AGENDA

TAC Specifications Committee

Marriott Renaissance Center
Lasalle B
Wednesday, April 24, 2002
7:00 to 10:00 a.m.
Detroit, MI

Voting Members:

Nicholas J. Carino, Chair and TAC Contact
Todd R. Watson, Secretary (Non-voting)
Jon B. Ardahl
William L. Barringer
William C. Bretnall
Jeffrey W. Coleman
D. Gene Daniel
I. Leon Glassgold
Ronald L. Hollrah
Alfred L. Kaufman, Jr.
W. Calvin McCall
Myles A. (Tony) Murray
Aimee Pergalsky
Arthur T. Weiss, Jr.

Associate Members:

Karl J. Bakke
James R. Baty
Daniel P. Dorfmueller
Kenneth G. Kazanis
William H. Oliver, Jr.
Robert J. Ryan
Michael S. Stenko

1. Call to Order and Introduction of Members and Visitors

At the request of TSC, a new format for the membership roster was created. The roster is in table format, shows all members' names, membership category, liaison or representative assignments, telephone number and e-mail address. The last column, e-mail addresses, can be copied and pasted into e-communications. The updated roster is attached as Agenda Exhibit 1.

1.1 Approval of Minutes

ACTION: The spelling of Gene Daniel's name was corrected. Does TSC approve the Minutes of the 2001 fall meeting in Dallas?

1.2 Membership Report

Long-time ACI member Clifford Gordon passed away in early April. Gene Daniel was appointed as a voting member. The following Associate Members have been appointed: Karl Bakke (117), James Baty (551), Daniel Dorfmueller (303), and William Oliver (336).

2. Revision of *ACI Specification Manual* (*ASpM*)

Background: Proposed changes to the 2000 *ACI Specification Manual* were discussed at the 2000 fall meeting in Toronto as documented in the meeting minutes. Members sent further proposed revisions to Art Weiss by January 15, 2001, who prepared a revised draft using the redline/strikeout format.

The proposed revisions assembled by Art Weiss were included as Agenda Exhibit 2 of the 2001 spring meeting and were reviewed by TSC in Philadelphia.

Following the 2001 spring meeting, Chair Carino incorporated the proposed changes made at Philadelphia into the latest draft of the proposed *ACI Specification Manual* for committee letter ballot. TSC Committee Ballot (TSC 01-1) was issued September 27, 2001, and canvassed on October 19, 2001. Ballot results were included in Dallas Minutes Item 2. Assembled comments on balloted items were included as Dallas Minutes Exhibit 2.

Additionally, there were several other issues discussed at Philadelphia, but not resolved. Members returned comments with TSC Ballot 01-1 some of which concerned the unresolved issues. Those items were revisited at Dallas and many were resolved (see Dallas Minutes, Item 2.1). However, two issues were not resolved and have been included in this Agenda as Item 2.1.

2.1 Unresolved Issues from Dallas (October 2001)

Item 1: Can ACI 116R be referenced in a Specification? ASTM Terminology standards are referenced in ASTM standards.

At Dallas, staff reported only standards are allowable references in Specifications. ACI 116R is a currently a report, and therefore, cannot be used as a reference at this time.

Dallas Resolution: Chair Carino would pursue the possibility of standardizing ACI 116R with the Technical Activities Committee (TAC) and ACI Committee 116. This item would remain on the TSC Agenda for the 2002 spring meeting in Detroit.

REPORT: Chair Carino is asked to report on discussions with TAC and ACI 116 concerning the standardization of ACI 116R.

Item 2: Article 5.3.11, dealing with "referral phrases" such as "unless otherwise specified," needs to be looked at more carefully. Should TSC be enforcing prohibition of these phrases? If so, more guidance is needed on why these types of phrases should not be used. If these types of phrases should not be prohibited, this Article should be revised.

Ardahl (JBA) explained his rationale for revision and Chair Carino also expressed concerns regarding this Article. Both comments were shown in Dallas Minutes Exhibits 2 under Section 5 – Article 5.3.11 and Page 27, Line 24.

Dallas Resolution: Jon Ardahl will rework Article 5.3.11 and forward the proposed revision to Chair Carino for incorporation into the Manual. The resolution satisfied Jon's comment on Section 5 – Article 5.3.11and was approved by committee members present.

