

ACI 364.1R Guide for Evaluation of Concrete Structures Prior to Rehabilitation

Table 6.1(a) Evaluation of Properties of Concrete

CHEMICAL AND PHYSICAL PROPERTIES	EVALUATION PROCEDURE																
	ACOUSTIC IMPACT (Table 6.3)	AIR CONTENT TEST (ASTM C457)	CEMENT CONTENT TEST (ASTM C1084)	CHEMICAL TESTS	CORE TESTING (ASTM C42)	ELECTRICAL POTENTIAL MEASUREMENTS (Table 6.3)	ELECTRICAL RESISTANCE MEASUREMENTS (Table 6.3)	FLEXURAL TESTS (ASTM C42)	FREEZE-THAW TEST (ASTM C666)	GAMMA RADIOGRAPHY (Table 6.3)	NUCLEAR MOISTURE METER (Table 6.3)	PERMEABILITY TEST (CRD C48)	PETROGRAPHIC ANALYSIS (ASTM C856)	PULLOUT TESTING (ASTM C900)	REBOUND HAMMER (ASTM C805)	UNTRASONIC PULSE (ASTM C597)	WINDSOR PROBE (ASTM C803)
ACIDITY				●								●					
AIR CONTENT		●										●					
ALKALI-CARBONATE REACTION												●					
ALKALI-SILICA REACTION												●					
CEMENT CONTENT			●	●								●					
CHEMICAL COMPOSITION				●								●					
CHLORIDE CONTENT				●	●							●					
COMPRESSIVE STRENGTH					●								●	●	●	●	
CONTAMINATED AGGREGATE				●								●					
CONTAMINATED MIXING WATER				●								●					
CORROSION ENVIRONMENT				●		●											
CREEP					●												
DENSITY					●				●								
ELONGATION					●												
FROZEN COMPONENTS												●					
MODULUS OF ELASTICITY					●										●		
MODULUS OF RUPTURE					●		●										
MOISTURE CONTENT					●	●				●							
PERMEABILITY											●	●					
PULL OUT STRENGTH													●				
QUALITY OF AGGREGATE												●					
RESISTANCE TO FREEZING AND THAWING					●			●				●					
SOUNDNESS					●				●			●					
SPLITTING TENSILE STRENGTH					●												
SULFATE RESISTANCE				●								●					
TENSILE STRENGTH					●		●										
UNIFORMITY	●											●		●			●
WATER-CEMENT RATIO												●					

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Table 6.1(b) Evaluation of Physical Conditions of Concrete

PHYSICAL CONDITION	EVALUATION PROCEDURE															
	ACOUSTIC EMISSIONS (Table 6.3)	ACOUSTIC IMPACT (Table 6.3)	CHEMICAL TESTS	CORE TESTING (ASTM C42)	FIBER OPTICS (Table 6.3)	GAMMA RADIOGRAPHY (Table 6.3)	INFRARED THERMOGRAPHY (Table 6.3)	LOAD TESTING (ACI 437R)	PETROGRAPHIC ANALYSIS (ASTM C856)	PHYSICAL MEASUREMENT	RADAR (Table 6.3)	REBOUND HAMMER (ASTM C805)	UNTRASONIC PULSE (ASTM C597)	UNTRASONIC PULSE-ECHO (ASTM C597)	VISUAL EXAMINATION (ACI 201.1R, ASTM C823)	WINDSOR PROBE (ASTM C803)
BLEEDING CHANNELS									●						●	
CHEMICAL DETERIORATION			●						●						●	
CORROSION OF STEEL			●	●					●						●	
CRACKING	●	●		●	●		●		●	●	●		●	●	●	
CROSS SECT PROPERTIES AND THICKNESS				●		●				●			●			
DELAMINATION		●		●	●	●	●		●		●		●	●	●	
DISCOLORATION			●						●						●	
DISINTEGRATION				●		●	●		●				●		●	
DISTORION															●	
EFFLORESCENCE			●						●						●	
EROSION									●						●	
FREEZE-THAW DAMAGE									●						●	
HONEYCOMB				●	●	●	●		●				●		●	
POPOUTS															●	
SCALING															●	
SPALLING				●		●	●								●	
STRATIFICATION		●			●								●	●		
STRUCTURAL PERFORMANCE	●							●							●	
UNIFORMITY OF CONCRETE						●			●			●	●	●	●	