

## **Capítulo 180**

# **Tubo de queda para águas pluviais**

## Capítulo 180-Tubo de queda para águas pluviais

### 180.1 Introdução

Existem vários tipos de tubos de queda para diversas aplicações, como: águas pluviais, esgoto sanitário, águas pluviais com esgotos no sistema unitário e água potável ou quase potável.

No caso de tubos de queda para esgotos, são importantes os odores e gases.

Os tubos de queda para águas pluviais podem ser:

- Tubos de queda de águas pluviais que serão conduzidas a tuneis de armazenamento de águas pluviais.

-Tubos de queda de águas pluviais que conduzirão as águas pluviais para uma galeria a jusante.

Não confundir com os degraus e a escada hidráulica.

### 189.2 Tubos de queda de águas pluviais para tuneis

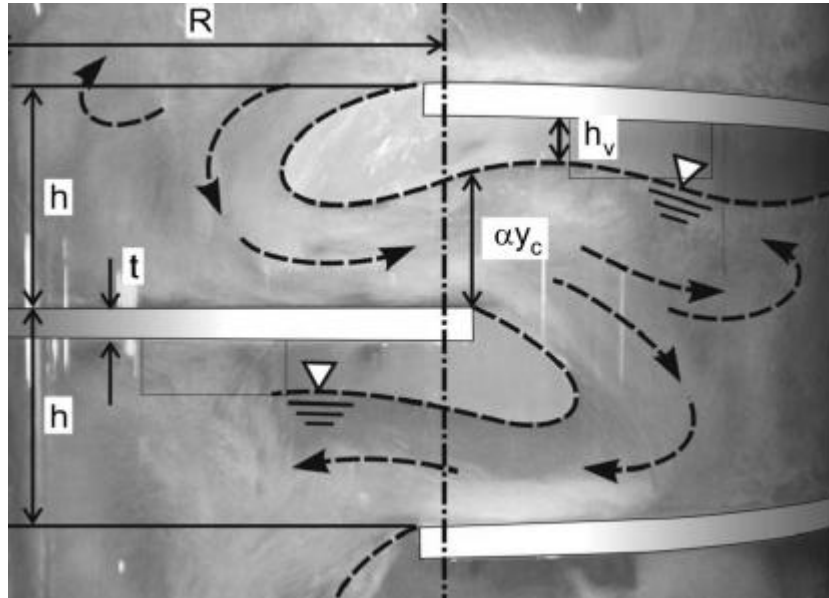
Os tuneis de queda de águas pluviais para serem conduzidos a tuneis de armazenamento de águas pluviais podem ser:

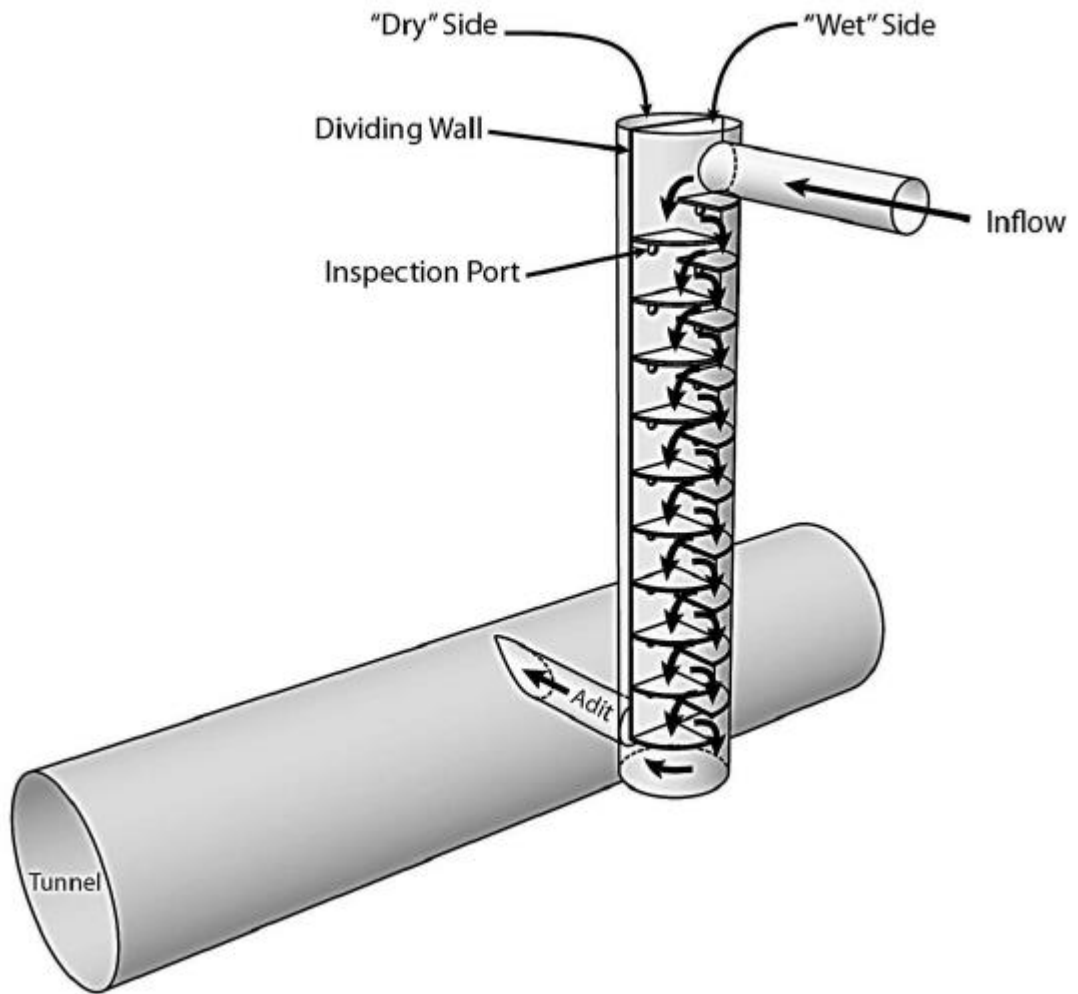
- Tubo de queda com vórtex normal
- Tubos com vórtex tipo Milwaukee
- Tubo de queda espiralado
- Tubo de queda com cascatas
- Tubos de queda propriamente dito ou Tubo de quedas de Napoli