REPORT: Chair Carino is asked to report on the revisionof Article 5.3.11. (To be discussed under 2.2)

2.2 No-Protest Consent of the Proposed *ACI Specification Manual (ASpM)*

At the Dallas meeting it was agreed that a new draft of the revised *ACI Specification Manual (ASpM)* would be prepared and sent to the committee for No-Protest Consent. The revised Manual was sent to the committee by e-mail on April 5, 2002. A cover memo that accompanied the revised draft indicated the following changes were incorporated:

- Editorial clean up of capitalization of terms for consistency;
- Editorial clean up of unnecessary use of "the";
- Definition of new term "graphics" and revision of Article 5.2.10;
- Addition of heading to many of paragraphs in Section 5 and elsewhere;
- New Article 5.3.11 on use of "the";
- New Article 5.3.12 on "referral phrases" to replace previous 5.3.11;
- New examples in Section 6.

ACTION: Chair Carino is asked to report on the status of the updated proposed *ASpM* or results of the No-Protest Consent.

3. TSC Membership and Status of Specifications

Background: Since the Toronto meeting, liaison assignments were made to ACI committees known to be working on or planning to work on a specification. Associate members have been appointed from most of the committees. Agenda Exhibit 3 is a report of ACI specification activities and current membership assignments.

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

Committee 117: Liaison Tony Murray. Associate Member Karl Bakke.

Committee 301: Liaison Jon Ardahl.

Committee 303: Liaison Alfred Kauman. Associate Member Dan Dorfmueller.

Committee 305: Liaison Aimee Pergalsky. Associate Member Robert Ryan.

Committee 306: Liaison Aimee Pergalsky. Associate Member Robert Ryan..

Committee 308: Liaison Aimee Pergalsky.

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 pending.

Committee 350: Liaison Jon Ardahl. (see Item 8)

Committee 423: A TSC liaison member to 423 is required. ACI 423 Chair Bruce Russell was asked to appoint a 423 member to serve as an associate member of TSC.

Committee 503: Liaison Tony Murray.

Committee 506: Liaison Jon Ardahl. Status of revision?

Committee 530: Liaison pending committee decision on future of specification.

Committee 548: Liaison Art Weiss. Associate Member Mike Stenko.

Committee 551: Liaison Alfred Kaufman. Associate Member Jim Baty.

4. TSC Operations

Background: At the Toronto meeting there was discussion of procedures for the operation of TSC and review of committee specifications. Chair Carino submitted proposed procedures, which are documented in the 2000 fall meeting minutes, for TAC approval at the 2001 spring meeting in Philadelphia.

In addition, TSC discussed a proposed new mission statement, which includes the addition "and manage specification development for the Institute." The revised mission was submitted to TAC for approval at the 2001 spring meeting. At the Philadelphia meeting, Chair Carino reported that TAC approved the revised mission, operating procedures, and suggested changes to the *ACI Technical Committee Manual*.

ACTION: Does TSC have any further comments regarding TSC Operations?
Should this item be removed from future agenda?

5. Specification Review

Within the last year, TSC members reviewed draft specifications by 503 and 548. In addition, comments were provided to 330 regarding responses to the TAC review.

Before the Detroit meeting, Committee 551 (Tilt-up Construction) submitted a draft of their draft reference specification. Kaufman and Carino are to provide 551 review comments.

ACTION: Chair Carino will report on the review.

6. Planning

The approved 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.*

Proposed short-term goals for 2002 are:

- Submit revised *ACI Specification Manual* for TAC review
- Continue development of materials for Specification Training Workshop
- Update ACI Specification activity database
- Review voting membership
- Continue development of plans for resolving conflicts among ACI specifications
- Initiate work on "ACI Specification Policy"

ACTION: TSC members are asked to discuss proposed TSC goals for 2002.

7. Conflicts in ACI Specifications

TAC has delegated to TSC the authority to manage specification development by the Institute. According to the TSC procedures discussed in Item 4, this involves the following activities:

- Review committee requests to begin the development of new specifications;
- Identify needs for new specifications; and
- Eliminate conflicts among ACI Specifications.

Revisions to the *TCM* and *Specification Manual* will put into effect the procedure for ACI committees to follow before beginning work on a proposed specification.

Implementation of the third activity requires the development of a plan for identifying and removing conflicts.

