

Facilities Consulting

Service Capabilities at Every Stage

70+
REGISTERED
AND LICENSED
PRACTITIONERS
ACROSS THE
COUNTRY

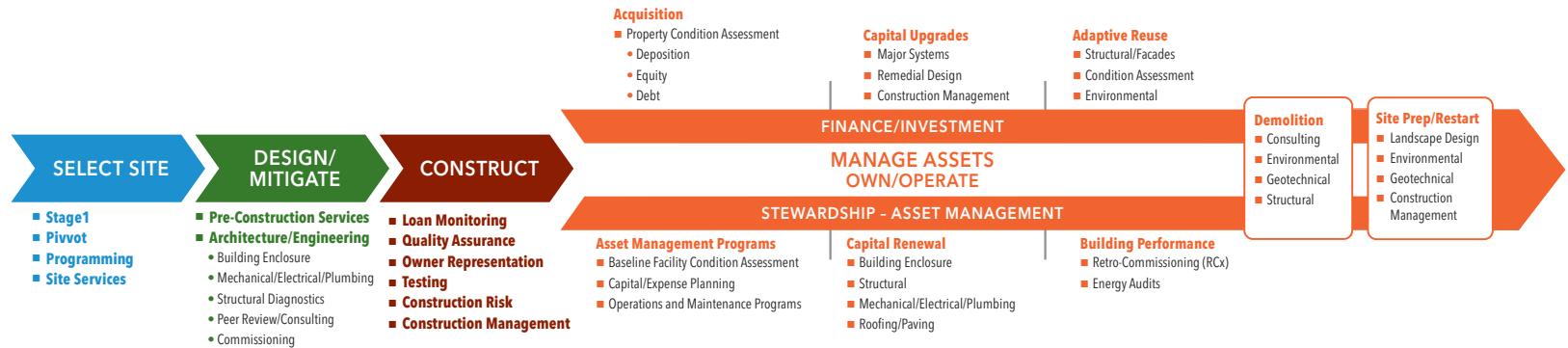
220+
BUILDING
SPECIALISTS
NATIONWIDE

**ALL BUILDING
SYSTEMS**
CURB TO
ROOFTOP

SERVICES
available in all
50 states
Locations Nationwide

**OVER
1B**
SQUARE FEET
ASSESSED

BUILDING SUSTAINABILITY LIFECYCLE



Terracon partners with clients as their trusted advisor during the design, construction, and operational phases of their building projects. Sustainability through optimization of building systems performance is the target, maximizing return on investment while extending systems service life.

THE BOTTOM LINE

We focus on building asset stewardship—providing value through specialized expertise at key junctures in the lifecycle.

SELECT SITE

Save time and money using our vault of site and soil data

DESIGN/MITIGATE

Injection of specialized system expertise to enhance design and system selection prior to construction

CONSTRUCT

Deliver quality assurance observations, testing, and technical support on specified systems as owners' eyes and ears

MANAGE ASSETS

Create a plan to sustain system value and performance through assessment, forecasting, and planning

Capital Renewal and Building Performance

Project design, consulting, and delivery administration

Whether building, buying, or maintaining, our full service capabilities and expertise support owners, architects, contractors, and managers as they work through the building lifecycle. Our core services focus on the critical junctures/systems within the building lifecycle, which provides value to enhance sustainability and performance for the discerning owner.

