

The TIP Funding Guide

A Practical Handbook in Taking
a Project from Conception
to Completion
March 2021



SRPEDD

Southeastern Regional Planning
& Economic Development District



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Southeastern Massachusetts Metropolitan Planning Organization (SMMPO)

Title VI Coordinator

SRPEDD

88 Broadway, Taunton, MA 02780

Phone: 508 824-1367 or dial 711 to use MassRelay

Email: lcabral@srpedd.org

The MassDOT Title VI Specialist

MassDOT Office of Diversity and Civil Rights

10 Park Plaza, Suite 3800, Boston, MA 02116

Phone: 857-368-8580 or 7-1-1 for

Relay Service. Email: MassDOT.CivilRights@state.ma.us

The MassDOT Office of Diversity and Civil Rights – Investigations Unit

Assistant Secretary of Diversity & Civil Rights, MassDOT

10 Park Plaza, Suite 3800, Boston, MA 02116

Email: odcrcomplaints@dot.state.ma.us

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English: If this information is needed in another language, please contact SRPEDD's Title VI Coordinator by phone at (508) 824-1367 or at lcabral@srpedd.org.

Portuguese: Caso esta informação seja necessária em outra idioma, favor contar o coordenador em Título VI do SRPEDD pelo telephone (508) 824-1367.

Spanish: Si necesita esta información en otro idioma, por favor contacte al coordinador de SRPEDD del Título VI al (508) 824-1367.

Haitian / French Creole: Si yo bezwen enfòmasyon sa a nan yon lòt lang , tanpri kontakte Koòdonatè Tit VI SRPEDD a pa telefòn nan (508) 824-1367.

Introduction

This funding guide is intended as a practical handbook in the procedures that must be followed in order to get a road, bridge or enhancement project included in the Transportation Improvement Program (TIP), therefore securing the funding necessary to complete the project. The TIP is the official programming document for transportation projects in the region. The Southeastern Massachusetts Metropolitan Planning Organization (SMMPO) is responsible for transportation policy and decisions for 27 member communities, and is responsible for endorsing the TIP. The TIP is a fiscally constrained document that identifies projects scheduled for construction over a 5-year period. The TIP is updated annually and is adjusted and amended over the course of the year to conform to changes in status of projects, needs, and costs.

Southeastern Regional Planning and Economic Development District (SRPEDD) serves as the technical and support staff to the SMMPO, as well as providing assistance to cities, towns and agencies. SRPEDD can and should be consulted throughout the process of funding and planning a project, as should the District 5 staff of the Massachusetts Department of Transportation (MassDOT).

The Joint Transportation Planning Group (JTPG) is the advisory group to the SMMPO for all transportation related issues, as well as the forum for citizen involvement in transportation plans and projects. The JTPG plays a very important role in the process as it prioritizes the list of projects within each TIP funding category and can vote to make adjustments to the TIP in their advisory capacity to the SMMPO. Members of the JTPG include a representative from each SRPEDD community. It is strongly encouraged that representatives from each community regularly attend JTPG meetings. JTPG involvement is essential in following and ensuring the progression of any project through the necessary process.

Any project eligible for federal or state aid needs to follow the process outlined in this document. A project may be eligible or may qualify for more than one source of funding based on a number of factors, including road classification (collector or arterial), or types of project such as maintenance, safety improvement or congestion relief, just to name a few. To determine the eligibility or to verify road classification for a potential project, communities should consult MassDOT's Road Inventory Interactive Maps in the reference section at the end of the document or [click here](#).

For the Map of Functional Classifications, go to the reference section at the end of the document or [click here](#).

You may also contact SRPEDD directly for assistance and guidance on this and other factors that may affect qualification. (Road classifications are also explained in greater detail in Appendix A.)

MassDOT's Project Development and Design Guide (titled "Massachusetts Highway Department Project Development and Design Guide"), especially Chapter 2 on project development, is an excellent reference source to consult on all aspects of getting a project through the process. This can be found at the end of this document in the reference section, and by [clicking here](#).

Also useful is the MassDOT Municipal Project Guide. found at the end of this document in the reference section, and by [clicking here](#).

All roads are not eligible for federal funds. Arterial and collector roads are eligible for federal funds, but local roads are not. (Any bridge, however, located on a public road is eligible for funding.)

Some of the available funding sources are Surface Transportation Program (STP), Congestion Mitigation / Air Quality (CMAQ), and Highway Safety Improvement Program (HSIP), to name a few. Please note that not all projects are eligible for all categories of funds. (More detail on funding sources can be found in Appendix B.)

Projects with local jurisdiction and funding sources, such as Chapter 90 and municipal funds, are not required to follow this process. The Chapter 90 program reimburses municipalities for roadway project costs. Communities are given an annual apportionment which can be spent immediately or saved up over time. In addition to road improvements, Chapter 90 funds also cover equipment, sheds, design needs, etc. Chapter 90 funds may also be used to fund the design costs of a project that is eligible for state or federal funding. (The Chapter 90 program is explained in greater detail in Appendix C.)

The TIP Process- A Brief Overview

Taking a project from conception to completion can be a long and arduous process but following some basic procedures can greatly simplify the process. There are some important things to keep in mind during this process. The planning and development of a project is fluid and some or all of the required tasks are interconnected and will be occurring concurrently. It is very important to maintain a close oversight on the process.

A project is developed following an identification of a problem or need. The identification of a problem may occur following a formal study conducted by SRPEDD, at the request of a

community, through the Regional Transportation Plan, identified by MassDOT, or may arise from community or citizen input.

Once it is determined that a potential problem exists, possible solutions or measures need to be identified. This can be accomplished by requesting assistance from SRPEDD or the District 5 staff of MassDOT. SRPEDD is available to provide technical assistance and information to identify, evaluate and recommend improvement alternatives to an existing or potential problem. These services range from tasks such as traffic counts to more extensive safety or congestion studies to define the problem and identify solutions.

The information gathered during this step will also be helpful in completing a Project Need (formerly the Project Needs Form) and subsequently, a Project Scope/Proposal, (formerly the Project Initiation Form). These forms are now completed using the Massachusetts Project Intake Tool (MaPIT), the comprehensive project screening tool. MaPIT allows a project's proponent, working with the MassDOT District 5 Office and SRPEDD, to define a project's scope, costs, timeline, impacts and responsibilities. The MaPIT tool is explained in much more detail beginning on page 5 in this guide. An approved Project Need, then a Project Scope, is necessary to gain Project Review Committee (PRC) approval. All projects advertised through the TIP must have MassDOT PRC approval. The PRC, comprised of staff from MassDOT and chaired by the chief engineer, meets three times a year to review PIFs and to assess the merits of each project.

Once a problem has been identified and studied, the project's proponent (the community) should meet with SRPEDD and the staff of the MassDOT District 5 office before a project's concept (or scope) is formally developed. An informal review can address any questions and determine any issues with a proposed project. This will also eliminate the possibility of a project getting rejected during the MaPIT process.

Public outreach is critical and should be initiated as early on in the project development as possible to ensure participation. Public outreach should be continued throughout the process, but it is particularly important early in the development of a project. A well-informed community increases the chances for acceptance and support of a project, improving the opportunity for that project to proceed and ultimately, receive funding. Input and feedback from local residents, businesses, and especially project area abutters, should be actively pursued to garner support, as well as to identify any opposition which may become an impediment later in the process.

A major inhibitor to the implementation of a project is with land takings. If it is determined that land takings may be necessary, this information should be presented as part of the initial public

outreach effort. Once this early determination is made, the proponent (the city or town) is often responsible for identifying and securing the right-of-way. It is imperative to address and resolve this issue early in the process.

JTPG involvement is always essential, as is communication and coordination with the staff of SRPEDD, the staff of the MassDOT District 5 office, engineers or consultants, elected officials, and local businesses and residents. Active participation of all parties is the key to the progress of a successful project.

Public Outreach

Every successful project is the result of collaborative effort which begins with public outreach. Public outreach should begin at the identification of a problem and should continue throughout the study, design and implementation of a solution. The first step is to make people aware of a potential project, especially those groups or individuals that have an interest in, or could be affected by the project. This list could include residents, business owners, neighborhood groups, elected and government officials and public agencies, potential users, and the general public.

It is important to allow citizens and groups an opportunity to be heard and be involved in the decision-making process, as well as to garner support for a project. If there is widespread opposition to a project, it is best to determine and address the objections early in the process.

Public outreach efforts should be conducted throughout the course of a project. Following the notification of the public and all interested parties, efforts should be made to allow participation during the planning and design phases, during formalized public meetings and hearings, and throughout the progression of a project. (Please note that formal public hearings are required by FHWA for federal-aid projects.)

There are various public outreach methods that can be utilized during the course of a project which include:

- social media, such as Facebook, Twitter and Instagram;
- announcements on the community's website, as well as on the websites of community partners, and/or stakeholders;
- notices and/or posters displayed at public libraries, town halls, civic buildings, churches, etc.;
- press releases and/or editorial letters sent to local newspapers; and
- informational letters sent to project abutters and neighboring residents.

The required formal design hearings are sometimes intimidating to citizens, so informal public meetings or charrettes and workshops or neighborhood meetings can also be conducted to inform and allow the participation of interested parties of a proposed project.

Successful public outreach requires communication and coordination among all interested parties. Meetings can be held physically, at a public venue, or virtually/remotely via computer or smart phone using an application such as Zoom or Webex. These meetings can then also be recorded and posted to a community's website to be viewed by interested parties who may have missed the meeting. Physical meetings, when possible, should be held in venues or locations that are fully accessible and located on public transit routes during hours of operation. Public outreach and participation, the process of keeping all parties informed, is important throughout the entire progression of a project, but it is absolutely essential before the start of a project.

The MaPIT Process and the Project Need

A project is developed following the identification and study of a problem, with recommendations for improvements. Once a problem has been identified and studied, and prior to the submittal of a Project Need (formerly the Project Need Form) through MaPIT, the project's proponent (the community) should meet with SRPEDD and the staff of the MassDOT District 5 office before a project's concept is formally developed. An informal review can address any questions and determine any issues with a proposed project. This will also eliminate the possibility of a project getting rejected in MaPIT, the comprehensive project screening tool. Open communication and coordination with all parties will ensure a smooth progression of the process, as well as a project that will develop with fewer problems and impediments.

To initiate a project, the first step is to submit a Project Need to MassDOT. This is accomplished through the MaPIT process. Every user requires a GeoDOT account with their own log-in and password to use MaPIT. The link to request a GeoDOT account can be found at the end of this document and by [clicking here](#).

Once logged into MaPIT, a screen will appear, offering 4 workflow options. (See Figure 1 below.)

