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ITS VIDEO SURVEILLANCE CAMERA SITE

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IC-QA-TS106
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FOREWORD

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REVISIONS TO PREVIOUS VERSION

This document has been revised from Specification RMS TS106 Edition 1 Revision 2.

All revisions to the previous version (other than minor editorial and project specific changes) are indicated by a vertical line in the margin as shown here, except when it is a new edition and the text has been extensively rewritten.

PROJECT SPECIFIC CHANGES

Any project specific changes are indicated in the following manner:

(a) Text which is additional to the base document and which is included in the Specification is shown in bold italics e.g. Additional Text.

(b) Text which has been deleted from the base document and which is not included in the Specification is shown struck out e.g. Deleted Text.
1 GENERAL

1.1 SCOPE

This Specification sets out the requirements for the supply, installation and commissioning of the following types of Intelligent Transport System (ITS) Video Surveillance Camera (VSC) Sites:

- VSC Site - Type A (Standard Video Camera Site); and
- VSC Site - Type B (Enclosed Dome Video Camera Site).

The scope of this Specification covers the procurement of all hardware and performance of all site works required to commission the VSC Sites.

An ITS VSC Site nominally includes:

- Pan-Tilt-Zoom (PTZ) enabled camera device and all associated components required onsite;
- Local communications equipment and cabling to the Site Access Node;
- Local power supply equipment and electrical power cabling to the Point of Supply;
- VSC Site cabinet for site equipment; and
- Any earthworks required for underground cableways and ducts to access the nominated connection pits.

Items excluded from the scope of this Specification:

- Support structures and footings such as masts or gantries on to which the standard VSCs are mounted;
- Communications system cabling and equipment beyond the Site Access Node; and
- Integration and configuration of the VSC into the RMS host system at the Control and Management Centre (CMC).

1.2 STRUCTURE OF THE SPECIFICATION

This Specification includes a series of annexures that detail additional requirements.

1.2.1 Project Specific Requirements

Project specific details of work are shown in Annexure TS106/A.

1.2.2 Measurement and Payment

The method of measurement and payment is detailed in Annexure TS106/B.
1.2.3 Schedules of HOLD POINTS, WITNESS POINTS and Identified Records

The schedules in Annexure TS106/C list the HOLD POINTS and WITNESS POINTS that must be observed. Refer to Specification RMS Q for definitions of HOLD POINTS and WITNESS POINTS.

The records listed in Annexure TS106/C are Identified Records for the purposes of RMS Q Annexure Q/E.

1.2.4 Planning Documents

The PROJECT QUALITY PLAN must include each of the documents and requirements listed in Annexure TS106/D and must be implemented.

In all cases where this Specification refers to the manufacturer’s recommendations, these must be included in the PROJECT QUALITY PLAN.

1.2.5 (Not Used)

1.2.6 Referenced Documents

Unless otherwise specified, the applicable issue of a referenced document, other than an RMS Specification, is the issue current at the date one week before the closing date for tenders, or where no issue is current at that date, the most recent issue.

Standards, specifications and test methods are referred to in abbreviated form (e.g. AS 2350). For convenience, the full titles are given in Annexure TS106/M.

Detailed RMS Technical Specifications (e.g.: TSI-SP-xxx) are provided to support the detailed design and delivery of specified projects for RMS, and will be provided to contractors on request.

In the event of a discrepancy between this document and a referenced document, the requirements of this Specification will take precedence.

1.3 DEFINITIONS AND ABBREVIATIONS

1.3.1 Definitions

The terms “you” and “your” mean “the Contractor” and “the Contractor’s” respectively.

The following definitions are applicable to this Specification:

**Control and Management System**
The central control system which is housed in the RMS control centre or a discrete Motorways Control Centre. Also known as the host system.

**Corridor Communications Network**
A local communications backbone provided to extend the ITS Communications System from the RMS WAN to multiple ITS Field Sites on a State Road corridor.

**D1**
D1 CCTV resolution is 704 x 480 pixels - the highest resolution the CCTV system can record at.

**ITS Communications System**
The communications backbone network for ITS equipment.
ITS Video Surveillance Camera Site

Principal
The RMS representative who is responsible for approvals over design documentations and site installations.

Site Access Node
The on site interfacing point for the ITS equipment to the ITS communications system.

