AGENDA

TAC Construction Standards Committee (TCSC)

Wednesday, March 27, 2019, 8:30 – 9:30 AM
Quebec City Convention Center - 307 B
Quebec City, QC

1. Call to Order and Introduction of Members and Visitors
   1.1 Approval of Agenda
   1.2 Approval of Past Meeting Minutes
   1.3 Amendments to the Agenda

2. Status of Specification Activities
   2.1 Updates

BACKGROUND: TCSC members are assigned as liaisons to ACI committees known to be working on a specification. Liaisons are responsible for providing guidance on format and style to the specification writing committee. Liaisons have been given access to the committee’s web site and ballots. In addition, these committees are asked to provide representation to TCSC and are appointed as associate members of TCSC.

<table>
<thead>
<tr>
<th>Committee</th>
<th>TCSC Liaison*</th>
<th>Committee Representative</th>
</tr>
</thead>
<tbody>
<tr>
<td>117</td>
<td>Bruce Suprenant (M)</td>
<td>same</td>
</tr>
<tr>
<td>201</td>
<td>Wilson (M)</td>
<td>same</td>
</tr>
<tr>
<td>301</td>
<td>Jim Cornell (M)</td>
<td>same</td>
</tr>
<tr>
<td>305</td>
<td>Jim Cornell (M)</td>
<td>same</td>
</tr>
<tr>
<td>306</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>308</td>
<td>Aimee Pergalsky (M)</td>
<td>David Suchorski</td>
</tr>
<tr>
<td>310</td>
<td>Bruce Suprenant</td>
<td>none</td>
</tr>
<tr>
<td>311</td>
<td>Al Kaufman</td>
<td>Claude Jaycox</td>
</tr>
<tr>
<td>327</td>
<td>Michael Sprinkel</td>
<td>Wayne Adaska</td>
</tr>
<tr>
<td>330</td>
<td>Mike Stenko</td>
<td>Robert Varner</td>
</tr>
<tr>
<td>336</td>
<td>Ed Ulrich (M)</td>
<td>same</td>
</tr>
<tr>
<td>350</td>
<td>Jon Ardahl (M)</td>
<td>same</td>
</tr>
<tr>
<td>351</td>
<td>Pericles Stivaros</td>
<td>none</td>
</tr>
<tr>
<td>423</td>
<td>Charles Hanskat</td>
<td>James Rogers</td>
</tr>
<tr>
<td>440</td>
<td>Nick Carino</td>
<td>none</td>
</tr>
<tr>
<td>506</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>522</td>
<td>Aimee Pergalsky (AM)</td>
<td>Dale Fisher</td>
</tr>
<tr>
<td>548</td>
<td>Michael Stenko (M)</td>
<td>same</td>
</tr>
<tr>
<td>563</td>
<td>Michael Sprinkel (M)</td>
<td>same</td>
</tr>
</tbody>
</table>

* (M) denotes member of committee being supported. (AM) denotes associated member of committee being supported.

ACTION: Charles Hanskat has resigned from TCSC due to meeting conflicts. New TCSC Liaisons will be selected for Committees 306 and 506.
ACTION: TCSC Liaison and Associate Members are asked to report on their respective committees’ activities and discuss any actions required of TCSC. Attachment 2.1a, ACI Specification Activity, has been updated on March 1, 2019, according to ACI staff records for TCSC reference. Please note that the due dates for specifications reflect a 5 year revision requirement recently approved by TAC.

REPORTS: The following action items were identified from the reports at the Las Vegas convention. Those listed are asked to report:

- ACI Committee 201 was requested to be added to the list of committees that are being tracked with Wilson as the TCSC Liaison. See list above.
- Chair Suprenant was asked to find the original request by ACI 201 to develop a code or specification and send it out to TCSC. The request is included in Attachment 2.1b and was approved by TAC. TAC concerns including a need for construction participants and mentions about warranties in the request by Committee 201 were passed along to the committee. Chair Suprenant is asked to report.
- Chair Suprenant was asked to review ACI 318 for items that affect TCSC. Chair Suprenant is asked to report.

ACTION: Are there any action items required based on the specification status reports?

