



Ontario Specification for GPS Control Surveys

Government of Ontario IT Standards (GO-ITS)

Document No. 45.3

Version 1.0

Status: Approved

OCCIO/OCCTO

**MANAGEMENT BOARD SECRETARIAT
CORPORATE ARCHITECTURE BRANCH
TECHNICAL STANDARDS SECTION**

Last Review Date: June 14, 2005

Foreword

Government of Ontario Information & Technology Standards are the official publications on the standards, guidelines, technical reports and preferred practices adopted by the Information Technology Standards Council under delegated authority of the Management Board of Cabinet. These publications support the Management Board Secretariat's responsibilities for coordinating standardization of Information and Technology in the Government of Ontario. Publications that set new or revised standards provide policy guidance and administrative information for their implementation. In particular, they describe where the application of a standard is mandatory and specify any qualifications governing its implementation.

Table Of Contents

INTRODUCTION	4
<i>Applicability</i>	<i>4</i>
<i>Requirement Levels</i>	<i>4</i>
<i>Purpose of the Standard</i>	<i>5</i>
<i>Recommended Versioning and/or Change Management.....</i>	<i>6</i>
Contact Information	6
<i>Type of Standard.....</i>	<i>7</i>
<i>Publication.....</i>	<i>7</i>
<i>Acknowledgements</i>	<i>8</i>
Development Team	8
Name.....	8
<i>Impacts to Standards</i>	<i>11</i>
<i>Impacts to Existing Environment.....</i>	<i>12</i>
ONTARIO SPECIFICATION FOR GPS CONTROL SURVEYS.....	13
<i>Abstract</i>	<i>13</i>
<i>Category.....</i>	<i>13</i>
<i>Related Documents.....</i>	<i>13</i>
<i>Specifications</i>	<i>14</i>
<i>Qualifications.....</i>	<i>14</i>
<i>Implementation.....</i>	<i>14</i>
<i>Where to obtain copies.....</i>	<i>15</i>
<i>Errata.....</i>	<i>15</i>
<i>Copyright.....</i>	<i>15</i>
APPENDIX A: ONTARIO SPECIFICATION FOR GPS CONTROL SURVEYS BUSINESS CASE.....	16
APPENDIX B: ONTARIO SPECIFICATION FOR GPS CONTROL SURVEYS, VERSION 1.2, JUNE 2004, GEOMATICS OFFICE, MTO AND PROVINCIAL GEOREFERENCING, MNR.....	31

Introduction

Applicability

Government of Ontario IT Standards and Enterprise Product Standards apply (are mandatory) for use by all ministries/clusters and to all former Schedule I and IV provincial government agencies under their present classification (Advisory, Regulatory, Adjudicative, Operational Service, Operational Enterprise, Trust or Crown Foundation) according to the current agency classification system. Additionally, this applies to any other new or existing agencies designated by Management Board of Cabinet as being subject to such publications.

Requirement Levels

GO-ITS documents may combine **mandatory** and **non-mandatory** information as necessary to effectively describe the requirements of a standard.

It is important to indicate clearly when a requirement is mandatory.

Where indicated throughout this standard, the terms 'must' and 'should' will be interpreted as follows:

Must; is mandatory (new standards are not retroactive, but new standards must be complied with at the next procurement/project opportunity)

Should; is best practice, already vetted, advantage to use, expedites approval process

Purpose of the Standard

This standard describes the Ontario Specification for GPS Control Surveys which specifies the requirements for all Global Positioning System (GPS) geodetic control surveys intended for inclusion or loading into the provincial geodetic control database known as COSINE (**C**ontrol **S**urvey **I**nformation **E**xchange). The Ontario Specification for GPS Control Surveys was developed cooperatively by the Ministry of Transportation, Ontario (MTO) and the Ontario Ministry of Natural Resources (MNR). These two ministries carry out or are responsible for the majority of geodetic control survey work in the province intended for inclusion in COSINE. This standard is not specific to a single ministry or agency.

