ADDENDUM FOR ORT6617/2021/RFP:

Summary of scope clarifications during site inspection conducted on the 23rd of September 2021

All items marked yellow, as well as pictures, are part of the clarification. These are from the bid document and pertain to Section C3.1, pages 7 to 12 in the amended document. Some additional pictures have been included in this document, in addition to those in the bid document, as additional information – in the annexes

1.4 Scope of Work

The Contractor shall ensure that execution of the *works* is in full compliance with all applicable SANS standards, JIG Bulletins, API Standards, EI Standards and the Occupational Health and Safety Act (OHSA) of 1993 with all its relevant regulations.

GENERAL DESCRIPTION OF THE *WORKS*

The *Contractor* is to confirm all quantities, dimensions, and pricing at tender stage during site visits.

Fire Protection Risk Improvements

Additional to the objective provided previously in this Works Information, the following is to be noted specifically for the fire protection risk improvements:

- Walling and/or plating to cover the gaps behind the bund wall panels of tank farms 1 and 2.
  - 2 walls are to built in order to prevent heat of fire from encroaching into panels
- Application of intumescent and cementitious fire-resistant material to bund wall cabling and to cabling leading to storage tank input and output automated valves. A sheath, covering or enclosure for all storage tank input and output actuated valves. All fire-resistant material applied and/or installed shall be specified to resist a fire of at least 1,500 °C for a period of no less than 20 minutes.
  - Quantities for tank farms 1 and 2 (tanks 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11) is 3 actuated valves
    - Total quantity is 33 flanges
- Provide fire resistant cladding to long bolt flanges. Pipe sizes and flange joint lengths vary and are to be measured and quantified before execution.

Installation of Non-Return Valves (NRV's)

Additional to the objective provided previously in this Works Information, the following is to be noted specifically for the selection, supply, and installation of the NRV's:

- Pipe dimensions and operating pressures are to be obtained, confirmed, and priced for at tender stage during site visits.
- The purpose of the NRV's is to prevent fuel from leaking backwards into the fire foam suppression system, as the tank foam fire suppression system works on the old base foam injection principal.
- Operating fluids
  - Fire suppression foam on one side
  - Jet-A1 fuel on the tank side
- Quantities
  - A quantity of 1 NRV per tank may be assumed (for tanks 1, 2, 3, 4 and 7)
    - Quantity = 5 NRV's requiring replacement
- Paint colour and process to match existing reticulation.

Installation of Spool Piece

Additional to the objective provided previously in this Works Information, the following is to be noted specifically for the selection, supply, and installation of the spool piece:

- Pipe dimensions and operating pressures are to be obtained, confirmed, and priced for at tender stage during site visits.
- Manufacturing, pressure testing and soak testing are all required as per requirements of JIG and EI Standards. The cost of fuel to be used to perform the test is to be included in the pricing.
- Paint colour and process to match existing reticulation.

Replacement of Motor-Operated Valves (MOV's)

The replacement of the actuated shall be like-for-like, as this replacement is in order to restore maintenance spares support for actuators D1 and D2 at the bulk fuel storage depot. Current specifications shall be obtained during site visit:

- Pipe dimensions and operating pressures are to be obtained, confirmed, and priced for at tender stage during site visits.
- The cost of ensuring that the replaced actuators are correctly linked to the current fuel storage depot control system interface shall be included

  Electric Actuator Specifications:

  • INGRESS PROTECTION: IP66/IP68 - 20 metres/10 days, double-sealed terminal compartment

  • TEMPERATURE: -30° C to 70° C (-22° F to 158° F) for Watertight, FM or CSA EP enclosures, -20° C to 70° C (-4° F to 158° F) for ATEX or IECEx enclosures

  • MOTOR: Three phase low inertia squirrel cage motor, class F insulation, incorporating thermostat protection.

  • SERVICE/DUTY RATING: Class A (On/Off)/Class B (Inching), nominal 60 starts at a rate ≤ 600 starts/hour. 15 minute rated at nominal 33% of rated torque

  • STARTER: Integral electrically and mechanically interlocked reversing contactors.

  • DRIVE: Incorporates lost motion 'hammer-blow', for releasing sticking valves

  • SYNCROPHASE: Auto Phase rotation correction and lost phase protection

  • LOCAL CONTROLS: Open/Close selector and pad-lockable Local/Stop/Remote selector (stop remains available for safety)

  • LOCAL INDICATION: Integral illuminated, digital valve position indicator showing 0.1% increments in position with closed and open limit symbols, torque, alarms, and other status data. 3 LED's; red-open, yellow-intermediate, green-closed (can reverse), blinker and alarms configurable.