CONTACT

First LastName

Title

Address

City, State

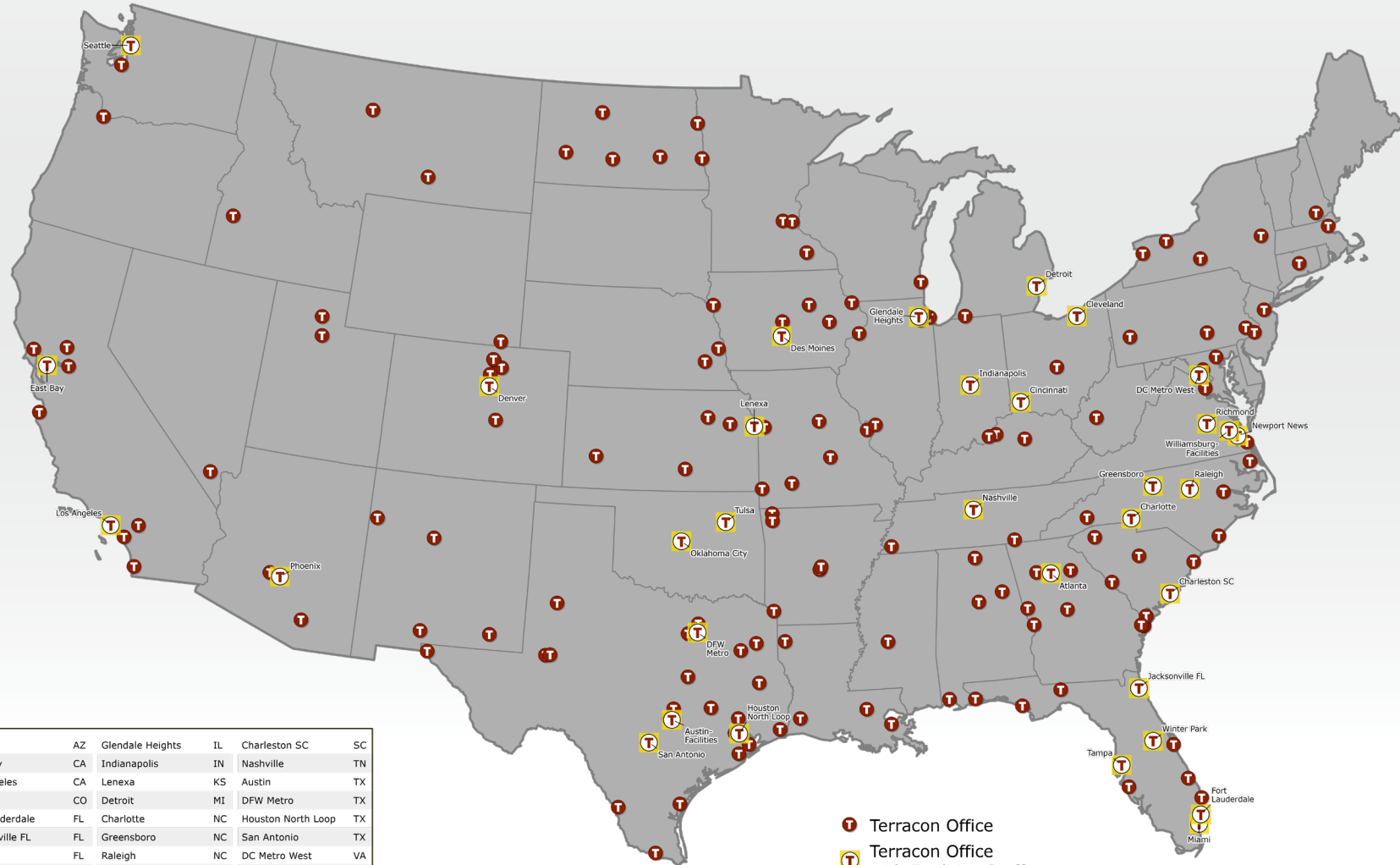
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name@terracon.com

