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## AGENDA

### **TAC Specifications Committee** **Wednesday, November 5, 2008, 7 – 10 AM** **November 2-6, 2008** **Renaissance Grand and America's Center,** **St. Louis, MO**

#### **Voting Members:**

David W. Johnston, Chair  
Miroslav F. Vejvoda, Secretary (nonvoting)  
Jon B. Ardahl  
William L. Barringer  
Nicholas J. Carino  
Jeffrey W. Coleman

D. Gene Daniel  
Charles S. Hanskat  
Alfred L. Kaufman, Jr.  
W. Calvin McCall  
Aimee Pergalsky  
Arthur T. Weiss, Jr.

#### **Associate Members**

Karl J. Bakke  
James R. Baty  
Daniel P. Dorfmueller  
Dale Fisher  
Sidney Freedman

Terence C. Holland  
Kenneth G. Kazanis  
William H. Oliver, Jr.  
Michael S. Stenko

### **1. Call to Order and Introduction of Members and Visitors**

#### **1.1 Approval of Agenda**

ACTION: Does TSC approve the agenda for this meeting?

#### **1.2 Approval of Minutes**

ACTION: Does TSC approve the minutes of the spring 2008 meeting in Los Angeles?

#### **1.3 Membership Report**

REPORT: Attachment 1.3 shows the current roster.

ACTION: Members are asked to review the roster and inform Secretary Vejvoda of any corrections.

### **2. ACI Specification Manual (ASpM)**

## **2.1 2005 version of *ASpM***

The 2005 version of the *ASpM* is available on the ACI website at:  
<http://www.concrete.org/technical/technical.htm>

ACTION: No action is required.

## **2.2 Revisions to the 2005 *ASpM***

TSC has balloted the revisions to the 2005 *ASpM* before the Puerto Rico meeting. The ballot received many negative votes and the ballot did not pass.

The following items were discussed at the meeting in Puerto Rico.

- Common terminology should be used to avoid lawsuits.
- Capitalize all defined terms as common in Contract Documents.
- Use leading caps in Reference Specifications, Guide Specifications, Manual, etc.
- When referring to the ACI specifications, state “ACI Reference Specification.”
- In the *ASpM*, the Sections may be called Chapters.
- Retain the designation “hard” and “soft” conversions; “practical” and theoretical” may be mentioned in parentheses.
- Retain “Referenced Standards” instead of the proposed “Normative References.”
- Committees should be informed of the TSC review process for specifications. The liaison member together with the TSC chair determines the appropriate timing of the TSC review group review of the draft specification.
- The TSC review group will have a conference call to finalize the comments that will be sent back to the committee.

A motion passed to change the *ASpM* draft to incorporate these discussed items.

TSC has balloted the revisions to the 2005 *ASpM* again (12/21/07-1/20/08). The ballot received many negative votes and the ballot did not pass. The remaining issues were resolved during a conference call with the negative voters and the chair. Chair Johnston asked the committee to confirm the latest revisions in a final ballot (2/25/08-3/4/08). After a successful ballot, the draft *ASpM* will be sent to a TAC ballot. It is the intent to have the 2008 *ASpM* ready for distribution at the spring convention in Los Angeles.

Secretary Vejvoda is asked to report.

ACTION: Is any TSC action required?

## **3. Status of Specification Activities**

### **3.1 Updates**

BACKGROUND: TSC members are assigned as liaisons to ACI committees known to be working on or planning to work on a specification. Committee members are appointed as associate members of TSC (unless the TSC liaison is also a member of the committee). Attachment 3.1 summarized ACI specification activities and current membership assignments.

