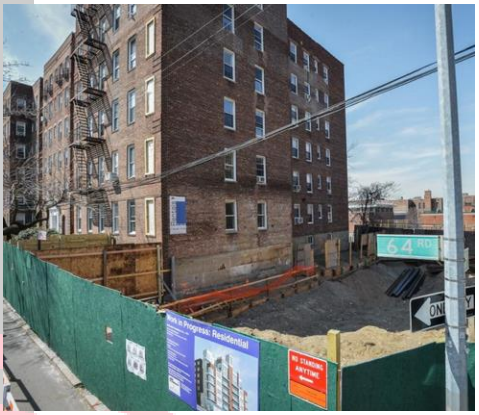
A Win-Win For Adjacent Building Owners And Developers

When a new building is being built, all parties are nervous about damaging the adjacent buildings. Unfortunately damaging buildings happens far too often. Damage can be avoided if a high precision approach is taken.

Measurements offer a Great Improvement to Preconstruction Surveys.



A Pre-Construction Survey is the bare minimum inspection to protect adjacent structures. And unfortunately, it does not provide insight into how a building will respond to construction activity. Technology has advanced to the point that a standard Preconstruction Survey can be complemented with a measure of a building's Dynamic Signature. ***STRAAM's Baseline Dynamic Signature*** quantifies how **dynamically sensitive** each building is and highlights areas of weaknesses that may exist. Knowing these conditions in advance helps the developer know what they need to look out for to avoid damage providing a Proactive approach to risk management.

What's Included in a Baseline Dynamic Signature?

A Baseline Dynamic Signature provides a measure of certain critical engineering parameters that, together, allow a prediction of how a structure will respond to forces that can damage it. The most important ones are:

First mode

1. **Frequencies of Resonances** – This relates to a buildings stiffness which is defined as how much a building will deflect under a force. If a building has half the required stiffness, it will displace 4 times as much. This means the building will crack under less force than a standard building. Engineers design for a structure to be stiff enough to minimize the deflection under a given load. We measure the stiffness to see if the building is fundamentally weaker than it should be.

Second mode

2. **Mode Shapes** – A mode shape is how a building deflects in each frequency of resonance. Mode shapes will highlight what areas of the building moves more than other areas. This shows areas where there are localized weaknesses. Areas of more movement are often more susceptible to damage from vibration.

Third mode

3. **Non-Linear Damping** – Damping is the amount of energy dissipated by the structure. Variations in damping could allow for ground energy to amplify in the building. This a major cause of damage. With amplification, damage will occur well before it would otherwise happen. Also, in certain situations, the damage can occur without being detected by traditional monitoring equipment.

What does it all that mean?

The three parameters above give critical insight into the **dynamic sensitivity** of the building. With this information, both parties will know if there is an elevated risk of damaging the building prior to beginning

work. If there is a high potential for amplification, then the developer adjusts the monitoring approach appropriately to better protect the building. Done properly, this will help create the most cost effective plan for both monitoring and construction. Both parties win if damage is avoided.

ALAN P. JEARY, AO, CENG, frs(n), DSC (ENG), PHD, FISTRUCTE, FAIB, FRMETS

PARTNER AND CHIEF TECHNOLOGY OFFICER

Alan Jeary brings to STRAAM over 40 years of innovation and experience in the area of structural performance monitoring and analysis. He is a world-recognized authority on instrumenting full-scale structures to study their dynamic characteristics. A pioneer of the field of Real Time Dynamic Structural Monitoring, he has published over 130 papers on the results of his studies. Dr. Jeary co-authored the new Hong Kong wind code; is a winner of the prestigious Telford Gold Medal of the Institution of Civil Engineers; is a Guest Professor at the Global Center of Excellence in Wind Engineering at the Tokyo Polytechnic University; is also a fellow of the Institute of Structural Engineers in the UK, the Australian Institute of Buildings and the Royal Meteorological Society. In April 2011 Alan won an Engineering news Record "Newsmaker of the Year" award, and in 2015 he was invested as an Officer of the Order of Australia, for services to Engineering and Education. Prior experience with other academic institutions include, the Building Research Establishment and the Central Electricity Research Laboratories. Jeary earned his PhD and DSc (elite Higher Doctorate) from University College, London and has lectured worldwide on the overall behavior of structures.

THOMAS A. WINANT, PE

PRESIDENT

Thomas A. Winant is President of STRAAM Group. He brings over 30 years of experience in the field of civil engineering, construction, structural health monitoring and project management. He was previously the Executive Vice president of STRAAM Corp since 2009. Prior to that was the Chief Operating Officer for Osmos USA. With these firms, he was responsible for all aspects of Company operations. He brings significant experience in Technology platform development and Project Management, including Structural health Monitoring used to aid in the condition assessment for bridges, buildings, and other structures under rehabilitation. Mr. Winant received a BS in Civil Engineering (Structural) from Lafayette College (89').

STRAAM Group provides the traditional as well as advanced assessment and monitoring capabilities. We also offer the

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STructural Risk Assessment And Management

most advanced risk management monitoring platform and skills to help navigate the most difficult projects. We work with engineers, owners and contractors to bring value to projects by quantifying risk factors associated with a structure's measured performance. This service is unique and has proven extremely valuable to keep projects moving forward.

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