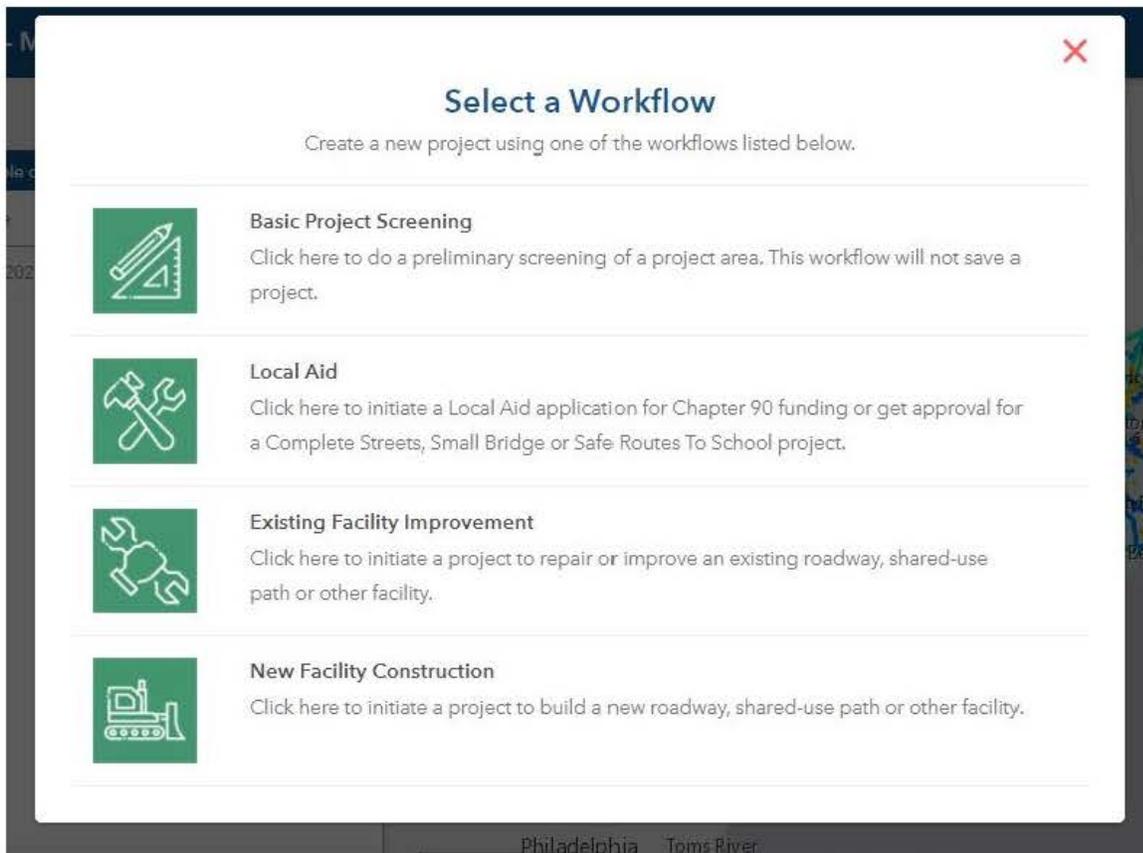


Figure 1-Screenshot of workflow options in MaPIT

The first option, Basic Project Screening, will not save a project, but will offer the opportunity for a practice exercise for any project. This can be helpful for a new user to get an overall comprehension of the information needed.

The second option, Local Aid, is for a Chapter 90 funding project, a Complete Streets, Small Bridge, or Safe Routes to School project.

The third option, Existing Facility Improvement, initiates a project to repair or improve an existing roadway, shared-use path or other facility. This is the most common option for a TIP project.

The fourth option, the New Facility Construction option will initiate a project to build a new roadway, shared-use path or other facility. This fourth option should only be selected for a project that creates a new route that does not currently exist, such as a shared-use path through the woods or a street that connects roads not currently connected.

Once you have selected the appropriate workflow, the second step is the project description. Each step of the MaPIT process is listed on the left of the screen as it is completed. (See Figure 2 below.) The project description includes the project name, the project’s proponent and contact information, and the person completing the Project Need and their contact information.

(TIP: For the project name, *always* start with your community name, then the road or project name.)

Please provide information for each field. Some fields provide an “information symbol.” If you hover over this symbol with your mouse, it will provide additional information related to that field. (See Figure 2 below.)

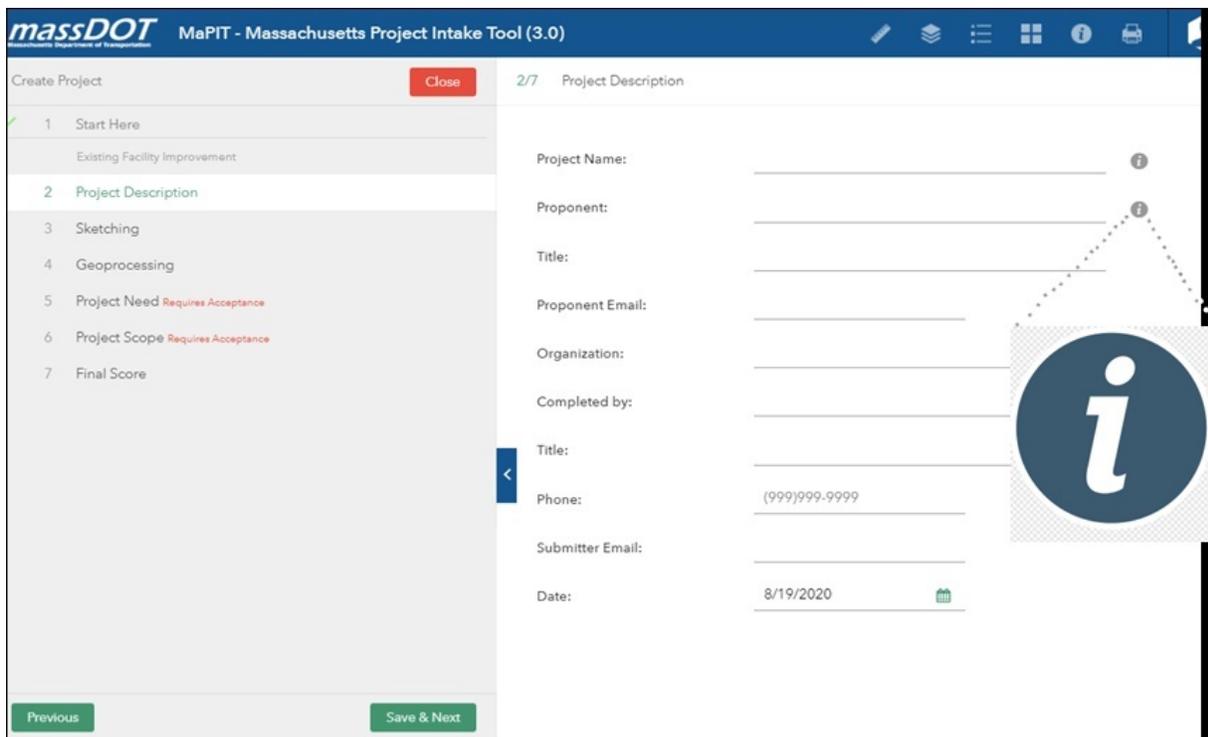


Figure 2- Screenshot of project description in MaPIT with information symbol

The 3rd step in the PNF is Sketching. This is where you indicate the location of the project. (See Figure 3 below.) You may do this by zooming in on the map that appears when beginning this step or by entering an address (123 Main Street, Anytown, MA) or intersection (Main Street at First Street, Anytown, MA) or venue (Anytown Public Library) in the search bar at the top of the page. (This is indicated by the red arrow in Figure 3.)

Once you locate your project area, you must draw a shape around it to indicate the project's parameters. You may change the background of the map to imagery, aerial view, street map, etc. to better identify project limits. This can be done by clicking on the fourth icon from the left on the top bar, the Base Map Gallery. (This is indicated by the red square on Figure 3.)

For existing facilities improvements, the project area is drawn as a polygon. To do this, click on the small box toward the bottom of your screen that reads "HPI existing facility." (This is circled in red on Figure 3.) Then go to the bar at the very bottom of the page and click on the 3rd figure from the left. (This is underlined in red in Figure 3.) Clicking on this drop-down menu will allow you to draw the parameter of your project by using a freehand polygon, or by choosing a square, circle, rectangle, etc. to indicate the project area.

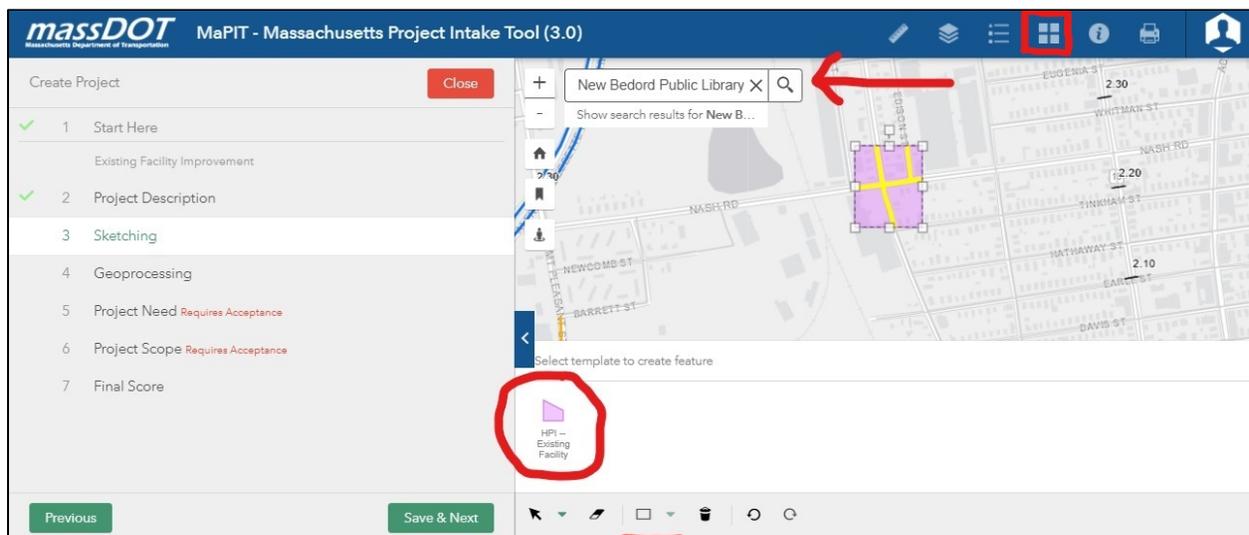


Figure 3- Step #3-Sketching in the MaPIT tool

Your polygon should be limited to just the roadways the project is on. When the polygon is as tight as you can get it, double click to finish. At this point, "Select routes" will pop up. Eliminate any roads not involved with your project.

(TIP: You can change the polygon by clicking on it. You can also click on the round nodes of the polygon to move it.)