Adopting the Ontario Specification for GPS Control Surveys as a provincial GO-ITS standard will:

- a) provide a standard for horizontal geodetic positioning using GPS technology for Ontario,
- b) provide a standard for three-dimensional (3-D) geodetic positioning (horizontal and ellipsoidal height) using GPS technology for Ontario,
- c) ensure that all GPS projects destined for COSINE from provincial government ministries, agencies and municipalities comply with the same standard,
- d) enhance awareness that GPS technology provides different positioning accuracies dependent upon how the technology is used in the field, and
- e) help to ensure the integrity of the geospatial reference framework for Ontario held in the provincial geodetic database known as COSINE.

Recommended Versioning and/or Change Management

The impact on organizational arrangements, staff, customers and service delivery can be summarized as follows:-

MNR and MTO clients, staff, stakeholders, and partners need to be aware that GPS technology can be deployed in the field using different techniques. To obtain the high levels of accuracy needed to support a geodetic control framework, the Ontario Specification for GPS Control Surveys has been developed for all projects destined for the provincial geodetic database known as COSINE (**C**ontrol **S**urvey **I**nformation **E**xchange).

To ensure the project is completed in a cooperative way, with the least possible disruption the ITIL change management process which is a standard within the LRC will be applied.

Staff, clients and stakeholders will be informed and trained through one-on-one contact with Geomatics Office, MTO or Provincial Georeferencing, MNR staff.

Ongoing change will be managed through the ITIL Change management process that is a standard within the LRC.

Contact Information

	Contact 1	Contact 2
<i>Name</i>	J. Morgan Goadsby	Ron Berg
<i>Organization/ Ministry</i>	MNR	MTO
<i>Division</i>	Science and Information Resources Division	Policy, Planning and Standards Division
<i>Branch</i>	Information Resources Management Branch	Engineering Standards Branch
<i>Section/ Unit</i>	Geographic Information Ontario, Provincial Georeferencing	Geomatics Office
<i>Office Phone</i>	(705) 755-2132	(905) 704-2330
<i>E-mail</i>	morgan.goadsby@mnr.gov.on.ca	ron.berg@mto.gov.on.ca

Type of Standard

Select the appropriate category for this standard.

Check One	Type of Standard
	Implementation or Process Standards – requirements or specifications, which may include best practices and guidance, for the implementation of a technology or the performance of an activity related to the use of technology, applicable throughout the provincial government. (e.g. mandatory O/S configuration requirements, security procedures, change management procedures, web page design requirements etc.).
√	Information Standard – specifications for a data format (e.g. XML schema, metadata, and/or related data models)
	Technical Standard - networking and communications specifications, protocols, interfaces (API's) (e.g. standards adopted from recognized standards development organizations such as W3C, OASIS or IETF such as TCP/IP, XML, SOAP, etc.)
	Architecture Standard – application patterns, architecture and standards principles governing the design and technology decisions for the development of major enterprise applications
	Product Standard – an enterprise-wide product which is mandatory for use such as a single corporate-wide application, which all ministries and agencies use to record and access their HR information.

Publication

Please indicate if this standard should be restricted to publishing on the Internal (Intranet) IT Standards web site or whether it is intended for publishing on the public (Internet) Government of Ontario IT Standards web site.

