

REGIONAL PROGRAM

LiDAR COLLECTION AND PROCESSING PROCEDURE

1.0 Background

The Regional Program has transitioned to LiDAR (Light Detection and Ranging) Survey to complete pavement modeling. Pavement modeling is a necessary process within our preservation portfolio to ensure that the current roadway meets our Engineering Instruction for Cross Slope (EI C4) for built roads or for Collector Highway Improvement Projects (CHIP), the new cross slope design meets our CHIP policy. The Department has selected LiDAR for this process due to its overall efficiency and accuracy as well as its compatibility with our current CADD (Computer Aided Drafting & Design) software.

The use of LiDAR requires collaboration between the Regional Program and the Property Office - LiDAR and Imaging Group (LIG), as they are currently responsible for the collection and processing (data thinning) of the raw data and providing a completed package to the Regional Program. The intent of this procedure is to provide information to Project Managers on when and how to request LiDAR collection.

2.0 Applicable Treatments

Pavement modeling will be required on all CHIPS and Heavy Treatments. Light Treatments may require pavement modeling depending on decisions made during scoping rides, which will be noted on the Scoping Sheet

3.0 Request Process

Once the project has been identified by the scoping sheet and a WIN has been assigned, the Project Manager will be responsible to submit the following:

- a. A request to the CADD Support team to add the design folders into the appropriate WIN drive. These folders will be used by the LIG to store the processed data.
- b. A written request form to the Pavement Quality & Design (PQD) Team for the collection of LiDAR. A request form can be found on the MaineDOT Engineering webpage (Engineering => Highway Program => General => The Regional Program => Forms => LiDAR Request Form). This form will include the Lat/Long beginning and end points as well as every segment included within the project limits as specified.

Once a request form has been submitted, the PQD will review the segments and thin redundant sections as needed. PQD will then provide the LIG team with a master list. The LIG team will be responsible to coordinate the physical collection of the data. Once the collection schedule is finalized, the LIG team will provide a list of the projects with an approximate time frame for collection.

4.0 LiDAR Layout

Each Region has been provided a 2'x2' checkerboard stencil. Each target will be painted in a black and white or orange and white alternating pattern. A PK Nail will be driven in to be as flush as possible with the existing paved surface. Once the target has been created, the Region will identify the approximate Lat/Long of the target.

Targets will be placed in the following locations:

- Project Begin
- Project End
- One per Mile
- Approximate PC/PT of superelevated curves.

Targets and the associated PK nail will be used during all phases (collection, design, and construction) and therefore must be easily locatable outside of damage such as plowing and general vehicle traffic (wheel path). Whenever possible, the targets will be placed on the paved shoulder. If a shoulder does not exist, the target will be painted on the centerline. In the worst case scenario, the target may be placed at the mid-point of the lane.

Once the Targets have been painted by the Region, a list of the target offsets (Shoulder/Travelway/etc) and location (Lat/Long) will be provided to the LIG and PQD. A form can be located here: (Engineering => Highway Program => General => The Regional Program => Forms => LiDAR Target Location Form). The LIG will use these approximate locations of the targets to identify their location on the data being processed. Once located, a true Lat/Long will be assigned as well as identifying marker within the processed data. These targets and locations will be integrated into the design created by the Regions via the alignment construction process.

It is the responsibility of the Region to maintain the targets once painted. The LIG will be responsible to provide a collection schedule to the Regions to ensure that the targets are properly placed and painted prior to collection.

5.0 LiDAR Processing

In general, LiDAR collects more data than is necessary for Pavement Modeling. Processing is the action of cutting back unneeded information as well as identifying features (such as curb) that is necessary for our designs.

In order to expediate the time needed to process, the Regional Program and Property Office have agreed to process and identify the following features:

Scope	Crown	Edge of Pavement	Pavement Elevations	Striping	Features w/in Road (Center Islands)	Imagery	Gutterline Curb	Topography Beyond EOP*
Light Treatment	X	X	X	X	X	X		
Heavy Treatment	X	X	X	X	X	X	X	
CHIP	X	X	X	X	X	X	X	X
*Topography will be as far as possible based on collection to a max of 3-rod from Centerline, used only as a way to estimate impacts and not for ROW negotiation use.								

Once processed, the LIG will be responsible to place the processed data into the appropriate folders on the drives. They will then notify the Regions and PQD that the processing is complete.