Background: On the issue of conflicts in ACI Specifications, Dan Dorfmueller, Chair of ACI Committee 303, wrote a letter in June 2001 to ACI Managing Director of Engineering Daniel W. Falconer expressing a recommendation from ACI Committee 303 that Chapter 6 of the ACI 301 specification be eliminated and instead ACI 301should refer to the ACI 303 specification for architectural concrete. In response, Calvin McCall, Chair of ACI Committee 301, wrote a letter explaining why this should not occur. Finally, Dorfmueller wrote a response to McCall's letter again detailing the recommendation from ACI Committee 303 and their reasoning. This situation illustrates the type of conflict in specifications that TSC is meant to manage. The letters were included as Dallas Agenda Exhibits 7.1, 7.2, and 7.3.

At the Dallas meeting, there was lively discussion on the subject of resolving conflicts among ACI committees writing specifications. It was suggested that there are three types of conflicts: jurisdiction, technical, and ego. A suggestion was made for a Technical Conflicts Report that would show conflicts requiring resolution between specifications and between specifications and other documents. The report would show the status of the resolution of the conflict (including who is doing the resolution). Thus, TSC would oversee the resolution of the conflict, but the committees involved will actually resolve the conflict.

A similar proposal was made for a Jurisdictional Conflicts Report that would show conflicts regarding jurisdiction, except that TSC would recommend to TAC resolution of jurisdiction conflicts. For ego conflicts, it was suggested that task groups be organized to resolve the conflicts with the idea that the end users' point of view is paramount.

At the Dallas meeting, Carino asked 301 Chair McCall and 303 Chair Dorfmueller to appoint a joint task force to develop recommendations for resolving the 301/303 jurisdictional conflict.

Staff requested Art Mulkoff to perform a review of technical conflicts among ACI Specifications. The results of that review are shown in Agenda Exhibit 7.

Before the Detroit meeting, TAC Chair Dolan asked Carino to develop a draft ACI policy to solve the current problem of overlap between ACI 301 and other ACI Specifications.

REPORT 1: Messrs. McCall and Dorfmueller are asked to report progress on the conflict between Committees 301 and 303.

REPORT 2: Staff is asked to report on the technical conflicts review (see Agenda Exhibit 7).

REPORT 3: Chair Carino is asked to report on the proposed TAC policy on coordination of ACI Specifications.

8. New Specifications

8.1 Environmental Engineering Concrete Structures

Background: ACI Committee 350 has been working on a draft specification for environmental engineering concrete structures in support of 350 Code. At the Dallas meeting, TSC 350 Liaison Jon Ardahl updated TSC on the status of the draft specification and explained why Committee 350 feels that a separate ACI 350 specification is needed.

REPORT: Mr. Ardahl reported that Committee 350 believes there is a need for a separate specification due to the unique needs of environmental engineering concrete structures. An option was explored to move 350 requirements into a separate chapter of ACI 301, but it was believed this would create too much confusion. Many 350 Code requirements are inconsistent with 318 Code requirements, such as maximum *w/c* ratio and minimum cement content. When the 350 Code was created, the intent was to continue with the recommendations in the ACI 350R. The proposed 350 specification will have 9 sections. A couple of sections that are currently

in ACI 301, such as shrinkage-compensating concrete, have been dropped from the proposed 350 specification.

TSC members present at the Dallas meeting (6) unanimously approved development of a separate ACI 350 specification. A TSC letter ballot of the full committee for approval to proceed was requested. TSC also would like to see the draft 350 specification when it is sent to the committee for first ballot.

ACTION: Staff is asked to report the results of the TSC letter ballot on approval to proceed with a separate 350 specification.

9. Computerization of Specifications

ACI Staff and ACI 301 Chair McCall have been discussing the idea of preparing an "active" computer-based specification that can be tailored to a specific project and included directly in the project specifications.

In December, Carino, McCall, and TAC Secretary Daniel Falconer met with ARCOM, the contractor that has developed the MASTERSPEC software for preparing project specifications.

REPORT: ACI 301 Chair McCall and TAC Secretary Falconer are asked to report.

ACTION: Should ACI be considering software products to supplement current specifications?

10. Workshop on Specification Writing

Background: At the San Diego (March 2000) meeting, Art Weiss proposed the development of presentation materials for a training workshop on writing specifications. Chair Carino asked Art Weiss to prepare an outline of the workshop for discussion at the Philadelphia meeting.