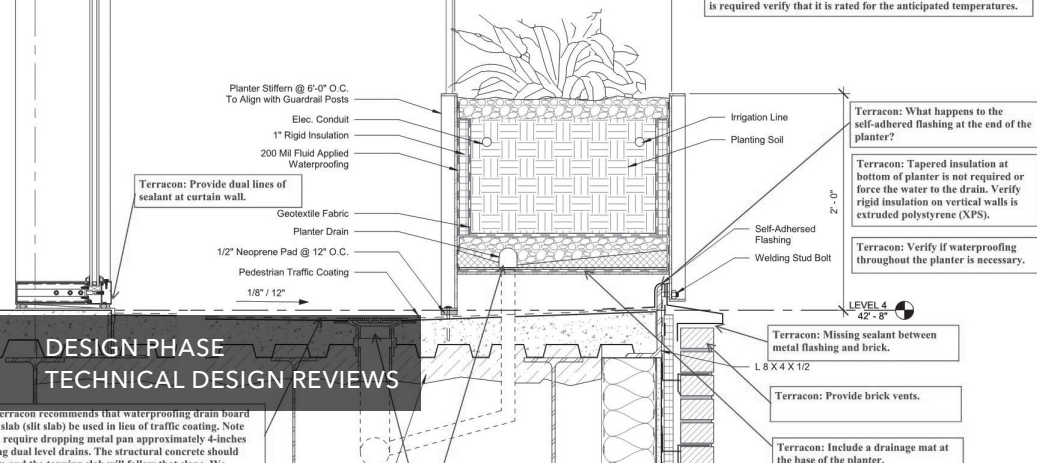
Facilities Consulting

Service Capabilities at Every Stage



| | | | | | |
|-----------------|----|------------------|----|--------------------|----|
| Phoenix | AZ | Glendale Heights | IL | Charleston SC | SC |
| East Bay | CA | Indianapolis | IN | Nashville | TN |
| Los Angeles | CA | Lenexa | KS | Austin | TX |
| Denver | CO | Detroit | MI | DFW Metro | TX |
| Fort Lauderdale | FL | Charlotte | NC | Houston North Loop | TX |
| Jacksonville FL | FL | Greensboro | NC | San Antonio | TX |
| Miami | FL | Raleigh | NC | DC Metro West | VA |
| Tampa | FL | Cincinnati | OH | Newport News | VA |
| Winter Park | FL | Cleveland | OH | Richmond | VA |
| Atlanta | GA | Oklahoma City | OK | Williamsburg | VA |
| Des Moines | IA | Tulsa | OK | Seattle | WA |

Terracon Office
 Terracon Office with Facilities Staff



DESIGN PHASE TECHNICAL DESIGN REVIEWS

CONSTRUCTION PHASE QUALITY ASSURANCE OBSERVATIONS

Facilities | Building Enclosure Commissioning

A building enclosure should be a facility owner's most important asset: a multitude of interconnected systems working efficiently to create a durable, comfortable, healthy environment for occupants, and maximizing your return on investment. Building enclosures have become more complex, skilled labor has become scarce, and the materials used to construct buildings have become increasingly engineered. Therefore, establishing and understanding the owner's project requirements is critical.

Improper installation and insufficient coordination between trades during construction as well as a lack of technical assistance during design can result in serious consequences for your facility, including:

- Water intrusion and uncontrolled air leakage
- Premature deterioration of structural and finish components
- Poor air quality
- Increased energy and operating costs
- Inefficient HVAC performance
- Poor occupant comfort
- Decreased worker productivity and production downtime
- Costly investigations and repairs

Whatever the concerns, whatever their cause, the bottom line is the same; building enclosure commissioning can help contribute to your project's success and lower life cycle costs.

■ What is Building Enclosure Commissioning

Building Enclosure Commissioning (BECx) is a process that begins with the establishment of the Owner's Project Requirements (OPR) and endeavors to verify the exterior enclosure meets those requirements. BECx helps to confirm that those elements intended to provide environmental separation within a building or structure meet or exceed the expectations of the Owner as described in the OPR, and as defined by the Contract Documents, industry standards, and guides.

Ideally, the BECx process begins at project inception during the pre-design phase. The BECx process provides its biggest benefits in the design stage and construction phases, and continues for the life of the building.

■ Experience and Expertise

Terracon's facilities professionals not only understand the commissioning process but are also building enclosure specialists. Our team understands the complexities of building enclosure materials, components, and systems.

