STRUCTURAL STEELWORKS FOR THE FIRE WATER RETICULATION INSTALLATION AT TRANSNET RAIL ENGINEERING DEPOT AT SALT RIVER, CAPE TOWN

PROJECT SPECIFICATIONS AND BILL OF QUANTITY

PARTICULAR SPECIFICATIONS

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PS1 SCOPE OF WORK

This particular specification covers the fabrication and supply of structural steel works for the installation of the fire water reticulation at the Transnet Engineering Depot at Salt River, Cape Town and includes the following:

The preparation of shop drawings, Test Certificates, Material Certificates, Galvanizing Certificates and inspection certificates, supply, fabrication, galvanizing and delivering of all steel works to the precise position inside the TE Depot at Salt River (inclusive in the Bill of Quantity rates per unit) for the following steelwork items on an once off delivery:

- All strut supports (Scenario B), as per the drawings and specification given in this document and set out in the Bill of Quantity provided.

The Fabricator shall supply a galvanizer's guarantee or test certificate prior to delivery. The Fabricator shall arrange for the coating application on fabricated steelwork to be inspected throughout by an independent competent person (hereinafter called the Inspector) appointed by the Fabricator. The appointment of the inspector shall be subject to the Engineer's approval.

And any work arising out of or incidental to the above, or required of the Contractor for the proper completion of the works in accordance with the true meaning and intent of the contract document.

PS2 INTERPRETATIONS

PS2.1 Supporting Specifications

In so far as they can be applied, and where they are not inconsistent with the terms of this Specification, the latest amendment of the relevant parts of SANS 1200 shall be regarded as being embodied in this Specification. The following list of Standard Specifications, not necessarily comprehensive, is referred to in this part of the Specifications:

SANS 2001-CS1: Construction works (Structural Steelwork)
SANS 1921-3: Construction and management requirements for works contracts (Structural Steelwork)
SANS 1200: Standardized specification for Civil Engineering construction
SANS 121 (ISO 1461): Hot dip galvanizing
SANS 1431: Weld able structural steel
SANS 10094: High-strength friction grip bolts
SANS 1700: Fasteners, Part 1 to Part 19

PS2.2 Abbreviations and Definitions

The abbreviations and definitions as described in the relevant Standard Specifications shall also be applicable to this Specification

PSH STRUCTURAL STEELWORK

PSH 1 SCOPE

SANS 1200 H, as amended below, shall apply to steel pipe supports and sundry structural steel items.

PSH 3 MATERIALS

PSH 3.1 STRUCTURAL STEEL

All steel used in the construction of these works shall comply with SANS 1431 Grade 350WA, or SANS 50025 Grade S355JR.

PSH 3.6 BOLTS, NUTS AND WASHERS

All bolts, nuts and washers shall be Precision Bolts Grade 8.8, Hot dip galvanised.

PSH 5 CONSTRUCTION

PSH 5.1 DRAWINGS AND SHOP DETAILS

PSH 5.1.2 Contractor Provides Shop Details

The Contractor shall be responsible for providing shop details in accordance with Clause PSH 5.1.2.

PSH 5.3 ASSEMBLY

PSH 5.3.4 Welding

(b) WELDING TO BE CONTINUOUS: All welding shall be continuous on all sides of any joint unless otherwise approved in writing by the Engineer. No crevices will be permitted and where stitch welding has been approved by the Engineer, the crevices so left shall be sealed with an approved filling compound prior to galvanising.

(c) WELD APPEARANCE: Welding shall be free of blowholes and all welding flux removed. All weld spatter and other sharp imperfections shall be removed prior to abrasive blasting. Prior to galvanising, weld beads with a surface irregularity exceeding 3 mm or with sharp crests having a radius less than 2 mm shall be ground. Weld grinding must not be performed on 304L or 316L stainless steel, however.

~~(d) SITE WELDING: Site welding shall be kept to a minimum and shall only be undertaken with the approval of the Engineer.~~ Not Required.

PSH 7 TESTING

PSH 7.1 TEST CERTIFICATES

The structural steel fabricator shall obtain and submit to the Engineer certificates from all suppliers from whom steel is purchased stating that the material supplied conforms in all respects with SANS 1431 Grade 350WA or SANS 50025 Grade S355JR, as applicable.

