



Structure Monitoring Technology

FROM DECK

TO CLOUD:

**Conventional Roof
Leak Detection
Systems**

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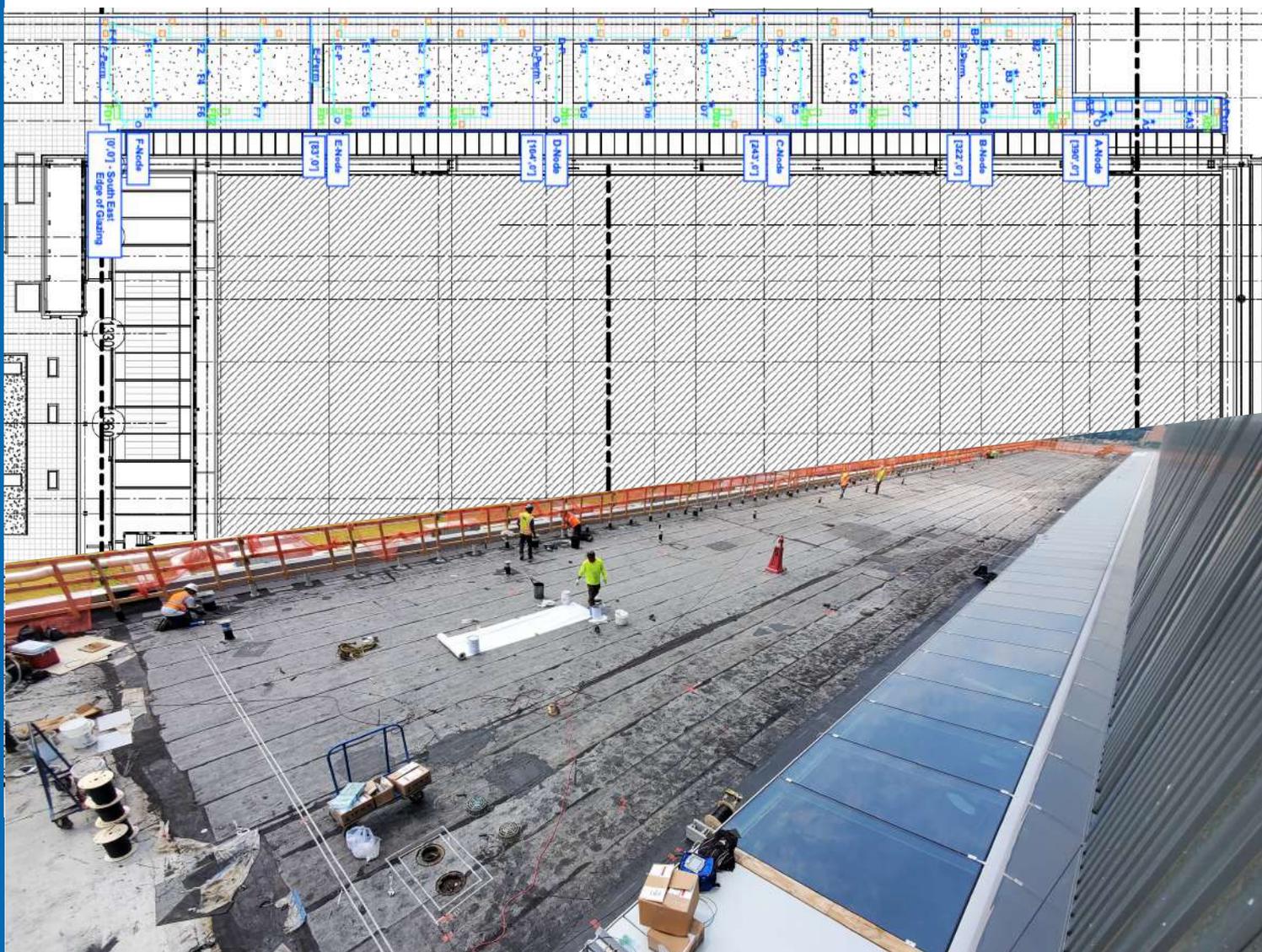
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1. DEFINING THE PROJECT

We are delighted that you are considering SMT for your project. For over 15 years we have been trusted by architects, general contractors, roofers, and building owners to install state-of-the-art sensors and enable the best possible leak detection across the globe.

