

CMC

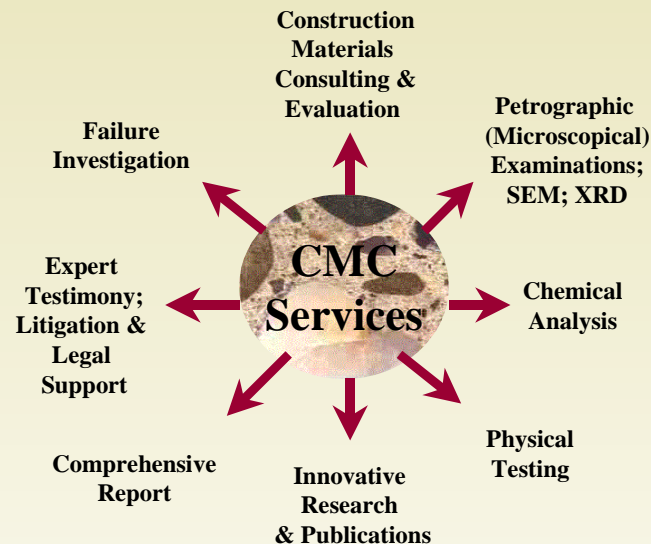
**Construction Materials
Consultants, Inc.**

**CEMENT,
AGGREGATE &
CONCRETE
DIVISION**

www.cmc-concrete.com

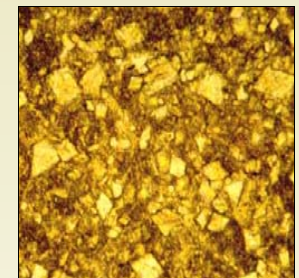
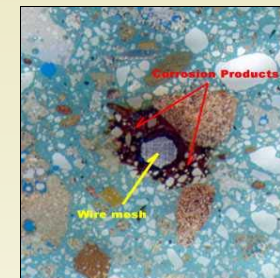
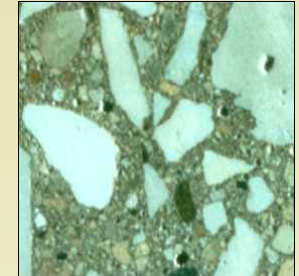
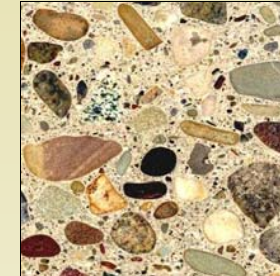
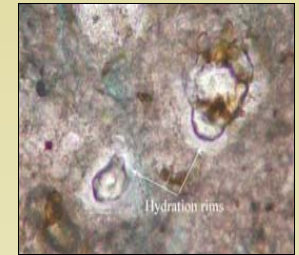
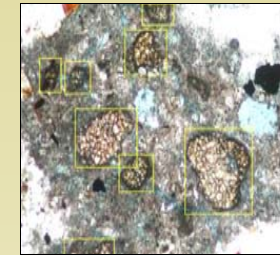
BENEFITS

- Comprehensive Professional Report
- Competitive Cost and Turnaround
- Integrated Scientific Approach
- Years of Experience in Construction Materials Evaluation and Failure Investigation
- Active Involvement in Construction Technology
- Industry Reputation
- State-of-the-art Laboratory Facilities
- Comprehensive & Dependable Services
- CMC Seminars, Publications, and Newsletters



STRUCTURES

Buildings • Bridges • Pavements • Driveways • Sidewalks • Patios • Concrete Pipelines • Residential Construction • Commercial Construction • Portland Cement Plasters • Precast/Prestressed Concrete Panels • Industrial Floors & Facilities • Tunnels • Foundations • Retaining Structures • Architectural Features



Top Left = Coarsely-ground cement; Top Right = Residual portland cement with hydration rims; Middle Left = Gravel coarse aggregate in concrete; Middle Right = Crushed stone coarse aggregate in concrete; Bottom Left = Corrosion of steel in concrete thin-section; Bottom Right = Alkali-Carbonate Reactive Aggregate.

**CMC
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For information about other testing, evaluation, and consulting services, please visit us online at:

www.cmc-concrete.com

CMC

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Cement, Aggregate & Concrete Division

CMC, Construction Materials Consultants, Inc., is a reputable, full-service, independent consulting and testing firm dedicated to providing services to the cement, aggregate, concrete, masonry, mortar, stone, and tile industries.