Committee 117: Liaison Charles Hanskat. Associate Member Eldon Tipping.  
Committee ITG-7: Liaison Charles Hanskat. Associate Member Eldon Tipping.  
Committee 301: Liaison Jon Ardahl.  
Committee 303: Liaison Alfred Kaufman. Associate Member Dan Dorfmueller.  
Committee 304: Liaison Nick Carino. Associate Member Terry Holland.  
Committee 305: Liaison Gene Daniel.  
Committee 306: Liaison Gene Daniel.  
Committee 308: Liaison Aimee Pergalsky.  
Committee 311: Liaison Alfred Kaufman.  
Committee 330: Liaison Art Weiss. Associate Member Ken Kazanis.  
Committee 336: Liaison Art Weiss. Associate Member Billy Oliver.  
Committee 346: Liaison Alfred Kaufman.  
Committee 347: Request for a specification pending.  
Committee 350: Liaison Jon Ardahl.  
Committee 423: Liaison Charles Hanskat. Associate Member: TBD.  
Committee 440: Liaison Nick Carino.  
Committee 503: Liaison Charles Hanskat.  
Committee 506: Liaison Jon Ardahl.  
Committee 522: Liaison Aimee Pergalsky. Associate Member Dale Fisher.  
Committee 533: Liaison Art Weiss. Associate Member Sidney Freedman.  
Committee 548: Liaison Art Weiss. Associate Member Mike Stenko.  
Committee 551: Liaison Alfred Kaufman. Associate Member Jim Baty.

The procedures for obtaining approval to start writing specifications, for committee liaisons, and for final approvals of specifications are in Section 3.2.1.2 of the *2008 TCM*, and in Section 1.3 of the *2008 ASpM*.

**ACTION:** TSC Liaison and Associate Members are asked to report their respective committees' activities and discuss any actions required of TSC.

## **4. Specification Review**

### **4.1 Current Review Activity**

**BACKGROUND:** Section 1.3 of the *ASpM* explains the TSC review process for ACI specifications. The intent is for TSC to review new and revised specifications.

ACI 311 submitted a document on testing to TSC some time ago and it was rejected as a specification. The committee included the content in an appendix to the Guide document and submitted it to TAC for approval for the 2007 summer meeting. TAC recommended the committee submit it as a standalone specification instead. The committee submitted the 311.X-XX specification to TAC for the fall convention in Puerto Rico.

At the Puerto Rico meeting, TAC reviewed the ACI 311.X-XX document and approved it subject to satisfactory compliance with TAC comments. The title was changed to "Specification for Ready-Mixed Concrete Testing Services". Because of the limited time available, TSC was asked to perform their final format review as an external reviewer during the review of the committee responses to TAC comments. In March 2008, TSC review group, Jon Ardahl, Nick Carino, Jeff Coleman, Charles Hanskat, and Alfred

Kaufman, provided TSC comments for the committee's consideration at their Los Angeles meeting.

A discussion evolved on the 311 document and the review process. Although this committee agreed in Puerto Rico that this is a valuable and needed document, some members question its need within the ACI documents.

"ACI Manual of Concrete Inspection" (ACI 311.1R-07 [SP-2-07]) has been published and is available for public purchase.

ACI 117 submitted the revised specification to TAC after the Puerto Rico meeting and it was reviewed immediately by TAC. It was reviewed also by ACI 301, with two members of both, 301 and TSC reviewing it for both committees (Chair Johnston and McCall).

ACI 117 responded to the TAC comments at this meeting and is expected to ballot responses shortly. The nonmandatory portion of the document is in the back.

A discussion evolved on a suggestion to include a "trigger" language in specification text that there is a mandatory checklist item. There already is such language for optional checklist items that reads: "unless otherwise specified." A motion was made, seconded, and modified to revise the future Specification Manual to permit specifications to indicate that there is a mandatory checklist item by stating: "as specified in Contract Documents." (Motion carried with 5Y, 2N, 0A, 1 not voting.) ACI 301 and 117 will add such language while it already exists in 350.

ACI 301: The goal is to submit to TAC after the 2008 fall convention.

ITG-7 is developing a specification for precast tolerances. The ITG balloted the document before the meeting and is planning on resolving negatives in Los Angeles. The plan is to submit to TAC for the summer meeting review. There are three TSC members on ITG-7 who will act as TSC TG-ITG-7: ITG-7 Chair Hanskat, Carino, and McCall. TSC will review the document parallel with the TAC review.

ACTION: No action is required.

#### **4.2 Revised Review Procedures**

Considering the new *TCM* and *ASpM* procedures for reviews of submitted specification to be parallel with the TAC review, the informal monitoring of specifications in development is very important. Depending on the complexity of the specification, the TSC review group may need to be created in advance. The development needs to be followed up through the liaison who may suggest the early creation of the RG.

ACTION: The associate membership of TSC will be checked to ensure all liaison members are in place.

## **5. Requests for New Specifications**

Committee 548 requested approval to write a new specification, submitted by 548 Chair Mike Stenko. The request was circulated to the TSC; see Attachment 5.0. Concerns were relayed to TAC. Committee 548 was asked to respond by the St. Louis convention.