1.3.2 Abbreviations

The following abbreviations apply to this Specification:

- **ADSL** Asymmetrical Digital Subscriber Line
- **CCD** Charge-Coupled Device (for capturing of digital images)
- **CCTV** Closed Circuit Television
- **CMC** Control and Management Centre
- **SMOF** Single Mode Optical Fibre
- **IP** Internet Protocol
- **ITS** Intelligent Transport Systems
- **LAN** Local Area Network
- **MM** Managed Motorways
- **MPEG4** Video compression method defined by Motion Picture Experts Group
- **MTBF** Mean Time Between Failures
- **ONVIF** Open Network Video Interface Forum
- **PAL** Phase Alternate Line, an analogue video standard
- **PTZ** Pan-Tilt-Zoom
- **RMS** Roads and Maritime Services
- **SMOF** Single Mode Optic Fibre
- **SVGA** Super Video Graphics Array (Super VGA)
- **TCS** Traffic Control Signal
- **TfNSW** Transport for New South Wales
- **TMC** Transport Management Centre
- **UPS** Uninterruptible Power Supply (DC/AC - Direct or Alternating Current)
- **VCS** Video Control System
- **WAN** Wide Area Network

2 VIDEO SURVEILLANCE CAMERA SITES

2.1 OVERVIEW

Transport for NSW (TfNSW) and Roads and Maritime Services (RMS) operates video surveillance cameras at strategic locations throughout the state of New South Wales.
Their primary purpose is to aid traffic operations personnel manage traffic incidents, traffic congestion and special events. The images from VSC Sites are used to evaluate local conditions (including during traffic incidents), and they specifically need to provide high quality, remote operator visibility under all lighting conditions and environmental conditions.

VSC can be mounted onto a variety of existing structures e.g. traffic signal masts, tunnels, bridges, signs, buildings or on dedicated masts. VSC can be remotely adjusted to optimise the video images acquired from each site. Typically, VSC Sites are supplied with a Video Equipment Cabinet that houses the supporting electronics for camera remote control, video encoding, communications interfacing, and equipment power supplies.

Digitised camera images are transmitted via an Internet Protocol (IP) communications system to the required Operations and Control Centre where they are integrated into the central Video Control System (VCS).

A standard VSC Site typically comprises the following components:
(a) a PTZ enabled day/night video camera;
(b) a suitable outdoor camera housing;
(c) Digital Video Encoder with PTZ support (if required);
(d) communications terminal equipment (IP modem, media converter, and local distribution);
(e) power terminal equipment (AC/DC power supplies, and local distribution); and
(f) a video equipment cabinet (for site electronics);

There are two main types of VSC utilised by RMS:
(i) Standard VSC Site (VSC Site - Type A); and
(ii) Enclosed Dome VSC Site (VSC Site - Type B);

The Type B Enclosed Dome VSC are only to be supplied where their use has been explicitly approved by the Principal.

In all other cases, the Type A Standard VSC must be supplied for its superior low-light image performance.

3 DESIGN REQUIREMENTS

3.1 RELIABILITY AND DESIGN LIFE

The VSC Site equipment and installation must be designed for an operational life of:
(a) for the PTZ enabled camera system, not less than 10 years;
(b) for the associated electronics, not less than 10 years;
(c) for the communications devices and power supplies, not less than 10 years; and
(d) for VSC controller housing, not less than 20 years.

The site equipment and installation must have a calculated mean time between failures (MTBF) of not less than 45,000 hours in operation.
The Contractor must state the following to assist the Principal in assessing maintainability:

(i) MTBF for the VSC; and
(ii) MTBF for the VSC Site.

### 3.2 ELECTROMAGNETIC COMPATIBILITY AND EMISSIONS

The equipment installed must be certified to the applicable statutory requirements for electromagnetic compatibility and interference e.g. C-tick certification.

The VSC Site equipment must comply with AS/NZS 61000.6.1 for immunity to surges and radiation.

The VSC Site equipment must comply with AS/NZS 61000.6.3 for electromagnetic emissions.

Equipment designed to emit electromagnetic radiation must be fitted with screens and safety devices to minimise operator exposure to radiation levels in excess of those nominated in AS/NZS 2772.