# Baffle Drop Structure Design Relationships

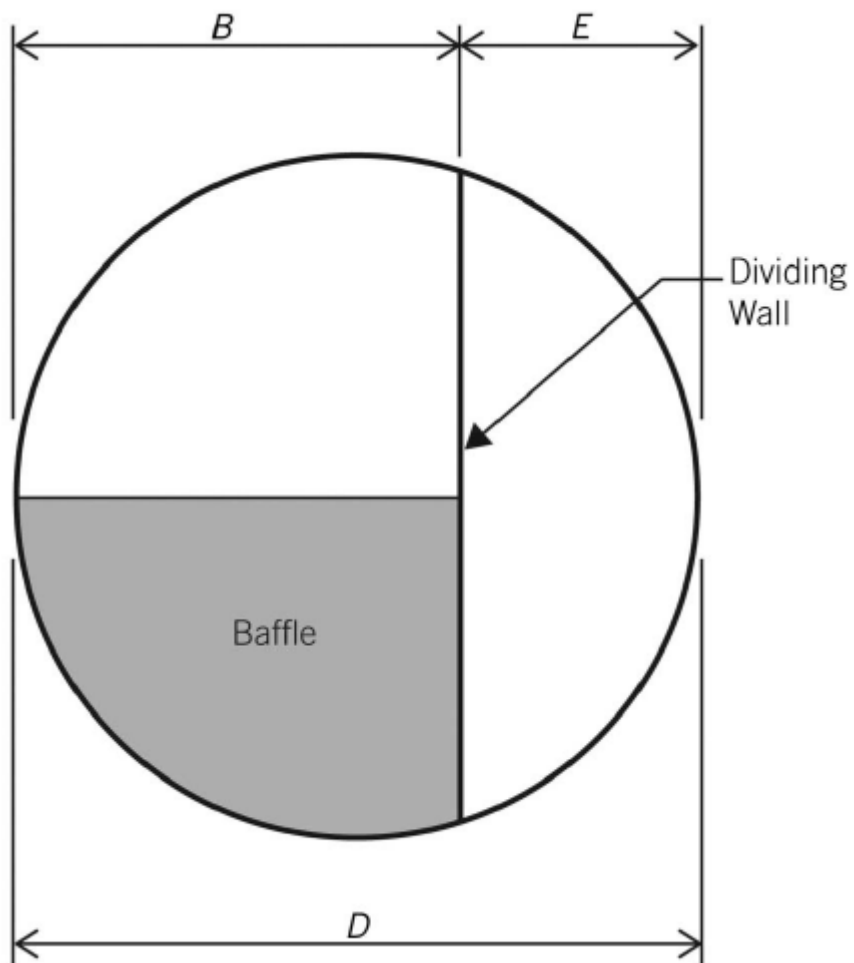
ARTICLE in JOURNAL OF HYDRAULIC ENGINEERING · SEPTEMBER 2013

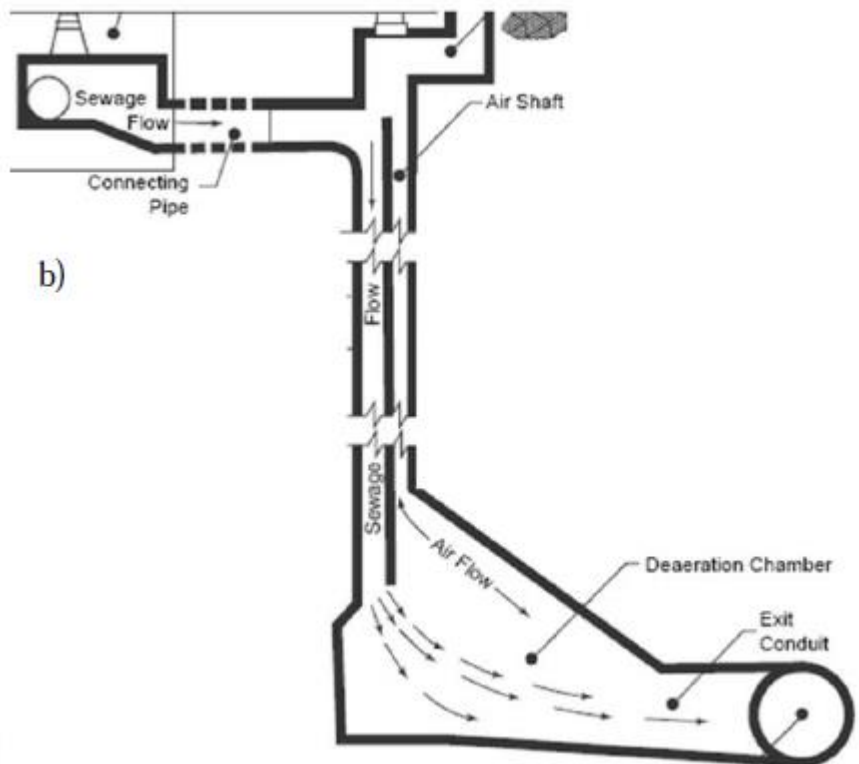
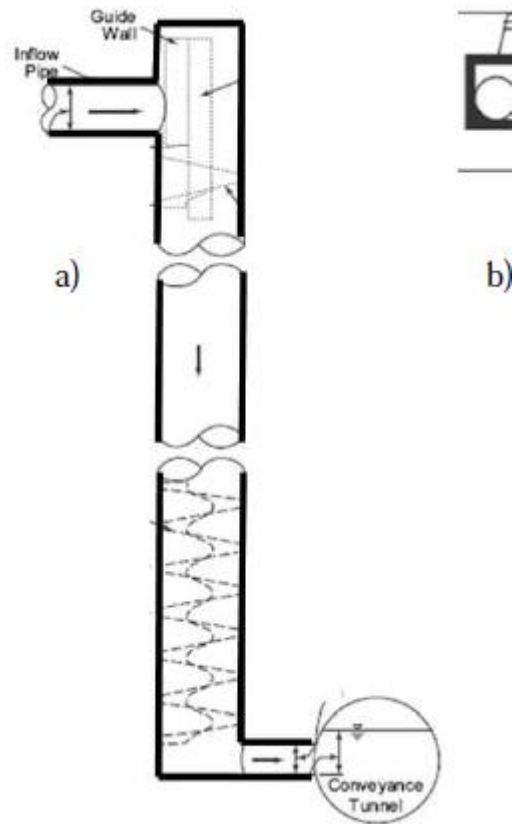
Impact Factor: 1.62 · DOI: 10.1061/(ASCE)HY.1943-7900.0000761