Mr. Weiss gave a handout in Philadelphia showing a draft outline of the session and the presentation, which will focus on how to write an ACI specification and how it relates to a project specification. At the Dallas meeting there was insufficient time to discuss further progress on the planning for this workshop.

REPORT: Mr. Weiss is asked to report on the status of the planning for this workshop.

ACTION: When should the workshop be held and who will work with Mr. Weiss to develop the final presentation material?

11. CI Article

Background: At the 1999 Fall Convention, Aimee Pergalsky agreed to write a short article ("press release") for *Concrete International* about the TSC rules and mission.

Ms. Pergalsky reported at the Philadelphia meeting that she would submit the article after the new *ACI Specification Manual* is published. The article will include information on: TSC's mission and goals; TSC operations; balance of committee memberships; the procedures committees must follow in developing a specification, such as a proposal to TAC that will be reviewed by TSC, liaison memberships with TSC, and reporting progress to TSC; and types of specifications.

REPORT: Ms. Pergalsky is asked to provide any additional information.

ACTION: When will a draft of the article be prepared and who will assist in reviewing it?

12. New Business

12.1 Structured Format for Checklists

At the Philadelphia meeting, Chair Carino brought up the question whether the ASpM should include a more structured format for items in the optional requirements checklist? ACI 301 is considering the following:

- Statement of requirement
- Guidance to specifier
- References

ACTION: Chair Carino is asked to lead the discussion regarding a more structured format for items in the optional-requirements checklist.

12.2 Defining Different Specification Formats in the ACI Specification Manual (ASpM)

Tony Murray submitted the following comment with TSC Ballot 01-1: "The manual fails to define the different specification formats, i.e., 1) product, 2) prescription, 3) performance, or if any of these formats would be rejected."

At the Dallas meeting, Art Weiss reported that he had some language/definitions for these terms that he would forward to Chair Carino for further consideration. TSC members felt that this item was more than a matter of just adding definitions and requested that it be placed on the Detroit Agenda for discussion of a section of explanation.

ACTION: Chair Carino is asked to lead the discussion on defining different specifications in the ASpM.

12.3 Format for Presenting Performance Criteria

Mr. Murray also submitted the following comment on Section 3, Part 2: "There is an absence of a suggested format for presenting performance criteria." TSC asked that this item also be placed on the Detroit Agenda for further consideration as New Business.

ACTION: Mr. Murray is asked to lead discussion on the need for a suggested format for presenting performance criteria.

12.4 Identification of Needed Specifications

As mentioned in Item 7, one of the functions of TSC is to assist the Institute in identifying specifications that are needed by the industry and that could be prepared by ACI Committees. Up until now TSC has not addressed this issue.

ACTION: Chair Carino is asked to lead a discussion of how TSC can go about identifying needed specifications.

13. Next Meeting

If there is no objection, the next TSC meeting will be held on Wednesday morning at the 2002 Fall Convention in Phoenix, AZ.

14. Adjournment

EXHIBITS:

Exhibit 1 – TSC Roster with Contact and Assignment Information
Exhibit 3 – ACI Specifications Information
Exhibit 7 – Technical conflicts in ACI Specifications

Copies: Daniel L. Baker, President, ACI
Terence C. Holland, President-Elect, ACI
José M. Izquierdo, Vice President, ACI
James G. Toscas, Executive Vice President, ACI
Charles W. Dolan, Chair, ACI-TAC
Om P. Dixit, Chair-Elect, ACI-TAC
Daniel W. Falconer, Secretary, ACI-TAC

