Maine Turnpike Authority
Electronic Exchange of Data Standard
October 20, 2016

General

This document is the Maine Turnpike's (MTA) specification for required electronic (computer) data as it relates to engineering design project deliverables. Organizations wishing to perform professional engineering services for MTA (the Consultant) are required to deliver electronic data as specified in this document. This specification also requires organizations to accept and utilize pertinent electronic data as provided by MTA.

I. CADD Files

MTA uses MicroStation v8i as our drafting software, a product of Bentley Systems, Inc.. Graphical data is to be provided in MicroStation's .DGN drawing format. Roadway design data shall be submitted in a format that can be imported directly into InRoads without translation, and with no loss of accuracy.

Electronic Deliverables To MTA:

All CADD files submitted to MTA shall be organized in accordance with the Maine Department of Transportation's (MaineDOT) CADD Standards. No translation of graphical or roadway design information by MTA personnel shall be required.

MaineDOT's CADD standards, custom MicroStation and InRoads configuration files, and current version information are available for download from the MaineDOT CADD Support Page on the Internet at:

http://www.maine.gov/mdot/caddsupport/index.htm

MicroStation drawing files (.DGN) must meet MaineDOT's conventions for Working Units, Global Origin, Level Structure and Naming, File Names, File Content and Referencing, Line Styles, Line Weights, Fonts, Cells, and Color Tables. Roadway design data shall be provided in Inroads model file (.dtm), and/or LandXML, and MaineDOT's DAB report format. MaineDOT's Standard InRoads Feature Naming Convention must be used for all roadway design data files. The Consultant is solely responsible for any translation and verification required to convert non-MicroStation graphics files to the current MaineDOT MicroStation design file format, and roadway design files to the MaineDOT InRoads format. MTA reserves the right to reject any file transmitted that does not conform to these standards.

It is recommended that the Consultant install the MaineDOT's MicroStation configuration as an alternative to their own. All of MaineDOT's MicroStation resources including seed files, cell libraries, line styles, fonts, macros, color table, settings manager files, menus, etc. are available from their web site, along with instructions for setting up MaineDOT's configuration on an existing MicroStation installation. Provisions are available to easily switch between other

configurations and MaineDOT's. The schedule of preliminary design electronic file submissions will be determined on a project-by-project basis, depending on scope of work.

Upon MTA approval and acceptance of the final signed and stamped plans, the Consultant shall provide to MTA the final electronic versions of all MicroStation files, roadway design files, and associated resource files on CD. The Consultant shall also be required to provide copies of final plan sheets in Adobe Portable Document Format (PDF). The PDF files must match all aspects of the final hardcopy signed and stamped plans. These electronic delivery items DO NOT replace any hardcopy delivery items.

A Project Journal File shall accompany all electronic files submitted to MTA. This document shall contain the Town Name, Contract Number, date, and a list of the files being transmitted with a brief description of each file.

CD's used to transmit electronic files to MTA shall, at a minimum, be labeled with the Contract Number, Location and date. If more than one CD is required to transmit the files, the disc label shall also include the disk number and total disks of the set transmitted, (ex: Disk 1 of 5).

II. Other Files

PDF's as well as the native file format (Word, Excel, etc.) should be provided for all design related documents. This shall include PDR's, estimates, meeting notes, special provisions, interim submissions and etc. Items such as load ratings and design calculations may be provided in a PDF format only, however the native file format shall be provided when requested by the Authority.

GIS Files - Acceptable file formats for GIS data submittals to Maine Turnpike Authority include Comma-Separated Values (.csv), ESRI Shapefiles (.shp), ESRI personal geodatabase (.mdb) and/or ESRI file geodatabase. All deliverables must be in an assigned coordinate system. The preferred coordinate system is NAD 1983 - UTM Zone 19N (U.S. Feet). Each GIS file deliverable shall also include a standard FGDC metadata documenting the method of data collection, use limitations, attribute(s) explanation and positional accuracy details.

Construction Documentation Files – The Maine Turnpike Authority utilizes APPIA construction management software. All resident engineers and inspectors are required to utilize the software for construction project documentation. The majority of the construction documentation files will be uploaded to the APPIA software; any files that are not uploaded should be provided in their native electronic format at the completion of the project organized into the following folders: Photos, Submittals, RFI, Field Memos, Change Orders, Job Meetings, Correspondence, Patron Claims, Plan Revisions.