3. Technical Committee Manual (TCM)

3.1 TCM Ballot

BACKGROUND: In Las Vegas, TCSC requested that the deadline for suggested changes to the TCM be communicated to TCSC. A summary of the changes to the TCM in the back of the document was also suggested.

TCSC members also expressed concern about how the new terminology document will work if it is not a standard. Non-standards should not be referenced in a specification. ACI 301 will refer to committee documents for definitions of some terms in the checklists.

Chair Suprenant was asked to send changes in Chapter 6 of the 2019 TCM to TCSC.

REPORT: Chair Suprenant is asked to report.

ACTION: Does TCSC have any further recommendations for modifications to the TCM?

4. Requests for New Specifications and review of specifications to TAC

BACKGROUND: ACI Committee 362, Parking Structures, has requested permission to develop a new document “Standard for the Design and Construction of Durable Parking Structures.” The Document Development Request is included in Attachment 4. A decision by TAC has not been made yet.

REPORT: Chair Suprenant is asked to report.

ACTION: This item is for information only.
5. **ACI Committee E707**

**BACKGROUND:** The education committee, E707, Specification Education, meets on Tuesday, March 26, from 11:30a to 1:00p, in Room C-2101.

Staff was asked to notify Chair Suprenant when the recorded presentation “Tutorial on Writing ACI Construction Specifications” had been completed so it could be sent to TCSC and the specification writing committees. The recording is available on the Document Development Guidance web page.

**REPORT:** A representative from E707 is asked to report on their meeting.

**ACTION:** Is there any TCSC action required?

6. **Guide to using ACI reference specifications**

**BACKGROUND:** A task group consisting of Suprenant, Hanskat, and Ardahl was formed to write a short document providing guidance on using ACI reference specifications.

**REPORT:** Chair Suprenant is asked to report.

**ACTION:** Is there any TCSC action required?

7. **Definition of the term “Construction Documents”**

**BACKGROUND:** The 2018 TCM contains the following definitions in Section 6.2.6.3, page 37:

**Construction Documents**—written and graphic documents and specifications prepared or assembled for describing the location, design, materials, and physical characteristics of the elements of a project necessary for obtaining a building permit and construction of the project.

**Contract Documents**—set of documents that form the basis of a contractual relationship between and Owner and constructor or design-builder. These documents are defined by the contractual agreement, and can contain contract forms, contraction conditions, specifications, drawings, addenda, and contract changes.

In Las Vegas, Chair Suprenant was asked to investigate why the TCM includes both terms, and Staff was asked to search all ACI specifications for use of the terms “construction documents” and “contract documents”.

**REPORT:** The results of the search are shown in Attachment 7.

**ACTION:** Chair Suprenant is asked to report

8. **Warranties, Regulatory Requirements and Safety in Specifications**

**BACKGROUND:** In Las Vegas, TCSC agreed that it should be clear to ACI committees that ACI specifications should not address warrantees, regulatory requirements, and safety. This information should be in the contract, not in the technical specifications. TCSC decided to consider language in the TCM to make this clear.
Cornell was asked to develop draft language for the TCM to make it clear that ACI specifications should not address warrantees, regulatory requirements, and safety.

REPORT: Cornell is asked to report.

ACTION: Is there any TCSC action required?

9. New Business

TCSC will consider new business items as time permits.

10. Adjournment

Attachments:
  2.1a – ACI Specifications Activity
  2.1b – ACI 201 Standard Request
  4 – ACI 362 Document Development Request
  7 – Term Search results
## TCSC Agenda – Quebec City, QC March 27, 2019