EXHIBIT 1

TSC ROSTER WITH CONTACT AND ASSIGNMENT INFORMATION February 2002			
Name	**Assignment**	**Telephone No.**	**E-Mail Address**
TSC Officers and TAC Contacts			
Nicholas J. Carino	Chair TSC & TAC Contact	301/975-6063	ncarino@nist.gov
Todd R. Watson	Secretary TSC (NV)	248/848-3728	todd.watson@concrete.org
Charles W. Dolan	Chair TAC	307/766-5255	cdolan@uwyo.edu
Daniel W. Falconer	Secretary TAC	248/848-3726	daniel.falconer@concrete.org
Voting Members			
Jon B. Ardahl	301, 350, 506	785/887-9991	ard00097@netzero.net
William L. Barringer		505/293-8368	joy2Bill@aol.com
William C. Bretnall		216/241-7078	bbretnall@gba-engineers.com
Jeffrey W. Coleman		952/841-0200	jwcoleman2@cs.com
D. Gene Daniel		501/636-1856	dgenedinc@aol.com
I. Leon Glassgold		410/355-4390	102126.1102@compuserve.com
Ronald L. Hollrah		913/458-8300	hollrahrl@bvsg.com
Alfred L. Kaufman, Jr.	303, 346, 551	925/866-2780	akaufman@rmcpmi.com
W. Calvin McCall		704/392-1506	wcmccall@bakerconcrete.com
M. A. (Tony) Murray	117, 503	303/688-8244	tmurray@restruction.com
Aimee Pergalsky	305, 306, 308	216/496-7489	apergalsky@mbt.com
Arthur T. Weiss, Jr.	330, 336, 548	770/860-1942	aweiss7501@aol.com
Associate Members			
Karl J. Bakke	117	303/674-2290	kalmanfloor@aol.com
James R. Baty	551	319/895-6911	jbaty@tilt-up.org
Daniel P. Dorfmueller	303	513/539-4043	dorf@bakerconcrete.com
Kenneth G. Kazanis	330	248/354-9050	ken.kazanis@lafargecorp.com
William H. Oliver, Jr.	336	713/207-4379	william.h.oliver.jr@centerpointenergy.com
Robert J. Ryan	305, 306,	216/839-7500	rryan@mbt.com
Michael S. Stenko	548	914/636-1000	mstenko@transpo.com

EXHIBIT 3

ACI SPECIFICATIONS INFORMATION

Comm. No.	Title	Specification	Status	Comment/ Action	TSC Liaison	Nonvoting TSC Members
117	Tolerances	Standard Specifications for Tolerances for Concrete Construction and Materials	117-90	Spec done. Revising commentary.	Murray	Bakke
301	Specifications for Concrete	Specifications for Structural Concrete	301-99	Incorporating 318 changes.	Ardahl (M)*	Not needed
303	Architectural CIP Concrete	Standard Specification for Cast-in-Place Architectural Concrete	303.1-97	Resolve conflicts w/301. TSC requested Joint Task Group (10/01) – Dallas.	Kaufman	Dorfmueller
305	Hot Weather Concreting	Standard Specification for Hot Weather Concreting	Draft 12	To TAC 3/01. Not approved. Working on response to TAC comments.	Pergalsky	Ryan
306	Cold Weather Concreting	Standard Specification for Cold Weather Concreting	306.1-90	No action on Spec. Working on report first.	Pergalsky	Ryan
308	Curing Concrete	Standard Specification for Curing Concrete	308.1-98	Planning new Specs. Need TAC approval of request	Pergalsky (M)*	Not needed
330	Concrete Parking Lots and Site Paving	Standard Specification for Plain Concrete Parking Lots	330.1-94	Revision approved 3/00; Final format review by	Weiss	Kazanis

Comm. No.	Title	Specification	Status	Comment/ Action	TSC Liaison	Nonvoting TSC Members
330		(Continued)		AW&NC requires updating & No Protest Consent		
336	Footings, Mats, and Drilled Piers	Reference Specification for Construction of Drilled Piers	336.1-98	Revision approved 7/00 Public discussion 2/1-5/1/01. Completed – Closure rec'd little comment.	Weiss	Oliver
346	CIP Pipe	Standard Specification for Cast-in-Place Nonreinforced Concrete Pipe	346-90 R97	Revision approved 10/99 Public discussion 4/1-7/1/01. No public comments rec'd. Sent to printer. Has been published.	Kaufman (M)*	Not needed
347	Formwork for Concrete	(specification on formwork)	Planning	Need request to TAC; committee balance.		
350	Environmental Structures	(specification on environmental engineering concrete structures)	In preparation	TSC approved in Dallas (10-01), but need full TSC Letter Ballot.	Ardahl (M)*	Not needed
423	Prestressed Concrete	Specification for Unbonded Single Strand Tendons	In preparation	TAC approved 2/01. Public discussion 5/1-8/1/01. Will wrap up in Dallas.		423 Chair (Bruce Russell) to appoint TSC rep.

