

# TENDER SC 909/2010 – Maintenance of ICT Network Cabling

## Scope of Services and Deliverables

Installation & maintenance intervals e.g. monthly of all network cabling;

Installation & maintenance of all network points;

Installation & maintenance of all ICT electricity connections

## Contract period:

Ending on 30 June 2013

## The Overstrand Municipal environment geographic locations:

- Hermanus
- Gansbaai
- Klein mond
- Stanford

## Service Hours

- Overstrand Municipal official hours – 8h00 to 16h30 Monday to Friday

## GENERIC PREMISE STRUCTURED CABLING REQUIREMENTS GUIDELINE

### FOREWORD

1. The Overstrand Municipality Structured Cabling guideline, as outlined in the pages to follow, is mandatory in terms of the acceptance of work done in or on Overstrand premises and facilities. Compliance therefore determines whether or not the Overstrand will take acceptance of installed Structured Cabling Systems (SCS) or subsystems.
2. The contractor is to note that despite the Structured Cabling System's vendor warranty requirements (which must be met), work done has been commissioned by the Overstrand Municipality and as owners of the supplied Structured Cabling System, it is expected that the Requirements and Technical directives of the Overstrand take precedence at all times.
3. The acceptance requirements as outlined in this document are **mandatory**. No variation will be tolerated nor accepted.

### DOCUMENT SCOPE

1. This document is intended as a guideline and therefore does not supersede the International Standards on which it is based.
2. The purpose of the document is to provide the contractor with information specific to the implementation of Standards based generic structured cabling as per the requirements of the Overstrand Network environment and the support/maintenance thereof.

## CONTRACTOR REQUIREMENTS

1. The contractor shall provide only skilled labour to complete work *within the agreed upon time frame*.
2. The contractor is responsible for the provision of all tools required to fulfil his installation obligations in accordance with task at hand at his cost.
3. This includes specialist tools such as core drills etc.
4. By means of the submission of a quotation and the acceptance of the relevant order number, the contractor is *solely responsible* for the successful delivery of all documentation pertaining to installed components e.g. Floor plans, excel sheets and test results to the Overstrand ICT Networks staff member responsible for the project and *NO OTHER* person, unless such an agreement has been made with the aforementioned responsible person.
5. In the event that work has been commissioned by Overstrand departments other than ICT Networks, contractors are reminded that the technical requirements of Overstrand ICT Networks still apply and that contractors will be required to conform irrespective of whether other Departments or their representatives have accepted work as completed.
6. The contractor is solely responsible for the thorough pre-quotation inspection and installation evaluation of any given project for which a quotation is submitted. Any over-sites on the part of the contractor are for his account.

## GENERAL PRODUCT CONFORMANCE REQUIREMENTS

1. The minimum acceptable cable performance category to be installed on Overstrand premises shall be ANSI/TIA/EIA-568-B Category 6 / ISO 11801 Class E (2002) compliant.
2. Only cable and connecting hardware specified for a given Vendor Structured Cabling Solution shall be used.
3. All installed components shall be new, complete, in good condition and unused albeit for demonstration purposes.
4. All cable reels are to be visually inspected for damage incurred during shipping and transit prior to installation.
5. Cable and connecting components found to be damaged or defective prior and during the installation process are to be removed immediately and returned to the supplier at no additional cost to the Municipality.

## GENERAL PRODUCT PERFORMANCE REQUIREMENTS

1. The supplied product shall, once installed, conform to **ISO 11801 Class E – 2002** electrical characteristics for the purposes of Vendor warranty.
2. It is expected that installed products be capable of supporting voice and data communications applications and protocols from baseline 56Kbps to ISDN PRI for Analog and Digital Voice and 10Base T to 1000 Base T for data as per the supported applications of **ISO 11801 Class E (2002)**.
3. The contractor will hand over all documentation, including, updated floor plans (as installed), test results and installation warranties (Panduit and contractor) to the Overstrand Municipality ICTS Project Manager, who will then sign off the installation.

## GENERAL INSTALLATION PRACTICE REQUIREMENTS

1. Cable is not to be pulled in under excessive load. At all times during any given “pull”, the cable under load should easily react and feed to pulling tension.
2. Cable being pulled in should be handled by no less than 2 individuals at all times in order to avoid damage to the cable by means of kinks, twisting along its own axis, getting snagged etc. It is recommended that 3 installers co-operate in the pulling in of any given cable run, 1 on each end and another in the middle or positioned near any obstructions to feed slack and thus avoid undue stress on the cable.
3. Whenever possible cable should be placed into pathways as apposed to pull in under tension.
4. Care should be taken not to score conductors during the removal of the outer insulating sleeve of the cable when preparing to terminate pairs.
5. Cable bends are to be kept to 25mm at minimum at all times (installed).
6. During the installation process, installers are required to visually inspect cable and connecting hardware components for damage. If such damage is found, e.g. tears in the outer jacket of the cable, severe kinks as identified by white/grey bands of discoloration on cable jacket, these components are to be replaced immediately.