Our national BECx team of enclosure specialists differentiates themselves by supplementing their commissioning experience with work on existing buildings, routinely performing evaluations and investigations to identify deficiencies and provide solutions that increase performance and reduce operating

expenses and potential liabilities. Our knowledge and direct experience in real-world conditions allow our experts to provide you effective, whole-building solutions needed to maximize your facility's durability, performance, and cost efficiency. Services include:

- Fundamental and enhanced commissioning
- Technical assistance and documentation during the development of the OPR and Basis of Design (BOD)
- Design Document Review
- Testing expertise
- Participation during bidding/negotiation, pre-construction, construction administration, and occupancy/operations phases of the BECx process
- Submittal, shop drawing, and RFI review
- Construction quality assurance (QA) observation
- Performance verification testing:
 - Fenestration air and water tightness testing (ASTM/AAMA)
 - Whole building air leakage
 - Electronic Leak Detection (ELD)
 - Masonry cavity testing
 - Electrical impedance (moisture scans)
 - Infrared thermography
 - Roof membrane uplift testing
- Hygrothermal Modeling (WUFI)
- Thermal Bridge Modeling (THERM)



Why Terracon?

Resourceful. Terracon Building Enclosure Commissioning professionals can help prevent and resolve a wide variety of issues through our extensive experience and in-depth knowledge of building enclosure systems and products.

Responsive. With our national network of offices, Terracon can mobilize quickly to deliver practical solutions that optimize your building's systems performance with the goal to extend service life and reduce cost of ownership.

Reliable. Terracon delivers consistent and high-quality service through our proactive, collaborative approach, yielding systems that perform beyond expectations and maximize your return on investment.

"Terracon provided technical expertise in reviewing and recommending the appropriate products and strategies that contributed to a successful project."

-GARY VERLINDEN, PROJECT
MANAGER, PARSONS
(SCOBEE PLANETARIUM,
SAN ANTONIO COLLEGE, TX)

ENR Rankings 2023

- #1 Asbestos and Lead Abatement
- #11 Top 100 Pure Designers
- #20 Top 500 Design Firms
- #44 Top 150 Global Design Firms
- #63 Top 200 Environmental Firms



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Nationwide
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- Facilities
- Environmental
- Geotechnical
- Materials



CLEMSON UNIVERSITY CORE CAMPUS
CLEMSON, SC



MARLINS PARK
MIAMI, FL

Facilities Consulting | Building Enclosure

A building enclosure should be a facility owner's best asset: a multitude of interconnected systems working efficiently to create a comfortable, healthy environment for occupants and maximize your return on investment. However, design flaws, inadequacies, unproven products and installation methods, or improper maintenance can lead to unintended and often serious consequences for your facility, including:

- Uncontrolled Air and Water Intrusion
- Premature Deterioration of Structural and Finish Components
- Mold Growth
- Poor Indoor Air Quality
- Increased Energy Costs
- Decreased Worker Productivity
- Production Downtime
- Costly Investigations and Repairs

Whatever the problems - and whatever their cause - the bottom line is the same; they need to be resolved, typically sooner rather than later.

Experience and Expertise

Terracon's facilities professionals understand the complexities of building enclosure materials, components, and systems. Our national team of experts routinely performs evaluations and investigations to identify deficiencies and provide solutions that increase performance and reduce operating expenses and potential liabilities.

Our knowledge and direct experience with how various building systems perform and interact in real-world conditions allow us to provide you the effective, holistic solutions needed to maximize your facility's functionality, cost efficiency, and usable lifespan.

■ Services include:

- Building Enclosure Systems - Condition Assessments
- Commissioning Services (BECx and Cx)
- Roof and Wall Asset Management
- Performance Modeling/Testing (EIFS Inspections/Infrared Thermography-Moisture Scans / Electronic Leak Detection (ELD) / Wind Uplift Testing)
- Air/Water Testing (ASTM/AAMA)
- Remedial Design and Construction Documents
- Construction-Phase Administration and Management
- Peer Review-Design Documents
- Product Submittal and Shop Drawing Review
- Mock-Up Construction Review and Testing
- Construction Observation/Quality Assurance
- Curtainwall Consulting
- Drone Assessment



BAHA MAR HOTEL CASINO AND RESORT
NASSAU, BAHAMAS



SCOBEE PLANETARIUM
SAN ANTONIO, TX

Why Terracon?

