

Hydronic Foundation Ground Thawing JHA

Worked instructional example

Work and worksite

A trained heating crew will thaw one released building-foundation bearing area with a selected closed-fluid hydronic hose heater before concrete placement. The actual unit instructions govern safe heating and hose handling; responsible ground and concrete personnel determine bearing and placement readiness. Work stays outside an excavation and excludes groundwater remediation. This fictional learning example describes planned controls; it records no actual inspection or work authorization.

- The bounded bearing area, services, ground access and heating method are released. The responsible geotechnical or foundation authority establishes actual assessment and acceptance requirements; warm surface readings alone do not establish bearing readiness.
- The exact heater, hose and heat-transfer-fluid instructions establish setup, operating limits, attendance and safe shutdown. A fire and exhaust plan, suitable power supply, protected routes and cold-weather worker arrangements are available; this example supplies no universal thaw depth, temperature or duration.
- Cold-weather concrete 238110-25 and footing/foundation 238110-07 connections are partial: ground thawing before a building-foundation placement only. Excavation entry, drainage or groundwater work, heater repair, soil replacement, concrete delivery and curing are excluded.

Questions before work

- Who establishes and verifies actual bearing and placement readiness for this treated area?
- How will the selected heater, hot-fluid hoses and exhaust remain separated from workers, combustibles and building intakes?
- Who monitors the operation and prevents the accepted area from refreezing before its next release?

Task Hazard Control

1 Release the defined ground-treatment plan

Hazard: Treating an unknown bearing area or confusing surface warmth with structural readiness can commit later concrete work to unsuitable ground.

Control: Foundation lead identifies the building area, service clearance, initial ground condition and accepted heating plan with the responsible ground authority. Establish actual monitoring, acceptance and refreeze-protection requirements and assign the heating attendant. Keep excavation entry, unstable ground and water-remediation work outside this operation; resolve unready access before equipment setup.

Verification: Lead confirms the bounded treatment area and actual acceptance responsibilities.

Reasoning: Heating readiness and foundation-bearing acceptance are different decisions.

2 Position the heater and control the work area

Hazard: Combustion exhaust, fire exposure, unstable equipment or hoses across icy routes can cause poisoning, burns, slips or blocked emergency access.

Control: Crew locates the unit on the selected manual's suitable support with required combustible clearances and exhaust separation from occupied areas and intakes. Establish protected power and fuel arrangements, hose routes, pedestrian boundaries and emergency access. Plan cold-weather traction and recovery resources and retain a spill response appropriate to the actual fluid and fuel.

Verification: Lead checks support, exhaust, fire controls and protected work routes.

Reasoning: A thawing arrangement must not create another uncontrolled exposure beside the foundation.

3 Inspect and deploy the compatible hose system

Hazard: Damaged couplings, unsuitable fluid or hose-reel movement can release hot liquid, trap hands or prevent controlled heat delivery.

Control: Trained personnel check the identified heater, fluid condition, hoses, connections, controls and protective devices under its actual instructions. Deploy the accepted hose and covering layout using the prescribed handling method and safe reel positions. Hold defects or missing compatibility evidence; do not bypass alarms, alter burner settings or improvise a replacement fluid or coupling.

Verification: Operator verifies prescribed pre-use and hose-layout findings before startup.

Reasoning: The complete selected system must be ready before heat and circulation are introduced.

Complete the work and hand over

4 Operate and monitor the released treatment

Hazard: An unnoticed leak, burner fault or changing ground condition can expose workers and undermine the intended thawing without a clear stop decision.

Control: Attendant starts and operates the unit through its actual procedure and checks the prescribed equipment and treatment indicators. Maintain required observation, protected routes and the agreed ground-monitoring record. Stop for leaks, abnormal response, alarms or conditions outside the plan; isolate the affected operation through the unit's method and obtain authorized correction rather than increasing heat to overcome a problem.

Verification: Attendant records required operating observations and escalates changed conditions.

Reasoning: Measured equipment operation supports the assessment but cannot supply a bearing release.

5 Obtain ground and placement-readiness disposition

Hazard: Removing protection or calling concrete on the basis of elapsed heating time can expose inadequately treated or softened ground to the intended loads.

Control: Responsible ground and concrete personnel assess the actual treated area through the project's specified method and evidence. Keep unresolved locations held and obtain any necessary technical disposition. Identify accepted boundaries and the protection needed until placement, with equipment and loads restricted to the released condition; the heating crew does not certify soil capacity from a hose temperature.

Verification: Named foundation authority records actual disposition and remaining restrictions.

Reasoning: Thawing completion must be established through the required ground assessment, not an equipment timer.

6 Shut down and transfer refreeze protection

Hazard: Residual hot fluid, uncontrolled reel handling or a gap in protection can burn workers or return accepted ground to an unsuitable condition.

Control: Operator follows the actual cooling, shutdown and hose-recovery method, verifying safe conditions before permitted connection or handling work. Capture any collected fluid and secure equipment without disturbing the accepted bearing area. Transfer actual treatment observations, ground disposition, held locations and refreeze-protection ownership to the receiving foundation lead; concrete placement begins through its separate readiness process.

Verification: Receiving lead confirms shutdown disposition and continuing ground protection.

Reasoning: The handover protects both workers and the ground condition needed for the next operation.

Pause and reassess

- The bearing-area release, service clearance, actual ground-assessment method or responsible acceptance authority is missing.
- The heater, hose, fluid, exhaust, control response or support differs from the selected instructions or leaks occur.
- Access, attendance, monitoring, cold-weather recovery or refreeze protection cannot be maintained.

Improve the controls

Needs improvement: The ground feels warm; call the concrete.

More useful: Responsible personnel assess the actual treated bearing area and placement readiness using project-required evidence.

Needs improvement: Use yesterday's hose spacing and burner setting.

More useful: Operator applies the selected unit's actual method and current ground-treatment plan, with assigned monitoring and protection.

Decisions that change the analysis

Does an accepted thawing record release an excavation or prove soil capacity?

No. This operation treats a defined accessible building bearing area and records the actual ground authority's disposition. Excavation protection, groundwater conditions and foundation design require their own decisions. Keep any changed or uncertain ground held and obtain responsible assessment; a warmer surface or running hydronic heater cannot replace those releases.

What must the crew record for actual use?

Record treatment boundaries, service and ground-release basis, actual heater and hose instructions, assigned attendant, required operating and ground observations, interruptions and dispositions. Identify the accepting foundation authority, held locations, safe shutdown findings, refreeze-protection ownership and separate concrete readiness requirements; enter actual findings only.

Training needs

- Selected hydronic-unit instruction on compatible hoses, pre-use checks, controlled operation, reel handling and verified safe shutdown without generic valve or fluid recipes.
- Instruction on burner and hot-fluid exposure, spill reporting, cold-weather access and the separate ground-acceptance and protection handover.

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

References and adaptation

Wacker Neuson Hydronic Surface Heaters: intended ground-thawing application
<https://www.wackerneuson.com/us/products/heaters/hydronic-surface-heaters/>

NRMCA CIP 27 Cold Weather Concreting: contact-surface preparation
<https://www.nrmca.org/wp-content/uploads/2021/01/27pr.pdf>

OSHA 1926.154 Temporary heating devices
<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.154>

References reviewed October 12, 2026. Use actual equipment and product instructions, project design and site requirements. This original draft supplies no fabricated inspection, signature or approval.