CTLGROUP QATAR

CTLGROUP QATAR STATEMENT OF QUALIFICATIONS

Engineering • Testing • Inspection

Table of Contents

Table of Contents

CTLGroup-Qatar is a 3rd party testing laboratory and specialty testing firm that provides various services and solutions related to engineering and material science. Backed by CTLGroup USA's century of experience in the cement and concrete industry, CTLGroup Qatar has an unparalleled capability to perform tests and evaluations ranging from routine QA/QC site testing of concrete to structural evaluations of various infrastructure projects.

With direct access to CTLGroup USA's consulting engineers, architects, and material scientists, CTLGroup-Qatar offers a full range of testing services for concrete, cementitious materials, aggregates, building systems, soils, and asphalt. In addition, the company offers several non-destructive testing, monitoring solutions and structural appraisal services as well as several training and accreditation programs. The company lab is ISO 17025:2017 and ISO 9001:2015 certified and supported by an internal Laboratory Management System. It has also acquired ISO 14001:2015 and ISO 45001:2018 and is an approved/enlisted laboratory by Public Work Authority (ASHGHAL) and Qatar General Organization for Standardization (QGOS).

CTLGroup-Qatar strives to be a leading laboratory for testing construction materials and to offer ethical solutions for various quality issues in the construction industry through the use of cutting-edge technology, testing equipment, qualified personnel, and industry knowledge. Concrete is an essential material to structures around the world. It is known for its strength, durability, and performance in numerous applications from high rises to highways, providing shelter and spaces to conduct business. However, like most construction materials, concrete can be subject to performance issues stemming from design, environment, and usage-factors. CTLGroup-Qatar specializes in solving problems with concrete production and performance in existing concrete structures.

As a leading organization for testing construction materials, we offer reliable concrete solutions to the various quality issues of the construction industry through Non-Destructive Testing, In-Situ Testing, Laboratory Testing, Certification, and Training. We've developed a range of quality assurance programs and guidelines to ensure our clients receive the highest level of service and expertise. Our employees undergo extensive training and maintain certifications for testing based on the requirements of the construction and testing industry. Our staff has the appropriate education and practical experience to meet the challenges of complex engineering projects.

One of many ways that CTLGroup-Qatar demonstrates our commitment to providing clients with professional, quality service and satisfaction is by requiring our staff to receive and maintain certifications from recognized local and national industry organizations. We encourage our professionals to attend seminars, conferences and classes to keep abreast of changes in our industry, and we recognize them for their outstanding accomplishments in the field.

Vision

Our vision is to maintain and improve our leading position as a third-party engineering + material science firm whose reputation is built on the ability to satisfy customers by providing creative solutions to complex problems. As specialists in their respective fields, our team of professionals is dedicated to a standard of excellence for quality and performance, through continuous development, which will set standards in our industry.

Mission

At all times, it is the Company's intention to conduct its operations in a fair, ethical and professional manner, which reflects excellence in every aspect of our business. Being committed to the highest standards of integrity and performance, our target is to maintain market superiority through our superior quality services, continuous improvement and strategic alliances with key suppliers.

Quality policy

CTLGroup-Qatar has assembled and maintains a robust Quality Management System (QMS) that enables us to consistently provide our clients with superior service and a valuable work product. Our dynamic QMS processes provide the framework for monitoring, measuring, and improving everything we do, ultimately translating to client satisfaction. Because of this, we have been able to attain QGOSM and ISO 17025 accreditations, ISO 9001 certification, ISO 45001:2018 certfication US Army Corps of Engineers (the only validated laboratory in the Middle East).

CTLGroup-Qatar has the honor to be certified by ISO 17025 as well as ISO 9001, 14001 and 45001. The policy of CTLGroup-Qatar is to provide reliable testing and assessment services that solves customers concerns and meet their expectations. In the same retrospect, we consider that the internal implemented procedures and techniques ensure the achievement of the following goals:

- Pursue the highest level of Quality regardless of project scale.
- Consistently satisfy and support the Clients' requirements.
- Promote the qualities and achievements of the Company with the objective of attracting and expanding the Client/Project base, and encouraging a sense of pride and satisfaction among our employees.

To achieve these goals, the Company has:

- Developed and implemented a robust Internal Quality Management System in accordance with the ISO 17025:2017 requirements as well as that of ISO 9001: 2015 and ISO 14001:2015.
- Identified and continually provided relevant training and awareness to our staff.
- Given all the staff the opportunity to contribute to the continuous improvement of Quality and the Quality Management System.
- Required all our staff to perform their duties in compliance with the Quality Management System.
- Given the appropriate staff the responsibility and authority for ensuring that the policy is understood, implemented and maintained at all levels.
- Set up the necessary quality objectives that can improve internal systems.

The role of the Quality Assurance team in CTLGroup-Qatar is to look after the company's systems, procedures and records and determine if they are in conformance with its policy, procedures, agreed standard and appropriate regulatory requirements.

CTLGroup Qatar Facilities spread over 10,000 ft2 and is equipped with state-of-art tools and equipment that enable us to perform a wide range of testing services in cementitious materials, soil, asphalt, chemical admixtures, mortars and construction products. CTLGroup-Qatar's laboratory has direct access to CTLGroup's (USA) engineering, architectural, and scientific consultants to provide our clients with a full range of professional services. Such solutions cover petrographic testing, XRD, XRF, Railway testing, posttensioning cables and many others.

Aggregate Testing

- Tests aggregates for suitability in concrete, buildings, and infrastructure.
- Checks size, strength, and quality per QCS 2014 and project needs.
- Ensures better material selection and project success.

Environmental Testing

- Tests water for balance, metals, turbidity, COD, BOD_5, and chlorine.
- Detects E. coli, coliforms, Legionella, fungi, and harmful bacteria.
- Evaluates groundwater and industrial water.

Steel Testing

- Tests steel for strength, toughness, hardness, corrosion, and composition.
- Verifies compliance with construction standards and specs.
- Ensures quality, safety, and long-term reliability in structures.

Concrete Testing

- Tests concrete for strength, durability, workability, and quality.
- Provides reliable results for construction and repairs.
- Ensures compliance with standards and performance.

Soil Testing

- Analyzes soil strength, stability, and suitability through investigations.
- Provides geotechnical data using advanced tools.
- Supports safe foundations and roadways through informed design.

Chemical Testing

- Analyzes chemical properties of materials including cement, water, and admixtures.
- Supports material characterization with CTLGroup USA for assessments.
- Solves material issues and ensures compliance.

Asphalt Testing

- Tests asphalt mixes for durability, strength, and compaction to optimize roads.
- Ensures compliance with construction standards and regulations.
- Improves pavement life via design and mix optimization.

Mortar Testing

- Tests mortar mixes to ASTM, BS EN, and other relevant international standards for performance and reliability.
- Ensures accurate, consistent results for material quality using automated equipment and strict procedures.
- Provides specialized mortar analysis for construction needs.

Masonry Testing

- Evaluates masonry materials and systems for durability and performance.
- Offers inspections, evaluations, and document reviews.
- Assists architects, engineers, and contractors.

Petrographic Examination

- Examines concrete, aggregates, and rocks under a microscope.
- Identifies material issues, deterioration, and weaknesses.
- Recommends solutions to improve material life and performance.

CTLGroup-Qatar has assembled and maintains a robust Laboratory Management System (LMS) that enables us to consistently provide our clients with superior service and a valuable work product. Our dynamic LMS processes provide the framework for monitoring, measuring, and improving everything we do, ultimately translating to client satisfaction. Because of this, we have been able to attain QGOSM and ISO 17025 accreditations, ISO 9001 certification.

ISO 17025 | Testing + Calibration Laboratory

General requirements for the competence of testing and calibration laboratories are the main ISO standard used by testing and calibration laboratories. In most major countries, ISO/IEC 17025 is the standard by which most labs must hold accreditation in order to be deemed technically competent. In many cases, suppliers and regulatory authorities will not accept test or calibration results from a lab that is not accredited.

ISO 9001:2015 | Quality Management System

The ISO 9000 family of quality management systems standards is designed to help organizations ensure that customers and other stakeholder's needs are being met, while also meeting statutory and regulatory requirements related to a product or program. ISO 9001:2015 sets the criteria for a quality management system and is the only standard in the family that requires certification.

ISO 14001:2015 | Environmental Management System

The ISO 14000 family of standards provides practical tools for companies and organizations of all kinds who want to manage their environmental responsibilities. ISO 14001 focus on environmental systems to achieve this. The standards in this area of ISO, focus on specific approaches such as audits, communications, labeling and life cycle analysis, as well as environmental challenges such as climate change.

ISO 45001:2018 | Occupational Health + Safety Management System

ISO 45001:2018, Occupational Health and Safety Assessment Series is an internationally recognized Standard for occupational health and safety management systems. It helps organizations of all types and sizes to establish, implement, and demonstrate effective health and safety practices, improving workplace safety and reducing risks.

CTLGroup Qatar & CTLGroup USA Relationship

CTLGroup-Qatar W.L.L. is a privately owned company established under the rules and regulations of State of Qatar and conforms to the general requirement of material testing laboratory (Grade A laboratory) defined by Qatar General Organization for Standardization.

The company was established during 2015 after both (1) the owners and (2) CTLGroup USA entered a joint development agreement to establish and operate a laboratory in Qatar which enables the owners of CTLGroup-Qatar to use CTL brand name and benefit from CTL Group expertise/technical support. In addition, a licensing agreement and a laboratory management agreement has been made to govern the relation between both firms and set a clear road map for day-to-day operations. Currently, CTLGroup-USA performs monthly visits to oversee the lab operation, train the staff and help in business development.

All projects executed by CTLGroup-Qatar are governed by the Qatari law and thus all responsibilities and Liabilities related to such projects will be interpreted as per the terms/conditions defined within such laws.

We are an intentionally-recognized expert consulting engineering and materials science firm that provides engineering, architecture, testing, and scientific services to our clients across the globe and delivers a multidisciplinary approach to solve the most complex problems. With a corporate history that spans nearly 100 years, we serve clients across the following markets:

Buildings + Facilities • Civil Infrastructure • Industrial Infrastructure • Energy + Resources • Litigation + Insurance • Materials + Products • Transportation

Our engineering expertise is complemented by one of the largest and most comprehensive private material and structural testing laboratories in the world and our experts can address problems from the materials and structural perspectives to deliver an integrated solution.

We have been involved in the development of some of the most advanced materials, authored testing standards, contributed to the construction of global landmarks, and have been called on as experts for some of the most notorious catastrophes and disasters. Across the construction life-cycle, CTLGroup experts help define problems, avoid issues and provide repair resolutions.

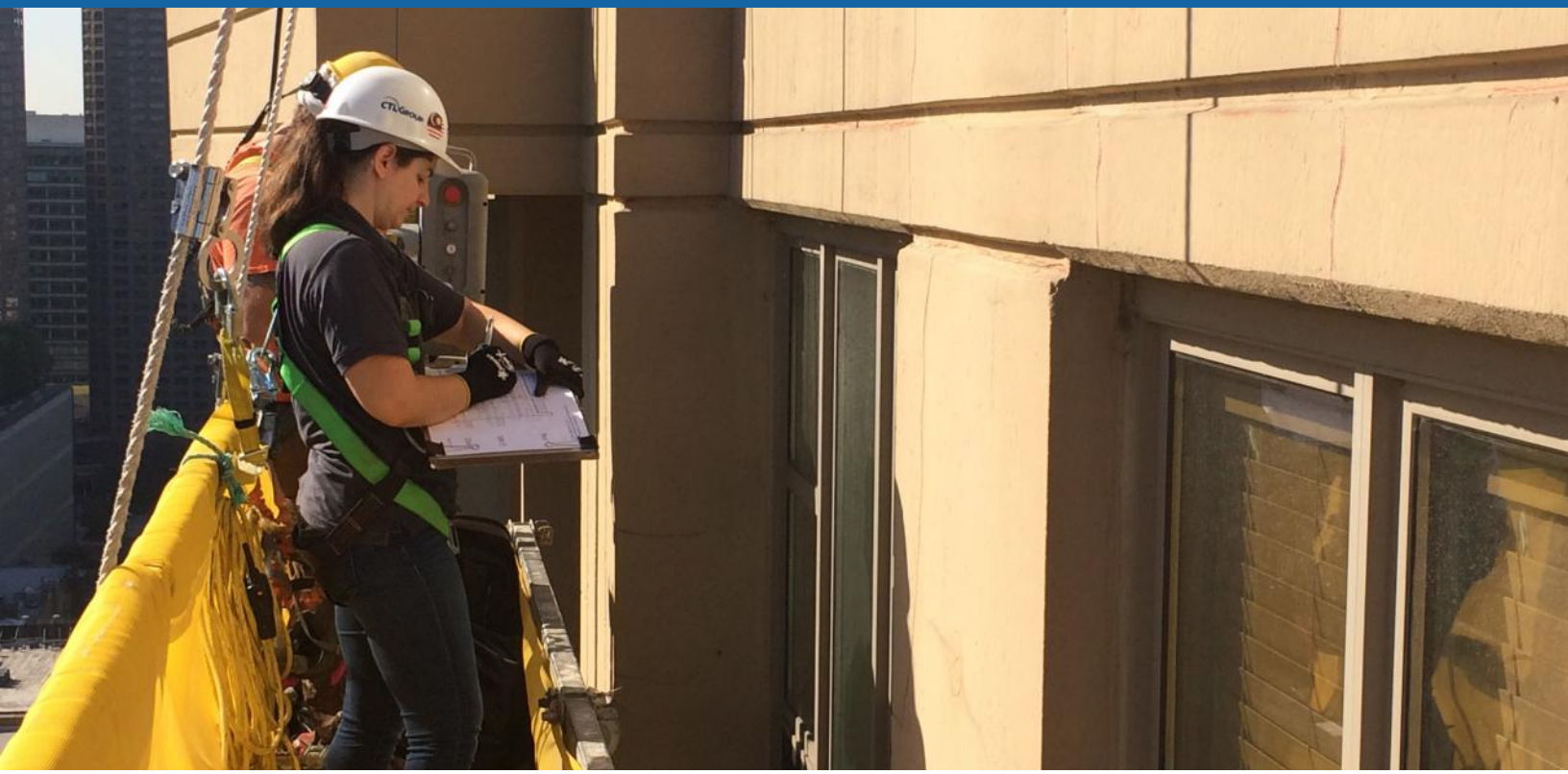
Key Facts

- 29% of staff hold professional licenses with over 10% holding Ph.D. degrees
- ACI certified technicians
- Licensed in all 50 states
- 60,000 sf of material and structural testing laboratories
- Laboratories are validated by US Army Corps of Engineers and hold numerous QMS certifications
- Stadium® certified user

Quality Management System

CTLGroup has one of the most demanding Quality Management Systems (QMS) for engineering consulting and laboratory testing of materials and structural components. Through our QMS, we have achieved various accreditations and certifications:

- IAS ISO 17025:2017 accredited
- AASHTO accredited
- 10 CFR 50, Appendix B/NQA-1 Compliant
- ISO 9001:2015Bureau Veritas
- ISO 14001:2015 accredited
- ISO 45001:2018 accredited



Consulting Services

Building practices, construction materials, evolving technology, and structural issues present a variety of complex challenges. Clients around the world turn to us for timely and reliable solutions. Our cross-disciplinary teams of engineers, architects, and scientists work together to deliver comprehensive results to almost any structural, material, or product-related problem. Few firms can match the powerful combination of our award-winning consulting teams and our renowned, world-class testing laboratories. Our consultants serve as trusted advisors and problem solvers.

Laboratory Services

CTLGroup provides the analyses and collaboration clients need when making big performance decisions. We offer physical, chemical, and microscopic analyses of building materials and products. With one of the biggest private structural labs in the U.S., CTLGroup conducts large-scale testing of engineered systems and components (load capacity up to ten million pounds). Clients count on CTLGroup for the testing of metals, aggregates, building systems, concrete, and cement. The diversity of our standard tests is complemented by the development of custom and specialized tests.

Expert insights, scientific solutions

As a leading expert in material sciences, CTLGroup provides engineering, architecture, testing, and scientific services to our clients across the globe. We deliver a multidisciplinary approach to solve the most complex problems across many markets.

CTLGroup's leadership team fosters a culture of success by emphasizing a unified, multi-disciplinary approach to all projects, and recognizing, developing and rewarding individual expertise. The corporate officers and senior managers that comprise the firm's leadership team partner with the practice group leaders to determine and implement the longterm strategic direction of the firm, and to set initiatives for the firm's growth across the multiple markets it serves. Leadership guides the firm's daily operations high-consequence problems.

1

100+ Years of History With R&D Works

CTLGroup's legacy began in 1916 as the R+D labs of its parent organization, the Portland Cement Association (PCA). How have we changed? In some ways, we haven't. We are still thought leaders and problem solvers. We are still engineers, architects, scientists, and consultants. As the world around us has changed, we have evolved with it to continue to meet the needs of our clients.

2

Proven Track-Record of Delivering Results & Developing Solutions

Creative Solutions to Complex Problems in Engineering and Materials Science. It is more than just a tag line. It is why our clients come to us to work with them and solve some of the most complex problems they will ever face. Whether it is a nuclear facility, tall building, long bridge or big concrete pour, CTL Group will always work on providing solutions to help owners and clients solve their problems.

3

State-of-Art Facility That Contains Latest Technological Instruments

CTLGroup's laboratory facilities are internationally respected as one of the most comprehensive testing and research facilities in cementitious materials, chemical admixtures, mortars, construction products and structural systems. The firm's 60,000 square feet of facilities consist of industry-leading:

- Materials Laboratories (Analytical Chemical, Mortar, Cement, Concrete, Physical Testing)
- Petrography Laboratory
- Creep + Shrinkage Laboratory
- Structural + Transportation Laboratory
- (One of the largest private structural labs in the U.S., conducting static or dynamic testing of full-scale engineered systems and components.)

4

Industry Finest Engineers, Scientists & Researchers

The success of CTLGroup depends solely on those who work here. We are driven to achieve greatness in our services, striving to produce results based on integrity and strength. The solutions that our clients have counted on us for are a direct result of hardworking, innovative people. We are dedicated to maintaining our reputation as a reliable firm that works to meet the needs of our clients.

5

Accreditations & Affiliations

CTLGroup is an internationally recognized expert consulting engineering and materials science firm. Our engineering expertise is complemented by one of the largest and most comprehensive private material and structural testing laboratories in the world. Our experts can address problems from the materials and structural perspectives to deliver an integrated solution. CTl GROUP QMS system meets the most demanding requirements for engineering consulting and testing of materials and structural components such as ISO/IEC, AASHTO, Corps of Engineers, Nuclear Industry Assessment Committee, Association of American Railroads and many others.

CTLGroup and its employees have received many awards for their contributions to the building industry. CTLGroup's work has consistently been recognized by its clients and the industry for technical excellence in applied research, structural evaluations and repair design, and mass concrete. For decades, our experts have been acknowledge for their leadership in the development of nationally recognized tests and standards for construction and building materials and for raising the standards of the engineering profession for building and infrastructure construction. Below is a summary of the firm's awards over the past ten years.

INTERNATIONAL CONCRETE REPAIR INSTITUTE

25th Annual ICRI Project Award Unity Temple Restoration Award of Excellence in the Historic Category for the 2017 ICRI Project Awards Program

LANDMARKS ILLINOIS

2017 Richard H. Driehaus Foundation Preservation Award. CTLGroup was among a team awarded for Restoration of Frank Lloyd Wright's Unity Temple.

2016 BD+C Giants 300 CTLGroup ranked on BD+C's Giants 300 Report

IRMCA
INDIANA READY MIXED CONCRETE ASSOCIATION

Indiana Ready Mixed Concrete Association 2015 Concrete Achievement Award Awarded to construction team for excellence in concrete construction for the Kern Road Interchange/ New US 31 By Pass.

CERTIFICATIONS

All CTLGroup physical testing technician personnel are American Concrete Institute (ACI) certified at various levels.

AASHTO/CCRL

All CTLGroup physical testing technician personnel are American Concrete Institute (ACI) certified at various levels. CTLGroup participates in Cement and Concrete Reference Laboratory (CCRL) and AASHTO Materials Reference Laboratory (AMRL) Proficiency Sample Programs.

AFFILIATIONS

STADIUM®

STADIUM® SOFTWARE

CTLGroup's laboratories are certified to provide testing services for input into the STADIUM (Software for Transport and Degradation In Unsaturated Materials)® service life modeling software. CTLGroup is a STADIUM® authorized company and STADIUM® Lab certified laboratory.

LICENSURE

CTLGroup employs licensed engineers in all 50 United States, as well as several U.S. Territories and Canadian provinces.

ISO IEC

IAS ACCREDITED

MIAMI-DADE COUNTY

ISO 9001:2008 BUREAU VERITAS Certification

AASHTO ACCREDITED

ASSOCIATION OF AMERICAN RAILROADS

massDOT Highway Division

2015

NASA 3D Printed Habitat Challenge: Best in Class Award for "Use of Space" Design Awarded for Best in Class award for "Use of Space" design as part of NASA's $2.25 million competition to design and build a 3D printed habitat for deep space exploration. CTLGroup's design was selected as a top 30 finalist out of 162 submissions.

Indiana Ready Mixed Concrete Association: 2015 Concrete Achievement Award Awarded to construction team for excellence in concrete construction for the Kern Road Interchange/New US 31 By Pass.

2014

National Aeronautics and Space Administration (NASA) Honor Awards, Group Achievement Award CTLGroup received NASA's "Group Achievement Award" for assisting the Jet Propulsion Laboratory with the evaluation of a Deep Space Network antenna pedestal near Madrid, Spain.

International Concrete Repair Institute Award of Excellence: Longevity Category Awarded for the 1993 repairs to the Paulina Street Parking Garage. The 1993 repairs have lasted 21 years with only localized repair patches and few if any tendon repairs since the early 1990s.

International Concrete Repair Institute Award of Excellence: Special Projects Category Awarded for the Roof Sundeck Rehabilitation at a Chicago Condominium Complex. The original roof sundecks were repaired, improving the durability and aesthetics of the sundecks significantly.

2013

National Aeronautics and Space Administration (NASA) Honor Awards, Group Achievement Award Awarded to Carlton Olson, Ethan Dodge, David Drengenberg, and Peter Kolf for the Concrete evaluation and repair of the DSS-35 Beam Waveguide Antenna at Canberra Deep Space Communications Complex, Australia, October 2013.

The Concrete Industry Board/ACI New York City Chapter, Roger H. Corbetta Award Awarded to the Construction team for superior concrete work on The World Trade Center Transportation Hub Transit Hall. CTLGroup was the concrete consultant for the mass concrete thermal control plans, November 2013.

2012

American Society of Civil Engineers (ASCE) T.Y. Lin Award Awarded to John Roller for the paper "Evaluation of Prestress Losses in High-Strength Concrete Bulb-Tee Girders for the Rigolets Pass Bridge," published in the PCI Journal, Winter 2011.

2010

ASTM International - American Society for Testing and Materials Service Award Awarded to Howard Kanare commemorating more than 15 years of outstanding service.

2008

American Society of Civil Engineers (ASCE) T.Y. Lin Award Awarded to John Roller for the paper "Fatigue Endurance of High-Strength Prestressed Concrete Bulb-Tee Girders," published in the PCI Journal, May-June 2007.

2007
International Concrete Repair Institute (ICRI) Award of Merit Parking garage repairs at a Chicago condominium complex.

2006
World of Concrete Most Innovative Building Product Awarded for The Rapid RH (Relative Humidity) Probe developed jointly by CTLGroup and Wagner Electronics.

2005
International Concrete Repair Institute (ICRI) Award of Excellence Rehabilitation of two hyperbolic cooling towers at a power plant in Pennsylvania.

2004
Post-Tensioning Institute (PTI) Best in Class, Strengthening/Rehabilitation category Strengthening of the Holcim Portland Plant Preheater Tower.

International Concrete Repair Institute (ICRI) Award of Excellence Strengthening of the Holcim Portland Plant Preheater Tower.

2003
Structural Engineers Association of Illinois (SEAOI) Award of Merit, 2003 Excellence in Structural Engineering Awards Structural repair designs to the Catholic Church of St. Joseph, Menomonie, WI.

Oak Park Historic Preservation Commission Historic Preservation Award Rehabilitation of Unity Temple, Oak Park, IL.

National Council of Structural Engineering Associations Project Merit Award Awarded to John Vincent for structural repair designs to the Catholic Church of St. Joseph, Menomonie, WI.

International Concrete Repair Institute (ICRI) Award of Excellence Structural repair designs to the Catholic Church of St. Joseph, Menomonie, WI.

Engineering Society of Detroit Outstanding Achievement Award for Building Design and Construction Bridge Street Bridge Deployment Project, Southfield, MI.

American Society of Civil Engineers (ASCE) Public Involvement Award, Illinois Section Awarded to John Vincent for structural repair designs to the Catholic Church of St. Joseph, Menomonie, WI.

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During the past decades, CTLGroup has been involved in several challenging projects. They have completed thousands of projects in all 50 U.S States and over 70 countries. Curretnly CTL Group has 5 remote offices in US in addition to their head offices in Skokie, CTL Group Qatar Offices is the most recent one and has been established to cater for the Qatari market specifically as well as covering projects in the middle east region.

Our locations

*Laboratory Services

Mount Prospect, IL (Corporate Headquarters)

1660 Feehanville Drive Suite
300 Mount Prospect, IL 60056
Phone: (847) 965-7500
Fax: (847) 965-6541

Mount Prospect, IL (Testing and Research Center

1050 E Business Center Drive
Mount Prospect, IL 60056
Phone: (847) 965-7500Fax:
(847) 965-6541

Doha, State of Qatar

P.O.Box 40146 Al Kassarat Road,
Industrial Area
Doha, QA
Phone: +974-40370130
Fax:+974 - 4038 6147

Houston, TX

14601 Bellaire Boulevard
Houston, TX, 77083

New York, NY

505 8th Avenue Suite 701
New York, NY 10018

Doha, State of Qatar

P.O.Box 40146
Al Kassarat Road,
Industrial Area
Doha, QA
Phone: +974 - 4037 0130
Fax: +974 - 4038 6147

FIELD INVESTIGATION OF CONCRETE STRUCTURES

The standard method of evaluating the quality of concrete or structures is to test specimens cast simultaneously for compressive, flexural, and tensile strengths. The main disadvantages are that results are not obtained immediately; concrete in specimens may differ from that in the actual structure as a result of different curing and compaction conditions and strength properties of a concrete specimen depend on its size and shape.

Several non-destructive test (NDT) methods of assessment have been developed to determine specific properties of placed and cured concrete. By using NDT assessments such as penetration tests and rebound tests, we can accurately measure concrete properties such as hardness, placement of reinforcement, voids, and crack depth.

CTLGroup-Qatar field investigation of concrete structures provides numerous methods for evaluating the performance of concrete structures, and provides evaluative data that indicates the structure integrity and performance.

Testing services

- Rebound Hammer Test: Assess quality and strength of site concrete
- Ultrasonic Pulse Velocity Test: Assess quality and strength of site concrete
- Concrete Core Extraction: Assess strength of concrete; for plumbing/electrical purposes
- Rebar Location + Cover-meter: Locating reinforcement in concrete
- Half-cell Potential Test/Resistivity Test: Reinforcement corrosion mapping
- Endoscopy/bore Scope: Inspect the in-accessible areas of structures, building components, Heritage structures, or pipes
- Load Test: Performance acceptance test for flexural members and bridges

Additional services

- Carbonation, Sulphate/Chloride Content Tests
- Calibration of Rebound Hammers

STRUCTURAL EVALUATION & REHABILITATION

Clients call on us to evaluate the cause and extent of structural or architectural problems associated with design, construction methods, and materials performance. CTLGroup also conducts investigations of catastrophic events such as structural failure and collapse. CTLGroup's structural evaluation teams are composed of licensed professional engineers, working closely with our materials scientists and chemists, whose analytical and physical testing augments the engineering findings, opinions, and recommendations.

CTLGroup's services include condition assessments, structural integrity evaluation, failure analysis, structural retrofits and strengthening, investigation of material durability issues, new construction problem troubleshooting, and preservation of historic structures.

CTLGroup offers a complete package of rehabilitation services including design drawings and specifications, cost estimating, construction administration and observations, and design-build. CTLGroup offers a full range of structural and architectural evaluation services for:

- Buildings
- Facades and roofs
- Parking garages
- Bridges
- Industrial facilities
- Utility structures
- Water and wastewater facilities
- Dams and mass concrete structures
- Tunnels and pipelines
- Sports arenas and stadiums
- Pavements and civil structures
- Foundations and subsurface construction

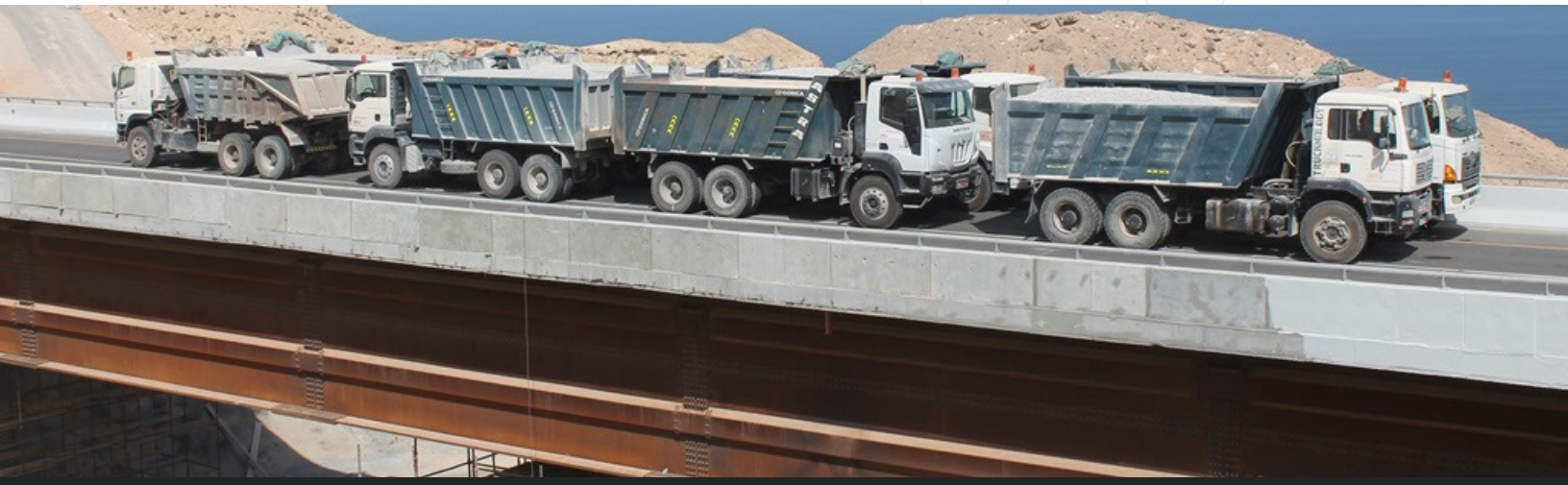
LOAD TESTING

Load testing is a popular mean to demonstrate the capability of the structure to carry safely the design loads. The load testing can be applied on bridges, floor slabs, beams, etc. Typical situations that arise include:

- Uncertainties associated with current as-built conditions
- Suspect performance such as excessive creep deflection
- Structural strength unknown and analysis
- Impractical change of use involving a loading increase
- Bomb or fire damage
- Materials defect or structural deterioration
- Handing over criteria for newly constructed bridge
- Quality Assurance Method used after completing the repair and strengthening works (used to verify the loading capacity of the structure and confirm its structural integrity)

For bridge load test, the common method used for load application is loaded trucks (moving or static) which is sufficient to trigger the needed behavior of the bridge. Monitoring the deflection is usually undertaken for bridge load tests using sensors installed on the structure. Other parameters may also be measured such as crack widths, strain, and temperature.

For slab load test, it is common to use cement bags to apply to desired load. The bags will be laid on top of the slab in a particular shape and number to achieve the desired load. Cement bags can be substituted by water bags that can be filled on site. Sensors, usually LVDTs attached to the bottom of the slab, record deflection. Parameters can also be measured, such as crack width, strain, and checking the post-tensioning.



MATERIALS LABORATORY

CTLGroup-Qatar's Laboratory provides support to our consulting and field inspection services while providing forensic and testing services to our clients nationwide. Stringent quality assurance and quality control procedures provide results that engineers can rely on as they consider recommendations, products, and materials to be used for construction or repair projects. Our clients include building owners, contractors, law firms, concrete producers, material manufacturers, engineering firms, government agencies, facility owners, and suppliers. CTLGroup-Qatar's laboratory can perform testing on the following materials: cement, fly ash, slag, calcium carbonates, metakaolin, aggregates, veneer stone, pavers, concrete masonry units (CMU), chemical admixture, concrete coating, epoxies, anchor systems, and concrete. CTLGroup USA's laboratory can also provide forensic services such as petrographic analysis of concrete.

CTLGroup employees are active members of ACI, ASTM, NRMCA, PCI, ICRI, and other relevant association. Our laboratory accreditation includes: ISO 17025:2008, ISO 9001:2015, ISO 14001:2015, & OHSAS 18001:2007.

All testing is carried out strictly in accordance with the relevant specifications, be it British or American standard by professionally-trained staff. Testing equipment is regularly calibrated and the laboratory participates in correlation testing with other laboratories and proficiency sample programs. Our laboratory services include:

Aggregate Testing

CTLGroup-Qatar conducts aggregate testing that will assist customers with assessing the characteristics and quality of aggregates for use in concrete, building, and/or construction. These tests are conducted in our well-equipped laboratory by trained, competent staff. Site services may also be arranged for any sampling and testing required on site

Testing concrete and precast concrete products

CTLGroup-Qatar has a range of concrete tests, which are conducted in our laboratory. We offer a wide range of compressive strength tests on concrete cubes, cores, and precast products. Concrete Mix designs and mix verifications can also be performed. Site sampling and testing required on-site, such as making of test cubes and coring of concrete are another of our services

Chemical testing

Full Chemical Analysis of OPC & SRC, Cement, GGBFS, Micro Silica, Fly Ash, Admixture, Testing of water, hardened concrete, mortar, plaster, as well as aggregates can be performed by our competent staff when required

Soil testing

Soil classification, CBR, proctor, field density, and plate load testing

Asphalt testing

Designing and testing for mix design properties, site coring, and bitumen testing

CONCRETE PERFORMANCE TESTING

A great deal of time, effort and expense can be wasted on in-situ testing unless the aims of the investigation are clearly established at the outset. These will affect the choice of test method, the extent and location of the tests, and the way in which the results are handled—inappropriate or misleading test results are often obtained as a result of a genuine lack of knowledge or understanding of the procedures involved. If future disputes over the results are to be avoided, an objective third party is essential at an early stage in the formulation of a test program.

Engineering judgment provided by CTLGroup-Qatar is inevitably required when interpreting results, but uncertainties can often be minimized by careful planning of the test program. A full awareness of the range of tests available—and, in particular, their limitations and the accuracies that can be achieved—is critical in Determining appropriate testing methods to be used. Some methods may appear to be very simple, but all are subject to complex influences. The use of skilled operators and appropriately experienced engineer are vital. In-situ testing of existing structures is seldom cheap since complex access arrangements are often Necessary and procedures may be time-consuming. Ideally, a program should evolve sequentially in response to results obtained in order to provide the highest quality information with minimum cost and disruption. This approach requires ongoing interpretation and will facilitate modifications in objectives, which may arise during the course of an investigation.

Aims of in-situ testing

CTLGroup-Qatar services cover the three basic categories of concrete testing, identified herein:

1. Control testing is normally carried out for the contractor or concrete producer to indicate adjustments necessary to ensure an acceptable supplied material.
2. Compliance testing is performed by the engineer according to an agreed plan to judge compliance with the specification. Where specific engineering expertise is required, CTLGroup USA can offer additional professional services.
3. Secondary testing is carried out on hardened concrete either in or extracted from the structure. This may be required in situations where there is doubt about the reliability of control and compliance results or specimens are unavailable or inappropriate, e.g.: out-of-date, damaged, or [deteriorating structure]. Testing which is not planned before construction would likely be in this category.

NRMCA PLANT CERTIFICATIONS

To make certain our clients receive the highest level of service and expertise, CTLGroup-Qatar has developed a range of quality assurance programs and guidelines. The certifications we have, and the employees who uphold them, are yet another part of our overall quality assurance program and attests to our high level of professionalism and commitment to quality. CTLGroup-Qatar has Certified Green-Star Plant Auditors and Truck Inspectors in staff to conduct Ready Mix Concrete Production Facilities Certifications.

NRMCA Green-Star Certification is a certification system specifically for ready-mixed concrete plants based on the development and implementation of an environmental management system. The certification of a concrete plant to the NRMCA Green-Star standards is through the National Ready Mixed Concrete Association (NRMCA), for both member and non-member companies. And, the NRMCA Green-Star certification is open to ready mixed operations across the globe.

The NRMCA Green-Star certification program requires that you develop and implement an environmental management system based on a classic "plan-do-check-act" model that contains the following key components:

- Gap Analysis - Part of the NRMCA Green-Star certification is identifying all of your positive and negative impact aspects.
- Environmental Policy – Becoming an NRMCA Green-Star certified facility means having a sound environmental policy.
- Program for Continual Improvement – The very basis of a successful environmental management system, and the NRMCA Green-Star program.
- Self-Evaluation Procedure – How is your company performing? The NRMCA Green-Star program, like all other environmental management systems, is based on the continual improvement model, and requires regularly auditing your facility.
- Environmental Training – Conducting environmental management system training is a vital, and necessary, component of the NRMCA Green-Star program.
- Staffing + Resource Commitment – It's not enough to say you're participating in the NRMCA Green- Star program, you have to fully commit to it.
- Public Outreach – A requirement of the NRMCA Green-Star program, but also a great way to proudly display your commitment to your employees, your community, and your environment.

In order to become NRMCA Green-Star certified, a concrete plant must have implemented an environmental management system through a minimum of one environmental management system cycle, and then be audited for conformance by an NRMCA Green-Star auditor.

