**TBM: (TUNNEL BORING MACHINE):**

 Equipped with a circular blade - used for tunneling with different diameters from 1 meter to 19.25 meters

And not used in tunnels less than 1 meter where other means are used, such as:

**TRENCHLESS CONSTRUCTION - HORIZONTAL DIRECTIONAL DRILLING**

**The TBM that used in phase 2- line 3 – Cairo Metro are:**

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| **EPB TBM**Imhotep drilling machine | **SLURRY TBM**Nefertiti drilling machine |  |
| (EPB): Earth Pressure Balance | (TBM): Tunnel Boring Machine. | Definition |
| It is working by compressed air and defined as the dredger operating at the same level as air pressure with soil pressure. | The basic principle of its work is:1. The pressure of the soil on the surface of the dredger should be equal to the pressure from the dredger by filling the work room behind the cutting head of the broom bentonite with pressure in the air.2. The soil is then transferred to the bentonite separation machine from the excavated soil to transport the semi-dry soil to the public dumps. | The working idea |
| From Cairo fair station to Haroun station. | From Abbasi station to the Cairo fair station. | Scope of use |
| 1. Drilling system by supporting the soil aspects using (foam-polymer)2. Works efficiently in clay soil - or soil with low permeability3. Production rate of 6: 8 meters per day4. Weight 780 tons + 1935 tons for vehicles5. Its length is 175 meters6. French industry | 1.Operate the drilling system by supporting the soil aspects using bentonite2. Works efficiently in sandy soil3. The production rate of 12: 15 meters per day4. Weight 450 tons + 350 tons for vehicles5. Its length is 75 meters6. German industry | Specifications |