Once you have done this and the project area is indicated correctly, then click "Next."

Additional TIPS:

On the left sidebar (show in the drawn blue square in Figure 4 below), the top icon is 'home', the middle one is 'bookmark' and the lower is for 'street view.'

On the top bar, starting on the left, the first icon is the measuring tool (yellow arrow), where you can measure by square mile, mile, and latitude and longitude. The second icon (red arrow) is data layers, where you can check for road inventory, HSIP clusters, RSA's, etc. The third icon (green arrow) is for existing projects (in design, under construction and completed). The fourth icon is the base map gallery (purple arrow), where you can change to aerial view, street map, etc. The fourth icon is the info button (black arrow), which provides further information. The fifth and last icon is to print. You can save the information in the tool as you go, and print what you have input so far at any time in this process.

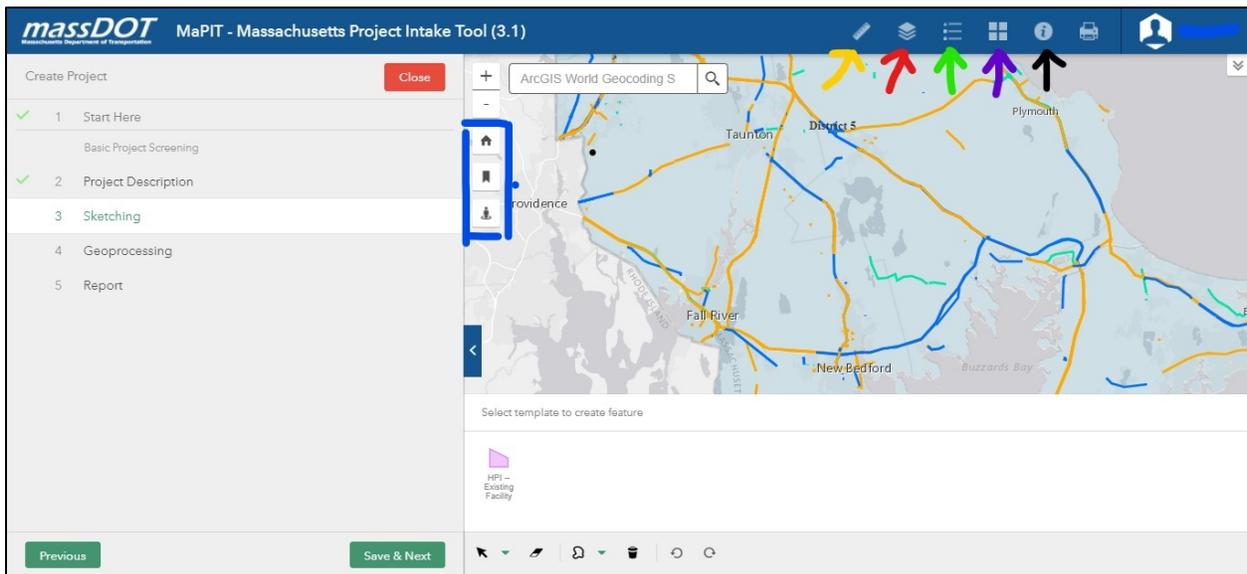


Figure 4-Additional Tips in MaPIT

Step #4 is Geoprocessing, where the MaPIT tool checks the parameters of your project area against all relevant GIS layers to identify possible issues, needs, and opportunities. This is where the MaPIT tool can save a project proponent time and effort in completing a Project Need. When using the MaPIT tool, much of this information, which was formerly time-consuming and difficult to gather, will automatically be populated into the Project Need by MaPIT, based simply on your project location and its limits. Some of the layers identified in the Geoprocessing step include HSIP clusters, pedestrian crash clusters, schools in the area, culverts, transit routes, freight corridors, Environmental Justice and Title VI areas, open space and flood zones. Also included in this step is environmental screening to flag an issue and notify proponents of permitting requirements and potential action items. MaPIT also allows automated alerts/communication between users and MassDOT, including links to access information necessary to complete the process.

All of the issues will be highlighted in yellow when the geoprocessing step is complete. (See Figure 5, below.)

After the geoprocessing is complete, click Save and Next. (Please note that there are currently no Priority Development Area (PDA) or Priority Protection Area (PPA) layers available in the geoprocessing step, so make a note if your project falls within one of these areas.)

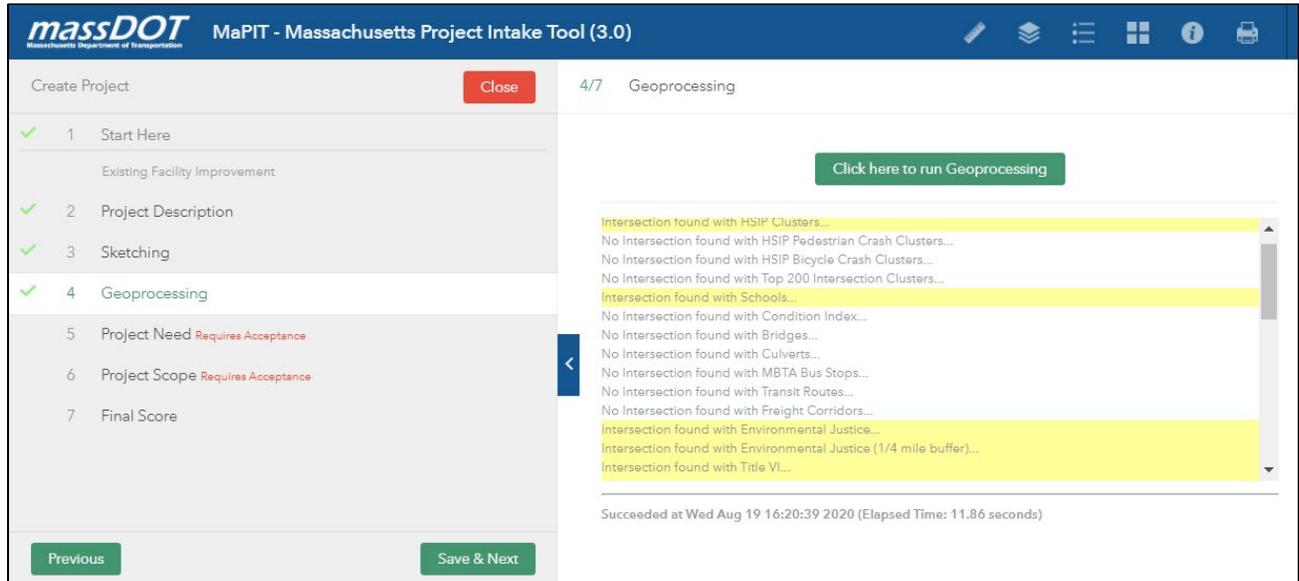


Figure 5-The Geoprocessing step in the MaPIT tool.

Step #5 is the project need section. There are 3 Parts to be completed in this step. Part I is Facility Location and General Information. Part II is Project Description, and Part III is Project Costs & Responsibilities. A step-by-step list and tips for each of these parts can be found beginning on page 12 of this guide.

The proponent should now carefully review each Part and Item to fill in all remaining empty fields or missing information. Begin by filling in any missing contact information.

(TIP: Some fields will be automatically filled in from the first step and/or from the Geoprocessing step. You can also click on the layers icons on the side to find or verify necessary information. In some places, there are also links available to assist with finding necessary information. The MaPIT tool will also alert you to any necessary permitting that is required.)

Any remaining information needs to be manually filled in by the proponent. The proponent should fill in as much information, with as much detail as possible. This information may include items such as the secondary road, the number of lanes, the width of the right-of-way and shoulder, the ADT, sidewalks present, traffic controls, lighting, posted speed limits, etc. (See

Figure 6 below.) The facilities attributes are an important part of the PNF and information should be provided for both existing and proposed conditions for all relevant sections.

(**TIP:** For those fields with varying widths, such as shoulders or travel lanes, a conservative minimum dimension should be entered if it will be used in evaluation for a Design Exception.)

(**TIP:** At the end of particular sections, a red text alert will be generated based on the Project Inputs to provide warnings about permits that may be required. Links to helpful websites are also provided throughout the PNF application. These may link directly to permitting documents or other supplemental information.)

Also necessary to the PNF is a brief summary of the project need, possible alternatives and preliminary cost estimates.

The screenshot shows the 'massDOT' logo and 'MaPIT - Massachusetts Project Intake Tool (3.0)' header. The sidebar on the left lists steps: 1 Start Here, 2 Project Description, 3 Sketching, 4 Geoprocessing, 5 Project Need (highlighted in red), 6 Project Scope (Requires Acceptance), and 7 Final Score. A 'Save & Close' button is at the top right of the sidebar. The main area is titled '5/7 Project Need' and contains a table with the following structure:

*numerals only, in feet	Existing	Proposed	Comments
Annual Daily Traffic (ADT)*			
Width of Right-of-Way* *			
Number of Travel Lanes** *			
Width of Travel Lanes* *			
Width of Shoulders* *			
Width of Bicycle Facility* *			
Width of Sidewalk (inc. curb)* *			
Sidewalks one side or both? *	<input type="checkbox"/>	<input type="checkbox"/>	

At the bottom of the sidebar are 'Previous' and 'Submit for Acceptance' buttons.

Figure 6-Some of the information (facilities attributes) needed in the PNF for a project.

The project need section should document the problems and explain why corrective action is needed. Every effort should be made to be as accurate as possible with preliminary information, **particularly with preliminary construction cost estimates.**

Please keep in mind when completing a PNF that a project need is not a project description. Being clear and concise will help the process greatly. Examples of projects needs are:

“The goals are to improve safety along the corridor and improve multimodal access, particularly for pedestrians, transit users, and bicyclists. One of the intersections is identified as an HSIP-eligible crash cluster. The project design will follow Complete Streets principles.”

“There is significant congestion at this intersection. During peak periods, the intersection operates at LOS F and long traffic queues develop.”

“There are no formal accommodations for bicycles or pedestrians between the elementary school and the residential neighborhood where a large number of students reside.”

It is always helpful to have any supporting documents attached to a PNF at the time of submittal. Supporting documents can include any additional data or statistics, plans, traffic counts, photographs, maps, etc. that would help to define the project need.

STEP-BY-STEP PROJECT NEED in MaPIT

Once again, some TIPS to keep in mind before you begin-

TIP: Some fields will be automatically filled in from the first step and/or from the Geoprocessing step.

TIP: You can click on layers on the side to find or verify necessary information.

TIP: There are links available to assist with finding necessary information.

TIP: The tool will alert you to any necessary permitting that is required.

Part I - Facility Location and General Information

For Items A through I, fill in the municipality, the primary roadway (otherwise, the program will pick the longest roadway), project type, urban or rural, functional class, if on the NHS system, the ADT, and if there are other recent/ongoing projects in the area.