SOIL TESTING

From Geotechnical engineering, used in abutment evaluation for dam and reservoir construction, to assessments for the foundations of houses, soil testing is a part of all forms of construction. The soil is in all of the construction.

Soil is a complex science that requires sound judgment, sharp technical skills, and up-to-date knowledge of construction practices. Let CTLGroup-Qatar's experts assist you with your on-site project needs. Scope of services includes:

- In-situ Density (non-nuclear)
- Plate Load
- Soil Classification
- CBR
- Stress/Strain of Soils
- Sieve Analysis
- Chloride Content
- Sulfate Content
- Laboratory Dry Density / Moisture Content Relationship
- Atterberg Limits
- Brazilian Test – Rocks
- UCS + Modulus of Elasticity of Rocks

ASPHALT TESTING

As an alternative to traditional Portland cement concrete pavements, asphalt pavements offer many improved benefits such as reduced crew size, equipment costs, and downtime of roadways. However, these benefits can be offset by improperly designed asphalt mixtures, out-of-date construction practices, and unreliable testing laboratories. CTLGroup-Qatar's experts can provide development of proper mix designs, guidance on construction practices, and knowledgeable technicians who can produce reliable results in the laboratory or in the field. Scope of services includes:

- Designing Asphalt Mixture (Marshall)
- Extraction of Bitumen (Centrifuge method)
- Extracting Asphalt Specimens (coring)
- Stability + Flow
- Theoretical Maximum Specific Gravity/Density
- Grading/Sieve Analysis of Asphalt Mixture
- Softening Point of Bitumen
- Water and Binder Content of Emulsified Asphalt
- Distillation of Bitumen
- Flash and Fire Points by Cleveland Open Cup Tester
- Solubility
- Saybolt Viscosity
- Residue by Distillation (Emulsion)
- Ductility
- Penetration of Bituminous Materials

NON-DESTRUCTIVE TESTING

We at CTLGroup-Qatar take pride in tackling the most difficult non-destructive evaluation (NDE) projects. Our NDE team often helps not only our own engineers and scientists, but also owners, designers, and contractors across the U.S. with their problems.

NDE is a relatively new and inexpensive way to determine the extent of damage or defective construction. Its use in civil engineering is analogous to the use of indirect sounding methods in medical examinations. Recent advances in testing techniques, equipment, and software have brought reliability and industry-wide acceptance to this discipline.

Non-destructive testing (NDT) can provide detailed information not obtainable from visual inspection or invasive sampling alone. This information is particularly beneficial in evaluating large concrete structures such as dams, bridges, and tall structures. The NDT data collected can be stored as a baseline for future studies, a useful resource in developing maintenance programs.

CTLGroup is a leader in designing and refining sophisticated NDE methods such as Impulse Response, Ultrasonic Tomography, Impact-Echo, and Impulse Radar. Our engineers have tested and proved these developments on sites throughout the world, and thus have stayed in the vanguard of the non-destructive evaluation industry.

The most complete investigation of structural problems is achieved through a careful mix of visual inspection, NDE, and minimally intrusive material sampling. Properly managed, this approach often costs less than a more traditional investigation while more clearly defining the problem. CTLGroup has the versatility, depth of knowledge, and breadth of experience to carry this out effectively. CTLGroup non-destructive testing services have many applications. Some of the most common include:

Subsurface characterization

- Locating tanks, utilities, and cavities
- Assessing foundation condition, pile length, and retaining wall depth

Concrete structures

- Locating embedded steel and assessing corrosion
- Identifying concrete defects in thick and heavily reinforced concrete
- Monitoring and analyzing vibration

Floor slabs and pavements

- Evaluating concrete quality, slab thickness, and support
- Locating dowel bars, subsurface voids, and internal delamination

Masonry structures

- Evaluating presence of reinforcing bars and grout in CMU walls
- Assessing in-situ stresses

STRUCTURAL HEALTH MONITORING

CTLGroup recently joined a select number of laboratories certified to provide testing services for input into the STADIUM® CTLGroup has pioneered the development of tools and techniques for monitoring structural performance. These performance-monitoring systems use arrays of sensors, integrated with remote computers and status alarms, to alert owners and engineers to the behavior of structures. While these systems have a variety of applications, they are suited particularly well for on-site structural behavior monitoring of buildings, bridges, roadways, stadiums, dams and monuments.

CTLGroup can design systems to monitor a structure's long-term health as it ages, as well as to measure the structural impact of near-site construction, seismic activity or other unforeseen events. Vibration monitoring systems are available for structures that are adjacent to construction sites where the use of heavy pile drivers and vibratory hammers can affect existing buildings. Because of their unparalleled expertise and experience, CTLGroup engineers and scientists are uniquely qualified to offer customized, comprehensive services, including: instrumentation planning; system installation and maintenance; data monitoring, interpretation and reporting services; and/ or custom software interfaces for data analysis. Clients can count on turnkey solutions tailored to their specific needs.

CTLGroup uses state-of-the-art technology to measure and monitor vibrations in structures and construction sites and to evaluate the dynamic (modal) characteristics of structures. Vibration monitoring systems can be configured to alert personnel automatically when established threshold values are exceeded. Our experts can design, supply, install and implement monitoring systems to serve a wide range of purposes.

Sensors and instrumentation

CTLGroup has designed and built sensors and measuring devices for more than 50 years. All CTLGroup sensors are custom designed for specific applications, and built with the highest quality materials and workmanship. All come with calibration sheets and provide NIST-traceable results.

Load cells

CTLGroup produces load rods ranging in capacity from 1 to 400 kips and load cells ranging from 5 to 2500 kips. Using the latest advancements in strain gage technology, CTLGroup experts can build load cells with less than 1% nonlinearity.

Strain-gage-based sensors

Strain-gage-based sensors can be designed for any application – to measure strain in steel or plastic, or for embedment in asphalt or concrete. CTLGroup strain gages use a full-bridge configuration for long-term stability, high output and lower signal conditioning costs.

Multi-depth deflectometers

With the introduction of its new SnapMDD, CTLGroup has streamlined and simplified the design and use of the multi-depth deflectometer. The SnapMDD significantly reduces the time and cost of measuring the load-bearing performance of multi-layer strata and pavements.

CTLGroup provides remote access using hard-wired or cellular modems or through hard-wired or wireless network connections. The systems compare measured data to predetermined response values in real time, and then use dial-out modems to activate visual/ audible on-site alarms or send notification by phone or email.

Data storage/management options

Data from remote monitoring locations can be stored onsite for later retrieval or posted to a website for password-protected access.

REPAIR DESIGN

Because of our vast exposure to concrete deterioration and previously unsuccessful repairs, CTLGroup Qatar experts are able to customize our evaluation and repair programs to provide the most responsive, cost-effective solutions. With a wide range of performance deficiencies and client needs, each of our repair projects is unique.

CTLGroup Qatar has an in-depth knowledge of current and historic construction materials for historic restoration projects. We can investigate how the structure was originally designed and built, review repairs made over the life of the structure, analyze/design replacements to simulate obsolete construction materials, and develop repairs to restore the structure.

CTLGroup Qatar offers the most sophisticated suite of engineering, testing and consulting services to address concrete performance, durability and life-cycle serviceability with the most progressive repair and restoration techniques available in the construction industry today.

WATER TESTING (ENVIRONMENTAL TESTING)

CTLGroup Qatar Environmental and Microbiology laboratories specialize in multifaceted analytical methodologies to assess, monitor, and ensure the integrity of water across diverse applications. Leveraging cutting-edge technologies and adhering to globally recognized protocols ISO/IEC 17025, we deliver precise and scientifically robust data to address both routine and complex water quality challenges.

Core Capabilities:

1. **Comprehensive Physio-Chemical Profiling**:
   - Determination of ionic balance, including anions (Sulfate, Nitrate, Chloride, Nitrite, Phosphates, Fluorides) and cations (Calcium, Magnesium, Sodium, Potassium, Manganese).
   - Evaluation of water hardness, alkalinity, and oxidative/reductive potential, oil and grease, turbidity, Chemical Oxygen Demand (COD), Biochemical Oxygen Demand (BOD5), Total and Free chlorine
   - Advanced spectrometric and chromatographic techniques for quantifying trace elements, including heavy metals (E.g. Zinc, Mercury, Cadmium, Lead).
2. **Microbial Qualitative Detection and Quantification**:
   - Application of *chromogenic* and *fluorogenic* techniques for precise identification of waterborne pathogens (Total Coliforms, Fecal Coliforms, *Escherichia coli*, *Legionella spp*).
   - Traditional culture-based methods for colony-forming unit (CFU) enumeration, ensuring compliance with health and safety standards.
   - Specialized Mycological analysis, including the detection of Fungi.
3. **Hydrogeological and Isotopic Analyses:**
   - Assessment of groundwater vulnerability through advance spectrometric analysis.
4. **Specialized Industrial and Process Water Testing:**
   - Fouling, scaling, and corrosion potential assessments to support industrial water cycle management.
   - Verification of boiler and cooling water treatment programs through conductivity, silica, and total dissolved solids (TDS) measurements.
   - Specialized in all kinds of industrial potable (drinking water) and all kind of non- potable water analysis.

Our equipment and facilities allow us to test for all regulated and non-regulated compounds of concern in,

- Potable/Drinking/Cooking Water
- Bore well / Ground water Marine Water
- Sea Water & Drain Water
- Irrigation/Agricultural/Hydroponic culture water
- R/O Water
- Discharge Water
- Condenser & Chilled water
- Sewage Water

GEOTECHNICAL & HYDROGEOLOGY INVESTIGATIONS

Geotechnical and hydrogeology investigations are essential processes in construction, and environmental studies. These investigations help assess soil, rock, and groundwater conditions to support the design and safety of infrastructure projects through analytical laboratory services, field studies, standardized test methods, and/or modeling to optimize land use and management.

We at CTL Group-Qatar have a variety of methods that can be used to sample, test, analyse, and/or assess natural resources including field mapping, core sampling, site assessment, perc test, water quality monitoring, use of observation wells, the Atterberg limit, and the limerock bearing ratio.

Geotechnical Investigations

1. Borehole drilling
2. Trial pit
3. Earthing and Open-hole Drilling
4. Probe-hole Drilling
5. Soil, Rock and Groundwater Sampling
6. Permeability Test – Falling Head Permeability Test
7. In-situ testing including, Standard Penetration Test (SPT), Electrical Resistivity Test (ERT), plate bearing tests, CBRs, etc.

Hydrogeological Investigations

1. Drilling and Installation of observation well and Groundwater monitoring
2. Installation of Piezometers
3. Groundwater Sampling
4. Laboratory Analysis of Groundwater Samples

Laboratory Testing

1. Particle Size Distribution (PSD) Test
2. Atterberg Limit Test
3. Maximum Dry Density (MDD) Test
4. Moisture Content Test
5. California Bearing Ratio (CBR) Test
6. Constant Head Permeability Test
7. Direct Shear Test
8. Consolidation Test
9. Unconfined Compressive strength Test of Rock
10. Point Load Test
11. Chemical Analysis of Soil and Groundwater Samples

RAILROAD + RAPID-TRASNIT INDUSTRIES SERVICES

CTLGroup is one of the leading independent testing facilities in North America. The experts in our structural and transportation laboratory have extensive experience in a broad range of engineering, consulting, and testing services for railroads, rapid transit authorities, railway component manufacturers, railway and transit consultants and contractors, highway transportation equipment
Suppliers, and government agencies. Our railroad and transit services include:

- Testing vehicle and track components to industry specifications
- Instrumented testing for product development and problem assessment
- Acquiring data on field service conditions

Our laboratory allows us to conduct several railway and transit testing programs simultaneously, using discrete loading systems that monitor and maintain the desired load or specimen deflection. Loading systems include 15,000- to 220,000-lb dynamic rams that can be used independently or in combination, and 22,000- to 1-million-lb-capacity single-axis dynamic and static loading machines. CTLGroup uses high-speed data acquisition systems to gather laboratory and field data. These systems monitor commonly-used sensors and record both static and dynamic responses.

CTLGroup maintains a variety of standard and custom test fixtures specifically designed to meet the railway, rapid transit and transportation industries' needs for laboratory and field testing.

Our test procedures comply with North American and global standards, including those established by American Railway Engineering and Maintenance-of- Way Association (AREMA), American Public Transportation Association (APTA), Amtrak and Association of American Railroads (AAR). Most often, these tests are conducted to satisfy railroad and rapid transit authority qualification/quality control/safety standards required by manufacturing and construction project specifications. CTLGroup is an ISO 17025:2008 approved facility.

Subsurface characterization

- Bolsters
- Side frames
- Brake beams
- Draft gear, couplers + yokes
- Fabricated trucks
- Locomotive engine components
- Trailer king pin assemblies
- Transit car components
- Suspensions
- Side bearings
- Primary suspension pads (shear pads)

Track components tested

- Direct fixation fasteners
- Grade crossings
- Welded rail
- Rail joints
- Wood, concrete +composite ties
- Tie fastener systems
- Tie inserts, pads + plugs

RAILROAD TIE TESTING

CTLGroup houses one of the leading and largest independent testing facilities in North America providing engineering, consulting, and testing services to:

- Railroads
- Rapid transit authorities
- Railway component manufacturers
- Railway and transit consultants
- Highway transportation equipment suppliers
- Governmental agencies

Our test procedures comply with North American and global standards, including those established by American Railway Engineering and Maintenance-of-Way Association (AREMA), American Public Transportation Association (APTA), Amtrak and Association of American Railroads (AAR). Most often, these tests are conducted to satisfy railroad and rapid transit authority qualification/quality control/safety standards required by manufacturing and construction project specifications. CTLGroup is an ISO 17025:2008 approved facility.

Railroad tie tests are conducted in accordance with the American Railway Engineering and Maintenance of Way Association (AREMA 2008) Chapter 30 Section 4.9 Testing of Monoblock Ties.

Tests include:

- Rail Seat Vertical Load
- Center Negative Bending Moment
- Center Positive Bending Moment
- Rail Seat Repeated Load
- Bond Development
- Tendon Anchorage
- Ultimate Load Testing

PETROGRAPHIC EXAMINATION

One of the most effective methods used to evaluate concrete quality, diagnose causes of deterioration, and determine extent of damage is petrographic examination. It is applicable to aggregates, concrete, mortar, grout, plaster, stucco, terrazzo, and similar Portland cement mixtures.

Petrographic methods combine unaided visual inspection and examination using stereo, petrographic and metallographic microscopes. CTLGroup's expert interpretation of findings helps us develop practical solutions to our clients' problems.

Using guidelines given in ASTM C856, Standard Practice for Petrographic Examination of Hardened Concrete, CTLGroup's staff of internationally recognized professional petrographers derive information that includes:

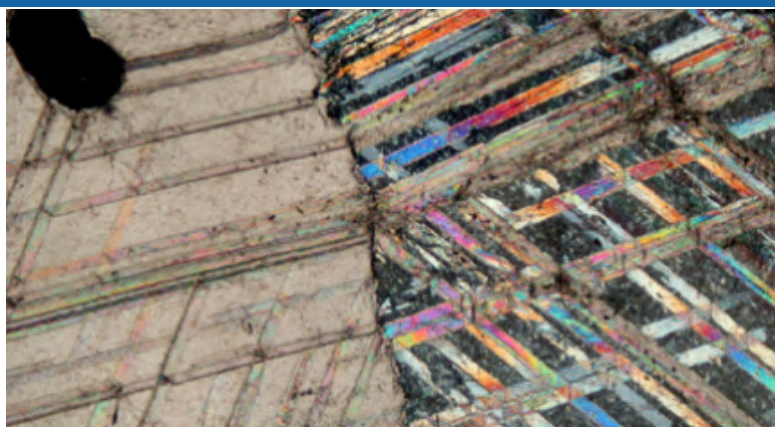
- Condition of material
- Causes of inferior quality, distress, or deterioration
- Probable future performance
- Compliance with project specifications
- Description of concrete

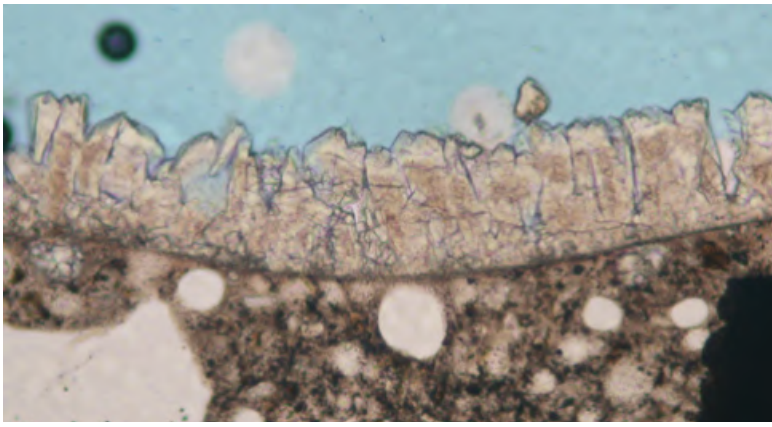
Petrographic examination can profide descriptive information that includes:

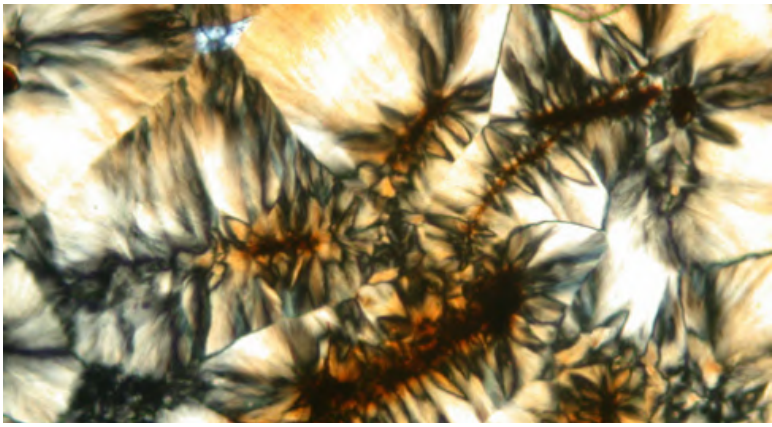
- Degree of cement hydration
- Estimation of water-cement ratio
- Extent of paste carbonation
- Presence and amount of fly ash
- Extent of corrosion of reinforcing steel
- Evidence of alkali-aggregate reaction, sulfate attack or other chemical attack
- Presence of potentially reactive aggregates
- Evidence of improper finishing
- Estimation of air content
- Evidence of early freezing
- Causes of cracking

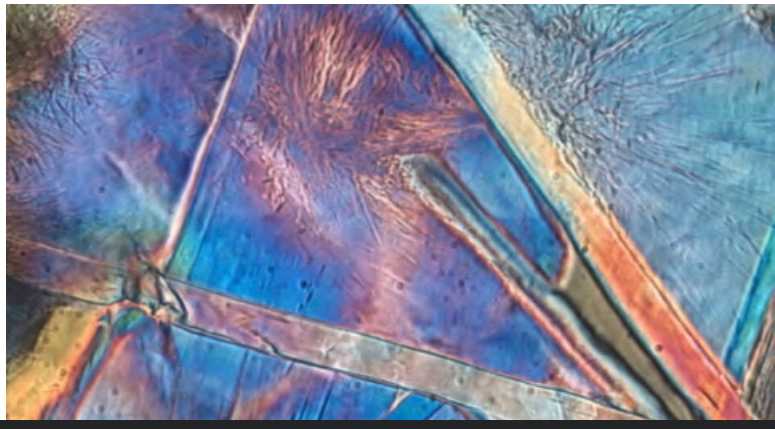
Petrographic examination is often supplemented with chemical analysis, X-ray diffraction analysis, and scanning electron microscopy. Physical tests develop data on compressive strength, volume change, air content of hardened concrete, freeze thaw durability, and rapid chloride permeability.

CTLGroup provides all of these services. Our expert petrographers and concrete technologists are available for on-site investigations.









SCANNING ELECTRON MICROSCOPE

The scanning electron microscope with energy dispersive X-ray spectroscopy (SEM/EDS) is an important tool for examination and analysis of micro structural and micro chemical characteristics. SEM provides high-resolution imaging and EDS provides elemental microanalysis.

CTLGroup uses SEM/EDS primarily as a forensic tool to investigate the performance or failure of materials. It complements the petrographic microscope and other testing capabilities for the study of materials such as concrete, mortar, stucco, paints and coatings, brick, ceramic tile, plastic, steel and other metals, mineral and synthetic fibers, and rocks.

Typical applications

- Analyze surface contamination and staining
- Evaluate paint and coatings
- Identify and measure submicroscopic features
- Investigate causes of de-bonding and cracking
- Evaluate corrosion products
- Characterize fracture surfaces

Advantages of using SEM

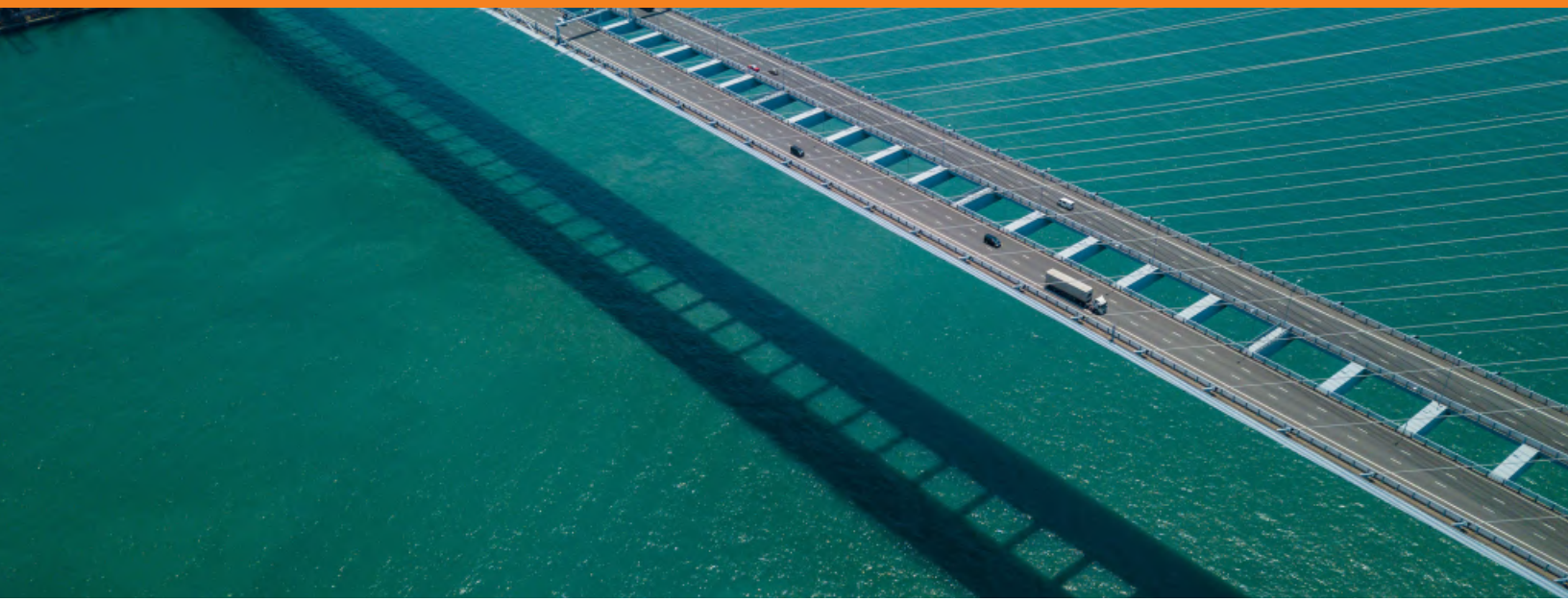
- Provides textural information at higher magnifications and with greater depth of field and resolution than possible with conventional optical microscopy
- Allows elemental composition analysis of particles or regions of a sample
- Maps elemental composition to demonstrate distribution
- Accepts broad range of sample sizes
- Requires minimum preparation of samples

Case Study of Concrete Discoloration

The client reported that a yellowish discoloration had appeared over the entire surface of an exterior concrete slab. The surface then darkened to a brownish color. A scraping of the surface deposit was analyzed by X-ray diffraction, which identified the deposit as primarily aphthitalite, a white alkali-sulfate compound. The brownish color was surmised to be from an iron compound because of the sequence of colors observed on the site. The concrete was examined petrographically. Optical microscopy showed bleed water channels in the concrete, indicating that the deposits occurred because of the evaporation of bleed water from the surface. Optical and electron microscopy confirmed the identification of the deposit as primarily aphthitalite containing minor amounts of iron sufficient to account for the observed colors. The iron could have come from the cement or from the use of dirty water in the mix. Tests of the compressive strength indicated that the concrete met the specified strength. CTLGroup concluded that the concrete was acceptable for its intended use and recommended that the surface be cleaned to remove the discoloration.

Case Study of Concrete Discoloration

Precast concrete piles were cracking and spalling at, and below, the splash zone. CTLGroup's petrographic examination and SEM study of cores showed that the major cause of deterioration was expansive cracking due to delayed ettringite formation. SEM study revealed that brucite formation caused by the infiltration of seawater had accelerated deterioration at the outer surfaces of the concrete piles.



ACCEPTANCE TESTING FOR CABLE-STAYED BRIDGES

CTLGroup's structural engineering laboratory is one of the world's largest private structural testing facilities and a recognized center for full-scale fatigue testing of stay cables and bridge components.

CTLGroup's activities in the specialized field of full-scale acceptance testing have contributed to better cable design and fabrication practices. Our engineers have helped disseminate technical information by presenting papers and working on technical committees for such organizations as the Post Tensioning Institute (PTI).

CTLGroup has designed and built one-of-a-kind test fixtures, electronic controls, servo hydraulic power units, load frames and high-capacity load cells for its test center. In 2001, the test center was enlarged to accommodate two test fixtures for stay cables.

CTLGroup subjects stay cables to static forces in excess of 10,000,000 pounds and dynamic (cyclic) forces of over 4,500,000 pounds. The axial test fixtures have been used to test cables with up to 156 strands, while the axial-flexural test fixture has been used to test cables with up to 119 strands. Cable assemblies are instrumented with strain gages, load cells and highly sensitive acoustic wire break detection systems for continuous monitoring of cable fatigue cracks and ruptures during the tests.

PTI criteria allow the fracture of no more than 2% of the total wires during a stay cable fatigue test. Accelerometers, combined with an automated electronic data acquisition system, monitor wire breaks, providing data on the date and the time of each trigger.

CTLGroup has performed cable-acceptance testing for cable-stayed and supported bridges all over the world. Some of the more prominent long-span bridges are:

- Maysville Bridge, Maysville, Kentucky
- Leonard Zakim Bridge, Boston, Massachusetts
- Sidney Lanier Bridge, Brunswick, Georgia
- C+D Canal Bridge, Delaware
- Clark Bridge over the Mississippi, Illinois
- Cape Girardeau Bridge, Missouri
- 2nd Street Bridge, Columbus, Indiana
- Foss Waterway, Tacoma, Washington
- US-34 Bridge, Burlington, Iowa
- Wadi-Leban Bridge, Saudi Arabia
- Rosario Victoria Bridge, Argentina
- Rama VIII Bridge, Bangkok, Thailand
- Kap Shui Mun Bridge, Hong Kong
- Puente Paralelo Bridge, Dominican Republic
- Bandra Worli Sea Link Bridge, India
- Putrajaya Bridges 8 and 9, Malaysia

MATERIALS CONSULTING SERVICES

CTLGroup's scientists and engineers help solve a range of materials-related problems in cementitious materials. Our cement chemists and process engineers can address any problem in cement manufacturing, while our materials, pavement and structural engineers help clients create structures that are strong, stable, and durable.

Working together, our experts address problems by applying in-depth knowledge of how cementitious materials work, while drawing on extensive experience to ensure that the solutions offered are practical and cost effective.

A matter of scale

Engineers normally work in large dimensions without always needing to consider what is happening at a very small scale. On the other hand, scientists often deal with interactions at a molecular scale. CTLGroup's unique synergy means that our engineers and scientists straddle this dimensional divide, thus enhancing our approach to those seemingly impossible problems in your concrete.

Some problems we've solved

- Identify causes and suggest solutions for blockages in a cement plant kiln system
- Analyze a bridge's environment and design a suitable high-performance concrete mixture design for the bridge deck
- Determine materials, workmanship or design-related causes for concrete cracking
- Evaluate cement and concrete for potential uses as silica-based waste product
- Design a very low-density, structural concrete mixture for a roof application
- Perform tests to determine causes for lowering strengths of concrete made from particular cement
- Help with process planning, materials characterization, equipment selection and ancillary materials, and commissioning a new cement plant
- Assess distress in a troubled structure, investigate reasons for occurrence and provide technical support in subsequent litigation

The materials consulting staff at CTLGroup comprises several PhDs and registered Professional Engineers. Our team includes chemists, process engineers, chemical engineers, pavement engineers, civil engineers, and materials engineers, many of whom are world-recognized authorities in their fields. We are multidisciplinary professionals accustomed to working together to meet your needs. We are regularly involved in training and writing publications aimed at educating the makers and users of cement and concrete.

THERMAL MODELING OF MASS CONCRETE

Concrete cast in massive sections requires that special consideration be given to handling the heat of hydration and the temperature rise after casting. Uncontrolled temperature rise can result in surface cracks or internal damage to the concrete. For lack of a standard definition, CTLGroup considers mass concrete to be any element with a minimum dimension equal to or greater than 3 ft. Similar considerations should be given to other concrete elements that do not meet this definition but contain Type III cement or cementitious material in excess of 564 lb/yd3 of concrete. In many cases, these non-mass elements will also generate significant amounts of heat.

Can thermal cracking be avoided?

Limited cracking may be acceptable under certain circumstances. However, thermal cracking can be avoided by:

- Changing concrete mixture proportions
- Protecting the exposed surfaces and formwork from environmental extremes
- Using aggregate with more desirable thermal properties
- Precooling the concrete constituent materials
- Cooling the concrete itself via internal cooling pipes
- Placing concrete in several lifts or pours

My specification says I need type IV cement, but I can't find it. What can I do?

Type IV cement can be special-ordered for large projects, but is not commonly available, although it is often cited in contracts and specifications. Type II and Type V cements can be viable alternatives. CTLGroup can help you select suitable additives and alternative mixtures. We can also verify the solutions by testing mixtures for you.

Will adding slag or fly ash to my mix solve my thermal problems?

Slag and fly ash might help, but precaution needs to be taken as the reactivity of slag is highly temperature dependent. For small mass concrete pours with limited temperature rise, slag can be useful, however, for large concrete pours, slag can generate more heat than the cement it replaces. Fly ash can be highly reactive and, in some cases, can generate as much heat as cement.

Should the maximum concrete temperature be limited to 125°F?

That depends on your specifications, the size of the concrete element, and the cement content of the mixture design. If the initial concrete temperature is high, then the maximum temperature may also be increased. For specific mixtures, the temperature may be allowed to reach 175°F. Should the maximum allowable temperature difference be limited to 35°F? While this is the industry rule-of-thumb intended to prevent thermal cracking, it can be overly restrictive or too conservative. The reinforcing steel, the geometry of the concrete element and the concrete's mechanical properties all play a role in determining the safe allowable differences in temperature, which may be more than 35°F. CTLGroup's experts can develop allowable temperature differentials for your project based on analytical modeling. We can also support your project with laboratory testing.

It's just a large volume of concrete, right? What's the big deal?

The making of concrete is both a physical mixture and a heat generating reaction. The larger the pour, the slower the dissipation of reaction heat. Heat generation and dissipation in mass concrete pours require special consideration. Temperatures can quickly rise well above acceptable and safe limits. Heat dissipation can continue over extended periods. Large amounts of thermal cracking may occur if precautions are not followed.

The job specifications were not clear when we bid on the project and I may already have a problem. What now?

CTLGroup's experts can help you to assess your situation and recommend remedial actions. We are available 24 hours a day. CTLGroup is a world leader in consulting services related to mass concrete technology. We have helped countless contractors, engineering/design firms and owners to write, adapt, understand and work within specifications for mass concrete elements and structures. CTLGroup can work with owners, engineers, architects, material suppliers and contractors to develop project-specific thermal control plans based on thermal modeling. If necessary, these requirements can be supplemented and verified using laboratory tests.

SPECIALIZED TESTING SERVICES

Our spacious laboratory allows us to conduct several railway and transit testing programs simultaneously, using discrete loading systems that continuously monitor and maintain the desired load or specimen deflection. Loading systems include 15,000 to 220,000 pound dynamic rams that can be used independently or in combination, and 22,000 to 1 million pound capacity single-axis dynamic and static loading machines. CTLGroup uses high speed, computer-based data acquisition systems to gather laboratory and field data. These systems monitor commonly-used sensors and record both static and dynamic responses.

Vehicle components tested include:

- Bolsters
- Side Frames
- Brake Beams
- Draft Gear, Couplers, and Yokes
- Fabricated Trucks
- Locomotive Engine Components
- Trailer King Pin Assemblies
- Transit Car Components
- Suspension Components
- Side Bearings

Track components tested include:

- Direct Fixation Fasteners
- Grade Crossings
- Welded Rail
- Rail Joints
- Wood, Concrete, and Composite Ties
- Tie Fastener Systems
- Tie Inserts, Pads, and Plugs

Cement testing:

ASTM C150 Standard Chemical + Physical Package Includes:

- C109 Strength OPC - 3 Ages
- C185 Air Content in Portland Cement
- Mortar
- C204 Fineness - Blaine OPC
- C114 Insoluble Residue
- C187 Normal Consistency
- C151 Soundness by Autoclave
- C191 Vicat - Initial Set
- C150 XRF Cement Raw Materials

ASTM C91 Specification for Masonry Cement Package Includes:

- C109 Strength - 2 Ages
- C185 Air Content in Portland Cement Mortar
- C604 Density by Pycnometer
- C430 Fineness 325 Sieve
- C266 Gillmore Time of Set
- C187 Normal Consistency
- C151 Soundness by Autoclave
- C1506 Water Retention

ASTM C595 Standard Specification for Blended Hydraulic Cements Package Includes:

- C109 Strength Blended - 3 Ages
- C185 Air Content in Portland Cement Mortar
- C604 Density by Pycnometer
- C204 Fineness Blaine Masonry Blended
- C114 Insoluble Residue
- C187 Normal Consistency
- C151 Soundness by Autoclabe
- C191 Vicat - Initial Set
- C150 XRF Cement Raw Materials

ASTM C1157 Performance Specification for Hydraulic Cement Package Includes:

- C109 Strength Blended - 3 Ages
- C185 Air Content in Portland Cement Mortar
- C604 Density by Pycnometer
- C430 Fineness 325 Sieve
- C204 Fineness Blaine Masonry Blended
- C187 Normal Consistency
- C151 Soundness by Autoclave
- C1038 Sulfur Mortar Bar 14-Day Expansion
- C191 Vicat - Initial Set
- C150 XRF Cement Raw Materials

ASTM C227 Potential Alkali Reactivity of Cement-Aggregate Combinations Package Includes:

- Mortar Bar Method - Single Aggregate,Combination Mixes
- C186 Heat of Hydration - 2 Ages
- C1702 Calorimetry Analysis – OPC Cement, Blended Cement, Cement Plus Admixture

Cement physical tests:

- Clinker Burnability and Alkali Volatility Test

- Microscipical Examination of Cement and Clinker ONO Method
- Coke and Coal Ash Analysis
- C1012 Length Change of Hydraulic Cement Mortars Exposed to a Sulfate Solution
- C109 Compressive Strength - 3 Ages

Fly ash testing:

ASTM C618 Coal Fly Ash + Raw or Calcined Natural Pozzolan for Use as Mineral Admixture in Concrete Package Includes:

- C604 Density by Pycnometer
- C430 Fineness 325 Sieve
- Free Moisture Content LOI-TGA
- C114 Loss on Ignition-TGA
- C187 Normal Consistency
- C311 Soundness by Autoclave
- C311 C109 Ash, Pozzolan Strength
- Activity Index
- XRF Other

Concrete shrinkage tests:

- C157 Mortar/Concrete Length Change
- C1581 Restrained Shrinkage Cracking Tendency of Concrete

Concrete durability tests:

- C1202 Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration
- NT Build (European Chloride Ion Penetration Test)
- C779 Abrasion Resistance of Horizontal Concrete Surfaces
- C666 Freeze-Thaw Durability Testing (3 Beams)
- Stadium Model Test Parameters
- Stadium Modeling

Analytical chemistry testing:

X-Ray Diffraction (XRD)

- Unknown Material
- Known Materials
- Reitveld Refinement (Cement)

XRF Elemental

XRF Constituents Determination of Concrete (Aggregate, Cementitious Materials, etc.)

Fourier Transform Infrared Spectroscopy (FTIR)

- Surface Examination Using ATR
- Qualitative Determination of Admixture/ Additive in Hardened Cement Products
- Uniformity of Admixture

Thermal Analyses

- Differential Scanning Calorimetry (DSC)
- Quantitate Sulfate Forms (Gypsum, Plaster, and Anhydrate) by DSC
- TGA/DSC in Nitrogen

Laser Particle Size Analysis

- Dry in Air
- Wet in Di Water
- Wet in Alcohol

Wet Analytical Chemistry

- Atomic Absorption/Inductively Coupled Plasma/Ion Chromatography Preparation
- AA/ICP/IC Cost Each Element
- ICP Trace Metals Scan
- TCLP Extraction
- ICP Trace Metals TCLP Heavy Metals Scan

Chloride Testing

- Powder
- Hardened Cement Products
- Chlroide Profile Grinding (C1556; per section price)
- Calculation Apparent Diffusion Coefficient
- Resistance of Concrete to Chloride Ion Penetration (90-Day Ponding)

Cement Content C1084 (Not Including Petrography Analysis)

SERVICE LIFE PREDICTION

CTLGroup recently joined a select number of laboratories certified to provide testing services for input into the STADIUM® (Software for Transport and Degradation In Unsaturated Materials) service life modeling software. The STADIUM® model, which is certified for use in the U.S. Navy's Unified Facilities Guide Specifications, is the newest and most powerful service life prediction solution. The software uses structural, material and environmental inputs to estimate a structure's remaining service life, accurately informing the user of concrete assets.

