

TRRC - ACI DOCUMENT REVIEW SUMMARY

Member	Current Comm. #	Current Doc #	Document Name	Size (pages)	Chapter Names	Comments	Recommendations
KP	116	116R-00	Cement and Concrete Terminology	73		There are many terms that should be included that are not - too numerous to mention, but as an example, this document does not include shotbalsting, scarifiers, or hydro demolition. Also, there are many definitions that do not match ICRI's Terminology.	A recommendation should be made to committee 116 from TRRC, to include many more repair terms. To ease the burden of this work, they could incorporate ICRI's terminology (which has been approved through ICRI's TAC review process). ASTM has just published a new terminology document. TRRC will recommend to 116 to include repair terminology utilizing ICRI and ASTM. 116 may become a staff function. TAC TG will decide by the next meeting.
JMD	201	201.2R-01	Guide to Durable Concrete	41	1- Freezing and thawing; 2- Aggressive chemical exposure; 3- Abrasion; 4- Corrosion of metals and other materials embedded in concrete; 5- Chemical reactions of aggregates; 6- Repair of concrete; 7- Use of protective-barrier systems to enhance concrete durability; 8- References; Appendix A- Method for preparing extract for analysis of water-soluble sulfate in soil;	Chapter 6 is a 2-page summary of concrete repair basics. All of the topics included in this summary are addressed in much greater detail in the ACI Concrete Repair Guide (546R-04). Similarly, the 2-page discussion of protective barrier systems to enhance concrete durability (Chapter 7) is very limited compared to the detail in ACI 546R-04. Both chapters appear to be outside the 201 mission to "develop and report information to ensure the production of durable concrete" and are unnecessary duplications of more comprehensive information in other ACI documents, particularly 546R-04.	Chapters 6 and 7 should be deleted from 201.2R-01 with references to 546R-04 as appropriate. The committee may miss the 2-year time limit to respond to TAC comments.

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JMD	207	204.3R-94	Practices for Evaluation of Concrete in Existing Massive Structures for Service Conditions	16	1-Introduction; 2-Preinspection and In-Service Inspection; 3-In-situ Condition Surveys and Testing; 4-Sampling and Laboratory Testing; 5-Damage; 6-Report; 7-references	"repair" appears several times in this document generally in the context that structure evaluation is required to determine the need for repair, or the condition of any repairs should be included as part of inspection reports	No action
JMD	210	210.1R-94	Compendium of Case Histories on Repair of Erosion-Damaged Concrete in Hydraulic Structures	33	1-Introduction; 2- Cavitation-erosion case histories; 3- Abrasion-erosion case histories; 4- Chemical attack-erosion case histories; 5- Project reference List	This compendium of case histories provides information on damage that has occurred to hydraulic structures and the various methods of repair that have been used. Summaries of repair techniques and subsequent performance are intended to aid in avoidance of oversights in design and construction of hydraulic structures and provide guidance in the treatment of future problems.	No action
JMD	210	210R-93	Erosion of Concrete in Hydraulic Structures	24	1-Causes of erosion; 2-Erosion by cavitation; 3-Erosion by abrasion; 4- Erosion by chemical attack; 5- Control of cavitation erosion; 6 Control of abrasion erosion; 7-Control of erosion by chemical attack; 8-Periodic inspections and corrective action; 9- Repair methods and materials; 10-References	Approximately 3 pages (Chap 9) of the 24 page document is devoted to repair. Discussion is generally limited to the ability of a variety of materials to resist cavitation and abrasion erosion resulting from high velocity flow and waterborne debris. Material requirements and repair techniques for hydraulic structures are somewhat unique; therefore, this brief summary of pertinent considerations appears appropriate for this document. References are provided for additional details on each	No action

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						material and method.	
KP	212	212.3R-04	Chemical Admixtures for Concrete	30	1- General Information; 2- Air-Entraining Admixtures; 3- Accelerating Admixtures; 4- Water-Reducing and Set-Controlling Admixtures ; 5- Admixtures for Flowing Concrete; 6- Miscellaneous Admixtures; 7- References	Repair only appears once in this document in the following paragraph: "Prepackaged mortar formulations are available that have an initial time of setting of 1 to 4 min and a final setting time of 3 to 10 min. They are used to seal leaks in below-grade structures, for patching, and for emergency repair. The ultimate strength of such mortar is much lower than if no accelerating admixture had been added."	No action needed, unless reference inserted to proper document detailing such mortars and their uses.
KP	212	212.4R-04	Guide for the Use of High-Range Water-Reducing Admixtures (Superplasticizers) in Concrete	13	1- General Information; 2- Effects of High-Range Water-Reducing Admixtures; 3- Effects on Freshly Mixed Concrete; 4- Effects on Hardened Concrete; 5- Typical Applications of High-Range Water-Reducing Admixtures; 6- Quality Control; 7- References	Repair only appears twice in this document: Once, in reference to low w/c ratio and how it can be beneficial to various grouts and prepackaged concretes used for repair and rehabilitation, and second, in reference to how having the proper mix can reduce the need to repair surface defects.	No action necessary

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JMD	221	221.1R-98	State-of-the-Art Report on Alkali-Aggregate Reactivity	31	1 - Introduction; 2 - Manifestations of distress due to alkali-silica reactivity; 3 - alkali-silica reactivity mechanisms; 4 - Petrography of alkali-silica reactive aggregate; 5 - Measures to prevent ASR; 6 - Methods to evaluate potential for expansive ASR; 7 - Manifestations of distress due to alkali-carbonate reactivity; 8 - ACR mechanisms; 9 - Measures to prevent ACR; 10 - Methods to evaluate potential for expansive ACR; 11 - Evaluation and repair of structures affected by AAR; 12 - References	Repair of structures affected by AAR is briefly summarized in Chapter 11 (1-1/2 pages) with extensive references to other documents for details. AAR often requires unique techniques for maintenance and repair; therefore, Chapter 11 appears appropriate for this document. There is minimal overlap and no obvious conflicts with other ACI repair-related documents	No action
JP	222	222.3R-03	Design and Construction Practices to Mitigate Corrosion of Reinforcement in Concrete Structures			The repair to defects of epoxy coated reinforcing is briefly discussed with reference to ACI 301. Appropriate reference is given to ACI 546 for repair methodology. This document correctly indicates that repair alone does little to address the causes of deterioration due to corrosion unless something is done to mitigate or stop the corrosion mechanism. This document provides guidance in this regard.	No change is required. It is an excellent supplement to ACI 546 and should be used as a reference when developing concrete repairs.

