The New COTO Specification for Road and Bridge Works
Chapter 2

THE SOUTH AFRICAN ROAD FEDERATION

South Africa COTO Committee of Transport Officials

SOUTH AFRICAN ROAD FEDERATION

presents a 1 day virtual course on

The New COTO Specifications: For Road and Bridge Works Chapters 2 and 3

PRESENTERS

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(Compiler of the COTO Chapter 3)

on

Thursday 17th June 2021

Virtual via MS Teams

A Maximum of 50 Delegates allowed per course

Delegates can claim 1 ECSA CPD points

COUSRE DESCRIPTION

The new COTO Standard Specification for Road and Bridge Works for South African Road Authorities, October 2020 was approved by the Committee of Transport Officials as a Draft Standard and will be replacing the COLTO Standard Specifications for Road and Bridge Works for State Road Authorities (1998 edition). COTO Standards Specifications consist of 20 chapters.

This course will cover **Chapter 2: Services** and **Chapter 3: Drainage**.

Chapter 2: Services is a total new chapter which covers different services found in the road reserve compared to the COLTO Specification which cover limited information on services.

Chapter 3: Drainage address both surface and subsurface drainage. Some of the specifications have been revised in the new document.

The course will familiarise practitioners with the changes to the COLTO Standard Specification, new specifications, measurement and payment items in these two chapters, as well as related sections in other chapters.

Practical hints relevant to specifications will be provided.

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STAKEHOLDERS

- **Road Authorities**
  - National, Provincial and Local

- **Service Owners (*in the Road Reserve*)**
  - **Telecommunication Service Owners**
    - Licensee – ICASA regulator
    - Electronic Communications Act 38
      - DFA / Liquid / Open Serve / Frogfoot / Vuma/SADV
      - 400 plus licensees
  - **Other Service Owners**
    - Water, sewer, energy, etc.
      - Treated as dry, wet and other services in the new COTO.

STAKEHOLDERS (Cont)

- **Professional Engineers (ECSA Registered)**
  - Civil engineers for the civil components of the work (road, structures, geotechnical, services, etc.)
- **Project Managers**
- **Contractors**
- **Sub – Contractors**
- **Suppliers (Telecoms related material/ Road furniture / Asphalt etc.)**
- **Public (Third parties)**
- **"Neighbours"**

TYPICAL FAILURE MECHANISMS: STORMWATER MANAGEMENT: PIPING

TYPICAL FAILURE MECHANISMS: SLOPE INSTABILITIES

TYPICAL FAILURE MECHANISMS: EFFECTS OF FUNCTIONALITY OF ROAD VERGE

TYPICAL CONTRACTUAL ENVIRONMENT

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Conventional Contracts:

Layer 1: Contract between the employer (landowner) / client and the contractor. Features: engineer – agent of employer / turnkey – design and construct.
Conditions, specifications and commercials (BoQ)

Layer 2: Contract between the contractor and sub-contractor:
Features: no contract between the sub-contractor and the employer.

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TYPICAL CONTRACTUAL ENVIRONMENT (Cont)

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Services Contract (i.e., telecommunications)

Layer 1: Agreement between licensee and landowner
Features: wayleaves, concessions, indemnifications, technical (COTO).

Layer 2: Contract between licensee and contractor
Features: conditions, specifications*, commercials (BoQ).

Layer 3: Sub-contract between contractor and sub-contractor

* *COTO vs In-house*

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STANDARD SPECIFICATIONS FOR SERVICES

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- Services are not covered by existing COLTO (1998) document (ducts included under section 2200)
- No current national standard specification for services is available
- The SABS 1200 series specification no longer formally a national specification (withdrawn)
- The SANS 2001-DP series: 2010 replaced the SABS 1200 series and provides generic technical specifications

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SOURCE DOCUMENTATION

- Since Chapter 2 is new, various source documents were used including:
  - SANS 2001- DP series
  - SABS 1200 series
  - Metro specifications (Tshwane, Cape Town, eThekwini etc)
  - Private sector service provider specifications
  - International specifications
- Section 2.3 relies heavily on reference to the SANS 2001- DP series

TYPICAL COTO CHAPTER STRUCTURE

SECTION

PART A: SPECIFICATIONS

- SCOPE
- DEFINITIONS
- GENERAL
- DESIGN BY CONTRACTOR / PERFORMANCE BASED SYSTEMS
- MATERIALS
- CONSTRUCTION EQUIPMENT
- EXECUTION OF THE WORKS
- WORKMANSHIP

PART B: LABOUR ENHANCED

PART C: MEASUREMENT AND PAYMENT

PART D: GUARANTEES AND COMPLIANCE CERTIFICATES

CHAPTER 2: SERVICES

Section 2.1: General Requirements and Trenching for Services

Section 2.2: Dry Services

Section 2.3: Wet Services

Section 2.4: Energy and Other Services

SECTION 2.1:

GENERAL AND TRENCHING OVERVIEW PART A

Clauses Include:

A2.1.3.2 Location, Identification, Protection and Relocation of Existing Services
A2.1.3.5 Programming for Services
A2.1.3.6 Provision of Record Drawings and Details
A2.1.4 Design by Contractor / Performance Based Systems

SECTION 2.1:

GENERAL AND TRENCHING OVERVIEW PART A (Cont)

Clauses Include

A2.1.7.1 Trenching for Services
h) Excavation
i) Classes of Excavation
j) Excavation using Labour Enhanced Construction Methods
l) Timbering and Shoring
r) Dealing with Water
t) Backfilling

SECTION 2.1:

GENERAL AND TRENCHING OVERVIEW PART A (Cont)

Clauses Include

A2.1.8.2 Compaction
a) Relative Density Compaction Control
b) DCP Compaction Control

SECTION 2.1:

GENERAL AND TRENCHING OVERVIEW PART B

Part B covers the scope for labour enhanced construction associated with the installation of services in a road reserve. Traditionally the installation of services offers a relative high labour component especially if trenching is done by hand.

