# AFRICAN STANDARD

# DARS 1372-4:2025

First Edition 2025



## Vehicle Load Management - Accreditation - Part 4: Weigh Station Accreditation Process

Reference No. ARS 1372-4:2025(E)
ICS 43.020

## Table of contents

## Foreword

The African Organization for Standardization (ARSO) is an African intergovernmental organization established by the United Nations Economic Commission for Africa (UNECA) and the Organization of African Unity (AU) in 1977. One of the fundamental mandates of ARSO is to develop and harmonize African Standards (ARS) for the purpose of enhancing Africa's internal trading capacity, increase Africa's product and service competitiveness globally and uplift the welfare of African communities. The work of preparing African Standards is normally carried out through ARSO technical committees. Each Member State interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, Regional Economic Communities (RECs), governmental and non-governmental organizations, in liaison with ARSO, also take part in the work.

ARSO Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare ARSO Standards. Draft ARSO Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an ARSO Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ARSO shall not be held responsible for identifying any or all such patent rights.

This African Standard was prepared by the ARSO Technical Committee Number 29 on Road, Rail, Air and Water Transport Infrastructure (ARSO/TC 29).



ARSO Central Secretariat
International House 3rd Floor
P. O. Box 57363 — 00200 City Square
NAIROBI, KENYA

Tel. +254-20-2224561, +254-20-3311641, +254-20-3311608

E-mail: arso@arso-oran.org
Web: www.arso-oran.org

ARSO Central Secretariat
International House 3rd Floor
P.O. Box 57363 — 00200 City Square
NAIROBI, KENYA

Tel: +254-20-2224561, +254-20-3311641, +254-20-3311608

E-mail: arso@arso-oran.org
Web: www.arso-oran.org

## Introduction

The main goal of a Weigh Station is effective and efficient vehicle load management. In order to achieve this goal, the design of a Weigh Station relates to layout, infrastructure and control equipment. Along with the physical design of a Weigh Station, the Vehicle Load Management Information System is necessary to support the Weigh Station in its vehicle load management operations, as well as to provide operational and management support to its personnel. The Weigh Station Staff Complement requires a Weigh Station maintenance and procedures manual to ensure all operations and the Weigh Station's maintenance are effectively operated with harmonised procedures and objectives.

In order to achieve this goal, the Weigh Station Accreditation Process details the requirements of a Weigh Station Accreditation Body, its Auditors and the process to have a Weigh Station accredited to operate as a specific Weigh Station Type.

This Standard is Part 4 of 4 Parts of a Weigh Station Accreditation Standard. The purpose of the parts of this Standard is to provide a framework for the minimum requirements of a Weigh Station to be Accredited, and to provide a framework for the Accreditation process that should be undertaken by Weigh Station Operators towards Accreditation.

Weigh Stations at which vehicle load management in respect of domestic road transport or international cross border road transport is performed, must be accredited and audited in accordance with Part 1 through 4 of this Standard, each part pertaining to a specific aspect of a Weigh Station:

Part 1: Weigh Station Layout and Design;

Part 2: Weigh Station Vehicle Load Management Information System;

Part 3: Weigh Station Procedures; and,

Part 4: Weigh Station Accreditation Process.

# Vehicle Load Management - Accreditation - Part 4: Weigh Station Accreditation Process

## 1 Scope and application

### 1.1. Scope

This document contains a proposed standard method to accredit Weigh Stations according to a recognised Weigh Station Type as specified in the Standard Design Specification and Technical Requirements of a Weigh Stations in order for the Weigh Station to become operational as well as for existing Weigh Stations to continue with its operations. The document also includes the minimum requirements of a Weigh Station Accreditation Body and its personnel.

### 1.2. Application

This part is intended to be used at Weigh Stations.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ARS 1372-1: Vehicle Load Management – Accreditation – Part 1: Weigh Station Layout & Design

ARS 1372-2: Vehicle Load Management – Accreditation – Part 2: Vehicle Load Management Information System

ARS 1372-3: Vehicle Load Management – Accreditation – Part 3: Weigh Station Procedures

ARS 1373: Verification of Static Scales

ARS 1374: Verification of Weigh in Motion Systems

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply:

### 3.1 Definitions

**3.1.1**
**Weigh Station Accreditation Body**
**WSAB**
Third-party conformity assessment body that performs certification operations.

**3.1.2**
**Assessment criteria**
Standards used for assessment during accreditation to certify compliance.

**3.1.3**
**Auditor**
A person managed by the Weigh Station Accreditation Body who performs the Weigh Station audits.



**3.1.4**
**Authorised Officers**
The collective of Licence Inspectors, Driving Examiners, Vehicle Examiners, Traffic Officers, Reserve Traffic Officers, Traffic Wardens, Transport Inspectors, Registration Officers and Weighbridge Operators.

**3.1.5**
**Maintenance Technicians**
The staff responsible for maintenance as applicable to computer equipment, weighing and control equipment, infrastructure and information systems.

**3.1.6**
**Traffic Authority**
The authority appointed by law, responsible to manage all traffic related legislated requirements.

**3.1.7**
**Tripartite Member/ Partner State**
Member or Partner State of the Tripartite Region in terms of the Tripartite Vehicle Load Management Agreement

**3.1.8**
**Vehicle Load Management Information System**
**VLMIS**
The computerised information system contemplated in ARS 1372-2: Vehicle Load Management – Accreditation – Part 2: Vehicle Load Management Information System.

**3.1.9**
**Weigh Station**
Includes all the equipment and processes required to determine if vehicles are overloaded or not

**3.1.10**
**Weigh Station type**
A type of Weigh Station categorised according to the location's ADTT and implemented procedures and Weigh Station equipment as specified in the Standard Design Specification of Weigh Stations

## 3.2 Abbreviations

For the purposes of this document, the following symbols and abbreviations apply.

**ADTT**
Average Daily Truck Traffic

**RWBLP**
Regional Weighbridge Location Plan

**TRIPS**
Transport Registers and Information Platform System

## 4 Weigh Station design overview

The Regional Weighbridge Location Plan (RWBLP) presented several different designs and types of Weigh Stations that are dependent on the purpose and the required location of the Weigh Station. The Weigh Stations are divided into the following categories:

1. Type 1: Multi-deck static scale, High Speed Weigh-in-Motion (HSWIM) and Low Speed Weigh-in-Motion (LSWIM);
2. Type 2: Multi-deck Static Scale and HSWIM;
    a. Large: HSWIM either in the road or in a screening lane.
    b. Small: No HSWIM is present.
3. Type 3: Single deck static scale or LSWIM.
4. Virtual Weigh Station, comprising of only a screening area.

The characteristics of each type of Weigh Station are summarised in Table 1.

**Table 1: Weigh Station Categories**

| # | Attribute | Weigh Station Categories | | |
|---|---|---|---|---|
| | | **Type 1** | **Type 2** | **Type 3** |
| 1 | **Traffic Volume** | High to very high heavy vehicle volumes | Medium to high heavy vehicle volumes | Low to medium heavy vehicle volumes |
| 2 | **Typical Duration of Operations** | Continuous, 24x7 24 hours/ day, 7 days/ week | Continuous or Non-continuous (e.g. at least 100 hours per week) | Continuous or Non-continuous (e.g. at least 20 hours per week) |
| 3 | **Holding Area** | Large capacity. Screening direct to yard when large number of vehicles are sent to scale. | Medium capacity. Load correction and service of notices after weighing. | Small capacity. Load correction and service of notices after weighing. |
| 4 | **Static Scale** | Multi-deck scale | Large Type 2 (Continuous, 24x7) Multi-deck scale Small Type 2 (At least 100 hours per week) Multi-deck scale | LSWIM Type 3 No Static Scale or Single Deck Type 3 |
| 5 | **WIM Scale** | HSWIM, LSWIM (optional) | HSWIM | LSWIM or None |
| 6 | **Violation Logger** | Yes | Yes | Yes |

Each Weigh Station type is designed to be able to process a certain number of heavy vehicles. Table 2 below presents each area of a Weigh Station and the capacity for heavy vehicles it must have.

**Table 2: Weigh Station Capacities**

| # | Activity | Type 1[a] | Large Type 2[a] | | Small Type 2[a] | Type 3 | |
|---|---|---|---|---|---|---|---|
| | | | Screening Lane | Road Screening | | LSWIM | Single Deck |
| 1 | **HSWIM Screening capacity (veh/h)** | ±240 | ±240 | ±120[d] | n/a | n/a | n/a |
| 2 | **LSWIM Screening capacity (veh/h)** | 90 - 180[b] | n/a | n/a | n/a | n/a | n/a |
| 3 | **Weighing capacity (veh/h)** | ±60[c] | ±60[c] | ±60[c] | ±60[c] | 40 - 60[g] | 20 - 40[e] |
| 4 | **Violation Processing capacity (veh/h)** | ±20 | ±15 | ±15 | ±10 | ±5 | ±5 |
| 5 | **Maximum system ADTT** | >2,500 | >1,500 | >750 | >500 | >300 | >200 |

(a) Per direction for a single installation on one side of the road.

(b) Depending on the axle configuration of the vehicles: 90 veh/h for high number of multiple axle and 180 veh/h for high number of 2 axle vehicles.

(c) Multi-deck scale.

(d) Trucks have to reduce speed to 50 km/h resulting in congestion.

(e) Depending on the axle configuration of the vehicles: 20 veh/h for high number of multiple axle and 40 veh/h for high number of 2 axle vehicles.

(f) Provided that the legislation allows Violation Notice issuance based on LSWIM weighing.

(g) Depending on the axle configuration of the vehicles: 40 veh/h for high number of multiple axle and 60 veh/h for high number of 2 axle vehicles.

## 5 Weigh Station accreditation process overview

A Weigh Station Accreditation will be conducted in the following manner:

1. An application for Weigh Station Accreditation shall be submitted to the Weigh Station Accreditation Body.

2. An Inspection Sheet, along with its supporting documentation, shall be submitted with the application.

3. The Weigh Station Accreditation Body will verify the Weigh Station Accreditation Application and supporting documentation.

4. An Auditor conforming to the requirements in 8.2 will be appointed by the Weigh Station Accreditation Body to conduct a Desktop Assessment of the application, inspection sheet and supporting documentation based on the accreditation criteria in order to make a judgement whether to proceed with an inspection to confirm the Weigh Station's compliance.

5. If the Desktop Assessment has been passed by the Auditor, the Weigh Station Inspection can be scheduled.

6. The Weigh Station Inspection is performed by the Auditor to verify the information provided by the applicant on the application and the Desktop Assessment and to perform a physical assessment of the Weigh Station based on the accreditation criteria inspection methodology.

7. The Auditor submits an Audit Report containing all findings, conclusions and recommendations of the Weigh Station Accreditation application. The applicant is notified of the accreditation's status.

8. Should the accreditation be successful, the Accreditation Body will issue an accreditation certificate with a validity for a period of five years.

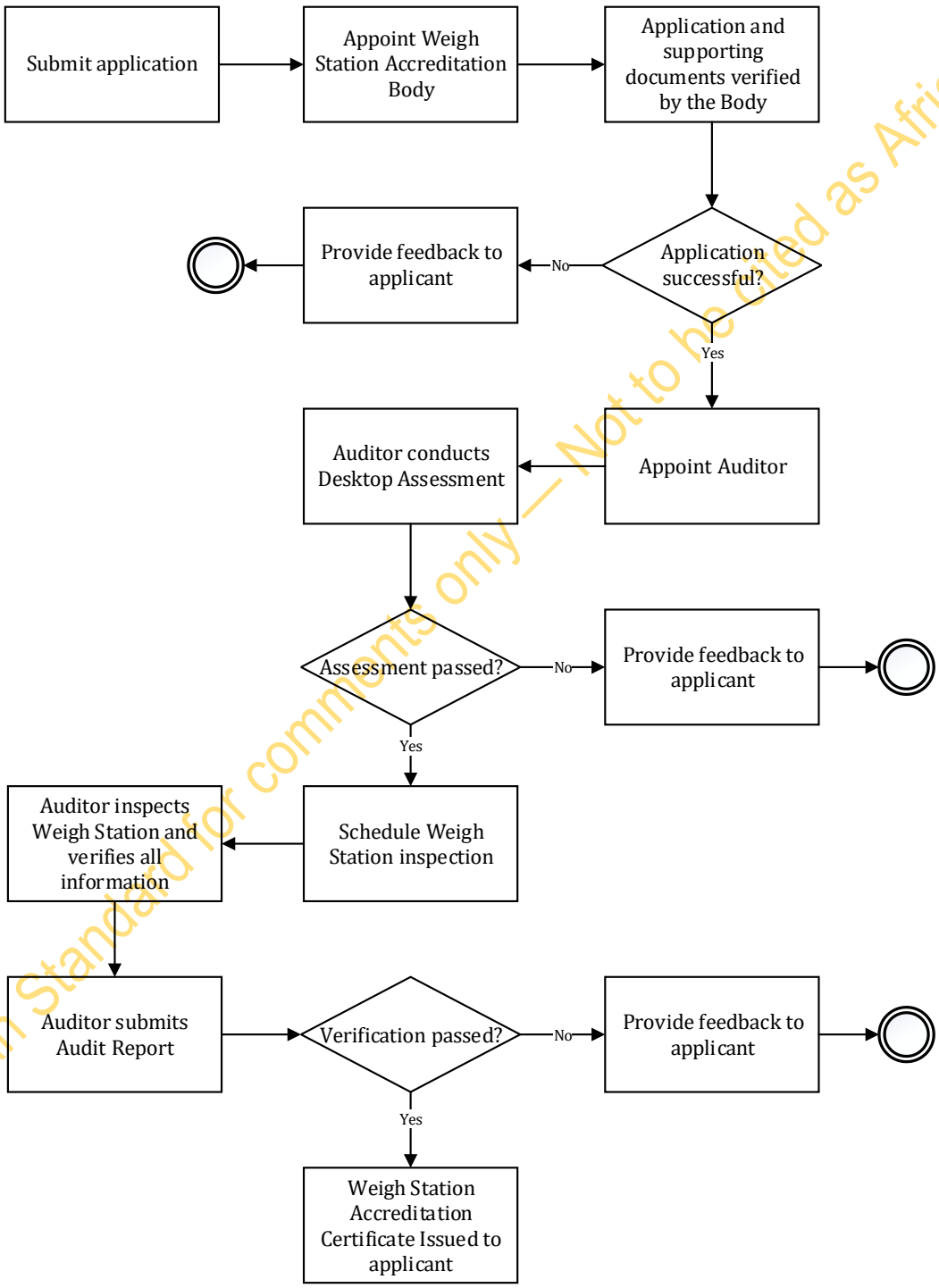



**Figure 1: Weigh Station Accreditation Process**

# 6 Weigh Station accreditation application

## 6.1. Weigh Station management application

As specified in the TTTFP Model Vehicle Load Management Regulations, any person, body of persons or government institution who intends to erect or operate a Weigh Station must apply to the Minister (or the entity who performs the functions in terms of the TTTFP Model Vehicle Load Management Act) for the accreditation of that Weigh Station. No Weigh Station may be operational unless it has been accredited in terms of the TTTFP Model Vehicle Load Management Regulations.

## 6.2. Supporting documents

The following supporting documents must be accompanied with an application for Weigh Station Accreditation:

1. Locality plan and drawings of the Weigh Station as specified in the TRS-007, Standard Design Specification and Technical Requirements of a Weigh Station.
2. Maintenance plan for the Weigh Station, specifying the maintenance of equipment and of the Weigh Station buildings.
3. Procedure Manuals of the Weigh Station.
4. Proof that the required insurance cover has been obtained in respect of the Weigh Station.
5. Completed Weigh Station Accreditation Inspection Sheet.
6. Calibration Certificate with calibration procedure documents.
7. Proof of payment made for the Weigh Station Accreditation.

# 7 Inspection sheet

Appendix B of this Standard contains the Inspection Sheet Criteria as specified in Part 1, Part 2 and Part 3. The respective Inspection Sheets shall be completed and submitted along with the Weigh Station accreditation application according to the Weigh Station Type for which the application was submitted.

# 8 Weigh Station Accreditation Body

A Weigh Station Accreditation Body will receive an application for the accreditation of a Weigh Station to verify the application and supporting documents. The same Weigh Station Accreditation Body will perform the Weigh Station inspection if the accreditation application was found compliant to all application requirements.

The appointed Weigh Station Accreditation Body must be independent with no interest in the Weigh Station being audited. The Weigh Station Accreditation Body must perform the accreditation verification free of any influences from parties whose interest might be harmed by the result of the accreditation verification.

## 8.1. Weigh Station Accreditation Body requirements

### 8.1.1. Application

In order for a prospective Weigh Station Accreditation Body to be accredited with certification to operate as a Weigh Station Accreditation Body, the Body must apply to its regional standards organisation for certification.

#### 8.1.2. Scope

The scope of operations of a Weigh Station Accreditation Body includes the following, but is not limited to:

1. Receives an approved Weigh Station application for accreditation from the Tripartite Member State's Traffic Authority.

2. Conducts desktop review of the Weigh Station accreditation applications. Should the findings of the review not be favourable, the applicant will be informed of the non-compliance and given six months in which to resubmit the application.

3. Provides the Tripartite Member State's Traffic Authority with status updates regarding Weigh Station accreditation when requested.

4. If the desktop review is favourable, the Accreditation Body will assigns Auditors to perform a desktop assessment.

5. If the desktop assessment is favourable, a visit to the Weigh Station is scheduled in order to inspect the Weigh Station and to perform the required assessment of the Weigh Station.

6. Provides a final audit report containing the findings and final recommendation of the Weigh Station accreditation application to the Accreditation Body for ratification.

7. The final results of the audit, including recommendations and the decision regarding the accreditation are conveyed to the applicant.

8. Should the accreditation be successful, the Accreditation Body will issue an accreditation certificate with a validity for a period of five years.

### 8.2. Auditor requirements

All Auditors of a Weigh Station Accreditation Body to verify a Weigh Station's accreditation application must adhere to the following minimum requirements:

1. Engineering Degree, or an equivalent, in the field of Vehicle Load Management,

2. At least 7 years' experience in Vehicle Load Management,

3. Substantial knowledge of Weigh Station Standards, and

4. At least 3 years' experience in performing certification audits or be certified in terms of ISO 9001(?) as Auditor.

## 9 Desktop assessment

The appointed Weigh Station Accreditation Body shall perform the desktop assessment of the Weigh Station accreditation application. The assessment will verify the compliance of the application based on the requirements as specified in the following standards:

1. Standard Design Specification and Technical Requirements of a Weigh Station

2. Standard Specification for a Vehicle Load Management Information System

3. Standard Procedures Manual for a Weigh Station



The assessment shall include the verification of all supporting documents submitted with the application as specified in section 6.2.

## 10 Weigh Station inspection

The Auditor of the Weigh Station Accreditation Body to conduct the Weigh Station inspection must verify all criteria in the Weigh Station accreditation application on the Inspection Sheet according to the requirements of the Weigh Station Type applied for.

If found that any of the requirements are not met, the findings must be recorded on the Inspection Sheet.

## 11 Audit report submission

The Audit Report must be submitted to the Weigh Station Accreditation Body by the Auditor who conducted the Desktop Assessment and the Weigh Station Inspection. The Audit Report must contain all findings, conclusions and recommendations of the Weigh Station accreditation application.

## 12 Weigh Station accreditation body management system

The Weigh Station Accreditation Body shall have a Management System on which the following functions shall be executed throughout the accreditation process:

1. Capture a Weigh Station accreditation application received from the Minister (or the entity who performs the functions in terms of the TTTFP Model Vehicle Load Management Act).
2. Schedule the Desktop Assessment with an Auditor.
3. Capture the Desktop Assessment results and supporting documentation.
4. Schedule the Weigh Station inspection to verify the application and Desktop Assessment results.
5. Capture the Weigh Station inspection results, in the form of the Audit Report.
6. Capture Weigh Station accreditation final result appeal applications.
7. Capture Weigh Station accreditation process complaints, feedback and investigation results.
8. Produce management reports, that shall include, but not be limited to the following:
    a. Number of applications received over time;
    b. Number of applications passed within a specified time period;
    c. Weigh Station Types applied for within a specified time period;
    d. List of Auditors;
    e. Query an application’s supporting documentation; and
    f. Audit trail of a Weigh Station’s accreditation process.

# 13 General requirements

## 13.1. Appeal on final accreditation result

An applicant for a Weigh Station's accreditation must be allowed to lodge an appeal against the final accreditation outcome submitted by the Auditor for the Weigh Station accreditation application.

The appeal must be lodged within ninety days (90 calendar days) of the date of issue of the Accreditation final report. The appeal application must be accompanied by supporting documentation for verification by another Auditor. If the Weigh Station Accreditation Body does not have another Auditor to review the appeal, an external Auditor shall be outsourced for the verification process. The applicant who submitted the appeal shall be notified of the outcome within sixty (60) calendar days.

## 13.2. Complaints on accreditation process

Any complaint submitted regarding a Weigh Station accreditation process must be acknowledged and investigated. The investigation results and feedback provided to the grievant must be stored for record purposes.

## Annex A
## (normative)
## Application Form

The Application Form is included on the next page

# WEIGH STATION ACCREDITATION APPLICATION FORM

| PART A: APPLICATION TYPE | |
|---|---|
| **New** | **Amendment** |

| PART B: WEIGH STATION DETAIL | |
|---|---|
| **Name of Weigh Station:** | |
| **Weigh Station Type:** | |
| **Physical Address:** | |
| **Postal Address:** | |

| PART C: WEIGH STATION APPLICANT PARTICULARS | |
|---|---|
| **First Name:** | |
| **Surname:** | |
| **National Identity Number:** | |
| **Physical Address:** | |
| **Postal Address:** | |
| **Telephone Number:** | |
| **Email Address:** | |

| PART D: SUPPORTING DOCUMENTS | |
|---|---|
| **Tick if Attached** | **Documents** |
| ☐ | Locality Plan as specified in the ARS 1372-1 |
| ☐ | Drawings of the Weigh Station as specified ARC 1372-1 |
| | VLMIS outline as specified in ARS 1372-2 |
| ☐ | Maintenance procedure for the Weigh Station as specified in DARS 1372-3 |
| ☐ | Procedure Manuals of the Weigh Station as specified in DARS 1372-3 |
| ☐ | Proof of Insurance Cover of the Weigh Station |
| ☐ | Completed Weigh Station Accreditation Inspection Sheet as specified in Annex B |
| ☐ | Static Scale Calibration Certificate with calibration procedure documents as specified in ARS 1373 for Static Scales and ARD 1374 for WIM Systems, if applicable |
| ☐ | Proof of payment for Weigh Station Accreditation |

| PART E: PREVIOUS ACCREDITATION | | |
|---|---|---|
| Has the Weigh Station been accredited before? | Yes | No |

*If yes provide details.*

| Entity | Date | Passed/Failed | Comment |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

| PART F: DECLARATION | |
|---|---|
| | I, the applicant, hereby: |

1. Declare that I have the authority to submit this application;
2. Declare that all the particulars furnished by me in this form are true and correct; and
3. Realise that a false declaration is punishable with a fine or imprisonment or both.

| Signature: | | Place: | | Date: | D | D | / | M | M | / | Y | Y | Y | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

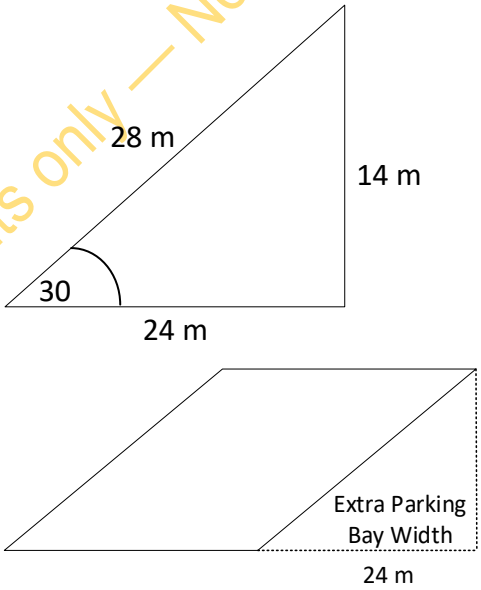
# Annex B
(normative)
Accreditation Inspection sheet

## B.1 Part 1: Weigh Station design

### B.1.1 Criterion 1: Weigh Station layout

#### B.1.1.1 Type 1 Weigh Station

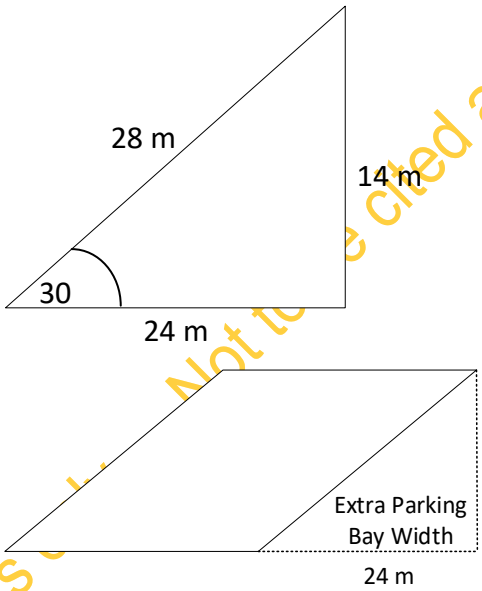
| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | General: Weigh Station Capacity | HSWIM Screening capacity (veh/h) | ±240 | |
| 2 | General: Weigh Station Capacity | LSWIM Screening capacity (veh/h) | 90 - 180 | |
| 3 | General: Weigh Station Capacity | Weighing capacity (veh/h) | ±60 | |
| 4 | General: Weigh Station Capacity | Violation Processing capacity (veh/h) | ±20 | |
| 5 | General: Holding Area | Maximum system ADTT | >2,500 | |
| 6 | Holding Area: Geometry Requirements | General | Dedicated Holding Area | |
| 7 | Holding Area: Geometry Requirements | General | Sufficient capacity for vehicles to be parked during load correction and possible payment of overload violation fee before continuing on their journey. | |
| 8 | Holding Area: Geometry Requirements | General | Sufficient capacity for the manoeuvring of relief vehicles to take cargo or trailers from overloaded vehicles | |
| 9 | Holding Area: Geometry Requirements | General | No storage facility available at the Holding area | |
| 10 | Holding Area: Geometry Requirements | General | Unloading of cargo without proper transport from the Weigh Station is considered a violation | |
| 11 | Holding Area: Geometry Requirements | General | Controlled entrance to prevent vehicles entering for load correction purposes without being weighed first | |
| 12 | Holding Area: Geometry Requirements | General | Controlled exit to prevent vehicles departing without permission | |
| 13 | Holding Area: Geometry Requirements | General | Optional Boom to restrict movement towards the Weighing Area | |
| 14 | Design Specification: Holding Yard Dimensions | Number of parking bays | 2 × ( Violation Processing Capacity Rate) × Holding Time | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 15 | Design Specification: Holding Yard Dimensions | Number of parking bays | Holding Area has its own relief vehicle | |
| 16 | Design Specification: Holding Yard Dimensions | Width of Holding Yard | Turning Circle Radius + sin(Parking Bay Angle) × Length of Parking Bay | |
| 17 | Design Specification: Holding Yard Dimensions | Length of Holding Yard | Turning Circle Radius + Number of Parking Bays × Parking Bay Width + Extra Parking Bay Width | |
| 18 | Design Specification: Holding Yard Dimension Variables | Violation Processing Capacity Rate | 10-20 vehicles/hour | |
| 19 | Design Specification: Holding Yard Dimension Variables | Holding Time | 1 hour | |
| 20 | Design Specification: Holding Yard Dimension Variables | Parking Bay Angle | 30°<br>  | |
| 21 | Design Specification: Holding Yard Dimension Variables | Turning Circle Radius | 20 m | |
| 22 | Design Specification: Holding Yard Dimension Variables | Length of Parking Bay | 28 m | |
| 23 | Design Specification: Holding Yard | Width of Parking Bay | 6 m | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | Dimension Variables | | | |
| 24 | Design Specification: Holding Yard Dimensions | Number of Parking Bays | 15-25 | |
| 25 | Design Specification: Holding Yard Dimensions | Width | 34 m | |
| 26 | Design Specification: Holding Yard Dimensions | Length | 150-300 m | |
| 27 | Design Specification: Weighing Area Dimensions | Width | 30-50 m | |
| 28 | Design Specification: Weighing Area Dimensions | Length | 240-305 m | |
| 29 | Design Specification: HSWIM Screening Area Dimensions | Width | 30-50 m | |
| 30 | Design Specification: HSWIM Screening Area Dimensions | Length | 390-460 m | |
| 31 | Design Specification: LSWIM Screening Area Dimensions | Width | 30-50 m | |
| 32 | Design Specification: LSWIM Screening Area Dimensions | Length | 240-305 m | |
| 33 | Design Specification: Total Screening Area Dimensions | Width | 60-100 m | |
| 34 | Design Specification: Total Screening Area Dimensions | Length | 690-825 m | |

### B.1.1.2 Type 2 Weigh Station with dedicated screening lanes

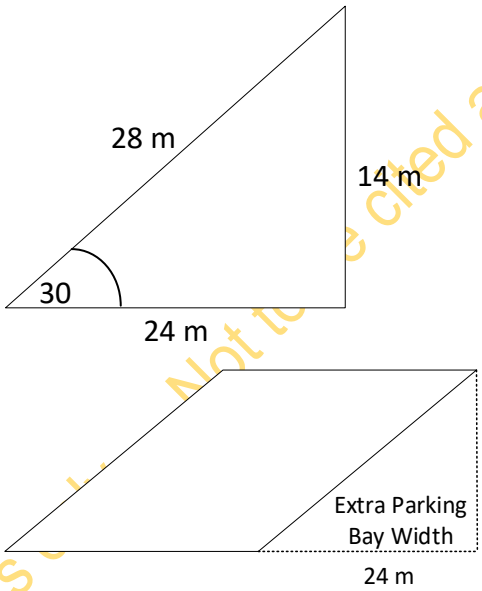
| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | General: Weigh Station Capacity | HSWIM Screening capacity (veh/h) | ±240 | |
| 2 | General: Weigh Station Capacity | LSWIM Screening capacity (veh/h) | N/A | |
| 3 | General: Weigh Station Capacity | Weighing capacity (veh/h) | ±60 | |
| 4 | General: Weigh Station Capacity | Violation Processing capacity (veh/h) | ±15 | |
| 5 | General: Holding Area | Maximum system ADTT | >1500 | |
| 6 | Holding Area: Geometry Requirements | General | Dedicated Holding Area | |
| 7 | Holding Area: Geometry Requirements | General | Sufficient capacity for vehicles to be parked during load correction and possible payment of overload violations before continuing on their journey. | |
| 8 | Holding Area: Geometry Requirements | General | Sufficient capacity for the manoeuvring of relief vehicles to take cargo or trailers from overloaded vehicles | |
| 9 | Holding Area: Geometry Requirements | General | No storage facility available at the Holding area | |
| 10 | Holding Area: Geometry Requirements | General | Unloading of cargo without proper transport from the Weigh Station is considered a violation | |
| 11 | Holding Area: Geometry Requirements | General | Controlled entrance to prevent vehicles entering for load correction purposes without being weighed first | |
| 12 | Holding Area: Geometry Requirements | General | Controlled exit to prevent vehicles departing without permission | |
| 13 | Holding Area: Geometry Requirements | General | Optional Boom to restrict movement towards the Weighing Area | |
| 14 | Design Specification: Holding Yard Dimensions | Number of parking bays | 2 × (Violation Processing Capacity Rate) × Holding Time | |
| 15 | Design Specification: Holding Yard Dimensions | Number of parking bays | Holding Area has its own relief vehicle | |
| 16 | Design Specification: Holding Yard Dimensions | Width of Holding Yard | Turning Circle Radius + sin(Parking Bay Angle) × Length of Parking Bay | |
| 17 | Design Specification: Holding Yard Dimensions | Length of Holding Yard | Turning Circle Radius + Number of Parking Bays × Parking Bay Width + Extra Parking Bay Width | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 18 | Design Specification: Holding Yard Dimension Variables | Violation Processing Capacity Rate | 7-15 vehicles/hour | |
| 19 | Design Specification: Holding Yard Dimension Variables | Holding Time | 1 hour | |
| 20 | Design Specification: Holding Yard Dimension Variables | Parking Bay Angle | 30°   | |
| 21 | Design Specification: Holding Yard Dimension Variables | Turning Circle Radius | 20 m | |
| 22 | Design Specification: Holding Yard Dimension Variables | Length of Parking Bay | 28 m | |
| 23 | Design Specification: Holding Yard Dimension Variables | Width of Parking Bay | 6 m | |
| 24 | Design Specification: Holding Yard Dimensions | Number of Parking Bays | 15-20 | |
| 25 | Design Specification: Holding Yard Dimensions | Width | 34 m | |
| 26 | Design Specification: | Length | 150-230 m | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | Holding Yard Dimensions | | | |
| 27 | Design Specification: Weighing Area Dimensions | Width | 30-50 m | |
| 28 | Design Specification: Weighing Area Dimensions | Length | 240-305 m | |
| 29 | Design Specification: HSWIM Screening Area Dimensions | Width | 30-50 m | |
| 30 | Design Specification: HSWIM Screening Area Dimensions | Length | 380-450 m | |
| 31 | Design Specification: Minimum area requirement | Total Weigh Station | 10.2 Hectares | |

### B.1.1.3 Type 2 Weigh Station without dedicated screening lanes

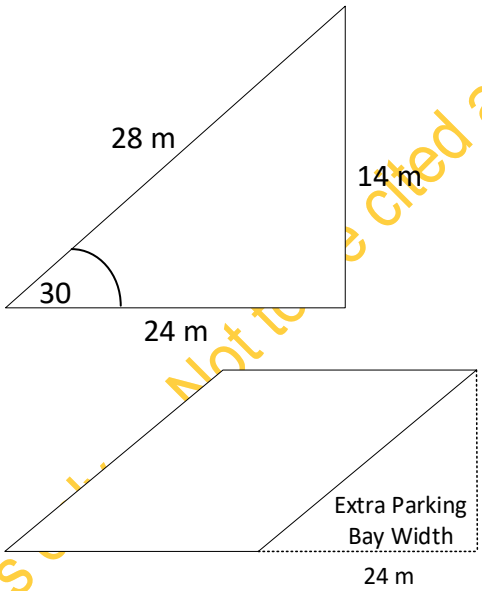
| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | General: Weigh Station Capacity | HSWIM Screening capacity (veh/h) | ±120 | |
| 2 | General: Weigh Station Capacity | LSWIM Screening capacity (veh/h) | N/A | |
| 3 | General: Weigh Station Capacity | Weighing capacity (veh/h) | ±60 | |
| 4 | General: Weigh Station Capacity | violation Processing capacity (veh/h) | ±15 | |
| 5 | General: Holding Area | Maximum system ADTT | >750 | |
| 6 | Holding Area: Geometry Requirements | General | Dedicated Holding Area | |
| 7 | Holding Area: Geometry Requirements | General | Sufficient capacity for vehicles to be parked during load correction and possible payment of overload violations before continuing on their journey. | |
| 8 | Holding Area: Geometry Requirements | General | Sufficient capacity for the manoeuvring of relief vehicles to take cargo or trailers from overloaded vehicles | |
| 9 | Holding Area: Geometry Requirements | General | No storage facility available at the Holding area | |
| 10 | Holding Area: Geometry Requirements | General | Unloading of cargo without proper transport from the Weigh Station is considered a violation | |
| 11 | Holding Area: Geometry Requirements | General | Controlled entrance to prevent vehicles entering for load correction purposes without being weighed first | |
| 12 | Holding Area: Geometry Requirements | General | Controlled exit to prevent vehicles departing without permission | |
| 13 | Holding Area: Geometry Requirements | General | Optional Boom to restrict movement towards the Weighing Area | |
| 14 | Design Specification: Holding Yard Dimensions | Number of parking bays | 2 × (Violation Processing capacity Rate) × Holding Time | |
| 15 | Design Specification: Holding Yard Dimensions | Number of parking bays | Holding Area has its own relief vehicle | |
| 16 | Design Specification: Holding Yard Dimensions | Width of Holding Yard | Turning Circle Radius + sin(Parking Bay Angle) × Length of Parking Bay | |
| 17 | Design Specification: Holding Yard Dimensions | Length of Holding Yard | Turning Circle Radius + Number of Parking Bays × Parking Bay Width + Extra Parking Bay Width | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 18 | Design Specification: Holding Yard Dimension Variables | Violation Processing capacity Rate | 7-15 vehicles/hour | |
| 19 | Design Specification: Holding Yard Dimension Variables | Holding Time | 1 hour | |
| 20 | Design Specification: Holding Yard Dimension Variables | Parking Bay Angle | 30°   | |
| 21 | Design Specification: Holding Yard Dimension Variables | Turning Circle Radius | 20 m | |
| 22 | Design Specification: Holding Yard Dimension Variables | Length of Parking Bay | 28 m | |
| 23 | Design Specification: Holding Yard Dimension Variables | Width of Parking Bay | 6 m | |
| 24 | Design Specification: Holding Yard Dimensions | Number of Parking Bays | 15-20 | |
| 25 | Design Specification: Holding Yard Dimensions | Width | 34 m | |
| 26 | Design Specification: | Length | 150-230 m | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | Holding Yard Dimensions | | | |
| 27 | Design Specification: Weighing Area Dimensions | Width | 30-50 m | |
| 28 | Design Specification: Weighing Area Dimensions | Length | 240-305 m | |
| 29 | Design Specification: Total Screening Area Dimensions | Width | 30-60 m | |
| 30 | Design Specification: Total Screening Area Dimensions | Length | 200-250 m | |
| 31 | Design Specification: Minimum area requirement | Total Weigh Station | 7.68 Hectares | |

### B.1.1.4 Type 2 Small Weigh Station

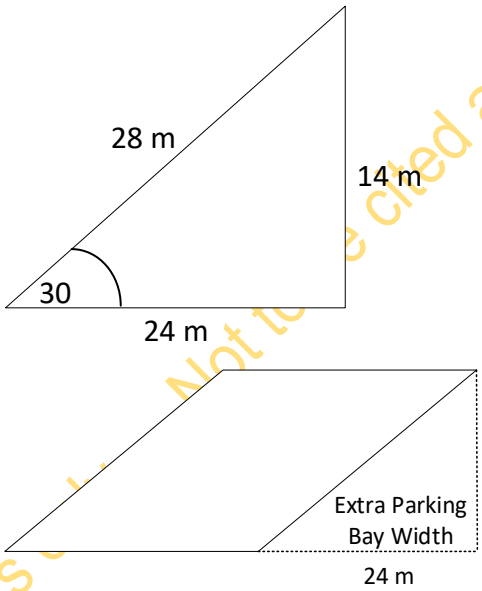
| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | General: Weigh Station Capacity | HSWIM Screening capacity (veh/h) | ±240 | |
| 2 | General: Weigh Station Capacity | LSWIM Screening capacity (veh/h) | N/A | |
| 3 | General: Weigh Station Capacity | Weighing capacity (veh/h) | ±60 | |
| 4 | General: Weigh Station Capacity | Violation Processing capacity (veh/h) | ±15 | |
| 5 | General: Holding Area | Maximum system ADTT | >1500 | |
| 6 | Holding Area: Geometry Requirements | General | Dedicated Holding Area | |
| 7 | Holding Area: Geometry Requirements | General | Sufficient capacity for vehicles to be parked during load correction and possible payment of overload violations before continuing on their journey. | |
| 8 | Holding Area: Geometry Requirements | General | Sufficient capacity for the manoeuvring of relief vehicles to take cargo or trailers from overloaded vehicles | |
| 9 | Holding Area: Geometry Requirements | General | No storage facility available at the Holding area | |
| 10 | Holding Area: Geometry Requirements | General | Unloading of cargo without proper transport from the Weigh Station is considered a violation | |
| 11 | Holding Area: Geometry Requirements | General | Controlled entrance to prevent vehicles entering for load correction purposes without being weighed first | |
| 12 | Holding Area: Geometry Requirements | General | Controlled exit to prevent vehicles departing without permission | |
| 13 | Holding Area: Geometry Requirements | General | Optional Boom to restrict movement towards the Weighing Area | |
| 14 | Design Specification: Holding Yard Dimensions | Number of parking bays | 2 × (Violation Processing capacity Rate) × Holding Time | |
| 15 | Design Specification: Holding Yard Dimensions | Number of parking bays | Number of parking bays | |
| 16 | Design Specification: Holding Yard Dimensions | Width of Holding Yard | Turning Circle Radius + sin(Parking Bay Angle) × Length of Parking Bay | |
| 17 | Design Specification: Holding Yard Dimensions | Length of Holding Yard | Turning Circle Radius + Number of Parking Bays × Parking Bay Width + Extra Parking Bay Width | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 18 | Design Specification: Holding Yard Dimension Variables | Violation Processing capacity Rate | 7-15 vehicles/hour | |
| 19 | Design Specification: Holding Yard Dimension Variables | Holding Time | 1 hour | |
| 20 | Design Specification: Holding Yard Dimension Variables | Parking Bay Angle | 30°<br>  <br> | |
| 21 | Design Specification: Holding Yard Dimension Variables | Turning Circle Radius | 20 m | |
| 22 | Design Specification: Holding Yard Dimension Variables | Length of Parking Bay | 28 m | |
| 23 | Design Specification: Holding Yard Dimension Variables | Width of Parking Bay | 6 m | |
| 24 | Design Specification: Holding Yard Dimensions | Number of Parking Bays | 15-20 | |
| 25 | Design Specification: Holding Yard Dimensions | Width | 34 m | |
| 26 | Design Specification: | Length | 150-230 m | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | Holding Yard Dimensions | | | |
| 27 | Design Specification: Weighing Area Dimensions | Width | 30-50 m | |
| 28 | Design Specification: Weighing Area Dimensions | Length | 240-305 m | |
| 29 | Design Specification: Total Screening Area Dimensions | Width | 30-50 m | |
| 30 | Design Specification: Total Screening Area Dimensions | Length | 380-450 m | |
| 31 | Design Specification: Minimum area requirement | Total Weigh Station | 10.2 Hectares | |

### B.1.1.5 Type 3 LSWIM Weigh Station

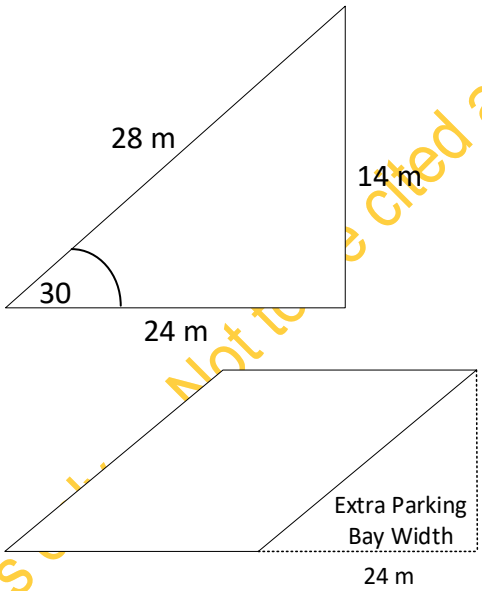
| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | General: Weigh Station Capacity | HSWIM Screening capacity (veh/h) | N/A | |
| 2 | General: Weigh Station Capacity | LSWIM Screening capacity (veh/h) | N/A | |
| 3 | General: Weigh Station Capacity | Weighing capacity (veh/h) | 40 - 60 | |
| 4 | General: Weigh Station Capacity | Violation Processing capacity (veh/h) | ±5 | |
| 5 | General: Holding Area | Maximum system ADTT | >300 | |
| 6 | Holding Area: Geometry Requirements | General | Dedicated Holding Area | |
| 7 | Holding Area: Geometry Requirements | General | Sufficient capacity for vehicles to be parked during load correction and possible payment of overload violations before continuing on their journey. | |
| 8 | Holding Area: Geometry Requirements | General | Sufficient capacity for the manoeuvring of relief vehicles to take cargo or trailers from overloaded vehicles | |
| 9 | Holding Area: Geometry Requirements | General | No storage facility available at the Holding area | |
| 10 | Holding Area: Geometry Requirements | General | Unloading of cargo without proper transport from the Weigh Station is considered a violation | |
| 11 | Holding Area: Geometry Requirements | General | Controlled entrance to prevent vehicles entering for load correction purposes without being weighed first | |
| 12 | Holding Area: Geometry Requirements | General | Controlled exit to prevent vehicles departing without permission | |
| 13 | Holding Area: Geometry Requirements | General | Optional Boom to restrict movement towards the Weighing Area | |
| 14 | Design Specification: Holding Yard Dimensions | Number of parking bays | 2 × (Violation Processing capacity Rate) × Holding Time | |
| 15 | Design Specification: Holding Yard Dimensions | Number of parking bays | Sufficient parking capacity for the manoeuvring of relief vehicles to take cargo or trailers from overloaded vehicles | |
| 16 | Design Specification: Holding Yard Dimensions | Width of Holding Yard | Turning Circle Radius + sin(Parking Bay Angle) × Length of Parking Bay | |
| 17 | Design Specification: Holding Yard Dimensions | Length of Holding Yard | Turning Circle Radius + Number of Parking Bays × Parking Bay Width + Extra Parking Bay Width | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 18 | Design Specification: Holding Yard Dimension Variables | Violation Processing capacity Rate | 5 vehicles/hour | |
| 19 | Design Specification: Holding Yard Dimension Variables | Holding Time | 1 hour | |
| 20 | Design Specification: Holding Yard Dimension Variables | Parking Bay Angle | 30°<br>  | |
| 21 | Design Specification: Holding Yard Dimension Variables | Turning Circle Radius | 20 m | |
| 22 | Design Specification: Holding Yard Dimension Variables | Length of Parking Bay | 28 m | |
| 23 | Design Specification: Holding Yard Dimension Variables | Width of Parking Bay | 6 m | |
| 24 | Design Specification: Holding Yard Dimensions | Number of Parking Bays | 5-10 | |
| 25 | Design Specification: Holding Yard Dimensions | Width | 34 m | |
| 26 | Design Specification: | Length | 100-150 m | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | Holding Yard Dimensions | | | |
| 27 | Design Specification: Weighing Area Dimensions | Width | 30-50 m | |
| 28 | Design Specification: Weighing Area Dimensions | Length | 240-305 m | |
| 29 | Design Specification: Minimum area requirement | Total Weigh Station | 2.73 Hectares | |

