In 2007, Tata & Howard began extracting one foot long cast iron water main samples ranging in diameter from 6 to 12 inches as part of a cleaning and cement lining water main rehabilitation project. Since then, we have evaluated a significant number of cast iron water main samples for several water distribution systems throughout Massachusetts and Connecticut, typically during a rehabilitation project, water main failure, or water main replacement project.

Sections are evaluated using several criteria:

1. **Pipe Class Estimation Based on Remaining Wall Thickness**
2. **Visual Inspection**
3. **Pipe Crushing**
   - **ANSI A21.6-13 Yields Break Load of Sample**
     - Samples are loaded, one at a time, onto a machine that monitors the application of load in pounds, and the load required to cause the main to break is then recorded. Additional visual inspections are also made and recorded.
4. **Remaining Factor of Safety Estimation**
   - In the past, cast iron pipe manufacturers incorporated a 2.5 minimum factor of safety (FOS) to the crushing load necessary to break a water main. The manufacturer’s FOS can be compared to the crushing load that was measured at the materials testing facility, which then yields the estimated remaining FOS of the water main sample.

Condition Assessment is beneficial in assisting a utility in the decision to rehabilitate a water main or schedule it for replacement, and in identifying asset classes that are candidates for replacement. The visual inspection provides an assessment of the quality of the water main, which assists in properly allocating capital funds to mains that are on the verge of failure or in need of rehabilitation.