

Local Project Administration Manual & Resource Guide

Project Design



MaineDOT

Integrity - Competence - Service

Chapter 3 - Updated March 2023

Project Design

Successful projects start with practical designs that reflect sound engineering judgment. Well-developed construction plans and specifications enable contractors to understand what they must build and how the work should be done. Most local agencies, without engineering staffs, will hire consultant engineers. In some larger communities, municipal engineers may perform project design work.

Chapter 3 is set up to guide communities and consultants in meeting MaineDOT's expectations for design work on locally administered projects. It covers the following topics:

- Design Requirements (page 3-1);
- Format of Design Plans – *updated* (page 3-2);
- Public Involvement – *updated* (page 3-2);
- Preliminary Design Report and Plan Impacts Complete (page 3-4);
- Using MaineDOT Items – **NEW** (page 3-5);
- Design and the Americans with Disabilities Act (page 3-6);
- TAME Process (page 3-6);
- Design Exceptions (page 3-7);
- Design Checks (page 3-8);
- Appendix 3A: Policy on Electronic Exchange of CADD Data – *updated* (page 3-9); and
- Appendix 3B: MaineDOT Item Numbers – **NEW** (page 3-12).



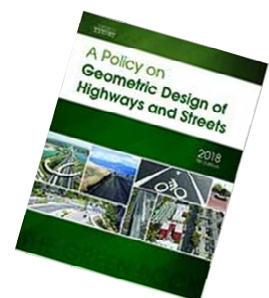
➔ Design guidance is available online: www.mainedot.gov/engineering/practices-procedures/

3.1 Design Requirements

Design work must be supervised by a Maine licensed professional engineer. Additionally, all projects must follow MaineDOT's Engineering Practices and Procedures, Standard Specifications, and Standard Details.

MaineDOT also encourages consultants and municipal engineers to consult appropriate transportation industry references, notably the following:

- AASHTO: A Policy on Geometric Design of Highways and Streets;
- AASHTO: Guide for the Development of Bicycle Facilities;
- AASHTO: Guide for the Planning, Design, and Operation of Pedestrian Facilities;
- AASHTO: LRFD Bridge Design Specifications;
- Federal Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD).



3.2 Format of Design Plans

Projects on the state system must be designed whenever possible using OpenRoads Designer software (ORD), by Bentley Systems. If MaineDOT will perform right-of-way work, electronic design files prepared with other software must be submitted to MaineDOT in ORD format so that staff in the MaineDOT Property Office can open them without translation or loss of accuracy.

Organizations using other design software should contract with consultants who have experience converting electronic design files to MaineDOT format. ***MaineDOT will return for corrections all electronic design files not meeting its requirements, set out in the policy referenced below.***

- ➡ Refer to MaineDOT’s Policy on Electronic Exchange of CADD Data, found in Appendix 3A and online: <https://www.mainedot.gov/caddsupport/>

Additionally, the following U.S. customary scales are recommended for projects on state highways:

- Plan View: 1 inch = 25 feet
- Profiles: 1 inch = 25 feet
- Cross Sections: 1 inch = 5 feet
- Typical Sections: 1 inch = 4 feet

3.3 Public Involvement

Once preliminary plans are developed, the local agency sponsoring a project must give people an opportunity to weigh in on the design. An agency should determine an appropriate amount of public involvement based on a project’s scope. Resurfacing a road, for example, should require less public outreach than rebuilding a road or developing a new sidewalk or multi-use pathway, which may require stand-alone meetings because of the potential impacts.

Live and virtual meetings are common ways to inform people about a project. The agency managing a project should notify abutters by registered mail and publicize events using its standard public notification procedures, including by electronic means.



Multiple events may be needed for complicated or controversial projects so that all stakeholders have an opportunity to influence decision-making. In some areas, for instance, a local agency may have to conduct outreach to populations with limited ability to read, speak, write or understand English, also known as Limited English Proficiency. (Refer to **section 3.3.1** on the next page.)

Guidance for setting up virtual public involvement is available from MaineDOT:
<https://storymaps.arcgis.com/stories/8f175ebd865c4dd9ba55bcc15cfe3b3d>

A summary of the public process must be part of the Preliminary Design Report (PDR), covered in section 3.4. A local agency must provide MaineDOT with LPA Letter 10 certifying that it provided for public participation.

- ➡ Templates in Word may be downloaded from the Public Participation section of MaineDOT’s LPA Documents web page: www.mainedot.gov/lpa/lpadocuments/

3.3.1 Public Involvement and Traditionally Underserved Populations

Local agencies must strive to ensure full and fair participation in decision-making by all potentially affected populations. Outreach to communities that may be underserved by conventional methods – such as minority, low-income and Limited English Proficiency groups – helps to ensure that all customers and stakeholders have opportunities to influence transportation decision-making.

