Standard Development Report
for
NTCIP 1202 v04
Object Definitions for Actuated Signal Controllers (ASC) Interface

June 27, 2025

The following Standard Development Report (SDR) is made in accordance with the Institute of Transportation Engineers (ITE) procedures for National Transportation Communications for ITS (Intelligent Transportation Systems) Protocol (NTCIP) family of standards.

1 LATEST VERSION OF THE DRAFT PROPOSED STANDARD

Appendix I refers to the attached Recommended Standard (RS) NTCIP 1202 v04, *Object Definitions for Actuated Signal Controllers (ASC) Interface*, (v04.11b, referenced hereafter as draft v04)). The previously approved and published version was NTCIP 1202 v03B (designated NTCIP 1202 v03.35e).

2 SUMMARY STATUS

Draft NTCIP 1202 v04 has been accepted as a Recommended Standard of the NTCIP Joint Committee (JC). Draft RS NTCIP 1202 v04 defines NTCIP 1202 v04 as part of that larger family and is designed to define an interoperable and interchangeable interface between a transportation management system and an ASC, while still allowing for extensions beyond NTCIP 1202 v04 to allow for new functions as needed. This approach is expected to support the deployment of ASC from one or more vendors in a consistent and resource-efficient way. NTCIP 1202 v04 is not backwards compatable with previous versions.

Draft RS NTCIP 1202 v04 is distributed to the Institute of Transportation Engineers (ITE), the American Association of State Highway and Transportation Officials (AASHTO), and the National Electrical Manufacturers Association (NEMA) for their respective balloting and approval processes. After all three standards development organizations (SDOs) have individually approved the standard; NTCIP 1202 v04 will be considered a Jointly Approved Standard and published.

3 STATUS REPORT

In May 2019 NTCIP 1202 v03A was published as an Approved Standard of the NTCIP JC. In August 2022, USDOT issued a Task Order for “NTCIP 1202 Actuated Signal Controllers Version 4”. The contractor completed the following:

a) Develop jointly with SAE, AASHTO and NEMA NTCIP 1202 version 4 with content consistent with NTCIP 8002 Annex B1.
b) Form the NTCIP 1202 working group that includes members from the NTCIP and SAE communities. This working group is managed by the NTCIP JC.
c) Conduct a kick-off meeting and develop the Project Management Plan (PMP) and Systems Engineering Management Plan (SEMP).
d) Develop a Concept of Operations (ConOps) update that describes the new and updated concepts from Connected Transportation Intereoperability (CTI) 4501 Connected Intersections (CI) Implementation Guide and the City of Anaheim's NTCIP 1202 Standard Testing Project, following the guidance of NTCIP 8002 Annex B1 and IEEE Std. 1362-1998.
e) Develop a Software Requirements Specification (SRS) update based on the ConOps, following the guidance of NTCIP 8002 Annex B1 and IEEE Std. 830-1998.
f) Develop a System Design Description (SDD) update based on the SRS, following the guidance of IEEE Std. 1016-1998. Additionally, the SDD adopts SMIv2 as recommended by NTCIP 9014.
g) Develop a working group draft for review by the working group.
h) Develop the User Comment Draft (UCD) version for review by the stakeholder community.
i) Based on UCD comments, develop a Ballot NTCIP 1202 version 4, and resolve all comments during the ballot comment resolution process.

The following must be completed after ITE, AASHTO, and NEMA complete their respective balloting and approval processes.

a) Publish the NTCIP 1202 version 4 standard.

Draft NTCIP 1202 v04 was developed under the auspices of the NTCIP Actuated Signal Control (ASC) Working Group (WG), and followed a Systems Engineering Process (SEP) to advance the project to the Recommended Standard (RS) stage.

Draft RS NTCIP 1202 v04 represents a significantly improved and enhanced document over NTCIP 1202 v03.

In April 2025, the NTCIP ASC WG voted using email ballots to send draft NTCIP 1202 v04 to the NTCIP JC for review as a Proposed Recommend Standard (pRS). In May 2025, the NTCIP JC accepted the document as a Recommended Standard via email ballots.

