

Engineering Standard

SAES-A-111

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Borrow Pit Requirements

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Saudi Aramco DeskTop Standards

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1 Scope

This standard defines the minimum mandatory requirements for the design and construction of borrow pits, as well as the minimum safe distances between borrow pits and various facilities.

2 Conflicts and Deviations

- 2.1 Any conflicts between this standard and other applicable Saudi Aramco Engineering Standards (SAESs), Materials System Specifications (SAMSSs), Standard Drawings (SASDs), or industry standards, codes, and forms shall be resolved in writing by the Company or Buyer Representative through the Manager, Environmental Protection Department, Dhahran.
- 2.2 Direct all requests to deviate from this standard in writing to the Company or Buyer Representative, who shall follow internal company procedure [SAEP-302](#) and forward such requests to the Manager, Environmental Protection Department, Dhahran.

3 References

The selection of material and equipment, and the design, construction, maintenance, and repair of equipment and facilities covered by this standard shall comply with the latest edition of the references listed below, unless otherwise noted.

3.1 Saudi Aramco References

Saudi Aramco Engineering Procedure

[SAEP-302](#)

Instructions for Obtaining a Waiver of a Mandatory Saudi Aramco Engineering Requirement

Saudi Aramco Engineering Standards

[SAES-A-102](#)

Air Pollutant Emission Source Control

[SAES-A-105](#)

Noise Control

[SAES-M-006](#)

Saudi Aramco Security and General Purpose Fencing

[SAES-M-100](#)

Saudi Aramco Building Code

Saudi Aramco Construction Safety Manual

Saudi Aramco General Instructions

GI-0002.716

Land Use Permit Procedures

GI-0475.001

Blasting Near Existing Facilities

3.2 Government Documents

Saudi Arabian Government Mining Code, Royal Decree No. M/21

4 Design

- 4.1 Table 1 shall be used to determine the minimum distance from the borrow pit permit boundary to various types of facilities outside the boundary.
- 4.2 Figure 1 shall be used for reference, and Chapter 18 of [SAES-M-100](#) shall be used to determine the minimum distance from the top and/or toe of the borrow pit to facilities inside the borrow pit area.
- 4.3 The dust concentrations and noise levels from borrow pit operations near residential or industrial areas shall not exceed the limitations in [SAES-A-102](#) and [SAES-A-105](#).
- 4.4 In no case shall removal of earth material create a situation in which standing water accumulates due to seepage, tidal flooding or overland stormwater flow.
- 4.5 Borrow pits shall not be established on lands occupied by holy places or officially designated as historical.
- 4.6 Fencing or controlled access to any borrow pit site shall be determined by [SAES-M-006](#). Borrow pits shall be fenced if the pit boundary is less than the minimum setback distance to a residential area as specified in Table 1.

Table 1 – Minimum Setback Distance from Borrow Pit Boundary

Facility	Minimum Distance from Borrow Pit Permit Boundary
Residences	1000 m from nearest dwelling wall
Industrial Plants	100 m from plot boundary
Isolated Permanent Structures	25 m from structure plot boundary
Hydrocarbon Pipelines	100 m from corridor boundary
Existing Oil and Gas Sites	100 m from boundary
Air Fields	200 m from secure fence
Power Lines and Substations	100 m from corridor boundary
Utility Lines	25 m from corridor boundary
Lagoons (natural or manmade)	200 m from secure fence
Access Roads	25 m from centerline
Highways	100 m from centerline

- 4.7 Borrow pits, designed for final slopes not steeper than 1 unit vertical to 5 units horizontal (20% slope), shall not require closure activities (see Section 6).

5 Construction

- 5.1 When applying for a borrow pit permit the procedures of GI-0002.716 shall be followed, and the requirements of Chapter 33 of [SAES-M-100](#) shall be implemented.
- 5.2 Unless otherwise recommended in an approved soils engineering or engineering geology report, cut slopes shall be no steeper than a ratio of two horizontal to one vertical, and final slopes shall be no steeper than 1 unit vertical to 5 units horizontal.
- 5.3 The borrow pit shall be less than one meter deep if the borrow is less than 45 m³.
- 5.4 Figure 2 shall be used for reference, and Appendix Chapter 33 of [SAES-M-100](#) shall be used to determine the minimum distance from the top and/or toe of the borrow pit to the permit boundary.
- 5.5 When using explosives in constructing a borrow pit, refer to GI-0475.001.
- 5.6 Refer to the Saudi Aramco Construction Safety Manual, Part II, Section 2.0 for safety criteria on excavations, trenching and shoring.

6 Pit Closure

In compliance with the Saudi Arabian Government Mining Code, all closed borrow pits shall be restored to their former state, to the extent reasonably practicable. At closure, borrow pits shall have final slopes not steeper than 1 unit vertical to 5 units horizontal (20% slope). This shall be the responsibility of the Company or organization that received the borrow pit permit.

7 Definitions

Borrow Pit: A site where earth material is removed by mechanical equipment and transported to an off-site location for use in grading.

Permit Boundary: The boundary in a land use permit that contains and describes the borrow pit.

Grading: Any excavating, filling or a combination thereof.

Revision Summary

31 December, 2002 Revised the "Next Planned Update". Reaffirmed the contents of the document, and reissued with no other changes.