To ensure full and fair participation, local project sponsors should consider the following questions:

- Has an organization considered the composition of the affected area to determine whether there are minority populations, low-income populations, Tribes, or other protected groups?
- Has an organization gathered feedback from and involved minority and/or low-income populations in early planning stages?
- Has an organization sought to overcome linguistic, cultural, institutional, geographic, and other barriers to meaningful participation?
- Have non-traditional methods of outreach been considered?
- Has an organization worked with affected populations to determine how to deliver the benefits from a project while mitigating potential adverse impacts?

To maximize the effectiveness of efforts to engage underserved people, MaineDOT encourages local agencies to consider using the following tools, especially for large or controversial projects that may affect minority or low-income neighborhoods:

- Plan public meetings well in advance, using diverse print and electronic media.
- Determine what non-English languages and other cultural characteristics could limit public participation, and offer appropriate accommodations to reduce any barrier effect.
- Accept verbal and written comments in languages other than English, if necessary.
- Hold meetings and conduct outreach in affected neighborhoods, if appropriate, using community activity centers as meeting locations and venues for informal outreach.
- Hold meetings at convenient times and at locations that are accessible and welcoming to all, including those with disabilities. (This includes providing appropriate room set-up and, when requested, alternate formats of handouts.)
- Make available alternative methods for two-way flow of information and input between a local agency and people who are not likely to attend meetings.
- Use various illustration and visualization techniques to convey and project information, including, but not limited to, charts, graphs, photos, maps and the Internet.
- Reach out to community agency staff and local leaders with expertise in contacting and connecting with underserved people, to obtain advice and information about best practices and effective techniques.

3.4 Preliminary Design Report

Early in project development, a designer develops preliminary plans (60 percent complete), identifies initial impacts, and prepares a preliminary estimate. The primary product at this point is a Preliminary Design Report (PDR), which must be submitted to a MaineDOT project manager for review using a standard form in the Engineering and Design section of the LPA Documents page: www.mainedot.gov/lpa/lpadocuments/

At a minimum, a PDR should provide the following information:

- Project location, with map;
- Design criteria;
- Description of existing conditions, including traffic volumes;
- Typical sections with pavement structure for travel lanes, shoulders and drives/entrances;
- Proposed exceptions to controlling design standards (if applicable);
- Identification of environmental, utility and right-of-way impacts;
- Compliance with Americans with Disabilities Act and MaineDOT Complete Streets Policy;
- Results of meetings and other public involvement activities; and
- Construction cost estimate, using MaineDOT items. (Refer to section 3.6.)

3.5 Plan Impacts Complete

Once MaineDOT approves a PDR, a project advances to final design. The primary milestone at this point is Plan Impacts Complete, when MaineDOT signs off on the highway, traffic, drainage and environmental designs, and right-of-way needs have been determined. At Plan Impacts Complete, design should be approximately 80 percent complete.

Draft plan impacts and an updated cost estimate must be sent to the MaineDOT project manager as .pdf files. A project reaches Plan Impacts Complete when plans show these details, as applicable:

- Plan views with cut/fill lines;
- Cross-sections every 50 feet showing proposed limits of slopes and new construction;
- Beginning and end of project stations;
- Bearings on the baseline;
- Locations and limits of driveways and entrances to be constructed;
- Type of surface treatment on drives and entrances;
- Locations of curbing, sidewalks and islands, including their geometrics;
- Drainage scheme showing under-drain, basins, culverts, ditches and outlet locations;
- Calculated drainage flows;
- Clearing limits and individual trees/shrubs to be removed, regardless of size;
- Locations of structures to be installed, such as retaining walls;
- Locations of all signal poles, special street lighting, conduits and junction boxes;
- Existing utilities on plans and cross sections with proposed new locations; and
- Proposed guardrail.

3.6 Using MaineDOT Items

Estimates and bid documents for a locally administered project must use MaineDOT items. These items refer to sections of MaineDOT's Standard Specifications, providing consistency in how work is carried out, measured, tested and paid for. Using MaineDOT items also enables project design staff to check recent bid-price history, available from MaineDOT.

Note: This section provides general guidance; it should not be treated as a complete listing. Common items for locally administered projects are listed in Appendix 3B, starting on page 3-12. Consult with MaineDOT if you cannot find an appropriate item number; do not make up an item.