ACTION: Is any action required?

## **6. Planning**

### **6.1 TSC Mission (For Information)**

The TSC mission is: “Assist the technical committees in preparing and maintaining specifications in the correct format and language, and manage specification development by the Institute.”

ACTION: Is any action required?

### **6.2 Goals for 2008**

Chair Johnston identified the following TSC goals:

- Review committee requests to develop new specifications and make recommendations to TAC;
- Coordinate specifications that overlap ACI code dependent specifications such as 301;
- Maintain updated database of ACI specification activities;
- Review draft specifications for conformance to the *ASpM* in a timely manner;
- Maintain punch list for future revisions to the *ASpM*;
- Submit for TAC review approved revisions of 2005 *ASpM*; and
- Refine liaison procedures, encourage TSC member attendance, and appoint new members.

ACTION: Is any action required?

## **7.0 ACI Specification Policy**

**7.1** In 2004, TAC approved the reorganization of ACI 301. The intent is to include all specifications for structural concrete in one document that corresponds to ACI 318 Code.

ACI 301-09 is in preparation and is expected to be submitted to TAC in late 2009. This will be the first edition of the reorganized 301 specification.

ACTION: Is any action required?

## **7.2 e-Specifications**

ACI staff, TSC, and ACI 301 Chair McCall have been discussing the idea of preparing an “active” electronic specification that can be tailored to a specific project and included directly in the project specifications. Action on this item is tabled until additional direction is provided by ACI.

Staff member Senecal reported that it is still a priority although it was delayed.

A Task Group (TG-7.2) (Ardahl, Hanskat, and Weiss) is in place to advise staff and to review the e-specification draft.

**ACTION:** Is any action required?

## **8. Training on Specification Writing**

TSC members conducted a technical session at the Spring 2007 convention in Atlanta. It was very successful and generated a lot of interest, although the attendance was not high.

It is intended to repeat specification training sessions every 2 to 3 years. Besides of the announcement at the TAC chair breakfast, additional effort in communicating with potential attendees is desirable. Another session would be beneficial when the first ACI Guide Specification is published.

**ACTION:** Is any action required?

## **9. Next Meeting**

TSC meetings are held on Wednesdays, 7 – 10 am during ACI Conventions.

**ACTION:** Is any action required?

## **10. Adjournment**

### **ATTACHMENTS:**

- Attachment 1.3 — TSC Roster with Contact and Assignment Information
- Attachment 3.1 — ACI Specifications Activity Database
- Attachment 5.0 — ACI 548 Proposal for a New Specification