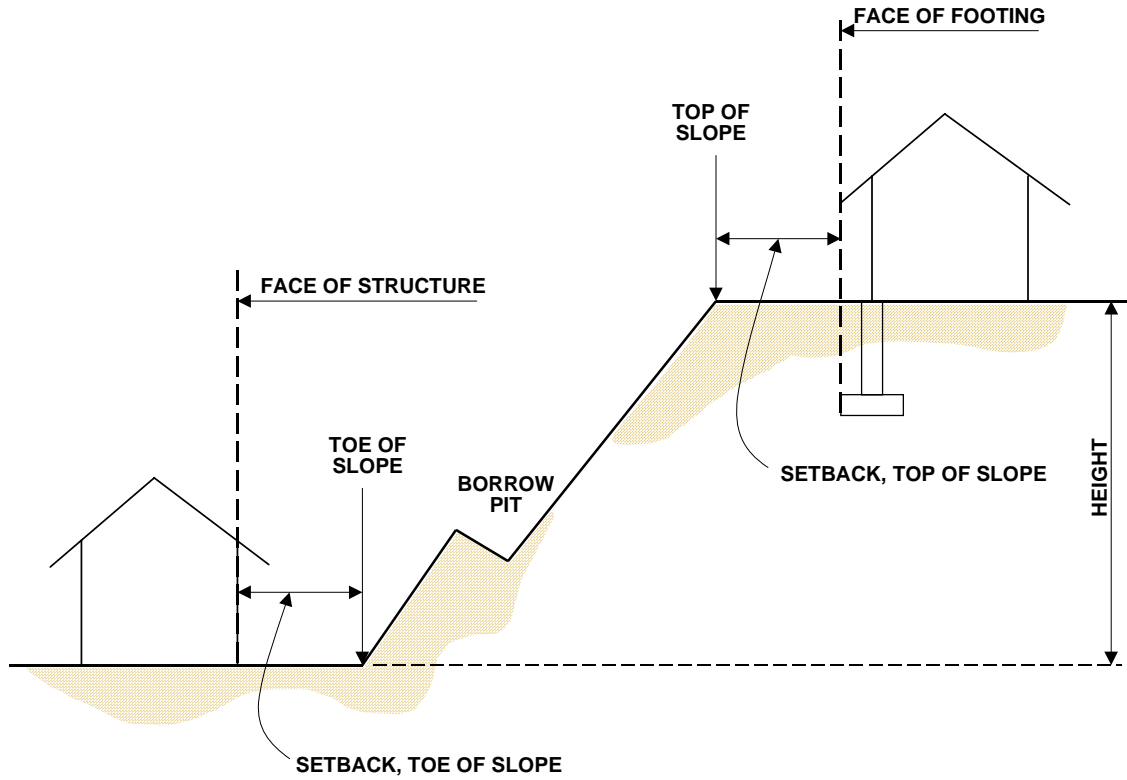


Figure1 - Minimum Distance from Borrow Pit Slope to Facilities Inside Permit Boundary

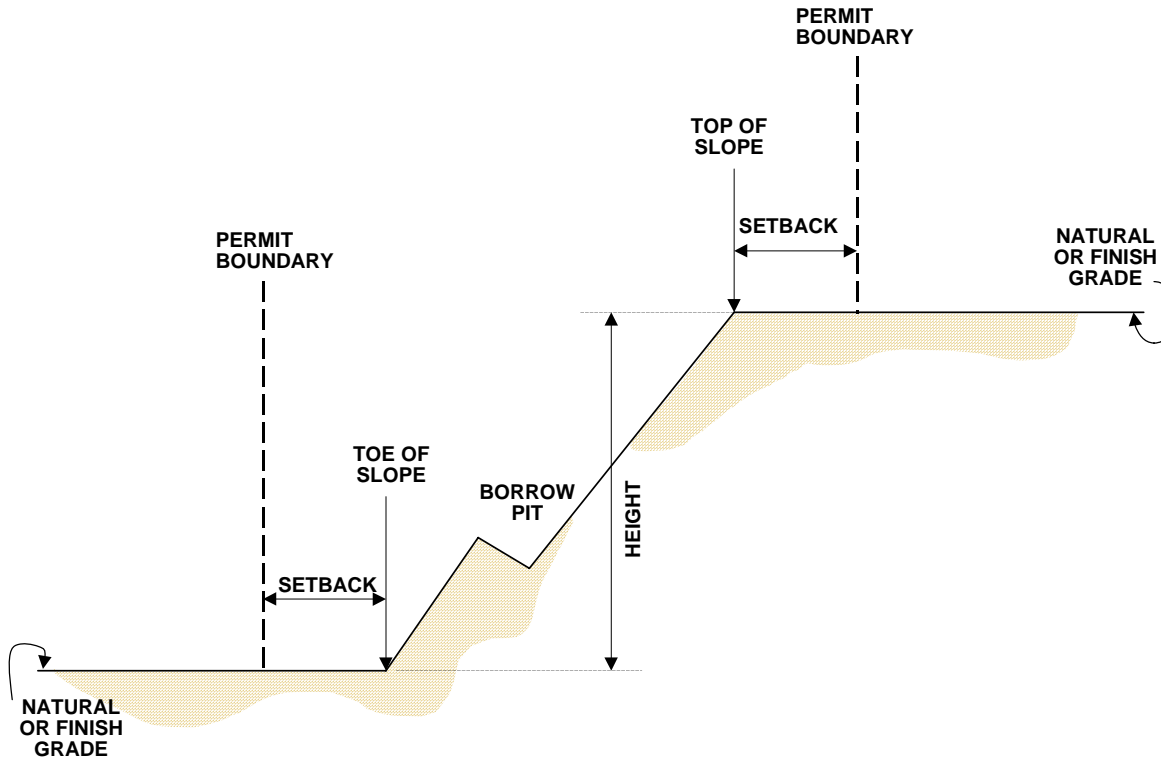


Figure 2 – Borrow Pit Setback Requirements