### 3.3 WARRANTY

Warranty for the equipment installed must be provided for 12 months after installation, or 24 months after equipment delivery to the Principal’s store, whichever comes first.

### 4 EQUIPMENT REQUIREMENTS

#### 4.1 GENERAL REQUIREMENTS

VSC must provide a minimum video resolution of D1 for digitised PAL (CCD) camera sensors, or XGA (1024 x 768 pixels) for 4:3 format native digital camera sensors or, 720p for 16:9 format native digital camera sensors.

All camera sensors should be designed for high sensitivity and low video noise so as to deliver optimal images in low-light conditions, and also must automatically adapt over an illumination range (Dynamic Range) of greater than 10,000:1 (or greater than 90dB For digital sensors).

The camera must support automatic white balance tracking to compensate for variations in local site illumination colour temperature between 2K (red) and 10K (blue) without operator interaction.

The PTZ control must operate via a CCTV industry standard PTZ over IP protocol such as Open Network Video Interface Forum (ONVIF) and be compatible with the RMS Video Control System (Genetec – Security Centre v5.2).

The VSC Site must communicate to the Video Control System via an IP network, and use standard video compression supported by the Video Control System e.g. MPEG 4 and H.264. Support for transparent streaming video transmission of D1/XGA at a minimum at 25 frames per second via TCP and UDP is mandatory.

All Video Surveillance Camera Sites supplied to RMS must be directly compatible with (controllable and manageable by) the specified TMC Video Control System – Genetec Security Centre 5.2.

VSC Site power supply equipment must be designed to support the requirements of all site equipment. Mains power distribution within the VSC cabinet must be as stated in Specification RMS TSI-SP-012.
VSC Site equipment must be designed to operate normally in all expected weather conditions, and at ambient temperatures between -10°C to +50°C Celsius. Camera housings must be rated to IP 65 or greater, and designed to be resistant to corrosion from salt air and motor vehicle fumes.

VSC Site equipment cabinets must meet the functional specifications and requirements of RMS TSI-SP-012 and RMS TSI-SP-016.

All discrete electrical equipment installed within standard RTA outdoor cabinets must be suitable for continuous operation at internal ambient temperatures between -10°C to +70°C, and with a relative humidity up to 90%.

4.2 Standard VSC Site (Type A) Specific Requirements

A minimum ambient illumination level is required at the VSC Site to produce an acceptable video signal without visible image processing artefacts being introduced:

(a) Colour video must be available from the VSC Site at ambient illumination levels greater than 0.2 lux (at F 1.2, 30 IRE); and
(b) Monochrome video must be available from the VSC Site at ambient illumination levels greater than 0.06 lux (at F 1.2, 30 IRE).

The camera zoom lens must be remotely controllable with a minimum of x 10 optical magnification.

The camera pan/tilt position must be remotely controllable over a minimum horizontal pan range of 10° to 350°, and a minimum vertical tilt range of +2° to –90° (from horizontal).

4.2.1 Standard VSC Site (Type A) – Typical Configuration

A typical Type B configuration includes:

(a) VSC (day/night) with ½ inch sensor e.g. Bosch LTC 0630/11 or equivalent;
(b) Zoom lens e.g. Fujinon 128a-e2, or equivalent;
(c) IP 65 camera housing;
(d) PT Mount e.g. Pelco Esprit ES3012, or equivalent;
(e) Video encoder with PTZ support as required e.g. Bosch VIP X1 XF E or equivalent;
(f) Ethernet to IP/SMOF media converter as required;
(g) Suitable AC/DC power supplies as required;
(h) Video equipment cabinet as specified in RMS TSI-SP-012.

4.3 VSC Dome Site (Type B) Specific Requirements

A minimum ambient illumination level is required at the site to produce an acceptable video signal without visible image processing artefacts being introduced:

(a) Colour video must be available from the VSC Site at illumination levels greater than 1.0 lux (at 30 IRE, F 1.6); and
(b) Monochrome Video must be available from the VSC Site at illumination levels greater than 0.1 lux (at 30 IRE, F 1.6).
The camera zoom lens must be remotely controllable with a minimum of x 29 optical, and x 12 digital magnification.

The camera pan/tilt position must be remotely controllable over a minimum horizontal pan range of 360° endless pan rotation and a tilt range of more than 90° supporting automatic image flipping. The camera shall have pan/tilt speed of 400° per second or greater.

