IES
INGRAM ENGINEERING SERVICES

SUBSURFACE IMPROVEMENTS

**EMERGENCY MOBILIZATION AVAILABLE WITHIN 5 BUSINESS DAYS.
WRITTEN CORRECTIVE ACTION PLAN DELIVERED WITHIN 24 TO 48 HOURS.**

When site soils fail to support conventional foundations, traditional remove-and-replace or deep foundation solutions are not always the most practical or economical path. **IES engineers and implements cost-effective subsurface improvement** methods that **stabilize** and **strengthen** existing site conditions in place, **saving time and budget** without compromising technical performance. A Licensed Engineer or Qualified Representative thereof is on site full-time during all improvement operations, providing real-time decisions and eliminating the disconnect between design intent and field execution.

SUBSURFACE IMPROVEMENT METHODS

Soil Cement Stabilization
In-place mixing of Portland cement with native soils to dramatically increase bearing capacity and reduce settlement. Avoids excavation and disposal costs associated with remove-and-replace.

Redensification
Mechanical recompaction of existing fill or disturbed soils to restore design bearing capacity without import material.

Crushing, Screening, and Redensification
On-site processing of existing site material to produce reusable engineered fill, eliminating both import and export costs.

Compaction Grouting
Pressure injection of low-slump grout to densify loose soils and lift settled structures from below.

Combination Approaches
Innovative multiple-stabilization methods applied in sequence or tandem when site conditions require a layered solution.

STORMWATER MANAGEMENT AND DRAINAGE REPAIR

BMP Repair and Restoration
Investigation and corrective action for failing stormwater management facilities per DEP standards in multiple states. Infiltration, wetland, and amended soil facilities.

Drainage Investigations
Diagnosis of surface and subsurface drainage failures, including scour, erosion, standing water, and underdrain system deterioration.

Pipe and Structure Replacement
Aging or failed conveyance systems replaced or lined to restore function without full excavation where feasible.

HOA AND COMMUNITY INFRASTRUCTURE

Retaining Wall Repair and Replacement
Assessment and repair of failing community walls where space, utilities, or proximity to structures limits conventional methods. Concrete bin block, segmental, and gravity solutions.

Sinkhole and Subsidence Remediation
Investigation and closure of sinkholes and voids using bentonite, flowable fill, impermeable liners, and engineered soil caps with proper drainage redirection.

Infrastructure Assessment and Budgeting
Existing infrastructure evaluation to assist HOA boards with short-term repair prioritization and long-term capital budgeting.

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SOIL CEMENT STABILIZATION

24 - 48 HRS
Written corrective action plan

7-10 DAYS
Typical emergency mobilization

20-50% SAVINGS
Versus deep foundations

25+ YRS
Engineering experience behind every solution

Soil cement is the most frequently misunderstood alternative to conventional foundation solutions. It is not a temporary fix, it is a tried and tested innovative technique approved by the Army Corp of Engineers. When implemented correctly and installed under licensed professional oversight, soil cement transforms problem soils into a stable, load-bearing platform that supports conventional shallow foundations, eliminating the cost and schedule impact of deep foundations or complete soil removal.

WHEN SOIL CEMENT IS THE RIGHT ANSWER

Most sites with poor soil conditions are presented with two choices: remove and replace, or install deep foundations. Both carry significant cost and schedule implications. Soil cement is an innovative option that is frequently overlooked because it requires expertise and laboratory backed data to design and execute correctly. It is most effective when:

- **Existing soils have excessive moisture content that prevents compaction**
- **Urban fills or loose native soils fail to meet clean fill or bearing capacity standards**
- **Soft, wet, or elastic soils present settlement risk for conventional construction**
- **Project budgets cannot absorb the premium of deep foundation systems**
- **Schedule constraints require a solution that can mobilize and execute rapidly**

FEATURED PROJECTS

CubeSmart, Neptune, NJ
3-Story, 105,000 SF Storage Facility

Wet elastic silts threatened foundations for this 105,000 SF facility. An 8,000 CY soil cement program produced a uniform bearing platform with settlement under 0.5 inches. IES also handled NJ DCA special inspections through the vertical build.

AutoZone, South Philadelphia, PA
2,700 CY Soil Cement Stabilization

Loose urban fills failed clean fill standards. Other firms proposed remove-and-replace or deep foundations. IES delivered a 2,700 CY soil cement program instead: a far more affordable alternative that met all structural requirements.

Whitford Country Club, Exton, PA
Sinkhole & Stream Erosion Repair

After multiple failed repair attempts by other firms, IES restored a severe sinkhole and stream erosion condition using a bypass pump, cofferdam, flowable fill, impermeable liner, bentonite, and full stream bank restoration.

Whiteland Woods, Exton, PA
HOA Retaining Wall & Drainage

For a 200+ home HOA experiencing repeated retaining wall failures, IES traced the root cause to hydrostatic pressure. A stone-lined swale and roof leader connections addressed the drainage issue and ended the failure cycle.

Bobby Bailey
(802) 922-0060
Bbailey@ingram-engineering.com