

SS 512 : 2021
(ICS 23.040.01)

SINGAPORE STANDARD

**Code of practice for the design, construction
and operation of pipeline service corridors**



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The content of this Singapore Standard was approved on 21 January 2021 by the Chemicals Standards Committee (CSC) under the purview of the Singapore Standards Council.

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JTC Corporation

Keppel Infrastructure Holdings Pte Ltd

Maritime and Port Authority of Singapore

Ministry of Manpower

National Environment Agency

Petrochemical Corporation of Singapore (Private) Limited

PUB, Singapore's National Water Agency

Sembcorp Industries Ltd

Singapore Civil Defence Force

SP PowerGrid Ltd

Stolthaven Terminal

TP Utilities Pte Ltd

Vopak Asia Pte Ltd

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Foreword

This Singapore Standard was prepared by the Working Group on Pipeline Service Corridor set up by the Technical Committee on Petroleum Processes and Products under the purview of CSC.

The companies on Jurong Island are linked to one another via a network of pipelines, which transverse a dedicated piece of land known as a 'Pipeline Service Corridor'. These pipelines serve as a vital artery, supplying feedstock and products from one plant to another. Companies benefit from over-the-fence selling of products through this linked petroleum and petrochemical cluster concept. This linked cluster concept is vital for the success of Singapore as a chemicals hub.

However, in order for these pipelines to operate safely, it is necessary for consistent and appropriate standards to be set. This document was first developed as TR 6 : 2001 – Pipeline service corridors – Design, construction and operation of pipeline service corridors in Singapore (the first of its kind Technical Reference for pipeline service corridors).

The review of TR 6 : 2001 by the original Working Group was undertaken on 30 July 2003 subsequent to a two-year trial (pilot) implementation of the Technical Reference by the Working Group and evolved to SS 512 : 2005.

This Singapore Standard is based on best industry practices and the appropriate existing internationally accepted codes and standards, such as ASME, which are already in use in Singapore.

It is presupposed that in the course of their work, users will comply with all relevant regulatory and statutory requirements. Some examples of relevant regulations and acts are listed in the Bibliography. The Singapore Standards Council and Enterprise Singapore will not be responsible for identifying all of such legal obligations.

In this revision, the key changes include the new requirements on fire water line, separation distance between piperack and adjacent company boundary, separation distance between piperack and adjacent company boundary and patrolling of P&FM pipelines for class 1 and 2 locations. In addition, this revision removed the previous Annex A to E to comply with changing industry practices.

In preparing this standard, permission was sought to reproduce materials from API 570, "Piping Inspection Code: In-service Inspection, Rating, Repair, and Alteration of Piping Systems", 4th edition, February 2016.

Acknowledgement is made for the use of information from the above publication.

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

NOTE

1. *Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions. Where SSs are deemed to be stable, i.e. no foreseeable changes in them, they will be classified as "Mature Standards". Mature Standards will not be subject to further review, unless there are requests to review such standards.*
2. *An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore and the Singapore Standards Council shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR. Although care has been taken to draft this standard, users are also advised to ensure that they apply the information after due diligence.*
3. *Compliance with a SS or TR does not exempt users from any legal obligations.*

Code of practice for the design, construction and operation of pipeline service corridors

1 Scope

This code sets down the engineering and management system requirements in the design, construction and operation of pipeline service corridors in Singapore. This Code is applicable only for new pipelines/piperacks/pipetracks/pipe bridges/service tunnels in existing or new pipeline service corridors.

2 Normative references

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

API 570	Piping inspection code: in-service inspection, rating, repair, and alteration of piping systems
API RP 1102	Steel pipelines crossing railroads and highways
API RP 1109	Line markers and signage for hazardous liquid pipelines and facilities
API RP 2201	Safe hot tapping practices in the petroleum and petrochemical industries
API SPEC 15HR	Specification for high-pressure fiberglass line pipe
API SPEC 15LE	Specification for polyethylene line pipe (PE)
API SPEC 15LR	Specification for low pressure fiberglass line pipe
API SPEC 5L	Line pipe
API SPEC 6A	Specification for wellhead and tree equipment
API SPEC 6D	Specification for pipeline and piping valves
API STD 520	Sizing, selection and installation of pressure-relieving devices Part 1: Sizing and selection Part 2: Installation
API STD 521	Pressure-relieving and depressurising systems
API STD 526	Flanged steel pressure-relief valves
API STD 1104	Welding of pipelines and related facilities
ASME B16.5	Pipe flanges and flanged fittings: NPS ½ through NPS 24 metric/inch
ASME B16.9	Factory-made wrought butt welding fittings
ASME B31.1	Power piping
ASME B31.3	Process piping
ASME B31.4	Pipeline transportation systems for liquids and slurries
ASME B31.8	Gas transmission and distribution piping systems
ASME Section I - IX	Boiler and pressure vessel code
ASME VIII	Rules for construction of pressure vessels

BD 31	Buried concrete box type structures
BD 37	Loads for highway bridges
BS 381C	Specification for colours for identification, coding and special purposes
BS 4500	ISO limits and fits.
EN 12007-2	Gas supply systems – Pipelines for maximum operating pressure up to and including 16 bar Part 2: Specific functional recommendations for polyethylene (MOP up to and including 10 bar)
IEC 60079 series	Explosive atmospheres
ISO 9001	Quality management systems – Requirements
NACE	Corrosion data survey – Metals section
NACE RP-01-69	Control of external corrosion on underground or submerged metallic piping systems
NACE RP-02-75	Application of organic coatings to the external surface of steel pipe for underground service
NFPA 600	Standard on facility fire brigades
NFPA 704	Standard system for the identification of the hazards of materials for emergency response
SS 651	Safety and health management system for the chemical industry – Requirements with guidance for use ¹
SS 575	Code of practice for fire hydrant, rising mains and hose reel systems
SS EN 1992	Eurocode 2: Design of concrete structures

¹ The current Safety and Health Management System Standard for the chemical industry, SS 506 : Part 3, will be replaced by SS 651 "Safety and health management system for the chemical industry – Requirements with guidance for use" from 1 Jan 2022.