TIP: To find ADT and other roadway info, click on the roadway in the map and the roadway information will pop up in the window, including the ADT.

TIP: You can save the information in the tool as you go, and print what you have input so far at any time.

Item J is the Project Need. An example of this follows:

“The primary goal of this project is to improve safety along the corridor and improve multi-modal access for all road users, including bicyclists, pedestrians and transit users. Part of the corridor has been identified as an HSIP eligible bike/ped crash cluster and one of the

intersections has been identified as an HSIP-eligible crash cluster. The project design will follow Complete Streets principles.”

Item K is the Proposed Scope of Work. Please use the same project name (Community-Project Name) that was used in the first part of the process. An example of this is as follows:

“The project scope includes roadway reconstruction of the corridor between Main Street and Maple Street, with new sidewalks, amenities for transit and bicycle use, and the reconstruction of 2 traffic signals within the corridor proposed. The project design will incorporate Complete Streets principles and include urban landscaping elements.”

Item L is the proposed project length. Use the measuring tool for this.

Item M is the Preliminary Office Estimate. Please check with the District office for a rough cost estimate.

Item N is Facility Attributes. **This section is very important** and needs to include both existing and proposed information.

TIP: Click on a Road Inventory line on the map for the ROW, ADT, shoulder widths, etc.

Item O is a 3R project (resurfacing, restoration or rehabilitation). Simple yes or no.

Item P is the Design Exception Report (DER). Will a Design Exception Report (DER) be needed for this project based on the 13 Controlling Criteria or Healthy Transportation Policy? There are links available here for more information.

TIP: You may include attachments with this first phase and this includes crash reports, traffic counts, etc.

PART II - Project Description

Item A: System Preservation

This includes overall condition of the primary asset, including pavement, traffic signals, utilities and other existing structures.

Item B: Mobility

This includes congestion, pedestrian, bicycle and transit mobility, including ALL proposed design elements that improve motor vehicle, pedestrian, bicycle, and transit mobility.

Item C: Safety

This includes all existing safety conditions and issues, including crash rates, crash clusters, if any, eligibility for HSIP funds, and/or RSA’s conducted. It also includes planned design elements

and roadway improvements intended to improve safety for motor vehicles, pedestrians, and bicyclists.

Item D: Economic Impacts

This includes Priority Development Areas, new amenities that improve accessibility, wayfinding, multi-user accommodations, or enhancements with the intent of attracting new businesses or consumers to the area, and Freight Corridors & Roadways of Economic Significance.

Item E: Social Equity

This includes the project location within an Environmental Justice or Title VI population area or community, any negative or positive impacts on these populations, near a Small Town Housing Choice, 40R site, Section 8 or Affordable Housing Development, the project's effect on Air Quality and Green House Gas Reduction, and does it improve connectivity.

Item F: Environmental Effects

This includes Stormwater Mitigation, Wetlands Impacts and Mitigation, Wildlife Impacts and Mitigation, Flood Resiliency, Climate Change Resiliency, Cultural Resources and Open Space, and Hazardous Materials or Sites.

Item G: Policy Support

This includes Statewide Policies and Plans, Regional Policies and Plan, Local Policies and Plans, and Public Outreach.

TIP: If you miss something essential, when you click to submit your project for acceptance, the program will highlight the missing information in red, allowing you to go back and fill that in.

PART III - Project Costs and Responsibilities

This table includes an Office Estimate of Construction Items, Design Contingency, Construction Contingency, Traffic Police, (both regular and overtime costs), Construction Engineering, and Utility Relocation. All these items summed up will give provide the Total Construction Cost.

TIP: If you miss something essential, when you click to submit your project for acceptance, the program will highlight the missing information in red, allowing you to go back and fill that in.

Once your project is submitted for acceptance, it will leave MaPIT and go into MassDOT Project info.

Once a proponent is satisfied that the information is as complete as possible, press "Submit for Acceptance." This will submit the Project Need for review. During the Project Need review, the proponent may be asked to provide additional information and/or to complete additional public outreach.

At this point, if a Project Need is accepted by MassDOT, then the proponent/community will be contacted to submit a Project Scope or Proposal (formerly the Project Initiation Form), also completed with the MaPIT intake tool. Part I of the Project Scope will be submitted through MaPIT to the District. District staff will communicate with the project's proponent and eventually approve Part I. At that point, the applicant will receive an email with access to complete Part II of the Project Initiation/Scope, in MaPIT.

Please note that a project proponent may seek assistance from SRPEDD and the MassDOT District 5 office at any time to gather the necessary data and to complete both parts of this process through the MaPIT project intake tool. The hiring of a consultant or an engineering firm is always an option, but given the fiscal constraints placed on communities, these are funds better spent as SRPEDD and the MassDOT District 5 office are willing and capable to assist communities at no cost.

Please note that a project proponent may seek assistance from SRPEDD and the MassDOT District 5 office at any time to gather the necessary data and to complete and submit the Project Need and the subsequent Project Initiation/Scope through the MaPIT project intake tool. The hiring of a consultant or an engineering firm is always an option, but given the fiscal constraints placed on communities, these are funds better spent as SRPEDD and the MassDOT District office are willing and capable to assist communities at no cost.

[The MaPIT Process and the Project Scope](#)

If and when a Project Need has been approved, the applicant will receive an email with access to complete the second part of the process, which is the Project Scope or proposal, (formerly the Project Initiation Form), also completed through the MaPIT project intake tool.

The Project Scope requires much more detailed project information to be documented by the proponent, as it outlines the project's scope and the best course of action to address the issues highlighted in the Project Need. It also requires detailed project costs and responsibilities, the ROW anticipated for both temporary and permanent easements, as well as a more in-depth project description.

The second part of the MaPIT process requires information based on seven categories that will ultimately lead to a project score based on the scope of the proposed project. These categories include system preservation; mobility and connectivity for all users; safety for all users; the economic impacts of the project; social equity; environmental impacts; and policy support.

At the end of the Project Scope, the total cost is calculated in a table. The contingency values in boxes B through F will be auto calculated by MaPIT based on the checkbox that is chosen by the user in the last column. The construction items value will be autofilled from Part 1, question M of the Project Need, although this value can be changed. **Every effort should be made to provide complete and accurate information, particularly with construction cost estimates.**

A proponent should also understand that a project's preliminary cost estimate, that appears on the TIP, consists of more than bid items. Items that must be accounted for include contingencies such as construction engineering, traffic police and utility relocation. Yearly inflation should also be accounted for. Elements beyond the bid items can account for 20-25% or more of the total participating federal cost.

TIP: Attachments such as planning studies, road safety audits, concept plans and other documents that provide project information can be added at the end of the Project Scope part before it is submitted and are encouraged.

STEP-BY-STEP PROJECT SCOPE IN MaPIT

Part 1 - General Information

Scope of Work: Describe the proposed improvements including limits of work, length of the project, major improvements, proposed cross-section, improvements to secondary assets, and related work. The description of improvements to secondary assets should include any proposed improvements to curbing, sidewalks, traffic signals, signs, lighting, landscaping, drainage, walls, etc. The scope of work for a multi- use path should also identify any proposed at-grade crossing treatments.

Regional Benefit: Describe any regional benefits that would be realized should the Project Need be met.

Right-of-Way: Identify how much right-of-way is anticipated to complete the project, including fee takings, permanent and temporary easements.

Part II - Project Costs and Responsibilities

Estimated Costs - Provide available cost estimates or estimated cost ranges in current-year dollars and attach any cost estimate work sheets or summaries. Components and their definitions are as follows:

A - Office Estimate (construction items) - this is the portion of project cost based on definitive items of work. For conceptual project estimates, this value can be determined by making equivalencies to past projects. (character of work & lane miles)

B - Design Contingency - this value accounts for the risk and uncertainty inherent to design development. The amount is calculated as a percentage of the construction items (A), based on guidance from MassDOT.

C - Construction Contingencies - this amount is calculated as a percentage of the construction items (A), and accounts for variation in quantities during construction. The following percentages should be used:

0% : NFA Maintenance Non-Site Specific

10% : All Federal Aided Projects and NFA Site Specific.

D - Traffic Police - this amount is calculated as a percentage of the construction items (A), and accounts for police details during construction. Refer to guidance from MassDOT.

E - Construction Engineering - this amount is calculated as a percentage of the Construction Items & Traffic Police (A + D), and represents the cost of MassDOT construction management for the project. The following values should be used:

15% : Construction Items < \$1m

10% : \$1m <= Construction Items < \$5m

5% : Construction Items => \$5m

F - Utility Relocation - this is the value of utility work necessitated by construction of the project. These costs are provided by utility owners once substantial design has been completed. During conceptual design, values are provided for specific projects, based on guidance from MassDOT.

G - Total Construction Cost – this is the sum of items A through F.

H - Consultant Planning/Design - this is the value of Highway Division Consultant services necessary to deliver the project (if municipal consultant, reflect cost as \$0).

I - MassDOT Project Development Costs - this amount is calculated as a percentage of the total direct project cost (G) and represents the cost of MassDOT project development for the project.

J- Right-of-way - 0% : Only municipal alterations or no alterations.

1% : For alterations to State Highway Layouts, assume 1% of Office Estimate (A) unless otherwise known

- : If significant State Highways Layout alterations are possible, refer to guidance from MassDOT

K- Total Project Costs - This is the sum of items G through J.

Please indicate the *Anticipated Funding Program* (STP, TAP, CMAQ, etc.) and *project responsibilities* (project management, design, permitting, right-of-way) for MassDOT and the community.

Part III - Project Description

A. System Preservation

1. Primary Asset and Condition: Identify the Primary Asset included in the project area (e.g. roadway, bridge, or bike trail), condition of asset (specify if asset is a new facility), and what project improvements are anticipated by project.

2. Proposed Treatment to the Primary Asset: Describe the proposed rehabilitation methods that are being considered for the primary asset (e.g. overlay, reclamation, full depth reconstruction). Keep in mind that the final pavement improvements will be identified through the development of a pavement design submitted as part of the project design process.

3. Describe Improvements to Other Existing Assets: Identify efforts to retain or preserve existing Infrastructure. Other existing assets may include: signal reconstruction, signal upgrades or improvements, large diameter culverts (4'+), box culverts, retaining walls, sidewalks, ramps, guardrail, drainage, signs, and curbing (or bridges, paths, and pavement if not already the primary asset).

4. Potential Impacts to Utilities: Identify any anticipated impacts or complications the proposed improvements will have on utilities. List utilities that will be impacted.

B. Mobility

1. Effect on Motor Vehicle Mobility and Congestion: Describe how the proposed improvements will impact the mobility of motor vehicles. Please note the presence of bottlenecks or congestion, and include any traffic analysis, including LOS (Level of Service) data, if available. Please include existing and proposed LOS, delays, queue lengths, and travel time.

