Table 4.17 as being too complex, smaller companies appear to have more challenges with closeout procedures as well as scheduling and alternates. But while 17% said that the scheduling specifications were too complex, twice as many (34%) said that the same provisions were too simple. Coordination was largely perceived to be too simple (43%), as was field engineering, with both reporting standard deviations greater than 1. These results are not consistent with those from the medium- and larger-sized companies. Regulatory requirements, though, were more likely to be perceived as too complex (18%) than too simple (7%) which follows with the other groups.

4.5.3 Front End Specification and Complexity, Medium Sized Companies

For medium sized businesses, FES were considered to be of acceptable complexity (62%) on average. Responses of too simple (23%) were of greater abundance on
average than opinions of too complex (15%). Similar to the small companies, medium-sized companies had complexity concerns about regulatory requirements (29%) and closeout (23%). Coordination was perceived as either too simple (40%) or as too complex (21%) by a majority of participants (Table 4.18).

Table 4.18: Normalized Complexity Response Proportions, Medium Companies

<table>
<thead>
<tr>
<th>MEDIUM</th>
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<th>Acceptable</th>
<th>Too Complex</th>
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<td>40%</td>
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<td>35%*</td>
<td>48%</td>
<td>17%</td>
</tr>
<tr>
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</tr>
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<td>ref</td>
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<td>22%</td>
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<td>4%</td>
</tr>
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<td>21%</td>
<td>68%</td>
<td>11%</td>
</tr>
<tr>
<td>allow</td>
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<td>22%</td>
<td>68%</td>
<td>10%</td>
</tr>
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</tr>
<tr>
<td>abrv</td>
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<td>12%</td>
<td>76%</td>
<td>12%</td>
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<tr>
<td>ident</td>
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<td>16%</td>
<td>76%</td>
<td>8%</td>
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<td>62%</td>
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<td>11%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Note. SCOPE = Summary (Scope) of the Work, ALLOW = Allowances, MEAS = Measurement & Payment, ALT = Alternates/Alternatives, COORD = Coordination, FIELD = Field Engineering, REG = Regulatory Requirements, ABRV = Abbreviations & Symbols, IDENT = Identification Systems, REF = Reference Standards, SPECL = Special Project Procedures, MEET = Project Meetings, SUBMT = Submittals, SCHED = Scheduling Specifications/Requirements, OTHRP = Other Project Control Requirements, CLOUT = Contract Closeout. n = number of responses. * = More than one standard deviation (SD) above the mean.

4.5.4 Front End Specifications and Complexity, Large Sized Companies

Consistent with the small and medium sized companies, most responses (72%) from large company participants indicated that Front End Specifications were of overall acceptable complexity. Regulatory requirements were more likely to be perceived as too complex (36%) than too simple (11%) by participants from Large Sized Companies, as
were special project procedures (20% v 13%). Overall, responses of too simple (17%) were received more often than too complex (12%) (Table 4.19).

Table 4.19: Normalized Complexity Response Proportions, Large Companies

<table>
<thead>
<tr>
<th>LARGE</th>
<th>n</th>
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<td>othrp</td>
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</tr>
<tr>
<td>meet</td>
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</table>

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4.5.5 Summary of Front End Specifications and Complexity

Front End Specifications were perceived to be of adequate complexity by two-thirds of participants. However, regardless of business size, FES were perceived as too simple roughly twice as often as too complex.

Importantly, coordination, scheduling, and summary (scope) of the work, the three FES categories causing the highest rate of claims (Section 4.4), demonstrated an interesting pattern. Regardless of company size, coordination, scheduling, and summary (scope) of
the work were each more likely to be perceived as too simple than as too complex. This would appear to be a contradiction in terms though it is possible that those opining on the simplicity of the scheduling specification have a good command of the topic and have no claims arising from scheduling disputes. Conversely, those same respondents may have significant claims from scheduling because the scheduling specification isn't clearly understood. More study of this apparent dichotomy could be warranted.

Table 4.20 highlights those Front End Specifications where the standard deviations for too simplistic and too complex were greater than or equal to 1.0.
These findings suggest FES vary greatly in perceived complexity across business sizes. While regulations ranked first as too complex, more than 10% of participants at each company size perceived regulations as too simple. While these findings fall short of providing conclusive proof that FES complexity directly causes claims, these data provide empirical evidence of a relationship between FES and perceived complexity. The industry should eliminate complexity (real or perceived) from the Front End Specifications. The use of truly standardized documents such as the ConsensusDOCS® is a solid first step.
However, these complexity data can not reveal whether the use of performance-based Front End Specifications would increase or reduce claims.

4.6 **Would the Use of Performance-Based Front End Specifications Increase or Reduce Claims? (Hypothesis 4)**

This research question (Hypothesis 4) is answered in two parts. First, the use of Performance-Based FES (PB-FES) and their Potential Effect on Claims is detailed (Hypothesis 4a). Then, to see if the use of PB-FES might affect the occurrence of claims, the potential relationship between document authorship and PB-FES is explored as Hypothesis 4b.

Performance-based specifications can be explained as follows:

Performance based specifications focus on outcomes or results rather than process, and the required goods and services rather than how the goods and services are produced. Conversely, design specifications outline exactly how the contractor must perform the service or how the product is made. Performance based specifications allow participants to bring their own expertise, creativity and resources to the bid process without restricting them to predetermined methods or detailed processes. This allows the participants to provide the product or service at less cost and shifts some of the risk to the contractors. For example, if a state agency utilizes a design specification for a unit of laboratory equipment, and the equipment does not work correctly, then the results may be the fault of the specification. However, if the agency wrote a performance based specification, the unit must operate properly in order to meet the performance standards.48

A number of owners are exploring the move from prescriptive specifications to performance-based specifications including NRMCA\textsuperscript{49} and the Department of Defense.\textsuperscript{50} Many of the topics included in the FES could be successfully converted to performance-based requirements. The question for the survey participants was whether doing so would be beneficial, detrimental or result in no meaningful difference. Participants were asked:

\textit{With Reference to the General Requirements (Front End) Specifications only, Do You Believe that the Use of Performance-based Requirements Would Lead to More or Fewer Disputes Involving Those Topics?}

### 4.6.1 Performance-Based Front End Specifications and Potential Effect on Claims (\textit{Hypothesis 4a})

Participants were asked whether Performance-Based Front End Specifications ("PB-FES") would increase or decrease claims. Results are shown in Figure 4.6.


\textsuperscript{50} “Guidebook for Performance-Based Services Acquisition (PBSA) in the Department of Defense” from http://www.acquisition.gov/comp/seven_steps/library/DODguidebook-pbsa.pdf.
Overall, 53 of 146 reported that PB-FES would increase claims (36%), 38 of 146 reported that PB-FES would neither increase nor decrease claims (26%) and 55 of 146 reported that PB-FES would decrease claims (38%). These opinions were clearly split as to whether PB-FES would increase or decrease claims, but the high rates of more claims and the similarly high rate of fewer claims suggest that participants may have differing views regarding the effects of PB-FES on claims.

While a potential benefit of PB-FES is that contractor performance is judged solely on results, some contractors might see the lack of detailed, directive FES as a problem. Where a contractor prefers to rely on the specifications as an excuse for late or non-performance, the use of PB-FES would work against it. How often this might occur or to what degree such a position might affect the industry, or any particular segment of it, is unknown. Empirical research focusing on the use of Performance-Based Front End Specifications would be necessary to address the question.
4.6.2 Document Authorship and Front End Specification Effects on Claims (*Hypothesis 4*)

To investigate if any Document authorship and PB-FES relationship would increase or decrease claims (*Hypothesis 4*), the same document authorship data discussed in section 4.1.8 above was revisited. Table 4.21 shows that perceptions are similar across Document authorship identities, with "increase claims", "decrease claims" and "no effect on claims", each well represented by participants using American Institute of Architects (AIA), Internal Contracts, owner designer or CM-created documents (Owner/Designer/CM), or the Engineers Joint Contract Documents Committee (EJCDC) publications.

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<tr>
<td></td>
<td>%</td>
<td>36</td>
<td>26</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>

*Note.* Count = number of responses.
The findings for Hypothesis 4 are inconclusive. With the exception of the three people referencing the AGC documents, the remaining respondents were more or less evenly split as to whether Performance-Based FES would make any difference in reducing claims. An opportunity for additional research arises from this: if provided with sample PB-FES language, would the outcome of the research as to this question change significantly?

4.6.3 Summary of Whether the Use of Performance-Based Front End Specifications Increase or Reduce Claims

Participants were well-divided in perceptions regarding whether the use of PB-FES would increase or decrease claims. Further, present findings provide no empirical evidence supporting a nexus between document authorship and perceptions of whether PB-FES increase claims. The next section looks at the effect of partnering on FES claims generation.

4.7 Partnering and Front End Specifications: Claims and Resolution (Hypothesis 5)

Partnering is the process by which stakeholders in the project meet early on to address potential areas of dispute and develop a mechanism for the resolution of claims at the lowest levels. Of 150 participants, 82 had utilized partnering sessions (55%) and 68 had not engaged in partnering sessions (45%).

4.7.1 Partnering and Claims Resolution

Participants were asked about their experiences using partnering and the resolution of claims. Of particular interest was determining whether resolution by "Negotiation Between The Parties Without Utilizing Attorneys" was significantly higher where partnering was utilized. However, Table 4.22 shows that resolution without the use of
attorneys ("Parties Resolution") was generally similar across partnering and non-partnering participants.

Table 4.22: Partnering and Negotiation between the Parties without Utilizing Attorneys

<table>
<thead>
<tr>
<th>Parties Resolution</th>
<th>1-20%</th>
<th>21-40%</th>
<th>41-59%</th>
<th>60-79%</th>
<th>80-100%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Partnering</td>
<td>32</td>
<td>51</td>
<td>7</td>
<td>11</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Non-Partnering</td>
<td>27</td>
<td>34</td>
<td>9</td>
<td>11</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>42</td>
<td>16</td>
<td>11</td>
<td>16</td>
<td>11</td>
</tr>
</tbody>
</table>

Note. Parties Resolution = Negotiation Between The Parties Without Utilizing Attorneys. n = number of responses.

When expressed graphically (Figure 4.7), it is clear that there is a strong tendency amongst those who utilized partnering to settle claims without attorneys in a majority of cases.

Figure 4.7: Partnering and Negotiation between the Parties without Utilizing Attorneys

The resolution of claims without the use of attorneys would be consistent with a willingness to discuss matters at the earliest stage, as partnering encourages, which would theoretically lead to the prompter resolution and disposal of potentially significant disputes. Since outside lawyers cost money, the willingness to resolve claims without the use of attorneys is an inherent goal of the partnering process. However,
present findings provide no empirical evidence supporting higher FES claims resolution by parties without the use of attorneys on projects utilizing partnering.

### 4.7.2 Partnering and Front End Specifications: Effects on Claims

Partnering and non-partnering participants were contrasted in their perceptions of whether the use of performance-based front end specifications would increase or decrease (or have no effect on) claims. Frequencies and percentages of Front End Specifications claims by partners and non-partners are displayed in Table 4.23.

<table>
<thead>
<tr>
<th>Partnering Status</th>
<th>Statistic</th>
<th>Use of P/B FES would ___ Claims</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Decrease</td>
<td>No Diff</td>
</tr>
<tr>
<td>Non-Partnering</td>
<td>n</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>30</td>
<td>23</td>
</tr>
<tr>
<td>Partnering</td>
<td>n</td>
<td>33</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>41</td>
<td>29</td>
</tr>
<tr>
<td>Total</td>
<td>n</td>
<td>53</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>36</td>
<td>26</td>
</tr>
</tbody>
</table>

*Note. n = number of responses.*

Partnering and non-partnering participants differed in perceptions. Partnering participants were more likely to perceive that performance-based FES would increase claims (41%) rather than decrease claims (30%). In contrast, non-partnering participants were more likely to perceive that performance-based FES would decrease claims (47%) rather than increase claims (30%).

One possible reason for this difference in perception is a recognition of the purpose of partnering. When successfully utilized, partnering encourages parties to resolve differences (disputes, potential and existing claims) at the lowest level. To the extent that occurs, it is possible that upper management never even knows about the issue(s).
4.7.3 Summary of Partnering and Front End Specifications: Claims and Resolution

Partnering participants were more likely to perceive that Performance-Based Front End Specifications would increase, not decrease claims. No relationship was found between partnering and claims resolution.

4.8 Claims Resolution

The finality of any claim is the resolution, and depending on the resolution, the time and cost can vary significantly. Generally, resolution from negotiation between the parties without utilizing attorneys is the preferred resolution path, given that other paths to claims resolution generally cost significant money and time.

To develop some information as to how claims were resolved by the participants at the completion of the project, respondents were asked:

*Of the claims and disputes that were not resolved prior to completion of the project, what percentage was resolved by [one of the listed categories]?*

Participants could choose between seven categories of resolution:

- Negotiation Between the Parties (without utilizing attorneys)
- Negotiations Involving Attorneys
- Formal Mediation (Using a neutral third party)
- Arbitration
- Other Alternative Dispute Resolution Method (mock trial, etc.)
- Litigation Settled Before Trial
- Judgment After Trial

The costs of each of these methods can vary substantially.\(^{51}\) To the extent that parties can resolve their own differences without the employment of outside professionals (e.g.,

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\(^{51}\) The costs of claims resolution was not a topic of the research.
attorneys and consultants), it stands to reason that the costs of claims resolution will be significantly lower for all concerned.

Table 4.24 displays the proportion of claims resolved by each method across five percentage ranges. Notice that the top right of Table 4.24 indicates 19% of participants reported claims were resolved between parties 81-100% of the time.

<table>
<thead>
<tr>
<th>Type</th>
<th>Method</th>
<th>n</th>
<th>1-20%</th>
<th>21-40%</th>
<th>41-60%</th>
<th>61-80%</th>
<th>81-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preferred</td>
<td>parties</td>
<td>127</td>
<td>42%</td>
<td>13%</td>
<td>13%</td>
<td>14%</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>lawyers</td>
<td>131</td>
<td>45%</td>
<td>27%</td>
<td>12%</td>
<td>11%</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>mediat</td>
<td>123</td>
<td>69%</td>
<td>17%</td>
<td>8%</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>arb</td>
<td>121</td>
<td>72%</td>
<td>17%</td>
<td>5%</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>otherres</td>
<td>116</td>
<td>92%</td>
<td>3%</td>
<td>3%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>beforetr</td>
<td>125</td>
<td>67%</td>
<td>16%</td>
<td>7%</td>
<td>4%</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>aftertr</td>
<td>120</td>
<td>86%</td>
<td>8%</td>
<td>2%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Average</td>
<td>Average</td>
<td>123.3</td>
<td>68%</td>
<td>15%</td>
<td>7%</td>
<td>6%</td>
<td>5%</td>
</tr>
</tbody>
</table>


This finding suggests that owners and contractors alike recognize the benefits of resolving their disputes without outside assistance. While negotiation between the parties without utilizing attorneys may be the preferred path, whether partnering effects FES claims resolution was unclear.

### 4.9 Research Results – Summary and Preliminary Discussion

#### 4.9.1 Summary Research Results

The present study of 150 construction professionals revealed that FES cause claims and that FES claims are financially expensive. Coordination, scheduling and summary (scope) of the work were identified as having the greatest potency as the most frequent sources of claims across company sizes. Further, the measurement & payment
provisions ranked high for small companies only, while special project procedures ranked high for large companies but not for medium or small companies. Complexity findings were surprising in that the FES were more likely to be perceived as too simple rather than as too complex with the regulatory requirements and scheduling appearing to be somewhat of dichotomies. Regardless of company size, coordination, scheduling and summary (scope) of the work (the greatest sources of claims among FES) were each more likely to be perceived as too simple than as too complex. Importantly, essentially regardless of which FES or size of company, each of the FES was too simple for some participants and too complex for others. While resolution between parties was the most common FES claims resolution method, no relationship was found between partnering and claims resolution. Partnering participants were more likely to perceive that performance-based FES would increase, not decrease, claims.

4.9.2 Research Results: Preliminary Discussion

Previous research grouped the individual Front End Specifications provisions, without differentiation, into one generalized "bucket" called “Specifications”. Those research efforts were also significantly limited, either by the survey population’s size or limitation of the target population. Other differences included geography (such as Yogeswaran’s and Kumaraswamy’s Hong Kong studies) or the design-imposed limitations of the CCI study.

This research is also differentiated from previous research by the breadth of the target population. The survey was available to respondents without regard to geographic limitation (c.f., the Barnes and Mitrani survey (1995), which was limited to Florida contractors only), the type of construction performed or to one specific project (c.f., the CII study). As a result, responses were received from a more diverse mix of participants and provide a much wider basis for analysis and reference than either the CII (1986) or Barnes and Mitrani (1995) studies. See Table 4.25 below.
Table 4.25: Summary of Survey Responses

<table>
<thead>
<tr>
<th>Survey</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Industry Institute (CII)</td>
<td>36</td>
</tr>
<tr>
<td>Barnes and Mitrani (Florida only)</td>
<td>270</td>
</tr>
<tr>
<td>Hymes – Initial Survey</td>
<td>150</td>
</tr>
<tr>
<td>Hymes – UFES (follow-on) Survey</td>
<td>17</td>
</tr>
</tbody>
</table>

The CII (1986) study was limited to owners and general contractors only, each of whom was limited to discussing a single project. The Barnes and Mitrani study (1995) reached out to both general and specialty contractors but only within the state of Florida. The Barnes study, unlike either the CII or present studies, utilized a blind mailing to obtain data resulting in a significant number of returns, according to the published report; Both CII and Hymes contacted active businesses and individuals. The current study reached out nationally to owners, general and specialty contractors and consultants and others, representing a wider cross-section of the industry. The follow-on survey is discussed in Chapter 5.

Looking at other discussion points, roughly half of participants reported that scope of work clauses caused problems, a seemingly low number considering how often claims regarding “out of scope” work are reported in the litigated cases. Since the scope of work clause defines what is to be accomplished, the significance of this response suggests a lack of planning and communication on the part of the specification draftsperson. Other issues were also frequently mentioned as problems. The measurement of work and payments for work were identified as potential claim topics. Regulatory requirements, which can include a multitude of things, including non-compliant work and a lack of understanding of what was required under one or more code provisions on the part of the contractor, were cited as a problem by the participants. Project meetings as an issue were probably highlighted more for the amount of time consumed than for actual problems created. (This is a subjective, experienced-based observation).
It is clear that the size of the project does not dictate a likelihood or dearth of claims. While the raw data suggests that smaller projects have a larger number of claims, larger projects are not problem-free; indeed, the converse could well be the case. It is more likely that the numbers reflect the fact that there are significantly more “small” jobs performed than large projects. Similarly, large projects often have a more sophisticated claims resolution arrangement in place, for example, appointment of a project neutral or claims resolution board. By the same token, though, the larger claims, if not resolved, may well spark the publicly reported litigated cases, given the larger dollar amounts involved, or they may result in an unreported arbitration result.

While three-in-four participants reported that the Front End Specifications were “acceptable,” roughly half also said that those same topics created problems in many of the situations where there were claims. This suggests that the “norm” of acceptability may not be performing adequately in setting forth the drafter’s expectations for performance.

For all of the enumerated items in Question #10 of the survey (listing sixteen of the most common Front End Specifications provisions) roughly two-thirds of participants reported that the FES were of an acceptable level of complexity. Given this level of acceptance, it may first appear that the FES neither add to the complexity of the project nor pose a significant administrative burden to contractors. The present findings demonstrate that Technical Plans and Plan Mistakes account for more than twice as many claims as the FES. Nonetheless, the present research results demonstrate that the Front End Specifications contribute significant claims and costs to construction management.

There are some general remarks to be made regarding the survey responses. Just under half (43%) of the respondents reported using the forms published by the American Institute of Architects ("AIA"). In perspective, this suggests that use of a “standard” form (such as the AIA’s or the new ConsensusDOCS®) has strong support, since roughly half the respondents use such documents. The research did not inquire about
any modification to standard forms. Obviously, a modified "standard" document differs from the "standard" document, introducing additional variables, impacting the "credibility" of those "standard" documents. And to what degree such modification would change the outcome of this research is unknown.\textsuperscript{52}

The importance of the Front End Specifications cannot be overstated, as they provide the framework for administering the contract and tracking a project’s progress. For example, the rules of project scheduling and contractor payments and the change order process are contained in the Front End Specifications. These rules and requirements ("specifications") often are referenced as the baseline when a claim or dispute arises as, for example, when a provision requires written notice to be given within a specified time period. Such specifications may set up the basis for a later claim by an aggrieved party, as detailed in Chapter 5, the Discussion.

\textsuperscript{52} As with any other research, some answers lead to additional questions which could be the basis for additional research.
Chapter 5

Discussion

The objective of this doctoral dissertation research was to determine whether Front End Specifications promote, rather than reduce, the number of construction claims. For the first time, detailed data regarding specific Front End Specifications have been developed and a reference benchmark now exists to base further investigation in this important new area of research.

5.1 Review of Present Findings

Multiple questions were addressed from the data gathered and its analysis. It is now documented that the Front End Specifications do cause disputes and claims. The claims add costs and result in reduced profits of 20% or more. The results are similar regardless of the size of the company, the author of the Front End Specifications or the initial project value. Regarding the use of performance-based Front End Specifications, the data was inclusive with no clear weight toward one outcome or another.

The use of partnering does not significantly reduce the incidence of disputes and claims. Partnering does provide related benefits and was used by roughly half the participants, with more widespread use by the larger companies.

The majority of the Front End Specifications were perceived to be of acceptable complexity by the research participants. Exceptions were those Front End Specifications dealing with regulatory requirements, scheduling and coordination, each of which was identified as the genesis for disputes and claims.
Finally, the sources of the Front End Specifications documents were explored with the findings being that a document’s authorship was not a significant source of disputes and claims.

5.2 Implications

Reviewing the findings of the research, suggestions for improving the Front End Specifications become apparent. Some are obvious, others more subtle. These observations and suggestions have application to each of the participants, both in general application as well as to individual owners, designers and contractors, and are here set forth in summary form.

Implications for General Application

- Regulatory requirements are too complex. Clearer language is a reasonable goal. Professional consultation may reduce misunderstanding.

- Coordination and Scheduling generate significant disputes and claims. Achieving clarity on these organizational issues up front will require more time and effort invested. This form of informal insurance or a quality investment that pays significant dividends indirectly by reducing expensive and distracting disputes and claims.

- Partnering is a worthwhile investment as there are strong indications that it does reduce the incidence of disputes and claims. Overall, partnering does not appear to reduce the need for attorneys in settling disputes and claims.

Implications for Owners

- Consistent Front End Specifications should reduce uncertainty about the meaning of common provisions recurring from project to project.

- Risk-sharing provisions of the Front End Specifications would become clearer with participants assuming the risk that they can best handle.
• Do not recycle Front End Specifications unless those requirements and
details truly apply to the specific project.
• Utilizing partnering gives the participants the opportunity to address
uncertainties about any of the Front End Specifications.
• As a source of disputes and claims, the scope of work frequently needs more
detail before a project begins. This is solely within the purview of the owner
and designer and is easily remedied with a small up-front investment.

Implications for Contractors

• Regulatory requirements was identified as one Front End Specification
giving rise to disputes and claims as being too complex. This indicates that
contractors need to fully review and understand the regulatory requirements
before they undertake the work, even acquiring outside assistance if
necessary.
• Use of consistent, unmodified Front End Specifications, such as the AIA
forms or ConstructDOCS®, should eliminate uncertainty for the contractor.
The same benefit should flow down to the contractor’s subcontractors.
• Use of standardized Front End Specifications (like ConstructDOCS®)
indicates an industry approved standard of practice and balancing of
interests.
• Utilizing partnering gives the participants the opportunity to address
uncertainties about any of the Front End Specifications and should allow for
earlier and less contentious dispute resolution.
• The contractor must understand the scheduling and coordination
requirements before starting work. On a multi-prime project, the owner or
its representative(s) should be responsible for coordination. If the contractor
can not meet the coordination requirements, it should consider passing on
the project.
• The contractor must understand the scheduling requirements up front and
get outside assistance if necessary to comply.

- The contractor must understand the scope of work and the accompanying expectations before starting work. Get clarifications if necessary and be clear as to what is included, and what is excluded, from the contractor’s scope of work.

Implications for Designers

- If uniformed Front End Specifications were available, there would be no need to draft new Front End Specifications for each project. The designer could then focus on the plans and technical specifications.

Many of these suggestions can be implemented quickly and at little or no cost. The simplest improvement to initiate, and at no direct cost, is to read and understand the Front End Specifications in their entirety, especially the coordination, regulatory requirements and scheduling provisions, as well as the scope of work description (regardless of its location in the documents). If the language isn’t clear and unambiguous, inquiry should be made to obtain clarification. Vague or ambiguous language is a disputes and claims magnet, virtually guaranteed to create problems during the course of the work. In some cases, the contractor may be better off passing on the work rather than taking on a project guaranteed to be problem-filled.

Owners (or whoever is preparing the the project documents) should make the investment of preparing Front End Specifications appropriate for the specific project. Some provisions truly can be recycled; others should be tailored to the job. At the very least, a comprehensive review periodically is appropriate.

Another option is to utilize the ConstructDOCS® set of forms. Developed by a consortium of owners and contractors, these Front End Specifications (and other documents) are the most balanced of the oft-utilized published forms. No set of standard forms will be perfect for every project, yet a set of Front End Specifications
which takes each party’s interests into account, such as the ConstructDOCS®, will likely need the least modification to be fully acceptable.

Once the Front End Specifications have been agreed to, project participants should resist the urge to waive provisions to accommodate special requests or avoid paperwork. If changes need to be made, do so in writing. An adage of experienced lawyers, especially those in the construction field, is that “if it's not in writing, it didn't happen” (Hedley 2004), mimicking the quote attributed to movie-mogul Samuel Goldwyn: "A verbal contract isn't worth the paper it's written on." Disputes are rarely decided promptly; thus, the “paper trail” often becomes the only way to establish what did or did not occur. Contracts frequently acknowledge this fact by requiring a “writing” to effect a change or modification:

This contract shall not be changed, modified, or terminated and none of its terms or conditions shall be waived orally, but only in writing signed by the Owner and by an officer of the Contractor. A waiver at any time of any of the terms and conditions of this contract shall not be considered a modification, cancellation, or waiver of such terms and conditions.

Scott County (Iowa) Standard Specifications (2006)

As many of the cited commentators noted, construction projects seem to invite claims. Many of these are settled without the need for lawyers or third party intervention and few make it to the courts as reported decisions. Yet, it would seem that with all of the time and effort that goes into a project from concept to completion, both on paper and on the ground, ways could be found to further minimize the time and costs incurred in the dispute resolution process.

5.3 Improving the Front End Specifications

This Discussion section considers individual improvements to the Front End Specifications that will benefit the industry by reducing disputes and claims. Various families of Front End Specifications forms utilized in the construction industry are also discussed. Additionally, the benefits potentially available from a truly standardized set of
Front End Specifications are discussed in the context of the recently released ConsensusDOCS® library of forms.

As documented in the previous chapter, profitability suffers as a result of disputes and claims. Claims, though, are obviously not the only cause of increased costs and decreased profits. Many factors contribute to reduced profitability, including operational effectiveness and efficiency. These increased costs can be direct, such as salaries, or indirect, such as lost productivity due to implementation, training and new process and technique “learning curves.” To the extent that these additional costs can be controlled or eliminated, efficiency and profits can be maintained with benefits to owner and contractor alike. One way these excess costs can be addressed is through consistency of process and the implementation of standards, a concept which cuts across virtually all industries.

While project types and sizes vary greatly, the Front End Specifications generally cover similar topics. The Front End Specifications map the administrative process. Much like mapping a travel route from point “A” to point “B”, the Front End Specifications dictate a project’s course from initiation (the Notice To Proceed date) through completion and the close out stage. Just as map reading is, for the most part, standardized and consistent, enabling different people to arrive at the same location, the same logic arguably applies to project administration. To the extent uncertainty and “customization” are eliminated, owners can reasonably expect lower costs associated with administering a project. Bubshait and Almohawis (1994, 133) stated the prospect clearly:

One of the main advantages [of using standardized Front End Specifications] is the potential for improvement. By using the same standardized conditions over a long period of time, the clarity, fairness, and efficiency of the provisions will be tested, and areas of deficiency will be identified and subsequently corrected.
Even though the research documents that a majority of the participants believe the Front End Specifications are of the right complexity, that does not mean that simplification and standardization can not further improve the Front End Specifications. After all, roughly half of those surveyed responded that the Front End Specifications created problems. To the extent problems can be avoided (or resolved at the lowest level) costs will be reduced. While the AIA forms were a step in the right direction, going one step further is a major accomplishment; the ConsensusDOCS® library (discussed below) takes this to the next level.

To explain, the AIA forms are submitted to other organizations for their comments and “acceptance”; this limited “buy in” makes the forms appear to have widespread acceptance. For example, the Associated General Contractors (AGC) recognizes the usefulness of the AIA documents; nonetheless, AGC has its own versions of the same document and subscribes to the same belief as AIA, stating:

> The advantages of using industry-accepted standard form contracts are significant. If the standard form is an AGC form, industry experts—general contractors, owners, specialty contractors, construction law attorneys, and others—have collaborated in drafting it, an assurance that you have the best minds in the business crafting and scrutinizing each standard form. As a result, many industry viewpoints are weighed and considered, thereby ensuring an equitable balance of risks and responsibilities and an appropriate baseline for the parties’ legal relationship.

While AIA and AGC have collaborated on their respective contract forms, they are not identical, leaving room for interpretation and dispute.

In the case of the AIA and AGC forms, while the designers and builders are “agreeing” on a standard form agreement for use by them with the owner, the owners are “not at

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53 “This document has been approved and endorsed by The Associated General Contractors of America.” AIA 201-1997 General Conditions of the Contract for Construction.