### B.1.1.6 Type 3 Static Scale Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | General: Weigh Station Capacity | HSWIM Screening capacity (veh/h) | N/A | |
| 2 | General: Weigh Station Capacity | LSWIM Screening capacity (veh/h) | N/A | |
| 3 | General: Weigh Station Capacity | Weighing capacity (veh/h) | 20 - 40 | |
| 4 | General: Weigh Station Capacity | Processing capacity (veh/h) | ±5 | |
| 5 | General: Holding Area | Maximum system ADTT | >200 | |
| 6 | Holding Area: Geometry Requirements | General | Dedicated Holding Area | |
| 7 | Holding Area: Geometry Requirements | General | Sufficient capacity for vehicles to be parked during load correction and possible payment of overload violations before continuing on their journey. | |
| 8 | Holding Area: Geometry Requirements | General | Sufficient capacity for the manoeuvring of relief vehicles to take cargo or trailers from overloaded vehicles | |
| 9 | Holding Area: Geometry Requirements | General | No storage facility available at the Holding area | |
| 10 | Holding Area: Geometry Requirements | General | Unloading of cargo without proper transport from the Weigh Station is considered a violation | |
| 11 | Holding Area: Geometry Requirements | General | Controlled entrance to prevent vehicles entering for load correction purposes without being weighed first | |
| 12 | Holding Area: Geometry Requirements | General | Controlled exit to prevent vehicles departing without permission | |
| 13 | Holding Area: Geometry Requirements | General | Optional Boom to restrict movement towards the Weighing Area | |
| 14 | Design Specification: Holding Yard Dimensions | Number of parking bays | 2 × (Violation Processing Capacity Rate) × Holding Time | |
| 15 | Design Specification: Holding Yard Dimensions | Number of parking bays | Sufficient parking capacity for the manoeuvring of relief vehicles to take cargo or trailers from overloaded vehicles | |
| 16 | Design Specification: Holding Yard Dimensions | Width of Holding Yard | Turning Circle Radius + sin(Parking Bay Angle) × Length of Parking Bay | |
| 17 | Design Specification: Holding Yard Dimensions | Length of Holding Yard | Turning Circle Radius + Number of Parking Bays × Parking Bay Width + Extra Parking Bay Width | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 18 | Design Specification: Holding Yard Dimension Variables | Violation Processing capacity Rate | 5 vehicles/hour | |
| 19 | Design Specification: Holding Yard Dimension Variables | Holding Time | 2 hour | |
| 20 | Design Specification: Holding Yard Dimension Variables | Parking Bay Angle | 30°<br>  | |
| 21 | Design Specification: Holding Yard Dimension Variables | Turning Circle Radius | 20 m | |
| 22 | Design Specification: Holding Yard Dimension Variables | Length of Parking Bay | 28 m | |
| 23 | Design Specification: Holding Yard Dimension Variables | Width of Parking Bay | 6 m | |
| 24 | Design Specification: Holding Yard Dimensions | Number of Parking Bays | 5-10 | |
| 25 | Design Specification: Holding Yard Dimensions | Width | 34 m | |
| 26 | Design Specification: | Length | 100-150 m | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | Holding Yard Dimensions | | | |
| 27 | Design Specification: Weighing Area Dimensions | Width | 30-50 m | |
| 28 | Design Specification: Weighing Area Dimensions | Length | 240-305 m | |
| 29 | Design Specification: Minimum area requirement | Total Weigh Station | 2.73 Hectares | |

### B.1.2 Criterion 2: Screening

#### B.1.2.1 Type 1 Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | General: Weigh Station Capacity | HSWIM Screening capacity (veh/h) | ±240 | |
| 2 | Screening Area: Equipment | General | Dedicated screening lane | |
| 3 | Screening Area: Equipment | General | HSWIM | |
| 4 | Screening Area: Equipment | General | LSWIM | |
| 5 | Screening Area: Equipment | General | HSWIM is in a dedicated screening lane | |
| 6 | Screening Area: Equipment | General | HSWIM is on the main road | |
| 7 | Screening Area: Equipment | General | LSWIM is in a dedicated screening lane after the exit of the HSWIM and before the entrance of the Weighing Area | |
| 8 | Screening Area: Equipment | General | Traffic Lights | |
| 9 | Screening Area: Equipment | General | Booms | |
| 10 | Screening Area: Equipment | General | Loops | |
| 11 | Screening Area: Equipment | General | Automatic Number Plate Recognition (ANPR) Cameras | |
| 12 | Screening Area: Equipment | General | Overview Cameras | |
| 13 | Screening Area: Equipment | General | Violation Logger | |
| 14 | Screening Area: Equipment | General | Violation Logger is placed on the main road | |
| 15 | HSWIM: Other systems | General | Operates as a standalone subsystem to the VLMIS | |
| 16 | HSWIM: Other systems | General | Operates as an integrated component to the VLMIS | |
| 17 | HSWIM: Standards | General | Complies to ASTM Type Approval and Verification | |
| 18 | HSWIM: Standards | General | Complies to Vehicle Load Management – Equipment Verification – Weigh-in-Motion System Verification | |
| 19 | HSWIM: General Requirements | General | Provides for single threshold weighing | |
| 20 | HSWIM: General Requirements | Speed range operating standard | 10 km/h to 120 km/h | |
| 21 | HSWIM: General Requirements | Axles mass measurement | < 20 000 kg | |
| 22 | HSWIM: General Requirements | Equipment | 2 Loops | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 23 | HSWIM: General Requirements | Equipment | 2 Scale decks per lane | |
| 24 | HSWIM: General Requirements | Equipment | Scale decks and loops shall cover the entire lane width | |
| 25 | HSWIM: General Requirements | Minimum parameters measured | The speed of the vehicle | |
| 26 | HSWIM: General Requirements | Minimum parameters measured | Time of departure of each vehicle | |
| 27 | HSWIM: General Requirements | Minimum parameters measured | Axle configuration – the numerical representation and combination of axles and axle units of a vehicle | |
| 28 | HSWIM: General Requirements | Minimum parameters measured | Vehicle classification | |
| 29 | HSWIM: General Requirements | Minimum parameters measured | Mass per axle | |
| 30 | HSWIM: General Requirements | Minimum parameters measured | Total mass for the vehicle | |
| 31 | HSWIM: General Requirements | Minimum parameters measured | Following interval between sequential vehicles (% <2sec) | |
| 32 | HSWIM: General Requirements | Minimum parameters measured | Vehicle length | |
| 33 | HSWIM: General Requirements | Minimum parameters measured | The number of vehicles passing the point | |
| 34 | HSWIM: General Requirements | Scale decks' technology | Unless specified to the contrary in the detail specification, the scale decks shall operate on any suitable and proven technology | |
| 35 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Hourly traffic flows per lane | |
| 36 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Distinction between heavy vehicles and light vehicles per hour per lane | |
| 37 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Daily traffic flows per lane | |
| 38 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Distinction between heavy vehicles and light vehicles per day per lane | |
| 39 | HSWIM: General Requirements | Information to be determined after | Short heavy vehicles (up to 12,5 m long) | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | data is collected and processed | | |
| 40 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Medium heavy vehicles (12,5 m and up to 17,0 m long) | |
| 41 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Long heavy vehicles (over 17,0 m long) | |
| 42 | HSWIM: General Requirements | Information to be determined after data is collected and processed | The number of heavy vehicles per axle configuration per day where “axle configuration ” refers to the numerical representation of axles per axle units of heavy vehicle | |
| 43 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Individual axle loads (only for heavy vehicles) | |
| 44 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Speed | |
| 45 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Following distance (% of vehicles under 2 seconds) | |
| 46 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Axle load violation | |
| 47 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Scale load violation | |
| 48 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Excess over the legal axle load limits of the axles exceeding the legal axle load limits | |
| 49 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Total number of E80 units, determined from the formula E80 d (d/8,2)n, where n 4,2 and d is the actual axle load in ton calculated on individual axles | |
| 50 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Total E80 portion resulting from the axles exceeding the legal limits, represented as a percentage of the total number of E80 units | |
| 51 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Grouped distribution of heavy axles with groups 0…1t, 1…2t, 2…3t, up until, 19…20t | |
| 52 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Average E80 units | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 53 | HSWIM: Functional Requirements | Vehicle Accommodation | Single vehicles and Vehicle combinations with up to 9 axles | |
| 54 | HSWIM: Functional Requirements | Functionality | Automatically determines measurements for each vehicle | |
| 55 | HSWIM: Functional Requirements | Automated Measurements | Vehicle mass | |
| 56 | HSWIM: Functional Requirements | General | Axle spacing, vehicle length and speed | |
| 57 | HSWIM: Functional Requirements | General: Accuracy of axle spacing | ± 150 mm | |
| 58 | HSWIM: Functional Requirements | General: Accuracy of vehicle length | ± 300 mm | |
| 59 | HSWIM: Functional Requirements | General: Accuracy of speed | ± 2 km/h | |
| 60 | HSWIM: Functional Requirements | General: Accuracy performance testing amount | > 40 trucks | |
| 61 | HSWIM: Functional Requirements | Violation determiner | Determines for any vehicle, if any axle(s) or axle unit(s) exceed the regulations as per the Vehicle Load Management Model Law and Regulations | |
| 62 | HSWIM: Functional Requirements | HSWIM Controller: Minimum individual vehicle records to store | 30 000 | |
| 63 | HSWIM: Functional Requirements | HSWIM Controller: Minimum days of data stored | 30 days | |
| 64 | HSWIM: Functional Requirements | HSWIM Controller: Power Protection | The storage device is protected against power interruptions and is not susceptible to loss of accumulated data | |
| 65 | HSWIM: Functional Requirements | HSWIM Controller | The controller unit calculates and stores data for all vehicles passing through the system even during periods of access, by portable PC or remotely by the host computer, real-time view, and downloading of data | |
| 66 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum front axle mass for all individual vehicle records stored | 1 500 kg | |
| 67 | HSWIM: Functional Requirements | HSWIM Controller Data: | Lane number | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | Minimum data recorded | | |
| 68 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Time and date | |
| 69 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Axle configuration | |
| 70 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Sequential Vehicle number | |
| 71 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Speed | |
| 72 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Mass in kilogram (kg) of each wheel or dual set of wheels by left and right side and by axle number | |
| 73 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Mass per axle by axle number | |
| 74 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Total mass for the vehicle | |
| 75 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Overall length of each vehicle or combination of vehicles in millimetres (mm) | |
| 76 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Spacing in millimetres (mm) between each sequentially numbered axle | |
| 77 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Identification for records of invalid measurement(s) | |
| 78 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Code for mass violation(s) as per the Vehicle Load Management Model Law and Regulations | |
| 79 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Following interval between sequential vehicles in seconds (%<2 seconds) | |
| 80 | HSWIM: Functional Requirements | Record transmission | Transmitting of each truck record to the host computer is executed as soon as the truck record is completed | |
| 81 | HSWIM: Functional Requirements | Record transmission | If communication is lost with the host computer, the truck record is stored as specified. All truck records in the storing | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | medium of the controller are transmitted to the host computer when communication to the host computer is back online | |
| 82 | HSWIM: Functional Requirements | Record transmission | All data is accessed and all required reports are generated by use of software running on the host computer | |
| 83 | HSWIM: Functional Requirements | 0 | The controller unit's communication capabilities are fully compatible with the host computer | |
| 84 | HSWIM: Equipment enclosure | Housing of Equipment | A suitable enclosure assembly for housing all required HSWIM system electronic equipment, controller electronic equipment and instrumentation is supplied and installed | |
| 85 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Number of keys furnished for the cabinet | **2** | |
| 86 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Minimum degree of protection | IP55 | |
| 87 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The enclosure is a freestanding unit with bottom cable entry and is suitable for outdoor installation | |
| 88 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The cabinet is of sufficient size to accommodate all equipment | |
| 89 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The design of the cooling system of the enclosure is designed to ensure that the internal temperature is maintained at a supplier specified operating level for all components and that the contents of the enclosure are maintained under pressure | |
| 90 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The cabinet and doors are manufactured to be bullet proof when shot at with a 9 mm pistol at a distance of 3 metres | |
| 91 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | All exterior seams are continuously welded. All surfaces are free from weld flash. Welds are smooth, neatly formed, free from cracks, blowholes and other irregularities. All sharp edges are grounded smooth | |
| 92 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | Vermin/rodent proof | |
| 93 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | Front door equipped with a lock. Provision is made for a padlock for the cabinet | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 94 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The doorframe is designed so that the latching mechanism will hold tension on and form a firm seal | |
| 95 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Minimum gasket material dimensions | 6 mm thick by 12 mm wide | |
| 96 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | The main door closes against a weatherproof and dust proof, closed-cell neoprene gasket seal | |
| 97 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Hinges are bolted to the cabinet | |
| 98 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Hinge pins and bolts are not be accessible when the door is closed | |
| 99 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Door hinges, pins and bolts are be made of stainless steel | |
| 100 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Provided with substantial metal shelves and brackets to support equipment | |
| 101 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | No fasteners (e.g. screws, bolts or nuts) protrude beyond the outside wall of the cabinet | |
| 102 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Coatings are smooth, free of flow lines, paint washout, streaks, blisters and no impairment of serviceability or general appearance is allowed | |
| 103 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Conductor sizes and types are selected according to their application | |
| 104 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Conductor colours are selected to suit their application and purpose | |
| 105 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All conductors are provided with suitable wiring numbers on both ends | |
| 106 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Where conductors are connected to terminal blocks, the terminals are clearly numbered and are clearly identifiable on the loop diagrams and schematic diagrams | |
| 107 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Wiring within the cabinet is laced or enclosed in plastic tubing or raceway and arranged neatly | |
| 108 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Conductor passages through any sharp object are finished with purpose-made rubber or plastic linings | |
| 109 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Conductors used in cabinet wiring are terminated with properly sized captive type terminals | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 110 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Permanent alphanumeric labels identify all field input/output (I/O) terminals | |
| 111 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | An equipment grounding conductor bus is provided in the cabinet. The bus is grounded to the cabinet and is connected to the ground conductor of the power supply. | |
| 112 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | A socket outlet of 15A rating complete with local earth leakage is mounted in a readily accessible location inside the cabinet | |
| 113 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All doors is bonded to the earth bar in the cabinet by means of braided copper conductors (16 $mm^2$ minimum), screw down lugs and brass screws | |
| 114 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Suitably sized terminal blocks, with a minimum rating of 10 amperes, is provided for field connections. | |
| 115 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Field terminals are installed within 300 mm of the face of the cabinet and is oriented for screwdriver operation from the door opening | |
| 116 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All terminals are a minimum of 300 mm above the foundation | |
| 117 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | An incoming power supply surge arrester is implemented | |
| 118 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All sensor cabling is installed in class 3 polyethylene conduit at least 600 mm deep | |
| 119 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All conduits, pull boxes, etc. is bonded together and earthed | |
| 120 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Marking tape shall be inserted ± 250 mm below ground level during backfilling of trenches | |
| 121 | HSWIM: Equipment enclosure | Power Panel | Consists of a separate, wholly enclosed module, securely fastened. | |
| 122 | HSWIM: Equipment enclosure | Power Panel | Manufactured from sheet steel with a removable plastic front cover | |
| 123 | HSWIM: Equipment enclosure | Power Panel | Allows access to the auxiliary and main circuit breakers without removing the front cover | |
| 124 | HSWIM: Equipment enclosure | Power Panel | Is wired to provide the necessary power to the cabinet and all equipment and auxiliary equipment | |
| 125 | HSWIM: Equipment enclosure | Housed components | Main circuit breaker (40A) complete with an earth leakage unit | |
| 126 | HSWIM: Equipment enclosure | Housed components | Line surges voltage protection unit | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 127 | HSWIM: Equipment enclosure | Housed components | Two (2) auxiliary 20A circuit breakers. One wired to the required socket outlet unit located in the cabinet and the other bypassing the earth leakage for supplying the HSWIM equipment with electrical power | |
| 128 | HSWIM: Equipment enclosure | Cabinet Instillation | Located next to the main road, as close as practical to the weight sensors but safely out of the way of traffic | |
| 129 | HSWIM: Equipment enclosure | Cabinet Instillation | Is supplied with at least four (4) anchor bolts to properly secure the cabinet to its base. The cabinet flange for securing the anchor bolts does not protrude outward from the bottom of the cabinet | |
| 130 | HSWIM: Equipment enclosure | Cabinet Instillation | An adequate amount of conduit is provided through the concrete foundation for wiring and cabling purposes | |
| 131 | HSWIM: Equipment enclosure | Cabinet Instillation | All foundations are plumb and square | |
| 132 | HSWIM: Equipment enclosure | Cabinet Instillation | A seal is placed between the controller cabinet and the concrete foundation for an effective seal to prevent dirt, water, dust and insects from entering the cabinet | |
| 133 | HSWIM: Specific Requirements | 0 | Dual Weigh Sensors | |
| 134 | HSWIM: Specific Requirements | Primary Sensor Inputs | Primary: Multiple channel self-tuning detector (up to 16 channels). | |
| 135 | HSWIM: Specific Requirements | Primary Sensor Inputs | Multiple channel axle detector (minimum of 8 channels). | |
| 136 | HSWIM: Specific Requirements | Secondary Sensor Inputs | Multiple Channel LSWIM interface (piezoresistive, capacitive or piezoelectric) up to 16 channels. | |
| 137 | HSWIM: Specific Requirements | Secondary Sensor Inputs | 8 channel I/O card. | |
| 138 | HSWIM: Specific Requirements | Memory Option | 8 mm battery backed up memory | |
| 139 | HSWIM: Specific Requirements | Power Management | Mains power supply and charger (110V – 220V) 12V DC | |
| 140 | HSWIM: Specific Requirements | Power Management | 5.5 – 7 Watt (nominal dependent on number of WIM weight sensors) | |
| 141 | HSWIM: Specific Requirements | Power Management | External power (300mA) to ancillary devices (2) | |
| 142 | HSWIM: Specific Requirements | Power Management | Hot – swap battery plugs | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 143 | HSWIM: Specific Requirements | Control, Data Extraction and Communication | Two RS 232 ports (300 – 19200 baud) | |
| 144 | HSWIM: Specific Requirements | Control, Data Extraction and Communication | Local via laptop | |
| 145 | HSWIM: Specific Requirements | Control, Data Extraction and Communication | Remote via modem, network or direct fibre links | |
| 146 | HSWIM: Geometric Roadway Design | Minimum Standards: Horizontal Alignment | Radius ≥ 1700m, 60m before/after | |
| 147 | HSWIM: Geometric Roadway Design | Minimum Standards: Longitudinal Alignment | 60m in advance and 30 m beyond shall not exceed 2% | |
| 148 | HSWIM: Geometric Roadway Design | Minimum Standards: Roadway Grade | ≤1%, 91m before/after | |
| 149 | HSWIM: Geometric Roadway Design | Minimum Standards: Cross Slope (lateral) | ≤3%, 60m in advance and 30 m beyond shall not exceed 2% | |
| 150 | HSWIM: Geometric Roadway Design | Minimum Standards: Lane Width | 3-4.5m, 46m before/after | |
| 151 | LSWIM: Other systems | General | Operates as a standalone subsystem to the VLMIS | |
| 152 | LSWIM: Other systems | General | Operates as an integrated component to the VLMIS | |
| 153 | LSWIM: Standards | General | Complies to ASTM Type Approval and Verification | |
| 154 | LSWIM: Standards | General | Complies to Vehicle Load Management – Equipment Verification – Weigh-in-Motion System Verification | |
| 155 | LSWIM: General Requirements | General | Provides for single threshold weighing of wheels and axles | |
| 156 | LSWIM: General Requirements | Speed range operating standard | 0 km/h to 8 km/h | |
| 157 | LSWIM: General Requirements | Axles mass measurement | < 20 000 kg | |
| 158 | LSWIM: General Requirements | Equipment | 2 Loops | |
| 159 | LSWIM: General Requirements | Equipment | 2 Scale decks per lane | |
| 160 | LSWIM: General Requirements | Equipment | Scale decks and loops shall cover the entire lane width | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 161 | LSWIM: General Requirements | Minimum parameters measured | The date and time | |
| 162 | LSWIM: General Requirements | Minimum parameters measured | The speed of the vehicle | |
| 163 | LSWIM: General Requirements | Minimum parameters measured | Time of departure of each vehicle | |
| 164 | LSWIM: General Requirements | Minimum parameters measured | The volume of vehicles passing the point | |
| 165 | LSWIM: General Requirements | Minimum parameters measured | Time of departure of each vehicle | |
| 166 | LSWIM: General Requirements | Minimum parameters measured | Axle Spacing | |
| 167 | LSWIM: General Requirements | Minimum parameters measured | Axle configuration | |
| 168 | LSWIM: General Requirements | Minimum parameters measured | Mass per wheel | |
| 169 | LSWIM: General Requirements | Minimum parameters measured | Mass per axle | |
| 170 | LSWIM: General Requirements | Minimum parameters measured | Mass per axle unit | |
| 171 | LSWIM: General Requirements | Minimum parameters measured | Following Interval (%<2 seconds) | |
| 172 | LSWIM: General Requirements | Minimum parameters measured | Gross Vehicle Mass | |
| 173 | LSWIM: General Requirements | Minimum parameters measured | Vehicle length | |
| 174 | LSWIM: General Requirements | Scale decks' technology | Unless specified to the contrary in the detail specification, the scale decks shall operate on any suitable and proven technology | |
| 175 | LSWIM: General Requirements | Information to be determined after data is collected and processed | The number of heavy vehicles per axle configuration per day where “axle configuration ” refers to the numerical representation of axles per Axle Unit per heavy vehicle | |
| 176 | LSWIM: General Requirements | Information to be determined after data is collected and processed | Individual axle loads | |
| 177 | LSWIM: General Requirements | Information to be determined after data is collected and processed | Axle load violation | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 178 | LSWIM: General Requirements | Information to be determined after data is collected and processed | Scale load violation | |
| 179 | LSWIM: General Requirements | Information to be determined after data is collected and processed | Excess over the legal axle load limits of the axles exceeding the legal axle load limits | |
| 180 | LSWIM: General Requirements | Information to be determined after data is collected and processed | Grouped distribution of heavy axles with groups 0…1t, 1…2t, 2…3t, up until, 19…20t | |
| 181 | LSWIM: General Requirements | Vehicle Accommodation | Single vehicles and Vehicle combinations with up to 9 axles | |
| 182 | LSWIM: General Requirements | Functionality | Automatically determines measurements for each vehicle | |
| 183 | LSWIM: General Requirements | Automated Measurements | Vehicle mass | |
| 184 | LSWIM: General Requirements | Automated Measurements | Axle spacing, vehicle length and speed | |
| 185 | LSWIM: General Requirements | Automated Measurements: Accuracy of axle spacing | ± 150 mm | |
| 186 | LSWIM: General Requirements | Automated Measurements: Accuracy of vehicle length | ± 300 mm | |
| 187 | LSWIM: General Requirements | Automated Measurements: Accuracy of speed | ± 2 km/h | |
| 188 | LSWIM: General Requirements | Automated Measurements: Accuracy performance testing amount | > 40 trucks | |
| 189 | LSWIM: General Requirements | Violation determiner | Determines for any vehicle, if any axle(s) or axle Unit(s) exceed the regulations as per the Vehicle Load Management Model Law and Regulations | |
| 190 | LSWIM: General Requirements | LSWIM Controller: Minimum individual vehicle records to store | 30 000 | |
| 191 | LSWIM: General Requirements | LSWIM Controller: Minimum days of data stored | 30 days | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 192 | LSWIM: General Requirements | LSWIM Controller: Power Protection | The storage device is protected against power interruptions and is not susceptible to loss of accumulated data | |
| 193 | LSWIM: General Requirements | LSWIM Controller | The controller unit calculates and stores data for all vehicles passing through the system even during periods of access, by portable PC or remotely by the host computer, real-time view, and downloading of data | |
| 194 | LSWIM: General Requirements | LSWIM Controller Data: Record specification | Individual vehicle records for all vehicles | |
| 195 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Time and date | |
| 196 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Axle configuration | |
| 197 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Speed | |
| 198 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Mass in kilogram (kg) of each wheel or dual set of wheels by left and right side and by axle number | |
| 199 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Mass per axle by axle number | |
| 200 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Total mass for the vehicle | |
| 201 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Overall length of each vehicle or combination of vehicles in millimetres (mm) | |
| 202 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Spacing in millimetres (mm) between each sequentially numbered axle | |
| 203 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Identification for records of invalid measurement(s) | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 204 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Code for mass violation(s) as per the Vehicle Load Management Model Law and Regulations | |
| 205 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Following interval between sequential vehicles in seconds (%<2 seconds) | |
| 206 | LSWIM: General Requirements | LSWIM Controller Data: Record transmission | Transmitting of each truck record to the host computer is executed as soon as the truck record is completed | |
| 207 | LSWIM: General Requirements | LSWIM Controller Data: Record transmission | If communication is lost with the host computer, the truck record is stored as specified. All truck records in the storing medium of the controller are transmitted to the host computer when communication to the host computer is back online | |
| 208 | LSWIM: General Requirements | LSWIM Controller Data: Record transmission | All data is accessed and all required reports are generated by use of software running on the host computer | |
| 209 | LSWIM: General Requirements | LSWIM Controller Data: Record transmission | The controller unit's communication capabilities are fully compatible with the host computer | |
| 210 | LSWIM: General Requirements | LSWIM Controller Data: Operating temperature range | -10°C and +50°C | |
| 211 | LSWIM: Equipment enclosure | Housing of Equipment | A suitable enclosure assembly for housing all required HSWIM system electronic equipment, controller electronic equipment and instrumentation is supplied and installed | |
| 212 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Number of keys furnished for the cabinet | 2 | |
| 213 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Minimum degree of protection | IP55 | |
| 214 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The enclosure is a freestanding unit with bottom cable entry and is suitable for outdoor installation | |
| 215 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The cabinet is of sufficient size to accommodate all equipment | |
| 216 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The design of the cooling system of the enclosure is designed to ensure that the internal temperature is maintained at a supplier specified operating level for all | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | components and that the contents of the enclosure are maintained under pressure | |
| 217 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The cabinet and doors are manufactured to be bullet proof when shot at with a 9 mm pistol at a distance of 3 metres | |
| 218 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | All exterior seams are continuously welded. All surfaces are free from weld flash. Welds are smooth, neatly formed, free from cracks, blowholes and other irregularities. All sharp edges are grounded smooth | |
| 219 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | Vermin/rodent proof | |
| 220 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | Front door equipped with a lock. Provision is made for a padlock for the cabinet | |
| 221 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The doorframe is designed so that the latching mechanism will hold tension on and form a firm seal | |
| 222 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Conductor sizes and types are selected according to their application | |
| 223 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Conductor colours are selected to suit their application and purpose | |
| 224 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | All conductors are provided with suitable wiring numbers on both ends | |
| 225 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Where conductors are connected to terminal blocks, the terminals are clearly numbered and are clearly identifiable on the loop diagrams and schematic diagrams | |
| 226 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Wiring within the cabinet is laced or enclosed in plastic tubing or raceway and arranged neatly | |
| 227 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Conductor passages through any sharp object are finished with purpose-made rubber or plastic linings | |
| 228 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Conductors used in cabinet wiring are terminated with properly sized captive type terminals | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 229 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Permanent alphanumeric labels identify all field input/output (I/O) terminals | |
| 230 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | An equipment grounding conductor bus is provided in the cabinet. The bus is grounded to the cabinet and is connected to the ground conductor of the power supply. | |
| 231 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | A socket outlet of 15A rating complete with local earth leakage is mounted in a readily accessible location inside the cabinet | |
| 232 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | All doors is bonded to the earth bar in the cabinet by means of braided copper conductors (16 mm² minimum), screw down lugs and brass screws | |
| 233 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Suitably sized terminal blocks, with a minimum rating of 10 amperes, is provided for field connections. | |
| 234 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Field terminals are installed within 300 mm of the face of the cabinet and is oriented for screwdriver operation from the door opening | |
| 235 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | All terminals are a minimum of 300 mm above the foundation | |
| 236 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | An incoming power supply surge arrester is implemented | |
| 237 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | All sensor cabling is installed in class 3 polyethylene conduit at least 600 mm deep | |
| 238 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | All conduits, pull boxes, etc. is bonded together and earthed | |
| 239 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Marking tape shall be inserted ± 250 mm below ground level during backfilling of trenches | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 240 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Power Panel | Consists of a separate, wholly enclosed module, securely fastened. | |
| 241 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Power Panel | Manufactured from sheet steel with a removable plastic front cover | |
| 242 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Power Panel | Allows access to the auxiliary and main circuit breakers without removing the front cover | |
| 243 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Power Panel | Is wired to provide the necessary power to the cabinet and all equipment and auxiliary equipment | |
| 244 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Housed components | Main circuit breaker (40A) complete with an earth leakage unit | |
| 245 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Housed components | Line surges voltage protection unit | |
| 246 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Housed components | Two (2) auxiliary 20A circuit breakers. One wired to the required socket outlet unit located in the cabinet and the other bypassing the earth leakage for supplying the HSWIM equipment with electrical power | |
| 247 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Cabinet Instillation | Located next to the main road, as close as practical to the weight sensors but safely out of the way of traffic | |
| 248 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Cabinet Instillation | Is supplied with at least four (4) anchor bolts to properly secure the cabinet to its base. The cabinet flange for securing the anchor bolts does not protrude outward from the bottom of the cabinet | |
| 249 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Cabinet Instillation | An adequate amount of conduit is provided through the concrete foundation for wiring and cabling purposes | |
| 250 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Cabinet Instillation | All foundations are plumb and square | |
| 251 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Cabinet Instillation | A seal is placed between the controller cabinet and the concrete foundation for an effective seal to prevent dirt, water, dust and insects from entering the cabinet | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 252 | LSWIM: Specified Requirements | 0 | Dual Weigh Sensors | |
| 253 | LSWIM: Specified Requirements | Primary Sensor Inputs | Primary: Multiple channel self-tuning detector (up to 16 channels). | |
| 254 | LSWIM: Specified Requirements | Primary Sensor Inputs | Multiple channel axle detector (minimum of 8 channels). | |
| 255 | LSWIM: Specified Requirements | Secondary Sensor Inputs | Multiple Channel LSWIM interface (piezoresistive, capacitive or piezoelectric) up to 16 channels. | |
| 256 | LSWIM: Specified Requirements | Secondary Sensor Inputs | 8 channel I/O card. | |
| 257 | LSWIM: Specified Requirements | Memory Option | 8 mm battery backed up memory | |
| 258 | LSWIM: Specified Requirements | Power Management | Mains power supply and charger (110V – 220V) 12V DC | |
| 259 | LSWIM: Specified Requirements | Power Management | 5.5 – 7 Watt (nominal dependent on number of WIM weight sensors) | |
| 260 | LSWIM: Specified Requirements | Power Management | External power (300mA) to ancillary devices (2) | |
| 261 | LSWIM: Specified Requirements | Power Management | Hot – swap battery plugs | |
| 262 | LSWIM: Specified Requirements | Control, Data Extraction and Communication | Two RS 232 ports (300 – 19200 baud) | |
| 263 | LSWIM: Specified Requirements | Control, Data Extraction and Communication | Local via laptop | |
| 264 | LSWIM: Specified Requirements | Control, Data Extraction and Communication | Remote via modem, network or direct fibre links | |
| 265 | LSWIM: Geometric Roadway Design | Minimum Standards: Horizontal Alignment | Radius ≥ 1700m, 60m before/after | |
| 266 | LSWIM: Geometric Roadway Design | Minimum Standards: Longitudinal Alignment | 60m in advance and 30 m beyond shall not exceed 1% | |
| 267 | LSWIM: Geometric Roadway Design | Minimum Standards: Roadway Grade | ≤1%, 91m before/after | |
| 268 | LSWIM: Geometric Roadway Design | Minimum Standards: Cross Slope (lateral) | ≤3%, 60m in advance and 30 m beyond shall not exceed 2% | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 269 | LSWIM: Geometric Roadway Design | Minimum Standards: Lane Width | 3-4.5m, 46m before/after | |

### B.1.2.2 Type 2 Weigh Station with dedicated screening lanes

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Screening Area: Equipment | General | Dedicated screening lane | |
| 2 | Screening Area: Equipment | General | HSWIM | |
| 3 | Screening Area: Equipment | General | LSWIM | |
| 4 | Screening Area: Equipment | General | HSWIM is in a dedicated screening lane | |
| 5 | Screening Area: Equipment | General | HSWIM is on the main road | |
| 6 | Screening Area: Equipment | General | LSWIM is in a dedicated screening lane after the exit of the HSWIM and before the entrance of the Weighing Area | |
| 7 | Screening Area: Equipment | General | Traffic Lights | |
| 8 | Screening Area: Equipment | General | Booms | |
| 9 | Screening Area: Equipment | General | Loops | |
| 10 | Screening Area: Equipment | General | Automatic Number Plate Recognition (ANPR) Cameras | |
| 11 | Screening Area: Equipment | General | Overview Cameras | |
| 12 | Screening Area: Equipment | General | Violation Logger | |
| 13 | Screening Area: Equipment | General | Violation Logger is placed on the main road | |
| 14 | HSWIM: Other systems | General | Operates as a standalone subsystem to the VLMIS | |
| 15 | HSWIM: Other systems | General | Operates as an integrated component to the VLMIS | |
| 16 | HSWIM: Standards | General | Complies to ASTM Type Approval and Verification | |
| 17 | HSWIM: Standards | General | Complies to Vehicle Load Management – Equipment Verification – Weigh-in-Motion System Verification | |
| 18 | HSWIM: General Requirements | General | Provides for single threshold weighing | |
| 19 | HSWIM: General Requirements | Speed range operating standard | 10 km/h to 120 km/h | |
| 20 | HSWIM: General Requirements | Axles mass measurement | < 20 000 kg | |
| 21 | HSWIM: General Requirements | Equipment | 2 Loops | |
| 22 | HSWIM: General Requirements | Equipment | 2 Scale decks per lane | |
| 23 | HSWIM: General Requirements | Equipment | Scale decks and loops shall cover the entire lane width | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 24 | HSWIM: General Requirements | Minimum parameters measured | The speed of the vehicle | |
| 25 | HSWIM: General Requirements | Minimum parameters measured | Time of departure of each vehicle | |
| 26 | HSWIM: General Requirements | Minimum parameters measured | Axle configuration – the numerical representation of axles per axle units of heavy vehicle | |
| 27 | HSWIM: General Requirements | Minimum parameters measured | Vehicle classification | |
| 28 | HSWIM: General Requirements | Minimum parameters measured | Mass per axle | |
| 29 | HSWIM: General Requirements | Minimum parameters measured | Total mass for the vehicle | |
| 30 | HSWIM: General Requirements | Minimum parameters measured | Following interval between sequential vehicles (% <2sec) | |
| 31 | HSWIM: General Requirements | Minimum parameters measured | Vehicle length | |
| 32 | HSWIM: General Requirements | Minimum parameters measured | The number of vehicles passing the point | |
| 33 | HSWIM: General Requirements | Scale decks' technology | Unless specified to the contrary in the detail specification, the scale decks shall operate on any suitable and proven technology | |
| 34 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Hourly traffic flows per lane | |
| 35 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Distinction between heavy vehicles and light vehicles per hour per lane | |
| 36 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Daily traffic flows per lane | |
| 37 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Distinction between heavy vehicles and light vehicles per day per lane | |
| 38 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Short heavy vehicles (up to 12,5 m long) | |
| 39 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Medium heavy vehicles (12,5 m and up to 17,0 m long) | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 40 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Long heavy vehicles (over 17,0 m long) | |
| 41 | HSWIM: General Requirements | Information to be determined after data is collected and processed | The number of heavy vehicles per axle configuration per day where axle configuration refers to numerical representation of axles per axle units of heavy vehicle | |
| 42 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Individual axle loads (only for heavy vehicles) | |
| 43 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Speed | |
| 44 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Following distance (% of vehicles under 2 seconds) | |
| 45 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Axle load violation | |
| 46 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Scale load violation | |
| 47 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Excess over the legal axle load limits of the axles exceeding the legal axle load limits | |
| 48 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Total number of E80 units, determined from the formula E80 = d (d/8,2)n, where n = 4,2 and d is the actual axle load in ton calculated on individual axles | |
| 49 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Total E80 portion resulting from the axles exceeding the legal limits, represented as a percentage of the total number of E80 units | |
| 50 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Grouped distribution of heavy axles with groups 0…1t, 1…2t, 2…3t, up until, 19…20t | |
| 51 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Average E80 units | |
| 52 | HSWIM: Functional Requirements | Vehicle Accommodation | Single vehicles and Vehicle combinations with up to 9 axles | |
| 53 | HSWIM: Functional Requirements | Functionality | Automatically determines measurements for each vehicle | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 54 | HSWIM: Functional Requirements | Automated Measurements | Vehicle mass | |
| 55 | HSWIM: Functional Requirements | General | Axle spacing, vehicle length and speed | |
| 56 | HSWIM: Functional Requirements | General: Accuracy of axle spacing | ± 150 mm | |
| 57 | HSWIM: Functional Requirements | General: Accuracy of vehicle length | ± 300 mm | |
| 58 | HSWIM: Functional Requirements | General: Accuracy of speed | ± 2 km/h | |
| 59 | HSWIM: Functional Requirements | General: Accuracy performance testing amount | > 40 trucks | |
| 60 | HSWIM: Functional Requirements | Violation determiner | Determines for any vehicle, if any axle(s) or axle unit(s) exceed the regulations as per the Vehicle Load Management Model Law and Regulations | |
| 61 | HSWIM: Functional Requirements | HSWIM Controller: Minimum individual vehicle records to store | 30 000 | |
| 62 | HSWIM: Functional Requirements | HSWIM Controller: Minimum days of data stored | 30 days | |
| 63 | HSWIM: Functional Requirements | HSWIM Controller: Power Protection | The storage device is protected against power interruptions and is not susceptible to loss of accumulated data | |
| 64 | HSWIM: Functional Requirements | HSWIM Controller | The controller unit calculates and stores data for all vehicles passing through the system even during periods of access, by portable PC or remotely by the host computer, real-time view, and downloading of data | |
| 65 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum front axle mass for all individual vehicle records stored | 1 500 kg | |
| 66 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Lane number | |
| 67 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Time and date | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 68 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Axle configuration | |
| 69 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Sequential Vehicle number | |
| 70 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Speed | |
| 71 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Mass in kilogram (kg) of each wheel or dual set of wheels by left and right side and by axle number | |
| 72 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Mass per axle by axle number | |
| 73 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Total mass for the vehicle | |
| 74 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Overall length of each vehicle or combination of vehicles in millimetres (mm) | |
| 75 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Spacing in millimetres (mm) between each sequentially numbered axle | |
| 76 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Identification for records of invalid measurement(s) | |
| 77 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Code for mass violation(s) as per the Vehicle Load Management Model Law and Regulations | |
| 78 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Following interval between sequential vehicles in seconds (%<2 seconds) | |
| 79 | HSWIM: Functional Requirements | Record transmission | Transmitting of each truck record to the host computer is executed as soon as the truck record is completed | |
| 80 | HSWIM: Functional Requirements | Record transmission | If communication is lost with the host computer, the truck record is stored as specified. All truck records in the storing medium of the controller are transmitted to the host computer when communication to the host computer is back online | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 81 | HSWIM: Functional Requirements | Record transmission | All data is accessed and all required reports are generated by use of software running on the host computer | |
| 82 | HSWIM: Functional Requirements | 0 | The controller unit's communication capabilities are fully compatible with the host computer | |
| 83 | HSWIM: Equipment enclosure | Housing of Equipment | A suitable enclosure assembly for housing all required HSWIM system electronic equipment, controller electronic equipment and instrumentation is supplied and installed | |
| 84 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Number of keys furnished for the cabinet | **2** | |
| 85 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Minimum degree of protection | IP55 | |
| 86 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The enclosure is a freestanding unit with bottom cable entry and is suitable for outdoor installation | |
| 87 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The cabinet is of sufficient size to accommodate all equipment | |
| 88 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The design of the cooling system of the enclosure is designed to ensure that the internal temperature is maintained at a supplier specified operating level for all components and that the contents of the enclosure are maintained under pressure | |
| 89 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The cabinet and doors are manufactured to be bullet proof when shot at with a 9 mm pistol at a distance of 3 metres | |
| 90 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | All exterior seams are continuously welded. All surfaces are free from weld flash. Welds are smooth, neatly formed, free from cracks, blowholes and other irregularities. All sharp edges are grounded smooth | |
| 91 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | Vermin/rodent proof | |
| 92 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | Front door equipped with a lock. Provision is made for a padlock for the cabinet | |
| 93 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The doorframe is designed so that the latching mechanism will hold tension on and form a firm seal | |
| 94 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: | 6 mm thick by 12 mm wide | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | Minimum gasket material dimensions | | |
| 95 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | The main door closes against a weatherproof and dust proof, closed-cell neoprene gasket seal | |
| 96 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Hinges are bolted to the cabinet | |
| 97 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Hinge pins and bolts are not be accessible when the door is closed | |
| 98 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Door hinges, pins and bolts are be made of stainless steel | |
| 99 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Provided with substantial metal shelves and brackets to support equipment | |
| 100 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | No fasteners (e.g. screws, bolts or nuts) protrude beyond the outside wall of the cabinet | |
| 101 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Coatings are smooth, free of flow lines, paint washout, streaks, blisters and no impairment of serviceability or general appearance is allowed | |
| 102 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Conductor sizes and types are selected according to their application | |
| 103 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Conductor colours are selected to suit their application and purpose | |
| 104 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All conductors are provided with suitable wiring numbers on both ends | |
| 105 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Where conductors are connected to terminal blocks, the terminals are clearly numbered and are clearly identifiable on the loop diagrams and schematic diagrams | |
| 106 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Wiring within the cabinet is laced or enclosed in plastic tubing or raceway and arranged neatly | |
| 107 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Conductor passages through any sharp object are finished with purpose-made rubber or plastic linings | |
| 108 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Conductors used in cabinet wiring are terminated with properly sized captive type terminals | |
| 109 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Permanent alphanumeric labels identify all field input/output (I/O) terminals | |
| 110 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | An equipment grounding conductor bus is provided in the cabinet. The bus is grounded to the cabinet and is connected to the ground conductor of the power supply. | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 111 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | A socket outlet of 15A rating complete with local earth leakage is mounted in a readily accessible location inside the cabinet | |
| 112 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All doors is bonded to the earth bar in the cabinet by means of braided copper conductors (16 mm² minimum), screw down lugs and brass screws | |
| 113 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Suitably sized terminal blocks, with a minimum rating of 10 amperes, is provided for field connections. | |
| 114 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Field terminals are installed within 300 mm of the face of the cabinet and is oriented for screwdriver operation from the door opening | |
| 115 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All terminals are a minimum of 300 mm above the foundation | |
| 116 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | An incoming power supply surge arrester is implemented | |
| 117 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All sensor cabling is installed in class 3 polyethylene conduit at least 600 mm deep | |
| 118 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All conduits, pull boxes, etc. is bonded together and earthed | |
| 119 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Marking tape shall be inserted ± 250 mm below ground level during backfilling of trenches | |
| 120 | HSWIM: Equipment enclosure | Power Panel | Consists of a separate, wholly enclosed module, securely fastened. | |
| 121 | HSWIM: Equipment enclosure | Power Panel | Manufactured from sheet steel with a removable plastic front cover | |
| 122 | HSWIM: Equipment enclosure | Power Panel | Allows access to the auxiliary and main circuit breakers without removing the front cover | |
| 123 | HSWIM: Equipment enclosure | Power Panel | Is wired to provide the necessary power to the cabinet and all equipment and auxiliary equipment | |
| 124 | HSWIM: Equipment enclosure | Housed components | Main circuit breaker (40A) complete with an earth leakage unit | |
| 125 | HSWIM: Equipment enclosure | Housed components | Line surges voltage protection unit | |
| 126 | HSWIM: Equipment enclosure | Housed components | Two (2) auxiliary 20A circuit breakers. One wired to the required socket outlet unit located in the cabinet and the other bypassing the earth leakage for supplying the HSWIM equipment with electrical power | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 127 | HSWIM: Equipment enclosure | Cabinet Instillation | Located next to the main road, as close as practical to the weight sensors but safely out of the way of traffic | |
| 128 | HSWIM: Equipment enclosure | Cabinet Instillation | Is supplied with at least four (4) anchor bolts to properly secure the cabinet to its base. The cabinet flange for securing the anchor bolts does not protrude outward from the bottom of the cabinet | |
| 129 | HSWIM: Equipment enclosure | Cabinet Instillation | An adequate amount of conduit is provided through the concrete foundation for wiring and cabling purposes | |
| 130 | HSWIM: Equipment enclosure | Cabinet Instillation | All foundations are plumb and square | |
| 131 | HSWIM: Equipment enclosure | Cabinet Instillation | A seal is placed between the controller cabinet and the concrete foundation for an effective seal to prevent dirt, water, dust and insects from entering the cabinet | |
| 132 | HSWIM: Specific Requirements | 0 | Dual Weight Sensors | |
| 133 | HSWIM: Specific Requirements | Primary Sensor Inputs | Primary: Multiple channel self-tuning detector (up to 16 channels). | |
| 134 | HSWIM: Specific Requirements | Primary Sensor Inputs | Multiple channel axle detector (minimum of 8 channels). | |
| 135 | HSWIM: Specific Requirements | Secondary Sensor Inputs | Multiple Channel LSWIM interface (piezoresistive, capacitive or piezoelectric)) up to 16 channels. | |
| 136 | HSWIM: Specific Requirements | Secondary Sensor Inputs | 8 channel I/O card. | |
| 137 | HSWIM: Specific Requirements | Memory Option | 8 mm battery backed up memory | |
| 138 | HSWIM: Specific Requirements | Power Management | Mains power supply and charger (110V – 220V) 12V DC | |
| 139 | HSWIM: Specific Requirements | Power Management | 5.5 – 7 Watt (nominal dependent on number of WIM weight sensors) | |
| 140 | HSWIM: Specific Requirements | Power Management | External power (300mA) to ancillary devices (2) | |
| 141 | HSWIM: Specific Requirements | Power Management | Hot – swap battery plugs | |
| 142 | HSWIM: Specific Requirements | Control, Data Extraction and Communication | Two RS 232 ports (300 – 19200 baud) | |
| 143 | HSWIM: Specific Requirements | Control, Data Extraction and Communication | Local via laptop | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 144 | HSWIM: Specific Requirements | Control, Data Extraction and Communication | Remote via modem, network or direct fibre links | |
| 145 | HSWIM: Geometric Roadway Design | Minimum Standards: Horizontal Alignment | Radius ≥ 1700m, 60m before/after | |
| 146 | HSWIM: Geometric Roadway Design | Minimum Standards: Longitudinal Alignment | 60m in advance and 30 m beyond shall not exceed 2% | |
| 147 | HSWIM: Geometric Roadway Design | Minimum Standards: Roadway Grade | ≤1%, 91m before/after | |
| 148 | HSWIM: Geometric Roadway Design | Minimum Standards: Cross Slope (lateral) | ≤3%, 60m in advance and 30 m beyond shall not exceed 2% | |
| 149 | HSWIM: Geometric Roadway Design | Minimum Standards: Lane Width | 3-4.5m, 46m before/after | |