4.4 **VSC Dome Site (Type B) – Typical Configuration**

The typical Type B configuration includes:

(a) Dome Camera with ¼ inch (minimum) sensor and integrated zoom e.g. Pelco SE DD429-X, Sony SNC-WR632, or equivalent
(b) Video encoder with PTZ support as required e.g. Bosch VIP X1 XF E, or equivalent
(c) Media converter - Ethernet to IP/SMFO as required
(d) Suitable AC/DC Power supplies as required
(e) Video equipment cabinet as specified in RMS TSI-SP-012

4.5 **Alternative VSC Site Specifications**

Requirements for alternative types of VSC Sites are to be defined in future versions of this Specification.

4.6 **Site Connection Requirements**

4.6.1 **Communications Connection**

The VSC Sites must communicate to its Host Control System (Video) in the ITS CMC via the ITS Communications System and if applicable, to the local Corridor Communications Network (CCN).

Copper cabling must not be used for any communications section over 50 meters.

The Contractor must advise the Principal during detailed design where any copper cabling is to be used, including the use of any existing cabling infrastructure, and the surge suppression techniques that are included in the design.

Where copper cabling is used it must be protected against electrical transients and lightning strikes. Lightning/surge protection procedures must conform with the relevant provisions of AS 1768.

To provide communications access to the site from the ITS CMC, any copper Ethernet cable connection must be converted to run on the Single Mode Optic Fibre (SMOF) cable of the RMS communications infrastructure, as presented to the site at the nominated communications pit (provided by others).

Media converters, local modems, and other communications equipment must be securely mounted within the control housing.

The SMOF cable in the RMS communications infrastructure from the pit (provided by others) must be extended via underground cableways into the control housing, terminating at the copper/SMOF media converter- serial modem. Spare SMOF cable must be neatly coiled and tied to the housing walls.
All SMOF splice-joints must be tested for return and insertion losses between the site and the next optical termination point in accordance with AS 14763.3.2012.

4.6.2 Electrical Connection

The VSC must be powered by the nominated local power point of 240 VAC mains supply.

The Contractor must engage the local power authority in order to provide mains power to the site from the local Point of Supply.

VSC Site equipment cabinets must be fitted with a 240 VAC switch board, mains fuse and GPO arrangement as per TSI-SP-012.

Mains power must enter the cabinet through separate underground ducting. The VSC Site electrical installation must comply with AS 3000.

The Contractor must perform all works in connecting the VSC Site to the Point of Supply, including pits, conduits and underground cableways as required by the site layout.

The Contractor must provide underground cableways and associated earth works from the power connection point to the control housing and from the control housing to the support structure in accordance with R155.

The electrical power for the site must meet the requirements specified in AS 4852.1 and RMS TSI-SP-016.

5 CONSTRUCTION AND INSTALLATION REQUIREMENTS

5.1 GENERAL

The Contractor must carry out a detailed site survey to determine the precise location of any underground services.

Before commencing construction, the Contractor must make all such enquires and inspections as may be necessary to make themselves fully aware of the type and location of surface and underground utility services at each site.

Specification RMS SI/TCS/8 may be used to provide an example of a typical installation.

5.1.1 Work Health and Safety

Work Health and Safety measures must be implemented, including preparation of Safe Work Method Statements, in accordance with Specification RMS G22.

5.1.2 Traffic Management

Traffic Management at VSC Sites must be provided in accordance with Specification RMS G10.

Access must be maintained to private properties and commercial premises at all times.
5.2 MOUNTING AND INSTALLATION

The Contractor must install the following:

(a) VSC Site control housings and associated modules, drivers and control equipment;
(b) dedicated camera masts, or mounting, connecting and/or bracing to existing support structures;
(c) any housing footings, ducts, pits and accessories at the site and those required to support connection to communications and power; and
(d) site communications equipment including software, modems, media converters, power supplies, and connecting to the power and communications access points;

Communications and power wiring for installations must comply with AS/CA S009.

All cable entries to the control housing must be constructed to preclude vermin ingress through sealed holes or cable glands.

5.3 ADDITIONAL SAFETY PRECAUTIONS

5.3.1 Protection of Completed Works and Existing Utilities

Completed works and existing utilities must be protected in accordance with RMS R155.

