



## ENGINEERING AT THE DISPOSAL OF EVERYONE CONCERNED

Project design depends on feasibility studies which must answer a certain number of recurrent questions, for example:

- **Geological investigations:** Number and type of boreholes, which analyses and ground surveys?
- **Diameter of work:** Definition of constraints (hydraulic, geometric) and correlation between the constraints and the diameter of equipment already available on the market.
- **Work layout, profiles:** Curves; lengths between pits
- **Integration of the jobsite in its environment:** Setting up the jobsite, dimensions of the working space available, disturbance reduction, which checks and type of monitoring?
- **Methods of realization:** What type of TBM, what means of balance?
- **Linings:** What type? Watertightness?
- **Preliminary budgets**
- **Programs**



CSM BESSAC engineers possess all the necessary knowledge to bring this important stage in a project's progress to a successful conclusion. Furthermore, on top of their own know-how, they have access to internal resources, such as:

- Excavating equipment design office
- "Tunnel" method study office
- A worldwide geotechnical base (Solétanche-Bachy)
- Wide experience in carrying out large-scale Design and Build Contracts, including:
  - Paris - La Défense (Service tunnel for urban heating - Enertherm) 1,4 Km Ø 3,08 m
  - Alger (Sewage system Oued M'Kacel) 4,5 Km Ø 4 m
  - Bogota (IRB sewage) 10 km Ø 2,20 m à 2,75 m
  - Bogota (IFT sewage ) 9,8 km Ø 3,75 m