  • BATTERY SUPPORT: Battery is not required for position sensing but supports LCD display, operation of indication relays, commissioning, and data logging in absence of mains power

  • POSITION SENSOR: Absolute encoder with 8000 turn, 0.1% resolution with built in redundancy, provides continuous high resolution position measurement which is fully maintained during manual operation and without mains power or battery support

  • MOUNTING: Can be in any orientation, local indication and controls rotatable in 90° increments to suit

  • MANUAL OVERRIDE: Pad-lockable clutch lever, Handwheel clockwise to close, automatically disengages when motor starts and non-rotating during electric operation

  • LUBRICATION: Gearcase oil filled for life

  • TORQUE SWITCHES: Adjustable electronic torque switches 40% to 100% of rated with start of travel bypass option.

  • COMMISSIONING: Non- intrusive setup of; travel limits (auto setup option), relays, alarms and other functions via Infrared/Bluetooth Setting Tool (one supplied with each order). Can be password protected

• DATA LOGGING/ASSET MANAGEMENT: Date/time stamped logging and display of operational events/trends, motor starts and valve torque profiles. Valve/actuator and gearbox data can be stored and service alarms set. Data download via Infrared/Bluetooth Setting Tool for upload to a PC and analysis via free InSight2 software
• CABLE ENTRIES: 4 threaded entries Metric, NPT or PG, cable glands not included
• TERMINALS: M5 power and M4 control terminals, screws and washers supplied. For ring tag conductors, power 16.0mm², controls 4.0mm²
• PAINT: Polyester powder coating 100-micron nominal thickness. Colours: Housings/Covers - Grey (00-A-05), Handwheel/Hand Auto Lever/Base – Black
• CONTROL SUPPLY: 20 – 60VDC/40 – 120VAC or actuator derived 24VDC
• CONTROL INPUTS: 6 inputs for open, close, stop/maintain, ESD and interlock signals
• INDICATION CONTACTS: 4 volt-free (SPST) latching contacts (S1-S4), rated at 120VAC/30VDC, 5mA to 5A, each configurable NO or NC to signal one of the following; open/closed or intermediate positions, moving (continuous or pulsing), Handwheel operation, local selected, remote selected, open/close interlock active, ESD active, motor tripped on torque in mid travel/going open/going closed, valve jammed, loss of power/phase or control supply, battery low, internal failure detected, thermostat tripped, programmable service alarms.
• MONITOR AND AVAILABILITY RELAY: Independent relay with volt-free changeover contact, rated at 120VAC/30VDC, 5mA to 5A. De-energises in case of; loss of power/phase or control supply, local control or local stop selected (can be excluded), motor thermostat tripped or detected internal failure

Installation of Overfill Protection

The product recovery tanks have a capacity of 3,000 litres and the operating philosophy shall be that alarming to the storage terminal CMMS/DCS and automatic closure of the inlet valve to the PRT is activated by a level reading of 3,000 litres. The quantities are as follows:

- Tank Farm 1
  - One PRT for tanks 1 and 2
  - One PRT for tanks 3 and 4
  - One PRT for tanks 5, 6 and 7
    - Total Quantity is 3 systems to install
- Tank Farm 2
  - One PRT for tanks 8 and 9
  - One PRT for tanks 10 and 11
    - Total Quantity is 2 systems to install

The storage facility is operating at a SIL 3 safety level and this must be maintained upon completion of the works. Ingress protection rating required is IP66 or higher.

Installation of Over-Pipe bridged walkways

Supply and installation of permanent over-pipe walkways completed with handrails. This is to improve ergonomic accessibility of personnel over large pipes to increase effectiveness of maintenance and operation inside and in the vicinity of the fire water pump station.

Figure 1: Bridged over-pipe walkway

A total quantity of 14 bridged walkways of are required, of which the size and length may vary. Additional pictures are included in the addendum.

Installation of Dip-Hatch Access Platform

Design, supply, and installation of dip hatch access platform in tank farm 3 in order to improve access to dip hatch for sampling and maintenance by personnel.