5.3.2 Installation of Conduits in High Voltage Areas

Where equipment is to be installed near high voltage earthed locations such as substations, the Contractor must obtain written authorisation from the Principal before commencing installation.

Existing high voltage earthing arrangements must not be disturbed under any circumstances.

5.4 ENVIRONMENTAL PROTECTION

Environmental protection measures must be applied in accordance with TSI-SP-016 and RMS R155.

5.5 SETTING OUT

Setting out of VSC Sites and associated equipment must be as per main project sign posting and delineation drawings (or equivalent) and conducted in accordance with RMS R155.

5.5.1 Tolerances

Setting out of VSC Sites and associated equipment sites will have a positioning tolerance of +/- 10 m from the nominated plan position. Setting out of sites at locations outside this range must be approved by the Principal.
5.6 CIVIL WORKS

The Contractor will perform any required Civil Works for each VSC Site prior to installation of any electronic equipment. Once the prerequisite Civil Works have been completed, the Contractor may proceed to completely install the first VSC Site in preparation for site type validation (after successful completion of equipment Factory Acceptance Testing (FAT)).

5.6 CIVIL WORKS

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<td>Release of Hold Point:</td>
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6 TESTING AND COMMISSIONING

6.1 VSC EQUIPMENT FACTORY ACCEPTANCE

The VSC is subject to type testing for a newly designed product or FAT for a pre-type tested product.

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<td>Release of Hold Point:</td>
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6.2 PHYSICAL SITE INSPECTION

At least one VSC Site must be formally presented for inspection, and acceptance must be granted by the Principal before continuing equipment installation on any other sites. Any deficiency identified with the installation must be recorded, and rectified where it is evident the installation does not meet RMS Specifications.
WITNESS POINT

Process Witnessed: First off VSC Site installation.
Submission Details: VSC Site installation inspection by the Principal.

6.3 COMMISSIONING AND FINAL ACCEPTANCE

The Principal will provide an appropriate VSC integration resource to assist the Contractor with VSC Site integration with the Host Control System, at a mutually agreed time.

The Contractor is responsible for the commissioning activities of the VSC Site, and for the successful integration with the remote Host Control System including:
(a) demonstrated correct operation of the VSC and associated control equipment;
(b) VSC Site access for local programming, operation and maintenance purposes;
(c) testing proving the integrity of cameras, communications, and power systems; and
(d) hand over of all relevant equipment documentation, including local copies in each VSC cabinet.

WITNESS POINT

Process Witnessed: Commissioning Test
Submission Details: Commissioning test witnessed by the Principal and/or nominated representative.

Acceptance of the installation, testing and commissioning of each new VSC Site will be issued by the Principal two weeks after satisfactory operation of the VSC has been witnessed and proven.

6.4 COMPLETION REPORT AND WORK-AS-EXECUTED DRAWINGS

6.4.1 Completion Report

A completion report must be provided. The completion report must include as a minimum:
(a) Photographs of each VSC Site installation, including camera mounting details; and
(b) All commissioning documents, test results, drawings, schematics, and manuals.

6.4.2 Work-As-Executed Drawings

Drawings and documentation must be provided in accordance with requirements of TSI-SP-016.

6.4.3 Warranty and Spares

Warranty conditions and spare equipment must meet requirements and conditions in TSI-SP-016.
### ANNEXURE TS106/A – PROJECT SPECIFIC REQUIREMENTS

#### A1 PROJECT LOCATION

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<td>Camera Site</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Camera Type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mast Type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mast Height</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrated Lowering Device</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mast Mounted Equipment Housing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Source</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standby Power</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communications link type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telecommunications line arranged by</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### A2 PROJECT SPECIFIC REQUIREMENTS
ANNEXURE TS106/B – MEASUREMENT AND PAYMENT

B1 MEASUREMENT AND PAYMENT

Payment will be made for all costs associated with completing the work detailed in this Specification in accordance with the following Pay Items.

Where no specific pay items are provided for a particular item of work, the costs associated with that item of work are deemed to be included in the rates and prices generally for the Work Under the Contract.

Pay Item TS106P1 - Conduits and Cabling

This is a lump sum item for each VSC Site.