SMT offers leading edge leak detection monitoring for Conventional Roof Systems. Our systems are embedded into the roof during new construction periods (or renovation and rehabilitation) allowing checks of the membrane integrity without the need for extremely costly investigative work.

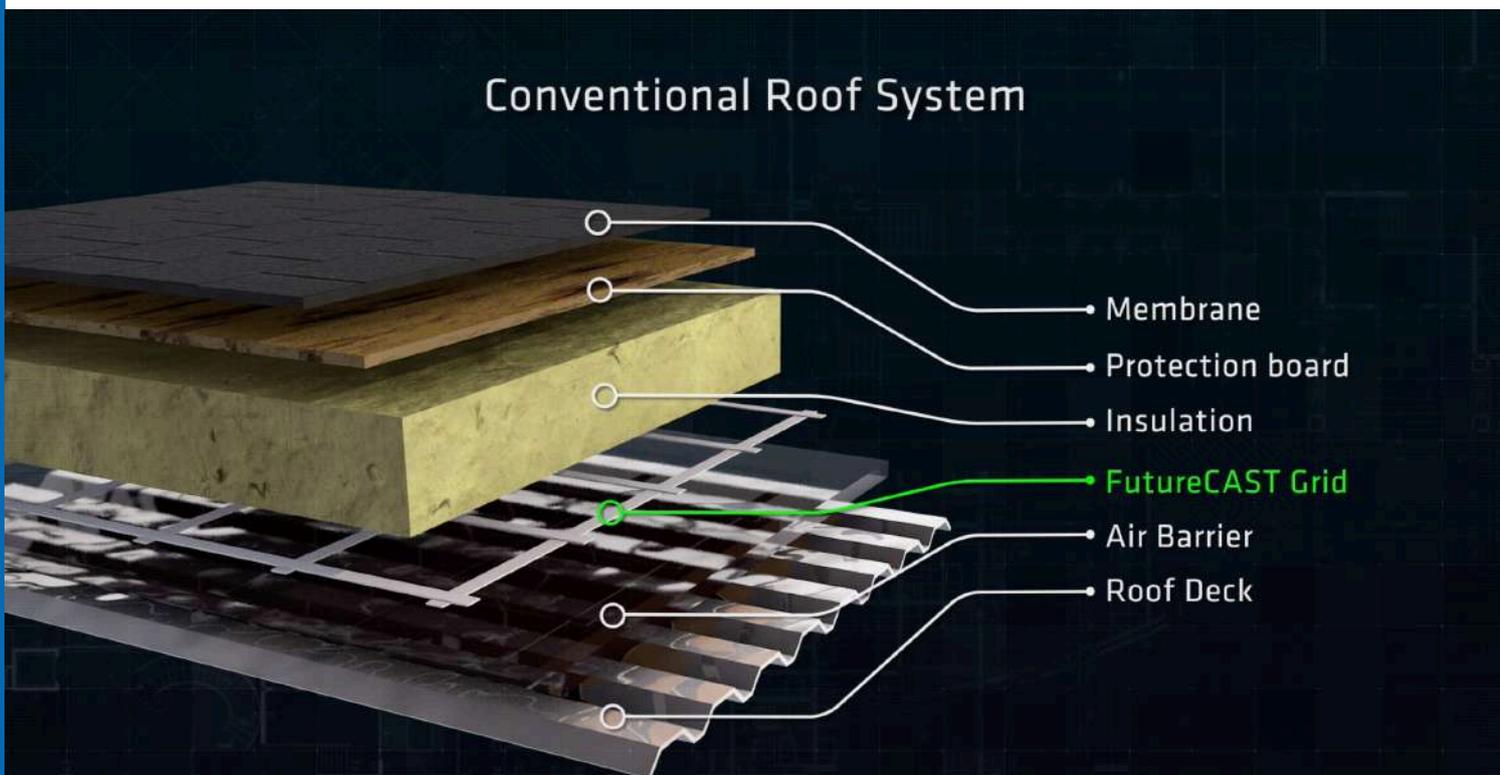
Our experienced team is ready to assist clients in finding the solution that suits their requirements and budget. Once a client has decided to install an SMT Sensor Network on their project, SMT will determine the scope of the project by taking into consideration instructions, drawings and specifications. Then we work within the construction schedule to install our smart monitoring system without causing disruption to other trades.