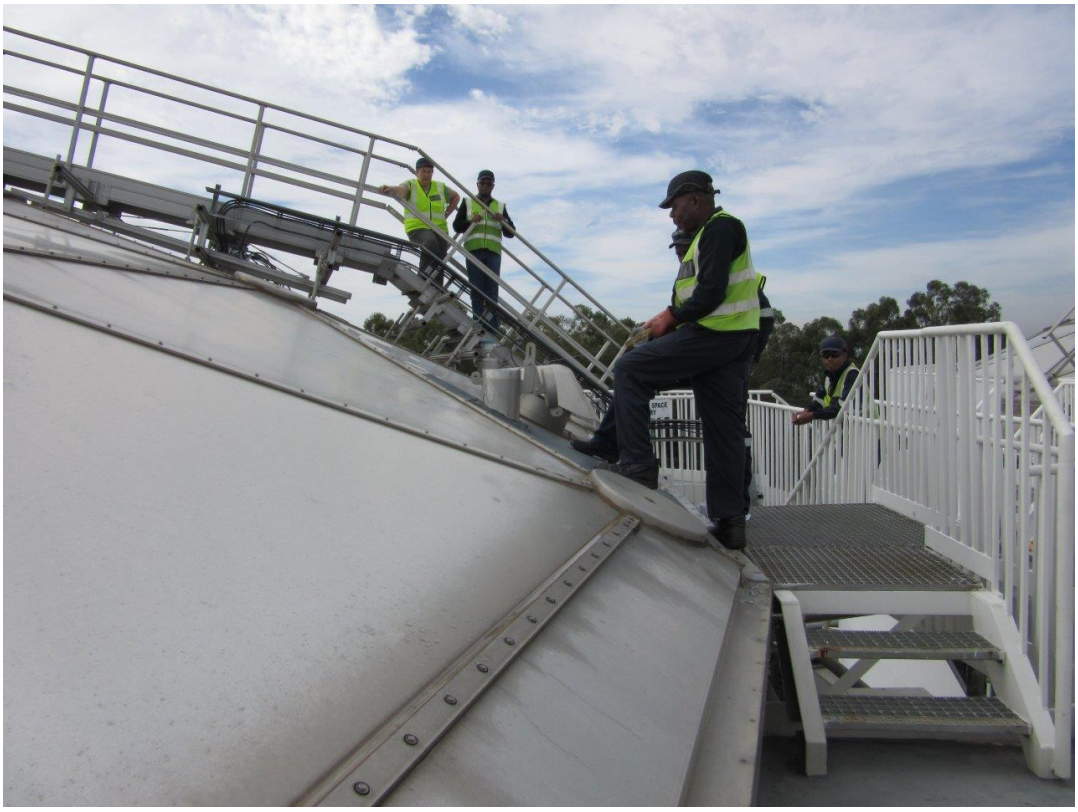

Figure 2: Dip-Hatch - Tank 13

Non-intrusive Jet-A1 metering devices

Selection, supply, installation and testing of metering systems to tie into SCADA and DCS of Bulk Jet-A1 Fuel storage depot. Must provide the capability to measure fuel flow rates (including volumes and pressures) and store data for historical trending. Devices to be installed must not obstruct fuel flow or impact on the integrity of piping maximum allowable working pressure. Therefore, the devices to be installed must be non-intrusive and must not require damage to the pipes to be installed and operated effectively. Ultrasonic or some form of non-intrusive measurement methods must be considered. These devices are required to be installed at;

- the bulk fuel storage depot main inlets (multi-product line receipt, NATREF/Rail line receipt),
- the bulk fuel storage depot main outlets (lines D1 [18”] and D2 [20”]), i.e., the apron fuel hydrant system supply lines.

The devices to be fitted must include surge protection and must have a sufficient IP rating so as to perform the intended function effectively for a minimum service life of 10 years.

The following pertinent information is provided:

- fluid is Jet A1 aviation fuel
- Incoming pipeline dimensions
  - Multiproduct pipeline

- Maximum Flow Rate: 665 m^3/hr
- Size: 8 inch

- NATREF Pipeline
  - Maximum Flow Rate: 310 m^3/hr
  - Size: 6 inch
- Rail Siding Pipeline
  - Maximum Flow Rate: 396 m^3/hr
  - Size: 6 inch

- Outgoing pipeline dimensions
  - Hydrant pipeline D1
    - Maximum Flow Rate: 1,800 m^3/hr
    - Size: 20 inch
  - Hydrant pipeline D2
    - Maximum Flow Rate: 1,800 m^3/hr
    - Size: 20 inch

Installation of Cathodic Protection Isolation-Flange Kits (IF Kits) in Tank Farm 1 and Tank Farm 2

Selection (including all required, inspections, measurement and confirmation of quantities), supply, installation and testing (where necessary) of;

- new lF kits be installed on all pipes that are connected to each tank in tank farm 1 and
- new IF kits and spark gaps be installed on all inlet and outlet actuators.
  Upon completion of the installation, confirmation of the electrical isolation of the tanks and connected pipework must be confirmed through readings and a report compiled and submitted by a suitably qualified NACE-approved CP technician.