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JP	222	222R-01	Protection of Metals in Concrete Against Corrosion			This document discusses methods to control corrosion which is an important aspect of any concrete repair program. Procedures to identify corrosive environments and active corrosion are included in this document which must be considered in concrete repair programs. The document does discuss in general terms the methodology for repairs especially in Chapter 5 with reference to ACI 546.	Core document. This document is an excellent supplement to ACI 546 and should be used as a reference when developing concrete repairs. It emphasizes methods to control and prevent future corrosion. I do not think that there are any conflicts with 546 or that repair is covered too much but it should be carefully reviewed.
RP	224	224.1R	Causes, Evaluation and Repair of Cracks in Concrete Structures	21		Document summarizes the causes, evaluation, and repair of cracks.	Core document. This is a basic document that should be referenced by all committees when reference is made to crack repair. It should remain with the committee, but be under the purview of TRRC.
RP	224	224R	Control of Cracking in Concrete Structures	46		Document summarizes the mechanisms that cause cracking and methods that can be used in design and construction to mitigate cracking.	This is a basic document that should be referenced by all committees when discussing the cause of cracks. It should remain with the committee.

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FG	225	ACI 225R-99	Guide to the Selection and Use of Hydraulic Cements	30	Chapter 1—Introduction, Chapter 2—Cement types and availability, 2.1—Portland and blended hydraulic cements 2.2—Special-purpose cements Chapter 3—Cement chemistry, 3.1—Portland cements 3.2—Blended hydraulic cements 3.3—Shrinkage-compensating expansive cements 3.4—Calcium-aluminate cements Chapter 4—Influence of chemical and mineral admixtures and slag on the performance of cements, 4.1—Air-entraining admixtures 4.2—Chemical admixtures 4.3—Mineral admixtures 4.4—Ground granulated blast-furnace slags Chapter 5—Influence of environmental conditions on the behavior of cements, Chapter 6—Influence of cement on properties of concrete, 6.1—Thermal cracking 6.2—Placeability 6.3—Strength 6.4—Volume stability 6.5—Elastic properties 6.6—Creep 6.7—Permeability 6.8—Corrosion of embedded steel 6.9—Resistance to freezing and thawing 6.10—Resistance to chemical attack 6.11—Resistance to high temperatures 6.12—Cement-aggregate reactions 6.13—Color Chapter 7—Cement storage and delivery, Chapter 8—Sampling and testing of hydraulic cements for conformance to specifications, 8.1—The cement mill test report 8.2—Sealed silos 8.3—Cement certification 8.4—Quality management Chapter 9—References, Appendix A—Calcium-aluminate cements.	No repairs are covered. Mention of the word "repair" is made in Section 2.2 describing some applications for special cements (T III, CA, MgPO ₄ , Ultrafine), Damage is used in section 6 regarding some of the deterioration mechanisms of cementitious materials.	Perhaps the descriptions of different cement types (section 2). might be useful as a reference in the Repair code Also description of the physical and chemical parameters of cementitious materials would also be useful as a reference (sections 3, 4, 5, and 6).

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RP	228	228.2R	Nondestructive Test Methods for Evaluation of Concrete Structures	62		Document summarizes methods to evaluate the condition of existing concrete construction using various electro/mechanical/chemical methods.	Core document. This document should be within TRRC purview as it relates to evaluation of existing structures. ICRI will have a new document produced by the evaluation committee that will include a table of problems (delamination, etc.) and methods on how to evaluate them.
RP	228	2281R	In-place Methods to Estimate Concrete Strength	44		Document summarizes methods to estimate the strength of concrete. It addresses the issue for both new construction relative to form removal and issues when strength is in question in existing construction.	Leave the document with the committee.

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KP	234	234R-96	Guide for the Use of Silica Fume in Concrete	51	1-Introduction; 2-Physical Properties and Chemical Composition of Silica Fume; 3- Mechanism by which Silica Fume Modifies Cement Paste; 4- Effects of Silica Fume on Properties of Fresh Concrete; 5-Effects of Silica Fume on Properties of Hardened Concrete; 6-Applications of Silica Fume; 7- Proportioning Silica Fume Concrete; 8- Specifications; 9- Working with Silica Fume in Field Concrete; 10- Research Needs; 11 - References	"Repair" appears several times in this document generally in the context of how silica fume concrete has been used in repairs, because it provides things such as abrasion/erosion resistance, chemical attack resistance, etc. It also appears in the following section: "Research is needed to develop better test methods, to investigate the performance of concrete under field conditions, and to determine construction practices that produce the best results in terms of resistance to corrosion. A related issue of particular interest in North America is the repair of deteriorated structures. Research is needed to develop repair methods that will not simply create new corrosion cells in different locations. Silica-fume concrete may well have a role to play in these repairs."	No action needed on the general references to silica fume concrete being used in repairs. May want to remove "A related issue of particular interest in North America is the repair of deteriorated structures. Research is needed to develop repair methods that will not simply create new corrosion cells in different locations. Silica-fume concrete may well have a role to play in these repairs.", or update this with newer references.

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LK	301	ACI 301-05	Specifications for Structural concrete	47	1-general requirements; 2 formwork and formwork accessories; 3-reinforcement; 4-concrete mixtures; 5-handling, placing, constructing; 6-architectural; 7- lightweight; 8-mass; 9-prestressed; 10-shrinkage-compensating;	See details below	See details below. Repair specification items are mixed in with 301 but should be separate. There should be a 301 repair subcommittee, a 562 repair specification, or a repair specification by another committee, possibly the ICRI Specification committee. The material selection guide should be used in developing the specification. TAC should decide how to create a repair specification.
LK	301	301-05	Specifications for Structural concrete		1.6.5	Tests on hardened concrete in place (limited techniques)	keep section 1.6.5 as is, reference repair spec when ready
LK	301	301-05	Specifications for Structural concrete		1.7.1.3 & 4	Repair rejected concrete work by removing and replacing or by reinforcing with additional construction...by Architect/Engineer	keep 1.7.1.3 & 4 as is
LK	301	301-05	Specifications for Structural concrete		1.7.4.2	Action required when strength is potentially deficient. Section gives rehabilitation procedure.	This section needs to reference a repair specification
LK	301	301-05	Specifications for Structural concrete		1.7.5.2	Action required when durability is potentially deficient	keep until repair spec is ready.
LK	301	301-05	Specifications for Structural concrete		3.3.2.8.b	repair of bar coatings -- epoxy repair prior to concrete placement	keep as is

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LK	301	301-05	Specifications for Structural concrete		5.3.7.3	Repair of surface defects other than tie holes. Gives specific repair technique	keep section 5.3.7.3 as is for now. Change language to "repair pursuant to specifications given in ACI 564 Repair Specifications". This really should reference ACI repair guide and ICRI guides.
LK	301	301-05	Specifications for Structural concrete		5.3.7.6	Repair materials other than site-mixed portland cement mortar. Gives ASTM epoxy references	needs to reference materials guide and application procedures
LK	301	301-05	Specifications for Structural concrete		6.3.6	Repair of tie holes and surface defects (gives architectural finish requirements)	keep 6.3.6 Until an architectural repair spec is done