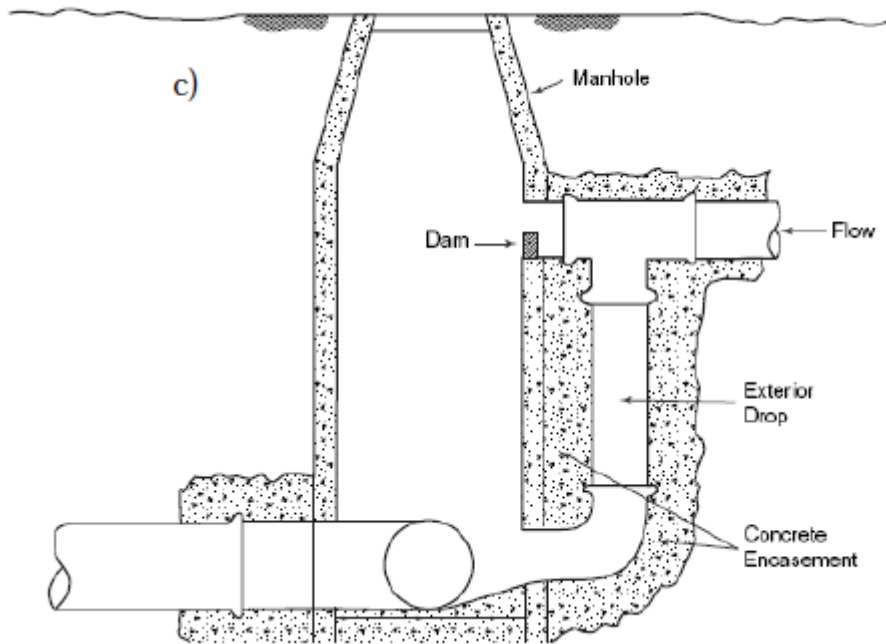








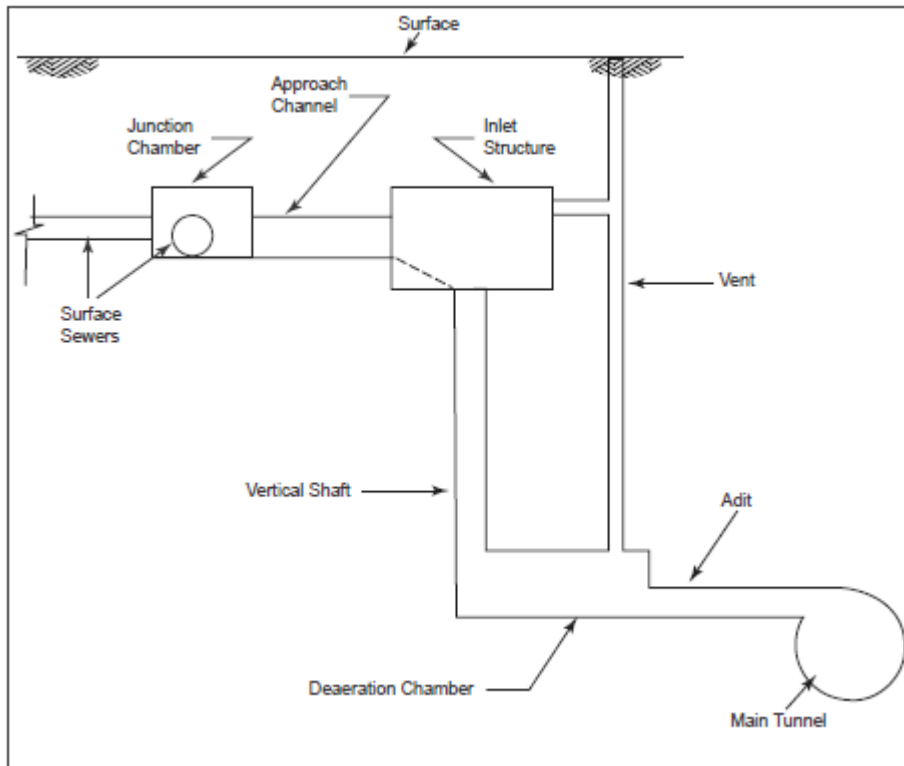


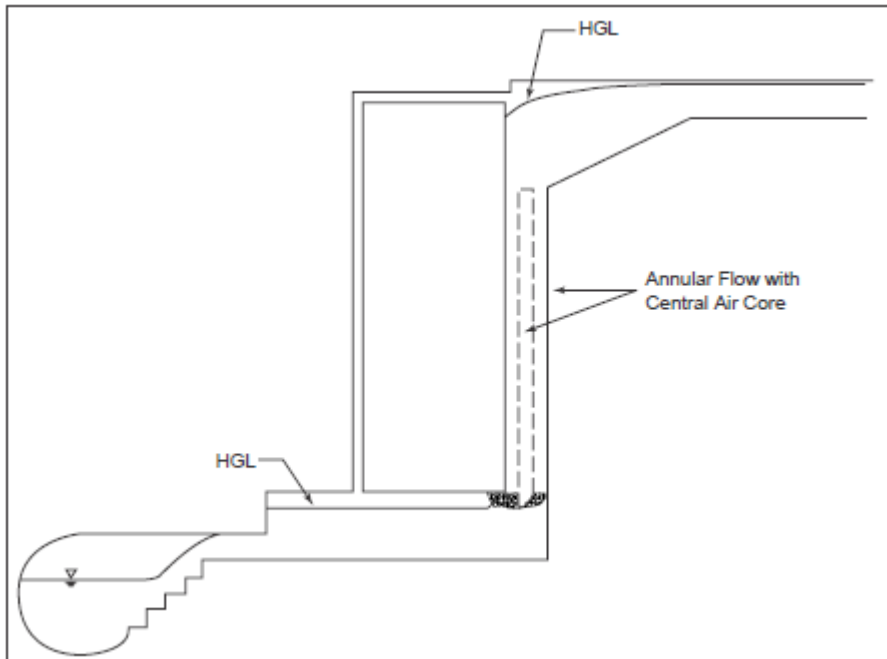
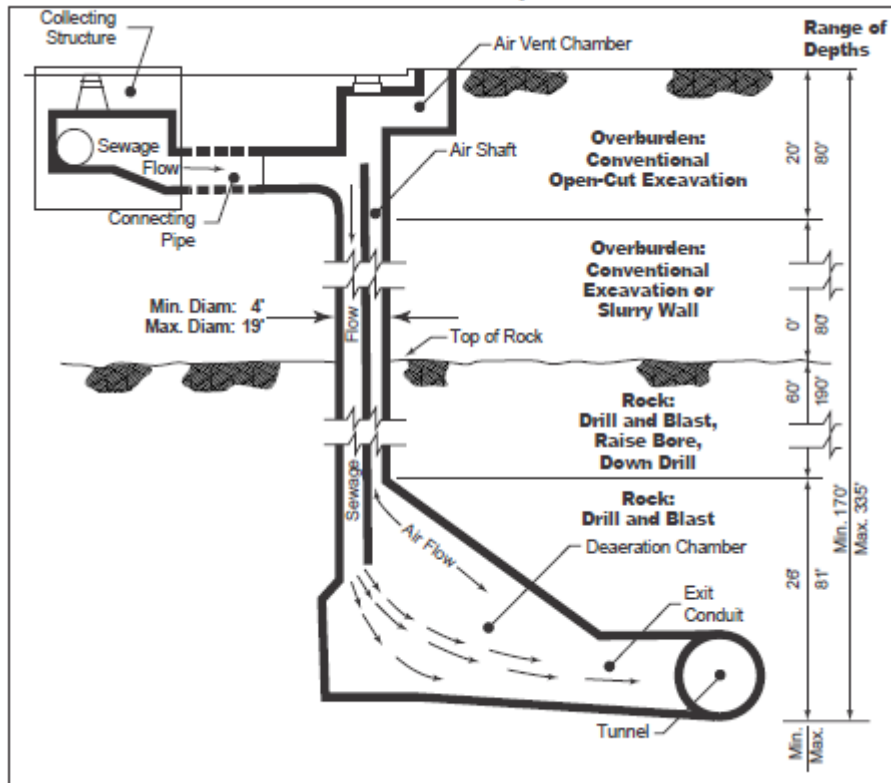


