

**1.6 Steel Ducts**

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## STEEL DUCTS

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## 1. GENERAL

### 1.1. SCOPE

1.1.1 This specification covers the minimum standards and requirements for the construction, properties, testing and packing of Galvanized Steel Ducts.

1.1.2 Tenderers shall provide with their bids their proposed material under this Specification, stating manufacturer, model number, technical specification, country of origin, and such other required information as noted herein. References to submissions by "supplier", "manufactures" and the like shall mean the "Tenderers" (during tender stage) or the "Contractor" (during the contract period), the Tenderer/Contractor being required to provide same under actual submission from the respective supplier/manufacture.

1.1.3 The purpose of the tender for The OIT is for supply install as set out in the Contract. References to "Supply-only" in this specification shall be disregarded, and shall only apply to special supply purchase orders as may be requested by MoT under the provision of Contract, if applicable.

1.1.4 Packing and marking sections of this specification are generally intended for imported materials. The Contractor shall be responsible to provide all necessary requirements to suit his approved sourcing, in order to ensure that materials are delivered to site in the specified condition.

## 1.2. INTENDED USE

2.1 Galvanized steel ducts purchased in compliance with this specification are used to protect underground telecommunications cable in applications such as bridges and the road crossings.

### 3. TYPE APPROVAL

3.1 Contractors who have not previously supplied under this specification (or who have made changes to prior supplied products) shall submit a product sample for approval. An interim Type Approval may be granted on the basis of a compliance statement and other information from the manufacturer. Approval of a sample shall not be construed as waiving any requirements of this specification.

4. RESERVED RIGHTS

4.1 The MoT cannot guarantee that any of the requirements, standards, regulations and conditions of this specification are not covered or protected by copyright or patent of a third party.

The MoT reserves the right to make changes to the specification without notice.

## 2. ASSOCIATED SPECIFICATIONS

The following unattached international and/or national standards shall be applied, and deemed to be an integral part of this specification:

- ASTM A53 Standard specification for pipe steel, black and hot dipped, zinc-coated welded and seamless
- ASTM A700 Standard practices for packaging, marking, and loading methods for steel products for domestic shipment
- ASTM A865 Standard specification for threaded couplings, steel, black or zinc-coated (galvanized) welded or seamless, for use in steel pipe joints
- ISO 9002 Quality systems - Model for quality assurance in production and installation

## 3. DEFINITIONS

The following definitions shall apply throughout this specification:

Refer to the general definition of the contract.

## 4. DESIGN REQUIREMENTS

### 4.1. GENERAL

- 4.1.1. This section describes the design of the Galvanized Steel duct.

### 4.2. LONG TERM PERFORMANCE REQUIREMENTS

- 4.2.1. The steel duct supplied in compliance with this specification shall be capable of withstanding the typical service conditions of Lebanon for a period of thirty years without detriment to the operation and maintenance characteristics.

- 4.2.2. Steel duct shall be designed, manufactured and packaged so that exposure to the environmental conditions of Lebanon during storage, transport, installation and operation and the environmental conditions to be expected during storage and transport outside Lebanon shall not degrade the physical or operation and maintenance characteristics of the duct.

The environmental conditions of Lebanon may include ambient air temperature variations from -15°C to +37°C. In addition direct solar radiation is known to increase the temperature of some outside plant to approximately +52°C.

### 4.3. STEEL DUCT DESIGN

- 4.3.1. The steel duct shall comply with requirements for an NPS 4, seamless, galvanized pipe of ASTM A53.
- 4.3.2. Both ends of the duct shall be threaded.
- 4.3.3. Each length of duct shall be fitted with 1 NPS 4 seamless, galvanized coupling compliant with ASTM A865.
- 4.3.4. The duct shall be supplied in 6 m lengths.

## 5. MATERIAL PROPERTIES AND TEST REQUIREMENT

### 5.1. GENERAL

- 5.1.1. This section specifies the steel duct material, physical, chemical, environmental and mechanical requirements and the tests to be applied for the determination of these requirements.

- 5.1.2. The requirements of this section refer to completed steel duct, or material removed from completed duct identified otherwise.

- 5.1.3. All materials used in the steel ducts shall be non-toxic and dermatologically safe.

### 5.2. TEST AND REPORT REQUIREMENTS

- 5.2.1. In order to assure the quality of purchased steel duct, Tenderer's are required to supply Type Approval and routine quality control test results and reports.

### 5.2.2. TYPE APPROVAL TESTING

5.2.2.1. Type Approval test results, samples and reports are required for acceptance of new designs and materials and following modifications to existing designs and materials. These test results are intended to assure the MoT that products have been designed to provide fault free service for the required life of the duct.

5.2.2.2. Type Approval shall not be granted until a Type Approval sample has been evaluated by the MoT. In the event that appropriate samples are not available from manufacture an interim Type Approval may be granted on the basis of a compliance statement and other information from the manufacturer. However a sample must be submitted and approved by the MoT for Type Approval prior to delivery.