Quantities required are summarised below:

- Tank Farm 1
  - 1 IF kit per flange immediately adjacent to each tank (tanks 1, 2, 3, 4, 5, 6 and 7) per tank (3 off)
    - Total IF kits required is 21
  - 1 Spark gap per input/output actuator per tank
    - Total spark gaps required is 21
- Tank Farm 2
  - 1 IF kit per flange immediately adjacent to each tank (tanks 8, 9, 10 and 11) per tank (3 off)
    - Total IF kits required is 12
  - 1 Spark gap per input/output actuator per tank
    - Total spark gaps required is 12

Annexures – additional pictures

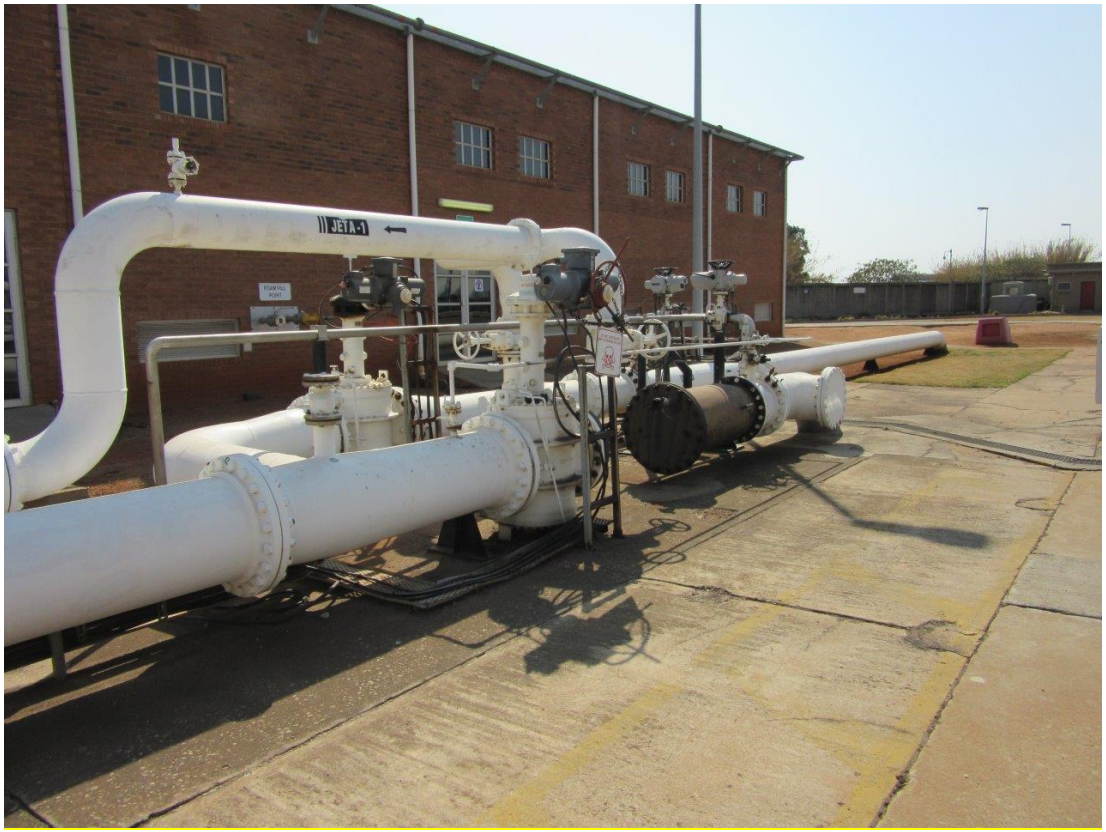

Figure 3: D1 and D2 actuated valves (D2 de-commissioned)