III. Survey Guidelines for MTA Design/Construction Projects

Prior to construction projects on land of the Maine Turnpike Authority, plans of the proposed construction will be prepared based on existing conditions data supplied by a survey consultant engaged in the lawful practice of their profession.

Accuracy of Data

Consultants supplying data for Project Design and Construction Plans of Authority projects must supply survey data that meets the positional accuracy requirements set forth in "Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys" dated February 23, 2011 and published by the American Land Title Association and the National Society of Professional Surveyors. This data includes, but is not limited to specific project requirements as specified in the Scope of Services.

Right of Way

The location of the MTA right of way and apparent location of intersecting property lines shall be researched, located and shown on the plan with plan and deed references noted. This shall include physically locating any existing right of way or property bounds that are within close proximity to the MTA boundary.

Survey Control

Surveys shall be tied to NAD83 Maine State Plane Coordinate System, West Zone, with a minimum of two static observations for each project. Vertical control must reference North American Vertical Datum (NAVD 1988). All elevations shall be to the nearest hundredth of a foot.

Plans

Plans shall be prepared in accordance with the MaineDOT CAD and Survey Standards and:

1. Plans shall be compiled at a scale of 1"=25' with existing elevation contour lines plotted on a one foot interval.
2. Plans shall have a note stating the location of all temporary benchmarks with their vertical position in NGVD 1988 and Horizontal Position in Maine State Plane Coordinate System, West Zone, NAD 83 on each sheet.
3. All dimensions shall be displayed in Imperial Units. Distances shall be stated to the nearest hundredth of a foot and angles in DMS format.

Deliverables:

The Consultant shall deliver to the Authority the following items for Construction Plans:

1. A reproducible existing conditions plan that is sealed and signed by a Maine Professional Surveyor which contains all criteria noted above.
2. When required for a project a proposed Right of Way map shall be prepared in general conformance the MaineDOT DOT Right of Way map requirements.
3. Electronic MicroStation or AutoCad file of the original survey. (All design files must be in MicroStation)
4. An electronic Points file containing survey point data in comma delimited format as follows: Point number, Northing, Easting, Elevation, Description (Field Code).
5. Electronic copy of all project files including, but not limited to surface triangles, intelligent contours, points and fault lines and any unrecorded plans used
6. All files shall be submitted electronically on CD and shall be in their natural or expanded format.

IV. **Survey Guidelines for Boundary/Row Surveys**

Property Plans Required

Prior to interests in real property being conveyed to or from the Maine Turnpike Authority (Authority) a plan of the transfer shall be prepared showing the survey of the conveyed property. The plan shall show the legal boundary of the parcel, the monuments set to mark the boundary on the face of the earth, adjoining interests, structures, watercourses, encroachments, areas of overlap and deficiency, any evidence of historical boundaries or occupation. The work shall meet the requirements of the Maine Board of Registration for Professional Land Surveyors applicable at the time of the Survey, and be embossed with the seal and signature of the Maine Professional Land Surveyor under whose direct supervision the work was done.

Accuracy of Data

Consultants supplying data for Property or Right of Way Plans of Maine Turnpike Authority interests in land must supply survey data that meets the positional accuracy requirements set forth in "Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys" dated February 23, 2011 and published by the American Land Title Association and the National Society of Professional Surveyors.

Survey Control

Survey shall be tied to NAD83 Maine State Plane Coordinate System, West Zone, with a minimum of two static observations for each project. Vertical control must reference to the North American Vertical Datum (NAVD 1988). All elevations shall be to the nearest hundredth of a foot.

Plans

Plans shall be prepared in accordance with industry standards with Authority border sheets and:

1. Plans shall be compiled at an appropriate scale for a 24x36" sheet size (Architectural "D") or approved alternative.
2. Plans shall have a note stating the location of all temporary benchmarks with their vertical position in NGVD 1988 and Horizontal Position in Maine State Plane Coordinate System, West Zone, NAD 83 on each sheet.
3. All callout text shall be 1/8" in height.
4. All dimensions shall be displayed in Imperial Units. Distances shall be stated to the nearest hundredth of a foot and angles in DMS format

Deliverables

The Consultant shall deliver to the Authority the following items for Property Plans:

1. 24x36 Recordable Property plan with embossed seal and signature
2. Certification on the plan attesting to the accuracy of the data and notation regarding the date of monument installation and description.
3. North, East, Elevation, description data in CSV point file format on CD.
7. Autocad or MicroStation file of raw and adjusted data (All design files must be in MicroStation)
4. Recordable mylar of the plan