### Attachment 2.1a

**ACI SPECIFICATIONS ACTIVITY**  
(Updated March 1, 2019)

<table>
<thead>
<tr>
<th>Committee</th>
<th>Specification</th>
<th>Document Number</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Specification for Tolerances for Precast Concrete</td>
<td>ITG 7-09</td>
<td>Will become a chapter in the next ACI 117. Expired in 2014.</td>
</tr>
<tr>
<td>305 – Hot Weather Concreting</td>
<td>Specification for Hot Weather Concreting</td>
<td>305.1-14</td>
<td>No activity; Expires 10/2/19.</td>
</tr>
<tr>
<td>308 – Curing Concrete</td>
<td>Specification for Curing Concrete</td>
<td>308.1-11</td>
<td>Expected to TAC summer 2018; Expired 7/14/16.</td>
</tr>
<tr>
<td>310 – Decorative Concrete</td>
<td>Specification for Polishing Finishes</td>
<td>New</td>
<td>Ulrich has been active in assisting the committee. Document has been balloted.</td>
</tr>
<tr>
<td></td>
<td>Inspection Services Specification for Cast-in-Place Concrete Construction</td>
<td>311.7-18</td>
<td>Recently finished. Expires 4/24/23.</td>
</tr>
<tr>
<td>330 – Concrete Parking Lots and Site Paving</td>
<td>Specification for Unreinforced Concrete Parking Lots</td>
<td>330.1-14</td>
<td>No activity; Expires 11/21/19.</td>
</tr>
<tr>
<td></td>
<td>Specifications for Environmental Concrete Structures</td>
<td>350.5-12</td>
<td>Expired 4/29/18.</td>
</tr>
<tr>
<td>Committee</td>
<td>Specification</td>
<td>Document Number</td>
<td>Status</td>
</tr>
<tr>
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<tr>
<td></td>
<td>Specification for Carbon and Glass Fiber-Reinforced Polymer Bar Materials for Concrete Reinforcement</td>
<td>440.6-08 (Reapproved 2017)</td>
<td>This specification is being moved to ASTM D30.10. It is WK43339. ASTM D30.10 Committee working on ballot resolutions. Expires 7/18/22.</td>
</tr>
<tr>
<td>522 – Pervious Concrete</td>
<td>Specification for Pervious Concrete Pavement</td>
<td>522.1-13</td>
<td>Expired 7/2/18.</td>
</tr>
<tr>
<td>548 – Polymers and Adhesives in Concrete</td>
<td>Specification for Latex-Modified Concrete Overlays</td>
<td>548.4-11</td>
<td>No activity; Expired 5/3/17.</td>
</tr>
<tr>
<td></td>
<td>Specification for Type EM (Epoxy Multi-Layer) Polymer Overlay for Bridge and Parking Garage Decks</td>
<td>548.8-07</td>
<td>TAC discussing in Quebec City; Expired 10/1/12.</td>
</tr>
<tr>
<td></td>
<td>Specification for Type ES (Epoxy Slurry) Polymer Overlay for Bridge and Parking Garage Decks</td>
<td>548.9-08</td>
<td>No activity; Expired 8/11/13.</td>
</tr>
<tr>
<td></td>
<td>Specification for Type MMS (Methyl Methacrylate Slurry) Polymer Overlays for Bridge and Parking Garage Decks</td>
<td>548.10-10</td>
<td>Should be to TAC soon; Expired 8/12/15.</td>
</tr>
<tr>
<td></td>
<td>Specification for Bonding Hardened Concrete and Steel to Hardened Concrete with an Epoxy Adhesive</td>
<td>548.12-12 (503.1)</td>
<td>Expired 4/9/18.</td>
</tr>
<tr>
<td></td>
<td>Specification for Bonding Fresh Concrete to Hardened Concrete with a Multi-Component Epoxy Adhesive</td>
<td>548.13-14 (503.2)</td>
<td>Recently finished; Expires 10/2/19.</td>
</tr>
<tr>
<td>Committee</td>
<td>Specification</td>
<td>Document Number</td>
<td>Status</td>
</tr>
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<tr>
<td>Standard Specification for Producing a Skid Resistant Surface on Concrete by the Use of a Multi-Component Epoxy System</td>
<td>503.3-10</td>
<td>Expect to ballot in 2019; Expired 10/13/15.</td>
<td></td>
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<tr>
<td>Standard Specification for Repairing Concrete with Epoxy Mortars</td>
<td>548.14-14 (503.4-92)</td>
<td>No activity; Expires 1/30/20.</td>
<td></td>
</tr>
<tr>
<td>Specification for Crack Repair by Epoxy Injection</td>
<td>548.X (503.7-07)</td>
<td>Approved SP ‘18; Expired 8/31/12.</td>
<td></td>
</tr>
</tbody>
</table>
April 18, 2017

Matt Senecal
TAC Secretary
American Concrete Institute
38800 Country Club Drive
Farmington Hills, MI 48331-3439

