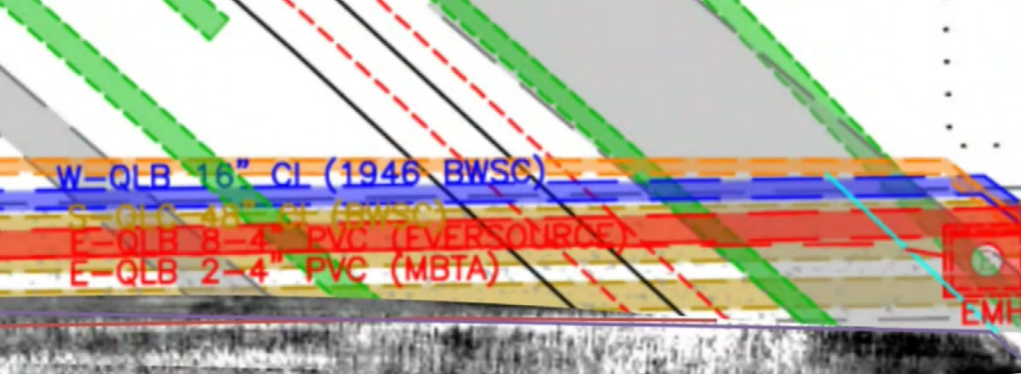




CASE STUDY

Subsurface Utility Mapping Beneath 200 Years of Change

CLIENT

Bryant Associates

PROJECT NAME

MassDOT Dorchester Ave.
Bridge Reconstruction

SERVICES

- Subsurface Utility Investigation & Mapping to ASCE 38-22 Quality Level B
- Wide-Array Ground Penetrating Radar (GPR)



SITE HISTORY

Dorchester Avenue's roots trace back to 1805, when the Dorchester Turnpike Corporation was chartered to build a toll road connecting South Boston to Milton, one of the most heavily trafficked and profitable turnpikes in the region until the parallel Old Colony Railroad opened in 1844 and drew traffic away.

Over the past 200 years, the street has undergone significant transformation to keep pace with the city's transportation needs, including the construction of a new subway system, and the cutting, relocation, and reinstallation of nearly every original utility network beneath it.

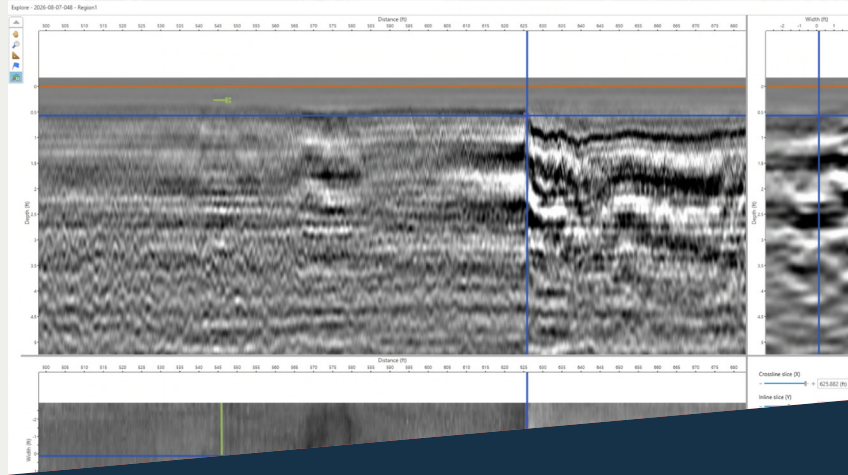
Dorchester Ave Bridge sits at the intersection of several of those eras. The South Boston Bypass Road, built beginning in 1991 as part of Boston's Central Artery/Tunnel Project (the Big Dig), runs alongside the work area within a depressed rail right-of-way, construction that also reduced the adjacent Boston Terminal Running Track to a single track. That track, once part of the rail yards serving the South Boston waterfront and later a haul route for Big Dig and Boston Convention and Exhibition Center construction materials, is now a test facility for the MBTA's new Red Line cars.

PROJECT OVERVIEW

DGT provided subsurface utility investigation and mapping to ASCE 38-22 Quality Level B standards for the design team behind the \$20 million Dorchester Ave bridge reconstruction project, funded by MassDOT.

Before fieldwork began, our team drew on the City of Boston's and the state's digital archives, alongside our legacy files and firsthand knowledge of the corridor from the Big Dig. That knowledge extended specifically to the South Boston Bypass Road, built as part of the Big Dig, which runs alongside the bridge today. Together, these resources helped the team understand the site's history and identify where underground conditions were likely to diverge from what the records showed.

That divergence turned out to be significant: two centuries of pipe cutting, relocation, and reinstallation had left the asset owners' records an unreliable guide to what was actually in the ground, while abandoned lines and a subway tunnel running beneath the street added their own layers of electrical interference. To resolve underground anomalies under those conditions, we used wide-array Ground Penetrating Radar, which was a method that also minimized time spent working in a live, high-traffic urban street.



OUTCOME

Through the investigation, DGT identified underground obstacles and existing utilities. The GPR survey also revealed the street's unique composite makeup, a byproduct of the initial construction of the South Boston Bypass Road. During that project, crews tested several different subgrade materials in different sections of the roadway, a hidden layer of the road's construction history that isn't otherwise visible from the surface.

With the scope of work complete, DGT delivered our findings to the client as georeferenced CAD files and PDF summaries showing utility locations to ASCE 38-22 Quality Level B, which were incorporated into a broader survey of the site. As the project moves into design, those survey insights will guide the engineering team's decisions on how the bridge gets rebuilt. DGT's subsurface data is expected to carry through into final construction documents, bidding, and execution.

ABOUT DGT

DGT Associates is New England's premier surveying and engineering firm. With clients spanning the cross section of community stakeholders from developers and construction managers to municipalities and homeowners, DGT provides unparalleled experience in the region. DGT is committed to thoughtful innovation in the surveying and engineering industries. We utilize cutting edge technology, combined with decades of field work experience, to deliver valued, meaningful results. Our professional crews are trained and perform to the highest standards of precision and safety. And our team is sized for the flexibility required to take on projects of varying scales, timeframes and complexity.

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