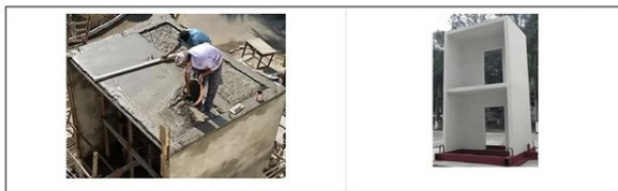
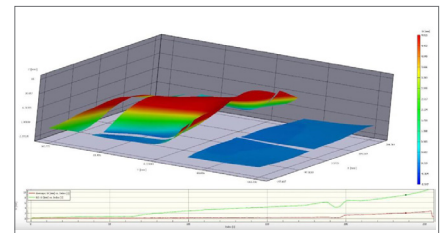
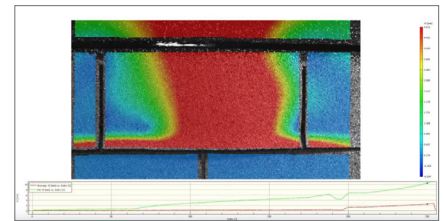


## VIC-3D with *iris* for Civil Engineering

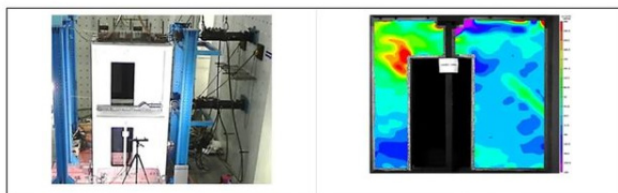
The VIC-3D digital image correlation (DIC) system from Correlated Solutions is the most powerful turnkey system for non-contact measurement of full-field surface shape, deformation, strain, vibration, and much more. With a range of new features including direct data comparison with finite element models (FEA) and a new graphics engine called *iris*, the VIC-3D system is poised to change the way civil engineers around the world validate models and share their results. Give us a call to find out how you can do better work in less time than you ever thought possible.

### Non-Contacting & Full-Field Measurements

- No mechanical interaction with the sample
- Eliminate the need for strain gauges, LVDTs, extensometers, etc.
- Rigid body motion can be easily removed
- Measure dynamic mechanical properties & vibration simultaneously
- Up to 31 million data points possible
- Automatically identify strain concentration locations, even in complex structures under complex loading conditions
- Fast data processing: up to 1,000,000 data points/second and intuitive inspection and extraction tools
- Data can be imported and exported for easy FEA comparison/validation
- Fully integrated camera control



*Spraying and pouring of concrete over the EPS core skeleton and finished building model*



*Testing of the full-scale model in the NSTF and strain pattern obtained using the contactless digital image correlation system procured through DST-FIST support*

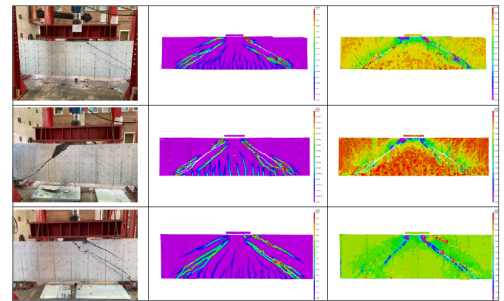
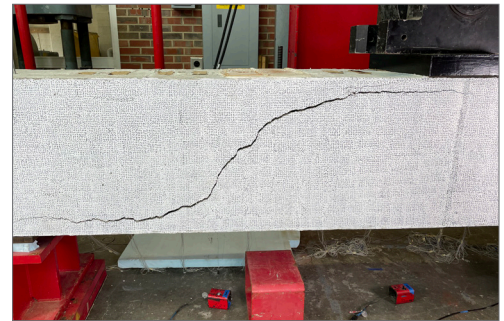
### VIC-3D is still the fastest, most accurate digital image correlation system on the market. Additional key features include:

- Python scripting for customized and repeatable analysis, including batch processing
- Hybrid calibration options for improving calibration via the use of speckle images
- Customizable calibration options for modeling radial, prismatic, and tangential distortions
- Completely integrated and customized turnkey systems with training, system maintenance, and technical support

### CASE STUDY - Large-Scale Concrete Structural Damage Assessment

Dr. Giorgio T. Proestos and doctoral student Dhanushka Palipana deployed the VIC-3D digital image correlation (DIC) system from Correlated Solutions in their work with a large-scale structural testing of concrete beams in the Department of Civil, Construction, and Environmental Engineering in the College of Engineering at North Carolina State University. The researchers used six high-resolution cameras to capture images of 16 ft by 4 ft concrete beams under load. The NCSU team chose the VIC-3D system because of its full-field ability to measure high resolution strains over the entire surface of a large test subject.

The project involved conducting a pilot series of three experiments with full-scale reinforced concrete models of elements used in civil infrastructure, including bridge pier caps and transfer-girders found in high-rise buildings. In structural concrete, there is a size effect; therefore, it is important to test full-scale members. The concrete members tested were each 16 ft by 4 ft (5.3 m x 1.3 m), were 1 ft (305 mm) thick and weighed approximately 9,600 lbs (4.8 tons). Some specimens reached peak loads exceeding 585 kips (2,600 kN). The main variable being examined in this pilot series was the shear-span-to-depth ratio (i.e., the distance between the applied load and the supports), which varied between 1.80 and 2.25. Read more at the full case study on our website.



*“It is remarkable that in the DIC-measured principal tensile strain data, essentially every structural crack is visible and identifiable.”*

-Dr. Giorgio T. Proestos, College of Engineering,  
North Carolina State University

Images courtesy of Dr. Proestos at NCSU.

	VIC-3D LS	VIC-3D QX	VIC-3D HS	VIC-3D UHS
Camera Resolution	2.3 MP - 45 MP	12.3 MP	Up to 4 MP	400 x 250 pixels
Frame Rate	400 Hz - 16 Hz	Up to 335 Hz	Up to 500 KHz *	Up to 5 MHz **
In-Plane Resolution	1/200,000 • FOV	1/200,000 • FOV	1/100,000 • FOV	1/50,000 • FOV
Out-of-Plane Resolution	1/100,000 • FOV	1/100,000 • FOV	1/50,000 • FOV	1/25,000 • FOV
Strain Resolution	down to 10 µε			
Strain Range	from 0.005% to > 2,000%			
Analog Data Recording	Up to 32 inputs	Up to 16 inputs	8 inputs	10 MS/s / 4 inputs
Full-field Real-Time Analysis	Yes, up to 10 Hz	Yes, up to 10 Hz	n/a	n/a
VIC-Gauge 3D Real-Time Analysis <small>(output of points, gauges, extensometers, etc.)</small>	Yes, up to 100 Hz Up to 4 real-time analog outputs	Yes, up to 100 Hz Up to 4 real-time analog outputs	n/a	n/a
FFT Module	Available	Available	Available	n/a

\*can be achieved at reduced resolutions, \*\*can be achieved at full resolution