MaineDOT's complete **Item Dictionary** is online: www.mainedot.gov/contractors/publications/

- ❑ **Division 200 – Earthwork** generally covers clearing and excavation. Commonly used items:
 - 201.11 Clearing;
 - 202.202 Removing Pavement Surface;
 - 203.20 Common excavation;
 - 203.21 Rock excavation;
 - 203.24 Common borrow & 203.25 Granular Borrow.
- ❑ **Division 300 – Bases** generally covers aggregates. Base and subbase gravels begin with **304**.
- ❑ **Division 400 – Pavement** items begin with **403**. Hot-mix asphalt pavement typically is either 19.0 mm, 12.5 mm or 9.5 mm. Check the Item Dictionary for appropriate item numbers.
- ❑ **Division 500 – Structures** covers primarily structural items used in bridge and marine projects. Items required for locally administered projects typically fall under **502** (structural concrete); **504** (structural steel); **528** (structural timber); and **531** (marine-related items).
- ❑ **Division 600 – Miscellaneous Construction** covers a variety of construction materials. Categories of commonly used items in the 600 series are listed below:
 - 603 – culvert pipe;
 - 604 – catch basins;
 - 608 – sidewalks;
 - 609 – curb;
 - 615 to 621 – landscape items;
 - 626 & 634 – electrical / lighting items;
 - 627 – roadway striping;
 - 643 – traffic signals;
 - 645 – highway signs;
 - 652 – traffic control; and
 - 654 – Intelligent Transportation Systems (ITS).

Note: An 800-series section in the Item Dictionary covers miscellaneous items not found elsewhere.

3.7 Design and the Americans with Disabilities Act

The Americans with Disabilities Act of 1990 (ADA) prohibits discrimination against people with disabilities. In the context of locally administered projects, the law frequently requires highway improvements to address ADA deficiencies. This section is intended as a summary for designers. The ADA is covered in greater detail in **Chapter 10**, “Civil Rights, DBE & ADA.”

Under the ADA, many types of highway projects must improve access to existing pedestrian facilities to the *maximum extent feasible*. This applies to new construction, reconstruction, rehabilitation, and “pavement alteration” treatments such as overlay, mill-and-fill, in-place recycling and micro-surfacing.



ADA-compliant curb ramps must be built within the limits of a project where barriers restrict access to sidewalks and other pedestrian facilities, following the standards below. MaineDOT also requires installation of detectable warning fields and, where warranted, upgrades to pedestrian signals.

- ☐ **New sidewalks** should be at least 5 feet wide, excluding curb, with cross-slopes of 2 percent.
- ☐ **Curb ramps:**
 - Running slope cannot exceed 1:12, or 8.33 percent;
 - Cross-slope cannot exceed 1:50, or 2 percent;
 - Ramps must be a minimum 5 feet clear width;
 - Slopes of flared sides cannot exceed 10 percent;
 - The bottoms of ramps must be flush with the street;
 - Detectable warnings must be placed at mid-block crossings and at traffic-controlled intersections. They should be the full width of ramps and at least 2 feet deep.

Curb ramps and sidewalks should be built to MaineDOT Standard Details 801(11-26). If curb ramps cannot be built to comply fully with the ADA, they must comply to the maximum extent feasible, with deficiencies explained and documented on MaineDOT’s **ADA Technical Infeasibility Form**. Links to the form, Standard Details and other guidance can be found at the web page cited below.

➔ ADA resources are online: www.mainedot.gov/civilrights/ada/resources-engineers/

3.8 TAME Process

MaineDOT uses Traffic Analysis Management and Evaluation (TAME) to address traffic delays from construction. After completing a PDR, a local agency should submit to the MaineDOT project manager a TAME Request Form, which can be downloaded using the link below.

MaineDOT will issue a TAME certification for a project and may prepare a special provision (Section 105, Limitation of Operations) restricting lane closures. Municipalities with projects on roads with average daily traffic volumes greater than 10,000 or heavy seasonal traffic should expect MaineDOT to place some restrictions on lane closures.

➔ TAME guidance is online: www.mainedot.gov/engineering/practices-procedures/

3.9 Design Exceptions

Designers and engineers often face tradeoffs. An appropriate design balances cost, safety, mobility, social and environmental impacts, and the needs of a variety of users. When it isn't practical to meet standard design criteria, an appropriate solution may be to use a design value outside the standard range – if the designer has analyzed potential impacts to safety and operations.

A design exception is a documented decision to design an element of the transportation system to criteria outside of established guidelines. For projects along state highways, exceptions to the criteria in the matrix below must be highlighted on the design plans, with a memo describing the controlling values and the nature of each proposed exception.

The design exception form is found under Engineering and Design on the LPA Documents page: www.mainedot.gov/lpa/lpadocuments/

Requests for design exceptions on locally administered projects must be sent initially to the manager of the MaineDOT Multimodal Program. From there, a design exception request may be elevated to the MaineDOT Engineering Council, as warranted and shown below.

