

Earth Pressure Balance TBM Excavation - JSA - A

en-US · Basic task controls · v1.0 · 2026-10-14 · Sources: article section 9

Site: | Item ID: | Work area:

Approval	Work supervisor	Technical reviewer	Release / handover authority

1. Job details and team signatures

Date / time		Location / area		Assessor		Supervisor	
Team signatures							

2. Conditions and hold points

Stage	Time	Location / area	Environment / readings	Item / condition	Controls	Plant / tools	Approval / signature
HP-0 Start							
HP-1 Connect and commission							
HP-2 Launch and begin advance							
HP-3 Erect ring and grout							
HP-4 Transfer and approve restart							

Complete after actual checks. Recheck after changes, defects or shift handover.

3. JSA risk assessment

Job stage	Hazards and effects	Failure factors	Technical and procedural controls	Site verification	P	S	R	A
1. Review ground and launch	1. Face instability 2. Ground settlement 3. Launch inflow	1. Groundwater model incomplete 2. Monitoring response absent 3. Launch seals unreviewed	1. Review ground and water data 2. Approve monitoring response 3. Accept launch support and seals	1. Geology and groundwater basis 2. Structures and monitoring map 3. Launch and reaction acceptance				
2. Connect and commission	1. Erector strike 2. Electrical or hydraulic injury 3. Failed emergency response	1. Interlocks bypassed 2. Connections untested 3. Communications fail	1. Inspect system connections 2. Test protective functions safely 3. Test communications and escape	1. Guard and stop-function tests 2. Electrical and hydraulic checks 3. Communication and escape test				
3. Launch and begin advance	1. Loss of face support 2. Launch-seal damage 3. Uncontrolled inflow	1. Advance and discharge imbalance 2. Launch support unaccepted 3. Leakage ignored	1. Use approved launch envelope 2. Coordinate advance and discharge 3. Observe seals and leakage	1. Launch support and sealing 2. Pressure advance and muck trends 3. Time and location alignment				
4. Control advance and muck	1. Ground loss or overpressure 2. Conveyor entanglement 3. Gas or fire exposure	1. Single gauge trusted 2. Muck system accessed running 3. Air monitoring interrupted	1. Correlate operating trends 2. Exclude access to moving systems 3. Maintain air and fire controls	1. Ring position and time 2. Pressure thrust and discharge 3. Surface and structure monitoring				
5. Erect ring and grout	1. Segment fall 2. Erector crush 3. Lining deformation	1. Support released too early 2. People in rotation envelope 3. Joint or seal defect	1. Follow erection support sequence 2. Clear erector envelope 3. Inspect joints and seals	1. Segment and ring IDs 2. Support and joint checks 3. Seal damage and leakage				
6. Transfer and approve restart	1. Unexplained trend repeats 2. Unresolved ring defect 3. Ground effects worsen	1. Alarm history omitted 2. Defect location not linked 3. Settings changed unrecorded	1. Transfer synchronized records 2. Identify open ring and plant holds 3. Review setting-change basis	1. Trend alarm and action history 2. Open ring and monitoring issues 3. Current settings and limitations				

P/S/R/A: Complete only after actual site assessment using the site risk method.

4. Pre-work checklist

☐ Geology and groundwater basis	☐ Guard and stop-function tests	☐ Launch support and sealing
☐ Ring position and time	☐ Segment and ring IDs	☐ Trend alarm and action history
☐ Launch and reaction acceptance	☐ Surface and structure monitoring	☐ Current settings and limitations