The schedule rate must include excavation for and supply/installation of conduits additional to the ITS conduits plus supply/installation of electrical and communications cables from the power source and telecommunications connection point to the CCTV, including any connection fees.

Pay Item TS106P2 - VSC Installation and Commissioning

This is a lump sum item for each VSC Site.

The schedule rate must include supply and installation of CCTV equipment at each site, including camera, lens, pan-tilt head, camera housing, camera controller, video transmitter, broadband router, surge suppression, protocol converter (if any), housings and CCTV commissioning.

Pay Item TS106P3 - VSC Completion Documentation

This is a lump sum item for each VSC Site.

The schedule rate must include submission of all VSC Site documentation in accordance with Clause 6.4.
ANNEXURE TS106/C – SCHEDULES OF HOLD POINTS, WITNESS POINTS AND IDENTIFIED RECORDS

Refer to Clause 1.2.3.

C1 SCHEDULE OF HOLD POINTS AND WITNESS POINTS

<table>
<thead>
<tr>
<th>Clause</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5</td>
<td>Hold</td>
<td>Commencement of Civil Works.</td>
</tr>
<tr>
<td>5.6</td>
<td>Hold</td>
<td>First VSC Site equipment installation</td>
</tr>
<tr>
<td>6.1</td>
<td>Hold</td>
<td>Commencement of VSC installation at site.</td>
</tr>
<tr>
<td>6.2</td>
<td>Witness</td>
<td>First off VSC Site installation</td>
</tr>
<tr>
<td>6.3</td>
<td>Witness</td>
<td>VSC Site Commissioning and Acceptance test</td>
</tr>
</tbody>
</table>

C2 SCHEDULE OF IDENTIFIED RECORDS

The records listed below are Identified Records for the purposes of RMS Q Annexure Q/E.

<table>
<thead>
<tr>
<th>Clause</th>
<th>Description of Identified Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.1</td>
<td>Safe Work Method Statements</td>
</tr>
<tr>
<td>5.1.2</td>
<td>Traffic Management Plan</td>
</tr>
<tr>
<td>5.5</td>
<td>Detailed site layout and equipment drawings.</td>
</tr>
<tr>
<td>6.4.1</td>
<td>Completion Report</td>
</tr>
<tr>
<td>6.4.2</td>
<td>Equipment Inventory</td>
</tr>
<tr>
<td>6.4.2</td>
<td>Work-as-executed general arrangement, schematic drawings and equipment configurations for each site</td>
</tr>
<tr>
<td>6.4.2</td>
<td>Manufacturers installation, operation and maintenance manuals for each item of equipment</td>
</tr>
<tr>
<td>6.4.2</td>
<td>Manual provided by the VSC installer describing installation procedure, operation and maintenance of a site</td>
</tr>
</tbody>
</table>
ANNEXURE TS106/D – PLANNING DOCUMENTS

Refer to Clause 1.2.4. The following documents are a summary of documents that must be included in the PROJECT QUALITY PLAN. The requirements of this Specification and others included in the Contract must be reviewed to determine additional documentation requirements.

<table>
<thead>
<tr>
<th>Clause</th>
<th>Description of Document</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2</td>
<td>Site Inspection and Test Plan</td>
</tr>
</tbody>
</table>

ANNEXURES TS106/E TO TS106/L – (NOT USED)
ANNEXURE TS106/M – REFERENCED DOCUMENTS

Refer to Clause 1.2.6.

RMS Specifications

RMS Q  Quality Management System
RMS G10  Traffic Management
RMS G22  Work Health and Safety (Construction Work)
RMS R155  Design and Construction of ITS Cableways
RMS SI/TCS/8  Installation and Reconstruction of Traffic Light Signals

RMS Detailed Specifications (available on request)

RMS TSI-SP-012  General Requirements for Roadside Equipment Housing
RMS TSI-SP-016  General Requirements for Outdoor Electronic Equipment

Australian Standards

AS 1170.2  Structural design actions - Wind actions
AS 3000  Electrical installations (known as the Australian/New Zealand wiring rules)
AS/CA S009  Installation requirements for Customer Cabling (Wiring Rules)

International Standards

ISO 14496  Information technology -- Coding of audio-visual objects

Note:

RMS Detailed Specifications are available to suppliers on request via ScatsHelp@rms.nsw.gov.au