Resourceful. Terracon can prevent or resolve a wide variety of issues through our extensive experience and in-depth knowledge of both traditional and new roof and enclosure systems and products.

Responsive. With our national network of offices, Terracon can mobilize quickly to deliver practical solutions that optimize your building's systems performance with the goal to extend service life and reduce the cost of ownership.

Reliable. Terracon delivers consistent service and high quality through our proactive, collaborative approach, yielding systems that perform beyond expectations and maximize your return on investment.

"Terracon provided technical expertise in reviewing and recommending the appropriate products and strategies that contributed to a successful project."

-GARY VERLINDEN, PROJECT MANAGER, PARSONS
(SCOBEE PLANETARIUM, SAN ANTONIO, TX)



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FACILITY CONDITION ASSESSMENT



BUSH TERMINAL/PROPERTY CONDITION ASSESSMENT
NEW YORK, NY

Facilities | Property/Facility Condition Assessments

Whether you are buying, selling, or holding your real estate assets, Terracon's expert facility assessment professionals can identify existing deficiencies, predict future system repairs and replacements, and forecast maintenance costs and future capital expenditures to improve your market position and allocation of operating capital.

To make informed decisions on your real estate investment, securing a thorough analysis of the facility and its current and future needs is an important step.

Property Condition Assessment (PCA)

A PCA is conducted as part of a real estate transaction. Performed to ASTM 2018 standards, a PCA is a documented visual review of each of the property's systems to assess conditions and determine capital expense requirements for maintaining, repairing or replacing identified systems, typically within a specified time frame. Documentation and recommendations are provided so you can make informed decisions when considering the purchase or sale of property.

Facility Condition Assessment (FCA)

Owners of existing facilities face the challenge of providing adequate maintenance with very limited financial resources. Prioritizing maintenance and

capital expenditures can be problematic due to a number of organizational influences and operational restraints. A third-party opinion is often desired to objectively identify and prioritize projects within complex organizations.

FCAs are conducted for owners desiring an independent baseline assessment of facility assets ranging from individual building systems to multi-site portfolios. Through condition assessment and analysis by Terracon's experienced facilities professionals, asset repairs and replacements are prioritized based on collectively established customized criteria incorporating the client's specific needs. Financial analysis typically is provided within a multi-year forecast giving facility owners an optimized approach to planning their asset preservation.

Customized Applications and Reporting

Terracon often provides customized condition assessment services tailored to specific client needs including development of custom assessment tools and reports, implementing commercially available asset management software, or working within an established assessment program.

Whether your project consists of a single site or a portfolio of hundreds or

even thousands of buildings, Terracon's engineering and architectural professionals provide a solution-oriented approach to your due diligence/condition assessment needs.

All systems can be assessed and typically include:

- Accessibility
- Amenities
- Architectural Finishes
- Building Envelope
- Electrical
- Fire Protection / Life Safety
- Mechanical
- Pavements
- Plumbing
- Roofing
- Site Drainage
- Site Infrastructure
- Structural Elements
- Vertical Transportation



COBALT CAPITAL PARTNERS/
PROPERTY CONDITION ASSESSMENT
MULTIPLE LOCATIONS



MASARYK 421/PROPERTY CONDITION ASSESSMENT
MEXICO CITY, MEXICO

Why Terracon?

Resourceful. Terracon brings you value by thoroughly understanding your asset management needs and supporting those efforts as you operate and upgrade your properties/facilities.

Responsive. Drawing upon Terracon's national network of offices and resources, we can quickly mobilize to support time-sensitive PCA delivery process demands.

Reliable. We deliver consistent service and high quality through our proactive, collaborative approach, yielding systems that perform beyond exceptions and maximize your return on investment.

"The reports we receive from Terracon are detailed and very useful to evaluate the property, plan for future expenses, and negotiate...a Terracon Property Condition Assessment pays for itself."

-RANDY ROGERS, PRESIDENT, RVE INTERESTS, LTD.