### B.1.2.3 Type 2 Weigh Station without dedicated screening lanes

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Screening Area: Equipment | General | No dedicated screening lane | |
| 2 | Screening Area: Equipment | General | HSWIM | |
| 3 | Screening Area: Equipment | General | LSWIM | |
| 4 | Screening Area: Equipment | General | HSWIM is on the main road | |
| 5 | Screening Area: Equipment | General | Traffic Lights | |
| 6 | Screening Area: Equipment | General | Booms | |
| 7 | Screening Area: Equipment | General | Loops | |
| 8 | Screening Area: Equipment | General | Automatic Number Plate Recognition (ANPR) Cameras | |
| 9 | Screening Area: Equipment | General | Overview Cameras | |
| 10 | Screening Area: Equipment | General | Violation Logger | |
| 11 | Screening Area: Equipment | General | Violation Logger is placed on the main road | |
| 12 | HSWIM: Other systems | General | Operates as a standalone subsystem to the VLMIS | |
| 13 | HSWIM: Other systems | General | Operates as an integrated component to the VLMIS | |
| 14 | HSWIM: Standards | General | Complies to ASTM Type Approval and Verification | |
| 15 | HSWIM: Standards | General | Complies to Vehicle Load Management – Equipment Verification – Weigh-in-Motion System Verification | |
| 16 | HSWIM: General Requirements | General | Provides for single threshold weighing | |
| 17 | HSWIM: General Requirements | Speed range operating standard | 10 km/h to 120 km/h | |
| 18 | HSWIM: General Requirements | Axles mass measurement | < 20 000 kg | |
| 19 | HSWIM: General Requirements | Equipment | 2 Loops | |
| 20 | HSWIM: General Requirements | Equipment | 2 Scale decks per lane | |
| 21 | HSWIM: General Requirements | Equipment | Scale decks and loops shall cover the entire lane width | |
| 22 | HSWIM: General Requirements | Minimum parameters measured | The speed of the vehicle | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 23 | HSWIM: General Requirements | Minimum parameters measured | Time of departure of each vehicle | |
| 24 | HSWIM: General Requirements | Minimum parameters measured | Axle configuration – the number and combination of axles of a vehicle grouped in axle units | |
| 25 | HSWIM: General Requirements | Minimum parameters measured | Vehicle classification | |
| 26 | HSWIM: General Requirements | Minimum parameters measured | Mass per axle | |
| 27 | HSWIM: General Requirements | Minimum parameters measured | Total mass for the vehicle | |
| 28 | HSWIM: General Requirements | Minimum parameters measured | Following interval between sequential vehicles (% <2sec) | |
| 29 | HSWIM: General Requirements | Minimum parameters measured | Vehicle length | |
| 30 | HSWIM: General Requirements | Minimum parameters measured | The number of vehicles passing the point | |
| 31 | HSWIM: General Requirements | Scale decks' technology | Unless specified to the contrary in the detail specification, the scale decks shall operate on any suitable and proven technology | |
| 32 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Hourly traffic flows per lane | |
| 33 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Distinction between heavy vehicles and light vehicles per hour per lane | |
| 34 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Daily traffic flows per lane | |
| 35 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Distinction between heavy vehicles and light vehicles per day per lane | |
| 36 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Short heavy vehicles (up to 12,5 m long) | |
| 37 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Medium heavy vehicles (12,5 m and up to 17,0 m long) | |
| 38 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Long heavy vehicles (over 17,0 m long) | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 39 | HSWIM: General Requirements | Information to be determined after data is collected and processed | The number of heavy vehicles per axle group per day where “axle group” refers to the number of axles per heavy vehicle | |
| 40 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Individual axle loads (only for heavy vehicles) | |
| 41 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Speed | |
| 42 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Following distance (% of vehicles under 2 seconds) | |
| 43 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Axle load violation | |
| 44 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Scale load violation | |
| 45 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Excess over the legal axle load limits of the axles exceeding the legal axle load limits | |
| 46 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Total number of E80 units, determined from the formula E80 = d (d/8,2)n, where n = 4,2 and d is the actual axle load in ton calculated on individual axles | |
| 47 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Total E80 portion resulting from the axles exceeding the legal limits, represented as a percentage of the total number of E80 units | |
| 48 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Grouped distribution of heavy axles with groups 0…1t, 1…2t, 2…3t, up until, 19…20t | |
| 49 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Average E80 units | |
| 50 | HSWIM: Functional Requirements | Vehicle Accommodation | Single vehicles and Vehicle combinations with up to 9 axles | |
| 51 | HSWIM: Functional Requirements | Functionality | Automatically determines measurements for each vehicle | |
| 52 | HSWIM: Functional Requirements | Automated Measurements | Vehicle mass | |
| 53 | HSWIM: Functional Requirements | General | Axle spacing, vehicle length and speed | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 54 | HSWIM: Functional Requirements | General: Accuracy of axle spacing | ± 150 mm | |
| 55 | HSWIM: Functional Requirements | General: Accuracy of vehicle length | ± 300 mm | |
| 56 | HSWIM: Functional Requirements | General: Accuracy of speed | ± 2 km/h | |
| 57 | HSWIM: Functional Requirements | General: Accuracy performance testing amount | > 40 trucks | |
| 58 | HSWIM: Functional Requirements | Violation determiner | Determines for any vehicle, if any axle(s) or axle grouping(s) exceed the regulations as per the Vehicle Load Management Model Law and Regulations | |
| 59 | HSWIM: Functional Requirements | HSWIM Controller: Minimum individual vehicle records to store | 30 000 | |
| 60 | HSWIM: Functional Requirements | HSWIM Controller: Minimum days of data stored | 30 days | |
| 61 | HSWIM: Functional Requirements | HSWIM Controller: Power Protection | The storage device is protected against power interruptions and is not susceptible to loss of accumulated data | |
| 62 | HSWIM: Functional Requirements | HSWIM Controller | The controller unit calculates and stores data for all vehicles passing through the system even during periods of access, by portable PC or remotely by the host computer, real-time view, and downloading of data | |
| 63 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum front axle mass for all individual vehicle records stored | 1 500 kg | |
| 64 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Lane number | |
| 65 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Time and date | |
| 66 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Axle configuration | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 67 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Sequential Vehicle number | |
| 68 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Speed | |
| 69 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Mass in kilogram (kg) of each wheel or dual set of wheels by left and right side and by axle number | |
| 70 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Mass per axle by axle number | |
| 71 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Total mass for the vehicle | |
| 72 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Overall length of each vehicle or combination of vehicles in millimetres (mm) | |
| 73 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Spacing in millimetres (mm) between each sequentially numbered axle | |
| 74 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Identification for records of invalid measurement(s) | |
| 75 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Code for mass violation(s) as per the Vehicle Load Management Model Law and Regulations | |
| 76 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Following interval between sequential vehicles in seconds (%<2 seconds) | |
| 77 | HSWIM: Functional Requirements | Record transmission | Transmitting of each truck record to the host computer is executed as soon as the truck record is completed | |
| 78 | HSWIM: Functional Requirements | Record transmission | If communication is lost with the host computer, the truck record is stored as specified. All truck records in the storing medium of the controller are transmitted to the host computer when communication to the host computer is back online | |
| 79 | HSWIM: Functional Requirements | Record transmission | All data is accessed and all required reports are generated by use of software running on the host computer | |
| 80 | HSWIM: Functional Requirements | 0 | The controller unit's communication capabilities are fully compatible with the host computer | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 81 | HSWIM: Equipment enclosure | Housing of Equipment | A suitable enclosure assembly for housing all required HSWIM system electronic equipment, controller electronic equipment and instrumentation is supplied and installed | |
| 82 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Number of keys furnished for the cabinet | 2 | |
| 83 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Minimum degree of protection | IP55 | |
| 84 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The enclosure is a freestanding unit with bottom cable entry and is suitable for outdoor installation | |
| 85 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The cabinet is of sufficient size to accommodate all equipment | |
| 86 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The design of the cooling system of the enclosure is designed to ensure that the internal temperature is maintained at a supplier specified operating level for all components and that the contents of the enclosure are maintained under pressure | |
| 87 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The cabinet and doors are manufactured to be bullet proof when shot at with a 9 mm pistol at a distance of 3 metres | |
| 88 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | All exterior seams are continuously welded. All surfaces are free from weld flash. Welds are smooth, neatly formed, free from cracks, blowholes and other irregularities. All sharp edges are grounded smooth | |
| 89 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | Vermin/rodent proof | |
| 90 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | Front door equipped with a lock. Provision is made for a padlock for the cabinet | |
| 91 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The doorframe is designed so that the latching mechanism will hold tension on and form a firm seal | |
| 92 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Minimum gasket material dimensions | 6 mm thick by 12 mm wide | |
| 93 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | The main door closes against a weatherproof and dust proof, closed-cell neoprene gasket seal | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 94 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Hinges are bolted to the cabinet | |
| 95 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Hinge pins and bolts are not be accessible when the door is closed | |
| 96 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Door hinges, pins and bolts are be made of stainless steel | |
| 97 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Provided with substantial metal shelves and brackets to support equipment | |
| 98 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | No fasteners (e.g. screws, bolts or nuts) protrude beyond the outside wall of the cabinet | |
| 99 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Coatings are smooth, free of flow lines, paint washout, streaks, blisters and no impairment of serviceability or general appearance is allowed | |
| 100 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Conductor sizes and types are selected according to their application | |
| 101 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Conductor colours are selected to suit their application and purpose | |
| 102 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All conductors are provided with suitable wiring numbers on both ends | |
| 103 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Where conductors are connected to terminal blocks, the terminals are clearly numbered and are clearly identifiable on the loop diagrams and schematic diagrams | |
| 104 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Wiring within the cabinet is laced or enclosed in plastic tubing or raceway and arranged neatly | |
| 105 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Conductor passages through any sharp object are finished with purpose-made rubber or plastic linings | |
| 106 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Conductors used in cabinet wiring are terminated with properly sized captive type terminals | |
| 107 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Permanent alphanumeric labels identify all field input/output (I/O) terminals | |
| 108 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | An equipment grounding conductor bus is provided in the cabinet. The bus is grounded to the cabinet and is connected to the ground conductor of the power supply. | |
| 109 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | A socket outlet of 15A rating complete with local earth leakage is mounted in a readily accessible location inside the cabinet | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 110 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All doors is bonded to the earth bar in the cabinet by means of braided copper conductors (16 mm² minimum), screw down lugs and brass screws | |
| 111 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Suitably sized terminal blocks, with a minimum rating of 10 amperes, is provided for field connections. | |
| 112 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Field terminals are installed within 300 mm of the face of the cabinet and is oriented for screwdriver operation from the door opening | |
| 113 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All terminals are a minimum of 300 mm above the foundation | |
| 114 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | An incoming power supply surge arrester is implemented | |
| 115 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All sensor cabling is installed in class 3 polyethylene conduit at least 600 mm deep | |
| 116 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All conduits, pull boxes, etc. is bonded together and earthed | |
| 117 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Marking tape shall be inserted ± 250 mm below ground level during backfilling of trenches | |
| 118 | HSWIM: Equipment enclosure | Power Panel | Consists of a separate, wholly enclosed module, securely fastened. | |
| 119 | HSWIM: Equipment enclosure | Power Panel | Manufactured from sheet steel with a removable plastic front cover | |
| 120 | HSWIM: Equipment enclosure | Power Panel | Allows access to the auxiliary and main circuit breakers without removing the front cover | |
| 121 | HSWIM: Equipment enclosure | Power Panel | Is wired to provide the necessary power to the cabinet and all equipment and auxiliary equipment | |
| 122 | HSWIM: Equipment enclosure | Housed components | Main circuit breaker (40A) complete with an earth leakage unit | |
| 123 | HSWIM: Equipment enclosure | Housed components | Line surges voltage protection unit | |
| 124 | HSWIM: Equipment enclosure | Housed components | Two (2) auxiliary 20A circuit breakers. One wired to the required socket outlet unit located in the cabinet and the other bypassing the earth leakage for supplying the HSWIM equipment with electrical power | |
| 125 | HSWIM: Equipment enclosure | Cabinet Instillation | Located next to the main road, as close as practical to the weight sensors but safely out of the way of traffic | |
| 126 | HSWIM: Equipment enclosure | Cabinet Instillation | Is supplied with at least four (4) anchor bolts to properly secure the cabinet to its base. The cabinet flange for securing the | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | anchor bolts does not protrude outward from the bottom of the cabinet | |
| 127 | HSWIM: Equipment enclosure | Cabinet Instillation | An adequate amount of conduit is provided through the concrete foundation for wiring and cabling purposes | |
| 128 | HSWIM: Equipment enclosure | Cabinet Instillation | All foundations are plumb and square | |
| 129 | HSWIM: Equipment enclosure | Cabinet Instillation | A seal is placed between the controller cabinet and the concrete foundation for an effective seal to prevent dirt, water, dust and insects from entering the cabinet | |
| 130 | HSWIM: Specific Requirements | 0 | Dual Weight Sensors | |
| 131 | HSWIM: Specific Requirements | Primary Sensor Inputs | Primary: Multiple channel self-tuning detector (up to 16 channels). | |
| 132 | HSWIM: Specific Requirements | Primary Sensor Inputs | Multiple channel axle detector (minimum of 8 channels). | |
| 133 | HSWIM: Specific Requirements | Secondary Sensor Inputs | Multiple Channel LSWIM interface (piezoresistive, capacitive or piezoelectric) up to 16 channels. | |
| 134 | HSWIM: Specific Requirements | Secondary Sensor Inputs | 8 channel I/O card. | |
| 135 | HSWIM: Specific Requirements | Memory Option | 8 mm battery backed up memory | |
| 136 | HSWIM: Specific Requirements | Power Management | Mains power supply and charger (110V – 220V) 12V DC | |
| 137 | HSWIM: Specific Requirements | Power Management | 5.5 – 7 Watt (nominal dependent on number of WIM weight sensors) | |
| 138 | HSWIM: Specific Requirements | Power Management | External power (300mA) to ancillary devices (2) | |
| 139 | HSWIM: Specific Requirements | Power Management | Hot – swap battery plugs | |
| 140 | HSWIM: Specific Requirements | Control, Data Extraction and Communication | Two RS 232 ports (300 – 19200 baud) | |
| 141 | HSWIM: Specific Requirements | Control, Data Extraction and Communication | Local via laptop | |
| 142 | HSWIM: Specific Requirements | Control, Data Extraction and Communication | Remote via modem, network or direct fibre links | |
| 143 | HSWIM: Geometric | Minimum Standards: | Radius ≥ 1700m, 60m before/after | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | Roadway Design | Horizontal Alignment | | |
| 144 | HSWIM: Geometric Roadway Design | Minimum Standards: Longitudinal Alignment | 60m in advance and 30 m beyond shall not exceed 2% | |
| 145 | HSWIM: Geometric Roadway Design | Minimum Standards: Roadway Grade | ≤1%, 91m before/after | |
| 146 | HSWIM: Geometric Roadway Design | Minimum Standards: Cross Slope (lateral) | ≤3%, 60m in advance and 30 m beyond shall not exceed 2% | |
| 147 | HSWIM: Geometric Roadway Design | Minimum Standards: Lane Width | 3-4.5m, 46m before/after | |

#### B.1.2.4 Type 2 Small Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Screening Area: Equipment | General | No dedicated screening lane | |
| 2 | Screening Area: Equipment | General | No dedicated screening lane | |
| 3 | Screening Area: Equipment | General | Loops | |
| 4 | Screening Area: Equipment | General | Automatic Number Plate Recognition (ANPR) Cameras | |
| 5 | Screening Area: Equipment | General | Overview Cameras | |
| 6 | Screening Area: Equipment | General | Violation Logger | |
| 7 | Screening Area: Equipment | General | Violation Logger is placed on the main road | |

### B.1.2.5 Type 3 LSWIM Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Screening Area: Equipment | General | No dedicated screening lane | |
| 2 | Screening Area: Equipment | General | Automatic Number Plate Recognition (ANPR) Cameras | |
| 3 | Screening Area: Equipment | General | Overview Cameras | |
| 4 | Screening Area: Equipment | General | Violation Logger | |
| 5 | Screening Area: Equipment | General | Violation Logger is placed on the main road | |
| 6 | LSWIM: Other systems | General | Operates as a standalone subsystem to the VLMIS | |
| 7 | LSWIM: Other systems | General | Operates as an integrated component to the VLMIS | |
| 8 | LSWIM: Standards | General | Complies to ASTM Type Approval and Verification | |
| 9 | LSWIM: Standards | General | Complies to Vehicle Load Management – Equipment Verification – Weigh-in-Motion System Verification | |
| 10 | LSWIM: General Requirements | General | Provides for single threshold weighing of wheels and axles | |
| 11 | LSWIM: General Requirements | Speed range operating standard | 0 km/h to 8 km/h | |
| 12 | LSWIM: General Requirements | Axles mass measurement | < 20 000 kg | |
| 13 | LSWIM: General Requirements | Equipment | 2 Loops | |
| 14 | LSWIM: General Requirements | Equipment | 2 Scale decks per lane | |
| 15 | LSWIM: General Requirements | Equipment | Scale decks and loops shall cover the entire lane width | |
| 16 | LSWIM: General Requirements | Minimum parameters measured | The date and time | |
| 17 | LSWIM: General Requirements | Minimum parameters measured | The speed of the vehicle | |
| 18 | LSWIM: General Requirements | Minimum parameters measured | Time of departure of each vehicle | |
| 19 | LSWIM: General Requirements | Minimum parameters measured | The volume of vehicles passing the point | |
| 20 | LSWIM: General Requirements | Minimum parameters measured | Time of departure of each vehicle | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 21 | LSWIM: General Requirements | Minimum parameters measured | Axle Spacing | |
| 22 | LSWIM: General Requirements | Minimum parameters measured | Axle configuration | |
| 23 | LSWIM: General Requirements | Minimum parameters measured | Mass per wheel | |
| 24 | LSWIM: General Requirements | Minimum parameters measured | Mass per axle | |
| 25 | LSWIM: General Requirements | Minimum parameters measured | Mass per axle unit | |
| 26 | LSWIM: General Requirements | Minimum parameters measured | Following Interval (%<2 seconds) | |
| 27 | LSWIM: General Requirements | Minimum parameters measured | Gross Vehicle Mass | |
| 28 | LSWIM: General Requirements | Minimum parameters measured | Vehicle length | |
| 29 | LSWIM: General Requirements | Scale decks' technology | Unless specified to the contrary in the detail specification, the scale decks shall operate on any suitable and proven technology | |
| 30 | LSWIM: General Requirements | Information to be determined after data is collected and processed | The number of heavy vehicles per axle configuration per day where “axle configuration refers to the numerical representation of axles per axle units of heavy vehicle | |
| 31 | LSWIM: General Requirements | Information to be determined after data is collected and processed | Individual axle loads | |
| 32 | LSWIM: General Requirements | Information to be determined after data is collected and processed | Axle load violation | |
| 33 | LSWIM: General Requirements | Information to be determined after data is collected and processed | Scale load violation | |
| 34 | LSWIM: General Requirements | Information to be determined after data is collected and processed | Excess over the legal axle load limits of the axles exceeding the legal axle load limits | |
| 35 | LSWIM: General Requirements | Information to be determined after data is collected and processed | Grouped distribution of heavy axles with groups 0…1t, 1…2t, 2…3t, up until, 19…20t | |
| 36 | LSWIM: General Requirements | Vehicle Accommodation | Single vehicles and Vehicle combinations with up to 9 axles | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 37 | LSWIM: General Requirements | Functionality | Automatically determines measurements for each vehicle | |
| 38 | LSWIM: General Requirements | Automated Measurements | Vehicle mass | |
| 39 | LSWIM: General Requirements | Automated Measurements | Axle spacing, vehicle length and speed | |
| 40 | LSWIM: General Requirements | Automated Measurements: Accuracy of axle spacing | ± 150 mm | |
| 41 | LSWIM: General Requirements | Automated Measurements: Accuracy of vehicle length | ± 300 mm | |
| 42 | LSWIM: General Requirements | Automated Measurements: Accuracy of speed | ± 2 km/h | |
| 43 | LSWIM: General Requirements | Automated Measurements: Accuracy performance testing amount | > 40 trucks | |
| 44 | LSWIM: General Requirements | Violation determiner | Determines for any vehicle, if any axle(s) or axle unit(s) exceed the regulations as per the Vehicle Load Management Model Law and Regulations | |
| 45 | LSWIM: General Requirements | LSWIM Controller: Minimum individual vehicle records to store | 30 000 | |
| 46 | LSWIM: General Requirements | LSWIM Controller: Minimum days of data stored | 30 days | |
| 47 | LSWIM: General Requirements | LSWIM Controller: Power Protection | The storage device is protected against power interruptions and is not susceptible to loss of accumulated data | |
| 48 | LSWIM: General Requirements | LSWIM Controller | The controller unit calculates and stores data for all vehicles passing through the system even during periods of access, by portable PC or remotely by the host computer, real-time view, and downloading of data | |
| 49 | LSWIM: General Requirements | LSWIM Controller Data: Record specification | Individual vehicle records for all vehicles | |
| 50 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Time and date | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 51 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Axle configuration | |
| 52 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Speed | |
| 53 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Mass in kilogram (kg) of each wheel or dual set of wheels by left and right side and by axle number | |
| 54 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Mass per axle by axle number | |
| 55 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Total mass for the vehicle | |
| 56 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Overall length of each vehicle or combination of vehicles in millimetres (mm) | |
| 57 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Spacing in millimetres (mm) between each sequentially numbered axle | |
| 58 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Identification for records of invalid measurement(s) | |
| 59 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Code for mass violation(s) as per the Vehicle Load Management Model Law and Regulations | |
| 60 | LSWIM: General Requirements | LSWIM Controller Data: Minimum data recorded for each LSWIM record | Following interval between sequential vehicles in seconds (%<2 seconds) | |
| 61 | LSWIM: General Requirements | LSWIM Controller Data: Record transmission | Transmitting of each truck record to the host computer is executed as soon as the truck record is completed | |
| 62 | LSWIM: General Requirements | LSWIM Controller Data: Record transmission | If communication is lost with the host computer, the truck record is stored as specified. All truck records in the storing medium of the controller are transmitted | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | to the host computer when communication to the host computer is back online | |
| 63 | LSWIM: General Requirements | LSWIM Controller Data: Record transmission | All data is accessed and all required reports are generated by use of software running on the host computer | |
| 64 | LSWIM: General Requirements | LSWIM Controller Data: Record transmission | The controller unit's communication capabilities are fully compatible with the host computer | |
| 65 | LSWIM: General Requirements | LSWIM Controller Data: Operating temperature range | -10°C and +50°C | |
| 66 | LSWIM: Equipment enclosure | Housing of Equipment | A suitable enclosure assembly for housing all required HSWIM system electronic equipment, controller electronic equipment and instrumentation is supplied and installed | |
| 67 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Number of keys furnished for the cabinet | 2 | |
| 68 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Minimum degree of protection | IP55 | |
| 69 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The enclosure is a freestanding unit with bottom cable entry and is suitable for outdoor installation | |
| 70 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The cabinet is of sufficient size to accommodate all equipment | |
| 71 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The design of the cooling system of the enclosure is designed to ensure that the internal temperature is maintained at a supplier specified operating level for all components and that the contents of the enclosure are maintained under pressure | |
| 72 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The cabinet and doors are manufactured to be bullet proof when shot at with a 9 mm pistol at a distance of 3 metres | |
| 73 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | All exterior seams are continuously welded. All surfaces are free from weld flash. Welds are smooth, neatly formed, free from cracks, blowholes and other irregularities. All sharp edges are grounded smooth | |
| 74 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | Vermin/rodent proof | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 75 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | Front door equipped with a lock. Provision is made for a padlock for the cabinet | |
| 76 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The doorframe is designed so that the latching mechanism will hold tension on and form a firm seal | |
| 77 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Conductor sizes and types are selected according to their application | |
| 78 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Conductor colours are selected to suit their application and purpose | |
| 79 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | All conductors are provided with suitable wiring numbers on both ends | |
| 80 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Where conductors are connected to terminal blocks, the terminals are clearly numbered and are clearly identifiable on the loop diagrams and schematic diagrams | |
| 81 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Wiring within the cabinet is laced or enclosed in plastic tubing or raceway and arranged neatly | |
| 82 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Conductor passages through any sharp object are finished with purpose-made rubber or plastic linings | |
| 83 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Conductors used in cabinet wiring are terminated with properly sized captive type terminals | |
| 84 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Permanent alphanumeric labels identify all field input/output (I/O) terminals | |
| 85 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | An equipment grounding conductor bus is provided in the cabinet. The bus is grounded to the cabinet and is connected to the ground conductor of the power supply. | |
| 86 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | A socket outlet of 15A rating complete with local earth leakage is mounted in a readily accessible location inside the cabinet | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 87 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | All doors is bonded to the earth bar in the cabinet by means of braided copper conductors (16 mm² minimum), screw down lugs and brass screws | |
| 88 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Suitably sized terminal blocks, with a minimum rating of 10 amperes, is provided for field connections. | |
| 89 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Field terminals are installed within 300 mm of the face of the cabinet and is oriented for screwdriver operation from the door opening | |
| 90 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | All terminals are a minimum of 300 mm above the foundation | |
| 91 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | An incoming power supply surge arrester is implemented | |
| 92 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | All sensor cabling is installed in class 3 polyethylene conduit at least 600 mm deep | |
| 93 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | All conduits, pull boxes, etc. is bonded together and earthed | |
| 94 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Terminals, Wiring and Facilities | Marking tape shall be inserted ± 250 mm below ground level during backfilling of trenches | |
| 95 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Power Panel | Consists of a separate, wholly enclosed module, securely fastened. | |
| 96 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Power Panel | Manufactured from sheet steel with a removable plastic front cover | |
| 97 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Power Panel | Allows access to the auxiliary and main circuit breakers without removing the front cover | |
| 98 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Power Panel | Is wired to provide the necessary power to the cabinet and all equipment and auxiliary equipment | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 99 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Housed components | Main circuit breaker (40A) complete with an earth leakage unit | |
| 100 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Housed components | Line surges voltage protection unit | |
| 101 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Housed components | Two (2) auxiliary 20A circuit breakers. One wired to the required socket outlet unit located in the cabinet and the other bypassing the earth leakage for supplying the HSWIM equipment with electrical power | |
| 102 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Cabinet Instillation | Located next to the main road, as close as practical to the weight sensors but safely out of the way of traffic | |
| 103 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Cabinet Instillation | Is supplied with at least four (4) anchor bolts to properly secure the cabinet to its base. The cabinet flange for securing the anchor bolts does not protrude outward from the bottom of the cabinet | |
| 104 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Cabinet Instillation | An adequate amount of conduit is provided through the concrete foundation for wiring and cabling purposes | |
| 105 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Cabinet Instillation | All foundations are plumb and square | |
| 106 | LSWIM: Equipment enclosure | Design and Construction of the cabinet: Cabinet Instillation | A seal is placed between the controller cabinet and the concrete foundation for an effective seal to prevent dirt, water, dust and insects from entering the cabinet | |
| 107 | LSWIM: Specified Requirements | 0 | Dual Weight Sensors | |
| 108 | LSWIM: Specified Requirements | Primary Sensor Inputs | Primary: Multiple channel self-tuning detector (up to 16 channels). | |
| 109 | LSWIM: Specified Requirements | Primary Sensor Inputs | Multiple channel axle detector (minimum of 8 channels). | |
| 110 | LSWIM: Specified Requirements | Secondary Sensor Inputs | Multiple Channel LSWIM interface (piezoresistive, capacitive or piezoelectric) up to 16 channels. | |
| 111 | LSWIM: Specified Requirements | Secondary Sensor Inputs | 8 channel I/O card. | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 112 | LSWIM: Specified Requirements | Memory Option | 8 mm battery backed up memory | |
| 113 | LSWIM: Specified Requirements | Power Management | Mains power supply and charger (110V – 220V) 12V DC | |
| 114 | LSWIM: Specified Requirements | Power Management | 5.5 – 7 Watt (nominal dependent on number of WIM weight sensors) | |
| 115 | LSWIM: Specified Requirements | Power Management | External power (300mA) to ancillary devices (2) | |
| 116 | LSWIM: Specified Requirements | Power Management | Hot – swap battery plugs | |
| 117 | LSWIM: Specified Requirements | Control, Data Extraction and Communication | Two RS 232 ports (300 – 19200 baud) | |
| 118 | LSWIM: Specified Requirements | Control, Data Extraction and Communication | Local via laptop | |
| 119 | LSWIM: Specified Requirements | Control, Data Extraction and Communication | Remote via modem, network or direct fibre links | |
| 120 | LSWIM: Geometric Roadway Design | Minimum Standards: Horizontal Alignment | Radius ≥ 1700m, 60m before/after | |
| 121 | LSWIM: Geometric Roadway Design | Minimum Standards: Longitudinal Alignment | 60m in advance and 30 m beyond shall not exceed 1% | |
| 122 | LSWIM: Geometric Roadway Design | Minimum Standards: Roadway Grade | ≤1%, 91m before/after | |
| 123 | LSWIM: Geometric Roadway Design | Minimum Standards: Cross Slope (lateral) | ≤3%, 60m in advance and 30 m beyond shall not exceed 2% | |
| 124 | LSWIM: Geometric Roadway Design | Minimum Standards: Lane Width | 3-4.5m, 46m before/after | |

### B.1.2.6 Type 3 Static Scale Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Screening Area: Equipment | General | No dedicated screening lane | |
| 2 | Screening Area: Equipment | General | Violation Logger | |
| 3 | Screening Area: Equipment | General | Violation Logger is placed on the main road | |
| 4 | Screening Area: Equipment | General | Automatic Number Plate Recognition (ANPR) Cameras | |
| 5 | Screening Area: Equipment | General | Overview Cameras (Optional) | |
| 6 | Screening Area: Equipment | General | Traffic Light (Optional) | |

### B.1.2.7 Virtual Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Screening Area: Equipment | General | No dedicated screening lane | |
| 2 | Screening Area: Equipment | General | Loops | |
| 3 | Screening Area: Equipment | General | Automatic Number Plate Recognition (ANPR) Cameras | |
| 4 | Screening Area: Equipment | General | Overview Cameras | |
| 5 | Screening Area: Equipment | General | Violation Logger | |
| 6 | Screening Area: Equipment | General | Violation Logger is placed on the main road | |
| 7 | Screening Area: Equipment | General | Violation Logger is placed on the main road | |
| 8 | HSWIM: Other systems | General | Operates as a standalone subsystem to the VLMIS | |
| 9 | HSWIM: Other systems | General | Operates as an integrated component to the VLMIS | |
| 10 | HSWIM: Standards | General | Complies to ASTM Type Approval and Verification | |
| 11 | HSWIM: Standards | General | Complies to Vehicle Load Management – Equipment Verification – Weigh-in-Motion System Verification | |
| 12 | HSWIM: General Requirements | General | Provides for single threshold weighing | |
| 13 | HSWIM: General Requirements | Speed range operating standard | 10 km/h to 120 km/h | |
| 14 | HSWIM: General Requirements | Axles mass measurement | < 20 000 kg | |
| 15 | HSWIM: General Requirements | Equipment | 2 Loops | |
| 16 | HSWIM: General Requirements | Equipment | 2 Scale decks per lane | |
| 17 | HSWIM: General Requirements | Equipment | Scale decks and loops shall cover the entire lane width | |
| 18 | HSWIM: General Requirements | Minimum parameters measured | The speed of the vehicle | |
| 19 | HSWIM: General Requirements | Minimum parameters measured | Time of departure of each vehicle | |
| 20 | HSWIM: General Requirements | Minimum parameters measured | Axle configuration – the number and combination of axles of a vehicle grouped in axle units | |
| 21 | HSWIM: General Requirements | Minimum parameters measured | Vehicle classification | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 22 | HSWIM: General Requirements | Minimum parameters measured | Mass per axle | |
| 23 | HSWIM: General Requirements | Minimum parameters measured | Total mass for the vehicle | |
| 24 | HSWIM: General Requirements | Minimum parameters measured | Following interval between sequential vehicles (% <2sec) | |
| 25 | HSWIM: General Requirements | Minimum parameters measured | Vehicle length | |
| 26 | HSWIM: General Requirements | Minimum parameters measured | The number of vehicles passing the point | |
| 27 | HSWIM: General Requirements | Scale decks' technology | Unless specified to the contrary in the detail specification, the scale decks shall operate on any suitable and proven technology | |
| 28 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Hourly traffic flows per lane | |
| 29 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Distinction between heavy vehicles and light vehicles per hour per lane | |
| 30 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Daily traffic flows per lane | |
| 31 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Distinction between heavy vehicles and light vehicles per day per lane | |
| 32 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Short heavy vehicles (up to 12,5 m long) | |
| 33 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Medium heavy vehicles (12,5 m and up to 17,0 m long) | |
| 34 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Long heavy vehicles (over 17,0 m long) | |
| 35 | HSWIM: General Requirements | Information to be determined after data is collected and processed | The number of heavy vehicles per axle group per day where “axle group” refers to the number of axles per heavy vehicle | |
| 36 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Individual axle loads (only for heavy vehicles) | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 37 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Speed | |
| 38 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Following distance (% of vehicles under 2 seconds) | |
| 39 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Axle load violation | |
| 40 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Scale load violation | |
| 41 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Excess over the legal axle load limits of the axles exceeding the legal axle load limits | |
| 42 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Total number of E80 units, determined from the formula E80 = d (d/8,2)n, where n = 4,2 and d is the actual axle load in ton calculated on individual axles | |
| 43 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Total E80 portion resulting from the axles exceeding the legal limits, represented as a percentage of the total number of E80 units | |
| 44 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Grouped distribution of heavy axles with groups 0…1t, 1…2t, 2…3t, up until, 19…20t | |
| 45 | HSWIM: General Requirements | Information to be determined after data is collected and processed | Average E80 units | |
| 46 | HSWIM: Functional Requirements | Vehicle Accommodation | Single vehicles and Vehicle combinations with up to 9 axles | |
| 47 | HSWIM: Functional Requirements | Functionality | Automatically determines measurements for each vehicle | |
| 48 | HSWIM: Functional Requirements | Automated Measurements | Vehicle mass | |
| 49 | HSWIM: Functional Requirements | General | Axle spacing, vehicle length and speed | |
| 50 | HSWIM: Functional Requirements | General: Accuracy of axle spacing | ± 150 mm | |
| 51 | HSWIM: Functional Requirements | General: Accuracy of vehicle length | ± 300 mm | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 52 | HSWIM: Functional Requirements | General: Accuracy of speed | ± 2 km/h | |
| 53 | HSWIM: Functional Requirements | General: Accuracy performance testing amount | > 40 trucks | |
| 54 | HSWIM: Functional Requirements | Violation determiner | Determines for any vehicle, if any axle(s) or axle grouping(s) exceed the regulations as per the Vehicle Load Management Model Law and Regulations | |
| 55 | HSWIM: Functional Requirements | HSWIM Controller: Minimum individual vehicle records to store | 30 000 | |
| 56 | HSWIM: Functional Requirements | HSWIM Controller: Minimum days of data stored | 30 days | |
| 57 | HSWIM: Functional Requirements | HSWIM Controller: Power Protection | The storage device is protected against power interruptions and is not susceptible to loss of accumulated data | |
| 58 | HSWIM: Functional Requirements | HSWIM Controller | The controller unit calculates and stores data for all vehicles passing through the system even during periods of access, by portable PC or remotely by the host computer, real-time view, and downloading of data | |
| 59 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum front axle mass for all individual vehicle records stored | 1 500 kg | |
| 60 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Lane number | |
| 61 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Time and date | |
| 62 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Axle configuration | |
| 63 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Sequential Vehicle number | |
| 64 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Speed | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 65 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Mass in kilogram (kg) of each wheel or dual set of wheels by left and right side and by axle number | |
| 66 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Mass per axle by axle number | |
| 67 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Total mass for the vehicle | |
| 68 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Overall length of each vehicle or combination of vehicles in millimetres (mm) | |
| 69 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Spacing in millimetres (mm) between each sequentially numbered axle | |
| 70 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Identification for records of invalid measurement(s) | |
| 71 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Code for mass violation(s) as per the Vehicle Load Management Model Law and Regulations | |
| 72 | HSWIM: Functional Requirements | HSWIM Controller Data: Minimum data recorded | Following interval between sequential vehicles in seconds (%<2 seconds) | |
| 73 | HSWIM: Functional Requirements | Record transmission | Transmitting of each truck record to the host computer is executed as soon as the truck record is completed | |
| 74 | HSWIM: Functional Requirements | Record transmission | If communication is lost with the host computer, the truck record is stored as specified. All truck records in the storing medium of the controller are transmitted to the host computer when communication to the host computer is back online | |
| 75 | HSWIM: Functional Requirements | Record transmission | All data is accessed and all required reports are generated by use of software running on the host computer | |
| 76 | HSWIM: Functional Requirements | 0 | The controller unit's communication capabilities are fully compatible with the host computer | |
| 77 | HSWIM: Equipment enclosure | Housing of Equipment | A suitable enclosure assembly for housing all required HSWIM system electronic equipment, controller electronic equipment and instrumentation is supplied and installed | |
| 78 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: | 2 | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | Number of keys furnished for the cabinet | | |
| 79 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Minimum degree of protection | IP55 | |
| 80 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The enclosure is a freestanding unit with bottom cable entry and is suitable for outdoor installation | |
| 81 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The cabinet is of sufficient size to accommodate all equipment | |
| 82 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The design of the cooling system of the enclosure is designed to ensure that the internal temperature is maintained at a supplier specified operating level for all components and that the contents of the enclosure are maintained under pressure | |
| 83 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The cabinet and doors are manufactured to be bullet proof when shot at with a 9 mm pistol at a distance of 3 metres | |
| 84 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | All exterior seams are continuously welded. All surfaces are free from weld flash. Welds are smooth, neatly formed, free from cracks, blowholes and other irregularities. All sharp edges are grounded smooth | |
| 85 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | Vermin/rodent proof | |
| 86 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | Front door equipped with a lock. Provision is made for a padlock for the cabinet | |
| 87 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Other | The doorframe is designed so that the latching mechanism will hold tension on and form a firm seal | |
| 88 | HSWIM: Equipment enclosure | Design and Construction of the cabinet: Minimum gasket material dimensions | 6 mm thick by 12 mm wide | |
| 89 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | The main door closes against a weatherproof and dust proof, closed-cell neoprene gasket seal | |
| 90 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Hinges are bolted to the cabinet | |
| 91 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Hinge pins and bolts are not be accessible when the door is closed | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 92 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Door hinges, pins and bolts are be made of stainless steel | |
| 93 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Provided with substantial metal shelves and brackets to support equipment | |
| 94 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | No fasteners (e.g. screws, bolts or nuts) protrude beyond the outside wall of the cabinet | |
| 95 | HSWIM: Equipment enclosure | Design and Construction of the cabinet | Coatings are smooth, free of flow lines, paint washout, streaks, blisters and no impairment of serviceability or general appearance is allowed | |
| 96 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Conductor sizes and types are selected according to their application | |
| 97 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Conductor colours are selected to suit their application and purpose | |
| 98 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All conductors are provided with suitable wiring numbers on both ends | |
| 99 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Where conductors are connected to terminal blocks, the terminals are clearly numbered and are clearly identifiable on the loop diagrams and schematic diagrams | |
| 100 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Wiring within the cabinet is laced or enclosed in plastic tubing or raceway and arranged neatly | |
| 101 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Conductor passages through any sharp object are finished with purpose-made rubber or plastic linings | |
| 102 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Conductors used in cabinet wiring are terminated with properly sized captive type terminals | |
| 103 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Permanent alphanumeric labels identify all field input/output (I/O) terminals | |
| 104 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | An equipment grounding conductor bus is provided in the cabinet. The bus is grounded to the cabinet and is connected to the ground conductor of the power supply. | |
| 105 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | A socket outlet of 15A rating complete with local earth leakage is mounted in a readily accessible location inside the cabinet | |
| 106 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All doors is bonded to the earth bar in the cabinet by means of braided copper conductors (16 mm² minimum), screw down lugs and brass screws | |
| 107 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Suitably sized terminal blocks, with a minimum rating of 10 amperes, is provided for field connections. | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 108 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Field terminals are installed within 300 mm of the face of the cabinet and is oriented for screwdriver operation from the door opening | |
| 109 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All terminals are a minimum of 300 mm above the foundation | |
| 110 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | An incoming power supply surge arrester is implemented | |
| 111 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All sensor cabling is installed in class 3 polyethylene conduit at least 600 mm deep | |
| 112 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | All conduits, pull boxes, etc. is bonded together and earthed | |
| 113 | HSWIM: Equipment enclosure | Terminals, Wiring and Facilities | Marking tape shall be inserted ± 250 mm below ground level during backfilling of trenches | |
| 114 | HSWIM: Equipment enclosure | Power Panel | Consists of a separate, wholly enclosed module, securely fastened. | |
| 115 | HSWIM: Equipment enclosure | Power Panel | Manufactured from sheet steel with a removable plastic front cover | |
| 116 | HSWIM: Equipment enclosure | Power Panel | Allows access to the auxiliary and main circuit breakers without removing the front cover | |
| 117 | HSWIM: Equipment enclosure | Power Panel | Is wired to provide the necessary power to the cabinet and all equipment and auxiliary equipment | |
| 118 | HSWIM: Equipment enclosure | Housed components | Main circuit breaker (40A) complete with an earth leakage unit | |
| 119 | HSWIM: Equipment enclosure | Housed components | Line surges voltage protection unit | |
| 120 | HSWIM: Equipment enclosure | Housed components | Two (2) auxiliary 20A circuit breakers. One wired to the required socket outlet unit located in the cabinet and the other bypassing the earth leakage for supplying the HSWIM equipment with electrical power | |
| 121 | HSWIM: Equipment enclosure | Cabinet Instillation | Located next to the main road, as close as practical to the sensors but safely out of the way of traffic | |
| 122 | HSWIM: Equipment enclosure | Cabinet Instillation | Is supplied with at least four (4) anchor bolts to properly secure the cabinet to its base. The cabinet flange for securing the anchor bolts does not protrude outward from the bottom of the cabinet | |
| 123 | HSWIM: Equipment enclosure | Cabinet Instillation | An adequate amount of conduit is provided through the concrete foundation for wiring and cabling purposes | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 124 | HSWIM: Equipment enclosure | Cabinet Instillation | All foundations are plumb and square | |
| 125 | HSWIM: Equipment enclosure | Cabinet Instillation | A seal is placed between the controller cabinet and the concrete foundation for an effective seal to prevent dirt, water, dust and insects from entering the cabinet | |
| 126 | HSWIM: Specific Requirements | Sensors | Dual Weight Sensors | |
| 127 | HSWIM: Specific Requirements | Primary Sensor Inputs | Primary: Multiple channel self-tuning detector (up to 16 channels). | |
| 128 | HSWIM: Specific Requirements | Primary Sensor Inputs | Multiple channel axle detector (minimum of 8 channels). | |
| 129 | HSWIM: Specific Requirements | Secondary Sensor Inputs | Multiple Channel LSWIM interface (piezoresistive, capacitive or piezoelectric) up to 16 channels. | |
| 130 | HSWIM: Specific Requirements | Secondary Sensor Inputs | 8 channel I/O card. | |
| 131 | HSWIM: Specific Requirements | Memory Option | 8 mm battery backed up memory | |
| 132 | HSWIM: Specific Requirements | Power Management | Mains power supply and charger (110V – 220V) 12V DC | |
| 133 | HSWIM: Specific Requirements | Power Management | 5.5 – 7 Watt (nominal dependent on number of WIM weight sensors) | |
| 134 | HSWIM: Specific Requirements | Power Management | External power (300mA) to ancillary devices (2) | |
| 135 | HSWIM: Specific Requirements | Power Management | Hot – swap battery plugs | |
| 136 | HSWIM: Specific Requirements | Control, Data Extraction and Communication | Two RS 232 ports (300 – 19200 baud) | |
| 137 | HSWIM: Specific Requirements | Control, Data Extraction and Communication | Local via laptop | |
| 138 | HSWIM: Specific Requirements | Control, Data Extraction and Communication | Remote via modem, network or direct fibre links | |
| 139 | HSWIM: Geometric Roadway Design | Minimum Standards: Horizontal Alignment | Radius ≥ 1700m, 60m before/after | |
| 140 | HSWIM: Geometric Roadway Design | Minimum Standards: Longitudinal Alignment | 60m in advance and 30 m beyond shall not exceed 2% | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 141 | HSWIM: Geometric Roadway Design | Minimum Standards: Roadway Grade | ≤1%, 91m before/after | |
| 142 | HSWIM: Geometric Roadway Design | Minimum Standards: Cross Slope (lateral) | ≤3%, 60m in advance and 30 m beyond shall not exceed 2% | |
| 143 | HSWIM: Geometric Roadway Design | Minimum Standards: Lane Width | 3-4.5m, 46m before/after | |

