Combined Sewer Installation in W. Becher St. I43 Freeway to W. Forest Home Avenue

PROJECT PROFILE

LOCATION:	Milwaukee, WI	ARCHITECT OR ENGINEER:	Ghassan Korban (414) 286-2461
OWNER:	Department of Public Works	ARCHITECT/ENGINEER CONTACT:	Ghassan Korban (414) 286-2461
OWNER CONTACT:	Ghassan Korban (414) 286-2461	CONSTRUCTION MANAGER:	Ghassan Korban (414) 286-2461

The Becher Street project was very unique as it had virtually every ground condition known to Southeast Wisconsin in the tunnel profile. The tunnel began in heavy/sticky clays which required foam ground conditioning to break up the material and convey it to the muck cars. The soils then transitioned into mixed face of clay and limestone which required us to change out the cutting tools on the face using back loading disk cutters. At the intermediate steel sheeted shaft we transitioned to very wet sandy silts over the limestone which required polymers and slower mining to prevent settlements. We used sodium silicate ground improvement for the launching of the TBM from the intermediate shaft to prevent settlement. While tunneling we employed the full EPB (Earth Pressure Balance) mode due to difficult soils and very urban setting. Given how close existing homes and utilities were to the tunnel, we didn't want to risk settlement and damage to existing facilities and/or residences. Especially at depths up to 70 vertical feet, the zone of influence of the tunnel is rather great.

Given the difficult site conditions, the City of Milwaukee opted to go with a Segment Lined Tunnel versus pipe jacking. Based on that decision we constructed the tunnel using a LOVAT 129SE EPB TBM equipped with a screw conveyor disposal system, and a ground stabilization system.

We Installed 5,041 lineal feet of 130" bore, 108" inside diameter, single pass segment lined tunnel, and three shafts. We also installed 500 lineal feet of 12x8' box culvert via open cut approximately 25' deep.

TOTAL VALUE OF CONTRACT: $14,126,832.18

COMPLETION TIMELINE: MARCH 2000 TO JUNE 5, 2003