The **Cement, Aggregate & Concrete Division** of CMC provides materials evaluation and failure investigation of portland cements, blended cements, natural and synthetic pozzolans, natural sand, gravel, crushed stone, lightweight and recycled concrete aggregates, portland cement concretes, blended cement concretes, fiber-reinforced, polymer-modified, and high performance concretes, miscellaneous concrete products, portland cement plasters (stuccos), grouts, shotcretes, and miscellaneous cementitious products.

What sets CMC apart from other testing laboratories is the expertise in failure investigation of various concrete problems. CMC has years of experience in the investigation of whether or not a particular distress is related to materials, installation practices, design, or environment. CMC offers services to contractors, insurance companies, law firms, architectural firms, civil and structural engineering firms, and homeowners related to failure investigation caused by materials, installation procedures, design, moisture, or environment.

Following are some commonly requested laboratory tests and failure investigations. Call us with your questions or concerns. We will be more than happy to help you!

LABORATORY TESTING FOR QUALITY ASSURANCE

CEMENT

- Chemical Analysis (ASTM C 114)
- Tests for Portland Cement (ASTM C 150 & Ref. Tests)
- Fly Ash & Natural Pozzolan (ASTM C 618)
- Slag (ASTM C 989); Silica Fume (ASTM C 1240)
- Petrographic Examinations; X-Ray Diffraction (XRD)
- Gypsum & Lime Products

AGGREGATE

- Specification—(ASTM C 33)
- ASR—Chemical (ASRM C 289)
- ACR—Rock Cylinder (ASTM C 586)
- Petrographic Examinations (ASTM C 295)
- Sulfate Soundness (ASTM C 88)
- Specific Gravity, Absorption (ASTM C 127, C 128)
- Sieve Analysis (ASTM C 136)
- Miscellaneous State-Specific Aggregate Tests

HARDENED CONCRETE

- Air-Void Analysis (ASTM C 457)
- Abrasion Resistance (ASTM C 418, C 779, C 944)
- ACR—Length Change (ASTM C 1105)
- ASR/ACR—Petrography (ASTM C 856)
- ASR—Length Change (ASTM C 1293)
- ASR—Mortar Bar (ASTM C 227, C 1260)
- Cement Content (ASTM C 1084)
- Chloride Analysis (ASTM C 1152, C 1218)
- Density, Absorption, Voids (ASTM C 642)
- Freeze-Thaw Durability (ASTM C 666)
- Length Change (ASTM C 157, C 341, C 490)
- Chloride Permeability (ASTM C 1202)
- Scaling Resistance (ASTM C 672)
- Strength—Compressive (ASTM C 39, C 42)
- Strength—Tensile (ASTM C 496, C 880)
- Strength—Flexural (ASTM C 78, C 293)
- Petrographic Examinations (ASTM C 856)
- Sulfate Analysis (ASTM C 114)
- Miscellaneous Project-Specific Tests

FAILURE INVESTIGATION

- Concrete Surface Distress (Scaling, Spalling, Dusting, Discoloration, Blisters, Delamination, Abrasion, Staining, Popout, Mortar Lift-off)
- Concrete Cracking
- Alkali-Aggregate Reaction
- Frost and Fire Attacks
- Chemical Attacks (Acid, Sulfate, Chloride)
- Strength Loss, Slump Loss, Slow Setting
- Cement & Concrete Burns
- Failure of Protective Coatings
- Moisture-Related Problems (Dome Tests and Relative Humidity Profiles)
- Corrosion of Steel in Concrete (Petrography, Chlorides, Field/Half-Cell Potential Survey)
- Paint Failure from Concrete, Stucco, Drywall

DIAGNOSING FAILURE BY

- Field Reconnaissance
- Field Survey of Concrete Surface Distress—Condition Survey (ACI 201), Chain Drag for Delamination, Sampling
- Petrographic Examinations, SEM, XRD
- Miscellaneous Physical Testing
- Miscellaneous Chemical Testing
- Miscellaneous Project-Specific Testing

OUR CLIENTS

- Manufacturers, Distributors, Suppliers
- Contractors, Installers
- Homeowners
- Testing & Consulting Companies
- Civil, Structural, and Architectural Engineering Firms
- Insurance Firms
- Law Firms—Expert Testimony in Litigation