PSH 8 MEASUREMENT AND PAYMENT

PSH 8.3 SCHEDULED ITEMS

PSH 8.3.14 Strut Supports

Strut supports shall be measured by number of each different type of Strut support as per the Bill of Quantity.
The rate per strut supports shall be an all-inclusive rate for supply, fabrication, corrosion protection, transport to site and handling and all as shown on the Drawings and/or specified.
The rate shall include all Shop Drawings, Test Certificates, Material Certificates and Galvanizing Certificates as stated.

Strut Supports, complete as shown on drawings and/or specified..... Unit: No

PSHC CORROSION PROTECTION

PSHC 1 SCOPE

This specification shall apply to the corrosion protection of strut support structures.
The corrosion protection of pipework is specified in SANS 1200 L, as amended by Section PSL herein.

PSHC 5 CONSTRUCTION

PSHC 5.7 PAINTING SYSTEM

The coating system shall be as detailed on the drawings.

PSHC 5.9 APPLICATION OF METAL COATINGS

PSHC 5.9.1 Hot Dip Galvanizing (New Clause)

Hot dip galvanizing shall be done in accordance with SANS 121 and the following shall apply:
(a) Coatings shall be to the thicknesses detailed in the Standard.
(b) Hot dip galvanized material which is to remain unpainted shall be passivated as specified in SANS 121. Items to be painted after hot dip galvanizing shall be air dried and not passivated.
(c) Hot dip galvanized material shall be substantially free of white rust when it is erected on site. Stacking and storing shall at all times be done in a manner to prevent white rust forming.
(d) Damage to hot dip galvanizing caused by welding, grinding, etc. is not acceptable. Repair to hot dip galvanizing damaged by handling or transport shall be done by cleaning the area and applying 3 coats of a zinc rich primer giving a dry film thickness of at least 100 µm and containing at least 94% zinc in the dried film. If the Engineer considers that damage is excessive, such items shall be replaced by the Fabricator without cost at his own expense.
(e) Welding after hot dip galvanizing is not acceptable.

The Fabricator shall supply a galvanizer's guarantee or test certificate prior to delivery.

PSHC 7 TESTING

PSHC 7.2 QUALITY CONTROL OF COATING APPLICATION

PSHC 7.2.1 Inspections (New Clause)

The Fabricator shall arrange for the coating application on fabricated steelwork to be inspected throughout by an independent competent person (hereinafter called the Inspector) appointed by the Fabricator. The appointment of the inspector shall be subject to the Engineer's approval.
Inspections shall be adequate to ensure compliance with the Specification and shall be done at the following stages as a minimum:

PSHC 7.2.1.1 Coating (Hot Metal Spray, Paint, etc.)

(a) After fabrication but before surface preparation.
(b) After surface preparation but before application of the first coat.
(c) After application of the final hot metal sprayed coating or after application of the paint primer or first coat (as applicable).
(d) After the final factory applied paint or sealing coat.

PSHC 7.2.1.2 Hot dip Galvanizing

(a) After fabrication but before hot dip galvanizing.
(b) After hot dip galvanizing.

PSHC 7.2.1.2 Duplex Protection (Hot dip Galvanizing and Coating)

(a) After fabrication but before hot dip galvanizing.
(b) After hot dip galvanizing but before application of the first coat.
(c) After application of the primer.
(d) After the final Site applied paint coat.

PSHC 7.2.2 Witnessing of Inspection (New Clause)

If the coating is to be done in the Cape Peninsula by in inspector other than the Engineer, the Fabricator shall, nevertheless, arrange for the Engineer to witness the inspections at the latter's discretion.

PSHC 7.2.3 Inspection Report (New Clause)

A written report of the inspections, prepared by the Inspector and signed by both the Inspector and the Fabricator, shall be submitted for appraisal by the Engineer before delivery of the equipment to Site.

PSHC 7.2.4 Inspector Qualifications (New Clause)

Inspectors appointed by the Contractor shall hold an appropriate qualification from one of the following:

(a) Corrosion Institute of Southern Africa.
(b) South African Institute of Welding.
(c) South African Institute for Non Destructive Testing.
(d) South African Qualification and Certification Committee.