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ENERGY PERFORMANCE CONSULTING



BARTLETT LAMENESS ARENA AT THE COLLEGE OF
VETERINARY MEDICINE | LEED ENHANCED COMMISSIONING
AUBURN UNIVERSITY, AL

Facilities | Mechanical, Electrical, and Plumbing

One of the largest challenges and expenses in facility maintenance is the operation and distribution of energy-consuming systems including heating, ventilation, and air conditioning (HVAC); interior and exterior lighting; and domestic water service. Today's building occupants increasingly expect high efficiency, sustainability, and performance in mechanical, electrical, and plumbing (MEP) systems. These expectations extend to the long-term maintenance of these complex and evolving systems.

Experience and Expertise

Terracon is a valuable partner in assessing the condition and performance of your MEP systems and developing strategies to improve their efficiency and reliability. Our licensed engineers, LEED accredited professionals, and commissioning agents recognize that even if your facility's MEP systems are properly designed and installed with state-of-the-art equipment and components, its function, occupancy, and usage may change over time.

Our professionals have the necessary tools and diagnostic skills to properly assess and troubleshoot MEP systems to ensure that they function as intended over the facility's lifetime.

Our engineers make assessments and diagnostics to provide informed, common sense recommendations. We do not assume that a system replacement or upgrade is the only answer. We are sensitive to your budget and begin with no-cost and low-cost options prior to recommending projects with higher capital investments and longer return on investment (ROI) periods.

Terracon's ultimate goal is to optimize the performance of your MEP systems to meet your needs for enhanced energy and cost efficiency.

Terracon's MEP services include:

- Air Barrier and Building Pressure Testing and Diagnostics
- Air Quality Testing and Assessments
- ASHRAE Level I, II, III Energy Audits
- Benchmarking
- Building Energy Performance Assessments
- Commissioning and Retro-Commissioning
- HVAC System Diagnostics
- LEED Consulting
- Performance Modeling/Testing
- MEP Design for Retrofit and Renovation
- MEP Diagnostics, Assessments, and Investigation
- Remedial Design and Construction Administration
- Whole Building Testing (Air Leakage)



ELECTRICAL SYSTEM ASSESSMENT



MECHANICAL SYSTEM
PERFORMANCE ASSESSMENTS

Why Terracon?

Resourceful. Terracon continually applies new processes, methodologies, and techniques to all facets and types of MEP systems, from aged to state-of-the-art systems, enabling us to provide you with expert cost-effective options.

Responsive. Terracon has a broad national network of employees and equipment resources to respond to your needs on projects large and small.

Reliable. We are committed to delivering outstanding optimization of your MEP systems to meet your short and long-term needs and enhance the operation and use of your facility.

"Terracon has always been very professional, responsive, and reliable...I am pleased to recommend them to anyone who has a need to truly understanding building issues and potential solutions."

-ED WRIGHT, EXECUTIVE VICE PRESIDENT, MAA



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HOUSTON CLUB | HOUSTON, TX
Vibration Monitoring During Implosion



BUSH TERMINAL | BROOKLYN, NY
Structural Assessment

Facilities | Engineering Diagnostics

If you own or manage buildings or other infrastructure, you know that these assets require regular maintenance throughout their service lives. Even with proper maintenance, structural and building system components often fail or deteriorate at accelerated rates due to changes in loading and/or environmental exposure conditions, inadequate design, material deficiencies, or natural disasters.

Experience and Expertise

Terracon's scientists, professional engineers, and architects have extensive experience determining why failures or distresses occur, identifying the most cost-effective solutions, and predicting future performance. Our approach combines hands-on experience with in-house, state-of-the-art laboratory and field testing capabilities.

At Terracon, we have applied our diagnostic skills on thousands of building and infrastructure projects and all types of structures including bridges; parking garages; industrial floor slabs; foundations; pavements; subsurface construction; and steel, concrete, masonry, and timber structures.

