NJDEP Proposes New Inland Flood Protection Rule

Gov. Phil Murphy and Commissioner of Environmental Protection Shawn LaTourette recently announced their intent to propose an Inland Flood Protection Rule to better protect New Jersey communities from worsening riverine flooding and stormwater runoff. The rule would update the state's existing flood hazard and stormwater regulations by replacing outdated precipitation estimates with modern data that accounts for observed and projected increases in rainfall.

The rule was developed in response to the devastating impacts of extreme rainfall events, which are expected to continue to intensify in frequency and severity, faced by an increasing number of New Jersey residents. The rule would better define areas at the most significant risk and help ensure that new and reconstructed assets in these flood-prone areas are properly suited to manage current and anticipated levels of rainfall, runoff, and flooding over their lifetime. If adopted, the standards would apply to new or reconstructed assets, but not existing development.

Rainfall data used in existing DEP rules was computed only through 1999 and current flood maps that reflect prior flooding patterns are also outdated.

"While many floodplains are mapped by the Federal Emergency Management Agency and state government," the DEP noted, "existing flood maps are based on past conditions and do not account for changing conditions such as increasing precipitation intensity. In some cases, flood mapping may not even be available in areas that now routinely flood."

Under the two primary components of the rule, habitable first-floor elevations mapped by the state DEP will be raised by two feet, and FEMA flood map elevations will increase by three feet. Certain permit applications will require the use of future projected precipitation data when calculating flood elevations and peak flow rates of streams and rivers under the Flood Hazard Area Control Act Rules (N.J.A.C. 7:13), or when a proposed development triggers compliance with NJDEP's Stormwater Management rules (N.J.A.C. 7:8).

The formal rule proposal is slated to be published in the New Jersey Register on Dec. 5, 2022, and a 60-day public comment period will follow. For more information on the Inland Flood Protection Rule and what it means for you, please contact Finelli Consulting Engineers at (908) 835-9500.

Soils Analysis: *"A Building is Only as Strong as Its Foundation"*

Understanding soil properties and its suitability for a proposed building, road, or other structure is an important first step when planning a construction project. Soil composition, strength, density, and reactivity are all vital elements that must be factored in to every foundation's design.

Soils analysis is performed by a state-licensed specialist with a civil engineering degree that has passed the NCEES Fundamentals of Engineering exam. Soil samples are collected using a various methods including shovels, auger boring, and drilling, among others. Some soil tests require laboratory analysis while others are conducted in the field. Here are a few of the more commonly-performed soil tests:

- The **specific gravity test** measures the mass of solids in the soil compared to the mass of water at the same volume to help determine its mineral composition, weathering, porosity, and saturation.

- Dry density is the weight of soil particles in a given volume. A **dry density test** calculates the amount of moisture needed to achieve maximum soil compaction.

- The **Atterberg limits test** establishes the moisture contents at which fine-grained soils transition between solid, semi-solid, plastic, and liquid states.

- The **Proctor compaction test** determines the optimal moisture content at which the soil will become most dense and achieve its maximum dry density.

FCE provides complete soils analysis services for private and public sector clients. For more information or assistance on your next project, please contact us at (908) 835-9500.
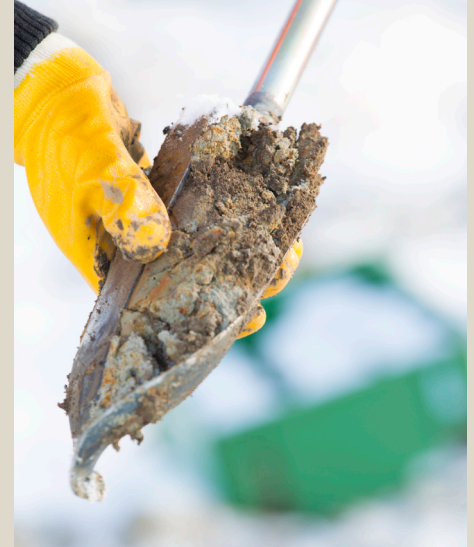
Lidar Technology Revealed a Vast Mayan Kingdom in the Guatemalan Rain Forest

Lidar is an advanced laser mapping technology commonly used in a variety of applications including land surveying and archaeology, among many others. In 2016, lidar was instrumental in the discovery of more than 61,000 unknown Mayan structures long-hidden under thick overgrowth in the rain forests of Guatemala.

The ancient Maya were an advanced Central American civilization that flourished from 1000 B.C. to 1500 A.D. Considered one of the most significant archaeological discoveries in recent times, these lidar images, including the one shown here, have profoundly changed what archaeologists had previously known about the Mayan civilization's population size, agricultural practices, and conflicts between warring factions.
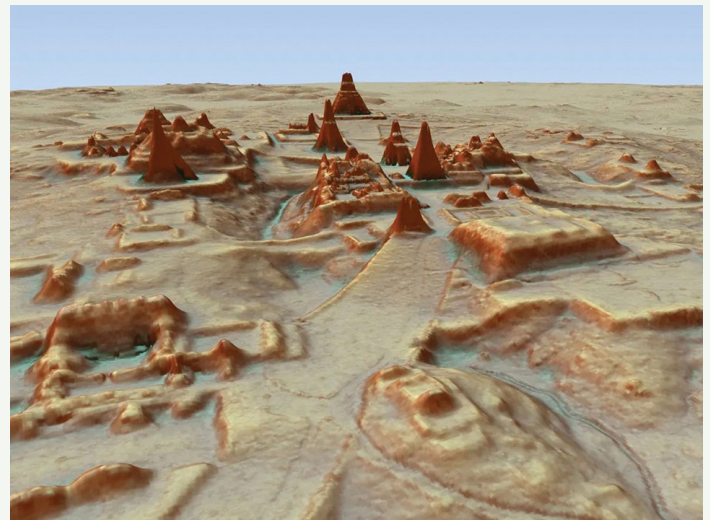
Image: Francisco Estrada-Belli/PACUNAM Lidar Initiative