



Pressure

Systems

GUIDELINES

The Integrity Management of Bund Walls Associated with Storage Tanks

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1 Introduction

SAFed Guide IMG01 provides specific information on the regulations applicable to storage tanks containing hazardous substances. IMG02 gives an overview of the inspection of storage tanks.

This guide provides information for the engineer surveyor on bund walls associated with storage tanks. Bund walls can be earth mounds around several large storage tanks, a wall around a single fuel tank, a double skin tank or a container holding barrels. In each case the bund must be impermeable to the liquid being stored, collect and contain spillages and leaks from the storage tank or associated pipework.

This guidance is published in the UK and therefore refers to its regulatory framework. However, much of the description of good practice it contains may be relevant elsewhere.

2 Scope

This document provides guidance on several types of bunding for storage tanks, either oil or chemical. It covers tanks or drums with bunds manufactured from metallic or non-metallic materials.

The inspection of bunding carried out by the competent person for the tank should be limited to observation of the overall condition of the bund. An evaluation of the structural integrity of the bund is beyond the scope of this document.

3 Types of Bund and inspection requirements

Bunds are to be designed to have a capacity of 110% of the primary container total storage capacity, irrespective of whether storage is in fixed or mobile containers, bunds are required for each individual container, or for a group of containers, as long as the total capacity of the bund is not less than 110% of the largest container in the system or 25% of the aggregate total capacity of the containers, whichever is the greater. It is recommended that the bund wall has a minimum height of 150mm to allow for rainfall and fire-fighting foam (Reference: Guidance note for the Control of Pollution (Oil Storage) (England) Regulations 2001 para 25).

Mastics/Sealants used in any joints in the bund should be compatible with the stored product(s).

It is recognized good practice for the bunding to be constructed to ensure that “jetting” beyond the bund in the event of puncture is avoided. Examples of control mechanisms;

- Keeping the container as low as possible
- Increasing the height of the bund wall
- Leaving sufficient space between the tank & bund walls
- Not sitting one tank above another
- Providing screening

3.1 Earth / concrete mound.



Example of earth / concrete mound

- Check for vegetation on or near bund walls which may mean roots are creating pathways through the bund.
- Check for cracks in the bund wall, whether bricks or concrete blocks are missing.
- Check for pipework which passes through bund walls (this was an older method of connection, newer installations should have pipework going over the bund.)
- New bund installations can be checked for tightness by carrying out a hydrostatic test by filling the bund with water, ensuring the storage tank remains in place. Leaks through the new bund are not acceptable.

Note: On older bunds consideration should be given to having the bund assessed by a person competent to assess the structure, prior to carrying out a hydrostatic test.

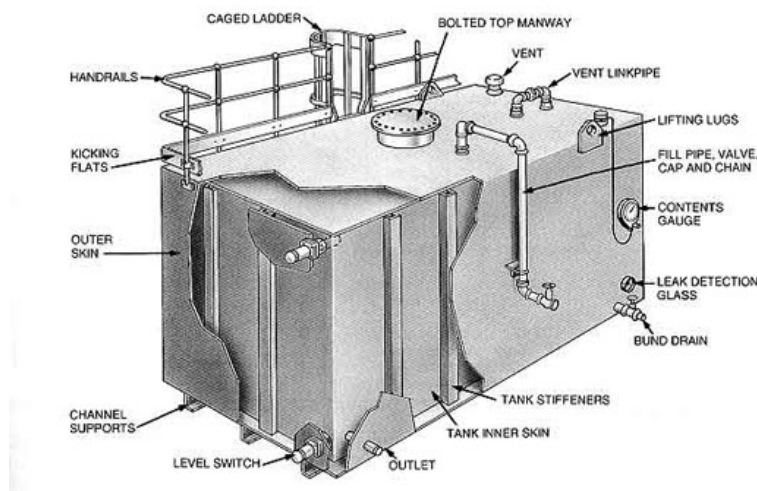
3.2 Walled.