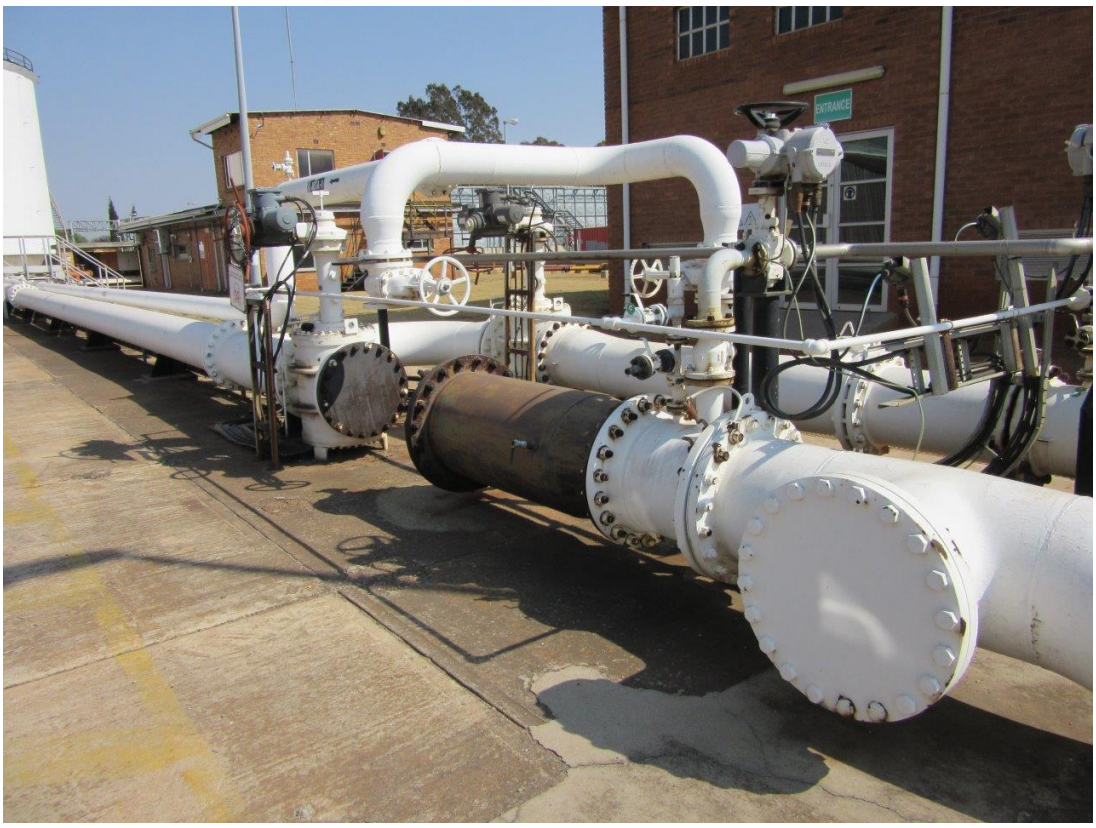

Figure 4: D1 and D2 actuated valves (D2 de-commissioned) reverse angle

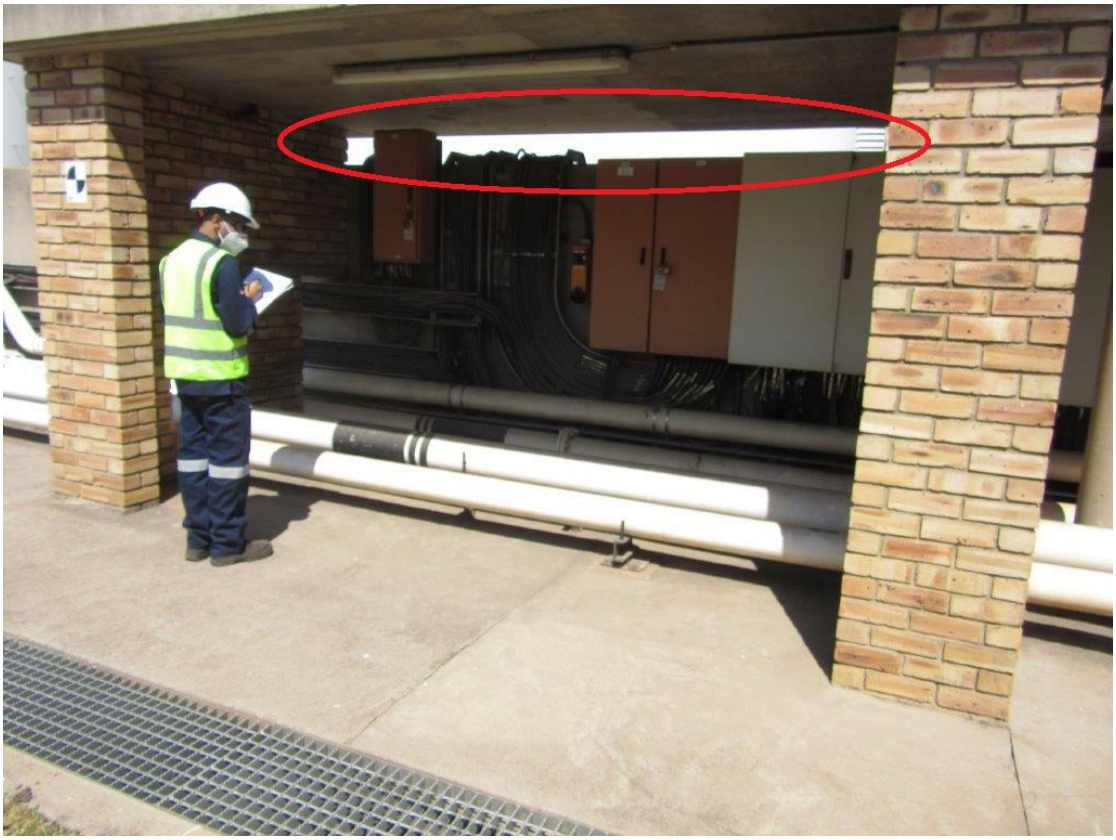

