



Vibration Monitoring Deployment Checklist: Sensors, PPV Alarms

Vibration Monitoring Deployment Checklist: interactive checklist, commentable, export as PDF/Excel; set sensors, PPV thresholds, verify calibration, and alarms.

Project:

Date:

Filled by:

Pre-Deployment Planning

1	Confirm monitoring scope and receptors per approved project specifications and authority requirements; list structures/utilities to be protected and intended works timeline. Evidence: approved monitoring plan with site drawing and asset register.
2	Verify instrument suitability: 3-axis geophones/accelerometers sized for expected PPV and frequency range; calibration certificate dated within 12 months. Evidence: model, serial numbers, and certificate copies.
3	Survey proposed sensor locations using GNSS/total station; record coordinates to ± 0.5 m and elevation; avoid soft/isolated surfaces. Evidence: georeferenced file (CSV/DWG) and location photos.
4	Compile alarm contact list and escalation matrix with 24/7 details for contractor, client, and authorities. Evidence: signed distribution list and approved alarm flowchart.

Sensor Placement and Installation

5	Prepare firm substrate; anchor sensor base per manufacturer (adhesive/anchor screws). Level within $\pm 2^\circ$ and label axes. Evidence: close-up photos showing level bubble and fasteners.
6	Verify coupling: check no rocking, re-torque fixings to manufacturer value, document method (epoxy/anchor). Evidence: torque value, curing time, and coupling photo.
7	Route and protect cables in UV-rated conduit or trays; add drip loops, strain relief, and hazard signage at crossings. Evidence: photos and cable schedule with lengths.
8	Assign persistent IDs to sensors; affix weatherproof labels and record GPS coordinates and axis orientation. Evidence: label photo and ID-to-coordinate register.

Power and Communications

9	Provide stable power: mains with UPS or solar/battery sized for autonomy ≥ 72 h or project minimum. Evidence: load calculation, battery capacity, and power-up log.
10	Configure telemetry (4G/LTE/Wi-Fi); confirm SIM/APN, static IP if required, and signal strength ≥ -90 dBm. Evidence: connection screenshots and ping test results.
11	Seal equipment in IP65+ enclosures; fit glands, desiccant, and strain relief; verify no ingress. Evidence: enclosure inspection photos and checklist.

Calibration and Verification	
12	Perform field verification using a portable shaker or bump test; confirm measured PPV within $\pm 10\%$ of expected response. Evidence: verification report with plots.
13	Check axis mapping and polarity by exciting X, Y, Z individually; confirm channel naming matches physical orientation. Evidence: annotated screenshots and sensor labels.
14	Record 10 minutes of baseline with works paused; confirm stable noise floor and no spurious triggers. Evidence: PPV trend screenshot and baseline PPV value (mm/s).
15	Synchronize time via NTP or GPS; verify drift < 1 s over 24 h. Evidence: time sync log and comparison check.

Thresholds and Alarms Configuration	
16	Enter PPV thresholds per approved project specifications and authority requirements; define informative, warning, and action levels for each sensor. Evidence: configuration screenshot.
17	Set manufacturer-recommended filters and integration settings for PPV; document frequency range and damping assumptions. Evidence: settings export and notes.
18	Apply schedules by receptor and working hours; suppress alarms during approved tests; log exceptions. Evidence: calendar/schedule screenshot and approval email.
19	Simulate exceedance to test pathways; verify SMS/email delivery within 30 s and audible/visual beacons where installed. Evidence: alarm log, recipient acknowledgements, and timestamps.
20	Define escalation: if unacknowledged after X minutes or repeated events, notify next tier. Evidence: approved escalation matrix and auto-escalation test record.

Data Acquisition and Logging	
21	Set sampling rate $\geq 10\times$ highest frequency of interest (e.g., 1000 Hz per axis); confirm anti-aliasing enabled. Evidence: device settings screenshot.
22	Configure data retention: local buffer ≥ 72 h offline and cloud retention per contract (e.g., 12 months); enable encryption. Evidence: storage status and policy export.
23	Build dashboard: name sensors, assign to map pins using surveyed coordinates, and display live PPV trends. Evidence: dashboard URL and screenshot.
24	Run a representative live trial during works; verify events captured and alarms executed; finalize commissioning report. Evidence: signed report with photos and data export.

Comments:

Filled by:

Signature:

Introduction	How to use this checklist
Vibration Monitoring Deployment Checklist helps teams place sensors, set PPV thresholds, verify calibration, and commission alarm pathways on active construction sites. This deployment scope covers practical geophone or accelerometer placement, baseline recording, time synchronization, data acquisition, and real-time alerting. It excludes mitigation design and structural response analysis. By focusing on sensor coupling, axis orientation, sampling rates, filtering, and validated recipients for alarms, you reduce false positives and protect sensitive receptors such as heritage buildings, laboratories, and utilities. Clear evidence capture—photos, serial numbers, calibration reports, screenshots—ensures compliance per approved project specifications and authority requirements. The outcome is a defensible, traceable monitoring system that reliably records peak particle velocity (PPV), timestamps events, and notifies the right people quickly. Use this interactive checklist to tick tasks, add comments, attach field evidence, and export an audit-ready report to PDF/Excel, complete with QR verification for stakeholder review.	1. Preparation: gather calibrated geophones/accelerometers, anchors/epoxy, tools, GNSS/total station, spirit level, UPS/solar kits, SIMs, and PPE. Confirm approved monitoring plan, alarm matrix, and site access permits. Brief the team on roles and evidence capture. 2. Using the Interactive Checklist: open the checklist, select your project, and start interactive mode. Tick items as you complete them, attach photos, calibration certificates, screenshots, and survey files to each step. 3. Comments and Reviews: add contextual comments with @mentions, note deviations from specifications, and request approvals. Use timestamps to document verification tests, alarm simulations, and stakeholder acknowledgements. 4. Export and Share: generate an export as PDF/Excel that compiles completed items, evidence, and comments. The export includes a QR code for authentication; share with contractor, client, and authorities. 5. Sign-Off and Archive: capture digital signatures from responsible parties, lock the record, and archive with the commissioning report. Store configuration exports, maps, and logs for maintenance handover.