Road Weather Information Systems

Transport Roads & Maritime Services

Procedural Guideline | **ILC-ITS-TP0-002-G05**

Introduction

This guideline is intended to complement procedure ILC-ITS-TP0-002 which is a generic description of processes for installation of Intelligent Transport System devices and systems.

When working on an installation of Road Weather Information Systems it is advised to refer to both documents to provide basic information about the RWIS systems and installation requirements. For site specific RWIS systems design and devices, refer to the system functional specifications, design concept and system definition documents and operational specifications.

Description of Device

Road Weather Information Systems are a group of devices that when appropriately interfaced with each other provide intelligent weather conditions detection and reporting, alerting motorists to risks and danger - autonomously.

Each of these systems are customized to site conditions and traffic management requirements, therefore they are unique in system layout, devices and construction.

RWIS design and construction caters for road alignment, type of sensors, number of displays and communication/power route requirements.

Solar is a preferred power source, especially in remote locations.

System controller(s) are required to provide system integration and functionality. Controller hardware and software are customized.

RWIS could have traffic management displays & devices (Flashers, LED signs, boom-gates etc) or provide outputs to other ITS devices and systems in the vicinity.

Weather sensors are used to detect one or a combination of the following:

- Fog
- Ice / Black Ice
- Snow
- Moisture / humidity
- Rain
- Wind
- Flooding (measure water levels)

Type of sensors can be:

- In-Pavement (Ice, Snow, temperature, rain etc)
- Remote sensing (Rain, Fog, Snow, Humidity etc)

- Environmental Devices (Conventional weather stations; rain, wind, temperature, humidity etc)

Sensors must meet specific weather sensing requirements at site.

Where required, Roads and Maritime Services protocol is used for communications with the TMC (Traffic Management Center), while firmware is customized to cater for total device functionality.

System should be designed to meet its operational needs; considering its location and traffic management requirements. In addition, care should be taken to design and build a RWIS system that has;

- Reasonable life cycle.
- Be reliable.
- Be ruggedized & durable.
- Be maintainable during its life cycle.
- Be environmentally adequate.

RWIS System integration with other ITS devices may render it critical to the operation of the greater system e.g. If communicating with a speed advisory system that requires rain / fog / snow / ice inputs to operate a VMS or flasher sign, its input becomes critical as a trigger during any of these weather events.

When necessary external communication to and from the system follows Roads and Maritime Services protocol. However, power need may increases and simple renewable power source may not be sufficient. This could include communication with the TMC (Traffic Management Center) or an ITS recipient device.

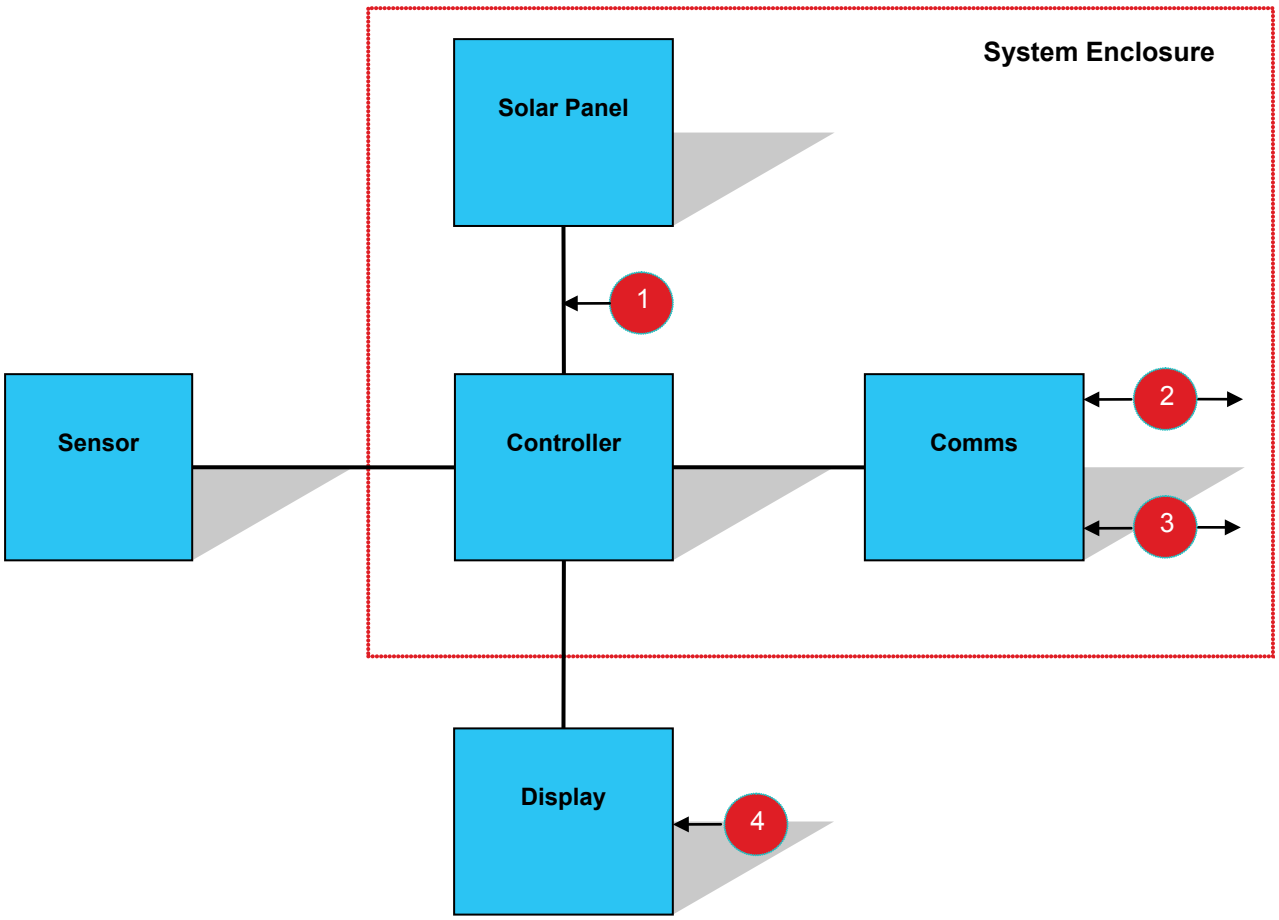
System firmware is also required to be customized for any external communication functionality.