CTLGroup scientists and engineers are also accredited users of the STADIUM® model, allowing our firm to provide comprehensive, in-house service life modeling services. Our staff uses this new technology in every stage of a structure's life cycle, helping clients make difficult remediation and repair decisions, as well as selecting the optimum concrete mixture for new construction in any environment.

BLAST RESISTANCE

CTLGroup's engineers are at the forefront of the developing practice of secure facility design with experience gained from investigations of explosions and similar disasters. Our professionals have established their expertise through the investigation of multiple structures in the aftermath of terrorist and blast-related incidents, including the World Trade Center collapse and the Oklahoma City Bombing of the Alfred P. Murrah Federal Building. CTLGroup's experts have written books, developed standards, and conducted research on the design of structures for blast resistance.

Destruction caused by intentional acts or accidental explosions threatens people's lives, as well as critical assets such as equipment, buildings, and other facility infrastructure. Most injuries occur not from the blast itself, but from the collapse of a structure. Therefore, secure facility design and blast engineering is an essential practice, especially for Facilities considered to be vulnerable to potential terrorist attacks or accidental explosions. CTLGroup's engineers and technical staff draw from their broad range of multi-disciplinary capabilities and in-depth knowledge to provide clients with solutions that go beyond blast resistance and explosion investigation.

Our explosion investigation and blast engineering services include:

- Blast-resistance design for new or existing structures
- Progressive collapse evaluation
- Explosion investigation

Representative experience

- PCA Blast Resistant Design Guide for Reinforced Concrete Structures - *guide for the blast-resistant design of mid- and low-rise reinforced concrete structures*
- ASCE Blast Resistant Design Standard - *chapter chair for blast resistant detailing in the first national standard of its kind*
- NCMA Blast Resistant Guide - *guide for the blast-resistant design of masonry structures*

NUCLEAR QUALITY MANAGEMENT

The CTLGroup Quality Management System (QMS) has been established to meet the most demanding requirements for engineering consulting and testing of materials and structural components.

CTLGroup is an accredited, independent engineering and testing firm that participates in a variety of laboratory certifications, inspections, and monitoring programs. CTLGroup's quality program meets the ISO/IEC Guide 17025 standards, equivalent to the relevant requirements of ISO 9000 and QS9000 series standards. Our firm also meets the requirements of 10 CFR 50, Appendix B and NQA-1.

Our accreditations, certifications, and laboratory approvals include:

- 10 CFR 50, Appendix B and NQA-1: The CTLGroup QMS received a satisfactory assessment (no findings) by the Nuclear Industry Assessment Committee (NAIC). The NAIC audit program is similar to the joint audit program operated by utilities through the Nuclear Procurement Issues Committee (NUPIC).
- ISO 9001: 2008 Bureau Veritas Certified Company.
- ISO 17025 Accredited Testing Lab.
- IAS Certification.
- Cement and Concrete Reference Laboratory (CCRL) - CTLGroup has participated in the Cement and Concrete Proficiency Sample Program since its inception for Portland cement, blended Portland cement, masonry cement, pozzolan, masonry brick, and concrete. CCRL inspects CTLGroup's laboratories once every two years.
- American Concrete Institute (ACI) - All CTLGroup physical testing technician personnel are certified by the ACI as ACI Level I Concrete Field Technicians.
- American Association of State Highway and Transportation Officials (AASHTO) - CTLGroup is accredited by AASHTO for the testing of fine and coarse aggregates, Portland cement concrete, and hydraulic cement (chemical and physical tests).

CTLGroup personnel are recognized leaders in non-destructive testing (NDT), and use a number of specialized techniques to assess the condition of a variety of nuclear structure types. With in-depth understanding of NDT procedures, state-of-the-art equipment and decades of practical experience, CTLGroup experts can efficiently gather pertinent data while minimizing disruption to facility operations.

We specialize in quality control and inspections, evaluating structural condition, detecting corrosion, performing as-built surveys and measuring vibration in structures. Non-destructive test methods such as Impulse Radar, Impulse Response, Impact Echo, Ultrasonic Pulse Velocity, Shear Wave Tomography (MIRA) and Optical Borescope/ Videoscope inspection are utilized in these types of investigations. Test results are then used to evaluate the extent of problems, identify causes of failures or develop repair plans.

CTLGroup has conducted non-destructive testing at the following nuclear sites:

- Crystal River Unit 3, Crystal River, Florida (Impulse Radar, Impulse Response, Impact Echo, MIRA)
- Oconee Nuclear Station, Oconee County, South Carolina (Impulse Radar)
- Monticello Nuclear Generating Plant, Monticello, Minnesota (Impulse Radar)
- Cook Nuclear Plant, Bridgman, Michigan (Ultrasonic Pulse Velocity, Impulse Radar)
- Three Mile Island Nuclear Generating Station, Middletown, Pennsylvania (Impulse Radar)
- Davis-Besse Nuclear Power Station, Oak Harbor, Ohio: (Impulse Response, Impulse Radar)
- Brown's Ferry Unit 3, Athens, GA (Impulse Radar)
- Palisades Nuclear Plant, Covert, MI (Impulse Radar)
- Indian Point Unit 3, Buchanan, NY (Impulse Radar)
- Peach Bottom Atomic Power Station, Delta, PA (Impulse Radar)
- Dresden Nuclear Power Station, Morris, IL (Impulse Response)
- Palo Verde Nuclear Power Station, Tonapah, AZ (Impulse Response, Impulse Radar, Ultrasonic Pulse Velocity)
- Oak Ridge National Laboratories, Oak Ridge, TN (MIRA, Impulse Response)

BUILDING ENVELOPE EVALUATION

Thermal properties of building materials + components

CTLGroup assists in improving the thermal performance of buildings by:

- Identifying areas of missing/poorly performing thermal insulation using infrared thermography
- Determining thermal mass effects of concrete and masonry
- Providing repair options when feasible and replacement options when necessary
- Providing pre-construction project document reviews

Water leakage + other moisture problems

CTLGroup conducts investigations into water leakage and other moisture related problems using a combination of the following methods:

- Field water penetration testing including spray rack nozzle and chamber testing
- Analysis of building wall components for condensation potential using WUFI
- Blower door field testing to identify gaps in air barriers
- Laboratory testing to determine water vapor transmission of materials
- Field observation and documentation, and project document review

Energy codes

- Assistance with using state, IECC and ASHRAE energy codes
- Specifying insulation levels

Green buildings

- Environmental life cycle inventory (LCI) and assessment (LCA) analyses
- ASTM C1549 - Standard Test Method for Determining Solar Reflectance (Albedo) Near Ambient Temperature
- Using a Portable Solar Reflectometer
- Comparative analysis of products' or services' characteristics to LEED point requirements and prerequisites

Once problems have been identified, CTLGroup can assist clients in implementing repairs by designing and specifying cost effective, durable repairs for the identified problems. We also assist in contract negotiation and construction observation to assure our clients that the repairs are implemented as specified.

One of the most notable things about CTLGroup-Qatar is the fact that we operate under a wide umbrella that covers our numerous capabilities and vast array of professional services. That umbrella is expanding as we continue to expand into new markets and add strategic services to help our clients with both their challenges and opportunities.

Across the construction life-cycle, CTLGroup' experts help define root cause problems and propose repair solutions. We also lend crucial support to manufacturers in the development and testing of new products. Our engineers, architects, material scientists and technical specialists bring a multi-disciplinary approach to the complex challenges of our clients around the globe.

BUILDINGS + FACILITIES

Material cracks or discolorations bring our structural engineers into the field for evaluation and problem assessment. Suspected seepage sends our non-destructive testing (NDT) teams out to do infrared inspections. Surface peeling signals our petrographers to conduct core studies. Ambient vibration causes unique problems that we monitor and analyze, and for which we engineer solutions. CTLGroup-Qatar's maintenance plans and service-life projections keep our buildings and facilities clients in business.

The needs of our Buildings + Facilities clients vary considerably. Whether it is a deteriorated structure, leaking basement or a fire damaged facility, we have you all covered. CTLGroup-Qatar expertise consistently brings value to each project, providing innovative and cost effective solutions. Our primary areas of practice include:

- Building envelope studies, maintenance, rehabilitation + repair programs
- Design + installation of structural monitoring systems
- Failure + forensic investigations
- Non-destructive field testing of structural assemblies + components
- Strength + service evaluation of existing building structures
- Development of practical solutions to address structural deficiencies
- Troubleshooting construction problems + techniques leading to improvements in safety and efficiency
- Geological + geotechnical considerations
- Concrete moisture investigations
- Flooring consulting + testing
- Green building, infrastructure, pavement + materials practices

CTLGroup's Buildings + Facilities Practice Group helps clients with complex structural and materials issues affecting:

- University + education buildings
- Healthcare + laboratory buildings
- Municipal buildings
- Historic buildings + landmarks
- High-rise commercial + residential buildings
- Parking garages + structures
- Stadiums
- Cultural + religious facilities
- Manufacturing + industrial plants

TRANSPORTATION

CTLGroup-Qatar has extensive experience in the structural evaluation and innovative improvement of bridges, tunnels, underpasses and culverts. Our project expertise worldwide encompasses the entire lifecycle of bridges, from design optimization and construction innovation; to construction planning, material testing and troubleshooting during construction; to structural health monitoring; load testing to extreme in-service event analysis; to extending service life and rehabilitation of aging structures.

The firm also has a long history of bridge engineering improvement. Our signature services include the inspection and evaluation of cable-supported bridges, as well as cable damping and non-contacting cable force measurement. Additionally, we perform suspension bridge and tied-arch hanger force measurement and ultrasonic flaw detection for cable anchorages. One of our most noted projects, the Hale Boggs Memorial (Luling) Bridge, involved a complete stay-cable replacement for the 1,221 foot long bridge.

Our integrated consulting and laboratory testing services, as well as our multi-disciplinary approach to all projects, allow us to provide a vast range of solutions for both new and existing bridges alike. For the evaluation, maintenance and upgrade of existing bridges, we have provided:

- Comprehensive non-destructive testing of post-tensioned and reinforced concrete
- Field inspection and condition assessment
- Failure analysis and investigation
- Remote wireless structural health monitoring systems
- Corrosion rate monitoring and service life assessment
- Post-tensioning tendon inspection and rehabilitation
- Service life modeling
- Bridge Load Testing (both Static and Dynamic)

WATER & WASTEWATER

CTLGroup-Qatar helps managers, contractors, government agencies and others in the water + wastewater sector by providing condition assessment, failure causation investigation, structural evaluation, materials consulting and repair/rehabilitation consulting. These types of projects often create unique challenges, related access limitations, safety and timing. Drawing upon experience gained from successful execution of hundreds of projects in the USA, we are well versed in handling such challenges.

Replacement or rehabilitation of existing infrastructure often requires considerable monetary resources. Therefore, many incentives exist to maximize the service life of our existing and future infrastructure components. In the past, many owners in the water + wastewater sector have made important decisions related to the disposition of an asset based on consideration of age or overall appearance (if readily visible). However, shortages in monetary resources have served to provide a strong incentive for taking a different approach to asset management. Implementing strategies for prolonging service life and building more sustainable infrastructures have now become a priority.

Like most other civil structures, water and wastewater structures are subject to deterioration with age. However, the mechanism(s) of deterioration can be somewhat different than most structures due to the unique circumstances under which they are constructed and operated. Concrete distress resulting from alkalisilica reactivity (ASR) and delayed ettringite formation (DEF) are examples of atypical deterioration mechanisms that can affect dams and levees. CTLGroup-Qatar's engineers and material scientists have the experience and resources needed to reliably diagnose these deterioration mechanisms and others, in order to provide clients with the valuable guidance needed to properly manage these important structures. CTLGroup-Qatar has experience with a significant number of water and wastewater structures including:

- Dams + Levees
- Pump Stations
- Pipes + Tunnels
- Tanks + Reservoirs

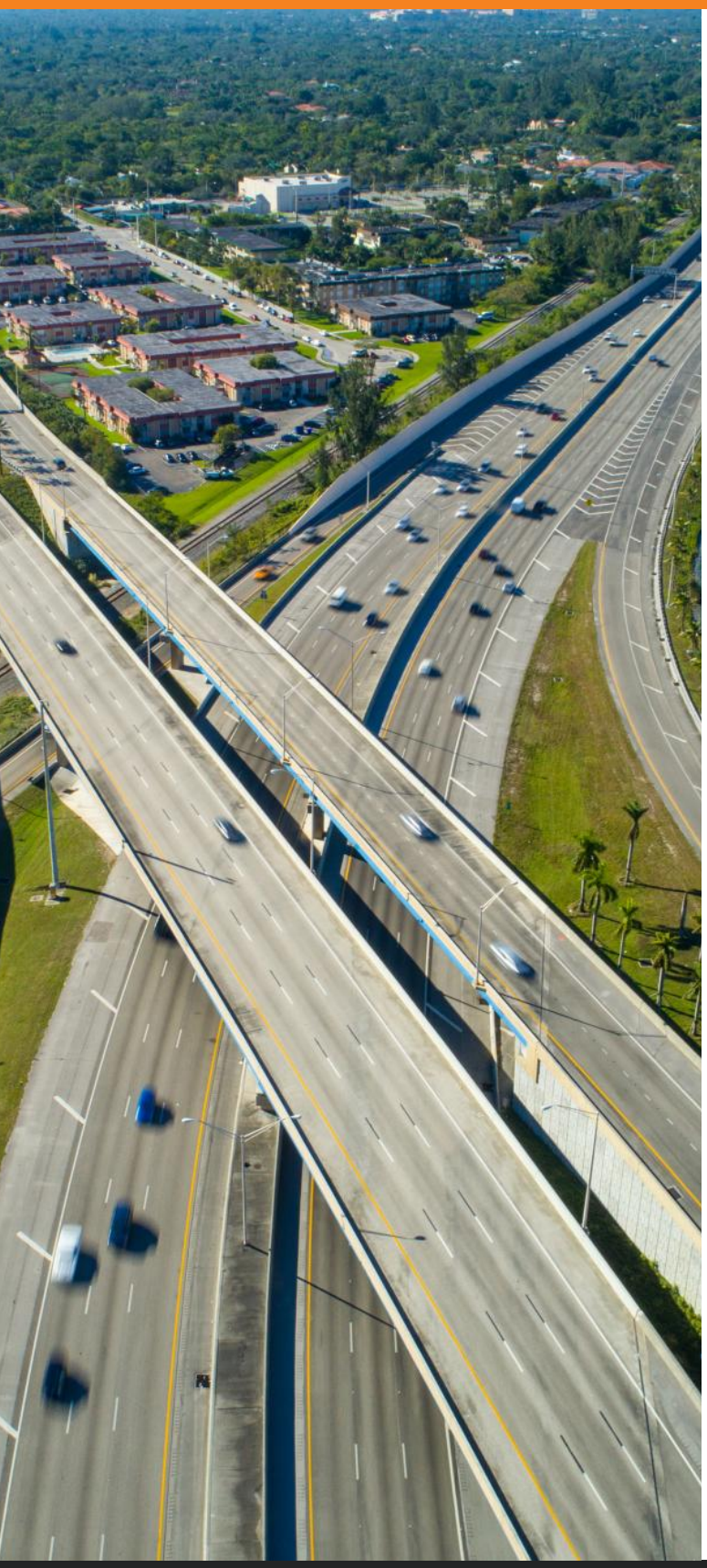
OIL & GAS

For the past three decades, CTLGroup USA has successfully completed various projects in the oil and gas sector— mainly assets related to industrial facilities. Our services involved everything from materials consulting to Non-Destructive Testing to design review to structural evaluation and rehabilitation. We have worked on piping, towers and main plant structures. We also evaluate and asses refineries, cooling towers, chimneys, sulfur pits and various others. CTLGroup prides themselves on their ability to provide practical, cost-effective solutions to any material or structural issue no matter how complex.

Industrial facilities operations involve several challenges and concerns including protection from deterioration and the serviceability of its assets. They also encounter the need to address all safety requirements as well as minimizing any discontinuation in operations. Thus, it can become critical for asset owners to handle all of these concerns in a timely manner without affecting the productivity of their facilities.

Our focus and experience in structural repair, maintenance, and upgrade of industrial infrastructure makes us the logical choice for demanding industrial projects. Our industrial teams recognize the need to ensure continuing plant operations. Our work is carried out under the highest safety standards while minimizing the impact on critical manufacturing or processing activities:

- Sulfur Pits
- Refineries
- Cooling Towers
- Silos + Warehouses
- Chimneys + Coker Drums



ROADS & PAVEMENT

CTLGroup-Qatar's laboratory facilities and pavement engineering staff provide clients with practical solutions for highway construction that maximize efficiency every step of the way. We provide testing and consulting services to concrete suppliers, contractors and transportation agencies on pavement projects nationwide. Combining expert material testing with experienced engineering and consulting services, we address complex issues anywhere in the pavement construction and maintenance cycle.

In the pre-bid and bidding stages, CTLGroup-Qatar works with clients to save time and money with material considerations, design and specifications review, risk analysis and various pavement design services, as well as many specialized services:
=

- Concrete mixture design optimization
- Hands-on consulting regarding aggregates, cement, cementitious materials, concrete
- workability, durability and every other mixture design consideration
- Identification of chemical admixture compatibility issues before they occur
- Consideration of sustainability throughout the process

We conduct chemical and physical testing of materials to identify potential adverse chemical reactions or to optimize the use of chemical admixtures, as well as testing to establish the workability and setting characteristics of paste, mortar and/or concrete. CTLGroup-Qatar also offers a comprehensive list of testing and consulting services to optimize efficiency in the pre-construction and construction phases:

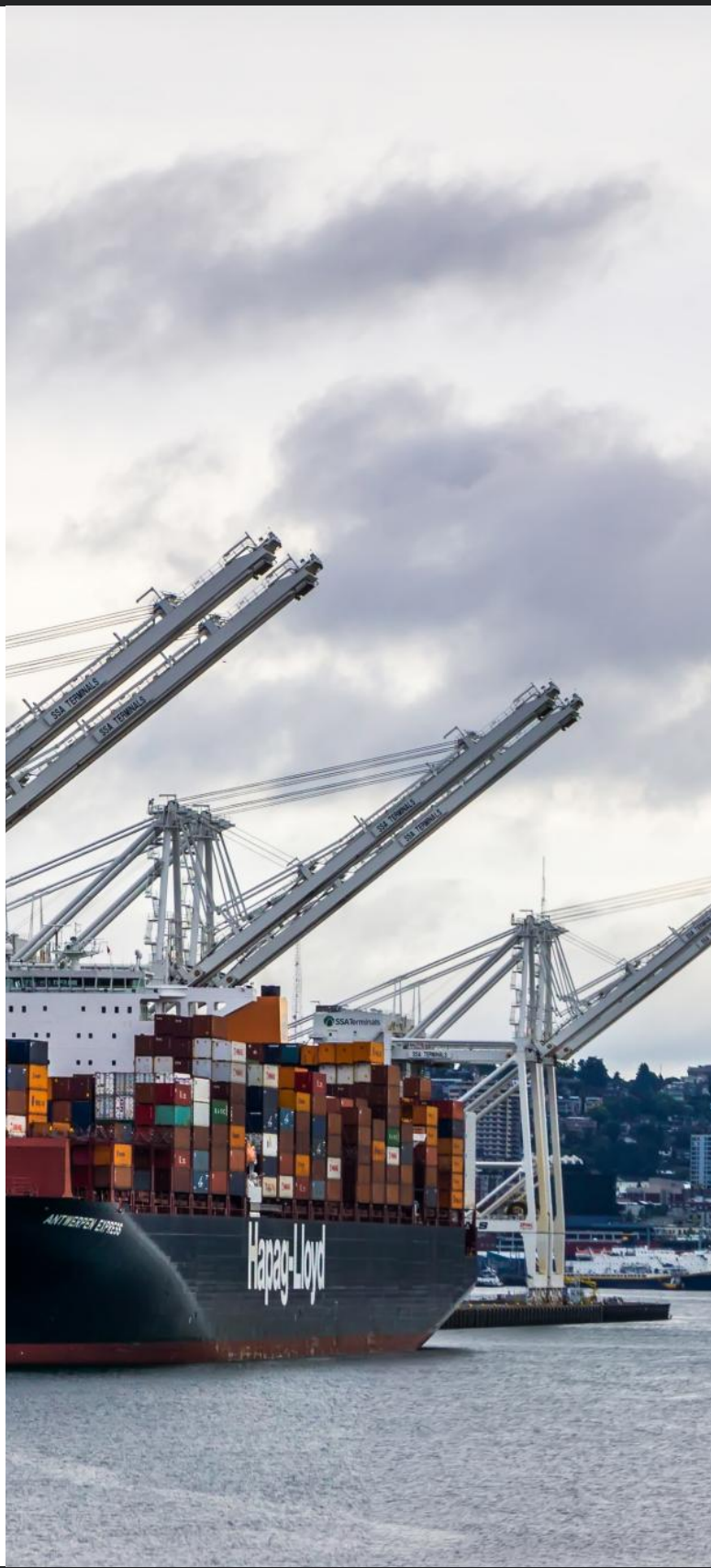
- Material evaluations
- Quality control testing
- Specifications review and changes for improved constructability and schedule
- Highly specialized trouble shooting services

MARINE STRUCTURES

A combination of aging and lack of funding are usually the main two factors that lead to accelerated deterioration of existing infrastructure assets. Today, thousands of marine structures (dams, jetties, ports) are in dire need of rehabilitation to meet current durability design and safety standards. CTL Group-Qatar's experts have been called on by both public and private owners and managers to help assess the concrete durability and develop repair and maintenance programs that help in extending the life-cycle of those structures as well as developing asset management practices.

Marine structures' owners, government officials, engineers, and emergency management professionals need to move towards a risk-based decision-making approach for the design, rehabilitation, and operation of dams. A risk-based approach will enable better utilization of limited funding, and will allow for a better prioritization of projects, by focusing on repairs and operational changes that allow for a better management of these critical assets.

Along our most advanced solutions offered for this sector are service life prediction models using STADIUM® Software. STADIUM® is sophisticated finite element analysis software which reliably predicts concrete degradation kinetics and time before the initiation of reinforcing steel corrosion. Unlike simplistic mathematical models, STADIUM® considers a wide range of physical and chemical phenomena that have a strong influence on long-term performance and overall service life.



CEMENT FACTORIES

CTLGroup's specialized consulting in process engineering addresses four intertwining aspects of cement production: quality, equipment performance, energy use and environmental compliance. In terms of Quality, we solve quality problems in:

- Raw mix design and optimization
- Clinker composition
- Finish grinding and cement performance
- Laboratory operations
- Calibration standards for raw materials

In terms of Equipment Performance, we recommend improvements that lower costs for:

- Raw mix preparation, including proportioning, blending and grinding
- Finish mill circuits, including presses, ball mills and separators
- Air flow, material and heat balances

In terms of Energy Use, a CTLGroup energy audit and pyroprocessing investigation assesses:

- Raw materials' and fuels' effects on internal volatilization cycles
- Alkali bypass efficiency
- Clinker granulation and dust formation
- Refractory life and kiln coating stabilization
- Preheater build-ups and plugging
- "Snowman" formation + "red rivers" in the grate cooler
- Cement kiln dust (CKD), alkali bypass dust and clinker cooler dust
- Burning zone conditions, combustion-burner pipe configuration and flame shape
- Effect of alternate raw materials and fuels on clinker formation and kiln operation
- Kiln operation stability, flushes, temperature cycling and coating loss

In terms of Environmental Compliance, CTLGroup experts assist cement manufacturers to comply with the provisions of the Clean Air Act by helping you:

- Reduce NOx, SOx, CO, HCl, hydrocarbon, opacity and PM -10, PM-215 and PM-1 emissions
- Improve efficiency of dust collectors
- Optimize mill air flow to control dust collector catch for enhanced production
- Improve versatility of dust collection systems to permit product enhancement
- Identify and control fugitive emissions

READY-MIX COMPANIES

We provide the ready mixed concrete industry with much more than just standard testing services. CTLGroup began its 95 year history as the Research and Development arm of the Portland Cement Association, and in that time we have provided research, engineering and consulting services to various clients, including ready mixed concrete suppliers, precast producers and contractors.

Our expertise includes developing specialized concrete mixture proportions to meet challenging placement requirements or modern performance specifications. We help improve overall concrete production quality, plant performance and environmental compliance, and we assist with on-site plant set up and qualification. Additionally, CTLGroup experts optimize proportions to help clients gain a competitive edge, meet performance based specifications and determine difficult mixture interactions in the field. CTLGroup provides products and services such as materials testing and new product development as well as education and training.

Plant Services and Optimization

- On-Site Batch Plant Configuration and Troubleshooting
- Quality Control Evaluations, Equipment Performance Inspection and Plant Audits
- Energy Use Audits and Environmental Compliance Testing

Mixture Proportion Consulting and Optimization:

- Review of Concrete Mixture Proportions and Specifications
- Aggregate Optimization and Void Space/Particle Packing Analysis
- Mixture Development for Creep and Shrinkage Performance
- Sustainable Concrete Mixture Development to Reduce Carbon Footprint
- Low Heat Mass Concrete Mixture Optimization
- Fiber Reinforced Concrete (FRC)
- Flowable, Tremie and Self-Consolidating Concrete (SCC)
- Rapid Setting or High Early Strength Concrete
- Mixture Development for Durability/Service Life Requirements or Performance Based
- Specification Assistance
- Mixture Cost Optimization

Engineering and Problem Solving:

- Concrete Precooling and Thermal Analysis
- Extended Slump Life/Pumpability Troubleshooting
- Setting Time/Early Strength Troubleshooting and Maturity for Early Formwork Removal
- Formwork Pressure Assessment
- Admixture - Cementitious Material Interaction and Fly Ash Troubleshooting

NUCLEAR

CTLGroup's extensive nuclear power industry experience, world-class consulting and testing capabilities and NQA-1 capabilities are compelling reasons to engage us for critical activities across the construction /maintenance lifecycle. We will dedicate the right team and resources to each project to ensure that our track record of excellence, responsive service and quality results work to your advantage every time. Clients will always find that type of partnership in every instance where CTLGroup is engaged to assist in solving complex challenges in the nuclear power industry. CTLGroup has conducted over 100 projects for the nuclear industry. Some of the more notable projects include:

- Large scale multi-axial structural tests on prototype concrete containment to quantify structural behavior and serve as the basis for code design requirements.
- Development of specialized concrete mixture design placement techniques and quality control criteria
- Creep and shrinkage tests for nuclear power plant containment vessels
- Non-destructive testing and evaluation to assess concrete containment structures
- Mass concrete evaluation and thermal control planning
- Properties measurement of concrete cores extracted from various nuclear plats
- Material qualification tests and petrographic evaluation of in place concrete
- Peer review of the AP 1000 reactor design by Westinghouse

CTLGroup had developed and implemented one of the most demanding Quality management Systems in the world for testing materials and structural components. Through our QMS, CTLGroup has achieved various credentials from organizations throughout the United States and around the word, including:

- The CTLGroup Quality Management System received a satisfactory assessment (No Findings) by the Nuclear Industry Assessment Committee (NIAC). The results of the audit confirmed that the CTLGroup Quality Management System meets the requirements of 10 CFR 50, Appendix B and NQA-1.
- CTLGroup's laboratory is accredited y IAS to the ISO standard 17:025
- CTLGroup is also AASTHO accredited and validated by the U.S. Corps of Engineers

SUPERTALL BUILDINGS

In working with SuperTall structures, experience matters. Understanding construction requires comprehensive, expert knowledge at every stage. With nearly 100 years of industry experience, CTL PC has consistently taken concrete technology to higher levels with revolutionary advances in SuperTall materials science and construction practices. A unique cross-disciplinary mixture of specialized skills and techniques provides extraordinary breadth and depth to resolve even the most complicated issues.

As a proven worldwide leader in SuperTall concrete consulting and materials testing, CTL PC's core capabilities address some of the most critical but common concerns:

Concrete Consulting

- Specification review and recommendations
- Mass concrete
- Sustainability
- Specialized mixture proportioning
- Laboratory trial mixture development
- Formwork pressure analysis
- Creep and shrinkage modeling
- Service life modeling

Materials Testing

- Fresh properties: slump, air content, temperature, density, yield, workability, pumpability and thermal control;
- Hardened properties: strength, stiffness, creep, shrinkage, and air void;
- Durability: permeability, alkali-silica reactivity (ASR) and sulfate resistance;

CTL PC's proven construction experience enables us to consistently provide state-of-the-art, cost-effective solutions to challenging demands of SuperTall structures that include:

Foundation Evaluation

- Design/peer review
- Construction monitoring
- Load and integrity testing

Construction Quality Oversight

- Constructability reviews
- Formwork design and construction
- Reinforcement placement

GREEN STRUCTURES

Contractors, building owners + operators, engineering and architectural firms, as well as manufacturers, are looking for green solutions. We started decades ago at CTLGroup. Green building design is an integral part of our practice.

CTLGroup's green building consultants provide a comprehensive variety of engineering, consulting, research and testing services that support sustainability of the built environment:

- Efficient use of energy, materials and resources
- Solar Reflectance Index testing (SRI) for LEED compliance
- Environmental product declaration and third party verification for cements
- Low carbon cementitious materials and concrete mixture design

Additional services include:

- Building envelope engineering, including insulation, thermal mass, air barriers, vapour retarders, and moisture mitigation
- Energy code compliance
- Remaining service-life analysis, performance assessment and analysis of existing buildings and structures
- Thermal property testing
- Service-life assessment

CTLGroup has the depth of green building design experience matched by few and has been making the world a greener place, project by project, for over 30 years in several ways:

- Contributing to the development of ASHRAE/USGBC/IES Standard 189.1 Standard for the Design of High Performance Green Buildings (since 2006) and ASHRAE 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings (since 1990)
- Testifying at the International Green Construction Code Hearings (IGCC) in August 2010 and the International Energy Conservation Code Hearings (IECC) since 2002
- Helping owners keep their facilities in good, safe working condition

Key Personnel

Chadi Y. Said

GENERAL MANAGER + TECHNICAL COORDINATOR (CTLGROUP QATAR)

Mr. Said has around 16 years of experience in the engineering and contracting industry with focus on condition assessment and repairs of old and deteriorated infrastructure facilities, building materials and concrete technology, construction of fast track projects and infrastructure asset management solutions. Prior to joining CTLGroup-Qatar, Mr. Said worked at IKK Group – Saudi Arabia where he co-founded a new engineering firm Inspectech that offered advanced civionic solutions to Asset Owners and Facility Managers through integrating state-of-art technology with assessment and maintenance methods. In 2016, he was assigned as R+D Manager for special projects where he led the development of several services offered by various business units at Kabbani Group including maintenance, testing, repair, waterproofing, flooring, and construction works.

Industry Experience

20 Years Industry Experience

Credentials

Master of Business Administration
London Business School; 2016

B.Eng in Civil Engineering
Lebanese American University; 2005

Training + Certifications

Bullet Proof Manager - CRESTCOM, 2015

Conceptual + Strategic Selling - Miller Heiman, 2012

Strategic Project Management, 2011

Construction Contracts + Contracting Management - CMCS, 2010

Occupational Health + Safety – CMCS, 2009

Safety Inspection of In-service Bridges – NHI, 2008

Contact Information

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CSaid@CTLGroupQatar.com

Relevant Project Experience

Condition Assessment

- Oversaw the execution of more than 350 projects related to Inspection, Testing and Appraisal for various infrastructures in GCC region including bridges, roads, buildings, industrial facilities, among many others

Structural Health Monitoring Load Testing

- Involved in the design, execution, engineering and testing monitoring of several automated monitoring and load solutions for buildings and bridges

Repair + Maintenance of Existing Structures

- Managed several critical projects that involved repair, strengthening and remedial waterproofing works for leaking basements, tunnels and buildings

Construction of Fast Track Projects

- Planned, supervised, coordinated and managed several construction activities contributing to successful completion and handing over of several landmark projects (Texas A+M Engineering College, NDIA Project, Al Barwa Residential Complex)

R+D Projects

- Collaborated with academic professors and institutions to develop a Bridge Management Software that helps governmental agencies (MOTs + Municipalities) to manage and optimize the lifecycle of their transportation structures
- Pioneered the development of inspection and maintenance solutions for several landmark projects (KAMC, MUST, NWAFH, DURP, KAUST, among others

Mahmoud Al Shboul

LABORATORY MANAGER (CTLGROUP QATAR)

Mr. Al Shboul oversees the day-to-day activities of the operation team as well as overall management of ongoing projects. In addition to his responsibilities towards ensuring quality and timely deliverables, Mahmoud is involved in several initiatives related to quality assurance and control programs such as NRMCA Inspection + Audits.

Prior to joining CTLGroup-Qatar, he was at Lafarge Ready Mix – Jordan where he was in charge of quality practices with focus on building materials and concrete technology. He has attended numerous training courses and acquired several certificates related concrete testing, inspection and quality control.

Industry Experience

14 Years Industry Experience

Credentials

Bachelor of Civil Engineering Jordan University for Science + Technology, 2011

Member of Qatar Engineers Association 2016

Training + Certifications

Plant Inspector Engineer (NRMCA), 2016

Measurement of Uncertainty, iAS, 2016

Concrete Field Testing - ACI, 2014

ISO 17025 – International Accreditation Service, 2011

STAAD pro Reinforcement Concrete Analysis + Design, Jordan Engineers Association (JEA), 2010

Primavera P6, (JUST) – 2010

Contact Information

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Relevant Project Experience

Material Testing

- Planned, supervised, coordinated and managed several material testing activities for concrete, soil, asphalt, cement, mortar, chemistry, water
- Enhanced several practices and processes related to daily laboratory operations

Condition Assessment

- Oversaw the execution of more than 75 projects related to Inspection, Testing and Appraisal for various infrastructures including bridges, marine structures, buildings, industrial facilities

Quality Assurance

- Collaborated and Developed in line with Quality Manager several in-house quality procedures, standards and specifications
- Assured consistent quality of operations by developing and enforcing the policies, validating processes and documentation

Concrete Technology

- Designed concrete mixes from M5 Grade to M100 Grade
- Conducted numerous laboratory tests to determine the properties and performance of construction materials such as cement, stone, sand, and chemical mixtures

Nondestructive Testing

- Performed several nondestructive testing to identify extent of damage and corrosion in reinforced concrete structures including IP, IE, UPV, GP, etc.

Daher A. El Mokdad

HEAD OF NDT & INSTRUMENTATION DIVISION

Mr. Mokdad has 14 years of experience in the specialized engineering and testing industry with the focus on nondestructive testing, material evaluation, condition assessment, field instrumentation and data collection as well as concrete repair and strengthening. Prior to joining CTLGroup-Qatar, Mr. Mokdad has worked as Operations Manager for 8 years at INSPECTECH and 4 years as business development at STRUCTURAL (Specialized Companies within IKK-Group KSA).During this period he oversaw execution and successful handing over of several projects related to testing, assessment, monitoring, repair and strengthening of various infrastructures

Industry Experience

14 Years Industry Experience

Credentials

B.Eng in Computer & Communication – Islamic University of Lebanon 2007

Training & Certifications

GPR Data acquisition and processing – Jeddah – May 2015

GSSI - Product Introduction Seminar – Jeddah – Feb – 2014

NDE/NDT for Bridges & Highways – New York – 2013

BDI - Product Conference – Colorado – Aug – 2013

Olsen Engineering – Seminar – New York – Aug – 2013

GSSI – Product Seminar – New Hamshire – Aug-13

SHM Systems – June 2013

GPR analysis Software (RDXPRO _ RDXCAD)– January 2011

ACI Certification – Concrete Field Testing – Mar – 2009

Cathodic Protection CP1- Abu Dhabi – Jan 2009

Relevant Project Experience

Condition Assessment/ Non-destructive Testing

- Executed and managed more than 300 projects involving nondestructive methods (Impact Echo, Impulse Response, GPR, ERT, Corrosion Rate & Potential, Schmidt Hammer and UPV)
- Preparing Technical Proposals/Commercial Offers for New Projects.
- Managing a team of specialized engineers to execute granted projects (Site Works, Data Analysis & Report Preparation).
- Meeting Clients to insure their satisfaction on the executed projects and discuss/solve any problem that occurs during project execution.
- Involved in the successful execution of numerous structural appraisal projects for various infrastructures in including bridges, roads, water tanks, marine structures, buildings, industrial facilities, and more

Structural Health Monitoring, Load Testing

- Executed and managed various projects involving structural health monitoring, load testing for buildings and bridges.

Repair + Maintenance of Existing Structures

- Managed several critical projects that involved repair, strengthening and remedial waterproofing works for leaking basements, tunnels and buildings
- Generated new sales opportunities by developing relationships with new and existing clients.
- Prepared Repair Procedures/ Technical Specifications for different type of repair projects.
- Estimating & Pricing Concrete Repair / Strengthening projects.
- Providing Technical Support for obtained projects through preparing method statements, meeting consultants, proposing alternative repair solutions, etc.…

Dennis M. McCann, Ph.D., P.E.

President

Dennis McCann Ph.D., P.E. serves as President of CTLGroup with responsibilities including operations oversight and strategy for the firm. Dr. McCann's professional practice focuses on forensic engineering, risk assessment, and performance evaluation of structures and infrastructure. He advises clients regarding technical problems across several market sectors, including buildings, energy, transportation, and infrastructure sectors. Within these sectors, he often consults on matters involving property loss and failure avoidance.

Dr. McCann has studied the cause of catastrophic structural collapses and has responded in the aftermath of several major natural disasters. He has also investigated design and construction defects or deterioration that has resulted in loss of performance or undesirable structural behavior. His efforts in performance evaluation have included the development and implementation of monitoring systems to assess the behavior and health of in-service structures and infrastructure. Dr. McCann has applied his expertise to residential and commercial buildings, bridges, temporary works, foundations, stacks, tanks, towers, and other industrial structures.