54 See, for example, AGC 200.1.
the table” with either organization. In fact, one group of major owners (the
Construction Owners Association of America) published its own “model” forms of
construction contracts and specifications with some input from AGC. Yet another
owners’ group, the Associated Owners and Developers (AOD), which counts among its
members such heavyweight companies as DuPont, Mercedes-Benz, Intel, Princeton
University, Home Depot, and Marriott Hotels in addition to some major contracting
firms, published its own “suggested” standard forms, which even before publication,
“took on” the AIA forms as not representing the interests of owners (ENR 2002). Not
to be left out of the debate, the American Council of Engineering Companies took a
position between that of the AIA and the AOD (ACEC 2002). With numerous
“standard” forms, it is clear that “standard” is not “standard”:

… substantially uniform and well established by usage in
the speech and writing of the educated and widely
recognized as acceptable.\(^{55}\)

In what may ultimately prove to be a watershed event in the procurement of
construction services, AOD recently published its own collection of sixty-two
documents addressing all of the major project delivery methods (design/bid/build,
design/build, etc.). Those documents were “developed through a collaborative effort of
entities representing a wide cross-section of the construction industry” (AOD, 2007,
cover page). Among the twenty endorsing organizations are the AGC, ABC, the
Construction Industry Round Table, Construction Users Roundtable and COAA;
without a doubt, these are entities with the power and resources to make things happen.
Noticeably absent from the list of participants are the American Institute of Architects
and representatives of the engineering disciplines. In the short term, there will be
competing “standard” forms and Front End Specifications being utilized (likely even by
ConsensusDOCS\(^{\text{®}}\) participants) as owners transition from the traditional “standard
form” documents to the ConsensusDOCS\(^{\text{®}}\) offerings.

\(^{55}\) Merriam-Webster’s Online Dictionary.
The significance associated with the release of this library of construction forms cannot be overstated. While designers, and to a much lesser extent constructors, developed the contract documents utilized in obtaining both design and construction services, owners financed whatever issues arose as a result of drafting inconsistencies or bias in favor of one party or another. For the most part, owners (as a group) did not participate in the process and lived with the consequences as the designers and constructors navigated the process. With owners now taking the helm in the procurement process, designers have lost the ability to control the process using their own contract documentation. To be sure, designers will continue to have a strong voice in the development and construction process; to what extent those voices will be softened remains to be seen. Without question, though, the ConsensusDOCS® signatories are in the position of dictating terms that are much more favorable to owners, and which, due to the participation of AGC and ABC, should result in fewer claims on projects where the ConsensusDOCS® are utilized.\footnote{The participation of AGC and ABC is significant. AGC, a ninety year-old organization, claims to represent more than 32,000 construction firms in the U.S. (http://www.agc.org/cs/about_agc). ABC claims to represent an additional 25,000 firms. (http://www.abc.org/about_abc.aspx).}

The goal of the AOD effort is “identifying and utilizing best practices in the construction industry for standard construction contracts” (AOD 2007, 4).

Incorporating the goals identified earlier, AOD 2007, 4) states:

> By starting with better standard documents that possess unprecedented buy-in, you reduce your transaction time and costs in reaching final agreement.

AOD (2007) describes its efforts as follows:

> Currently there are a variety of construction associations that produce standard form construction contracts. However, standard contracts published by one association are perceived as ultimately favoring that association’s membership. There is also a growing
industry frustration that heavily modified standard form documents hardly resemble the original text. Sometimes "modifications" are actually longer than the unrecognizable standard form.

Although not so stated, when taken in context with cited news releases, it is clear that the reference is to the AIA family of documents and the AIA Citator identified earlier. While protecting one’s own interests is long-accepted behavior, the lack of balance in association published documents (AIA, EJCDC, etc.) was one justification in creating the new documents by AOD. In describing its efforts further, AOD (2007) makes the following statement:

ConsensusDOCS® is the new choice in contract documents, because all the parties were invited to the drafting table and had a full vote in deciding final contract terms. All parties in a construction project deserve to work under a fair contract -one that they have confidence in because each of their respective associations had a true seat at the drafting table. The ConsensusDOCS® drafting process is similar to negotiations for a specific project contract. The drafting mantra was to represent the best interests of the project, rather than a singular party. At all times, the contracts employ best practices and fair risk allocation for all of the parties. Consequently, these contracts focus on yielding better project results and fewer disputes. This unprecedented effort is the most significant industry development in the last 20 years. The diverse buy-in amongst all parties will literally transform the industry.

As noted, neither the AIA nor the engineering organizations have endorsed the ConsensusDOCS® efforts or product specifications. Given an architect’s role in a project, and that most architects initially get involved in the concept design stage, the opportunity for “full” buy-in (that is, from concept to completion) is not yet accomplished. Similarly, the absence of support by the engineering discipline potentially undercuts utilization of the ConsensusDOCS® library “across the board.”

57 Even in the absence of the AIA and the engineers, the twenty members of the AOD have the power to impose the use of ConsensusDOCS merely by refusing to utilize other contract forms. The AOD document family includes agreements for architects and engineers; only time will tell if AOD members utilize those forms exclusively after a reasonable transition time.
A significant departure of the AOD family of documents from those of AIA and others is the integration of the Front End Specifications (referred to by the ConsensusDOCS® as the General Conditions) into the contract itself rather than presenting them as a standalone document. This benefits the participants by eliminating one major document, different versions of which are in common circulation, and also simplifying the “precedence of documents” analysis.\textsuperscript{58} While lawyers frequently draft custom agreements with the Front End Specifications included as part of the contract document itself, none of the standard form agreements has done so until now. The resulting document is a more comprehensive basis for effecting the project (AIA, 1997).

While this may seem a subtle point, the effects could be significant. To anyone who has worked with standard form documents, the need to “jump” between documents for details or answers and the potential for unreconciled differences (and sometimes contradictions) invites omissions and confusion. To the extent that such problems survive quality assurance overview, disputes and claims can arise. Every step that eliminates uncertainty improves the prospects for minimizing and eliminating claims.

Another major departure from common standard form documents is the recognition that the contractor is under no mandate to discover design errors or omissions (AOD 2007). This results in risk residing with the party best able to handle it, the designer, and should result in fewer disputes resulting from undiscovered defects.\textsuperscript{59} Along that same line, the contractor is now able to rely on worksite information provided by the owner and enumerates the owner’s obligations in that regard (AOD 2007). The effect of this provision should be to eliminate disputes as to what information was actually provided and what information was implied. Information explicitly provided should not be debatable; that which is alluded to is always going to be subject to interpretation. Where

\textsuperscript{58} “Precedence of Documents”, the order of reference, is defined in the glossary.

\textsuperscript{59} This is not a new concept. See, for example, Jergas & Hartman (1996) and Zack (1995).
there is uncertainty, having the party best able to handle a risk area retain responsibility for it should result in reduced claims.

Similarly, the ConstructDOCS® document contains explicit provisions governing the schedule of work (including delays and changes), items identified in the study as contributing to disputes and claims. These provisions are not dramatically different from those contained in other standard form agreements. What is different is that, for the first time, leaders in the construction industry (absent the designers) have agreed on a library of consistent and coordinated documents. To the extent that the effort is successful, all parties should benefit. To be sure, this is not something that will occur quickly. While the private sector could transition to the AOD documents in short order, public agencies likely need to wait for enabling legislation, regulations and guidelines.60

Considering these points in context, it is a fair question to ask if one standard set of Front End Specifications is necessarily better or worse than another. To a great extent, the answer lies in one’s perspective: for an architect seeking maximum authority with minimal responsibility, then compared to the AIA endorsed forms, the ConsensusDOCS® are seen as a “worse” selection. To an owner wanting to regain control of its projects, balance the playing field, and minimize the potential for claims, then the ConsensusDOCS® are potentially “better” than a set of forms advocated by designers or contractors. To the constructor which felt that its voice was not heard in the development of the AIA or EJCDC documents, the ConsensusDOCS® forms are likely more attractive. If that constructor is a member of AGC or ABC, its organization participated in the creation of the ConsensusDOCS® and its views (at least at the national level) are to some extent incorporated in those documents.

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60 As owners in their own right, states and municipalities have no obligation to utilize any particular form of document other than their own.
5.4 Towards Uniform Front End Specifications

Without reference to the AOD form set and based on earlier draft versions of this study, the author conducted a short follow-on survey to determine if there might be third-party interest in “Uniform Front End Specifications.” More targeted than the initial survey, the survey request was sent to the “Claims & Disputes Resolution” and “Planning & Scheduling” committees of AACEI. These recipients were chosen based on the cross-section of owners, designers, contractors and consultants who are members of these two groups; a total of 375 persons were invited to participate.

The question posed was straight-forward:

Do you think that the mandatory use of a truly standardized Uniform Front End Specifications (that is, endorsed by owners, designers, contractor and subcontractors alike) would reduce claims and disputes on projects? The UFES would not necessarily be identical for public and private works. Why or why not?

Responses were received from seventeen individuals representing designers, contractors and consultants. The majority (twelve) said that the UFES would (or could) reduce claims, though none provided an unqualified endorsement of the concept. Virtually all of the participants expressed concerns regarding variations in state and federal laws as a reason why the concept was possibly unworkable; a number of people pointed out (quite correctly) that getting all of the various participants to agree on one or more uniform standards would be a not insignificant challenge.\(^6\)

No contract document can override statutory or court-made law. Every contract, whether issued by a private owner, trade association, or public agency (federal or state)

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\(^6\) Release of the ConstructDOCS® suggests that the challenge has been significantly addressed.
is subject to the law. Even with the “standard forms” now in circulation and use (AIA, CMAA, etc.), enforcement of the provisions will always be governed by legal requirements. Yet, no set of standard forms, including the UFES concept, discusses state or federal laws other than by requiring compliance.

Courts, though, always look first at the document itself, using what is known as the “four corners” test: does the document (for these purposes, the Front End Specifications) address the issue and provide the necessary guidance to enforce the contract; that is, is it complete? By providing guidance and interpretations governing the underlying transaction (i.e., the project) no “outside” input as to meaning and procedure is necessary. Thus, standard forms serve that very valuable purpose, albeit with varying degrees of success; it is that level of success that the UFES would attempt to improve.

Looking at some of the comments made by study participants offers some insight into how construction professionals individually view both the Front End Specifications in general and the potential UFES specifically:

I absolutely agree that mandatory use of a true set of GC’s and GR’s would assist in reducing claims and disputes on projects over the long run. For the same reason that mandatory use of the FAR clauses helps prevent many issues (because everyone involved knows clearly the intent of each provision, we are left arguing only over facts) use of a similar set of GC’s and GR’s would help outside the Federal sector.

… once the UFES would be established sufficiently that all parties and their people would know the provisions, and there would be sufficient experience with resolution of disputes under their provisions to establish how the UFES should be interpreted, there

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63 This is referred to as the use of “extrinsic” evidence.

64 All of the comments (with identity of authorship removed) are contained in Appendix V.
should be a reduction in claims and disputes. ... The benefits of the true standardization could derive from more comprehensive use of any of the construction contract document sets currently available.

Even the most clearly written and understandable clause can come into dispute when people are pushed against a wall on a project that has issues. [However, i]f you are dealing with the same parties (contractors, owners, subcontractors, etc.) doing the same type of work then unified specifications like you describe is a positive for continuity.

... a consistent spec would create less confusion and possibly result in claims being addressed better during the project.

The one advantage I see with a UFES standard is that it would help create consistency with the relationship in which owners, designers and contractors work; however, I can see this working only on small projects.

I think the use of a standardized UFES would be highly effective in reducing disputes and claims on a project because it would contain a good prospective specification …

The use of a UFES certainly could avoid some claims and disputes merely because the people in the project may know what is contained in them.

The use of mandatory, truly standard UFES would indeed reduce claims and disputes on projects. Why change the rules of the game every time we play? (Emphasis added: why indeed?)

As noted earlier, not everyone agreed with the concept of the UFES:

I don’t think using a mandatory UFES would reduce claims and disputes on projects …

I’m doubtful that the use of a UFES system would result in any meaningful reduction in claims. Consider that most claims involve disputed extra work, delays and acceleration, differing site conditions, failure to make payment, etc. UFES would help identify a uniform approach to resolving the claims but wouldn’t prevent the claims from arising in the first place.

I think it will increase disputes. It may reduce claims in the area that you thought of ahead of time and stuck your finger in the hole
in the dike; but there’s always something you didn’t think of (like whack-a-mole).

… specs do not cause claims to occur. The specifications may define the outer boundaries of the battleground, but the disputes are brought onto the battlefield, and only affected in certain ways by the terms of the contract.

Even the naysayers acknowledge that standardization helps define boundaries and provide a uniform approach to resolving claims. One person summed up the benefits quite well, in the author’s opinion:

*Here is the thing about standardization – we standardize things so that we can reduced [sic] errors (by the contractor and the owner) and to reduce costs.*

The same person went on to state the following:

*In addition, standardizing GC’s – like using the AIA 201, reduces both the time it takes to review the specs, (generally because the estimators know where the killer terms are located and look for them in the Special Conditions) it also reduces uncertainty and hedging against uncertainty in the bidding process.*

Reviewing the narrative comments points out that people have preconceived beliefs as to why claims occur. These beliefs likely reflect each person’s own experiences with the topic as well as his or her exposure through topical literature and interaction with other industry members. Paralleling the initial survey results, this second group acknowledged the role of the Front End Specifications in claims, though not unanimously or uniformly. As a group, the participants believe that standardization would be of benefit, mirroring the statements of the ConsensusDOCS® mission statement.

This second survey was conducted approximately three months after the public release of the ConsensusDOCS® library of standard forms. None of the participants mentioned
the ConsensusDOCS® documents release. This suggests that it will take time for the industry to become aware of the documents.65

With the ongoing introduction of the ConsensusDOCS® to the industry, comparisons to the existing published documents is inevitable. To provide some basic comparison and analysis, we take a look at selected provisions of the AIA A201-1997, EJCDC 700 and the comparable ConsensusDOCS® form. This is by no means a comprehensive in-depth study; rather, the purpose is to provide a side-by-side comparison to demonstrate relevant differences in the respective documents a with focus on the same (or similar, as the case may be) provisions highlighted earlier. Consider the specifications addressing the as-built and record drawings (Table 5.1).

<table>
<thead>
<tr>
<th>Table 5.1: As-built and Record Drawings66</th>
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<tbody>
<tr>
<td><strong>AIA A201-1997</strong></td>
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<tr>
<td>3.11.1. The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to record field changes and selections made during construction, and one record copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work.</td>
</tr>
</tbody>
</table>

Each of these provisions requires the contractor to maintain and provide a set of record drawings. Only the AIA provision specifically requires that the documents be “current.”

65 The ConsensusDOCS have a much broader coverage than the UFES. As proposed by the author, the UFES was limited to the front end specifications only; the ConsensusDOCS library includes agreements and goes far beyond the UFES’s proposed scope.

66 The AIA document is the 1997 version. AIA only recently released (in late 2007) a revised edition which is not in wide use as this is written.
The inclusion of that language suggests marking up documents contemporaneously as the changes are made; in practice, this is what happens. The practical effect of these provisions is the same: the contractor provides an annotated marked-up set of contract documents as the history of the project. The language of the AIA and EJCDC documents makes their usage mutually exclusive; the ConsensusDOCS® language would work whether an architect or engineer, or both, were engaged on the project since the obligation is to provide the information to the owner. The scheduling provisions (Table 5.2) present similar issues:

<table>
<thead>
<tr>
<th>AIA A201</th>
<th>EJCDC 700</th>
<th>ConsensusDOCS® 200</th>
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<tbody>
<tr>
<td>3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.</td>
<td>2.07 Unless otherwise provided in the Contract Documents, at least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to review for acceptability to ENGINEER as provided below. The schedules submitted in accordance with paragraph 2.05.B. CONTRACTOR shall have an additional ten days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to CONTRACTOR until acceptable schedules are submitted to ENGINEER. (Other related provisions (2.05, 2.07, 6.04) not included.)</td>
<td>6.2.1 Before submitting the first application for payment, the Contractor shall submit to the Owner, and if directed, its Architect/Engineer, a Schedule of the Work that shall show the dates on which the Contractor plans to commence and complete various parts of the Work, including dates on which information and approvals are required from the Owner. On the Owner's written approval of the Schedule of the Work, the Contractor shall comply with it unless directed by the Owner to do otherwise or the Contractor is otherwise entitled to an adjustment in the Contract Time. The Contractor shall update the Schedule of the Work on a monthly basis or at appropriate intervals as required by the conditions of the Work and the Project.</td>
</tr>
</tbody>
</table>

The AIA document requires the proposed schedule to be prepared and submitted for the owner's and architect’s “information” while the other documents require approval by the engineer or owner. The AIA document requires a “prompt” submission; the EJCDC requires submission at least ten days before the first payment application; the ConsensusDOCS® requirement is for submission prior to the first application for payment. The likelihood of contemporaneous usage occurring is possible on a multi-prime job.
payment. Each of these presents potential problems. The language addressing weather issues shown in Table 5.4.3 below highlights the problem.

### Table 5.3: Weather

<table>
<thead>
<tr>
<th>AIA A201</th>
<th>EJCDC 700</th>
<th>ConsensusDOCS® 200</th>
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<tr>
<td>4.3.7.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.</td>
<td>12.03 Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a Claim is made therefore as provided in paragraph 12.02.A. Delays beyond the control of CONTRACTOR shall include, but are not limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.</td>
<td>6.3 If the Contractor is delayed at any time in the commencement or progress of the Work by any cause beyond the control of the Contractor, the Contractor shall be entitled to an equitable extension of the Contract Time. Examples of causes beyond the control of the Contractor include, but are not limited to, the following: ... adverse weather conditions not reasonably anticipated; ...</td>
</tr>
</tbody>
</table>

With the EJCDC provision, the engineer can hold up payments until receiving a schedule that meets with approval; at what point does that affect the “means and methods” of the contractor? Only the ConsensusDOCS® language specifically addresses the issue of relieving the contractor when the owner directs the contractor to proceed differently. It will be interesting to see how this language is interpreted over the years ahead.

Both the AIA and EJCDC documents recognize weather delays as grounds for an extension of time and require the contractor to file a claim to obtain that relief. The ConsensusDOCS® language is not adversarial, acknowledges the contractor’s right to an equitable extension of the contract time, and on its face, appears to be a more balanced approach to resolving a frequently occurring situation. This is likely the result of the inclusive nature of the document’s creation by the endorsing entities, a distinct departure from how the AIA and EJCDC documents are drafted.
Looking next at the schedule of values requirements, Table 5.4, each provision requires the contractor to prepare and submit its allocation of the contract value. The AIA specification is stricter, requiring substantiation; each provision, though accomplishes the same goal of having a tracking metric for project performance and costs.

<table>
<thead>
<tr>
<th>AIA A201</th>
<th>EJCDC 700</th>
<th>ConsensusDOCS® 200</th>
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<tbody>
<tr>
<td>9.2.1 Before the first Application for Payment, the Contractor shall submit to the Architect a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor’s Application for Payment.</td>
<td>2.07.A.3. CONTRACTOR’s schedule of values will be acceptable to ENGINEER as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.</td>
<td>9.1 Within twenty-one (21) Days from the date of execution of this Agreement, the Contractor shall prepare and submit to the Owner, and if directed, the Architect/Engineer, a schedule of values apportioned to the various divisions or phases of the Work. Each line item contained in the schedule of values shall be assigned a value such that the total of all items shall equal the Contract Price.</td>
</tr>
</tbody>
</table>
The progress payment specifications are compared in Table 5.5.

<table>
<thead>
<tr>
<th>AIA A201</th>
<th>EJCDC 700</th>
<th>ConsensusDOCS® 200</th>
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<tbody>
<tr>
<td>9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment for operations completed in accordance with the schedule of values. Such application shall be notarized, if required, and supported by such data substantiating the Contractor’s right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and reflecting retainage if provided for in the Contract Documents.</td>
<td>14.02.A.1 At least 20 days before the date established for each progress payment (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that OWNER has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect OWNER’s interest therein, all of which must be satisfactory to OWNER.</td>
<td>9.2.1 The Contractor shall submit to the Owner and the Architect/Engineer a monthly application for payment not later than the ___ Day of the calendar month for the preceding thirty (30) Days. Contractor’s applications for payment shall be itemized and supported by the Contractor’s schedule of values and any other substantiating data as required by this Agreement. Payment applications shall include payment requests on account of properly authorized Change Orders or Interim Directed Change. The Owner shall pay the amount otherwise due on any payment application, as certified by the Architect/Engineer, no later than twenty (20) Days after the Contractor has submitted a complete and accurate payment application, or such shorter time period as required by applicable state statute. The Owner may deduct from any progress payment amounts as may be retained pursuant to Subparagraph 9.2.4</td>
</tr>
</tbody>
</table>

The end result is the same with the contractor having to submit documentation verifying amounts due; only the AIA form may require notarization, a meaningless requirement.\(^{68}\) Only the ConsensusDOCS® language includes an obligation on the owner to pay within a specified time of receipt of the payment application. Both it and the AIA specification address the owner’s right to withhold retainage; the EJCDC specification is silent on the point.

\(^{68}\) Notarization only verifies the identity of the signatory; it does not verify the accuracy of the contents.
The use of uniform FES has a number of demonstrated advantages. Yet, the success of moving in that direction is not without hurdles. As this is written, the ConsensusDOCS® pose both risks and unknowns. For example, The ConsensusDOCS® are untested. Thus, even with the input from owners and contractors, there are no guarantees that the language will be accepted without challenge on any given project. Given that the designers (architects and engineers) did not participate in the development of the documentation, resistance to the use of the ConsensusDOCS® is very possible and their objections will have to be addressed in one way or another. It could turn out that the uniform FES documentation is more suitable to one type of work than another, e.g., tilt-up construction versus high-rise residential. Few lawyers accept standard form documentation “as-is”; to what extent such modifications will affect and impact the use, and usability, of such documents is unknown. While private owners are free to use whatever form of FES and contract documentation they choose, public owners are often limited by law. Thus, some legislation could be necessary for a willing public owner to use the ConsensusDOCS® materials.

To summarize, uniform FES have the potential to reduce both costs and disputes and claims by eliminating the uncertainty that exists on comparable projects. It will take some time for uniform FES to get into circulation and be utilized. Once significant usage of uniform FES such as the ConsensusDOCS® has occurred, the actual impact of such utilization should be determined by way of empirical study.

An analogy is the adoption by many states and local jurisdictions of the National Electrical Code and the Uniform Building Code without modification. A designer need only be familiar with one set of requirements and a contractor should know what is expected. With such conformity, there is less likelihood of mistakes being made and contractors should realize some cost savings through the use of consistent processes.

Finally, one place where this can begin is in the public sector. It would be to a
community's advantage to standardize on the FES it uses in all departments. Use of the same FES eliminates the need for recurring reviews from project to project and allows contractors and suppliers to anticipate those requirements. The same course of action by cities, counties and at the state level should provide the same benefits.

Eliminating disputes and claims saves both taxpayers and contractors money and that's a good thing. Prior to the ConsensusDOCS® release, owners and contractors complained about the bias of the AIA documents, in particular, in favor of the architect. This was noted earlier in this study and in the information which accompanied the release of the ConsensusDOCS® documentation. Under that scenario, architects had much authority but less responsibilities toward either the owner or the contractor, a point which the ConsensusDOCS® attempts to rectify. How this will actually play out remains to be seen. One strong advantage of the ConsensusDOCS® is the broad support provided by a large number of endorsing entities. With increased buy-in comes deeper awareness, support, and presumably, utilization.

In concluding this discussion regarding the development of Uniform Front End Specifications, it seems clear that there are potential benefits to such a document both at the “front end” of a project (estimating) and in possibly reducing claims. However, it is too soon to know if the consensus approach to Front End Specifications, as envisioned by the ConsensusDOCS® forms, will be successful and reduce claims.

5.5 Suggestons for Future Research

Potential research topics that emanate from the present research include:

- What percent of claims, based on final outcomes, arise from the FES.
- Of the FES discussed, which of those represent the root cause of a claim.

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69 One person responded with “… one would think uniform contract requirements should be the Holy Grail.” A little strong possibly, but not inconsistent with some of the other comments.
Beyond the size of the company, does the type of company affect the role of FES in claims generation.

Beyond the estimates provided by respondents, what actual economic return would result from eliminating or minimizing FES-based claims.

The present study could be replicated with behavioral measures, including costs and claims, rather than rely on the memories and perceptions of participants.

How cross-cultural factors affect the rate of FES claims.

Additionally, some topics touched upon in this research yield some additional research possibilities:

- What are the effects of ConsensusDOCS® on disputes and claims across states, localities, and types of construction projects, from school construction and supermarket construction, to bridge construction and hospital construction.
- Investigation of effective techniques for reducing the perceived complexity of regulatory requirements.
- Might benefits result from the compilation of a uniformed Front End Specification database towards reducing claims resulting from the Front End Specifications.

Without a doubt, the most beneficial future research should focus on the Holy Grail of the construction industry: a project free from disputes and claims, accomplished on time and on budget. To be sure, many, many projects are completed without a major “hiccup”: the project is completed in line with the original expectations such that neither the public nor the courts are aware of any negative aspects. Others may have the results determined quietly by a private tribunal (such as an arbitration panel). Still others, such as the Central Artery/Tunnel Project (the “Big Dig”), grab the headlines with their respective problems.

Eliminating, or to the extent possible minimizing, issues with the Front End Specifications might well be accomplished by following a very simple formula:
Contract Documents. During the design phase of a construction project, an owner's ideas, concepts and project requirements are transformed into detailed plans and specifications that will be used by the contractor to construct the project. It is important that an owner, in conjunction with the architect/engineer, exercise the utmost care and consideration when making decisions early in the design phase to minimize the impact of any disputes on project progress.

Proper planning and careful review of project plans and specifications can substantially minimize the likelihood of disputes and provide a basis for timely resolution of any problem that may occur.

It may be advisable for the owner to establish an independent contract document review team that will review the project documents as a whole. The contract review team should look for ambiguities, inconsistencies and conflicts in the project documents. Persons not involved in the preparation of the original documents may provide a fresh look and be better able to identify deficiencies in the documents than the people who prepared them (Ness 2000, p).

Proper planning and review can only help improve the process, because the more eyes on a plan, the higher the likelihood of catching errors and omissions and thereby reducing disputes and claims, a concept well-established in the engineering profession. Determining methods to foster proper planning and review on the front end will benefit all parties by reducing claims in construction.

5.6 Conclusions

The present research findings document that claims from Front End Specifications impose significant costs on the construction process. From this research, it is clear that various Front End Specifications have a tendency to lead to, if not result in, claims and disputes which remain unresolved at the completion of the project. In reality, no project is truly complete until all outstanding matters, including unresolved claims, have been
addressed and concluded. It should go without saying that the additional effort to resolve these matters cost money and distract from other business efforts.

The industry would be well served by the use of consistent, balanced Front End Specifications which eliminate uncertainty, confusion and complexity. To what extent the ConstructDOCS® can successfully meet this goal remains unknown. The strong backing of the ConstructDOCS® library holds strong promise for widespread adaption.

It appears that participation in partnering, and addressing Front End Specification issues prior to the start of construction, is beneficial. To be sure, not every issue can be anticipated prior to the project's start; yet, investing the necessary time and effort into understanding the Front End Specifications, and getting clarification early on, should result in claims avoidance from these provisions.

Cooperation and communications between the parties is the key to improved project success.
Appendix A

General Background Review

Not all that long ago, owners hired builders to construct bridges, factories, commercial and residential structures with not much more than a set of basic drawings. However, numerous societal and legal events have brought about an environment in which structures must be safer and more complex. Building and fire codes, brought about by serious and deadly tragedies, compelled owners and their contractors to provide life-safety elements while elevators and ventilation systems allowed us to build larger, higher and denser structures. In order to obtain the envisioned design and construction results, architects and engineers developed more comprehensive drawings and detailed written specifications. As projects became more complex, the supporting drawings and specifications, out of necessity, became more detailed: operable windows gave way to ventilation systems, subject to air change requirements and strict temperature controls. Simple “lifts” operated by individuals begat automated, high-speed, programmable conveyances. Progress: certainly, but at an increase in complexity. As a result, with each new advance, designers are compelled, or feel compelled, to communicate their thoughts and intent into more and more detailed information, often increasing the level of complexity.

While the designs and their components continued to challenge builders, owners (for the most part) turned projects over to the designer and builder, expecting only to receive a finished, functional, operational facility at project completion. The owner was generally indifferent to the sequence in which the builder performed, expecting only that the job be completed. So long as the contract price was not exceeded, the owner did not concern itself with issues of cost accounting, task durations or whether one aspect was five percent more than budgeted while another was three percent less than expected.
Fast forward to the present. Constructors must focus as much on administrative matters as on the construction itself. Monthly, if not more frequently, reports on schedule compliance, budgetary and estimation adherence and justification for twenty-four hour delays seem to consume vast amounts of time, attention and financial resources. Owners often believe that constructors spend more of their time generating change order requests than they do completing the underlying project and, indeed, some contractors are known more for their claims prowess than for their construction expertise.

In an attempt to address these issues and potential areas of abuse, the construction industry developed rules for these concerns and included them in the contracts for construction as well as within the technical specifications for the project. This “front-end” language dictates how the constructor will schedule the job, report on its progress, and communicate with the owner and its agents to the point where it is arguable that the constructor’s role is almost robotic. While it is frequently stated that the contractor is responsible for the “means and methods” of construction, it is not unusual for the means and methods to be set forth in the specifications. Nevertheless, even while dictating how the constructor is to perform one or more aspects of the work, the owner or designer, or both, contractually disclaims responsibility for those same means and methods.

It should not be hard to accept that in the not so distant past, owners and builders dealt on the basis of handshakes; indeed, the concept of the master builder was based on the premise that the owner, in essence, described what he or she wanted and the constructor both designed and constructed the project. As the state-of-the-art progressed and projects became more complex, the ability of the owner to describe the end result became more difficult and the need for better communications developed. As the role of architects and engineers expanded, the communication tool similarly expanded: simple drawings became dozens, if not hundreds, and in some cases thousands, of pages. Concurrently, the need to provide detailed descriptions beyond what graphics and pictures could describe became a necessity and these written specifications (especially in commercial and industrial projects) became paramount.