### **COPIES:**

- TSC Members
- ACI TAC members
- ACI Engineering staff

**Attachment 1.3  
TSC Roster with Contact and Assignment Information**

October 2007			
Name	Assignment	Telephone No.	E-Mail Address
<b>TSC Officers and TAC Contacts</b>			
David Johnston	Chair and TAC Contact RG-440 Chair, RG-503.3 Chair	919/515-7412	<a href="mailto:johnston@eos.ncsu.edu">johnston@eos.ncsu.edu</a>
Miroslav Vejvoda	Secretary TSC (NV)	248/848-3713	<a href="mailto:miroslav.vejvoda@concrete.org">miroslav.vejvoda@concrete.org</a>
Ron Burg	Chair TAC	847/972-3050	<a href="mailto:rburg@ctlgroup.com">rburg@ctlgroup.com</a>
Daniel W. Falconer	Secretary TAC	248/848-3726	<a href="mailto:daniel.falconer@concrete.org">daniel.falconer@concrete.org</a>
<b>Voting Members</b>			
Jon B. Ardahl	301, 350, 506, TG-2.2, TG-7.2, TG-304	785/887-9991	<a href="mailto:ard00097@netzero.net">ard00097@netzero.net</a>
William L. Barringer		505/293-8368	<a href="mailto:joy2Bill@aol.com">joy2Bill@aol.com</a>
Nicholas J. Carino	304, 440, TG-2.2 Chair, TG-304	301/975-6063	<a href="mailto:ncarino@nist.gov">ncarino@nist.gov</a>
Jeffrey W. Coleman		952/841-0200	<a href="mailto:jwcoleman@chvv.com">jwcoleman@chvv.com</a>
D. Gene Daniel	305, 306, 423	479/636-1856	<a href="mailto:dgenedinc@aol.com">dgenedinc@aol.com</a> *
Charles S. Hanskat	117, 423, 503, TG-7.2, TG-304 Chair, RG-440	847/972-3146	<a href="mailto:chanskat@ctlgroup.com">chanskat@ctlgroup.com</a>
Alfred L. Kaufman, Jr.	303, 346, 551	925/866-2780	<a href="mailto:alfredl.kaufman@cemex.com">alfredl.kaufman@cemex.com</a>
W. Calvin McCall	TG-2.2	704/392-1506	<a href="mailto:wcmccall@concretees.com">wcmccall@concretees.com</a>
Aimee Pergalsky	308, 522	216/491-9265	<a href="mailto:geoaimee@aol.com">geoaimee@aol.com</a>
Arthur T. Weiss, Jr.	330, 336, 533, 548, TG-7.2, RG-440, RG-503.3	770/860-1942	<a href="mailto:aweiss7501@aol.com">aweiss7501@aol.com</a>
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Sidney Freedman	533	312/786-0300	<a href="mailto:sfreedman@pci.org">sfreedman@pci.org</a>
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William H. Oliver, Jr.	336	713/207-4379	<a href="mailto:billy.oliver@centerpointenergy.com">billy.oliver@centerpointenergy.com</a>
Michael S. Stenko	548	914/636-1000	<a href="mailto:mstenko@transpo.com">mstenko@transpo.com</a>

\*Text e-mail messages only; mail hard copies of any attached files

**Attachment 3.1  
ACI SPECIFICATIONS ACTIVITY DATABASE**

<b>Comm. No.</b>	<b>Title</b>	<b>Specification</b>	<b>Number / Status</b>	<b>Comment/ Action</b>	<b>TSC Liaison</b>	<b>Nonvoting TSC Members</b>
117	Tolerances	Standard Specifications for Tolerances for Concrete Construction and Materials	117-06	ACI 117-06 was published in Oct. 2006. ACI 117 is finalizing a revision: Responded to the TAC comments at the LA meeting and is expected to ballot responses shortly. The nonmandatory portion of the document is in the back.	Hanskat	Bakke
ITG-7	Specification for Tolerances for Precast Concrete	Specification for Tolerances for Precast Concrete	ACI ITG 7-XX	The ITG balloted the document before the meeting and is planning on resolving negatives in Los Angeles. The plan is to submit to TAC for the summer meeting review.	Hanskat	Ardahl
301	Specifications for Concrete	Specifications for Structural Concrete	301-08 in preparation	Published Spring 2005. New Committee organized. The goal is to submit 301-09 to TAC after the 2008 fall convention.	Ardahl (M)*	Not needed
303	Architectural CIP Concrete	Standard Specification for Cast-in-Place Architectural Concrete	303.1-97	Information in spec getting rolled into ACI 301. Will be a new section 6 of ACI 301.	Kaufman	Dorfmueller
304	Measuring, Mixing, Transporting, and Placing Concrete	Guide Specification for Underwater Concrete	In preparation	Outline approved by TSC in April 2005 and TAC in July 2005. A TSC Task Group (TG-304) provided comments in 2007. This will be the first ACI Guide	Carino	Holland



<b>Comm. No.</b>	<b>Title</b>	<b>Specification</b>	<b>Number / Status</b>	<b>Comment/ Action</b>	<b>TSC Liaison</b>	<b>Nonvoting TSC Members</b>
				Specification.		
305	Hot Weather Concreting	Specification for Hot Weather Concreting	ACI 305.1-06	Published in 2007.	Daniel	Not needed
306	Cold Weather Concreting	Standard Specification for Cold Weather Concreting	306.1-90 (R-98)	No action on Spec. Working on report first.	Daniel	Not needed
308	Curing Concrete	Standard Specification for Curing Concrete	308.1-98	Balloted summer '06. Resolving negatives. Expect to go to TAC soon.	Pergalsky (M)*	Not needed
311	Inspection of Concrete	Specification for Ready-Mixed Concrete Testing Services	311.X-XX	Submitted for TAC review in Puerto Rico (Fall 2007); TSC TG reviewed in March 2008; Committee responding to TSC in LA.	Kaufman	
330	Concrete Parking Lots and Site Paving	Standard Specification for Plain Concrete Parking Lots	330.1-03	Change it to for pavements of 8 in. or less and write a heavy duty parking lot spec – discussing. It will have to be reapproved in two years.	Weiss	Kazanis
336	Footings, Mats, and Drilled Piers	Specification for the Construction of Drilled Piers	336.1-01	Committee balloting guide and are resolving negatives. Once finished it will be easier to revise spec. Spec is mostly commentary, it will take significant effort to rewrite it. This specification will be changed into a guide specification as it is	Weiss	Oliver