Dr. McCann has a strong background in engineering mechanics with a specialty in structural dynamics and vibrations. His experience includes analysis of structural response to wind, earthquake, and blast loads, as well as monitoring and mitigation of vibration effects. Dr. McCann's technical background extends to probabilistic analysis to support risk management and decision making.

Prior to joining CTLGroup, Dr. McCann held positions with a leading multi-disciplinary engineering and scientific consulting firm. He also has past experience performing analysis and design tasks for water resources facilities and geotechnical systems. Dr. McCann has taught civil engineering courses and has served as a peer reviewer for academic journals and industry publications. He has also served as a Structures Specialist for the Illinois Urban Search and Rescue Team.

Representative Project Experience

Failure Investigation

- Served as lead structural engineering expert on team investigating the tragic collapse of the Champlain Towers South condominium in Surfside, Florida. Investigation included study of the original structural design and pre-collapse conditions, site investigation and material sampling, artifact examination, hypothesis development and analysis, and technical support for the mediation process in the civil litigation.
- Investigated the failure during construction of a nearly 800 foot long steel sheet pile bulkhead and pile-supported river walk structure in Georgia. Evaluated the adequacy of the structural design and assessed reparability as part of the builder's risk insurance loss recovery process.

Academic Credentials

Ph.D. in Civil Engineering
The Johns Hopkins University, 2001

M.S.E. in Civil Engineering
The Johns Hopkins University, 2000

B.S. in Civil Engineering
University of Notre Dame, 1993

Licensure/Certification

Professional Engineer
CO, CT, FL, GA, IL, IN, IA, KS, LA, MI, MD, MN, NC, NJ, NV, NY, OH, VA, WV, USVI

NCEES

Professional Affiliations

Abel Wolman Graduate Fellow, The Johns Hopkins University

American Society of Civil Engineers, Member

American Concrete Institute, Member

American Institute of Steel Construction, Member

Structural Engineers Association of Illinois, Associate Member

American Association for Wind Engineering, Member

Contact Information

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Failure Investigation (Continued)

- Served as lead investigator studying the partial collapse of a pre-engineered metal building warehouse facility in Maryland following a major winter storm. Assessed original design and as-built conditions, and oversaw the conceptual design of a replacement structure for the purposes of property loss recovery.
- Investigated the failure of an earth retention system, which was constructed as part of a major metropolitan sewage treatment plant expansion project, and associated earth embankment collapse that impacted operations of an adjacent mass transit rail line. The investigation included structural design review, computational modeling and simulation of the structural failure, and analysis of slope stability.
- Led the investigation into the collapse of a form traveler used to construct a cable stayed bridge in Puerto Rico. Oversaw nondestructive evaluation and metallurgical studies, design and fabrication review, and structural analysis. Evaluated contribution of design and fabrication defects on the failure. Provided expert witness services during dispute resolution.
- Performed a failure investigation following a construction accident during widening of a combined rail and highway bridge in Louisiana. Documented the failure scene, preserved evidence, and analyzed the guy wire system and other temporary works used to stabilize the in-progress construction.
- Managed the failure investigation of a steel box-girder bridge in New York that collapsed during a concrete deck pour. Documented failure scene and participated in evidence preservation program with other experts. Conducted design review, assessed construction loads, and performed finite element analyses to test failure theories.
- Investigated the collapse of a 10-story rack structure in Wisconsin. Conducted field investigation to document scene and identify evidence for preservation. Evaluated welded connections of structural assemblages. Performed design review and computational analyses to assess the stability of the structure under various failure scenarios.

Disaster Response

- Responded in the wake of several major natural disasters including Hurricanes Wilma, Katrina, Ike, Harvey, Irma, and Maria, as well as river flooding, tornadoes, and severe weather outbreaks in the Midwest. Evaluated nature, extent, and reparability of damage to residential and commercial properties following these catastrophes
- Served as structural engineering expert on multidisciplinary teams investigating accidental explosions at various industrial, agricultural, and petrochemical sites. Performed structural blast indicator analysis to determine magnitude of explosion pressures as part of origin and cause analysis of combustible dust and vapor cloud explosions.

Dennis M. McCann, Ph.D., P.E.

President

Structural Performance Evaluation

- Led multidisciplinary team of structural and materials engineers investigating alleged defective construction of a steel fiber reinforced concrete building. Managed extensive field sampling study and laboratory analysis of materials. Conducted design review and performed structural analysis, including non-linear, dynamic finite element analysis, to assess the effect of deviations from material specifications on structural performance.
- Investigated the cause of steel bearing plate performance issues and concrete damage on large precast concrete girders erected as part of elevated transit rail infrastructure expansion project on the east coast. Supported contractor team with the development of repair solutions.
- Evaluated the impact of interior wall corrosion on the performance of two steel stacks at a chemical processing plant in Louisiana. Assisted plant managers with risk analysis and recommended repair alternatives.
- Conducted a performance assessment of a water tank at a power plant in Virginia. Analyzed the impact of foundation settlement and made recommendations for future monitoring.

Monitoring of In-Service Structures

- Developed a structural monitoring program aimed at managing risk of damage to a sensitive structure adjacent to a construction site on a dense urban higher education campus in Chicago. Implemented multi-node vibration, settlement, and tilt monitoring systems that operated throughout demolition and construction activities, and ensured regular reports and alerts were provided to the university to aid the risk management effort.
- Monitored dynamic response of stay-cables and analyzed measurement data to estimate cable damping and tension as part of the recurring inspection program for the East Huntington Bridge over the Ohio River.
- Designed and implemented a structural monitoring system as part of load testing at a nuclear power plant in Michigan conducted to validate structural response to new cask transporter loads that were heavier than the original design.
- Conducted a vibration study of large reactors at a chemical processing facility in Illinois. Performed modal testing, monitored vibrations during operations, conducted structural condition assessments, and made recommendations for design improvements to mitigate unwanted vibrations and improve long-term performance.

Dennis M. McCann, Ph.D., P.E.

President

Publications

- McCann, D.M., Viz, M.J. **Risk-based Inspection and Hazard Assessments: Analogs for Civil Infrastructure.** American Society of Civil Engineers, Structures Congress, Portland, Oregon. April 2015.
- Ogle, R.A., McCann, D.M., Viz, M.J. **Sizing Safety Stock for Supply Chain Risk Management.** American Institute of Chemical Engineers, 2011 Annual Meeting, Minneapolis, Minnesota. October 2011.
- Corr D.J., McCann D.M., McDonald B.M. **Lessons learned from the Marcy bridge collapse. Forensic Engineering 2009 – Pathology of the Built Environment**, Proceedings of the 5th Congress on Forensic Engineering, Washington, DC, November 11–14, 2009.
- Smith S., Bilow D., McCann D., Kamara M. **A Complete Guide to Blast-Resistant Design of Low Rise Reinforced Concrete Buildings.** 17th IABSE Congress, Creating and Renewing Urban Structures—Tall Buildings, Bridges and Infrastructure, Chicago, IL, September 17–19, 2008.
- Peraza D.P., McCann D.M. **Avoiding Structural Failures During Construction** - Part 2. Structure Magazine, February 2008.
- McCann D.M., Smith S.J. **Blast Resistant Design of Reinforced Concrete Structures.** Structure Magazine, April 2007.
- McCann D.M., Weaver B.T., Smith S.J., Meacham E.M. **Modal Testing Diagnosis of Bus Seat Failures.** IMAC XXII, Society of Experimental Mechanics, Dearborn, MI, January 2004.
- McCann D.M., Jones N.P. **Systems-Based Approach to Evaluating Structural Condition Assessment Methods.** Proceedings, Workshop on Management of Civil Infrastructure Systems in Multihazard Environments, Jones NP (ed), 2001.
- McCann D.M. **The value of Information In Structural Performance Assessment.** Ph.D. Dissertation, The Johns Hopkins University, Baltimore, MD, 2000.
- McCann D.M., Jones N.P., Ellis J.H. **Role of Global NDE Techniques in Structural Performance Assessment.** Proceedings, 14th ASCE Engineering Mechanics Conference, Austin, TX, 2000.
- McCann D.M, Jones N.P., Ellis J.H. **Evaluating The Utility of Global Damage Detection Methods for Highway Bridges.** Proceeding, 5th Annual Symposium on Nondestructive Evaluation and Health Monitoring of Aging Structures, Newport Beach, CA, 2000.
- McCann D.M., Jones N.P., Ellis J.H. **Toward Consideration of The Value of Information In Structural Performance Assessment.** Proceedings, Structural Engineering World Congress, San Francisco, CA, 1998.
- Kirkner D.J., Caulfield P.N., McCann D.M. **Three Dimensional Finite Element Simulation of Permanent Deformations in Flexible Pavement Systems.** Transportation Research Record, No. 1448, pp. 34–39, 1994.
- McCann D.M. **Response of an Elastic-Plastic Layer to a Moving Load.** Proceedings, 7th NCUR, Salt Lake City, UT, 1993.

Dennis M. McCann, Ph.D., P.E.

President

Books

- Smith S.J., McCann D.M., Kamara M.E. **Blast Resistant Design Guide for Reinforced Concrete Structures**. Portland Cement Association, 2009. ISBN 978-0-8932-270-6.

Conferences and Seminars

Presenter/Panelist

- **Advances in Forensic Engineering of Concrete Structures**, RC 4.0 Reunión del Concreto Virtual, Cartagena de Indias, Columbia, September 24, 2020.
- **Monitoring Structural Response During Load Tests at a Nuclear Power Plant**, Exelon Structural Partners Meeting, Warrenville, IL, August 22, 2017
- **Structural Vibrations: Measurement & Diagnosis**, Iowa ASCE Structural Engineering Conference 2016, Ames, IA, November 17, 2016.
- **Eyes in the Sky: Drones in Facility Management**, National Facilities Management & Technology, Baltimore, MD, March 24, 2016.
- **A Primer on Structural Vibrations**, Iowa ASCE Structural Engineering Conference 2014, Ames, IA, November 10, 2014.
- **Construction Accidents – An Engineer's Perspective**, Defense Trial Counsel of Indiana 17th Annual Conference + Meeting, November 18, 2010.
- **Lessons Learned from the Marcy Bridge Collapse**, Forensic Engineering 5th Congress – Pathology of the Built Environment, November 2009.
- **Evaluating the Utility of Global Damage Detection Methods for Highway Bridges**. SPIE 5th Annual Symposium on Nondestructive Evaluation and Health Monitoring of Aging Structures, Newport Beach, California, May 2000.
- **Toward Consideration of the Value of Information in Structural Performance Assessment**. Structural Engineers World Congress, San Francisco, California, July 19-23, 1998.

Invited Lectures

- McCann D.M. **Explosion investigations – A Structural Engineer's Perspective**. Engineering Forensics Course, Department of Civil Engineering, Northwestern University, May 12, 2011.
- Wren J.R., McCann D.M. **Epic failures**. William A. and Joyce R. Bell Excellence Fund for Civil Engineering Lecture, Western Kentucky University, October 5, 2010.
- McCann DM. **Blast Effects on Structures – A Primer on Blast Resistant Design**. Structural Engineers Association of Washington, Spokane Chapter, April 20, 2010.
- McCann DM. **Blast Resistant Design Basics**. Steel Structures Design Course, Department of Civil Engineering, Northwestern University, March 13, 2009 and June 1, 2010.

Dennis M. McCann, Ph.D., P.E.

President

Prior Experience

- **CTLGroup, Skokie, Illinois**
  Vice President and Chief Operating Officer, 2018-2020
  Senior Principal Engineer and Director, Materials & Mechanics Group, 2017
  Principal Engineer and Director, Materials & Mechanics Group, 2015 – 2016
  Principal Engineer and Director, Naperville, Illinois Office, 2011 – 2014

- **Exponent, Inc., Buildings and Structures Practice, Chicago, Illinois**
  Senior Managing Engineer, 2008–2011
  Managing Engineer, 2005–2007
  Senior Engineer, 2003–2004
  Engineer, 2001–2002

- **The Johns Hopkins University, Baltimore, Maryland**
  Post-Doctoral Fellow, Department of Civil Engineering, 2000
  Courses Taught: Engineering Mechanics, Dynamics
  Instructor, Part-Time Programs in Engineering and Applied Sciences, 2000
  Courses Taught: Wind + Earthquake Engineering

- **Lawson-Fisher Associates, P.C., South Bend, Indiana**
  Civil Engineer, 1993–1995

Additional Experience

- Structures Specialist, Illinois Urban Search and Rescue – Task Force 1, Illinois Emergency Management Agency/Illinois Terrorism Task Force, 2003–present

Professional Honors

- Abel Wolman Graduate Fellow, The Johns Hopkins University
- Walter L. Shilts Award for Undergraduate Achievement, University of Notre Dame
- Chi Epsilon, Civil Engineering Honor Society
- Sigma Xi, Scientific Research Society

Professional Affiliations

- Abel Wolman Graduate Fellow, The Johns Hopkins University
- American Society of Civil Engineers, Member
- American Concrete Institute, Member
- American Institute of Steel Construction, Member
- Structural Engineers Association of Illinois, Associate Member
- American Association for Wind Engineering, Member

David Corr, Ph.D., P.E.

Vice President of Consulting Services

David Corr serves as the Vice President of Consulting Services at CTLGroup and is one of the nation's leading experts related to materials characterization, structural performance, and infrastructure materials development. Dr. Corr's knowledge focuses on both traditional and emerging building materials. Specifically, he has studied the durability of concrete, the rheology and fresh-state behavior of concrete, and fracture and cracking in cement-based materials.

Prior to joining CTLGroup, Dr. Corr was Clinical Professor and the Director of Graduate Studies in the Department of Civil & Environmental Engineering at Northwestern University. His most current research focused on nanotechnology of cement-based materials, large-scale additive manufacturing (3D printing), and cross-laminated timber. Dr. Corr has also conducted research in structural health monitoring, structural diagnostics, data analysis of structural performance, failure analysis and forensic engineering. He is a member of the American Concrete Institute (ACI), the past Chair of the Cements Division of the American Ceramic Society and is a licensed professional engineer in the states of Illinois and Michigan.

Patents and Developments

- Managed an investigation into the cause and origin of excessive cracking in a water retaining concrete structure in Canada. Evaluated concrete mixture design characteristics and rebar details against pertinent industry documents including ACI 350 to evaluate hypotheses for lack of water-tightness.
- Managed an investigation into excessive cracking in precast concrete box girder segments for a commuter rail line in the Philippines. Assessed mixture design characteristics and temperature profiles to determine susceptibility to shrinkage cracking and delayed ettringite formation.
- Investigated the failure investigation of a steel box-girder bridge in New York that collapsed during construction. Determined construction loads, and conducted finite element modeling to test failure theories.
- Investigated the collapse of a 10-story rack structure in Wisconsin. Performed design calculations and computational modeling to assess the stability of the structure under various failure scenarios.
- Responded in the wake of multiple major natural disasters including Hurricane Katrina and the Kiholo Bay earthquake in Hawaii. Evaluated nature, extent, and reparability of damage to residential and commercial properties following these catastrophes.

Academic Experience

- Director of Graduate and Undergraduate Studies, Civil and Environmental Engineering, 9/2012 – 10/2022.
- Clinical Professor, Civil and Environmental Engineering, Northwestern University, 1/2018 - 10/2022.
- Charles Deering McCormick University Distinguished Clinical Professor, 9/2014 to 9/2015.

Academic Credentials

Adjunct Professor, Civil and Environmental Engineering
Northwestern University
Evanston, IL

Ph.D. in Civil Engineering
University of California, Berkeley
Berkeley, CA 2001

M.S. in Civil Engineering
University of California, Berkeley
Berkeley, CA 1998

B.S. in Civil Engineering
University of Notre Dame,
South Bend, IN 1996

Licensure & Certifications

Licensed Professional Engineer
IL, MI, NC, NY, WI

Professional Affiliations

American Concrete Institute (ACI), Member

American Ceramic Society (ACerS) Credentials Body

Contact Information

(847) 972-3056
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- Clinical Associate Professor, Civil and Environmental Engineering, Northwestern University, 9/2008 - 12/2017.
- Joint Appointment with Northwestern University Infrastructure Technology Institute, 9/2008 – 8/2013.

Recent Publishing History

- Marrero Rosa R.E., Corr D.J., Espinosa H.D. and Shah S.P., "**Characterization of adhesion strength between carbon nanotubes and cementitious materials**," Cement and Concrete Composites 138, 2023
- Marerro Rosa R.E., Cusatis G., Shah S.P. and Corr D.J., "**Characterization of Contact Creep Behavior on Carbon Nanoreinforced Cementitious Composites**," in preparation, 2023.
- Mendu K., Corr D.J. and Shah S.P., "**Influence of CNF on Portland Cement Hydration Products using FTIR-DRIFT, Raman Spectroscopy, and X-ray Diffraction Studies**," in preparation, 2023.
- Tong D., Brown S.A., Landis E., Corr D. and Cusatis G., "**Orthotropic Hygroscopic Behavior of Mass Timber: Theory and Computation**," in preparation, 2023.
- Mendu K., Guiney L.M., Hersam M.C., Shah S.P. and Corr D.J., "**Characterization and scalability of carbon nanofiber dispersions in aqueous solutions for cementitious nanocomposites**," Cement and Concrete Composites, under review, 2023.
- Mete F., Kosnik D.E. and Corr D.J., "**Long-term monitoring of bridge performance using structural health monitoring and weigh-in-motion data**," in preparation, 2022.
- Mete F., Corr D.J., Wilbur M. and Chen Y., "**Bridge response and heavy truck classification framework based on a two-step machine learning algorithm**." Transportation Research Record, published online December 2, 2021.
- Tong D., Brown S.A., Corr D. and Cusatis G., "**Wood creep data collection and unbiased parameter identification of compliance functions**," Holzforschung - Wood Research and Technology, 2020.
- Li Z., Corr D.J., Han B. and Shah S.P., "**Investigating the effect of carbon nanotubes on early age hydration of cementitious composites with isothermal calorimetry and fourier transform infrared spectroscopy**," Cement and Concrete Composites 107, 2020.
- D'Alessandro A., Corr D.J. and Shah S.P., "**Use of Tetraethyl Orthosilicate to improve durability of ferrocement**," ACI Materials Journal 116(6), 159-168, 2019.
- Tao S., Gao Y., Corr D.J. and Shah S.P., "**FTIR study on early-age hydration of carbon nanotube-modified cement-based materials**," Advances in Cement Research 31(8), 353-361, 2019.
- Xu J., Shen W., Corr D.J., and Shah S.P., "**Effect of nanosilica on cement grain-CSH gel interfacial properties quantified by modulus mapping and nanoscratch**," Materials Research Express 6(4), 2019.

Conference Proceedings

- Kosnik D.E., Hopwood T. and Corr D.J., "**Acoustic Emission Monitoring for Assessment of Steel Bridge Details, American Institute of Physics**," July 2010, San Diego, CA, 2011.
- Corr D., McCann D. and McDonald B., "**Lessons Learned from March Bridge Collapse," ASCE 5th Congress on Forensic Engineering**," November 2009, Washington, DC.
- Landis E. and Corr D.J., "**Three Dimensional Analysis of Air Void Systems in Concrete**," 16th European Conference of Fracture, 2006, pp. 517-524.
- Corr D.J. and Shah S.P., "**Concrete Materials Science at the Nanoscale**," Keynote Paper, Global Construction: Ultimate Concrete Opportunities, July 5-7, 2005, Scotland.
- Corr D.J., Graham-Brady L.L., Igusa T., Der Kiureghian A., "**Reliability of Service Life Predictions for Concrete under Sulfate Attack**," Proceedings, 9th International Conference on Applications of Statistics and Probability in Civil Engineering, Millpress, Rotterdam, 2003.

Accomplishments

- Charles Deering McCormick University Distinguished Clinical Professor, Northwestern University. Awarded 2014.
- Certificate of Teaching Excellence, McCormick School of Engineering and Applied Science. Awarded 2011.
- Northwestern University Faculty Senate, representative of McCormick non-tenure track faculty, 2016-2018.
- American Ceramic Society (ACerS), member and President of Cements Division, 2018-2019.
- 7th Advances in Cement-Based Materials, July 2016 ACerS Cements Division conference, Program Chair.
- 11th Advances in Cement-Based Materials, June 2020 ACerS Cements Division conference, Program Chair (cancelled due to COVID-19).

Boyd Clark, Ph.D.

Principal In Charge

As the Vice President of Materials at CTLGroup, Dr. Clark excels in materials science, new product design, and the research and analysis of building materials. He is additionally proficient in the application and use of scanning electron microscopy (SEM), optical microscopy, X-ray diffraction (XRD), and X-ray fluorescence (XRF). With over 25 years experience as a principal investigator for a wide variety of material related failures, Dr. Clark is a leader in litigation and support for CTLGroup. Prior to joining CTLGroup, Dr. Clark worked at a major testing and consulting firm where, among other roles, he served as Director of Construction Materials Services. There, he was involved in research and problem solving analyses for materials including ceramics, metals, minerals, and building products.

Representative Project Experience

Materials Analysis & Structural Investigation

- Determined the cause of deterioration in concrete members including railroad ties, bridges and piers, parking garages, residential foundations + swimming pool plasters.
- Evaluated concrete in a building damaged as a result of the collapse of the World Trade Center Towers. The evaluation included failure analysis, appraisal of thermal effects on cementitious and metal building systems and the extent to which diesel fuel ingress compromised structural integrity.
- Evaluated and designed cementitious systems for the incorporation of simulated mixed waste (radioactive and non-radioactive) from the Hanford Reservation.
- Has overseen multiple projects for the Nuclear Industry; projects have been governed by both DOE and NRC regulations. Projects include qualifying constituents for concrete production, evaluating structural integrity and durability of concrete containing radioactive waste, and operations to evaluate concrete and mortar specimens with low levels of radioactivity, including examinations using multiple analytical techniques and physical testing.
- Evaluated concrete samples using multiple analytical techniques to determine cause of deterioration; concrete members evaluated include concrete railroad ties, bridges and piers, parking garages, stucco applications, residential foundations, and swimming pool plasters.

Laboratory Oversight

- Overseen various laboratory functions for the testing of cement, fly ash, slag, concrete, and other components related to construction materials. Testing includes wet chemical, mechanical (structural) behavior, physical parameters, microscopy, and analytical chemistry techniques, including organic and inorganic analytical techniques.

Academic Credentials

Ph.D. Intercollege Materials Program Pennsylvania State University, 2001

M.S. in Materials Science and Engineering University of California-Berkeley, 1988

B.S. in Materials Science and Engineering University of California-Berkeley, 1983

Professional Affiliations

- Need -

Contact Information

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BClark@CTLGroup.com

Boyd Clark, Ph.D.

Principal In Charge

Representative Project Experience (Continued)

Laboratory Oversight (Continued)

- Skilled in application of laboratory systems and quality control programs for numerous test methods in environmental and construction industry.
- Managed routine laboratory operations for environmental assessments using both organic and inorganic test procedures.
- Research and problem-solving analyses for a wide variety of materials, including semiconductors, metals, minerals, and building products utilizing multiple analytical techniques.

Nuclear Industry

- Oversaw multiple projects for the Nuclear Industry, governed by both DOE and NRC regulations. Projects included qualifying constituents for concrete production, evaluating structural integrity and durability of concrete containing radioactive waste, and research of cementitious waste forms for long term disposal. developed laboratory operations to evaluate concrete and mortar specimens with low levels of radioactivity, including examinations using multiple analytical techniques and physical testing.
- Evaluation and design of cementitious systems for incorporation of simulated mixed waste (radioactive and non-radioactive) from the Hanford Reservation. Projects involved the evaluation of physical and chemical parameters for long-term containment and/or solidification of liquid or solid waste components.

Environmental Toxins Analyses

- Managed laboratory performing environmental testing using standard analytical and wet chemistry techniques for building products, contaminated soils and water specimens.
- Evaluation of a building damaged as a result of the collapse of the World Trade Center Towers. Evaluation included appraisal of the extent of diesel fuel ingress and the extent of dust contamination on electronic components.
- Managed department evaluating dust samples for multiple industrial clients. Both bulk and air-borne dust samples were evaluated on a routine testing basis. Testing included organic and inorganic component evaluations.
- Managed projects using automated SEM and optical microscopy techniques to enhance particulate evaluation. These testing results were, in turn, used many times for source apportionment purposes. Also assisted in the development of automated techniques for project-specific purposes.
- Designed sampling programs and reporting systems for monitoring nuisance dust, respirable and bulk crystalline silica in the mining and construction industry.

Representative Project Experience (Continued)

Concrete Construction

- Evaluated concrete samples using multiple analytical techniques to determine cause of deterioration. Concrete components evaluated include concrete railroad ties, bridges and piers, parking garages, stucco applications, residential floors and foundations, and swimming pool plasters.
- Evaluation of a building damaged as a result of the collapse of the World Trade Center Towers. Evaluation included appraisal of thermal effects on cementitious and metal building systems; assessments were used to evaluate the extent of compromised concrete structural integrity.
- Managed department evaluating cementitious materials for failures and concrete mix design determinations. Testing generally employed SEM and optical microscopy techniques for projects.
- Evaluated stucco construction defects in residential applications, including mix design problems, component failures, and durability issues.

Coating Failures

- Evaluated numerous construction defects involving failures of coatings. Coating failures have included paint delamination, cementitious material finish coats, and elastomeric coatings on exterior building surfaces. Substrate materials, with coatings, have included aluminum frames, concrete, stucco, and plastics. Evaluation of construction defects included origin of coating failure, defects present in coatings (voids and foreign materials), determination of coating thicknesses, assessment of organic and inorganic constituents, and identification of specific products used for the coatings.
- Project involving the evaluation of premature deterioration of oil refinery fireproofing. Cementitious fireproofing applied to steel girders for use in an oil refinery expansion was delaminating and cracking due to outdoor exposure. Numerous analytical techniques were employed to evaluate the cause of observed yellowing of the product and correlated microstructural changes to the fireproofing. Determined that causation was directly related to the inadequate manufacturing practices employed for the pre-bagged products used in casting the fireproofing on the beams.
- Assessed numerous failure projects of coatings on architectural aluminum frames for high-rise buildings in marine environments. In these projects fluoropolymer compounds were required for the long term durability. Assessments included evaluation of component manufacturing and failure mechanisms.

Boyd Clark, Ph.D.

Principal In Charge

Representative Project Experience (Continued)

Metal Corrosion

- Involved with projects evaluating the corrosion of various metal components using optical microscopy, SEM, and other analytical techniques. Multiple routine investigations passed through the laboratory to characterize corrosive ionic species and to assess extent of corrosion.
- Large projects involved corrosion of household articles from chlorine gas (train derailment) and corrosion of metal components in single family residences in Southern California, Arizona, Hawaii and Florida.
- Evaluation of corrosion mechanisms of aluminum architectural frames due to marine environment.
- Assessing the service life of corroding fasteners for a building envelope system in a high-rise, multi-family building.
- Led development of new product designed to prevent corrosion of metal in concrete using chemical inhibitors. Comparisons included using existing (marketed) liquid corrosion inhibitors.

Publications

- Henocq, P., E. Samson, J. Marchand, and B. Clark. 2007. "**Determination of the Chloride Content Threshold to Initial Steel Corrosion**." 5th International Essen Workshop – TRANSCON 07 – Transport in Concrete: Nano- to Macrostructure, Essen, Germany. June 11-13.
- E. Samson, J. Marchand, and B. Clark. 2008. "**Extending the service life of an existing bridge structure using a predictive modeling software**". Concrete Bridge Conference, St. Louis, May 4-7 (presentation).
- Feng, X. and Clark, B. 2014. "**Portland-Limestone Blended Cement: Effects of Limestone Characteristics**". Portland Cement Association R+D SN3241.
- Feng, X., and Clark, B. 2012. "**Correlations between the Laboratory Test Methods for Potential Alkali-Silica Reactivity of Aggregates**." 14th International Conference on Alkali Aggregate Reaction, Austin, Texas. May.
- Cooke, G. A., L. L. Lockrem, B. A. Clark, and R. Westberg. 2008. **Cast Stone Technology for Treatment and Disposal of Iodine Rich Caustic Waste Demonstration** - Final Report. CH2M Hill, RPP-RPT-26725, Hanford Group, Richland, Washington.
- Atteridge, D., M. Avila, V. Baca, S. Stevens, R. Westberg, K. M. Bishop, G. A. Cooke, L. L. Lockrem, B. Clark, R. J. Lee, and M. Silsbee. 2005. "**Development of a Cast Stone Formulation for Hanford Tank Wastes**." Full Paper, Presented at the RemTech 2005 Symposium, CH2M Hill, RPP-RPT-27297-FP, Banff, Alberta. October 19-21.

Publications (Continued)

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Boyd Clark, Ph.D.

Principal In Charge

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- Silsbee, Michael, Marisol Avila, Boyd A. Clark, and R. J. Lee. 2005. "**Development of Waste Forms for the Hanford Brines Basin 42 Waste Water, Waste Treatment Plant Secondary Wastes and Bulk Vitrification Secondary Waste**." Abstract submitted to Remediation Technologies Symposium, Alberta, Canada. October 19-21.
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Professional Honors, Awards, Fellowships, and Affiliations

- American Concrete Institute (ACI) Member
- Responsibility in Concrete Construction Committee 132
- Fly Ash in Concrete Committee 232
- Natural Pozzolans Committee 240
- Durability of Concrete Committee 201
- Corrosion of Metals in Concrete Committee 222
- American Society for Testing and Materials (ASTM) Member
- ASTM Cement Committee C01 and ASTM Concrete and Aggregate Committee C09.
- Honorary Member of ASTM Concrete and Aggregate Committee C09
- Subcommittee member
- Supplementary Cementitious Materials C09.24
- Aggregate Reactions in Concrete C09.50
- Petrography C09.65

Timothy D. Tonyan, Ph.D.

Vice President of Strategic Development

Dr. Tim Tonyan serves as CTLGroup's Vice President of Strategic Development, bringing over 30 years of experience as a forensic consultant and operations leader in the engineering consulting industry. He specializes in concrete science, materials characterization, construction processes, and forensic investigations, applying his expertise to advance strategic growth initiatives and deliver exceptional value to clients.

Dr. Tonyan's distinguished career includes serving as Chief Operating Officer of a globally recognized engineering and materials testing firm, where he directed operations, profitability, and growth strategies. He has successfully launched new business ventures, managed high-performing consulting teams, and led research laboratories in the development of innovative commercial product platforms. His technical expertise encompasses condition assessments, failure analyses of complex building systems, and expert testimony in construction claims and patent litigation. A holder of multiple patents, he has also contributed to the development of industry and building code standards, including ASME and ACI standards for the nuclear industry. With experience spanning the United States and the Middle East, Dr. Tonyan is recognized as a leader in engineering consulting and strategic development.

Inventions and Patents

Tonyan, Timothy D., James M. Ullett, and James E. Reicherts. **Non-combustible reinforced cementitious lightweight panels and metal frame system for a fire wall and other fire resistive assemblies.** U.S. Patent 8,122,679, filed on November 15, 2010, and issued February 28, 2012.

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Academic Credentials

Ph.D. in Civil Engineering, Massachusetts Institute of Technology, 1991

S.M. in Civil Engineering, Massachusetts Institute of Technology, 1988

B.S. in Building Construction, Georgia Institute of Technology, 1977

Professional Affiliations

American Concrete Institute (ACI)

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Member, Sigma Xi, Scientific Research Society

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Tonyan, Timothy D., et al. **Cement based laminated armor panels.** U.S. Patent 8,062,741, filed on February 27, 2009 and issued November 22, 2011.

Tonyan, Timothy D., James M. Ullett, and James E. Reicherts. **Non-combustible reinforced cementitious lightweight panels and metal frame system for building foundations.** U.S. Patent 8,061,108, filed on November 17, 2010, and issued November 22, 2011.

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Tonyan, Timothy D., David M. Bonen, Ashish Dubey, and Kumar C. Natesaiyer. 2003. **Structural sheathing panels.** U.S. Patent 6,620,487, filed on November 21, 2000, and issued September 16, 2003.

Reicherts, James, Timothy Tonyan, John Lankford, and Timothy Kenny. **Water durable board for exterior wall assembly water management system.** U.S. Patent 6,410,118, filed on November 14,1997, and issued June 25, 2002.

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Gan, Q., Lane, J., and Tonyan, T.D. **"Gaining acceptance: Testing of stay-cable systems assures durability."** Roads & Bridges, Scranton Gillette Communications, 46-51. Arlington Heights, Illinois. May 2013.

Eamon, C.D., Dubey, A., Roth, M.J., Slawson, T.R., and Tonyan, T.D. **"Ultra-High-Strength, Glass Fiber-Reinforced Concrete: Mechanical Behavior and Numerical Modeling."** Materials Journal, American Concrete Institute, Volume 107, Issue2: 158-194. March 2010.

Tonyan, T.D. **"Sustainability in New Building Systems Development: A Manufacturers Perspective."** Conference and Workshop on Sustainable Green Building Design and Construction, Cairo, Egypt. March 10-12 2009.

Bonen, D. and T. D. Tonyan. **"Microstructure and Mechanical Properties of a Composite Made of Well Embeddded AR Glass Fiber."** Fifth RILEM Symposium on Fiber Reinforced Cement. Eds. P. Rossi and G. Chanvillard, RILEM Publications s.a.r.l. 735-745, 2000.

Tonyan, T. D., K. W. Moyer, and W. C. Brown. **"Water Management and Moisture Transport in Direct-Applied and EIFS Wall Assemblies."** Journal of Testing and Evaluation, American Society for Testing and Materials, 219-230. West Conshocken, Pennsylvania. May 1999.

Brown, W. C., P. Adams, T. D. Tonyan, and J. M. Ullett. **"Water Management in Exterior Wall Claddings."** Journal of Thermal Insulation and Building Envelopes, Volume 21: 253-43. Technomic Publishing Inc. July 1997.

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Tonyan, T. D. **"Precast Concrete Sandwich Panels Using Cellular Concrete Cores."** Presented at the American Concrete Institute Spring Convention, Salt Lake City, Utah. March 9, 1995.

Karam, G. and T.D. Tonyan. **"Fractal Morphology of Cement Foams."** Materials Letters, Volume 16, Number 5: 278-280. May 1992.

Tonyan, T. D. and L. J. Gibson. **"Structure and Mechanics of Cement Foams."** Journal of Materials Science, 27: 6371-6378. December 1993.

Tonyan, T. D. and L. J. Gibson. **"Strengthening of Cement Foams."** Journal of Materials Science, 27: 6379-6386. December 1992.

Toole, T. M. and T. D. Tonyan. **"The Adoption of Innovative Building Systems: A Case Study."** Building Research, 1992

Professional and Academic Awards

USG Innovation Award, 2005

Graduate Research Fellowship, Program for Advanced Construction Technology, MIT, 1987-1989

Copy Of Valid Certificates

مستخرج ببعض بيانات السجل التجاري
Summary of commercial registry info

رقم السجل C.R Number	**69008**	تصنيف المنشأة SME Classification	صغيرة Small
الاسم التجاري	كونستركشن تكنولوجى لابروتوريز جروب	الشكل القانوني	شركة ذات مسؤولية محدودة
Commercial Name	CONSTRUCTION TECHNOLGY LABORATORIES GROUP	Legal form	Limited Liability Company

بيانات السجل التجاري
Commercial Registry Information

تاريخ الإنشاء Est. Date	تاريخ الانتهاء Expiry Date	رأس المال Capital	عدد الفروع Active	جنسية Nationality	حالة السجل C.R Status
05/11/2014	01/11/2028	200,000	0	قطر QATAR	نشط Active

اسم المالك أو الشركاء Owner Name or Partners	رقم الاثبات Identification Number	رقم السجل C.R Number	النسبة Percentage	الجنسية Nationality	الحالة Status
ريمه بنت طارق بن رشدي الصفدي Rymh Bnt Tarq Bn Rshdy Al-sfdy	R774711		49	السعودية SAUDI ARABIA	نشط Active
محمد خالد ماجد خالد المرزوقى MOHAMMED KHALID AL-MARZOUQI AL-MARZOUQI	29863405265		51	قطر Qatar	نشط Active

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بيانات الأنشطة التجارية
Commercial Activities

رمز النشاط Activity code	اسم النشاط التجاري Activity Name	رمز النشاط Activity code	اسم النشاط التجاري Activity Name
2001746	مختبرات علمية Scientific laboratories	7120005	اعمال فحص واختبار مواد البناء works of examine and experiment of building materials
4773012	التجارة فى الالات والمعدات المهنية والعلمية Trading in professional and scientific machinery and equipment	7120017	مختبرات البيئة و القياسات الاشعاعية Laboratories of environment and radiation measurement
7120002	مختبر تحليل المياه Water analysis laboratory		
7120400	اختبار و قياس المؤشرات البيئية Testing and measuring environmental indicators		

رقم قيد المنشأة Entity Number	رقم التسجيل الضريبي Tax Registration Number	الرقم الاقتصادي الموحد Unified Economic No.	غرفة قطر QATAR CHAMBER
14-9103-00	5000469239		عضو في غرفة تجارة وصناعة قطر Member of the Qatar Chamber of Commerce and Industry

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Ministry of Commerce and Industry
State of Qatar • دولـــة قطـــر

إدارة التسجيل والتراخيص التجارية
Registration and Commercial Licenses Department

رخصة تجارية
Commercial License

License Information — معلومات الرخصة

Company's Name	CONSTRUCTION TECHNOLGY LABORATORIES GROUP			كونستركشن تكنولوجى لابروتوريز جروب	**اسم الشركة**
Trade Name					**الاسم التجاري**
Site Classification	Commercial	تجاري	**تصنيف الموقع**	**License Number** 104641	**رقم الرخصة**
C.R. Number	69008		**رقم السجل**	**Date Issue** 19/02/2015	**تاريخ الإصدار**
				Expiry Date 04/01/2029	**تاريخ الانتهاء**

Responsible Manager Info — بيانات المدير المسؤول

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اسم النشاط التجاري Activity Name	رمز النشاط Activity code	اسم النشاط التجاري Activity Name	رمز النشاط Activity code
اعمال فحص واختبار مواد البناء works of examine and experiment of building materials	7120005	مختبر تحليل المياه Water analysis laboratory	7120002
مختبرات البيئة و القياسات الاشعاعية Laboratories of environment and radiation measurement	7120017	مختبرات علمية Scientific laboratories	2001746

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QATAR CHAMBER

غرفة تجارة وصناعة قطر
هاتف : ٤٤٥٥ ٩١١١ فاكس : ٤٤٦٦ ١٦٩٧ - ٤٤٦٦ ١٦٩٣
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شهادة عضوية
MEMBERSHIP CERTIFICATE

2023

Qatar Chamber Of Commerce & Industry certify that

CONSTRUCTION TECHNOLGY LABORATORIES GROUP

is a member of QCCI under Membership No 02/05803 and has (0) branches

Date: 07/11/2023

Management

Note : This certificate is valid until: 02/11/2025

*** Any alterations , overwriting or amendments to this certificate shall annul it.**

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06/09/2020

TAX CARD - بطاقة ضريبية

The General Tax Authority of Qatar certifies that the entity is registered as per the following details:

تشهد الهيئة العامة للضرائب في دولة قطر أن الجهة أدناه مسجلة حسب البيانات التالية:

TIN Number	**5000469239**	**رقم التعريف الضريبي**
Taxpayer Name:	كونستركشن تكنولوجى لابروتوريز جروب **CONSTRUCTION TECHNOLGY LABORATORIES GROU**	إسم المكلف:
Commercial Registration Number	**69008**	رقم السجل التجاري القطري
Address [Headquarter]:	المبنى: Building: منطقة: Zone: 57 شارع: Street: 41 قطر - Qatar	العنوان (المركز الرئيسي):
Main Activity:	**2001746** - مختبرات علمية **2001746-Scientific laboratories**	النشاط الرئيسي:
Legal Form:	شركة ذات مسؤولية محدودة **Limited Liability Company**	الشكل القانوني:
Activity Commencement Date:	**05/11/2014**	تاريخ بدئ النشاط:
Number of Branches:	**0**	عدد الفروع:
Registered taxes :		**الضرائب المسجلة :**
Income Tax	**REGISTERED - 05/11/2014 -** مسجل	الضريبة على الدخل

الهيئة العامة للضرائب
GENERAL TAX AUTHORITY

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Certificate

Quality Austria
has issued an IQNET recognized certificate that the organization:

Construction Technology Laboratories Group WLL

Street 125 (Al-Kassarat Road), Industrial Area, Doha, Qatar, PO BOX 40146.

for the following scope:

Laboratory Testing, Consulting Engineering and Scientific Analysis

EAC: 28

has implemented and maintains a

QUALITY MANAGEMENT SYSTEM

which fulfils the requirements of the following standard

ISO 9001:2015

Issued on:	**2024-08-21**
Validity Date:	**2027-05-10**
Quality Austria certified since:	**2015-05-11**

Registration Number: **AT-16336/0**

Alex Stoichitoiu
President of IQNET

Mag. Friedrich Khuen-Belasi
Authorised Representative
of Quality Austria

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qualityaustria
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This **quality**austria certificate confirms the application and further development of an effective

QUALITY MANAGEMENT SYSTEM

complying with the requirements of standard

ISO 9001:2015

Construction Technology Laboratories Group WLL
Street 125 (Al-Kassarat Road), Industrial Area, Doha, Qatar, PO BOX 40146.