Of course, with increased complexity comes the opportunity for increased
mistakes so it was not unexpected that the need for increased quality assurance also arose. The mechanics of the QA/QC process were embedded in the written specifications; while the constructor always had (and still has) primary responsibility for insuring that the project is constructed as designed, the specifications often dictated inspection criteria and frequently the need for the constructor to utilize the services of a third-party inspection entity.

Similarly, and reflecting the ever-increasing subscription to the doctrine that “time is money”, owners began substituting their own construction schedules in lieu of the contractor's own time estimate: projects are now often put out for bid with the project duration specified in the bid documents. Presumably, the person developing the project duration has the skill and expertise to develop a realistic schedule. How, though, one can assume the sequence of construction without actually planning the job for execution is often a mystery and which leads to a large number of claims, as is discussed below. Nonetheless, owners assume that the successful contractor will build the project in the time allotted, regardless of the reasonableness of that assumption.
Appendix B

ASA Seminar Discussion

In an effort to determine if the proposed research premise has any justification beyond CMAA, a simple (and admittedly non-scientific) survey was conducted by the author during a claims avoidance presentation and training session he conducted at the American Subcontractors Association's 2005 Business Forum and Convention in Orlando, Florida on March 17, 2005. In the opening minutes of the workshop, the attendees (totaling 24) were asked the following series of questions:

*How many of you believe that the contract or specifications language itself causes a claim or potential claim situation?*

Twenty-two (22) responded “Yes”.

*How many of you believe that the contract language creates the potential or actual problem?*

Twenty (20) responded “Yes”.

*How many of you believe that the Division One (General Conditions or “front-end” language creates the potential or actual problem?*

Seven (7) responded with “Yes”.

*Which of the following clauses (noted as being offered in random order) cause significant problems?*

- Schedule updating (15 of 24 responded “yes”)
- Change directives (22 of 24 responded “yes”)
- Change order process (18 of 24 responded “yes”)
- Payment application process (6 of 24 responded “yes”)
- Disputes process (16 of 24 responded “yes”)
- Notice provisions (16 of 24 responded “yes”)
- Submittal process (15 of 24 responded “yes”)

Again, while this “survey” most certainly does not qualify as a defensible inquiry, it does suggest that the topic area warrants research.
Before moving into the session’s discussion of the various topics, the group was asked two additional questions:

*What, in your (i.e., the group's) opinion, is the cause of claims?* (The intent was to elicit discussion points for the workshop, rather than resulting in any kind of ranking.) The responses, as recorded, were:

- Specifications
- Scope of work
- Customer Expectations
- Incomplete plans
- Lack of knowledge
- Lack of coordination
- Poor communications
- No follow through
- Scheduling and sequencing
- Out of scope work
- Cost increases
- Accidents and incidents

The final question for the group was *“What, in your opinion, would do the most to avoid claims?”*

- “Not work”
- “Be on the same page”
- Proper planning and set up
- Improved communications

It is interesting that while the first set of questions suggested that various document provisions “caused” construction claims, the group’s responses to the penultimate question only identified two causes directly driven by either the contract or specifications language, the specifications themselves and the scheduling and sequencing issue. It must be further noted that the attendees (with one exception, an attorney) were all subcontractors and may have had one or more claims experiences which added some bias to their perspectives. Nonetheless, and the proposed research will address, claims are a part of the construction process. Possibly, though not presumably, the “survey” results would have differed if the mix had included owners, prime contractors and or construction managers; again, the proposed research will include those groups.
Appendix C

Survey Question Reviewers

The survey questions were submitted to the following individuals for review prior to initiating the research:

James E. Koch, PhD
Washington University in St. Louis

Roger W. Liska, Ed D
Clemson University

V. Paul Kelemen, PhD
Northlake College

Frank Giunta, PE, SVP
Hill International

Charles Bolyard, PSP
President & CEO
McDonough Bolyard Peck

William DuVall, PE
Skanska

Graham Myers
Bechtel Corporation
Appendix D

Survey Questions

General Demographics

How would you best describe your agency or business?
• Federal Agency
• State Agency
• Municipal Agency
• Not-for-profit Agency
• Private Entity

If you are a private entity, please categorize (for statistical purposes only) the size of your business:
• Large (annual revenues in excess of $100,000,000/year)
• Medium (annual revenues between $10,000,000 and $100,000,000)
• Small (annual revenues less than $10,000,000/year)

If you are a private entity, are you a member company/subsidiary of a larger company?
• Yes
• No

Since January 1, 1995, has your agency or business been involved (in any role) in a construction project which generated one or more claims or disputes that was not resolved prior to completion of the project? (For purposes of this survey, “completion of the project” should be deemed to be the point at which the final undisputed payment was made to the prime or general contractor.)
• No
• Yes

If your answer to the preceding question was “No”, your participation in the balance of the survey will not be required. Please be sure to submit your answers as they are statistically significant to the survey. Thank you for your time.

Please state the number of construction projects in which your agency or business has been involved in since January 1, 1995, approximating if necessary.
• 1-50
• 51-101
• 101-200
Of the total number of projects included in your preceding response, how many had an initial contract value (determined prior to issuance of the Notice to Proceed) of:

- Less than $100,000
- $100,001 to $1,000,000
- $1,000,001 to $10,000,000
- $10,000,001 to $50,000,000
- More than $50,000,000

For all of the projects included in your response to Question No. __, how many involved claims or disputes involving:

- The technical plans and/or specifications
- Claimed defects/mistakes in the plans and/or specifications
- The non-technical specifications for the project such as procedural or administrative requirements. (These would be of the nature most often addressed in Division 01 of the CSI Master Format or in a comparable format.)
- Jurisdictional disputes
- Other

The following questions are intended to elicit your claims experiences with certain non-technical specifications generally found in most engineering, construction and construction management agreements and specifications. For each enumerated item, please identify the frequency (expressed as a percentage of the time) with which each resulted in a claim or dispute that was not resolved prior to completion of the project, as defined earlier.

For clarity, it is possible that there will be overlap between topics below. The purpose of these questions is to develop some guidelines as to how survey participants identify the various claim/dispute areas in which they’ve been involved. Claims in the amount of less than $1,000 should not be included in your responses.

- Summary (Scope) of the Work:
  - 1-20%
  - 21-40%
  - 41-59%
  - 60-79%
  - 80-100%

- Allowances:
  - 1-20%
  - 21-40%
  - 41-59%
• Measurement & Payment:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• Alternates/Alternatives:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• Coordination:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• Field Engineering:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• Regulatory Requirements:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• Abbreviations & Symbols:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%
• Identification Systems:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• Reference Standards:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• Special Project Procedures:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• Project Meetings:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• Submittals:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• Scheduling Specifications/Requirements:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• Other Project Control Requirements:
  o 1-20%
  o 21-40%
• Contract Closeout:
  
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

How Would You Rate Each of the Following General Requirements Specifications:

• Summary (Scope) of the Work:
  o Too Simplistic
  o Of Acceptable Complexity
  o Too Complex
  o Not Required

• Allowances:
  o Too Simplistic
  o Of Acceptable Complexity
  o Too Complex
  o Not Required

• Measurement & Payment:
  o Too Simplistic
  o Of Acceptable Complexity
  o Too Complex
  o Not Required

• Alternates/Alternatives:
  o Too Simplistic
  o Of Acceptable Complexity
  o Too Complex
  o Not Required

• Coordination:
  o Too Simplistic
  o Of Acceptable Complexity
  o Too Complex
  o Not Required
• Field Engineering:
  o Too Simplistic
  o Of Acceptable Complexity
  o Too Complex
  o Not Required

• Regulatory Requirements:
  o Too Simplistic
  o Of Acceptable Complexity
  o Too Complex
  o Not Required

• Abbreviations & Symbols:
  o Too Simplistic
  o Of Acceptable Complexity
  o Too Complex
  o Not Required

• Identification Systems:
  o Too Simplistic
  o Of Acceptable Complexity
  o Too Complex
  o Not Required

• Reference Standards:
  o Too Simplistic
  o Of Acceptable Complexity
  o Too Complex
  o Not Required

• Special Project Procedures:
  o Too Simplistic
  o Of Acceptable Complexity
  o Too Complex
  o Not Required

• Project Meetings:
  o Too Simplistic
  o Of Acceptable Complexity
  o Too Complex
  o Not Required

• Submittals:
  o Too Simplistic
  o Of Acceptable Complexity
• Scheduling Specifications/Requirements:
  o Too Simplistic
  o Of Acceptable Complexity
  o Too Complex
  o Not Required

• Other Project Control Requirements:
  o Too Simplistic
  o Of Acceptable Complexity
  o Too Complex
  o Not Required

• Contract Closeout:
  o Too Simplistic
  o Of Acceptable Complexity
  o Too Complex
  o Not Required

• Which contract form do you encounter most often on your projects?
  o AGC
  o AIA
  o EJCDC
  o CMAA
  o Owner, Designer or CM-created
  o Contract documents created by/for your own organization
  o None

• With Reference to the General Requirements (Front End) Specifications only, Do You Believe that the Use of Performance-based Requirements Would Lead to More or Fewer Disputes Involving Those Topics:
  o More Disputes
  o Fewer Disputes
  o No Difference

Resolution of Claims and Disputes

Of the claims and disputes that were not resolved prior to completion of the project, what percentage was resolved by:

• Negotiation Between the Parties (without utilizing attorneys):
  o 1-20%
  o 21-40%
• Negotiations Involving Attorneys:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• Formal Mediation (Using a neutral third party):
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• Arbitration:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• Other Alternative Dispute Resolution Method (mock trial, etc.):
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• Litigation Settled Before Trial:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• Judgment After Trial:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%
• Prior to Any Claim or Dispute Arising, Had a Formal Partnering Session Been Conducted:
  o Yes
  o No

Costs of Claims and Disputes

• For Non-Private Agency Entities, Including All Indirect Costs (that is, included in your normal costs such as salaries, etc.), What Is Your Estimate of the Additional Costs (expressed as a percentage of the total) That Resolving Claims and Disputes Cost:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

• For Private Businesses, and Including All Indirect Costs (that is, included in your normal costs such as lost time, salaries, etc.), What Is Your Estimate of the Additional Profit (expressed as a percentage of the total) That You Would Have Retained Had There Been No Claims or Disputes on Your Projects:
  o 1-20%
  o 21-40%
  o 41-59%
  o 60-79%
  o 80-100%

Thank you for your participation in this survey. If you have any additional comments regarding the General Requirements Specifications that you’d like to offer, or if you’d be willing to participate in a telephone interview regarding this subject, please email sjhymes@wustl.edu.

Again, many thanks for your valuable time.
Appendix E

Sample Front End Specifications Documents

AppV.1: Washington University in Saint Louis
AppV.2: Rochester Institute of Technology
Appendix E.1: Washington University in Saint Louis
GENERAL CONDITIONS:
FACILITIES CONTRACTS

DEPARTMENT of FACILITIES
PLANNING and MANAGEMENT

Washington University – St. Louis
One Brookings Drive
Campus Box 1038
St. Louis, MO 63130
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I. SCHEDULES
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   GC-27 Project Schedule
   GC-28 Performance of Work
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GC-1 DEFINITIONS/AUTHORITY

Terms used in the Contract Documents are defined:

A. "Contract Documents": The Contract Documents consist of the Agreement between Owner and Contractor, these General Conditions, Drawings, Project Manual and Specifications, addenda issued before execution of the Agreement, other documents listed in the Agreement, and modifications issued after execution of the Agreement. A modification is a written amendment signed by both parties, a change order, a construction change directive, or a written order for a minor change in the Work issued by the Architect/Engineer.

B. "The Contract": The Contract Documents form the Contract for construction and represent the entire integrated Agreement between the Owner and Contractor, and shall not be construed to create a contractual relationship of any kind between any parties other than the Owner and the Contractor.

C. "The Work": The Work comprises the completed construction required by the Contract Documents and includes all labor necessary to produce such construction and all materials and equipment incorporated in such construction.

D. "Owner": Washington University, a Missouri corporation. The work shall be under the general administration and subject to the inspection of the Administrator of Facilities Planning and Management or his representative, and these are the only persons authorized to represent the Owner. The term "Owner's Representative" means the Administrator of Facilities Planning and Management.

E. "Architect/Engineer": The Architect or Engineer is the person lawfully licensed to practice architecture and/or engineering in the state of Missouri, identified as such in the Owner-Contractor Agreement, and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The terms Architect and/or Engineer mean the Architect and/or his authorized representative.

The Architect and/or Engineer and/or a designated construction coordinator will be the representative of the Administrator of Facilities Planning and Management during construction and until final payment is due. The Architect and Engineer will have authority to act on behalf of the Owner only to the extent provided in their contract with the Owner.

F. "Contractor": The person, firm, or corporation with whom the contract is made by Owner.

G. "Subcontractor": A person, firm, or corporation, supplying labor and materials, or only labor for work at site of the project for and under separate contract or agreement with Contractor.

H. "Furnish": Purchase and deliver to the project site, complete with each and every necessary appurtenances, all as part of the contract work.

I. "Install": Coordinate delivery schedule; unload and handle from the delivery point at the project site; put into field storage as required; field assemble, if necessary; mount in position (with rigging, if necessary); connect and perform all other operations necessary for proper functioning, as part of this work.

J. "As-Built Documents": Drawings and other records that are maintained to record all conditions which exist when the building construction is completed. This includes both the elements of the project itself and existing elements that are encountered during the course of project construction.

K. "Shop Drawings": are drawings, diagrams, illustrations, charts, brochures, and other data that are prepared by Contractor or any Subcontractor, manufacturer, supplier or distributor, for some portion of the work.

L. "Samples": are physical examples furnished to illustrate materials, equipment or workmanship, and to establish standards by which the work will be judged.
M. "General Conditions": The standardized contractual provisions describing the responsibilities, rights and relationships of the Owner and Contractor under the construction contract. Washington University provides a line for the General Contractor to list the cost of general conditions in the form of bidders proposal. The percentage identified on this line is to be used to calculate the value to provide general conditions for changes to the contract. The value is determined by multiplying the percentage for general conditions identical in the form of bidders proposal times the sum of approved material and labor costs associated with the change to the contract.

GC-2 CODES, PERMITS, LAWS AND REGULATIONS

A. All workmanship and materials used under this contract shall be in accordance with all local, city, state and national codes which may be applicable.

B. Contractor shall comply with all applicable laws, ordinances, rules and regulations of all authorities having jurisdiction over construction of this project. Where requirements of the Contract Documents differ from laws, ordinances, rules, regulations, orders, the Building Code or the requirements of authorities having jurisdiction, the more stringent requirements shall govern.

C. Contractor shall at his own expense procure and maintain all licenses, permits, inspections and approvals necessary for the execution of the work. The Contractor shall indicate the time required to maintain permits in his project schedule. The Washington University project number and project manager shall be indicated on the permit application.

D. Contractor shall at his own expense, pay all fines and penalties which may be levied by authorities having jurisdiction over construction of this project for violations of building codes, building permits, licenses, inspections and approvals, including the penalty for starting construction without a permit.

GC-3 CONTRACT DRAWINGS AND SPECIFICATIONS

A. Information given in the Contract Documents is as exact as could be secured, but its extreme accuracy is not guaranteed. Contractor must, therefore, examine the locations carefully and verify all measurements, distances, elevations, clearances, etc., before starting work.

B. Contractor shall, upon discovery and before proceeding further, notify Architect or Engineer in writing, of any latent conditions differing materially from those indicated in the Contract Documents or unknown unusual physical conditions at the site. Architect or Engineer may, in writing, order changes in the work within the general scope of the contract.

C. Specifications and drawings of the Contract Documents shall be considered as mutuality explanatory and any work required by one, but not by the other, shall be performed as if required by both.

D. The drawings indicate diagrammatically the desired arrangement and approximate location for the items of equipment, piping and ductwork. In some instances, components have been distorted and/or exaggerated to avoid confusion. The entire installation is to be made in such a manner as to avoid obstructions, pressure headroom, keep openings and passageways clear, and to overcome local difficulties, interference with structural conditions and coordination with other trades.

E. Measurements, dimensions, equipment space requirements, etc., shall be verified by Contractor. Contractor shall assume responsibility for proper installation and coordination of equipment in the space available. Work, which may be specified but not completely detailed on the drawings, shall be installed as dictated by common practice or as directed by Architect or Engineer.
GC-4 AS-BUILT DRAWINGS

A. Contractor shall maintain on-site and submit for approval of Owner’s Representative upon completion of the work, a complete set of "As-Built" drawings and specifications of the Contract Documents which clearly show with dimensions any variation from working drawings in the installation of materials and equipment.

B. On-Site Requirements: Contractor shall maintain a complete bound set of all drawings, specifications, addenda, approved shop drawings, change orders and other modifications of the Contract Documents for inspection at any time by Owner’s Representative. Contractor shall mark up the on-site set each day to record measurements, changes and deviations from the design and additions and deletions thereto, as approved, as well as existing facilities encountered in the course of the work, which are not shown on the drawings. It is mandatory that the on-site set of record drawings be kept up-to-date by Contractor.

C. Form of Submittals: "As-Built" drawings submitted by Contractor to Architect or Engineer for approval shall be red-lined prints, fully marked up to show all changes approved by Change Orders, approved Field Change Requests or changes approved by Owner’s representative.

GC-5 ADMINISTRATION INSPECTION/AUTHORITY

A. The Administrator of Facilities Planning and Management and his representative is the only entity that will give orders and directions by authority of Owner under this contract. Contractor shall be responsible for any and all actions and omissions of all his employees and Subcontractors not so authorized.

1) The Architect will not have control over or charge of and will not be responsible for construction means, methods, procedures, sequence or techniques, or for safety precautions and programs in connection with the Work, all of which are solely the Contractor’s responsibility. The Architect will not be responsible for the performance of the construction contract(s). Work or projects, or any defects, deficiencies, or effects resulting therefrom, of any Contractor, Subcontractor, manufacturer, supplier, fabricator, consultant, retained by the Owner, or any third party, including anyone working or acting on behalf of any of them.

B. Owner’s Representative shall at all times, have access or Contractor shall provide facilities for access to the work whenever it is in preparation or progress. Owner’s Representative shall be permitted and periodically will inspect all aspects of this contract including workmanship, materials, records, and other relevant items to determine the quality, acceptability and fitness of the work.

C. Owner’s Representative may reject all workmanship and materials which do not conform with the intent of the Contract Documents, but failure to exercise power shall not be construed or held by Contractor as an admission on the part of Owner that the work, or any part thereof, has been satisfactorily performed in case the fact shall be otherwise.

GC-6 INTERPRETATION AND DECISION

A. Claims, disputes, and other matters in question relating to the execution of this work, progress, and interpretation of the Contract Documents shall be referred to a representative of the Administrator of Facilities Planning and Management for a decision.

B. Representative of the Administrator of Facilities Planning and Management or the Architect, or the Engineer, shall decide the meaning and intent of any portion of the Contract Documents where same may be in dispute.

C. All interpretations and decisions shall be consistent with the intent of the Contract Documents.

GC-7 CORRECTION OF WORK

A. Work covered contrary to the request of Owner’s Representative shall, if required, be
uncovered and replaced at Contractor's expense.

E. Contractor shall uncover work for inspection at the request of Owner's Representative although the Owner's Representative had not specifically requested to observe said work prior to being covered. If the work is unacceptable, Owner shall pay the cost of uncovering and replacement by change order.

C. Contractor shall promptly correct all work rejected by Owner's Representative whether observed before or after Substantial Completion.

D. All defective and non-conforming work shall be corrected to conform to the Contract Documents without cost to Owner.

F. If Contractor defaults, neglects to prosecute the work, and/or does not correct defective or non-conforming work, Owner may after seven days' written notice to Contractor and without prejudice to any other remedy he may have, make good such deficiencies. An appropriate Change Order shall be issued, deducting from the payments due Contractor, the cost of correcting such deficiencies. If the payments then or thereafter due Contractor are not sufficient to cover such amount, Contractor shall pay the difference to Owner.

GC-6 WARRANTIES AND GUARANTEES

A. Materials and Workmanship Warranty

1. If within one year after the date of completion or within such longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by the Contract Documents, Owner finds any of the work to be defective or not in accordance with the Contract Documents, Owner shall give such notice promptly after discovery of the condition.

2. One-year warranty shall begin upon date of Final Acceptance and payment of retention for work listed on Punch List at time of Substantial Completion.

3. Defective work corrected by Contractor shall be warranted for an additional period of one year from date of Owner's acceptance of Contractor's corrections.

B. Landscape and Planting Warranty

1. Warranty requirements are applicable to plant materials furnished by Contractor, planting materials installed by Contractor that are perennial or hardy, and to plantings which are part of the campus landscape, whether indoors or outdoors. This warranty requirement is not applicable to annual or seasonal plantings, which must be renewed on an annual basis.

2. Contractor shall warrant plant material furnished and/or installed to be live and healthy, vigorous and thriving for a period of one year. If the one-year warranty expires in a dormant season, the warranty will be extended to the next following growing season. Contractor, at Contractor's sole expense, shall promptly replace any plant material that is dead, moribund, not vigorous or thriving during the warranty period after receipt of the Owner's notice. God, seeding and ground cover plantings wherever there is a bare spot or location 18 inches across where there is not healthy, thriving grass or ground cover planting.

3. Upon completion of the planting, Contractor shall furnish complete written instructions for the Owner's care of planting materials.

4. Contractor shall include all costs for warranty required by this section in the bid and such costs shall be part of the Contract Sum.

GC-6 PROGRESS PAYMENTS

A. Owner shall pay Contractor value of work in place and materials stored on site upon approval of Application for Payment submitted by Contractor not more than once per month. The Owner will attempt to make payment within ten days of receipt of invoice to Contractors that have sub-contracted with MBE and WBE firms. Direct payment will be made to the MBE and
WBE trim. The application for payment shall be submitted on AIA Document G702 or its equivalent with continuation sheets. The continuation sheets shall be complete showing individual lines for each specification section and contractor.

E. Owner shall retain ten (10%) percent of each scheduled value of each payment to contractor to ensure the proper performance of the contract.

C. With application for Progress Payment, Contractor shall furnish notarized waivers of lien for the value of the progress payment; and subcontractors and material suppliers shall furnish notarized waivers of lien for the progress payment, conforming to the requirements of Chapter 429 HS😂.

D. With Application for Progress Payment, Contractor shall submit a copy of the Construction Progress Schedule, which shall show the portions of the work claimed as completed for payment as related to the Schedule of Values. Application for payment shall show reclamation as a line item for each scheduled value.

E. Storage of Materials Off-site and Payment

(1) The Contractor and his Subcontractors shall obtain prior written approval from the Owner through the Architect for permission to store any materials to be incorporated in and made a permanent part of the Work, for which Progress Payments will be requested, at off site locations. Any and all charges for storage, including insurance, and any and all charges for transportation to the site shall be borne solely by the Contractor. Before approval, Owner requires that off-site materials be stored in an approved warehouse, with proper proof of insurance and a letter stating the following information:
   (a) The name of the Contractor and/or Subcontractor leasing the storage space.
   (b) The location of such leased space.
   (c) The leased area: the entire premises or certain areas of a warehouse giving the number of floors or portions thereof.

(d) The case on which the material was first stored.

(e) The value of the material stored.

(2) The Contractor and his Subcontractors shall notify the Architect and the Owner, at least once each month, to visit the warehouse where the materials are being stored.

(3) The Contractor and his Subcontractors shall mark each sealed carton with the name of the project and the Architect.

(4) A perpetual inventory shall be maintained for all materials held in storage for which payment has been requested.

(5) Payments for materials stored off-site in an approved warehouse and insured shall be at the sole discretion of the Owner. Any additional costs to the Owner resulting from storage of material off-site for which payment is requested, such as, but not limited to, travel expenses and time for inspectors, shall be back charged to, and paid by the Contractor. Title to materials stored off-site shall be transferred to the Owner when the Owner pays for such stored materials.

F. All applications for payment shall be submitted on AIA Document G702, Application and Certificate for Payment. Applications for payment shall reflect all items detailed in the approved schedule of values with corrections made for new items or Contract Changes as Work progresses.

G. On projects greater than $390,009 in value, Contractor shall furnish a bi-monthly project report with the Application for Progress Payment. The report shall contain the following information:

(1) A cover letter describing the general status of construction activities as they relate to the project schedule and description of activities anticipated during the next month.

(2) An activity report describing items completed during the month for each individual construction task. Include a log of daily weather conditions and temperatures.

(3) A manpower summary for the month indicating daily manpower levels for each contractor and trade.
4. A minority report summarizing the daily workforce composition by ethnic and gender for the month.
5. A log of change requests.
6. A log of submittals.
7. A log of requests for information.
8. An attendance and conference call notes for the month.
9. Engineers' certifications for the month.
10. Four 8-inch by 10-inch color photographs of work progress recorded during the month.
11. List of unresolved issues that may impede meeting project milestones or schedule.

In the event Contractor or any subcontractor tenders substitute security, the following shall apply:

1. All such substitute security shall be sery in the name of "Washington University".
2. Contractor at its sole cost shall cause all substitute security to be held by a financial institution, the company of other third party custodian in the St. Louis, Missouri metropolitan area acceptable to Owner under terms which permit Owner to take immediate possession of any substitute security on demand at any time during normal business hours with or without cause.
3. Contractor at its sole cost and as agent for Owner shall administer any and all substitute security as required by applicable law including without limitation making release thereof and payment of interest and income thereon to itself and for the benefit of contractor as and when required by the Contract Documents and applicable law.
4. Not less often than monthly, Contractor at its sole cost shall provide Owner with a written certification and report of all substitute security receipt and details reasonably satisfactory to Owner.
5. Contractor hereby agrees to indemnify, defend and hold harmless Owner and its trustees, officers and employees against any and all claims, demands or liabilities arising out of the negligent or otherwise improper administration by Contractor of substitute security and for any negligence of the custodian.

I. Applications for Progress Payment shall not include costs for items that are not a direct expense of the work. Costs that are not authorized include, but are not limited to the following:

1. Professional dues for contractors and their employees.
2. Cumulative rental costs for equipment that exceeds their purchase price.
3. Workers' Compensation Insurance credits - Credits given by the insurance company shall be reflected as a credit to the Owner.

GC-10 EXTRAS/CHANGES TO THE WORK

A. Owner, without invalidating the agreement, may order changes to the work and such changes shall be authorized by Change Order (C.O.) to the Contractor. All changes shall be executed under the applicable provisions of the Contract Documents and all changes requiring an adjustment in the Contract Sum of Time of Performance must be evidenced by a C.O. signed by Owner, Architect and Contractor.

B. Within five working days of receipt of the request for Change to the Work from Owner or Architect, Contractor shall provide Owner with an estimate as to the proposed change in the Contract Sum or Time of Performance.

C. The value of any Change to the Work which results in an addition/deletion to the Contract Sum shall be determined in one or more of the following ways, at the option of the Owner and summarized in accordance with the Owner's Code of Accounts, which is the G.S.I. format:

1. By estimate and acceptance of a lump sum change to the Contract Sum
2. By unit prices named in the Contract or subsequently agreed upon
3. By a Not-To-Exceed line item and material cost plus a percentage of Contractor's Overhead and Fee as applicable.

D. In order to arrive at the value for any change, Contractor shall credit Owner with it's project costs excluding Overhead and Fee for any work which was previously included, but which has
been deleted by any such change.

E. For all changes, all such estimates shall be substantiated with a detailed breakdown of quantities, units, prices, man-hours, wage rates, Overhead & Fee and similar details clearly showing how the Contractor's and Subcontractor's estimated costs were determined. The Owner reserves the right to audit all Contractor, Subcontractor and Vendor records and accounts pertaining to the Change in Work.

F. In the event of a reduction from the Scope of Work, a fair and equitable deduction from the Contract Sum shall be made which deduction shall be based upon the costs Contractor would otherwise incur, excluding the Overhead & Fee to which the Contractor otherwise would have been entitled.

G. No claims for any extra work or materials shall be permitted by the Owner, unless the work is ordered in writing by the Owner's Representative. Change Orders shall not be in an application for progress payment until approved by the Owner in writing.

H. In consideration of the project schedule, the Owner may at his option approve Changes in the Work to proceed while continuing to negotiate the cost of such changes, with the Contractor.

I. Change Order Allowances:

1. In the event that fees for overhead and profit were not specified by the Contractor in the Form of Bidders Proposal, Change Order allowances for overhead and profit combined, included in the total cost to the Owner shall be based on the following schedule:

(a) For the Contractor for work performed by the Contractor's own forces, fifteen (15%) percent of the cost.

(b) For the Contractor for work performed by his Subcontractor, five (5%) percent of the amount due the Subcontractor.

(c) For each Subcontractor or second tier Contractor involved, for any work performed by that Contractor's own forces, fifteen (15%) percent of the cost.

(d) For each Subcontractor for work performed by that Subcontractor, five (5%) percent of the amount due the second tier Contractor.

J. Costs to which overhead and profit is to be applied shall be limited to the following: cost of materials, including sales tax and cost of delivery; cost of labor, including social security, old age and unemployment insurance, and fringe benefits required by agreement or custom; worker's compensation insurance bond premiums; rental value of equipment and machinery; and the additional costs of supervision and field office personnel directly attributed to the change. Without limiting the foregoing, costs to which overhead and profit shall be applied shall not include additional time or expenses of project managers or other administrative or managerial personnel regardless of whose services are performed. Fees may only be applied to the straight time portion of overtime wage rates.

K. Costs for General Conditions will be allowed per the proportion as submitted in Base Contract Schedule of Values. General Conditions are only allowed to the Prime Contractor.

L. Contractor shall review all submissions for extras prior to delivering to Owner. This shall include verification of materials and labor hours.

GC-11 SUBSTANTIAL COMPLETION AND ACCEPTANCE

A. Contractor shall notify Owner's Representative upon completion of all work. Owner's Representative shall inspect the work to determine completion and acceptance.

B. Date of Substantial Completion shall be the date on which Owner accepts the facilities, or any part thereof as may be agreed, as being sufficiently completed by Contractor to permit Owner's occupancy and utilization of the facilities for the intended purpose.

C. When required by the Contract Documents, Orientation by Contractor of Owner's
personnel shall precede acceptance of Substantial Completion.

