

Embedded Concrete Maturity Monitoring JHA

Worked instructional example

Work and worksite

A trained monitoring crew will install identified COMMAND Center sensors at released locations in a building slab before a separately controlled pour. Protected sensor leads allow later Bluetooth data collection through the matching sensor reader. The accepted mix-specific calibration supports reported maturity-based strength estimates; actual construction release belongs to the responsible authority. This fictional learning example describes planned controls and records no actual inspection or work authorization.

- The monitoring plan identifies the concrete mix, accepted strength-maturity relationship, equation inputs, sensor locations, reporting interval and verification requirements. Calibration is independently supplied and accepted; an available temperature chart does not establish a valid strength estimate.
- The actual sensors, reader, software and compatible instructions are identified. Retrieved COMMAND Center System User Guide v4.3 supports installation, timestamp and data handling; the responsible lead resolves any version difference before field use.
- Curing activity 238110-24 is a partial connection: embedded time-temperature evidence and mix-calibrated estimates only. Laboratory calibration, acceptance-cylinder production, concrete placement, curing application, intrusive sensor recovery and form, shore or load release are excluded.

Questions before work

- Which accepted mix calibration and equation inputs apply to this actual placement?
- Where will each sensor be secured and its lead protected without changing reinforcement or required access?
- Who checks data completeness and corroborating evidence before any separate construction-release decision?

Task Hazard Control

1 Establish the monitoring and calibration basis

Hazard: An unmatched mix curve or default equation can produce a persuasive but inappropriate strength estimate that someone later uses for structural release.

Control: Monitoring lead matches the actual placement and mix identity to the independently accepted calibration and project monitoring plan. Obtain required equation, units, constants, locations and corroboration requirements from the responsible reviewer. Resolve changes before enabling strength estimates. A manufacturer's general description of maturity does not supply the site's calibration or authorize the next construction activity.

Verification: Lead records the accepted mix/calibration link and actual reporting requirements.

Reasoning: A maturity estimate depends on the relationship for the identified concrete, not temperature alone.

2 Identify equipment and prepare protected installation access

Hazard: A mislabeled sensor or unsafe route across reinforcement can injure an installer and associate data with the wrong concrete location.

Control: Match sensors, reader and software configuration to the applicable instructions and make the required equipment checks. Assign unique placement and sensor records before concealment. Use the released work route with opening and protrusion protection and arrange manageable ties and leads. Do not climb reinforcement, displace supports or enter an unaccepted form area to reach a preferred sensor position.

Verification: Installer checks component identities, software compatibility and protected access before fitting.

Reasoning: Preserving device identity and a safe work position begins before the sensor disappears into concrete.

3 Secure sensors and preserve the lead interface

Hazard: A displaced sensor, damaged lead or incorrectly recorded position can prevent useful data and encourage entry into a later restricted pour area.

Control: Install the specified sensors at the plan's released locations through the actual system method, using suitable securement without altering reinforcement. Protect exposed leads and connection points from the separate placing and finishing operations while keeping walkways clear. Record actual positions and identify any unsuitable location for reviewer disposition. Do not relocate a sensor solely for convenience or improvise field cable repair.

Verification: Monitoring lead verifies prescribed locations, securement and protected data-access interfaces.

Reasoning: The measured temperature represents the sensor's actual location, which must remain known and suitable.

Complete the work and hand over

4 Coordinate placement identity and establish the data record

Hazard: A guessed cover time, wrong time zone or sensor assigned to another pour can distort the temperature history and resulting maturity calculations.

Control: Brief the placement lead on sensor protection and the planned observation interface without directing concrete placement. Assigned personnel record the actual time concrete covers each sensor and retain the correct placement, units and sensor identity in the data system. Use protected observation positions and hold damaged or displaced devices for review. Adding a label to software is not proof that recorded measurements have been collected.

Verification: Lead checks actual placement timestamps, identities and reported sensor condition.

Reasoning: Time history must refer to the real casting event and the identified sensor.

5 Collect data and identify limitations

Hazard: Missing downloads, stale timestamps or selectively omitted readings can make an incomplete history look like valid current strength evidence.

Control: Collect stored data through the selected matching reader method from the planned protected positions. Check identities, updated timestamps, continuity and required sensor coverage before interpreting a report. Maintain access and curing restrictions and transfer monitoring ownership across shifts. Report missing or abnormal history to the responsible reviewer; never replace observations with assumed values, conceal a failed sensor or enter an unsafe area to obtain a reading.

Verification: Assigned checker records collection status, actual data gaps and reviewer notifications.

Reasoning: A current display needs a verified history and visible limitations to support responsible interpretation.

6 Report evidence while preserving release holds

Hazard: A graph or alert can be mistaken for permission to strip forms, remove support or load concrete without the required engineering determination.

Control: Prepare traceable reports linking the real placement, sensor locations, complete history and accepted calibration inputs. Send required corroborating findings and unresolved limitations to the designated authority. Keep the separate construction action held until its actual release is obtained. Protect remaining leads and monitoring ownership through the accepted handover; do not drill or chip out embedded equipment through this analysis.

Verification: Receiving reviewer confirms report basis, limitations and the continuing construction-release hold.

Reasoning: Monitoring supplies evidence for a decision rather than making the structural decision itself.

Pause and reassess

- The actual mix, accepted calibration, equation inputs, sensor location plan or applicable equipment instructions is uncertain.
- Sensor position, identity, lead condition, concrete-cover timestamp or actual data history differs from the monitoring plan.
- An estimate or software alert is being treated as automatic permission for form removal, support changes or structural loading.

Improve the controls

Needs improvement: The sensor shows warm concrete; it must be strong enough.

More useful: Use the accepted mix-specific maturity relationship, traceable history and required verification, then obtain the separate construction-release decision.

Needs improvement: The sensor label is in the app, so monitoring is complete.

More useful: Verify the identified device's actual collected data, casting timestamp, continuity and report limitations.

Decisions that change the analysis

Can the previous pour's calibration be reused when this mix changes?

Only the responsible testing/design process can establish that the calibration applies. Hold strength estimates based on an unaccepted mix relationship and document the change. Valid temperature observations can remain useful when clearly labeled, but neither a renamed curve nor a plausible graph supplies the required strength basis or construction release.

What must the monitoring crew record for actual use?

Record placement and mix identity, accepted calibration/report reference, equation inputs, sensor locations and serials, applicable equipment/software instructions and installation findings. Preserve actual concrete-cover times, raw histories, collection events, gaps and corroborating evidence. Identify monitoring ownership and reviewer dispositions without inventing readings, attained strength or permission to change structural support.

Training needs

- Actual COMMAND Center sensor/reader/software instruction on identity, placement time, protected installation, data collection and report traceability.
- Instruction on the accepted maturity plan, mix-specific calibration limitations, missing or suspect data response and separate strength/load-release authority.

Confirm applicable qualifications and actual training evidence for the people assigned. Related toolbox talks support discussion; they do not establish competence.

References and adaptation

COMMAND Center System User Guide v4.3: field installation, sensor identity and collected data

https://www.commandcenterconcrete.com/wp-content/uploads/2023/08/commandcenter_userguide_v4.3.pdf

COMMAND Center maturity implementation: mix-specific calibration and verification

<https://www.commandcenterconcrete.com/maturity/>

COMMAND Center guidance documents: governing maturity-method requirements

<https://www.commandcenterconcrete.com/resources/guidance-documents/>

References reviewed October 13, 2026. Use actual equipment and product instructions, project design and site requirements. This original draft supplies no fabricated inspection, signature or approval.