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DRAWING OFFICE STANDARD (PL100)

DOCUMENT APPROVAL PROCESS

NAME		POSITION/MEETING NO.	SIGNATURE	DATE
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1. INTRODUCTION

The objective of this Drawing Standards Document is to establish a set of approved drawing standards and codes of practise that shall be required to be adhered to by both Contractor and Client in the preparation of Engineering Documentation for and on behalf of Transnet Pipelines, a Division of Transnet Limited. By ensuring comprehensive, consistent and uniform means of presentation of information, these Standards and Codes of Practise are intended to facilitate rapid comprehension by the users of the information, and thus assist in the maintenance and fault finding of installed technology.

2. SCOPE

2.1. General

This document defines as a minimum, the general responsibilities for the provision of all Engineering Documentation, whether it be by the Client or Contractor, for and on behalf of Transnet Pipelines. In this regard, providers of Engineering Documentation are required to familiarise themselves with all applicable Standards and Codes of Practice listed herein, and to ensure compliance in the execution of any work in terms of this document. Failure to comply may render the provider liable for corrections at his own cost.

These Standards and Codes of Practise should be read in conjunction with all other Specifications and drawings as issued for a particular contract. Where discrepancies occur, these must be brought to the attention of Transnet Pipelines in writing before commencement of work. In the event of any conflict between the contents of any documents forming part of a contract (as listed in the Schedule of Contract Documents) and this document, the former shall prevail.

This Drawing Standards Document PL100 incorporates two sections as follows:

Section A - General Standards

Incorporating Standards PL 101 to PL 103, detailing Plant and Equipment Tag Numbering, Symbolology and General Drawing Standards to be adhered to in the production of Engineering Documentation for and on behalf of Transnet Pipelines

Section B - Documentation Typical/ Design Documentation

Incorporating typicals of all Drawing and Documentation Types. These typicals have been incorporated into the Standards Document for the purposes of conveying both layout and content requirements to be adhered to in the production of Engineering Documentation for and on behalf of Transnet Pipelines.

Prior to commencement of design, contractors are required to request typicals of all relevant Drawings and Documentation to be produced, and should ensure adherence in both content and layout standards.

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Where Contractors wish to deviate from specified typicals, either in layout or information content, approval will be required to be obtained from Transnet Pipelines prior to commencement of work.

Typicals exist for the following types of documentation:

Process Flows/ Diagrams Documentation Standards

- Piping & Instrumentation Diagrams (P&IDs)
- Process Flow Diagrams (PFDs)
- Heating Ventilation & Air Conditioning (HVAC)
- Hazardous Area Classification Diagrams
- Hazop Studies

Metering & Instrumentation Documentation Standards

- Instrument Schedules
- Instrument Data Sheets
- Instrument Hook-up Diagrams
- Loop Reports/ Drawings
- Panel Layout and General Arrangements
- Panel Wiring Diagrams
- Cable Schedules (Refer to Electrical Typicals)
- Cable Block Diagrams (Refer to Electrical Typicals)
- Cable Interface Wiring Diagrams
- Safety Integrity Levels (SILs) Report

Software Documentation Standards

- Plant Input/ Output (I/O) Schedules
- Flow Charts
- Software Listings

Electrical Documentation Standards

- Single Line Diagrams
- Electrical Schematic & Wiring Diagrams
- Panel Layout and General Arrangements
- Cable Schedules
- Cable Block Diagrams
- Cable Interface Wiring Diagrams
- Connection/ Hook-up Diagrams

Mechanical Documentation Standards

- General Arrangement/ 3D CAD views of Piping, Structural Steel & Mechanical, Installations.
- Layout Drawings/ 3D model Isometric views
- Underground Drawings
- Piping – Analysis, Calculations, Studies, Reports

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Civil/Site Layout & Survey Documentation Standards

- Trenching and Services Layout Diagrams
- Earthing Reticulation Diagrams
- Cable Routing Reticulation Diagrams
- Structural Arrangement Drawings
- Structural Fire Protection Drawings
- Structural Steel Detail Drawings
- Foundation Drawings
- Pipe/ Ducting Support Drawings
- Weight Reports
- Structural Analysis Design Reports

2.2. Application to Work Activities

The Standards and Codes of Practice contained herein are suitable for use whenever Engineering Documentation is required to be produced and includes amongst others the following:

- Design Sketches
- Technical Data and manufacturer's technical literature
- Equipment Identification and Tagging
- Construction Drawings
- Specifications, both Functional and Technical
- Installation, operating and maintenance instructions, drawings and records

3. REFERENCE DOCUMENTATION

The following standard specifications are to be used for reference purposes and need to be noted by Tenderers in order to signify familiarity and compliance with the requirements. It is expected of Tenderers that they be familiar with the applicable clauses and that these will be adhered to in the execution of any work in terms of this specification.

A. Standards and Recommended Practices for Instrumentation and Control, 11th Edition, Instrument Society of America.

- ANSI/ISA-5.1-2009 : Instrumentation Symbols and Identification
- ISA-S5.3-1983 : Graphic Symbols for DCS/Shared Display Instrumentation, Logic & Computer Systems
- ISA-S5.4-1991 : Instrument Loop Diagrams
- ANSI/ISA-S5.5-1985 : Graphic Symbols for Process Displays

B. Graphical Symbols for Electrical Diagrams NRS 002-2000 second edition

C. International Electro technical Commission Standards for Electrical Drawings

- IEC Publication 27 : Letter Symbols to be used in Electrical Technology
- IEC Publication 50 : International Electro technical Vocabulary
- IEC Publication 617 : Graphical Symbols for Diagrams

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D. SANS-10111-1-2011 Engineering Standard

E. TPL-TECH-I-POL-001 - Measurement Policy

F. TPL-TECH-I-POL-002 - Control Policy

G. TPL-TECH-I-POL-003 - Instrumentation Policy

4. ABBREVIATIONS

For the purpose of understanding these Standards, the following abbreviations apply.

ANSI	:	American National Standards Institute
C & I	:	Control and Instrumentation
IEC	:	International Electrotechnical Commission
ISA	:	Instrument Society of America
SABS	:	South African Bureau of Standards
ASA	:	American Standards Association

5. APPENDICES

General Standards

- PL 101 - Plant & Equipment Tag Numbering Standards
- PL 102 - Equipment, Instrument and Electrical Symbolology Standards
- PL 103 - General Drawing Standards

6. DOCUMENT CHANGE HISTORY:

The owner of this document is responsible for the revision and control of the document, including updating of the table below, which contains the history of the document with details of each revision.

Date	Previous Rev No.	New Rev No.	Details of Revision
15.01.99	00	01	Document approved for distribution
30.07.99	01	02	Doc Typicals – Typicals and Rev No's added
15.04.01	02	03	Doc Typicals – Changed to On Request basis
12.06.12	03	04	New Transnet Standard Template Adopted
13.04.16	04	05	Document review & New Template

This table summarises what has been changed in the document so that it is easy to keep track of the effected changes.