D. After inspection and upon acceptance of Substantial Completion, Owner’s Representative shall list uncompleted items and items to be corrected on a Punch List. Failure to include any items on such list does not alter Contractor’s responsibility to complete all work conforming to the requirements and intent of the Contract Documents. Substantial Completion will not be accepted if Punch List items interfere with Owner occupying facilities or utilizing facilities for the intended purpose. Substantial Completion will not be accepted if all Punch List items cannot be completed or corrected by Contractor within sixty (60) consecutive calendar days after Owner’s Representative inspection.

E. If Owner shall determine that a subcontractor’s performance has been substantially completed (including without limitation, that all of the same items described in subsection C of GC-12 below required for approval of Contractor’s Application for Final Payment for the entire project, as such items relate to each subcontractor’s work), is complete, and especially including without limitation that As-Built Drawings, O&M Manuals, Owners Orientation Warranties, Final User Warranties and As-Is Stock relative to such subcontractor’s work have been submitted to and approved by Owner) and if Owner further determines that such subcontractor can be released prior to substantial completion of the entire project without risk to the Owner involving such subcontractor’s work, Owner shall, upon request by Contractor, release retainage as necessary to allow Contractor to pay such subcontractor in full. The foregoing shall be without prejudice to Owners right to hold and/or continue to hold sums (in addition to and not as retainage), following default, neglect to prosecute the work and/or failure to correct defective or nonconforming work by Contractor or such subcontractor, to protect Owners interest in satisfactory performance of the Contract.

F. Owner Occupancy

1. A Certificate of Substantial Completion will be executed for each specific portion of the work to be completed prior to Owner occupancy.

2. Obtain a certificate of Occupancy from local building officials prior to Owner occupancy.

G. Use and Occupancy Prior to Acceptance

1. The Owner may fully occupy the facility as soon as it is substantially completed. No provision in this document shall be construed to prevent partial occupancy by the Owner so long as the partial occupancy does not materially affect the construction process.

2. Contractor agrees that the Owner, upon advance notification to Contractor in writing, will be permitted to occupy and use any completed or partially completed portions of the project when such occupancy and use is to the Owner’s best interest.

3. If such prior occupancy increases the cost of the Work or delays in its completion, provided that the same occur prior to the completion date fixed in the “Notice to Proceed”, and as amended by contract change orders, and provided that the Contractor submits written notification of such cost increase or time delay, the Contractor shall be entitled to extra compensation or extension of time, or both.

4. In case of partial occupancy prior to the stipulated completion date, the Owner shall secure endorsement from the insurance carrier and consent of the Surety permitting occupancy of the hundred and fifty percent (150%) of the amount determined by Owner to be the cost to complete any remaining items. The foregoing shall be without prejudice to Owner’s right to hold and/or continue to hold sums (in addition to and not as retainage), following default, neglect to prosecute the work and/or failure to correct defective or nonconforming work by Contractor or any subcontractor, to protect Owner’s interest in satisfactory performance of the contract.
building or use of the project during the remaining period of construction.

5. In the case of partial occupancy prior to the stipulated date, the Contractor shall extend all necessary insurance coverage until Final Acceptance of the project. The Owner’s use and occupancy prior to Final Acceptance shall not relieve the Contractor of his responsibility to maintain the insurance coverage required by the Contract Documents.

6. In the case of such partial occupancy, guarantee/warranty period called for by the Contract Documents shall not commence until substantial completion of all work under the Contract.

7. Occupancy of the building or any portion thereof by the Owner shall not constitute an acceptance of the Work or portion thereof nor release the Contractor of Responsibility to perform any work required by the Contract Documents but not completed at the time of occupancy.

8. The Contractor shall not be required to pay maintenance costs on the portion of the building occupied under this agreement, nor be responsible for the wear and tear or damage resulting from such occupancy.

9. The Contractor will not be required to furnish heat, light and water used in the building or the portion of the building so occupied, without remuneration therefore in accordance with Net Cost plus Percentage method as defined in the CONDITIONS OF THE CONTRACT.

H. The Contractor shall be responsible for all costs to the Owner resulting from failure to meet the scheduled completion date. The costs for extended general conditions and storage, double handling, re-shipping, etc. of Owner furnished furniture and equipment resulting from delayed completion shall be paid by the Contractor. An appropriate Change Order shall be issued, deducting from payments due Contractor, the cost of these and any other items necessitated by the delayed completion. If the payments theretofore due Contractor are not sufficient to cover such amount, Contractor shall pay the difference to the Owner.

GG-12 FINAL INSPECTION, ACCEPTANCE, PAYMENT

A. Contractor shall notify Owner’s Representative when the Punch List has been completed. Owner’s representative shall determine if the Work has been fully completed and so notify the Contractor.

B. Contractors application for payment of retention shall be made after the date of substantial completion. Owner shall make final payment and/or release of retention within thirty days of approval of Contractor’s Application for Final Payment. Payment of retention will be reduced 1.5 times the estimated value of all work judged to be incomplete or non-conforming.

C. Approval of Contractor’s Application for Final Payment requires:

1. Receipt and approval of Contractor’s As-Built drawings and Vendor’s Instruction Manuals. Owner will hold five percent (5%) of each subcontract value (in addition to and not as retention) until the delivery of As-Built Drawings and Vendor’s Instruction Manuals.

2. Receipt of Contractor’s notarized affidavit stating that all monetary obligations to suppliers of materials, services, labor, and all Subcontractors have been completely discharged and fulfilled.

3. Receipt of release liens from Contractor and all Subcontractors and suppliers. Owner will hold one percent (1%) of all subcontract values (in addition to and not as retention) until delivery of final lien waivers.

4. Receipt of Consent of Surety to final payment by Owner to Contractor when Payment and Performance Bond is required by Instructions for Bidders of the Contract Documents.

5. Receipt of all guarantees, warranties and instructions as called for in the Contract.
Documents. Owner will hold one percent (1%) of all subcontract values (in addition to and not as retainer) until delivery of
guarantees, warranties and instructions.
[0] Correction of all Punch List Items
determined in final inspection.
[7] Return of all keys issued to Contractor by
Owner. Owner will withhold $100.00 for
each key not returned at the time of
submittal of Contractor's Application for
Final Payment.

GC-13 EQUIPMENT AND MATERIALS

A. All equipment and materials required for
installation under these specifications shall
be new and without blemish or defect. All
electrical equipment shall bear labels
attesting to Underwriters Laboratories
approval.

B. Name brands or manufacturer's model
designations are listed in the Contract
Documents to set a minimum acceptable
standard of quality. The words "or equal if
approved by Owner" are implied, if not
expressly stated.

C. Where type or quality of material or
equipment is not indicated, a first class
standard article shall be furnished, subject to
Shop Drawing approval.

D. All equipment of one type (such as fans,
pumps, cox, fixtures, hardware, etc.) shall be
the product of one manufacturer, unless
otherwise specified.

E. When particular manufacturer's products or
processes are specified for an item of Work,
you are required to choose. However, the
Contractor at his option may offer a
substitute product or process that completely
fulfills the requirements of the Contract
Documents. Substitutions will be considered
only if the Contractor submits a written
request to the Architect, and only under the
following circumstances:

[1] When the specified product or process is
discontinued and not available from the
manufacturer.
[2] When, if a guarantee of performance is
required, and in the judgment of the
Contractor, the specified product or
process shall not produce the desired
results.
[3] When such substitution, in the opinion of
the Architect, is in the interest of the
Owner.

F. Requests for substitution of products or
processes other than those specified shall be
submitted by Contractor in writing to the
Architect. A request shall be accompanied by
such drawings, specifications, samples,
performance data, and other information as
may be necessary to assist the Architect in
determining whether the proposed
substitution is acceptable. The burden of
proof rests solely upon the Contractor. Each
request shall stipulate the following items.

[1] The substitution is equal in quality and
serviceability to the specified item.
[2] The substitution shall not entail changes
in details and construction of related
Work.
[3] The substitution shall be acceptable in
consideration of the required design and
architectural effect.
[4] The substitution shall not involve
additional cost to the Owner. Credits to
the Owner shall be described in an
accompanying request for a Change
Order.
[5] The Contractor shall waive all claims for
additional costs that may subsequently
become apparent for work associated
with the substitution. The Contractor
shall be responsible for the affect of a
substitution upon related Work in the
Project and shall pay any additional costs
including the Architect's and/or
Engineer's additional services associated
with a substitution.
[6] The Owner reserves the right to approve
substitutions.

G. Regardless of the evidence submitted, or any
review or independent investigation by the
Owner or the Architect, a request for
substitution of products or processes is a
warranty by the Contractor to the Owner that
such substitution meets the foregoing
requirements.

H. Contractor shall furnish necessary
appurtenances required for complete
installation of materials or equipment
turned on Contractor by Owner.
Contractor shall furnish all items required for installation of Owner furnished equipment. Unless specified otherwise, Contractor's responsibility is to receive, store and install Owner-furnished equipment and materials.

GC-14 PURCHASE OF MATERIAL AND EQUIPMENT

A. Owner represents that it is exempt from sales tax. For the purchase of material and equipment the following procedure shall be observed:

1. The University will furnish a Project Tax Exemption Certificate with the University purchase order in accordance with 144-982 RCW to the General Contractor for a given project. The certificate is renewable for the given project at the option of Washington University and only for the purpose of revising the certificate expiration date as necessary to complete the given project. The Contractor shall submit a copy of the "Washington University Project Tax Exempt Certificate" to all subcontractors, and any contractor purchasing materials shall present a copy of the certificate to all material suppliers as authorization to purchase, on behalf of Washington University, all tangible personal property and materials to be incorporated into or consumed in the construction of the project and no other on a tax exempt basis. Such suppliers shall execute to the purchasing contractor invoices billable to the contractor and bearing the name of Washington University and the project identification number.

GC-15 SHOP DRAWINGS AND SAMPLES

A. Contractor shall submit to Owner's Representative, for approval, six (6) copies of Shop Drawings and descriptive literature for all equipment to be furnished under this contract, for checking sites, etc, of the equipment. All Shop Drawings shall be certified.

B. Contractor shall retrieve all Shop Drawings prior to submission to Owner's Representative and shall note any deviations from established requirements in writing. Any deviations not so noted, and any misrepresentations by means of omission of pertinent data, will be the responsibility of the Contractor.

C. Contractor shall be responsible for any errors in Shop Drawings.

D. Approval of Shop Drawings shall be for design and performance only. Contractor shall be responsible for dimensions, quantities, and coordination with other trades. Approval of Shop Drawings does not authorize changes to specification requirements.

E. Contractor shall not purchase any equipment until after approval of Shop Drawings and/or descriptive literature.

F. Shop Drawings shall be furnished for approval even though there is no substitution of the specified item.

G. Approval of Shop Drawings or other information submitted in accordance with requirements specified, does not assure that Architect, Engineer or Owner attests to the dimensional suitability of the material or equipment involved or the mechanical performance at equipment. Approval of Shop Drawings does not validate the plans and specifications if in conflict, unless written request of such change is submitted by Contractor and approved by Owner's Representative.

H. Contractor shall submit samples in kind and number required by the Contract Documents, labeled and identified.

I. Immediately after award of contract, the Contractor shall submit a schedule of submittals to the Owner and Architect for review. The schedule of submittals shall fully define the intended date of submission for each and every submittal required by the contract documents. This schedule shall be revised as requested by the Owner. In no case shall the submission of the required documents extend beyond 25% of the project duration.
GC-16 SAMPLES AND TESTING

A. Materials used in the construction, particularly those upon which the strength or durability of the project may depend, shall be subject to testing to verify conformance with the Contract Documents and suitability.

B. Contractor shall provide samples of material in kind and quantity required for testing, labeled and identified, without additional cost to Owner. Contractor shall patch shall patch and restore after removal of in-place samples.

C. Owner, at Owner’s request, will provide tests of samples furnished by Contractor except that, if test results indicate non-conformity with the Contract Documents or non-suitability, subsequent tests required shall be the expense of Contractor including replaced or substituted materials. Contractor is responsible for coordinating with Owner’s testing laboratories.

D. Mill tests, when required of metals, pressure tests and certification of piping and vessels, shall be at Contractor’s expense.

E. Copies of all test reports and test summaries shall be submitted to the Owner, Architect and St. Louis County Department of public works code enforcement.

GC-17 CONTRACTOR’S WORKING CONDITIONS ON-CAMPUS

A. Parking:

1) Contractor, Subcontractors and material suppliers shall at all times adhere toOwner’s parking policy. Failure to abide with the Parking Policy shall be cause to remove the owner/driver of the vehicle from the project.

2) Parking is only permitted in marked construction-parking zone spaces. Contractor permits shall be obtained and displayed to grant parking in the construction-parking zone. Vehicles parking in zones other than the specified construction-parking zone, using the contractor permit are subject to tow without prior warning. Contractors who display fraudulent University permits are subject to tow, time Facilities action and possible criminal prosecution.

3) At the Owner’s option, the Contractor may be able to use the Owner’s off-site parking. Contractors are requested to discuss this with the Owner’s Representative prior to obtaining parking permits.

4) Parking shall not be permitted in the following areas:
   (a) Fire Lanes
   (b) In the proximity of fire hydrants and stand pipes
   (c) On driveways or landscape areas
   (d) On or obstructing sidewalks, pedestrian crosswalks and handicapped curb cuts, loading zones and truck docks
   (e) On roadways or other paved surfaces which are not marked for parking
   (f) Any vehicle parking in “no parking” areas (inner walkway of campus, promenade, grassy areas, fire lanes, etc.) without proper authorization is subject to tow without prior warning.

5) The Contractor is responsible for all parking fines incurred by employees, subcontractors and material suppliers.

B. Work Area

1) Contractor shall confine his work to the area indicated on the drawing.

2) The area for storage of material shall be the immediate area for construction or as agreed to by provided by owner. Contractor shall order and accept delivery of materials for this project in such a manner as to avoid an excessive amount of stored material.

3) In entering, passing through or working in any such space in the existing facility in the performance of the work, Contractor shall at all times furnish and maintain proper protection for the existing property of Owner and other contractors working in the area.

4) Any item damaged, marred or otherwise rendered unsatisfactory to Owner due to this work, whether protected or not, shall be replaced or repaired to Owner’s satisfaction without cost to Owner. This includes, but is not limited to, such items as lawns and landscaping, paving, curbs,
C. Coordination/Access

1. All work should be carried out in such a manner as to cause the least interference with Owner’s continuous operation and/or the work of other contractors.

2. At no time shall contractor hamper Owner’s use of the existing facility. Corridors, doorways and exits shall be kept free of all materials at all times.

3. Campus Roadways and walkways shall remain open except if the Contractor is actively working at the location. Contractor shall furnish road plates, barricades, temporary guardrails, temporary pedestrian footbridges and overhead shelters, duckboards and any other installation to permit traffic and pedestrians to cross the work area safely.

4. Contractor shall not enter or have access to any space in the existing facility in order to perform the work without first having given timely notice to Owner’s Representative and other contractors so that necessary arrangements may be made to enter or have access to such space.

5. All work carried out at the site is to be done in a neat, workman-like between the hours of 7:00 AM and 6:00 PM, except in residential areas where the hours of work shall be 9:00 AM to 5:00 PM, local time. Contractor’s work outside of these hours and on Saturdays, Sundays, and University holidays require advance approval and coordination by Owner’s Representative.

6. There will be a $100 deposit for each key requested by Contractor’s personnel and subcontractors. A company check must be presented to Customer Service representing the amount for the number of keys requested. The check will be deposited into a holding account until all keys are returned. Once all keys are returned a University check will be issued for the deposit. If keys are not returned at the end of the project, the deposit will be forfeited.

7. There will be a $10, non-refundable, production fee for all new contractor cards used for entering card access controlled buildings after hours and for accessing traffic control devices. All lost or stolen ID cards should be reported as soon as possible to the Washington University Police Department at 056-5555. There will be a $100 fee to replace stolen ID cards as long as a report has been filed with the WUPD, but all lost cards will have a replacement fee of $5.

D. Existing Utilities

1. Contractor shall work in such a manner as to avoid interrupting the operation of the existing utility systems, which would interfere with the continuous operation of the existing facility. If it becomes necessary to interrupt service to make a connection, alteration or relocation to same, Contractor shall arrange same with Owner’s Construction Coordinator and make connections, alterations or relocations at time directed.

2. Contractor shall obtain Owner’s approval five days prior to actual shutdown of any existing system required to facilitate installation of new work. Utility systems shall be restored to service immediately after Contractor completes his connection or at the end of the working day if required by Owner.

3. Whenever the Contractor requests shutdown of a system or branch of a system to permit demolition, tie-in or extension, he shall first schedule the shutdown with the University’s Project Manager. The Contractor shall attach a tag to the valve, switch or disconnect with the following information written on it: Name of Contractor, Purpose of Shutdown, and Expected Resumption of Service.

4. All systems shut down by the Contractor are to be plugged, capped, disconnected or made safe by the Contractor in as short a period as possible and building services restored.
(b) Non-metallic Underground Warning Tapes: Contractor shall install non-metallic warning tapes in trenches for installation of metal pipes, conduits and buried cables.

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(c) Metallic Underground Warning Tapes:
Contractor shall install metallic warning tapes in trenches for installation of plastic pipes, plastic water pipes, clay or cement water lines, and sewer lines, fiberglass-reinforced plastic pipes, plastic, clay and concrete sewer pipes, fiber optic transmission lines, plastic conduit, etc. At underground non-metallic lines of any length shall have metallic underground warning tapes installed in the pipe trench. Ends of rolls of metallic underground warning tapes shall be bonded mechanically. Shallow buried metallic underground warning tapes shall be detected easily by any common used metal detector before digging.
GENERAL CONDITIONS: FACILITIES CONTRACTS

(d) Approval and acceptance. OWNER shall locate the metallic underground warning tape using any or all of the OWNERS’ metal detectors before the Contractor shall be permitted to claim 100 percent completion for installation of underground piping, conduits and cables on Schedule of Values.

E. Tools, Scaffolding, etc.
Contractor shall furnish all transportation, labor, apparatus, scaffolding, barricades, safety devices and materials necessary for performance of the work according to the intent of the Contract Documents.

F. Cutting and Patching
1. Contractor shall be responsible for the cutting and patching required. Under no circumstances shall any structural members, load bearing walls, floors, etc., be cut without previous written consent of Owner’s Representative.
2. All patching shall be done at Contractor’s expense. Contractor shall use the respective trades for performing the work.
3. Contractor shall use Hot Work Permits when cutting, grinding, welding, sandblasting and during other activities requiring the use of an open flame. The hot work area shall be monitored for 4 hours after the job is completed.

G. Patching shall be in accordance with the requirements of the Contract Documents and finished patch and all finishes shall exactly connect with surrounding finishes.

H. Removal of Rubbish:
1. Rubbish shall not be allowed to accumulate on the site. The premises shall be left neat and clean at all times. Rubbish and debris shall be specifically removed at any time as directed by Owner’s Representative. No open burning will be permitted.
2. Construction debris shall not be deposited in Owner’s dumpsters and receptacles.
3. Contractor shall dispose of construction debris, demolished materials, trash and rubbish in compliance with all applicable laws, ordinances and regulations at Contractor’s expense.
4. Owner reserves the right to salvage any fixtures, material or equipment included in demolition by Contractor by the Contract Documents. Owner’s Representative shall notify Contractor that materials are to be salvaged. Contractor shall place salvaged materials on Owner’s pallet at the edge of the construction site.

I. Clean up
1. On completion of the work, all rubbish and debris shall be entirely removed by Contractor so as to leave the premises clean and ready for use by Owner. Area shall be left in a 'broom clean' condition when completed for inspection. Carpeted areas shall be vacuumed.
2. All equipment with removable or detachable panels, plates, covers, etc., shall be cleaned on the inside before the apparatus is turned over for use by Owner.
3. All marred finishes shall be repaired, touched up or replaced by Contractor.

J. The Contractor shall be responsible for the proper fitting of all work and the coordination of the operations of all trades or material and equipment engaged upon the Work. Contractor shall be prepared to guarantee each of the Subcontractors, unless otherwise specified elsewhere in the Contract Documents, the dimensions which they may require for the fitting of their work to all surrounding work and shall do or cause the Subcontractors to do all cutting, fitting, adjusting and patching necessary to make the several parts of the Work come together properly and to fit the work to receive or be received by that of other contractors.

K. The Contractor shall give his personal supervision to the Work or have a competent superintendent on the Work at all times during the progress of the Work, with the authority to act for him, and provide an adequate staff for the proper coordination and expediting of his work.

L. The Contractor shall lay out his own work and be responsible for all lines, elevations,
and measurements of the building, grading, paving, and other work executed under the Contract. He shall exercise proper precaution to verify the dimensions shown on the Drawings before laying out the work and will be held responsible for any error resulting from his failure to exercise such precaution.

M. The Contractor shall be in charge of the entire work and shall be responsible for the prompt coordination of all trades, as well as the Owner's separate contractors if they are on the job during the Contractor's operations, and become familiar with all work required under the Contract.

N. Care shall be given to the proper scheduling, delivery, and installation of items to be built into rough construction which will affect the latter portions of the work, such as anchors, pipe sleeves, insulation, conduit pipes, lugs, clamps, brackets, braces, hangars, bolts, miscellaneous metal and similar items. The Contractor shall ascertain that all are properly installed in their correct locations at the proper time, so as to prevent cutting and patching of finished work.

O. The Contractor shall be fully responsible for coordination of General Construction work with that of Subcontractors for PLUMBING, PIPE PROTECTION, ELECTRICAL, HEATING, VENTILATION AND AIR CONDITIONING and other specialized trades. He shall investigate, together with the Subcontractors involved, the routing of pipe, ductwork, and conduit with particular attention to interference of structural members, other pipes, ducts, and conduit, heat and air conditioning, door and window openings, and similar features of the building which may affect installation and proper functioning of such items.

P. Changes in design locations, which may be necessary in the routing of pipes and ducts, or in the location of any mechanical, electrical or other equipment, shall be anticipated and made prior to installation. Additional compensation will not be allowed for costs incurred as a result of the Contractor's failure to anticipate the necessity of such changes.

G. There shall be no change or variation in ceiling height, wall layout, shaft chase, turning or other dimension shown on Drawings, without the specific written approval of the Architect.

H. The Contractor's responsibility for the coordination of all work under the Contract shall be complete. Where the Contract Documents allow an optional material or method of performing a portion of the Work, or where the Contractor is ultimately allowed or directed to perform a portion of the Work using a substitute material or method, the Contractor shall provide all other coordination and additional work that such change necessitates without any additional cost to the Owner.

S. Prepare Coordination Drawings where close coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space necessitates maximum utilization of space for efficient installation of different components. All Coordination Drawings, including sections through shafts, shall be at not less than 3/8-inch scale.

T. Coordination Drawings shall indicate the necessary offsets for all ductwork, piping, conduit, and other items to clear the work of all other trades and to maintain the required ceiling height and partition layouts.

U. If any space conflicts cannot be resolved by the Contractor, he shall immediately notify the Architect.

V. Architect's review of the Coordination Drawings shall not relieve the Contractor from his overall responsibility for coordination of all work performed pursuant to the Contract or from any other requirement of the Contractor.

W. For construction, repair, demolition, road use and other activities that produce particulate matter emissions, Washington University requires control measures as necessary to minimize or prevent emissions from going beyond the limits of the work. These control measures vary depending on the project or activity involved, but include, at minimum, the following:
[4] Paving or frequent cleaning of roads, driveways, etc.
[5] Minimize the size of excavation and volume of particulate matter that can be disrupted.

**GC-18 RESPONSIBILITIES OF CONTRACTOR**

A. Before submitting bid, Contractor shall visit the site to satisfy himself to the nature and scope of all work to be done. The submission of a bid shall be taken as evidence that such an examination has been made and difficulties, if any, noted. Later claims for labor, work, materials and equipment required for any difficulties encountered, which could have been foreseen, shall not be recognized, and all such difficulties shall be properly taken care of by Contractor at no additional cost to Owner.

B. Contractor shall carefully study the Contract documents and at once shall report to Owner’s Representative any error, inconsistency, or omission therein.

C. All work shall be done to Owner’s complete approval and there shall be no deviation from the Contract Documents without approval. Should any difficulty arise in installing the facility or its components, Contractor shall promptly report same to owners’ representative.

D. Contractor shall review field conditions and consult existing drawings of the various facilities on the project, and shall so plan and execute his work as to minimize obstructions, and to arrange routings in the most efficient and effective manner.

E. All work shall be done under the personal supervision of Contractor. Contractor shall provide a competent project engineer and a competent superintendent, approved by Owner, who shall be at the construction site and working full time on this project for layout, coordination, sequencing and all other required activities, for the entire duration of and until final acceptance of the work.

F. Contractor shall at all times enforce strict discipline and good order among his employees and shall not employ any unfit person or anyone not skilled in the task assigned to him. Contractor shall require compliance with all of Owner’s rules, regulations, and directions by his employees and those of subcontractors. Owner may direct Contractor to remove any person from Owner’s campus.

G. Contractor shall at all times take such precautions as may be necessary to properly protect his apparatus from damage during construction.

H. All work shall be done by thoroughly skilled and experienced personnel, and shall at all times be under the supervision of a competent foreman.

I. Where specialized systems are to be installed, the apparatus shall be positioned, coupled, connected, assembled, installed or otherwise mounted such that all work is performed fully in accordance with the manufacturer’s and/or designer’s recommendations.

J. Vendors Instruction Manuals:

[1] Requirement: Contractor shall furnish Owner all information available from manufacturers and vendors of all machinery, fixtures, equipment, systems and devices installed as required by the scope of work of the Contract.

[2] Information Required: Such information shall include, wherever applicable, but not to be limited to: manuals of recommended installation, operation and maintenance; parts diagrams and lists; lists of recommended spare parts and current parts price lists; identification of local vendor or manufacturer’s representative; certified vendor drawings, assembly diagrams, wiring diagrams, service pip and duct connection drawings; setting and required clearance diagrams; curves, graphs, or charts of operating range with design point indicated; name plate subbing (code vessels), manufacturer’s certificates and
warranties; specifications for required utilities and services; finish product identification. Whenever equipment or machine assembly incorporates controls, motors or other products of other manufacturers, information of the other manufacturer or supplier shall be included.

(3) Form of Submittal: Contractor shall furnish four (4) copies of vendor information, neatly bound in rigid binders. Information shall be divided in each binder by tabs into such divisions as will make the information readily accessible. Owners project number, Sheet Title and date of submittal shall be on the spine and front cover of binders. Submittal of Vendor’s Manuals for approval shall be in accordance with that for Shop Drawings per Article GC-15.

(4) Retainage Withheld: Final payment of retainage will not be approved until the Owner has received all Owners’ Manuals, approved as complete and final.

K. Orientation by Contractor

(1) Requirement: Contractor and each Subcontractor, whenever applicable, shall inform Owner’s operating and maintenance personnel of proper operation and maintenance of facilities installed as required by the scope of work of the Contract.

(2) Orientation: Contractor shall conduct an inspection of all parts installed as required by the scope of work of the Contract. Contractor shall explain functions of switches and valves; methods of shutting off systems; method of draining systems; source of utilities and services; access to coveaded valves, etc.; lubrication points and access; for servicing of equipment. Contractor shall describe lubricants, filters, fuses, etc., which he has installed for initial operation and inform Owner’s personnel of when each should be replaced in normal operation.

(3) Demonstration: Contractor shall demonstrate operation and function of control systems, hazard warning and suppression systems, mechanisms, etc. Actual discharge of sprinkler or other emergency systems is not required for orientation.

(4) Substantial Completion: Orientation by Contractor is required before Owner will accept Substantial Completion.

GC-19 EQUAL EMPLOYMENT OPPORTUNITY

A. Hiring, Continuation of Employment and Promotion:

(1) Hiring, continuation of employment and promotion practices of Contractor shall comply with the nondiscrimination clause contained in section 202, Executive Order 11246, as amended by Executive Order 11375, relative to Equal Employment Opportunity for all persons without regard to race, color, religion, sex or national origin, and the implementing rules and regulations, prescribed by the Secretary of Labor and the provisions of section 504 of the Rehabilitation Act of 1973, prohibiting discrimination solely by reason of handicap.

(2) All Contractors, Subcontractors and suppliers for University construction projects are required to have an employee profile on file with the Department of Facilities. These profiles shall be updated annually and/or after a significant change in the composition of the Contractor/Subcontractor’s workforce.

B. Use of Minorities on Project

(1) Policy: In an effort to expand economic opportunities for all, Owner requests that the Contractor make an affirmative effort to secure participation of minorities and other underrepresented groups when bidding on construction products for the University. This request for minority participation consists of all aspects of the construction process including, but not limited to, contractors, subcontractors, material suppliers, and the make-up of the on-site workforce.

(2) Action Required: The Contractors bid shall include a statement about the degree of participation of minorities in the on-site work force, the dollar amount of subcontracting work let to minority-owned firms and the dollar amount of materials, which the Contractor will be ordering from minority-owned
businesses. The Contractor shall complete Section BF-10 of the Form of Bidder's Proposal, which calls for the identification of minority-owned firms participating in the Contractor's bid, the extent of that participation and the projected level of minority participation in the make-up of the on-site work force. The Contractor shall meet or exceed all levels of minority participation stated in section BF-10 of the Bidders Form of Proposal.

5. Criteria: Owner will consider the extent of participation of minorities and under-represented groups as one of the criteria of awarding the contract.

4. Reports Required for Long Form Contracts: The Contractor shall maintain a daily log of the on-site work force composition by hours worked in total and identifying hours worked per ethnic group and gender for each firm represented. The work force composition shall be summarized on a monthly basis. A monthly summary of cost of the project, which has been furnished or performed by a firm that is minority or woman owned, shall be maintained. A copy of the monthly summaries and daily log sheets shall be bound and delivered to the Owner with the monthly progress billing. Information is required of all contractors, even if their firm or project has no minority or woman participation.

5. Qualification Requirements: To be qualified for work at Washington University, all contractors and subcontractors shall have a completed Contractor Employee File on file with the Department of Facilities. These profile forms shall be updated on an annual basis. All contractors and subcontractors shall submit a written statement, describing the measures that they will take to ensure maximum minority and women participation on the project, with the Bidders Form of Proposal.