Figure 5: Bund wall local control panel - marked gap to be closed

Figure 6: Medium-sized bridged walkway required

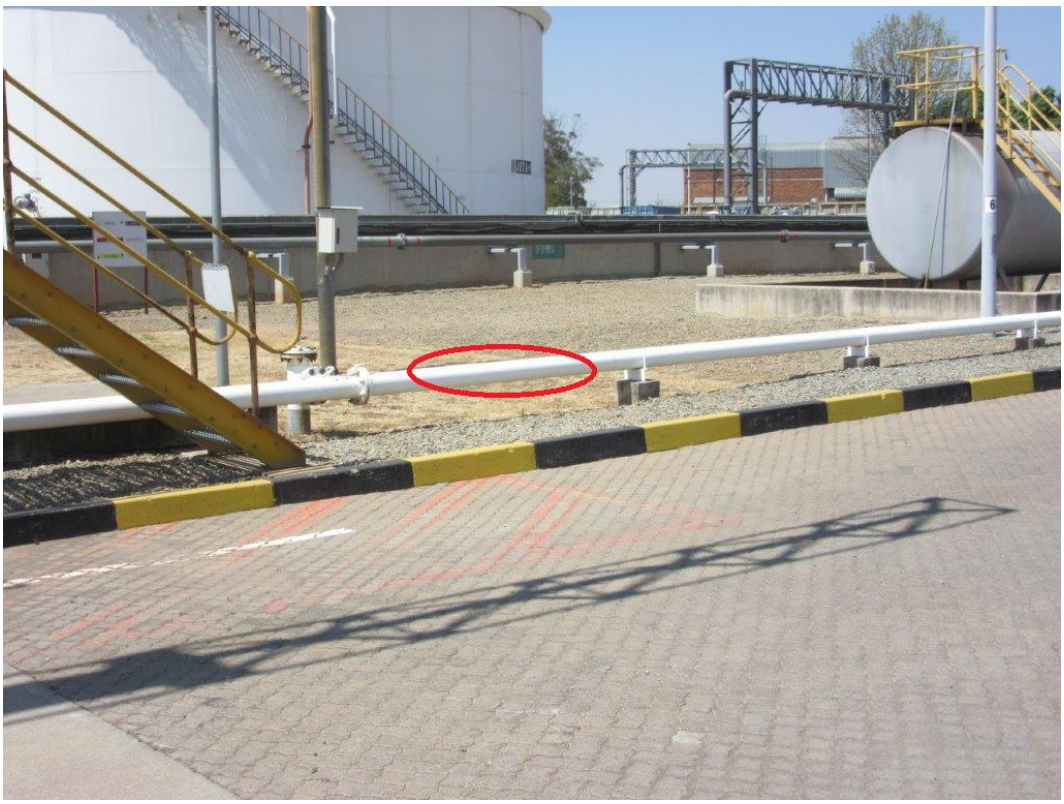

Figure 7: Small-sized bridged walkway