



香港
建造
學院 | HONG KONG
INSTITUTE
OF
CONSTRUCTION

Safety Training Course for Construction Workers of Specified Trade (Silver Card Course)

Tunnel Workers (AS13) Key Points Review (M1)

4.2020



I. Major Hazards Relating to Tunnel Works and the Associated Safety Precautions

A. Major hazards involving :

1. Shaft sinking
2. Use of explosives
3. Use of Tunnel Boring Machines
4. Use of other tunneling plant
5. Work in compressed air
6. Use of electrical equipment



I. Major Hazards Relating to Tunnel Works and the Associated Safety Precautions

B. Other hazards including:

1. Dust
2. Dangerous gases
3. Fire and explosions
4. Flooding



II. Decompression Sickness (DCS)

- Describes a condition arising from dissolved gases coming out of solution into bubbles inside the body on depressurization.
- DCS most commonly refers to a specific type of [scuba diving hazard](#) but may be experienced in other depressurization events, such as compressed air tunnel working.
- Since bubbles can form in or migrate to any part of the body, DCS can produce many symptoms, and its effects may vary from joint pain and rashes, to paralysis and death.
- Treatment is by [hyperbaric oxygen therapy](#) in a [recompression chamber](#).
- If treated early, there is a significantly higher chance of successful recovery.



III. General Occupational Health, Safety and Emergency Procedures Relating to Tunnel Works

Personal Protection

- Reflective vest, Wellington boots, face mask, ear muffs, safety helmet, etc. to be worn by workers whenever necessary.



III. General Occupational Health, Safety and Emergency Procedures Relating to Tunnel Works

Transportation

- If employing tractors for transportation of earth materials from inside of tunnel, recess bays shall be provided for every 18m length for workers to stay away from the transports.
- If employing belt conveyors, the dangerous parts shall be provided with safety guarding and emergency trip guards.



III. General Occupational Health, Safety and Emergency Procedures Relating to Tunnel Works

Tag system for entry control

- Permit-to-Work Certificate shall be issued by Contractor or Authorized Person before workers are allowed to gain access into the tunnel.
- Tag and Registration System shall be enforced to record the In & Out of workers in tunnel.
- The record shall be kept for at least 1 year.



IV. Emergency Response

A. Collapse of Earth Works

- (1) To assess the situation after the collapse of earth works to determine the emergency repair provided there is no further risk of collapsing.
- (2) To adopt simple bracing support system to avoid situation from deteriorating.



IV. Emergency Response

- (3) To confirm the magnitude of collapsing and the damage to the supporting structure and to make a full record in details.
- (4) To record the details of underground water and top check the situation on part above the tunnel.
- (5) To establish monitoring system for nearby tunnel areas.
- (6) Based on the information obtained to decide on methods of repair and progress of work.



V. Emergency Procedures and Communication

- Employ a team of 2 persons to work in the tunnel whenever practical.
- Apart from builders' lift, other form of emergency escape means like egress shaft to be provided for the work team.
- Evacuate work team in case of mal-functioning of ventilation system or there is a risk of collapse of tunnel face or possibility of accumulation of flammable gases.
- Provide effective communication system for the work team in tunnel.



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