

Dynamic Compaction (DC) for ground improvement

A heavy weight dropped from a crane on a planned grid densifies loose granular soils and fills to depth.

CAN BE CONSIDERED WHERE

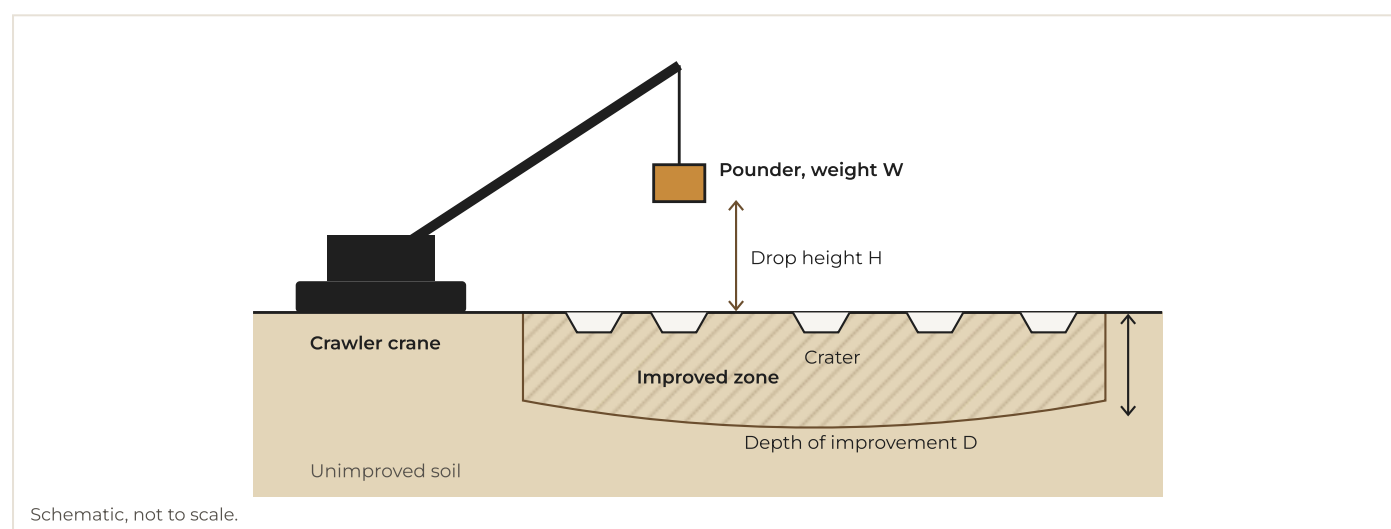
- Loose sands and gravels need densifying to depth.
- Granular or mixed fills, including old, uncontrolled fills, must be improved before building.
- Collapsible soils need treatment before loading or wetting.

LIMITATIONS

- Saturated fine-grained soils (clays and silts) respond poorly.
- A shallow groundwater table may require lowering or a raised working platform.

HOW IT WORKS

A crawler crane lifts a steel or concrete weight (the pounder) and drops it in free fall onto the ground at planned grid points. Each impact sends stress waves into the soil, pushing particles into a denser arrangement and closing voids. The surface settles into craters, which are backfilled and levelled between phases.



DESIGN INPUTS

- Site investigation: soil profile, in-situ test results (CPT/SPT), fines content, groundwater level.
- Performance criteria: required bearing pressure, allowable total and differential settlement, target test values.
- Required depth of improvement.
- Energy parameters: pounder weight, drop height, drops per point, number of phases.

EXECUTION CONTROLS

- Setting out of every print position against the approved grid.
- Number of drops per point and drop height per phase, recorded for each print.
- Crater depth measurement against the agreed stopping criteria.
- Waiting periods between phases where needed for pore-water pressure to dissipate.

VERIFICATION AND ACCEPTANCE

Design intent: What is required

Performance criteria and target test values agreed with the consultant.

Production control: What was done

Point-by-point records of energy, drops, crater depth and levels.

Acceptance: What was proven

Post-treatment CPT/SPT, plate load tests or settlement monitoring against the criteria.

DELIVERABLES

Method statement and risk assessment · Treatment grid and phasing drawings · Trial area report with agreed production parameters · Daily production records · Level surveys and induced-settlement records