6. Limitation: This section does not nullify Section 1B-15 of the Instructions for Bidders concerning recommended subcontractors.

GC-20 JOBSITE SAFETY AND SECURITY

A. Contractor shall initiate, maintain and supervise all safety precautions and programs in connection with the work. This includes compliance with all applicable laws, ordinances, rules, regulations and lawful order of any public authority for the safety of persons or property. Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents.

B. Contractor shall abate any real or potential hazard to Owner's students, personnel, campus visitors and property due to Contractor's activity or any site condition. Contractor shall abate such hazard immediately and before proceeding with any work and without notice of Owner's Representative.

C. Contractor shall provide, install and maintain adequate temporary safety devices to abate such hazards including temporary barricades, signs, warning lights, walkways, safety nets, fences, shields and any other devices appropriate to the situation.

D. Contractor shall provide personal protective clothing, apparel and devices for authorized visitors to the job site as may be required by Contractor, applicable laws and regulations.

E. Contractor shall maintain an adequate first-aid chest on site for treatment of minor injuries.

F. Contractor is entirely responsible for security and safety of the site until it is turned over to Owner. Contractor shall take all necessary precautions, including, without limitation, the furnishing of guards, fences, warning signs, flags and the like, for the safety of, and the prevention of injury, loss and damage to, persons, and property (including without
limitation, members of the public, students attending the University, Owner's employees and agents, Architect, Engineer and his employees, Contractor's employees, his subcontractors and their respective employees, other contractors, their subcontractors and respective employees) or, about or adjacent to the site where the work is being performed.

G. OSHA Compliance: Contractor shall comply with all applicable Occupational Safety and Health Administration (OSHA) rules and regulations for safety and health in construction projects in accordance with 29 CFR Part 1926.

H. Washington University has adopted the St. Louis Council of Construction Consumers 'Model Substance Abuse Testing Specification'. All contractors, subcontractors, and material suppliers are required to meet the requirements of this policy. For additional information on this policy, contact Dennis Lavallee at (631) 394-8040.

I. Smoking shall only be permitted in designated smoking areas, which have been coordinated with the Owner. Smoking is not permitted within the footprint of Washington University buildings.

GC-21 HAZARD COMMUNICATION

A. Owner and Contractor shall comply with 29 CFR 1910.1200 and 1926.59

B. Contractor shall provide a Material Safety Data Sheet (MSDS) to the Owner's Safety Office for each chemical and compressed gas brought onto the Campus of Washington University. Hazardous materials may not be used without prior coordination with the Safety Office. Contractor must make provision for adequate ventilation when using volatile materials such that University students, employees and visitors are not exposed to any chemical hazards. Adequate protection for the employees using the hazardous materials shall be provided by the Contractor.

C. Contractors working in areas containing University chemicals or hazardous materials or in ducts that exhaust hazardous chemicals shall contact the Owner's Safety Office to obtain information regarding the hazards of the chemicals and recommendations for personal protective equipment.

D. No chemical materials shall be disposed of in University trash containers. Contractors shall dispose of materials brought into the University in accordance with federal, state, and local laws and regulations and University Disposal Policy.

E. Hazardous materials such as asbestos, asbestos products, polychlorinated biphenyl (PCB) or other toxic substances shall not be allowed on the site or be used in the Work. The Contractor shall notify the Owner if any of the products or materials specified in the Contract Documents or proposed by the Contractor or its Subcontractors or material suppliers are used on the job site, contain or are reasonably believed to contain hazardous materials in any form, so that a qualified consultant retained by the Owner can determine whether such materials may be used in the work or need to be removed from the site or rendered harmless in a manner which will not adversely affect the health of any persons and which will comply with applicable governmental laws and regulations.

F. Asbestos-Containing Material: Replacement of Thermal Insulation

1. Applicability: This section is applicable to all projects which have as their scope abatement of Asbestos-Containing Material by removal of thermal insulation from pipes, vessels, ductwork, and the like. It is also applicable to all projects that have asbestos abatement as part of the project's scope of work.

2. Requirement: The Contractor who removes asbestos-containing thermal insulation shall replace the insulation removed with non-asbestos-containing material. Replacement of thermal insulation is part of the scope of work of all asbestos abatement projects and abatement portions of all other projects whether or not replacement is specifically stated at any other place in the Contract Documents.

3. Exceptions: Any exception to the requirement that the Contractor shall
G. Submit: Contractor shall submit proposed replacement insulation material information, including the manufacturer’s technical information and recommended method of installation, along with the Contractor’s calculation of heat loss and proposed thickness. Submittal shall be in accordance with that for Shop Drawings per Section SC-2 of the Project of the Contract Documents.

H. Asbestos-Containing-Material: Sampling

1. Applicability: This section is applicable to all projects that have asbestos abatement as part of the project’s scope of work.


3. Format of Samples: The Contractor shall obtain the University’s required sample containers, container labels and Project Summary forms at the beginning of abatement work from the Asbestos Abatement Administrative Assistant in the Department of Facilities Planning & Management. The Contractor shall deliver a sample from each different type of Asbestos-Containing-Material abated from the project area.

4. Retainment Withheld: Final payment or final payment of retainage will not be approved until the Contractor has submitted samples, all necessary close-out documentation and Project Summary to Owner and until Owner has accepted and approved the Contractor’s submittals.

H. Asbestos or other hazardous substances are suspected or encountered but not created on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately report the condition to the Owner and Architect in writing. The Contractor shall stop work only in areas where work cannot progress safely while utilizing reasonable precautions. The Owner shall be responsible to verify the presence or absence of the material or substance reported by the Contractor and, if present, to verify when the material or substance has been rendered harmless.

GC-22 BUILDERS RISK INSURANCE

A. Contractor shall maintain Builder’s Risk insurance on 100 percent completed value basis on the project to cover the Work in progress and materials stored on-site preparatory to being incorporated in the Work. The Contractor’s Builder’s Risk policy shall also cover loss or damage to materials while in transit, or stored off-site.

B. A copy of the Contractor’s Builder’s Risk policy shall be filed with Owner not less than five (5) days prior to commencement of work. The policy shall state:

1. Washington University is Additional Insured
2. Insurer waives any right of recovery against Owner and/or Architect
3. Contractor’s insurance is primary to insurance, if any, maintained by Owner.

Insurer shall give Owner and Architect at least thirty (30) days notice in writing in advance of any cancellation, termination or lapse of the Builder’s Risk policy, or the effective date of any reduction in the policy limits or coverage.

C. The deductible shall not exceed $25,000 unless approved in advance by Owner in its sole discretion. Contractor in all events is
solely responsible for payment of claims within the deductible or above the policy limits.

D. Owner in its sole discretion, at its sole expense and for its sole benefit may maintain its own Builder’s Risk insurance. In such event Contractor’s insurance shall be primary. Contractor will not be named as an additional insured on Owner’s policy.

GC-23 INSURANCE/INDEMNIFICATION

A. Contractor shall secure, pay for and maintain, at all times, all required insurance, as required by the Contract Documents, including, but not limited to, insurance that will protect the Contractor, the Owner, and the Architect and the Architect’s consultants and agents and employees of any of them from claims directly or indirectly arising or alleged to arise out of the performance of or failure to perform the Work, or the condition of the Work or the job site, from claims by workmen, suppliers or subcontractors, from claims under any statute, laws or other agreements with respect to protection of adjacent landowners, and from any other claims to damages or property to bodily injury, including death, which may arise in whole or in part from operations by the Contractor or any subcontractor or anyone directly or indirectly employed by either of them. Such insurance shall also cover all contractual obligations that the Contractor has assumed including the “Hold Harmless Agreement.”

B. To the fullest extent permitted by law, the Contractor indemnify and hold harmless the Owner and the Architect, and their respective consultants, and the directors, officers, partners, employees and agents of any of them from and against claims, damages, losses and expenses, including but not limited to attorney’s fees, arising out of or resulting from performance of the Work, provided that such claim, damage loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Contractor, a subcontractor, anyone directly or indirectly employed by them or anyone for acts of them which may be liable, regardless of whether or not such claim, damage, loss or expense is jointly caused in part by the negligent act or omission of a party indemnified hereunder. Such obligation shall not be construed to negate, abrogate, or reduce any other rights or obligations of indemnity which would otherwise exist as to a party or person described in this clause.

C. In claims against any person or entity indemnified under this clause by any employee of the Contractor, a subcontractor, anyone directly or indirectly employed by them or anyone for whose acts any of them may be liable, the indemnification obligation under this clause shall not be limited by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or a subcontractor under workers’ or workmen’s compensation acts, disability benefit acts or other employee benefit acts.

D. The obligations of the Contractor under this clause shall not extend the liability of Architect and its consultants and agents, and employees of any of them arising out of the preparation of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications, or the giving of or the failure to give directions, instructions, or orders by Architect and its consultants, and agents or employees of any of them, provided such giving or failure to give is the primary cause of the injury or damage.
**HOLD HARMLESS**

In consideration of the use of certain Washington University facilities, understands that it is assuming the risk of using these facilities. Any personal belongings (equipment, books, jewelry, etc.) that it brings with them to Washington University is at their own risk and is not the responsibility of Washington University. Further, these items are not covered by Washington University insurance coverage.

Agrees to protect, defend and hold harmless Washington University, its trustees, officers, and employees from any and all claims, suits, actions and liability of any character, arising, or alleged to arise, out of injuries or damages sustained by any person, persons, or property on account of, or in consequence of, any act or omission, neglect or misconduct, or in violation of any law, ordinance or regulation, by the undersigned, which was caused to occur during their use of Washington University facilities.

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**Signature**

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**Date**

---

**Title**

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**Company**

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**Date of Use**

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**GC-24 INSURANCE REQUIREMENTS**

A. Contractor shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of result from Contractor's operations under the contract, whether such operations be by himself or by any subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

1. Claims under Worker's or Workmen's compensation, disability benefit and other similar employee benefit acts;

2. Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees;

3. Claims for damages because of bodily injury, occupational sickness or disease, or death of any person other than his employees;

4. Claims for damages insured by usual personal injury liability coverage, which are sustained (1) by any person as a result of any offense directly or indirectly related to the employment of such person by Contractor, or (2) by any other person;

5. Claims for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom;

6. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle;

7. Liability insurance shall include all major divisions of coverage and be on a comprehensive basis, including, but not limited to:

   a. Premises-Operations
   b. Independent Contractors
   c. Contractual Liability
   d. Products-Completed Operations
   e. Personal Injury (Libel, Slander, Defamation of Character, Discrimination)
   f. Owned, Non-owned, and Hired Motor Vehicles
   g. Broad Form Property Damage Coverage
   h. Excavation, Collapse and Under-ground, Explosion

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B. The insurance required shall be written for not less than the following limits:

1. Workmen's Compensation: as required by the law of the State of Missouri and Employer's Liability Insurance, with limits of $1,000,000 (these coverages must include: Occupational Disease; Broad Form All States Endorsement; and U.S. Longshoreman Harbor Workers Endorsement);

2. Comprehensive General Liability and Contractual Liability:

   a. Bodily injury and property damages: $1,000,000 each occurrence
   b. $1,000,000 aggregate
(b) Personal injury:
$1,000,000 each person
$1,000,000 aggregate

(3) Comprehensive Automobile Liability;
(a) Bodily injury:
$1,000,000 each occurrence
(b) Property Damage:
$500,000 each occurrence

(4) Umbrella Liability
$1,000,000

C. Certificate of Insurance acceptable to Owner shall be filed with Owner five (5) calendar days prior to the commencement of the Work. The Certificate shall have typewritten upon them (on the back, if space is insufficient on the front) the following provisions:

(1) Insurer will give to Owner and Architect and/or Engineer at least thirty (30) days notice in writing of any cancellation, termination or lapse, or the effective date of any reduction in the amounts of the insurance.

(2) Washington University is an additional insured.

(3) Contractor’s insurance shall be primary.

D. Contractor shall require each of its subcontractors to procure and maintain during the life of the subcontract, Subcontractor’s General Liability and Property Damage Insurance of the type specified herein.

E. The Architect shall be named as an additional insured on the Contractor’s Comprehensive General Liability policy, Excess Liability policy, Owner’s Protective Liability policy and Builder’s Risk policy.

F. The Contractor shall secure, pay for and maintain whatever Fire or Extended Coverage Insurance the Contractor may deem necessary to protect himself against loss of owned or rented capital equipment and tools, including any tools owned by mechanics, and any tools, equipment, scaffolding, staging, towers and forms owned or rented by the Contractor. The requirements to secure and maintain such insurance is solely for the benefit of the Contractor. Failure of the Contractor to secure such insurance or to maintain adequate levels of coverage shall not oblige the Owner, the Architect or the Architect’s consultants or their agents and employees for any losses of owned or rented equipment. If the Contractor secures such insurance the insurance policy shall include a waiver of subrogation clause as follows:

"It is agreed that in no event shall this insurance company have any right of recovery against the Owner or the Architect."

GC-25 SUBCONTRACTS

A. Contractor shall be responsible for the performance of all work required for the complete furnishing and installation of the Work as described in the Contract Documents.

B. Where required by local codes, jurisdiction, etc., Contractor shall arrange for the proper installation of such components or items of the work included which are not part of the work normally done by his personnel, by securing the services of personnel properly qualified for such work or by subcontracting such portions of the work to qualified firms.

C. Contractor shall obtain Owner’s Representative’s approval of subcontractors prior to the beginning of the Work. Owner has the right of approval of subcontractors throughout the course of the work. Should Owner rescind approval of subcontractor, Contractor shall replace approved subcontractor with another subcontractor approved by the Owner, at no additional cost to the Owner.

GC-28 SCHEDULE OF VALUES

A. Contractor shall submit to Owner for approval a breakdown showing portions of the Contract Sum as the value of each item of the work.

B. Contractor’s schedule of values shall be subdivided for each item of work identified in the Contract Documents and additional value subdivisions for each subcontractor.
GC-27  PROJECT SCHEDULE

A. Contractor shall confer with Owner's Representative to determine a mutually acceptable schedule.

B. Contractor shall submit written copies of schedule for approval. Schedule shall be related to calendar periods and indicate starting and completion dates of major and critical items of the work and the various stages of construction. Should changes become necessary, Contractor shall follow approved Project Schedule unless Owner subsequently approves rescheduling individual items of the work. Should changes become necessary, Contractor shall revise the schedule and re-submit for approval.

C. Almost all of the Work must be scheduled in advance to permit Owner to make necessary adjustments in Owner's operations, which will allow Contractor to perform his work. Contractor shall follow approved Construction Project Schedule unless Owner subsequently approves rescheduling individual items of the Work.

D. Items scheduled shall be sufficiently small in scope and detailed to permit ready evaluation of the progress of completion of the item. Division of the Work into scheduled items may be specific items, class or type of work or by area as may best serve for monitoring progress of the item.

E. The dollar value of each scheduled item from the Schedule of Values shall be listed on the Project Schedule.

F. Items of Subcontractor work shall be scheduled in similar detail.

G. The Project Schedule shall be plainly related to calendar dates to permit identification of scheduled starting and completion dates for phases of each item of work and events.

H. If the value to be claimed on Project Schedules is not linear and continuous with completion schedule, percentages shall be indicated at appropriate points on the item schedule line.

I. Progress Schedules shall be submitted with each application for partial payment. The schedule for each scheduled item shall be distinctively marked to show completion claimed for payment and the total value claimed shall be written on the schedule.

J. Contractor shall revise the Project schedule whenever Owner requests. Contractor may revise the Project Schedule at any time. Revised Project Schedules are subject to Owner's approval. The Project Schedule shall be revised and resubmitted when the project is 15 percent, 40 percent, 75 percent and 90 percent complete.

K. The project schedule shall include an allowance of 63 bad weather days per year. This allowance is divided into the following monthly breakdown:

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<th>Month</th>
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<td>January</td>
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<td>November</td>
<td>5 days</td>
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<td>December</td>
<td>7 days</td>
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In the event that weather-related conditions preclude performance of 90% of critical path activities scheduled for a particular day, the day may be claimed by the contractor as a weather day and charged against the allowance included for that project. If good weather conditions prevail throughout the contract period and the allowed number of weather days are not encountered, the Contractor will not be required to complete the contract correspondingly ahead of the contract completion date. If poor weather conditions prevail such that all of the allowed bad weather days are exceeded, no cost change order extending the date of scheduled completion will be executed.

GC-28  PERFORMANCE OF WORK

A. Should Owner's Representative find that Contractor or any subcontractor is failing to prosecute the work so as to assure completion in a timely manner or by Contract Substantial Completion Date, Owner's
Representative shall require Contractor by
written notice, to provide additional material,
manpower equipment sufficient to insure
timely completion. Failure by Contractor to
provide additional material, manpower and
equipment immediately upon Owner's
Representative's notice shall be a violation of
the Contract.

E. If Contractor fails to prosecute the work so as
to insure completion in a timely manner, or if
any of the provisions of this contract are
violated by contractor or by any of his
subcontractors, Owner, by written notice,
may cancel this contract. Thereafter, Owner
may have the work completed and hold
Contractor liable for all costs to owner for the
completion of said Contract.

C. Contractor shall be liable for all costs
incurred by Owner as a result of the
contractor failing to meet scheduled
completion dates. These costs shall be
deducted from the Contract amount by
Change Order.

GC-29 EXTENSION OF SCHEDULED TIME OF
SUBSTANTIAL COMPLETION

A. Contractor shall not be entitled to any claim
for damages and the Contract Sum shall not
be revised on account of hindrances or
delays from any cause whatsoever. If
occasional by any cause over which the
Contractor has no control, or by any act or
omission on the part of the Owner, such act,
hindrance or delay may entitle the Contractor
to an extension of time in which to complete
the Work. Whether or not the Contractor
shall be entitled to an extension of time shall
be determined by Owner's Representative,
provided that the Owner's Representative
receives Contractor's written notice of the
cause of such act, hindrance or delay within
ten consecutive calendar days of its
occurrence.

B. If the claim for a schedule extension is based
on adverse weather conditions, the claim
shall include documentation substantiating
that weather conditions were abnormal for
the period and could not have been
reasonably anticipated. The claim shall also
define how the weather conditions had an
adverse effect on the critical path of the
construction schedule.
Appendix E.2: Rochester Institute of Technology
GENERAL CONDITIONS OF THE CONTRACT
FOR CONSTRUCTION
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ARTICLE I

CONTRACT DOCUMENTS

1.1 Definitions

1.1.1 Contract Documents

The Contract Documents consist of the AECOM Request for Proposal document, Request for Proposal Form and Supplemental General Conditions of the Contract for Construction, and all Addenda issued prior to the execution of the Owner-Contractor Agreement and all Modifications thereto. A Modification is: (1) a written amendment to the Contract signed by both parties; (2) an Change Orders; (3) a written interpretation issued by the architect pursuant to Subparagraph 1.1.2; or (4) a written order for a minor change in the Work issued by the architect pursuant to Paragraph 1.1.4.

1.1.2 Contract for Agreement

The Contract Documents form the Contract for Construction. This Contract expresses the entire and integrated agreement between the parties hereto and replaces all prior negotiations, representation, or agreements, whether written or oral. The Contract may be amended or modified only by a Modification as defined in Subparagraph 1.1.1.

The Contract Documents shall not be construed to create any contractual relationship of any kind between the Owner and the Contractor. No the architect shall be entitled to perform any other obligation incurred for the benefit of and on behalf of the Owner. Nothing contained in the Contract Documents shall create any contractual relationship between the Owner and the Architect or any Subcontractor or Sub-subcontractor.

1.1.3 The Work

The Work consists of the complete construction ordered by the Contract Documents and includes all labor and materials necessary to produce such construction and all materials and equipment incorporated therein as required for the construction.

1.1.4 The Project

The Project in the total construction of which the Work performed under the Contract Documents may be the whole or a part.

1.1.5 Miscellaneous Definitions

1. The "Drawings" shall mean the graphical and/or physical portions of the Contract Documents, whenever located and whenever issued, showing the design, layout and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

2. "Final Completion" shall mean the date the Contract has been fully performed, all the Work has been completed and a Final Certificate of Payment approved by the Owner has been issued by the architect.

3. "Governmental authority (authorities)" shall mean the taxing states of New York, the City of Manhattan ("County), the City of Rochester ("City"), the Town of Fairview ("Town") any political subdivisions thereof and any agency, department, committee, board, bureau or instrumentality or any of the foregoing now existing or hereafter created having jurisdiction over the Project or any portion thereof or any thereof.

4. "Hazardous materials" shall mean those in or on any real property, fixtures, or improvements that are or contain any hazardous substance, or any other substance the removal of which is required, or the manufacture, use, maintenance, storage, ownership or handling of which is restricted, prohibited, regulated or permitted by any Requirement now or at any time hereafter in effect, including any toxic, hazardous, or other substance or material that is listed in or exhibits any of the characteristics enumerated in a Code of Federal Regulations §401.21(b)(2.01)(4) in New York Code, Rules and Regulations Part 770 through 777 inclusive, or on hazardous substances as defined in the Comprehensive Environmental Response, Compensation and Liability Act or the Superfund Amendments and Reauthorization Act of 1986 ("CERCLA") that present a threat to health or safety, or hazardous chemical substances that are present in quantities that exceed exposure standards as those terms are defined under §§6 and 9 of the Occupational Safety and Health Act of 1970 (29 U.S.C. § 650 et seq.) and §313(c) of Federal Regulations Part 355 ("HAZARDOUS WASTE").

5. All references to time in this document shall be deemed to refer to such manner as the same may be amended from time to time and to include any same supervising or supplementing any such manner.

6. The term "Product" as used herein includes materials, systems and equipment.


8. "Requirements" shall mean, in addition to the other obligations, responsibilities and limitations set out in the Contract Documents, the obligations, responsibilities and limitations imposed by all present and future laws, rules, orders, ordinances, regulations, statutes, requirements, codes and executive acts, customary as well as ordinary (including, without limitation, any of the same relating to the construction and maintenance thereof, or in any way affecting the same), real property, and in any applicable the zoning laws, building laws or other building codes or other building codes in effect, protection, maintenance, use, or operation thereof, or any street, sidewalk or sidewalk, and any public right of way or easement or access to any such right of way or easement or access.

9. The "Specifications" shall mean that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the Work and
performance of related services.

9. The terms "install" or "install all" labor are not intended as term contract and unless specifically noted otherwise are to mean perform all operations connected with installation of work including unloading materials to be installed, supply all necessary equipment and crews to do the work, test, place in operation and service.

10. The terms "trench" or "trench all" and "all material" are used here in a term contract and unless specifically noted otherwise are to mean "supply and deliver to the job-site all materials and equipment as specified.

11. The work "provide" is used herein as a term contract and unless otherwise specifically noted it is to mean "supply, install, erect, set, complete, test, place in operation and service.

12. The term "approved", "equal", "as per" and words of similar import are understood to mean "in the opinion of the Architect.

1.6 DOCUMENTS

The following documents are incorporated by reference into the General Conditions:

1. The latest edition of all applicable Local, State and Federal Codes, including, but not limited to the State of New York Uniform Fire Protection and Building Codes, the Occupational Safety and Health Act, and the Administrative Manual's of the

2. The standards of the NPPA, including the National Electrical Code and the Life Safety Code.

3. Where the standards of the Underwriters Laboratories or the Factory Mutual Research Corp apply, all equipment and materials furnished shall comply with these standards unless specifically noted otherwise in the specifications.

4. The standards of NFRA, BCCA, ASME, ASME, ASME, and BIME.

1.1 EXECUTION, CORRELATION AND INTENT

1.2 The Contract Documents shall be effective when signed by the Owner and Contractor.

1.2.1 Execution of the Contract by the Contractor is a representation that said Contract Documents are fair and complete, and that to the best of the Contractor's knowledge, the Contractor has had the opportunity to incorporate all the terms and conditions of the Contract Documents into the Contract Documents and to enter into the Contract and that the Contract Documents are accurate as to enable it to construct the Work enclosed therein, and otherwise to fulfill all of its obligations hereunder, including, but not limited to, Contractor's obligation to construct the Work for an amount not in excess of the Contract Sum, or before the closing of Substantial Completion as established in the Agreement.

1.2.2 Contractor acknowledges and states that it has visited and examined the site, examined all physical, legal and other conditions affecting the Work and is fully familiar with all therein and therewith affecting the same. In connection therewith, Contractor, specifically requests and warns Owner to enter a bond, by co-signed execution, satisfied itself as to: (1) the nature, location and character of the Project and the site, including, without limitation, the surface and subsurface conditions of the site and all structures and obstructions, difficulties and restrictions thereon and thereunder, both natural and man-made, and all surface and subsurface water conditions of the site and immediate area and the location of the Work in the site, (2) the nature, location, and character of the general area in which the Project is located, including the limitation to climate conditions, available labor supply and labor costs, and available equipment supply and equipment costs, (3) the quality and quantity of all materials, supplies, tools, equipment, labor, and professional services necessary to complete the Work in the manner and within the cost and time limit required by the Contract Documents; and (4) the accommodations of the Work to work that may be performed by or for the Owner under other contracts, all required corrections of any work to suit work under other contracts, and scheduling of all Work as required to coordinate with such work under other contracts and any other condition which may affect the Work in any manner. No allowance will be made to the Contractor unless an agreement thereto shall have been made in writing by the Owner at the time of the signing of the Contract Documents.

1.3.3 The intent of the Contract Documents is to include all terms necessary for the proper execution and completion of the Work. The Contract Documents are comprehensive, and what is not required by any one shall be in binding as required by all. What covered in the Contract Documents will not be required unless it is considered otherwise. The bond required herein is reasonably limited to the cost of producing the intended results. Words and abbreviations which have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings.

1.4 If any terms, conditions, or provisions in the Contract Documents were not sold to the Contractor by the Owner, the Contractor shall consider that the Work was performed, and that the Work was completed, except as otherwise provided in the Contract Documents.

1.5 In the event of a conflict or discrepancy among the Contract Documents, the interpretation will be based on the following priorities, provided, however, that the most stringent condition will control:

a. The Agreement
b. Addenda, with those of later date having precedence over those of earlier date
c. The Specifications
h. The General Conditions of the Contract Document
k. The Schedule of Values
l. The Final Settlements

1.6 Should there be any inconsistency in the drawings or between
1.4 The implementation of the Specifications into division, sections and articles, and the arrangement of Drawings shall be executed by the Contractor in dividing the work among subcontractors or in establishing the extent of Work to be performed by any trade.

1.5 Certain portions of the Specifications are written in condensed outline form and some words are to be supplied by inference. Naming of an article or operation shall have the effect of naming the operation to be done, the article to be furnished and shall be interpreted in such manner that it applies unless it is further qualified to the context in which it appears.

2. Reference is made to specifications of a manufacturer, trade association, government agencies, reference standards, or similar sources (issued by ASME, AIA, ANS, ANSI, etc.). Such standards provide basic guidelines for the work to be performed. The Contractor acknowledges his familiarity with those pertaining to his work.

**ARTICLE 2**

**ARCHITECT**

2.1 **DEFINITION**

2.1.1 The Architect is the person (architects licensed to practice architecture, or an entity legally practicing architecture identified as such in the Owner-Contractor Agreement) and is referred to throughout the Contract Documents as architect or architects and as such shall be responsible for the accuracy of the specifications. The term “Architect” means the Architect or his authorized representative.

2.2 **ADMINISTRATION OF THE CONTRACT**

2.2.1 The Architect shall, in the Name of the Owner, be the Owner’s representative during construction and shall perform his duties in accordance with the Owner-Contractor Agreement. The Architect shall have all authority as set forth in the Owner-Contractor Agreement, and shall provide the services necessary to the completion of the Work. The Architect shall be responsible for the accuracy of the specifications and the drawings. The Architect shall be responsible for the coordination and control of the Work. The Architect shall be responsible for the accuracy of the specifications and the drawings.

2.2.2 The Architect shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall be responsible for the accuracy of the specifications and the drawings. The Architect shall be responsible for the accuracy of the specifications and the drawings.

2.2.3 The Architect shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall be responsible for the accuracy of the specifications and the drawings. The Architect shall be responsible for the accuracy of the specifications and the drawings.

2.2.4 The Architect shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall be responsible for the accuracy of the specifications and the drawings. The Architect shall be responsible for the accuracy of the specifications and the drawings.

2.2.5 The Architect shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall be responsible for the accuracy of the specifications and the drawings. The Architect shall be responsible for the accuracy of the specifications and the drawings.

2.2.6 The Architect shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall be responsible for the accuracy of the specifications and the drawings. The Architect shall be responsible for the accuracy of the specifications and the drawings.

2.2.7 The Architect shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall be responsible for the accuracy of the specifications and the drawings. The Architect shall be responsible for the accuracy of the specifications and the drawings.

2.2.8 The Architect shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall be responsible for the accuracy of the specifications and the drawings. The Architect shall be responsible for the accuracy of the specifications and the drawings.

2.2.9 The Architect shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall be responsible for the accuracy of the specifications and the drawings. The Architect shall be responsible for the accuracy of the specifications and the drawings.

2.2.10 The Architect shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall be responsible for the accuracy of the specifications and the drawings. The Architect shall be responsible for the accuracy of the specifications and the drawings.

2.2.11 The Architect shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall be responsible for the accuracy of the specifications and the drawings. The Architect shall be responsible for the accuracy of the specifications and the drawings.

2.2.12 The Architect shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall be responsible for the accuracy of the specifications and the drawings. The Architect shall be responsible for the accuracy of the specifications and the drawings.

2.2.13 The Architect shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall be responsible for the accuracy of the specifications and the drawings. The Architect shall be responsible for the accuracy of the specifications and the drawings.

2.2.14 The Architect shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall, at all times, have access to the Work to ensure its quality and to examine the Work. The Contractor shall be responsible for the accuracy of the specifications and the drawings. The Architect shall be responsible for the accuracy of the specifications and the drawings.

2.3 **MEETINGS**

2.3.1 All meetings shall be deemed as conferences and shall be scheduled by the Architect.
Minutes at least weekly. The Architect shall record and distribute minutes of each meeting.