### B.1.3 Criterion 3: Static Scale

#### B.1.3.1 Type 1 Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Weighing Area | General | Weighing Area Offices | |
| 2 | Weighing Area | General | Ease of maintenance of the static scale | |
| 3 | Weighing Area | General | Reinforcement of the pavement | |
| 4 | Weighing Area | General | Straight line approaches without the need for awkward manoeuvring by vehicles | |
| 5 | Weighing Area | General | Level approaches relative to the scale | |
| 6 | Weighing Area | General | Proper drainage system. | |
| 7 | Weighing Area | General | Traffic Lights | |
| 8 | Weighing Area | General | Booms | |
| 9 | Weighing Area | General | Loops | |
| 10 | Weighing Area | General | Automatic Number Plate Recognition (ANPR) Cameras | |
| 11 | Weighing Area | General | Overview Cameras | |
| 12 | Weighing Area | General | static scale deck (multi-deck) | |
| 13 | Static Scale | General | Operates as a subsystem to the VLMIS | |
| 14 | Static Scale | General | Operates as an integrated component to the VLMIS | |
| 15 | Static Scale | General | Complies to OIML Type Approval Standards | |
| 16 | Static Scale | General | Complies to Vehicle Load Management – Equipment Verification – Static Scale Verification | |
| 17 | Static Scale | General | Scale decks are not fatigued or distorted when a vehicle is fully laid on the Static Scale | |
| 18 | Static Scale | General | Longitudinal and cross bearers are of the heavy I-section type steel beams | |
| 19 | Static Scale | General | The top surface of the decks are level with the Static Scale surrounds and approach | |
| 20 | Static Scale | General | Scale decks or any part do not protrude above the Static Scale surrounds, approach and departure slabs | |
| 21 | Static Scale | Maximum allowable tolerance given the datum mark | 2mm below datum mark | |
| 22 | Static Scale | Maximum allowable clearance between the scale pit and steel deck edges | 5mm < Clearance < 30mm | |
| 23 | Static Scale | General | Comprises of flat steel decks bolted onto main rolled steel girders | |
| 24 | Static Scale | General | All girders are bolted together with high tensile steel-machined bolts complete with heavy duty spring washers. | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 25 | Static Scale | General | The frames, are bolted together, and are rigid. | |
| 26 | Static Scale | Static Scale installation minimum equipment | 4 independent scale decks in a recessed concrete pit (recessed Static Scale) or above ground concrete platform (elevated Static Scale) | |
| 27 | Static Scale | Static Scale installation minimum equipment | Each scale deck is supported by four (4) load cells | |
| 28 | Static Scale | General | Computer and peripheral devices for recording, displaying, printing and transferring the weighing information | |
| 29 | Static Scale | Minimum Scale Deck A (Platform 1) dimensions for individual axle loading measurements | 3 m x 3,5 m (steering axle deck) | |
| 30 | Static Scale | Minimum Scale Deck B (Platform 2) dimensions for individual axle loading measurements | 6 m x 3,5 m | |
| 31 | Static Scale | Minimum Scale Deck D (Platform 4) dimensions for individual axle loading measurements | 7 m x 3,5 m | |
| 32 | Static Scale | Minimum Scale Deck C (Platform 3) dimensions for individual axle loading measurements | 6 m x 3,5 m | |
| 33 | Static Scale | Corrosion | All steel structure elements of the Static Scale are protected against corrosion | |
| 34 | Static Scale | Minimum thickness of anti-corrosion coating | 55 µm for the primer | |
| 35 | Static Scale | Minimum thickness of anti-corrosion coating | 30 µm for the covering coat | |
| 36 | Static Scale | Static Scale accuracy | 0,01% | |
| 37 | Static Scale | Nominal weighing capacity | > 120 000 kg | |
| 38 | Static Scale | Nominal weighing capacity | < 40 000 kg per dual axle unit | |
| 39 | Static Scale | Nominal weighing capacity | < 45 000 kg per triple or quadruple axle unit | |
| 40 | Static Scale | General | Steel tyre guides are designed as an integral part of the scale decks | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 41 | Static Scale | General | Tyre guides are designed for the full length of the Static Scale, on both longitudinal sides. | |
| 42 | Static Scale | General | The tyre guides are strong enough to withstand the mass of the fully laden vehicle | |
| 43 | Static Scale | General | The space between the scale decks and the tyre guides are closed-off with hot dipped galvanised steel open grid flooring panels | |
| 44 | Static Scale | General | Panels are hinged and lockable in order to provide means of access to the components of the Static Scale | |
| 45 | Static Scale | General | The hinges are of a heavy-duty design and is purposefully made for this duty. | |
| 46 | Static Scale | General | The panels shall are suitably supported to remain in the vertical plane and these supports are not obstructing the access to the load cells and any other component of the weighbridge | |
| 47 | Static Scale | General | 12mm | |
| 48 | Static Scale | General | All decks are secured to main and cross bearers with 14 mm galvanised mild steel bolts | |
| 49 | Static Scale | General | The heads of the bolts are level with the deck plates or otherwise slightly below | |
| 50 | Static Scale | General | Spring washers are used on all nuts | |
| 51 | Static Scale | General | The steel decks are in firm contact at all points of support and its surface is absolutely level to provide good load distribution at all times. | |
| 52 | Static Scale | Internal width of Static Scale concrete pit for a 4-deck arrangement | > 3.0 m | |
| 53 | Static Scale | Internal length of Static Scale concrete pit for a 4-deck arrangement | > 22 m | |
| 54 | Static Scale | Maximum dimension deviation allowed of the concrete pit | 30 mm | |
| 55 | Static Scale | Concrete pit | The scale concrete pit surface edge is equipped with steel kerbing. | |
| 56 | Static Scale | Concrete pit | The alignment of the steel kerbing (on the horizontal and vertical planes) is verified with a 6 m straight edge. | |
| 57 | Static Scale | Concrete pit | A steel disk of at least 3 mm thick and 150 mm in diameter does not slide through between the straight edge and the steel kerbing. | |
| 58 | Static Scale | Recessed Static Scale minimum | 1.5 m | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | requirements: Minimum depth between the lowest point of any scale deck structural steel component and the concrete pit floor | | |
| 59 | Static Scale | Recessed Static Scale minimum requirements: Total depth of the concrete pit | 1.8 m | |
| 60 | Static Scale | Recessed Static Scale minimum requirements | Manholes are used for maintenance inspections and cleaning | |
| 61 | Static Scale | Recessed Static Scale minimum requirements: Drainage Sump minimum dimensions | 600 x 600 x 600 mm | |
| 62 | Static Scale | Recessed Static Scale minimum requirements: Drainage Sump pit floor slope | 1% | |
| 63 | Static Scale | Recessed Static Scale minimum requirements: Drainage Sump component requirements | The drainpipe is of low carbon steel pipes | |
| 64 | Static Scale | Recessed Static Scale minimum requirements | A drainage pump is installed in the sump when natural drainage of the sump is not possible | |
| 65 | Static Scale | Recessed Static Scale minimum requirements | The sump is covered with grating | |
| 66 | Static Scale | Recessed Static Scale minimum requirements | The sump grating is able to support without deflection a mass of 200 kg | |
| 67 | Static Scale | Recessed Static Scale minimum requirements | The sump grating is slotted to allow the pump cable and delivery pipe to protrude | |
| 68 | Static Scale | Elevated Static Scale minimum requirements: Minimum depth between the lowest point of any scale deck structural steel component and the concrete floor | 200 mm | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 69 | Static Scale | General | The removable deck plates are provided along the length of the deck for maintenance inspections and cleaning below the scale deck | |
| 70 | Static Scale | Amount of load cells per scale deck | 4 | |
| 71 | Static Scale | Pivoting Rocker-pin arrangement requirements | The lower bearing surface of the load cell is properly sealed | |
| 72 | Static Scale | General | An anti-rotation device is provided which will not influence any weighing results. | |
| 73 | Static Scale | General | Has no positive fixed mechanical connectors such as bolts or links that are required in mounting the load cell to the Static Scale or foundation base plates. | |
| 74 | Static Scale | Load cell connection | Each load cell is connected to the deck by means of a mounting bracket. | |
| 75 | Static Scale | Linear Operating temperature | -10°C to 60°C | |
| 76 | Static Scale | Load cell life span | 1 000 000 cycles | |
| 77 | Static Scale | Body of load cells: Material | Stainless steel material, grade 304 or better | |
| 78 | Static Scale | Body of load cells: Material | Is precision machined | |
| 79 | Static Scale | Body of load cells: Material | Is provided with drift compensated strain gauges matched to the material in use | |
| 80 | Static Scale | Load cells design | Withstands horizontal disturbing forces associated with the acceleration and deceleration of vehicles on the scale, without any change in the measuring result | |
| 81 | Static Scale | Load cells design | Individual adjustments of each load cell is possible | |
| 82 | Static Scale | Load cells design | All load cells perform accurately under all types of weather conditions, e.g. being dry, wet and/or high humidity. | |
| 83 | Static Scale | Load cells design | Load cells are interchangeable | |
| 84 | Static Scale | Load cells design | All load cells supplied are of the same type and manufacturer | |
| 85 | Static Scale | Permissibles: Load cell capacity | 20 000 kg | |
| 86 | Static Scale | Permissibles: Safe overload % | > 150% | |
| 87 | Static Scale | Permissibles: Ultimate overload % | > 300% | |
| 88 | Static Scale | Permissibles: Cell load accuracy | 1% | |
| 89 | Static Scale | Capabilities | Each load cell is capable of carrying the specified loads plus any dynamic shock loads presented by the vehicle or its load | |
| 90 | Static Scale | Capabilities | The load cells have inherent lateral stability and rigidity (allowing movement only in the vertical plane) | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 91 | Static Scale | Capabilities | The methods employed for preventing lateral movement does not jeopardise the accuracy of the measured results and at the same time, does not place no restriction on the downward force on the load cells | |
| 92 | Static Scale | Capabilities | The cabling between the load cells and transmitter/controller is as short as possible, screened and armoured for added environmental and vermin/rodent protection. | |
| 93 | Static Scale | Capabilities | Cross-range forces and impulsive forces shall be resisted | |
| 94 | Static Scale | Capabilities | All load cells that are supplied is accompanied by a type approval and test certificate, which is handed over on delivery of the completed unit. | |
| 95 | Static Scale | Capabilities | The load cells is correctly convert and transmit the applied mass to the digital display board and printer, which is situated in the scale office adjacent to the scale. | |
| 96 | Static Scale | General | Scale Deck is stabilised | |
| 97 | Static Scale | General | Adequate means is provided to prevent the decks from hitting the surrounding pit frame due to horizontal movement without impeding on the results of the measurement and without damaging the structure of the scale pit | |
| 98 | Static Scale | General | A bumper plate mechanism is designed to ensure that any impact forces due to deck movement are adequately absorbed without causing damage to the structure of the scale pit | |
| 99 | Static Scale | General | The suspension provided for the decks is designed to dissipate the lateral force in any direction and shall minimise horizontal movement when a vehicle stops on the scale decks. | |
| 100 | Static Scale | General | Stand-alone audio system | |
| 101 | Static Scale | General | Amplifier of industrial quality with 50 W continuous rating and 100 V line output. The volume and pitch shall be adjustable. The output shall be short-circuit protected. | |
| 102 | Static Scale | Amplifier Continuous rating | 50 W | |
| 103 | Static Scale | Amplifier Line output | 100 V | |
| 104 | Static Scale | Amplifier attributes | Adjustable volume and pitch | |
| 105 | Static Scale | Amplifier attributes | The output is short-circuit protected | |
| 106 | Static Scale | All wiring | Black 2.5 mm twin flex cable | |
| 107 | Static Scale | All wiring | Adheres to safety protocol | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 108 | Static Scale | All wiring | Desktop mounted gooseneck microphone with an illuminated push-to-talk button on the base. | |
| 109 | Static Scale | Functionality | Indicates the mass of each individual scale deck and the Gross Vehicle Mass or Gross Combined Mass. | |
| 110 | Static Scale | Visibility | The display unit is installed at the outside of the scale office at a location where the driver of the weighed vehicle can clearly see the readings without exiting the vehicle | |
| 111 | Static Scale | 0 | Direct sunlight does not influence the readability of the characters | |
| 112 | Static Scale | Display board enclosure | IP65 rated | |
| 113 | Static Scale | 0 | Equipped with a suitable sized canopy to provide further protection against weather conditions | |
| 114 | Static Scale | Minimum digital characters requirements: Height of characters | > 80 mm | |
| 115 | Static Scale | : Characters visibility distance | >30 m | |
| 116 | Static Scale | Functionality | First indoor display board indicates the same values as the outdoor display board | |
| 117 | Static Scale | Visibility | The display unit is installed inside the scale office at a location where the scale operator can clearly see the readings | |
| 118 | Static Scale | Visibility | Is either wall mounted or table mounted | |
| 119 | Static Scale | Display board enclosure | IP44 rated | |
| 120 | Static Scale | Display board enclosure: Height of characters | > 50 mm | |

### B.1.3.2 Type 2 Weigh Station with dedicated screening lanes

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Weighing Area | General | Weighing Area Offices | |
| 2 | Weighing Area | General | Ease of maintenance of the Static Scale | |
| 3 | Weighing Area | General | Reinforcement of the pavement | |
| 4 | Weighing Area | General | Straight line approaches without the need for awkward manoeuvring by vehicles | |
| 5 | Weighing Area | General | Level approaches relative to the scale | |
| 6 | Weighing Area | General | Proper drainage system. | |
| 7 | Weighing Area | General | Traffic Lights | |
| 8 | Weighing Area | General | Booms | |
| 9 | Weighing Area | General | Loops | |
| 10 | Weighing Area | General | Automatic Number Plate Recognition (ANPR) Cameras | |
| 11 | Weighing Area | General | Overview Cameras | |
| 12 | Weighing Area | General | Static Scale Deck (multi-deck) | |
| 13 | Static Scale | General | Operates as a subsystem to the VLMIS | |
| 14 | Static Scale | General | Operates as an integrated component to the VLMIS | |
| 15 | Static Scale | General | Complies to OIML Type Approval Standards | |
| 16 | Static Scale | General | Complies to Vehicle Load Management – Equipment Verification – Static Scale Verification | |
| 17 | Static Scale | General | Scale decks are not fatigued or distorted when a vehicle is fully laid on the Static Scale | |
| 18 | Static Scale | General | Longitudinal and cross bearers are of the heavy I-section type steel beams | |
| 19 | Static Scale | General | The top surface of the decks are level with the Static Scale surrounds and approach | |
| 20 | Static Scale | General | Scale decks or any part do not protrude above the Static Scale surrounds, approach and departure slabs | |
| 21 | Static Scale | Maximum allowable tolerance given the datum mark | 2mm below datum mark | |
| 22 | Static Scale | Maximum allowable clearance between the scale pit and steel deck edges | 5mm < Clearance < 30mm | |
| 23 | Static Scale | General | Comprises of flat steel decks bolted onto main rolled steel girders | |
| 24 | Static Scale | General | All girders are bolted together with high tensile steel-machined bolts complete with heavy duty spring washers. | |
| 25 | Static Scale | General | The frames, are bolted together, and are rigid. | |
| 26 | Static Scale | Static Scale installation | 4 independent scale decks in a recessed concrete pit (recessed Static Scale) or | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | minimum equipment | above ground concrete platform (elevated Static Scale) | |
| 27 | Static Scale | Static Scale installation minimum equipment | Each scale deck is supported by four (4) load cells | |
| 28 | Static Scale | General | Computer and peripheral devices for recording, displaying, printing and transferring the weighing information | |
| 29 | Static Scale | Minimum Scale Deck A (Platform 1) dimensions for individual axle loading measurements | 3 m x 3,0 m (steering axle deck) | |
| 30 | Static Scale | Minimum Scale Deck B (Platform 2) dimensions for individual axle loading measurements | 6 m x 3,0 m | |
| 31 | Static Scale | Minimum Scale Deck D (Platform 4) dimensions for individual axle loading measurements | 7 m x 3,0 m | |
| 32 | Static Scale | Minimum Scale Deck C (Platform 3) dimensions for individual axle loading measurements | 6 m x 3,0 m | |
| 33 | Static Scale | Corrosion | All steel structure elements of the Static Scale are protected against corrosion | |
| 34 | Static Scale | Minimum thickness of anti-corrosion coating | 55 µm for the primer | |
| 35 | Static Scale | Minimum thickness of anti-corrosion coating | 30 µm for the covering coat | |
| 36 | Static Scale | Static Scale accuracy | 0,01% | |
| 37 | Static Scale | Nominal weighing capacity | > 120 000 kg | |
| 38 | Static Scale | Nominal weighing capacity | < 40 000 kg per dual axle unit | |
| 39 | Static Scale | Nominal weighing capacity | < 45 000 kg per triple or quadruple axle unit | |
| 40 | Static Scale | General | Steel tyre guides are designed as an integral part of the scale decks | |
| 41 | Static Scale | General | Tyre guides are designed for the full length of the Static Scale, on both longitudinal sides. | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 42 | Static Scale | General | The tyre guides are strong enough to withstand the mass of the fully laden vehicle | |
| 43 | Static Scale | General | The space between the scale decks and the tyre guides are closed-off with hot dipped galvanised steel open grid flooring panels | |
| 44 | Static Scale | General | Panels are hinged and lockable in order to provide means of access to the components of the Static Scale | |
| 45 | Static Scale | General | The hinges are of a heavy-duty design and is purposefully made for this duty. | |
| 46 | Static Scale | General | The panels shall are suitably supported to remain in the vertical plane and these supports are not obstructing the access to the load cells and any other component of the weighbridge | |
| 47 | Static Scale | General | 12mm | |
| 48 | Static Scale | General | All decks are secured to main and cross bearers with 14 mm galvanised mild steel bolts | |
| 49 | Static Scale | General | The heads of the bolts are level with the deck plates or otherwise slightly below | |
| 50 | Static Scale | General | Spring washers are used on all nuts | |
| 51 | Static Scale | General | The steel decks are in firm contact at all points of support and its surface is absolutely level to provide good load distribution at all times. | |
| 52 | Static Scale | Internal width of Static Scale concrete pit for a 4-deck arrangement | > 3.0 m | |
| 53 | Static Scale | Internal length of Static Scale concrete pit for a 4-deck arrangement | > 22 m | |
| 54 | Static Scale | Maximum dimension deviation allowed of the concrete pit | 30 mm | |
| 55 | Static Scale | Concrete pit | The scale concrete pit surface edge is equipped with steel kerbing. | |
| 56 | Static Scale | Concrete pit | The alignment of the steel kerbing (on the horizontal and vertical planes) is verified with a 6 m straight edge. | |
| 57 | Static Scale | Concrete pit | A steel disk of at least 3 mm thick and 150 mm in diameter does not slide through between the straight edge and the steel kerbing. | |
| 58 | Static Scale | Recessed Static Scale minimum requirements: Minimum depth between the | 1.5 m | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | lowest point of any scale deck structural steel component and the concrete pit floor | | |
| 59 | Static Scale | Recessed Static Scale minimum requirements: Total depth of the concrete pit | 1.8 m | |
| 60 | Static Scale | Recessed Static Scale minimum requirements | Manholes are used for maintenance inspections and cleaning | |
| 61 | Static Scale | Recessed Static Scale minimum requirements: Drainage Sump minimum dimensions | 600 x 600 x 600 mm | |
| 62 | Static Scale | Recessed Static Scale minimum requirements: Drainage Sump pit floor slope | 1% | |
| 63 | Static Scale | Recessed Static Scale minimum requirements: Drainage Sump component requirements | The drainpipe is of low carbon steel pipes | |
| 64 | Static Scale | Recessed Static Scale minimum requirements | A drainage pump is installed in the sump when natural drainage of the sump is not possible | |
| 65 | Static Scale | Recessed Static Scale minimum requirements | The sump is covered with grating | |
| 66 | Static Scale | Recessed Static Scale minimum requirements | The sump grating is able to support without deflection a mass of 200 kg | |
| 67 | Static Scale | Recessed Static Scale minimum requirements | The sump grating is slotted to allow the pump cable and delivery pipe to protrude | |
| 68 | Static Scale | Elevated Static Scale minimum requirements: Minimum depth between the lowest point of any scale deck structural steel component and the concrete floor | 200 mm | |
| 69 | Static Scale | General | The removable deck plates are provided along the length of the deck for maintenance inspections and cleaning below the scale deck | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 70 | Static Scale | Amount of load cells per scale deck | 4 | |
| 71 | Static Scale | Pivoting Rocker-pin arrangement requirements | The lower bearing surface of the load cell is properly sealed | |
| 72 | Static Scale | General | An anti-rotation device is provided which will not influence any weighing results. | |
| 73 | Static Scale | General | Has no positive fixed mechanical connectors such as bolts or links that are required in mounting the load cell to the Static Scale or foundation base plates. | |
| 74 | Static Scale | Load cell connection | Each load cell is connected to the deck by means of a mounting bracket. | |
| 75 | Static Scale | Linear Operating temperature | -10°C to 60°C | |
| 76 | Static Scale | Load cell life span | 1 000 000 cycles | |
| 77 | Static Scale | Body of load cells: Material | Stainless steel material, grade 304 or better | |
| 78 | Static Scale | Body of load cells: Material | Is precision machined | |
| 79 | Static Scale | Body of load cells: Material | Is provided with drift compensated strain gauges matched to the material in use | |
| 80 | Static Scale | Load cells design | Withstands horizontal disturbing forces associated with the acceleration and deceleration of vehicles on the scale, without any change in the measuring result | |
| 81 | Static Scale | Load cells design | Individual adjustments of each load cell is possible | |
| 82 | Static Scale | Load cells design | All load cells perform accurately under all types of weather conditions, e.g. being dry, wet and/or high humidity. | |
| 83 | Static Scale | Load cells design | Load cells are interchangeable | |
| 84 | Static Scale | Load cells design | All load cells supplied are of the same type and manufacturer | |
| 85 | Static Scale | Permissibles: Load cell capacity | 20 000 kg | |
| 86 | Static Scale | Permissibles: Safe overload % | > 150% | |
| 87 | Static Scale | Permissibles: Ultimate overload % | > 300% | |
| 88 | Static Scale | Permissibles: Cell load accuracy | 1% | |
| 89 | Static Scale | Capabilities | Each load cell is capable of carrying the specified loads plus any dynamic shock loads presented by the vehicle or its load | |
| 90 | Static Scale | Capabilities | The load cells have inherent lateral stability and rigidity (allowing movement only in the vertical plane) | |
| 91 | Static Scale | Capabilities | The methods employed for preventing lateral movement does not jeopardise the accuracy of the measured results | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | and at the same time, does not place no restriction on the downward force on the load cells | |
| 92 | Static Scale | Capabilities | The cabling between the load cells and transmitter/controller is as short as possible, screened and armoured for added environmental and vermin/rodent protection. | |
| 93 | Static Scale | Capabilities | Cross-range forces and impulsive forces shall be resisted | |
| 94 | Static Scale | Capabilities | All load cells that are supplied is accompanied by a type approval and test certificate, which is handed over on delivery of the completed unit. | |
| 95 | Static Scale | Capabilities | The load cells is correctly convert and transmit the applied mass to the digital display board and printer, which is situated in the scale office adjacent to the scale. | |
| 96 | Static Scale | General | Scale Deck is stabilised | |
| 97 | Static Scale | General | Adequate means is provided to prevent the decks from hitting the surrounding pit frame due to horizontal movement without impeding on the results of the measurement and without damaging the structure of the scale pit | |
| 98 | Static Scale | General | A bumper plate mechanism is designed to ensure that any impact forces due to deck movement are adequately absorbed without causing damage to the structure of the scale pit | |
| 99 | Static Scale | General | The suspension provided for the decks is designed to dissipate the lateral force in any direction and shall minimise horizontal movement when a vehicle stops on the scale decks. | |
| 100 | Static Scale | General | Stand-alone audio system | |
| 101 | Static Scale | General | Amplifier of industrial quality with 50 W continuous rating and 100 V line output. The volume and pitch shall be adjustable. The output shall be short-circuit protected. | |
| 102 | Static Scale | Amplifier Continuous rating | 50 W | |
| 103 | Static Scale | Amplifier Line output | 100 V | |
| 104 | Static Scale | Amplifier attributes | Adjustable volume and pitch | |
| 105 | Static Scale | Amplifier attributes | The output is short-circuit protected | |
| 106 | Static Scale | All wiring | Black 2.5 mm twin flex cable | |
| 107 | Static Scale | All wiring | Adheres to safety protocol | |
| 108 | Static Scale | All wiring | Desktop mounted gooseneck microphone with an illuminated push-to-talk button on the base. | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 109 | Static Scale | Functionality | Indicates the mass of each individual scale deck and the Gross Vehicle Mass or Gross Combined Mass. | |
| 110 | Static Scale | Visibility | The display unit is installed at the outside of the scale office at a location where the driver of the weighed vehicle can clearly see the readings without exiting the vehicle | |
| 111 | Static Scale | 0 | Direct sunlight does not influence the readability of the characters | |
| 112 | Static Scale | Display board enclosure | IP65 rated | |
| 113 | Static Scale | 0 | Equipped with a suitable sized canopy to provide further protection against weather conditions | |
| 114 | Static Scale | Minimum digital characters requirements: Height of characters | > 80 mm | |
| 115 | Static Scale | : Characters visibility distance | >30 m | |
| 116 | Static Scale | Functionality | First indoor display board indicates the same values as the outdoor display board | |
| 117 | Static Scale | Visibility | The display unit is installed inside the scale office at a location where the scale operator can clearly see the readings | |
| 118 | Static Scale | Visibility | Is either wall mounted or table mounted | |
| 119 | Static Scale | Display board enclosure | IP44 rated | |
| 120 | Static Scale | Display board enclosure: Height of characters | > 50 mm | |

### B.1.3.3 Type 2 Weigh Station without dedicated screening lanes

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Weighing Area | General | Weighing Area Offices | |
| 2 | Weighing Area | General | Ease of maintenance of the Static Scale | |
| 3 | Weighing Area | General | Reinforcement of the pavement | |
| 4 | Weighing Area | General | Straight line approaches without the need for awkward manoeuvring by vehicles | |
| 5 | Weighing Area | General | Level approaches relative to the scale | |
| 6 | Weighing Area | General | Proper drainage system. | |
| 7 | Weighing Area | General | Traffic Lights | |
| 8 | Weighing Area | General | Booms | |
| 9 | Weighing Area | General | Loops | |
| 10 | Weighing Area | General | Automatic Number Plate Recognition (ANPR) Cameras | |
| 11 | Weighing Area | General | Overview Cameras | |
| 12 | Weighing Area | General | Static Scale Deck (multi-deck) | |
| 13 | Static Scale | General | Operates as a subsystem to the VLMIS | |
| 14 | Static Scale | General | Operates as an integrated component to the VLMIS | |
| 15 | Static Scale | General | Complies to OIML Type Approval Standards | |
| 16 | Static Scale | General | Complies to Vehicle Load Management – Equipment Verification – Static Scale Verification | |
| 17 | Static Scale | General | Scale decks are not fatigued or distorted when a vehicle is fully laid on the Static Scale | |
| 18 | Static Scale | General | Longitudinal and cross bearers are of the heavy I-section type steel beams | |
| 19 | Static Scale | General | The top surface of the decks are level with the Static Scale surrounds and approach | |
| 20 | Static Scale | General | Scale decks or any part do not protrude above the Static Scale surrounds, approach and departure slabs | |
| 21 | Static Scale | Maximum allowable tolerance given the datum mark | 2mm below datum mark | |
| 22 | Static Scale | Maximum allowable clearance between the scale pit and steel deck edges | 5mm < Clearance < 30mm | |
| 23 | Static Scale | General | Comprises of flat steel decks bolted onto main rolled steel girders | |
| 24 | Static Scale | General | All girders are bolted together with high tensile steel-machined bolts complete with heavy duty spring washers. | |
| 25 | Static Scale | General | The frames, are bolted together, and are rigid. | |
| 26 | Static Scale | Static Scale installation | 4 independent scale decks in a recessed concrete pit (recessed Static Scale) or | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | minimum equipment | above ground concrete platform (elevated Static Scale) | |
| 27 | Static Scale | Static Scale installation minimum equipment | Each scale deck is supported by four (4) load cells | |
| 28 | Static Scale | General | Computer and peripheral devices for recording, displaying, printing and transferring the weighing information | |
| 29 | Static Scale | Minimum Scale Deck A (Platform 1) dimensions for individual axle loading measurements | 3 m x 3,5 m (steering axle deck) | |
| 30 | Static Scale | Minimum Scale Deck B (Platform 2) dimensions for individual axle loading measurements | 6 m x 3,5 m | |
| 31 | Static Scale | Minimum Scale Deck D (Platform 4) dimensions for individual axle loading measurements | 7 m x 3,5 m | |
| 32 | Static Scale | Minimum Scale Deck C (Platform 3) dimensions for individual axle loading measurements | 6 m x 3,5 m | |
| 33 | Static Scale | Corrosion | All steel structure elements of the Static Scale are protected against corrosion | |
| 34 | Static Scale | Minimum thickness of anti-corrosion coating | 55 µm for the primer | |
| 35 | Static Scale | Minimum thickness of anti-corrosion coating | 30 µm for the covering coat | |
| 36 | Static Scale | Static Scale accuracy | 0,01% | |
| 37 | Static Scale | Nominal weighing capacity | > 120 000 kg | |
| 38 | Static Scale | Nominal weighing capacity | < 40 000 kg per dual axle unit | |
| 39 | Static Scale | Nominal weighing capacity | < 45 000 kg per triple or quadruple axle unit | |
| 40 | Static Scale | General | Steel tyre guides are designed as an integral part of the scale decks | |
| 41 | Static Scale | General | Tyre guides are designed for the full length of the Static Scale, on both longitudinal sides. | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 42 | Static Scale | General | The tyre guides are strong enough to withstand the mass of the fully laden vehicle | |
| 43 | Static Scale | General | The space between the scale decks and the tyre guides are closed-off with hot dipped galvanised steel open grid flooring panels | |
| 44 | Static Scale | General | Panels are hinged and lockable in order to provide means of access to the components of the Static Scale | |
| 45 | Static Scale | General | The hinges are of a heavy-duty design and is purposefully made for this duty. | |
| 46 | Static Scale | General | The panels shall are suitably supported to remain in the vertical plane and these supports are not obstructing the access to the load cells and any other component of the weighbridge | |
| 47 | Static Scale | General | 12mm | |
| 48 | Static Scale | General | All decks are secured to main and cross bearers with 14 mm galvanised mild steel bolts | |
| 49 | Static Scale | General | The heads of the bolts are level with the deck plates or otherwise slightly below | |
| 50 | Static Scale | General | Spring washers are used on all nuts | |
| 51 | Static Scale | General | The steel decks are in firm contact at all points of support and its surface is absolutely level to provide good load distribution at all times. | |
| 52 | Static Scale | Internal width of Static Scale concrete pit for a 4-deck arrangement | > 3.0 m | |
| 53 | Static Scale | Internal length of Static Scale concrete pit for a 4-deck arrangement | > 22 m | |
| 54 | Static Scale | Maximum dimension deviation allowed of the concrete pit | 30 mm | |
| 55 | Static Scale | Concrete pit | The scale concrete pit surface edge is equipped with steel kerbing. | |
| 56 | Static Scale | Concrete pit | The alignment of the steel kerbing (on the horizontal and vertical planes) is verified with a 6 m straight edge. | |
| 57 | Static Scale | Concrete pit | A steel disk of at least 3 mm thick and 150 mm in diameter does not slide through between the straight edge and the steel kerbing. | |
| 58 | Static Scale | Recessed Static Scale minimum requirements: Minimum depth between the | 1.5 m | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | lowest point of any scale deck structural steel component and the concrete pit floor | | |
| 59 | Static Scale | Recessed Static Scale minimum requirements: Total depth of the concrete pit | 1.8 m | |
| 60 | Static Scale | Recessed Static Scale minimum requirements | Manholes are used for maintenance inspections and cleaning | |
| 61 | Static Scale | Recessed Static Scale minimum requirements: Drainage Sump minimum dimensions | 600 x 600 x 600 mm | |
| 62 | Static Scale | Recessed Static Scale minimum requirements: Drainage Sump pit floor slope | 1% | |
| 63 | Static Scale | Recessed Static Scale minimum requirements: Drainage Sump component requirements | The drainpipe is of low carbon steel pipes | |
| 64 | Static Scale | Recessed Static Scale minimum requirements | A drainage pump is installed in the sump when natural drainage of the sump is not possible | |
| 65 | Static Scale | Recessed Static Scale minimum requirements | The sump is covered with grating | |
| 66 | Static Scale | Recessed Static Scale minimum requirements | The sump grating is able to support without deflection a mass of 200 kg | |
| 67 | Static Scale | Recessed Static Scale minimum requirements | The sump grating is slotted to allow the pump cable and delivery pipe to protrude | |
| 68 | Static Scale | Elevated Static Scale minimum requirements: Minimum depth between the lowest point of any scale deck structural steel component and the concrete floor | 200 mm | |
| 69 | Static Scale | General | The removable deck plates are provided along the length of the deck for maintenance inspections and cleaning below the scale deck | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 70 | Static Scale | Amount of load cells per scale deck | 4 | |
| 71 | Static Scale | Pivoting Rocker-pin arrangement requirements | The lower bearing surface of the load cell is properly sealed | |
| 72 | Static Scale | General | An anti-rotation device is provided which will not influence any weighing results. | |
| 73 | Static Scale | General | Has no positive fixed mechanical connectors such as bolts or links that are required in mounting the load cell to the Static Scale or foundation base plates. | |
| 74 | Static Scale | Load cell connection | Each load cell is connected to the deck by means of a mounting bracket. | |
| 75 | Static Scale | Linear Operating temperature | -10°C to 60°C | |
| 76 | Static Scale | Load cell life span | 1 000 000 cycles | |
| 77 | Static Scale | Body of load cells: Material | Stainless steel material, grade 304 or better | |
| 78 | Static Scale | Body of load cells: Material | Is precision machined | |
| 79 | Static Scale | Body of load cells: Material | Is provided with drift compensated strain gauges matched to the material in use | |
| 80 | Static Scale | Load cells design | Withstands horizontal disturbing forces associated with the acceleration and deceleration of vehicles on the scale, without any change in the measuring result | |
| 81 | Static Scale | Load cells design | Individual adjustments of each load cell is possible | |
| 82 | Static Scale | Load cells design | All load cells perform accurately under all types of weather conditions, e.g. being dry, wet and/or high humidity. | |
| 83 | Static Scale | Load cells design | Load cells are interchangeable | |
| 84 | Static Scale | Load cells design | All load cells supplied are of the same type and manufacturer | |
| 85 | Static Scale | Permissibles: Load cell capacity | 20 000 kg | |
| 86 | Static Scale | Permissibles: Safe overload % | > 150% | |
| 87 | Static Scale | Permissibles: Ultimate overload % | > 300% | |
| 88 | Static Scale | Permissibles: Cell load accuracy | 1% | |
| 89 | Static Scale | Capabilities | Each load cell is capable of carrying the specified loads plus any dynamic shock loads presented by the vehicle or its load | |
| 90 | Static Scale | Capabilities | The load cells have inherent lateral stability and rigidity (allowing movement only in the vertical plane) | |
| 91 | Static Scale | Capabilities | The methods employed for preventing lateral movement does not jeopardise the accuracy of the measured results | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | and at the same time, does not place no restriction on the downward force on the load cells | |
| 92 | Static Scale | Capabilities | The cabling between the load cells and transmitter/controller is as short as possible, screened and armoured for added environmental and vermin/rodent protection. | |
| 93 | Static Scale | Capabilities | Cross-range forces and impulsive forces shall be resisted | |
| 94 | Static Scale | Capabilities | All load cells that are supplied is accompanied by a type approval and test certificate, which is handed over on delivery of the completed unit. | |
| 95 | Static Scale | Capabilities | The load cells is correctly convert and transmit the applied mass to the digital display board and printer, which is situated in the scale office adjacent to the scale. | |
| 96 | Static Scale | General | Scale Deck is stabilised | |
| 97 | Static Scale | General | Adequate means is provided to prevent the decks from hitting the surrounding pit frame due to horizontal movement without impeding on the results of the measurement and without damaging the structure of the scale pit | |
| 98 | Static Scale | General | A bumper plate mechanism is designed to ensure that any impact forces due to deck movement are adequately absorbed without causing damage to the structure of the scale pit | |
| 99 | Static Scale | General | The suspension provided for the decks is designed to dissipate the lateral force in any direction and shall minimise horizontal movement when a vehicle stops on the scale decks. | |
| 100 | Static Scale | General | Stand-alone audio system | |
| 101 | Static Scale | General | Amplifier of industrial quality with 50 W continuous rating and 100 V line output. The volume and pitch shall be adjustable. The output shall be short-circuit protected. | |
| 102 | Static Scale | Amplifier Continuous rating | 50 W | |
| 103 | Static Scale | Amplifier Line output | 100 V | |
| 104 | Static Scale | Amplifier attributes | Adjustable volume and pitch | |
| 105 | Static Scale | Amplifier attributes | The output is short-circuit protected | |
| 106 | Static Scale | All wiring | Black 2.5 mm twin flex cable | |
| 107 | Static Scale | All wiring | Adheres to safety protocol | |
| 108 | Static Scale | All wiring | Desktop mounted gooseneck microphone with an illuminated push-to-talk button on the base. | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 109 | Static Scale | Functionality | Indicates the mass of each individual scale deck and the Gross Vehicle Mass or Gross Combined Mass. | |
| 110 | Static Scale | Visibility | The display unit is installed at the outside of the scale office at a location where the driver of the weighed vehicle can clearly see the readings without exiting the vehicle | |
| 111 | Static Scale | 0 | Direct sunlight does not influence the readability of the characters | |
| 112 | Static Scale | Display board enclosure | IP65 rated | |
| 113 | Static Scale | 0 | Equipped with a suitable sized canopy to provide further protection against weather conditions | |
| 114 | Static Scale | Minimum digital characters requirements: Height of characters | > 80 mm | |
| 115 | Static Scale | : Characters visibility distance | >30 m | |
| 116 | Static Scale | Functionality | First indoor display board indicates the same values as the outdoor display board | |
| 117 | Static Scale | Visibility | The display unit is installed inside the scale office at a location where the scale operator can clearly see the readings | |
| 118 | Static Scale | Visibility | Is either wall mounted or table mounted | |
| 119 | Static Scale | Display board enclosure | IP44 rated | |
| 120 | Static Scale | Display board enclosure: Height of characters | > 50 mm | |

