Deep soil grouting (above) during Phase I and placing the geogrid (at left) during Phase II of the reconstruction of St. Felix Street.

St. Felix Street Settlement

Brooklyn, NY

In January, 1997 a water main break occurred in front of 131 St. Felix Street, causing movement of subsoils and settlement of the roadway, sidewalk and stoop in front of the building. The stoop, which was attached to the facade; rotated, partially pulling the front wall away from the building framing. At that time, it was observed that the water main break was not an isolated occurrence, but rather a result of a larger problem. Marked evidence of ground subsidence existed in the intersection of St. Felix Street and Hanson Place with more subtle signs evident over most of the length of St. Felix Street between Hanson Place and Lafayette Avenue.

Mueser Rutledge Consulting Engineers (MRCE) was retained by the New York City Department of Transportation (NYCDOT)as part of a team to perform an Emergency Forensic Investigation to investigate the cause of subsidence and determine possible remedial alternatives to stem the subsidence. The investigation indicated that the ground subsidence originates from the period shortly after construction of the subway in 1917. The proximate causes of the distress in St. Felix Street are the loose backfill placed above the subway, movement of soil into voids within construction debris left in the backfill, and possible decay and collapse of the debris.

A combination alternative of shallow soil stabilization with geogrid reinforced fill and deep soil grouting to fill voids was recommended to NYCDOT for the reconstruction of St. Felix Street. NYCDOT gave approval to proceed with design and preparation of contract documents for the reconstruction of St. Felix Street between Hanson Place and Lafayette Avenue. A phased approach was proposed for the work. Phase I would accomplish the deep soil grouting. Phase II would complete the reconstruction with shallow soil stabilization with geogrid reinforced fill.