2.3.2.2 The Owner and/or Architect shall submit the project to the Architect for review at least weekly.

2.3.3 The Owner shall require the appropriate subcontractors to attend such meetings.

2.3.4 The purpose of the meetings is to assure proper coordination; determine the schedule of work; monitor and update progress schedules; receive presentations and change orders; expedite the completion of the Project in accordance with the Contract Documents and other relevant items.

ARTICLE 4

OWNERSHIP

3.1 The Owner is the person or entity identified in the Owner's Construction Agreement and is referred to throughout the Contract Documents as the Owner or its authorized representative.

3.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

3.2.1 The Owner shall furnish all surveys describing the physical characteristics, legal limitations, and utility locations for the site of the Project, and a legal description of the site. The furnishing of these surveys and the legal description of the site shall be the responsibility of the Architect from its issuance under the Contract Documents in general and Subparagraphs 1.2.2 and 1.2.8 of the General Conditions in particular. The Architect shall require the Owner to furnish information concerning subsurface characteristics or conditions of the area where the Work is to be performed. Where the Owner or Architect makes investigations of subsurface characteristics or conditions of the area where the Work is to be performed, the Owner or Architect shall provide written reports to the Owner or other party responsible for the Work.

3.3 OWNERSHIP OF THE WORK

3.3.1 If the Owner fails to correct defects in the Work as required by Paragraph 19.5.1, the Owner must pay the Owner's share of the cost of repairing the Work, unless the Owner has notified the Contractor of the defect in writing within five days after the Owner's receipt of such notice. The Owner's share of the cost of repairing the Work shall be determined in accordance with the terms of this Contract.

3.4 OWNERSHIP TO CARRY OUT THE WORK

3.4.1 If the Owner fails to carry out the Work in accordance with the Contract Documents and fails within three days after receipt of written notice from the Owner to commence and continue construction of such defect or defect with diligence and promptness, or fails within such three days to take steps to correct the defect in a timely manner, the Contractor may take such steps to correct the defect in a timely manner, and the costs of such work shall be deducted from the payment to the Owner, unless the Contractor has been notified in writing by the Owner that the Owner will correct the defect in a timely manner, and the costs of such work shall be deducted from the payment to the Owner, unless the Contractor has been notified in writing by the Owner that the Owner will correct the defect in a timely manner.
4.2 The Contractor shall be responsible to the Owner for the acts and omissions of its employees. Subcontractors and their agents and employees, and other persons performing any of the Work under a contract with the Contractor, is understood and agreed that the relationship of Contractor to Owner shall be that of an independent contractor. Nothing contained herein or interpretable herethrough shall be deemed or construed to (1) make Contractor the agent, servant, or employee of the Owner, or (2) create any partnership, joint venture, or other association between Owner and Contractor. Any direction or instruction by Owner in respect of the Work shall relate to the results the Owner desires to obtain from the Work, and shall in no way affect Contractor's independent contractor status as described herein.

4.3 The Contractor shall not be relieved from his obligations to perform the Work in accordance with the Contract Documents, by the activities or acts of the architect in the administration of the Contract, or by inspection, tests or approvals required or performed under Paragraph 7.7 by persons other than the Contractor.

4.4 Where equipment lines, piping, and/or conduit are shown diagrammatically, the Contractor shall be responsible for the coordination and orderly arrangement of the contact lines of piping and conduit included in the Work or the Contract.

4.5 The Contractor, his employees and subcontractors, shall be subject to such rules and regulations for the conduct of work as the Owner may establish. The Contractor shall be responsible for the conduct and manner of the employees of the Contractor's subcontractors.

4.6 The Contractor has the responsibility to ensure that all material suppliers and subcontractors, their agents, and employees adhere to the Contract documents, and the quality of materials, and to their employees on site, taking into account the current market conditions and delivery conditions and that they provide materials on time, to the extent required. The Contractor shall coordinate the Work with all other involved in the Project including delivery, storage, installation, and commissioning duties. The Contractor shall make every effort to ensure that the Work is performed to the highest standards and that all employees involved in the Project including delivery, storage, installation, and commissioning duties.

4.7 Either alternative method of construction or substitution of materials for those specified shall be allowed unless approved by the Architect in advance and in writing. Paragraphs for such material shall be taken from the Change Proposal and shall not delay the Owner to the extent required. Changes in materials or similar manner will not be accepted as a reason for substitution, but the Contractor shall be responsible for all special charges for shipping, packaging, and installation of materials as required to obtain the specified materials.

4.8 The Contractor shall establish and maintain marks and all other guides, lines, and levels necessary for the Work, except errors or inaccuracies in the Owner and architect's documents before commencing Work, and review the plans and the drawings and specifications facilities on the construction site with the Owner and Architect, and all lines are staked out and before finalization Work is started. Contractor shall provide access to the Work for the Owner, the Architect, either persons designated by Owner and other governmental authorities. Any encumbrances made by Contractor or in Subcontractors (or any other contractor) for any property due to encumbrances arising from errors or omissions not reasonably discoverable by the Contractor to the Owner, Contractor shall be the sole responsibility of the Contractor, and Contractor shall execute such encumbrances within thirty (30) days of the improvement survey (or as soon thereafter as reasonably possible, or in such other manner as the Owner and Architect may, in the reasonable judgment of the Owner, require for the execution of the contract and without the benefit of any insurance or other encumbrances to the Owner's satisfaction) allowing the encumbrances to remain.

4.4 LABOR AND MATERIALS

4.4.1 Unless otherwise provided for in the Contract Documents, the Contractor shall provide and keep on file for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transport, insurance premium and other facilities and services necessary for the proper execution and completion of the Work, whether permanent or temporary and whether or not incorporated or to be incorporated in the Work. Contractor shall also be responsible for labor force and project staff at all times to the extent of their work, and as needed to perform the Contract. The Contractor shall not assign any portion of the Work to any independent contractor not employed by the Contractor or any other person or entity.

4.4.2 The Contractor shall at all times ensure safe and clean work area and good order among his employees and shall not employ on the Work any person or anyone who has been excluded by the Owner.

4.4.3 On receipt of approved changes, contractor will be expected to provide his labor and work schedule. With the approval of Owner, Contractor may include the cost of such materials in a written proposal for payment. Provided such materials have been approved in and the materials are delivered to the Contractor, and properly received by the Contractor, the Contractor will be responsible for all materials supplied by or on behalf of the Contractor.

4.4.4 All products, materials and equipment shall be fully installed, completed, tested, cleaned and commissioned in accordance with the specifications and the contract documents.
4.6.6 Contractor shall verify the identity and employment eligibility of all employees and those of any of its subcontractors engaged in activities in connection with the Project, whether on or off site, on or after the effective date of this Contract. Contractor shall comply with a "Fair Workforce Log" (common).

4.7 The warranties must comply with the documentation standards set forth in the Immigration Reform and Control Act of 1986 ("IRCA") and any implementing regulations. Contractor further agrees to complete Immigration and Naturalization Service Form I-9, and to otherwise comply with the requirements of IRCA and its implementing regulations. Contractor will make the original Form I-9 available to the Owner within 2 business days of delivery or within request. Contractor agrees to supply the Owner with any facility or renews ticketed to the Owner resulting from any alleged violation of IRCA relating to any individual employed by Contractor or any of its subcontractors in connection with the Project. If requested by the Owner, Contractor shall maintain a Daily Work Force Log, in the form supplied by Owner, on the Project Site and make same, or copies of same, available to the Owner at any time upon request.

4.8 The Contractor shall not permit the installation of any materials containing asbestos in any portion of the Work.

4.5 WARRANTY

4.5.1 The Contractor warrants to the Owner and the Architect that all materials and equipment furnished under this Contract will be free from defects, proper in weight and condition, and in accordance with the Contract Documents. The Work will not be subject to waste, spoilage, or damage during fabrication, handling, installation, or performance by Contractor. If required by the Architect, the Contractor shall furnish equipment for any work to be performed at the site of the Project. The warranty period will be 2 years from the date of final acceptance of the Work by the Owner, or 12 months from the date of issue of the Final Certificate of Substantial Completion, whichever is later.

4.5.2 All warranties shall be signed by the Contractor and the Architect.

4.5.3 The Contractor warrants that all materials furnished under this Contract are new and are in good condition and are free from defects, proper in weight and condition, and in accordance with the Contract Documents. The Work will not be subject to waste, spoilage, or damage during fabrication, handling, installation, or performance by Contractor. If required by the Architect, the Contractor shall furnish equipment for any work to be performed at the site of the Project. The warranty period will be 2 years from the date of final acceptance of the Work by the Owner, or 12 months from the date of issue of the Final Certificate of Substantial Completion, whichever is later.

4.5.4 The Contractor shall promptly correct any defects discovered in the Work and shall make such corrections at no cost to the Owner. The Contractor shall also pay for any damage to the Work resulting from said defect or fault.

4.6 The Contractor shall warrant for a period of twelve (12) months that the building(s) shall be water and leakproof at every point and in every respect, and that all structural components and materials, including but not limited to the components and materials, shall be free from defects and shall conform to the specifications and plans. The warranty period shall begin on the date of final acceptance of the Work by the Owner, or 12 months from the date of issue of the Final Certificate of Substantial Completion, whichever is later.

4.7 In addition to the foregoing, the Contractor shall warrant that all materials furnished to this Contract will be free from defects, proper in weight and condition, and in accordance with the Contract Documents. The warranty period will be 2 years from the date of final acceptance of the Work by the Owner, or 12 months from the date of issue of the Final Certificate of Substantial Completion, whichever is later.

4.8 The Contractor shall warrant that all materials furnished under this Contract are new and are in good condition and are free from defects, proper in weight and condition, and in accordance with the Contract Documents. The Work will not be subject to waste, spoilage, or damage during fabrication, handling, installation, or performance by Contractor. If required by the Architect, the Contractor shall furnish equipment for any work to be performed at the site of the Project. The warranty period will be 2 years from the date of final acceptance of the Work by the Owner, or 12 months from the date of issue of the Final Certificate of Substantial Completion, whichever is later.

4.9 The Contractor shall promptly correct any defects discovered in the Work and shall make such corrections at no cost to the Owner. The Contractor shall also pay for any damage to the Work resulting from said defect or fault.

4.10 The Contractor shall also pay for any damage to the Work resulting from said defect or fault. The Contractor shall also deliver all subcontractor guarantees.
Subject Document Content
4.6 TAXES

4.6.1 The Owner has informed the Contractor that all materials supplied in connection with performance of the work which will become an integral component of the Project are not subject to the application of New York State and Monroe County sales taxes. Should such sales taxes be imposed, the Owner agrees that the Contractor shall be exempted by the full amount of such sales taxes. The Owner hereby appoints the Contractor as its agent solely for purposes of the purchase of materials or services with respect to this project, provided, however, that this appointment shall not extend to the purchase or rental of tool, equipment, scaffolding, ladders, temporary fencing, fences, safety barricades, safety lighting, port-a-potties or other materials or equipment required by the Contractor for the prosecution of its work or the fulfillment of its work or the protection responsibilities as set forth in this Agreement. This agency appointment includes the power to delegate the trust authority to perform the services in whole or in part to agents, subcontractors, sub-subcontractors, materials, materials suppliers and vendors of the Contractor and to such other matters as the Contractor chooses to assign so long as they are engaged, directly or indirectly, with respect to the project.

4.7 any sale to the Owner of material or services with respect to the Project will be exempt from the New York State Sales and Compensating Use Taxes ("Sales Taxes") if an exempt organization certificate (term ST 1011) is provided to the Contractor at the time of the sale. In addition, any sale to the Contractor, Subcontractor or a subcontractor of materials that become part of the real property of the Owner will be exempt from Sales Taxes if a Contractor’s Exception certificate (term ST 1011) is provided to the Contractor at the time of the sale.

4.7.1 The Contractor shall provide copies of the exempt organization certificates to the Owner at the time of sale. It shall also be the responsibility of the Owner to ensure that any such certificates are adequately maintained and updated. The Contractor shall not become a party to the real property of the Owner. Copies of the exempt organization certificate may be obtained from the Project Manager.

4.7.2 With respect to 4.6.1, the Contractor shall pay all sales, consumer use and other similar taxes levied for the Work or products thereof provided by the Contractor which are legally required at the time such tax is received, whether or not for obligation. Contractor shall be solely responsible for, and pay, all contributions, assessments, taxes or other payments made by any government or governmental entity, as well as all union fees or payments which are necessary to wages, salaries or other remuneration paid to persons employed by Contractor or any subcontractor and are required by any work performed under this Contract.

4.7.3 PERMITS, FEES AND NOTICES

4.7.4 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and for all other permits, utilityhookups and governmental fees, licenses and inspections necessary for the construction and completion of the Work which are customarily required prior to commencing the Contract and which are legally required at the time the bids are released.

4.7.5 The Contractor shall give all notices and shall promptly comply therewith.

4.8 ALLOWANCES

4.8.1 The Contractor shall include in the Contract Sum all allowances included in the Contract Documents. Item 15.1 above refers to these allowances shall be expended for such amounts and in such manner as the Owner may direct, but the Contractor will not be required to expend any money against which it is ascertainable in a reasonable time.

4.8.2 Unless otherwise provided in the Contract Documents, the Contractor shall not be entitled to any additional cost as a result of the value of materials or equipment required by the Contractor due to the allowance defined above. The Contractor shall not be entitled to any additional cost due to the allowance defined above for any materials or equipment required by the Contractor due to the allowance defined above.
4.5 The Contractor shall employ a competent Superintendent and necessary assistants who shall be at the Project site at all times during the progress of the Work. The Superintendent shall represent the Contractor and all communications given to the Superintendent shall be binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be as confirmed on written request in each case.

4.5.3 The Superintendent shall not change the Engineer during the course of construction without prior written notification from the Owner and written notice to the Contractor.

4.5.4 It is agreed that the Superintendent is not accountable to the Owner, Contractor shall, if requested by Owner, replace the Superintendent with another Superintendent to Owner.

4.6 SCHEDULE

4.6.1 The Contractor, immediately after being awarded the Contract, shall prepare and submit for the Owner's and Architect's review and approval an estimated progress schedule for the Work. The progress schedule shall be revised and updated by the Architect in the process required by the Contract Documents, and shall provide for revisions and preparations of the Work. The schedule shall contain the proposed starting and completion dates for the various subdivisions of the Work as well as the quality of the Work and identify the Project critical path.

4.6.2 With the Program Schedule, the Contractor shall provide an estimate, with an estimate of the proposed monthly drawings for value of work completed throughout the contract period.

4.6.3 The progress schedule shall be updated at the job site and sent to the Owner and architect as updated. Each schedule shall contain an estimate of actual progress with the estimated progress for each phase in time stated in the original schedule.

4.6.4 If, in the opinion of Owner, Contractor fails to follow the latest Program Schedule, the Contractor shall take whatever steps may be necessary to expedite the program and shall, if requested by Owner, submit a statement detailing how the time lag may be reduced. The Contractor is responsible to maintain its schedule and shall, if requested by Owner, submit a statement detailing how the time lag may be reduced. In the event that the Contractor fails to maintain its schedule, the Owner may specially instruct the Architect in writing of such deviation at the time of such deviation and the Architect shall give written notice to the specific deviation. The Contractor shall not be relieved from responsibility or errors or omissions in the Program Schedule unless the Architect approves the deviation.

4.6.5 The Contractor shall direct specific attention, in writing or as noted on the Contract Documents, to drawings or specifications that may cause no delay in the Work or to the work of the Owner or any subcontractor, at all times during the contract period.

4.6.6 The Contractor shall submit, at least monthly, an estimate of the total value of work completed during the month, together with any other information required by the Contract Documents.

4.6.7 The Contractor shall submit, at least monthly, an estimate of the total value of work completed during the month, together with any other information required by the Contract Documents.
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4.3.3 The Contractor shall coordinate operations at the site to ensure compliance by law, ordinance, permit and the Contract Documents and shall not unreasonably interfere with the use or utility of any materials or equipment or interfere with Owner's activities or properties adjacent to the site. The Contractor shall notify the Architect and Owner at least seven (7) days in advance of a proposed time for shutting down or interrupting any utilities, services or facilities which may affect the operation of other portions of the building or other buildings, services or facilities of the Owner. In no event may any obstruction or interruption of any utilities, services or facilities be made without the approval and authorization of the Architect. Every reasonable means shall be employed by the Contractor to minimize vibration and noise which may result from work and to control the length of any utility outage. Where required by the Architect, the Contractor shall provide temporary services for maintaining existing utilities, services or facilities. The Contractor shall coordinate through the Architect any Work in accordance with adjacent utilities, roadways, sidewalks, or other facilities which would tend to produce excessive noise or movement, result in temporary damage upon the Owner's property.

4.3.4 CUTTING AND PATCHING OF WORK

4.4.1 The Contractor shall be responsible for all cutting, trimming or patching that may be required to complete the Work or to make repairs to the Owner's property.

4.4.2 The Contractor shall not damage or endanger any portion of the work or the work of the Owner or any separate Contractor by cutting, trimming or otherwise altering any work, or by excavation. The Contractor shall not cut, trim or otherwise alter the work of the Owner or any separate Contractor except with the written consent of the Owner. The Contractor shall not reasonably disturb any underground or surface utilities, including the work of any separate Contractor that may be located on the site.

4.4.5 The Contractor shall keep the premises free from accumulation of waste materials or rubbish caused by his operations. At the completion of the work he shall remove the project to a clean and orderly condition, including removing all waste materials and rubbish from and about the work as well as all tools, equipment, materials, and surplus materials.

4.5.2 If the Contractor fails to clean up the completion of the Work, the Owner may do so as provided in Paragraph 3.4.1 and the cost thereof shall be charged to the Contractor.

4.6 COMMUNICATIONS

4.5.4 The Contractor shall provide all communication to the Owner through the Architect.

4.7 ROYALTIES AND PATENTS

4.7.1 The Contractor shall pay all royalties and license fees. He shall defend all suits or actions for infringement of any patent or other proprietary right and shall indemnify the Owner from loss or damage therefrom, except that the Owner shall be responsible for all such loss when a particular design process or the product of a particular manufacturer or manufacturer is specified, but if the Owner has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Architect and Owner.

4.8 FACILITIES MANAGEMENT SERVICES

4.8.1 The facilities management services shall be limited to the following:

a. The provision of management services and facilities management services shall be limited to the following:

b. The provision of management services and facilities management services shall be limited to the following:

4.8.2 In any and all claims against the Indemnified Party by an employee of any separate Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts or omissions any separate Contractor may be liable, the indemnitee shall be held harmless from any and all losses, damages, costs, or expenses, including reasonable attorneys' fees, which result from any injury to persons or property caused by the acts or omissions of any separate Contractor or anyone acting or working on the premises of the Owner. The obligations contained in this Paragraph shall not be deemed to release, absolve, or otherwise reduce any other right or obligation of indemnity, which would otherwise exist as to any party or person described in Paragraph 4.8.1.

4.8.3 The obligations of the Contractor under this Paragraph shall extend to the liability of the Architect or agents or employees, arising out of (1) the preparation of any design, drawings, specifications, or plans, (2) the giving of any directions or instructions by the Architect, or (3) the correctness or completeness of any plans, specifications, or drawings. This Paragraph does not apply to construction or installation of any separate Contractor, any subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts or omissions any separate Contractor may be liable.

4.8.4 The Contractor shall promptly advise Owner on setting of any other matters arising out of investigation or inspection of which the Contractor becomes aware.
The indemnification may apply, and Contractor, as Contractor's representative, must ensure on behalf of Owner and conduct with due diligence and in good faith the entire extent with which it is necessary to observe, provide for, and ensure the right to the representation thereby of the owner's counsel and the owner's expensive and provided under, but in the determination by any such action between Contractor and Owner and Owner shall have reasonably concluded that there may be legal defenses available to it which are different from or additional to, or inconsistent with, those available to Contractor. Owner shall have the right to select appropriate counsel to participate in the defense of any action on its behalf at Contractor's expense. In the event of failure by Contractor to timely perform in accordance with this indemnification paragraph, Owner, at its option, and without releasing Contractor of its obligations hereunder, may perform, but all costs and expenses incurred by Owner in that event shall be reimbursed by Contractor to Owner, together with interest at the same rate or, if any such expense was paid by Owner until reimbursed by Contractor, at the rate of interest provided to be paid on judgments, by the law of the jurisdiction to which the interpretation of the Contract is subject.

4.2.3 The obligations of the Contractor under the Paragraph 4.15 shall survive the expiration or termination of the Contract.

4.19 REPRESENTATIONS AND WARRANTIES

The Contractor represents and warrants:

1. That it is financially solvent and is experienced in and competent to perform the Work, and that the staff, labor, equipment, subcontractors, and supplies available to complete the Work within the time specified for the contract period.

2. That it is familiar with all Federal, State or other laws, ordinances, rules, regulations, and practices, which may in any way affect the Work;

3. That any temporary and permanent Work required by the Contract shall be performed in a professional manner and that said construction will not injure any person or damage any property;

4. That it has carefully examined the Contract and the Site of the Work and that from the Contract and the Work the Contractor is familiar with the nature and extent of the property, the character or equipment and other facilities needed for the performance of the Work, the general and local conditions, and all other matters or things which may affect the Work;

5. That it is authorized that the Work can be performed and completed in accordance with the Contract, and warranty that it has not been influenced by any oral statement or promise of the Owner or the Architect.

ARTICLE 5

SUBCONTRACTORS

5.1 DEFINITION

5.1.1 A Subcontractor is a person or entity who has entered into a Contract with the Contractor to perform any of the Work including supply of equipment or materials. The term Subcontractor is referred to throughout the Contract documents as it relates to those persons and entities in the Owner and means a Subcontractor or any authorized representative. The term Subcontractor does not include any owner's representatives or any other person or entity having the same meaning.

5.1.2 A Subcontractor is a person or entity who has entered into an independent Contract with a Subcontractor to perform any of the Work. The term Subcontractor is defined in the Contract Documents as it relates to the principal or the owner and means a Subcontractor or any authorized representative thereof.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS

5.2.1 Unless otherwise required by the Contract Documents or the bidding Documents, the Contractor, in its-own discretion after the award of the Contract, shall award to the Owner the Architect, and in writing the names of the persons or entities (including those who are to furnish materials or equipment furnished to a special design prepared for each of the purposes of the Work. The work will be performed within 30 days from the date of receipt of such names from the Contractor, and in writing, to the Contractor, setting out whether or not the Owner of the Architect, objects to any such proposed person or entity. If the Owner or the Architect objects to the names as above shall constitute notice of its reasonable objection. The list of names of proposed Subcontractors shall also include the amount of the respective bids.

5.2.2 The Contractor shall not enter into any such proposed person or entity to whom the Owner or the Architect has made timely objection under the provisions of Subparagraph 5.2.1. The Contractor shall not enter into a Contract with anyone to whom the Owner or the Architect has made timely objection under the provisions of Article 5.2.1. The Contractor agrees to impose its best efforts to give similar business and minority-owned businesses, as well as local supplier distributors, the maximum practicable opportunity to participate in the Subcontract and to make positive efforts to utilize small business and minority-owned business sources of supplies and services for the Work.

5.2.3 If the Owner or the Architect objects to any such proposed person or entity, the Contractor shall submit a substitute to whom the Owner or the Architect has no objection.

5.2.4 The Contractor shall not enter into a Contract with any Subcontractor, person or entity previously selected except as allowed by the Contractor. The Contractor may select a replacement for such person upon written notice to the Owner and Architect unless the Owner or the Architect objects within 30 days or receipt of such notice from the Contractor.

5.2.5 Upon request of Owner, contractor shall submit to Owner promptly following execution, copies of all subcontract or purchase order and a copy of any written acknowledgment, modification or cancellation executed or issued by Contractor with respect thereto. Unless Owner so requests, Owner is not obligated to make payment or account of Work performed or materials furnished by the Subcontractor in the Material and subject to a subcontract or purchase order unless there shall have been billed by Owner to the Work performed or materials furnished by the Subcontractor in the Material and subject to a subcontract or purchase order until the termination required by the Contract Documents be submitted therein except as may otherwise be specified by Owner with respect to purchase order in his
5.1 Subcontractual Relations

5.1.1 By an appropriate written agreement, the Contractor shall require each Subcontractor, in the execution of the Work to be performed by the Subcontractor, to bond to the Contractor for the performance of the Work in accordance with the terms of the Contract Documents. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with its Subcontractors. Each subcontractor shall satisfy the Contractor that such an agreement with the Subcontractor is sufficient to protect the interest of the Contractor and the Owner in the execution of the Work. The Contractor shall also require each Subcontractor to furnish satisfactory evidence of its ability to perform the Work.

5.1.2 The Contractor shall incorporate in all subcontracts and purchase orders, except as may otherwise be specified by Owner, with respect to purchase orders for minor purchases, the same terms and conditions as specified in the Contract Documents, unless specifically approved by Owner.

5.1.3 In the event the Contractor fails to discharge, in whole or in part, any lien, bond, or other payment due to any Subcontractor or other party, the Owner may at its option require payment of the amount due to the Subcontractor or other party. The Contractor shall indemnify and hold harmless the Owner from and against any claim or costs incurred by the Owner in connection with the performance of the Work. The Contractor shall also require each Subcontractor to furnish satisfactory evidence of its ability to perform the Work.

ARTICLE 6

WORK BY OWNER OR BY INDEBTED CONTRACTORS

6.1 Owner’s Right to Perform Work and to Award Separate Contracts

6.1.1 The Owner reserves the right to perform work related to the Project or any portion thereof, and to award separate contracts in connection with the performance of such work. The Contractor shall not be liable for any claim that such action is in violation of the Contract Documents. The Contractor shall be liable for any claim that such action is in violation of the Contract Documents.

6.1.2 When separate contracts are awarded for different portions of the Project or other work on the site, the Owner shall award the contracts in such manner as to ensure that no conflicting relationship arises between the Owner and any Subcontractor or Subcontractor and any Subcontractor or Subcontractor with the Owner.

6.1.3 The Contractor shall be responsible for the performance of the Work and the execution of the Work, and shall coordinate the work with the Owner and any other party performing work on the site. The Contractor shall also coordinate the work with any other party performing work on the site, and shall be responsible for the performance of the Work in accordance with the Contract Documents.

6.2 Mutual Responsibility

6.2.1 The Contractor shall be responsible for the performance of the Work and the execution of the Work, and shall coordinate the work with the Owner and any other party performing work on the site. The Contractor shall also coordinate the work with any other party performing work on the site, and shall be responsible for the performance of the Work in accordance with the Contract Documents. The Contractor shall also be responsible for the performance of the Work in accordance with the Contract Documents. The Contractor shall also be responsible for the performance of the Work in accordance with the Contract Documents.

6.2.2 If any part of the Contractor’s Work is dependent on proper facilities and management, the Contractor shall ensure that all necessary facilities and management are provided to ensure proper performance of the Work. The Contractor shall also ensure that all necessary facilities and management are provided to ensure proper performance of the Work.
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under the Contract or shall any such action or failure be set
constitute an approval of or compliance in any manner thereto,
except as may be specifically agreed in writing.

7.7 NOTICE

7.7.1 If the Contractor Documents, laws, ordinances, rules, regulations or any public authority having jurisdiction require any portion of the Work to be inspected, tested or approved, the Contractor shall give the Architect timely notice of its readiness to the Architect any notice such inspection testing or approval. The Contractor shall bear all costs of such inspections, tests or approvals conducted by public authorities. Unless otherwise provided, the Owner shall bear all costs of other inspections, tests or approvals.

7.7.2 If the Architect determines that any Work requires special inspection, testing or approval, which written subparaphraph 7.7.1 does not include the will, upon written authorization from the Owner, instruct the Contractor to order such special inspection, testing or approval, and the Contractor shall give notice as provided in Subparagraph

7.7.3 If such special inspection or testing reveals a failure of the Work to comply with the requirements of the Contractor Documents, the Contractor shall bear all costs thereof, including, but not limited to, the architect's professional services made necessary by such failure, unless the Owner shall furnish the contractor, in writing and within a reasonable time after such event has occurred, notice in writing of the Owner's failure to furnish such notice, in which case the Contractor shall be entitled to recover all reasonable costs incurred by it in connection with the inspection, testing or approval.

7.7.4 The Architect or his authorized representative shall be entitled to enter the Work at any time to observe the Work, and to be present at any inspection, test or approval required by the Architect. The Owner shall permit the Architect to inspect and test the Work at any time.

7.7.5 Any material or workmanship shall be subject to inspection and testing by the Architect. The Architect's inspection shall be deemed to be satisfactory unless the Architect shall give notice thereof in writing to the Contractor and the Owner within ten days after such notice, in which case the Contractor shall be entitled to recover all reasonable costs incurred by it in connection with the inspection, testing or approval.

7.7.6 The Owner reserves the right to reject any material, product, or workmanship and to require that it be replaced or repaired at the Contractor's sole expense.

7.8 INSPECTION

7.8.1 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due and any amount of interest included in or on any award made pursuant to Article 7.9 shall be at such rate as the parties may agree upon in writing or in the absence thereof, at the prime rate as published by "The Wall Street Journal" in its column "Money Rates," or, if no longer reported therein, as reported in a nationally recognized source at a materially similar rate for calculation, provided, however, that amount so returned in good faith shall not bear interest until and unless determined in the first instance to be due by the architect or the Owner is entitled to the

7.9 DISPUTES RESOLUTION

7.9.1 All claims, disputes and other matters in question between the Contractor and the Owner arising out of, relating to, or relating to the Contractor Documents or the Work thereunder, except as provided in Article 7.9.3 with respect to the Architect's decisions on matters relating to aesthetic effect, and except for claims which have been waived by the making or acceptance of final payment in accordance with Article 9.4 and 9.5 shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then prevailing if the total amount of any monetary damage claimed by either party to said arbitration by claimant in connection with any dispute or claim is less than $50,000. Each party making such a claim in arbitration agrees that it includes all damages which have or will accrue out of the facts upon which said claim is based and that the damages in any event as a result of said claim are limited to a maximum of $150,000. The limits on claims to be pursued in arbitration shall not be avoided by alleging damages not reasonably related to the claim or by commencements multiple arbitrations proceedings arising out of a single dispute or bring the interest of the parties to resolve all disputes described above that involve no more than $150,000 by arbitration and that all arbitrations be conducted in the counties of the State of New York pursuant to Article 7.9.5.