### B.1.3.4 Type 2 Small Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Weighing Area | General | Weighing Area Offices | |
| 2 | Weighing Area | General | Ease of maintenance of the Static Scale | |
| 3 | Weighing Area | General | Reinforcement of the pavement | |
| 4 | Weighing Area | General | Straight line approaches without the need for awkward manoeuvring by vehicles | |
| 5 | Weighing Area | General | Level approaches relative to the scale | |
| 6 | Weighing Area | General | Proper drainage system. | |
| 7 | Weighing Area | General | Traffic Lights | |
| 8 | Weighing Area | General | Booms | |
| 9 | Weighing Area | General | Loops | |
| 10 | Weighing Area | General | Automatic Number Plate Recognition (ANPR) Cameras | |
| 11 | Weighing Area | General | Overview Cameras | |
| 12 | Weighing Area | General | Static Scale Deck (multi-deck) | |
| 13 | Static Scale | General | Operates as a subsystem to the VLMIS | |
| 14 | Static Scale | General | Operates as an integrated component to the VLMIS | |
| 15 | Static Scale | General | Complies to OIML Type Approval Standards | |
| 16 | Static Scale | General | Complies to Vehicle Load Management – Equipment Verification – Static Scale Verification | |
| 17 | Static Scale | General | Scale decks are not fatigued or distorted when a vehicle is fully laid on the Static Scale | |
| 18 | Static Scale | General | Longitudinal and cross bearers are of the heavy I-section type steel beams | |
| 19 | Static Scale | General | The top surface of the decks are level with the Static Scale surrounds and approach | |
| 20 | Static Scale | General | Scale decks or any part do not protrude above the Static Scale surrounds, approach and departure slabs | |
| 21 | Static Scale | Maximum allowable tolerance given the datum mark | 2mm below datum mark | |
| 22 | Static Scale | Maximum allowable clearance between the scale pit and steel deck edges | 5mm < Clearance < 30mm | |
| 23 | Static Scale | General | Comprises of flat steel decks bolted onto main rolled steel girders | |
| 24 | Static Scale | General | All girders are bolted together with high tensile steel-machined bolts complete with heavy duty spring washers. | |
| 25 | Static Scale | General | The frames, are bolted together, and are rigid. | |
| 26 | Static Scale | Static Scale installation | 4 independent scale decks in a recessed concrete pit (recessed Static Scale) or | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | minimum equipment | above ground concrete platform (elevated Static Scale) | |
| 27 | Static Scale | Static Scale installation minimum equipment | Each scale deck is supported by four (4) load cells | |
| 28 | Static Scale | General | Computer and peripheral devices for recording, displaying, printing and transferring the weighing information | |
| 29 | Static Scale | Minimum Scale Deck A (Platform 1) dimensions for individual axle loading measurements | 3 m x 3,5 m (steering axle deck) | |
| 30 | Static Scale | Minimum Scale Deck B (Platform 2) dimensions for individual axle loading measurements | 6 m x 3,5 m | |
| 31 | Static Scale | Minimum Scale Deck D (Platform 4) dimensions for individual axle loading measurements | 7 m x 3,5 m | |
| 32 | Static Scale | Minimum Scale Deck C (Platform 3) dimensions for individual axle loading measurements | 6 m x 3,5 m | |
| 33 | Static Scale | Corrosion | All steel structure elements of the Static Scale are protected against corrosion | |
| 34 | Static Scale | Minimum thickness of anti-corrosion coating | 55 µm for the primer | |
| 35 | Static Scale | Minimum thickness of anti-corrosion coating | 30 µm for the covering coat | |
| 36 | Static Scale | Static Scale accuracy | 0,01% | |
| 37 | Static Scale | Nominal weighing capacity | > 120 000 kg | |
| 38 | Static Scale | Nominal weighing capacity | < 40 000 kg per dual axle unit | |
| 39 | Static Scale | Nominal weighing capacity | < 45 000 kg per triple or quadruple axle unit | |
| 40 | Static Scale | General | Steel tyre guides are designed as an integral part of the scale decks | |
| 41 | Static Scale | General | Tyre guides are designed for the full length of the Static Scale, on both longitudinal sides. | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 42 | Static Scale | General | The tyre guides are strong enough to withstand the mass of the fully laden vehicle | |
| 43 | Static Scale | General | The space between the scale decks and the tyre guides are closed-off with hot dipped galvanised steel open grid flooring panels | |
| 44 | Static Scale | General | Panels are hinged and lockable in order to provide means of access to the components of the Static Scale | |
| 45 | Static Scale | General | The hinges are of a heavy-duty design and is purposefully made for this duty. | |
| 46 | Static Scale | General | The panels shall are suitably supported to remain in the vertical plane and these supports are not obstructing the access to the load cells and any other component of the weighbridge | |
| 47 | Static Scale | General | 12mm | |
| 48 | Static Scale | General | All decks are secured to main and cross bearers with 14 mm galvanised mild steel bolts | |
| 49 | Static Scale | General | The heads of the bolts are level with the deck plates or otherwise slightly below | |
| 50 | Static Scale | General | Spring washers are used on all nuts | |
| 51 | Static Scale | General | The steel decks are in firm contact at all points of support and its surface is absolutely level to provide good load distribution at all times. | |
| 52 | Static Scale | Internal width of Static Scale concrete pit for a 4-deck arrangement | > 3.0 m | |
| 53 | Static Scale | Internal length of Static Scale concrete pit for a 4-deck arrangement | > 22 m | |
| 54 | Static Scale | Maximum dimension deviation allowed of the concrete pit | 30 mm | |
| 55 | Static Scale | Concrete pit | The scale concrete pit surface edge is equipped with steel kerbing. | |
| 56 | Static Scale | Concrete pit | The alignment of the steel kerbing (on the horizontal and vertical planes) is verified with a 6 m straight edge. | |
| 57 | Static Scale | Concrete pit | A steel disk of at least 3 mm thick and 150 mm in diameter does not slide through between the straight edge and the steel kerbing. | |
| 58 | Static Scale | Recessed Static Scale minimum requirements: Minimum depth between the | 1.5 m | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | lowest point of any scale deck structural steel component and the concrete pit floor | | |
| 59 | Static Scale | Recessed Static Scale minimum requirements: Total depth of the concrete pit | 1.8 m | |
| 60 | Static Scale | Recessed Static Scale minimum requirements | Manholes are used for maintenance inspections and cleaning | |
| 61 | Static Scale | Recessed Static Scale minimum requirements: Drainage Sump minimum dimensions | 600 x 600 x 600 mm | |
| 62 | Static Scale | Recessed Static Scale minimum requirements: Drainage Sump pit floor slope | 1% | |
| 63 | Static Scale | Recessed Static Scale minimum requirements: Drainage Sump component requirements | The drainpipe is of low carbon steel pipes | |
| 64 | Static Scale | Recessed Static Scale minimum requirements | A drainage pump is installed in the sump when natural drainage of the sump is not possible | |
| 65 | Static Scale | Recessed Static Scale minimum requirements | The sump is covered with grating | |
| 66 | Static Scale | Recessed Static Scale minimum requirements | The sump grating is able to support without deflection a mass of 200 kg | |
| 67 | Static Scale | Recessed Static Scale minimum requirements | The sump grating is slotted to allow the pump cable and delivery pipe to protrude | |
| 68 | Static Scale | Elevated Static Scale minimum requirements: Minimum depth between the lowest point of any scale deck structural steel component and the concrete floor | 200 mm | |
| 69 | Static Scale | General | The removable deck plates are provided along the length of the deck for maintenance inspections and cleaning below the scale deck | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 70 | Static Scale | Amount of load cells per scale deck | 4 | |
| 71 | Static Scale | Pivoting Rocker-pin arrangement requirements | The lower bearing surface of the load cell is properly sealed | |
| 72 | Static Scale | General | An anti-rotation device is provided which will not influence any weighing results. | |
| 73 | Static Scale | General | Has no positive fixed mechanical connectors such as bolts or links that are required in mounting the load cell to the Static Scale or foundation base plates. | |
| 74 | Static Scale | Load cell connection | Each load cell is connected to the deck by means of a mounting bracket. | |
| 75 | Static Scale | Linear Operating temperature | -10°C to 60°C | |
| 76 | Static Scale | Load cell life span | 1 000 000 cycles | |
| 77 | Static Scale | Body of load cells: Material | Stainless steel material, grade 304 or better | |
| 78 | Static Scale | Body of load cells: Material | Is precision machined | |
| 79 | Static Scale | Body of load cells: Material | Is provided with drift compensated strain gauges matched to the material in use | |
| 80 | Static Scale | Load cells design | Withstands horizontal disturbing forces associated with the acceleration and deceleration of vehicles on the scale, without any change in the measuring result | |
| 81 | Static Scale | Load cells design | Individual adjustments of each load cell is possible | |
| 82 | Static Scale | Load cells design | All load cells perform accurately under all types of weather conditions, e.g. being dry, wet and/or high humidity. | |
| 83 | Static Scale | Load cells design | Load cells are interchangeable | |
| 84 | Static Scale | Load cells design | All load cells supplied are of the same type and manufacturer | |
| 85 | Static Scale | Permissibles: Load cell capacity | 20 000 kg | |
| 86 | Static Scale | Permissibles: Safe overload % | > 150% | |
| 87 | Static Scale | Permissibles: Ultimate overload % | > 300% | |
| 88 | Static Scale | Permissibles: Cell load accuracy | 1% | |
| 89 | Static Scale | Capabilities | Each load cell is capable of carrying the specified loads plus any dynamic shock loads presented by the vehicle or its load | |
| 90 | Static Scale | Capabilities | The load cells have inherent lateral stability and rigidity (allowing movement only in the vertical plane) | |
| 91 | Static Scale | Capabilities | The methods employed for preventing lateral movement does not jeopardise the accuracy of the measured results | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | and at the same time, does not place no restriction on the downward force on the load cells | |
| 92 | Static Scale | Capabilities | The cabling between the load cells and transmitter/controller is as short as possible, screened and armoured for added environmental and vermin/rodent protection. | |
| 93 | Static Scale | Capabilities | Cross-range forces and impulsive forces shall be resisted | |
| 94 | Static Scale | Capabilities | All load cells that are supplied is accompanied by a type approval and test certificate, which is handed over on delivery of the completed unit. | |
| 95 | Static Scale | Capabilities | The load cells is correctly convert and transmit the applied mass to the digital display board and printer, which is situated in the scale office adjacent to the scale. | |
| 96 | Static Scale | General | Scale Deck is stabilised | |
| 97 | Static Scale | General | Adequate means is provided to prevent the decks from hitting the surrounding pit frame due to horizontal movement without impeding on the results of the measurement and without damaging the structure of the scale pit | |
| 98 | Static Scale | General | A bumper plate mechanism is designed to ensure that any impact forces due to deck movement are adequately absorbed without causing damage to the structure of the scale pit | |
| 99 | Static Scale | General | The suspension provided for the decks is designed to dissipate the lateral force in any direction and shall minimise horizontal movement when a vehicle stops on the scale decks. | |
| 100 | Static Scale | General | Stand-alone audio system | |
| 101 | Static Scale | General | Amplifier of industrial quality with 50 W continuous rating and 100 V line output. The volume and pitch shall be adjustable. The output shall be short-circuit protected. | |
| 102 | Static Scale | Amplifier Continuous rating | 50 W | |
| 103 | Static Scale | Amplifier Line output | 100 V | |
| 104 | Static Scale | Amplifier attributes | Adjustable volume and pitch | |
| 105 | Static Scale | Amplifier attributes | The output is short-circuit protected | |
| 106 | Static Scale | All wiring | Black 2.5 mm twin flex cable | |
| 107 | Static Scale | All wiring | Adheres to safety protocol | |
| 108 | Static Scale | All wiring | Desktop mounted gooseneck microphone with an illuminated push-to-talk button on the base. | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 109 | Static Scale | Functionality | Indicates the mass of each individual scale deck and the Gross Vehicle Mass or Gross Combined Mass. | |
| 110 | Static Scale | Visibility | The display unit is installed at the outside of the scale office at a location where the driver of the weighed vehicle can clearly see the readings without exiting the vehicle | |
| 111 | Static Scale | 0 | Direct sunlight does not influence the readability of the characters | |
| 112 | Static Scale | Display board enclosure | IP65 rated | |
| 113 | Static Scale | 0 | Equipped with a suitable sized canopy to provide further protection against weather conditions | |
| 114 | Static Scale | Minimum digital characters requirements: Height of characters | > 80 mm | |
| 115 | Static Scale | : Characters visibility distance | >30 m | |
| 116 | Static Scale | Functionality | First indoor display board indicates the same values as the outdoor display board | |
| 117 | Static Scale | Visibility | The display unit is installed inside the scale office at a location where the scale operator can clearly see the readings | |
| 118 | Static Scale | Visibility | Is either wall mounted or table mounted | |
| 119 | Static Scale | Display board enclosure | IP44 rated | |
| 120 | Static Scale | Display board enclosure: Height of characters | > 50 mm | |
| 121 | General: Weigh Station Capacity | HSWIM Screening capacity (veh/h) | Weighing Area Offices | |
| 122 | General: Weigh Station Capacity | LSWIM Screening capacity (veh/h) | Ease of maintenance of the Static Scale | |

### B.1.3.5 Type 3 LSWIM Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Weighing Area | General | Weighing Area Offices | |
| 2 | Weighing Area | General | Ease of maintenance of the LSWIM | |
| 3 | Weighing Area | General | Reinforcement of the pavement | |
| 4 | Weighing Area | General | Straight line approaches without the need for awkward manoeuvring by vehicles | |
| 5 | Weighing Area | General | Level approaches relative to the scale | |
| 6 | Weighing Area | General | Proper drainage system. | |
| 7 | Weighing Area | General | Traffic Lights | |
| 8 | Weighing Area | General | Booms | |
| 9 | Weighing Area | General | Loops | |
| 10 | Weighing Area | General | Automatic Number Plate Recognition (ANPR) Cameras | |
| 11 | Weighing Area | General | Overview Cameras | |
| 12 | Weighing Area | General | LSWIM | |
| 13 | LSWIM | Display board enclosure: Height of characters | > 50 mm | |

### B.1.3.6 Type 3 Static Scale Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Weighing Area | General | Weighing Area Offices | |
| 2 | Weighing Area | General | Ease of maintenance of the Static Scale | |
| 3 | Weighing Area | General | Reinforcement of the pavement | |
| 4 | Weighing Area | General | Straight line approaches without the need for awkward manoeuvring by vehicles | |
| 5 | Weighing Area | General | Level approaches relative to the scale | |
| 6 | Weighing Area | General | Proper drainage system. | |
| 7 | Weighing Area | General | Traffic Lights | |
| 8 | Weighing Area | General | Booms | |
| 9 | Weighing Area | General | Loops | |
| 10 | Weighing Area | General | Automatic Number Plate Recognition (ANPR) Cameras | |
| 11 | Weighing Area | General | Overview Cameras | |
| 12 | Weighing Area | General | Static Scale Deck (single-deck) | |
| 13 | Static Scale | General | Operates as a subsystem to the VLMIS | |
| 14 | Static Scale | General | Operates as an integrated component to the VLMIS | |
| 15 | Static Scale | General | Complies to OIML Type Approval Standards | |
| 16 | Static Scale | General | Complies to Vehicle Load Management – Equipment Verification – Static Scale Verification | |
| 17 | Static Scale | General | Scale decks are not fatigued or distorted when a vehicle is fully laid on the Static Scale | |
| 18 | Static Scale | General | Longitudinal and cross bearers are of the heavy I-section type steel beams | |
| 19 | Static Scale | General | The top surface of the decks are level with the Static Scale surrounds and approach | |
| 20 | Static Scale | General | Scale decks or any part do not protrude above the Static Scale surrounds, approach and departure slabs | |
| 21 | Static Scale | Maximum allowable tolerance given the datum mark | 2mm below datum mark | |
| 22 | Static Scale | Maximum allowable clearance between the scale pit and steel deck edges | 5mm < Clearance < 30mm | |
| 23 | Static Scale | General | Comprises of flat steel decks bolted onto main rolled steel girders | |
| 24 | Static Scale | General | All girders are bolted together with high tensile steel-machined bolts complete with heavy duty spring washers. | |
| 25 | Static Scale | General | The frames, are bolted together, and are rigid. | |
| 26 | Static Scale | Static Scale installation | 4 independent scale decks in a recessed concrete pit (recessed Static Scale) or | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | minimum equipment | above ground concrete platform (elevated Static Scale) | |
| 27 | Static Scale | Static Scale installation minimum equipment | Each scale deck is supported by four (4) load cells | |
| 28 | Static Scale | General | Computer and peripheral devices for recording, displaying, printing and transferring the weighing information | |
| 29 | Static Scale | Minimum Scale Deck A (Platform 1) dimensions for individual axle loading measurements | 3 m x 3,5 m (steering axle deck) | |
| 30 | Static Scale | Minimum Scale Deck B (Platform 2) dimensions for individual axle loading measurements | 6 m x 3,5 m | |
| 31 | Static Scale | Minimum Scale Deck D (Platform 4) dimensions for individual axle loading measurements | 7 m x 3,5 m | |
| 32 | Static Scale | Minimum Scale Deck C (Platform 3) dimensions for individual axle loading measurements | 6 m x 3,5 m | |
| 33 | Static Scale | Corrosion | All steel structure elements of the Static Scale are protected against corrosion | |
| 34 | Static Scale | Minimum thickness of anti-corrosion coating | 55 µm for the primer | |
| 35 | Static Scale | Minimum thickness of anti-corrosion coating | 30 µm for the covering coat | |
| 36 | Static Scale | Static Scale accuracy | 0,01% | |
| 37 | Static Scale | Nominal weighing capacity | > 120 000 kg | |
| 38 | Static Scale | Nominal weighing capacity | < 40 000 kg per dual axle unit | |
| 39 | Static Scale | Nominal weighing capacity | < 45 000 kg per triple or quadruple axle unit | |
| 40 | Static Scale | General | Steel tyre guides are designed as an integral part of the scale decks | |
| 41 | Static Scale | General | Tyre guides are designed for the full length of the Static Scale, on both longitudinal sides. | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 42 | Static Scale | General | The tyre guides are strong enough to withstand the mass of the fully laden vehicle | |
| 43 | Static Scale | General | The space between the scale decks and the tyre guides are closed-off with hot dipped galvanised steel open grid flooring panels | |
| 44 | Static Scale | General | Panels are hinged and lockable in order to provide means of access to the components of the Static Scale | |
| 45 | Static Scale | General | The hinges are of a heavy-duty design and is purposefully made for this duty. | |
| 46 | Static Scale | General | The panels shall are suitably supported to remain in the vertical plane and these supports are not obstructing the access to the load cells and any other component of the weighbridge | |
| 47 | Static Scale | General | 12mm | |
| 48 | Static Scale | General | All decks are secured to main and cross bearers with 14 mm galvanised mild steel bolts | |
| 49 | Static Scale | General | The heads of the bolts are level with the deck plates or otherwise slightly below | |
| 50 | Static Scale | General | Spring washers are used on all nuts | |
| 51 | Static Scale | General | The steel decks are in firm contact at all points of support and its surface is absolutely level to provide good load distribution at all times. | |
| 52 | Static Scale | Internal width of Static Scale concrete pit for a 4-deck arrangement | > 3.0 m | |
| 53 | Static Scale | Internal length of Static Scale concrete pit for a 4-deck arrangement | > 22 m | |
| 54 | Static Scale | Maximum dimension deviation allowed of the concrete pit | 30 mm | |
| 55 | Static Scale | Concrete pit | The scale concrete pit surface edge is equipped with steel kerbing. | |
| 56 | Static Scale | Concrete pit | The alignment of the steel kerbing (on the horizontal and vertical planes) is verified with a 6 m straight edge. | |
| 57 | Static Scale | Concrete pit | A steel disk of at least 3 mm thick and 150 mm in diameter does not slide through between the straight edge and the steel kerbing. | |
| 58 | Static Scale | Recessed Static Scale minimum requirements: Minimum depth between the | 1.5 m | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | lowest point of any scale deck structural steel component and the concrete pit floor | | |
| 59 | Static Scale | Recessed Static Scale minimum requirements: Total depth of the concrete pit | 1.8 m | |
| 60 | Static Scale | Recessed Static Scale minimum requirements | Manholes are used for maintenance inspections and cleaning | |
| 61 | Static Scale | Recessed Static Scale minimum requirements: Drainage Sump minimum dimensions | 600 x 600 x 600 mm | |
| 62 | Static Scale | Recessed Static Scale minimum requirements: Drainage Sump pit floor slope | 1% | |
| 63 | Static Scale | Recessed Static Scale minimum requirements: Drainage Sump component requirements | The drainpipe is of low carbon steel pipes | |
| 64 | Static Scale | Recessed Static Scale minimum requirements | A drainage pump is installed in the sump when natural drainage of the sump is not possible | |
| 65 | Static Scale | Recessed Static Scale minimum requirements | The sump is covered with grating | |
| 66 | Static Scale | Recessed Static Scale minimum requirements | The sump grating is able to support without deflection a mass of 200 kg | |
| 67 | Static Scale | Recessed Static Scale minimum requirements | The sump grating is slotted to allow the pump cable and delivery pipe to protrude | |
| 68 | Static Scale | Elevated Static Scale minimum requirements: Minimum depth between the lowest point of any scale deck structural steel component and the concrete floor | 200 mm | |
| 69 | Static Scale | General | The removable deck plates are provided along the length of the deck for maintenance inspections and cleaning below the scale deck | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 70 | Static Scale | Amount of load cells per scale deck | 4 | |
| 71 | Static Scale | Pivoting Rocker-pin arrangement requirements | The lower bearing surface of the load cell is properly sealed | |
| 72 | Static Scale | General | An anti-rotation device is provided which will not influence any weighing results. | |
| 73 | Static Scale | General | Has no positive fixed mechanical connectors such as bolts or links that are required in mounting the load cell to the Static Scale or foundation base plates. | |
| 74 | Static Scale | Load cell connection | Each load cell is connected to the deck by means of a mounting bracket. | |
| 75 | Static Scale | Linear Operating temperature | -10°C to 60°C | |
| 76 | Static Scale | Load cell life span | 1 000 000 cycles | |
| 77 | Static Scale | Body of load cells: Material | Stainless steel material, grade 304 or better | |
| 78 | Static Scale | Body of load cells: Material | Is precision machined | |
| 79 | Static Scale | Body of load cells: Material | Is provided with drift compensated strain gauges matched to the material in use | |
| 80 | Static Scale | Load cells design | Withstands horizontal disturbing forces associated with the acceleration and deceleration of vehicles on the scale, without any change in the measuring result | |
| 81 | Static Scale | Load cells design | Individual adjustments of each load cell is possible | |
| 82 | Static Scale | Load cells design | All load cells perform accurately under all types of weather conditions, e.g. being dry, wet and/or high humidity. | |
| 83 | Static Scale | Load cells design | Load cells are interchangeable | |
| 84 | Static Scale | Load cells design | All load cells supplied are of the same type and manufacturer | |
| 85 | Static Scale | Permissibles: Load cell capacity | 20 000 kg | |
| 86 | Static Scale | Permissibles: Safe overload % | > 150% | |
| 87 | Static Scale | Permissibles: Ultimate overload % | > 300% | |
| 88 | Static Scale | Permissibles: Cell load accuracy | 1% | |
| 89 | Static Scale | Capabilities | Each load cell is capable of carrying the specified loads plus any dynamic shock loads presented by the vehicle or its load | |
| 90 | Static Scale | Capabilities | The load cells have inherent lateral stability and rigidity (allowing movement only in the vertical plane) | |
| 91 | Static Scale | Capabilities | The methods employed for preventing lateral movement does not jeopardise the accuracy of the measured results and at the same time, does not place no | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | restriction on the downward force on the load cells | |
| 92 | Static Scale | Capabilities | The cabling between the load cells and transmitter/controller is as short as possible, screened and armoured for added environmental and vermin/rodent protection. | |
| 93 | Static Scale | Capabilities | Cross-range forces and impulsive forces shall be resisted | |
| 94 | Static Scale | Capabilities | All load cells that are supplied is accompanied by a type approval and test certificate, which is handed over on delivery of the completed unit. | |
| 95 | Static Scale | Capabilities | The load cells is correctly convert and transmit the applied mass to the digital display board and printer, which is situated in the scale office adjacent to the scale. | |
| 96 | Static Scale | General | Scale Deck is stabilised | |
| 97 | Static Scale | General | Adequate means is provided to prevent the decks from hitting the surrounding pit frame due to horizontal movement without impeding on the results of the measurement and without damaging the structure of the scale pit | |
| 98 | Static Scale | General | A bumper plate mechanism is designed to ensure that any impact forces due to deck movement are adequately absorbed without causing damage to the structure of the scale pit | |
| 99 | Static Scale | General | The suspension provided for the decks is designed to dissipate the lateral force in any direction and shall minimise horizontal movement when a vehicle stops on the scale decks. | |
| 100 | Static Scale | General | Stand-alone audio system | |
| 101 | Static Scale | General | Amplifier of industrial quality with 50 W continuous rating and 100 V line output. The volume and pitch shall be adjustable. The output shall be short-circuit protected. | |
| 102 | Static Scale | Amplifier Continuous rating | 50 W | |
| 103 | Static Scale | Amplifier Line output | 100 V | |
| 104 | Static Scale | Amplifier attributes | Adjustable volume and pitch | |
| 105 | Static Scale | Amplifier attributes | The output is short-circuit protected | |
| 106 | Static Scale | All wiring | Black 2.5 mm twin flex cable | |
| 107 | Static Scale | All wiring | Adheres to safety protocol | |
| 108 | Static Scale | All wiring | Desktop mounted gooseneck microphone with an illuminated push-to-talk button on the base. | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 109 | Static Scale | Functionality | Indicates the mass of each individual scale deck and the Gross Vehicle Mass or Gross Combined Mass. | |
| 110 | Static Scale | Visibility | The display unit is installed at the outside of the scale office at a location where the driver of the weighed vehicle can clearly see the readings without exiting the vehicle | |
| 111 | Static Scale | 0 | Direct sunlight does not influence the readability of the characters | |
| 112 | Static Scale | Display board enclosure | IP65 rated | |
| 113 | Static Scale | 0 | Equipped with a suitable sized canopy to provide further protection against weather conditions | |
| 114 | Static Scale | Minimum digital characters requirements: Height of characters | > 80 mm | |
| 115 | Static Scale | : Characters visibility distance | >30 m | |
| 116 | Static Scale | Functionality | First indoor display board indicates the same values as the outdoor display board | |
| 117 | Static Scale | Visibility | The display unit is installed inside the scale office at a location where the scale operator can clearly see the readings | |
| 118 | Static Scale | Visibility | Is either wall mounted or table mounted | |
| 119 | Static Scale | Display board enclosure | IP44 rated | |
| 120 | Static Scale | Display board enclosure: Height of characters | > 50 mm | |

#### B.1.3.7 Virtual Weigh Station

There is no Static Scale installed at a Virtual Weigh Station.

### B.1.4 Criterion 4: Traffic control

#### B.1.4.1 Type 1 Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Weighing and control equipment | Static Scale | Integrated into VLMIS | |
| 2 | Weighing and control equipment | Violation Logger | Integrated into VLMIS | |
| 3 | Weighing and control equipment | HSWIM | Integrated into VLMIS | |
| 4 | Weighing and control equipment | LSWIM | Integrated into VLMIS | |
| 5 | Weighing and control equipment | Equipment to send data to VLMIS | ANPR Camera | |
| 6 | Weighing and control equipment | Equipment to send data to VLMIS | Loop | |
| 7 | Weighing and control equipment | Equipment to send data to VLMIS | Static Scale | |
| 8 | Weighing and control equipment | Equipment to send data to VLMIS | HSWIM | |
| 9 | Weighing and control equipment | Equipment to send data to VLMIS | LSWIM | |
| 10 | Weighing and control equipment | Equipment to send data to VLMIS | Violation Logger | |
| 11 | Weighing and control equipment | Equipment to receive data from VLMIS | ANPR Camera | |
| 12 | Weighing and control equipment | Equipment to receive data from VLMIS | Traffic Light | |
| 13 | Weighing and control equipment | Equipment to receive data from VLMIS | Boom | |
| 14 | Weighing and control equipment | Equipment to receive data from VLMIS | Static Scale | |
| 15 | Weighing and control equipment | Required Server Hardware: Domain Controller | Has an entry level rack-mount server with a Xeon 4-core processor, 32 GB RAM and 2 x 1TB NLSAS hard drives in a RAID 1 configuration | |
| 16 | Weighing and control equipment | Required Server Hardware: Server Host | At least two mid-range rack-mount servers with dual Xeon 12-core processors, 24GB RAM, and 8 x 1.8 TB SAS drives in a RAID 5 configuration | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 17 | Weighing and control equipment | Required Server Hardware: Storage Device | Network Attached Storage device (NAS) with a built-in processor unit, at least 1GB RAM, at least 16 TB raw storage capacity (scalable up to 64 TB) and two 1GB LAN interface cards | |
| 18 | Weighing and control equipment | Required Server Hardware: Traffic Controller | Has an entry level server with a Xeon 12-core processor, 32 GB RAM and 2 x 1TB NLSAS hard drives in a RAID 1 configuration | |
| 19 | Weighing and control equipment | Required Server Hardware: Server Software | VMWare vSphere Essentials (ESXi) Plus software which allows for up to 3 physical hosts in a cluster | |
| 20 | Weighing and control equipment | Required Server Hardware: Antivirus Software | Industry standard Antivirus software | |
| 21 | Weighing and control equipment | Required Server Hardware: Office Automation Software | The latest supported version of the MS Office Application for business use in a Terminal-server environment | |
| 22 | Weighing and control equipment | Required Server Hardware: Backup Solution | Disk-based backup solution | |
| 23 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | Personal computers (with at least an i3 or equivalent processor with 4GB RAM and an entry-level hard disk drive) or thin-clients (with at least a 1.2GHz processor, 4GB RAM and a 32GB Flash memory-based solid-state storage module) | |
| 24 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | Laptops (with at least at least an i5 or equivalent processor with 8GB RAM and 256 GB solid-state hard drives) | |
| 25 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | At least Microsoft Windows 7 of later 64-bit Operating System | |
| 26 | Weighing and control equipment | Required Man Machine Interface Equipment: Printers | A4 Mono Laser printer, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor | |
| 27 | Weighing and control equipment | Required Man Machine Interface Equipment: Printers | An A4 Colour Laser printer or multi-function device, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor | |
| 28 | Weighing and control equipment | Required Man Machine Interface Equipment: Hand Held Computers (PDA) | Android version 4.0 or later | |
| 29 | Weighing and control equipment | Required Man Machine Interface Equipment: Hand | Built-in 2D barcode scanner with ability to scan PDF417 barcodes and QR codes | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | Held Computers (PDA) | | |
| 30 | Weighing and control equipment | Required Man Machine Interface Equipment: Hand Held Computers (PDA) | Wireless access point in close proximity to the location where the PDA will be used | |
| 31 | Weighing and control equipment | Required Networks: Internal Network | Connect all servers, workstations and printers in an Ethernet communication network | |
| 32 | Weighing and control equipment | Required Networks: Internal Network | UTP CAT 6 cables, fly leads and termination points as well as Gigabit Ethernet switches | |
| 33 | Weighing and control equipment | Required Networks: External Network | Dual spanning tree redundant fibre ring using single mode fibre technology with multimode fibre technology | |
| 34 | Weighing and control equipment | Required Networks: External Network | Is integrated with the Internal network to form a single communications network | |
| 35 | Weighing and control equipment | Required Networks: Internet Network | Uploading and retrieving data from TRIPS | |
| 36 | Weighing and control equipment | Required Networks: Internet Network | Retrieving information from national Driver and Vehicle Registration Systems | |
| 37 | Weighing and control equipment | Required Networks: Security | Industry leading firewall technology with full maintenance and support | |
| 38 | Traffic Light | General | At the exit to the Static Scales and WIM | |
| 39 | Traffic Light | General | At the exit to the main road | |
| 40 | Traffic Light | General | Used in conjunction with booms | |
| 41 | Traffic Light | Material | Mild steel | |
| 42 | Traffic Light | Outside diameter of material | 115 mm | |
| 43 | Traffic Light | Mounting height | 3.3 m | |
| 44 | Traffic Light | Additional | Poles are equipped with a base plate for mounting onto a suitable foundation frame | |
| 45 | Traffic Light | Foundation | A steel foundation frame complete with anchor bolts, nuts and washers is provided for each pole | |
| 46 | Traffic Light | Foundation | Foundation frame is cast in a 25 MPa concrete foundation | |
| 47 | Traffic Light | Foundation | 75 mm PVC sleeve is cast into the concrete foundation to provide cable access to the inside of the pole | |
| 48 | Traffic Light | Foundation | Base of the pole is designed to fracture on impact without damaging the foundation frame | |
| 49 | Traffic Light | Design Specifications | Safely supports traffic signal heads and backboards having a total mass of 50 kg and a projected wind area of 1,3 $m^2$ | |
| 50 | Traffic Light | Minimum clearance height of the cantilever arms | 5.1 m, measured at a point one metre from the centre of the upright pole | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 51 | Traffic Light | Minimum clearance height of the cantilever arms | The pole cantilever is supplied in two sections with neither section exceeding 6m in length | |
| 52 | Traffic Light | Foundation | A steel foundation frame complete with anchor bolts, nuts and washers is provided for each pole | |
| 53 | Traffic Light | Foundation | Foundation frame is cast in a 25 MPa concrete foundation | |
| 54 | Traffic Light | Foundation | 75 mm PVC sleeve is cast into the concrete foundation to provide cable access to the inside of the pole | |
| 55 | Traffic Light | Foundation | Base of the pole is designed to fracture on impact without damaging the foundation frame | |
| 56 | Traffic Light | Cable terminating boxes | Suitable for traffic signal poles with a 115 mm outside diameter | |
| 57 | Traffic Light | Box: Material | Aluminium | |
| 58 | Traffic Light | Box: Features | Fully waterproof | |
| 59 | Traffic Light | Box: Features | The cover of the box is held in position with a quick release mechanism | |
| 60 | Traffic Light | Box: Features | Equipped with two, six-way terminal strips rated at 30 A | |
| 61 | Traffic Light | Box: Features | Provision are made to earth the terminal box to the pole | |
| 62 | Traffic Light | Box: Base | Minimum of 2 x 20mm diameter knock-outs is provided | |
| 63 | Traffic Light | Box | Has provision within the circumference of the pole to provide cable entry for at least 2 x 24 core 2,5 mm² traffic signal cables and 2 x 2 core 2,5mm² pedestrian pushbutton cables | |
| 64 | Traffic Light | Material | Aluminium with a high silicon content | |
| 65 | Traffic Light | Paint | Chemically etched and coated with black enamel paint | |
| 66 | Traffic Light | Optical Units | Completely interchangeable | |
| 67 | Traffic Light | Optical Units | Easily accessible for maintenance and cleaning | |
| 68 | Traffic Light | Each signal head | Is provided with an anodised aluminium reflector | |
| 69 | Traffic Light | Lenses | Constructed of polycarbonate | |
| 70 | Traffic Light | Lenses | Diameter of 200mm | |
| 71 | Traffic Light | Lenses | The chromaticity is embodied in the body of the lens itself, and is not to externally applied. | |
| 72 | Traffic Light | Signal head | An easily detachable black aluminium anti-phantom cross is fitted to each signal head. | |
| 73 | Traffic Light | Visor | A suitable polythene visor is provided on each signal head to adequately prevent the driver of the vehicle seeing illuminated signals other than those concerning him at an intersection | |
| 74 | Traffic Light | Visor | The top of the visor will project 160mm from the signal face. | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 75 | Traffic Light | Cables | Cable entry is from the underside of the upper signal head by means of flexible 20mm PVC tubing, 610mm in length, housing colour coded conductors protruding at least 200mm out of the tube | |
| 76 | Traffic Light | Mount | Signal heads are mounted onto the pole using universal pole mounting straps | |
| 77 | Traffic Light | Type | H3 10V 50 Watt or type H2 12V 55 Watt halogen lamps | |
| 78 | Traffic Light | Type | Pedestrian aspects are fitted with standard 70 Watt, screw type incandescent lamps | |
| 79 | Traffic Light | Transformers used for lights | Double wound 55 VA continuous rating | |
| 80 | Traffic Light | Transformer's voltage: Primary | 220/240 V | |
| 81 | Traffic Light | Transformer's voltage: Secondary | 10 V | |
| 82 | Traffic Light | Type | Lamps of the signal heads is of the LED cluster type (extra high brightness) | |
| 83 | Traffic Light | Minimum on axis luminous intensity aspects | 380 candelas | |
| 84 | Traffic Light | Supply voltage | Either 10 Volt AC or 230 Volt AC | |
| 85 | Traffic Light | Power consumption: Minimum | 6 W | |
| 86 | Traffic Light | Power consumption: Maximum | 9 W when not dimmed | |
| 87 | Traffic Light | Total harmonic distortion (230V) | < 12% | |
| 88 | Traffic Light | 0 | Backboards are sufficiently robust to withstand the effects of vandalism, exposure to the elements and wind loads | |
| 89 | Traffic Light | Wind design load : Signal heads mounted on the standard 3,3m poles | 0,75 kN/m | |
| 90 | Traffic Light | Wind design load : Signal heads mounted on the standard 5m cantilever poles | 1,25kN/m | |
| 91 | Traffic Light | Material | Die-cast aluminium (LM6) | |
| 92 | Traffic Light | Minimum dimension requirements: Aspect signal heads | 999 mm in length | |
| 93 | Traffic Light | Minimum dimension | 500 m in width | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | requirements: Aspect signal heads | | |
| 94 | Traffic Light | Minimum dimension requirements: Aspect signal heads | Backboards fit directly onto the signal heads without the use of brackets. Modular design backboards to fit signal heads with any number of aspects shall be preferred | |
| 95 | Traffic Light | Paint | The back boards is chemically etched and coated with black enamel paint | |
| 96 | Traffic Light | Paint | 25mm wide golden yellow border around the periphery of backboard | |
| 97 | Traffic Boom | Opening speed | 2,5 seconds | |
| 98 | Traffic Boom | Boom arm: | 4,5m long, 47mm x 90mm octagonal profile, white aluminium with red reflective tape | |
| 99 | Traffic Boom | Drive unit | Instant reversing magnetic torque motor with sinusoidal lever system | |
| 100 | Traffic Boom | Enclosure | 1,6mm 3CR12 steel white powder coated with hinged door (lockable) | |
| 101 | Traffic Boom | Balancing | Adjustment of built-in springs and rubber buffers for boom dampening | |
| 102 | Traffic Boom | Power supply | 240V AC 50Hz | |
| 103 | Traffic Boom | Auto closing | Adjustable, typically 1 minute | |
| 104 | Traffic Boom | Barrier enclosures equipment | Drive mechanism and spring assembly | |
| 105 | Traffic Boom | Barrier enclosures equipment | Interface to control network, for remote control of the barrier | |
| 106 | Traffic Boom | Barrier enclosures equipment | Inductive loop controllers (typically 4) | |
| 107 | Traffic Boom | Barrier enclosures equipment | Overvoltage protection | |
| 108 | Traffic Boom | Barrier enclosures equipment | Local 240 V AC mains isolator | |
| 109 | Traffic Boom | Barrier enclosures equipment | Tamper switch | |
| 110 | Traffic Boom | General | Utilise permanently lubricated bearings without mechanical friction clutches | |
| 111 | Traffic Boom | General | If the power supply is interrupted, the boom is raised automatically. Re-closing shall only commence after the local reader controller is online. | |
| 112 | Traffic Boom | General | Traffic booms are securely bolted onto concrete plinths by means expanding bolts | |
| 113 | Traffic Boom | General | Traffic booms are accommodated on a paved surface or normal ground depending on the final installation position | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 114 | Loops | Presence loop composition | A loop or group of loops installed in the roadway | |
| 115 | Loops | Presence loop composition | Lead-in cable | |
| 116 | Loops | Presence loop composition | Sensor unit | |
| 117 | Loops | Presence loop composition | Power supply installed in the controller cabinet | |
| 118 | Loops | Presence loop composition | Transient voltages do not affect the units | |
| 119 | Loops | Start up time after power interruption | < 1 minute | |
| 120 | Loops | Loop Unit composition | Indicator light or meter for each output circuit | |
| 121 | Loops | Loop Unit design | Provide ease of maintenance with easily accessible electronic components | |
| 122 | Loops | Grooves dimensions for the detector loops and feeders: Depth | > 25 mm | |
| 123 | Loops | Grooves dimensions for the detector loops and feeders: Width | > 4 mm | |
| 124 | Loops | General: Accuracy tolerance | Within 5 mm | |
| 125 | Loops | Requirements | Slot cutting in concrete for inductive detector loops is not performed until after the concrete pavement has been grounded, straight-edged and brought into tolerance | |
| 126 | Loops | Requirements | Slots cut in the pavement are washed clean, blown out and thoroughly dried before installing conductors | |
| 127 | Loops | Requirements: Wire for the loop | PVC insulated | |
| 128 | Loops | Requirements: Wire for the loop | 2,5mm single core stranded copper conductor, unjointed and untwisted | |
| 129 | Loops | Requirements: Wire for the loop | A continuous length of wire is inserted in the groove in a clockwise direction such that three complete turns are be provided for the loop. | |
| 130 | Loops | Requirements: Wire for the loop | The loop and feeder wires are protected by means of neoprene cord inserted tightly into the groove | |
| 131 | Loops | Requirements: Feeder Wires | Is twisted as a pair with at least five twists per meter | |
| 132 | Loops | Post Conductor installation requirements | Slots are be filled with sealant to within 3mm of the pavement surface. | |
| 133 | Loops | Sealant Requirements: | > 10 mm | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | Thickness above the top conducted in the saw cut | | |
| 134 | Loops | Sealant Requirements | Surplus sealant is removed from the adjacent road surfaces without the use of solvents | |
| 135 | Loops | Road drilling requirements : Diameter | 22 mm | |
| 136 | Loops | Road drilling requirements : Length from the edge of the row | 400 mm | |
| 137 | Loops | Road drilling requirements : Depth below surface | 500 mm | |
| 138 | Loops | Sleeve pipe requirements: Depth below surface in drilled hole | > 25 mm | |
| 139 | Loops | Sleeve pipe requirements: Material | Polyethylene pipe | |
| 140 | Loops | Conductors | All conductors are identified and labelled, in the junction box adjacent to the loops and near the termination of the conductors in the controller cabinet | |
| 141 | Loops | Insulation resistance test: Test 1 | At the termination junction box, prior to connection to the detector lead-in cable | |
| 142 | Loops | Insulation resistance test: Test 2 | At the controller cabinet after connection to the detector lead-in cable | |

### B.1.4.2 Type 2 Weigh Station with dedicated screening lanes

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Weighing and control equipment | Static Scale | Integrated into VLMIS | |
| 2 | Weighing and control equipment | Violation Logger | Integrated into VLMIS | |
| 3 | Weighing and control equipment | HSWIM | Integrated into VLMIS | |
| 4 | Weighing and control equipment | LSWIM | No LSWIM | |
| 5 | Weighing and control equipment | Equipment to send data to VLMIS | ANPR Camera | |
| 6 | Weighing and control equipment | Equipment to send data to VLMIS | Loop | |
| 7 | Weighing and control equipment | Equipment to send data to VLMIS | Static Scale | |
| 8 | Weighing and control equipment | Equipment to send data to VLMIS | HSWIM | |
| 9 | Weighing and control equipment | Equipment to send data to VLMIS | Violation Logger | |
| 10 | Weighing and control equipment | Equipment to receive data from VLMIS | ANPR Camera | |
| 11 | Weighing and control equipment | Equipment to receive data from VLMIS | Traffic Light | |
| 12 | Weighing and control equipment | Equipment to receive data from VLMIS | Boom | |
| 13 | Weighing and control equipment | Equipment to receive data from VLMIS | Static Scale | |
| 14 | Weighing and control equipment | Required Server Hardware: Domain Controller | Has an entry level rack-mount server with a Xeon 4-core processor, 32 GB RAM and 2 x 1TB NLSAS hard drives in a RAID 1 configuration | |
| 15 | Weighing and control equipment | Required Server Hardware: Server Host | At least two mid-range rack-mount servers with dual Xeon 12-core processors, 24GB RAM, and 8 x 1.8 TB SAS drives in a RAID 5 configuration | |
| 16 | Weighing and control equipment | Required Server Hardware: Storage Device | Network Attached Storage device (NAS) with a built-in processor unit, at least 1GB RAM, at least 16 TB raw storage capacity (scalable up to 64 TB) and two 1GB LAN interface cards | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 17 | Weighing and control equipment | Required Server Hardware: Traffic Controller | Has an entry level server with a Xeon 12-core processor, 32 GB RAM and 2 x 1TB NLSAS hard drives in a RAID 1 configuration | |
| 18 | Weighing and control equipment | Required Server Hardware: Server Software | VMWare vSphere Essentials (ESXi) Plus software which allows for up to 3 physical hosts in a cluster | |
| 19 | Weighing and control equipment | Required Server Hardware: Antivirus Software | Industry standard Antivirus software | |
| 20 | Weighing and control equipment | Required Server Hardware: Office Automation Software | The latest supported version of the MS Office Application for business use in a Terminal-server environment | |
| 21 | Weighing and control equipment | Required Server Hardware: Backup Solution | Disk-based backup solution | |
| 22 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | Personal computers (with at least an i3 or equivalent processor with 4GB RAM and an entry-level hard disk drive) or thin-clients (with at least a 1.2GHz processor, 4GB RAM and a 32GB Flash memory-based solid-state storage module) | |
| 23 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | Laptops (with at least at least an i5 or equivalent processor with 8GB RAM and 256 GB solid-state hard drives) | |
| 24 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | At least Microsoft Windows 7 of later 64-bit Operating System | |
| 25 | Weighing and control equipment | Required Man Machine Interface Equipment: Printers | A4 Mono Laser printer, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor | |
| 26 | Weighing and control equipment | Required Man Machine Interface Equipment: Printers | An A4 Colour Laser printer or multi-function device, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor | |
| 27 | Weighing and control equipment | Required Man Machine Interface Equipment: Hand Held Computers (PDA) | Android version 4.0 or later | |
| 28 | Weighing and control equipment | Required Man Machine Interface Equipment: Hand Held Computers (PDA) | Built-in 2D barcode scanner with ability to scan PDF417 barcodes and QR codes | |
| 29 | Weighing and control equipment | Required Man Machine Interface Equipment: Hand | Wireless access point in close proximity to the location where the PDA will be used | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | Held Computers (PDA) | | |
| 30 | Weighing and control equipment | Required Networks: Internal Network | Connect all servers, workstations and printers in an Ethernet communication network | |
| 31 | Weighing and control equipment | Required Networks: Internal Network | UTP CAT 6 cables, fly leads and termination points as well as Gigabit Ethernet switches | |
| 32 | Weighing and control equipment | Required Networks: External Network | Dual spanning tree redundant fibre ring using single mode fibre technology with multimode fibre technology | |
| 33 | Weighing and control equipment | Required Networks: External Network | Is integrated with the Internal network to form a single communications network | |
| 34 | Weighing and control equipment | Required Networks: Internet Network | Uploading and retrieving data from TRIPS | |
| 35 | Weighing and control equipment | Required Networks: Internet Network | Retrieving information from national Driver and Vehicle Registration Systems | |
| 36 | Weighing and control equipment | Required Networks: Security | Industry leading firewall technology with full maintenance and support | |
| 37 | Traffic Light | General | At the exit to the Static Scales and WIM | |
| 38 | Traffic Light | General | At the exit to the main road | |
| 39 | Traffic Light | General | Used in conjunction with booms | |
| 40 | Traffic Light | Material | Mild steel | |
| 41 | Traffic Light | Outside diameter of material | 115 mm | |
| 42 | Traffic Light | Mounting height | 3.3 m | |
| 43 | Traffic Light | Additional | Poles are equipped with a base plate for mounting onto a suitable foundation frame | |
| 44 | Traffic Light | Foundation | A steel foundation frame complete with anchor bolts, nuts and washers is provided for each pole | |
| 45 | Traffic Light | Foundation | Foundation frame is cast in a 25 MPa concrete foundation | |
| 46 | Traffic Light | Foundation | 75 mm PVC sleeve is cast into the concrete foundation to provide cable access to the inside of the pole | |
| 47 | Traffic Light | Foundation | Base of the pole is designed to fracture on impact without damaging the foundation frame | |
| 48 | Traffic Light | Design Specifications | Safely supports traffic signal heads and backboards having a total mass of 50 kg and a projected wind area of 1,3 $m^2$ | |
| 49 | Traffic Light | Minimum clearance height of the cantilever arms | 5.1 m, measured at a point one metre from the centre of the upright pole | |
| 50 | Traffic Light | Minimum clearance height of the cantilever arms | The pole cantilever is supplied in two sections with neither section exceeding 6m in length | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 51 | Traffic Light | Foundation | A steel foundation frame complete with anchor bolts, nuts and washers is provided for each pole | |
| 52 | Traffic Light | Foundation | Foundation frame is cast in a 25 MPa concrete foundation | |
| 53 | Traffic Light | Foundation | 75 mm PVC sleeve is cast into the concrete foundation to provide cable access to the inside of the pole | |
| 54 | Traffic Light | Foundation | Base of the pole is designed to fracture on impact without damaging the foundation frame | |
| 55 | Traffic Light | Cable terminating boxes | Suitable for traffic signal poles with a 115 mm outside diameter | |
| 56 | Traffic Light | Box: Material | Aluminium | |
| 57 | Traffic Light | Box: Features | Fully waterproof | |
| 58 | Traffic Light | Box: Features | The cover of the box is held in position with a quick release mechanism | |
| 59 | Traffic Light | Box: Features | Equipped with two, six-way terminal strips rated at 30 A | |
| 60 | Traffic Light | Box: Features | Provision are made to earth the terminal box to the pole | |
| 61 | Traffic Light | Box: Base | Minimum of 2 x 20mm diameter knock-outs is provided | |
| 62 | Traffic Light | Box | Has provision within the circumference of the pole to provide cable entry for at least 2 x 24 core 2,5 $mm^2$ traffic signal cables and 2 x 2 core 2,5$mm^2$ pedestrian pushbutton cables | |
| 63 | Traffic Light | Material | Aluminium with a high silicon content | |
| 64 | Traffic Light | Paint | Chemically etched and coated with black enamel paint | |
| 65 | Traffic Light | Optical Units | Completely interchangeable | |
| 66 | Traffic Light | Optical Units | Easily accessible for maintenance and cleaning | |
| 67 | Traffic Light | Each signal head | Is provided with an anodised aluminium reflector | |
| 68 | Traffic Light | Lenses | Constructed of polycarbonate | |
| 69 | Traffic Light | Lenses | Diameter of 200mm | |
| 70 | Traffic Light | Lenses | The chromaticity is embodied in the body of the lens itself, and is not to externally applied. | |
| 71 | Traffic Light | Signal head | An easily detachable black aluminium anti-phantom cross is fitted to each signal head. | |
| 72 | Traffic Light | Visor | A suitable polythene visor is provided on each signal head to adequately prevent the driver of the vehicle seeing illuminated signals other than those concerning him at an intersection | |
| 73 | Traffic Light | Visor | The top of the visor will project 160mm from the signal face. | |
| 74 | Traffic Light | Cables | Cable entry is from the underside of the upper signal head by means of flexible 20mm PVC tubing, 610mm in length, housing colour coded conductors | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | protruding at least 200mm out of the tube | |
| 75 | Traffic Light | Mount | Signal heads are mounted onto the pole using universal pole mounting straps | |
| 76 | Traffic Light | Type | H3 10V 50 Watt or type H2 12V 55 Watt halogen lamps | |
| 77 | Traffic Light | Type | Pedestrian aspects are fitted with standard 70 Watt, screw type incandescent lamps | |
| 78 | Traffic Light | Transformers used for lights | Double wound 55 VA continuous rating | |
| 79 | Traffic Light | Transformer's voltage: Primary | 220/240 V | |
| 80 | Traffic Light | Transformer's voltage: Secondary | 10 V | |
| 81 | Traffic Light | Type | Lamps of the signal heads is of the LED cluster type (extra high brightness) | |
| 82 | Traffic Light | Minimum on axis luminous intensity aspects | 380 candelas | |
| 83 | Traffic Light | Supply voltage | Either 10 Volt AC or 230 Volt AC | |
| 84 | Traffic Light | Power consumption: Minimum | 6 W | |
| 85 | Traffic Light | Power consumption: Maximum | 9 W when not dimmed | |
| 86 | Traffic Light | Total harmonic distortion (230V) | < 12% | |
| 87 | Traffic Light | 0 | Backboards are sufficiently robust to withstand the effects of vandalism, exposure to the elements and wind loads | |
| 88 | Traffic Light | Wind design load : Signal heads mounted on the standard 3,3m poles | 0,75 kN/m | |
| 89 | Traffic Light | Wind design load : Signal heads mounted on the standard 5m cantilever poles | 1,25kN/m | |
| 90 | Traffic Light | Material | Die-cast aluminium (LM6) | |
| 91 | Traffic Light | Minimum dimension requirements: Aspect signal heads | 999 mm in length | |
| 92 | Traffic Light | Minimum dimension requirements: Aspect signal heads | 500m in width | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 93 | Traffic Light | Minimum dimension requirements: Aspect signal heads | Backboards fit directly onto the signal heads without the use of brackets. Modular design backboards to fit signal heads with any number of aspects shall be preferred | |
| 94 | Traffic Light | Paint | The back boards is chemically etched and coated with black enamel paint | |
| 95 | Traffic Light | Paint | 25mm wide golden yellow border around the periphery of backboard | |
| 96 | Traffic Boom | Opening speed | 2,5 seconds | |
| 97 | Traffic Boom | Boom arm: | 4,5m long, 47mm x 90mm octagonal profile, white aluminium with red reflective tape | |
| 98 | Traffic Boom | Drive unit | Instant reversing magnetic torque motor with sinusoidal lever system | |
| 99 | Traffic Boom | Enclosure | 1,6mm 3CR12 steel white powder coated with hinged door (lockable) | |
| 100 | Traffic Boom | Balancing | Adjustment of built-in springs and rubber buffers for boom dampening | |
| 101 | Traffic Boom | Power supply | 240V AC 50Hz | |
| 102 | Traffic Boom | Auto closing | Adjustable, typically 1 minute | |
| 103 | Traffic Boom | Barrier enclosures equipment | Drive mechanism and spring assembly | |
| 104 | Traffic Boom | Barrier enclosures equipment | Interface to control network, for remote control of the barrier | |
| 105 | Traffic Boom | Barrier enclosures equipment | Inductive loop controllers (typically 4) | |
| 106 | Traffic Boom | Barrier enclosures equipment | Overvoltage protection | |
| 107 | Traffic Boom | Barrier enclosures equipment | Local 240 V AC mains isolator | |
| 108 | Traffic Boom | Barrier enclosures equipment | Tamper switch | |
| 109 | Traffic Boom | General | Utilise permanently lubricated bearings without mechanical friction clutches | |
| 110 | Traffic Boom | General | If the power supply is interrupted, the boom is raised automatically. Re-closing shall only commence after the local reader controller is online. | |
| 111 | Traffic Boom | General | Traffic booms are securely bolted onto concrete plinths by means expanding bolts | |
| 112 | Traffic Boom | General | Traffic booms are accommodated on a paved surface or normal ground depending on the final installation position | |
| 113 | Loops | Presence loop composition | A loop or group of loops installed in the roadway | |
| 114 | Loops | Presence loop composition | Lead-in cable | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 115 | Loops | Presence loop composition | Sensor unit | |
| 116 | Loops | Presence loop composition | Power supply installed in the controller cabinet | |
| 117 | Loops | Presence loop composition | Transient voltages do not affect the units | |
| 118 | Loops | Start up time after power interruption | < 1 minute | |
| 119 | Loops | Loop Unit composition | Indicator light or meter for each output circuit | |
| 120 | Loops | Loop Unit design | Provide ease of maintenance with easily accessible electronic components | |
| 121 | Loops | Grooves dimensions for the detector loops and feeders: Depth | > 25 mm | |
| 122 | Loops | Grooves dimensions for the detector loops and feeders: Width | > 4 mm | |
| 123 | Loops | General: Accuracy tolerance | Within 5 mm | |
| 124 | Loops | Requirements | Slot cutting in concrete for inductive detector loops is not performed until after the concrete pavement has been grounded, straight-edged and brought into tolerance | |
| 125 | Loops | Requirements | Slots cut in the pavement are washed clean, blown out and thoroughly dried before installing conductors | |
| 126 | Loops | Requirements: Wire for the loop | PVC insulated | |
| 127 | Loops | Requirements: Wire for the loop | 2,5mm single core stranded copper conductor, unjointed and untwisted | |
| 128 | Loops | Requirements: Wire for the loop | A continuous length of wire is inserted in the groove in a clockwise direction such that three complete turns are be provided for the loop. | |
| 129 | Loops | Requirements: Wire for the loop | The loop and feeder wires are protected by means of neoprene cord inserted tightly into the groove | |
| 130 | Loops | Requirements: Feeder Wires | Is twisted as a pair with at least five twists per meter | |
| 131 | Loops | Post Conductor installation requirements | Slots are be filled with sealant to within 3mm of the pavement surface. | |
| 132 | Loops | Sealant Requirements: Thickness above the top conducted in the saw cut | > 10 mm | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 133 | Loops | Sealant Requirements | Surplus sealant is removed from the adjacent road surfaces without the use of solvents | |
| 134 | Loops | Road drilling requirements : Diameter | 22 mm | |
| 135 | Loops | Road drilling requirements : Length from the edge of the row | 400 mm | |
| 136 | Loops | Road drilling requirements : Depth below surface | 500 mm | |
| 137 | Loops | Sleeve pipe requirements: Depth below surface in drilled hole | > 25 mm | |
| 138 | Loops | Sleeve pipe requirements: Material | Polyethylene pipe | |
| 139 | Loops | Conductors | All conductors are identified and labelled, in the junction box adjacent to the loops and near the termination of the conductors in the controller cabinet | |
| 140 | Loops | Insulation resistance test: Test 1 | At the termination junction box, prior to connection to the detector lead-in cable | |
| 141 | Loops | Insulation resistance test: Test 2 | At the controller cabinet after connection to the detector lead-in cable | |