4 COMMENTS LISTING

The adjudicated user comments from the UCD comment period are attached and referenced in Appendix II.

5 COMMITTEE OBJECTIVES

The objective of the NTCIP JC and the NTCIP ASC WG is to produce a Jointly Approved NTCIP 1202 v04 that incorporates additional functionality, enhanced security, as well as comments and related deployment experience from NTCIP 1202 v02 and v03. This distribution of draft RS NTCIP 1202 v04 is for balloting and approval within ITE and the other SDOs making up the NTCIP program.

6 COMMITTEE MEMBERS

Draft RS NTCIP 1202 v04 was developed under the oversight of the NTCIP JC, which is made up of representatives from the American Association of State Highway and Transportation Officials (AASHTO), the Institute of Transportation Engineers (ITE), and the National Electrical Manufacturers Association (NEMA). Draft RS NTCIP 1202 v04 was developed under the auspices of the NTCIP ASC WG, a subordinate unit of the NTCIP JC.

NTCIP ASC Working Group (Voting Members Only are listed)

Douglas Tarico, Econolite Control Products, Inc. (Co-Chair)
John Thai, City of Anaheim (Co-Chair)
Ralph Boaz, Pillar Consulting
Douglas Crawford, Q-Free
Matthew DeWitt, Florida Department of Transportation
Jonathan Grant, Yunex Traffic
Roy Goudy, Nissan Motors
Rami Khashashina, New York City Department of Transportation
Derek Lehrke, Minnesota Department of Transportation
Chrisptopher Primm, Oregon Department of Transportation
Robert Rausch, TransCore, ITS, LLC
Michael Robinson, California Department of Transportation
Wuping Xin, Caliper Corporation

NTCIP Joint Committee (Voting Members Only are listed)

Voting-NEMA
Russ Brookshire, Parsons
Pier Castonguay, VerMac
Robert Rausch, TransCore, ITS, LLC
Jonathan Grant, Yunex Traffic
James Barnhart, Skylne Products
Steve Bostrom, Daktronics

Voting-ITE
John Thai, City of Anaheim (Chair)
Patrick Chan, Consensus Systems Technologies
Stephen Dellenback, Southwest Research Institute
Sayuri Koyamatsu, Washington State DOT
Raman Patel, RK Patel Associates, Inc.

Voting-AASHTO
Derek Vollmer, Florida Department of Transportation
Edward Seymour, Texas Transportation Institute
Doug Spencer, Oregon Department of Transportation
Derek Lehrke, Minnesota Department of Transportation
Robert Terry, New York State Department of Transportation

7 Other References

Normative References

Normative references contain provisions that, through reference in this text, constitute provisions of NTCIP 1202 v04. Other references in NTCIP 1202 v04 might provide a complete understanding or provide additional information. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on NTCIP 1202 v04 are encouraged to investigate the possibility of applying the most recent editions of the standards listed.

Identifier	Title
ATC 5301 v02	Advanced Transportation Controller (ATC) Cabinet Standard Version 02, v02.02, AASHTO / ITE / NEMA, published March 18, 2019.
ISO 15784-2	Intelligent transport systems — Data exchange involving roadside modules communication — Part 1: Centre to field device communications using Simple Network Management Protocol (SNMP), published 2024.
ISO 26048-1	Intelligent transport systems — Field device Simple Network Management Protocol (SNMP) data interface — Part 1: Global Objects
IETF RFC 1907	Management Information Base for Version 2 of the Simple Network Management Protocol (SNMPv2), January 1996.
NEMA TS 1-1989 (R2020)	NEMA Standards Publication TS 1-1989 (R1994, R2000, R2005, R2020), Traffic Control Systems. (Not Recommended for New Designs)
NEMA TS 2-2021	NEMA Standards Publication TS 2-2021, Traffic Controller Assemblies with NTCIP Requirements Version 03.08, NEMA, published 2021.
NTCIP 1218	Object Definitions for Roadside Units (RSUs) Version 01A, AASHTO / ITE / NEMA, published January 2025.
NTCIP 2301	Simple Transportation Management Framework (STMF) Application Profile (AP) (AP-STMF)
SAE J2735	V2X Communications Message Set Dictionary, SAE International, published September 2024.