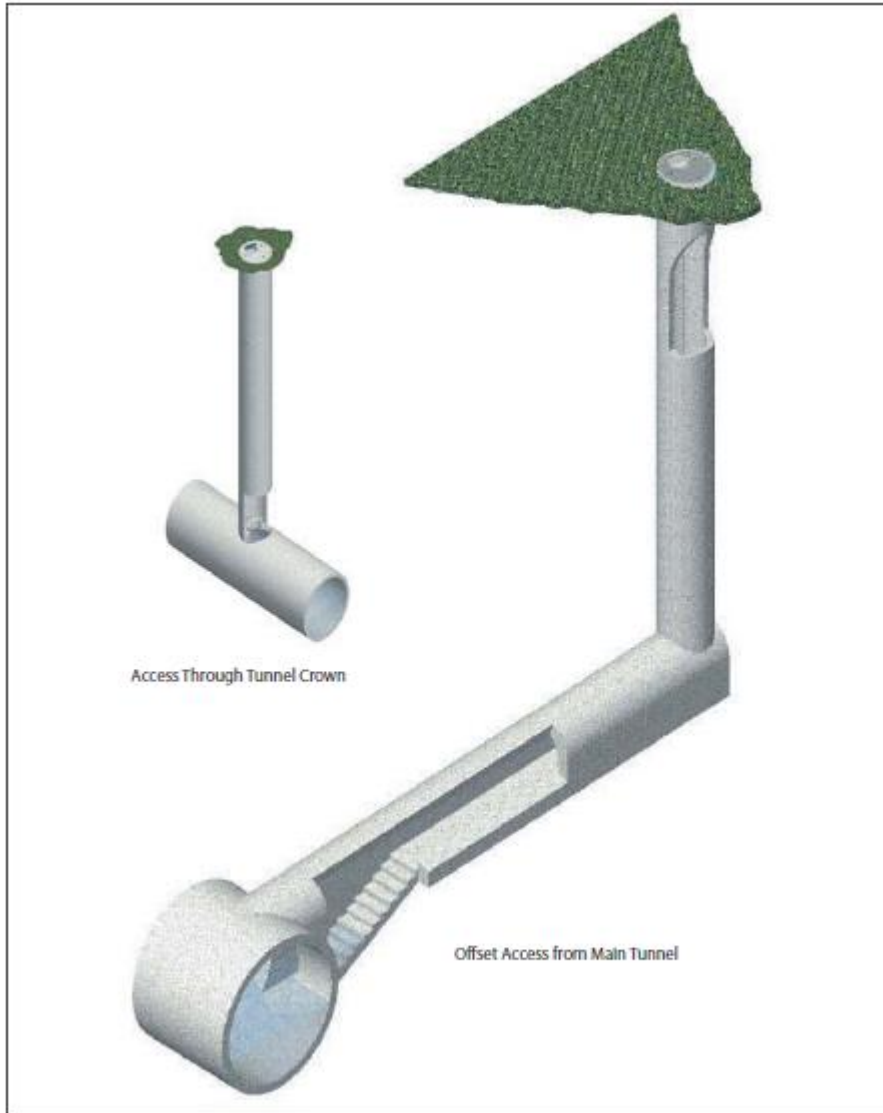


1998 William Barclay Parsons Fellowship  
Parsons Brinckerhoff  
Monograph 14

# Drop Structure Design for Wastewater and Stormwater Collection Systems





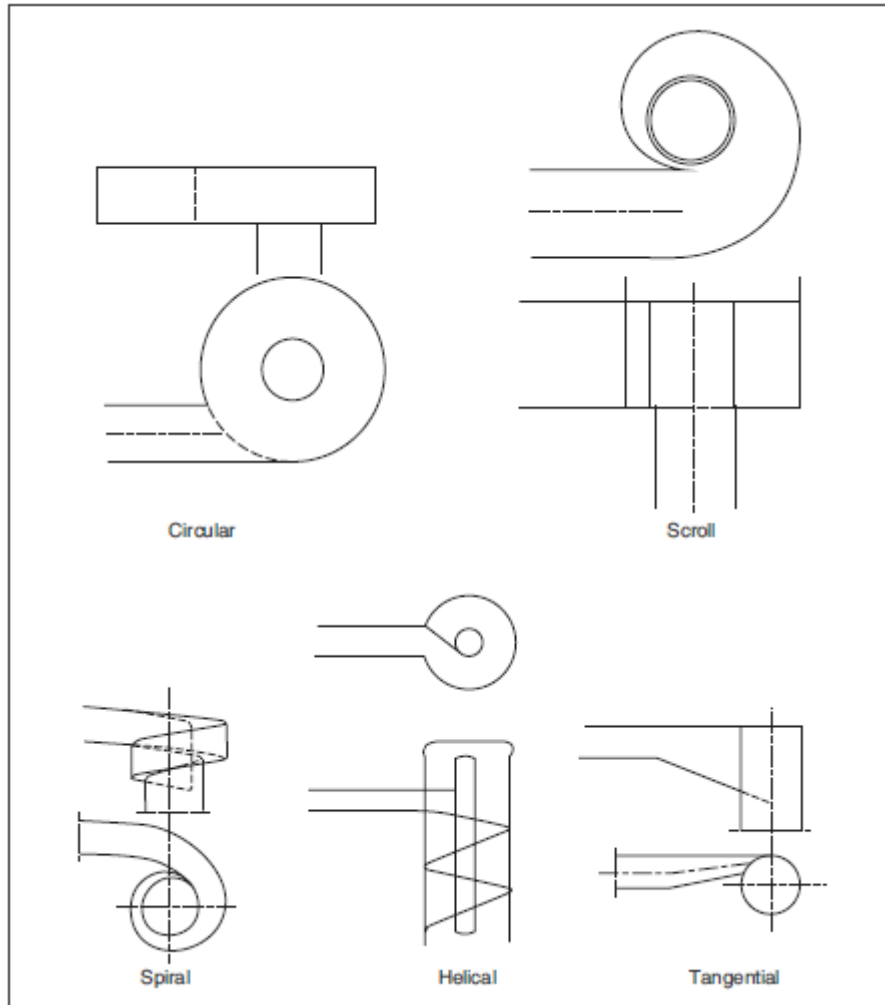


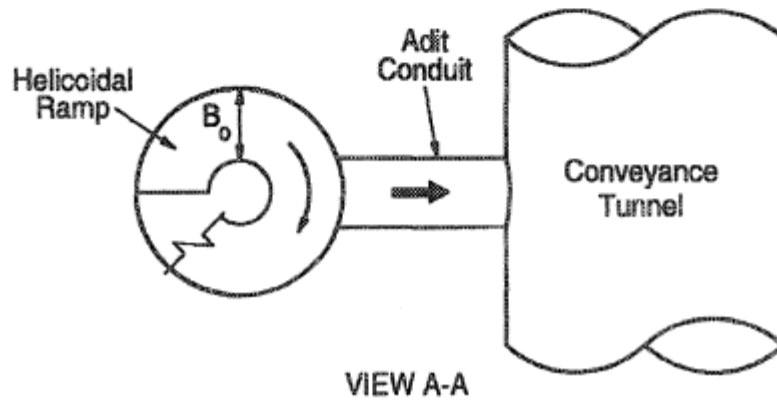
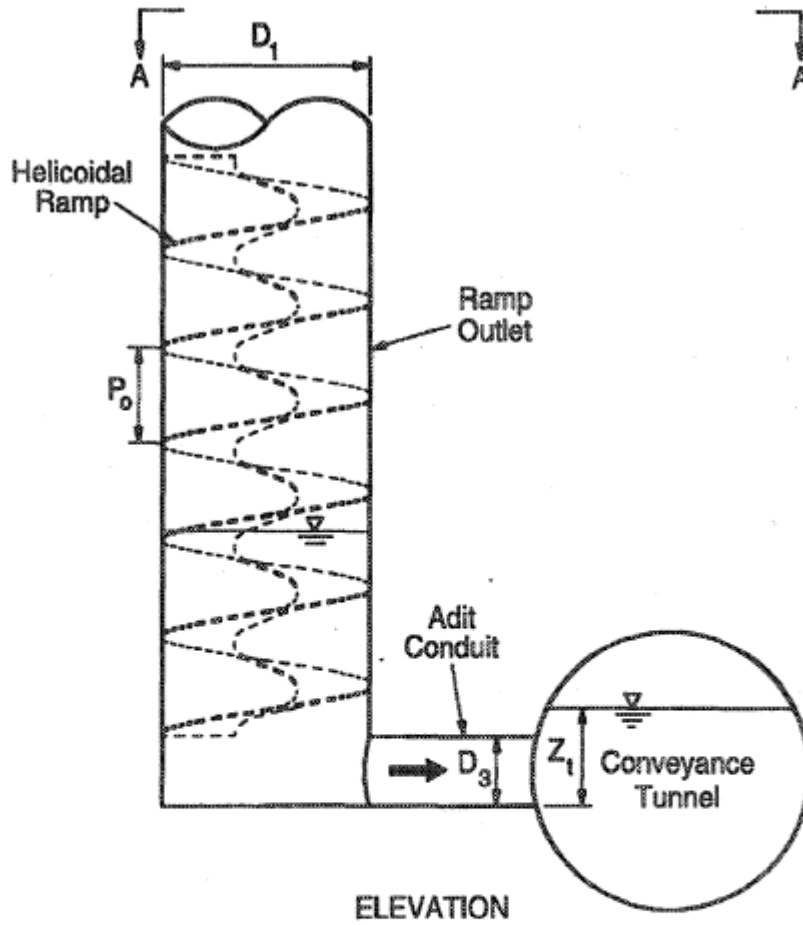