Laboratory Testing, Consulting Engineering and Scientific Analysis

The validity of the **quality**austria certificate will be maintained by annual surveillance audits and one renewal audit after three years.

Registration No.: Q-16336/0

Date of initial issue: 11 May 2015

Valid until: 10 May 2027

qualityaustria
MEMBER OF IQNET

Vienna, 21 August 2024

Quality Austria - Trainings, Zertifizierungs und Begutachtungs GmbH,
AT-1010 Vienna, Zelinkagasse 10/3

Mag. Christoph Mondl
CEO

Mag. Dr. Werner Paar
CEO

Ing. Christoph Baumgartner, MSc, MBA
Authorised representative,
management Customer Service Center

Quality Austria - Trainings, Zertifizierungs und Begutachtungs GmbH is accredited according to the Austrian Accreditation Act by the BMWFW (Federal Ministry of Science, Research and Economy).

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Certificate

Quality Austria
has issued an IQNET recognized certificate that the organization:

Construction Technology Laboratories Group WLL

Street 125 (Al-Kassarat Road), Industrial Area, Doha, Qatar, PO BOX 40146.

for the following scope:

Laboratory Testing, Consulting Engineering and Scientific Analysis

EAC: 28

has implemented and maintains an

ENVIRONMENTAL MANAGEMENT SYSTEM

which fulfils the requirements of the following standard

ISO 14001:2015

Issued on:	**2024-08-21**
Validity Date:	**2027-07-13**
Quality Austria certified since:	**2015-07-14**

Registration Number: **AT-02878/0**

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President of IQNET

Mag. Friedrich Khuen-Belasi
Authorised Representative
of Quality Austria

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Construction Technology Laboratories Group WLL

Street 125 (Al-Kassarat Road), Industrial Area, Doha, Qatar, PO BOX 40146.

ENVIRONMENTAL MANAGEMENT SYSTEM

complying with the requirements of standard

ISO 14001:2015

Laboratory Testing, Consulting Engineering and Scientific Analysis

Registration No.: U-02878/0

Date of initial issue: 14 July 2015

Valid until: 13 July 2027

The validity of the **quality**austria certificate will be maintained by annual surveillance audits and one renewal audit after three years.

Vienna, 21 August 2024

Quality Austria - Trainings, Zertifizierungs und Begutachtungs GmbH,
AT-1010 Vienna, Zelinkagasse 10/3

Mag. Christoph Mondl
CEO

Mag. Dr. Werner Paar
CEO

Ing. Christoph Baumgartner, MSc, MBA
Authorised representative,
management Customer Service Center

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MEMBER OF
IQNET

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Quality Austria is authorized by the VDA (Association of the Automotive Industry).

For accreditation registration details please refer to the applicable decisions or recognition documents.

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Dok. Nr. FO_24_026

498a6c5e-e7a0-478a-bcd7-0e0bc0969c54

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for the following scope:

Laboratory Testing, Consulting Engineering and Scientific Analysis

EAC: 28

has implemented and maintains an

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEMS

which fulfils the requirements of the following standard

ISO 45001:2018

Issued on:	**2024-08-21**
Validity Date:	**2027-06-07**
Quality Austria certified since:	**2021-06-08**

Registration Number: **AT-01264/0**

Alex Stoichitoiu
President of IQNET

Mag. Friedrich Khuen-Belasi
Authorised Representative
of Quality Austria

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Construction Technology Laboratories Group WLL

Street 125 (Al-Kassarat Road), Industrial Area, Doha, Qatar, PO BOX 40146.

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEMS

complying with the requirements of standard

ISO 45001:2018

Laboratory Testing, Consulting Engineering and Scientific Analysis

Registration No.: OHS-01264/0

Date of initial issue: 08 June 2021

Valid until: 07 June 2027

The validity of the **quality**austria certificate will be maintained by annual surveillance audits and one renewal audit after three years.

Vienna, 21 August 2024

Quality Austria - Trainings, Zertifizierungs und Begutachtungs GmbH,
AT-1010 Vienna, Zelinkagasse 10/3

Mag. Christoph Mondl
CEO

Mag. Dr. Werner Paar
CEO

Ing. Christoph Baumgartner, MSc, MBA
Authorised representative,
management Customer Service Center

Dok. Nr. FO_24_026

39234684-570d-43f3-8877-fd97c1b9275f

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Previous & Current Projects

Liquefied Natural Gas (LNG) Tanks

AL ZOUR KUWAIT

Kuwait Integrated Petroleum Industries Company (KIPIC) is in the process of constructing and operating a Liquefied Natural Gas (LNG) Import facility at Al-Zour offshore area in the State of Kuwait. KIPIC is a subsidiary of KPC set up by the State of Kuwait to manage refinery, petrochemicals and LNG import operations in the Al-Zour area. The project works were commenced in May 2016 and are expected to be completed on February 2021.

In the early months of year 2018, CTL Group Qatar was hired to perform a Non-Destructive Test by using the Impulse Response method in the base slab of the tanks to look for a suspected voids underneath the concrete.

By using a state of the art equipment and advanced computer software, CTL Group Qatar can pin-point the exact locations of the voids in random areas of all the inspected tanks. CTL Group Qatar also provided the client a contour map in each inspected tanks to make it easier to determine the locations of voids.

Client

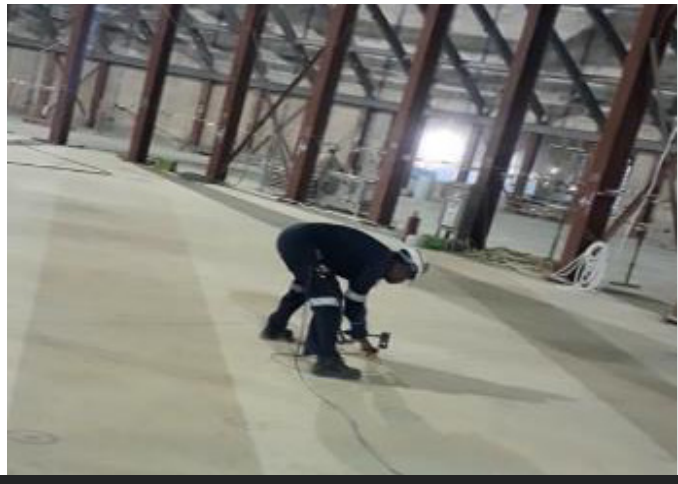
Hyundai Engineering and Construction Company

Services

Non Destructive Testing by Impulse Response method for LNG tanks base slab.

Project Team

Ethan Dodge
Nemer Al Hamra
Mahmoud Shboul
Prinson Galicinao



Concrete Plinths Marina Bridge

LUSAIL, DOHA QATAR

Bridge CP04B is located at Lusail city, Qatar, Road A1, A6 Southern and Marina interchange and it has 424.5 meters span pre-stressed box section structure supported by 2 abutment walls + 6 pair of piers, on 27th December 2017 client noticed that PTFE damage at the two bearings on Pier No. 5. The bridge is under construction since 3 years ago and it's in final stage.

CTL Group Qatar has been contracted by M/s. Midmac Yuksel JV to perform Non-Destructive Testing + evaluation for the bridge Marina Pier 5 – CP04B. The main objective of study was to perform Non-De6structive Testing for top plinths at Bearing #1 + Bearing #3 and evaluate overall concrete quality found within these concrete plinths.

Accordingly, CTL Group Qatar intends to provide a summary of all the works performed, findings, analysis, and conclusion concerning the concrete plinths quality. It also includes a list recommended actions that have to be implemented to reinstate the structural integrity.

Client

MIDMAC – Yuksel JV

Services

Non Destructive Testing by Ground Penetrating Radar (GPR), Ultrasonic Pulse Velocity (UPV), Impulse Response and Impact Echo.

Project Team

Mahmoud Shboul
Prinson Galicinao
Saiju Simon

Mowasalat Bus Showroom

AIN KHALID, DOHA QATAR

The Site is located inside MOWASALAT Bus Showroom (Ain Khalid). Total build-up area of showroom around 45,000 squaremeter includes basement, ground floor and roof. Total parking slot 246 number of buses.(basement 104 buses , ground floor 58 buses and in roof 84 buses) can park.

In the early months of year 2018, CTL Group Qatar was hired to perform a Load Test by using the Structural Testing System and LVDT Displacement Transducer on the Precast Beam and HC Slab look for assessing the structural condition/integrity of the above elements and their ability to carry safely the suggested imposed load.

By using STS4 structural scanning system and advanced computer software, CTL Group Qatar conclusion that there are some area with durability concern and there was no immediate concern for structural failure. CTL Group Qatar Recommended location should be repaired to ensure the current strength will remains for the structure's service life.

Client

Smeet Precast W.L.L.

Services

Load Testing for Beam and Slab

Project Team

Nemer Al Hamra
Mahmoud Shboul
Fadhil Ahamed

Naval Base in New Port Project

AL WAKRA QATAR

Naval Base is located at Mesaieed Road, New Doha Port Interchange. It has a total of 716 capping blocks with a 4296m in length and a total area of 25779m². The project is already completed and it is in maintenance (warranty) stage. In 2016, Both consultant and CHEC noticed many cracks in many different capping blocks and a repairing contractor was carried out the repair of cracks by epoxy injection method.

By the year 2017, China Harbour Engineering Company hired CTL Group Qatar to investigate the repaired shrinkage cracks. The aim of the NDT inspection is to identify the repaired cracks (epoxy injection) carried out by the sub-contractor if it's fully injected or not by using Ultrasonic Pulse Velocity (UPV-indirect method) for the injected cracks to determine if the epoxy injection has been totally closed and reach the total depth of the cracks.

Client

China Harbour Engineering Company

Services

Non Destructive Testing by
Ultrasonic Pulse Velocity (UPV)

Project Team

Mahmoud Shboul
Prinson Galicinao

Pedestrian Bridge at Qatar University

DOHA, QATAR

The pedestrian bridge is located inside of the Qatar University Campus. It was built in 1982 and has a dimension of (Length 47.00 meters, Width 7.69 meters and Height 3.69 meters). They've noticed defects in some parts of the bridge and wants to evaluate the condition of the existing bridge and to provide recommendations for repairing. At the time of the inspection, there are no previous documents about the bridge received from the client. CTLGroup Qatar scope of work was to evaluate the bridge and conducted the investigation based on a sampling + testing plan that was proposed and agreed with the client. NDT inspection was carried out by the methods of GPR scanning, Ultrasonic Pulse Velocity, Impulse Response and Half Cell Corrosion Potential. In the other hand, the material testing was carried out by the methods of Compressive strength, Rapid Chloride Penetration, Water Absorption, Water Soluble Chloride Content, Water Soluble Sulfate, Depth of Carbonation and pH value. CTLGroup Qatar was able to finish the project in 2 weeks.

Client

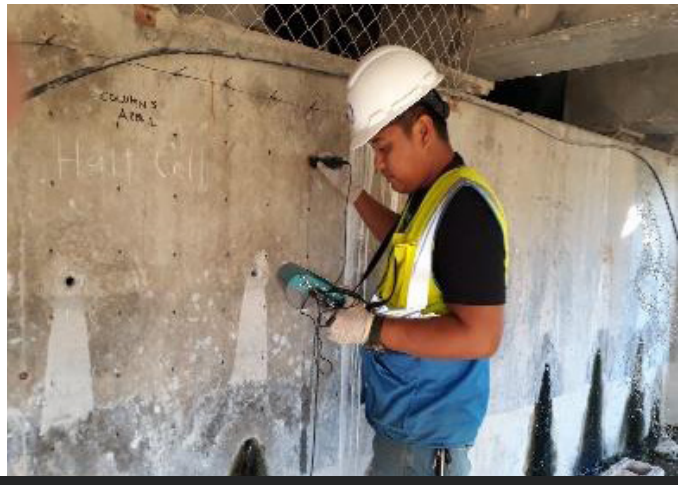
Jascon Engineering

Services

Non Destructive Testing and Condition Assessment

Project Team

Mahmoud Shboul
Prinson Galicinao



Qatar Internal Security Force (ISF) Camp Project

DOHA, QATAR

The Internal Security Force of Qatar (ISF) is building a camp at on the outskirts of Doha. This camp, located in Dhulia area, will cover an impressive four million square meters in total. The ISF project features more than 330 individual building units made up of several different types of purpose-built facilities.

The camp is planned to have an ultimate resident population of more than 17,000 and it is expected overall completion date is in 2025. Besides residential buildings, the area will include post office, unit force offices, unit guardhouses, check points, a five-star hotel and a 10 000 spectator stadium. The project works were commenced in 2013 and are expected to be completed on February 2025.

In the early months of year 2018, CTL Group Qatar was hired to perform a Fresh concrete Sampling and Testing.

Client

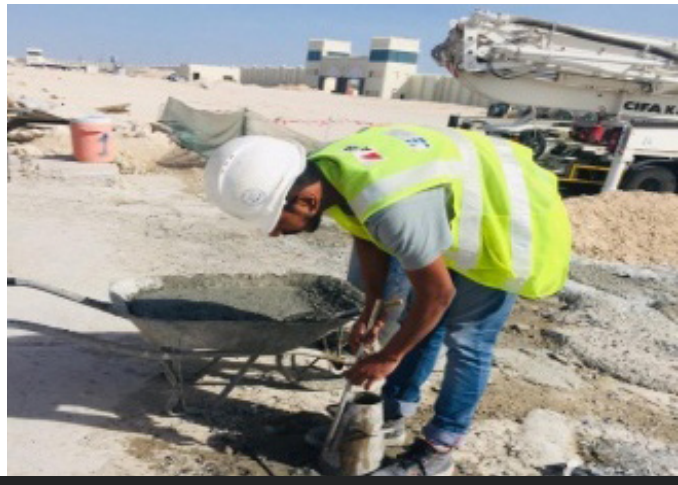
Aktor - Al Jaber Engineering (JEC) J.V.

Services

Concrete Sampling
Slump Testing
Hardened Concrete Testing

Project Team

Mahmoud Al Shboul
Saiju Simon



Al-Udeid Air Base Project

DOHA, QATAR

Qatar's Ministry of Defense broke ground on new barracks for US and Coalition airmen stationed at Al Udeid Air Base (AUAB), part of a multi-billion dollar expansion project for the base, located in Qatar. Qatar and the United States have long been strategic partners, as evidenced by Qatar's continued contributions to regional security and counterterrorism efforts through Al Udeid Air Base, which currently hosts approximately 10,000 US and Coalition members

The project works were commenced in 2017 and are expected to be completed in 2020.

In the early months of year 2018, CTL Group Qatar was hired to perform Site lab. Fresh concrete Sampling and Testing, harden concrete testing Soil Testing, Field Density test, plate load, asphalt.

Client

Al Seal Contracting & Trading Co.

Services

Fresh Concrete Sampling & Testing
Harden concrete Testing
Soil Testing
Asphalt Testing
Field Density Test

Project Team

Mahmoud Al Shboul
Saiju Simon

Material Testing & Analysis of Ready-Mix Companies

DOHA, QATAR

Ready-mix Companies as refers to concrete that is specifically batched or manufactured for customer's construction projects.

CTLGroup Qatar provides a wide range of testing services for fresh concrete, cementitious materials, aggregates in several Ready-mix around Qatar.

CTLGroup Qatar hired qualified ACI Certified technician to provide best testing service to our clients. Especially Ready-mix companies.

Clients

Gulf Ready-Mix
Ready-Mix Qatar
Al Wataniya Concrete
Barzan Ready-Mix
Sabea Ready-Mix

Services

Material Evaluation of Aggregate, Cement, Construction water, Concrete Specimen Testing

Project Team

Nemer Al Hamra
Mahmoud Shboul
Chandra kanta Chhatkuli

Condition Assessment & Repair Recommendation For Women's Sports Facility

DOHA, QATAR

The women's sports facility_1 (D03 building) was built approximately 40 years ago. The building consists of three squash rooms, main hall, Gymnasium room, lobby, eight store rooms, clinic, electrical and maintenance rooms, kitchen and toilet facilities.

In the middle of year 2018, CTL Group Qatar was hired to perform a Non-Destructive Test by using the GPR scanning, Ultrasonic Pulse Velocity, Impulse Response and Half Cell Corrosion Potential method in the top slab (10m x 6.4m) of the Squash room to evaluate the condition of slab and to provide recommendations for repairing.

By using a state of the art equipment and advanced computer software, CTL Group Qatar is noted that the concrete surface hardness is not homogenous due to corrosion in reinforcement. CTL Group Qatar Recommended location should be repaired to ensure the current strength will remains for the structure's service life.

Client

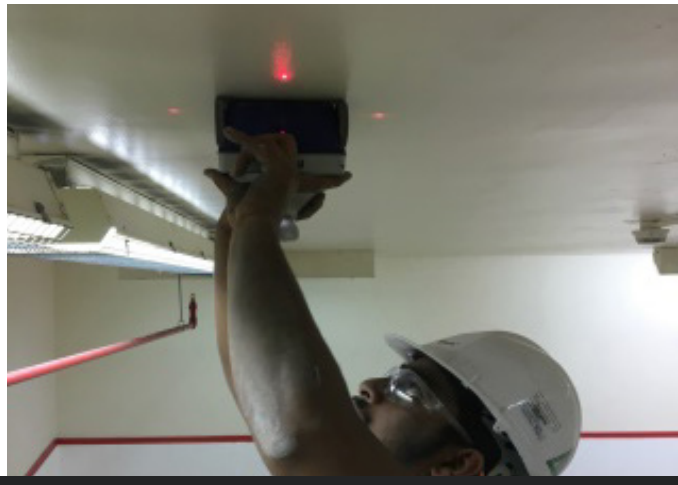
Qatar University

Services

Non Destructive Testing
Condition Assessment

Project Team

Mahmoud Al Shboul
Nemer El Hamra
Fadhil Ahamed



Burj Khalifa Consulting

DUBAI, UAE

In January 2010, Dubai announced the opening of the world's tallest building. The Burj Khalifa (formerly the "Burj Dubai"), a concrete skyscraper wrapped in glass and metal, stands above the clouds at a staggering 2,717 feet. CTLGroup played a pivotal role in the development of this record-breaking structure.

CTLGroup's expert consultants and industry-leading testing services addressed a major issue facing any concrete-based construction effort: how to account for creep and shrinkage. Using its world-class laboratory, CTLGroup conducted the creep and shrinkage testing critical for the structural analysis of the building. Additionally, much of the technology used to design and analyze the high-strength concrete necessary for the project came from the extensive work CTLGroup did for other tall buildings.

Because of its international reputation for accuracy and notable contributions to other world-famous buildings, CTLGroup was considered the "go-to" firm for concrete materials technology for the project.

According to Bill Baker of Skidmore Owings + Merrill LLP, "CTLGroup was a great resource and made a major contribution to the success of Burj Khalifa."

Client

Skidmore Owings + Merrill

Services

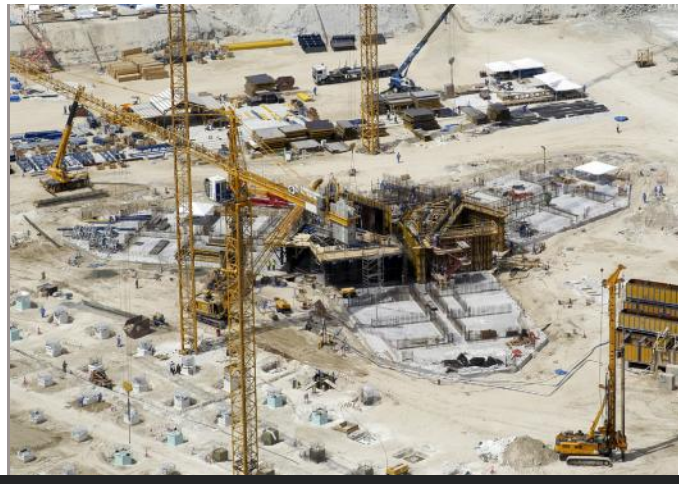
Creep and Shrinkage Consulting
Mix Design Consulting
Construction Process Review

Reference

Ahmad Abdelrazaq
Samsung Corp./Engineering + Construction
222-145-5190
ahmad.abdelrazaq1@samsung.com

Completion Date

June 2005



Wilshire Grand Center

LOS ANGELES, CALIFORNIA

In 2014, the Wilshire Grand Tower was the site of the world's largest continuous concrete pour. CTLGroup played a vital role in the oversight and engineering of the "Grand Pour," which was certified as a record by the Guinness Book of World Records.

The Wilshire Grand Tower's foundation pour consisted of a total of 21,200 cubic yards of concrete over 18.5 hours using 19 separate pumps feeding 13 hoses to fill the site with roughly 82 million pounds of concrete.

CTLGroup engineered a cooling pipe system that internally cooled the foundation to ensure that it was below 160°F during curing and kept the temperature difference below a limit that was specifically engineered for the placement.

CTLGroup's cooling pipe system reduced the temperature in the foundation to near-ambient conditions within 10 days and was carefully engineered to avoid precooling of the concrete. The cooling process would have taken up to 100 days if the cooling pipes were not used.

Client

Turner Construction Company

Services

Mass Concrete Consulting
Thermal Control Plan
On-site + Pour Consulting
Cooling Pipe System

Project Team

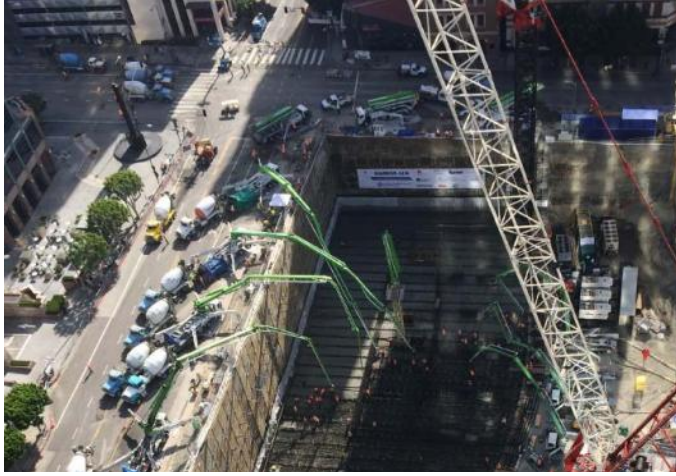
Jonathan Feld | Project Engineer

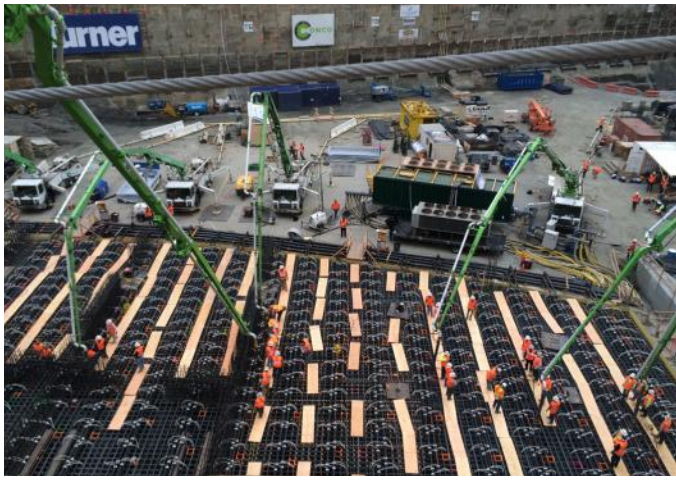
Reference

Dave Bushnell
Turner Construction Company
312-447-6950
dbushnell@tcco.com

Completion Date

June 2015





Holy Haram Makkah

MECCA, SAUDI ARABIA

CTLGroup was retained by the Binladin Concrete Solutions Company (BCS) to review temperature data from a concrete placement at the construction site during the expansion of the Holy Haram Makkah. The subject concrete placement was part of the third expansion of the Holy Haram Makkah and surrounding areas.

CTLGroup's scope of work included a review of the recorded concrete temperatures, discussion of the temperature differentials, and the effects of the maximum temperatures recorded in the element. The measured temperature and temperature differences reportedly exceeded the limits provided in the project specifications. CTLGroup prepared an alternative, performance-based temperature difference limit for the project.

Client

Binladin Concrete Solutions Company

Services

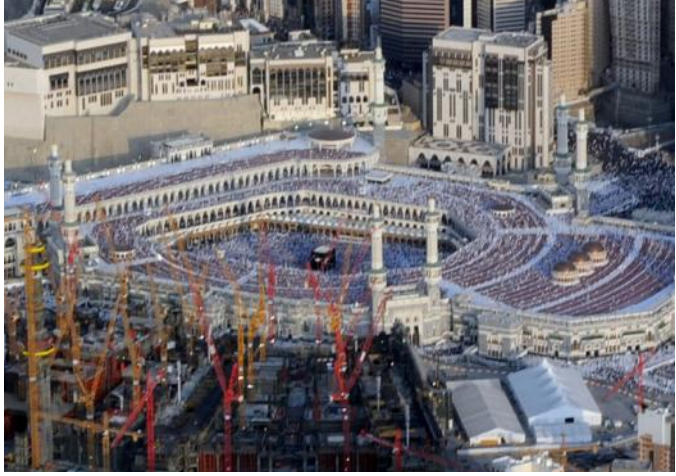
Materials Consulting
Construction Methods Consulting
Construction Review Process

Reference

Confidential Reference

Completion Date

September 2011



Oakland Bay Bridge

CORDOVA, CALIFORNIA

CTLGroup assisted in the construction of the Oakland Bay Bridge by working on major mass concrete development for the foundation. The San Francisco-Oakland Bay Bridge's W2 foundation required specific and controlled procedures to avoid the overheating of the massive concrete placement.

CTLGroup installed a cooling system of more than 12,000 ft of the thermocouple wiring in the multiple pile, footing, and column placements to reduce cooling times and to speed up construction. There were 40 separate concrete placements over a 12-month period, each footing consisted of approximately 675 truckloads of concrete placed during a 36-hour period.

CTLGroup proposed and implemented a redundant system designed to insure quality, contiguous data, which was vital in the management of the construction site during the Bay Area's winter weather. Likewise, redundant sensors were installed to maintain integrity throughout the concrete placement and curing phase. Over the duration of the entire project, data was continuously logged and reported to the clients and the resident engineer to show that the temperatures and the temperature differences were not excessive.

Client

C.C. Myers, Inc.

Services

Temperature Monitoring
Mass Concrete Services

Project Team

David Drengenberg | Senior Engineer

Reference

George Delano
C.C. Meyers, Inc.
916-635-9370

Completion Date

May 2007

Gulf IntraCoastal Waterway

METAIRIE, LOUISIANA

Located on the west bank of the Mississippi River near New Orleans, LA in the Gulf Intracoastal Waterway, the WCC will function as a major component of the Greater New Orleans Hurricane Storm Damage Risk Reduction System (HSDRRS). CTLGroup was retained to blend state-of-the-art concrete technology with advanced construction practices so that concrete could be easily placed, and durability achieved with almost no impact on the desired speed of construction. Large mass concrete placements were routine on this project and one of them consisted of a 9-foot-thick slab where 5,700 cubic yards of concrete was placed in 18 hours. CTLGroup provided world-class troubleshooting expertise, phase after phase, to the contractor, ensuring the delivery of a better quality structure with high-class durability.

Client

Gulf IntraCoastal Constructors

Services

Concrete Mix Development
Thermal Modeling

Project Team

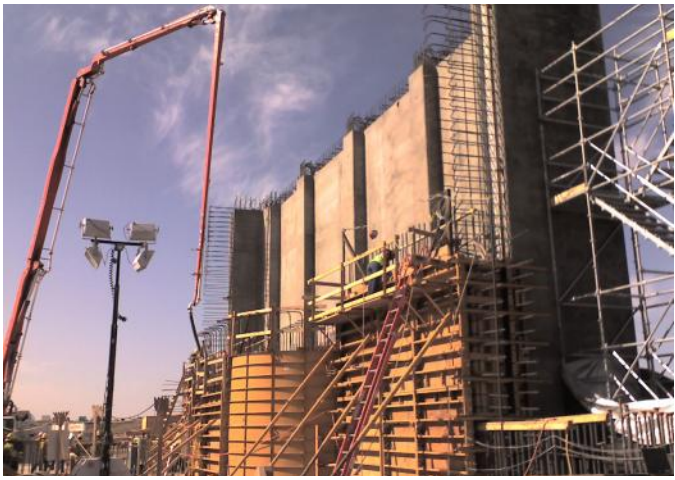
Jonathan Feld | Project Engineer
Peter Kolf | Principal Structural Engineer

Reference

Chris Krumwiede
Gulf IntraCoastal Constructors
224-374-5776

Completion Date

July 2011



Olmsted Dam

OHIO RIVER (BETWEEN KENTUCKY + ILLINOIS)

CTLGroup was contacted by Stantec Consulting Services, Inc. (Stantec) regarding a scope of work for laboratory investigation of Olmsted Dam tremie concrete during the replacement of locks and dam numbers 52 and 53 at the Olmsted Dam. The general scope was to evaluate the materials and properties of the Olmsted tremie concrete mixture to be placed in precast tainter gate bay shells and stilling basin shells. Prior to the construction of these shells, a test shell section was constructed to evaluate the performance of the tremie concrete mixture. During the placement of the test shell section, the tremie concrete mixture reportedly experienced early-age stiffening problems, and CTLGroup evaluated the concrete mixture to identify the cause and developed the correct concrete mixture that was needed for success.

Client

Stantec Consulting Services, Inc.

Services

Concrete Mix Development
Replacement Design

Project Team

Jonathan Feld | Project Engineer

Reference

Barry Bryant
Stantec Consulting Services, Inc.
barry.bryant@stantec.com
859-422-3000

Completion Date

September 2011

DC WASA Blue Plains Tunnel

WASHINGTON, DC

CTLGroup provided mass concrete engineering consulting services for the Blue Plains Screening and Dewatering Shafts DC Clean Rivers Project in Washington, DC. The DC Clean Rivers Project consisted of a network of tunnels designed as part of a plan to manage combined sewer overflows for the District of Columbia Water and Sewer Authority (DCWASA). The tunnels were designed to carry wastewater to the Blue Plains Advanced Water Treatment Plant. As part of the Blue Plains Project, large elements were to be constructed and the specifications required that the large elements be treated as mass concrete. The elements included base slabs ("dome slabs"), invert slabs, and walls.

Client

Traylor/Skanska/JayDee Joint Venture

Services

Mass Concrete Consulting
Thermal Control Plan

Project Team

Jonathan Feld | Project Engineer

Reference

Brett Zernich
Traylor/Skanska/JayDee Joint Venture
812-447-1542
BZernich@traylor.com

Completion Date

November 2013

Ohio River Crossing

UTICA, INDIANA + LOUISVILLE, KENTUCKY

CTLGroup provided engineering consulting services to the contractor for the tunnel concrete to verify compliance with the contract requirements. Our firm performed a critical review of the project specifications concrete mixture proportions for feasibility, thermal modeling, and mass concrete services.

A design approach review including pumpability, durability, and service life requirements was performed. Fire spalling resistance and extensive testing was carried out to characterize the concrete performance and support the consulting efforts, including fire, durability, and service life.

CTLGroup completed an explosive spalling fire exposure evaluation for large scale concrete panels which would be used in the tunnel liner. The new test method, based on similar European projects, was not within the capabilities of other North American fire laboratories. To meet the requirements, CTLGroup designed, built, and calibrated a fire testing furnace to assess the suitability of proposed tunnel lining concrete. Testing showed that explosive spalling of the concrete during a fire (before the deluge system extinguished the fire) would not jeopardize the safety of the fire respondents or the integrity of the structure.

Client

Walsh/Vinci Construction, JV

Services

Engineering Consulting Services
Concrete Mix Design Review
Service Life Evaluation

Project Team

Jonathan Feld | Senior Engineer
Benjamin Birch | Project Engineer
Jose Pacheco | Project Associate

Reference

Joe DeFiore
Project Manager
Walsh/Vinci Construction, JV
502-276-9182
jdefiore@wvb-eec.com

Completion Date

September 2016

James Jardine Water Purification Plant

CHICAGO, IL

CTLGroup performed a condition assessment of thousands of precast concrete channel slabs that comprised the roof over a large filtration building. Deterioration observed during the visual review included spalled flanges with exposed corroded reinforcement, longitudinal cracking in the flanges, web spalls, and excessive web cracking. Based on the assessment. CTLGroup ultimately determined that replacement of distressed channel slabs was the only practical repair solution.

The City of Chicago commissioned a comprehensive removal and replacement program for the roof of the filtration building. As part of the program, CTLGroup was retained to design a more durable channel slab, which included a high performance concrete mix and enhanced concrete cover over the reinforcing steel. CTLGroup also performed submittal reviews and quality assurance reviews at the precast concrete fabrication plant.

Client

HDR Engineering, Inc.

Services

Structural Evaluation
Structural Repair Design
Concrete Mix Development

Project Team

John Vincent | Project Manager + Principal Structural Engineer
Carlton Olson | Principal-In-Charge
Alexis Brackney | Project Structural Engineer

Reference

Barry Kravitz, PE, SE
Vice President
HDR Engineering, Inc.
773-380-7940
Barry.Kravitz@hdrinc.com

Completion Date

September 2015

Frank Lloyd Wright Unity Temple

OAK PARK, IL

Unity Temple was constructed in 1908-1909 and is a National Historic Landmark. CTLGroup's role in the restoration of Unity Temple was comprised of a comprehensive survey and evaluation of the concrete's condition and the development of an ongoing phased rehabilitation plan. CTLGroup evaluated the different types of concrete present in the structure, core samples were taken, studied, and the types of concrete were confirmed and characterized. CTLGroup designed cementitious materials that would be durable and visually match the original materials. It was mandatory that CTLGroup achieve the highest possible aesthetic standards, maintain strict historical accuracy, and protect the integrity of existing building features. Numerous field trial mock ups were performed to verify the material match.

A full condition survey and visual inspection was performed to assist in developing the scope of repairs. The results of the survey were used to develop repair documents and solicit pricing for the restoration work. CTLGroup performed construction observation services throught the repair phase and designed structural repairs as unforeseen conditions arose. The restoration project was awarded the International Concrete Repair Institute (ICRI) 2017 Award of Excellence Historic Category.

CLIENT

Unity Temple Restoration Foundation

SERVICES

Historic Restoration
Nondestructive Testing
Concrete Mixture Development
Petrography

PROJECT TEAM

CP Bok | Project Manager + Principal Structural Engineer
Brian Frost | Senior Engineer
John Vincent | Principal Structural Engineer
Peter Kolf | Principal Structural Engineer
Patrick Bruce | Senior Technician

REFERENCE

Unity Temple Restoration Foundation
708-303-8873

COMPLETION DATE

April 2017

Middle East High-Rise

MIDDLE EAST

CTLGroup was retained to investigate cast-in-place concrete construction for a prominent high-rise in the Middle East. Our work included review of relevant project documents; a field investigation encompassing visual inspection, nondestructive testing, exploratory coring, observation of concrete placement activities; and laboratory testing of extracted samples. A discussion of our findings and recommendations were provided.