Identifier	Title
SAE J3161/1	Onboard System Requirements for LTE-V2X V2V Safety Communications, SAE International, published September 2024.

Other References

The following documents and standards may provide the reader with a better understanding of the entire protocol and the relations between all parts of the protocol. However, these documents do not contain direct provisions that are required by NTCIP 1202 v04. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on NTCIP 1202 v04 are encouraged to investigate the possibility of applying the most recent editions of the standard listed.

Identifier	Title
ATC 5201 API v06	Advanced Transportation Controller (ATC) Standard Version v06A, v06A.37, AASHTO / ITE / NEMA, published July 29, 2020.
ATC 5401 v02b	Application Programming Interface (API) Standard for the Advanced Transportation Controller (ATC) v02B, v02B.45, published February 16, 2023.
CTI 4001	Connected Transportation Interoperability 4001 - Roadside Unit (RSU) Standard, September 2022, v01.01.
CTI 4501	Connected Transportation Interoperability 4501 – Connected Intersections (CI) Implementation Guide, September 2025, v02.
CTI 4501/1	Connected Transportation Interoperability 4501 – Connected Intersections (CI) Implementation Guide – SPaT Messages, September 2025.
CTI 4501/2	Connected Transportation Interoperability 4501 – Connected Intersections (CI) Implementation Guide – MAP Messages, September 2025.
Caltrans TEES 2020	Caltrans Transportation Electrical Equipment Specifications (TEES), 2020.
IEEE Std 100-2000	The Authoritative Dictionary of IEEE Standards Terms, IEEE, December 11, 2000.
Indiana Traffic Signal Hi Resolution Data Logger Enumerations	Indiana Traffic Signal Hi Resolution Data Logger Enumerations, November 2012. http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1002&context=jtrpdata
FHWA MUTCD 2023 Edition	Manual of Uniform Traffic Control Devices, FHWA, 11th Edition, December 2023.
Multimodal Intelligent Traffic Signal System	Multi-Modal Intelligent Traffic Signal System – Phase II: System Development, Deployment and Field Test, Final Report, Connected Vehicle Pooled Fund Study, September 2016. https://engineering.virginia.edu/sites/default/files/common/Centers/CTS/CVPFS/projects/53 MMITSS Phase 2 - Final Report – FINAL 09252016-compressed.pdf
NTCIP 1201	Global Object (GO) Definitions, AASHTO / ITE / NEMA, Version 4 published 2025.
NTCIP 1209	Object Definitions for Transportation Sensor Systems (TSS) Version 02, AASHTO / ITE / NEMA, published May 2014.
NTCIP 8004	Structure and Identification of Management Information (SMI) Version 03, AASHTO / ITE / NEMA, published tbd.
Preemption of Traffic Signals Near RR Grade Crossings, 2006	The Preemption of Traffic Signals Near RR Grade Crossings, an ITE Recommended Practice, Institute of Transportation Engineers, 2006.
Signal Timing Manual	Signal Timing Manual - Second Edition, National Academies of Sciences, Engineering, and Medicine, 2015.

Identifier	Title
U.S. Architecture Reference for Cooperative and Intelligent Transportation (ARC-IT)	Architecture Reference for Cooperative and Intelligent Transportation (ARC-IT), USDOT, Version 9.2.
V2I Hub Interface Control Document	Integrated Vehicle-to-Infrastructure Prototype (IVP), V2I Hub Interface Control Document (ICD) - Final Report March 2017, FHWA JPO.

8 DECLARATION REGARDING OTHER KNOWN NATIONAL AND INTERNATIONAL STANDARDS

This statement confirms that other known national and international standards have been examined with regard to harmonization and duplication of content, and no significant conflicts with other known standards have been identified.

