CASCADE CASE STUDY

# In Situ Stabilization in a Complex Urban Footprint

Locking Contaminants in Place for Safe Redevelopment

**PROJECT:** Gowanus Douglass Street ISS

**CLIENT:** Charney Companies LLC

**LOCATION:** Brooklyn, New York

**SERVICE:** In Situ Stabilization

**CONTAMINANTS:** Coal Tar DNAPL

## CHALLENGE

Cascade was contracted to perform in situ stabilization (ISS) at a mixed-use redevelopment site along Douglass Street in Brooklyn, NY. The primary challenge was to stabilize soils impacted by coal tar DNAPL to meet environmental requirements for residential and commercial reuse.

**Key challenges included:**

- Dense urban surroundings and limited street access.
- Tight schedules driven by overlapping construction activities and limited site availability.
- Active construction zones surrounding the treatment area required heightened safety precautions.
- Subsurface obstructions, including tanks and buried debris, complicated drilling our columns to depth.
- Reduced gate access over time as the building footprint expanded.
- Delays in regulatory approvals that extended the total project duration by over 130%.

## SOLUTION

To effectively stabilize impacted soil while minimizing disruption to ongoing development, Cascade employed a full-scale ISS approach. The method involved injecting and mixing a blend of Portland cement and Ground Granulated Blast-Furnace Slag (GGBFS) into the soil using a BG36 drill rig with an 8-foot mixing head.

This approach offered several key advantages:

- Achieved required treatment depths of 54 feet below grade.
- Met NYSDEC standards for permeability reduction.
- Minimized soil excavation and off-site disposal.
- Enabled safe treatment near vertical construction using controlled drilling rates and a second pass requirement for each column.

Cascade performed an initial treatability and pilot study to validate the approach feasibility.

Based on pilot results and regulatory feedback, the mixing process was modified to include more conservative advancement and withdrawal rates. The treatment sequence was adapted in response to real-time field conditions and site constraints. Cascade's solution balanced technical requirements, safety, and urban logistical challenges, helping the client progress toward development goals.

## PROJECT EXECUTION

Following pilot testing, full-scale ISS proceeded in phases across the project area:

- Initial treatment occurred in the Butler Corridor.
- Work progressed from east to west, then north to south.
- A laydown area swap was required mid-project, enabling treatment beneath previously occupied space.
- Simultaneous tank removals by a separate contractor were coordinated with Cascade's schedule.

Despite equipment issues caused by obstructions, weekly auger maintenance and frequent technician support kept the project on track. Close coordination with other site contractors and the general contractor was essential to maintain access, safety, and workflow continuity.

## RESULTS

The Douglass Street project achieved full regulatory approval and delivered measurable improvements in subsurface containment:

- 672 ISS columns completed
- 41,000 cubic yards of soil treated
- Permeability reduced from ~$1x10^{-4}$ to an average of $1.53x10^{-7}$
- 0 incidents or OSHA recordables with over 40,000 man-hours logged

## CONCLUSION

Cascade met all environmental performance goals for the project, successfully stabilizing impacted soils to enable future development. While the project schedule was impacted by external factors—such as regulatory delays and unforeseen subsurface obstacles—the team maintained operational integrity and safety throughout.