Our diagnostic services are tailored to meet your needs as well as the project's needs, and typically include one or more of these tasks:

- Visual Condition Assessment
- Nondestructive Testing
- Load Testing and Instrumentation
- Document Review
- Laboratory Testing and Examination
- Engineering Analysis
- Rehabilitation Plans and Specifications
- Bidding Assistance
- Construction Administration
- Field Testing/Monitoring of Repairs

Terracon maintains more than 80 AASHTO-accredited laboratories to support routine field and laboratory testing needs. We also maintain specialized field laboratory testing capabilities across the United States to supplement those of more than 150 local offices, including:

- Ground Penetrating Radar
- Half-Cell Corrosion Potential Mapping
- Impact Echo and Ultrasonic Pulse Velocity Testing
- Infrared Analysis
- Liquid Penetrant Testing
- Magnetic Particle Testing
- Petrographic Examination
- Radiography
- Strain Gauge Instrumentation
- Ultrasonic Flaw and Thickness Measurements
- Vibration Monitoring



NON-DESTRUCTIVE EXAMINATION



THE FOUR SEASONS HOTEL | NEW ORLEANS, LA
Concrete Panel Evaluation

Why Terracon?

Resourceful. Terracon's team of expert materials engineers, structural engineers, mechanical engineers, building enclosure consultants, and environmental scientists allow us to provide thorough, highly accurate analysis and solutions.

Responsive. Drawing on our national network of offices, Terracon can act quickly to deliver practical solutions, address immediate safety concerns, and develop cost-effective solutions to restore functionality and improve long-term building performance.

Reliable. We deliver consistent quality on every engineering diagnostic project through our collaborative approach and commitment to outstanding client service.

"I am sure given the opportunity, Terracon will exceed any expectations, and will prove themselves a benefit to any owner."

-JAMES H. WORSHAM, SPECIAL OPERATIONS
SUPERVISOR, BERKLEY COUNTY
SCHOOL DISTRICT

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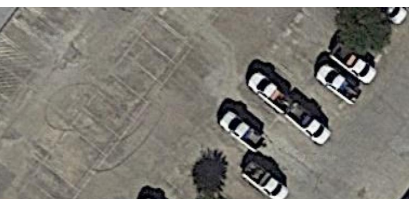
■ Facilities
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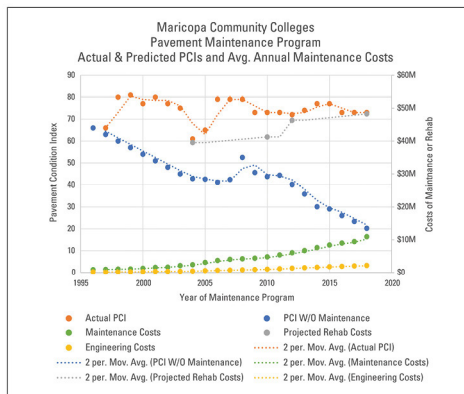
GOOGLE SATELLITE IMAGERY



TERRACON MOSAIC IMAGERY



Using automated data collection, our engineers can monitor severe pavement changes and better predict when failures will occur. You can then make real-time, cost-effective maintenance decisions and prioritize projects over time using Terracon's mosaic imagery that provides a more precise image of your pavement details.



\$30M
CLIENT COST SAVINGS!



Pavement Technology Solutions

Managing your pavement assets is essential to detect hazards early and act quickly to verify end-user safety and minimize your liability. Terracon's innovative, cost-effective solutions help you extend the life of your pavement assets and optimize your budget.