5.2.2.3. Further to the contract requirements in respect of material approvals by the Engineer, Contractors are advised not to proceed with manufacture until written Type Approval or interim Type Approval has been given by the Engineer for all Type Approval requirements of this specification.

5.2.2.4. Tenderers are required to ensure that applied steel duct complies fully with the Type Approval requirements. Although the MoT may designate tests as Type Approval the Tenderer may find it necessary to perform some of the tests on a regular Quality Control basis.

5.2.2.5. Type approval tests and measurements are identified by (T/A).

5.2.2.6. If requested Type Approval samples shall be one length of steel duct fitted with a coupling.

#### 5.2.3. ROUTINE QUALITY CONTROL

Routine Quality Control tests are the tests used on a regular basis, such as every delivery, to assure the MoT that manufactured items conform to specification and that the manufacturing process is under control. Routine Quality Control tests are identified by (QC). Testing frequencies are detailed in Section 8.

#### 5.3. STEEL DUCT

5.3.1. The steel duct shall comply with all the test requirements for a galvanized, seamless NPS 4 pipe of ASTM A53.

5.3.2. The coupling shall comply with all test requirements for a galvanized, seamless NPD 4 coupling of ASTM 865.

## 6. ELECTRICAL AND TRANSMISSION REQUIREMENTS

Not required in this specification.

## 7. QUALITY ASSURANCE

### 7.1. QUALITY SYSTEM ACCREDITATION

7.1.1. Manufacturers of steel duct conforming to this specification may be required to show evidence that the steel duct has been manufactured according to a Quality System conforming to ISO 9002 or a national equivalent which has been approved by the MoT.

7.1.2. Manufacturers may be required to supply a copy of the Quality Manual, at the time of tender, which shall be utilized for the manufacture and delivery of steel duct complying to this specification.

7.1.3. The MoT may require the manufacturer to be accredited to the above standards either by MoT personnel or assessors acting on behalf of the MoT.

### 7.2. INSPECTION

7.2.1. The MoT or its authorized representative(s) may inspect the Tenderers facilities for the purpose of Quality Assurance surveillance at any time during the term of the Contract.

7.2.2. If requested by the MoT, the Tenderer shall supply evidence of the quality of the raw materials and components used in the manufacturing process.

7.2.3. All steel manufactured to this specification may be inspected and tested by MoT to check compliance.

7.2.4. The inspector reserves the right to request proof of compliance with this specification, either by witnessing actual performance of this specification's prescribed tests and/or the provisioning of documented test results at the discretion of the inspector.

7.2.5. In the case of a dispute, testing shall be performed by an 'independent authority' at the expense of the tenderer.



## 8. SUMMARY OF REPORTS AND TESTING FREQUENCY.

S.I. GENERAL

8.1.1. The two categories of test reports required, i.e. Type Approval and Quality Control, are detailed in clause 5.2.

### 3.12. REPORT FORMAT

3.1.2.1. All reports submitted shall include the following details:

Manufacturer's name  
Project number

Quality Control reports shall also include:

Date of delivery

Identification of ducts included in the reports.

8.1.2.2 The report shall detail all results in the same order and shall refer to the relevant clause of Section 8.

### 3.2. TYPE APPROVAL TESTS SAMPLES AND REPORT REQUIREMENTS

4.2.1. Type approval test results and samples shall be submitted

- 1- At the time of tender for steel duct which has not been given Type Approval or
- 2- Prior to delivery of any duct which does not have Type Approval, and
- 3- At least once every 12 months, unless agreed otherwise.

## COMPLIANCE STATEMENT

Tenderers shall supply a clause by clause compliance statement with the complete specification.

3.2.3 Certification to verify that the duct and couplings comply with ASTM A53 and ASTM A865.

### 4.3.3. ROUTINE QUALITY CONTROL TEST REPORTS

### 8.3.1.1. FREQUENCY OF QUALITY CONTROL REPORTS

Quality Control test reports shall be submitted to the MoT with each delivery.

8.3.2. In addition to the test results required by the MoT, Tenderers are responsible to ensure that the steel duct complies with this specification. Therefore the Contractor shall perform all additional tests necessary at appropriate frequencies to ensure the delivery of compliant steel duct.

3.3.3. The manufacturer shall submit evidence that the data and couplings have been manufactured, sampled, inspected and tested in accordance with the requirements of ASTM A53 and ASTM A865.

## 9. PACKING AND MARKING

## P.L. PACKING

2.1.1. Each galvanized steel duct shall be protected from damage to the threads by a covering of sufficient design and strength.

1.1.2. A maximum of ten (10) pieces shall be bundled into one package in accordance with ASTM A700.

1.3. The bundle shall be secured together with strapping of sufficient number and size to maintain the bundle through handling, storage and transportation by land, sea, or air.

2.1.4. Each bundle shall be marked with the following information in Arabic and English:

Ministry of Telecommunications in Lebanon

Galvanized steel duct

Quantity of pieces (In the bundle)

Manufacturer's name or trademark

Month and year of manufacture.