## VORTEX DROPSHAFTS: HISTORY AND CURRENT APPLICATIONS TO THE SEWER SYSTEM OF NAPLES (ITALY)

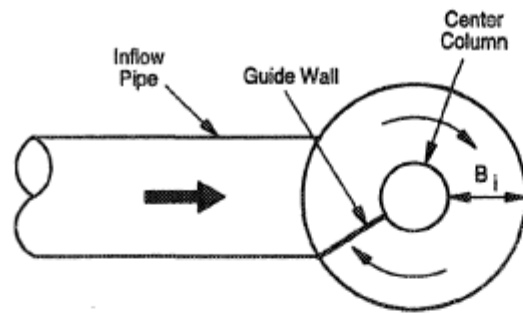
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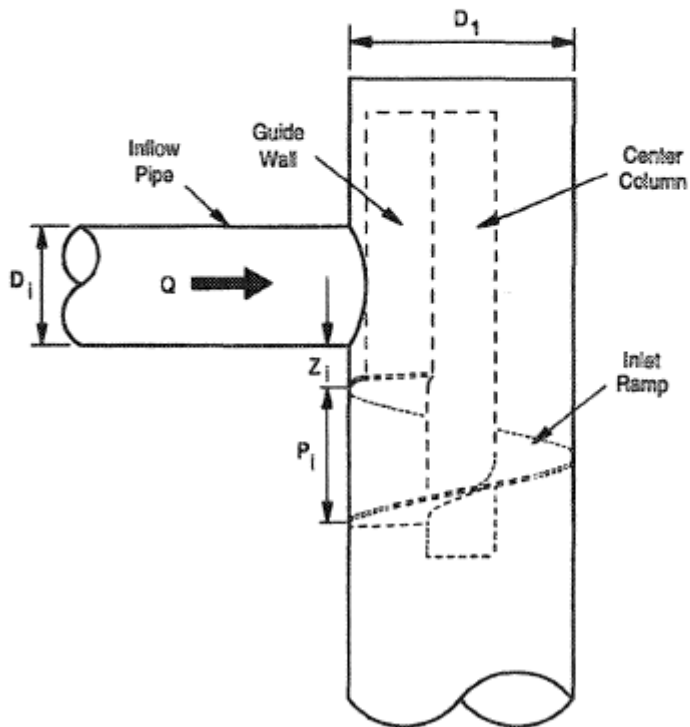
<sup>2</sup> Department of Civil Engineering, Seconda Università di Napoli, via Roma 29, 81031 Aversa, Italy  
email: corrado.gisonni@unina2.it