Typical activities which can be performed using labour enhanced techniques are clearing and grubbing, removal of surfacing and paving materials on the trench line, excavation, digging of pilot holes, preparing the bottom of the trench, duct or pipe installation, preparation of backfilling material and trench backfilling.

Labour enhanced construction methods shall only be used where specified in the Contract Documentation or as ordered by the Engineer.

SECTION 2.1:

GENERAL AND TRENCHING OVERVIEW PART B (CONT)

B2.1.7.1 Classes of excavation

Where excavation is done using labour enhanced construction methods, the Engineer shall classify excavated materials as either soft or intermediate for payment purposes in terms of Table B2.1.7-1 or, if the Contractor does not agree with the classification, in terms of Table B2.1.72. The decision of the Engineer regarding the classification of the excavated materials shall then be final and binding, subject to the provisions of the conditions of contract.

No hard material shall be measured under labour enhanced construction methods.

SECTION 2.1:

GENERAL AND TRENCHING OVERVIEW PART B (Cont)

Classification	**Description**
Soft	Material which can be excavated by means of a suitable shovel with or without the use of a pick or other hand-swung tool.
Intermediate	Material which is difficult to excavate by hand even with the aid of a crowbar and requires the assistance of pneumatic tools for economic removal.

Materials Classification	**Consistency**		**Number of DCP Blows to Penetrate 100 mm * 1**	
	Granular Soil	**Cohesive Soil**	**Granular Soil**	**Cohesive Soil * 2**
Soft	Very loose to dense	Very soft to stiff	< 15	<8
Intermediate	Very dense	Very stiff	>15	>8

*1Only applicable to materials comprising not more than 10 % gravel of size less than 10 mm and materials containing no cobbles or isolated small boulders.
*2 Classification depends on the moisture content of the cohesive material.

SECTION 2.1: OVERVIEW PART C (Cont)

Pay Items Include:

- C2.1.1 Location, identification, protection and relocation of services
- C2.1.2 Exiting services location, detection and verification
- C2.1.3 Obtaining wayleaves and permits
- C2.1.4 Provision of guarantees or deposits for services
  C2.1.5 Provision of record drawings and applicable data
- C2.1.5 to C2.1.10 Excavation etc

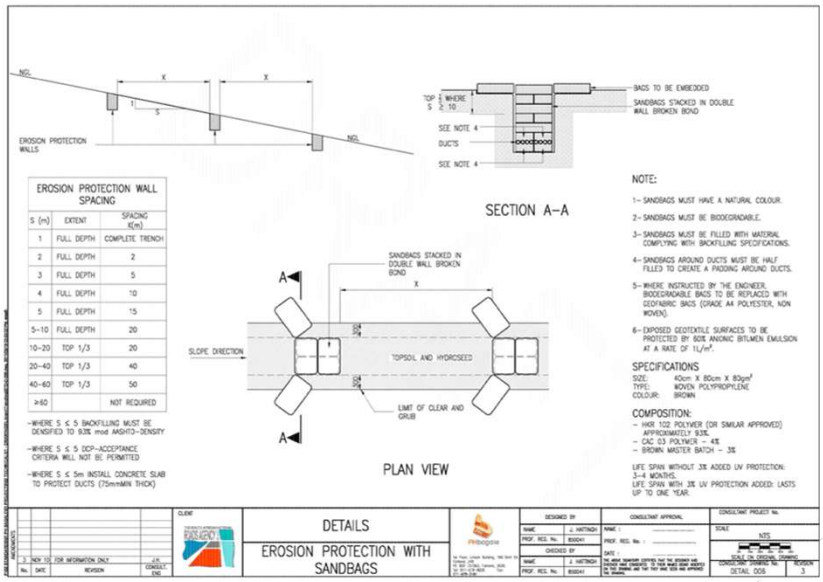
SECTION 2.1: OVERVIEW PART C (Cont)

Pay Items Include:

- C2.1.11 to C2.1.14 Backfilling etc
- C2.1.18 Timbering, strutting and shoring
- C2.1.19 Dealing with water on services work
- C2.1.20 Specified temporary works to control water inflow
- C2.1.22 Existing services that intersect or adjoin a trench
- C2.1.23 Reinstatement of trenches in existing surfaced roads

EROSION PROTECTION WITH SANDBAGS

EROSION PROTECTION WITH SANDBAGS



SECTION 2.2: DRY SERVICES OVERVIEW PART A

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Clauses Include:

A2.2.5 MATERIALS

- A2.2.5.1 Ducts and Sleeves
- A2.2.5.2 Bedding
- A2.2.5.3 Backfill
- A2.2.5.7 Handhole, Manhole and Access Chamber Types and Covers

A2.2.7 CONSTRUCTION / EXECUTION OF WORKS

- A2.2.7.2 Duct Installation by Methods other than by Micro or Mini Trenching
- A2.2.7.6 Duct Installation by Micro and Mini Trenching

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SECTION 2.2:
OVERVIEW PART C

PAY ITEMS INCLUDE:

- C2.2.1 to C2.2.3 Lay ducts
- C2.2.4 to C2.2.5 Bedding for ducts
- C2.2.6 to C2.2.8 Ducts accessories, manholes etc