2. Effect on Pedestrian Mobility and Accommodations: Describe how the improvements are addressing pedestrian accommodation, including ADA/AAB requirements, through improving existing facilities, improving safety and traffic calming, or proposing new or expanded pedestrian facilities. HTP requires 2 sidewalks in urban areas. (Examples of improved pedestrian facilities are new or expanded sidewalks, crossings, pedestrian signals, RRFBs, shared-use paths, side-paths, etc.).

3. *Effect on Bicycle Mobility and Accommodations:* Describe how the improvements are addressing bicycle accommodation through new or improved facilities. HTP requires a minimum 5 ft. shoulder for improved bicycle accommodations. (Examples of improved bicycle facilities are new or expanded 5' shoulders, marked or buffered bicycle lanes, shared-use paths, etc.).

4. *Effect on Transit Mobility and Accommodations:* Describe how the improvements are addressing transit mobility through new or improved facilities or accommodations. (Examples include dedicated bus lanes, transit signal prioritization, BRT, or new park & rides, bus stops, shelters, bump outs, etc.)

5. *Connectivity:* Identify whether the proposed improvements will impact connectivity or access along the corridor or to other facilities. Please specify whether the project completes a link between existing bicycle and pedestrian facilities, or if the project creates new connections to businesses, residences, open space, transit stops, etc.

6. *Design Exceptions:* Identify whether any exceptions to MassDOT design criteria are anticipated, such as exemptions for meeting AASHTO 13 design requirements or HTP.

C. *Safety*

1. *Motor Vehicle Safety:* Describe any improvements that are expected to reduce the crash potential or improve the general safety for motor vehicles. Please provide any highway safety analysis that has been completed, including Road Safety Audits.

2. *Safety for Other Users:* Describe any improvements that are expected to improve the safety for other multi-modal users such as pedestrians, bicyclists, persons with disabilities, transit riders, school children, etc. Please provide any highway safety analysis that has been completed, including Road Safety Audits.

3. *Evacuation Routes:* If the project is a known evacuation route identified at the state, local or private level, indicate how the project impacts the route.

D. *Economic Impacts*

1. *Economic Impact on a City, Town, or Village Center:* If the project is located within a city/town/village center, an area 2: 5000 population per square mile, or is a roadway that provides an important connection to a city/town/village center or population center, please identify any economic impacts the project is anticipated to have on the city/town/village or population center.

2. *Priority Development Areas*: Identify any positive impacts to a Priority Development Area(s), as well as any improved access to services, industry clusters, or job creation in the project area (including the number of jobs to be created, if available). Please note any other proposed improvements that reflect the Commonwealth's Smart Growth/Smart Energy programs or Sustainable Development principles.

3. *Local Economic Considerations*: Identify if the project includes any improvements with the specific intent to fill vacant storefronts or office spaces in city/town/village center, or if it incorporates any amenities that improve accessibility, wayfinding, pedestrian accommodations, or beautification of a city/town/village center with the intent of attracting consumers. (Examples of amenities or improvements can be new or ornamental lighting, benches, bike racks, landscaping enhancements, new parking, wayfinding signs, etc.)

E. Environmental & Health Effects

1. *Air Quality and Greenhouse Gases*: Indicate if the project is expected to produce an improvement to Air Quality or a reduction in Greenhouse Gases, confirmation pending completion of the Air Quality Analysis Worksheet. Please note any Traffic Operational Improvements, any increase to motor vehicle capacity, any expanded transit accommodations or park-and-rides that decrease motor vehicle miles travelled, and any new bicycle and pedestrian infrastructure proposed.

2. *Stormwater Improvements/Impaired Waterbodies*: Indicate the potential impact to any impaired waterbodies or TMDL watersheds near the project, and list any proposed BMP's that will be included to improve stormwater treatment. State how the proposed BMP's will meet or work towards MassDEP stormwater standards or TMDL requirements. Also include whether the project is proposing to decrease or increase the amount of impervious cover.

3. *Wetland(s) and Resource Areas*: If there are any wetlands, watersheds, or resource areas adjacent to the project, discuss how the project impacts the identified locations. Include an estimate of the quantity of temporary and permanent impacts to any wetlands, and a summary of how impacts will be mitigated.

4. *Wildlife Habitat(s)*: Identify any priority habitats within a 1/2 mile of the project limits, and discuss how the project may impact any locations identified. Include a discussion of temporary and permanent impacts, and any improvements that are being proposed. If project includes work on bridges or culverts, discuss if new structures will meet the Massachusetts River and Stream Crossing standards. (Examples of priority development areas include: Core Habitat and Critical Natural Landscape, Coldwater fisheries, diadromous fish runs, Vernal Pools, and NHESP Priority and Estimated Rare species habitat.)

5. *Resiliency*: Indicate if the project is located within a 100-year floodplain or any area identified as vulnerable through a municipal, state, or federal vulnerability assessment. Identify

any improvements to the system's resiliency to flood events and other climate change stressors through resiliency best management practices (BMPs) such as increasing the hydraulic opening of a bridge or culvert(s), armoring of hydraulic and/or hydrologic features, replacement of a standalone headwall, scour protection at a structure, or erosion prevention along a bank or shoreline.

6. Historic/Cultural/Archaeological Resource(s): If there is any Open Space, National Register listed or eligible properties, or 4(f) or Article 97 protected land in the area, discuss any positive or negative impacts to these resources, including improved or hindered access. Please reference the MACRIS database to determine if any National-Register Listed or Eligible properties are located within the project limits.

7. Hazardous Materials: If there are any hazardous materials or sites adjacent to the project, discuss how the project will handle any hazardous materials.

F. Social Equity

1. Environmental Justice: If the project is located in, or within a ¼ mile of, an Environmental Justice area, please identify any elements of the project designed to decrease environmental impacts or improve the safety, sustainability, or mobility of the EJ community. Identify any improvements that involve community planning and equitable sharing of benefits/burden or are particularly targeted within an Environmental Justice area.

2. Title VI: If the project is located in, or within a ¼ mile of, a Title VI area, please identify any elements of the project designed to have a positive impact on the community through public outreach. Identify any improvements that involve community planning and equitable sharing of benefits/burden or are particularly targeted within a Title VI community.

3. Regional Equity: Please note the last project the proponent initiated seeking Federal Transportation Funds, along with the year initiated (other than this project). If any projects have been constructed using Federal Transportation Funds in the last 5 years, please identify along with the year completed. If this project is located in a rural area, discuss the importance of this project to the community or region.

G. Policy Support

1. Risk Assessment and Appropriateness: Discuss any other alternatives considered, and how the chosen concept is the most appropriate solution to the projects needs and potential risks in comparison to other alternatives, if any. Identify whether the project involves any innovative or non-traditional design or construction techniques intended to improve safety, reduce costs, improve customer service, reduce environmental or climate impacts, expedite project completion, or enhance the statewide or national transportation system.

2. *Statewide Policies and Plans*: If the project concept or location is mentioned or supported by any other MassDOT policy or plan not noted elsewhere, please describe. If the project is supported by any other state entities, please describe level of support. Examples of other state entities may be DCR, MBTA, RTA, etc. Statewide Plans may include, but are not limited to, the following: Bicycle, Freight, Pedestrian, Port, Rail or ITS.

3. *Regional Policy*: Describe how the project meets regional policies or performance measures supported by a regional entity such as a Regional Planning Agency. Reference any regional studies or plans that include the project location. Identify efforts to coordinate with relevant government agencies, including RTA(s), DCR, regulatory agencies, or neighboring municipalities.

4. *Local Policy*: Describe how the project meets local policies. Reference any local studies or plans that reference the project or location. (Examples of local policies or plans may include the Master Plan, community compacts, livability plans, health assessments, local ordinances, bylaws, a designated Green Community, a Complete Streets Policy, etc.)

5. *Planning and Public Outreach and Support*: Describe any Public Outreach that has occurred. Include any public informational meetings, local mailings, workshops, planning documents, etc., where the proposed improvements were specifically presented to abutters, businesses and/or the general public. Please note any local support or opposition to the project, including any local advocacy groups.

The next step for a community seeking to have their project constructed with federal or state or funds is to have the project approved by the Project Review Committee (PRC). The PRC, comprised of staff from MassDOT and chaired by the chief engineer, meets three times per year to review and assess the merits of each submitted project. (More detail on the PRC can be found in Appendix D.)

Following the PRC review, one of the following determinations will be made:

- 1) APPROVE- the project will move ahead in the process into design and programming review by the MPO;
- 2) TABLE - no action is taken on the project and it is kept on the agenda for the next meeting;
- 3) DENY- the project is removed from consideration for design and programming.

Following approval by the PRC, there are a number of events set in motion. MassDOT sends out a PRC approval letter to a municipality notifying them of the PRC approved project. This letter defines the responsibilities of the municipality now that the project has been approved and includes appropriate attachments. All information provided through the MaPIT forms and geoprocessing are automatically added into MassDOT's project planning database (Pinfo) and

given an official project number. The staff of the SMMPO is notified of the project's status, and it is placed in the future element of the TIP for programming consideration. MassDOT will notify, via email, the proponent, as well as forward a copy of a municipal agreement. This agreement must be signed prior to construction and states that MassDOT agrees to fund up to 110% of the bid value of a project. If overall project costs exceed 110%, the municipality must either reduce the scope of the project or cover the additional cost. (A sample of the municipal agreement can be found in Appendix E.)

At this point in the process, the proponent/community should hold a public meeting to present any alternatives for the project and to actively seek input from all interested parties. This will help in garnering community support and in addressing any concerns presented.

Once programmed into a year of the TIP, the staff of the SMMPO (SRPEDD) considers the project, and assigns it a Transportation Evaluation Criteria (TEC) score. The TEC score assists in determining the project's placement in the TIP, as do other factors, including the funding that is available for any given year, and other projects competing for that funding.

The planning and design of a project also needs to be at a specific stage in the process to be placed in the TIP. A project can be placed in the TIP when the design is within 4 years of being completed or shovel ready. As a general rule a project should be at the 75% design stage entering the first or current TIP year and at least at 25% design stage in the second year. Other projects needing further development may be placed in the future element of the TIP. Generally, projects that are still early in the development stage and need additional definition, are placed in the future element before advancing to the programmed years.

Please keep in mind that a positive recommendation from the PRC indicates only that a project is eligible for a specific funding category, but it does not guarantee that the project has dedicated funding. Advocacy for a project during the annual update and development of the TIP, which is customarily prior to the beginning of the federal fiscal year (FFY) which begins on October 1 and runs through September 30, is strongly recommended, as is regular attendance at JTPG meetings to continue to advocate for the project and to maintain an overview of the progress of a project. A proponent's continued advocacy of a project, as well as the oversight of its progress through the design stage, is paramount to its completion.