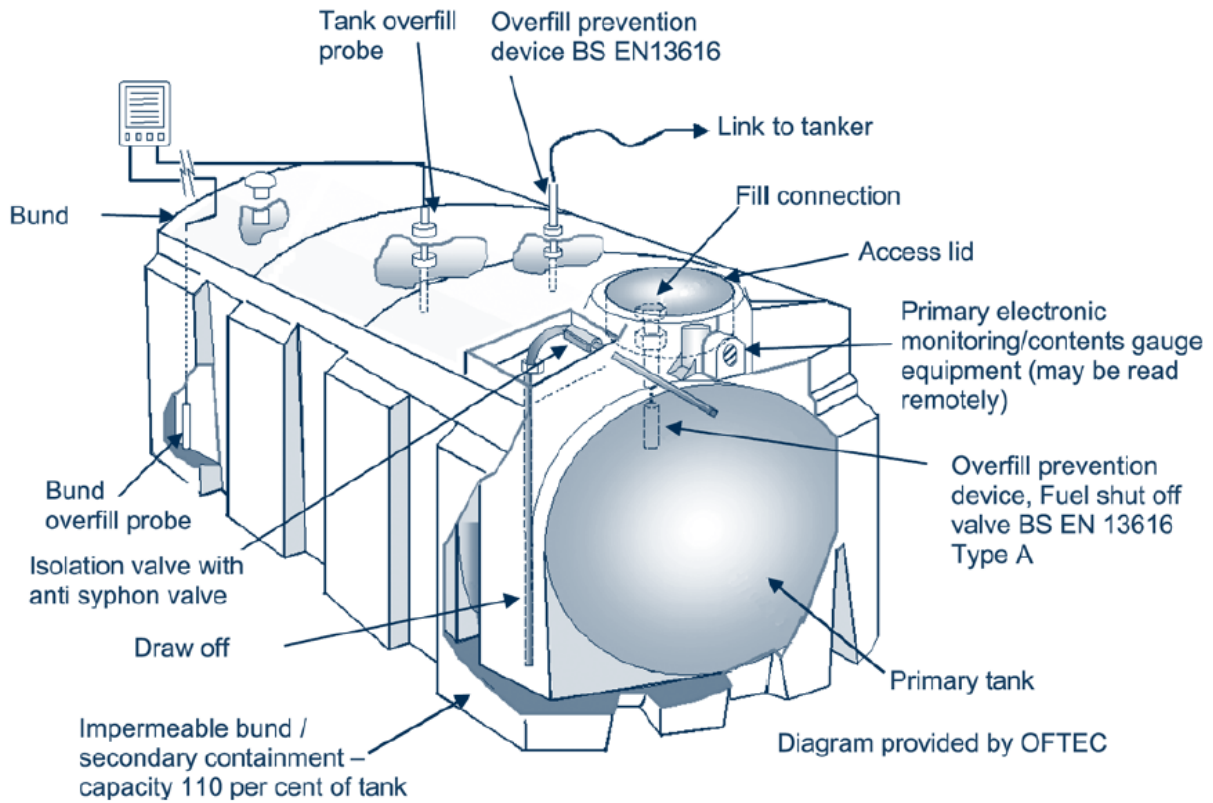
Example of walled bund

- The volume of the banded area should be 110% of the tank storage capacity
- Check rainwater is removed to a safe place.
- Check corners for cracking due to lack of extra strengthening.
- Check support saddles of tank are not cracking bund base allowing leakages.

3.2 Double skin tanks.



Example of a double skinned metallic tank



Example of double skinned non-metallic tank

- Facilities for leak detection between outer and inner skins must be provided
- Leak detection can be vacuum, pressure sensors or liquid monitor
- Check for subsidence
- Check for cracking

3.4 Barrel container



An example of a barrel store with integral bunding.

4 Summary

This document highlights the main types of secondary containment (including bunds) associated with oil and chemical storage facilities. It should be used in conjunction with the associated SAFed guidance relevant to the type of storage tank under inspection.

5 References

IMG01 - The mechanical Integrity of Plant Containing Hazardous Substances

IMG02 - Guidelines for Users and Competent Persons - Overview of the Inspection of Storage Tanks