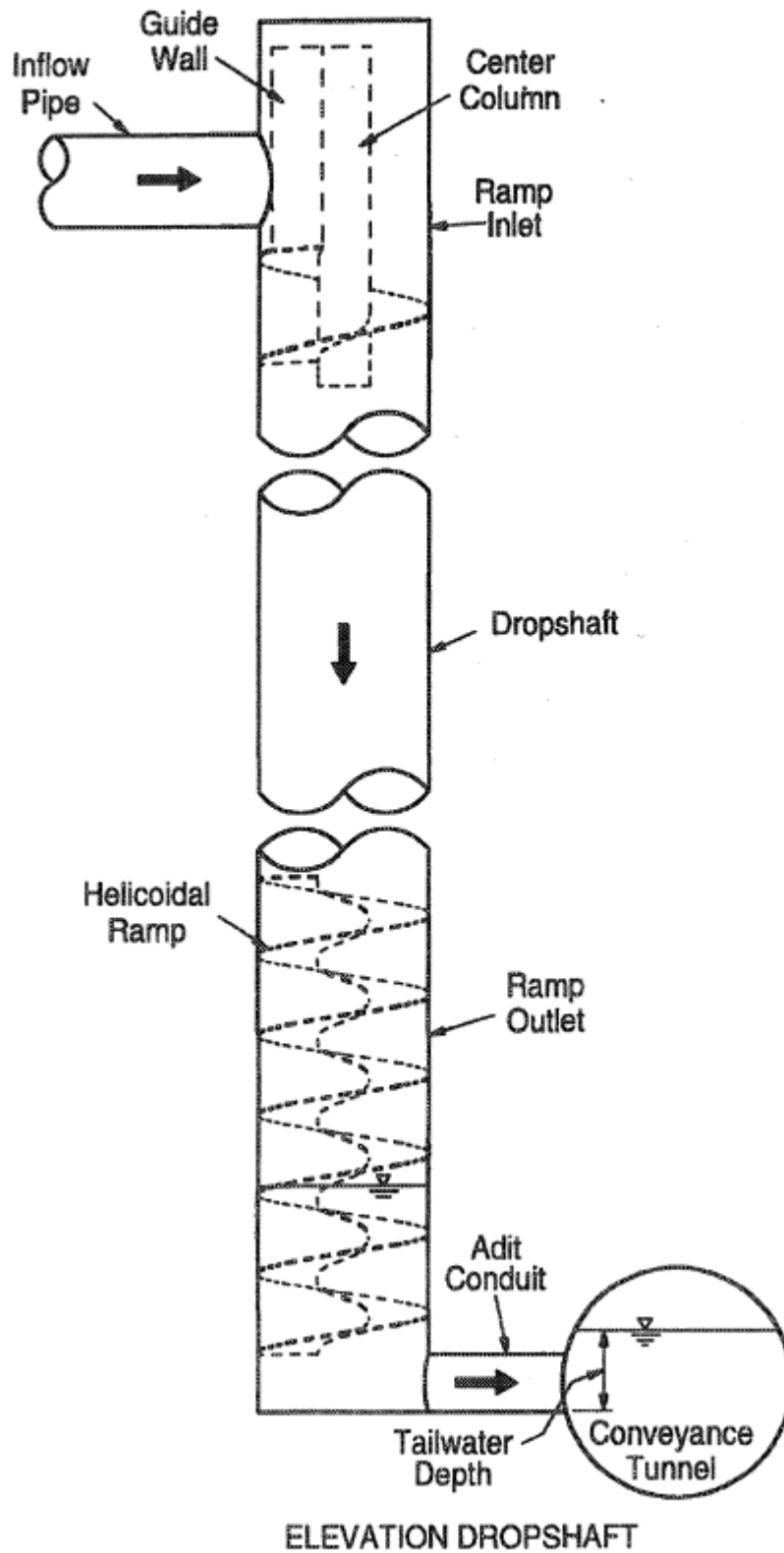


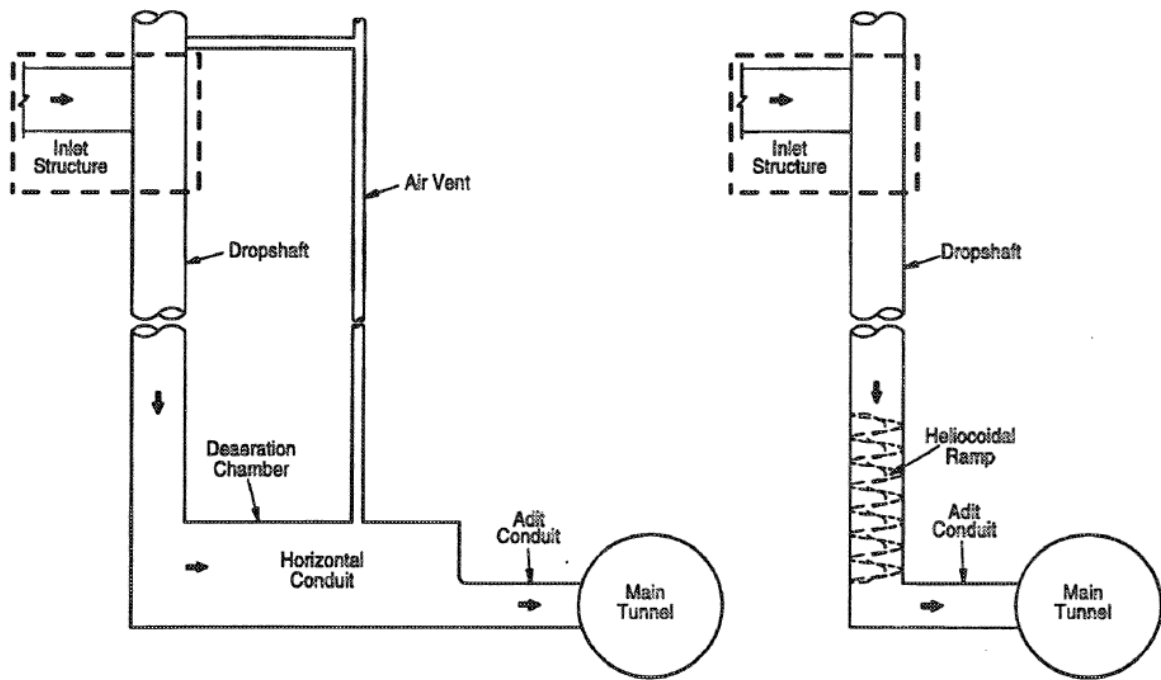


PLAN VIEW OF DROPSHAFT INLET



ELEVATION OF DROPSHAFT INLET

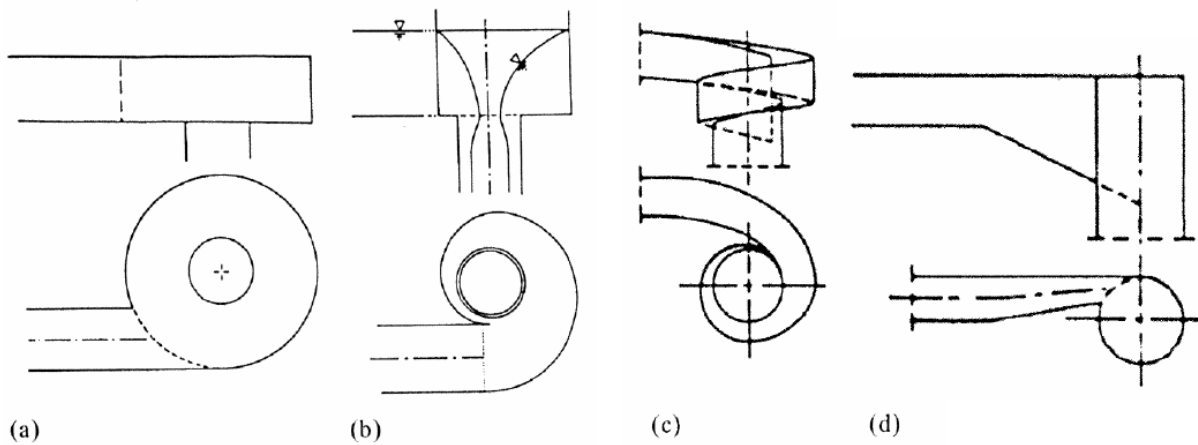