Dear Matt,

Re: ACI 201 – Request to develop new committee documents:
Standard Practice for Obtaining Durability in Design, and
Standard Practice for Executing Durable Concrete Construction

As Chair and Secretary of Committee 201: Durability, we would like to request permission from the Technical Activities Committee to develop new documents titled “Standard Practice for Obtaining Durability in Design,” and “Standard Practice for Executing Durable Concrete Construction.” A proposed outline of the documents are attached. The intent is to develop two standard practices in mandatory language for planning and executing durable concrete structures both during the design stage (targeting the licenced design professionals) and in construction (targeting contractors and the owner’s inspectors). These standards would provide more information on durability design than provided in the current requirements set out for durability exposures listed in the 318 code, and provide detailed requirements for obtaining durability during construction, respectively. These documents will provide uniformity and clarity for the practitioner for what is the minimum standard of practice for obtaining durable concrete structures. The 201.2R Guide to Durable Concrete was revised in 2016, but the committee is recommending development of these additional documents to promulgate mandatory requirements for obtaining durability in both design and execution.

These standard practices will support the work of other committees of the Institute, demonstrate ACI’s international leadership and aligns with the long-term goals of the Institute, the Strategic Development Council and the Concrete 2029 initiative. These Standard Practices will help maintain ACI’s international leadership and align with recent advances in durability design and execution found in the fib Model Code 2010 and the Concrete Institute of Australia’s Concrete Z7 Durability Recommended Practice Documents (Z7/01 Durability-Planning, Z7/02 Durability-Exposure Classes, Z7/03 Durability-Deemed to Comply Requirements, Z7/04 Durability-Good Practice through Design Concrete Supply and Construction, Z7/05 Durability-Modelling, Z7/06 Durability-Cracks and Crack Control, and Z7/07 Durability-Testing).

The 201 committee believes these new documents will support the work of other committees of the Institute and will be complementary to the proposed ACI committee 365 standard practice for service life prediction.

Examples of relevant committees are as follows:
ACI Committee 130: Sustainability. One of the biggest impacts on sustainability is obtained by designing and building durable concrete structures that do not prematurely degrade.
ACI Committee 222: Corrosion of Metals in Concrete. As part of durability inspections during construction, corrosion initiation can be delayed by proper inspection of cover depth and curing.
ACI Committee 224: Cracking. Part of Durability design is prevention of non-structural cracks.
ACI Committee 301: Specifications for Structural Concrete.
ACI Committee 308: Curing Concrete. Curing requirements need to be focused on obtaining durability and not just on strength.
ACI Committee 329: Performance Criteria for Ready Mixed Concrete. Durability performance is just as important as physical performance.
ACI Committee 365: Service Life Prediction. Through proper durability planning, design and execution, variability in the parameters used in prediction of service life can be reduced, thus improving confidence in the predictions.
ACI Committee 562: Evaluation, Repair, and Rehabilitation of Concrete Buildings. Their new document would benefit from requirements for obtaining durable repairs.
ACI Committee 563: Specifications for Repair of Structural Concrete in Buildings. Repair specifications need stronger requirements for obtaining durable repairs.

Integrating recommendations from each of these committees in the proposed Standard Practices will provide needed emphasis on the importance of addressing all the issues that affect obtaining durable concrete structures.

Finally, the membership of ACI 201 was polled regarding development this Standard Practice and the results are recorded in the Spring 2017 minutes of C201. There was unanimous agreement of the committee members to undertake this task. The motion to develop these Standard Practices was made as the result of deliberations and recommendations from the 201 Durability Initiative Task Group formed in 2016. The committee members believe that one current challenge facing the concrete industry is the lack of durability of some structural elements and concrete infrastructure in severe exposures, even though the industry has the knowledge to prevent such premature degradation. Developing Standard Practices with requirements that will help in prevention of premature degradation will greatly benefit the industry.

Thank you for considering our application for ACI Committee 201, Durability to develop Standard Practices for Obtaining Durability in Design, and Obtaining Durability in Concrete Construction.

Regards

Thomas Van Dam
Chair, C201
tvandam@ncenet.com

R. Doug Hooton
Secretary C201
hooton@civ.utoronto.ca
ACI 201: Durability

1. Standard Practice for Durability Design

Proposed Outline

OBJECTIVE: To develop a standard practice for obtaining durability during construction targeting contractors and the owner’s inspectors.