### B.1.4.3 Type 2 Weigh Station without dedicated screening lanes

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Weighing and control equipment | Static Scale | Integrated into VLMIS | |
| 2 | Weighing and control equipment | Violation Logger | Integrated into VLMIS | |
| 3 | Weighing and control equipment | HSWIM | Integrated into VLMIS | |
| 4 | Weighing and control equipment | LSWIM | No LSWIM | |
| 5 | Weighing and control equipment | Equipment to send data to VLMIS | ANPR Camera | |
| 6 | Weighing and control equipment | Equipment to send data to VLMIS | Loop | |
| 7 | Weighing and control equipment | Equipment to send data to VLMIS | Static Scale | |
| 8 | Weighing and control equipment | Equipment to send data to VLMIS | HSWIM | |
| 9 | Weighing and control equipment | Equipment to send data to VLMIS | Violation Logger | |
| 10 | Weighing and control equipment | Equipment to receive data from VLMIS | ANPR Camera | |
| 11 | Weighing and control equipment | Equipment to receive data from VLMIS | Traffic Light | |
| 12 | Weighing and control equipment | Equipment to receive data from VLMIS | Boom | |
| 13 | Weighing and control equipment | Equipment to receive data from VLMIS | Static Scale | |
| 14 | Weighing and control equipment | Required Server Hardware: Domain Controller | Has an entry level rack-mount server with a Xeon 4-core processor, 32 GB RAM and 2 x 1TB NLSAS hard drives in a RAID 1 configuration | |
| 15 | Weighing and control equipment | Required Server Hardware: Server Host | At least two mid-range rack-mount servers with dual Xeon 12-core processors, 24GB RAM, and 8 x 1.8 TB SAS drives in a RAID 5 configuration | |
| 16 | Weighing and control equipment | Required Server Hardware: Storage Device | Network Attached Storage device (NAS) with a built-in processor unit, at least 1GB RAM, at least 16 TB raw storage capacity (scalable up to 64 TB) and two 1GB LAN interface cards | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 17 | Weighing and control equipment | Required Server Hardware: Traffic Controller | Has an entry level server with a Xeon 12-core processor, 32 GB RAM and 2 x 1TB NLSAS hard drives in a RAID 1 configuration | |
| 18 | Weighing and control equipment | Required Server Hardware: Server Software | VMWare vSphere Essentials (ESXi) Plus software which allows for up to 3 physical hosts in a cluster | |
| 19 | Weighing and control equipment | Required Server Hardware: Antivirus Software | Industry standard Antivirus software | |
| 20 | Weighing and control equipment | Required Server Hardware: Office Automation Software | The latest supported version of the MS Office Application for business use in a Terminal-server environment | |
| 21 | Weighing and control equipment | Required Server Hardware: Backup Solution | Disk-based backup solution | |
| 22 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | Personal computers (with at least an i3 or equivalent processor with 4GB RAM and an entry-level hard disk drive) or thin-clients (with at least a 1.2GHz processor, 4GB RAM and a 32GB Flash memory-based solid-state storage module) | |
| 23 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | Laptops (with at least at least an i5 or equivalent processor with 8GB RAM and 256 GB solid-state hard drives) | |
| 24 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | At least Microsoft Windows 7 of later 64-bit Operating System | |
| 25 | Weighing and control equipment | Required Man Machine Interface Equipment: Printers | A4 Mono Laser printer, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor | |
| 26 | Weighing and control equipment | Required Man Machine Interface Equipment: Printers | An A4 Colour Laser printer or multi-function device, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor | |
| 27 | Weighing and control equipment | Required Man Machine Interface Equipment: Hand Held Computers (PDA) | Android version 4.0 or later | |
| 28 | Weighing and control equipment | Required Man Machine Interface Equipment: Hand Held Computers (PDA) | Built-in 2D barcode scanner with ability to scan PDF417 barcodes and QR codes | |
| 29 | Weighing and control equipment | Required Man Machine Interface Equipment: Hand | Wireless access point in close proximity to the location where the PDA will be used | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | Held Computers (PDA) | | |
| 30 | Weighing and control equipment | Required Networks: Internal Network | Connect all servers, workstations and printers in an Ethernet communication network | |
| 31 | Weighing and control equipment | Required Networks: Internal Network | UTP CAT 6 cables, fly leads and termination points as well as Gigabit Ethernet switches | |
| 32 | Weighing and control equipment | Required Networks: External Network | Dual spanning tree redundant fibre ring using single mode fibre technology with multimode fibre technology | |
| 33 | Weighing and control equipment | Required Networks: External Network | Is integrated with the Internal network to form a single communications network | |
| 34 | Weighing and control equipment | Required Networks: Internet Network | Uploading and retrieving data from TRIPS | |
| 35 | Weighing and control equipment | Required Networks: Internet Network | Retrieving information from national Driver and Vehicle Registration Systems | |
| 36 | Weighing and control equipment | Required Networks: Security | Industry leading firewall technology with full maintenance and support | |
| 37 | Traffic Light | General | At the exit to the Static Scales and WIM | |
| 38 | Traffic Light | General | At the exit to the main road | |
| 39 | Traffic Light | General | Used in conjunction with booms | |
| 40 | Traffic Light | Material | Mild steel | |
| 41 | Traffic Light | Outside diameter of material | 115 mm | |
| 42 | Traffic Light | Mounting height | 3.3 m | |
| 43 | Traffic Light | Additional | Poles are equipped with a base plate for mounting onto a suitable foundation frame | |
| 44 | Traffic Light | Foundation | A steel foundation frame complete with anchor bolts, nuts and washers is provided for each pole | |
| 45 | Traffic Light | Foundation | Foundation frame is cast in a 25 MPa concrete foundation | |
| 46 | Traffic Light | Foundation | 75 mm PVC sleeve is cast into the concrete foundation to provide cable access to the inside of the pole | |
| 47 | Traffic Light | Foundation | Base of the pole is designed to fracture on impact without damaging the foundation frame | |
| 48 | Traffic Light | Design Specifications | Safely supports traffic signal heads and backboards having a total mass of 50 kg and a projected wind area of 1,3 $m^2$ | |
| 49 | Traffic Light | Minimum clearance height of the cantilever arms | 5.1 m, measured at a point one metre from the centre of the upright pole | |
| 50 | Traffic Light | Minimum clearance height of the cantilever arms | The pole cantilever is supplied in two sections with neither section exceeding 6m in length | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 51 | Traffic Light | Foundation | A steel foundation frame complete with anchor bolts, nuts and washers is provided for each pole | |
| 52 | Traffic Light | Foundation | Foundation frame is cast in a 25 MPa concrete foundation | |
| 53 | Traffic Light | Foundation | 75 mm PVC sleeve is cast into the concrete foundation to provide cable access to the inside of the pole | |
| 54 | Traffic Light | Foundation | Base of the pole is designed to fracture on impact without damaging the foundation frame | |
| 55 | Traffic Light | Cable terminating boxes | Suitable for traffic signal poles with a 115 mm outside diameter | |
| 56 | Traffic Light | Box: Material | Aluminium | |
| 57 | Traffic Light | Box: Features | Fully waterproof | |
| 58 | Traffic Light | Box: Features | The cover of the box is held in position with a quick release mechanism | |
| 59 | Traffic Light | Box: Features | Equipped with two, six-way terminal strips rated at 30 A | |
| 60 | Traffic Light | Box: Features | Provision are made to earth the terminal box to the pole | |
| 61 | Traffic Light | Box: Base | Minimum of 2 x 20mm diameter knock-outs is provided | |
| 62 | Traffic Light | Box | Has provision within the circumference of the pole to provide cable entry for at least 2 x 24 core 2,5 $mm^2$ traffic signal cables and 2 x 2 core 2,5$mm^2$ pedestrian pushbutton cables | |
| 63 | Traffic Light | Material | Aluminium with a high silicon content | |
| 64 | Traffic Light | Paint | Chemically etched and coated with black enamel paint | |
| 65 | Traffic Light | Optical Units | Completely interchangeable | |
| 66 | Traffic Light | Optical Units | Easily accessible for maintenance and cleaning | |
| 67 | Traffic Light | Each signal head | Is provided with an anodised aluminium reflector | |
| 68 | Traffic Light | Lenses | Constructed of polycarbonate | |
| 69 | Traffic Light | Lenses | Diameter of 200mm | |
| 70 | Traffic Light | Lenses | The chromaticity is embodied in the body of the lens itself, and is not to externally applied. | |
| 71 | Traffic Light | Signal head | An easily detachable black aluminium anti-phantom cross is fitted to each signal head. | |
| 72 | Traffic Light | Visor | A suitable polythene visor is provided on each signal head to adequately prevent the driver of the vehicle seeing illuminated signals other than those concerning him at an intersection | |
| 73 | Traffic Light | Visor | The top of the visor will project 160mm from the signal face. | |
| 74 | Traffic Light | Cables | Cable entry is from the underside of the upper signal head by means of flexible 20mm PVC tubing, 610mm in length, housing colour coded conductors | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | protruding at least 200mm out of the tube | |
| 75 | Traffic Light | Mount | Signal heads are mounted onto the pole using universal pole mounting straps | |
| 76 | Traffic Light | Type | H3 10V 50 Watt or type H2 12V 55 Watt halogen lamps | |
| 77 | Traffic Light | Type | Pedestrian aspects are fitted with standard 70 Watt, screw type incandescent lamps | |
| 78 | Traffic Light | Transformers used for lights | Double wound 55 VA continuous rating | |
| 79 | Traffic Light | Transformer's voltage: Primary | 220/240 V | |
| 80 | Traffic Light | Transformer's voltage: Secondary | 10 V | |
| 81 | Traffic Light | Type | Lamps of the signal heads is of the LED cluster type (extra high brightness) | |
| 82 | Traffic Light | Minimum on axis luminous intensity aspects | 380 candelas | |
| 83 | Traffic Light | Supply voltage | Either 10 Volt AC or 230 Volt AC | |
| 84 | Traffic Light | Power consumption: Minimum | 6 W | |
| 85 | Traffic Light | Power consumption: Maximum | 9 W when not dimmed | |
| 86 | Traffic Light | Total harmonic distortion (230V) | < 12% | |
| 87 | Traffic Light | 0 | Backboards are sufficiently robust to withstand the effects of vandalism, exposure to the elements and wind loads | |
| 88 | Traffic Light | Wind design load : Signal heads mounted on the standard 3,3m poles | 0,75 kN/m | |
| 89 | Traffic Light | Wind design load : Signal heads mounted on the standard 5m cantilever poles | 1,25kN/m | |
| 90 | Traffic Light | Material | Die-cast aluminium (LM6) | |
| 91 | Traffic Light | Minimum dimension requirements: Aspect signal heads | 999 mm in length | |
| 92 | Traffic Light | Minimum dimension requirements: Aspect signal heads | 500m in width | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 93 | Traffic Light | Minimum dimension requirements: Aspect signal heads | Backboards fit directly onto the signal heads without the use of brackets. Modular design backboards to fit signal heads with any number of aspects shall be preferred | |
| 94 | Traffic Light | Paint | The back boards is chemically etched and coated with black enamel paint | |
| 95 | Traffic Light | Paint | 25mm wide golden yellow border around the periphery of backboard | |
| 96 | Traffic Boom | Opening speed | 2,5 seconds | |
| 97 | Traffic Boom | Boom arm: | 4,5m long, 47mm x 90mm octagonal profile, white aluminium with red reflective tape | |
| 98 | Traffic Boom | Drive unit | Instant reversing magnetic torque motor with sinusoidal lever system | |
| 99 | Traffic Boom | Enclosure | 1,6mm 3CR12 steel white powder coated with hinged door (lockable) | |
| 100 | Traffic Boom | Balancing | Adjustment of built-in springs and rubber buffers for boom dampening | |
| 101 | Traffic Boom | Power supply | 240V AC 50Hz | |
| 102 | Traffic Boom | Auto closing | Adjustable, typically 1 minute | |
| 103 | Traffic Boom | Barrier enclosures equipment | Drive mechanism and spring assembly | |
| 104 | Traffic Boom | Barrier enclosures equipment | Interface to control network, for remote control of the barrier | |
| 105 | Traffic Boom | Barrier enclosures equipment | Inductive loop controllers (typically 4) | |
| 106 | Traffic Boom | Barrier enclosures equipment | Overvoltage protection | |
| 107 | Traffic Boom | Barrier enclosures equipment | Local 240 V AC mains isolator | |
| 108 | Traffic Boom | Barrier enclosures equipment | Tamper switch | |
| 109 | Traffic Boom | General | Utilise permanently lubricated bearings without mechanical friction clutches | |
| 110 | Traffic Boom | General | If the power supply is interrupted, the boom is raised automatically. Re-closing shall only commence after the local reader controller is online. | |
| 111 | Traffic Boom | General | Traffic booms are securely bolted onto concrete plinths by means expanding bolts | |
| 112 | Traffic Boom | General | Traffic booms are accommodated on a paved surface or normal ground depending on the final installation position | |
| 113 | Loops | Presence loop composition | A loop or group of loops installed in the roadway | |
| 114 | Loops | Presence loop composition | Lead-in cable | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 115 | Loops | Presence loop composition | Sensor unit | |
| 116 | Loops | Presence loop composition | Power supply installed in the controller cabinet | |
| 117 | Loops | Presence loop composition | Transient voltages do not affect the units | |
| 118 | Loops | Start up time after power interruption | < 1 minute | |
| 119 | Loops | Loop Unit composition | Indicator light or meter for each output circuit | |
| 120 | Loops | Loop Unit design | Provide ease of maintenance with easily accessible electronic components | |
| 121 | Loops | Grooves dimensions for the detector loops and feeders: Depth | > 25 mm | |
| 122 | Loops | Grooves dimensions for the detector loops and feeders: Width | > 4 mm | |
| 123 | Loops | General: Accuracy tolerance | Within 5 mm | |
| 124 | Loops | Requirements | Slot cutting in concrete for inductive detector loops is not performed until after the concrete pavement has been grounded, straight-edged and brought into tolerance | |
| 125 | Loops | Requirements | Slots cut in the pavement are washed clean, blown out and thoroughly dried before installing conductors | |
| 126 | Loops | Requirements: Wire for the loop | PVC insulated | |
| 127 | Loops | Requirements: Wire for the loop | 2,5mm single core stranded copper conductor, unjointed and untwisted | |
| 128 | Loops | Requirements: Wire for the loop | A continuous length of wire is inserted in the groove in a clockwise direction such that three complete turns are be provided for the loop. | |
| 129 | Loops | Requirements: Wire for the loop | The loop and feeder wires are protected by means of neoprene cord inserted tightly into the groove | |
| 130 | Loops | Requirements: Feeder Wires | Is twisted as a pair with at least five twists per meter | |
| 131 | Loops | Post Conductor installation requirements | Slots are be filled with sealant to within 3mm of the pavement surface. | |
| 132 | Loops | Sealant Requirements: Thickness above the top conducted in the saw cut | > 10 mm | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 133 | Loops | Sealant Requirements | Surplus sealant is removed from the adjacent road surfaces without the use of solvents | |
| 134 | Loops | Road drilling requirements : Diameter | 22 mm | |
| 135 | Loops | Road drilling requirements : Length from the edge of the row | 400 mm | |
| 136 | Loops | Road drilling requirements : Depth below surface | 500 mm | |
| 137 | Loops | Sleeve pipe requirements: Depth below surface in drilled hole | > 25 mm | |
| 138 | Loops | Sleeve pipe requirements: Material | Polyethylene pipe | |
| 139 | Loops | Conductors | All conductors are identified and labelled, in the junction box adjacent to the loops and near the termination of the conductors in the controller cabinet | |
| 140 | Loops | Insulation resistance test: Test 1 | At the termination junction box, prior to connection to the detector lead-in cable | |
| 141 | Loops | Insulation resistance test: Test 2 | At the controller cabinet after connection to the detector lead-in cable | |

### B.1.4.4 Type 2 Small Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Weighing and control equipment | Static Scale | Integrated into VLMIS | |
| 2 | Weighing and control equipment | Violation Logger | Integrated into VLMIS | |
| 3 | Weighing and control equipment | HSWIM | No HSWIM | |
| 4 | Weighing and control equipment | LSWIM | No LSWIM | |
| 5 | Weighing and control equipment | Equipment to send data to VLMIS | ANPR Camera | |
| 6 | Weighing and control equipment | Equipment to send data to VLMIS | Loop | |
| 7 | Weighing and control equipment | Equipment to send data to VLMIS | Static Scale | |
| 8 | Weighing and control equipment | Equipment to send data to VLMIS | Violation Logger | |
| 9 | Weighing and control equipment | Equipment to receive data from VLMIS | ANPR Camera | |
| 10 | Weighing and control equipment | Equipment to receive data from VLMIS | Traffic Light | |
| 11 | Weighing and control equipment | Equipment to receive data from VLMIS | Boom | |
| 12 | Weighing and control equipment | Equipment to receive data from VLMIS | Static Scale | |
| 13 | Weighing and control equipment | Required Server Hardware: Domain Controller | Has an entry level rack-mount server with a Xeon 4-core processor, 32 GB RAM and 2 x 1TB NLSAS hard drives in a RAID 1 configuration | |
| 14 | Weighing and control equipment | Required Server Hardware: Server Host | At least two mid-range rack-mount servers with dual Xeon 12-core processors, 24GB RAM, and 8 x 1.8 TB SAS drives in a RAID 5 configuration | |
| 15 | Weighing and control equipment | Required Server Hardware: Storage Device | Network Attached Storage device (NAS) with a built-in processor unit, at least 1GB RAM, at least 16 TB raw storage capacity (scalable up to 64 TB) and two 1GB LAN interface cards | |
| 16 | Weighing and control equipment | Required Server Hardware: Traffic Controller | Has an entry level server with a Xeon 12-core processor, 32 GB RAM and 2 x 1TB NLSAS hard drives in a RAID 1 configuration | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 17 | Weighing and control equipment | Required Server Hardware: Server Software | VMWare vSphere Essentials (ESXi) Plus software which allows for up to 3 physical hosts in a cluster | |
| 18 | Weighing and control equipment | Required Server Hardware: Antivirus Software | Industry standard Antivirus software | |
| 19 | Weighing and control equipment | Required Server Hardware: Office Automation Software | The latest supported version of the MS Office Application for business use in a Terminal-server environment | |
| 20 | Weighing and control equipment | Required Server Hardware: Backup Solution | Disk-based backup solution | |
| 21 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | Personal computers (with at least an i3 or equivalent processor with 4GB RAM and an entry-level hard disk drive) or thin-clients (with at least a 1.2GHz processor, 4GB RAM and a 32GB Flash memory-based solid-state storage module) | |
| 22 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | Laptops (with at least at least an i5 or equivalent processor with 8GB RAM and 256 GB solid-state hard drives) | |
| 23 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | At least Microsoft Windows 7 of later 64-bit Operating System | |
| 24 | Weighing and control equipment | Required Man Machine Interface Equipment: Printers | A4 Mono Laser printer, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor | |
| 25 | Weighing and control equipment | Required Man Machine Interface Equipment: Printers | An A4 Colour Laser printer or multi-function device, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor | |
| 26 | Weighing and control equipment | Required Man Machine Interface Equipment: Hand Held Computers (PDA) | Android version 4.0 or later | |
| 27 | Weighing and control equipment | Required Man Machine Interface Equipment: Hand Held Computers (PDA) | Built-in 2D barcode scanner with ability to scan PDF417 barcodes and QR codes | |
| 28 | Weighing and control equipment | Required Man Machine Interface Equipment: Hand Held Computers (PDA) | Wireless access point in close proximity to the location where the PDA will be used | |
| 29 | Weighing and control equipment | Required Networks: Internal Network | Connect all servers, workstations and printers in an Ethernet communication network | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 30 | Weighing and control equipment | Required Networks: Internal Network | UTP CAT 6 cables, fly leads and termination points as well as Gigabit Ethernet switches | |
| 31 | Weighing and control equipment | Required Networks: External Network | Dual spanning tree redundant fibre ring using single mode fibre technology with multimode fibre technology | |
| 32 | Weighing and control equipment | Required Networks: External Network | Is integrated with the Internal network to form a single communications network | |
| 33 | Weighing and control equipment | Required Networks: Internet Network | Uploading and retrieving data from TRIPS | |
| 34 | Weighing and control equipment | Required Networks: Internet Network | Retrieving information from national Driver and Vehicle Registration Systems | |
| 35 | Weighing and control equipment | Required Networks: Security | Industry leading firewall technology with full maintenance and support | |
| 36 | Traffic Light | General | At the exit to the Static Scales and WIM | |
| 37 | Traffic Light | General | At the exit to the main road | |
| 38 | Traffic Light | General | Used in conjunction with booms | |
| 39 | Traffic Light | Material | Mild steel | |
| 40 | Traffic Light | Outside diameter of material | 115 mm | |
| 41 | Traffic Light | Mounting height | 3.3 m | |
| 42 | Traffic Light | Additional | Poles are equipped with a base plate for mounting onto a suitable foundation frame | |
| 43 | Traffic Light | Foundation | A steel foundation frame complete with anchor bolts, nuts and washers is provided for each pole | |
| 44 | Traffic Light | Foundation | Foundation frame is cast in a 25 MPa concrete foundation | |
| 45 | Traffic Light | Foundation | 75 mm PVC sleeve is cast into the concrete foundation to provide cable access to the inside of the pole | |
| 46 | Traffic Light | Foundation | Base of the pole is designed to fracture on impact without damaging the foundation frame | |
| 47 | Traffic Light | Design Specifications | Safely supports traffic signal heads and backboards having a total mass of 50 kg and a projected wind area of 1,3 $m^2$ | |
| 48 | Traffic Light | Minimum clearance height of the cantilever arms | 5.1 m, measured at a point one metre from the centre of the upright pole | |
| 49 | Traffic Light | Minimum clearance height of the cantilever arms | The pole cantilever is supplied in two sections with neither section exceeding 6m in length | |
| 50 | Traffic Light | Foundation | A steel foundation frame complete with anchor bolts, nuts and washers is provided for each pole | |
| 51 | Traffic Light | Foundation | Foundation frame is cast in a 25 MPa concrete foundation | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 52 | Traffic Light | Foundation | 75 mm PVC sleeve is cast into the concrete foundation to provide cable access to the inside of the pole | |
| 53 | Traffic Light | Foundation | Base of the pole is designed to fracture on impact without damaging the foundation frame | |
| 54 | Traffic Light | Cable terminating boxes | Suitable for traffic signal poles with a 115 mm outside diameter | |
| 55 | Traffic Light | Box: Material | Aluminium | |
| 56 | Traffic Light | Box: Features | Fully waterproof | |
| 57 | Traffic Light | Box: Features | The cover of the box is held in position with a quick release mechanism | |
| 58 | Traffic Light | Box: Features | Equipped with two, six-way terminal strips rated at 30 A | |
| 59 | Traffic Light | Box: Features | Provision are made to earth the terminal box to the pole | |
| 60 | Traffic Light | Box: Base | Minimum of 2 x 20mm diameter knock-outs is provided | |
| 61 | Traffic Light | Box | Has provision within the circumference of the pole to provide cable entry for at least 2 x 24 core 2,5 $mm^2$ traffic signal cables and 2 x 2 core 2,5$mm^2$ pedestrian pushbutton cables | |
| 62 | Traffic Light | Material | Aluminium with a high silicon content | |
| 63 | Traffic Light | Paint | Chemically etched and coated with black enamel paint | |
| 64 | Traffic Light | Optical Units | Completely interchangeable | |
| 65 | Traffic Light | Optical Units | Easily accessible for maintenance and cleaning | |
| 66 | Traffic Light | Each signal head | Is provided with an anodised aluminium reflector | |
| 67 | Traffic Light | Lenses | Constructed of polycarbonate | |
| 68 | Traffic Light | Lenses | Diameter of 200mm | |
| 69 | Traffic Light | Lenses | The chromaticity is embodied in the body of the lens itself, and is not to externally applied. | |
| 70 | Traffic Light | Signal head | An easily detachable black aluminium anti-phantom cross is fitted to each signal head. | |
| 71 | Traffic Light | Visor | A suitable polythene visor is provided on each signal head to adequately prevent the driver of the vehicle seeing illuminated signals other than those concerning him at an intersection | |
| 72 | Traffic Light | Visor | The top of the visor will project 160mm from the signal face. | |
| 73 | Traffic Light | Cables | Cable entry is from the underside of the upper signal head by means of flexible 20mm PVC tubing, 610mm in length, housing colour coded conductors protruding at least 200mm out of the tube | |
| 74 | Traffic Light | Mount | Signal heads are mounted onto the pole using universal pole mounting straps | |
| 75 | Traffic Light | Type | H3 10V 50 Watt or type H2 12V 55 Watt halogen lamps | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 76 | Traffic Light | Type | Pedestrian aspects are fitted with standard 70 Watt, screw type incandescent lamps | |
| 77 | Traffic Light | Transformers used for lights | Double wound 55 VA continuous rating | |
| 78 | Traffic Light | Transformer's voltage: Primary | 220/240 V | |
| 79 | Traffic Light | Transformer's voltage: Secondary | 10 V | |
| 80 | Traffic Light | Type | Lamps of the signal heads is of the LED cluster type (extra high brightness) | |
| 81 | Traffic Light | Minimum on axis luminous intensity aspects | 380 candelas | |
| 82 | Traffic Light | Supply voltage | Either 10 Volt AC or 230 Volt AC | |
| 83 | Traffic Light | Power consumption: Minimum | 6 W | |
| 84 | Traffic Light | Power consumption: Maximum | 9 W when not dimmed | |
| 85 | Traffic Light | Total harmonic distortion (230V) | < 12% | |
| 86 | Traffic Light | 0 | Backboards are sufficiently robust to withstand the effects of vandalism, exposure to the elements and wind loads | |
| 87 | Traffic Light | Wind design load : Signal heads mounted on the standard 3,3m poles | 0,75 kN/m | |
| 88 | Traffic Light | Wind design load : Signal heads mounted on the standard 5m cantilever poles | 1,25kN/m | |
| 89 | Traffic Light | Material | Die-cast aluminium (LM6) | |
| 90 | Traffic Light | Minimum dimension requirements: Aspect signal heads | 999 mm in length | |
| 91 | Traffic Light | Minimum dimension requirements: Aspect signal heads | 500m in width | |
| 92 | Traffic Light | Minimum dimension requirements: Aspect signal heads | Backboards fit directly onto the signal heads without the use of brackets. Modular design backboards to fit signal heads with any number of aspects shall be preferred | |
| 93 | Traffic Light | Paint | The back boards is chemically etched and coated with black enamel paint | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 94 | Traffic Light | Paint | 25mm wide golden yellow border around the periphery of backboard | |
| 95 | Traffic Boom | Opening speed | 2,5 seconds | |
| 96 | Traffic Boom | Boom arm: | 4,5m long, 47mm x 90mm octagonal profile, white aluminium with red reflective tape | |
| 97 | Traffic Boom | Drive unit | Instant reversing magnetic torque motor with sinusoidal lever system | |
| 98 | Traffic Boom | Enclosure | 1,6mm 3CR12 steel white powder coated with hinged door (lockable) | |
| 99 | Traffic Boom | Balancing | Adjustment of built-in springs and rubber buffers for boom dampening | |
| 100 | Traffic Boom | Power supply | 240V AC 50Hz | |
| 101 | Traffic Boom | Auto closing | Adjustable, typically 1 minute | |
| 102 | Traffic Boom | Barrier enclosures equipment | Drive mechanism and spring assembly | |
| 103 | Traffic Boom | Barrier enclosures equipment | Interface to control network, for remote control of the barrier | |
| 104 | Traffic Boom | Barrier enclosures equipment | Inductive loop controllers (typically 4) | |
| 105 | Traffic Boom | Barrier enclosures equipment | Overvoltage protection | |
| 106 | Traffic Boom | Barrier enclosures equipment | Local 240 V AC mains isolator | |
| 107 | Traffic Boom | Barrier enclosures equipment | Tamper switch | |
| 108 | Traffic Boom | General | Utilise permanently lubricated bearings without mechanical friction clutches | |
| 109 | Traffic Boom | General | If the power supply is interrupted, the boom is raised automatically. Re-closing shall only commence after the local reader controller is online. | |
| 110 | Traffic Boom | General | Traffic booms are securely bolted onto concrete plinths by means expanding bolts | |
| 111 | Traffic Boom | General | Traffic booms are accommodated on a paved surface or normal ground depending on the final installation position | |
| 112 | Loops | Presence loop composition | A loop or group of loops installed in the roadway | |
| 113 | Loops | Presence loop composition | Lead-in cable | |
| 114 | Loops | Presence loop composition | Sensor unit | |
| 115 | Loops | Presence loop composition | Power supply installed in the controller cabinet | |
| 116 | Loops | Presence loop composition | Transient voltages do not affect the units | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 117 | Loops | Start up time after power interruption | < 1 minute | |
| 118 | Loops | Loop Unit composition | Indicator light or meter for each output circuit | |
| 119 | Loops | Loop Unit design | Provide ease of maintenance with easily accessible electronic components | |
| 120 | Loops | Grooves dimensions for the detector loops and feeders: Depth | > 25 mm | |
| 121 | Loops | Grooves dimensions for the detector loops and feeders: Width | > 4 mm | |
| 122 | Loops | General: Accuracy tolerance | Within 5 mm | |
| 123 | Loops | Requirements | Slot cutting in concrete for inductive detector loops is not performed until after the concrete pavement has been grounded, straight-edged and brought into tolerance | |
| 124 | Loops | Requirements | Slots cut in the pavement are washed clean, blown out and thoroughly dried before installing conductors | |
| 125 | Loops | Requirements: Wire for the loop | PVC insulated | |
| 126 | Loops | Requirements: Wire for the loop | 2,5mm single core stranded copper conductor, unjointed and untwisted | |
| 127 | Loops | Requirements: Wire for the loop | A continuous length of wire is inserted in the groove in a clockwise direction such that three complete turns are be provided for the loop. | |
| 128 | Loops | Requirements: Wire for the loop | The loop and feeder wires are protected by means of neoprene cord inserted tightly into the groove | |
| 129 | Loops | Requirements: Feeder Wires | Is twisted as a pair with at least five twists per meter | |
| 130 | Loops | Post Conductor installation requirements | Slots are be filled with sealant to within 3mm of the pavement surface. | |
| 131 | Loops | Sealant Requirements: Thickness above the top conducted in the saw cut | > 10 mm | |
| 132 | Loops | Sealant Requirements | Surplus sealant is removed from the adjacent road surfaces without the use of solvents | |
| 133 | Loops | Road drilling requirements : Diameter | 22 mm | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 134 | Loops | Road drilling requirements : Length from the edge of the row | 400 mm | |
| 135 | Loops | Road drilling requirements : Depth below surface | 500 mm | |
| 136 | Loops | Sleeve pipe requirements: Depth below surface in drilled hole | > 25 mm | |
| 137 | Loops | Sleeve pipe requirements: Material | Polyethylene pipe | |
| 138 | Loops | Conductors | All conductors are identified and labelled, in the junction box adjacent to the loops and near the termination of the conductors in the controller cabinet | |
| 139 | Loops | Insulation resistance test: Test 1 | At the termination junction box, prior to connection to the detector lead-in cable | |
| 140 | Loops | Insulation resistance test: Test 2 | At the controller cabinet after connection to the detector lead-in cable | |

### B.1.4.5 Type 3 LSWIM Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Weighing and control equipment | Static Scale | No static scale | |
| 2 | Weighing and control equipment | Violation Logger | Integrated into VLMIS | |
| 3 | Weighing and control equipment | HSWIM | No HSWIM | |
| 4 | Weighing and control equipment | LSWIM | Integrated into VLMIS | |
| 5 | Weighing and control equipment | Equipment to send data to VLMIS | ANPR Camera | |
| 6 | Weighing and control equipment | Equipment to send data to VLMIS | Loop | |
| 7 | Weighing and control equipment | Equipment to send data to VLMIS | LSWIM | |
| 8 | Weighing and control equipment | Equipment to send data to VLMIS | Violation Logger | |
| 9 | Weighing and control equipment | Equipment to receive data from VLMIS | ANPR Camera | |
| 10 | Weighing and control equipment | Equipment to receive data from VLMIS | Traffic Light | |
| 11 | Weighing and control equipment | Equipment to receive data from VLMIS | Boom | |
| 12 | Weighing and control equipment | Required Server Hardware: Domain Controller | Has an entry level rack-mount server with a Xeon 4-core processor, 32 GB RAM and 2 x 1TB NLSAS hard drives in a RAID 1 configuration | |
| 13 | Weighing and control equipment | Required Server Hardware: Server Host | A Xeon 12-core processor, 96GB RAM, and 5x 1.8 TB SAS drives in a RAID 5 configuration | |
| 14 | Weighing and control equipment | Required Server Hardware: Storage Device | Network Attached Storage device (NAS) with a built-in processor unit, at least 1GB RAM, at least 16 TB raw storage capacity (scalable up to 64 TB) and two 1GB LAN interface cards | |
| 15 | Weighing and control equipment | Required Server Hardware: Traffic Controller | Has an entry level server with a Xeon 12-core processor, 32 GB RAM and 2 x 1TB NLSAS hard drives in a RAID 1 configuration | |
| 16 | Weighing and control equipment | Required Server Hardware: Server Software | VMWare vSphere Essentials (ESXi) Plus software which allows for up to 3 physical hosts in a cluster | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 17 | Weighing and control equipment | Required Server Hardware: Antivirus Software | Industry standard Antivirus software | |
| 18 | Weighing and control equipment | Required Server Hardware: Office Automation Software | The latest supported version of the MS Office Application for business use in a Terminal-server environment | |
| 19 | Weighing and control equipment | Required Server Hardware: Backup Solution | Disk-based backup solution | |
| 20 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | Personal computers (with at least an i3 or equivalent processor with 4GB RAM and an entry-level hard disk drive) or thin-clients (with at least a 1.2GHz processor, 4GB RAM and a 32GB Flash memory-based solid-state storage module) | |
| 21 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | Laptops (with at least at least an i5 or equivalent processor with 8GB RAM and 256 GB solid-state hard drives) | |
| 22 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | At least Microsoft Windows 7 of later 64-bit Operating System | |
| 23 | Weighing and control equipment | Required Man Machine Interface Equipment: Printers | A4 Mono Laser printer, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor | |
| 24 | Weighing and control equipment | Required Man Machine Interface Equipment: Printers | An A4 Colour Laser printer or multi-function device, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor | |
| 25 | Weighing and control equipment | Required Networks: Internal Network | Connect all servers, workstations and printers in an Ethernet communication network | |
| 26 | Weighing and control equipment | Required Networks: Internal Network | UTP CAT 6 cables, fly leads and termination points as well as Gigabit Ethernet switches | |
| 27 | Weighing and control equipment | Required Networks: External Network | Dual spanning tree redundant fibre ring using single mode fibre technology with multimode fibre technology | |
| 28 | Weighing and control equipment | Required Networks: External Network | Is integrated with the Internal network to form a single communications network | |
| 29 | Weighing and control equipment | Required Networks: Internet Network | Uploading and retrieving data from TRIPS | |
| 30 | Weighing and control equipment | Required Networks: Internet Network | Retrieving information from national Driver and Vehicle Registration Systems | |
| 31 | Weighing and control equipment | Required Networks: Security | Industry leading firewall technology with full maintenance and support | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 32 | Traffic Light | General | At the exit to the Static Scales and WIM | |
| 33 | Traffic Light | General | At the exit to the main road | |
| 34 | Traffic Light | General | Used in conjunction with booms | |
| 35 | Traffic Light | Material | Mild steel | |
| 36 | Traffic Light | Outside diameter of material | 115 mm | |
| 37 | Traffic Light | Mounting height | 3.3 m | |
| 38 | Traffic Light | Additional | Poles are equipped with a base plate for mounting onto a suitable foundation frame | |
| 39 | Traffic Light | Foundation | A steel foundation frame complete with anchor bolts, nuts and washers is provided for each pole | |
| 40 | Traffic Light | Foundation | Foundation frame is cast in a 25 MPa concrete foundation | |
| 41 | Traffic Light | Foundation | 75 mm PVC sleeve is cast into the concrete foundation to provide cable access to the inside of the pole | |
| 42 | Traffic Light | Foundation | Base of the pole is designed to fracture on impact without damaging the foundation frame | |
| 43 | Traffic Light | Design Specifications | Safely supports traffic signal heads and backboards having a total mass of 50 kg and a projected wind area of 1,3 m² | |
| 44 | Traffic Light | Minimum clearance height of the cantilever arms | 5.1 m, measured at a point one metre from the centre of the upright pole | |
| 45 | Traffic Light | Minimum clearance height of the cantilever arms | The pole cantilever is supplied in two sections with neither section exceeding 6m in length | |
| 46 | Traffic Light | Foundation | A steel foundation frame complete with anchor bolts, nuts and washers is provided for each pole | |
| 47 | Traffic Light | Foundation | Foundation frame is cast in a 25 MPa concrete foundation | |
| 48 | Traffic Light | Foundation | 75 mm PVC sleeve is cast into the concrete foundation to provide cable access to the inside of the pole | |
| 49 | Traffic Light | Foundation | Base of the pole is designed to fracture on impact without damaging the foundation frame | |
| 50 | Traffic Light | Cable terminating boxes | Suitable for traffic signal poles with a 115 mm outside diameter | |
| 51 | Traffic Light | Box: Material | Aluminium | |
| 52 | Traffic Light | Box: Features | Fully waterproof | |
| 53 | Traffic Light | Box: Features | The cover of the box is held in position with a quick release mechanism | |
| 54 | Traffic Light | Box: Features | Equipped with two, six-way terminal strips rated at 30 A | |
| 55 | Traffic Light | Box: Features | Provision are made to earth the terminal box to the pole | |
| 56 | Traffic Light | Box: Base | Minimum of 2 x 20mm diameter knock-outs is provided | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 57 | Traffic Light | Box | Has provision within the circumference of the pole to provide cable entry for at least 2 x 24 core 2,5 mm² traffic signal cables and 2 x 2 core 2,5mm² pedestrian pushbutton cables | |
| 58 | Traffic Light | Material | Aluminium with a high silicon content | |
| 59 | Traffic Light | Paint | Chemically etched and coated with black enamel paint | |
| 60 | Traffic Light | Optical Units | Completely interchangeable | |
| 61 | Traffic Light | Optical Units | Easily accessible for maintenance and cleaning | |
| 62 | Traffic Light | Each signal head | Is provided with an anodised aluminium reflector | |
| 63 | Traffic Light | Lenses | Constructed of polycarbonate | |
| 64 | Traffic Light | Lenses | Diameter of 200mm | |
| 65 | Traffic Light | Lenses | The chromaticity is embodied in the body of the lens itself, and is not to externally applied. | |
| 66 | Traffic Light | Signal head | An easily detachable black aluminium anti-phantom cross is fitted to each signal head. | |
| 67 | Traffic Light | Visor | A suitable polythene visor is provided on each signal head to adequately prevent the driver of the vehicle seeing illuminated signals other than those concerning him at an intersection | |
| 68 | Traffic Light | Visor | The top of the visor will project 160mm from the signal face. | |
| 69 | Traffic Light | Cables | Cable entry is from the underside of the upper signal head by means of flexible 20mm PVC tubing, 610mm in length, housing colour coded conductors protruding at least 200mm out of the tube | |
| 70 | Traffic Light | Mount | Signal heads are mounted onto the pole using universal pole mounting straps | |
| 71 | Traffic Light | Type | H3 10V 50 Watt or type H2 12V 55 Watt halogen lamps | |
| 72 | Traffic Light | Type | Pedestrian aspects are fitted with standard 70 Watt, screw type incandescent lamps | |
| 73 | Traffic Light | Transformers used for lights | Double wound 55 VA continuous rating | |
| 74 | Traffic Light | Transformer's voltage: Primary | 220/240 V | |
| 75 | Traffic Light | Transformer's voltage: Secondary | 10 V | |
| 76 | Traffic Light | Type | Lamps of the signal heads is of the LED cluster type (extra high brightness) | |
| 77 | Traffic Light | Minimum on axis luminous intensity aspects | 380 candelas | |
| 78 | Traffic Light | Supply voltage | Either 10 Volt AC or 230 Volt AC | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 79 | Traffic Light | Power consumption: Minimum | 6 W | |
| 80 | Traffic Light | Power consumption: Maximum | 9 W when not dimmed | |
| 81 | Traffic Light | Total harmonic distortion (230V) | < 12% | |
| 82 | Traffic Light | 0 | Backboards are sufficiently robust to withstand the effects of vandalism, exposure to the elements and wind loads | |
| 83 | Traffic Light | Wind design load : Signal heads mounted on the standard 3,3m poles | 0,75 kN/m | |
| 84 | Traffic Light | Wind design load : Signal heads mounted on the standard 5m cantilever poles | 1,25kN/m | |
| 85 | Traffic Light | Material | Die-cast aluminium (LM6) | |
| 86 | Traffic Light | Minimum dimension requirements: Aspect signal heads | 999 mm in length | |
| 87 | Traffic Light | Minimum dimension requirements: Aspect signal heads | 500m in width | |
| 88 | Traffic Light | Minimum dimension requirements: Aspect signal heads | Backboards fit directly onto the signal heads without the use of brackets. Modular design backboards to fit signal heads with any number of aspects shall be preferred | |
| 89 | Traffic Light | Paint | The back boards is chemically etched and coated with black enamel paint | |
| 90 | Traffic Light | Paint | 25mm wide golden yellow border around the periphery of backboard | |
| 91 | Traffic Boom | Opening speed | 2,5 seconds | |
| 92 | Traffic Boom | Boom arm: | 4,5m long, 47mm x 90mm octagonal profile, white aluminium with red reflective tape | |
| 93 | Traffic Boom | Drive unit | Instant reversing magnetic torque motor with sinusoidal lever system | |
| 94 | Traffic Boom | Enclosure | 1,6mm 3CR12 steel white powder coated with hinged door (lockable) | |
| 95 | Traffic Boom | Balancing | Adjustment of built-in springs and rubber buffers for boom dampening | |
| 96 | Traffic Boom | Power supply | 240V AC 50Hz | |
| 97 | Traffic Boom | Auto closing | Adjustable, typically 1 minute | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 98 | Traffic Boom | Barrier enclosures equipment | Drive mechanism and spring assembly | |
| 99 | Traffic Boom | Barrier enclosures equipment | Interface to control network, for remote control of the barrier | |
| 100 | Traffic Boom | Barrier enclosures equipment | Inductive loop controllers (typically 4) | |
| 101 | Traffic Boom | Barrier enclosures equipment | Overvoltage protection | |
| 102 | Traffic Boom | Barrier enclosures equipment | Local 240 V AC mains isolator | |
| 103 | Traffic Boom | Barrier enclosures equipment | Tamper switch | |
| 104 | Traffic Boom | General | Utilise permanently lubricated bearings without mechanical friction clutches | |
| 105 | Traffic Boom | General | If the power supply is interrupted, the boom is raised automatically. Re-closing shall only commence after the local reader controller is online. | |
| 106 | Traffic Boom | General | Traffic booms are securely bolted onto concrete plinths by means expanding bolts | |
| 107 | Traffic Boom | General | Traffic booms are accommodated on a paved surface or normal ground depending on the final installation position | |
| 108 | Loops | Presence loop composition | A loop or group of loops installed in the roadway | |
| 109 | Loops | Presence loop composition | Lead-in cable | |
| 110 | Loops | Presence loop composition | Sensor unit | |
| 111 | Loops | Presence loop composition | Power supply installed in the controller cabinet | |
| 112 | Loops | Presence loop composition | Transient voltages do not affect the units | |
| 113 | Loops | Start up time after power interruption | < 1 minute | |
| 114 | Loops | Loop Unit composition | Indicator light or meter for each output circuit | |
| 115 | Loops | Loop Unit design | Provide ease of maintenance with easily accessible electronic components | |
| 116 | Loops | Grooves dimensions for the detector loops and feeders: Depth | > 25 mm | |
| 117 | Loops | Grooves dimensions for the detector loops | > 4 mm | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | and feeders: Width | | |
| 118 | Loops | General: Accuracy tolerance | Within 5 mm | |
| 119 | Loops | Requirements | Slot cutting in concrete for inductive detector loops is not performed until after the concrete pavement has been grounded, straight-edged and brought into tolerance | |
| 120 | Loops | Requirements | Slots cut in the pavement are washed clean, blown out and thoroughly dried before installing conductors | |
| 121 | Loops | Requirements: Wire for the loop | PVC insulated | |
| 122 | Loops | Requirements: Wire for the loop | 2,5mm single core stranded copper conductor, unjointed and untwisted | |
| 123 | Loops | Requirements: Wire for the loop | A continuous length of wire is inserted in the groove in a clockwise direction such that three complete turns are be provided for the loop. | |
| 124 | Loops | Requirements: Wire for the loop | The loop and feeder wires are protected by means of neoprene cord inserted tightly into the groove | |
| 125 | Loops | Requirements: Feeder Wires | Is twisted as a pair with at least five twists per meter | |
| 126 | Loops | Post Conductor installation requirements | Slots are be filled with sealant to within 3mm of the pavement surface. | |
| 127 | Loops | Sealant Requirements: Thickness above the top conducted in the saw cut | > 10 mm | |
| 128 | Loops | Sealant Requirements | Surplus sealant is removed from the adjacent road surfaces without the use of solvents | |
| 129 | Loops | Road drilling requirements : Diameter | 22 mm | |
| 130 | Loops | Road drilling requirements : Length from the edge of the row | 400 mm | |
| 131 | Loops | Road drilling requirements : Depth below surface | 500 mm | |
| 132 | Loops | Sleeve pipe requirements: Depth below surface in drilled hole | > 25 mm | |
| 133 | Loops | Sleeve pipe requirements: Material | Polyethylene pipe | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 134 | Loops | Conductors | All conductors are identified and labelled, in the junction box adjacent to the loops and near the termination of the conductors in the controller cabinet | |
| 135 | Loops | Insulation resistance test: Test 1 | At the termination junction box, prior to connection to the detector lead-in cable | |
| 136 | Loops | Insulation resistance test: Test 2 | At the controller cabinet after connection to the detector lead-in cable | |

