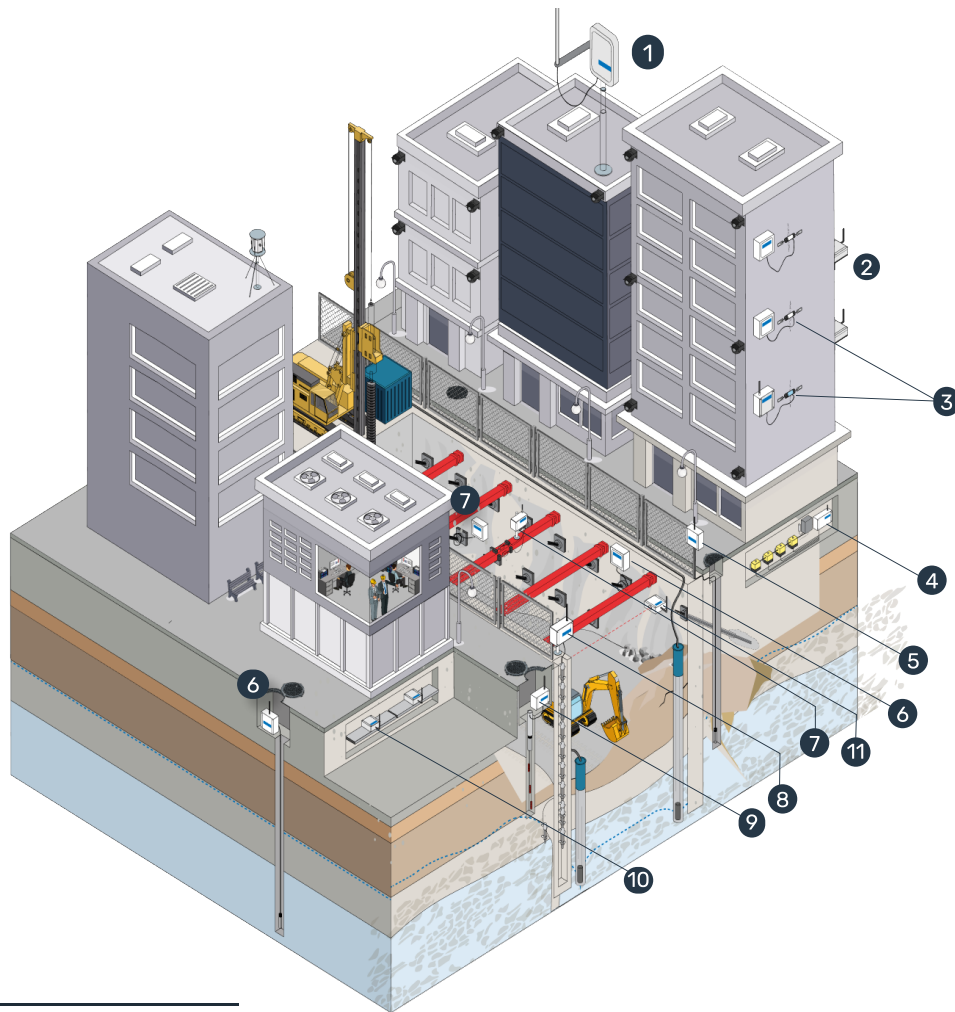


IoT Remote Monitoring Solution

# IoT Remote Monitoring in Tunnel Construction



- 1 Remotely manage and monitor your network and all deployed devices either on-premise or through the cloud through a **gateway** sending data to the **Connectivity Management Tool (CMT)**. Integrate your data analytics software in CMT to create complete monitoring reports.
- 2 Measure tilt, building response to tunneling, angular distortion or horizontal displacement with the **Tilt90-x**, a 2-in-1 inclinometer and data logger, installed using a vertical mounting bracket.
- 3 Check the movement across surface cracks and joints and building response to tunneling with the **Piconode** or **Vibrating wire 1-channel data logger** connected to a crackmeter or displacement sensor (potentiometer or vibrating wire).
- 4 Monitor settlement, heave and building response to tunneling with the **Analog 4-channel data loggers** connected to liquid level settlement cells or with the **Wireless Tiltmeter** attached to a rigid beam and installed in a chain.
- 5 Assess the groundwater level and pore water pressure with the **Vibrating Wire 1-channel data logger** connected to a piezometer vibrating wire.
- 6 Measure the force in ground anchors with the **Piconode** connected to a load cell.
- 7 Monitor the strain and stresses in structural members with the **Vibrating wire 5-channel data logger** connected to a strain gauge (vibrating wire).
- 8 Analyze the lateral deformation in diaphragm walls and ground movement with the **Digital logger** connected to an in-place inclinometer (IPI) on a chain or a ShapeArray in a hole or excavation.
- 9 Measure ground movement behind diaphragm walls and vertical deformation at various depths with the **Vibrating wire 5-channel data logger** connected to a multipoint borehole extensometer or MPBX (vibrating wire).
- 11 Gather data about convergence measurements with the **LaserTilt90**, a 3-in-1 data logger, laser distance meter and inclinometer with a range of  $\pm 90^\circ$ .

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