FDH INFRASTRUCTURE SERVICES
ENGINEERING INNOVATION

25 YEARS OF EXCELLENCE
IN STRUCTURAL INVESTIGATIONS

1994

FDH ESTABLISHED

FDH is founded by two NC State University civil engineering professors and a PhD student.


John Fisher, PhD, PE


Robert Douglas, PhD, PE


Darrin Holt, PhD, PE

FIRST RESEARCH PROJECT

First research collaboration with NC Department of Transportation determines the in-situ length of aging bridge piles for which no as-built documentation exists. FDH develops a series of proprietary nondestructive evaluation (NDE) techniques using dispersive wave propagation that provide an accurate assessment of both bridge pile length and condition.

1998

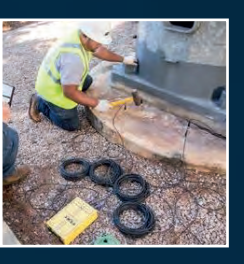
DISPERSIVE WAVE METHODS VALIDATED FOR BRIDGE PILES/APPLIED TO TRANSPORTATION INDUSTRY

Following a successful research study with North Carolina DOT, FDH provides nondestructive evaluations of unknown foundations using its proprietary methods for state DOTs across the country. More than 4,500 timber and concrete bridges are tested over the next two decades, minimizing the need for cased borings and saving bridge owners millions of dollars.

2003

DISPERSIVE WAVE METHODS APPLIED TO CELL TOWER FOUNDATIONS IN TELECOM INDUSTRY

As the telecommunications industry ramps up the 4G wireless network build, carriers and tower owners turn to FDH to evaluate the foundations of existing cell towers to determine their capacity to support additional loading. FDH's proprietary dispersive wave NDE methods enable accurate foundation mapping and the identification and condition of embedded rebar for towers lacking original as-built drawings. Over 7,000 projects are conducted over the next decade, saving tower owners millions in replacement avoidance and remediation reduction.



2008

DISPERSIVE WAVE METHODS APPLIED TO POST-TENSIONED STEEL ANCHOR RODS IN LARGE DAMS

U.S. Army Corps of Engineers (USACE) approaches FDH regarding the use of its proprietary dispersive wave NDE methods to determine residual tension in post-tensioned anchor rods as an alternative to costly and hazardous hydraulic lift-off tests. A growing number of rod failures have been occurring in the aging Tainter gate anchorage systems.

2009

U.S. PATENT 7,548,192. METHOD OF MAPPING STEEL REINFORCEMENTS IN CONCRETE FOUNDATIONS

In response to transportation and tower infrastructure owners' need to know the precise location and exact size of embedded steel reinforcement in concrete decks and foundations, FDH develops and patents an innovative rebar mapping method utilizing ground penetrating radar (GPR).

2012

U.S. PATENT 8,096,195. U.S. PATENT 8,176,800. METHOD OF DETERMINING TENSION IN A ROD

As its 20th year approaches, FDH develops and validates an NDE method to determine the residual tension in embedded, post-tensioned anchorages. The method is rolled out nationally on USACE's inventory of major navigational and flood control dams.

FDH/ERDC NDE RESEARCH COLLABORATION

FDH and the Army Engineer Research and Development Center (ERDC) initiate a collaborative research and implementation plan to bring FDH's NDE method from initial field feasibility to a fully validated method that can be employed without confirming lift-off tests. This groundbreaking method is accurate within +/-10% of the traditional test method, significantly safer, and 10x faster (100 rods/day tested vs. 10 rods/day), resulting in a 90% overall cost savings.

2013

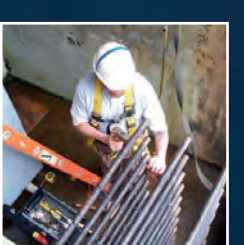
DISPERSIVE WAVE METHODS APPLIED TO POWER INDUSTRY

Utilities approach FDH about applying its proprietary NDE methods to evaluate transmission, substation, and wind turbine foundations. Over the next six years, FDH conducts 200+ foundation investigations in this segment.

2016

FDH RECEIVES $10M CONTRACT AWARD FROM USACE FOR NONDESTRUCTIVE EVALUATIONS

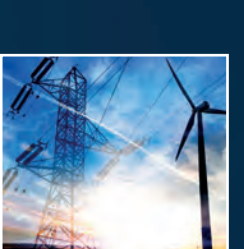
FDH receives funding to test additional USACE dam sites over the next five years using its proprietary NDE method as the validation program with ERDC enters its final stage.



2018

FDH DEVELOPS STRUCTURAL HEALTH MONITORING (SHM) AS NEW SERVICE OFFERING

As a complementary solution to its proprietary NDE capabilities, FDH makes a strategic move to enhance its portfolio by offering real-time, remote monitoring services for critical structures using highly energy-efficient wireless sensor network technology.



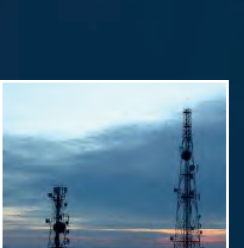
2019

FDH ENTERS INTERNATIONAL MARKET

Celebrating 25 years!

FDH begins partnership discussions with European tower engineering firm to provide foundation investigation and mapping services for wireless infrastructure portfolios in Southeast Asia.

FDH explores development of an innovative NDE method to evaluate anchor and flange bolt tension in wind turbines.



Learn more about the 25 Years of Excellence at **www.fdh-is.com**