<b>Comm. No.</b>	<b>Title</b>	<b>Specification</b>	<b>Number / Status</b>	<b>Comment/ Action</b>	<b>TSC Liaison</b>	<b>Nonvoting TSC Members</b>
				very site specific.		
346	CIP Pipe	Specification for Cast-in-Place Concrete Pipe	346-01	Revision going to TAC review in Santa Fe.	Kaufman (M)*	Not needed
347	Formwork for Concrete	Formwork Specification	New, in preparation	Committee is working on request to TSC to write a specification.		
350	Environmental Structures	Specification for Environmental Engineering Concrete Structures	In preparation	TSC review was done by Carino and Bill Barringer. Resolving negatives for last 2 sections (prestressed) at main. Probably will go to TAC in fall 2008 or after shortly after that.	Ardahl (M)*	Not needed
423	Prestressed Concrete	Specification for Unbonded Single-Strand Tendon Materials and Commentary	423.7-07	Published in 2007.	Hanskat	423 chair (Andrea Schokker) to appoint TSC rep.
423	Prestressed Concrete	Specification for Installation of Unbonded Single-Strand Tendons and Commentary	423.8	Committee still working on it.	Hanskat	423 chair (Andrea Schokker) to appoint TSC rep.
440	Fiber Reinforced Polymer Reinforcement	Specification for Carbon and Glass Fiber Reinforced Polymer (FRP) Bars for Concrete Reinforcement	440.Y-XX In public review	TSC (RG-440) review was completed on July 9, 2007. Comments forwarded to 440 as part of TAC review. In public review.	Carino	

<b>Comm. No.</b>	<b>Title</b>	<b>Specification</b>	<b>Number / Status</b>	<b>Comment/ Action</b>	<b>TSC Liaison</b>	<b>Nonvoting TSC Members</b>
440	Fiber Reinforced Polymer Reinforcement	Specification for Construction with Fiber Reinforced Polymer (FRP) Reinforcing Bars and Their Supports	440.X-XX In public review	TSC (RG-440) review was completed on July 9, 2007. Comments forwarded to 440 as part of TAC review. In public review.	Carino	
503	Adhesives in Concrete	Standard Specification for Bonding Concrete, Steel, Brick and Other Materials to Hardened Concrete with a Multi-Component Epoxy Adhesive	503.1-92 R97, 03	Format revision overdue. TSC is recommending removal from the MCP. Committee intends to revise it per minutes from LA.	Hanskat	
503	Adhesives in Concrete	Standard Specification for Bonding Plastic Concrete to Hardened Concrete with a Multi-Component Epoxy Adhesive	503.2-92 R-97, 03	Format revision overdue. TSC is recommending removal from the MCP. Committee intends to revise it per minutes from LA.	Hanskat	
503	Adhesives in Concrete	Standard Specification for Producing a Skid Resistant Surface on Concrete by the Use of a Multi-Component Epoxy System	503.3-92 R97, 03	Committee balloting responses to TAC comments; standardization will follow probably in summer 2008.	Hanskat	
503	Adhesives in Concrete	Standard Specification for Repairing Concrete with Epoxy Mortars	503.4-92 R97, 03	Format revision overdue. TSC is recommending removal from the MCP. Committee intends to revise it per minutes from LA.	Hanskat	
503	Adhesives in Concrete	Specification for Crack Repair by Epoxy Injection	503.7-07	Published in 2007.	Hanskat	