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LK, PG			Repair Specification			<p>Recommendations (continued) We further recommend that the following ACI personnel discuss this proposal: TAC chair, TRRC chair, 301 chair, 364 chair, 546 chair, and 562 chair. This discussion would help determine how ACI and ICRI should coordinate activities. The discussion would include the various committees' desires to participate in writing a Guide Specification or a Mandatory Specification. Reasons: The 562 "Repair Code" committee will want to reference specifications in its Standard. While the 562 commentary will reference items like the ACI Committee 546 Materials Selection Guide, many of the items mentioned in that Guide should be in a Specification format for use by repair designers and for direct reference by the 562 Code. It is requested that the specs follow the CSI numbering format.</p>	<p>Recommendations (continued) The Repair Code should reference an ACI or joint ACI-ICRI specification and should not reference just an ICRI document so that ACI TAC can assure coordination between the Code and Specification committees. We are recommending that a Guide Specification be written before a Mandatory Specification so that a document can be developed more quickly and can receive comments from practitioners before a final specification is drafted. The above recommendation will also hold true for ACI 303.1, Standard Specifications for Cast-In-Place Architectural Concrete.</p>

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JP	302	302.1R-04	Guide for Concrete Floor and Slab Construction			Indicates that grinding, planning, removal and replacement can be used as remedial measures for slabs-on-grade. For suspended slabs, remedial measures are generally limited to grinding or use on an underlayment or topping material. No specific repair methods are given but the document indicates that the repair documents should clearly identify acceptable corrective methods. The document references ACI 222 and 222.1R for crack repairs. ACI 546 is not referenced.	No changes are required except that ACI 546 should be referenced.
JP	302	302.XR-XX	Guide for Concrete Slabs to Receive Moisture-Sensitive Flooring Materials			Document has just been approved by TAC in Charlotte. ICRI considers mitigation of moisture in existing structures as the next step. Committee 302 does not seem interested in this effort. Is this possibly a subject for committee 515?	
KP	303	303.1-97	Standard Specification for Cast-in-Place Architectural Concrete	10	1-General; 2-Concrete for Architectural Cast-In-Place Construction; 3-Reinforcement, Tie wire, and Bar Supports; 4-Formwork for Architectural Concrete; 5-Architectural Treatments; 6-Miscellaneous	"Repair" appears several times in this document, in the context of surface defects that may need to be repaired.	As this is a specification, it does not get into how to repair the defects, so no action is necessary.

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PG	303	303.1-97	Standard Specification for Cast-in-Place Architectural Concrete	10	Specification Checklist; 1 - General; 2 - Concrete for Architectural Cast-in-Place Construction; 3 - Reinforcement, tie-wire and bar supports; 4 - Formwork for Architectural Concrete; 5 - Architectural Treatments; 6 - Miscellaneous	Repair is referred to generally regarding correction of aesthetic and casting problems such as contrasts, blemishes, etc. Mockups and matching for repair to the architectural concrete is also mentioned. There should be a reference to ACI 546R-04 for concrete repair. There is also mention of sealers and joint sealants which can be referenced to ACI 515.1R and AIC 504R.	References to ACI 515.1R and ACI 546R should be added. ACI 504 is out of date and needs to be assigned to another committee.
KP	303	303R-04	Guide to Cast-in-Place Architectural Concrete Practice	32	1-Introduction; 2-Architectural Considerations; 3-Structural Considerations; 4-Forms; 5-Reinforcement; 6-Concrete Materials and Mixture Proportioning; 7-Placing and Consolidation; 8- Curing; 9-Treated Architectural Surfaces; 10-Finishing and Final Cleanup; 11 - References; Appendix - Architectural Concrete Photos	"Repair" appears several times in this document, in the context of surface defects that may need to be repaired. "Blemish repair" is the title of a whole section.	The "blemish repair" section does get very specific as to how to repair these surface defects. It should be left as is, since there is no other better section in one of the "repair" committee documents that I could find.

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PG	303	303R-04	Guide to Cast-in-Place Architectural Concrete Practice	32	1- Introduction; 2- Architectural considerations; 3- Structural considerations; 4- Forms; 5- Reinforcement; 6- Concrete materials and mixture proportioning; 7- Placing and consolidation; 8- Curing; 9- Treated architectural surfaces; 10- Finishing and final cleanup; 11- References; Appendix A- Architectural concrete photos;	Repair is discussed in relation to correcting construction problems. Section 2.5.4, par 4 should include a reference to ACI 546R. Emphasis on mockups throughout the document is good. Section 3.3 which discusses cracking should correspond with refer to greater detail in ACI 224. Section 3.4 Joints should correspond with and mention that ACI 504 has more detail. Chapter 10 Finishing and Final Cleanup has several references to repair regarding blemishes, filling tie holes, etc. This chapter should correspond to recommendations of ACI 546R and ACI 515. Description of repair may be simplified or removed, and should refer to ACI 546 and 515 for more comprehensive information.	References of repair of blemishes and construction problems should reference ACI 546R, ACI 515. Chapter 10 needs some editing to correspond to ACI 546R and other repair documents and references to repair need to be added. ACI 504 is out of date and needs to be assigned to another committee. Issues are similar to 301. A new specification is needed to include the blemish issues, defects, acceptance of repair, reprofiling of surfaces with no anchorage to existing concrete, tolerances, etc. Some of these issues are not treated properly at present and there are legal issues. It is not always clear what is a repair issue (filling of bug holes, for example).
PC	304	304.1R-92	Guide for the Use of Pre-placed Aggregate Concrete for Structural and Mass Concrete Applications	19	1 - Intro, 2 - mat'ls & proportioning, 3 - Equipment, 4 - construction procedure, 5 - temp control, 6 - quality assurance and control, 7 - conclusion, 8 - references	Mentions use in construction, but most examples are of repairs. PPAC is currently covered in 546 repair guide by referring to this 304 document.	Need 2 separate documents, construction with PPAC and repair with PPAC. The jurisdiction for the repair version of 304.1R should belong to 546. ACI 304 should focus on construction.
PC	304	304.6R-91 (reapproved 1997)	Guide for the Use of Volumetric-Mixing and Continuous-	14	1 - Intro, 2 - Equipment, 3 - Operations, 4 - Applications, 5 - QC & Testing, 6 - Operational Precautions, 7 - References	Chapter 1 mentions use in highway and bridge deck repairs	probably best to leave this material in Committee 304 domain

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			Mixing Concrete Equipment				
PC	304	304R-00	Guide for Measuring, Mixing, Transporting and Placing Concrete	41	1 - Intro, 2 - control, handling, storage, 3 - measurement, batching, 4 - mixing, transporting, 5 - placing, 6 - forms, joint prep, finishing, 7 - Pre-placed Aggregate Concrete, 8 - Underwater placing, 9 - pumping, 10 - conveying, 11 - heavyweight and radiation shielding, 12 - lightweight structural, 13 – volumetric-measuring & continuous-mixing equipment, 14 - references	Chapter 7, pp20-24, covers the topic of PPAC. Underwater repairs are also mentioned.	Except chapter 7, jurisdiction for all other chapters can be left as is. Chapter 7, PPAC, refers to a repair method, generally not a construction method, so Chapter 7 should be moved to 546R repair guide, 546.2R underwater repairs, or to a new document, similar to 304.1R. Some overlap with 546; 304 should focus on construction that is the same for repair or new construction. Core document.

