

To: SUPERSEDED BY EB 09-026 EFFECTIVE 5/6/10		New York State Department of Transportation ENGINEERING INSTRUCTION	EI 08-003
Title: HIGHWAY DESIGN MANUAL CHAPTER 8 HIGHWAY DRAINAGE SECTION 8.6.2.4 ECONOMICS			
Distribution: ☒ Manufacturers (18) ☒ Local Govt. (31) ☒ Agencies (32) ☐ Surveyors (33) ☒ Consultants (34) ☒ Contractors (39)		Approved:  Daniel D'Angelo, P.E. Deputy Chief Engineer, Design <u>2/01/08</u> Date	

ADMINISTRATIVE INFORMATION:

- **Effective Date.** This Engineering Instruction (EI) is effective beginning with projects submitted for the letting of September 4, 2008.
- **Superseded Issuances.** This EI supersedes EI 83-15.
- **Disposition of Issued Materials.** Highway Design Manual Chapter 8.

PURPOSE: The purpose of this EI is to issue revised guidance regarding pipe material selection.

TECHNICAL INFORMATION:

- **Changes.** The guidance provided on page 2 of this EI should be used in lieu of the guidance provided in Highway Design Manual Chapter 8, Section 8.6.2.4 Economics dated 6/23/97.

REFERENCES: Federal-Aid Policy Guide, Title 23 - Code of Federal Regulations (and Non-regulatory Supplements) - 23 CFR 635.411.

<http://www.fhwa.dot.gov/legregs/directives/cfr23toc.htm>

CONTACT: Direct questions regarding this EI to Norman Schips in the Design Quality Assurance Bureau at 518-485-8611 or via email at nschips@dot.state.ny.us.

8.6.2.4 Engineering and Economic Analysis

Materials shall be specified which satisfy engineering requirements at the lowest overall cost. This cost should include all expenses necessary to install and maintain the pipe throughout the life of the highway. The installation cost includes not only the pipe itself but the pipe excavation, backfill, labor, and any other special features. Generally, the design with the least installation cost is the first choice. Occasionally, however, there may be other quantifiable lifetime factors which negate the initial savings. These can include maintenance costs which occur on a regular predictable basis or specific material features which offer additional resistance to corrosion, silting, sliding or rupture.

A discussion on cost analysis and justification of the final design should be included in the Drainage Report.

Note: In the absence of firm cost data and without an engineering reason dictating the choice of one pipe material, an optional specification should be used. Special specifications are available to specify alternate culvert materials for side drains (driveways and ditch crossings) and cross drains (culverts under gravel or dirt roads) not installed under high type pavement (603.85xxxx15, 603.86xxxx15, 603.87xxxx15). Under the optional items, the designer selects the size and shape of the pipe, and the contractor picks the material based on the specification. Therefore, pipes should be sized based on the hydraulically least efficient material.