Once again, the staff of the SMMPO (SRPEDD) and the staff of the MassDOT District 5 Office should be consulted for any assistance needed. Please note that a project proponent may hire a consultant or engineering firm at any time to gather the necessary data and to complete and submit the MaPIT process.

Environmental, Design and Right of Way Project

The MaPIT process will complete many tasks for a proponent. This includes highlighting any missing information, providing links to assist in locating any necessary information needed, and alerting you to any necessary permitting that is required for the project. With that in mind, the following section should be used only as a reference, to guide a proponent through the design stages to see a project to completion.

There are several design stages during the development of a project beginning with the preliminary design stage at 25%. The 75% design stage, 100% design stage and PS&E (plans, specifications and estimates) stage make up the final design stages prior to advertising a project for construction.

A Design Public Hearing is held for all projects subsequent to the review and acceptance of the 25% Design Plans by MassDOT. Continued public outreach by the community is essential during this time to maintain support and to seek meaningful input on design elements.

These are the final tasks to be completed for the 25% Design Plans. Some of these technical requirements are set and managed by MassDOT but are ultimately, the responsibility of the proponent/community, and there are many varied issues to consider and tasks to complete. Please keep in mind that at this point, the process of planning a project is not a step-by step progression, but has become a fluid one and some or all of these tasks will be occurring concurrently. It may be complicated to keep track of these tasks, as some of the tasks mentioned here may have already been completed. Project delays can be minimized by early and on-going coordination with federal, state, and local agencies with jurisdiction by law or special expertise.

Municipalities are generally responsible for the cost to design municipal projects constructed through the TIP. This consists of engineering design, environmental permitting and right-of-way plan preparation and acquisition. All projects advertised through the TIP are overseen by MassDOT engineers during construction and municipalities are not responsible for construction oversight, but should allow for consultant fees during construction. It may be necessary during this time for consultants to attend meetings, fine tune issues such as traffic signal timings, and to address design related questions, etc.

There are environmental, design and right-of-way concerns to be addressed, including documentation, permitting and acquisitions. Environmental clearances and permits should be secured as early on in the design process as is practicable. There is a list of varied activities and

tasks that are necessary to develop the 25 Percent Design Plans. There may be land takings to identify and right-of-way acquisitions to be made, if necessary. The securing of right-of-way acquisitions may be the responsibility of the municipality and may require City Council or Town Meeting approval. Please keep in mind the time frame of the approval process or the scheduling of any required voting necessary, such as a Town meeting, for right-of-way acquisitions. Any delay in acquisitions may result in the delay of a project. A project may be delayed by the failure to follow through on any of these ongoing tasks, especially design, right-of-way and environmental tasks and permitting and it is imperative to maintain an overview of the process.

It cannot be emphasized enough that municipalities should actively seek the assistance and expertise of the staff of SRPEDD and the MassDOT District 5 office, especially during the beginning stages of developing a project and getting it through to the 25% design phase.

As a reference only, here are some of the issues that may need to be addressed:

Environmental Documentation and Permitting-

Addressing the anticipated environmental consequences of the project is essential. Essential information needs to be identified to include into the 25% design. Early identification of issues and early coordination with appropriate groups is crucial. Designer will be responsible to determine which groups (local environmental or historical, state environmental, others) are appropriate to consult and what is required (request for review, standardized letter, proposed scope of work and/or locus plan or other consultation.)

MEPA and NEPA Determination-

The proponent (or designer) will be responsible for determining the MEPA and NEPA project category. All environmental review and permit submissions and coordination with the agencies will be made through the MassDOT Environmental Section. If the project involves federal funds, a determination should be made regarding compliance with the National Environmental Policy Act.

Determine Other Applicable Federal, State and Local Environmental Laws and Requirements –

The proponent or designer will be responsible for identifying and complying with all other applicable federal, state and local environmental laws and requirements. The MassDOT Environmental Section, or its website, should be consulted for any questions regarding these efforts.

Identification of Applicable Permits-

Environmental clearances and permits should be secured as early on in the design process as is practicable. The identification of applicable permits is completed prior to the 25% Design Submission.

It is important to reiterate that at this point in the process, the many aspects of planning of a project are happening simultaneously and some or all of these tasks will be occurring concurrently. It may be complicated to keep track of these varied tasks, as some of the tasks mentioned here may have already been completed and some may not have been addressed as of yet.

The following activities are necessary to develop the preliminary (25%) design:

- Order Necessary Survey Data – detailed aerial or ground survey data that is adequate to design the project.
- Prepare Base Plans – these include field notes, establishing coordinates, determining the scale used in plotting, etc.
- Compile Necessary Traffic Data – both existing and projected data is necessary for all modes of travel using the facility.
- Develop Basic Roadway Horizontal and Vertical Geometry – all geometric data (stations, bearings, distances, horizontal and vertical curve) must be calculated at this stage.
- Develop Typical Cross Sections – show design elements that will predominate throughout the project.
- Bridge Design Coordination (If Applicable) – develop alignments to integrate roadway and structural elements of the project.
- Landscape Design Coordination – integration of design in the roadside, structures, urban design, etc.
- Develop Draft Traffic Signal Plan (If Required) – follow guidelines in the most current Manual on Uniform Traffic Control Devices (MUTCD).
- Develop Bridge Type Studies and Sketch Plans for Bridges, Culverts and Walls (If Required) – based on guidelines in the MassHighway Bridge Manual.

- Develop Preliminary Pavement Design – including determination of rigid or bituminous pavement and a design section.
- Develop Preliminary ROW Plans - estimates should be complete, including parcel numbers, dimensions of all proposed acquisitions and areas of anticipated takings and easements.
- **Develop Preliminary Cost Estimate** – it is important that this estimate be as complete and as accurate as possible. This cost should itemize the participating costs (those covered by the funding source) and nonparticipating costs (those covered by the proponent).
- Controlling Criteria and Design Justification - these controlling Criteria include: Pedestrian and Bicycle Facilities; Transit Provisions; Ramp Length (for Roadways); Design Speed; Design Loading Structural Capacity; Lane Width; Shoulder Width; Horizontal Curve Radius; Superelevation Rate; Stopping Sight Distance; Maximum Grade; Cross Slope; and Vertical Clearance.
<https://www.mass.gov/doc/controlling-criteria-and-design-justification-process-for-massdot-highway-division-projects-e/download>
- The Design Justification Workbook provides project designers with a standardized method of identifying and documenting the desirable, minimum and proposed design criteria for each controlling design element, and streamlines MassDOT's design review process. Proposed design criteria that do not meet minimum criteria require documentation and justification in the workbook. MassDOT Design Justification Reports & Workbook can be found here:
<https://www.mass.gov/info-details/massdot-design-justification-reports>
- Functional Design Report – necessary for all projects under 25% review, except for resurfacing and maintenance projects. This is a report documenting the justification for the proposed design, particularly if standards other than what is documented in AASHTO (Green Book) are used or if the project is not “typical.” A functional design report (FDR), preliminary design plans, and the completed 25% Traffic and Safety Engineering Review Checklist are necessary components for all Transportation and Safety Improvement Projects submitted to MassDOT. <https://www.mass.gov/doc/25-design-traffic-submission-guidelines/download>
- 25 Percent Traffic & Safety Engineering Review – comments resulting from this review must be addressed prior to proceeding with the Design Public Hearing. These guidelines contain detailed descriptions and requirements of the reports and plans to be included with the 25% Design Submission. The 25% Traffic Engineering Review is intended to provide MassDOT the

opportunity to evaluate the proposed design and Functional Design Report relative to current design standards, operation impacts, safety impacts and other potential community concerns associated with the proposed design.

<https://www.mass.gov/doc/traffic-and-safety-engineering-25-design-submission-guidelines/download>

- Design Exceptions Report– when design exceptions involving speed, widths, alignments, etc. are necessary for roadways and bike and pedestrian accommodations.
- Submit Plans to Utilities Engineer-Concurrent with the 25 percent submission, the construction plans should be submitted to the MassDOT Utilities Engineer.

For additional highway project development tools including guidelines, templates and estimators, please use the link below.

<https://www.mass.gov/lists/massdot-highway-project-development-tools>

- Conduct 25 Percent Design Hearing – following the review and acceptance of the 25% design plans by MassDOT. A Design Public Hearing is held for all projects subsequent to the review and acceptance of the 25% Design Plans by MassDOT.
- Obtain 25 Percent Project Approval – a written approval granting the proceeding of the project into Final Design.

Once again, continued public outreach is essential during this time to maintain support and to seek meaningful input on design elements. Once again, the staff of SRPEDD or the staff at the MassDOT district office is available to assist in this process.

The Next Step

This document guides the reader through the funding process as an overview and with specifics during the first or preliminary design stage, the 25% design stage. The process does not stop there, but it is well on its way. There are three additional design phases of a project. They are 75% design stage, 100% design stage and PS & E (plans, specifications and estimates.)

Once the preliminary design has been reviewed and approved by MassDOT, and a public hearing has been held, a project can proceed into the final design process, the 75% design. There is a checklist of 75% design submission requirements in the appendix to Chapter 2 – Project Development in the Massachusetts Highway Department Project Development and

Design Guide, <https://www.mass.gov/doc/2006-project-development-and-design-guide/download> which is a necessary reference source for this process.

The 75% design approval is granted when plans are approximately 90% complete and all the steps between the 25% and 75% stages in the Submission Guidelines have been properly addressed. Following 75% approval, the preparation of the 100% / PS&E can proceed.

The community or proponent must understand that all the design for a project must be complete, all environmental permits and rights of way must be secured in order to advertise a project.

It cannot be emphasized enough that municipalities should actively seek the assistance and expertise of the staff of SRPEDD and the MassDOT District 5 office, especially during the beginning stages of developing a project and getting it through to the 25% design phase.

Reference Links

To request a GeoDOT account:

<https://www.mass.gov/forms/request-a-geodot-account>

Road Inventory Interactive Maps

<https://gis.massdot.state.ma.us/roadinventory/>

Map of Functional Classifications:

<http://www.arcgis.com/home/webmap/viewer.html?url=https%3A%2F%2Fgis.massdot.state.ma.us%2Farcgis%2Frest%2Fservices%2FRoads%2FFedFuncClassRoads%2FMapServer&source=sd>

The MassDOT Project Development and Design Guide is your best resource for specifics.

<https://www.mass.gov/doc/2006-project-development-and-design-guide/download>

MassDOT Design Justification Reports & Workbook

<https://www.mass.gov/info-details/massdot-design-justification-reports>

MassDOT highway project development tools including guidelines, templates and estimators

<https://www.mass.gov/lists/massdot-highway-project-development-tools>

Appendices

Appendix A – Functional Road Classifications

Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of traffic service that they are intended to provide. There are three highway functional classifications: arterial, collector, and local roads. All streets and highways are grouped into one of these classes, depending on the character of the traffic (i.e., local or long distance) and the degree of land access that they allow.