Client

Confidential Client

Services

Nondestructive Testing
Materials Consulting
Structural Evaluation

Project Team

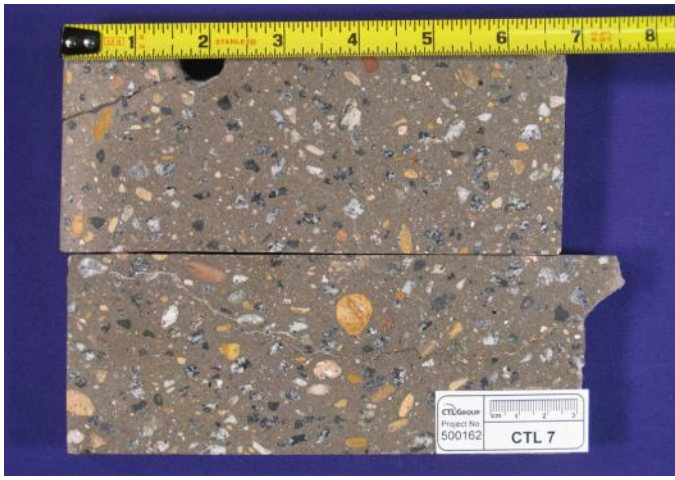
Ethan Dodge | Nondestructive Testing Engineer
Hamid Lotfi | Senior Engineer
Rich Kaczkowski | Principal Structural Engineer
Peter Kolf | Principal Structural Engineer

Reference

Confidential Reference

Completion Date

September 2013



CTLGroup Qatar | List of Executed Projects

CONDITION ASSESSMENT, DURABILITY STUDIES, DEVELOPMENT OF AS-BUILT DRAWINGS, LOAD TESTING, NONDESTRUCTIVE EVALUATION & STRUCTURAL HEALTH MONITORING

#	Project Name	Client	Consultant	Contractor	Location	Date
1	Structural Assessment - Qatar International School	Diwan Architects	N/A	N/A	Qatar	2015
2	Condition Assessment for a Private Villa at Buraimi	Private	N/A	N/A	Oman	Aug-15
3	Building @ Industrial Area, Concrete Physical & NDT Test	Clean Plus	N/A	N/A	Industrial Area, Qatar	Mar-16
4	Private Villa, Concrete Physical & NDT Test	Tiles Contracting	N/A	N/A	Sayliya	Apr-16
5	Residential Building, Concrete Core Evaluation	GRM	N/A	N/A	Bin Omran	Apr-16
6	Site Survey, Visual Inspection, NDT & Repair Recommendations	Qatar Gas	---	QCTC	Ras Laffan, Qatar	Jan-17
7	Pull of Test	Sodamco-weber	N/A	Zublin	Energy City	Mar-17
8	NDT & Material Testing for Central Market	MOME	---	---	Doha, Qatar	Jun-17
9	Material Sampling, NDT Testing & Evaluation for Al Waab Building - Part J	Al Waab City	---	QCTC	Doha, Qatar	Jun-17
10	NDT testing Bahrain City Center	City Centre Bahrain	---	QCTC	Manama, Bahrain	Jun-17
11	NDT & Material Evaluation for Some Structural Elements at Al Wakrah Stadium	Supreme Committee for Sports	---	MIDMAC – Yuksel	Wakra, Qatar	Jun-17
12	Residential building at Mansoura, Concrete Core Compressive Strength, Ultrasonic Pulse Velocity, Rebound Hammer Test, Concrete Core Extraction, Ground Penetrating Radar (GPR)	Private	Edarat Al-Khebra for Eng. Consultation	N/A	Mansoura, Qatar	Jun-17
13	Post Tension Scanning and locating on site, Ground Penetrating Radar, Concrete Core Extraction	DSI Middle East	N/A	N/A	Qatar	Jul-17
14	Material Evaluation & Pull Off Test	Khalid Plastic	N/A	N/A	Qatar	Aug-17
15	NDT Testing, Extraction of Concrete Core for Compressive Strength Testing, Impulse Response, Impact Echo	Private	---	QCTC	Lusail, Qatar	Aug-17
16	Post Tension Scanning and locating - Al Mazrooa Project	---	N/A	DSI Middle East	Doha, Qatar	Sep-17
17	Post Tension Scanning and locating on site, NDT Testing with Impulse Response & Impulse Echo	---	N/A	DSI Middle East	Qatar	Oct-17

18	GPR scanning for Post Tension Cables on Site – AL Hazem Mall		N/A	Aseel Construction (Ultracrete)	Qatar	Oct-17
19	Pull Off Test at People Mover System Project	Medtel – W.N.	N/A	N/A	Qatar	Oct-17
20	Nondestructive Testing (Ultra-Sonic Testing (UPV), Impact echo (IE), Crack Monitoring) for Amphitheater - Barwa City	KCIC	N/A	N/A	Doha, Qatar	Oct-17
21	NDT Testing, Extraction of Concrete Core for Compressive Strength Testing, Impulse Response, Impact Echo	Lusial	N/A	QD-SBG	Lusail, Qatar	Oct-17
22	Ultrasonic Pulse Velocity for various locations at Concrete bridge deck	PWA	---	MIDMAC / Yuksel JV	Lusail, Qatar	Nov-17
23	GPR Scanning for Cold Joints and Voids for RC Walls	QatarGas	---	Galfar Al Misnad Engineering (QCTC)	Ras Laffan, Qatar	Jan-18
24	Crack Mapping & Nondestructive Testing – Hamad Port	Mawani Qatar	---	China Harbour Engineering Company	Mesaieed, Qatar	Jan-18
25	Load Testing for various Structural Elements (beam & slabs)	Mowasalat	---	QCTC	Doha, Qatar	Apr-18
26	Site Inspection & Survey, NDT, Material Testing, Service Life Prediction, Modelling & Analysis, Repair Recommendation	QatarEnergy	Tebodin Bilfinger	N/A	Ras Laffan, Qatar	Apr-18
27	Nondestructive Testing using Impulse Response & Repair Recommendation	KIPIC	Wood	Hyundai Engineering & Construction	Al Zour, Kuwait	Apr-18
28	Condition Assessment of Various RC Structures including inspection, testing and repair recommendations	Qatar University	---	---	Doha, Qatar	Jul-18
29	Nondestructive Testing using Impulse Response Technique for various Concrete Elements at Strategic Food Security Storage Project	Hamad Port	Dorch Qatar	Al Jaber Engineering	Wakra, Qatar	Oct-18
30	Relative Humidity Testing for Concrete Floor Slab using in-situ probes– Western Green Spine Pedestrian Underpass Project (WGSP)	Qatar Foundation	Parsons	Redco International	Doha, Qatar	Nov-18
31	Material Testing and Non Destructive Testing for Structural Elements of Building	Private Engineering Office	N/A	QCTC	Doha, Qatar	Nov-18
32	Condition Assessment & Evaluation for Al Wakrah British School	Artan Holding	N/A	House of Architecture & Interior (HAI)	Wakrah, Doha	Feb-19
33	NDT and Slab Load Testing – Shield 5 Program, project555	Ministry of Defense	US Corps of Engineers / Parsons	MIDMAC	Al Rayyan, Qatar	May-19

34	Condition Assessment & Monitoring for Noted Cracks and Settlement at a Private Villa near Landmark Mall	Private	N/A	House of Architecture & Interior (HAI)	Doha, Qatar	May-19
35	Impulse Response Testing for Concrete Raft	Private	CEC	Ultracrete	Ras Laffan, Qatar	May-19
36	NDT (GPR scanning & UPV testing)	Al Khulaify Palace	Al Kashaf International	Palmera	Laqtifiya, Qatar	Jun-19
37	Development of As-Built Drawings & Structural Assessment for Doha British School	Artan Holding	---	House of Architecture & Interior	Doha, Qatar	2019
38	Delamination Survey for Slab Soffit	Artan Holding	---	House of Architecture & Interior	Doha, Qatar	2019
39	Slab Load Testing – Shield 5 Project	Ministry of Defense	Parsons	MIDMAC Contracting	Doha, Qatar	2019
40	Condition Assessment of noted settlement & cracks at private villa	Private	---	House of Architecture & Interior	Doha, Qatar	2019
41	Condition Assessment for 34 different structures-Refurbishment of Doha West Wastewater Treatment Project	Public Work Authority	STANTEC	SUEZ/QCTC	Doha, Qatar	2019
42	Development of As-Built Drawings for Steel Structure at old showroom – Industrial Area	Mannai	Petra Design	---	Qatar	2019
43	Development of As-Built Drawings & Revit Model for Art Mill Museum & Cultural Center	Qatar Museums	KEO	---	Ras Abu Abboud	2020
44	Condition Assessment & Durability Study for Bldg #08 - MOD	Ministry of Defense	QECE	Redco Construction Al Manaa	Doha, Qatar	2020
45	Laboratory Testing for Water Leakage Investigation for LA24 Construction of Pearl Showroom	UDC	GHD Group	---	Pearl, Qatar	2020
46	Inspection, Testing & Assessment of Slab Areas (MJ-628)	Qatar Petroleum	---	Medgulf	Ras Laffan, Qatar	2020
47	Material Testing & Nondestructive Evaluation for NGL Structure #1	Qatar Petroleum	---	TUV Rheinland Gulf	Mesaieed, Qatar	2020
48	Inspection & Material Testing Ras Laffan Water Fall	Qatar Petroleum	Jensen Hughes	---	Doha, Qatar	2020
49	NDT & Materials Testing of Basement 2 & 3 (Qatar Petroleum District Project)	Qatar Petroleum	Buro Happold	Fugro	Doha, Qatar	2020
50	Condition Assessment Study for Industrial Interchange	ASHGHAL	CDM Smith	MP JV (Parsons)	Doha, Qatar	2020
51	Condition Assessment for Transformer Building - EPIC for Common Cooling Seawater System Phase-3	Qatar Petroleum	N/A	Medgulf	Ras Laffan, Qatar	2020
52	Service Life Study & Quality Control for Repair Works for Bldg #08 at Ministry of Defense Headquarters	Ministry of Defense	QECE	Redco Construction Al Manaa	Doha, Qatar	2020
53	Assessment of Various Structural Elements – NTRF - DWSTP	ASHGHAL	STANTEC	SUEZ	Doha, Qatar	2021
54	Condition Assessment of Drum Screen Inspection inside CFF	Qatar Petroleum	N/A	Medgulf	Ras Laffan, Qatar	2021

55	GPR Scanning to detect embedded steel reinforcement in foundations	Qatar Petroleum	N/A	Medgulf	Ras Laffan, Qatar	2021
56	Condition Assessment of Residential Building near Jarir Bookstore (Salwa Road)	Private	N/A	Tender Contracting	Doha, Qatar	2021
57	Study Assessment Repair/Replace Culverts – DCA	QatarEnergy	Energo Projekt Entel	---	Dukhan	2021
58	Impulse Response Testing for Concrete Structural Elements – Doha Oasis Project	Haloul Real Estate	AECOM	IMAR / CIVE Qatar	Doha, Qatar	2021
59	Third Party Inspection Services New Gasoline and Jet Storage Facilities Mesaied industrial city	QatarEnergy	---	Rotary Engineering	Mesaieed, Qatar	2022
60	Load Testing for Roof Panel (Cultural Center in Education City)	Qatar Foundation	ASTAD	Redco Al Manaa	Doha, Qatar	2022
61	Capping Beam Concrete Assessment Study for MIC Berths	Qatar Energy	---	---	Mesaieed, Qatar	2022
62	On-Call Consultancy Services for Highway Structures	ASHGHAL	Louis Berger (WSP)	---	Doha, Qatar	2022
63	NDT Works for Existing Structures at QG1, RL1, RLTO	QatarGas	---	Chiyoda Al Mana	Ras Laffan, Qatar	2022
64	Investigation & Assessment of 2 Residential Buildings	Al Asmakh Real Estate Development	---	Borog Trading	Doha, Qatar	2022
65	Material Testing & Evaluation for Concrete Structure	Qatar Steel	---	TUV Rheinland	Mesaieed, Qatar	2022
66	Structural / Geotechnical Assessment of 2 Buildings & Preparation of Repair BOQ	Broog Trading Company	---	---	Doha, Qatar	2023
67	Investigation of Noted Cracks at Repaired Wall	---	---	QCTC	---	2023
68	Condition Assessment & Durability Study for 2 RC Culverts (ECS for Hazardous Waste Storage Facility - QP Refinery, Mesaieed)	QatarEnergy	GHD	---	Mesaieed, Qatar	2023
69	Structural Health Monitoring for Cable Stayed Bridges at Mesaimeer Road Project (P008-C3)	ASHGHAL	Parsons	CCC	Doha, Qatar	2023
70	Crack Assessment & Slab Integrity Evaluation – Jerry Al Samur Warehouse	Mohammad AbdulRahman Al-Bahar & Sons (CAT)	---	---	Ras Laffan, Qatar	2023
71	NDT Evaluation for Dome TSE Seasonal Storage Lagoon (Phase 1) CP832	ASHGHAL	KEO	Hyundai (QPC)	Qatar	2023

72	Survey & Testing of Concrete Defects on Offshore Concrete Deck Platform – Bahrain LNG Terminal	---	Conseil Engineering Consultants	KBR / QCTC	Bahrain	2024
73	Structural Integrity & Settlement Assessment of Building 17 At Station-S In Mesaieed. Study involves field survey, geotechnical investigation, durability assessment, structural evaluation and recommendations for the needed strengthening and repair works	QatarEnergy	Consolidated Engineering & Consultancy (CEC)	---	Mesaieed, Qatar	2024
74	Structural Integrity Assessment-Existing Building In Bitumen Plant At Mic (Project No. Pe32087424) including field inspection, testing, structural assessment, durability study and repair recommendations	WOQOD	Energoprojekt Entel LTD (EPE)	---	Mesaieed, Qatar	2024
75	Thermal Modelling, Calibration, And Thermal Control Plan EPIC For Ras Laffan Port Control Tower	QatarEnergy	---	Midmac Contracting Company	Ras Laffan, Qatar	2024
76	Supply, Design, Installation & Commissioning of Structural Health Monitoring System For 2 Cable Stayed Bridges -Construction & Upgrading of Mesaimeer Road Project (P008-C3)	ASHGHAL	Parsons	Consolidated Contractors Company (CCC)	Doha, Qatar	2024
77	Testing & Assessment of Slab Soffit in Car Park Area – Fox Hills	Private Client	---	Draya Contracting	Doha, Qatar	2024
78	Inspection & Assessment of noted Cracks - Building in Buthaila Farm	Private Client	---	Lusail Hospitality & Services	Doha, Qatar	2024
79	Concrete Scanning using GPR & Cutting for Post-Tensioned Slab In Gym Of Private Palace	Private Client	---	Pride projects Real Estate Contracting	Doha, Qatar	2024
80	Concrete Scanning & Coring Works-Proposed Modification & Fit-Out Works for Aman Clinic	Aman Clinic	Al Kashaf International for Design & Engineering Consultancy	Blueprint	Doha, Qatar	2024
81	Nondestructive Testing & Material Sampling and Laboratory Testing for Concrete Structures	---	Al Sraiya Engineering Consultants	CCL Qatar	Doha, Qatar	2024
82	Non-Destructive Evaluation & Material Testing for 2 Old Structures in Doha (Grand Hamad & HAK Buildings)	Commercial Bank	LACASA	---	Doha, Qatar	2024
83	Qatar Academy Sidra Senior School Structural Condition Assessment, concrete durability Study, Service Life Prediction & Repair Recommendation	Qatar Foundation	Trust Engineering	N/A	Doha, Qatar	2024
84	Repair Material Selection & Trial Test Definition – RLIC- Seawater Return Facility. Works include desktop study, extensive laboratory testing, material characterization and development of detailed scope of works and cost estimate for repair works	QatarEnergy	N/A	N/A	Ras Laffan, Qatar	2024

CONCRETE AND AGGREGATE						
#	Project Name	Client	Consultant	Contractor	Location	Date
1	Evaluation of Material	Sana Crushers	NA	NA	Qatar	2015
2	Testing of Aggregates & Cement	Gulf Readymix	NA	NA	Industrial Area, Qatar	Jan'15 to Dec'15
3	Concrete Testing & Evaluation - Batiniya Expressway	MOCT	NA	L&T Oman	Oman	Nov'15
4	Material Testing & Evaluation	Synaxis	NA	NA	Qatar	Sep'15
5	Material Testing & Evaluation - Umm Obariya Complex	Man Enterprise	NA	Man Enterprise	Qatar	Sep'15
6	Evaluation of Material (20mm Gabbro, 10mm Gabbro, 10mm Lime Stone, Washed Sand)	Synaxis	NA	NA	Qatar	Jan'16 to Dec'16
7	Material Evaluation of Tiles (Bending Strength & Stain Test)	Granada	NA	NA	Qatar	Jan'16
8	Concrete Quality Assessment (Physical and Chemical)	Apollo	NA	NA	Qatar	Feb'16
9	Concrete Quality Assesment , Integrity of Existing Jetty Structure at Messaid NGL-2	Penspen	NA	NA	Mesaaid, Qatar	Oct'16
10	Material Evaluation (Testing for Aggregate, Soil & Concrete)	GET	NA	NA	Qatar	Dec'16
11	Material Evaluation of 20mm Aggregate, 10mm Aggregate & washed Sand	Al Tasneem Readymix	NA	NA	Qatar	Jan-17
12	Material Evaluation of 20mm Gabbro, 10mm Gabbro, 10mm Lime Stone, 5mm Lime Stone, Washed Sand, Plaster Sand.	KCIC (Block Division)	NA	NA	Industrial Area, Qatar	Jan'17 to Dec'17
13	Material Evaluation of Admixture, 20mm Gabbro, 10mm Gabbro, Washed Sand & Brakish Water	KCIC (RMC Division)	NA	NA	Industrial Area, Qatar	Jan'17 to Dec'17
14	Material Evaluation	New Touch General Maintenance	NA	NA	Qatar	Jan-17
15	Material Evaluation of Water Permeability of Concrete, Water Absorption of Concrete, RCP, Compressive Strength of Cubes, Acid Soluble Chloride & Sulphate	KCIC - RMC	NA	NA	Industrial Area, Qatar	Jan'17 to Dec'17
16	Material Evaluation, Extraction of Concrete Core	Mr. Hosam Aldeen Mustafa	NA	NA	Qatar	Feb-17
17	Lusail LRT, Compressive strength of Masonry units,	QDVC	NA	NA	Qatar	Feb-17
18	Evaluation of Material, Chemical Test of Admixture, Hollow Block, OPC & SRC Cement Chemical & Physical Test, Concrete Tile, Fire Resistance Block & Interlock	KCIC - Block	NA	NA	Industrial Area, Qatar	Jan'17 to Dec'17
19	Material Evaluation, Concrete Core Extraction	New Touch General Maintenance	NA	NA	Industrial Area, Qatar	Mar-17
20	Material Evaluation of Fire resistance of concrete and masonry units	Qatar Clay Bri cks	NA	NA	Industrial Area, Qatar	Mar-17

21	Material Evaluation	Urbacon Trading Company	NA	NA		Mar-17
22	Evaluation of material, Activity Index of Silica Fume, Water Soluble Chromium	Al Jabor Cement Industries	NA	NA	Mesaaid, Qatar	Mar-17
23	Material Evaluation of 20mm Gabbro, 20mm Stevin Rock Limestone, 10mm Gabbro, 10mm Stevin Rock Limestone & Washed Sand	Readymix Qatar	NA	NA	Qatar	Apr'17 to Dec'17
24	Material Evaluation, Compressive Strength of Concrete Core, Acid soluble chloride content of hardened concrete, Acid soluble sulphate content of hardened concrete	QCTC	NA	QCTC	HMC Womens Hospital	May-17
25	Condition assessment, Concrete Core Compressive Strength,Acid Soluble Chloride, Acid Soluble Sulfate, Carbonation Depth, Ultrasonic Pulse Velocity, Rebound Hammer Test, Concrete Core Extraction	Ministry of Environment	NA	NA	Doha, Qatar	Jun-17
26	Material Evaluation, Compressive strength of concrete specimens (3d, 7d & 28days),	Ultracrete LLC	NA	NA	Precast, Industrial Area	Jul-17
27	Material Evaluation of Fly Ash Fineness, 45 micron Seive	Gulf Additives & Chemical Factory	NA	NA	Qatar	Aug-17
28	Material Evaluation, Extraction Concrete Core	Platinum Company	NA	NA	Airport Street	Apr-17
29	Material Evaluation, Fineness by the 45-µm Sieve of Fly Ash	Buildex Trading & Contracting	NA	NA	Qatar	Aug-17
30	NRMCA Training at Sohar Plant	Al Tasneem Readymix	NA	NA	Oman	Aug-17
31	Material Testing of Hollow Block, 20cm, 5N, Limestone, Hollow Block, 20cm, Gabbro, 20mm Gabbro, 10mm Gabbro, 10mm Limestone & Washed Sand, Compressive strength of concrete specimens (3d, 7d & 28days)	Group One for Block,Interlock & Kerbstone	NA	NA	Industrial Area, Qatar	Sep-17 (Ongoing)
32	Material Evaluation & Compressive strength of concrete specimens	Khouzan Cement Industries Complex	NA	Ultracrete	Precast Dukhan & Al Owina	Sep-17
33	Concrete Sampling, Testing & Evaluation for Slabs and Walls	ALMAJED GROUP	NA	NA	Al Saad, Qatar	Oct-17
34	Construction Material Testing (cement, aggregate & concrete)			Advanced Pipes & Casts		June-19 (Ongoing)
35	Construction Material Testing (cement, aggregate & concrete)	Sabea Ready Mix	NA	NA	Industrial Area, Qatar	Dec-17 (Ongoing)
36	Construction Material Testing (cement, aggregate & concrete)	Barzan Ready Mix	NA	NA	Mesaieed, Qatar	Feb-18 (Ongoing)
37	Construction Material Testing (cement, aggregate & concrete)	AL RAYYAN RMC	NA	NA	Industrial Area, Qatar	Fe,Jun-18

38	Construction Material Testing (cement, aggregate & concrete)	SABEA HOLLOW-CORE AND PRECAST	NA	NA	Industrial Area, Qatar	Aug-17 (Ongoing)
39	Durability Testing for Concrete	OMAN PORTOGESE RMC	NA	NA	Duqm, Oman	Nov-18
40	Construction Material Testing (cement, aggregate & concrete)	Al Wataniya Ready Mix	NA	NA	Doha, Qatar	Mar-18 (Ongoing)
41	Concrete & Agregate Testing (ASTM & BS EN)	United Readymix	NA	NA	Doha, Qatar	May-19 (Ongoing)

Geotechnical Investigations						
#	**Project Name**	**Client**	**Consultant**	**Contractor**	**Location**	**Year**
1	Villa Settlement	Artan Holding	---	---	Doha	2019
2	Bldg 19-20 - Al Bidayaa Compound	Private	---	---	Doha	2022
3	1B+G+2+PH – Al Markhiya 2 Building	Janas Contracting Company		Al Baraha Technical Laboratories	Doha	2023
4	Mosque M117A with Imam House Type -7	Janas Contracting Company	---	Al Baraha Technical Laboratories	Doha	2023
5	Earthing Works (Soil Drilling)	-	-	Al Baraha Technical Laboratories	Doha	2023
6	Soil Investigation	-	-	Draieh Contracting W.L.L	Doha	2023
7	Umm Al Haul Free Zone Project	IKA Constructions	---	Al Baraha Technical Laboratories	Doha	2024
8	Geophysical Survey, Geotechnical Investigation and Assessment - Qatar Academy Senior Sidra School	Qatar Foundation	Trust Engineering	N/A	Doha	2024
9	Settlement Assessment of Bldg 17 at Station S in Mesaieed	QatarEnergy	CEC Engineering	N/A	Mesaieed	2024
10	Renovation, Refurbishment and Retrofitting Works (Civil and MEP)	Qatar University	---	Draieh Contracting W.L.L	Doha	2024
11	Qatar 500MW Single Cycle Peak Unit Power Project	Qatar Electricity & Water Co. - Surbana Jurong Infrastructure Pte.Ltd	---	Qatar Electricity & Water Co. - Surbana Jurong Infrastructure Pte.Ltd	Doha	2025

CHEMISTRY						
#	Project Name	Client	Consultant	Contractor	Location	Date
1	Water Chemical Analysis - Water Recycling Plant	KCIC (Block Division)	NA	NA	Industrial Area, Qatar	2015
2	Material Evaluation of Water Proofing (Physical & Chemical Test, Pull off Test)	ASPEC	NA	NA	Qatar	Jan'16 to Dec'16
3	Evaluation of Material (Admixture Physical & Chemical Test, Hardened Concrete & Reinforcment)	Sodamco	NA	NA	Qatar & Oman	Nov'16
4	Material Evaluation of Lime Stone	Urbacon	NA	NA	Qatar	Nov'16
5	Full Chemical and Physical Analysis of OPC Cement	Al Khalij Cement	NA	NA	Umbab, Qatar	Nov'16- Mar'17
6	Material Evaluation of Lime Stone	Urbacon	NA	NA	Qatar	Nov'16
7	Evaluation of Material (Chemical Analysis of Chilled Water, Aggregate & Cement)	Gulf Readymix	NA	NA	Industrial Area, Qatar	Jan'17 to Dec'17
8	Evaluation of Material, Chemical Analysis & Physical Analysis of OPC & SRC Cement	Al Khalij Cement	NA	NA	Umbab, Qatar	Feb-17
9	Evaluation of Material, Chemical Analysis & Physical Analysis of OPC, SRC, GGBFS, Fly Ash	Gulf Additives & Chemical Factory	NA	NA	Qatar	Feb-17
10	Material Evaluation of Water Proofing (Physical & Chemical Test, Pull off Test)	ASPEC	NA	NA	Qatar	Apr-17
11	Material Evaluation of Sea Water	Gulf Organization for Research & Development	NA	NA	Qatar	Apr-17
12	Evaluation of material, Stainless Steel Tensile Strength & Chemical Analysis	Style For Steel Engineering & Metal Casting W.L.L	NA	NA	Qatar	Apr-17
13	Material Evaluation, Washed Sand, Chemical & Physical Analysis of OPC & SRC, GGBS, Silica Fume	Readymix Qatar	NA	NA	Qatar	Apr'17 to Dec'17
14	Sea water analysis	Gulf Organization for Research & Development	NA	NA	Qatar	Jul-17
15	Material Evaluation, Full Chemical Analysis of GGBFS and Physical Test	United Gulf Cement Company	NA	NA	Mesaaid, Qatar	Aug-17
16	Evaluation of Material, sea water analysis	Gulf Organization for Research & Development	NA	NA	Qater Foundation	Aug-17
17	New Product Tetsing, Compressive Strength and Setting Time of Gypsum	Gulf Organization for Research & Development	NA	NA	Qatar	Oct;17 to Dec'17
18	Evaluation of Material , Acid Soluble Chloride and Acid Soluble Sulfate, core compressive strength	Private	NA	MATTA Contracting	Shahaniya, Qatar	Oct-17

SOIL AND ASPHALT						
#	Project Name	Client	Consultant	Contractor	Location	Date
1	Material Evaluation of Soil Testing (Lab Maximum Dry Density, Liquid Limit, Platic Limit, Sieve Analysis, Petrography Test)	QGPSM	NA	NA	Qatar	2015
2	Soil Sampling & Testing	Private	NA	Khalid Contracting	Industrial Area, Qatar	Jan'15 to Dec'15
3	Al Khor Camp, Material Evaluation of Backfill	QEPCO	NA	NA	Al Khor, Qatar	Jan'16
4	Material Evaluation of Soil	Royal Touch	NA	NA	Qatar	April'16
5	Material Evaluation of Concrete Core Extraction,Particle size distribution (Gradation),Modified proctor, California Bearing Ratio (CBR), Sand equivalent, Liquid Limit, Plastic Limit & Plasticity index, Fractured particles , Soundness by Magnesuim Sulfate, Resistance to degradation by LA machine,Acid / Water soluble Sulphate, Acid / Water soluble Chloride, pH value, Organic content for Subbase.	Khalid Contracting	NA	NASCO	Doha,	Jan'17 to Dec'17
6	Soil Density Testing using Nuclear Density Gauge	Al Khulaify Palace	Al Kashaf International	Palmera Landscape	Laqtifiya, Doha	June-19

TRAINING & CERTIFICATIONS						
#	Project Name	Client	Consultant	Contractor	Location	Date
1	NRMCA Certification for Concrete Plants & Delivery Trucks	Serka	N/A	N/A	Oman	Jan-18
2	NRMCA Certification for Concrete Plants & Delivery Trucks	Unibeton	N/A	N/A	Doha, Qatar	Jan/Feb 2018
3	NRMCA Certification for Concrete Plants & Delivery Trucks	Sabea Readymix	N/A	N/A	Doha, Qatar	Jan/June 2018
4	Training on Concrete Fundamentals & Testing (in collabortion with ASHGHAL & ASTM)	Various	N/A	N/A	Doha, Qatar	March-18
5	NRMCA Certification for Concrete Plants & Delivery Trucks	Al Wataniya	N/A	N/A	Doha, Qatar	April-Jul-Dec 2018
6	Concrete Fundamentals Training (in collabortion with ASHGHAL & ASTM)	Various	N/A	N/A	Doha, Qatar	Apr-19
7	Fresh Concrete Sampling & Testing (in collabortion with ASHGHAL & ASTM)	Various	N/A	N/A	Doha, Qatar	Apr-19
8	NRMCA Certification for Concrete Plants & Delivery Trucks	Barzan	N/A	N/A	Doha, Qatar	Apr-19
9	NRMCA Certification for Concrete Plants & Delivery Trucks	Sabea	N/A	N/A	Doha, Qatar	May-19

MOBILE TESTING LABS						
#	Project Name	Client	Consultant	Contractor	Location	Year
1	Site Mobile Lab for Construction Works at Shield 5 Program (Testing of Concrete, Aggregates, Soil & Asphalt)	Qatar Ministry of Defense /	US Corps of Engineers	AICI / Al Seal JV	Doha, Qatar	2018
2	Testing of Concrete & Aggregates – Fresh Concrete Sampling & Testing) at ISF Camp	Ministry of Interior	Dar Al Handasah	Aktor / Al Jaber Engineering	Duhail, Qatar	2018
3	Sampling & Testing of various Construction Material (Concrete, Soil, Asphalt, Steel, Water) - QIMC Tower	Qatar Industrial Manufacturing Company - QIMC	Arab Engineering Bureau	Redco Construction Al Manaa	Doha, Qatar	2018
4	Field Sampling & Testing for ongoing Construction of Alar Hotel Project	Thornham Qatar	Shaker	MAN Enterprise	Doha, Qatar	2019
5	Design & Construction of Duhail Villa Project	Private Owner	Erga	UCC / Palmera Landscape	Doha, Qatar	2019
6	10 Residential Villas (G+F+PH)	Private Owner	JCP Engineering	Al Madar Contracting	Doha, Qatar	2019
7	Design and Build for Additional Modification to (27) Schools – Package 1 & 2	Public Works Authority	Engineering Consultants Group	Amana Contracting	Doha, Qatar	2019
8	Umm Al Dome Improvement	Public Works Authority	Italconsult	Petroserve / Strukton JV	Doha, Qatar	2019
9	Design and Build – Ministry of Defense Headquarters	Ministry of Defense	Qatar Armed Forces	Redco Construction Al Manaa	Qatar	2020
10	HIAEP - Passenger Terminal – Central Concourse Building	Hamad International Airport	Hill - DAR	MIDMAC-TAV-Taisei	Doha, Qatar	2020
11	Design & Build Works for Lusail Plaza Towers Plot 1 & 2 (BP12A & 12B)	Lusail Real Estate Development Company	Louis Berger-QPM JV	MIDMAC-MIC JV	Lusail, Qatar	2020
12	Doha Live (Hotel + Retail)	Al Baker Investments	Al Baker Architects	Redco Construction Al Manaa	Qatar	2019
13	DW082 Al Sailiya & Al Hamm Street Surface Water	Public Works Authority	Italconsult	Al Waha Contracting & Trading	Qatar	2019
14	Al Baker Towers Hotel	Al Baker Investments	Al Baker Architects	Redco Construction Al Manaa	Qatar	2020

15	Design & Construction of Industrial & Mubaireek Interchanges	ASHGHAL	CDM Smith	MIDMAC – PORR JV	Industrial Area, Qatar	2020
16	Main Works for FDTA Facility – Hamad International Airport	Hamad International Airport	DAR	Redco Construction AlMana	Doha, Qatar	2020
17	Treated Sewage Effluent Polishing Project - KATARA	KATARA	KEO International	MAN Enterprise	Katara, Qatar	2021
18	Renovation & Extension of Shoura Council Buildings (Pckg 1 & 3)	Hamad Medical City	GHD Global	Redco Construction Al Manaa	Doha, Qatar	2021
19	RC AlMana New HQ Energy City Lusail	Private	N/A	Redco Construction Al Manaa	Doha, Qatar	2021
20	Cultural Center Project in Education City	Education City	ASTAD	Redco Construction Al Manaa	Doha, Qatar	2021
21	Data Center – Ras Abu Fountas Project	Um Al Houl	Khatib & Alami	AMANA Contracting	Doha, Qatar	2021
22	Material Sampling & Testing of Fresh Concrete, Pull Off Test & Petrography Examination (Mockup Rectification Works for RLIC Seawater Return Facility)	QatarEnergy	Jensen Hughes	QCTC	Ras Laffan	2021
23	F&B District at Intercontinental Doha Hotel & Residences	Gulf Hotels Company	DAR	MAN Enterprise	Doha, Qatar	2022
24	Third Party Material Testing For Soil, Concrete, Asphalt & Steel Testing (ALAR Grand Villas – N7)	DAMSA HOLDING	SHAKER	MAN Enterprise	Lusail, Qatar	2022
25	Roads and Infra in Al Mearad and Southwest of Muaither - Package 3	ASHGHAL	CDM Smith	Petroserv Limited	Doha, Qatar	2022
26	CP28-Early Works (Enabling) for Huzoom Lusail Early Works and Phase 1	QDREIC	Parsons	QD-SBG Construction	Lusail, Qatar	2022
27	Third Party Material Testing For Soil, Concrete, Asphalt & Steel Testing (Private Palace)	---	---	MAN Enterprise	Al Khor, Qatar	2022
28	3rd Party Material Testing – Concourse D&E Expansion Works (HIAEP-0065)	MATAR	DAR	MIDMAC	Doha, Qatar	2022
29	Design and Construction of New Light Industrial Unit for City Neon	Qatar Free Zone	KIEC	AMANA Contracting	Ras Bufontas, Qatar	2022
30	Design & Construction of Eight Boutique Warehouses	Qatar Free Zone	KIEC	AMANA Contracting	Doha, Qatar	2023

31	P293 Teyseer Project	Teyseer Group	Universal Design Center	Redco Construction Al-Manaa	Doha, Qatar	2023
32	Construction of College of Medicine & Health Sciences at Qatar University	ASHGHAL (Qatar Uni)	KEO	Bojamhoor	Doha, Qatar	2023
33	CP28-Early Works (Enabling) for Huzoom Lusail Phase 2	QDREIC	Parsons	QD-SBG Construction	Doha, Qatar	2023/2024
34	AL DAAYEN FARM - STAGE 1 “GATEHOUSE” (ADF1)	Al Daayen Municipality	GHD Global Pty Ltd	MAN Enterprise	Doha, Qatar	2023/2024
35	Wathnan Equestrian Complex - Gallop Track & Boundary Wall Works	Qatar Racing and Equestrian Club (QREC)	GHD Global Pty LTD	MAN Enterprise	Doha, Qatar	2023/2024
36	EPIC for Ras Laffan Port Control Tower	QatarEnergy	N/A	Midmac Contracting	Ras Laffan, Qatar	2024

EllisDon — We build on great relationships™

DESIGN AND BUILD OF MIXED USED BUILDINGS
COMMERCIAL BOULEVARD (BP 18A)

REDCO CONSTRUCTION - ALMANA

دورش قطر Dorsch Qatar

SUBMITTAL FORM

Submittal No.: CBD-BP18A-AP-RED-DCQ-SUB-PD-CV-0273 | Rev.: 1

Date: November 3, 2019

CONSULTANT: DORSCH QATAR

Submittal Type: **PREQUALIFICATION DOCUMENT**

CONTRACT: DESIGN AND BUILD OF MIXED USE BUILDINGS - COMMERCIAL BOULEVARD (BP18A) TENDER NUMBER: 55012006

PLOT NO: ALL PLOTS

FROM : REDCO CONSTRUCTION - ALMANA

Signature:

TO : DORSCH

CC : ELLISDON

Subject : PREQUALIFICATION DOCUMENT OF M/S CTL Group Qatar WLL for Third Party Laboratory Testing.

ACTION CODES	
APPROVED	A
APPROVED WITH COMMENTS	B
REVISE AND RESUBMIT	C
REJECTED	D
FOR INFORMATION	E

The contractor certify that the submission is in full compliance with contractual requirements and local authorities regulations.

Contractor's Signatures — Date: 3-Nov-19

Following is the list of documents submitted.

ITEM	QTY.	Dwgs., Specs. or BOQ Ref.	DOCUMENT / DRAWING NO.	DESCRIPTION	TYPE	CODE	
						SUBMIT.	ACTION
1	3	NA	CBD-BP18A-AP-RED-DCQ-SUB-PD-CV-0273	PREQUALIFICATION DOCUMENT OF M/S CTL Group Qatar WLL for Third Party Laboratory Testing.	PD	FOA	B

EllisDon RECEIVED 13 NOV 2019 Time: 08:40 am

03 NOV 2019

Supervision Consultant's Comments:

Refer to attached comments sheet

Recommended for Approved with Comments Code (B) 12/11/2019

PMCM's Comments:

Subject to enclosed comments.

