

WERF FROG Project

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Water Environment Research Foundation (WERF)
Fats, Roots, Oils, and Grease (FROG) Project
Project 03-CTS-16T

Background: As sewerage agencies started to develop Fats, Oils, and Grease (FOG) Control Programs as one part of a multi-pronged approach to address sanitary sewer overflows, questions about the design, operation, and maintenance of grease interceptors arose. (Note: the “grease interceptors” referred to herein are now called “gravity grease interceptors” in the 2006 Uniform Plumbing Code (UPC).)

Problem: Currently, local jurisdictions make their own judgments on what design and sizing criteria to use, typically by asking, “What is everyone else doing?” In addition, questions such as which drain lines to connect to a grease interceptor and how often should an interceptor be pumped out are debated. As a result, it is currently possible to be on one side of the street in one town and be subject to its criteria, but then have to comply with a different set of criteria across the street in another town’s jurisdiction. Therefore, there was a need for a research project specifically on the optimal design and sizing and operations and maintenance of grease interceptors. Furthermore, it was also requested that this resulting research should result in practical information that could be shared with code bodies, such as International Association of Plumbing & Mechanical Officials (IAPMO, publisher of the UPC) and International Code Council (ICC, publisher of the International Plumbing Code (IPC)), for consideration in their code revision processes.

Five Objectives of the Project: As the project started, various entities gave input so that the research project came to focus on 5 specific objectives:

- 1) Determine the optimal design, sizing, and operations and maintenance criteria for grease interceptors to help control problems with FOG in centralized and decentralized systems.
- 2) Evaluate the effects that combined waste (i.e., domestic and commercial waste) and waste from garbage grinders have on grease interceptors
- 3) Determine if different piping materials have different susceptibility to blockages caused by fats, roots, oils, and grease.
- 4) Identify the most detrimental tree roots to both centralized and decentralized systems and determine the best control methods while considering environmental effects.
- 5) Develop a companion report that can be submitted to the IAPMO for consideration for inclusion into the Uniform Plumbing Code (UPC).

Roots: In addition to research on grease interceptors, the project also includes research on root control (the “R” in FROG) and piping material susceptibility to FROG blockages.

Funding: The total projected cost of the project was \$300,000, but only \$276,000 was funded, so the project scope was narrowed to the 5 objectives outlined above.

Investigators: Through an RFP process, a team of professors from NCSU, Purdue, and Southern Illinois Universities along with Leon Holt, Utility Pretreatment Coordinator for the Town of Cary, NC were selected as the principal investigators.

Project Scope: The objectives are covered under 12 separate tasks. Their research includes building a pilot-scale grease interceptor, developing a GI simulator, field testing, measuring the surface roughness and polarity of piping materials and roots, surveys on FOG and roots, and researching and testing root control methods.

Timeline: The project is projected to take 2 years to complete. Since the project started ~May 2005, the timeline extends to ~May 2007.

More Info: For more information, please visit the following website: www.ce.ncsu.edu/research/frog/