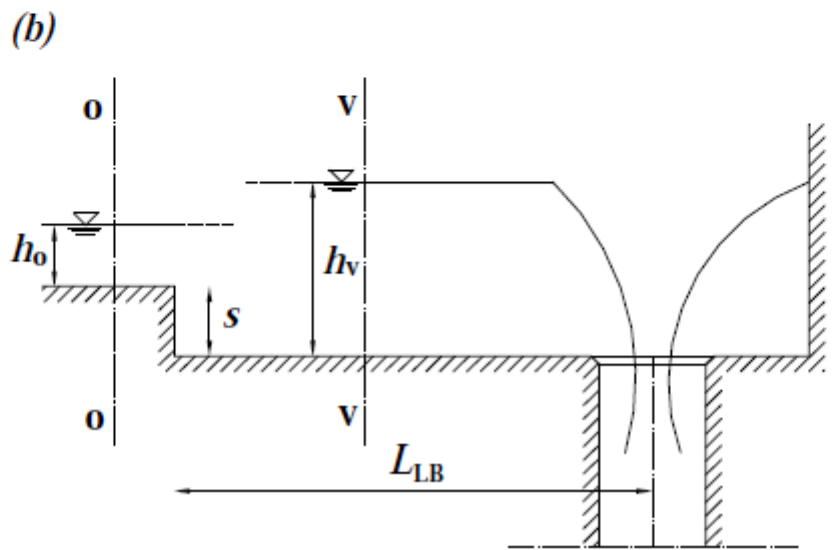
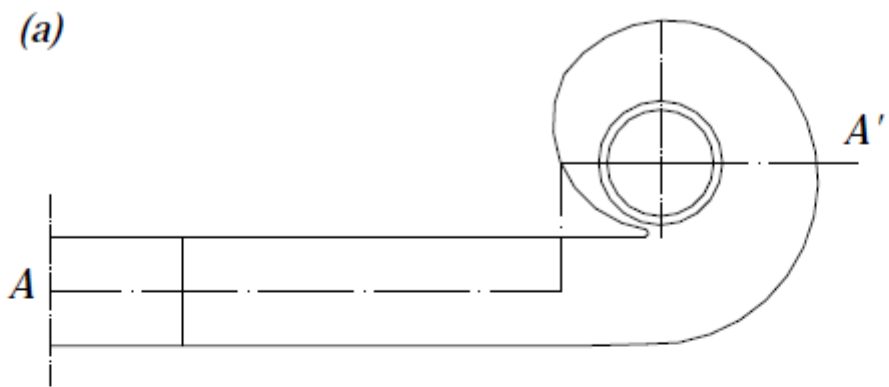


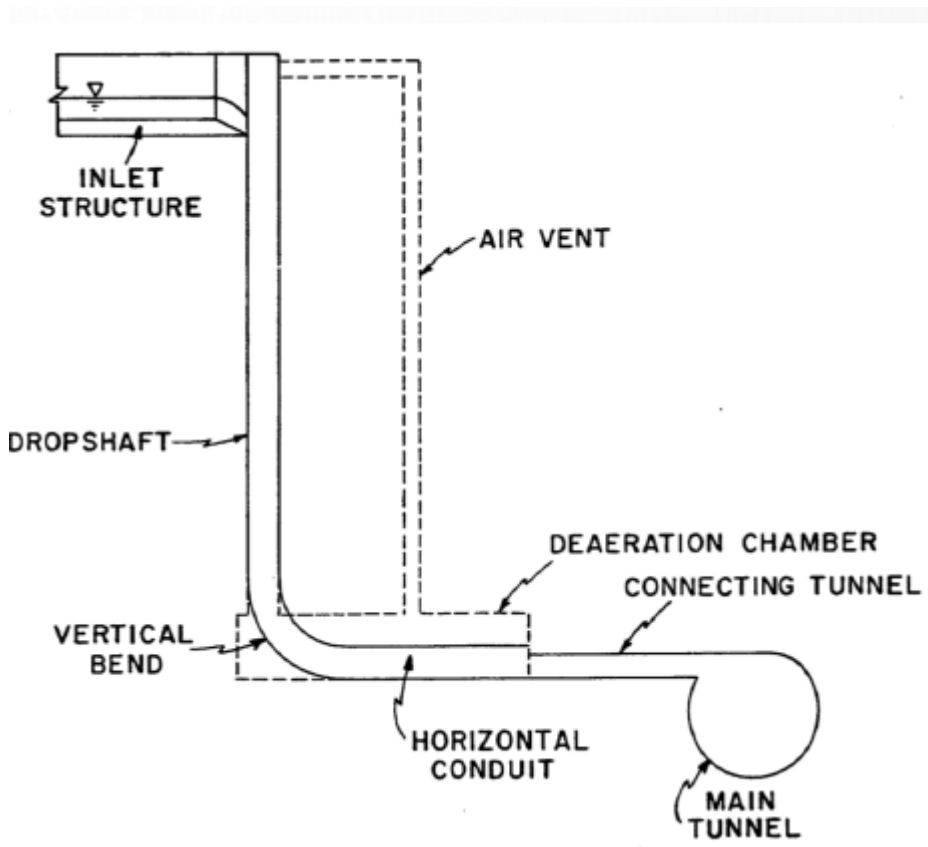
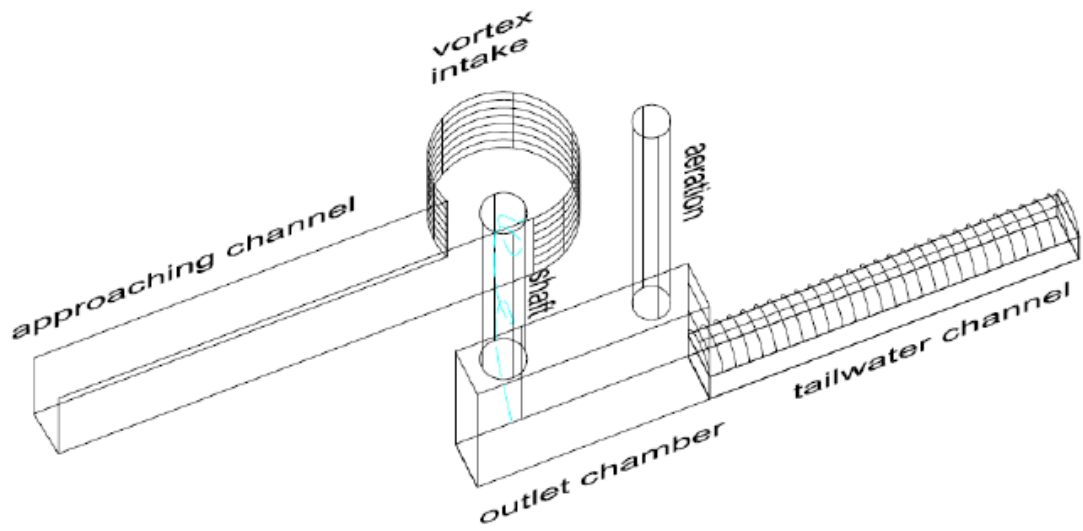


