

Civil Engineering and Tunneling

SELECTED TUNNELLING PROJECTS

DRIVEN BY FULL FACE TUNNEL BORING MACHINES IN SOFTGROUND OR ROCK GEOLOGY

Construction Period	Project-name	Client	Project Location	Bore Diameter	Tunnel Length	Geology	Construction Method	Permanent Lining
2001 – 2005	„Herren-tunnel“ Lübeck	Consesion grantee „Herrentunnel Lübeck GmbH	Lübeck Germany	11.68 m	2 x 780 m	Sand, Marl, Clay, Bolder	Slurryshield	Reinforced Concrete Segments
2001 – 2004	Thames-tunnel CTRL Lot 320 London	Union Rail-ways Ltd. UK	London UK	8.15 m	2 x 2,514 m	Chalk, Sand Gravel	Slurryshield	Steelfibre Rein- forced Concrete Segments with PP-Plastic fibre
1998 – 2003	Mohale Tun-nel	Lesotho Highlands Developement Authority	Lesotho South Africa	Outlet Tackle: 5.34 m Intake Tackle: 4.88 m	30,540 m	Basalt	Hard Rock TBM	Reinforced Concrete Segments
1998 – 2004	Rail-tunnel „Sophia-spoortunnel“ Rotterdam	NS Railinfra-beheer Utrecht Nederlande	Rotterdam Netherlands	9.80 m	2 x 4,240 m	Sand, Clay, Peat	Slurryshield	Reinforced Concrete Segments

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1997 – 2003	Road-tunnel „Weser-tunnel“ Oldenburg	Straßenbau- amt Oldenburg	Dedesdorf / Kleinensiel Germany	11.65 m	2x 1,640 m	Gravel, Sand, Peat, Clay	Slurryshield	Reinforced Concrete Segments
1997 – 2000	Metro Düs- seldorf Lot Kölner-/ Sieg- burgerstr	Stadt Düssel- dorf	Düsseldorf Germany	9.40 m	1,120 m	Gravel, Sand	Slurryshield	Reinforced Concrete Segments
1995 – 2002	„Elbtunnel Hamburg 4. Tube“	Hanseatic City Hamburg	Hamburg Germany	14.46 m	2,561 m	Sand, Bolder Clay, Clay	Slurryshield	Reinforced Concrete Segments
1995 – 2003	„Main Line- tunnelBerlin“ Contract 3	Deutsche Bahn AG	Berlin Germany	9.20 m	4x 703 m 4x 572 m	Sand, Marl	Slurryshield	Reinforced Concrete Segments
1993 – 1995	Europipe Landfall Tunnel	STATOIL, Stavanger, Norwegen	Dornumersiel Germany	4.00 m	2,531 m	Sand,Clay, Peat	Slurryshield Pipejacking	Reinforced Concrete pipes

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1992- 2000	Light Rail System Duisburg Phase 7 / 8 A	Stadt Duis- burg	Duisburg Germany	6.58 m	2x 1,100 m 2x 2,000 m	Gravel, Clay, Fine-Sand	Slurryshield	Reinforced Concrete Segments
1992 – 1996	Under- ground Rail- way Mün- chen Line 1 West, Contract 5	Stadt Mün- chen	München Germany	7.35 m	2x 1,172 m	Sand, Gravel, Clay, Silt, Marl	Slurryshield	Reinforced Concrete Segments
1991 - 2000	Metro Athen Linien 2 / 3	Greek Ministry for Environment	Athen Greece	9.50 m	11,664	Sandstone, Claystein, Siltstone	Slurryshield	Reinforced Concrete Segments
1991 - 1996	Lesotho Highlands Water Pro- ject TCTA 20 Ash and Caladon Tunnels	Trans-Caledon Tunnel Authority	Republic of South Africa / Lesotho	5.38 m	11,011 m and 8,073 m	Sandstone, Claystone, Siltstone Dolorit-Dykes	Hardrock TBM	Reinforced Concrete Segments
1991 – 1995	Köln Metro Lot M 1	Stadt Köln	Cologne Germany	6.56 m	2x 1,233 m	Sand, Gravel	Slurryshield	Reinforced Concrete Segments

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1990 - 1998	Under-ground Railway Essen Contract 34	Stadt Essen	Essen Germany	8.30 m	2x 2,015 m	Marl, Silt	Slurryshield	Reinforced Concrete Segments
1989 – 1990	Light Rail Transit Edmonton Los 8884	City of Edmonton	Edmonton / Canada	6.56 m	306 m	Clay, Marl, Sand	Slurryshield	Reinforced Concrete Segments
1989 – 1992	Fernwärme-Verbundleitung „Tunnel Englischer Garten“ München Lose 1 / 2 / 3	Stadtwerke München	Munich Germany	4.60 m	5,470 m	Flinzmarl, Flinzsand	Open Mode Shield	Reinforced Concrete Segments
1988 – 1994	Stadtbahn Mülheim an der Ruhr , Bauabschnitt 8	Stadt Mülheim	Mülheim / Ruhr Germany	6.80 m	2,123 m	Sandstone, Claystone	Slurryshield	Reinforced Concrete Segments

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1988 – 1990	Stadtbahn Duisburg TA 6 Duissern Baulos 22	Stadt Duis- burg	Duisburg Germany	5.09 m	2 x 48 m 2 x 550 m	Sand, Gravel	Slurryshield	Reinforced Concrete Segments
1986 – 1993	City Metro Essen Lots 32 / 33	Stadt Essen	Essen Germany	7.12 m	2 x 1,975 m	Marl, Silt, Chalk- inclusions	Earth Pressure Balance Shield	Extruded Concrete with In situ concrete Steelfibre reinforced