Highway Corridor Priority	Applicable Controlling Criteria	Approval Level
1-2 (NHS)	CS, CZ, DS, HC, LW, MG, SC, SSD, SR, SW, VC	MaineDOT Engineering Council *
3-4 (State Highways) 5 (Local)	CS, CZ, DS, HC, LW, MG, SC, SSD, SR, SW, VC	MaineDOT Program Manager **

- CS Cross Slope
- CZ Clear Zone
- DS Design Speed
- HC Horizontal Curve Radius
- LW Lane Width
- MG Maximum Grade
- SC Structural Capacity
- SR Superelevation Rate
- SSD Stopping Sight Distance
- SW Shoulder Width
- VC Vertical Clearance

* *Design exceptions on preservation projects must be approved at the Program level. Design exceptions on rehabilitation projects can be approved at the Program level, with consideration given to submitting such exceptions to the Engineering Council on complex projects.*

** *Design exceptions on complex projects should be submitted to the Engineering Council.*

3.10 Design Checks

MaineDOT requires consultants and municipal engineers working on locally administered projects to perform and document quality-control (QC) design checks at the milestones below:

- ☐ At submittal of the Preliminary Design Report (PDR);
- ☐ At submittal of Design Plan Impacts; and
- ☐ At submittal of final plans, specifications & estimate (PS&E).

The QC process will consist of reviewing all calculations, design assumptions, contract provisions, plan set, cost estimates and all other relevant documents. The design reviewer must be a qualified individual other than the originator of the documents.

The design-review process should cover the following tasks:

- ☐ Summarizing the design-check process, including tools used.
- ☐ Reviewing the calculations for each design element.
- ☐ Assuring that the design meets all applicable MaineDOT standards, policies and practices.
- ☐ Documenting the checks performed through initials of the reviewer, the date on which a review was performed, and comments by a reviewer.
- ☐ Checking for compliance with legal and regulatory requirements, such as the Americans with Disabilities Act (ADA) and Manual on Uniform Traffic Control Devices (MUTCD).
- ☐ Reviewing the cost estimate, including quantity and unit price analysis with comparison to established budget and project scope. *MaineDOT pay items must be used.*
- ☐ Analyzing the proposed design for potential construction and maintenance issues.



MaineDOT will verify the design checks through its quality-assurance reviews of project plans at the milestones PDR, Plan Impacts Complete (PIC) and final PS&E. MaineDOT staff won't review plan submittals that lack evidence of design checks until they receive such documentation.

NOTE: *If a community intends to hire an engineering consultant, quality control must be a scope of work item in a consultant's technical proposal and contract.*

Appendix 3A:

Policy on Electronic Exchange of CADD Data

Updated in 2023

Policy on Electronic Exchange of CADD Data

General

This policy provides guidance on MaineDOT's specification for electronic data for design deliverables. Municipalities and consultants designing projects that will require submittal of files to MaineDOT for use in the right-of-way process shall deliver electronic data as specified in this document.

MaineDOT uses OpenRoads Designer (ORD) and InRoads, products of Bentley Systems. Graphical data shall be provided to MaineDOT in .DGN format. Roadway design data shall be submitted in a format that can be imported directly into ORD or InRoads without translation or loss of accuracy.

Electronic Deliverables to MaineDOT

Electronic CADD files shall meet MaineDOT's standards, found on MaineDOT's CADD Support web page: <https://www.maine.gov/mdot/caddsupport/>. *No translation of graphical or roadway design information by MaineDOT shall be required.*

All .DGN files shall 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 ORD as .DGN and .ITL files or in InRoads files [.DTM, .RWK, .ALG, .ITL, .IRD, .XIN], and/or LandXML format. MaineDOT's naming convention shall be used for all roadway design data files.

Either a municipality or its consultant is responsible for any translation and verification required to convert non-.DGN files to the current MaineDOT design file format, and roadway design files to the MaineDOT ORD or InRoads format, or to LandXML. *MaineDOT reserves the right to reject any file transmitted that does not conform to these standards.*

Consultants should install MaineDOT's CADD configuration as an alternative to their own. All ORD, InRoads and ORD resources – including seed files, cell libraries, line styles, fonts, macros, color table, settings manager files, and menus – are available from the CADD support web page referenced above, along with instructions for setting up MaineDOT's configuration on an existing CADD software installation. Provisions are available to switch easily between other configurations and the MaineDOT configuration.

Files may be submitted via MaineDOT's FTP site (<ftp.mainedot.smartfile.com>) contained in a .ZIP file, or written to portable data storage devices as individual files.

Once MaineDOT accepts the final signed and stamped plans, either a municipality or its consultant shall provide MaineDOT with the final electronic versions of all CADD files, roadway design files, and associated resource files on a portable data storage device. MaineDOT may request copies of final plan sheets in PDF format. The PDF files will serve as the electronic, read-only record plans, and they shall match all aspects of the final hard copy signed and stamped plans. *Electronic delivery items **DO NOT** replace hard copy delivery items.*

A Project Journal File shall accompany all electronic files submitted to MaineDOT, both those written to a portable data storage device and those transmitted via MaineDOT's FTP site. This document shall contain the town name, state work identification number (WIN), the date, and a list of the files being transmitted with a brief description of each file.