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FG	311	ACI 311.4R-05	Guide for Concrete Inspection		Chapter 1—Introduction, 1.1—Scope 1.2—Philosophy 1.3—General 1.4—Definitions 1.5—Categories of inspection 1.6—Inspection team Chapter 2—Responsibilities, 2.1—Scope 2.2—Owner’s Responsibilities 2.3—Architect/engineer’s inspection responsibilities 2.4—Owner’s inspection organization responsibilities 2.5—Contractor’s inspection responsibilities 2.6—Manufacturer’s or fabricator’s inspection responsibilities Chapter 3—Planning for inspection, 3.1—Scope 3.2—Written inspection plan 3.3—Building code requirements for special inspections 3.4—Preconstruction conferences 3.5—Meetings 3.6—Qualifications of inspection and testing personnel 3.7—Recommendations for inspection and testing 3.8—Reporting and evaluating inspection and test results Chapter 4—References, Appendix I—Expanded checklist of inspection attributes, Appendix II—Synopsis of ACI 311.5	Sections 1.2, 1.3, 1.4, 1.5, 1.6, 2, 3, except for 3.3 and 3.6, Table 1 beginning with III, 3.7 with editing, 3.8, Appendix 1 section on preconstruction testing of materials parts 1-9, bag storage, and the section on post placement inspection depending on material and application method are relevant to a Repair Code.	Some minor changes are needed, but most of the document could be excerpted and dropped into the appropriate sections on repair. Edit and excerpt as needed, but do should not be under the jurisdiction of the Repair Code as it mainly addresses new construction.
FG	311	SP2	ACI Manual of Concrete Inspection	209	Not a part of MCP	Chapter 11 Correction of defects in newly hardened concrete and repairs of older concrete, Chapter 12 the section on two course slabs, Chapter 14 sections on repairs and final acceptance, Chapter 15 sections on PPAC, US, and shotcrete, and Chapter 16 on pressure grouting and base plate grouting	Edit and excerpt appropriate sections.

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JP	315	315-99	Details and Detailing of Concrete Reinforcement			No specific concrete repairs are discussed except for the repair of damaged corrosion-resistant coatings on reinforcing.	No changes to this document are required.
PE	330	ACI 330.1-03	Specification for Unreinforced Concrete Parking Lots	6			
PE	330	ACI 330R-01	Guide for Design and Construction of Concrete Parking Lots	32	Chapter 6—Maintenance and repair, p. 330R-15 6.1—Introduction 6.2—Surface sealing –in core documents 6.3—Joint and crack sealing- in core documents 6.4—Full-depth repair- not in core documents in the detail required 6.5—Undersealing and leveling- not in core documents 6.6—Overlay not in core documents in the detail required 6.7—Parking lot cleaning		
PE	332	ACI 332R-84 (99)	Guide to Residential Cast-in-Place Concrete Construction	38	Chapter 11-Repair of surface defects, page 332R.29 This chapter details methods of fixing new construction defects (not covered in core documents)		
MS	345	345.2R-98 (05)	Routine Maintenance of Concrete Bridges	13	-	It was decided to include bridges in the TRRC effort.	No action
MS	345	345R-91 (05)	Guide for Widening Highway Bridges	14		This document includes demolition, durability, and maintenance.	No action

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JMD	346	346-01	Specification for Cast-in-Place Concrete Pipe	5	1 - General; 2 - Products; 3 - Execution	Very brief discussion of crack repairs	No action
JP	349	349.3R-02	Evaluation of Existing Nuclear Safety-Related Concrete Structures			This document discusses methods to evaluate nuclear structures including testing techniques, evaluation criteria, and acceptance criteria. Chapter 8 covers repair. No specific techniques are provided but 1999 Concrete Repair Manual is referenced indicating that there are methods cited that are well suited for nuclear power plants. ACI 546 is not specifically referenced. This chapter includes a brief discussion of selection criteria of a repair procedure, materials, required documentation, the qualifications of the craftsmen performing the work as well as other issues.	I think that Chapter 8 in this documents needs to be carefully reviewed for consistency with generally acceptable repair methods and procedures. This should be done by individuals with repair expertise in conjunction with representative of committee 349. An expertise with nuclear structures is essential. Mike Shield with Bechtel should be contacted. Repair issues for such structures are more severe as they are safety related.

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FG	351	ACI 351.1R-99	Grouting between Foundations and Bases for Support of Equipment and Machinery	18	Chapter 1—Introduction, 1.1—General, 1.2—Definitions, 1.3—Grout requirements, 1.4—Evolution of materials, Chapter 2—Properties of grout, 2.1—General, 2.2—Hydraulic cement grouts, 2.3—Epoxy grouts, Chapter 3—Requirements of materials for grout, 3.1—General, 3.2—Hydraulic cement grouts, 3.3—Epoxy grouts, Chapter 4—Testing of grout, 4.1—General, 4.2—Hydraulic cement grouts, 4.3—Epoxy grouts, 4.4—Performance evaluation test, Chapter 5—Grouting considerations for foundation design and detailing, 5.1—General, 5.2—Machine or equipment bases, 5.3—Concrete foundation, 5.4—Anchorage design, 5.5—Clearances, Chapter 6—Preparation for grouting, 6.1—General, 6.2—Anchor bolt, 6.3—Concrete surface preparation, 6.4—Metal surfaces, 6.5—Formwork, 6.6—Safety and handling of epoxies, Chapter 7—Grouting procedures, 7.1—Consistency, 7.2—Temperature, 7.3—Mixing, 7.4—Placing, 7.5—Removal of excess material, Chapter 8—Curing and protection, 8.1—Hydraulic cement grouts, 8.2—Epoxy grouts, Chapter 9—Construction engineering and testing, 9.1—General, 9.2—Hydraulic cement grouts, 9.3—Epoxy grouts, 9.4—Documentation, Chapter 10—References	No repairs are covered except for repair due to shim removal is briefly mentioned. No mention of the words "rehabilitation", "retrofit", or "restore" in this document. "Damage" is mentioned in regards to freeze thaw action on freshly placed grout and the improved chemical resistance of epoxy grouts in situations where cementitious grouts would be damaged.	Since grouts are frequently used as repair materials or otherwise placed in contact with hardened concrete, this document should be referenced regarding the types, testing and construction practices of grouts. It is specifically written for the application of grouts for load transfer in equipment foundations, so little could be extracted for insertion into a Repair Code. A few sections should be in the repair code.