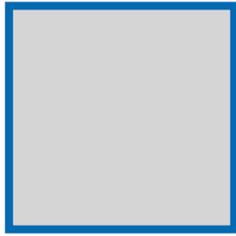
BUILDING INTELLI



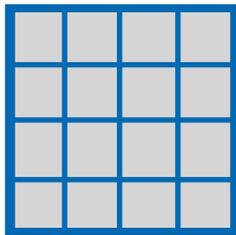
- The Futurecast sensor network is connected to a monitoring gateway, transmitting near-live data to SMTs data monitoring centre from which data can be viewed graphically and alarms/notifications engaged.
- This system is constantly monitoring, allowing SMT to provide advanced warning of potential leaks, as well as a host of usable intelligence.



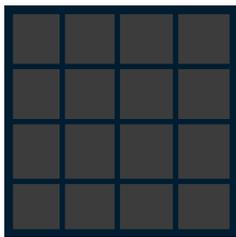
2. HOW IT WORKS



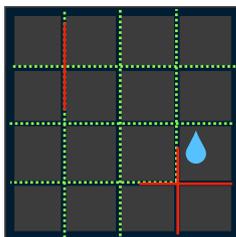
Clear Deck



MDS Tape Grid Applied.



Insulation, protection board, and Membrane installed on top of MDS Tape.



When activated, system takes readings and identifies moisture concentration

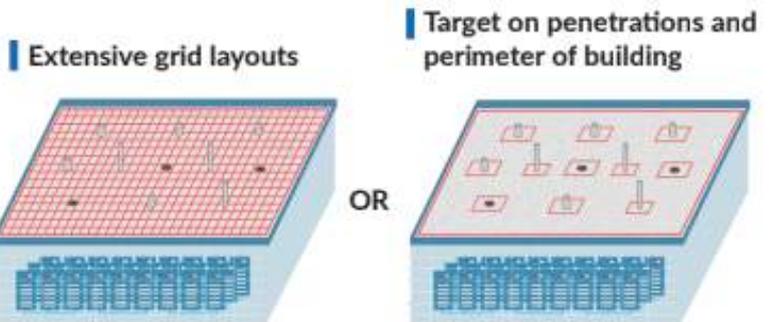
Moisture Detection Sensor (MDS) tape is applied in segments, forming a grid-like installation with granularity to the client's specification.

The MDS is then covered by glue or mechanically fastened insulation and hoverboard prior to the cap sheet being applied. The system remains in place for the lifespan of the roof.

In a conventional roof system, the MDS grid measures resistance on each sensor tape to identify moisture accumulations.

Using electronic data, SMT can tell you which parts of the roof are wet, which are dry, and where the greatest concentration of moisture is occurring.

Grid layout dependent on topology of roof and granularity of leak detection.



3. INSTALLATION



Preparing the Deck

Sensors are typically placed directly on the lowest vapour retarder. The deck must be clean and dry, and the MDS tape layer must be covered and sealed on a daily basis. Slope packages and insulation can lie in direct contact with the sensors. Metal debris and any sources of moisture - no matter how small - should be actively looked for and excluded.



Placing MDS Tape

SMT will grid the deck surface, applying MDS tape in 20 ft strips at 10ft spacing (or to the specified granularity). Each strip is then wired back to a central junction box.

MDS tape is applied to the lower air vapour barrier (AVB), or directly to concrete/steel deck.



Weather Conditions

In order to install on a Conventional roof, the deck must be clear and dry.

The roofing system should be sealed as per manufacturer's instruction to prevent moisture accumulation in the assembly.

4. CABLE ROUTING & DECK JUNCTION BOXES



A Wired Network

SMT uses low voltage cable to network sensors, these cables are stepped down in deck-mounted junction boxes where they are terminated onto data acquisition boards.

SMT makes significant effort to limit the amount of cable used, ensuring the best possible signal integrity while being cost effective.

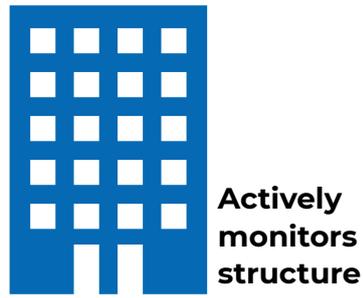


Junction Box Access

The network is wired to a junction box on site, which will house the cables and electronics in a way that they are easily accessible.

The junction box is best placed at the edge of the system, mounted to a prevailing wall detail or in grade with a free standing flashing stack. SMT designs its systems so that they are discrete, and easy to access for technicians.