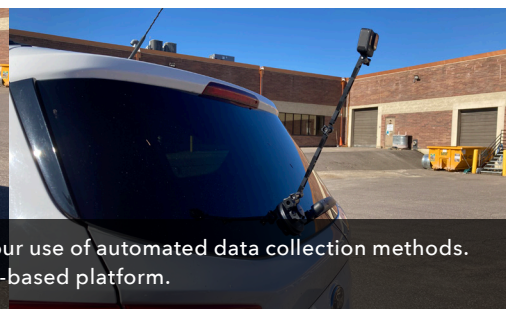
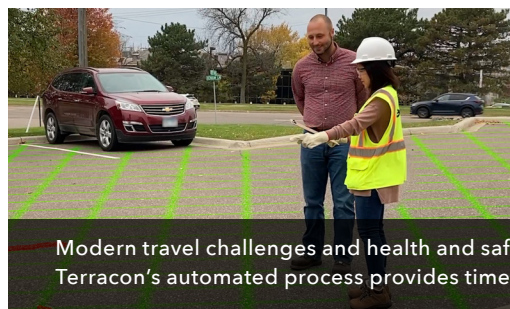
We understand budgets are limited and pavement reconstruction isn't always an option. Terracon offers a range of services allowing us to create maintenance and rehabilitation choices to achieve your short- and long-term goals in a proactive, strategic, and timely way. The goal of our pavement services is to prevent unnecessary reactive expenditures due to an end-user incident, while maximizing your return on investment.

Digital Data Collection and Artificial Intelligence (AI) Drives Safety and Efficiency

Terracon's pavement asset quantification and management technology provides automated distress detection and Pavement Condition Index (PCI) calculation through time-stamped mosaic imagery and AI learning. Cameras mounted on field vehicles capture georeferenced imagery to create a real-time pavement snapshot. Then, we use AI to identify distress type, severity, and extent, and calculate PCI without sending pavement experts to a site, saving you time and money.

This innovative approach enables us to safely and efficiently collect field imagery, generate mosaic models, calculate pavement conditions, and generate summary reports with maintenance and rehabilitation options and budget projections.

Using this information, you can develop a best-practice, data-driven pavement maintenance strategy to mitigate future risk and optimize your budgets.



Modern travel challenges and health and safety precautions have led us to grow and innovate our use of automated data collection methods. Terracon's automated process provides timely, accessible reporting through an interactive, GIS-based platform.

▶ **Don't let pavement planning fall through the cracks – use Terracon technology**
to reduce costs and increase performance of your pavement assets



ARBY'S PARKING LOT | MARSHALL, MN
PAVEMENT CONDITION SURVEY AND
SUBSURFACE EXPLORATION



RETAIL DISTRIBUTION CENTER | GROVE CITY, OH
PAVEMENT CONDITION INDEX SURVEY



CONFIDENTIAL SOLAR PROJECT | WI
PRE-, MID-, AND POST-CONSTRUCTION
PAVEMENT CONDITION ASSESSMENT SURVEY

Why Terracon?

Resourceful. We provide you a full range of pavement consulting services, as well as expert insight regarding project evaluation, budget, bid, construction management, and quality control.

Responsive. We can meet your needs no matter where the project is located and connect you with the most experienced pavement professionals nationwide.

Reliable. You are able to meet pavement design lifespan challenges earlier than ever before with Terracon's innovative technology.

"Thank you and your team for assisting on the upfront design and during the construction-phase services. The alternative pavement section was key in eliminating potential dewatering and increased costs due to additional base and subgrade reworking."

-LEO REPETTI, P.E., DEPUTY DIRECTOR
MARTIN COUNTY UTILITIES, STUART, FL



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Facilities Consultants

- Architects and Engineers
- Building Enclosure Specialists
- Building Enclosure Commissioning Agents (BECx)
- Roofing and Paving Consultants
- Mechanical and Structural Engineers
- Certified Access Specialists (CASp)
- Commissioning Agents (Cx)
- LEED Accredited Professionals
- Construction Risk Consultants

Facilities Consulting Services

- Building Enclosure Consulting and Testing
- Building Enclosure Commissioning (BECx)
- Structural Diagnostics Consulting
- Mechanical, Electrical, Plumbing (MEP)/Energy Consulting
- Commissioning/Retro-Commissioning (Cx, Retro)
- Facilities Asset Management Consulting
- Facility Condition Assessments
- Due Diligence (Property Condition Assessments)
- Construction Risk Consulting
- Remedial Design and Administration
- Accessibility Consulting

Facilities Data Technology

- Imaging, Drones, and BIM
- Sustainability and Resiliency

Evaluating a Site



Partnership at every step



SERVICES
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50 states
Locations Nationwide

220+
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