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FG	351	ACI 351.3R-04	Foundations for Dynamic Equipment	63	Chapter 1—Introduction, 1.1—Background, 1.2—Purpose, 1.3—Scope, 1.4—Notation, Chapter 2—Foundation and machine types, 2.1—General considerations, 2.2—Machine types, 2.3—Foundation types, Chapter 3—Design criteria, 3.1—Overview of design criteria, 3.2—Foundation and equipment loads, 3.3—Dynamic soil properties, 3.4—Vibration performance criteria, 3.5—Concrete performance criteria, 3.6—Performance criteria for machine-mounting systems, 3.7—Method for estimating inertia forces from multi-cylinder machines, Chapter 4—Design methods and materials, 4.1—Overview of design methods, 4.2—Impedance provided by the supporting media, 4.3—Vibration analysis, 4.4—Structural foundation design and materials, 4.5—Use of isolation systems, 4.6—Repairing and upgrading foundations, 4.7—Sample impedance calculations, Chapter 5—Construction considerations, 5.1—Subsurface preparation and improvement, 5.2—Foundation placement tolerances, 5.3—Forms and shores, 5.4—Sequence of construction and construction joints, 5.5—Equipment installation and setting, 5.6—Grouting, 5.7—Concrete materials, 5.8—Quality control, Chapter 6—References, 6.1—Referenced standards and reports, 6.2—Cited references, 6.3—Software sources and other references, 6.4—Terminology	The very detailed discussion contained in this document of dynamic and vibration forces transmission and distribution would likely be useful in explanation of failure analysis. An entire section (4.6) is devoted to repair and upgrade of foundations and some discussion in 5.1 regarding improvements to subsurface conditions.	Section 4.6 and portions of 5.1 should be included in the Repair Code. Committee 562 will consider this recommendation.

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Member	Current Comm. #	Current Doc #	Document Name	Size (pages)	Chapter Names	Comments	Recommendations
FG	355	355.1R-91	State of the Art Report on Anchorage to Concrete (not in MCP)	71	Chapter 1 Introduction, Chapter 2- Types of Anchoring devices, 2.1 Introduction, 2.2 Scope, 2.3 Anchor systems, 2.4 Cast in place systems, 2.5 Post installed systems, Chapter 3--Behavior of anchors, 3.1 Introduction, 3.2 Behavior of anchors in uncracked concrete, 3.3 Behavior of anchors in cracked concrete, 3.4 Behavior of cast in place anchor bolts in uncracked concrete piers, 3.5 References, Chapter 4-- Design considerations, 4.1 Introduction, 4.2 Functional requirements, 4.3 Materials, 4.4 Design basis, 4.5 Construction practices, 4.6 References, Chapter 5-- Construction considerations, 5.1 Introduction, 5.2 Shop drawings/submittals, 5.3 Tolerances, 5.4 Installation of anchors, 5.5 Inspection, 5.6 Grouting, 5.7 Field problems, Chapter 6--Requirements in existing codes and specifications, 6.1 Introduction, 6.2 Existing codes and specifications, 6.3 Application and development of codes, 6.4 References, Appendix A--Conversion factors, Appendix B--Notations	Anchors are used both as cast in place and post installed systems. Post installed systems whether mechanical or adhesive are common in repair situations. Section 2.5 deals with post installed systems. Chapter 3 discusses behavior of anchors, which is common to both types of systems, but Section 3.3 deals with behavior of anchors in cracked concrete which would be especially applicable to repair. Anchors by definition are used for attachments between components, which is common in repair situations.	Section 2.5 and 3.3 should be in the Repair Code commentary. Chapter 3 should also be included with editing. The entire document would be useful to reference in the code.
FG	355	ACI 355.2-04	Qualification of Post-Installed Mechanical Anchors in Concrete	31	Chapter 1—Scope, Chapter 2— Definitions and notation, 2.1— Definitions, 2.2—Notation, Chapter 3—Significance and use, Chapter 4— General requirements, 4.1—Testing sequence, 4.2—Test samples, 4.3— Testing by independent testing and evaluation agency and by manufacturer, 4.4—Changes to product, Chapter 5—Requirements for test specimens, installation of	The entire document deals with anchorage to hardened concrete. Although not limited to repair situations, it is not associated with fresh concrete placement.	Should be included in Repair Code. This is a core document. It is referenced by ACI 318. This document is not in the MCP.

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					anchors, and conduct of tests, 5.1—Concrete for test members, 5.2—Anchor installation, 5.3—Test methods, 5.4—Tests in cracked concrete, 5.5—General requirements for anchor behavior, Chapter 6—Requirements for anchor identification, 6.1—Determination of critical characteristics of anchors, 6.2—Specification of critical characteristics of anchors, 6.3—Verification of conformance to drawings and Specifications, Chapter 7—Reference tests, 7.1—Purpose, 7.2—Reference tension tests for single anchors without spacing and edge effects (Table 4.1, Tests 1 and 2, or Table 4.2, Tests 1,2,3, and 4), 7.3—Required calculations using results of reference tests, Chapter 8—Reliability tests, 8.1—Purpose, 8.2—Reliability tests using reduced installation effort, (Table 4.1, Test 3, and Table 4.2, Test 5), 8.3—Reliability in low-strength concrete with large drill bit (Table 4.1, Test 4, and Table 4.2, Test 6), 8.4—Reliability in high-strength concrete with small drill bit (Table 4.1, Test 5, and Table 4.2, Test 7), 8.5—Reliability under repeated load (Table 4.1, Test 6), 8.6—Reliability in cracked concrete where crack width is cycled (Table 4.2, Test 8), Chapter 9—Service-condition tests, 9.1—Purpose, 9.2—Service-condition tension test with a single anchor and with two edges (corner) (Table 4.1, Test 7, and Table 4.2, Test 9), 9.3—Service-condition test at		
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					minimum edge distance and minimum spacing (Table 4.1, Test 8, and Table 4.2, Test 10), 9.4—Service-condition shear test for single anchors without spacing and edge effects (Table 4.1, Test 9, and Table 4.2, Test 11), 9.5—Service-condition, simulated seismic tension tests (Table 4.2, Test 12), 9.6—Service-condition, simulated seismic shear tests (Table 4.2, Test 13), Chapter 10—Establishing anchor categories, Chapter 11—Presenting anchor data, 11.1—Data analysis, 11.2—Format of the data sheet, 11.3—General requirements, 11.4—Contents of evaluation report, Chapter 12—Requirements for independent testing and evaluation agency, Chapter 13—References, 13.1—Referenced standards, Appendix A1—Requirements for normalization of results, A1.1—Normalization of capacities to take account of concrete and steel strengths, A1.2—Concrete breakout or splitting failure, A1.3—Pullout and pull-through failure, A1.4—Steel failure Appendix A2—Requirements for establishing characteristic capacities, A2.1—Scope, A2.2—Procedure, Appendix A3—Requirements for test members, A3.1—Tests in uncracked concrete A3.2—Tests in cracked concrete, A3.3—Casting and curing of test members		