PSHC 7.2.5 Identification of Items (New Clause)

Every item to be coated shall be identified by a welded or hard stamped code. Records shall be maintained for each item.

PSHC 8 MEASUREMENT AND PAYMENT

PSHC 8.1 PRINCIPLES

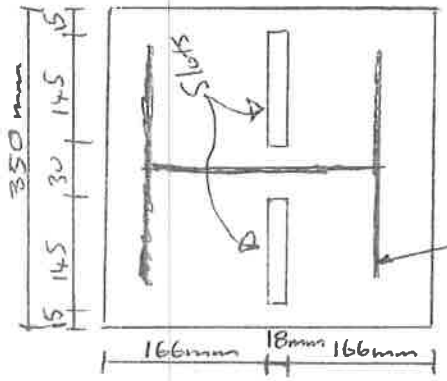
The cost of corrosion protection as specified will be included in the relevant items for the supply and fabrication of steel pipe supports and pipe clamps.

PSHC 8.2 SCHEDULED ITEMS

PSHC 8.2.4 Inspections

A provisional sum will be scheduled for the employment of third party, independent inspector as required by Clause PSHC 7.2.1 above.
The Fabricator shall pay the Inspector all fees and costs due to him, which shall be recoverable under this item.
The Fabricator's tendered mark-up shall allow for profit, overheads and all administrative costs in appointing the Inspector and complying with associated requirements in respect of inspections of corrosion protection.

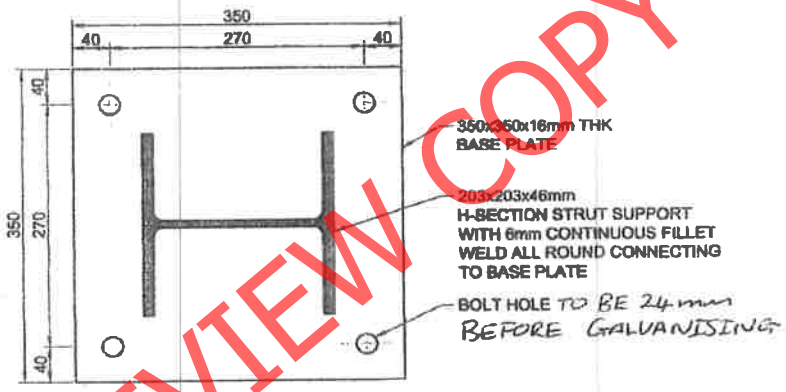
Employment of Independent Coatings Inspector ..... PC Sum



H-Section Strut Support as specified below.

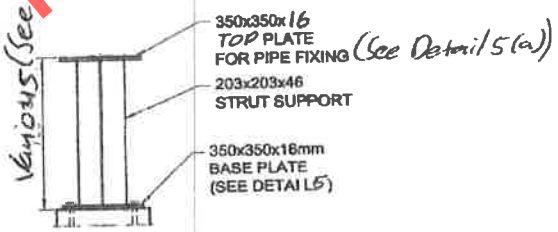
Detail 5 (a)

Top Plate



DETAIL 5
SCALE 1:5

Base Plate



Strut Support at various Heights as indicated below

Struts Various Heights	60 Number of Struts at 700mm Heights 10 Number of Struts at 900 mm Heights 10 Number of Struts at 1100 mm Heights

PS4 BILL OF QUANTITY

ITEM	PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
1.1	PSH 8.3.14	Steel Strut Support Scenario B (Pipe on Waist high bridge/supports, complete as shown on structural drawing and specificatiosn supplied).	No	60		
1.2			No	10		
1.3			No	10		
2.0	8.3.1.14	Preparation of shop detail drawings, Supplying of Material-, Test- and Galvanising Certificates.	Sum	Inclusive in the Rates Above		
3.0	PSHC 8.2.4	Employment of Independent Coatings Inspector and Supplying of full Inspection Report as Specified.	PC SUM	1	---	R 5 000.00

Item 1.1 above is, 60 Number of struts at 700 mm Heights
Item 1.2 above is, 10 Number of struts at 900 mm Heights
Item 1-3 above is, 10 Number of struts at 1100 mm Heights