Portable data storage devices used to transmit electronic files to MaineDOT shall, at a minimum, be labeled with the town name, state WIN, and date. If more than one device is required to transmit the files, the label shall also include the device number and total number of devices of the set transmitted, (example, Drive 1 of 2).

MaineDOT Furnished Services and Information

MaineDOT will provide copies of the latest files used to configure, customize, and utilize ORD or MicroStation and InRoads in its own project development process to consultants through the MaineDOT CADD Support web page: <https://www.mainedot.gov/caddsupport/>

MaineDOT CADD support personnel are available to provide information and answer questions on MaineDOT CADD standards, ORD, MicroStation and InRoads setup, configuration, customization, and documentation. Contact information is available on the MaineDOT CADD Support web page.

MaineDOT's Survey Section will determine the horizontal and vertical datum to be used for each project located on a state highway. Files exchanged between MaineDOT and the consultant will reflect these data. Consultants using ORD or InRoads software can request the original MaineDOT ORD or InRoads survey model.

Standard reports created during the processing of survey data for input into ORD or InRoads are also available from MaineDOT. ***Consultants are responsible for translating this data into other formats required for use in their design software.***

Appendix 3B:

MaineDOT Item Numbers

- ❑ Electronic versions in Excel are found in the Engineering and Design section of the MaineDOT LPA Documents page: www.mainedot.gov/lpa/lpadocuments/
- ❑ MaineDOT's complete Item Dictionary is an online resource: www.mainedot.gov/contractors/publications/

ESTIMATE TEMPLATE: BICYCLE / PEDESTRIAN PROJECT

Item No.	ITEM DESCRIPTION	UNIT	QTY.	UNIT PRICE	AMT.
201.11	CLEARING	ACRE			
201.23	REMOVING SINGLE TREE TOP ONLY	EA			
201.24	REMOVING STUMP	EA			
202.202	REMOVING PAVEMENT SURFACE	SY			
203.20	COMMON EXCAVATION	CY			
203.21	ROCK EXCAVATION	CY			
203.24	COMMON BORROW	CY			
203.25	GRANULAR BORROW	CY			
203.35	CRUSHED STONE FILL	CY			
206.0611	STRUCTURAL EARTH EXCAVATION - DRAINAGE AND MINOR STRUCTURES	CY			
206.07	STRUCTURAL ROCK EXCAVATION - DRAINAGE AND MINOR STRUCTURES	CY			
304.10	AGGREGATE SUBBASE COURSE - GRAVEL	CY			
403.208	HOT MIX ASPHALT, 12.5 MM SURFACE	TON			
403.209	HOT MIX ASPHALT, 9.5 MM (SIDEWALKS, DRIVES, INCIDENTALS) – <i>Note: Behind curb</i>	T			
403.21	HOT MIX ASPHALT, 9.5 MM – <i>Note: Machine placed, for shoulders/travel lanes</i>	T			
403.213	HOT MIX ASPHALT, 12.5 MM BASE	T			
409.15	BITUMINOUS TACK COAT - APPLIED	GAL			
411.13	STONE DUST SURFACE COURSE – <i>Note: Use on unpaved multi-use pathways.</i>	T			
502.21	STRUCTURAL CONCRETE: ABUTMENTS AND RETAINING WALLS – <i>Note: Pedestrian bridges</i>	CY			
528.20	TIMBER STREAM CROSSING BRIDGE	LS			
530.04	PREFABRICATED BRIDGE STRUCTURE AND ASSEMBLY – <i>Note: Pedestrian bridge</i>	LS			
603.159	12-INCH CULVERT PIPE OPTION III	LF			
603.17	18-INCH CULVERT PIPE OPTION I – <i>Note: Option I is used under driveways</i>	LF			
603.179	18-INCH CULVERT PIPE OPTION III	LF			
603.19	24-INCH CULVERT PIPE OPTION I – <i>Note: Under driveways</i>	LF			
603.199	24-INCH CULVERT PIPE OPTION III	LF			
603.20	30-INCH CULVERT PIPE OPTION I – <i>Note: Under driveways</i>	LF			
603.209	30-INCH CULVERT PIPE OPTION III	LF			
603.21	36-INCH CULVERT PIPE OPTION I – <i>Note: Under driveways.</i>	LF			
603.219	36-INCH CULVERT PIPE OPTION III	LF			
604.072	CATCH BASIN TYPE A1-C – <i>Note: Use Type A with granite curb</i>	EA			
604.092	CATCH BASIN TYPE B1-C – <i>Note: Use Type B with paved curb</i>	EA			
604.161	ALTERING CATCH BASIN	EA			
604.18	ADJUSTING MANHOLE OR CATCH BASIN TO GRADE	EA			
604.2402	BEHIND CURB CATCH BASIN	EA			
604.242	CATCH BASIN TYPE F3 – <i>Note: Type F is small; number is the depth (ft.)</i>	EA			
604.244	CATCH BASIN TYPE F4	EA			
604.246	CATCH BASIN TYPE F5	EA			
604.248	CATCH BASIN TYPE F6	EA			
604.262	CATCH BASIN TYPE B5-C – <i>Note: Offset cone, cascade grate</i>	EA			
605.09	6-INCH UNDERDRAIN TYPE B – <i>Note: Perforations down with Type B</i>	LF			
605.11	12-INCH UNDERDRAIN TYPE C – <i>Note: Perforations up with Type C</i>	LF			
605.12	15-INCH UNDERDRAIN TYPE C	LF			
605.13	18-INCH UNDERDRAIN TYPE C	LF			
606.47	SINGLE WOOD POST	EA			
606.52	MAILBOX REMOVE & RESET	EA			