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Member	Current Comm. #	Current Doc #	Document Name	Size (pages)	Chapter Names	Comments	Recommendations
FG	355	ACI 355.X (draft for ballot)	QUALIFICATION OF POST-INSTALLED ADHESIVE ANCHORS IN CONCRETE	96	Subject to change;	The entire document deals with anchorage to hardened concrete. Although not limited to repair situations, it is not associated with fresh concrete placement.	Should be included in Repair Code. This is a core document. The subject of 355.2 should be in the guide rather than the repair code. 562 will look into it.
PC	357	357R-84	Guide for the Design and Construction of Fixed Concrete Offshore Structures	23	1 - General, 2 - Mat's & durability, 3 - Loads, 4 - Design, analysis, 5 - Foundations, 6 - Construction, installation & relocation, 7 - Inspection & Repair, 8 References	Very old and outdated document. Chap 7 completely out of date in methods and technical content. Sect 7.3 Repair of concrete, Sect 7.4 crack repairs	Delete chapter 7 from this doc and make reference to 546 docs. This document is 9 years old.
TN	360	360R-92	Design of Slabs on Grade	57	1 - Intro, 2 - Slab types and design methods, 3 - Soil support systems, 4 - Loads, 5 - Plain concrete slabs, 6 - Slabs w/shrinkage and temperature reinforcement, 7 - Shrinkage-compensating concrete slabs,, 8 - Post-tensioned slabs on grade, 9 - Reducing effects, 10 - References	Document deals with design and detailing of new slabs on grade. May need revision since even title appears obsolete. Only new construction. A revised document has been approved by TAC and is in the final stage of responding to TAC comments.	Leave document with committee.
PG	362	362.1R-97	Guide for the Design of Durable Parking Structures	40	1-General; 2-Structural system; 3-Durability of materials; 4-Design issues related to construction practice; 5-Design issues related to maintenance practice; 6-References	Section 1.4 Durability Concerns describes deterioration, corrosion, chlorides, and other aspects of durability and corrosion. This summary section is good but it must be coordinated with ACI 201 and ACI 222. The section does reference other ACI documents. Section 3.5 should refer to ACI 515a and ACI 546 discussion on protection systems. Generally the document does a good job of referencing other documents except for ACI 515 and ACI 546, which are not	During next update (currently 1997), the document should include additional references.

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Member	Current Comm. #	Current Doc #	Document Name	Size (pages)	Chapter Names	Comments	Recommendations
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						mentioned anywhere.	
PG	362	362.2R-00	Guide for Structural Maintenance of Parking Structures	15	1-Introduction; 2-Developing a maintenance program; 3-Deterioration problems associated with parking structures; 4-General maintenance considerations; 5-Parking facility structural maintenance tasks and frequencies; 6-References; Appendix A-Snow removal; Appendix B-Deicing procedures; Appendix C-Checklist for structural inspection of parking structures	This document is primarily related to maintenance and ongoing assessment of parking structures. The discussion related to periodic assessment, periodic inspections, evaluation checklists, etc. is good but needs to reference ACI 364.1 and ACI 437R. 546R is mentioned in this documents short overview on repair which is good.	no action Update references; Refer to 364; Use as model for other documents.
FG	364	ACI 364.1 R-94	Guide for Evaluation of Concrete Structures Prior to Rehabilitation	22	Chapter I-Introduction, I.I-General, 1.2-Definitions, 1.3-Purpose and scope, Chapter 2-preliminary investigation, 2.1-Introduction, 2.2-Scope and methodology, 2.3-Results, Chapter 3-Detailed investigation, 3.1-Introduction, 3.2-Documentation, 3.3-Field inspection and condition survey, 3.4-Sampling and material testing, 3.5-Evaluation, 3.6-Final report, Chapter 4-Documentation, 4.1-Introduction, 4.2-Design information, 4.3-Materials information, 4.4-Construction information, 4.5-Service history, 4.6-Communication, Chapter 5-Field observations and condition survey, 5.1-Introduction, 5.2-Preparation and planning, 5.3-Field verification of as-built construction, 5.4-Condition assessment, 5.5-Unsafe or potentially hazardous conditions, Chapter 6-Sampling and material testing, 6.1-Introduction, 6.2-Determination of testing requirements, 6.3-Testing and evaluation 6.4-	The entire document deals with Repair and rehabilitation situations	Should be included in Repair Code. Data Sheet Protocols may be better suited for 546. This is a stand alone document and it should be referenced but not be included in the code.

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Member	Current Comm. #	Current Doc #	Document Name	Size (pages)	Chapter Names	Comments	Recommendations
					Nondestructive evaluation methods, 6.5-Sampling techniques, Chapter 7-- Evaluation, 7.1-Introduction, 7.2- Dimensions and geometry, 7.3- Material evaluation, 7.4-Structural evaluation, 7.5-Evaluation of rehabilitation alternatives, 7.6-Cost evaluation, Chapter 8-Final report, 8.1- Introduction, 8.2-Purpose and scope of investigation, 8.3-Existing construction and documentation, 8.4- Field observations and condition survey, 8.5-Sampling and material testing, 8.6-Evaluation and repair alternatives, 8.7-Findings and recommendations, Chapter 9- References, 9.1-Recommended references, 9.2-Cited references		
FG	364	FAQ's	Frequently Asked Questions, not in MCP	variable	numerical order of initial discussion	in various stages of development with 10 completed and published. Designed to address "hot topics" of the repair industry not addressed by other documents in ACI.	Use information from published documents as appropriate, possible mechanism is to pose additional questions for needed topics to achieve consensus and TAC review for inclusion in Repair Code.
PC	365	365.1R-00	Service-Life Prediction-- State-of-the-Art Report	44	1 - Intro, 2 - Environ design, construct, considerations, 3 - in-service inspection, condition assessment, remaining life, 4 - methods for predicting service life, 5 - economic considerations, 6 - Examples of service life techniques, 7 - On-going work and needed development, 8 References	The document deals with service life of concrete, and words 'repair' and 'rehabilitation' appear frequently in the theoretical concept of 'when to repair or replace', but the document does not cover any specific repair methods.	This committee deals with the service life of existing structures. The committee's scope work is foreign to TAC and should be overseen by TRRC. The service life information is a core document.

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Member	Current Comm. #	Current Doc #	Document Name	Size (pages)	Chapter Names	Comments	Recommendations
TN	373	373R-97	Design and Construction of Circular Prestressed Concrete Structures with Circumferential Tendons	26	1 - General, 2 - Materials, 3 - Design, 4 - Construction procedures, 5 - Acceptance criteria for liquid-tightness	The document relates to design and construction of new structures. There is no mention of repair.	Leave document as is with committee. Since the committee has knowledge in the area of external post-tensioning, it could be asked to consider the preparation of a repair document for circular structures. The committee should come up with recommendations for repair.
JMD	423	423.4R-98	Corrosion and Repair of Unbonded Single Strand Tendons	20	1 - Introduction; 2 - Review of code requirements and changes; 3 - Unbonded tendons; 4 - Evaluating corrosion damage; 5 - Repair schemes and methods; 6 - Summary; 7 - References	"Repair" in this document is primarily related to repair of tendons. Limited discussion of concrete repair includes references to ACI 224 and 546	No action
JMD	423	423.6-01/423.6R-01	Specification for Unbonded Single-Strand Tendons and Commentary	29	1 - General; 2 - Products; 3 - Execution	"repair" in this document is primarily related to repair of sheathing	No action