Comm. No.	Title	Specification	Status	Comment/ Action	TSC Liaison	Nonvoting TSC Members
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		Murray (M)*	Not needed
		Standard Specification for Bonding Plastic Concrete to Hardened Concrete with a Multi-Component Epoxy Adhesive	503.2-92 R-97			
		Standard Specification for Producing a Skid Resistant Surface on Concrete by the Use of a Multi-Component Epoxy System	503.3-92 R97	Need to check for conflicts with 548 Specs		
		Standard Specification for Repairing Concrete with Epoxy Mortars	503.4-92 R97			
		Standard Specification for Crack Repair by Epoxy Injection	In preparation	TAC RRR 7/00 Problem w/ bonded overlay test method.		
506	Shotcreteing	Specifications for Shotcrete	506.2-95	Finalizing rewrite from ballot comments.	Ardhal (M)*	Not needed
530	Masonry Standards Joint Committee	Specification for Masonry Structures	530.1-99	TAC 3/01, Working on spec-moving code requirements out & into code.		
548	Polymers in Concrete	Standard Specifications for Latex Modified Concrete (LMC) Overlays	548.4-93 R98		Weiss	Stenko

Comm. No.	Title	Specification	Status	Comment/ Action	TSC Liaison	Nonvoting TSC Members
		Standard Specifications for Type EM Polymer Concrete Overlays	In preparation	Need to check w/ 503.3 for conflict. Need 503 test method to proceed.		
551	Tilt-Up Construction	Reference or Guide Specification on Tilt-Up Construction	Planning	To be Reference Spec (not Guide).	Kaufman	Baty

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

Exhibit 7 – Technical Conflicts in ACI Specifications

The following ACI specifications, plus the ACI 318 Code, have been reviewed for over lapping provisions or conflicting requirements:

117-90	Standard Specifications for Tolerances for Concrete
301-99	Specifications for Structural Concrete
303.1-97	Standard Specification for Cast-In-Place Architectural Concrete
306.1-90	Standard Specification for Cold Weather Concreting
308.1-98	Standard Specification for Curing Concrete
330.1-94	Standard Specification for Plain Concrete Parking Lots
336.1-01	Specification for the Construction of Drilled Piers
346-01	Specification for Cast-in-Place Concrete Pipe
423.6-01	Specification for Unbonded Single-Strand Tendons
503.1-92	Four Epoxy Specifications
506.2-95	Specification for Shotcrete
530.1-02	Masonry Structures and Specification for
548.4-93	Standard Specification for Latex-Modified Concrete (LMC) Overlays
318-02	Building Code Requirements for Structural Concrete and Commentary

A limited amount of overlapping or conflicting provisions were found in ACI's specifications. The actual provisions follow this listing:

Conflict 1
CIP pipe wall thickness and pipe diameter tolerances are not in complete agreement:
ACI 117-90: Sections 14.1 and 14.2 vs.
ACI 346-01: Section 3.2.1.3 and Table 3.1

Conflict 2
Minimum sampling frequency for each class of concrete are not in complete agreement:
ACI 301-99: Section 1.6.4.2 d vs.
ACI 318-02: Section 5.6.2.1 & 5.6.2.3

Conflict 3
Required average compressive strength not consistent:
ACI 301-99: Table 4.2.3.3 b vs.
ACI 318-02: Table 5.3.2.2

Conflict 4
Required curing and protection period information after placement of concrete not consistent:
ACI 301-99: Section 5.3.6.1 vs.
ACI 306.1-90: Table 3.2.1 vs.
ACI 308.1-98: Section 1.1.6.1 vs.
ACI 318-02: Sections 5.11.1 and 5.11.2

Conflict 1 – ACI 117-90 vs. 346-01

ACI 117-90

SECTION 14 - NONREINFORCED CAST-INPLACE PIPE

14.1 - Wall thickness

Minimum wall thickness at any point shall be 1/12 times the specified internal diameter of the pipe plus 1/2 in., but in no case less than . . . . . 2 in.

14.2 - Pipe diameter

The internal diameter at any point shall not be less than 95 percent of the specified diameter, the average of any four measurements taken at 45 deg intervals shall not be less than the specified diameter.

ACI 346-01

3.2.1.3 *Pipe diameter tolerances*—Internal diameter of pipe at any point shall not be less than 98% of the design diameter.