5. BUILDING INTELLI: OVERVIEW



To protect your most valuable assets, and for access to the most comprehensive data, SMT offers its custom active monitoring system: **BUILDING INTELLI**.

Active Membrane Monitoring

BUILDING INTELLI links SMT's sensor array to a monitoring gateway where data is collected at custom intervals and synced to the SMT Analytics Monitoring Center for trend analysis and actionable event support.

How It Works

Building Intelli utilises a custom Data Acquisition Board housed in each deck junction box. Continually checking for system function, and sampling the deck with resistance based readings to detect the presence of moisture.

6. BUILDING INTELLI: INSTALL



Monitoring Gateway

SMT has two solutions for Building Intelli installations.

BiG™: BiG is a windows based software system which enables the broadcast of data packages from the sensor network. BiG allows the Building Intelli system to interface directly with Building Management Systems.

TiG™: A Linux based computer system designed for low power applications, or where signals must be buffered or amplified. Requires a static IP and either solar, battery, or hardline power.

These gateways allow front end control of the system, as well as data monitoring and back end control from remote locations.

Low Profile, Easy to Access

The SMT sensor array is routed to a junction box on the deck. The junction boxes are then linked, via cable or wireless, to a single monitoring gateway inside the building.

This linkage can involve substantial lengths of cabling. Junction boxes and monitoring systems are installed in interior and exterior locations, and can be installed in most construction environments. Let us know at the time of quotation if routing conduits, FT6 locations, or outdoor environments exist to provide the best options for your building.

7. BUILDING INTELLI: ANALYTICS



What Happens to all that Data?

SMT sensors communicate to junction nodes, which stream to the site gateway where data is uploaded to Analytics and/or BMS control centres. An outbound Internet connection is essential.

Local and recent data is always available at the terminal to assist with local field repairs, while monthly and yearly data is stored in perpetuity off-site at SMT Analytics.

Intelligence You Can Rely On

SMT Analytics reviews data prior to a repair dispatch. Using multiple data sets, we assist building owners/managers in determining the appropriate level of response - we believe in the scalpel not the hammer.

SMT Analytics can track for neighbouring sensors, season, occupancy rate, and other factors when assessing triggered events. Once the processed data creates a points to a leak condition (of various urgency), SMT will contact the client. Thanks to SMT's sensor network, once a repair is sanctioned we will be able to provide an accurate location and verify the integrity of the repair.

Choose Your Level of Engagement

Email or other forms of notification can be engaged to alert the client of developing conditions. SMT can produce intelligence ranging from basic reports to advanced graphing, depending on the needs and wishes of the client. We also offer on-line drawing and photo management, and BIM interface.

8. BUILDING INTELLI: BMS CONNECTIONS



SMT Monitoring Gateway



Automation protocol



Building Management System

A System that Plays Well With Others

Data from SMT’s sensor networks often needs communicating to third party control systems, integrating our system into the building’s management suite. SMT utilises the BACnet building automation and control networking protocol, a fully autonomous, always online, executive control interface. Developed by ASHRAE, BACnet is accessible both remotely and locally, and has become the protocol of choice for most building automation control networks.

How It Works

SMT’s Building Intelligence Gateway (BiG) gathers data from wired CAN networks and/or wireless sensor networks and communicates this information to a CAS 2700 gateway on the same network. The CAS gateway, communicates to 3rd party BAC NET systems using BAC NET IP over a standard Ethernet network.

SMT Analytics also offers an API for interfacing to other online BMS’ and BIM related graphical tools. Roof leak status can be shown graphically on BIM models to enhance the visibility of the leak location and the conditions that lead to the leak.

9. FAQs

What Do I Get From My System?

With SMT's Building Intelli active monitoring system, we are constantly evaluating for the presence of moisture in the assembly.

SMT can establish an SMS or Email warning system for when an event has been triggered. There are numerous options to integrate the SMT sensor network with your building management system.

SMT offers packages with extensive graphing and visualisations of your membranes integrity, as well as other pertinent data.

What If I Need Support?

SMT is always available for phone, email, and video conference support. We also offer webinars to help you get more out of your structural monitoring solution. .

Is My System Under Warranty?

Yes, the most basic SMT sensor network comes with a 2 year manufacturers warranty for all components, with options for longer warranty at a slightly higher premium.