<b>Comm. No.</b>	<b>Title</b>	<b>Specification</b>	<b>Number / Status</b>	<b>Comment/ Action</b>	<b>TSC Liaison</b>	<b>Nonvoting TSC Members</b>
506	Shotcreting	Specifications for Shotcrete	506.2-95	Revising. There are problems with major negatives and with the commentary. Will take some time to finish.	Ardahl (M)*	Not needed
522	Pervious Concrete	Specification for Pervious Concrete Pavement	522.1-08	Published in 2008.	Pergalsky	Fisher
533	Precast Panels	Proposed Specification on Precast Panels		Will be folded into ACI 301.	Weiss	Freedman
548	Polymers in Concrete	Standard Specifications for Latex Modified Concrete (LMC) Overlays	548.4-93 R98	Format revision overdue	Weiss	Stenko
548	Polymers in Concrete	Specification for Type EM (Epoxy Multi-Layer) Polymer Overlay for Bridge and Parking Garage Decks	548.8-07	Published in 2007.	Weiss	Stenko
548	Polymers in Concrete	Specification for Type ES (Epoxy Slurry) Polymer Overlay for Bridge and Parking Garage Decks	548.X-XX	Responses to TAC comments completed; in preparation for public review.	Weiss	Stenko
548	Polymers in Concrete	Specification for Polymer Concrete and Composite Underground Utility Enclosures	Request to write a new spec.	Request reviewed by TSC; comments relayed to 548; response expected after LA meeting.	Weiss	Stenko
551	Tilt-Up Construction	Specification on Tilt-Up Construction		Being rolled into 301.	Kaufman	Baty

<b>Comm. No.</b>	<b>Title</b>	<b>Specification</b>	<b>Number / Status</b>	<b>Comment/ Action</b>	<b>TSC Liaison</b>	<b>Nonvoting TSC Members</b>
563	Specifications for Repair of Structural Concrete in Buildings	Specification for Repair of Existing Structural Concrete		Committee is starting work on a specification to go with the 562 code requirements document.		

\*(M) indicates that the TSC liaison is also a member of the committee and an associate member from that committee is not necessary.

**Attachment 5.0**  
Proposal for a new Specification  
ACI Committee 548 – Mike Stenko, Chairman  
Subcommittee 548C – PC Structures

Proposed Title: ***Specification for Polymer Concrete and Composite Underground Utility Enclosures***

Scope: The proposed specification would provide the requirements for polymer concrete and fiberglass reinforced polymer composite underground utility enclosures, frequently called handholes. Enclosures would be suitable for use in light commercial and residential sidewalks, driveways, parking lots and behind curbs. They would not be installed in pavements in heavily traveled roadways where vehicle impact and fatigue loading occur. Performance and materials requirements, design criteria, and appearance would be included.

Statement of need: Enclosures (handholes) addressed by this specification are currently used by electric, water and communications utilities for access to buried outside plant equipment such as meters, splices, switches and fuses. Annual volume for PC/FRP handholes is estimated to be in the \$250 million to \$500 million range in the US. Currently, there is a regional guideline describing the features of these products (Western Underground Committee Guide 3.6) and a guide written by the Society of Cable Telecommunications Engineers (ANSI/SCTE 77-2007) directed at requirements for cable television applications. Otherwise, utilities have been either writing their own specifications, making partial reference to the two existing documents or choosing certain manufacturers to supply products without formalized specifications. This proposed specification would be a companion to the ACI 548.7 test method, providing detailed product requirements. Typically, the at-grade portions of these enclosures are polymer concrete to provide resistance to damage from equipment such as mowers and trimmers, to provide resistance to road salts and chemicals, and to provide UV resistance. By taking advantage of the strength/weight ratios, many sizes have removable covers that can be handled without heavy equipment, reducing maintenance costs. Currently, both ETL and UL have listings for these products.

Objectives: The objective of the specification is to provide a detailed, single document describing the performance requirements for precast polymer concrete and PC/FRP composite underground utility enclosures.

Proposed Outline:

- A. General
  - a. Scope
  - b. Definitions
  - c. Reference Standards
  - d. Standards-producing Organizations
  - e. Submittals
  - f. Quality Assurance

B. Products

- a. Covers – will describe standard features required for functional at-grade enclosure covers.
- b. Boxes – will describe function and accessories for the enclosures.
- c. Extensions – will describe matching extensions to increase the depth of the enclosure for grade changes, etc.
- d. Materials qualifications – will include requirements for resistance to acids, bases and petroleum products, UV resistance, water absorption, flammability, etc.
- e. Performance and strength requirements – will provide load standards, strength factors and testing criteria (ref. to ACI 548.7).

C. Execution