### B.1.4.6 Type 3 Static Scale Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Weighing and control equipment | Static Scale | Integrated into VLMIS | |
| 2 | Weighing and control equipment | Violation Logger | Integrated into VLMIS | |
| 3 | Weighing and control equipment | HSWIM | No HSWIM | |
| 4 | Weighing and control equipment | LSWIM | No LSWIM | |
| 5 | Weighing and control equipment | Equipment to send data to VLMIS | ANPR Camera | |
| 6 | Weighing and control equipment | Equipment to send data to VLMIS | Loop | |
| 7 | Weighing and control equipment | Equipment to send data to VLMIS | Static Scale | |
| 8 | Weighing and control equipment | Equipment to send data to VLMIS | Violation Logger | |
| 9 | Weighing and control equipment | Equipment to receive data from VLMIS | ANPR Camera | |
| 10 | Weighing and control equipment | Equipment to receive data from VLMIS | Traffic Light | |
| 11 | Weighing and control equipment | Equipment to receive data from VLMIS | Boom | |
| 12 | Weighing and control equipment | Equipment to receive data from VLMIS | Static Scale | |
| 13 | Weighing and control equipment | Required Server Hardware: Domain Controller | Has an entry level rack-mount server with a Xeon 4-core processor, 32 GB RAM and 2 x 1TB NLSAS hard drives in a RAID 1 configuration | |
| 14 | Weighing and control equipment | Required Server Hardware: Server Host | A Xeon 12-core processor, 96GB RAM, and 5x 1.8 TB SAS drives in a RAID 5 configuration | |
| 15 | Weighing and control equipment | Required Server Hardware: Storage Device | Network Attached Storage device (NAS) with a built-in processor unit, at least 1GB RAM, at least 16 TB raw storage capacity (scalable up to 64 TB) and two 1GB LAN interface cards | |
| 16 | Weighing and control equipment | Required Server Hardware: Traffic Controller | Has an entry level server with a Xeon 12-core processor, 32 GB RAM and 2 x 1TB NLSAS hard drives in a RAID 1 configuration | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 17 | Weighing and control equipment | Required Server Hardware: Server Software | VMWare vSphere Essentials (ESXi) Plus software which allows for up to 3 physical hosts in a cluster | |
| 18 | Weighing and control equipment | Required Server Hardware: Antivirus Software | Industry standard Antivirus software | |
| 19 | Weighing and control equipment | Required Server Hardware: Office Automation Software | The latest supported version of the MS Office Application for business use in a Terminal-server environment | |
| 20 | Weighing and control equipment | Required Server Hardware: Backup Solution | Disk-based backup solution | |
| 21 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | Personal computers (with at least an i3 or equivalent processor with 4GB RAM and an entry-level hard disk drive) or thin-clients (with at least a 1.2GHz processor, 4GB RAM and a 32GB Flash memory-based solid-state storage module) | |
| 22 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | Laptops (with at least at least an i5 or equivalent processor with 8GB RAM and 256 GB solid-state hard drives) | |
| 23 | Weighing and control equipment | Required Man Machine Interface Equipment: Workstations | At least Microsoft Windows 7 of later 64-bit Operating System | |
| 24 | Weighing and control equipment | Required Man Machine Interface Equipment: Printers | A4 Mono Laser printer, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor | |
| 25 | Weighing and control equipment | Required Man Machine Interface Equipment: Printers | An A4 Colour Laser printer or multi-function device, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor | |
| 26 | Weighing and control equipment | Required Networks: Internal Network | Connect all servers, workstations and printers in an Ethernet communication network | |
| 27 | Weighing and control equipment | Required Networks: Internal Network | UTP CAT 6 cables, fly leads and termination points as well as Gigabit Ethernet switches | |
| 28 | Weighing and control equipment | Required Networks: External Network | Dual spanning tree redundant fibre ring using single mode fibre technology with multimode fibre technology | |
| 29 | Weighing and control equipment | Required Networks: External Network | Is integrated with the Internal network to form a single communications network | |
| 30 | Weighing and control equipment | Required Networks: Internet Network | Uploading and retrieving data from TRIPS | |
| 31 | Weighing and control equipment | Required Networks: Internet Network | Retrieving information from national Driver and Vehicle Registration Systems | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 32 | Weighing and control equipment | Required Networks: Security | Industry leading firewall technology with full maintenance and support | |
| 33 | Traffic Light | General | At the exit to the Static Scales and WIM | |
| 34 | Traffic Light | General | At the exit to the main road | |
| 35 | Traffic Light | General | Used in conjunction with booms | |
| 36 | Traffic Light | Material | Mild steel | |
| 37 | Traffic Light | Outside diameter of material | 115 mm | |
| 38 | Traffic Light | Mounting height | 3.3 m | |
| 39 | Traffic Light | Additional | Poles are equipped with a base plate for mounting onto a suitable foundation frame | |
| 40 | Traffic Light | Foundation | A steel foundation frame complete with anchor bolts, nuts and washers is provided for each pole | |
| 41 | Traffic Light | Foundation | Foundation frame is cast in a 25 MPa concrete foundation | |
| 42 | Traffic Light | Foundation | 75 mm PVC sleeve is cast into the concrete foundation to provide cable access to the inside of the pole | |
| 43 | Traffic Light | Foundation | Base of the pole is designed to fracture on impact without damaging the foundation frame | |
| 44 | Traffic Light | Design Specifications | Safely supports traffic signal heads and backboards having a total mass of 50 kg and a projected wind area of 1,3 m² | |
| 45 | Traffic Light | Minimum clearance height of the cantilever arms | 5.1 m, measured at a point one metre from the centre of the upright pole | |
| 46 | Traffic Light | Minimum clearance height of the cantilever arms | The pole cantilever is supplied in two sections with neither section exceeding 6m in length | |
| 47 | Traffic Light | Foundation | A steel foundation frame complete with anchor bolts, nuts and washers is provided for each pole | |
| 48 | Traffic Light | Foundation | Foundation frame is cast in a 25 MPa concrete foundation | |
| 49 | Traffic Light | Foundation | 75 mm PVC sleeve is cast into the concrete foundation to provide cable access to the inside of the pole | |
| 50 | Traffic Light | Foundation | Base of the pole is designed to fracture on impact without damaging the foundation frame | |
| 51 | Traffic Light | Cable terminating boxes | Suitable for traffic signal poles with a 115 mm outside diameter | |
| 52 | Traffic Light | Box: Material | Aluminium | |
| 53 | Traffic Light | Box: Features | Fully waterproof | |
| 54 | Traffic Light | Box: Features | The cover of the box is held in position with a quick release mechanism | |
| 55 | Traffic Light | Box: Features | Equipped with two, six-way terminal strips rated at 30 A | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 56 | Traffic Light | Box: Features | Provision are made to earth the terminal box to the pole | |
| 57 | Traffic Light | Box: Base | Minimum of 2 x 20mm diameter knock-outs is provided | |
| 58 | Traffic Light | Box | Has provision within the circumference of the pole to provide cable entry for at least 2 x 24 core 2,5 mm² traffic signal cables and 2 x 2 core 2,5mm² pedestrian pushbutton cables | |
| 59 | Traffic Light | Material | Aluminium with a high silicon content | |
| 60 | Traffic Light | Paint | Chemically etched and coated with black enamel paint | |
| 61 | Traffic Light | Optical Units | Completely interchangeable | |
| 62 | Traffic Light | Optical Units | Easily accessible for maintenance and cleaning | |
| 63 | Traffic Light | Each signal head | Is provided with an anodised aluminium reflector | |
| 64 | Traffic Light | Lenses | Constructed of polycarbonate | |
| 65 | Traffic Light | Lenses | Diameter of 200mm | |
| 66 | Traffic Light | Lenses | The chromaticity is embodied in the body of the lens itself, and is not to externally applied. | |
| 67 | Traffic Light | Signal head | An easily detachable black aluminium anti-phantom cross is fitted to each signal head. | |
| 68 | Traffic Light | Visor | A suitable polythene visor is provided on each signal head to adequately prevent the driver of the vehicle seeing illuminated signals other than those concerning him at an intersection | |
| 69 | Traffic Light | Visor | The top of the visor will project 160mm from the signal face. | |
| 70 | Traffic Light | Cables | Cable entry is from the underside of the upper signal head by means of flexible 20mm PVC tubing, 610mm in length, housing colour coded conductors protruding at least 200mm out of the tube | |
| 71 | Traffic Light | Mount | Signal heads are mounted onto the pole using universal pole mounting straps | |
| 72 | Traffic Light | Type | H3 10V 50 Watt or type H2 12V 55 Watt halogen lamps | |
| 73 | Traffic Light | Type | Pedestrian aspects are fitted with standard 70 Watt, screw type incandescent lamps | |
| 74 | Traffic Light | Transformers used for lights | Double wound 55 VA continuous rating | |
| 75 | Traffic Light | Transformer's voltage: Primary | 220/240 V | |
| 76 | Traffic Light | Transformer's voltage: Secondary | 10 V | |
| 77 | Traffic Light | Type | Lamps of the signal heads is of the LED cluster type (extra high brightness) | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 78 | Traffic Light | Minimum on axis luminous intensity aspects | 380 candelas | |
| 79 | Traffic Light | Supply voltage | Either 10 Volt AC or 230 Volt AC | |
| 80 | Traffic Light | Power consumption: Minimum | 6 W | |
| 81 | Traffic Light | Power consumption: Maximum | 9 W when not dimmed | |
| 82 | Traffic Light | Total harmonic distortion (230V) | < 12% | |
| 83 | Traffic Light | 0 | Backboards are sufficiently robust to withstand the effects of vandalism, exposure to the elements and wind loads | |
| 84 | Traffic Light | Wind design load : Signal heads mounted on the standard 3,3m poles | 0,75 kN/m | |
| 85 | Traffic Light | Wind design load : Signal heads mounted on the standard 5m cantilever poles | 1,25kN/m | |
| 86 | Traffic Light | Material | Die-cast aluminium (LM6) | |
| 87 | Traffic Light | Minimum dimension requirements: Aspect signal heads | 999 mm in length | |
| 88 | Traffic Light | Minimum dimension requirements: Aspect signal heads | 500m in width | |
| 89 | Traffic Light | Minimum dimension requirements: Aspect signal heads | Backboards fit directly onto the signal heads without the use of brackets. Modular design backboards to fit signal heads with any number of aspects shall be preferred | |
| 90 | Traffic Light | Paint | The back boards is chemically etched and coated with black enamel paint | |
| 91 | Traffic Light | Paint | 25mm wide golden yellow border around the periphery of backboard | |
| 92 | Traffic Light | Opening speed | 2,5 seconds | |
| 93 | Traffic Light | Boom arm: | 4,5m long, 47mm x 90mm octagonal profile, white aluminium with red reflective tape | |
| 94 | Traffic Light | Drive unit | Instant reversing magnetic torque motor with sinusoidal lever system | |
| 95 | Traffic Light | Enclosure | 1,6mm 3CR12 steel white powder coated with hinged door (lockable) | |
| 96 | Traffic Light | Balancing | Adjustment of built-in springs and rubber buffers for boom dampening | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 97 | Traffic Light | Power supply | 240V AC 50Hz | |
| 98 | Traffic Light | Auto closing | Adjustable, typically 1 minute | |
| 99 | Traffic Light | Barrier enclosures equipment | Drive mechanism and spring assembly | |
| 100 | Traffic Light | Barrier enclosures equipment | Interface to control network, for remote control of the barrier | |
| 101 | Traffic Light | Barrier enclosures equipment | Inductive loop controllers (typically 4) | |
| 102 | Traffic Light | Barrier enclosures equipment | Overvoltage protection | |
| 103 | Traffic Light | Barrier enclosures equipment | Local 240 V AC mains isolator | |
| 104 | Traffic Light | Barrier enclosures equipment | Tamper switch | |
| 105 | Traffic Light | General | Utilise permanently lubricated bearings without mechanical friction clutches | |
| 106 | Traffic Light | General | If the power supply is interrupted, the boom is raised automatically. Re-closing shall only commence after the local reader controller is online. | |
| 107 | Traffic Light | General | Traffic booms are securely bolted onto concrete plinths by means expanding bolts | |
| 108 | Traffic Light | General | Traffic booms are accommodated on a paved surface or normal ground depending on the final installation position | |
| 109 | Loops | Presence loop composition | A loop or group of loops installed in the roadway | |
| 110 | Loops | Presence loop composition | Lead-in cable | |
| 111 | Loops | Presence loop composition | Sensor unit | |
| 112 | Loops | Presence loop composition | Power supply installed in the controller cabinet | |
| 113 | Loops | Presence loop composition | Transient voltages do not affect the units | |
| 114 | Loops | Start up time after power interruption | < 1 minute | |
| 115 | Loops | Loop Unit composition | Indicator light or meter for each output circuit | |
| 116 | Loops | Loop Unit design | Provide ease of maintenance with easily accessible electronic components | |
| 117 | Loops | Grooves dimensions for the detector loops and feeders: Depth | > 25 mm | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 118 | Loops | Grooves dimensions for the detector loops and feeders: Width | > 4 mm | |
| 119 | Loops | General: Accuracy tolerance | Within 5 mm | |
| 120 | Loops | Requirements | Slot cutting in concrete for inductive detector loops is not performed until after the concrete pavement has been grounded, straight-edged and brought into tolerance | |
| 121 | Loops | Requirements | Slots cut in the pavement are washed clean, blown out and thoroughly dried before installing conductors | |
| 122 | Loops | Requirements: Wire for the loop | PVC insulated | |
| 123 | Loops | Requirements: Wire for the loop | 2,5mm single core stranded copper conductor, unjointed and untwisted | |
| 124 | Loops | Requirements: Wire for the loop | A continuous length of wire is inserted in the groove in a clockwise direction such that three complete turns are be provided for the loop. | |
| 125 | Loops | Requirements: Wire for the loop | The loop and feeder wires are protected by means of neoprene cord inserted tightly into the groove | |
| 126 | Loops | Requirements: Feeder Wires | Is twisted as a pair with at least five twists per meter | |
| 127 | Loops | Post Conductor installation requirements | Slots are be filled with sealant to within 3mm of the pavement surface. | |
| 128 | Loops | Sealant Requirements: Thickness above the top conducted in the saw cut | > 10 mm | |
| 129 | Loops | Sealant Requirements | Surplus sealant is removed from the adjacent road surfaces without the use of solvents | |
| 130 | Loops | Road drilling requirements : Diameter | 22 mm | |
| 131 | Loops | Road drilling requirements : Length from the edge of the row | 400 mm | |
| 132 | Loops | Road drilling requirements : Depth below surface | 500 mm | |
| 133 | Loops | Sleeve pipe requirements: Depth below surface in drilled hole | > 25 mm | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 134 | Loops | Sleeve pipe requirements: Material | Polyethylene pipe | |
| 135 | Loops | Conductors | All conductors are identified and labelled, in the junction box adjacent to the loops and near the termination of the conductors in the controller cabinet | |
| 136 | Loops | Insulation resistance test: Test 1 | At the termination junction box, prior to connection to the detector lead-in cable | |
| 137 | Loops | Insulation resistance test: Test 2 | At the controller cabinet after connection to the detector lead-in cable | |

### B.1.4.7 Virtual Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Weighing and control equipment | Static Scale | No Static Scale | |
| 2 | Weighing and control equipment | Violation Logger | Integrated into VLMIS | |
| 3 | Weighing and control equipment | HSWIM | Integrated into VLMIS | |
| 4 | Weighing and control equipment | LSWIM | No LSWIM | |
| 5 | Weighing and control equipment | Equipment to send data to VLMIS | ANPR Camera | |
| 6 | Weighing and control equipment | Equipment to send data to VLMIS | Loop | |
| 7 | Weighing and control equipment | Equipment to send data to VLMIS | HSWIM | |
| 8 | Weighing and control equipment | Equipment to send data to VLMIS | Violation Logger | |
| 9 | Weighing and control equipment | Equipment to receive data from VLMIS | ANPR Camera | |
| 10 | Weighing and control equipment | Equipment to receive data from VLMIS | Traffic Light (Optional) | |
| 11 | Weighing and control equipment | Equipment to receive data from VLMIS | Boom (Optional) | |
| 12 | Weighing and control equipment | Required Server Hardware: Domain Controller | Has an entry level rack-mount server with a Xeon 4-core processor, 32 GB RAM and 2 x 1TB NLSAS hard drives in a RAID 1 configuration | |
| 13 | Weighing and control equipment | Required Server Hardware: Traffic Controller | Has an entry level server with a Xeon 12-core processor, 32 GB RAM and 2 x 1TB NLSAS hard drives in a RAID 1 configuration | |
| 14 | Traffic Light (Optional) | General | At the exit to the WIM | |
| 15 | Traffic Light (Optional) | Material | Mild steel | |
| 16 | Traffic Light (Optional) | Outside diameter of material | 115 mm | |
| 17 | Traffic Light (Optional) | Mounting height | 3.3 m | |
| 18 | Traffic Light (Optional) | Additional | Poles are equipped with a base plate for mounting onto a suitable foundation frame | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 19 | Traffic Light (Optional) | Foundation | A steel foundation frame complete with anchor bolts, nuts and washers is provided for each pole | |
| 20 | Traffic Light (Optional) | Foundation | Foundation frame is cast in a 25 MPa concrete foundation | |
| 21 | Traffic Light (Optional) | Foundation | 75 mm PVC sleeve is cast into the concrete foundation to provide cable access to the inside of the pole | |
| 22 | Traffic Light (Optional) | Foundation | Base of the pole is designed to fracture on impact without damaging the foundation frame | |
| 23 | Traffic Light (Optional) | Design Specifications | Safely supports traffic signal heads and backboards having a total mass of 50 kg and a projected wind area of 1,3 m² | |
| 24 | Traffic Light (Optional) | Minimum clearance height of the cantilever arms | 5.1 m, measured at a point one metre from the centre of the upright pole | |
| 25 | Traffic Light (Optional) | Minimum clearance height of the cantilever arms | The pole cantilever is supplied in two sections with neither section exceeding 6m in length | |
| 26 | Traffic Light (Optional) | Foundation | A steel foundation frame complete with anchor bolts, nuts and washers is provided for each pole | |
| 27 | Traffic Light (Optional) | Foundation | Foundation frame is cast in a 25 MPa concrete foundation | |
| 28 | Traffic Light (Optional) | Foundation | 75 mm PVC sleeve is cast into the concrete foundation to provide cable access to the inside of the pole | |
| 29 | Traffic Light (Optional) | Foundation | Base of the pole is designed to fracture on impact without damaging the foundation frame | |
| 30 | Traffic Light (Optional) | Cable terminating boxes | Suitable for traffic signal poles with a 115 mm outside diameter | |
| 31 | Traffic Light (Optional) | Box: Material | Aluminium | |
| 32 | Traffic Light | Box: Features | Fully waterproof | |
| 33 | Traffic Light (Optional) | Box: Features | The cover of the box is held in position with a quick release mechanism | |
| 34 | Traffic Light (Optional) | Box: Features | Equipped with two, six-way terminal strips rated at 30 A | |
| 35 | Traffic Light (Optional) | Box: Features | Provision are made to earth the terminal box to the pole | |
| 36 | Traffic Light (Optional) | Box: Base | Minimum of 2 x 20mm diameter knock-outs is provided | |
| 37 | Traffic Light (Optional) | Box | Has provision within the circumference of the pole to provide cable entry for at least 2 x 24 core 2,5 mm² traffic signal cables and 2 x 2 core 2,5mm² pedestrian pushbutton cables | |
| 38 | Traffic Light (Optional) | Material | Aluminium with a high silicon content | |
| 39 | Traffic Light (Optional) | Paint | Chemically etched and coated with black enamel paint | |
| 40 | Traffic Light | Optical Units | Completely interchangeable | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | (Optional) | | | |
| 41 | Traffic Light (Optional) | Optical Units | Easily accessible for maintenance and cleaning | |
| 42 | Traffic Light (Optional) | Each signal head | Is provided with an anodised aluminium reflector | |
| 43 | Traffic Light (Optional) | Lenses | Constructed of polycarbonate | |
| 44 | Traffic Light (Optional) | Lenses | Diameter of 200mm | |
| 45 | Traffic Light (Optional) | Lenses | The chromaticity is embodied in the body of the lens itself, and is not to externally applied. | |
| 46 | Traffic Light (Optional) | Signal head | An easily detachable black aluminium anti-phantom cross is fitted to each signal head. | |
| 47 | Traffic Light (Optional) | Visor | A suitable polythene visor is provided on each signal head to adequately prevent the driver of the vehicle seeing illuminated signals other than those concerning him at an intersection | |
| 48 | Traffic Light (Optional) | Visor | The top of the visor will project 160mm from the signal face. | |
| 49 | Traffic Light (Optional) | Cables | Cable entry is from the underside of the upper signal head by means of flexible 20mm PVC tubing, 610mm in length, housing colour coded conductors protruding at least 200mm out of the tube | |
| 50 | Traffic Light (Optional) | Mount | Signal heads are mounted onto the pole using universal pole mounting straps | |
| 51 | Traffic Light (Optional) | Type | H3 10V 50 Watt or type H2 12V 55 Watt halogen lamps | |
| 52 | Traffic Light (Optional) | Transformers used for lights | Double wound 55 VA continuous rating | |
| 53 | Traffic Light (Optional) | Transformer's voltage: Primary | 220/240 V | |
| 54 | Traffic Light (Optional) | Transformer's voltage: Secondary | 10 V | |
| 55 | Traffic Light (Optional) | Type | Lamps of the signal heads is of the LED cluster type (extra high brightness) | |
| 56 | Traffic Light (Optional) | Minimum on axis luminous intensity aspects | 380 candelas | |
| 57 | Traffic Light (Optional) | Supply voltage | Either 10 Volt AC or 230 Volt AC | |
| 58 | Traffic Light (Optional) | Power consumption: Minimum | 6 W | |
| 59 | Traffic Light (Optional) | Power consumption: Maximum | 9 W when not dimmed | |
| 60 | Traffic Light (Optional) | Total harmonic distortion (230V) | < 12% | |
| 61 | Traffic Light (Optional) | 0 | Backboards are sufficiently robust to withstand the effects of vandalism, | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | exposure to the elements and wind loads | |
| 62 | Traffic Light (Optional) | Wind design load : Signal heads mounted on the standard 3,3m poles | 0,75 kN/m | |
| 63 | Traffic Light (Optional) | Wind design load : Signal heads mounted on the standard 5m cantilever poles | 1,25kN/m | |
| 64 | Traffic Light (Optional) | Material | Die-cast aluminium (LM6) | |
| 65 | Traffic Light (Optional) | Minimum dimension requirements: Aspect signal heads | 999 mm in length | |
| 66 | Traffic Light (Optional) | Minimum dimension requirements: Aspect signal heads | 500m in width | |
| 67 | Traffic Light (Optional) | Minimum dimension requirements: Aspect signal heads | Backboards fit directly onto the signal heads without the use of brackets. Modular design backboards to fit signal heads with any number of aspects shall be preferred | |
| 68 | Traffic Light (Optional) | Paint | The back boards is chemically etched and coated with black enamel paint | |
| 69 | Traffic Light (Optional) | Paint | 25mm wide golden yellow border around the periphery of backboard | |
| 70 | Loops | Presence loop composition | A loop or group of loops installed in the roadway | |
| 71 | Loops | Presence loop composition | Lead-in cable | |
| 72 | Loops | Presence loop composition | Sensor unit | |
| 73 | Loops | Presence loop composition | Power supply installed in the controller cabinet | |
| 74 | Loops | Presence loop composition | Transient voltages do not affect the units | |
| 75 | Loops | Start up time after power interruption | < 1 minute | |
| 76 | Loops | Loop Unit composition | Indicator light or meter for each output circuit | |
| 77 | Loops | Loop Unit design | Provide ease of maintenance with easily accessible electronic components | |
| 78 | Loops | Grooves dimensions for the detector loops and feeders: Depth | > 25 mm | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 79 | Loops | Grooves dimensions for the detector loops and feeders: Width | > 4 mm | |
| 80 | Loops | General: Accuracy tolerance | Within 5 mm | |
| 81 | Loops | Requirements | Slot cutting in concrete for inductive detector loops is not performed until after the concrete pavement has been grounded, straight-edged and brought into tolerance | |
| 82 | Loops | Requirements | Slots cut in the pavement are washed clean, blown out and thoroughly dried before installing conductors | |
| 83 | Loops | Requirements: Wire for the loop | PVC insulated | |
| 84 | Loops | Requirements: Wire for the loop | 2,5mm single core stranded copper conductor, unjointed and untwisted | |
| 85 | Loops | Requirements: Wire for the loop | A continuous length of wire is inserted in the groove in a clockwise direction such that three complete turns are be provided for the loop. | |
| 86 | Loops | Requirements: Wire for the loop | The loop and feeder wires are protected by means of neoprene cord inserted tightly into the groove | |
| 87 | Loops | Requirements: Feeder Wires | Is twisted as a pair with at least five twists per meter | |
| 88 | Loops | Post Conductor installation requirements | Slots are be filled with sealant to within 3mm of the pavement surface. | |
| 89 | Loops | Sealant Requirements: Thickness above the top conducted in the saw cut | > 10 mm | |
| 90 | Loops | Sealant Requirements | Surplus sealant is removed from the adjacent road surfaces without the use of solvents | |
| 91 | Loops | Road drilling requirements : Diameter | 22 mm | |
| 92 | Loops | Road drilling requirements : Length from the edge of the row | 400 mm | |
| 93 | Loops | Road drilling requirements : Depth below surface | 500 mm | |
| 94 | Loops | Sleeve pipe requirements: Depth below surface in drilled hole | > 25 mm | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 95 | Loops | Sleeve pipe requirements: Material | Polyethylene pipe | |
| 96 | Loops | Conductors | All conductors are identified and labelled, in the junction box adjacent to the loops and near the termination of the conductors in the controller cabinet | |
| 97 | Loops | Insulation resistance test: Test 1 | At the termination junction box, prior to connection to the detector lead-in cable | |
| 98 | Loops | Insulation resistance test: Test 2 | At the controller cabinet after connection to the detector lead-in cable | |

### B.1.5 Criterion 5: Computer hardware & operating software

#### B.1.5.1 Type 1 Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Server Hardware | Domain Controller | The Weigh Station must have a domain controller that manages user access and permissions to the network and systems installed. | |
| 2 | Server Hardware | Server Host | A virtual domain controller to act as a backup for the physical domain controller. | |
| 3 | Server Hardware | Server Host | Virtual Weigh Station management application server to host the applications installed at the facility, e.g. the VLMIS. | |
| 4 | Server Hardware | Server Host | Virtual Weigh Station management database server to host the data generated by the applications at the facility. | |
| 5 | Server Hardware | Server Host | Virtual file server to store general files and documentation generated by the users in-line with the VLMIS duties. | |
| 6 | Server Hardware | Server Host | Virtual backup server to manage the data backup functions implemented at the facility. | |
| 7 | Server Hardware | Server Host | Virtual image processing server used for the management and processing of images for linking during the weigh and violation processes. | |
| 8 | Server Hardware | Server Host | Virtual traffic control server to act as a backup for the physical traffic controller and to host the console used to control the bypass functions such as opening of booms and switching of traffic lights. | |
| 9 | Server Hardware | Storage Device | A storage device that will store all data that is written to disk during the backup process as well as to store ANPR and Overview Images and other data. The storage device shall be a Network Attached Storage device (NAS) with a built-in processor unit. | |
| 10 | Server Hardware | Traffic Controller | A physical server to serve as the primary interface for the management, control and directing of traffic flow through and in the area of the Weigh Station. | |
| 11 | Server Hardware | Server Software | Software that allows for up to three physical hosts in a cluster host shall be used as the operating system for the virtualisation on the server host. | |
| 12 | Server Hardware | Antivirus Software | Antivirus software that:<br>a) Protects against internet-based software infections; | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | b) Protects against unauthorised copying of information to private data storage devices;<br><br>c) Protects against malware and key-logging software;<br><br>d) Protects against spreading of unwanted software programmes; and<br><br>e) Blocks unauthorised storage devices access and infections. | |
| 13 | Server Hardware | Office Automation Software | The latest supported version of the MS Office Application for business use in a Terminal-server environment will be used for office automation purposes. The standard edition comprises of Microsoft Word, Excel, PowerPoint and Outlook. | |
| 14 | Server Hardware | Backup Solution | A disk-based backup solution that can be used for backup and replication of the virtual servers as well as the daily backups of the critical data. Backups will be made using industry leading backup software with block-level incremental backup and cross-version deduplication that provides multi-version backup optimized storage utilization and multiple backup destinations to local shared folders, external hard drives, network shared folders, rsync servers, and public cloud services. | |
| 15 | Man Machine Interface Equipment | Workstations | A workstation for each function of the Weigh Station:<br>a) Weighing operations (VLMIS),<br><br>b) Transgression Module (NTIS), and<br><br>c) Management (Reporting & administrative duties). | |
| 16 | Man Machine Interface Equipment | Printers | An A4 Mono Laser printer, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor, is required for printing notices/ tickets. | |
| 17 | Networks | Internal Network | The Internal network (LAN) comprise of the UTP CAT 6 cables, fly leads and terminations points as well as Gigabit Ethernet switches, required to connect all servers, workstations and printers in an Ethernet Communication Network. | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 18 | Networks | External Network | The External Network comprise of a dual spanning tree redundant fibre ring using single mode fibre technology with multimode fibre technology to break out from the ring to the external devices such as traffic controllers, boom-gates, traffic lights, weigh-in-motion devices, traffic lights.<br>The External network will be integrated with the internal network to form a single communications network. | |
| 19 | Networks | Internet Break Out | An Internet breakout that is restricted to sending and receiving data for official use and remote support purposes shall be provided. Official use may include:<br>a) Uploading and retrieving data from TRIPS;<br>b) Retrieving information from National Transport Information Systems (NTIS). | |
| 20 | Networks | Security | The perimeter of the network should be protected and governed through the use of industry leading firewall technology with full maintenance and support to ensure that the firewall is kept up to date and in line with security trends. | |
| 21 | Uninterruptible Power Supply | Power Supply | An Uninterruptible Power Supply shall be installed at the Weigh Station to:<br>a) Stabilise the power input coming from the mains, to prevent damage to the application server and other hardware;<br>b) Ensure data integrity in the event of a power failure, powering the application server until power is restored or, in the event of longer periods of power failure, a technician can back-up the database onto removable storage. | |

### B.1.5.2 Type 2 Weigh Station with dedicated screening lanes

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Server Hardware | Domain Controller | The Weigh Station must have a domain controller that manages user access and permissions to the network and systems installed. | |
| 2 | Server Hardware | Server Host | A virtual domain controller to act as a backup for the physical domain controller. | |
| 3 | Server Hardware | Server Host | Virtual Weigh Station management application server to host the applications installed at the facility, e.g. the VLMIS. | |
| 4 | Server Hardware | Server Host | Virtual Weigh Station management database server to host the data generated by the applications at the facility. | |
| 5 | Server Hardware | Server Host | Virtual file server to store general files and documentation generated by the users in-line with the VLMIS duties. | |
| 6 | Server Hardware | Server Host | Virtual backup server to manage the data backup functions implemented at the facility. | |
| 7 | Server Hardware | Server Host | Virtual image processing server used for the management and processing of images for linking during the weigh and violation processes. | |
| 8 | Server Hardware | Server Host | Virtual traffic control server to act as a backup for the physical traffic controller and to host the console used to control the bypass functions such as opening of booms and switching of traffic lights. | |
| 9 | Server Hardware | Storage Device | A storage device that will store all data that is written to disk during the backup process as well as to store ANPR and Overview Images and other data. The storage device shall be a Network Attached Storage device (NAS) with a built-in processor unit. | |
| 10 | Server Hardware | Traffic Controller | A physical server to serve as the primary interface for the management, control and directing of traffic flow through and in the area of the Weigh Station. | |
| 11 | Server Hardware | Server Software | Software that allows for up to three physical hosts in a cluster host shall be used as the operating system for the virtualisation on the server host. | |
| 12 | Server Hardware | Antivirus Software | Antivirus software that:<br>a) Protects against internet-based software infections;<br>b) Protects against unauthorised copying of information to private data storage devices; | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | c) Protects against malware and key-logging software;<br><br>d) Protects against spreading of unwanted software programmes; and<br><br>Blocks unauthorised storage devices access and infections. | |
| 13 | Server Hardware | Office Automation Software | The latest supported version of the MS Office Application for business use in a Terminal-server environment will be used for office automation purposes. The standard edition comprises of Microsoft Word, Excel, PowerPoint and Outlook. | |
| 14 | Server Hardware | Backup Solution | A disk-based backup solution that can be used for backup and replication of the virtual servers as well as the daily backups of the critical data. Backups will be made using industry leading backup software with block-level incremental backup and cross-version deduplication that provides multi-version backup optimized storage utilization and multiple backup destinations to local shared folders, external hard drives, network shared folders, rsync servers, and public cloud services. | |
| 15 | Man Machine Interface Equipment | Workstations | A workstation for each function of the Weigh Station:<br>a) Weighing operations (VLMIS),<br><br>b) Transgression Module (NTIS), and<br><br>Management (Reporting & administrative duties). | |
| 16 | Man Machine Interface Equipment | Printers | An A4 Mono Laser printer, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor, is required for printing notices/ tickets. | |
| 17 | Networks | Internal Network | The Internal network (LAN) comprise of the UTP CAT 6 cables, fly leads and terminations points as well as Gigabit Ethernet switches, required to connect all servers, workstations and printers in an Ethernet Communication Network. | |
| 18 | Networks | External Network | The External Network comprise of a dual spanning tree redundant fibre ring using single mode fibre technology with multimode fibre technology to break out from the ring to the external devices such as traffic controllers, boom-gates, | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | traffic lights, weigh-in-motion devices, traffic lights.<br>The External network will be integrated with the internal network to form a single communications network. | |
| 19 | Networks | Internet Break Out | An Internet breakout that is restricted to sending and receiving data for official use and remote support purposes shall be provided. Official use may include:<br>a) Uploading and retrieving data from TRIPS;<br><br>Retrieving information from national Driver and Vehicle Registration Systems. | |
| 20 | Networks | Security | The perimeter of the network should be protected and governed through the use of industry leading firewall technology with full maintenance and support to ensure that the firewall is kept up to date and in line with security trends. | |
| 21 | Uninterruptible Power Supply | Power Supply | An Uninterruptible Power Supply shall be installed at the Weigh Station to:<br>a) Stabilise the power input coming from the mains, to prevent damage to the application server and other hardware;<br><br>b) Ensure data integrity in the event of a power failure, powering the application server until power is restored or, in the event of longer periods of power failure, a technician can back-up the database onto removable storage. | |

### B.1.5.3 Type 2 Weigh Station without dedicated screening lanes

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Server Hardware | Domain Controller | The Weigh Station must have a domain controller that manages user access and permissions to the network and systems installed. | |
| 2 | Server Hardware | Server Host | A virtual domain controller to act as a backup for the physical domain controller. | |
| 3 | Server Hardware | Server Host | Virtual Weigh Station management application server to host the applications installed at the facility, e.g. the VLMIS. | |
| 4 | Server Hardware | Server Host | Virtual Weigh Station management database server to host the data generated by the applications at the facility. | |
| 5 | Server Hardware | Server Host | Virtual file server to store general files and documentation generated by the users in-line with the VLMIS duties. | |
| 6 | Server Hardware | Server Host | Virtual backup server to manage the data backup functions implemented at the facility. | |
| 7 | Server Hardware | Server Host | Virtual image processing server used for the management and processing of images for linking during the weigh and violation processes. | |
| 8 | Server Hardware | Server Host | Virtual traffic control server to act as a backup for the physical traffic controller and to host the console used to control the bypass functions such as opening of booms and switching of traffic lights. | |
| 9 | Server Hardware | Storage Device | A storage device that will store all data that is written to disk during the backup process as well as to store ANPR and Overview Images and other data. The storage device shall be a Network Attached Storage device (NAS) with a built-in processor unit. | |
| 10 | Server Hardware | Traffic Controller | A physical server to serve as the primary interface for the management, control and directing of traffic flow through and in the area of the Weigh Station. | |
| 11 | Server Hardware | Server Software | Software that allows for up to three physical hosts in a cluster host shall be used as the operating system for the virtualisation on the server host. | |
| 12 | Server Hardware | Antivirus Software | Antivirus software that:<br>a) Protects against internet-based software infections;<br>b) Protects against unauthorised copying of information to private data storage devices; | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | c) Protects against malware and key-logging software;<br><br>d) Protects against spreading of unwanted software programmes; and<br><br>Blocks unauthorised storage devices access and infections. | |
| 13 | Server Hardware | Office Automation Software | The latest supported version of the MS Office Application for business use in a Terminal-server environment will be used for office automation purposes. The standard edition comprises of Microsoft Word, Excel, PowerPoint and Outlook. | |
| 14 | Server Hardware | Backup Solution | A disk-based backup solution that can be used for backup and replication of the virtual servers as well as the daily backups of the critical data. Backups will be made using industry leading backup software with block-level incremental backup and cross-version deduplication that provides multi-version backup optimized storage utilization and multiple backup destinations to local shared folders, external hard drives, network shared folders, rsync servers, and public cloud services. | |
| 15 | Man Machine Interface Equipment | Workstations | A workstation for each function of the Weigh Station:<br>a) Weighing operations (VLMIS),<br><br>b) Transgression Module (NTIS), and<br><br>Management (Reporting & administrative duties). | |
| 16 | Man Machine Interface Equipment | Printers | An A4 Mono Laser printer, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor, is required for printing notices/ tickets. | |
| 17 | Networks | Internal Network | The Internal network (LAN) comprise of the UTP CAT 6 cables, fly leads and terminations points as well as Gigabit Ethernet switches, required to connect all servers, workstations and printers in an Ethernet Communication Network. | |
| 18 | Networks | External Network | The External Network comprise of a dual spanning tree redundant fibre ring using single mode fibre technology with multimode fibre technology to break out from the ring to the external devices such as traffic controllers, boom-gates, | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | traffic lights, weigh-in-motion devices, traffic lights.<br>The External network will be integrated with the internal network to form a single communications network. | |
| 19 | Networks | Internet Break Out | An Internet breakout that is restricted to sending and receiving data for official use and remote support purposes shall be provided. Official use may include:<br>a) Uploading and retrieving data from TRIPS;<br><br>Retrieving information from national Driver and Vehicle Registration Systems. | |
| 20 | Networks | Security | The perimeter of the network should be protected and governed through the use of industry leading firewall technology with full maintenance and support to ensure that the firewall is kept up to date and in line with security trends. | |
| 21 | Uninterruptible Power Supply | Power Supply | An Uninterruptible Power Supply shall be installed at the Weigh Station to:<br>a) Stabilise the power input coming from the mains, to prevent damage to the application server and other hardware;<br><br>b) Ensure data integrity in the event of a power failure, powering the application server until power is restored or, in the event of longer periods of power failure, a technician can back-up the database onto removable storage. | |