7. The installer is to make use of best practices when handling unjacketed conductors. Care is to be taken as not to create pair spread, pair wrapping, pair separation and the re-twisting of pairs.
8. No more than 13mm of wire may be exposed for the purposes of termination, the only acceptable exception being high band modules where such practices are dictated by the design of the module.
9. All cabling shall be clearly labelled at both ends to the rear of the point of termination no more than 100mm from such a termination point.
10. All patch panel ports and workstation outlets shall be clearly labelled by means of appropriately secured printed labels (hand written labels are not acceptable).
11. All patch and workstation outlet cables shall be clearly labelled by means of an appropriately secured Printed label.
12. All labelling schemes shall be confirmed with the appropriate representative of Overstrand ICT Networks before being applied.
13. The maximum number of screws or bolts as provided for by the design of connecting hardware or SCS components and accessories are to be used without exception.

## **DUCTING AND SUPPORTING STRUCTURES**

1. Where support structures are used, such structures are to provide support at a maximum of 1.5 meters along the length of the run as to avoid cable tension as a result of the cumulative weight of such cable acting upon itself at the next point of support.
2. The surface of such support structures e.g. Cable hangers will not pose a risk of damaging cable due to sharp edges or angular surfaces which would act against the symmetry of wire pairs within the cable or a risk to installers e.g. Cuts.
3. Where cable ties are used, they are to be securely fastened but still permit for cable movement if tugged upon making use of reasonable force.
4. Cable ties are to be used at set intervals of 300mm for all cable bundles thus presenting a uniform appearance.
5. Under no circumstances shall any cable/s hang unsupported, vertical runs are to be supported are no greater than 300mm intervals.
6. When cable ties are cut; once appropriately fastened around cable bundles, in order to remove protrusions beyond the buckle, the installer will ensure that such a cut is clean and that no sharp edges are created which would damage other cable being pulled past it or injure installers and support staff.
7. Cable shall under no circumstances be strapped to PVC electrical conduit or any structures belonging to an unrelated functional unit such as an air conditioning drain pipe as future maintenance by associated maintenance staff may result in damage or removal in order to facilitate work.
8. Where purpose-installed conduits are to be used for structured cabling, such conduits may never be filled beyond 40% of capacity and should bend at a radius of no less than 6 times the outside diameter of such conduit, nor shall more than two 90 degree bends along the total span of such a conduit.
9. Cable is at no point to be placed directly on top of suspended ceiling tiles.
10. Contractors are to ensure that cable is not installed in areas such as roof spaces or in direct sunlight where temperature ranges might exceed the manufactures operating temperate specifications (typically not in spaces where temperatures exceed 60 degrees Celsius.)
11. All metallic support structures, be it conduit, ducting or trays, shall be grounded in accordance with national electric regulations.
12. Ducting systems shall be securely fastened to walls by means of the appropriate fixing hardware so as to ensure a sound and durable installation.
13. Ducting system covers are to be fitted securely and any portion of the ducting system found to be cracked or damaged is to be immediately replaced.

## **POWER AND EMI SOURCE SEPARATION**

1. Cable may be laid adjacent to sources of interference such as 240V electrical branch circuits with a minimum separation of 50.8mm where:
  - a. A continuous grounded metallic barrier exists between electric cable and structured cabling.
  - b. A durable non-metallic insulation exists, other than the insulation material of the cable.
  - c. At no point may data cabling cross the path of any power or broadband cable, fluorescent lighting unit (where suspension is used as a means of separation) at an angle less or greater than 90 degrees.

2. The installer is to ensure that electrostatic devices such as photocopiers and sources of radiation such as x-ray devices, radio transmitters, their antennae and associated broadband cables are to be avoided when routing cable.

## POST-INSTALLATION TEST AND CERTIFICATION

### General Requirements

1. **Every** cabling link is to be tested and must meet with the requirements of ISO 11801 Class E (2002) across the full length of the link.
2. Test requirements as per **Permanent Link** certification requirement for which the appropriate test adapters are to be used.
3. The contractor **will ensure that the full plot data** is stored for each and every test.
4. The test results shall also be in **Fluke Networks Linkware format (.flw)**.
5. Test results are to be stored and provided to Overstrand ICT Networks staff in electronic format in **.csv and .flw** file formats.
6. Overstrand ICT Networks staff further reserve the right to insist on being present during the self-calibration of the test unit and the instruments initial configuration prior to test and during the test process itself.
7. The contractor is to advise Overstrand ICT Networks staff within 3 working days of intent to commence testing in order that such a staff member may make himself available to attend testing procedures.
8. The contractor is required to make available the test equipment and necessary personnel at no extra cost should a member of Overstrand ICT Networks wish to perform random acceptance testing on approximately 10% of the installed cabling infrastructure.
9. ICTS Networks staff reserves the right to decline acceptance of marginal performing cables irrespective of their having passed testing based on risk of future degradation over the life span of the installed product.
10. Where it is found that the random tests do not match those presented, Overstrand ICT Networks staff reserves the right to insist on a supervised re-test of any or all installed cables prior to acceptance.
11. It is the sole responsibility of the contractor to ensure that the appropriate Vendor test and documentation requirements are met in order that Overstrand ICT Networks be provided with a warranty certificate issued by the SCS Vendor.
12. Any contention regarding Vendor warranty requirements is to be resolved between the Vendor and the contractor and has thus no bearing on the Municipality's requirements as outlined here.
13. Documentation is to be provided in 3 parts:
  - a. An excel spreadsheet indicating cable label, location of work area and Telecommunications closet
  - b. Termination points etc in electronic format.
  - c. A floor plan or site diagram reflecting the routes taken to and location of all installed cables in
  - d. Electronic format.