1. Scope/Introduction
2. Definitions and Acronyms
3. Roles and Responsibilities
4. Planning: Setting Project Durability Objectives and Considerations
   a. General
   b. Preliminary Assessment of Potential Durability Challenges
   c. Design Goals, Prescriptive Requirements, and Limit States
   d. Design Service Life & Design Reference Period
5. Planning and Design for Durability
   a. Requirements for each exposure class
   b. Cover requirements
   c. Minimization of cracking, structural and non-structural
      i. Thermal control
      ii. Shrinkage control
   d. Moisture management
   e. Curing for each exposure class
   f. Protection strategies
   g. Other considerations
      i. Global structure strategies
      ii. Maintenance & repair planning
6. Design Documentation Requirements
   a. Properties of Products and systems
   b. Acceptance Criteria
   c. Contractual roles
7. Quality Assurance Plan
   a. Owner testing and inspection
   b. Concrete supply prequalification and standards
   c. Contractor prequalifications and competence checklist
   d. Mockups
   e. Warrantees
8. References
2. **Standard Practice for Executing Durable Concrete Construction**

**Proposed Outline**

OBJECTIVE: To develop a standard practice for obtaining durability during construction targeting contractors and the owner’s inspectors.

1. Introduction
2. Definitions and Abbreviations
3. Roles and Responsibilities
4. General Requirements for Executing Durability Design
   a. Prequalification of Concrete Mix Designs
   b. Batch Testing
   c. Substitution requests
5. Executing Concrete
   a. Concrete Plant Management Plan
   b. Thermal Control Plan
   c. Shrinkage control Plan
   d. Transport and Delivery Plan
   e. Placing and Finishing Plan
   f. Curing Plan
   g. Structural considerations & global stability
   h. Protective Coatings
6. Quality Control
   a. General
   b. Tests, Inspections, and Observations
   c. Documentation requirements
   d. Changes to documented design & substitutions
   e. Evaluation of conformance to durability design Intent
7. Warranties & Closeout
   a. Licensed Design Professional requirements
   b. Contractor requirements
   c. Owner requirements
8. Future Assessment, Maintenance & Repair Planning
   a. Changes in executed project prompting changes in original plan
9. References
**Document Development Request**

Complete Questions 1 through 9 for all document development requests. (Question 7a. only pertains to standards.) In addition to these questions, fill out Questions 10-11 for new documents or Question 12 if it’s a new document.

<table>
<thead>
<tr>
<th>All Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Committee Name and Number</strong></td>
</tr>
<tr>
<td><strong>2. Title of document</strong></td>
</tr>
</tbody>
</table>
| **3. Synopsis** | One of the documents that ACI 362 has developed and has maintained is the design guide for parking structures (ACI 362.1). This document provides guidance to the designers and constructors of new parking structures that, if followed, enhances the durability of those structures. As of this time, this document has been through multiple iterations, and is now due to be updated again. Consideration should be given to standardizing the information in this document so that the construction of these structures in the future is required to follow the good industry practices that this committee has promoted through the use of its design guide.

The standard would increase the durability requirements of ACI 318 and requirements not covered in ACI 318. Parking structures are a hybrid between a building and a bridge. This requires design standards that are code language, so it is enforced by governing bodies.

Back around 2000, TAC had requested that this guide be made a standard, and after a draft of the standard was prepared, TAC decided to keep this document as a guide. The committee is prepared to begin updating this document, but needs guidance from TAC as to whether it feels that this document should be made into a standard or should be updated as a guide. |

| **4. Primary audience** | Designers and contractors |
| **5. Secondary audience** | Code Officials and Owners |

