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REVISIONS TO PREVIOUS VERSION

This document has been revised from Specification RMS TS107 Edition 1 Revision 1.

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.
RMS QA SPECIFICATION TS107
ITS EMERGENCY TELEPHONE SITE

1 GENERAL

1.1 SCOPE

Transport for NSW (TfNSW) and Roads and Maritime Services (RMS) operate Emergency Telephones at Sites on motorways. These enable motorists to contact Emergency Services when required and are intended to be used for emergencies only.

This Specification sets out the requirements for the supply, installation and commissioning of equipment at Emergency Telephone Sites.

An Emergency Telephone Site includes:

- The Emergency Telephone device and all associated components on site;
- If mains powered, the connection to the local power supply point; and
- If connected to the communications fibre or local ADSL, the connection to the adjacent communications pit.

Items excluded from the scope of this Specification include:

- Pit and conduit beyond the telephone interface point to the communication backbone where the site is not wireless;
- Emergency Telephone footings (Specification RMS R152, supplied by the Principal);
- Communication backbone cabling and equipment; and
- Integration and configuration of the Emergency Telephone Site into the RMS host system.

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 TS107/A.

1.2.2 Measurement and Payment

The method of measurement and payment is detailed in Annexure TS107/B.

1.2.3 Schedules of HOLD POINTS, WITNESS POINTS and Identified Records

The schedules in Annexure TS107/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 TS107/C are Identified Records for the purposes of RMS Q Annexure Q/E.

1.2.4 (Not Used)

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 TS107/M.

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:

- **ITS Control and Management System**: The central control system which is housed in the RMS control centre, also ‘the host system’.

- **ITS Communications System**: The communications backbone network for ITS equipment.

- **Principal**: RMS representative who’s responsible for approvals over design documentations and site installations.

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

- **The Operator**: The person or organisation who answers the call from the phone.

1.3.2 Abbreviations

The following abbreviations apply to this Specification:

- **dbm**: decibel milliwatts
- **EGSM**: Extended GSM (900Mhz)
- **GSM**: Global System for Mobile (850Mhz)
- **IP**: Internet Protocol
- **ISO**: International Standards Organisation
- **ITS**: Intelligent Transport Systems
- **CMC**: Corridor Management Centre
- **MTBF**: Mean Time Between Failures
2 EMERGENCY TELEPHONE SITES

2.1 OVERVIEW

A typical Emergency Telephone Site consists of an Emergency Telephone device; and a telecommunications link to the Operator;

2.1.1 Emergency Telephone

Emergency Telephones are roadside devices, consisting of a metal housing containing the telephone component and all other fixings and posts.

There are three possible classes of Emergency Telephones:
(a) GSM/Next G solar powered (for example RMS GSM/Next G Roadside Emergency Telephone System);
(b) GSM mains powered (to be specified in the future); and
(c) PSTN mains powered (power feed from the nearest distribution site – to be specified in the future).

The GSM/Next G solar powered Emergency Telephone is the preferred and default installation. It must be installed when adequate sunlight and 3G signal reception is available.

A mains powered emergency telephone must be installed only when required sunlight conditions for solar power are not available.

A PSTN connected emergency telephone must be installed only when the required level of 3G/4G signal reception is not available.

2.1.2 Communications Links

A communications link enables the Emergency Telephone to connect with the Operator. The technology used may include one or more of the following solutions:
(a) 3G wireless (including enhanced 3G solutions);
(b) 4G wireless; and
(c) PSTN voice circuits over copper or optical fibre carriers.

3 DESIGN REQUIREMENTS

Emergency Telephones must be provided in accordance with TSI-SP-040.
3.1 RELIABILITY AND DESIGN LIFE

Equipment must be designed to provide continuous operation for a service life of 15 years as a minimum in accordance with Specification RMS TSI-SP-016.

Equipment must have an MTBF of 45,000 hours in operation as a minimum in accordance with TSI-SP-016.

3.2.2 Environmental

Environmental measures must meet the requirements of Specification RMS TSI-SP-16.

3.2.3 Electromagnetic Compatibility

Electromagnetic compatibility and surge protection measures must meet requirements in TSI-SP-016.

Surge protection must meet the requirements in Specification TSI-SP-016.

All equipment fitted within enclosures (including batteries) must be suitable for normal operation at internal temperatures up to 70°C.

3.2.4 Documentation

Documentation for the equipment must be provided in accordance with TSI-SP-016.

3.2.5 Warranty

Warranty for the equipment installed must be provided in accordance with TSI-SP-016.

