Division / Business Unit: Corporate Services & Safety
Function: Signalling
Document Type: Specification

Pits requirements for Signalling Applications

ESA-12-01

Applicability

ARTC Network Wide

SMS

Publication Requirement

Internal / External

Primary Source

Document Status

Version #	Date Reviewed	Prepared by	Reviewed by	Endorsed	Approved
1.0	13 Jun 20	Standards	Stakeholders	Manager Signalling Standards	General Manager Technical Standards 17/06/2020

Amendment Record

Amendment Version #	Date Reviewed	Clause	Description of Amendment
1.0	13 Jun 20		First issue of Specification.

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1 Introduction

1.1 Purpose

The purpose of this specification is to describe the requirements for High-Density Polyethylene (HDPE) and GRP (Glass Reinforced Plastic) pits used for main cable routes and local cable routes for signalling and communication system to be supplied and installed for Australian Rail Track Corporation (ARTC).

1.2 Scope

This specification covers minimum requirements for HDPE and GRP pits and covers to be used on the ARTC network.

1.3 Document Owner

The General Manager Technical Standards is the document owner. Queries should be directed to standards@artc.com.au in the first instance.

1.4 Responsibilities

The applicable Project Manager (for projects) or Responsible Asset Manager/Signal engineer is accountable for implementation of this specification.

The manufacturer/supplier is responsible for compliance and confirmation to this specification.

The Project Manager (for projects) or Responsible Asset manager are responsible for consultation and agreement with the relevant local Signal Maintenance Engineer. This is necessary to ensure consistency, maintainability and reliability of the Signalling System.

1.5 Reference Documents

The following documents support this specification:

ESC-11-01 – Construction of Cable Route and Associated Civil Works

AS 3996 – Access Covers and Grates

AS 4586 – Slip Resistance Classification of New Pedestrian Surface Materials

AS 7664 – Railway Signalling cables, routes, cable pits and foundations

AS/NZS 4131 – Polyethylene compounds for pressure pipes and fitting

ANSI/SCTE 77 – Specification for underground closure integrity

1.6 Definitions

The following terms and acronyms are used within this document:

Term or acronym	Description
ARTC	Australian Rail Track Corporation Ltd.
HDPE	High-Density Polyethylene
WHS	Work Health and Safety
GRP	Glass Reinforced Plastic

2 Specifications

2.1 Standard Compliance

Manufacturer shall be able to demonstrate the compliance to relevant standard/s from section 1.5. All test reports shall be provided for pits by the manufacturer to ensure the compatibility with this specification.

2.2 General Requirements

All pits with lids shall be provided with padlocks or similar tamper proof mechanism to guard against theft and vandalism.

Pits shall be easy enough to cut on site to allow conduit entry into the pits without affecting the overall strength of the pits.

All pits shall be provided with removable lids compliant to AS 3996.

Class A/B pit lids shall be provided on the ARTC network only for locations where vehicular traffic is not expected.

Pits should have structure ribbing to allow securing of the pit in the ground and to provide additional structure strength.

Pits shall be tested with load rating as per ANSI/SCTE 77 Tier 22 or equivalent test in laboratory. Manufacturer shall provide test reports and results to demonstrate the compliance with ANSI/SCTE 77 Tier 22 or equivalent.

All pits shall be manufactured with UV stabilised material.

All Pits should be compliant with the requirements of ANSI-SCTE 77 TIER 22 Section 6 – Environmental Tests or equivalent.

2.3 Size

Pit size for the main cable pits shall be compliant with the below table.

Type of pit	Depth Up to 1500mm	Depth over 1500mm
Square	1000mm x 1000mm	1200mm x 1200mm
Rectangular	1200mm x 700mm	1450mm x 850mm

2.4 WHS

Pits more than 600mm deep shall be large enough so maintenance personnel can safely stand and work within the pit clear of cables.

If pits are deeper than 750mm then a ladder or rungs shall be provided within the pit.

There shall be no sharp edges on any section of the pit.

2.5 Installation

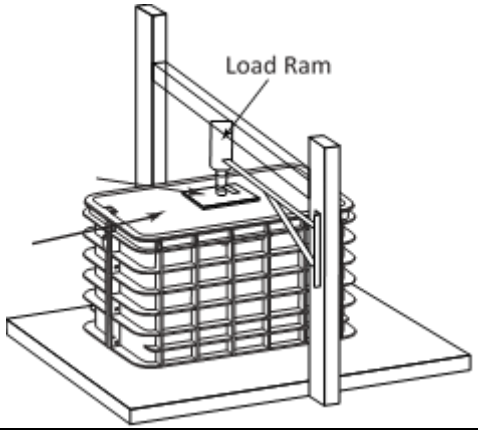
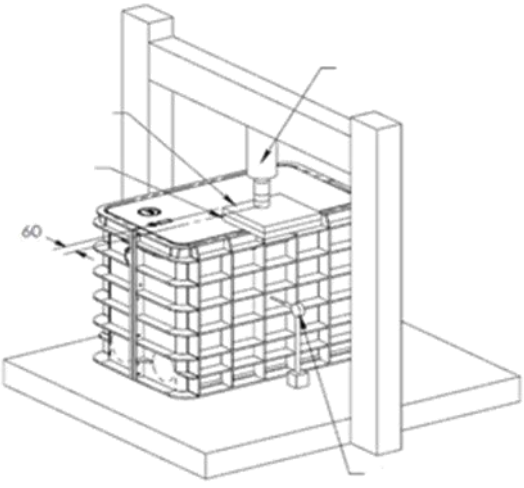
All pits and related installation shall be compliant to ESC-11-01 – Construction of cable route and associated civil works. All pits shall be installed as per manufacturer guidelines.

Adequate drainage shall be provided as per ESC-11-01.

No plastic pits shall be installed within 3m from the nearest rail of the tracks.

2.6 Testing Requirements

Below information is based on ANSI SCTE 77 for guidance only. Please refer to standard for full test details.

Test Description	Test Method
Vertical Center Load - 150kN (15 tons) The full magnitude of the cyclic load will be applied over the center of the plate for 5 seconds and then removed. The loading and unloading rate shall not exceed 5 kN per minute. This cycle is repeated 4 more times, after which the final (maximum) load is applied for 10 seconds and then removed.	
Vertical Sidewall Load - 150kN (15 tons) The full magnitude of the cyclic load will be applied over the center of the engaged portion of the plate for 5 seconds and then removed. The loading and unloading rate shall not exceed 5 kN per minute. This cycle is repeated 4 more times, after which the final (maximum) load is applied for 10 seconds and then removed.	

Lateral Sidewall Vertical Load - 15kN (1.5 tons) The full magnitude of the cyclic load will be applied over the center of the engaged portion of the plate for 5 seconds and then removed. The loading and unloading rate shall not exceed 5 kN per minute. This cycle is repeated 4 more times, after which the final (maximum) load is applied for 10 seconds and then removed.