7.9.2 The foregoing arrangement to arbitrate and any other arrangement to arbitrate with an additional person or persons to connect with the Parties shall be specifically enforceable under the prevailing arbitration laws of the State of New York. The award rendered by the arbitrator shall be final and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereto.

7.9.3 The venue of any arbitration proceeding pursuant to this Article or any corresponding to interpret or enforce such Article shall be in Monroe County, State of New York.

7.9.4 Notice of the demand for arbitration shall be filed in writing with the other party or parties to said arbitration and with the American Arbitration Association. The demand for arbitration shall be made within the time limits specified as provided elsewhere in these General Conditions, and in all other respects within a reasonable time after the claim, dispute, or matter in question has arisen, and in no event shall be made more than two years after the notice of the claim, dispute, or matter in question would have been broken by the applicable statute of limitations.

7.9.5 Except as provided in Article 7.9.4 all other claims, disputes and other matters in question between the Contractor and the Owner arising out of, relating to, the Contractor Documents or the Work thereunder, except as provided in Article 7.9.3 with respect to the Architect's decisions on matters relating to aesthetic effect, and except for claims which have been waived by the making or acceptance of final payment in accordance with Article 9.4 and 9.5 shall be decided by the courts of the State of New York and the Counties in which such action shall be brought.

7.9.6 Except as otherwise agreed in writing, the Contractor shall carry
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as that does open words that portion is placed into beneficial service by the Owner or upon which the Work is accepted by the Owner, whatever comes first. Substantial Completion shall not relieve the Contractor of its obligations to complete the Work in accordance with the Contract Documents.

18.1.4 The term 'day' as used in the Contract Documents shall mean calendar day unless otherwise specifically designated.

18.1.5 Work remaining to be completed after Substantial Completion shall be limited to items which can ordinarily be completed within the thirty (30) day period following the date payment is made.

18.2 PROGRESS AND COMPLETION

18.2.1 All time limits stated in the Contract Documents are of the essence of the Contract. It is implied that additional time is allowed for the completion of any Work, the new time or correction established by said extension shall be of the essence.

18.2.2 The Contractor shall begin the work on the date of commencement as set out in Subparagraph 18.2.1. He shall carry the Work forward expeditiously with due diligence and shall achieve Substantial Completion within the Contract Time. It is expressly understood and agreed by and between the Contractor and the Owner that the time for completion of the Work described herein is a reasonable time for completion of the same.

18.2.3 In no case shall the Contractor delay the progress of the Work, or any part thereof, on account of changes in the Work or disputes caused by proposal oriteral changes in the work, or any disputes or disagreements as to the equitable value of the changes.

18.3 DELAYS AND EXTENSIONS OF TIME

18.3.1 If the Contractor is delayed at any time in the progress of the Work by any act or omission of the Owner or of the architect, or by any employee of either, or by any act or omission committed by the Owner, or by changes ordered in the Work, or by accidents beyond the control and without the fault or negligence of the Contractor and with the exercise of reasonable diligence the Contractor is liable to prevent or provide against, including labor disputes (other than disputes limited to the work herein) or, provided by the Contractor or the Subcontractor, that, unusual delays to be delayed, it reasonably, anticipate, unavoidable accidents, or by other circumstances which the architect, subject to the Owner's approval, determines as justify delay, then provided that the Contractor is in compliance with Subparagraph 18.5.5.3 hereof, the Contract Time shall be extended by Change Order for the length of the delay actually and directly caused by such occurrence as determined by the architect and approved by the Contractor and Owner (such approval not to be unreasonably withheld, delayed, or conditioned), provided, however, that such extension of Contract Time shall be set at any delays caused by or due to the fault or negligence of the Contractor or which are otherwise the responsibility of the Contractor and shall also be set at any contingency or 'force' time allowance included in the Contractor's contract in advance. The Contractor shall, in the event any occurrence is likely to result from a delay, promptly inform the Owner and Contractor to modify and mitigate the impact of any such occurrence and all other things reasonably under the circumstances to achieve the goal.

18.3.2 The Owner shall give the Contractor reasonable notice of its intent to occupy the premise, desirous of the extent, purpose, and

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condition of the Occupancy. The Contractor may, upon receipt of the notification, request an extension of time if such occupancy, in his opinion, will result in delay or increase in minimum prenuance of the Work or additional work to be performed.

8.2.8 Any claim for extension of time shall be made in writing to the Architect not more than ten days after the commencement of the delay; otherwise it shall be forfeited. In the case of a continuing delay, only one statement shall be prepared. The Contractor shall provide an estimate of the probable cost or lack of progress on the project of the Work.

8.4 If no agreement is made during the time upon which the application is provided in Subparagraph 8.2.5 shall be handed, then no claim for delay shall be allowed or notice to furnish such information unless after ten days after written request is made for them, and notice unless such claim is reasonable.

8.5 Extension or time provided for the completion of the Work shall be by the Contractor's sole remedy for delay (except for the Contractor's right to terminate the Contractor's remaining of the Contract according to the provisions of Article 14 hereof), unless the same shall have been caused by acts constituting intentional interference by Owner with Contractor's performance of the Work where, and in the event that, such acts of the Owner continue after Contractor's written notice to Owner of such interference. The Owner's exercise of any of his rights under this Contract, including without limitation, its right under Article 12, Changes in the Work, regardless of the extent or number of such changes, or the Owner's exercise of any of its remedies of suspension of the Work, or requirement of contractor's re-execution of any defective Work, shall not in any manner be construed as intentional interference with Contractor's performance of the Work.

8.6 The Owner may seek recovery for actual damages suffered due to delay of the Work: such actual damages shall be considered to commence five (5) days after each of all of the following:

1. scheduled Substantial Completion date for any portion of the Work,
2. scheduled occupancy date for any portion of the Work,
3. scheduled Substantial Completion date for the entire Work, and
4. scheduled occupancy date for the entire Work.

The dates referenced herein shall be subject to adjustment as provided in the Contract Documents.

ARTICLE 9
PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

9.1.1 The Contract Sum is fixed in the Owner-Contractor Agreement and, including authorized change orders, is the total amount payable by the Owner to the Contractor for the performance of the Work under the Contract Documents.

9.2 SCHEDULE OF VALUES

9.2.1 At least 30 days before the first Application for Payment, the Contractor shall submit to the Owner and the Architect for approval a schedule of values within the aggregate equals the total Contract Sum divided as to facilitate payments to Subcontractors, supported by such data or evidence of cost as the Architect may request or as required by the Owner. This schedule, when approved by the Architect and Owner, shall be used to monitor the program of the Work and to compute the amounts of the various payments required by the Conditions for Payment. All items with earned values will be monitored by the Contractor to the “Application and Certificates for Payment,” and shall include the latest approved Change Orders. Change Order values shall be broken down to show the Work elements. The Application for Payment shall be on forms provided by the Architect and approved by Owner. Each item shall show its total scheduled value, value of previous application, value of application, percent complete, value completed and value yet to be completed. All bids, takeoffs and estimates must be included, including every percentage complete figure. No application for payment shall be required to be approved until after the Schedule of Values has been approved by the Owner and Architect.

9.2.2 The Schedule of Values and application for Payment shall be prepared by the Contractor using a modified version of AIA Form G-707 and G-103, “Application and Certification for Payment.” The Schedule of Values shall be submitted to the Owner and/or Architect for approval a minimum of five (5) days before the first Application for Payment. A milestone payment schedule may be required by the Owner, and shall be made a part of the Schedule of Values when agreed upon by the parties. Work and future work overview shall be included in each item. All applications for Payment Change Orders, and other amounts involving monetary amounts shall be made rounded off to the whole dollar amount for 9 coins through 99 cents. All items above 99 cents through 999 cents in the tent dollar.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 At least twenty-five (25) days before the date for each progress payment established in the Owner-Contractor Agreement, the Contractor shall submit to the Architect an Invitational Application for Payment, mentioning it required, and shall receive payment, if any, as provided elsewhere in the Contract Documents. Applications for payment must include (and include dollar) adjustments to the Lump Sum of the Contract remaining from work performed and approved Change Orders (as listed in Article 12) and shall be made separately on the application for the prior and current periods. Each Application and Certificate for Payment shall include:

1. up-to-date copies of the Progress Schedule, revised to the end of the application period.

The application for payment shall be accompanied by (1) a certification by an officer of Contractor to the effect that: "There are no lien claims asserted, or any other claim for labor, materials, goods, or services, by subcontractors, suppliers, laborers, or other persons, arising out of labor, material, goods, or services furnished to or for the use of the Work, or (2) warranty and insurance on the Contractor’s work as to the Work and materials for which payment is sought.

9.3.2 Unless otherwise provided in the Contract Documents, payments will be made on account of materials or equipment not incorporated in the Work but delivered and stored at the site and, if approved in advance by the Owner, payments may similarly be made for materials or equipment initially stored at some other location agreed upon in writing. Payments for materials or equipment stored off the site shall be conditioned upon submission by the

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9.3.3 The Contractor warrants and agrees that title to all Work will pass to the Owner either by incorporation in the Work or upon the receipt of payment therefor by the Contractor, whichever occurs first, free and clear of all liens, claims, taxes, encumbrances, or limitations whatsoever, that the work of the Contractor shall not impair any obligations of the Owner or otherwise exceed or encroach upon the rights, duties, or responsibilities of the Owner, that the Contractor shall perform the Work in a professional, competent manner, and that the Work shall be completed by the Contractor in accordance with the Contract Documents and in a workmanlike and professional manner.

9.4 Payment shall be made to the Contractor for Work performed and materials furnished under the Contract Documents.

9.5 Payment shall be made to the Contractor for Work performed and materials furnished under the Contract Documents.

9.6 Certificates for Payment shall be submitted by the Contractor to the Owner for review and approval.

9.7 The Contractor shall maintain proof of insurance as required by the Contract Documents.

9.8 The Contractor shall comply with all laws, codes, and regulations applicable to the Work.

9.9 The Contractor shall comply with all laws, codes, and regulations applicable to the Work.

9.10 The Contractor shall comply with all laws, codes, and regulations applicable to the Work.

9.11 The Contractor shall comply with all laws, codes, and regulations applicable to the Work.

9.12 The Contractor shall comply with all laws, codes, and regulations applicable to the Work.
pay or to use in the payment of any money to any subcontractor except as otherwise required by law.

9.5.4 No Certificate for progress payment nor any progress payment, nor any partial or entire use or occupancy of the Project by the Owner, shall constitute an acceptance of any work not in accordance with the Contract documents.

9.6 PAYMENTS WITHHELD

9.6.1 The Architect may decline to certify payment and may withhold the Certificate in whole or in part to the extent that is reasonably necessary to protect the Owner, if in the Architect's opinion he is unable to make representations to the Owner as provided in subparagraph 9.4.2. If the Architect is unable to make representations to the Owner as provided in subparagraph 9.4.2 and the party to whom the Architect has been paid the amount of the Application, he will notify the Contractor as provided in subparagraph 9.4.2. If the Contractor and the Architect cannot agree on the amount, the Architect will promptly issue a Certificate for Payment for the amount for which he is unable to make such representations to the Owner. The Architect may also decline to certify payment or, because of subsequently discovered evidence or observations, require the Contractor to make such representations to the Owner. The Architect may also decline to certify payment or, because of subsequently discovered evidence or observations, require the Contractor to make such representations to the Owner.

1. defective Work not remedied,
2. third party claims filed or reasonable evidence indicating probable filing of such claim,
3. failure of the Contractor to make payments properly to others having claims against the Owner or the Contractor's equipment,
4. reasonable evidence that the Work cannot be completed for the purpose of the Contract,
5. damage to the Owner or another Contractor,
6. reasonable evidence that the Work will not be completed within the time limit or cost,
7. failure to carry out the Work in accordance with the Contract Documents.

9.6.2 The Owner may refuse to make payment on any Certificate for payment for any delay in the submission of the Certificate, but not limited to evidence of delay set forth in Clauses 9.6.1 through 9.6.3.

9.6.3 The Owner shall not be deemed in default by reason of withholding payment while any of such defects remain unremedied.

9.6.4 When the above grounds in subparagraph 9.6.1 are removed, payment shall be made for amounts withheld because of them.

9.7 SUBSTANTIALLY COMPLETE

9.7.1 When the Contractor certifies that the Work, or a designated portion thereof which is acceptable to the Owner, is substantially complete as defined in subparagraph 9.13, the Contractor shall notify the Owner and prepare for termination to the extent that a list of items to be completed or corrected. The failure to include any item on such list does not affect the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. When the Architect has the basis of an inspection determines that the Work or designated portion thereof is substantially complete, he will then prepare a Final Principal LA or a Certificate of Substantial Completion which shall state the Date of Substantial Completion, and in the event the Owner occupies or utilizes the Work, shall note the responsibilities of the Owner and the Contractor for security, maintenance, loss, utilities, damage to the Work, and insurance shall be in the form which the Contractor shall complete the items listed therein. Until the Owner occupies the Work, Contractor shall not be relieved of any of its obligations under the Contract Documents respecting safety, security, maintenance, loss, utilities, insurance or damage to the Work. Warranties required by the Contract Documents will be required as part of the Work and will commence on or before the date of the final Completion or on the date of the final Acceptance, whichever shall occur as of the date of Final Acceptance. The date of commencement of warranties shall be based upon the Warranty Date. The Work will be considered suitable for Substantial Completion reviews until all Project systems (including the Work) are operational as designed and scheduled, all design and required governmental inspections and certifications have been made and signed, a Certificate of Occupancy (having terms acceptable to the Owner) has been issued by the proper authorities, designated inspectors of Owner's personnel in the operation of the system has been completed, and all final facilities with the Contractor are in place. In general, the only remaining Work shall be minor in nature, or that the Owner could occupy the building at full extent and that the completion of the Work by the Contractor would not materially interfere with occupancy by the Owner or the Owner's tenants or other claimants (by, through or under Owner's control) business operations. As a further condition of Substantial Completion acceptance, the Contractor shall certify that all remaining Work will be completed within thirty (30) consecutive calendar days or as agreed upon following the Date of Substantial Completion.

9.7.2 Upon substantial completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Architect, the Owner shall make payment, reducing advances in outstanding, if any, for all Work as evidenced hereunder as provided in the Contract Documents. The Owner, when all the Work is substantially complete, shall pay to the Contractor the balance due the Contractor pursuant to the Contract, less:

1. any (2) interest at any remaining term of Work to be completed or corrected and
2. any amount necessary to satisfy any and all claims, liens or judgments against the Contractor.

As the remaining items of Work are completed and accepted by the Owner, the Owner shall pay the appropriate amount pursuant to the same completed and substantially complete requirements.

9.7.3 In the event of Partial Occupancy before Substantial Completion as provided above, the Contractor shall cooperate with the Owner in making available to the Owner's use and benefit such building systems as heating, ventilating, cooling, water, lighting, electrical, elevators and security for the portion or portions to be occupied, and if the Work required to maintain such services is not...
In the event of Partial Occupancy prior to Substantial Completion, mutually acceptable arrangements shall be made between the Owner and Contractor in respect of the operation and use of the building, including the use of any unfinished portions or portions involving unfinished services or additions. The Owner shall assume proportionate and reasonable responsibilities for the cost of the above services reduced by any savings to Contractor for such services realized by reason of Partial Occupancy. Further, mutually acceptable arrangement shall be made between the Owner and Contractor in respect of insurance and damage to the Work. Contractor’s acceptance of insurance proceeds from the Owners in respect of such matters shall not be unreasonably withheld delayed or conditioned.

9.7.5 In each instance, when the Owner elects to exercise its right of Partial Occupancy as described herein, Owner will give Contractor, Contractor’s Manager and Architect written notice of its election to take the portion or portions involved, and immediately prepare Partial Occupancy, the Owner, Contractor and architect shall jointly inspect the area to be occupied or portion of the Work to be used to determine and record the conditions of the same.

9.7.6 It shall be understood, however, that Partial Occupancy shall not (1) constitute final acceptance of any Work; (2) relieve the Contractor of responsibility for loss or damage because of (i) an act or omission of the Owner or (ii) an act or omission of any others unaffiliated with the Owner or the Contractor; (3) permit the Owner, Contractor or architect to use the Work or any part of it prior to Substantial Completion of the Work; or (4) entitle the Owner, Contractor or architect to sell or dispose of the Work in any manner or at any time prior to completion of the Work.

9.8 FINAL COMPLETION AND FINAL PAYMENT

9.8.1 Upon receipt and approval of written notice that the Work is ready for final inspection and acceptance and upon except a final application for Payment, the Architect will promptly make such inspection and if he finds the Work accepted, enter it, and if he finds it not acceptable, he will promptly make a final Certificate for payment stating that in the best of his knowledge, information and belief and on the basis of his observations and inspection, the Work has been completed in accordance with the terms and conditions of the Contract Documents but at the time balance due to be delivered in the Contract, and found in said final Certificate to be paid and payable, the Architect’s final Certificate for payment will constitute a final representation of the conditions precedent to the Contractor’s being entitled to final payment and such Certificate is subject to Paragraph 9.3.7 which have been submitted and approved by the Architect and the Owner; (7) all applicable federal, state and local laws and regulations, including any which may affect the Work or the Occupancy thereof.

9.8.2 The making of final payment shall constitute a waiver of all claims by the Contractor except those arising from:

1. unexcused delay;
2. faulty or defective work;
3. invalid or unenforceable work;
4. terms of any special warranty required by the Owner.

The acceptance of final payment shall constitute a waiver of all claims by the Contractor except those previously made in writing and identified by the Contractor as unexcused at the time of the final application for Payment.

9.8.3 RECOIL DRAWINGS

9.9.1 The Contractor shall deliver, in the form, format and condition as required, such additional and other drawings and specifications as may be required to be delivered by the Architect to the Owner in accordance with the Contract Documents, subject to the approval of the Owner, who shall be responsible for all costs and expenses thereof.

9.9.2 Revisions and modifications to the drawings shall be prepared in CAD.
10.1 The Contractor shall be responsible for initiating, maintaining, and updating all safety precaution and programs in connection with the Work.

10.1.3 The Contractor shall, if requested by Owner, furnish action copies of said programs.

10.1.4 The Contractor shall immediately notify RIT’s Campus Safety Office of any accident occurring in the performance of work for RIT’s own use or for RIT’s property and shall promptly provide RIT’s Facilities Management Services with copies of any accident reports.

10.2.1 The Contractor shall take all necessary precautions for the safety of, and shall provide all necessary protection to prevent damage to, injury or loss to:

1. All employees of the Work and all other persons who may be affected by it;

2. All work and all materials or equipment to be incorporated therein, whether in use or off the site, under the care, custody or control of the Contractor or any sub-contractor or sub-sub-contractor; and

3. Other property at the site or adjacent thereto, including tools, cribbing, scaffolding, structures, barriers, measures, and utilities designated for removal, relocation or replacement in the course of construction.

10.2.3.1.1 The Contractor shall give notice and comply with all applicable laws, ordinances, rules, regulations, and other orders of all public authorities having on the safety of persons or property or their protection from damage, injury, or loss. Contractor shall provide all facilities and shall follow all procedures required by the Occupational Safety and Health Act (OSHA) including, but not limited to, providing and using all required personal protective and safety equipment and shall otherwise be responsible for compliance with all other mandatory safety laws.

10.2.3.1.2 The Contractor shall erect and maintain in respect by existing conditions and progress of the work, all necessary barricades for safety and protection including, but not limited to, barricades, signs, and barriers against hazards, complying with all safety regulations and posting signs and use of warning signals and fencing fences and posts to include work sites and prevent entry by unauthorized persons.

10.2.3.1.3 The Contractor shall maintain the work area clear of unnecessary material and equipment which may constitute a safety hazard and shall remove it from the work area promptly after its use.

10.2.3.1.4 When the use or storage of explosives or other hazardous materials or equipment is necessary for the execution of the Work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel.

10.2.3.1.5 The Contractor shall promptly remove at its own cost and expense all damage or loss to any property referred to in clauses 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, any Subcontractor, any Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone on whose acts any of them may be liable and for which the Contractor is responsible under clauses 10.2.1.2 and 10.2.1.3. The obligations of the Contractor under this subsection shall not extend to the liability of the Architect, its agents, or employees, arising out of or the preparation or approval of any drawings, opinions, reports, surveys, change orders, designs, or specifications, or the giving of any advice or matter which is not the subject of this subsection.

10.2.6 The Contractor shall designate a responsible member of its organization at the site whose duty shall be to prevent the occurrence of accidents. This person shall be the Contractor’s representative and shall otherwise be designated by the Contractor as fitting in the Owner and the Architect.

10.2.7 The Contractor shall not be required to pay any of the Work to be halted in order to endanger safety.

10.3.1 In any emergency attending the safety of persons or property, the Contractor shall, at his discretion, to prevent threatened damage, injury, or loss. Any additional compensation or extension of time claimed by the Contractor on account of emergency work shall be determined as provided in Article 12 for Changes in the Work.

10.4.1 In the event Contractor encounters on the site material reasonably believed to be “Hazardous Materials” as defined herein, Contractor shall immediately any work in the area affected and report the condition to Owner and Architect in writing. The work in the affected area shall not be resumed until a determination has been made by Owner as to how to proceed.

ARTICLE III
INSURANCE

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11.1.3 Before signing and until Final Payment (except for products and equipment liability coverage which continues in force until three years after the date of Final Payment with Owner to receive annual evidence of such continuance), Contractor and its Subcontractors shall procure and maintain such insurance as will protect him from claims against him which may arise out of or result from the Contractor's operations under the Contract, whether such operations be by themselves, or by any Subcontractor or by anyone directly or indirectly employing any of them, or by anyone not whose acts or omissions be liable.

The Contractor shall, at its own expense, maintain insurance as outlined below with minimum limits as referenced.

1. **BODILY INJURY & PROPERTY DAMAGE LIABILITY**: With limits of $1,000,000 ($1,000,000 general aggregate) written on an occurrence basis including coverage for bodily injury and property damage, NCCI, products liability, explosion/imploded operations, commercial liability, business interruption liability, and personal injury liability for advertising liability (refer to 11.1.2)

2. **AUTOMOBILE LIABILITY**: Including, several hired and non-owned autos, trucks, tractors, trailers, motorcycles or other mobile equipment. $1,000,000 combined single limit (each accident). Coverage must apply to all employees of Contractor engaged in performance of the Contract. Coverage shall include contractual liability.

3. **ECONOMIC LIABILITY**: $1,000,000 minimum in excess of underlying limits. The limits shall be no more restrictive than the underlying coverage.

4. **WORKMEN’S COMPENSATION & EMPLOYERS LIABILITY**: Written on New York State limits.

5. **ASBESTOS LIABILITY**: If Work Includes Asbestos Removal, with limits of $1,000,000 written on an occurrence basis.

11.1.5 Owner shall be named as an additional insured on all policies purchased by the Contractor as described herein with the exception of Workers Compensation and Employer's Liability.

11.2 COMMERCIAL GENERAL LIABILITY POLICY

11.2.1 The Commercial General Liability policy shall provide insurance for Contractor and Owner for Bodily Injury and Property Damage to third persons arising out of:

1. Work performed by Contractor itself or its Subcontractors.

2. Work performed by its Subcontractors, caused by any work or by Independent Contractors which is referred to as Contractor's Frequent Liability.

3. Contractor's frequent liability caused by "bodily harm" claims against third parties will be referred to as the "Contractor's Frequent Liability Insurance".

4. Property Liability Insurance covering the completed building or installation or products furnished. (This is referred to as "Product Liability Insurance for the Manufacturer and Contractor's Frequent Liability Insurance for Contractors").

11.2.2 In the event of claims being made by reason of personal injuries suffered by any employees or employer of Contractor for which another insured hereunder is to be made liable by this policy shall cover such damage or injury or any claims arising out of the same manner as it may be liable, then this policy shall cover such injury against whom a claim is made or may be made in the same manner as if separate policies had been issued to such insured hereunder.

11.2.3 In the event of claims made by reason of damage to property belonging to any insured hereunder for which another insured hereunder may be liable, then this policy shall cover such damage against whom a claim is made or may be made in the same manner as it may be liable.

11.3 CERTIFICATES OF INSURANCE

11.3.1 Certificates from the insurance carrier stating the limits of liability, any non-cancelable provisions deductible applicable to such liability, and expiration date shall be filed with Owner before operations are begun. Such certificates not only shall name the types of policy provided for but also shall refer specifically to this Contract and the above paragraphs in accordance with which such insurance is being furnished shall not yet cease to be free of all claims being insured by such non-cancelable portions of such coverage and shall be sufficiently comprehensive as to insure Owner named as an additional insured (or, if Contractor and owner then the coverage extends to acts of or on behalf of Subcontractors, as its permit Owner to determine that the required insurance coverage has been provided without the responsibility of examining the individual insurance policies. For work being performed regarding the B ~m and Conference Center, add: (Certificate Holders (Owner) The 525 W. Riverfront Blvd., Rochester, NY 14623. Additional Insured.

11.3.2 If the initial insurance expires prior to completion of work
ARTICLE 12
CHANGES IN THE WORK/RESTITUTIONS

12.1 Change Orders

12.1.1 A Change Order is a written order by the Owner to the Contractor to make changes in the Work or in the Contract Sum or the Contract Time. The Contract Sum and the Contract Time may be changed only by Change Order. A Change Order shall be the basis for payment and any extra cost for any contractor.

1. A written notice of change order shall not be recognized as having any effect on the Contract Sum or on the Contract Time until the Contractor has received the Change Order and the Contractor has confirmed in writing that the Change Order is accurate and complete.

2. When submitting its change proposal, the Contractor shall submit a change proposal in writing, stating the exact amount of extra work or extra time required for the new or altered work.

3. The Contractor is not entitled to any payment or extra time for any work that is not specified in the Change Order.

4. If the Contractor submits a Change Order that is not in accordance with the provisions of this Article, the Change Order shall be rejected.

5. In general, a Change Order is subject to the following:
   a. The Change Order shall be assigned to the Contractor and the Contractor shall be bound by the terms of the Change Order.
   b. The Change Order shall be in writing and shall be signed by the Owner.
   c. The Change Order shall be accompanied by any drawings or specifications that are necessary for the execution of the Change Order.

6. Change Orders are subject to the approval of the Owner, the Architect, and the Contractor.
1. The prices agreed upon in the body of this contract shall be adjusted according to the conditions of the Contract Document.

2. Changes in the contract terms due to changes in the Work shall result in changes involving quantities, alleged damages, and the value of such materials, as determined by the engineer. If any materials previously agreed upon are not delivered or are not delivered or paid, or if the Contractor, and consequently, the Owner, will be required to return such material, the Contractor shall be responsible for such return.

3. Changes in the Contract terms due to changes in the Work shall be made in a timely manner, and the Contractor shall be compensated for any additional work or materials required. If the change order is for additional work or materials, the Contractor shall submit a change order proposal to the Owner, and the Owner shall accept or reject the proposal within 10 days. If the proposal is accepted, the Contractor shall proceed with the additional work or materials.

4. A labor-hour charge shall be computed based on the estimated number of labor-hours required for the additional work or materials. Labor-hours shall be calculated by the following formula:

   \[ \text{Labor-hours} = \frac{\text{Total cost} \times 1000}{\text{Cost per labor-hour}} \]

   where:
   - Total cost is the total cost of the additional work or materials.
   - Cost per labor-hour is the cost per labor-hour as agreed upon.

5. The total labor-hours shall be calculated for each change order proposal. The final labor-hours shall be calculated once the change order is accepted by the Owner. The final labor-hours shall be used to calculate the total cost of the change order.

6. Material costs shall be charged based on the cost of materials as agreed upon in the Contract Document. The material costs shall be calculated by the following formula:

   \[ \text{Material cost} = \text{Total weight} \times \text{Cost per unit} \]

   where:
   - Total weight is the total weight of the materials.
   - Cost per unit is the cost per unit of the materials.

7. The final material costs shall be calculated once the change order is accepted by the Owner. The final material costs shall be used to calculate the total cost of the change order.

8. The contract shall be considered null and void if the change order is not accepted within 30 days of submission. The Owner shall have the right to reject any change order proposal that does not meet the requirements of the Contract Document.

9. The Owner shall have the right to accept or reject any change order proposal. The final decision shall be made by the Owner, and the Contractor shall be responsible for the additional work or materials as agreed upon.

10. The contract shall be considered null and void if the change order is not accepted within 30 days of submission. The Owner shall have the right to accept or reject any change order proposal. The final decision shall be made by the Owner, and the Contractor shall be responsible for the additional work or materials as agreed upon.
provided. Owner shall in turn for Contractor to take advantage of any such cost decreases.

Price quotations from material suppliers must be treated by each specific item to be purchased. "Lot pricing" quotations will not be considered unless submitting them.

d. Equipment - Allowable change order estimates may include appropriate amounts for rental or repair of equipment specifically needed to perform the change order work, to the extent that the equipment is not the property of the Contractor and has not been previously used by the Contractor. The Employer shall agree in advance to furnish the necessary equipment at a reasonable cost to the Contractor, and the cost of such equipment shall be reimbursable to the Contractor in accordance with the terms of the contract.

3. Cost (See Change Order Proposal) - As an alternative to either Lump Sum Change Order Proposal or Unit Price Change Order Proposal, the Owner may elect to have any extra work performed on a cost plus markup percentage basis. Upon written notice to proceed, the Contractor shall perform such authorized extra work at an extra cost to the Owner, with such extra cost to be charged against the balance of the contract. In the event of a dispute, the Contractor shall have the right to submit a claim to the Owner for the extra cost of such work. The amount of such extra cost shall be determined in accordance with applicable laws and regulations.

4. Unit Price - The Unit Price, as agreed upon, shall be included in the total cost of the contract. The Unit Price shall be subject to adjustment as necessary to reflect changes in the cost of labor and materials. Any adjustment in the Unit Price shall be made in accordance with the provisions of the contract documents.