9 ABSTRACT OF THE STANDARD

Purpose

Draft RS NTCIP 1202 v04 has been accepted as a Recommended Standard of the NTCIP Joint Committee (JC). Draft RS NTCIP 1202 v04 specifies the logical interface between an Actuated Signal Controller (ASC) and the host systems that control them as well as field devices that exchange data with them over ethernet connections. NTCIP 1202 v04 describes the supported ASC functionality in terms of user needs and requirements; however, the nature of the interface is determined in part by the operational nature of the devices being controlled, and therefore NTCIP 1202 v04 touches on such operational issues on occasion.

Overview

NTCIP 1202 v04 standardizes the communications interface by identifying the various operational needs of the users (Section 2) and subsequently identifying the necessary requirements (Section 3) that support each need. NTCIP 1202 v04 then defines the NTCIP standardized communications interface used to fulfill these requirements by identifying the dialogs (Section 4) and related data concepts (Section 5) that support each requirement. Traceability among the various sections is defined by the Protocol Requirements List (Section 3.3) and the Requirements Traceability Matrix (Annex A). Conformance requirements for NTCIP 1202 v04 are provided in Section 3.3. NTCIP 1202 v04 only addresses a subset of the requirements needed for procurement. It does not address requirements related to the performance of the traffic detectors (e.g., accuracy, the supported detection range, the time it takes to detect conditions, etc.), hardware components, mounting details, etc.

In addition, NTCIP 1202 v04 standardizes the communications interface between an ASC and a RoadSide Unit (RSU). A RSU is any connected vehicle field device that is used to broadcast messages to, and receive messages from, nearby vehicles using wireless communications. To support connected vehicle field devices, NTCIP 1202 v04 also standardized communications interface between an ASC and an External Local Control Application (ECLA) for informational purposes.

An implementation of NTCIP 1202 v04 requires lower-level services to structure, encode, and exchange the data concepts defined by NTCIP 1202 v04. NTCIP 1202 v04 assumes that the data concepts are exchanged by one of the protocols defined in NTCIP 2301 v02.

Document Organization

Draft RS NTCIP 1202 v04 includes the following sections:

a) Section 1 General [Informative]
b) Section 2 Concept of Operations [Normative]
c) Section 3 Functional Requirements [Normative]
d) Section 4 Dialogs [Normative]
e) Section 5 Management Information Base (MIB) [Normative]
f) Section 6 Block Object Definitions

NTCIP 1202 v04 also contains two normative and four informative annexes:

a) Annex A Requirements Traceability Matrix (RTM) [Normative] traces requirements to dialogs and data concepts (messages, data frames, and data elements) used to fulfill one or more requirements.
b) Annex B Object View [Informative] provides a graphical Object Tree representation of the major nodes of the ISO tree as defined by NTCIP 1202 v04 and a Profile Implementation References Statement highlighting mandatory and optional objects.
c) Annex C Test Procedures [Normative] provides test procedures, initially developed by the City of Anaheim, for conformance to NTCIP 1202 v04.
d) Annex D Documentation of Revisions [Informative] identifies the significant revisions in NTCIP 1202 v04 that have been made since previous versions of NTCIP 1202.
e) Annex E User Requests [Informative] identifies features that were suggested for NTCIP 1202 v04, but are either supported by mechanisms that may not be readily obvious, or are not supported by NTCIP 1202 v04.
f) Annex F Generic Concepts and Definitions [Informative] provides additional guidance on generic concepts and definitions, including a section on connected vehicle implementations.

APPENDICES

Appendix I

Draft Recommended Standard NTCIP 1202 v04

Is attached to this SDR as

- 1202v0411b.mib
- NTCIP 1202v04.11b.docx
- NTCIP 1202v04.11b.pdf
- NTCIP 1202v04.11bAnnexC.docx
- NTCIP 1202v04.11bAnnexC.pdf

Appendix II

Comments Report from the Development of Draft Recommended Standard NTCIP 1202 v04

Is attached to this SDR as NTCIP 1202 comments - UCD - Comment Resolution -040225.xlsx