QD-Comments: CTL may not be used in any test not approved by Ashghal. Examples: CTL not approved for water absorption test, ISAT & all waterproofing tests

An Approval, correction or comments DO NOT relive the Contractor of his obligation under the Contract.

Supervision Consultant:	PMCM:	Client:
Signature: E. Osman	Signature:	Signature: Abdulaziz Al Romaihi
Date: 12/11/19	Date: 14 Nov 19	Date: 14/11/2019 Younis

Note: Compliance Form duly filled is enclosed herewith.

* TYPE: Shop Drawings, Drawings, Inspection Test Plan, Material Submittal, Method Statement etc.

Lusail-BP12 - A - Lusail Plaza Towers Plot No.01 – Main Work
Lusail Development
Doha
23175 Qatar

Louis Berger - QPM Joint Venture
Jaidah Square, Suite 602A
Airport Road
Doha
202401 Qatar
Ph. +974 4 44015800

MAIL TYPE	MAIL NUMBER	REFERENCE NUMBER
Workflow Transmittal	LBQPMJV-WTRAN-001149	LBQPMJV-WTRAN-001149

Final (WF-002568) Construcion Submission for PMC Review / Approval - Company Pre-Qualification Approval Request for Third party Testing Laboratory - Construction Technology Laboratories Group

From	Evelyn Tingabngab - Louis Berger - QPM Joint Venture
To (6)	Mr Graham Davis - Louis Berger - QPM Joint Venture (+5 more...)
Cc (21)	Mr Christopher Bell - Louis Berger - QPM Joint Venture (+20 more...)
Sent	Sunday, 19 April 2020 1:09:29 PM GST (GMT +04:00)
Status	N/A

MIDMAC - MIC Joint Venture (MMJV)
(PROJECT - 562-QLT)
Design & Build Works for Lusail Plaza Towers
Plots 1 & 2 (BP12A & BP 12B)
Plot 1 ☐ Plot 2 ☐
Ref.: Date:

DISTRIBUTION	INFO	ACTION
Project Director	✓	
Dy. Project Director	✓	
Project Manager	✓	
Construction	✓	
Design / Technical	✓	
Interface	✓	
Contract Administration	✓	
MEP		
Planning	✓	
Survey Team		
HSE		
QA/QC	✓	
Procurement		✓
Site Administration		
Stores		
MMJV Main Offices		
Others		✓

CTL

DOCUMENT ATTACHMENTS (2)

(0 selected)

File	Document No	Revision	Revision Date	Title	Status
	9204-BP12A-MMJV-PRS-QL-NS-000-00006	000	15/04/2020	Company Pre-Qualification Approval Request for Third party Testing Laboratory - Construction Technology Laboratories Group	B - Approved with Comments
	9204-BP12A-MMJV-PRS-QL-NS-000-OCS-00006	000	15/04/2020	OCS_Company Pre-Qualification Approval Request for Third party Testing Laboratory - Construction Technology Laboratories Group	B - Approved with Comments

MESSAGE

Workflow Review History

The attached documents have completed the "Construcion Submission for PMC Review / Approval - Company Pre-Qualification Approval Request for Third party Testing Laboratory - Construction Technology Laboratories Group" workflow with the following results :

This transmittal was automatically generated.

HILL - dar

HAMAD INTERNATIONAL AIRPORT EXPANSION PROJECT

midmac contracting company w.l.l. limited liability company | TAV Construction | TAISEI

SUBCONTRACTOR / SUPPLIER APPROVAL SUBMITTAL (SAS)

CONTRACTOR: MIDMAC-TAV-TAISEI Joint Venture	
Contract Work Package: HIAEP-00013	**SAS No. ME-00013-A7120-CN-MTT-B-PQD-0001-R – REV.0**
Discipline: Composite, Multi-Discipline Documents	
Sub-Contractor / Supplier Name	**Construction Technology Laboratories Group WLL**
Local Status	**Local Co. CR 69008**
Registered Address	**11809**
Head Office Address	**Ind. Area-Al Kassarat Road-R/A 41**
Activity to be Undertaken	**Third Party Material Testing**
ISO Certification	**attached**
Specification/Contract Document Reference	**Sec. 220590**
Description of Attachments	**Prequalification Document (Company Profile)**
Comparison in case of Alternative Submittal	
Comments:	MIDMAC-TAV-TAISEI JV Reviewed & Approved for Submission CENTRAL CONCOURSE BLDG-TAISEI-JOTC
Contractor's Authorized Rep.:	Signature & Company Stamp: Date: 20 JAN 2020

PMCM'S COMMENTS / RECOMMENDATIONS:

The proposed supplier/subcontractor satisfy the requirement for the attached list of tests as approved by Ashghal circular Number 41-2019 dated 29/12/2019. According he is recommended for approval to conduct these list of tests.

HILL - dar (Doha - Qatar) (PQA-01114 Hamad International Airport Expansion Project) 21 JAN 2020 RECEIVED BY: ..... Time: 11:24

CLIENT / STAKEHOLDER'S COMMENTS (if applicable):

An approval does not relieve the Project Manager of his obligations under the Contract. Furthermore, an approval does not relieve the Contractor of his obligations under the Contract and he shall be liable for all acts, defaults and negligence by the Subcontractor. This approval is only for those tests as approved by Ashghal Circular Number 41-2019 dated 29/12/2019 following the PMCMs recommednation above.

☑ A- Approved ☐ B- Approved with Comments ☐ C-Revise and Re-submit ☐ D-Rejected

Client / Stakeholder Rep. S. SHAWYER	Signature:	Date: 06/02/2020

PMCM'S APPROVAL:

Approved for the attachrd list as per Ashghal Circular number 41-2019 dated 29/12/2019 only.

RECEIVED 09 FEB 2020

☐ A- Approved ☑ B- Approved with Comments ☐ C-Revise and Re-submit ☐ D-Rejected

PMCM Rep. Sabri Bakri	Signature:	Date: 9/2/2020

ALBAKER ARCHITECTS | ALBAKER INVESTMENTS | REDCO CONSTRUCTION · ALMANA

DOCUMENT SUBMITTAL

SUBMITTAL NO.: ABDL-RED-PD-00GE-0106 REV: 1 — DATE: February 05, 2020

PROJECT NAME: DOHALIVE (HOTEL+ RETAIL) — PROJECT NO.: P-269

CONSULTANT: AL BAKER ARCHITECTS

CONTRACTOR: REDCO CONSTRUCTION ALMANA

ALBAKER ARCHITECTS Doha Live Project

	Action	Info
PM		✓
RE		
Arch		
Civil/Struc.	✓	
Mech.		
Elect.		
ID		
Planner		
Q.S.		
HSE Sec./Dc	✓	
S/FILE		
Head Office		
Others		

SUBMITTAL TYPE

☐ Technical Submittals ☐ Method Statement ☐ Reports ■ Prequalification of subcontractor

☐ PQP / ITP ☐ Schedule ☐ Supplier Approval ☐ Test Reports

☐ O&M Manual ☐ Certificates ☐ Others

TRANSMITTED FOR

■ Approval ☐ Review & Comments ☐ Information/Records ☐ As Requested

METHOD OF TRANSMISSION

■ Hand ☐ Email ☐ Mail ☐ Upload via FTP

Sl	DESCRIPTION	Document Ref. No.	Rev. No.	Format		No. of copies	Remarks
				Hard	Soft		
	Prequalification Document of M/s CONSTRUCTION TECHNOLOGY LABORATORIES GROUP (CTL GROUP QATAR)	ABDL-RED-PD-00GE-0106	1	■	■	2	
	Third Party Testing Laboratory						

CONTRACTOR		CONSULTANT	
Commercial Manager	Project Manager	Received By	Date & Time

Consultant Comments:

Refer the comments on the attached sheet.

Action Code: ☐ A= Approved ☑ B= Approved as Noted ☐ C= Revise & Resubmit ☐ D= Rejected

Discipline Engineer: FPILISAN / SSE **Date:** 09/02/20

CONSULTANT		CONTRACTOR	
Project Manager	Date	Received By	Date

RECEIVED 13 FEB 2020 DOHALIVE (P*269) REDCO CONSTRUCTION-ALMANA

Project Logo:

Project Name : MINISTRY OF DEFENSE HEADQUARTERS DESIGN & BUILD (B-112-01)

Form No. : F03-R0

Client: MOD | Engineer: | Contractor

Submittal Type :

☐ - Technical Submittals ☐ - Procedures ☐ - Others
☐ - PQP / ITP ☐ - Supplier Approval
☐ - Test Reports ■ - Subcon Approval Pre-Qualification
☐ - Design Data ☐ - Method Statement
☐ - Certificates ☐ - Schedule / Reports

Submittal No. : MOD-RED-PD-01GE-0001 Rev.: 0
Submittal Date : 07th January 2020
Expected Response Date : 15th January 2020

No. of Sets:

a.) Hardcopy 1 Size:
b.) E-copy 1 Type:

Discipline:

☐ - Civil / Structural ☐ - Mechanical ☐ - Electrical ☐ - Architect / Interior Design ■ - Others Pre Qualification

Description of Documents:

Pre-Qualification Document of CTL Group Qatar (3rd Party Testing Laboratory & Speciality Testing Firm) for Ministry of Defense Headquarters Design & Build (B-112-01) Project

Submitted for :

■ - Review and Approval ☐ - Re-Submitted for Review & Approval ☐ - For Information & Records

Prepared by:	*Reviewed by: (Contractors Coordinator/ TM/ QA/QC or HSE)*	*Recommended for Submission by: (Contractors PM)*
Name / Sign / Date	Name / Sign / Date	Name / Sign / Date

Refer the attached Comments.

Submittal Status :

☐ - Approved ☑ - Approved as Noted ☐ - Revise and Resubmit ☐ - Rejected

Reviewed by:	Approved by:	Client Rep. Endorsement (when required):
Name / Signature	Name / Signature	Name / Signature
Designation: Dire Engineer	Designation: Project Manager	Designation
Date	Date	Date

Note: Approval comments noted to the submittal does not relieve the Contractor from their responsibilities. The Contractor is to ensure the goods in conformance and compliance of the comments to the contract and specification requirements

PROJECT: Design & Construction of Duhail Villa Project	EMPLOYER: Private Owner	N°. UCC741-PAB-PRQ-TS-L-00002 rev.0
CONTRACTOR: UCC	CONSULTANT: erga QATAR	RECEIVED 17 FEB 2020 erga; RECEIVED 22 FEB 2020

TECHNICAL SUBMITTAL

Type of Submittal:				
Document ☐	Sketch/Drawing ☐	Test Result ☐	Other ☒	
Other (Specify):	Pre-Qualification			
Subcontractor:	Palmera Agricultural Business			

Subject: Pre-Qualification for CTL Group Qatar for Third Party Testing Laboratory

Description of Document Submitted:

Contractor's Representative: Feras Asadi – Project Manager **Date:** 17-Feb-19

COMMENTS: "AAN"

- Comply the comments on the attached comment sheet.

19 FEB 2020

Status:	A: Approved ☐	AAN: Approved As Noted ☑	CA: Conditional Approval ☐	
	RR: Revise & Resubmit ☐	R: Rejected ☐	NFD: Need Further Detail ☐	N: Noted ☐

Engineer: **Date:** 22/2/2020

Approval shall not relieve the Contractor of his liabilities under the Contract or constitute authorization of any change to the Contract Documents

PARSONS

Parsons International Limited
1st Fl., Financial Square Building no. 4, Al Muntazah Signal, P.O. Box 2091 | Doha, Qatar
P: +974.440.58444 | F: +974.443.77434 | www.parsons.com
بارسونز انترناشيونال ليمتد ، الطابق الأول ، بناية الساحة المالية رقم 4 ، إشارة المنتزه ، ص.ب. 2091 | دوحة، قطر
ت: +974.440.58444 | ف: +974.443.77434

External Document Transmittal

Project : Expressway

Transmittal No : EXW-P017-0001-QM-PAR-TN-01446

References : EXW-P017-0001-TEK-PAR-TN-00064 CB

Project No : P017C2 – Construction Of East Industrial Road Between Al-Muntazah Street and West Corridor

Issue Date : 14 June 2018

PIL Filing Code: 08.51.08

Project ID No : IA/2017/C/006/G

Reason for Issue: Review of Prequalification

Contract No : C2017/90

Format : Hard Copy

To : **Tekfen Construction & Installation Co.**
P.O. Box 23584
Doha, Qatar

Attn : **Ersin Cetinkaya**
Project Manager

Issued By : **Georgios Lampridis**
Senior Resident Engineer

Issue Method : By Hand

Item	Document No./Title	Rev	Status	Document Title	Qty
1	EXW-P017-0001-QM-TEK-PQ-00018	CB	A	Prequalification File of CTL Group Qatar for Third Party Laboratory Testing – (PQ-00018 CB)	1
2	EXW-P017-0001-QM-PAR-CR-00086	CB	A	Comments Report Sheet No. CR-00086	1

Comments:
Approved

Please acknowledge receipt by returning a signed copy of Transmittal to originator.

ISSUED BY:

Georgios Lampridis
PARSONS

RECEIVED BY:

SIGNATURE

TEKFEN CONSTRUCTION AND ... ING.
19 JUN 2018
RECEIVED

DATE

Ammar Jahangard Mahboub – Ashghal
Zainal Bapoo – Ashghal

km/fv

suez سويز Marubeni ماروبيني

SUEZ International SAS Qatar Branch
14 APR 2020
Refurbishment of Doha West STP Old Plant
RECEIVED

RECEIVED
07 APR 2020

Stantec

SUBMITTAL TO THE MANAGER OF DRAINAGE NETWORKS PROJECT DEPARTMENT

Contractor's contract no: C2005/99	SECTION 1 (FOR CONTRACTOR'S USE)		Consultant's contract no: P2019/34
DATE 07/Apr/20	**PROJECT NAME** DOHA WEST SEWAGE TREATMENT WORKS EXTENSION NO.3 ANNEXURE NO.3 – REFURBISHMENT OF DOHA WEST STP OLD PLANT	**CONTRACT/ PROJECT No.** **Contract No.:** C2005/99 **Project Code:** CP627 **Budget Ref:** 1460120/61010	**LOCATION** Qatar

SUBMITTALNUMBER

Civil Project No.						Category			Type			Seq. No.				Rev.	
C	P	6	2	7		C	I	V	O	T	H	0	0	5		0	3

FROM **SUEZ/MARUBENI JV**
P.O. Box 24038, Salwa Road, Doha, Qatar
Tel.: +974 44502801 - Fax: +974 44502871

TO **STANTEC**
P.O. Box 207312, C-Ring Road, Doha, Qatar
Tel.: +974 44086333 - Fax: +974 44950900

CC **PUBLIC WORKS AUTHORITY**
Mr. Salem Hakawati - DPD/IA Project Manager
P.O. Box 22188
Tel.: +974 44950000 - Fax: +974 44317015

ITEM NO.	ITEM DESCRIPTION	ACTION REQUEST CODE	DOCUMENT TYPE	DOCUMENT/DRAWING NO	QTY	CONSULTANT USE	
						STATUS	SIGNATURE
1	Prequalification – CTL Group – Investigation of Structural Conditions of the Existing Structures	FA	Answer Sheet	SEV-CW-000-SD-004-B-AS	Soft Copy	A	PPCM

This certifies that all items submitted herewith have been checked by the Contractor, QC / Designer and are in full conformance with the requirements of the contract documents, except as noted, and are approved by the Contractor for this project.

QC / DESIGNER (Signature and Title)	This submittal contains deviation	Yes	No	CONTRACTOR (Signature and Title)
			X	

Suez Marubeni JV
Refurbishment of Doha West Old Plant

SECTION 2 (FOR ENGINEER'S USE)

Corrections or comments made on the shop drawings during this review do not relieve Contractor from compliance with the requirements of the Contract. Review of a specific item shall not include review of an assembly of which the item is a component. Contractor is responsible for dimensions to be confirmed and correlated at the job site; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of its work with that of all other trades; and for performing all work in a safe and satisfactory manner. Review of this submittal does not include review of any of the matters referenced in the previous sentence, all of which are the exclusive responsibility of the Contractor.

STATUS:
A – NO OBJECTION
B – NO OBJECTION WITH COMMENTS
C – REVISE AND RESUBMIT
D – REJECTED
E – FOR INFORMATION
CAN – CANCELLED

Stantec
RECEIVED DATE 07/04/20

DISTRIBUTION	INITIAL	DATE	ACTION
EK		7/4	
KS			

FILE REF

A – Resubmission not required. Manufacturing/Construction may proceed.
B – Resubmission required. Manufacturing/Construction may proceed subject to comments issued.
C – Not to proceed with manufacturing/construction.
D – Incomplete Submittal. Returned without complete review.
E – Retained for information and records.
CAN – Cancelled. Resubmission not required.

STANTEC
By:

Stantec
Stantec UK Limited
P.O. Box 207312
Doha, Qatar

DATE 14/4/2020
ENCLOSURE
ITEMS CS

ASHGHAL
قطر تستحق الأفضل
Qatar Deserves The Best

ECG جماعة المستشارين للاستشارات الهندسية
ENGINEERING CONSULTANTS GROUP S.A.

amana CONTRACTING أمانة

DOCUMENT SUBMITTAL

SUBMITTAL NO.: AMA-PKG01-GEN-SOD-CI-008 — **Revision No. 01**

PROJECT NAME: Design and Build for Modification & additional works- To (27) Schools – Package 1 (8) Nos. Schools — **PROJECT NO.:BA 2019 C 002I**

CONSULTANT: M/S ECG — **DATE: 28-Oct-2019**

CONTRACTOR: Amana Qatar Contracting

DISCIPLINE: ☐ ARCH. ☑ CIV. ☐ STRU. ☐ ELE. ☐ MECH. ☐ INTERIOR DESIGN ☐ OTHER

SUBMITTAL TYPE

☐ Technical Submittals	☐ Method Statement	☐ Reports	☐ Test Results
☐ PQP	☐ ITP	☐ Certificates	☐ O&M Manual
☐ Schedule/ Program	☑ Prequalification of Subcontractor/Supplier	☐ Others	

TRANSMITTED FOR

☑ Approval	☐ Review & Comments	☐ Information/Records	☐ As Requested

METHOD OF TRANSMISSION

☑ Hand	☐ Email	☐ Mail	☐ Upload via FTP

Sl	DESCRIPTION	Document Ref. No. Specs/BOQ Reference	Rev. No.	Format		No. of Copies	Remarks
				Hard	Soft		
1	Prequalification Document for M/s CTL Group Qatar Scope of works: Laboratory / Material Testing Services	AMA-J130-SOD-CI-PRQ-003	1	☑	☑	02 HC 01 Soft copy	

CONTRACTOR		CONSULTANT	
QA/QC Engineer	Project Manager	Received By	Date & Time
			2.00 PM 29/10/2019

Consultant Comments:

* All Calibration Certificats shall be updated in the specific date and shall be comply with QCS

Action Code: ☐ A=Approved ☑ B=Approved as Noted ☐ C=Revise & Resubmit ☐ D=Rejected

Discipline Engineer: Date: 31.10.2019

RECEIVED 31 OCT 2019 amana J-130

CONSULTANT		CONTRACTOR	
Project Manager	Date	Received By	Date

For the contents of this submittal, approval by the Consultant and/or the Engineer shall not relieve the Contractor of his obligation under the Contract, and the Contractor shall be solely responsible for the soundness and correctness of the submitted documents.

ASHGHAL
قطر تستحق الأفضل
Qatar Deserves The Best

ECG جماعة المهندسين للاستشاريين
ENGINEERING CONSULTANTS GROUP S.A.

amana CONTRACTING أمانة

DOCUMENT SUBMITTAL

SUBMITTAL NO.: AMA-PKG02-GEN-SOD-CI-005 ✓ **Revision No. 01**

PROJECT NAME: Design and Build for Modification & additional works- To (27) Schools – Package 2 (8) Nos. Schools **PROJECT NO.:BA 2019 C 003 I**

CONSULTANT: M/S ECG **DATE:** 28-Oct-2019

CONTRACTOR: Amana Qatar Contracting

DISCIPLINE: ☐ ARCH. ☑ CIV. ☐ STRU. ☐ ELE. ☐ MECH. ☐ INTERIOR DESIGN ☐ OTHER

SUBMITTAL TYPE

☐ Technical Submittals	☐ Method Statement	☐ Reports	☐ Test Results
☐ PQP	☐ ITP	☐ Certificates	☐ O&M Manual
☐ Schedule/ Program	☑ Prequalification of Subcontractor/Supplier	☐ Others	

TRANSMITTED FOR

☑ Approval	☐ Review & Comments	☐ Information/Records	☐ As Requested

METHOD OF TRANSMISSION

☑ Hand	☐ Email	☐ Mail	☐ Upload via FTP

Sl	DESCRIPTION	Document Ref. No. Specs/BOQ Reference	Rev. No.	Format		No. of Copies	Remarks
				Hard	Soft		
1	Prequalification Document for M/s. CTL Group Qatar Scope of works: Laboratory / Material Testing Services	AMA-J131-SOD-CI-PRQ-003	01	☑	☑	02 Hard Copy & 01 Soft copy	

CONTRACTOR		CONSULTANT	
QA/QC Engineer	Project Manager	Received By	Date & Time
			2.00 P.M 29/10/2019

Consultant Comments:

.....

.....

Action Code:	☐ A=Approved	☑ B=Approved as Noted	☐ C=Revise & Resubmit	☐ D=Rejected

Discipline Engineer: Date: 31-10-2019

RECEIVED 31 OCT 2019 amana qatari J-13

CONSULTANT		CONTRACTOR	
Project Manager	Date	Received By	Date
	31/10/2019		

For the contents of this submittal, approval by the Consultant and/or the Engineer shall not relieve the Contractor of his obligation under the Contract, and the Contractor shall be solely responsible for the soundness and correctness of the submitted documents.

PROJECT: CONSTRUCTION OF ADDITIONAL FACILITIES FOR COMMUNITY COLLEGE OF QATAR	EMPLOYER: ASHGHAL قطر تستحق الأفضل Qatar Deserves The Best	N° DS : AMA-J132-PRQ-CI-002 Rev 0
CONTRACTOR: amana CONTRACTING أمانة	CONSULTANT: erga QATAR	RECEIVED 02 NOV 2019 erga; RECEIVED 06 NOV 2019 amana J-132

DOCUMENT SUBMITTAL

Type of Submittal:				
Document ☒	Sketch/Drawing ☐	Test Result ☐	Other ☒	
Other (Specify):	Prequalification of subcontractor			

Subject: Prequalification of M/S CTL GROUP

Description of Document Submitted:

Prequalification of M/S CTL GROUP

Scope : Third party laboratory for Testing concrete,steel,compaction,blocks etc

Contractor's Representative: Engg Mohammad Khair Date: 29-Oct-2019

COMMENTS:

1. CALIBRATION CERTIFICATES FOR THE EQUIPMENT SHALL BE LATEST VALID.
2. UPON REQUEST PLANT VISIT ON M/S CTL TEST LABS SHALL BE CONDUCTED ACCORD.
3. TESTING KEY PERSONNEL/STAFF SHOULD BE WITH M/S CTL GROUP DOING RELEVANT TESTING WORKS OF PREVIOUS PROJECTS.

ERGA - STRUCTURAL
06.11.2019

Status:	A: Approved ☐	AAN: Approved As Noted ☑	CA: Conditional Approval ☐	
	RR: Revise & Resubmit ☐	R: Rejected ☐	NFD: Need Further Detail ☐	N: Noted ☐

Engineer: Date:

Approval shall not relieve the Contractor of his liabilities under the Contract or constitute authorization of any change to the Contract Documents

Ref: No. NPP/0085/LT/JEC/2018/0358
Date: 17 December 2018

Al-Jaber Engineering L.L.C
P.O. Box 22801
Doha, Qatar

References: 1) NPP0085-LTR-JEC-NPP-1027 dated 05 December 2018
2) NCR 0007/CIV

Attention: **Mr. Shadi Khashab**
Project Director

Subject: **Hamad Port Project (HPP)**
NPP/0085: Strategic Food Security Facilities
Non Compliance Report No. 0007-CIV

Abdallah

Dear Mr. Khashab,

The HPP writes with reference to Al-Jaber Engineering (Contractor) letter Ref: 1 regarding the acceptance of the CV's for the specialists employed by M/s CTL Group Qatar who will be responsible for the assessment and recommendations for the affected works regarding the Ref: 2 NCR No. 0007/CIV.

The Contractor is hereby advised that the HPP has no-objection to the specialists' qualification to carry out the delegated task and proceed with the assessment works.

Also, the HPP would like to reiterate that M/s CTL Group Qatar shall be tasked to perform in their full capabilities including but not limited to:

1. conducting condition assessment,
2. structural integrity evaluation, and
3. providing engineering/repair recommendations for the affected works which shall be free from any influence from the Contractor.

This is for your information and reference.

Yours faithfully,

Jassim M. Al-Shirawi
Project Executive Director

17/12/18

cc: HPP, PMC (DORSCH Qatar)
Encl.: *None*

Ph : +974 4406 4444
Fax : +974 4406 4422

Hamad Port Project
P.O Box: 28333
Doha – QATAR

	Sub-Contractor Approval Request	Document No. :	PWA-RPD-CON-FM-0302
		Revision No. :	04
		Issue Date :	15 Jan. 2019

Project Details

Document No.:	IA2018-C031G/SCAR/027	Rev. No:	00	Date:	16/09/2019
Project No.:	IA2018/C031G (C2018/114)	Area:	DOHA, QATAR		
Project Title:	Umm Al Dome Improvement				
Contractor:	M/s.Petroserv limited / Strukton construction & Trading (JV)	GEC:	ITALCONSULT		

RECEIVED 17 SEP 2019 ITALCONSULT

We request the approval of the following Sub-Contractor to undertake the section of work identified in this submittal

Part 1 - Particulars of the Sub-Contractor

Company Name:	M/s. CTL GROUP QATAR
Address 1:	STREET 41 AT KASSARAT ST. INDUSTRIAL AREA, PO BOX NO.14212, DOHA QATAR
Address 2:	N/A
Address 3:	N/A
Address 4:	N/A
e-mail:	N/A
Telephone No:	+974 44950200
Fax No:	+974 44951200

RECEIVED 05 OCT 2019 PETROSERV LTD STRUKTON CONSTRUCTION & TRADING (JV)

Confirm that the following pre-qualification documents are enclosed (tick to conform)

- ☑ Covering Letters from the Contractor addressed to the Supervision Consultant proposing the Sub-Contractor
- ☑ Commercial Register
- ☑ Compliance Statement with Qatar standard specification requirements (QCS 2014 or latest updates)
- ☑ International quality certification (BS EN ISO and / or others) BSI Kite mark,
- ☑ Company Quality Manual / Inspecting and Testing Plans
- ☑ Summary of Experience
- ☑ Financial Status
- ☑ Details of work being undertaken in the Region
- ☑ Company Staff details / Management Structure
- ☑ Equipment owned by the Company

☐ Sub-Contractor included In Tender Submission ☑ Sub-Contractor is a GCC Company

Part 2 - Product Details

Section of Subcontracted Work: Third Party Technical Laboratories for Testing of the Materials

Discipline: Material Testing & Geotechnical Engineering services

Bill of Quantities items to be supplied by the Subcontractor

(a)	Material Testing & Geotechnical Engineering services	BoQ Ref. :	G1(P1)
(b)		BoQ Ref. :	
(c)		BoQ Ref. :	
(d)		BoQ Ref. :	

Part 4\3 - Contractor Authorized Representative

Name: SALVADOR GERMAN

Position: PROJECT MANAGER

Signature:

Date: 16.09.2019

Part 5 - GEC Recommendation Comments

To Contractor: M/s. CTL Group - Qatar is included in Ashghal approved third party laboratory. M.A. 2/10/19

Action Code A : ☑ Can be recommended for Approval without any comments

Action Code B : ☐ Can be recommended for Approval subject to corrections and/or comments attached

Action Code C : ☐ Revised & resubmitted in accordance with the completion of corrections shown and/or comments attached

Action Code D : ☐ Rejected

APPROVED ITALCONSULT

Name : Raed [illegible]

ITALCONSULT Resident Engineer

Position: RE

Signature :

Date: 3/10/19

Part 6 - RPD Verification (if required)

Name :

Position:

Signature :

Date:

Project Logo:

Project Name : QATAR INDUSTRIAL MANUFACTURING COMPANY (QIMC) TOWER 4B+G+M+POD+38F

Project No. : P-276 Form No. : F03-R0, (AEB Ref: P07-F14)

Client: التحويلية QIMC | Project Manager: Hill International | Consultant: المكتب العربي للشؤون الهندسية Arab Engineering Bureau | Contractor

DOCUMENT SUBMITTAL FORM

Submittal Type :

- ☐ - Technical Submittals
- ☐ - PQP / ITP
- ☐ - Test Reports
- ☐ - Design Data
- ☐ - Certificates
- ☐ - Procedures
- ☐ - Supplier Approval
- ☒ - Subcon Approval
- ☐ - Method Statement
- ☐ - Schedule / Reports
- ☐ - Others

Submittal No. : QIMC-RED-PD-00GE-0006 Rev.: 0

Submittal Date : 19-Dec-18

Expected Response Date :

No. of Sets:

a.) Hardcopy 2 Sets Size: A4

b.) E-copy 2 Type: CD

Discipline:

☒ - Civil / Structural ☐ - Mechanical ☐ - Electrical ☐ - Architect / Interior Design ☐ - Others

Description of Documents:

PREQUALIFICATION DOCUMENT OF M/S CTL GROUP QATAR

(Independent Geotechnical & Material Testing Laboratory Subcontractor)

HILL INTERNATIONAL - QATAR

23 DEC 2018

RECEIVED

20 DEC 2018

Submitted for :

☒ - Review and Approval ☐ - Re-Submitted for Review & Approval ☐ - For Information & Records

Prepared by:	Reviewed by: (Contractors Coordinator/ TM/ QA/QC or HSE)	Recommended for Submission by: (Contractors PM)
CONNIE JOY CORTES	ENG. WALEED GHARIB	ENGR. OTHMAN MAHMOUD ABU HEJLEH
Name / Sign / Date	Name / Sign / Date	Name / Sign / Date

COMMENTS BY THE CONSULTANT (Use Review Comment Sheet When Necessary)

Structurally, No objections for the prequalification Documents However,

Contractor shall stick To one Lab from the approved

Labs for each activity.

* Subcontractor shall Comply with Project specs & approved ITP & QCS 2014 min requirments.

* Calibration Certificate for all equipments shall Be up To date During the whole project Construction time

Submittal Status :

☐ - Approved ☑ - Approved as Noted ☐ - Revise and Resubmit ☐ - Rejected

Reviewed by:	Approved by:	Client Rep. Endorsement (when required):
Name / Signature	Name / Signature	Name / Signature
AEB RE or Sr. Engineer	AEB - PM	
Designation	Designation	Designation
23/12/18 Date	23.12.2018 Date	23/12/18 Date

Note : Approval or comments made to this submittal does not relieve the Contractor from their responsibilities. The assessment is to review the general conformance and compliance of the submittals to the contract and specification requirements

RECEIVED

23 DEC 2018

Time: 1:30 Pm

Signature:

PROJECT: PROJECT ALAR, HOTEL DEVELOPMENT	**CLIENT:** THORNHAM	**Date:** 27-02-2019	**N°:** PAL-MAN-ZALL-ALL-PD-QL-0003 REV.0
PROJECT MANAGEMENT: Turner & Townsend	**CONSULTANT:** SHAKER CONSULTANCY COMPANY	**CONTRACTOR:** MAN ENTERPRISE QATAR	

SHAKER CONSULTANCY COMPANY RECEIVED 27 FEB 2019

MAN ENTERPRISE QATAR ALAR PROJECT DATE: 10 MAR 2019 INCOMING DISTRIBUTION LIST ACT INFO FILE NO. T01/0010

DOCUMENT SUBMITTAL

Type of Submittal:			
Document ☒	**Sketch/Drawing** ☐	**Test Result** ☐	**Other** ☐
Other (Specify):			

Subject: **PREQUALIFICATION DOCUMENTS**

Description of Document Submitted:

Prequalification documents of M/s CTL Group Qatar for Third Party Material testing Laboratory

Contractor's Representative: Andre Korkomaz **Date:** 27-February-2019

COMMENTS:

Please refer to the comments in the attached CRS.

Status:	**A:** Approved ☐	**B:** Approved As Noted ☒	**C:** Revise and Resubmit ☐	**D:** Rejected ☐

Engineer: **Date:** 09-03-19.

Approval shall not relieve the Contractor of his liabilities under the Contract or constitute authorization of any change to the Contract Documents

RECEIVED 10 MAR 2019 ALAR MAN

	Document Review Comment Sheet	Document No. :	PWA-RPD-QM-FM-028
		Revision No. :	04
		Issue Date :	20 Jan. 2019

GEC/ Contractor:	Area/ Contract No.:	Contract Title:	
Italconsult / Al Waha Contracting & Trading Co WLL	DW082 / IA 2017 C023 G / PWA/GTC/049/2017	Al Sailiya and Al Hamm Street Surface Water	
Document No.:	**Document Title:**	**Transmittal No.:**	**Date of Submittal:**
DW082-ALW-CON-SAR-00017 Rev 00	PREQUALIFICATION CTL GROUP QATAR (THIRD PARTY MATERIAL LABORATORY TESTING OF ULTRA CRETE)	DW082-ITAL-ALW-TML-00392	04 April 2019

Comment No.	Section Reference	Reviewer	Position	Comment	Category (R/S)	Response	Responder	Position
1	General	SS	Material Inspector	Material testing shall be carried out as per Ashghal approved list.	Response required			
2	Calibration	SS	Material Inspector	Valid calibration certificate of all testing equipment's shall be attached.	Response required			
3	General	NA	Site Engineer	Contractor ensures that work carried out shall be strict accordance with contract and QCS requirements	Note			
4	General	NA	Site Engineer	Contractor shall update record of all test reports, summaries and submit for review/approval and record shall be maintained.	Response required			
5	General	NA	Site Engineer	Previous project approvals shall be enclosed.	Note			
6	General	NA	Site Engineer	CV and qualification of persons shall be submitted as per organization chart.	Response required			
7	Testing locations	NA	Site Engineer	Test reports shall include coordinates of sampling and testing	Note			

				locations as per Ashghal technical circular no (8)2019.				
8	General	NA	Site Engineer	GEC recommended to select one laboratory which is already approved due to logistics purpose.	Note			

☐ *A - Approved As Submitted* ☑ *B - Approved with Comments* ☐ *C - Revised and Resubmit* ☐ *D - Reject*

Abbreviation:

R - Requirement
S - Suggestion

IAS Certification

CERTIFICATE OF ACCREDITATION

This is to attest that

CONSTRUCTION TECHNOLOGY LABORATORIES GROUP WLL

BUILDING 263, STREET 125 AT KASSARAT ST. INDUSTRIAL AREA
DOHA, QATAR

Testing Laboratory TL-651

has met the requirements of AC89, *IAS Accreditation Criteria for Testing Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories.* This organization is accredited to provide the services specified in the scope of accreditation.

Expiry Date May 1, 2026
Effective Date June 26, 2024

President

Visit www.iasonline.org for current accreditation information.

SCOPE OF ACCREDITATION

International Accreditation Service, Inc.