3.2.6 Power Supply

The operating voltages of any mains powered equipment must comply with TSI-SP-016.

Back Up Power Supply for mains powered Emergency Telephones must be provided to meet the availability requirements of this Specification.

All Emergency Telephone equipment must be supplied with battery backup power supply (UPS) to support continued operation for a minimum of 12 hours in the event of mains power supply failure.

3.2.7 Availability

The Emergency Telephone, intermediate equipment, and communications link(s), must support a minimum availability level of 99.95% per month

4 EQUIPMENT REQUIREMENTS

The Emergency Telephone provided and installed must meet the requirements for operation in Specification TSI-SP-040.

4.1 FUNCTIONAL REQUIREMENTS

The Emergency Telephone must be capable of:
(a) establishing a call to a pre-programmed number without the user needing to dial i.e. the user lifts the handset;
(b) running in low power mode;
(c) indicating whether it is running in low power mode;
(d) receiving a call;
(e) remaining connected to the mobile network for a configurable about of time (between 1 and 99 minutes) after an outgoing call is terminated;
(f) being configured to automatically dial a specific phone number;
(g) playing a recorded message while connecting to the mobile network;
(h) providing an option for an authorised user to dial any number;
(i) connecting to the mobile network without making a call;
(j) displaying the mobile network signal strength in decibel milliwatts (dBm);
(j) being configured to limit the call time (to between 1 and 99 minutes) after which the call will hang up; and
(k) dialling a number within 2 seconds of handset pickup or going “off-hook”.

4.2 Non-Functional Requirements

Equipment markings must be provided in accordance with TSI-SP-016.

4.2.1 Interface Requirements

4.2.1.1 Communications

As the nominal configuration of Emergency Telephone Sites communications is via cellular wireless, no other communications is required in this case.

Where physical connectivity to the Emergency Telephone Site is required, communications link(s) must be provided in accordance with RMS TS020 and RMS R155.

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

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 to the relevant provisions of AS 1768.

4.2.1.2 Power

As the nominal configuration of Emergency Telephone Sites power is via battery/solar, no other power supply is required in this case.

Where physical power connectivity to the Emergency Telephone Site is required, it must be provided in accordance with RMS R155.
All emergency telephone are to be supplied with battery backup power supplies (UPS), and with batteries suitable for internal enclosure temperatures up to 70°C.

Electrical characteristics of the Emergency Telephone must be in accordance with TSI-SP-040.

5 CONSTRUCTION AND INSTALLATION REQUIREMENTS

5.1 GENERAL

Where earthworks are required, 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.

Emergency Telephones must be installed on the footing supplied by the Principal in accordance with Specification RMS R152.

5.1.1 Work Health and Safety

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

5.1.2 Traffic Management

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

Access must be maintained to private properties and commercial premises.

5.2 MOUNTING AND INSTALLATION

The Emergency Telephone must be installed to allow access and use by motorists and maintenance staff.

All civil and electrical works must comply with Specification RMS SI/TCS/8.

Emergency Telephone Site installations must comply with AS 3000.

Mounting of Emergency Telephone Site component parts must be provided in accordance with requirements of TSI-SP-016.

Communications wiring for Emergency Telephone Site installations must be in accordance with requirements of TSI-SP-016, and comply with AS/CA S009.

Cabling for Emergency Telephone Site installations must be provided in accordance with the requirements of TSI-SP-016.

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 Specification RMS R155.

5.3.2 Installation of Equipment in High Voltage Areas

Where equipment are to be installed in proximity to high voltage earthed locations such as substations, written authorisation must be obtained from the Principal before commencing installation.

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

5.4 Environmental Protection

The Emergency Telephone provided must meet the environmental protection requirements of TSI-SP-016 and RMS R155.

5.5 Setting Out

Setting out of Emergency Telephone Sites and associated equipment must be as per the main project sign posting and delineation drawings (or equivalent) and performance of works in accordance with RMS R155.

5.5.1 Tolerances

Setting out of Emergency Telephone Sites and associated equipment sites will have no positioning tolerance from the nominated plan position.

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<tr>
<th>HOLD POINT</th>
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<tr>
<td>Process Held:</td>
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<tr>
<td>Submission Details:</td>
</tr>
<tr>
<td>Release of Hold Point:</td>
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</table>

5.6 Civil Works

The Contractor will perform any required civil works for each Emergency Telephone Site prior to installation of any electronic equipment. Once the pre-requisite civil works have been completed, the contractor may proceed to completely install the first Emergency Telephone Site in preparation for first site validation (after successful completion of equipment Factory Acceptance Testing (FAT)).