Arterial- these roads include the Interstate Highway System, freeways, and multilane highways. Arterials provide the highest level of service at the greatest speed for the longest uninterrupted distance, with some degree of access control. Interstates nationwide usually have posted speeds between 50 mph and 75 mph.

Collector – these roads provide a less highly developed level of service at a lower speed for shorter distances by collecting traffic from local roads and connecting them with arterials. The posted speed limit on collectors is usually between 35 and 55 mph.

Local – these are all roads and streets not defined as arterials or collectors and are the majority of roads in the U.S. They primarily provide access to residential areas, businesses, farms, and other local areas. Posted speed limits are usually between 20 and 45 mph.



Arterials provide a high level of mobility and a greater degree of access control, while local facilities provide a high level of access to adjacent properties but a low level of mobility. Collector roadways provide a balance between mobility and land access.

Appendix B - FUNDING SOURCES

Bridge (BR)

Federal-aid bridge funding (80% federal / 20% non-federal) is used to rehabilitate or replace bridges based upon the structure's adequacy, safety, serviceability, age and public usage.

Bridge funding is sub-allocated for projects that are on the federal-aid system (a road classified as a collector or higher) (BR-On) and those that are not (BR-Off).

Congestion Mitigation/Air Quality (CMAQ)

CMAQ funds (80% federal / 20% non-federal) provide a flexible funding source for transportation investments and programs to help meet the requirements of the federal Clean Air Act. Funding is available to help reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (nonattainment areas) and for former nonattainment areas that are now in compliance (maintenance areas). Prior to programming, proposed CMAQ investments are reviewed by the CMAQ Consultation Committee, which is responsible for determining whether a project shows an air quality benefit and is eligible for CMAQ funding. The members of the Committee include representatives from MassDOT, Massachusetts Department of Environmental Protection (DEP), United States Department of Transportation (USDOT), U.S. Environmental Protection Agency (EPA), and the MPOs.

Earmarks

Certain funding categories are project-specific, i.e. funds are 'earmarked' only for use in the development of that project. Previously, earmarks were included in federal Transportation bills by a state's congressional delegation. This practice has since ended in Congress, though some earmarks are still available for certain designated investments. These include, among others, Sections 115, 117, 129 and 125 categories. Funding: Federal - 100%

Emergency Relief (ER)

A special program from the Highway Trust Fund for the repair or reconstruction of Federal-aid highways and roads on Federal lands which have suffered serious damage as a result of (1) natural disasters or (2) catastrophic failures from an external cause. This program supplements the commitment of 48 resources by States, their political subdivisions, or other Federal agencies to help pay for unusually heavy expenses resulting from extraordinary conditions. Funding: For Interstate highways, the Federal share is 90 percent. For all other highways, the Federal share is 80 percent. The Federal share for permanent ER repairs may amount to 90 percent if the combined eligible ER expenses incurred by the State in a Federal fiscal year exceeds the annual apportionment of the State under 23 U.S.C. section 104 for the fiscal year in which the disasters or failures occurred.

Federal Lands Access Program (FLAP)

The Federal Lands Access Program was established under MAP-21 §11119; 23 USC 201, 204 to improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands. The Access Program supplements State and local resources for public roads, transit systems, and other transportation facilities, with an emphasis on high-use recreation sites and economic generators. The Federal share is 100%.

Ferry Boat Formula Program (FBP)

The FBP program provides formula-based funding for ferry facilities (either vehicular or passenger) that are on a non-Interstate public road and are publicly owned, publicly operated, or majority publicly owned providing substantial public benefits. The FBP was created under MAP-21 and continued under the FAST Act, replacing the previous Ferry Boat Discretionary Program (FBD).

Highway Safety Improvement Program (HSIP)

The HSIP funds (90% federal / 10% non-federal) safety improvement investments to reduce the number and severity of crashes at dangerous locations. A highway safety improvement investment is any strategy, activity, or project on a public road that is consistent with each state's data-driven State Strategic Highway Safety Plan (SHSP) and corrects or improves a hazardous road location or addresses a highway safety problem.

National Highway Freight Program (NHFP)

NHFP was established in December 2015 through the FAST Act to improve the efficient movement of freight on the National Highway Freight Network (NHFN). The Commonwealth's Freight Plan was approved by FHWA on July 13, 2018. As the Freight Plan continues to develop, program sizes will be proposed in future STIPs according to need and appropriations. Funding: The Federal share is generally 80%, subject to the upward sliding scale adjustment for States containing public lands. Funding: The Federal share for projects on the Interstate system (except projects that add lanes that are not high-occupancy vehicle or auxiliary lanes) is 90%, subject to the upward sliding scale adjustment. For projects that add single occupancy vehicle capacity, that portion of the project that increases single occupancy vehicle capacity will revert to the 80% Federal share participation level.

National Highway Performance Program (NHPP)

NHPP provides support for the condition and performance of the National Highway System (NHS), including Interstate and non-Interstate routes and 26 bridges. These investments ensure that federal-aid funds in highway construction are on an eligible facility and support progress

toward achievement of national performance goals for improving infrastructure condition, safety, mobility, or freight movement on the NHS, and that they are consistent with Metropolitan and Statewide planning requirements. The federal share for projects on the Interstate System is 90%, with a 10% match coming from the state. Any Interstate System project that increases single occupancy vehicle capacity will revert to the 80 percent Federal share participation level.

Non-Federal Aid (NFA)

This funding category contains all those projects not receiving federal funds. Various categories of state funding are included in this group including bikeways, and highway construction and maintenance (Chapter 497). The state share of these funds is 100% and these projects are not typically included in the TIP. This category is included in this document for informational purposes only.

Railroad Highway Crossing Program (Section 130)

The Railway-Highway Crossings (Section 130) Program (formerly RRHE and RRPD) provides funds (federal - 90%, state – 10%) for the elimination of hazards at railway-highway crossings. The 2015 Fixing America's Surface Transportation Act (FAST Act) continues the annual set-aside for railway highway crossing improvements under 23 USC 130(e). The funds are set-aside from the Highway Safety Improvement Program (HSIP) apportionment.

Surface Transportation Block Grant Program (STBG)

Funding under this category (federal - 80%, state - 20%) may be expended for construction, reconstruction, rehabilitation, resurfacing, restoration, operational and safety improvements on roads classified higher than urban local or rural minor collectors in the urbanized areas of the region. In addition to federal-aid roads, capital costs for transit projects are also eligible. Additional eligible activities are defined under 23 U.S.C. 133(b).

Surface Transportation Block Grant Program – Transportation Alternatives (STBG-TA)

The FAST Act eliminates the MAP-21 Transportation Alternatives Program (TAP) and replaces it with a set-aside of Surface Transportation Block Grant (STBG) program funding for transportation alternatives (TA). These set-aside funds (federal - 80%, state - 20%) include all projects and activities that were previously eligible under TAP, encompassing a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvements such as 50 historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity.

Appendix C - The Chapter 90 Program

The Chapter 90 Program was enacted in 1973 to entitle municipalities to reimbursement of documented expenditures under the provisions of MGL Chapter 90, Section 34, Clause 2 (a) on approved projects. Chapter 90 funds are non federal aid funds. Communities within the region are given an apportionment which can be spent immediately or saved up over time. Chapter 90 funds can also be used to build bikeways, purchase equipment, sheds, pay for design needs, etc. Roadway projects or expenditures are approved in advance and municipalities are then reimbursed up to the limit of their apportionment.

The formula used to determine the amount of Chapter 90 funding a municipality receives is based on the number of miles of accepted streets in the town, the number and percentage of residents who are employed, and its population. Under the formula, communities with a more road miles receive proportionately more aid than those with fewer road miles.

PROGRAM GUIDELINES

Chapter 90 entitles cities and towns to receive reimbursements on approved projects. It is a 100% reimbursable program. Chapter 90 funds are for capital improvement such as highway construction, preservation and improvement projects.

Roadway projects include resurfacing and related work (the minimum for resurfacing shall be 3/4" course with a continuous length of 500') and other work incidental to the above such as:

- Preliminary engineering including state aid/consultant design agreements
- Right-of-way acquisition
- Shoulders
- Side road approaches
- Landscaping and tree planting
- Roadside drainage
- Structures (including bridges), sidewalks, traffic control and service facilities
- Street lighting (excluding operating costs)
- Other purposes authorized by the department

The municipality must provide documentation of compliance with Chapter 149, Sections 44J and 26-27F; as applicable.

These are additional project guidelines for Chapter 90 work, voted and approved by the Board of Commissioners on September 28, 1994:

Highway Construction, Preservation and Improvement Projects that Create or Extend the Life of Capital Facilities

Resurfacing, Graveling, Microsurfacing, Pug Mill Mix (cold mix), Chip Stone Seal, Oil and Stone, Infrared Repairs (in connection with surface treatments), Recycled Aggregate Pavement, Rip Rap, Fabric, Crack Sealing, Drainage, Intersections, Shoulders, Guardrails, Sidewalks, Footbridges, Berms and Curbs, Traffic Controls and Related Facilities, Right of Way Acquisition, Street Lighting (excluding operating costs and decorative enhancements), Construction, Direction and Warning Signs (must comply with MUTCD), Bridges, and Tree Planting/Landscaping in association with a project.

Projects and Uses

Bikeways, Salt Sheds, Garages (construction and additions) for storage of road building equipment. Bikeways and Public use of off-street parking facilities related to mass transportation, a facility with bus or rail services. Engineering services and expenses related to highway and mass transportation purposes. Pavement management systems, development and maintenance.

Road Building Machinery, Equipment and Tools

Care, repair and storage must be project related and submitted on the same project request form. Purchase, replacement and long-term lease of road building machinery, equipment and tools that must remain the property of the municipality. Long-term lease will be reimbursed once annually for the construction season.

Road Building Equipment

Air Compressor, Asphalt Hot Box, Back Hoe, Berm Machine, Catch Basin Cleaner, Chipper, Wood & Brush, Chain Saw, Clam or Dragline, Compactor, Concrete, Floor Trowel, Concrete Mixer, Crack Sealer, Crane, Excavator, Generator, Grader, Gradall, Infrared Machine, Jackhammer, Lab Testing Equipment, Loader, Pavement Breaker, Paver, Pump, Roller, Spreader for Chip Seal Project, Striper, Survey Equipment, Sweeper, Tools, Tractor, Trailer, Trencher, Truck, Minimum 27,000 Pounds, Welder.

CHAPTER 90 PRICE ADJUSTMENT REQUIREMENTS

All municipalities are required to include price adjustment clauses for diesel fuel, gasoline, liquid asphalt, Portland cement concrete, and steel in the bid documents of all construction contracts to be funded under the program described in Chapter 6C, Section 4 of the Massachusetts General Laws (commonly referred to as "the Chapter 90 Program").