Item No.	ITEM DESCRIPTION	UNIT	QTY.	UNIT PRICE	AMT.
606.611	TIMBER GUARDRAIL	LF			
607.16	CHAIN LINK FENCE - 4 FOOT	LF			
607.163	CHAIN LINK FENCE - 4 FOOT PVC COATED	LF			
607.22	CEDAR RAIL FENCE	LF			
607.24	REMOVE AND RESET FENCE	LF			
607.26	REMOVE AND RESET STONE WALL	LF			
608.08	REINFORCED CONCRETE SIDEWALK	SY			
608.26	CURB RAMP DETECTABLE WARNING FIELD	SF			
608.32	CONCRETE BASE FOR BENCH TYPE 1	EA			
608.45	CONSTRUCT SIDEWALK	SY			
609.11	VERTICAL CURB TYPE 1 – <i>Note: Type 1 is granite curb</i>	LF			
609.21	CONCRETE SLIPFORM CURB	LF			
609.219	CONCRETE SLIPFORM CURB - TERMINAL END	EA			
609.221	TERMINAL CURB TYPE 1	LF			
609.31	CURB TYPE 3 – <i>Note: Type 3 is paved curb</i>	LF			
610.08	PLAIN RIPRAP	CY			
610.18	STONE DITCH PROTECTION	CY			
613.319	EROSION CONTROL BLANKET	SY			
615.07	LOAM	CY			
618.13	SEEDING, METHOD 1 – <i>Note: For lawns (Unit = 1,000 square feet.)</i>	UNIT			
618.14	SEEDING, METHOD 2 – <i>Note: Mowable slopes</i>	UN			
618.141	SEEDING, METHOD 3 – <i>Note: Non-mowable areas</i>	UN			
619.12	MULCH	UN			
620.58	EROSION CONTROL GEOTEXTILE – <i>Note: Use under riprap</i>	SY			
627.733	4 INCH WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE	LF			
627.75	WHITE OR YELLOW PAVEMENT & CURB MARKING – <i>Note: Crosswalks and painted curb</i>	SF			
627.77	REMOVING PAVEMENT MARKINGS	SF			
629.05	HAND LABOR, STRAIGHT TIME	HR			
631.12	ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	HR			
631.133	SKID STEER (INCLUDING OPERATOR)	HR			
631.172	TRUCK - LARGE (INCLUDING OPERATOR)	HR			
631.32	CULVERT CLEANER (INCLUDING OPERATOR)	HR			
639.19	FIELD OFFICE TYPE B	LS			
641.12	BENCH	EA			
643.6001	SOLAR POWERED LED PED CROSSWALK BEACON	EA			
643.62	RECTANGULAR RAPID FLASHING BEACON	EA			
643.807	LIGHTED CROSSWALKS	EA			
645.103	DEMOUNT GUIDE SIGN	EA			
645.106	DEMOUNT REGULATORY, WARNING, CONF & RTE MARKER SIGN	EA			
645.113	REINSTALL GUIDE SIGN	EA			
645.116	REINSTALL REGULATORY, WARNING, CONF & RTE MARKER SIGN	EA			
645.292	REGULATORY, WARNING, CONF & RTE MARKER SIGNS TYPE II	EA			
645.306	FLEXIBLE REFLECTORIZED DELINEATOR	EA			
652.33	DRUM	EA			
652.34	CONE	EA			
652.35	CONSTRUCTION SIGNS	SF			
652.36	MAINTENANCE OF TRAFFIC CONTROL DEVICES	CD			
652.38	FLAGGERS	HR			
656.75	TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LS			
659.10	MOBILIZATION	LS			
672.10	PRECAST CONCRETE BLOCK GRAVITY WALL	SF			
673.10	WET CAST SMALL LANDSCAPE BLOCK WALL	SF			
801.03	TEST PITS	EA			
841.48	BOLLARDS	EA			
841.481	REMOVABLE BOLLARD	EA			
841.49	BOLLARDS - COLLAPSIBLE	EA			
		TOTAL:			

ESTIMATE TEMPLATE: HIGHWAY PROJECT

INSTRUCTIONS:

1. Below is an estimate template for a highway resurfacing / reconstruction, with common items listed. Non-applicable items should be deleted; items not listed can be found in the Item Dictionary.
2. The notes in red are for guidance only and should be deleted from estimates sent to MaineDOT.
3. MaineDOT's Item Dictionary is online: <https://www.maine.gov/mdot/contractors/publications/>

WIN:

Location:

Date:

ITEM	ITEM DESCRIPTION	UNIT	QTY.	UNIT PRICE	AMT.
201.11	CLEARING	ACRE			
201.23	REMOVING SINGLE TREE TOP ONLY	EA			
201.24	REMOVING STUMP	EA			
202.202	REMOVING PAVEMENT SURFACE	SY			
202.203	PAVEMENT BUTT JOINTS	SY			
203.20	COMMON EXCAVATION	CY			
203.21	ROCK EXCAVATION	CY			
203.24	COMMON BORROW	CY			
203.25	GRANULAR BORROW	CY			
203.33	SPECIAL FILL	CY			
203.34	CRUSHED STONE FILL	CY			
206.061	STRUCTURAL EARTH EXCAVATION - DRAINAGE AND MINOR STRUCTURES	CY			
206.070	STRUCTURAL ROCK EXCAVATION - DRAINAGE AND MINOR STRUCTURES	CY			
304.10	AGGREGATE SUBBASE COURSE - GRAVEL	CY			
304.14	AGGREGATE BASE COURSE - TYPE A	CY			
304.15	AGGREGATE BASE COURSE - TYPE B	CY			
403.208	HOT MIX ASPHALT, 12.5 MM SURFACE	T			
403.2081	12.5 MM POLYMER MODIFIED HOT MIX ASPHALT – <i>Note: Higher truck volumes</i>	T			
403.209	HOT MIX ASPHALT, 9.5 MM (SIDEWALKS, DRIVES, INCIDENTALS) – <i>Note: Behind curb</i>	T			
403.210	HOT MIX ASPHALT, 9.5 MM	T			
403.211	HOT MIX ASPHALT (SHIMMING)	T			
403.213	HOT MIX ASPHALT, 12.5 MM BASE	T			
409.15	BITUMINOUS TACK COAT, APPLIED	G			
502.342	STRUCTURAL CONCRETE ROADWAY TRUCK APRON	CY			
508.13	SHEET WATERPROOFING MEMBRANE	SY			
603.159	12-INCH CULVERT PIPE OPTION III	LF			
603.17	18-INCH CULVERT PIPE OPTION I - <i>Note: Option I is used under driveways</i>	LF			
603.179	18-INCH CULVERT PIPE OPTION III	LF			
603.19	24-INCH CULVERT PIPE OPTION I - <i>Note: Under driveways</i>	LF			
603.199	24-INCH CULVERT PIPE OPTION III	LF			
603.20	30-INCH CULVERT PIPE OPTION I - <i>Note: Under driveways</i>	LF			
603.209	30-INCH CULVERT PIPE OPTION III	LF			
603.21	36-INCH CULVERT PIPE OPTION I - <i>Note: Under driveways</i>	LF			
603.219	36-INCH CULVERT PIPE OPTION III	LF			
603.42	30-INCH REINFORCED CONCRETE PIPE CLASS IV	LF			
603.43	36-INCH REINFORCED CONCRETE PIPE CLASS IV	LF			
603.55	CONCRETE PIPE TIES	GP			
604.072	CATCH BASIN TYPE A1-C – <i>Note: Use Type A with granite curb</i>	EA			
604.092	CATCH BASIN TYPE B1-C – <i>Note: Use Type B with paved curb</i>	EA			
604.16	ALTERING CATCH BASIN TO MANHOLE	EA			