Check One	Publish as Internal or External
	Internal Standard
√	External Standard

Acknowledgements

Provide a list of individuals and stakeholder groups that contributed to the development of this standard, including those who helped write the standard and provided subject expertise as well as those groups or individuals contacted for input/comments. (see next table for list of governance bodies and other groups that had input)

Development Team

Name	Cluster/Ministry	Branch
Ron Berg	Transportation/MTO	Engineering Standards Branch, Geomatics Office
Robin Poot	Transportation/MTO	Engineering Standards Branch, Geomatics Office
Trevor Holiday	Transportation/MTO	Engineering Standards Branch, Geomatics Office
J. Morgan Goadsby	LRC/MNR	Information Resource Management Branch, Provincial Georeferencing
Peter Heney	LRC/MNR	Information Resource Management Branch, Provincial Georeferencing
(Primary team for the	development of the new	Ontario Specification for GPS Control Surveys)
J. Morgan Goadsby	LRC/MNR	Information Resource Management Branch
Anne Trudell	LRC/MNR	Science Information Branch
Dr. Carey Gibson	LRC/MNR	Information Resource Management Branch
Melanie Blamire	LRC/MNR	Information Resource Management Branch
Shawn Kelleher	LRC/MNR	Information Resource Management Branch
Ron Berg	Transportation/MTO	Engineering Standards Branch
Peter Hanmore	LRC/MNR	Information Resource Management Branch
Colleen Melanson	LRC/MNR	Information Resource Management Branch
Dr. Laura Kingston	Transportation/MTO	Engineering Standards Branch
Dennis Gertridge	LRC/MNR	Information Resource Management Branch
(All members of the	LRC/OPS	Geomatics Standards Working Group (GSWG))

Reviewers: in addition to the development team members listed above, please list others contacted for input/comments in the table below:

Check	Area	Date: (month/year)
<input type="checkbox"/>	Technical Standards Unit, Corporate Architecture Branch, OCCTO	May 2005
	Corporate Architecture Branch (CAB Architects), OCCTO	
	Infrastructure Development Branch & iSERV, OCCSD	
	Corporate Security Branch, OCCS	
	Strategy, Policy, Planning and Management Branch (SPPM, OCCS)	
<input type="checkbox"/>	Corporate ACT and Domain Working Groups	July 2004
	– Information Architecture Domain (IADWG)	
	– Technology Architecture Domain (TADWG)	
	– Application Architecture Domain (AADWG)	
	– Security Architecture Working Group (SAWG)	
<input type="checkbox"/>	Cluster ACT/ARB (for cluster standards promoted to corporate standards)	April 2004
	ITSC members (<i>provide name</i>)	
<input type="checkbox"/>	Interministerial Committee on Land Information (ICLI) Working Group	June 2003
<input type="checkbox"/>	Information Resources Management Branch – Branch Leadership Team	May 2003
<input type="checkbox"/>	Dr. Michael R. Craymer, Team Leader, Geodetic Networks, Geodetic Survey Division, Natural Resources Canada	January – Feb, 2004
<input type="checkbox"/>	Dan Lymer, P. Eng., O.L.S., Manager Data Integration Services, City of Toronto	January – Feb., 2004
<input type="checkbox"/>	Mike MacLean, Administrator, Land Information Services, City of Peterborough	January – Feb., 2004
<input type="checkbox"/>	John Struik, Graphic Services Coordinator, Geographic Information Services, City of Barrie	January – Feb., 2004
<input type="checkbox"/>	Jerome Katekyeza, Camara Geomatic Technologies (MTO Approved Control Surveys Consultant List)	Fall 2003
<input type="checkbox"/>	Robert Parr, Elliot and Parr (Peterborough) Limited (MTO Approved Control Surveys Consultant List)	Fall 2003
<input type="checkbox"/>	Robin Fleguel, Everest Geodetics (MTO Approved Control Surveys Consultant List)	Fall 2003
<input type="checkbox"/>	Ewart Bowlby, Fairhall, Moffatt & Woodland Limited (MTO Approved Control Surveys Consultant List)	Fall 2003