### B.1.5.4 Type 2 Small Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Server Hardware | Domain Controller | The Weigh Station must have a domain controller that manages user access and permissions to the network and systems installed. | |
| 2 | Server Hardware | Server Host | A virtual domain controller to act as a backup for the physical domain controller. | |
| 3 | Server Hardware | Server Host | Virtual Weigh Station management application server to host the applications installed at the facility, e.g. the VLMIS. | |
| 4 | Server Hardware | Server Host | Virtual Weigh Station management database server to host the data generated by the applications at the facility. | |
| 5 | Server Hardware | Server Host | Virtual file server to store general files and documentation generated by the users in-line with the VLMIS duties. | |
| 6 | Server Hardware | Server Host | Virtual backup server to manage the data backup functions implemented at the facility. | |
| 7 | Server Hardware | Server Host | Virtual image processing server used for the management and processing of images for linking during the weigh and violation processes. | |
| 8 | Server Hardware | Server Host | Virtual traffic control server to act as a backup for the physical traffic controller and to host the console used to control the bypass functions such as opening of booms and switching of traffic lights. | |
| 9 | Server Hardware | Storage Device | A storage device that will store all data that is written to disk during the backup process as well as to store ANPR and Overview Images and other data. The storage device shall be a Network Attached Storage device (NAS) with a built-in processor unit. | |
| 10 | Server Hardware | Traffic Controller | A physical server to serve as the primary interface for the management, control and directing of traffic flow through and in the area of the Weigh Station. | |
| 11 | Server Hardware | Server Software | Software that allows for up to three physical hosts in a cluster host shall be used as the operating system for the virtualisation on the server host. | |
| 12 | Server Hardware | Antivirus Software | Antivirus software that:<br>a) Protects against internet-based software infections;<br>b) Protects against unauthorised copying of information to private data storage devices; | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | c) Protects against malware and key-logging software;<br><br>d) Protects against spreading of unwanted software programmes; and<br><br>Blocks unauthorised storage devices access and infections. | |
| 13 | Server Hardware | Office Automation Software | The latest supported version of the MS Office Application for business use in a Terminal-server environment will be used for office automation purposes. The standard edition comprises of Microsoft Word, Excel, PowerPoint and Outlook. | |
| 14 | Server Hardware | Backup Solution | A disk-based backup solution that can be used for backup and replication of the virtual servers as well as the daily backups of the critical data. Backups will be made using industry leading backup software with block-level incremental backup and cross-version deduplication that provides multi-version backup optimized storage utilization and multiple backup destinations to local shared folders, external hard drives, network shared folders, rsync servers, and public cloud services. | |
| 15 | Man Machine Interface Equipment | Workstations | A workstation for each function of the Weigh Station:<br>a) Weighing operations (VLMIS),<br><br>b) Transgression Module (NTIS), and<br><br>Management (Reporting & administrative duties). | |
| 16 | Man Machine Interface Equipment | Printers | An A4 Mono Laser printer, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor, is required for printing notices/ tickets. | |
| 17 | Networks | Internal Network | The Internal network (LAN) comprise of the UTP CAT 6 cables, fly leads and terminations points as well as Gigabit Ethernet switches, required to connect all servers, workstations and printers in an Ethernet Communication Network. | |
| 18 | Networks | External Network | The External Network comprise of a dual spanning tree redundant fibre ring using single mode fibre technology with multimode fibre technology to break out from the ring to the external devices such as traffic controllers, boom-gates, | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | traffic lights, weigh-in-motion devices, traffic lights.<br>The External network will be integrated with the internal network to form a single communications network. | |
| 19 | Networks | Internet Break Out | An Internet breakout that is restricted to sending and receiving data for official use and remote support purposes shall be provided. Official use may include:<br>a) Uploading and retrieving data from TRIPS;<br><br>Retrieving information from national Driver and Vehicle Registration Systems. | |
| 20 | Networks | Security | The perimeter of the network should be protected and governed through the use of industry leading firewall technology with full maintenance and support to ensure that the firewall is kept up to date and in line with security trends. | |
| 21 | Uninterruptible Power Supply | Power Supply | An Uninterruptible Power Supply shall be installed at the Weigh Station to:<br>a) Stabilise the power input coming from the mains, to prevent damage to the application server and other hardware;<br><br>b) Ensure data integrity in the event of a power failure, powering the application server until power is restored or, in the event of longer periods of power failure, a technician can back-up the database onto removable storage. | |

### B.1.5.5 Type 3 LSWIM Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Server Hardware | Domain Controller | The Weigh Station must have a domain controller that manages user access and permissions to the network and systems installed. | |
| 2 | Server Hardware | Server Host | A virtual domain controller to act as a backup for the physical domain controller. | |
| 3 | Server Hardware | Server Host | Virtual Weigh Station management application server to host the applications installed at the facility, e.g. the VLMIS. | |
| 4 | Server Hardware | Server Host | Virtual Weigh Station management database server to host the data generated by the applications at the facility. | |
| 5 | Server Hardware | Server Host | Virtual file server to store general files and documentation generated by the users in-line with the VLMIS duties. | |
| 6 | Server Hardware | Server Host | Virtual backup server to manage the data backup functions implemented at the facility. | |
| 7 | Server Hardware | Server Host | Virtual image processing server used for the management and processing of images for linking during the weigh and violation processes. | |
| 8 | Server Hardware | Server Host | Virtual traffic control server to act as a backup for the physical traffic controller and to host the console used to control the bypass functions such as opening of booms and switching of traffic lights. | |
| 9 | Server Hardware | Storage Device | A storage device that will store all data that is written to disk during the backup process as well as to store ANPR and Overview Images and other data. The storage device shall be a Network Attached Storage device (NAS) with a built-in processor unit. | |
| 10 | Server Hardware | Traffic Controller | A physical server to serve as the primary interface for the management, control and directing of traffic flow through and in the area of the Weigh Station. | |
| 11 | Server Hardware | Server Software | Software that allows for up to three physical hosts in a cluster host shall be used as the operating system for the virtualisation on the server host. | |
| 12 | Server Hardware | Antivirus Software | Antivirus software that:<br>a) Protects against internet-based software infections;<br>b) Protects against unauthorised copying of information to private data storage devices; | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | c) Protects against malware and key-logging software;<br><br>d) Protects against spreading of unwanted software programmes; and<br><br>Blocks unauthorised storage devices access and infections. | |
| 13 | Server Hardware | Office Automation Software | The latest supported version of the MS Office Application for business use in a Terminal-server environment will be used for office automation purposes. The standard edition comprises of Microsoft Word, Excel, PowerPoint and Outlook. | |
| 14 | Server Hardware | Backup Solution | A disk-based backup solution that can be used for backup and replication of the virtual servers as well as the daily backups of the critical data. Backups will be made using industry leading backup software with block-level incremental backup and cross-version deduplication that provides multi-version backup optimized storage utilization and multiple backup destinations to local shared folders, external hard drives, network shared folders, rsync servers, and public cloud services. | |
| 15 | Man Machine Interface Equipment | Workstations | A workstation for each function of the Weigh Station:<br>a) Weighing operations (VLMIS),<br><br>b) Transgression Module (NTIS), and<br><br>Management (Reporting & administrative duties). | |
| 16 | Man Machine Interface Equipment | Printers | An A4 Mono Laser printer, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor, is required for printing notices/ tickets. | |
| 17 | Networks | Internal Network | The Internal network (LAN) comprise of the UTP CAT 6 cables, fly leads and terminations points as well as Gigabit Ethernet switches, required to connect all servers, workstations and printers in an Ethernet Communication Network. | |
| 18 | Networks | External Network | The External Network comprise of a dual spanning tree redundant fibre ring using single mode fibre technology with multimode fibre technology to break out from the ring to the external devices such as traffic controllers, boom-gates, | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | traffic lights, weigh-in-motion devices, traffic lights.<br>The External network will be integrated with the internal network to form a single communications network. | |
| 19 | Networks | Internet Break Out | An Internet breakout that is restricted to sending and receiving data for official use and remote support purposes shall be provided. Official use may include:<br>a) Uploading and retrieving data from TRIPS;<br><br>Retrieving information from national Driver and Vehicle Registration Systems. | |
| 20 | Networks | Security | The perimeter of the network should be protected and governed through the use of industry leading firewall technology with full maintenance and support to ensure that the firewall is kept up to date and in line with security trends. | |
| 21 | Uninterruptible Power Supply | Power Supply | An Uninterruptible Power Supply shall be installed at the Weigh Station to:<br>a) Stabilise the power input coming from the mains, to prevent damage to the application server and other hardware;<br><br>b) Ensure data integrity in the event of a power failure, powering the application server until power is restored or, in the event of longer periods of power failure, a technician can back-up the database onto removable storage. | |

### B.1.5.6 Type 3 Static Scale Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Server Hardware | Domain Controller | The Weigh Station must have a domain controller that manages user access and permissions to the network and systems installed. | |
| 2 | Server Hardware | Server Host | A virtual domain controller to act as a backup for the physical domain controller. | |
| 3 | Server Hardware | Server Host | Virtual Weigh Station management application server to host the applications installed at the facility, e.g. the VLMIS. | |
| 4 | Server Hardware | Server Host | Virtual Weigh Station management database server to host the data generated by the applications at the facility. | |
| 5 | Server Hardware | Server Host | Virtual file server to store general files and documentation generated by the users in-line with the VLMIS duties. | |
| 6 | Server Hardware | Server Host | Virtual backup server to manage the data backup functions implemented at the facility. | |
| 7 | Server Hardware | Server Host | Virtual image processing server used for the management and processing of images for linking during the weigh and violation processes. | |
| 8 | Server Hardware | Server Host | Virtual traffic control server to act as a backup for the physical traffic controller and to host the console used to control the bypass functions such as opening of booms and switching of traffic lights. | |
| 9 | Server Hardware | Storage Device | A storage device that will store all data that is written to disk during the backup process as well as to store ANPR and Overview Images and other data. The storage device shall be a Network Attached Storage device (NAS) with a built-in processor unit. | |
| 10 | Server Hardware | Traffic Controller | A physical server to serve as the primary interface for the management, control and directing of traffic flow through and in the area of the Weigh Station. | |
| 11 | Server Hardware | Server Software | Software that allows for up to three physical hosts in a cluster host shall be used as the operating system for the virtualisation on the server host. | |
| 12 | Server Hardware | Antivirus Software | Antivirus software that:<br>a) Protects against internet-based software infections;<br>b) Protects against unauthorised copying of information to private data storage devices; | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | c) Protects against malware and key-logging software;<br><br>d) Protects against spreading of unwanted software programmes; and<br><br>Blocks unauthorised storage devices access and infections. | |
| 13 | Server Hardware | Office Automation Software | The latest supported version of the MS Office Application for business use in a Terminal-server environment will be used for office automation purposes. The standard edition comprises of Microsoft Word, Excel, PowerPoint and Outlook. | |
| 14 | Server Hardware | Backup Solution | A disk-based backup solution that can be used for backup and replication of the virtual servers as well as the daily backups of the critical data. Backups will be made using industry leading backup software with block-level incremental backup and cross-version deduplication that provides multi-version backup optimized storage utilization and multiple backup destinations to local shared folders, external hard drives, network shared folders, rsync servers, and public cloud services. | |
| 15 | Man Machine Interface Equipment | Workstations | A workstation for each function of the Weigh Station:<br>a) Weighing operations (VLMIS),<br><br>b) Transgression Module (NTIS), and<br><br>Management (Reporting & administrative duties). | |
| 16 | Man Machine Interface Equipment | Printers | An A4 Mono Laser printer, supporting HP PCL 6 Print Language with Auto-Duplex and Network capability via built-in 1GB Ethernet network adaptor, is required for printing notices/ tickets. | |
| 17 | Networks | Internal Network | The Internal network (LAN) comprise of the UTP CAT 6 cables, fly leads and terminations points as well as Gigabit Ethernet switches, required to connect all servers, workstations and printers in an Ethernet Communication Network. | |
| 18 | Networks | External Network | The External Network comprise of a dual spanning tree redundant fibre ring using single mode fibre technology with multimode fibre technology to break out from the ring to the external devices such as traffic controllers, boom-gates, | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| | | | traffic lights, weigh-in-motion devices, traffic lights.<br>The External network will be integrated with the internal network to form a single communications network. | |
| 19 | Networks | Internet Break Out | An Internet breakout that is restricted to sending and receiving data for official use and remote support purposes shall be provided. Official use may include:<br>a) Uploading and retrieving data from TRIPS;<br><br>Retrieving information from national Driver and Vehicle Registration Systems. | |
| 20 | Networks | Security | The perimeter of the network should be protected and governed through the use of industry leading firewall technology with full maintenance and support to ensure that the firewall is kept up to date and in line with security trends. | |
| 21 | Uninterruptible Power Supply | Power Supply | An Uninterruptible Power Supply shall be installed at the Weigh Station to:<br>a) Stabilise the power input coming from the mains, to prevent damage to the application server and other hardware;<br><br>b) Ensure data integrity in the event of a power failure, powering the application server until power is restored or, in the event of longer periods of power failure, a technician can back-up the database onto removable storage. | |

### B.1.5.7 Virtual Weigh Station

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Server Hardware | Processing Station | A physical industrial rack-mount server to serve as the primary interface for the collection, management, control and directing of weigh data and statistics as well as traffic flow through and in the area of the Weigh Station.. | |
| 2 | Server Hardware | Software | Operating and Processing Software for the functioning of the processing station and that will also allow for the hosting of individual virtual servers as may be required to operate the various processes in its own space. | |
| 3 | Server Hardware | Antivirus Software | Antivirus software that:<br>a) Protects against internet-based software infections;<br>b) Protects against unauthorised copying of information to private data storage devices;<br>c) Protects against malware and key-logging software;<br>d) Protects against spreading of unwanted software programmes; and<br>Blocks unauthorised storage devices access and infections. | |
| 4 | Networks | External Network | The External Network comprise of a dual spanning tree redundant fibre ring using single mode fibre technology with multimode fibre technology to break out from the ring to the external devices such as traffic controllers, boom-gates, traffic lights, weigh-in-motion devices, traffic lights. | |
| 5 | Networks | Internet Break Out | An Internet breakout that is restricted to sending and receiving data for official use and remote support purposes shall be provided. | |
| 6 | Traffic Controler | Traffic Event Logger | Industrial processing unit for interfacing with weigh-in-motion equipment and processing weigh-in-motion activities.<br>Including the following components<br>CPU Card<br>Loop Card<br>Piezo Card<br>Serial Communication Card<br>Weigh Card<br>Loop terminals<br>Piezo terminals<br>Weigh terminals<br>65aH Battery | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 7 | Networks | Security | The perimeter of the network should be protected and governed through the use of industry leading firewall technology with full maintenance and support to ensure that the firewall is kept up to date and in line with security trends. | |
| 8 | Uninterruptible Power Supply | Power Supply | An Uninterruptible Power Supply shall be installed at the Weigh Station to:<br>a) Stabilise the power input coming from the mains, to prevent damage to the application server and other hardware;<br>b) Ensure data integrity in the event of a power failure, powering the application server until power is restored or, in the event of longer periods of power failure, a technician can back-up the database onto removable storage. | |

## B.2 Part 2: Vehicle Load Management Information System

### B.2.1 Criterion 1: Screening component

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Weigh Station System Parameters | Manage WIM Test | Enable and disables certain WIM Test | |
| 2 | Weigh Station System Parameters | Maintain WIM Parameters | Initial set up and maintenance of WIM System Parameters | |
| 3 | Screening | Generate WIM Record | Generate a WIM Record once WIM data has been received | |
| 4 | Screening | Perform WIM Axle Unit Mass Test | System performs the WIM Axle Unit Mass Test | |
| 5 | Screening | Perform WIM Max Mass Test | System performs the WIM Max Mass Test | |
| 6 | Screening | Perform WIM Steering Overload Test | System performs the WIM Steering Overload Test | |
| 7 | Screening | Perform WIM Speed Test | System performs the WIM Speed Test | |
| 8 | Screening | Perform WIM Length Test | System performs the WIM Length Test | |
| 9 | Screening | Perform WIM Off-Scale Hit Test | System performs the WIM Off-Scale Hit Test | |
| 10 | Screening | Perform WIM Steering Axle Under Loading Test | System performs the WIM Steering Axle Under Loading Test | |
| 11 | Screening | Perform WIM Sum of Permissible Maximum Masses Test | System performs the WIM Sum of Permissible Maximum Masses Test | |
| 12 | Screening | Perform WIM Carrying Capacity (Bridge Formula) Test | System performs the Carrying Capacity (Bridge Formula) Test | |
| 13 | Screening | Determine Overall WIM Test Results | System performs the overall WIM Test result | |

### B.2.2 Criterion 2: Weighing component

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Weigh Station System Parameters | Manage Mandatory Information Fields | Indicates which fields must be captured by the user before weighing a vehicle on the Static Scale, and which fields are optional | |
| 2 | Weigh Station System Parameters | Maintain Weigh Station Parameters | Initial set up and maintenance of System Parameters | |
| 3 | Weighing | Capture Pre-Weigh Information | User captures a vehicle's information prior to being weighed on the Static Scale | |
| 4 | Weighing | Auto Link of WIM record | System automatically link a WIM Record to a Static Scale record | |
| 5 | Weighing | Manual Link of WIM record | User manually links a WIM Record if the auto linking of the WIM Record failed or is unavailable | |
| 6 | Weighing | Capture Vehicle Configuration | User captures the vehicle configuration that consist of the axle and wheel configuration | |
| 7 | Weighing | Capture Engine Power | User captures the engine power of a vehicle | |
| 8 | Weighing | Capture Plate Information | User captures the plate information of the vehicle | |
| 9 | Weighing | Capture Cargo Type | User captures the details of the cargo being transported | |
| 10 | Weighing | Capture Bridge Formula Information | User captures the axle dimensions of all axle units for a vehicle | |
| 11 | Weighing | Capture Abnormal Load Information | User captures the information of an abnormal load permit | |
| 12 | Weighing | Release Vehicle | User is able to release vehicles regardless of the vehicle's final weigh test results | |
| 13 | Weighing | Mark Vehicle as Escaped | User updates a vehicle status to indicate that it has escaped if a vehicle left the holding area without being re-weighed or prosecuted | |
| 14 | Weighing | Link All Vehicle Plate Numbers | User is able to link all vehicle plate numbers regardless of the final weigh test results | |
| 15 | Weighing | Link Relief Vehicle | User links a vehicle's plate numbers to the relevant axle units as per axle configuration once a vehicle has been found to be overloaded | |
| 16 | Weighing | Issue Weigh Certificate | System issues a Weigh Certificate to indicate a vehicle has passed the Final Weigh Test | |
| 17 | Weighing | Obtain Static Scale Measurements | System obtains Static Scale mass measurements for the captured vehicle configuration | |
| 18 | Weighing | Perform Wheel Standards Weigh Test | System performs a Wheel Standards Weigh Test | |

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 19 | Weighing | Perform Axle Carrying Capacity Weigh Test | System performs an Axle Carrying Capacity Weigh Test | |
| 20 | Weighing | Perform Steering Axle Underload Test | System performs a Steering Axle Under loading Test | |
| 21 | Weighing | Perform Plate Mass Weigh Test | System performs a Plate Mass Weigh Test | |
| 22 | Weighing | Perform Steering Axle Carrying Capacity Weigh Test | System performs a Steering Axle Carrying Capacity Weigh Test | |
| 23 | Weighing | Perform Sum of Permissible Weigh Test | System performs a Sum of Permissible Weigh Test | |
| 24 | Weighing | Perform GVM Weigh Test | System performs a GVM Weigh Test | |
| 25 | Weighing | Perform Engine Power Weigh Test | System performs an Engine Power Weigh Test | |
| 26 | Weighing | Perform Driving Axle Weigh Test | System performs a Driving Axle Weigh Test | |
| 27 | Weighing | Perform Carrying Capacity (Bridge Formula) Weigh Test | System performs the Carrying Capacity (Bridge Formula) Test | |
| 28 | Weighing | Perform GCM Weigh Test | System performs a GCM Weigh Test | |
| 29 | Weighing | Perform Maximum Mass Weigh Test | System performs a Maximum Mass Weigh Test | |
| 30 | Weighing | Determine Final Weigh Test Result | System determine the Final Weigh Test Results | |

### B.2.3 Criterion 3: Violation component

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Transgression | General | Captures additional mandatory information before System-determined transgressions can be published to the Transgression System | |
| 2 | Transgression | Submit Vehicle Update/ Weigh Station Visit | System automatically submits updates in terms of the vehicle's Vehicle Status as a result of a Weigh Station visit by the vehicle to the Vehicle Module of NTIS | |
| 3 | Violation | Determine Violation Charges | System to determine the Violation charges automatically according to the failed Static Scale Weigh Tests | |
| 4 | Violation | Submit Violation | Weigh Station Module automatically submits the particulars of a Violation to the Violation Module of NTIS | |
| 5 | Violation | Capture Trip Particulars | User captures the location where a vehicle was loaded | |
| 6 | Violation | Capture Driver Particulars | User captures and queries driver particulars for violation processing | |
| 7 | Violation | Capture Vehicle Particulars | User captures and queries vehicle particulars for violation processing | |
| 8 | Violation | Capture Operator Particulars | User captures and queries operator particulars for violation processing | |

### B.2.4 Criterion 4: Traffic control component

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Traffic Control | Activate and Deactivate Alarm | Alarm is activated as specified in the Standard Specification and Technical Requirements of a Weigh Station | |
| 2 | Traffic Control | Signal Traffic Light | Traffic light is signalled and directs the vehicles when the relevant event is received as specified in the Standard Specification and Technical Requirements of a Weigh Station | |
| 3 | Traffic Control | Signal Boom | Boom opens and closes for vehicles as specified in the Standard Specification and Technical Requirements of a Weigh Station | |
| 4 | Traffic Control | Capture Image | Camera captures images as specified in the Standard Specification and Technical Requirements of a Weigh Station | |
| 5 | Traffic Control | Publish Outdoor Display Board Information | User publishes information of the Static Scale mass measurements to the outdoor display board, so that an outdoor display board can display the information | |
| 6 | Traffic Control | Publish Vehicle Screening Overload Indicator | User publishes a vehicle screening overload indicator, so that the indicator can be used to notify traffic officers of a possibly overloaded vehicle, as specified in the Weigh Station Standard Design Specification | |
| 7 | Traffic Control | Receive Violation Logger Event | User can obtain a record from the violation logger as specified in the TTTFP Standard Specification and Technical Requirements of a Weigh Station | |

### B.2.5 Criterion 5: Management reporting

| # | Section | Attribute | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|---|
| 1 | Reports | Tonnage and Movement Report | User can view a summary report that includes the tonnage per day weighed at the selected Weigh Station for a specific time period | |
| 2 | Reports | Weighing Statistics per Vehicle Type | User can view a detailed report that includes the weighing statistics of vehicles weighed on the Static Scale, per vehicle type, for a specific time period | |
| 3 | Reports | Weighing Statistics per Vehicle Operator | User can view a detailed report that includes the weighing statistics of vehicles weighed on the Static Scale, per operator, for a specific time period | |
| 4 | Reports | Vehicle Violations Report | User can view a detailed report that includes the vehicle violation, for a specific time period | |
| 5 | Reports | Pre-Captured and Weigh Cancelled Vehicle List | User can view a detailed list that includes all the vehicle plate numbers captured, but without a corresponding weigh record, for a specific time period | |

## B.3 Part 3: Maintenance and operating procedure manuals

### B.3.1 Criterion 1: Management

| # | Item | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|
| | | **Contractual Agreement and Reporting Hierarchy** | |
| 1 | Weigh Station Management contractual agreement | The Minister or Roads Authority may enter an agreement with any person, including any government institution. This person or government institution shall be the appointed Weigh Station Management that manages the operations and maintenance at the Weigh Station. | |
| 2 | Weigh Station Management staff's responsibilities | The Weigh Station Management staff's responsibilities must be clearly outlined in the contractual agreement and consist of all weighing activities, all administrative activities following the issuing of a transgression by an Authorised Officer, the maintenance of the facility and all equipment and the provision of stationary and utility services. | |
| 3 | Law Enforcement contractual agreement | Either the Minister responsible for Transport/ Infrastructure or the Minister responsible for Policing may appoint a Traffic Authority. | |
| 4 | Traffic Authority's responsibilities | The Traffic Authority's responsibilities must be clearly outlined in the contractual agreement and consist of chasing and returning vehicles weighing more than 3 500 kg that did not enter the Weigh Station and to control the flow of vehicles at the Weigh Station when heavy traffic occurs. | |
| 5 | Weigh Station Management Reporting Structure | The Weigh Station Management reporting structure must clearly be outlined. Maintenance staff (including maintenance technicians, cleaners and gardeners), administration staff and capturers and Authorised Officers, report to a shift supervisor. The shift supervisor reports to Weigh Station Management. Weigh Station Management in return, reports either to the Roads Authority or Minister/ Authorised Government Institution. | |
| 6 | Traffic Authority Reporting Structure | A Traffic Authority reporting structure must clearly be outlined. Traffic Officers report to the Minister responsible for Policing, Infrastructure or Transport. | |
| | | **Management Protocol and Procedures** | |
| 7 | Routine Tasks | Hard copies of the routine tasks executed at a Weigh Station that are related to:<br>a) Overload Control Procedures;<br>b) Driver Fitness Assessment Procedures;<br>c) Operator Fitness Assessment Procedures; and<br>d) Vehicle Fitness Assessment Procedures.<br>must be available upon request. | |
| 8 | Overload Control Procedures | Procedures for tasks relating to overload control, including the violation process and related administration procedures must be freely available to the Weigh Station staff complement. | |
| 9 | Equipment Maintenance | Maintenance technicians must be responsible for carrying out of equipment maintenance at regular intervals according to the manufacturer's specifications. A | |

| # | Item | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|
| | | maintenance table must be available listing the routine maintenance tasks, the responsible person or party for the maintenance, as well as the frequency of the maintenance required. | |
| 10 | Reporting Procedures | The Weigh Station Manager must be responsible for reporting:<br>a) Management reporting;<br>b) Operations reporting;<br>c) Maintenance and equipment reporting;<br>d) Incident reporting; and<br>e) Accounting and Contractual reporting.<br>A reporting table must be available listing the type of report as well as the frequency of the report submission. | |
| 11 | Management reporting | Management reporting must consist of asset management, quality assurance, safety and security, environmental management of the site, training RDP requirements, incident management, liaison and co-operation with Traffic Officers, management of utilities, staff members, and operations. | |
| 12 | Operations reporting | Operations reporting must consist of screening, weighing, and violation reports. | |
| 13 | Maintenance and equipment reporting | Maintenance and equipment reporting must consist of all maintenance and repair work done at the Weigh Station. | |
| 14 | Incident reporting | Incident reporting must consist of all incidents that occurred at the Weigh Station. | |
| 15 | Accounting and contractual reporting | Accounting and Contractual reporting must consist of change in management, change in organisational structure, change in the fiscal year, and change in memorandum and articles of association to shareholders' agreement the National Roads Authority reports. | |
| 16 | Report assistance | Traffic controllers, supervisors, administration clerks, and technicians must all assist the Weigh Station Manager in compiling the reports. | |
| 17 | Reports submission | Reports must be submitted to the executive member of the Operator who is responsible for operation for reporting to the National Roads Authority. | |
| **Asset Management** | | | |
| 18 | Assets Management System | All assets for the Weigh Station must be maintained by using the Fixed Assets Management System. | |
| 19 | Categories of assets | The Asset Management System shall have asset registers according to the following three main categories of assets:<br>a) Fixed assets;<br>b) Semi-fixed assets; and<br>c) Movable assets. | |
| 20 | Fixed assets | Fixed assets shall be divided into the following subcategories: | |

| # | Item | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|
| | | d) Buildings, access roads, paving, parking areas;<br>e) Services infrastructure;<br>f) Electrical fixed assets;<br>g) Building installation elements; and<br>h) Mechanical fixed assets. | |
| 21 | Semi-fixed assets | Semi-fixed assets shall be divided into the following subcategories:<br>a) Services infrastructure;<br>b) Electrical semi-fixed assets;<br>c) Mechanical semi-fixed assets;<br>d) Assets in lane area;<br>e) Equipment and systems;<br>f) Documents, drawings and manuals; and<br>g) Other, e.g. road signs. | |
| 22 | Movable assets | Movable assets shall be divided into the following subcategories:<br>a) Computer equipment;<br>b) Furniture;<br>c) Safety equipment;<br>d) Traffic management aids;<br>e) Computer software systems;<br>f) Emergency communication system;<br>g) Incident management system;<br>h) Electrical and mechanical movable assets; and<br>i) Other, e.g. gardening and cleaning equipment, other tools, and vehicles to transport staff members and associated equipment. | |
| 23 | Asset information | The system shall reconcile the physical inventory, i.e. actual inventory versus theoretical/recorded inventory. | |
| 24 | Asset information | The monthly maintenance of the register shall comprise of the updating of the register with any acquisitions or disposals and the calculation of depreciation. | |

| # | Item | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|
| 25 | Marking policy | Semi-fixed and movable assets shall be marked upon receipt and acceptance to identify the asset as Weigh Station property. | |
| 26 | Marking policy | The identification shall be affixed to the asset permanently by using a standardised adhesive tag or inscribing the asset according to the defined format. | |
| 27 | Asset reports | The following asset reports shall be made available on the Asset Management System:<br>a) Depreciation report;<br>b) Department/cost centre sequence report;<br>c) Movement reports;<br>d) Assets purchased report;<br>e) Transfer report;<br>f) Physical location report of assets. | |
| 28 | Damage to and repairs or replacement of assets | The description of the following procedures shall be made available to the Weigh Station staff complement:<br>a) Repairing damaged fixed assets procedure;<br>b) Repairing semi-fixed and movable assets procedure;<br>c) Replacing damaged fixed assets procedure; and<br>d) Replacing semi-fixed and movable assets procedure. | |
| 29 | Workplace safety | Precautions stipulated by the country's acts regarding occupational health and safety shall be taken to provide a safe workplace. | |
| 30 | Inventory of the Weigh Station library | Weigh Station Management shall keep inventory of the contents of the Weigh Station library. The following documents shall always be available to the Weigh Station staff complement:<br>a) Legislation relative to the performance areas of the Weigh Station;<br>b) General legislation;<br>c) Training material;<br>d) Documents, drawings, and software; and<br>e) Any other additional reference material at management's discretion. | |
| **Inventory of Weigh Station Library** | | | |
| 31 | Weigh Station Library | The Weigh Station Manager must keep an inventory of the contents of the Weigh Station library. The inventory must be available to the Weigh Station staff complement at all times. | Weigh Station Library |

### B.3.2 Criterion 2: Operations

| # | Item | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|
| 1 | Operational Areas | All operational areas must be identified and recorded within a Weigh Station. | |
| 2 | Standard Procedures | Standard procedures for each of the operational functions or tasks performed within a specified Operational Area at a Weigh Station must be available for the Weigh Station staff complement. | |
| 3 | Standard Procedures | Each operational procedure must entail a listing of the standard operating procedures as well as variations to the standard procedures. Each procedural task are to be coded and numbered. | |
| 4 | Standard Procedures | Procedures regarding the following activities must be available:<br>a) Procedure for vehicles failing to enter the Entry lane at the Weighing Station;<br>b) High-speed screening procedure at the Weighing Station;<br>c) Low-speed screening procedure at the Weighing Station;<br>d) Screening of vehicles on alternative routes using mobile equipment;<br>e) Standard weighing procedure at the Weighing Station;<br>f) All Vehicles weighing procedure at the Weighing Station;<br>g) Weighing of vehicles conveying dangerous goods;<br>h) Reweighing procedure at the Weighing Station;<br>i) Abnormal load (ABN) weighing procedure at the Weighing Station;<br>j) Holding yard procedure;<br>k) Violation Notice procedure;<br>l) Payments received at Weigh Station procedure;<br>m) Operational Procedures on other roads;<br>n) Operational Contingency Procedure; and<br>o) Weigh Station Visit Protocol | |

### B.3.3 Criterion 3: Maintenance

| # | Item | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|
| **Identification of Maintenance Areas and Types** | | | |
| 1 | Maintenance Types | A maintenance technician must be responsible for all preventative and corrective maintenance procedures made freely available at the Weigh Station.<br>Preventative maintenance procedures must include general preventative maintenance; and routine preventative maintenance. Corrective maintenance procedures must include general corrective maintenance, and breakdown maintenance. | |
| 2 | General Preventive Maintenance | General preventive maintenance must include daily maintenance, structural maintenance and domestic maintenance of the Weigh Station. | |
| 3 | Routine Preventive Maintenance | Routine preventive maintenance must include the systematic inspection, cleaning, making of minor adjustments, lubricating, testing, measuring and recording, replacing of minor components or consumables and other similar measures necessary to reduce wear and/or to assure reliability of all assets. | |
| 4 | General Corrective Maintenance | General corrective maintenance must include scheduled overhauls, replacement of worn or failed components, correction of problems found during routine maintenance and must include all procedures necessary to prolong the economic life and/or assure reliability of equipment. This also includes the repair or replacement of any components found to be defective during routine maintenance. | |
| 5 | Breakdown Maintenance | Breakdown maintenance must include all unscheduled repair to faulty assets and includes the replacement of any components found to be defective during breakdown maintenance. Breakdowns need to be recorded as an incident as described in the incident manual. | |
| 6 | Maintenance Areas | All maintenance areas shall be identified and recorded within a Weigh Station. Maintenance areas include:<br>a) Maintenance Area 1: Operational equipment;<br>b) Maintenance Area 2: Electricity supply;<br>c) Maintenance Area 3: Information Technology; and<br>d) Maintenance Area 4: Facility. | |

| # | Item | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|
| 7 | Maintenance Area 1: Operational equipment; | Operational equipment within Maintenance Area 1 shall include:<br>a) Static Scales;<br>b) WIMs;<br>c) Camera equipment; and<br>d) Traffic controlling devices. | |
| 8 | Maintenance Area 2: Electricity supply | Electricity shall be supplied within Maintenance Area 2 to the following equipment:<br>a) Distribution boards and enclosures<br>b) Generator; and<br>c) UPS. | |
| 9 | Maintenance Area 3: Information Technology | Technology within Maintenance Area 3 shall include:<br>a) Network;<br>b) Hardware;<br>c) Software; and<br>d) IT security. | |
| 10 | Maintenance Area 4: Facility | The facilities within Maintenance Area 4 shall include:<br>a) Roads, road markings, parking areas (including the holding yard), walkways and paved areas and road signs (static signs);<br>b) Fences and gates;<br>c) Water reticulation system;<br>d) Sewage system;<br>e) Buildings, structures and furniture;<br>f) Drainage system;<br>g) Domestic maintenance;<br>h) Pest Control; and<br>i) Communication Equipment. | |
| **Maintenance Control Plan** | | | |
| 11 | Hardcopy of Maintenance Control Plan | The Weigh Station Manager must develop and make available a hardcopy of the Maintenance Control Plant that schedules the frequency of routine inspections, inspection checklist, and report formats. | |

| # | Item | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|
| 12 | Hardcopy of Maintenance Control Plan | The Maintenance Control Plan shall consist of:<br>a) Maintenance records;<br>b) Critical (breakdown) maintenance;<br>c) Maintenance Staff;<br>d) Tools, equipment, and material | |
| 13 | Maintenance records | The Weigh Station Manager shall record the following information for each of the maintenance areas:<br>a) Area reference and subject;<br>b) Sub-item inspected;<br>c) Date and time of maintenance inspection;<br>d) Maintenance representative in charge;<br>e) Problems identified/maintenance action required; and<br>f) Action taken/recommended action. | |
| 14 | Maintenance records | Maintenance information shall be recorded in duplicate on a maintenance sheet/checklist. | |
| 15 | Maintenance records | The following documents shall be filed in date sequence:<br>a) Manufacturer's manuals;<br>b) Maintenance schedules;<br>c) Checklists;<br>d) Breakdown reports;<br>e) Routine preventive maintenance records;<br>f) Component replacement records; and<br>g) Monthly reports. | |
| 16 | Maintenance records | Records regarding all repairs including those for which the Roads Authority is responsible shall be kept on file at the Weigh Station. | |
| 17 | Critical (breakdown) maintenance | The equipment and systems in maintenance area 1 shall be listed and related to an urgency classification in accordance with manufactures' manuals. | |
| 18 | Critical (breakdown) maintenance | Equipment in maintenance area 4 shall be categorised according to medium and low urgency repair. | |
| 19 | Maintenance staff | Weigh Station Management shall ensure that the operating and maintenance staff are well trained and informed of the operating instructions in the manufactures' manuals. | |
| 20 | Maintenance staff | Only trained, competent maintenance technicians or specialists shall be authorised to conduct maintenance inspections and repairs. | |

| # | Item | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|
| 21 | Maintenance staff | The Weigh Station Manager shall monitor general maintenance and, where applicable, supervise specialised maintenance tasks. | |
| 22 | Tools, equipment, and material | Weigh Station Management shall supply all tools and equipment required for maintenance. | |
| 23 | Tools, equipment, and material | An inventory of materials, spare parts, components and equipment necessary for the complete maintenance of each asset shall be kept on file. | |
| 24 | Tools, equipment, and material | All tools, equipment or spare parts shall be inspected on delivery for any damage or malfunction. | |
| 25 | Tools, equipment, and material | Damaged goods shall be reported to Weigh Station Management and returned to the suppliers. | |
| **Maintenance Procedures** | | | |
| 26 | Standard Maintenance Procedures | Standard maintenance procedures for each of the maintenance functions or tasks performed within a specified Maintenance Area at a Weigh Station must be available for the Weigh Station staff complement. | |
| 27 | Standard Maintenance Procedures | Each procedure must entail a listing of the standard operating procedures as well as variations to the standard procedures. Each procedural task are to be coded and numbered. | |
| 28 | Standard Maintenance Procedures | Procedures regarding the following activities must be available:<br>a) Area 1: Operational equipment;<br>i) Static scale;<br>ii) HSWIM;<br>iii) Traffic controlling devices; and<br>iv) Traffic controlling devices.<br>b) Area 2: Electricity supply;<br>v) Distribution boards and enclosures;<br>vi) Generator; and<br>vii) UPS.<br>c) Area 3: Information Technology; and<br>viii) Network;<br>ix) Hardware;<br>x) Software; and<br>xi) IT security. | |

| # | Item | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|
| | | d) Area 4: Facility and domestic maintenance;<br>xii) Roads, road signs, road markings, parking areas, walkways and paved areas<br>xiii) Fences and gates;<br>xiv) Water reticulation system;<br>xv) Sewage system;<br>xvi) Buildings, structures and furniture;<br>xvii) Drainage system;<br>xviii) Domestic maintenance;<br>xix) Pest Control; and<br>xx) Communication equipment. | |
| 29 | Maintenance Frequency | A maintenance table must be available listing the type of maintenance, the maintenance technician responsible for the maintenance, as well as the frequency of the maintenance. | |

### B.3.4 Criterion 4: Incident management and emergency protocol

| # | Item | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|
| | | **Incident Management System** | |
| 1 | Hardcopy of the Incident Management System | A hardcopy of the Incident Management System must be made freely available. The Incident Management System must co-ordinate and pre-plant activities and resources to restore normal capacity and safety levels as quick and efficient as possible after an incident. | |
| | | **Recording and Reporting Incidents** | |
| 2 | Incident Management Protocols | Standard protocols for each of the following incidents at a Weigh Station must be available for the Weigh Station staff complement:<br>a) Security;<br>i) Access Control; and<br>ii) Security Guards.<br>b) Fires;<br>i) Fire inside buildings;<br>ii) Fire outside buildings;<br>iii) Fire adjacent to the Weigh Station<br>c) Parking in the Holding Yard;<br>d) Hazardous Substances;<br>e) Criminal Threats;<br>f) Illegal Trading;<br>g) Accidents;<br>h) Accommodation and Diversion of Traffic;<br>i) Location: Road adjacent to the Weigh Station;<br>ii) Location: Screening Lane;<br>iii) Location; Weigh Lane;<br>iv) Location: Holding Yard;<br>v) Diversion protocol.<br>i) Heavy Vehicle Blockade;<br>i) General preparedness at the Weigh Station; | |

| # | Item | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|
| | | ii) Procedures to deal with a heavy vehicle blockade at the Weigh Station; and<br><br>iii) Joint Operations Centre Procedure.<br><br>j) Debriefing of Plan; and<br><br>k) Labour Unrest and Strike action. | |
| 3 | Important contact numbers | A printout of all the following contact numbers must be made available at the Weigh Station where it is highly visible by all Weigh Station staff complement:<br>a) Traffic Authority;<br><br>b) Weigh Station;<br><br>c) Central Communications Centre;<br><br>d) Fire and Rescue Services;<br><br>e) National Police;<br><br>f) National Roads Authority; and<br><br>g) Local Authority. | |

### B.3.5 Criterion 5: Environmental management plan

| # | Item | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|
| **Environmental Management Plan** | | | |
| 1 | Hardcopy of the Environmental Management Plan | A hardcopy of the Environmental Management Plan must be made freely available. The Environmental Management Plan must document the procedures necessary to minimise the impact of activities on the environment. | |
| 2 | Environmental awareness training for operations personnel | Prior to work commencing, the Weigh Station staff complement involved in the operation of the Weigh Station are to be briefed in their own language (if possible) on their obligations towards environmental controls and methodologies in terms of the EMP. | |
| 3 | Environmental awareness training for operations personnel | The briefing will take the form of an onsite talk and demonstration by an appointed Environmental Officer. | |
| 4 | Record keeping | All records related to the implementation of the management plan (e.g. monitoring reports and relevant management plans) shall be kept together in an office where they are safe and can be retrieved easily. | |
| 5 | Record keeping | Complaints received from Interested and Affected Parties regarding the Weigh Station shall be recorded in a book or letters and the response noted with the date and action taken. | |
| 6 | Record keeping | The complaints records should be submitted with the monthly reports and be kept for two years to be made available at any time for scrutiny by any relevant authorities. | |
| **Environmental Management Plan Procedures** | | | |
| 7 | Standard procedures | Standard procedures for each of the environmental protection procedures at a Weigh Station must be available for the Weigh Station staff complement. | |
| 8 | Standard procedures | Each operational procedure must entail a listing of the standard operating procedures as well as variations to the standard procedures. Each procedural task are to be coded and numbered. | |
| 9 | Standard procedures | Procedures regarding the following activities must be available:<br>a) Legislation;<br>b) Training;<br>c) Auditing; and<br>d) Record keeping. | |
| 10 | Environmental Considerations | Measures that need to be in place during construction and operations must be made freely available and include:<br>a) Social Considerations;<br>b) Fauna and Flora;<br>c) Water and Sanitation; | |

| # | Item | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|
| | | d) Waste Management;<br>e) Emergency Situations and Responses;<br>f) Access Roads Embankments;<br>g) Storm Water Management;<br>h) Diesel Refuelling at the Generator;<br>i) Chlorination System for Portable Water;<br>j) Vehicle Holding Yard; and<br>k) Air and Light Pollution. | |
| **Management Protocol and Procedures** | | | |
| 11 | Fixed Assists Management System | All fixed assets for the Weigh Station must be maintained by using the Fixed Assets Management System. | |
| **Workplace Safety** | | | |
| 12 | Safety of the Weigh Station Staff Members | Standard precautions stipulated by the country's Occupational Health and Safety Act must be taken to provide a safe workplace for all Weigh Station staff complement. | |
| 13 | The use of firearms | Authorised Officers must strictly adhere to their own Code of Conduct and the country's Firearms Control Act. | |

### B.3.6 Criterion 6: Workplace

| # | Item | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|
| 1 | Hardcopy of the Workplace Rules, Policies and Procedures | A hardcopy of the Workplace Rules, Policies and Procedures must be made freely available at the Weigh Station for the Weigh Station staff complement. | |
| 2 | Workplace Rules | The Workplace Rules must contain statements of what can, should or must be done in particular circumstances<br>The types of Workplace Rules include:<br>a) General workplace rules;<br>b) General workplace safety rules; and<br>c) Communication rules. | |
| 3 | Workplace Policies | The Workplace Polices must outline various plans of actions that are adopted by a Weigh Station to deal with key human resource aspects.<br>The types of Workplace Polices include:<br>a) Disciplinary policy;<br>b) Employee health and wellness policy;<br>c) Employment equity policy;<br>d) Sexual harassment policy;<br>e) Firearm policy;<br>f) Training policy;<br>g) Competency policy; and<br>h) Smoking policy. | |
| 4 | Workplace Procedures | The Workplace Procedures must formalise the steps to be taken to deal with issues such as discipline, grievances and sexual harassment complaints. Workplace Procedures must also prescribe certain administrative actions.<br>a) The types of Workplace Procedures include:<br>b) Weigh Station Visitors Protocol;<br>c) Performance Appraisal Procedure;<br>d) Disciplinary Code on Conduct;<br>e) Disciplinary Procedure: Incapacity;<br>f) Disciplinary Procedure: Misconduct;<br>g) Grievance Procedure;<br>h) Sexual Harassment Complaints Procedure; | |

| # | Item | Requirement | Result (Compliant/ Not Compliant) |
|---|---|---|---|
| | | i) Timesheet and Claims Procedure;<br>j) Leave Procedure;<br>k) Attendance Register Procedure; and<br>l) Cellular Telephone Claims Procedure. | |

# Annex C
# (normative)
# Weigh Station Accreditation Certificate

The Weigh Station Accreditation Certificate is included on the next page

.

## WEIGH STATION ACCREDITATION CERTIFICATE

**WEIGH STATION DETAIL:**

Traffic Register Number:
Weigh Station Name:
Weigh Station Type:
Physical Address:

Postal Address:

**CERTIFICATE DETAIL:**

Certificate Number:
Date of Accreditation:
Date of Issue:
Accreditation Expiry Date:

**RECEIPT INFORMATION:**

| | |
|---|---|
| Transaction: | |
| Receipt Number: | Method of Payment: |
| Amount Received: | Received By: |
| Payment Date: | Payment Reference: |

**No: *NNNNNNNNN***

PDF417 Barcode

## Bibliography

1. Reasonably Firm Regional Weighbridge Location Plan (RWBLP): Final Report - Revision 2.1 (*November 2017*), *www.tttfp.org*

2. TRS-007, Standard Design Specification and Technical Requirements of a Weigh Station, Version *002 or later, www.tttfp.org*

3. URS-007, Standard Specification for a Vehicle Load Management Information System, *Version 004 or later, www.tttfp.org*

