

## Fixed Anti-Icing Spray System

The system was designed to replace de-icing salt on the landmark Brooklyn Bridge with anti-icing liquid (such as potassium acetate). Non-corrosive anti-icer is sprayed on the roadway surface prior to freezing and precipitation, preventing the formation of ice and facilitating the plowing of accumulated snow.

The advantages of the system are:

1. Eliminating salt is expected to at least double the life of bridge paint and reduce the rate of steel corrosion drastically. It is recalled that the cost of rehabilitation on the Brooklyn Bridge over the last 15 years has exceeded 500 ml. USD. It is essential to protect this significant Federal, State, and Local investment by extending the life of all bridge components in a cost-effective manner.
2. Anti-icer application by spraying is economical, because it permits the amount of material to be optimized, depending on atmospheric conditions.
3. The system is designed for user safety. Tests were conducted until the spraying was adjusted to deliver material to the roadway surface without discomfort to motorists.

The system consists of 2 reservoirs, 2 pumps, electric controls, tubing and pipes on both sides of the 3-lane roadway over a length of 500 feet. The rest of the bridge was subjected to alternative forms of anti-icing for the purpose of comparison. The two year test run was deemed successful. The NYC Department of Sanitation observed the performance and approved the alternate de-icer, agreeing to discontinue salt application on the Brooklyn Bridge. The system will be extended to the entire bridge and complemented by a weather monitoring system for optimal application.

Similar fixed systems are contemplated for the other East River bridges: Williamsburg, Manhattan, and Queensboro.

The pilot project was funded by Federal Highway Research Administration. All design, installation and application was by NYC DOT staff

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Photo 2: Project Location (Looking East)

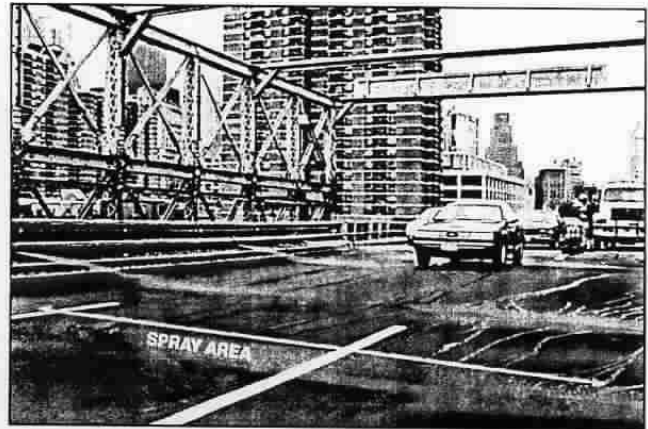


Photo 18: Spraying with Traffic (Center Lane)

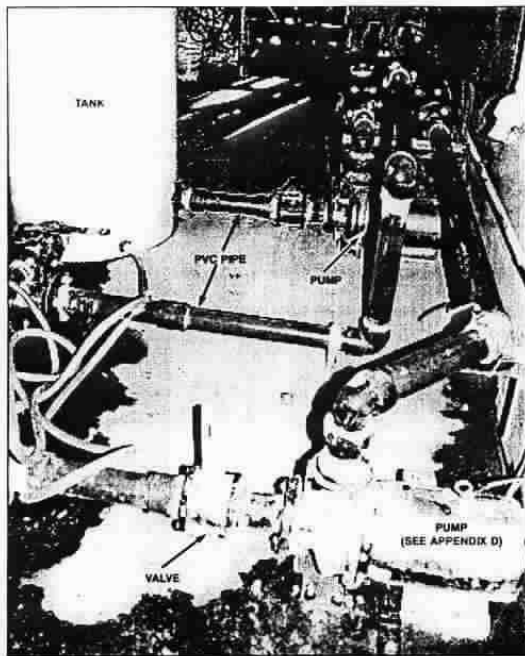
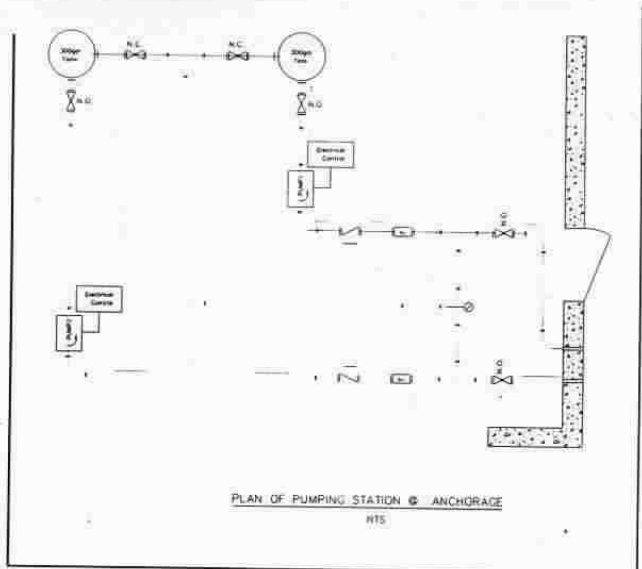


Photo 4: Pump Room at the Manhattan Anchorage



Note: The addition of solenoid valves to the current design would allow us to deliver anti-icing chemicals to an additional 3,000 linear feet of piping to other sections of the bridge. This option will be pursued in future phases of the project. See Appendix E for the different flow arrangement diagrams.