<input type="checkbox"/>	Richard Emode, Geomatic International Technologies Inc. (MTO Approved Control Surveys Consultant List)	Fall 2003
<input type="checkbox"/>	Joseph Young, J.D. Barnes Limited (MTO Approved Control Surveys Consultant List)	Fall 2003
<input type="checkbox"/>	Stephen Giddings, Marshall Macklin Monaghan Limited (MTO Approved Control Surveys Consultant List)	Fall 2003
<input type="checkbox"/>	Glenn Dawson, Monteith & Sutherland Limited (MTO Approved Control Surveys Consultant List)	Fall 2003
<input type="checkbox"/>	James Ferguson, Mosaic Mapping Systems Inc. (MTO Approved Control Surveys Consultant List)	Fall 2003
<input type="checkbox"/>	Eric Rody, Sutcliffe Rody Quesnel Inc. (MTO Approved Control Surveys Consultant List)	Fall 2003
<input type="checkbox"/>	Robert Forbrigger, Triathlon Ltd. (MTO Approved Control Surveys Consultant List)	Fall 2003

Impacts to Standards

List any existing GO-ITS that may be impacted or associated with this standard.

GO-ITS #	Describe Impact	Recommended Action (or page number where details can be found)
GO-ITS 45.1 NAD83	The proposed GO-ITS for the Ontario Specification for GPS Control Surveys sets the standards for use of high-precision GPS to build onto the control survey reference framework in the NAD83 reference system.	None – Complimentary to GO-ITS 45.1 NAD83
GO-ITS 45.2 NTv2	The proposed GO-ITS for the Ontario Specification for GPS Control Surveys sets the standards for the use of high-precision GPS to build onto the control survey reference framework in the NAD83 reference system. If users need to transform data between the NAD27 and NAD83, then the NTv2 can be used to transform coordinate information. Control Survey Reference points need to be rigorously computed/determined in the NAD83 system	Ensure users are aware that the NTv2 is available to transform data between NAD27 and NAD83, but that high-precision reference points must be rigorously determined/computed in the NAD83 system through precise survey methods (usually using GPS technology).
GO-ITS 29	ORN already uses NAD83 as the standard geo-referencing system. The Ontario Specification for GPS Control Surveys provides the requirements to build onto the control survey reference framework in NAD83, which would thus provide more reference points on which the ORN could be related	None – Complimentary to GO-ITS 29
GO-ITS 72	Geo-spatial Metadata Standard has field for (geodetic) datum. The Ontario Specification for GPS Control Surveys specifies the GPS methods to be used to build onto the control survey reference framework in the NAD83 datum.	None
GO-ITS 24	Omnibus Standard lists GO-ITS used by industry in Ontario. The Ontario Specification for GPS Control Surveys has been accepted and in use by Ontario industry and municipalities for over one year.	Add GO-ITS 45.3 Ontario Specification for GPS Control Surveys to list of GO-ITS used by Ontario Industry.

Impacts to Existing Environment

List any significant impacts this standard may have on the existing I&IT environment.

Application(s) or Infrastructure Impacted	Describe Impact	Recommended Action (or page number where details can be found)
Specifications for GPS Control Surveys – Draft 1.0, March 1997, Surveys and Mapping Section, MTO	This 1997 Draft Specification is replaced by the Ontario Specification for GPS Control Surveys – June 2004	MTO is already requiring new projects to adhere to the new Ontario GPS Specification for GPS Control Surveys. Consultants are already performing work in accordance with the new specification.
Provisional Specifications for GPS Control Surveys, March 1994, Geodetic Services Unit, MNR	This 1994 Provisional Specification is replaced by the Ontario Specification for GPS Control Surveys – June 2004	MNR is already requiring new projects to adhere to the new Ontario GPS Specification for GPS Control Surveys. Consultants and municipalities are already adhering to the new specification.

Ontario Specification for GPS Control Surveys

Abstract

This standard describes the Ontario Specification for GPS Control Surveys which specifies the requirements for all Global Positioning System (GPS) geodetic control surveys intended for inclusion or loading into the provincial geodetic control database known as COSINE (**CO**ntr**OL** **S**urvey **IN**formation **E**xchange). The Ontario Specification for GPS Control Surveys was developed cooperatively by the Ministry of Transportation, Ontario (MTO) and the Ontario Ministry of Natural Resources (MNR). These two ministries carry out or are responsible for the majority of geodetic control survey work in the province intended for inclusion in COSINE. This standard is not specific to a single ministry or agency.