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Member	Current Comm. #	Current Doc #	Document Name	Size (pages)	Chapter Names	Comments	Recommendations
TN	437	437R-03	Strength Evaluation of Existing Concrete Buildings	28	1 - Intro, 2 - Preliminary investigation, 3 - Methods for material evaluation, 4 - Assessment of loading conditions, 5 - Evaluation, 6 - References	The document deals with the evaluation of existing concrete structures from properties of material to in-situ load testing.	This document should be within the jurisdiction of TRRC as it pertains to the phase of structural assessment necessary prior to any repair/upgrade. If approved by TAC in the summer of 2006, it would be a core document. Should the evaluation be in ACI 364 as well? ACI committees do not distinguish repair related committees or documents in their numbering system. A classification system would be helpful (repair starts with R, etc.). This is a core document.
TN	440	440.2R-02	Guide for the Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete Structures	45	1 - General, 2 - Materials, 3 - Recommended construction requirements, 4 - Design recommendations, 5 - Design examples	The document is aging because the technology moves so fast. A new revision is expected shortly. This document is <u>TOTALLY</u> related to repair and upgrade of concrete structures.	This document should be within TRRC jurisdiction as it relates to existing structures. Core document; will go to TAC soon. The entire document is related to strengthening of existing structures. It is a core document related to 562.
TN	440	440.3R-04	Guide Test Methods for Fiber-Reinforced Polymers (FRPs) for Reinforcing or Strengthening Concrete Structures	40	1 - General, 2 - Test methods for FRP bars, 3 - Test methods for FRP laminates, 4 - References	The document reports on test methods for material characterization since such test standards are not yet available in ASTM. ASTM itself is using this document as a straw man.	Leave document with committee. Test procedures will become ASTM documents later; one has already been approved by ASTM.

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Member	Current Comm. #	Current Doc #	Document Name	Size (pages)	Chapter Names	Comments	Recommendations
TN	440	440R-96	State-of-the-Art Report on Fiber Reinforced Plastic (FRP) Reinforcement for Concrete Structures	68	1 - Intro, 2 - FRP composites, 3 - Mechanical properties and test methods, 4 - Design guidelines, 5 - Behavior of structural elements, 6 - Prestressed concrete elements, 7 - External reinforcement, 8 - Field applications, 9 - Research needs, 10 - References	Committee is balloting a new version of this document given the significant amount of interest and use in this technology. Ch. 7 of this document is completely devoted to strengthening and repair. Ch. 8, Section 3 is devoted to applications in repair.	Document will go to TAC in the summer of 2006. Since the major interest in the use of FRP is in repair and strengthening, there is a need for a separate SOA report on this topic. The committee does not seem interested. The document has just been approved by TAC. Can be used as reference. Possibly, document may be separated into new and existing structures. The recommendation is, however, to leave it as is.
MS	503	503.1-92 (03)	Standard Specification for Bonding Hardened Concrete, Steel, Wood, Brick, and Other Materials to Hardened Concrete with a Multi-Component Epoxy Adhesive	5		specification	No action

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Member	Current Comm. #	Current Doc #	Document Name	Size (pages)	Chapter Names	Comments	Recommendations
MS	503	503.2-92 (03)	Standard Specification for Bonding Plastic Concrete to Hardened Concrete with a Multi-Component Epoxy Adhesive	5		specification	No action
MS	503	503.4-92 (03)	Standard Specification for Repairing Concrete with Epoxy Mortars	5		specification	No action
MS	503	503.5R-92 (03)	Guide for the Selection of Polymer Adhesives with Concrete	16			No action
MS	503	503.6R-97 (03)	Guide for the Application of Epoxy and Latex Adhesives for Bonding Freshly Mixed and Hardened Concretes	4	2, 3 and 4;	sections discuss surface evaluation, concrete removal and surface preparation	may want to 503 should reference documents on surface evaluation, concrete removal and surface preparation
MS	503	503R-93 (98)	Use of Epoxy Compounds with Concrete	28		5 sections discuss surface evaluation, concrete removal and surface preparation	may want to reference documents on surface evaluation, concrete removal and surface preparation

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Member	Current Comm. #	Current Doc #	Document Name	Size (pages)	Chapter Names	Comments	Recommendations
MS	504	504R-90 (97)	Guide to Sealing Joints in Concrete Structures	44	7.2.1;	Section discusses header repair Committee discharged; document is outdated; looking for a home committee for the document; should be split by parts into committees where they belong; TAC should send a letter to those committees and TRRC would contact them to discuss it.	Section should reference a document on header repair. The committee has been discharged. The document was reapproved in 1997 but it still is in MCP. TRRC recommends that this document is adopted by 515 or preferably to 546. TAC should decide.
PC	506	506.1R-98	Committee Report on Fiber Reinforced Shotcrete"	11	1 - Intro, 2 - steel-fiber reinforced shotcrete, 3 - synthetic fiber reinforced shotcrete, 4 - references	Introduction mentions use in repair of tunnels and mine linings, surface repairs. Section 2.7 'Applications' – repair of deteriorated concrete surfaces, lighthouse and chimney repairs	
PC	506	506.2-95	Specification for Shotcrete	8	1 - General, 2 - Materials, 3 - Execution,	Chapter 3 covers surface prep, finishing, curing, hot weather, cold weather, and other items related to placement.	Leave document status as is. Specification

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Member	Current Comm. #	Current Doc #	Document Name	Size (pages)	Chapter Names	Comments	Recommendations
PC	506	506R-90	Guide to Shotcrete	41	1 - General, 2 - Materials, 3 - Equipment, 4 - Crew organization, 5 - Preliminary procedures, 6 - Proportioning and preconstruction testing, 7 - Batching & mixing, 8 - Placement, 9 - QC, 10 - References	There are numerous references to repair of concrete throughout the 506 document. There is current overlap with 546 repair guide, shotcrete being covered in both documents.	Core document for shotcrete. Shotcrete is both a construction and a repair process, so two documents may be needed. Either a new 506 document exclusively for concrete repair is needed, or 546 repair guide section on shotcrete should be expanded, and the 506 document edited. Should have a liaison member from ACI 546. This could be split into 2 documents.
JP	515	515R	A Guide to the Use of Protective and Decorative Systems for Concrete			This document has not yet been approved by TAC. This review is based on the most recent draft. Chapter 2 is devoted to surface preparation. ACI 546 is referenced for repair of surface defects in cast-in-place concrete. This document also indicates that structural repairs require engineered repair. The committee is looking into expanding the document; no deadline set.	Although this document needs to go through TAC, no changes regarding concrete repair are required in the current draft. This document is not in MCP and should be deleted from this table.
PC	524	524R-04	Guide to Portland Cement Based Plaster	40	1 - Purpose, 2 - Intro, 3 - Desirable properties, 4 - Materials, 5 - Bases, 6 - Lathing accessories, 7 - Design considerations, 8 - Install lath, 9 - Surf prep for plaster, 10 - Proportions and mixing, 11 - Application of plaster, 12 - Plaster finishes, 13 - Evaluation of Plaster, 14 - Testing, 15 - Patching & repair, 16 - Tools, 17 - References	Entire document is related to plaster, rather than concrete. No conflicts with 546. Chapter 14 covers repair of cracks, delamination, debonding, chemical attack, freeze-thaw	Leave document status as is. Committee should be encouraged to produce guidance on how to repair plaster.