MassDOT has developed specific contract language for use in MassDOT construction contracts. These price adjustment clauses have been posted on the MassDOT Highway Division website for your information and use. In addition, period prices for Portland cement, diesel fuel, gasoline, and liquid asphalt can be found on the **Price Adjustments website** at <https://www.mass.gov/massdot-contract-price-adjustments>

ALL FORMS NEEDED FOR CHAPTER 90 PROJECTS

All of the forms listed below needed for Chapter 90 projects can be found here:

<https://www.mass.gov/lists/chapter-90-forms>

Project Request Form

Cities/towns use this form to confirm a project's eligibility under Chap. 90. The information on the form should include all details of work to be done and list all Memorandum of Agreement numbers. The District Highway Director, assisted by the District State Aid Engineer, certifies the project's eligibility.

Preliminary Estimate Form

This form is submitted by the city/town to the District Office in order to calculate an initial estimate for the work to be completed under the CH 90 Project being requested. This form should accompany the Chapter 90 Project Request Form.

Summary of Bids Form

This form lets MassDOT know that the municipality has procured the goods/services properly by submitting the list of bidders with a notation of the winning bidder.

Environmental Punch List

The City/Town submits this form to the District Office to certify environmental approvals and compliance. This form should accompany the Chapter 90 Project Request Form.

Reimbursement Request

The City/Town submits this form to document expenditures in order to request reimbursement for previously approved Chapter 90 Projects. This form is submitted with the Chapter 90 List of Materials HED-454 Form and/or the Chapter 90 Payroll HED-600 Form, as well as, copies of invoices.

Payroll (600) Form

Cities/towns use this form to record personnel time on Chap. 90 program funded projects. It is forwarded to and used by the District State Aid Engineer to verify that all personnel and their time qualify under the specific Memorandum of Agreement being used to fund the project. Submit with the Chap. 90 Final Report.

List of Materials

Cities/towns use this form to record materials used on a specific Chap. 90 project. It is forwarded to and used by the District State Aid Engineer to verify that all materials and their quantities qualify under the specific Memorandum of Agreement used to fund the project. Submit with the Chap. 90 Final Report.

Final Report

This form is to be completed by the municipalities when Chapter 90 approved projects are finalized.

Appendix D - The Project Review Committee

The Project Review Committee (PRC) is comprised of staff from MassDOT and chaired by the chief engineer and meets 3 times per year to review, evaluate and assess the merits of each project and determines if it warrants approval based on funding eligibility and project feasibility. Following this review, the project proponent is then notified of the PRC's decision by the District 5 office and the project is entered into MassDOT's internal project information system (ProjectInfo) and assigned to a project manager.

MassDOT's Project Review Committee includes:

- The Chief Engineer;
- Each District Highway Director (5);

and representatives from

- Project management;
- Environmental;
- Planning;
- Right-of-Way;
- Traffic;
- Bridge; and
- Capital Expenditure Program Office (CEPO).

**MUNICIPAL PROJECT AGREEMENT
MUNICIPALLY-FUNDED DESIGN**

Agreement By and Between
The Massachusetts Department of Transportation
And The
City/Town of _____

Agreement Number _____

Agreement made this ___ day of _____, 2018 by and between the Massachusetts Department of Transportation, established pursuant to Chapter 6C of the General Laws, having its principal place of business in the State Transportation Building at 10 Park Plaza, Boston Massachusetts 02116 (hereinafter referred to as the “MassDOT”) and the City/Town of _____, (hereinafter referred to as the “City/Town”).

WHEREAS, the City/Town desires MassDOT to perform roadway reconstruction on _____, (hereinafter referred to as the “Project”), and where the said roadway is under the jurisdiction of the City/Town of _____, in the County of _____, in said Commonwealth, and

WHEREAS, in accordance with Chapter 81 of the General Laws, MassDOT may at its discretion and subject to appropriation by the Legislature expend monies to improve and upgrade local roads under local jurisdiction, and

WHEREAS, the City/Town has procured the services of the consulting firm of _____, for the Project, in accordance with the terms and provisions of the MassDOT Highway Division Project Eligibility Notification dated ____ (“Project Eligibility Notification”), and the consulting firm has prepared a complete set of plans, specifications, and estimates for the Project in accordance with the terms and provisions of the Project Eligibility Notification, and

WHEREAS, MassDOT advertised and awarded the Project, and

WHEREAS, the parties hereto have reached an agreement as to the apportionment of the work necessary for the construction of the Project, including the expenses thereof,

NOW, THEREFORE, in consideration thereof, MassDOT and the City/Town hereby agree each with the other, as follows:

DIVISION OF WORK

MassDOT shall execute the construction contract and issue the Notice to Proceed upon the execution of this Municipal Project Agreement.

MassDOT shall provide construction oversight of the Project.

The City/Town is responsible for any and all design required for the Project, including construction phase services, in accordance with terms and provisions of the Project Eligibility Notification.

The City/Town is responsible for any and all maintenance of the facilities included in the Project, after completion of the Project.

DIVISION OF EXPENSE

MASSDOT FUNDED (“PARTICIPATING”) WORK

MassDOT shall be responsible for the total participating contract bid price plus Project costs up to and including ten percent (10%) for additional work necessary to complete the original scope of the participating work (as shown on “Exhibit A, Contract Estimate” attached hereto).

MassDOT shall also be responsible for all construction costs that exceed the total participating contract bid price plus ten percent (10%) if the City/Town submits sufficient documentation to MassDOT showing that the work was necessary solely due to MassDOT’s construction oversight, as determined solely by MassDOT.

CITY/TOWN FUNDED (“NON-PARTICIPATING”) WORK

The City/Town shall be responsible for all construction costs under two conditions:

1. When the construction costs for the contract scope exceed the total participating contract bid price by more than ten percent (10%), the City/Town shall be responsible for the amount over 110% of the total participating contract bid price unless the City/Town submits sufficient documentation to MassDOT showing that the work was necessary solely due to MassDOT’s construction oversight, as determined solely by MassDOT.
2. When the City/Town requests work that FHWA and/or MassDOT determine is unnecessary to complete the Project, the work shall be deemed “non-participating” and the City/Town shall pay the full cost of that work.

If the determination of “non-participating” was made before the construction Project was bid, the work is identified as “Non-Participating” in the bid documents and a separate “Non-Participating Agreement” executed by the City/Town and MassDOT.

Types of non-participating construction costs that may arise after the construction contract is executed includes, but is not limited, to the following:

1. Bid item overruns and additional work over 110% of the total participating contract bid price necessitated by design errors and omissions. (See “Project Scope – Extra Work/Reduction in Scope” below.)
2. Bid item overruns and additional work requested by the City/Town. (See “Project Scope – Extra Work/Reduction in Scope” below.)
3. Costs due to the design being out of compliance with MassDOT regulations and policies.
4. Additional traffic control assigned by MassDOT at the request of the City/Town.
5. Interest charges on late contractor payments, levied pursuant to M.G.L. c. 30, § 39G, when the payments are the responsibility of the City/Town.
6. Work necessitated by changed conditions, pursuant to M.G.L. c. 30, § 39N. (See “Project Scope – Additional Costs/Reduction in Scope” below.)

The City/Town shall be responsible for all maintenance costs upon completion of the Project.

MASSDOT NOTIFICATION TO CITY/TOWN

The MassDOT District office shall promptly provide written notification to the City/Town of the following:

1. Alleged design errors and omissions.
2. Contractor claims for “changed conditions” pursuant to M.G.L. c. 30, § 39N.

PROJECT SCOPE – ADDITIONAL COSTS/REDUCTION IN SCOPE

If a bid item overrun or underrun occurs or if extra work is proposed during construction then the MassDOT Resident Engineer shall provide the City/Town representative with the proposed Resident Engineer’s Report of Change (Form CSD 683), and advise the representative of the impacts to the overall construction costs. MassDOT will not authorize any Extra Work until the City/Town representative signs Form CSD 683.

In the event that the City/Town is responsible for additional costs and additional funds are not obtainable by the City/Town, then the MassDOT Resident Engineer and the City/Town shall identify items of work that can be eliminated from the Project to bring the contract within available funding. Once the items to be eliminated have been identified by the MassDOT Resident Engineer and the City/Town, these shall be forwarded to the MassDOT Construction Engineer for concurrence by the Highway Division Administrator, or other MassDOT staff as necessary. No items shall be eliminated until such concurrence is obtained. For FHWA oversight projects, additional concurrence shall be obtained from the FHWA Area Engineer. If items of work cannot be eliminated from the Project, the parties shall consider whether “Chapter 90” funds may be utilized for the Project.

PAYMENTS TO THE CONTRACTOR FOR CONSTRUCTION OVERRUNS

The payment process for work that is identified as “Non-Participating work” in the construction bid documents is set forth in the “Non-Participating Agreement” executed by and between the City/Town and MassDOT. If a Non-Participating Agreement exists and additional non-participating work is identified during construction, the payment for that work shall be added to the Non-Participating Agreement.

If the contract does not include a Non-Participating Agreement, and non-participating work is identified during construction, then the MassDOT Resident Engineer shall prepare and send to the City/Town a “zero estimate” and a “Town estimate,” authorized by MassDOT for payment, and attach copies of all signed Resident Engineer’s Reports of Change (Form CSD 683) to document the source of the costs. The Resident Engineer will also forward a printout of the Contract Quantity Estimate (CQE) for non-participating work to the City/Town, and the City/Town shall pay the Contractor directly. The Contractor shall not invoice the City/Town directly.

REVIEW OF PROJECT DOCUMENTS

The Governor or his designee, the Secretary of Administration and Finance, and the State Auditor or his designee shall have the right at reasonable times and upon reasonable notice to examine the books, records and other compilations of data of the City/Town which pertain to the performance of the provisions and requirements of this Agreement.

FINAL COMPLETION AND FUTURE MAINTENANCE

The City/Town’s representative shall be made available to attend MassDOT’s final inspection of the Project. When all punch list items identified as part of the final inspection are addressed to the satisfaction of MassDOT, MassDOT shall notify the City/Town in writing that the Project has been completed. Upon such date of notification, the City/Town shall be responsible thereafter for the maintenance of the facilities included in the Project. This obligation includes reasonable efforts to remove snow and ice to allow only temporary and isolated interruptions in accessibility, in accordance with the Americans with Disabilities Act of 1990, as amended, 42 U.S.C. § 12101 et seq., 28 CFR § 35.133, and 23 U.S.C. § 116 (Maintenance).

IN WITNESS WHEREOF, the parties hereto have executed this Agreement in duplicate on the day and year first above written.

APPROVED

**MASSACHUSETTS
DEPARTMENT OF TRANSPORTATION**

JONATHAN L. GULLIVER
HIGHWAY ADMINISTRATOR

CITY/TOWN OF _____

(Signature)

(Name-Printed)

(Title)