3060 Saturn Street, Suite 100, Brea, California 92821, U.S.A. | www.iasonline.org

CONSTRUCTION TECHNOLOGY LABORATORIES GROUP WLL

www.ctlgroupqatar.com

Contact Name Mahmoud Al-Shboul **Contact Phone** +974-30337573

Accredited to ISO/IEC 17025:2017 *Effective Date June 26, 2024*

Category	Standard/ Method No. / Date	Standard/ Method Title & Section	Location / Facility
Aggregates	AASHTO T304	Standard Method of Test for Uncompacted Void Content of Fine Aggregate	CTL Lab
Aggregates	ASTM C40	Standard Test Method for Organic Impurities in Fine Aggregates for Concrete	CTL Lab
Aggregates	ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate	CTL Lab
Aggregates	ASTM C117	Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing	CTL Lab
Aggregates	ASTM C123	Standard Test Method for Lightweight Particles in Aggregate	CTL Lab
Aggregates	ASTM C127	Standard Test Method for Relative Density (Specific Gravity) and Absorption of Coarse Aggregate	CTL Lab
Aggregates	ASTM C128	Standard Test Method for Relative Density (Specific Gravity) and Absorption of Fine Aggregate	CTL Lab
Aggregates	ASTM C 131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine	CTL Lab
Aggregates	ASTM C136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates	CTL Lab
Aggregates	ASTM C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates	CTL Lab
Aggregates	ASTM C535	Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine	CTL Lab
Aggregates	ASTM C566	Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying	CTL Lab
Aggregates	ASTM C702	Standard Practice for Reducing Samples of Aggregate to Testing Size	CTL Lab
Aggregates	ASTM C1252	Uncompacted Void Content of Fine Aggregate	CTL Lab

Category	Standard/ Method No. / Date	Standard/ Method Title & Section	Location / Facility
Aggregates	ASTM D546	Standard Test Method for Sieve Analysis of Mineral Filler for Asphalt Paving Mixtures	CTL Lab
Aggregates	ASTM D4791	Flat and Elongated Particles	CTL Lab
Aggregates	ASTM D5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate	CTL Lab
Aggregates	BS 812-2, 5.3	Testing aggregates. Methods for determination of density and Water Absorption (All larger than 10mm aggregate)	CTL Lab
Aggregates	BS 812-2, 5.4	Testing aggregates. Methods for determination of density and Water Absorption (Method for aggregates between 40 mm and 5 mm)	CTL Lab
Aggregates	BS 812-2, 5.5	Testing aggregates. Methods for determination of density and Water Absorption (Method for aggregates 10 mm nominal size and smaller)	CTL Lab
Aggregates	BS 812-102:1989	Sampling of Aggregates (From Heaps)	CTL Lab
Aggregates	BS 812-103.1:1985, 7.2	Methods for determination of particle size distribution — Section 103.1 Sieve tests - Washing and sieving method	CTL Lab
Aggregates	BS 812-103.1:1985, 7.3	Methods for determination of particle size distribution — Section 103.1 Sieve tests - Dry sieving method	CTL Lab
Aggregates	BS 812-105.1:1989	Testing aggregates. Methods for determination of particle shape. Flakiness index	CTL Lab
Aggregates	BS 812-105.2:1990	Testing aggregates. Methods for determination of particle shape. Elongation index of coarse aggregate	CTL Lab
Aggregates	BS 812-109, Section 6	Methods for determination of moisture content Definitive, oven-drying method	CTL Lab
Aggregates	BS 812-110	Methods for determination of aggregate crushing value (ACV)	CTL Lab
Aggregates	BS 812-111	Methods for determination of ten per cent fines value (TFV)	CTL Lab
Aggregates	BS 812-112	Methods for determination of aggregate impact value (AIV)	CTL Lab
Aggregates	BS 812-117	Testing aggregates. Method for determination of water-soluble chloride salts	CTL Lab
Aggregates	BS 812-117, App. C	Testing aggregates. Method for determination of Acid-soluble chloride salts	CTL Lab
Aggregates	BS 812-118	Testing aggregates. Methods for determination of sulphate content	CTL Lab
Aggregates	BS EN 932-1	Tests for general properties of aggregates. Methods for sampling	CTL Lab

Category	Standard/ Method No. / Date	Standard/ Method Title & Section	Location / Facility
Aggregates	BS EN 933-1	Tests for geometrical properties of aggregates. Determination of particle size distribution. Sieving method	CTL Lab
Aggregates	BS EN 933-1	Tests for geometrical properties of aggregates. Determination of particle size distribution. Sieving method Material finer than 0.063mm	CTL Lab
Aggregates	BS EN 933-3	Tests for geometrical properties of aggregates. Determination of particle shape. Flakiness index	CTL Lab
Aggregates	BS EN 933-4	Tests for geometrical properties of aggregates. Determination of particle shape. Shape index	CTL Lab
Aggregates	BS EN 933-7	Tests for geometrical properties of aggregates. Determination of shell content. Percentage of shells in coarse aggregates	CTL Lab
Aggregates	BS EN 933-9:2009 +A1:2013	Tests for Geometrical Properties of Aggregates Part 9: Assessment of fines - Methylene Blue Test	CTL Lab
Aggregates	BS EN 1097-2 Cl.5	Determination of Los Angeles Abrasion	CTL Lab
Aggregates	BS EN 1097-6	Tests for mechanical and physical properties of aggregates. Determination of particle density and water absorption	CTL Lab
Aggregates	BS EN 1367-2	Determination of Magnesium Sulphate Soundness	CTL Lab
Aggregates	BS EN 1367-4	Determination of Drying Shrinkage	CTL Lab
Aggregates	BS EN 1744-1 2009, Section 12	Tests for chemical properties of aggregates. Chemical analysis- Determination of acid soluble sulfate in aggregate	CTL Lab
Aggregates	BS EN 1744-5	Tests for chemical properties of aggregates -Part 5: Determination of acid soluble chloride salts	CTL Lab
Cementitious Materials	ASTM C109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)	CTL Lab
Cementitious Materials	ASTM C183	Standard Practice for Sampling and the Amount of Testing of Hydraulic Cement	CTL Lab
Cementitious Materials	ASTM C187	Standard Test Method for Amount of Water Required for Normal Consistency of Hydraulic Cement Paste	CTL Lab
Cementitious Materials	ASTM C191	Standard Test Methods for Time of Setting of Hydraulic Cement by Vicat Needle	CTL Lab
Cementitious Materials	ASTM C311, Parts 10, 11, 12, 13, 14	Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete. Part 10 – Sulfate by C114 Part 17.1.2, Parts 11 & 12 - Moisture Content, Parts 13 & 14 – Loss on Ignition	CTL Lab

Category	Standard/ Method No. / Date	Standard/ Method Title & Section	Location / Facility
Cementitious Materials	ASTM C349	Compressive Strength of Cement Mortars	CTL Lab
Cementitious Materials	ASTM C989	Standard Specification for Slag Cement for Use in Concrete and Mortars	CTL Lab
Cementitious Materials	ASTM C1240	Standard Specification for Silica Fume Used in Cementitious Mixtures-Pozzolanic Activity Test	CTL Lab
Cementitious Materials	BS EN 196-1	Methods of testing cement. Determination of strength	CTL Lab
Cementitious Materials	BS EN 196-2, Cl 4.4.1	Method of testing cement Part 2: Chemical analysis of cement-Determination of loss on ignition	CTL Lab
Cementitious Materials	BS EN 196-2 Cl 4.4.2	Method of testing cement Part 2: Chemical analysis of cement- Determination of Sulfate	CTL Lab
Cementitious Materials	BS EN 196-2, Cl 4.4.3	Method of testing cement Part 2: Determination of Residue Insoluble in Hydrochloric Acid and Sodium Carbonate	CTL Lab
Cementitious Materials	BS EN 196-2, Cl. 4.5.2	Method of testing cement. Chemical analysis of cement. Impure Silica Content	CTL Lab
Cementitious Materials	BS EN 196-2, Cl. 4.5.6	Method of testing cement. Chemical analysis of cement. Pure Silica Content	CTL Lab
Cementitious Materials	BS EN 196-2, Cl. 4.5.10	Method of testing cement. Chemical analysis of cement. Ferric Oxide Content	CTL Lab
Cementitious Materials	BS EN 196-2, Cl. 4.5.11	Method of testing cement. Chemical analysis of cement. Aluminum Oxide Content	CTL Lab
Cementitious Materials	BS EN 196-2, Cl. 4.5.12	Method of testing cement. Chemical analysis of cement. Calcium Oxide Content	CTL Lab
Cementitious Materials	BS EN 196-2, Cl. 4.5.13	Method of testing cement. Chemical analysis of cement. Magnesium Oxide Content	CTL Lab
Cementitious Materials	BS EN 196-2 Cl. 4.5.19	Method of testing cement. Chemical analysis of cement. Determination of Alkaly	CTL Lab
Cementitious Materials	BS EN 196-2, Cl. 13.2&3	Method of testing cement. Chemical analysis of cement. Silica Content	CTL Lab
Cementitious Materials	BS EN 196-2, Cl. 13.6	Method of testing cement. Chemical analysis of cement. Pure Silica Content	CTL Lab
Cementitious Materials	BS EN 196-2, Cl. 13.10	Method of testing cement. Chemical analysis of cement. Ferric Oxide Content	CTL Lab
Cementitious Materials	BS EN 196-2, Cl. 13.11	Method of testing cement. Chemical analysis of cement. Aluminum Oxide Content	CTL Lab
Cementitious Materials	BS EN 196-25, Cl. 13.14	Method of testing cement. Chemical analysis of cement. Calcium Oxide Content	CTL Lab
Cementitious Materials	BS EN 196-2, Cl. 13.15	Method of testing cement. Chemical analysis of cement. Magnesium Oxide Content.	CTL Lab

Category	Standard/ Method No. / Date	Standard/ Method Title & Section	Location / Facility
Cementitious Materials	BS EN 196-2, Cl. 13.9	Method of testing cement. Chemical analysis of cement. Total Silica Content	CTL Lab
Cementitious Materials	BS EN 196-3, Cl 5	Methods of testing cement. Determination of setting times and soundness. Cement Standard Consistency	CTL Lab
Cementitious Materials	BS EN 196-3, Cl 6	Methods of testing cement. Determination of setting times and soundness. Determination of Cement Setting Time	CTL Lab
Cementitious Materials	BS EN 196-3, Cl 7.0	Methods of testing cement. Determination of setting times and soundness. Determination of Soundness of Cement	CTL Lab
Cementitious Materials	BS EN 196-5	Methods of testing cement. Pozzolanicity test for pozzolanic cement	CTL Lab
Cementitious Materials	BS EN 196-6	Fineness Test of Cement	CTL Lab
Cementitious Materials	BS EN 196-7	Methods of testing cement. Methods of taking and preparing samples of cement.	CTL Lab
Cementitious Materials	BS EN 196-21:1992, Cl 4	Methods of testing cement. Determination of the chloride, carbon dioxide and alkali content of cement Determination of Chloride Content in cement	CTL Lab
Concrete	ASTM C31	Standard Practice for Making and Curing Concrete Test Specimens in the Field	CTL Lab
Concrete	ASTM C39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens	CTL Lab
Concrete	ASTM C42	Obtaining and Testing of Drilled Cores	CTL Lab
Concrete	ASTM C109	Compressive Strength of Hydraulic Cement Mortars	CTL Lab
Concrete	ASTM C138	Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete	CTL Lab
Concrete	ASTM C143	Standard Test Method for Slump of Hydraulic cement Concrete	CTL Lab
Concrete	ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete	CTL Lab
Concrete	ASTM C173	Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method	CTL Lab
Concrete	ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method	CTL Lab
Concrete	ASTM C232	Bleeding of Concrete	CTL Lab
Concrete	ASTM C305	Standard Practice for Mechanical Mixing of Hydraulic Cement Pastes and Mortars of Plastic Consistency	CTL Lab
Concrete	ASTM C403	Time of Setting of Concrete Mixtures by Penetration Resistance	CTL Lab

Category	Standard/ Method No. / Date	Standard/ Method Title & Section	Location / Facility
Concrete	ASTM C494	Chemical Admixtures for concrete	CTL Lab
Concrete	ASTM C617	Standard Practice for Capping Cylindrical Concrete Specimens	CTL Lab
Concrete	ASTM C900	Pullout Strength of Hardened Concrete	CTL Lab
Concrete	ASTM C1064	Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete	CTL Lab
Concrete	ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for use in Construction and Criteria for testing agency evaluation	CTL Lab
Concrete	ASTM C1202	Standard Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration	CTL Lab
Concrete	ASTM C1231	Standard Practice for use of unbonded caps in determination of compressive strength of hardened concrete cylinders	CTL Lab
Concrete	ASTM C1385	Sampling of Shotcrete	CTL Lab
Concrete	ASTM C1611	Standard Test Method for Slump Flow of Self-Consolidating Concrete	CTL Lab
Concrete	ASTM C1621	Passing Ability for self-Consolidating Concrete by J-Ring	CTL Lab
Concrete	ASTM C1688	Density Determination of Pervious Concrete	CTL Lab
Concrete	BS 1881-122	Water Absorption Test	CTL Lab
Concrete	BS 1881-124, sec 12.1	Acid soluble chloride in concrete	CTL Lab
Concrete	BS 1881-124, sec 12.2	Acid soluble sulfate in concrete	CTL Lab
Concrete	BS 1881 Part 208	Initial Surface Absorption of conditioned (oven dry, non oven dry & site) conrete sample (ISAT)	CTL Lab
Concrete	BS EN 445	Bleeding Test Of grout	CTL Lab
Concrete	BS EN 445	Compressive Strength of grout	CTL Lab
Concrete	BS EN 445	Fluid Density Of grout (Cone Method)	CTL Lab
Concrete	BS EN 445	Fresh Density Of grout	CTL Lab
Concrete	BS EN 445	Volume Change, Vertical Shrinkage of grout	CTL Lab
Concrete	BS EN 12350-1	Testing fresh concrete - Part 1: Sampling	CTL Lab
Concrete	BS EN 12350-2	Testing fresh concrete - Part 2: Slump-test	CTL Lab
Concrete	BS EN 12350-5	Testing fresh concrete - Part 5: Flow table test	CTL Lab
Concrete	BS EN 12350-6	Testing Fresh Concrete: Density	CTL Lab
Concrete	BS EN 12350-7	Testing Fresh Concrete: Air Content by Pressure Methods	CTL Lab
Concrete	BS EN 12350-9	V-Funnel test for Self-Compacting Concrete	CTL Lab
Concrete	BS EN 12350-10	L-Box test for Self-Compacting Concrete	CTL Lab
Concrete	BS EN 12390-1	Shape and Dimensions of Specimen	CTL Lab
Concrete	BS EN 12390-2	Testing hardened concrete - Part 2: Making and curing specimens for strength tests	CTL Lab
Concrete	BS EN 12390-3	Testing hardened concrete - Part 3: Compressive strength of test specimens	CTL Lab
Concrete	BS EN 12390-7	Density of Hardened Concrete	CTL Lab

Category	Standard/ Method No. / Date	Standard/ Method Title & Section	Location / Facility
Concrete	BS EN 12390-8	Water Penetration Test	CTL Lab
Concrete	BS EN 12504-1	Obtaining and Testing of Drilled Cores	CTL Lab
Concrete	NT Build 492	Chloride Penetration Test	CTL Lab
Environmental	APHA/AWWA 2130 B, 22nd Edition 2012, 23rd Edition 2017	Turbidity	CTL Lab
Environmental	APHA/AWWA 2320-B	Total Alkalinity	CTL Lab
Environmental	APHA/AWWA 2320-B	Phenolphthalein Alkalinity	CTL Lab
Environmental	APHA/AWWA 2320-B	Bicarbonate	CTL Lab
Environmental	APHA/AWWA 2320-B	Carbonate	CTL Lab
Environmental	APHA/AWWA 2340-C, 22nd Edition 2012, 23rd Edition 2017	Total Hardness	CTL Lab
Environmental	APHA/AWWA 2510-B	Electrical Conductivity	CTL Lab
Environmental	APHA/AWWA- 2540 B, 22nd Edition 2012, 23rd Edition 2017	Total solids	CTL Lab
Environmental	APHA/AWWA 2540-C, 22nd Edition 2012, 23rd Edition 2017	Total Dissolved Solids (TDS)	CTL Lab
Environmental	APHA/AWWA 2540-C, 22nd Edition 2012, 23rd Edition 2017	Total Volatile Dissolved Solids (TVDS)	CTL Lab
Environmental	APHA/AWWA 2540-D, 22nd Edition 2012, 23rd Edition 2017	Total Suspended solids	CTL Lab
Environmental	APHA/AWWA 2540-D, 22nd Edition 2012, 23rd Edition 2017	Total Volatile Suspended solids	CTL Lab
Environmental	APHA/AWWA 2540-F	Settleable Solids	CTL Lab
Environmental	APHA/AWWA 2540 G	Total, Fixed Solids in Solids and Semisolids samples	CTL Lab
Environmental	APHA/AWWA 2540 G	Volatile Solids in Solids and Semisolids samples	CTL Lab
Environmental	APHA/AWWA 3500-Ca B, 22nd Edition 2012, 23rd Edition 2017	Calcium	CTL Lab
Environmental	APHA 3500-CrB, 22nd Edition 2012, 23rd Edition 2017	Chromium (vi)	CTL Lab
Environmental	APHA/AWWA 3500 Mg, 22nd Edition 2012, 23rd Edition 2017	Magnesium Concentration by Calculation	CTL Lab
Environmental	APHA/AWWA 4500-Cl, 22nd Edition 2012, 23rd Edition 2017	Free Chlorine	CTL Lab

Category	Standard/ Method No. / Date	Standard/ Method Title & Section	Location / Facility
Environmental	APHA/AWWA 4500-Cl, 22nd Edition 2012, 23rd Edition 2017	Total Chlorine	CTL Lab
Environmental	APHA/AWWA 4500-Cl B, 22nd Edition 2012, 23rd Edition 2017	Chloride	CTL Lab
Environmental	APHA/AWWA 4500 F, 22nd Edition 2012, 23rd Edition 2017	Fluoride	CTL Lab
Environmental	APHA/AWWA 4500 H+ B	pH	CTL Lab
Environmental	APHA/AWWA 4500 NO_2 B, 22nd Edition 2012, 23rd Edition 2017	Nitrite Nitrogen	CTL Lab
Environmental	APHA/AWWA 4500-NO_3 D, 22nd Edition 2012, 23rd Edition 2017	Nitrate Nitrogen	CTL Lab
Environmental	APHA/AWWA 4500-O G, 22nd Edition 2012, 23rd Edition 2017	Dissolved Oxygen	CTL Lab
Environmental	APHA/AWWA 4500-P, 22nd Edition 2012, 23rd Edition 2017	Phosphorous (total)	CTL Lab
Environmental	APHA/AWWA 4500-SO4, 22nd Edition 2012, 23rd Edition 2017	Sulphate	CTL Lab
Environmental	APHA/AWWA 4500--S2 E or F	Sulphide	CTL Lab
Environmental	APHA/AWWA 5210B, 22nd Edition 2012.Test-APHA/AWWA 4500-OC, 23rd Edition 2017	Biochemical Oxygen Demand (BOD)	CTL Lab
Environmental	APHA/AWWA 5520 B	Oil & grease	CTL Lab
Environmental	APHA/AWWA 5220 D, 22nd Edition 2012, 23rd Edition 2017	Chemical oxygen Demand	CTL Lab
Environmental	APHA/AWWA 5520 D, 22nd Edition 2012, 23rd Edition 2017	Oil & grease	CTL Lab
Environmental	APHA/AWWA- 9223B, 22nd Edition 2012, 23rd Edition2017, IDEXX method	E-Coli	CTL Lab
Environmental	APHA/AWWA- 9223B, 22nd Edition 2012, 23rd Edition2017, IDEXX method	Fecal Coliform	CTL Lab
Environmental	APHA/AWWA- 9223B, 22nd Edition 2012, 23rd	Total Coliforms	CTL Lab

Category	Standard/ Method No. / Date	Standard/ Method Title & Section	Location / Facility
	Edition2017, IDEXX method		
Drinking Water/Potable Water	APHA/AWWA 4500Cl-B SMEWW 24th Edition 2023	Chloride	CTL Lab
Drinking Water/Potable Water	APHA/AWWA 4500SO42-C SMEWW 24th Edition 2023	Sulphate	CTL Lab
Drinking Water/Potable Water	APHA/AWWA 2320 B SMEWW 24th Edition 2023	Alkalinity as CaCO3	CTL Lab
Drinking Water/Potable Water	APHA/AWWA 2340 C SMEWW 24th Edition 2023	Total Hardness as CaCO3	CTL Lab
Drinking Water/Potable Water	APHA/AWWA 4500 Cl G SMEWW 24th Edition 2023	Total Chlorine as Cl2	CTL Lab
Drinking Water/Potable Water	APHA/AWWA 4500 Cl G SMEWW 24th Edition 2023	Free Chlorine as Cl2	CTL Lab
Drinking Water/Potable Water	APHA/AWWA 2540 C SMEWW 24th Edition 2023	Total Dissolved Solids	CTL Lab
Drinking Water/Potable Water	APHA/AWWA 4500H+B SMEWW 24th Edition 2023	pH	CTL Lab
Drinking Water/Potable Water	APHA/AWWA 4500 F-D SMEWW 24th Edition 2023	Fluoride as F	CTL Lab
Drinking Water/Potable Water	APHA/AWWA 4500NO3-D SMEWW 24th Edition 2023	Nitrate Nitrogen (NO3-N)	CTL Lab
Drinking Water/Potable Water	APHA/AWWA 3500 Ca-B SMEWW 24th Edition 2023	Calcium	CTL Lab
Drinking Water/Potable Water	APHA/AWWA 3500 Mg-B SMEWW 24th Edition 2023	Magnesium	CTL Lab
Drinking Water/Potable Water	APHA/AWWA 9223B SMEWW 24th Edition 2023	Total Coliform	CTL Lab
Drinking Water/Potable Water	APHA/AWWA 9223B SMEWW 24th Edition 2023	E-Coli (MPN/100ml)	CTL Lab
Geotechnical	ASTM D1196	Plate Load Test	CTL Lab
Geotechnical	ASTM G57	Electrical Resistivity Test	Field
Geotechnical	BS 1377 Part 9-Sec. 4.1	Plate Load Test	CTL Lab
Geotechnical	BS 1377 Part 9-Sec. 4.3	California Bearing Ratio (CBR) Test	Field

Category	Standard/ Method No. / Date	Standard/ Method Title & Section	Location / Facility
Hydrogeology	ASTM D2435	Determination of One-Dimensional Consolidation Properties of Soils	Field
Hydrogeology	ASTM D4543	Preparing Rock Core Specimens to Dimensional and Shape Tolerances	Field
Hydrogeology	ASTM D5731	Point Load Index Determination	Field
Hydrogeology	ASTM D7012 – Method C	Compressive Strength of Rock Core Specimen - Method C: Uniaxial Compressive Strength of Intact Rock Core Specimens.	Field
Hydrogeology	BS 1377 Part 5-Sec. 3	Determination of One-Dimensional Consolidation Properties of Soils	Field
Hydrogeology	BS 1377 Part 7-Sec. 4	Direct Shear on Soil (Small Box)	Field
Hydrogeology	BS 1377 Part 5-Sec. 5	Constant Head Permeability Test	Field
Hydrogeology	BS 1377 Part 9-Sec. 3.3	Standard Penetration Test (SPT)	Field
Hydrogeology	BS 5930 Section 6	Description of Soil and Rock	Field
Hydrogeology	BS 5930 Cl. 23	Ground Water Sampling	Field
Hydrogeology	BS 5930 Cl. 23, 27, 47	Ground Water Level Measurement	Field
Hydrogeology	BS 5930 Cl. 25	Falling Head Permeability Test	Field
Masonry	ASTM C140, Cl 8	Water Absorption for Interlocks	CTL Lab
Masonry	BS 6073 Part 1	Compressive Strength of Concrete Masonry Blocks	CTL Lab
Masonry	BS 6717:2001, Annex B	Measurement of Dimensions of Paving Blocks	CTL Lab
Masonry	BS 6717:2001, Annex E	Tensile splitting Strength of Paving Blocks	CTL Lab
Masonry	BS EN 771 Part 1 cl 5.2.4 & 5.3.4	Compressive Strength of Clay Masonry Blocks	CTL Lab
Masonry	EN 771-3	Water Absorption for Masonry Blocks	CTL Lab
Masonry	BS EN 772-1	Compressive Strength of Concrete Masonry Blocks	CTL Lab
Masonry	EN 772-11	Determination of water absorption of aggregate concrete	CTL Lab
Masonry	BS EN 1338 Annex E	Water Absorption of Paving Blocks	CTL Lab
Masonry	BS EN 1338 Annex F	Tensile Strength of Paving Blocks	CTL Lab
Masonry	BS EN 1339 Appendix E	Water Absorption for Concrete Paving Flags/Slabs	CTL Lab
Masonry	BS EN 1339 Appendix F	Transverse Strength of Concrete Paving Flags/Slabs	CTL Lab
Masonry	BS EN 1340 Annex C	Measurement of Dimensions of Kerbs	CTL Lab
Masonry	BS EN 1340 Annex E	Water Absorption for Kerbs	CTL Lab
Masonry	BS EN 1340 Annex F	Transverse Strength of Kerbs	CTL Lab
NDT	ASTM C805	Rebound Hammer Test for Concrete	CTL Lab
NDT	ASTM D4541	Coating Pull off test	CTL Lab
NDT	BS 1881-204	Concrete Cover Determination	CTL Lab
NDT	BS EN 12504-4	Ultrasonic Pulse Velocity	CTL Lab
NDT	Gauge manaual	Crack width gauge	CTL Lab

Category	Standard/ Method No. / Date	Standard/ Method Title & Section	Location / Facility
Road and Pavement Tests	ASTM D5	Standard test method of Penetration of Bituminous Materials	CTL Lab
Road and Pavement Tests	ASTM D979	Standard Practice for Sampling Bituminous Paving Mixtures	CTL Lab
Road and Pavement Tests	ASTM D2041	Standard Test Method for Theoretical Maximum Specific Gravity and Density of Asphalt Mixtures	CTL Lab
Road and Pavement Tests	ASTM D2172	Standard Test Methods for Quantitative Extraction of Bitumen From Bituminous Paving Mixtures	CTL Lab
Road and Pavement Tests	ASTM D2726	Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures	CTL Lab
Road and Pavement Tests	ASTM D2995	Standard Practice for Estimating Application Rate and Residual Application Rate of Bituminous Distributors	CTL Lab
Road and Pavement Tests	ASTM D3549	Standard Test Method for Thickness or Height of Compacted Asphalt Mixture Specimens	CTL Lab
Road and Pavement Tests	ASTM D5361	Standard Practice for Sampling Compacted Asphalt Mixtures for Laboratory Testing	CTL Lab
Road and Pavement Tests	ASTM D5444	Standard Test Method for Mechanical Size Analysis of Extracted Aggregate1	CTL Lab
Road and Pavement Tests	ASTM D6926	Standard Practice for Preparation of Asphalt Mixture Specimens Using Marshall Apparatus	CTL Lab
Road and Pavement Tests	ASTM D6927	Standard Test Method for Marshall Stability and Flow of Bituminous Mixtures	CTL Lab
Road and Pavement Tests	BS EN 1426	Bitumen and bituminous binders. Determination of needle penetration	CTL Lab
Road and Pavement Tests	BS EN 12697-2	Bituminous mixtures. Test methods. Determination of particle size distribution	CTL Lab
Road and Pavement Tests	BS EN 12697-5	Bituminous mixtures - test methods. Determination of the maximum density	CTL Lab
Road and Pavement Tests	BS EN 12697-6	Bituminous mixtures. Test methods for hot mix asphalt. Determination of bulk density of bituminous specimens	CTL Lab
Road and Pavement Tests	BS EN 12697-8	Bituminous mixtures. Test methods. Determination of void characteristics of bituminous specimens	CTL Lab

Category	Standard/ Method No. / Date	Standard/ Method Title & Section	Location / Facility
Road and Pavement Tests	BS EN 12697-13	Bituminous mixtures. Test methods. Temperature measurement	CTL Lab
Road and Pavement Tests	BS EN 12697-27	Bituminous mixtures. Test methods. Sampling	CTL Lab
Road and Pavement Tests	BS EN 12697-28	Bituminous Mixtures - Test Methods for Hot Mix Asphalt - Part 28: Preparation of Samples for Determining Binder Content, Water Content and Grading	CTL Lab
Road and Pavement Tests	BS EN 12697-29	Bituminous mixtures - Test methods for hot mix asphalt - Part 29: Determination of the dimensions of a bituminous specimen	CTL Lab
Road and Pavement Tests	BS EN 12697-36	Bituminous mixtures Test methods for hot mix asphalt Part 36: Determination of the thickness of a bituminous pavement	CTL Lab
Soil	ASTM C702	Reducing Samples to Testing Size	CTL Lab
Soil	ASTM D854	Standard Test Method for Specific Gravity of Soil Solids by Water Pycnometer	CTL Lab
Soil	ASTM D1140	Satandard test method for determining the amount of Materials Finer than No. 0.075mm (No.200) Sieve in soil by washing	CTL Lab
Soil	ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method	CTL Lab
Soil	ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort	CTL Lab
Soil	ASTM D1883	CBR of Lab Compacted Soils	CTL Lab
Soil	ASTM D2216	Determination of Moisture Content	CTL Lab
Soil	ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate	CTL Lab
Soil	ASTM D3740	Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction	CTL Lab
Soil	ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils	CTL Lab
Soil	ASTM D4429	In Place California Bearing Ratio (CBR)	CTL Lab
Soil	ASTM D4718	Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles1	CTL Lab
Soil	ASTM D4944	In Place Moisture Content (Calcium Carbide Tester)	CTL Lab
Soil	ASTM D6913	Particle Size Distribution	CTL Lab

Category	Standard/ Method No. / Date	Standard/ Method Title & Section	Location / Facility
Soil	ASTM D6938	Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)	CTL Lab
Soil	BS 1377-2: Sec. 3.2	Determination of Moisture Content (Oven Drying)	CTL Lab
Soil	BS 1377-2: Sec. 4.3	Determination of Liquid Limit (Cone Penetrometer)	CTL Lab
Soil	BS 1377-2: Sec. 4.5	Determination of Liquid Limit (Casagrande method)	CTL Lab
Soil	BS 1377-2 sec 5.0	Determination of Plastic Limit & Plasticity index	CTL Lab
Soil	BS 1377-2 sec 9.2	Determination of Particle size distribution (wet sieving method)	CTL Lab
Soil	BS 1377-2: Sec. 9.3	Particle Size Distribution (Dry Sieving Method)	CTL Lab
Soil	BS 1377-3: Sec. 4	Determination of Organic Matter Content	CTL Lab
Soil	BS 1377-3:1990 Sec. 5.2	Determination of Acid Soluble Sulphate Content	CTL Lab
Soil	BS 1377-3:1990 Sec. 5.3/5.5	Determination of Water Soluble Sulphate Content	CTL Lab
Soil	BS 1377-3: Sec. 7.3/5.5	Determination of Acid Soluble Chloride Content	CTL Lab
Soil	BS 1377-3:2018 Sec. 7.3 & 7.6	Determination of Water Soluble Sulphate Content	CTL Lab
Soil	BS 1377-3: Sec. 7.9 & 7.6	Determination of Acid Soluble Sulphate Content	CTL Lab
Soil	BS 1377-3: Sec. 9.2	Determination of Water Soluble Chloride Content	CTL Lab
Soil	BS 1377-3:1990 Sec. 7.2	Determination of Water Soluble Chloride Content	CTL Lab
Soil	BS 1377-4: Sec. 3	Determination of dry density/moisture	CTL Lab
Soil	BS 1377-4: Sec. 7	Determination of California Bearing Ratio (CBR)	CTL Lab
Soil	BS 1377-9: Sec. 2.1	In-Situ Density Test (Sand Replacement Method-Small Pouring Cylinder)	CTL Lab
Soil	BS 1377-9: Sec. 2.2	In-Situ Density Test (Sand replacement method suitable for fine-, medium- and coarse-grained soils (large pouring cylinder method)	CTL Lab
Soil	BS EN 933-8	Sand Equivalent Value	CTL Lab
Steel	ASTM A370	Tensile Strength Test of steel	CTL Lab
Steel	ASTM A931	Tension Testing of Wire Ropes and strand	CTL Lab
Steel	ASTM A1061	Testing multi wire steel prestressing strand	CTL Lab
Steel	ASTM E415	Analysis of Carbon and Low-Alloy Steel by Spark Atomic Emission Spectrometry	CTL Lab
Steel	ASTM E1086	Analysis of Austenitic Stainless Steel by Spark Atomic Emission Spectrometry	CTL Lab

Category	Standard/ Method No. / Date	Standard/ Method Title & Section	Location / Facility
Steel	BS 4449 Sec. 7.2.5	Bend Test & Rebend Test	CTL Lab
Steel	BS EN 10002-1, BS EN 6892-1 CL 11, 12, 20, 21	Tensile Strength Test of steel	CTL Lab
Steel	BSEN ISO 15630-3	Tensile test of high tensile steel prestressing strand	CTL Lab
Steel	BS EN ISO 15630-1 Cl 5	Tensile Strength Test of Reinforcement bars, wire rods and wires	CTL Lab
Steel	BS EN ISO 15630-1 Cl 6 & 7	Bend & Rebend Test	CTL Lab

Certification From Governmental Departments

QATAR CHAMBER OF COMMERCE & INDUSTRY
Tel : 4455 9111 | Fax: 4466 1693 - 4466 1697
P. O .Box : 402 | Doha - Qatar
E-mail : info@qcci.org | www.qatarchamber.com

غرفة قطر
QATAR CHAMBER

غرفة تجارة وصناعة قطر
هاتف : ٤٤٥٥ ٩١١١ فاكس : ٤٤٦٦ ١٦٩٧ - ٤٤٦٦ ١٦٩٣
ص.ب : ٤٠٢ ، الدوحة ، قطر
بريد إلكتروني: www.qatarchamber.com | info@qcci.org

شهادة عضوية
MEMBERSHIP CERTIFICATE

2025

Qatar Chamber Of Commerce & Industry certify that

CONSTRUCTION TECHNOLGY LABORATORIES GROUP

is a member of QCCI under Membership No 02/05803 and has (0) branches

Date: 13/11/2025

Management

Note : This certificate is valid until: 01/11/2028

*** Any alterations , overwriting or amendments to this certificate shall annul it.**

*** Please see important notices on the back side**

وزارة الداخليـــــة
الادارة العامة للدفاع المدني
ادارة الوقاية

وزارة الداخليـــــة
Ministry of Interior
State of Qatar • دولـــة قطـــر

تاريخ الطباعة : 2024-07-17
وقـت الطباعة : AM 8:25
رقـم الطلـب : CAC24000966

شـــــــــهادة

نوع الشهادة : صلاحية نظام الوقاية ومكافحة الحريق (تجاري)

بيانات المنشأة

الاسم التجاري : كونستركشن تكنولوجى لابروتوريز جروب

رقم السجل التجاري : 69008 | **رقم الرخصة التجارية** : 104641

رقم قيد المنشأة : 14-9103-00 | **مساحة** : 1514

بيانات صاحب الشهادة

الاسم : شادي يوسف سعيد

الرقم الشخصي : 28342200171 | **الهاتف الجوال** : 40370130

الجوال : 55891624

تفاصيل العنوان

رقم المنطقة : 57 | **رقم الشارع** : 125

اسم الشارع : الكسارات | **رقم المبنى** : 263

رقم قطعة الارض : | **رقم الوحدة** :

تفاصيل الشهادة

1. يجب تنفيذ جميع أحكام قانون الدفاع المدني رقم (25) لسنة 2015 والالتزام التام به.
2. يجب الحصول على موافقات الجهات المختصة للنشاط المراد مزاولته.

تاريخ اصدار الشهادة : 2024-07-17 | **تاريخ انتهاء الشهادة** : 2026-07-17

٤/

مدير ادارة الوقاية
الادارة العامة للدفاع المدني

This Certificate is issued to:

CONSTRUCTION TECHNOLGY LABORATORIES GROUP

Commercial Registration Number: 69008 | Address: AL KASSARAT STREET STREE 41

ICV Certification Details

Certificate Number	Certifier	Financial Year
10007642	Kreston SVP Chartered Accountants	31 December 2021

Issue Date	Grace Period Expiry Date *	Download Date
17 September 2025	16 December 2026	17 September 2025

ICV Score & Contribution

● Valid

In-Country Value (ICV) Digital Portal

Note: This ICV Certificate is issued by Tawteen through the ICV Digital Portal as an extension to the ICV Certificate 10004195 issued on 19 June 2024.

* The “Grace Period Expiry Date” identifies the end of the 15-month certificate validity period (12 months of standard ICV Certificate validity + 3 months grace period). If the certificate is in the grace period, to be eligible to bid in tenders with Energy Sector companies, suppliers must submit a signed engagement letter from an ICV Certifier along with the bid documents.

1/10/2017 2:36 PM
2017/0038099/9

هيئة الأشغال العامة
Public Works Authority

مذكرة داخلية. Memorandum

قطر تستحق الأفضل
Qatar Deserves The Best

From:	ادارة الجودة والسلامة	**من:**
To:	شؤون الدعم الفني	**الى:**
Subject:	قائمة أشغال للاختبارات المعتمدة لدى المختبرات المحايدة رقم (2017/10)	**الموضوع:**
Date:	2017/10/01	**التاريخ:**

Dear All ,,,

With reference to memorandum No. 28 - 2016 and regular assessment carried out by the Quality and Safety Dept. inspection team, you will find attached the updated list of approved tests, which used in Public Works Authority (Ashghal) projects. The basic amendments can be summarized as follows:

1. Construction Technology Laboratories Group is added to the list based on their compliance with ISO 17025 and Ashghal quality requirements.

The list of approved tests can be downloaded from Ashghal website: www.ashghal.gov.qa.

For further information, please contact Quality and Safety Dept. through:

Tel: 44950200 - Fax: 44951200

خالد محمد العمادي
Quality & Safety Department Manager

تحية طيبة وبعد،

بناءً على التعميم رقم 28 لسنة 2016 وعلى التقييم الدوري لفريق مراقبة المختبرات التابع لإدارة الجودة والسلامة، نرفق لسيادتكم تحديث قائمة الاختبارات المعتمدة في مشاريع هيئة الأشغال العامة.

أهم التحديثات التي تمت هي:

1- تمت إضافة مختبرات كونستركشن تكنولوجي إلى قائمة أشغال للاختبارات المعتمدة بعد التأكد من توافقهم مع اشتراطات ISO 17025 ومتطلبات هيئة الأشغال العامة للجودة.

يمكنكم الاطلاع والحصول على نسخة من قائمة الاختبارات المعتمدة من خلال موقع الهيئة www.ashghal.gov.qa

لمزيد من المعلومات يمكنكم الاتصال بإدارة الجودة والسلامة على:

ت: 44950200 -فاكس: 44951200

REGISTRATION CERTIFICATE

الهيئة العامة القطرية للمواصفات والتقييس
Qatar General Organization for Standardization

REGISTRATION CERTIFICATE

شهادة تسجيل مختبر خاص

وفقاً للائحة الصادرة بقرار وزير البلدية والبيئة رقم (٣٥٦) لسنة ٢٠١٧م
According to the Ministerial Decree No. (356)/2017

No: RL001 -19

Date of Issue:	27/07/2025	تاريخ اصدار الشهادة:
Date of Expiry :	26/07/2026	الصلاحية حتى:
Lab Name:	كونستركشن تكنولوجي لابروتوريز جروب Construction Technology Laboratories Group	اسم المختبر:
Address:	منطقة ٥٧، شارع ١٢٥، مبنى ٢٦٣، المنطقة الصناعية، الدوحة Zone 57, Street 125, Building 263, Industrial Area, Doha	العنوان:
CR No:	69008	رقم السجل التجاري :
Activity:	Testing (Material, Geotechnical)	النشاط:
Scope of Registration: Attached Scope of accreditation No:	TL-651	مجال التسجيل: مرفق مجال الاعتماد شهادة رقم:

Notes:

1. QS has no any responsibility for poor performance by this lab during the validity period.
2. This certificate will remain valid for the period specified, subject to compliance with the Technical Regulations.
3. This certificate is invalid without the attached scope of accreditation
3. It is important to apply two months before expiry date of validity for renewal of this conformity certificate.
4. The required fee for this certificate has been stated according to the decision No. (112)/2019

Recommended by: ..... Head of CC Section

Authorized by: ..... Director of Quality & Conformity Dept

Approved by: .....
PRESEDENT QGOS

QATAR STANDARDS
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Thank You