The owner and contractor aggree in advance to furnish the necessary equipment at a reasonable cost to the Contractor, and the cost of such equipment shall be reimbursable to the Contractor in accordance with the terms of the contract.

Below is a list of the Unit Prices for each item of work.

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<th>Item</th>
<th>Description</th>
<th>Unit Price</th>
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The Contract Documents, cost shall be limited to the following: cost of materials, labor, equipment, and other costs as described in the contract documents. The amount of cost to be allowed by the Owner to the Contractor for any extra work or changes in the contract shall be determined in accordance with the provisions of the contract documents.

The ITF Facilities Management Services General Conditions of the Contract for Construction 01/01/06 are hereby incorporated by reference. The contract documents, cost shall be limited to the following: cost of materials, labor, equipment, and other costs as described in the contract documents. The amount of cost to be allowed by the Owner to the Contractor for any extra work or changes in the contract shall be determined in accordance with the provisions of the contract documents.

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the amount of the actual net cost as confirmed by the Architect. When both additions and credits covering related work or submittals are involved in any one change, the allowance for overhead and profit shall be figured on the basis of the net increase or decrease.

12.15 Accurate Change Order Pricing Information - The Contractor, Subcontractors and lower tier Sub-subcontractors agree that they are responsible for submitting accurate cost and pricing data to support their lump sum Change order and/or cost plus Change Order Proposals or other contract price adjustments under the contract. Contractor and Subcontractors agree further to certify that the change order cost and pricing data submitted is accurate, complete, correct and in accordance with the terms of the contract and request for pricing of change order.

12.15.1 Right to Verify Change Order Pricing Information - Contractor, Subcontractors, and lower tier Sub-subcontractors agree that any designated Owner’s representative will have the right to examine the contractor’s records to verify the accuracy and the appropriateness of the pricing data used to price Change Order Proposals. Upon issue of the change order proposal, the Contractor and all lower tier subcontractors agree that an appropriate request for proposal adjustment will be made. If it is later determined that the change order cost and pricing data submitted was inaccurate, incorrect, not current or not in compliance with these provisions.

12.15.1.1 Requirements for Detailed Change Order Pricing Information - Contractors agree to provide and require all Subcontractors and lower tier Sub-subcontractors to provide a breakdown of allowable labor and material cost breakdown cost information. This information will be used to evaluate the potential cost of labor and material changes to any change order work. It is implied that all information represent an accurate estimate of the Contractor’s actual labor and material cost components and will be subject to verification of the underlying cost components. The Owner may elect to engage staff labor rates, based upon the information submitted, with the understanding that such rates will become fixed and agreed upon for the purpose of pricing change order work. This information is not intended to constitute bid soliciting or change order pricing labor rates. However, in the event change order work is priced, the actual cost shall apply. Job costs may be used to price change order work. The accuracy of any such agreed upon labor cost components used for pricing change order work shall be subject to labor audits. Approved change order estimates may be adjusted later to correct the impact of inaccurate labor cost components if the agreed upon labor cost components are determined to be unreasonable.

12.15.1.2 Overhead and Profit shall not be calculated on credits. The amount of credit to be allowed for a reduction or change which results in a net decrease to the Contract sum shall be the actual net cost. When both additions and credits covering related work or submittals are involved in a change, the allowance for overhead and profit shall be figured on the basis of the net increase or decrease.

12.15.1.3 If any portion previously paid is omitted by written order of the Owner after it has been delivered to or partially worked on by the Contractor and consequently will result in full loss of a portion of such work, the Contractor shall be allowed an additional cost of such omitted work based on the material value of such product as determined by the Consultant.

12.15.1.4 If any product previously ordered is omitted by written order of the Owner prior to its being ordered, the Owner shall receive full credit. If omitted after it has been delivered, the Contractor shall attempt to return a full return and give the Owner prorated credit. It can not be returned for full value due to restocking charges for which it has been partially worked on by the Contractor and consequently. You shall not give the full value for other items, the Owner may require the Contractor to assume it ever to be used. The Owner agrees that the Contractor shall be allowed an actual cost of such omitted product, less the fair market value of such product as determined by the Consultant.

12.16 Cost shall not be allowed in excess of normal stock changes in the Contractor’s area for similar equipment of like size and condition, including cost of necessary supplies and repairs for normal maintenance and in connection with other Work unless in the directly affects actual and additional costs to the Contractor. If equipment on site is required for a change in Work, only the cost of normal maintenance equipment may be included.

12.16.1 Minimum Markup Percentage Allowable on Self-Performed Work - With respect to change order changes involving work performed by a Contractor with their own forces, a single minimum Markup percentage fee shall be allowed to all contractors regardless it is the Contractor or an additional cost to the Contractor. This Markup fee on additional work shall be as follows: 10% of the net change order direct cost for self-performed work. In the event that change orders require deletions of work, no markup percentage fee shall be added to the credits and work credits shall be based on the net change order cost.

12.16.1.1 Minimum Markup Percentage Allowable on Work Performed by lower tier contractors - With respect to change order changes involving work performed by lower tier contractors, the minimum Markup percentage fee shall be as follows: 5% of the total contractor work under the lower tier contracts and any change order work performed by the lower tier subcontractors. No markup shall be permitted by lower tier subcontractors.

12.16.2.1 The allowance for overhead and profit stated in 12.15 shall be the maximum of all supervisory and field office personnel costs unless it is extrapolated (e.g., through contracts to Contract Time) that Contractor actually incurred additional costs in supervision and field office personnel directly attributable to the change.

12.16.2 Minimum Markup Percentage Allowable on Work Performed by a Subcontractor’s Supplier - With respect to materials supplied to a subcontractor whose vendors are installing or furnishing the materials, the maximum Markup percentage fee allowable to the sub-supplier shall be as follows: 5% of the work performed by the sub-supplier. No markups shall be permitted beyond the costs charged.

12.2 CANCELLATION CONDITIONS

12.2.1 If conditions are encountered at the site which are (1) substance in the contemplated physical condition which differ materially from those indicated in the Contract Documents or (2) unknown physical condition of an unknown nature, which are substantially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the owner party shall be given to the other party promptly stating conditions are thereby changed and to an event which may delay the work the circumstances
the conditions. The Architect will promptly investigate such condition and, if it differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. The Contractor acknowledges that the Contract amount as fixed in the Bid includes such provisions which the Contractor deemed proper for all surface or site conditions; the Contractor cannot reasonably anticipate encountering as indicated in the Contract, or during, reports, rock cores, foundation investigation reports, topographical maps or other information available to the Contractor or from the Contractor's inspection and examination of the Site prior to the submission of bids.

12.3 CLAIMS FOR ADDITIONAL COST

12.3.1 If the Contractor wishes to make a claim for an increase in the Contract Sum, he shall give the Architect written notice thereof within twenty (20) days after the occurrence of the event giving rise to such claim. The notice shall be given by the Contractor before proceeding to effectuate the Work, except in an emergency where the Architect shall proceed in accordance with Paragraph 10.3. No such claim shall be valid unless so made. Any change in the Contract Sum resulting from such claim shall be authorized by Change Order.

12.3.2 If the Contractor claims for additional cost is involved because of, but not limited to, (i) any withholding or termination pursuant to Subparagraph 3.2.9, (ii) any cost to the Owner to stop the work pursuant to Paragraph 3.2.10, (iii) any direction to stop the Work pursuant to Paragraph 12.4.1 or (iv) failure of payment by the Owner pursuant to Paragraph 9.7, the Contractor shall make such claims as provided in Subparagraph 25.3.1.

12.3.3 All written claims for damages or extra work shall include notice of damage, location and other identifying factors and shall be supported at request by the Architect, by invoices, or drawings, inspection, minutes, or other pertinent application records.

12.3.4 The Owner shall be liable to any Contractor or Subcontractor for damages caused by any delays or disruptions or other acts of negligence by any other Contractor or Subcontractor during the Contractor's performance of any portion of the Work or by bad weather or by any acts or omissions on the part of any or any cause outside of the Contractor's reasonable control.

12.4 MINOR CHANGES IN THE WORK

12.4.1 The Architect, following consultation with approval by the Project Manager, will have authority to order minor changes in the Work, not involving an adjustment in the Contract Sum or an extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order, and shall be shown on the Owner and the Contractor. The Contractor shall carry out all written orders promptly.

12.5 SUBSTITUTIONS

12.5.1 Using the same or a proprietary form of the same or a comparable substitute in the meaning of an item to be furnished is considered the type, function, and quality required, unless the opposite is specifically indicated in the Contract. Equipment of other manufacturers may be accepted by the Architect or Engineer (A/E) if sufficient information is submitted by the Contractor with the A/E's approval that the proposal contains or equipment or materials to equal or are equal to that specified.

12.5.2 The procedure for review by the A/E will include the following:

1. Requests for review of substitute items of material or equipment will not be accepted by the A/E from anyone other than the Contractor.

2. The Contractor shall make written application for acceptance thereof, indicating the proposed substitution will:
   a. Perform adequately the function and achieve the results called for by the design.
   b. Be similar and of equal substance to that specified and be used in the same manner as that specified.

3. The application will state that the evaluation and acceptance of the proposed substitution will not prejudice the Contractor's entitlement to substantial completion or final acceptance of the Work, and that acceptance of the substitution will require a change in the Contract Documents to adopt the design to the proposed substitution.

4. All variations of the proposed substitution from that specified will be identified in the application.

5. Available maintenance, repair, and replacement service will be indicated.

6. The substitution shall contain an itemized estimate of all costs and credits that will result directly or indirectly from the acceptance of such substitution.
UNCOVERING AND CORRECTION OF WORK

13.1.1 If any portion of the Work should be resoundary in the request of the Owner or architect to requirements specifically contained in the Contract Documents, it must, if required in writing by the Owner or architect, be uncovered or for observation and shall be replaced at the Contractor's expense.

13.1.2 If any portion of the Work has been covered when the Architect has not specifically requested to observe prior to being covered, the Architect or architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is found to be in accordance with the Contract Documents, the cost of uncovering and replacement shall be charged to the Owner. If such Work is found not to be in accordance with the Contract Documents, the Contractor shall pay such cost, unless it is found that the condition was caused by the Owner or a sub-contractor as provided in Article 6, in which event the Owner shall be responsible for the payment of such costs unless otherwise provided in the Contract Documents.

13.3.1 The Contractor shall promptly correct the defects or non-conforming Work as requested by the Owner or architect from time to time, unless the defects or non-conforming Work are in accordance with the Contract Documents. The Contractor shall correct the defects or non-conforming Work as required by the Owner or architect at the cost of the Owner or architect, unless otherwise agreed upon in writing by the Owner or architect and the Contractor.

13.3.2 The Owner or architect shall have the right to inspect the Work at any time during the construction of the Project. The Contractor shall provide all necessary rights of access to the Owner or architect to inspect the Work.

ARTICLE 14
TERMINATION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

14.1.1 If the Work is stopped for a period of sixty days or more by reason of any event or other public authority having jurisdiction, or as a result of an act of government, such as a declaration of a national emergency, or by reason of materials not available, through an act of God or the force majeure of the Contractor or the Owner or architect's agent, employer or any other person performing any of the Work under a contract with the Contractor, or if the Work should be stopped for a period of thirty days by the Contractor because the Owner has not issued a Notice of Payment or as provided in Paragraph 5.7, or because the Owner has no usable payment thereon as provided in Paragraph 5.7, then the Contractor may, upon written demand of the Owner or architect, terminate the Contractor's rights under the Contract, and may give notice to the Owner or architect of the fact that the Owner or architect is not required to make any further payment thereon. However, such notice to the Owner or architect shall be given no more than thirty days after the termination of the Work.

14.2 TERMINATION BY THE OWNER

14.2.1 If the Contractor is declared to be bankrupt, or makes a general assignment for the benefit of creditors, or if a receiver is appointed or the Owner or architect in receiver, or if the Contractor shall be placed in voluntary or involuntary bankruptcy, or if the Contractor is adjudicated a bankrupt, or makes a general assignment for the benefit of creditors, or if a receiver is appointed or the Owner or architect in receiver, then the Owner or architect may terminate the Contract immediately and give notice to the Contractor.
CONTRACTOR/ARCHITECT/ENGINEER

By:  ____________________________

Signature

______________________________

Date:  

RIT FACILITIES MANAGEMENT SERVICES  General Conditions of the Contract for Construction 0703-11
C:\Documents and Settings\busb\Desktop\0703_Gen. Conditions.doc  Rev. 10/3/06
EXHIBIT 1

DAILY WORKFORCE LOG FOR RIT CONSTRUCTION PROJECTS

Date: Week Beginning -

Project

Contractor/Sub-Contractor Name

Listed workers:

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I certify that these are all of our employees who worked on this job site this week. All of them are legally authorized to work in the United States.

Printed Name: ____________________________

Signature:

RIT FACILITIES MANAGEMENT SERVICES

General Conditions of the Contract for Construction 07/03-12

Condition: doc

Rev. 10/3/06
Appendix F

UFES Survey Responses

Question: Do you think that the mandatory use of a truly standardized Uniform Front End Specifications (that is, endorsed by owners, designers, contractor and subcontractors alike) would reduce claims and disputes on projects? The UFES would not necessarily be identical for public and private works. Why or why not?

1: I absolutely agree that mandatory use of a true set of GC's and GR's would assist in reducing claims and disputes on projects over the long run. For the same reason that mandatory use of the FAR clauses helps prevent many issues (because everyone involved knows clearly the intent of each provision, we are left arguing only over facts) use of a similar set of GC's and GR's would help outside the Federal sector. The real challenges is twofold -- one, getting someone to draft the provisions in simple, understandable language and, two, getting agreement of a large number of organizations representing every party's interests -- owners, designers, CM's, constructors, subcontractors, suppliers, etc. Whether this can be done, I doubt it sincerely. Look at the recent experience with the new version of the AIA's documents where the AGC and several subcontractor organizations refused to endorse the new documents despite having spent some considerable amount of time on the task force to draft these documents.

Do we need separate public vs private versions of these uniform documents? Absolutely. Why? Because private and public organizations allocate risk quite differently and will continue to do so for the foreseeable future. And, even in the public sector, different versions for differing jurisdictions may be required. For example, California has a very well developed Public Contract Code with many California-specific requirements which differ radically from Arizona. Without statutory changes, no public works owner in California can agree to anything but what the Public Contract Code calls for.

2: In the longer term, once the UFES would be established sufficiently that all parties and their people would know the provisions, and there would be sufficient experience with resolution of disputes under their provisions to establish how the UFES should be interpreted, there should be a reduction in claims and disputes. This would eventually occur, I believe, since improved communication between parties to a contract usually tends to reduce misunderstandings and disputes. This presumes that UFES would truly become the standard in the industry and not just another set of "standard" contract documents from which to choose. The benefits of the true standardization could derive from more comprehensive use of any of the construction contract document sets.
currently available. (Ideally the requirement to use the UFES would be phased in over a number of years, giving ample time for practitioners and students to learn the UFES well.) UFES would likely offer no drastic reduction in claims and disputes, however, since the site-specific, project-specific nature of construction would preclude identical application and interpretation of the documents from job to job.

Anyway, that's my two cents, Sid. I'd like to see a little more standardization of procedures and documents in the industry—not mandated, but by concurrence. Higher construction education can help in that regard. Good luck.

3: My single-word answer to your question is “no.”

First, by definition, each project is unique. Logic is contradicted by thoughts that a standardized specification would be equally applicable to all projects without much modification. Please know that I assume that even a “unified” spec would allow for a certain (limited) amount of modification. Nevertheless, even if a quarter of the clauses in a typical specification were project-specific, that would require an awful lot of modification, and would thus challenge the “unified” concept.

Second, and more to your question, specs do not cause claims to occur. The specifications may define the outer boundaries of the battleground, but the disputes are brought onto the battlefield, and only affected in certain ways by the terms of the contract. The primary catalyst for all project disputes is human attitude. Why is it that some projects have few if any claims, while others are riddled with them? It is all about how willing (and how skilled) people are at working through their initially different perspectives. If they are open and understanding, and if they communicate in an even-keeled and respectful manner, resolutions will follow. If they are not, no amount of contract language will reduce the friction.

3: The answer is an unqualified "maybe." Not trying to be funny, but the real issues to consider include:

(a) A contract clause / specification is applied by humans with all their frailties. Even the most clearly written and understandable clause can come into dispute when people are pushed against a wall on a project that has issues. Either they really didn't consider all the ramifications the first few times they read it in context of the current issue, or they have chosen to use it as their weapon of choice. Either way the results can be ugly.

(b) If you are dealing with the same parties (contractors, owners, subcontractors, etc.) doing the same type of work then unified specifications like you describe is a positive for continuity. Consider this the "measured mile" approach to contracting behavior. However, when you are dealing with super large / complex design-build, often one-off efforts, then the contract and specifications need more tailoring to fit its unique circumstances and the parties involved.
When dealing with international projects you have the added complexity of local customs, local laws and regulations, and international parties, all of which can create significant execution issues. The contract may not fully address local laws and regulations and rely upon international or home country specifications that ultimately create barriers to smooth and timely execution. This first domino to tip then results in never ending chaos and disputes for the balance of the project.

On balance the idea is commendable and has merit, but should not be mandated except in those types of projects and situations where the above identified problems do not exist.

First of all, I don’t think you will get everyone to “agree” on a front-end spec. One has to keep in mind that specs is that they are written by owners. Owners have a completely different mindset than contractors. What is considered “fair” in the mind of an owner is considered grievous in the mind of a contractor.

Putting that aside, a consistent spec would create less confusion and possibly result in claims being addressed better during the project. However, most contractual provisions have apposing positions that each sides can legally raise. Even when the spec is being constantly changed to keep up with resent court rulings, as is done with the DAS spec in Ohio, the language is constantly being challenged.

Often claims are pursued due to a disputes on the factual issues. If the specs could successfully get the sides to agree on the factual issues as the project progresses, it would greatly reduce litigation.

Based on your assumptions, yes, the types of general conditions claims and disputes as we see them today would be reduced because the process of everyone endorsing the general conditions would force it to be fair and comprehensive. However, the assumption that you COULD get everyone to endorse it is another question! And the scenario you have spelled out necessitates a variety of versions, leading to conflicts over WHICH ONE to use, etc. The final caveat is WHO is doing the enforcing? It would have to be a government agency to have any teeth, with consequences if the directive were not followed... Although General Conditions claims would be less confusing if everyone had to use the same document, conflict would only be shifted from that to other areas, one of them being the legality of forcing entities to use the general conditions in the first place...

In short, when two entities do not agree on an issue, they will find a way to dispute it.

I think it will increase disputes. It may reduce claims in the area that you thought of ahead of time and stuck your finger in the hole in the dike; but there's always something you didn't think of (like whack-a-mole). That being reality, meanwhile the added detail and the great volume of the front-end spec gives the illusion that you were able to think of everything (exhaustiveness) and therefore just provide more fodder for creative language interpretation to support claims.
One of the wonders that I’ve seen is the General Conditions that Toyota uses in Japan and Korea to build major plants: 3 pages of fine print, very few claims. Granted, there are major cultural (non-Western) factors at play here, but in their opinion, "the more general the clauses, the more subject matter it will cover, and hence greater the risk coverage".

Sounds cynical? Maybe I've been in this business too long.

8 : CCDC documents have widespread use in the commercial sector on projects with an architect. There is some limited use in the public sector. Typically these projects will use front end CCDC documents in conjunction with Masterformat developed jointly by CSI and CSC.

In the industrial world most people have not heard of CCDC and/or Masterformat and typically each Owner has their own form of Contract sometimes reinvented for each major project. On occasion they will use forms recommended by their engineering firm which always requires, in the mind of the Owner, “tweaking”.

With that background assuming, the above does not fall within your 2 paragraph limit, I have the following response to your question.

Based on the use of the CCDC documents it would seem that there are less disputes “escalated” because there is more certainty as to the meaning of the term(s) in question and perhaps more importantly more certainty as to how it would be interpreted by the courts. I agree with Donald people are people and there will always be disputes. With however widespread use of standard form documents, over time a body of knowledge and precedence is developed that reduces creative and/or unnecessary arguments.

As both the private and public sector have used the same document in Canada I see no reason why it can’t be used by both sectors. The reluctance by the public sector, here in Canada, has been as a consequence of their difficulty in moving away from their traditional draconian type Contracts.

9 : In theory, I believe the use of a UFES standard would preclude or reduce claims as long as all owners adhere to what the specs say. In application, however, a UFES standard may not be practicable.

The one advantage I see with a UFES standard is that it would help create consistency with the relationship in which owners, designers and contractors work; however, I can see this working only on small projects. Having this consistency also benefits those owners and designers that are not very sophisticated with construction contract requirements typically found with projects that are small and/or those with challenged budgets, where the services of professional construction managers and oftentimes construction attorneys are unable to be used.
On the other hand, most owners (especially private owners) who do (or think they do) understand construction, by their nature, like the flexibility to specify the "front ends" that best suit them; i.e. the golden rule approach. Even given commercial specs developed by groups such as AIA, CSI or Masterspec, owners often perform a cut and paste exercise incorporating their own modifications to these documents. Claims, unfortunately, often are the result of modified front end specs.

10 : I think the use of a standardized UFES would be highly effective in reducing disputes and claims on a project because it would contain a good prospective specification, and the construction industry, mainly Contractors, would ultimately learn to produce a good prospective analysis of delay impacts. The enforced usage of this prospective TIA allows for negotiation of the risk, in time and money, of the ramifications of potential delays, as well as allowing Owners to participation in the mitigation of their own delays. I would also hope that it would reference forensic methodology that must be used when the window of opportunity for predicting delay impacts and the risk has already been assumed by the Owner.

11 : The use of a UFES certainly could avoid some claims and disputes merely because the people in the project may know what is contained in them. Too many small contractors (and subcontractors) never receive or never read the front end. They rely on what they think it says from the last project (or some project in the past). Even the larger more sophisticated contractors have issues sometimes with their people not reading the contract and relying on what they think it says.

On the negative, are there any legal problems with drafting a UFES that is applicable in 50 states? I think some owners would resist because they want to tailor their specs to their advantage. I suspect that if adopted, uniform General Conditions would be subject to project and/or owner specific modifications through Special Provisions/Conditions specification sections to some degree negating the benefit of the UFES.

12 : If the UFES are prescriptive to the degree that only predetermined equipment/systems and prequalified manufacturers and vendors are permitted, then there should (emphasize “should”) be a reduction in claims. My experience, however, shows that regardless of the specifications, if a contractor loses money past the pain threshold on a job they will seek a way to recover the loss regardless of fault (thus the “should” part above). Also, depending upon the type of construction project, technology changes. In a process plant, for example, by the time the contract is let vs. the time the project is constructed may be several years. Advances in technology may render the prior spec out of date, or not in compliance with new environmental reg’s, etc. To bring up to current technology would require a change, which opens the door for a claim.

Side note: “Mandatory” makes me immediately want to rebel against the system. I think contractors similarly hate being told what to do, especially by owners who hire them because they really don’t know what to do, or think they do but really don’t.
The use of mandatory, truly standard UFES would indeed reduce claims and disputes on projects. Why change the rules of the game every time we play? If the playing fields (General Conditions) were level on all projects think what advances we could make in project management and project execution without reinterpretation of the rules of the game and rogue expectations and restraints. It would indeed prevent claims and after using the standard UFES, case history and precedents set that would prevent many of the abuses that occur due to wordsmithing an advantage to the owner, designer, contractor or subcontractor. Ideally it should be the same for both public and private work so that all may have the same rules to play the game.

The industry has attempted to have UFES. The standard AIA format was the best attempt but over enthusiastic consultants and parties, trying to protect their client’s interests and the fact that buy in from owners, designers, contractors and subcontractors is not an easy objective, it has been water down. Buy in is only one of the problems. What group would author the UFES and then what about the enforcement of the standard? Then you would have to deal with state and federal laws that would differ in regions (i.e. pay when paid laws).

Here is the thing about standardization – we standardize things so that we can reduced errors (by the contractor and the owner) and to reduce costs. Mathematically, you can show that the owner offering a job up for bid, actually pays the total cost of all parties to bid the job. When \( N = \) number of bidders, and \( C = \) the cost to bid, the probability of winning the contest is \( 1/N \), therefore in order to recover the cost of the bid, \( C \), each bidder must include \( N\times C \) in their individual bids. Therefore, the owner pays the cost of everyone that bids the job, including all of the subcontractors that bid the work – based on the same analysis. As a consequence, the owner wants to reduce \( C \) (or \( N \), though that is not typically a fruitful strategy – because contractors use an average “\( N \)” when determining their mark-up) and the best way to do this is to make the job easier and less costly to bid. In addition, standardizing GC’s – like using the AIA 201, reduces both the time it takes to review the specs, (generally because the estimators know where the killer terms are located and look for them in the Special Conditions) it also reduces uncertainty and hedging against uncertainty in the bidding process.

Philosophically, one would think uniform contract requirements should be the Holy Grail. However, each player organization has their own perceptions, philosophies, and practices [ and never the twain shall meet ….Kipling] that are time tested and proven for them. Hence, because each knows with undoubted certainty that THEIRs is/are the correct ones, they will never condescend to a ‘uniform’ set of conditions.

I don’t agree that any standard, uniform, or other ‘General Conditions’ or Specifications should need modification from contract to contract. These documents evolved through many trials under fire and have been distilled into what they are, a proven best statement of what is required and/or the rules of conduct / engagement.
Modern, contemporary construction work scheduling has matured drastically. Now, today, we don’t need 20, 30, 40,+ page manifestos. We only need a requirements statement that solely specifies what is required. Unfortunately we have widespread misuse and at times outright abuses either unintentionally or otherwise so that for the time being our specification must, or should, contain certain prohibitions of that behavior.

16 : I don’t think using a mandatory UFES would reduce claims and disputes on projects for the following reasons:

I think the formation of the general conditions of a contract is affected by a variety of factors, such as the law of the location in which it is used and the prevailing norms and culture. In this respect, there may be potential difficulties arising if a standard form of general conditions was used in different States (if in the USA) or in different regions of the world. As for the law, for example, in the USA you may have varying case law in different States about a particular term (say, for example, no-damages-for-delay clause). This would, in turn, affect how a the delay damages clause would be drafted in these terms and conditions. As for the culture, the Middle East, for example, employs a different set of construction management principles than in the USA. For example, a standard form of UFES may advocate the partnership or win-win approach, which may be a very new concept in the Middle East (or even in some locations in North America or some countries in Europe) . Also, from my experience and interaction with lawyers here in Egypt on construction arbitration cases, a lot of Egyptian lawyers would place equal (if not more) emphasis on the Civil Code when presenting or rebutting cases than they do on the contract itself. This takes us back to the effect of the governing law in the location in which the UEFS is intended to be used.

The other factor to consider is the varying risks associated with the roles of the contracting parties (such as owner-contractor, owner-designer, owner-vendor, contractor-subcontractor). I would imagine that it is more appropriate to have a set of general conditions for each type of contract, since the risk involved is different in each case. The only way to circumvent this problem is if the UEFS was too general, but this may give rise to ambiguity in the contract which would lead to an increase in, rather than an avoidance of, claims and disputes. This same factor, I believe, could also be the reason that public and private projects should not have the same general conditions. For example, public contracts may tend to give concepts such as public policy much more weight than private contracts, and may therefore contain stringent obligations on the contractor which private contracts may not.

17 : I’m doubtful that the use of a UFES system would result in any meaningful reduction in claims. Consider that most claims involve disputed extra work, delays and acceleration, differing site conditions, failure to make payment, etc. UFES would help identify a uniform approach to resolving the claims but wouldn’t prevent the claims from arising in the first place. In most cases, a better job by the design team in preparing the information behind the front end specs would prevent or reduce the amount of claims.
In addition, many states and municipalities have a de facto UFES in that they have fairly standard general conditions that might be tweaked for the specifics of a project. Yet, they never seem to lack claims, probably due to deficiencies in the design.

Lastly, we have 50 state court systems, many federal court districts as well as countless local court systems. Each would interpret the UFES differently, particularly as it pertains to public and private work. For evidence of this, we need look no further than notice and no damage for delay provisions in contracts to see that courts typically protect the public fiscally by enforcing these provisions on public contracts and ignoring them on private contracts.
Appendix G

Glossary and Acronyms

Glossary

This abbreviated glossary is being provided to assist the reader with terminology unique to the topic. More comprehensive glossaries and dictionaries are available at the websites of the Construction Management Association of America (http://cmaanet.org/glossary.php) and Constructionplace.com (http://www.constructionplace.com/glossary.asp) for construction management specific terms and at Max Wideman's excellent project management site, http://www.maxwideman.com/pmglossary/.

Model Clauses: Contract or specification language provided as a guideline for drafting provisions specific to a project or endeavor. Their use is not mandatory but often provides a “safe harbor” solution to the draftsperson. See, for example, Business Proposes Alternative Model Contract Clauses for Data Transfers from the EU, available at http://www.mofo.com/news/news/article580.html and Progress Report on Code Clauses for "Limit Design", ACI-ASCE Committee 428, most recently accessed on 3/19/08.

Order of Precedence A provision intended to establish ranking (superiority) in the event of a conflict or inconsistency between various contract documents as, for example, between the drawings and written technical specifications.

Project Delivery Method: The means by which work is contracted such as Lump Sum (also known as Firm Fixed Price), Guaranteed Maximum Price (GMP) and Design/Build, among other methods.
Standardized: Something established by authority, custom, or general consent as a model or example; regularly and widely used, available, or supplied. ([www.m-w.com](http://www.m-w.com)) Pre-printed forms are often referred to as “standardized” forms.

Third-Party Beneficiary A non-signatory to an agreement or an unnamed person or entity for whose benefit a contract may exist.

### Acronyms

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<td>AACEI</td>
<td>Association for the Advancement of Cost Engineering International</td>
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<td>ABC</td>
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<td>NAWIC</td>
<td>National Association of Women in Construction</td>
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Hedley, George. If it's not in writing, it didn’t happen, [sic] Chicago, IL; Masonry Construction, July 2004.


### Vita

**Sidney J. Hymes**

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<td>M.B.A., May 1976</td>
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