Table 3.1—Wall thickness*			
Internal diameter		Minimum wall thickness	
Inches	Millimeters	Inches	Millimeters
24, 27, and 30	600 and 750	3	76
36	900	3.5	89
42	1050	4	102
48	1200	5	127
54	1350	5.5	140
60	1500	6	153
66	1650	6.5	165
72	1800	7	178
78	1950	7.5	191
84	2100	8	203
90	2250	8.5	216
96	2400	9	229
108	2700	10.5	254
114	2900	11	280
120	3050	12	305
*For any internal diameter not indicated above, the minimum wall thickness shall be equal to the next size larger pipe.			

2. ACI 301-99 vs. 318-02

ACI 301-99

1.6.4.2.d Obtain samples in accordance with ASTM C 172. Select the trucks or batches of concrete to be tested on a random basis, using random numbers selected before commencement of concrete placement.

Obtain at least one composite sample for each 100 yd^3, or fraction thereof, of each concrete mixture placed in any one day. When the total quantity of a given concrete mixture is less than 50 yd^3, the strength tests may be waived by the Architect/Engineer.

ACI 318-02

5.6.2.1 — Samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, nor less than once for each 150 yd^3 of concrete, nor less than once for each 5000 ft^2 of surface area for slabs or walls.

5.6.2.3 — When total quantity of a given class of concrete is less than 50 yd^3, strength tests are not required when evidence of satisfactory strength is submitted to and approved by the building official.

3. ACI 301-99 vs. 318-02

ACI 301-99

Table 4.2.3.3.b—Required average compressive strength $f_{cr.}'$*	
Specified strength amount f_c', psi	Required average compressive strength f_{cr}', psi
Less than 3000	$f_c' + 1000$
3000 to 5000	$f_c' + 1200$
Over 5000 to 10,000	$f_c' + 1400$
Over 10,000 to 15,000	$f_c' + 1800$
*When data are not available to establish standard deviation.	

ACI 318-02

TABLE 5.3.2.2—Required average compressive strength when data are not available to establish a standard deviation	
Specified compressive strength, f_c', psi	Required average compressive strength, f_{cr}', psi
Less than 3000	$f_c' + 1000$
3000 to 5000	$f_c' + 1200$
Over 5000	$1.10 f_c' + 700$

3. ACI 301-99 vs. 306.1-90 vs. 308.1-98 vs. 318-02

ACI 301-99

5.3.6.1 *Curing* — Cure concrete in accordance with 5.3.6.2 or 5.3.6.3 for a minimum of 7 days after placement. Cure high-early-strength concrete for a minimum of 3 days after placement.

Alternatively, moisture retention measures may be terminated when:

- Tests made on at least two additional cylinders kept adjacent to the structure and cured by the same methods as the structure indicate that 70% of the specified compressive strength f_c' , as determined in accordance with ASTM C 39, has been attained;
- The compressive strength of laboratory-cured cylinders, representative of the in-place concrete, exceeds 85% of the specified strength f_c' , provided the temperature of the in-place concrete has been maintained at 50 F or higher during curing; or
- Strength of concrete reaches f_c' as determined by accepted nondestructive test methods meeting the requirements of 2.3.4.2.

When one of the curing procedures in 5.3.6.4—Preservation of moisture, is used initially, the curing procedure may be replaced by one of the other procedures when concrete is 1 day old, provided the

concrete is not permitted to become surface-dry at any time. Use a curing procedure of 5.3.6.4 that supplies additional water during the entire curing period for concrete containing silica fume and when specified in the Contract Documents.

ACI 306.1-90

Table 3.2.1 - Concrete temperature		
(1)	(2)	(3)
Least dimension of section, in.	Minimum temperature of concrete as placed and maintained during the protection period, F	Maximum gradual decrease in surface temperature during any 24 h after end of protection, F
Less than 12	55	50
12 to less than 36	50	40
36 to 72	45	30
Greater than 72	40	20

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1.1.6.1 When testing is not performed to determine the curing period, cure concrete for at least 7 days provided that the concrete surface temperature is at least 10 C (55 F).

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5.11 — Curing

5.11.1 — Concrete (other than high-early-strength) shall be maintained above 50 F and in a moist condition for at least the first 7 days after placement, except when cured in accordance with 5.11.3.

5.11.2 — High-early-strength concrete shall be maintained above 50 F and in a moist condition for at least the first 3 days, except when cured in accordance with 5.11.3.