ITEM	ITEM DESCRIPTION	UNIT	QTY.	UNIT PRICE	AMT.
604.18	ADJUSTING MANHOLE OR CATCH BASIN TO GRADE	EA			
604.243	CATCH BASIN TYPE F3-C – <i>Note: Type F is small; number is depth from top of frame</i>	EA			
604.245	CATCH BASIN TYPE F4-C	EA			
604.247	CATCH BASIN TYPE F5-C	EA			
604.249	CATCH BASIN TYPE F6-C	EA			
604.262	CATCH BASIN TYPE B5-C – <i>Note: Offset cone with cascade grate</i>	EA			
605.09	6-INCH UNDERDRAIN TYPE B – <i>Note: Holes down</i>	LF			
605.10	6-INCH UNDERDRAIN OUTLET	LF			
605.11	12-INCH UNDERDRAIN TYPE C – <i>Note: Holes up</i>	LF			
605.111	12-INCH UNDERDRAIN OUTLET	LF			
606.1301	31-INCH W-BEAM GR, MID-WAY SPLICE - SINGLE FACED	LF			
606.1302	31-INCH W-BEAM GR, MID-WAY SPLICE - DOUBLE FACED	LF			
606.1303	31-INCH W-BEAM GR, MID-WAY SPLICE - UP TO 15-FT RADIUS	LF			
606.1304	31-INCH W-BEAM GR, MID-WAY SPLICE - OVER 15-FT RADIUS	LF			
606.1305	31-INCH W-BEAM GR, MID-WAY SPLICE - SPCL FLARED TERMINAL	LF			
606.1306	31-INCH W-BEAM GR, MID-WAY SPLICE - SPCL TANGENT TERMINAL	LF			
606.353	REFLECTORIZED FLEXIBLE GUARDRAIL MARKER	EA			
606.356	UNDERDRAIN DELINEATOR POST	EA			
606.47	SINGLE WOOD POST	EA			
607.24	REMOVE AND RESET FENCE	LF			
608.26	CURB RAMP DETECTABLE WARNING FIELD	SF			
608.45	CONSTRUCT SIDEWALK	SY			
609.11	VERTICAL CURB TYPE 1 – <i>Note: Granite curb</i>	LF			
609.21	CONCRETE SLIPFORM CURB	LF			
609.219	CONCRETE SLIPFORM CURB - TERMINAL END	LF			
609.221	TERMINAL CURB TYPE 1	LF			
609.31	CURB TYPE 3 – <i>Note: Paved curb</i>	LF			
610.08	PLAIN RIPRAP	CY			
610.180	STONE DITCH PROTECTION	CY			
613.319	EROSION CONTROL BLANKET	SY			
615.07	LOAM	CY			
618.13	SEEDING, METHOD 1 – <i>Note : Lawns (Unit = 1,000 square feet.)</i>	UNIT			
618.14	SEEDING, METHOD 2 – <i>Note : Mowable slopes</i>	UN			
618.141	SEEDING, METHOD 3 – <i>Note : Non-mowable areas</i>	UN			
619.12	MULCH	UN			
620.58	EROSION CONTROL GEOTEXTILE - <i>Note: Typically used under riprap</i>	SY			
626.21	METALLIC CONDUIT	LF			
626.22	NON-METALLIC CONDUIT	LF			
626.411	18 INCH DIAMETER FOUNDATION	LF			
626.42	24 INCH DIAMETER FOUNDATION	LF			
627.18	12 INCH SOLID WHITE PAVEMENT MARKING	LF			
627.733	4 INCH WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE	LF			
627.75	WHITE OR YELLOW PAVEMENT & CURB MARKING	SF			
629.05	HAND LABOR, STRAIGHT TIME	HR			
631.12	ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	HR			
631.13	BULLDOZER (INCLUDING OPERATOR)	HR			
631.140	GRADER (INCLUDING OPERATOR)	HR			
631.172	TRUCK-LARGE (INCLUDING OPERATOR)	HR			
631.18	CHAIN SAW RENTAL (INCLUDING OPERATOR)	HR			
631.20	STUMP CHIPPER RENTAL (INCLUDING OPERATOR)	HR			
631.22	FRONT END LOADER (INCLUDING OPERATOR)	HR			
631.32	CULVERT CLEANER (INCLUDING OPERATOR)	HR			
639.19	FIELD OFFICE TYPE B	EA			
643.63	RECTANGULAR RAPID FLASHING BEACON	LS			

ITEM	ITEM DESCRIPTION	UNIT	QTY.	UNIT PRICE	AMT.
643.92	PEDESTAL POLE	EA			
643.921	PEDESTRIAN BUTTON POLE AND FOUNDATION	EA			
643.98	COUNTDOWN PEDESTRIAN HEADS	EA			
645.106	DEMOUNT REGULATORY, WARNING, CONF & RTE MARKER SIGN	EA			
645.108	DEMOUNT POLE	EA			
645.116	REINSTALL REGULATORY, WARNING, CONF & RTE MARKER SIGN	EA			
645.118	REINSTALL POLE	EA			
645.292	REGULATORY, WARNING, CONF & RTE MARKER SIGNS TYPE II	SF			
652.312	TYPE III BARRICADE	EA			
652.33	DRUM	EA			
652.34	CONE	EA			
652.35	CONSTRUCTION SIGNS	SF			
652.36	MAINTENANCE OF TRAFFIC CONTROL DEVICES	CD			
652.38	FLAGGER	HR			
652.381	TRAFFIC OFFICER	HR			
652.41	PORTABLE CHANGEABLE MESSAGE SIGN	EA			
656.75	TEMPORARY SOIL EROSION & WATER POLLUTION CONTROL	LS			
658.20	ACRYLIC LATEX COLOR FINISH - <i>Note: Traffic islands</i>	SY			
659.10	MOBILIZATION	LS			
803.01	TEST PITS	EA			
812.06	SEWER MANHOLE	EA			
812.16	ADJUSTING MANHOLE TO GRADE	EA			
TOTAL \$-					

END OF CHAPTER 3