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Member	Current Comm. #	Current Doc #	Document Name	Size (pages)	Chapter Names	Comments	Recommendations
PE	533	ACI 533R-93	Guide for Precast Concrete Wall Panels	56	Chapter 6-Installation, pg. 533R- 6.1-Planning and preparation 6.2-Unloading and handling 6.3-Jobsite storage 6.4-Installation 6.5-Cleaning 6.6-Patching and repair- covered in our core documents 6.7-Joint sealing (caulking)		

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Member	Current Comm. #	Current Doc #	Document Name	Size (pages)	Chapter Names	Comments	Recommendations
FG	543	ACI 543R-00	Design, Manufacture, and Installation of Concrete Piles	49	Chapter 1—Introduction, 1.0—General, 1.1—Types of piles, Chapter 2—Design, 2.0—Notation, 2.1—General design considerations, 2.2—Loads and stresses to be resisted, 2.3—Structural strength design and allowable service capacities 2.4—Installation and service conditions affecting design, 2.5—Other design and specification considerations, Chapter 3—Materials, 3.1—Concrete, 3.2—Reinforcement and prestressing materials, 3.3—Steel casing, 3.4—Structural steel cores and stubs, 3.5—Grout, 3.6—Anchorages, 3.7—Splices, Chapter 4—Manufacture of precast concrete piles, 4.1—General, 4.2—Forms, 4.3—Placement of steel reinforcement, 4.4—Embedded items, 4.5—Mixing, transporting, placing, and curing concrete, 4.6—Pile manufacturing, 4.7—Handling and storage, Chapter 5—Installation of driven piles, 5.0—Purpose and scope, 5.1—Installation equipment, techniques, and methods, 5.2—Prevention of damage to piling during installation, 5.3—Handling and positioning during installation, 5.4—Reinforcing steel and steel core placement, 5.5—Concrete placement for CIP and CIS piles, 5.6—Pile details, 5.7—Extraction of concrete piles, 5.8—Concrete sheet piles, Chapter 6—References, 6.1—Referenced standards and reports, 6.2—Cited references	Repair is briefly mentioned, but no specifics regarding techniques or even references for further information. Damage is mentioned frequently, but usually as preventative measures. Some brief discussion about pile inspection is included, but nothing especially useful for repair.	Develop separate document. Likely will be from scratch if needed. 543 should develop a repair guide.

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Member	Current Comm. #	Current Doc #	Document Name	Size (pages)	Chapter Names	Comments	Recommendations
TN	544	544.1R-96	State-of -the-Art Report on Fiber Reinforced Concrete	66	1 - Intro, 2 - Steel fiber reinforced, 3 - Glass fiber reinforced, 4 - Synthetic fiber reinforced, 5 - Natural fiber reinforced	Revision of a document originally published in 1982. Very outdated. For each chapter dedicated to a fiber type, there could be a section on repair applications that has become of interest in recent years. The revision has not been approved by TAC.	Leave document status as is. Ask committee to consider complete update and potentially include repair. The draft document was not approved by TAC last year; the status will be checked.
TN	544	544.3R-93	Guide for Specifying, Proportioning, Mixing, Placing, and Finishing Steel Fiber Reinforced Concrete	10	1 - General, 2 - Materials, 3 - Mixture proportioning, 4 - Formwork and reinforcing steel, 5 - Batching, mixing, delivery, & sampling, 6 - Placing and finishing, 7 - Curing and protection, 8 - References	As all other 544 documents, very outdated. There is mention of practices that are relevant to TRRC such as; a) bridge deck overlays, b) shotcrete coverings.	Leave document in committee discussion. Request committee to consider writing a document for repair applications. There should be also a separate chapter on repair for FRG itself.
PG	546	546.2R-98	Guide for Underwater Repair of Concrete	24	1-General; 2-Causes of deterioration; 3-Evaluations and investigations; 4-Preparation for repair; 5-Formwork; 6-Methods and materials; 7-Inspection of repairs; 8-Developing technologies; 9-References	This document does a good job of describing topics through reference in combination with differences associated with underwater repair work. References to ACI 546R and ICRI to be added.	No action. The draft document was not approved by TAC at this meeting; it will be redone.

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Member	Current Comm. #	Current Doc #	Document Name	Size (pages)	Chapter Names	Comments	Recommendations
PG	546	546R-04	Concrete Repair Guide	53	1-Introduction; 2-Concrete removal, preparation, and repair techniques; 3-Repair materials; 4-Protective systems; 5-Strengthening techniques; 6-References	This is of course one of the base repair documents. Once the ACI 546 Material Selection Guide a portion of this document should be revised to account for the detail of this new material selection information and refer to this documents for more detail. Chapter 4 Protective Systems should be revised and refer to ACI 515 for more detail once this document has been updated. The committee is looking into expanding the document; no deadline set.	No action; Core document; should be referenced by others; material selection guide is nearing completion; possibly more than one document in the future; 364 and 546 should propose repair guide splitting into different documents; easier to focus on smaller documents for updates; other committees could reference the specification chapter only; one document should cover all aspects in a short version and refer to the shorter more specific documents. Repair and rehabilitation is too chaotic; an umbrella is needed; 546 would provide the overview document; the committee will give recommendations to TRRC. Chapter 3 Evaluation may be better suited for 364; 364 further supplements this one. 3rd draft is under consideration. Surface preparation: ACI 546 and ICRI are expanding this issue; use references rather than duplication; the ICRI document is limited in scope. 546 should refer to 304 for construction.

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MS	548	548.1R-97	Guide for the Use of Polymers in Concrete	29	4.3.6 and 4.5.4;	discusses patching	548 should may want to reference documents on concrete removal and surface preparation
MS	548	548.1R-97	Guide for the Use of Polymers in Concrete	29	4.5	discusses construction procedures	may want to update references to other documents on construction procedures for PMC
MS	548	548.2R-93 (98)	Guide for Mixing and Placing Sulfur Concrete in Construction	12	2.3 and 2.4	sections discuss surface evaluation, concrete removal and surface preparation	may want to reference documents on surface evaluation, concrete removal and surface preparation
MS	548	548.3R-03	Polymer-Modified Concrete	40	2.5 and 4.8	sections discuss surface preparation and placing and curing concrete	may want to update references on surface preparation, placement and curing
MS	548	548.4-93 (98)	Standard Specification for Latex-Modified Concrete (LMC) Overlays	6		Specification; Can such an overlay be a part of a repair?	No action
MS	548	548.5R-94 (98)	Guide for Polymer Concrete Overlays	26	4	deals with surface preparation, patching and crack repair	may want to refer to documents on surface preparation, patching and crack repair
MS	551	551.1R-05	Tilt-Up Concrete Construction Guide	29	8.1 and 8.2	sections discuss surface preparation, patching and crack repair	sections should reference documents on surface preparation, patching and crack repair
MS	551	551R-92 (03)	Tilt-Up Concrete Structures	46	6.8.3	section discusses crack repair	section should reference a document on crack repair