Operating and Maintenance Manual

Operating and Maintenance manual is customized for each system.

Diagrams and Photos

Block Diagram – Road Weather Information System:



1 = Mains Power Connection (may be added for extra power load due to comms features or other devices)

2 = Comms Input / output device (**copper, fibre optic, Wi-Fi, wire-less radio, cellular etc).**

3 = Comms Input / output to other local ITS devices or systems.

4 = Display devices – Flashers, LED signs, VMS, VSLS system, Slow Down Signs etc.

References and Related Documents

Related Documents:	
Policies	Nil
Standards and Specifications	• Roads and Maritime Services QA Specification TS020 ITS Communications System • TSI-SP-003 - Communications Protocol for Roadside Devices • Maintenance of Road Weather Information Systems “R308”, December 2013
Procedure	• ILC-ITS-TP0-002 ITS Project Life Cycle
Technical Directions	• TDT 2011/07 - Attachment of Equipment to Traffic Facilities Assets • TDT 2012/10 - Energy Management for New Traffic Assets
Guidelines	• ITS-11ITS7 - APC Selection Guidelines – Alternative Power and Communications for ITS Installations. • ILC-ITS-TP0-G01 Life Cycle management of ITS Devices and Systems
Maintenance Specifications	For Supplier-specific maintenance documents, refer to those provided by Supplier(s).
Factory Acceptance Testing (FAT)	For Supplier-specific FAT documents, refer to those provided by Supplier(s).
Site Acceptance Testing (SAT)	For Supplier-specific SAT documents, refer to those provided by Supplier(s).

Acronyms, Abbreviations and Definitions

Term	**Definition**
TMC	Traffic Management Centre
VSLS	Variable Speed Limit Sign
VMS	Variable Message Sign
Firmware	A software application residing in hardware written to control it

Protocol	An established method of communication between two or more entities.
Modem	A device that performs Modulation and De-modulation of data.
Entity	Refers to a local area community or another data recipient.

About this release

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Issue 1	July 2013	Initial Release
Issue 2	September 2013	Updated author and technical authority
Issue 3	January 2014	Updated reference section
Issue 4	March 2015	New Template and logo. Updated References and Related Documents.

Note: The issue date is normally considered to be the date on which a document is authorised or signed off. Under the ILC Management System, authorisation is indicated by the signature of the authorising manager on the document register. For simplicity then, the date of writing or revising a document is used as the issue date.

This document is published under the Infrastructure Life Cycle Management System and is subject to review and continual improvement. The current version of this procedure is that published on the Roads and Maritime Services intranet.

Note: The Infrastructure Lifecycle Management System complies with the requirements of the ISO9001 standard. This standard is revised every four years (2008, 2012, 2016). While system procedures within the ILC Management System are revised as necessary, to meet any changed requirements of the standard, references within the procedures refer only to ISO9001.

It should be confidently assumed by users that the term ISO9001 within a procedure refers to the most current version of the standard.

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