6 Testing and Commissioning

6.1 Physical Inspection
Site inspection and acceptance must be completed by the Principal for at least one site before continuing installation on any other sites. The site chosen for the preliminary fit out will be mutually agreed between you and the Principal.

The Contractor must rectify any deficiencies to the mechanical and electrical installation where it is evident the installation does not comply with this Specification.

### HOLD POINT

- **Process Held:** Emergency Telephone installation at other sites after the first site.
- **Submission Details:** Documentation to verify that the first Emergency Telephone installation complies with RMS TS107.
- **Release of Hold Point:** The Principal will inspect the Emergency Telephone installation and consider the submitted documentation prior to authorising the release of the Hold Point.

### 6.2 COMMISSIONING AND FINAL ACCEPTANCE

All Emergency Telephone equipment must be tested to confirm compliance with the requirements in this Specification e.g. Testing of hearing loop, Initiate call from CMC, Initiate call from Emergency Telephone, correspondence of call and indication of correct location to CMC Operator.

### WITNESS POINT

- **Process Witnessed:** Emergency Telephone Site commissioning.
- **Submission Details:** Notification of trial at least 3 working days prior to commencement.

### 6.3 COMPLETION REPORT AND WORK-AS-EXECUTED DRAWINGS

#### 6.3.1 Completion Report

A completion report must be provided and must include a close-up colour photograph of each telephone installation and another photo of the telephone site set against the surrounding background to allow for easy identification of the location of the telephone.

#### 6.3.2 Work-As-Executed (WAE) Drawings and Documentation

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

#### 6.3.3 Spares

Spares equipment must meet requirements and conditions in TSI-SP-016.
### A1 PROJECT LOCATION

<table>
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ANNEXURE TS107/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 TS107P1 - Cabling

This is a lump sum item for each Emergency Telephone site.

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

Pay Item TS107P2 - Emergency Telephone Installation and Commissioning

This is a lump sum item for each Emergency Telephone site.

The schedule rate must include supply and installation of Emergency Telephone equipment at each site, including handsets, housing, and Emergency Telephone commissioning.

Pay Item TS107P3 - Emergency Telephone Completion Documentation

This is a lump sum item for each Emergency Telephone Site.

The schedule rate must include submission of all Emergency Telephone Site documentation in accordance with Clause 5.3.
ANNEXURE TS107/C – SCHEDULES OF HOLD POINTS, WITNESS POINTS AND IDENTIFIED RECORDS

Refer to Clause 1.2.3.

C1 SCHEDULE OF HOLD POINTS AND WITNESS POINTS

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<td>Hold</td>
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<td>Hold</td>
<td>Emergency Telephone installation at other sites after the first site</td>
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<tr>
<td>6.2</td>
<td>Witness</td>
<td>Emergency Telephone Site commissioning</td>
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C2 SCHEDULE OF IDENTIFIED RECORDS

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

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<td>5.5</td>
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</tr>
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<td>6.3.1</td>
<td>Completion Report</td>
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<tr>
<td>6.3.2</td>
<td>Equipment Inventory</td>
</tr>
<tr>
<td>6.3.2</td>
<td>Work-as-executed general arrangement and schematic drawings for each site</td>
</tr>
<tr>
<td>6.3.2</td>
<td>Manufacturers installation, operation and maintenance manuals for each item of equipment</td>
</tr>
<tr>
<td>6.3.2</td>
<td>Manual provided by the Emergency Telephone installer describing installation procedure, operation and maintenance of a site</td>
</tr>
</tbody>
</table>
ANNEXURES TS107/D TO TS107/L—(NOT USED)

ANNEXURE TS107/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 R152   Roadside Emergency Telephone Pillars  
RMS R155   Design and Construction of Underground Cableways  
RMS SI/TCS/8 Installation and Reconstruction of Traffic Light Signals  
RMS TSI-SP-012 General Requirements for Roadside Equipment Housing  
RMS TSI-SP-016 General Requirements for Outdoor Electronic Equipment  
RMS TSI-SP-040 GSM/NextG Roadside Emergency Telephone Product Description

**RMS Drawings**

RMS VC002-24  Traffic Signal Controller Housings

**Australian Standards**

AS 3000      Electrical Installations (known as the Australian/New Zealand wiring rules)  
AS/CA S009   Installation Requirements for Customer Cabling (Wiring Rules)