



**DALMIA CEMENT (B) LIMITED – CEMENT PLANT
ARIYALUR
CIVIL DEPARTMENT MANUAL**



Issue No. 02	Rev. No: 02	Effective Date: 23.08.2022	SOP/CIVIL/001
Issued By: M.R		Approved By: HOD – CIVIL	
SOP FOR EARTH WORK EXCAVATION			

SCOPE: This SOP covers the procedure for safe earth work excavation

RESPONSIBILITY: HOD – CIVIL

Accountability: CIVIL department – Ariyalur plant

PPE:

1. Safety Helmet,
2. Safety Shoes,
3. Nose Mask
4. Hand Gloves
5. Safety Goggles
6. Gum-Boot

TOOLS:

1. Crowbar
2. spade
3. mortar pan
4. Ladder
5. Excavator
6. Tippers

Hazard Analysis:

Risks associated:

Mitigating Measures

Underground cable/Pipe lines: Clearance from concern dept (Through Work Permit)

Fall of a person in deep excavation of depth > 1.5m: Hard barricading & fixed ladder arrangement to be provided.

Movement of vehicle: Barricading the surrounding area & sign boards for diversions.



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Earth Collapse in sides: Shoring & shuttering the sides of excavated surfaces & dumping excavated earth beyond 2m from the pit edges

Training needs:

1. Emergency preparedness.

PROCEDURE:

1. Ensure availability of good for construction drawing
2. Safety induction / PEP talk for all labours, operators, drivers and contractor supervisors have to be given.
3. Preparing the JSA (Job safety analysis)
4. Clearance shall be obtained from Electrical, Instrumentation, IT, Mechanical, Civil & Safety Department through Earth Work Permit for any underground cables / pipelines, etc.,
5. Necessary protocol is available and clearance for starting the work shall be obtained
6. All workmen shall wear required safety PPEs
7. Excavation area shall be barricaded by safety tape
8. If the depth of excavation is more than 1.5m, then hard barricading shall be done using metal pipes/reinforcement steel with concrete base
9. Excavated earth shall be dumped at the designated location as confirmed by the section-in-charge & no earth shall be dumped within 2m from the edges of pit



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10. All edges of the excavation pit shall always be kept clean & free from any obstacles
11. Depending upon the depth of excavation and the type of earth encountered, the section in-charge & HOD may decide on the nature of side surface cut to be made (vertical / inclination / step, etc.)
12. Proper leading arrangement shall be made for excavation at depths.
13. For depth of excavation greater than 3.0m, shoring / strutting shall be provided to prevent the sides of the pit from collapse as required.
14. Water encountered shall be immediately pumped out to prevent the collapse of earth.
15. In case of any cables / pipelines encountered, only manual excavation shall be done.
16. Ensure that the depth of excavation shall be as per the drawing.
17. In case the bottom of excavation being loose / unconsolidated, shall inform the section in-charge / HOD for further instruction.
18. Excavation bottom shall be properly levelled / trimmed before carrying out further works.
19. For accessing the bottom of earth pit, only certified aluminium ladder shall be used upto the depth of 1.5m.
20. Below 1.5m depth, fixed ladder arrangement/fabricated staircase/earthen steps/earthen ramp shall be made suitably as per the site conditions in order to ensure safe evacuation during emergency situation.



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Emergency / Emergency Shut OFF:

1. If any incident happens there, inform to the Safety department or Call Emergency number 3108/9865152222/9750963761

Records/Annexure:

1. Refer the work permit.
2. JSA as enclosed below.

Job Safety Analysis	Job: Earth work excavation	Date:	Analysis by: M.I. Shameem Sufiyan	Reviewed by: S. Chandra Bose
Title of employee doing job: Contract Workmen (Excavator Operator, Drivers, Mason & Unskilled labors)	Supervisor: SECTION ENGINEER	Department: Civil	Section: General	Approved by: S. Chandra Bose
Req'd/recommended PPE: SAFETY HELMET, SAFETY SHOES, NOSE MASK, HAND GLOVES, GUM-BOOT, Excavators and Tippers.				
Sequence of Basic Job Steps	Potential Hazards	Recommended Safe Procedure	What Could Go Wrong	Corrective Action
1) While doing earthwork excavation	Underground cable damage	Necessary protocol and clearance from concern dept. for starting the work has to be obtained	Electric shock and major injury lead to fatal.	Excavation permit shall be ensured with all concern department's clearance
	Underground Pipe line damages		Pipe line damage leads to excess water / oil accumulation in the work area.	
	Earth Collapse from sides	Shoring & strutting the surrounding areas	Earth slide leads major injury or fatal	Shoring & strutting to be provided for sides of the excavated areas as required Avoid dumping excavated earth within 2m from the pit edges
	Fall of person	Soft barricading with safety tap if depth < 1.5m	May lead to injury	Soft barricading to be done
		Hard-barricading with metal-pipes/reinforcement steel with concrete base if depth > 1.5m	May lead to serious injury / fatal due to free fall	Hard barricading shall be ensured
		Fixed ladder arrangement / fabricated staircase / earthen steps / earthen ramp shall be made suitably if depth > 1.5m	May lead to serious injury / fatal due to free fall	Fixed ladder arrangement / fabricated staircase / earthen steps / earthen ramp shall be made suitably if depth > 1.5m
2) While operating with		Providing Barricade Surrounding areas	Soil spill on the road ways	Identify the expertise operators & drivers



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excavator & tippers	Injury or fatality	Proper area has to be identified for dumping of excavated earth	which leads to other vehicles or person may slip	Proper sign board has to be fixed while running the excavators
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