**Synopsis**

Provide a one- or two-paragraph synopsis should state the document’s scope and purpose.
|   | 6. **Industry affected**  
List industries affected by document, i.e., commercial, industrial, manufacturing, precast, etc. | Contractors, Commercial, Precast, Post-Tensioning |
|---|---|
| 7. | **ACI committees**  
List other ACI committees that may have an interest in document or have similar content | ACI 301 - Specifications; ACI 318 - Building Code; ACI 550 - Precast Structures; 423 - Prestressing; ACI 201 - Durability |
| 7a. | **FOR STANDARDS ONLY: Coordination with other standards**  
If the document will be or is a design standard, list ACI or other standards that are likely to be referenced by this document. Standards requests are also reviewed by the TAC Construction Standards Committee | ACI 301 - Specifications; ACI 318 - Building Code |
| 8. | **Educational products**  
List educational products that could benefit from document, i.e., Apps, webinars, etc. | Could make a webinar for the design of Parking Structures |
| 9. | **Estimated time to TAC**  
When does committee intend to submit document to TAC for review (i.e., fall 2019) | Spring 2022 |
|   | **If Revision** |
| 10. | **What revisions will be made**  
Provide one or two brief paragraphs with the main changes that will be included in this revision, such as new or removed topics, reorganization, new format, parallel construction, etc. | The document will be standardized, so the provisions will either be standardized in mandatory language, or will be converted to commentary or eliminated, if text is merely recommended or suggested practice. In addition, new business items, information obtained from TechNotes being developed by committee, and corrections identified by committee will be incorporated. Aside from the new business items discussed below, the items identified by the committee that require updating, clarifying, or further information, include:  
- Supplemental cementitious materials  
- Waterproofing systems  
- Vehicle barrier walls  
- Mixed use of coated and uncoated reinforcing  
- Expansion joints  
- Background chloride levels  
- Zinc-plating versus hot-dipped galvanizing  
- Use of stainless steel rebar  
- Issue regarding PT coating at intermediate anchor  
- Local measures for waterproofing over occupied or habitable spaces, or mechanical or electrical rooms |
| 11. | **New business**  
List business items from the previous TAC review that will be included in this revision and | As a result of TAC’s 2010 comments from their current version of the Design Guide, the following secondary comments were identified as future business, which will be considered for this version of the document:  
- Supplemental cementitious materials  
- Waterproofing systems  
- Vehicle barrier walls  
- Mixed use of coated and uncoated reinforcing  
- Expansion joints  
- Background chloride levels  
- Zinc-plating versus hot-dipped galvanizing  
- Use of stainless steel rebar  
- Issue regarding PT coating at intermediate anchor  
- Local measures for waterproofing over occupied or habitable spaces, or mechanical or electrical rooms |
| Section 3.8 | Consider adding a figure showing sliding bearing connection for slab-to-wall connections in below-grade parking structures. |
| Section 4.3 | In section regarding materials requirements, consider requiring mill certs to show the steel is in compliance with appropriate ASTM Standards. |
| Section 4.7.2 | In section regarding expansion joint seals, consider commenting on providing an isolation coating between aluminum and concrete. |
| Section 5.1.1 | In section regarding design loads, consider adding statement indicating that vehicle truck height barriers may limit excess loads from being applied to structure. |
| Section 6.1.1 | Review the map of exposure zones, which implies that the Puget Sound area is a critical zone for coastal chlorides. Based on the very mild winds in the Puget Sound, most designers find that building performance is acceptable with limited special chloride consideration. |
| Section 7.4.2 | In section regarding membranes, consider adding: “accommodation for movement of deck elements to prevent rupture of membranes over joint locations must be considered”. |
| Section 7.4.3 | In section on joints, consider adding two sketches showing plant-topped and CIP topping systems, illustrating the difference in treat time between the two systems. |

| Outline |
| Provide a simple outline of the contents of the proposed document at the end of the form. |

Provide outline below this table
TCSC Requested that staff search all ACI specifications for use of the terms “construction documents” and “contract documents”. The search results using the PDF version of the 2019 ACI Collection of Concrete Codes, Specifications, and Practices are as follows:

- The term “contract document” occurs 2,456 times in 298 documents. The specifications that this term occurs in are:

```
117-10   350.1-10   506.2-13
301-16   350.5-12   522.1-13
305.1-14 351.4-14   548.4-11
306.1-90 351.5-15   548.8-07
308.1-11 423.7-14   548.10-10
311.6-18 440.5-08   548.13-14
311.7-18 503.3-10   548.14-14
330.1-14 503.4-92   563-18
336.1-07 503.7-07   ITG-7-09
```

- The term “construction document” occurs 519 times in 39 documents. None of these documents are specifications. Several are codes.