Category

This is a mandatory standard.

Any GPS geodetic control survey, whether two-dimensional (horizontal) or three-dimensional (horizontal and ellipsoidal height) that is intended for loading in the provincial geodetic control database known as COSINE, shall follow these specifications.

Related Documents

Provisional Specification for GPS Control Surveys, March 1994. Ontario Ministry of Natural Resources. This is the previous Specification for GPS Control Surveys issued by Provincial Georeferencing, MNR.

Ontario Specifications for Horizontal Control Surveys, 1979 (OS 79) and Ontario Guidelines for Horizontal Control Surveys, 1979 (OG 79, published by the Ministry of Natural Resources. This is the current Ontario Provincial Specification governing conventional (non-GPS) geodetic control surveys.

Surveyor General's Memo of 1984/04/11 to the Association of Ontario Land Surveyors regarding New Monumentation Specifications for Horizontal and Vertical Control Surveys. This memo describes the general requirements for monumentation for geodetic control surveys (GPS and non-GPS) which are intended for inclusion in COSINE, the provincial geodetic control database.

Specifications for GPS Control Surveys, Draft 1.0, March 1997. Ministry of Transportation, Ontario (MTO). This is the previous Specification for GPS Control Surveys issued by the Geomatics Office, MTO.

Accuracy Standards for Positioning, Version 1.0, September 1996. Geodetic Survey Division, Geomatics Canada, 615 Booth Street, Ottawa. This is the current federal specification dealing with the accuracy standards for different positioning methods, including GPS.

Guidelines and Specifications for GPS Surveys, Release 2.1, December 1992. Geodetic Survey Division, Geomatics Canada, 615 Booth Street, Ottawa. This is the current federal guideline and specifications document recommending how GPS should be used in the field for control surveys.

Specifications

Ontario Specification for GPS Control Surveys, Version 1.2, Geomatics Office, MTO and Provincial Georeferencing, MNR.

This is the Ontario Specification regarding geodetic control surveys using GPS technology, which are planned for inclusion in the provincial database known as COSINE.

Qualifications

This standard applies to all ministries, provincial government agencies and municipalities who conduct GPS control surveys destined for inclusion in the provincial geodetic database known as COSINE (COntrol Survey INformation Exchange). Any organization that is implementing this standard must do so in accordance with the technical information and specifications as provided in the Ontario Specification for GPS Control Surveys Business Case (Appendix “A”) and the Ontario Specification for GPS Control Surveys, June 2004 (Appendix “B”).

Implementation

The effective date of this standard is 2005/06/14.

Compliance with this standard will be achieved by conducting GPS control surveys in accordance with the specification and technical requirements of the standard attached as Appendix “B”.

Where to obtain copies

Copies of related documents may be obtained from:

Provincial Georeferencing, GIO, MNR
2nd Floor, North Tower, Robinson Place
300 Water Street
Peterborough, ON K9J 8M5
Email: morgan.goadsby@mnr.gov.on.ca

or

Geomatics Office, MTO
2nd Floor, Garden City Tower
301 St Paul Street
St. Catharines, ON L2R 7R4
Email: ron.berg@mto.gov.on.ca

Errata

Created: April 08, 2005

Updated: Month Day, Year

- Approved by IT Standards Council May 18, 2005
- Approved by Corporate Architecture Review Board June 14, 2005

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Appendix A: Ontario Specification for GPS Control Surveys Business Case

Appendix B: Ontario Specification for GPS Control Surveys, Version 1.2, June 2004, Geomatics Office, MTO and Provincial Georeferencing, MNR