## Stormwater Two-Ramp Drop Struct

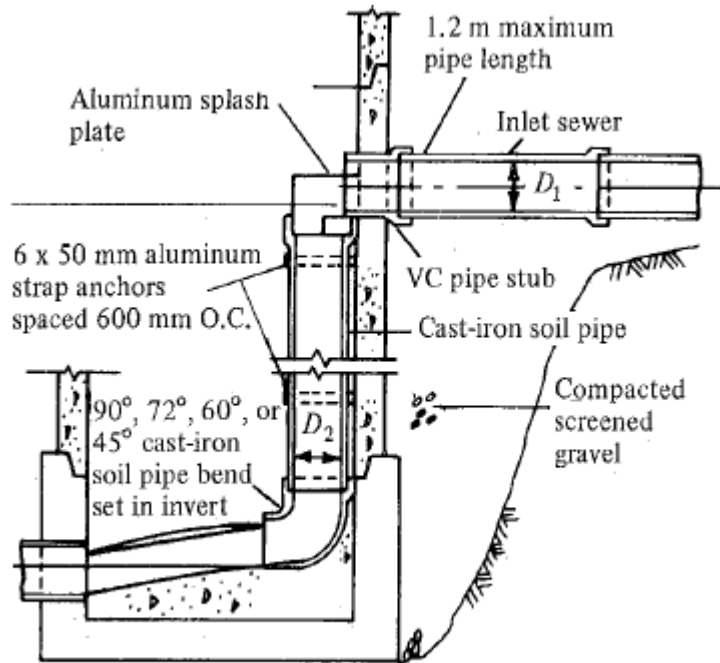
Subhash C. Jain







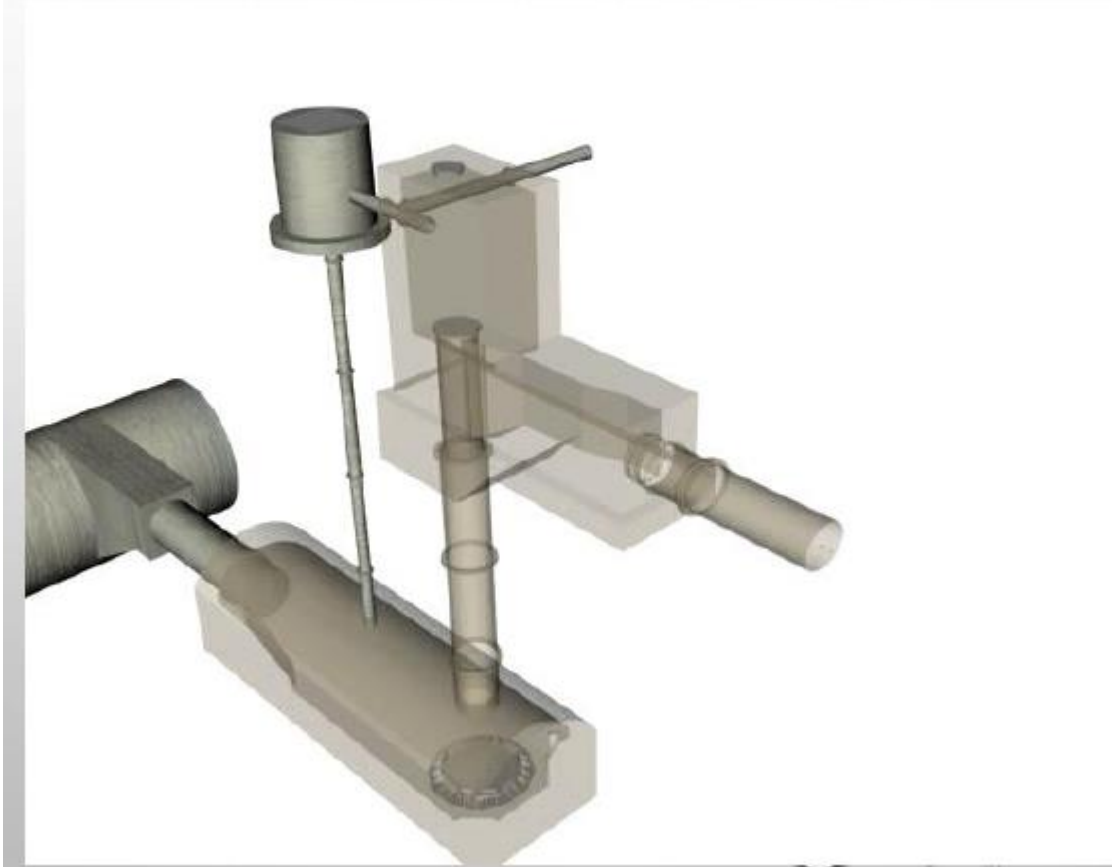




## HELICOIDAL RAMP



# VORTEX DROP STRUCTURE



## COMPARISON OF DROP STRUCTURES

Feature	Vortex	Plunge	Helicoidal	Cascade
Total number of sewage installations	++	+++	-	+
Commonly used in sewage tunnels	+++	+	+	++
Hydraulically efficient	++	+++	++	+
Provides access for equipment/people	+	+	-	+++
Surge mitigation built-in	+	++	+	+++
Costs less to build	+	+++	+	++
Commonly built over top of tunnel	+	+++	???	++
Accommodates multiple inlet sewers	-	+	-	+++
Minimizes air entrainment	+++	-	+	+++
Minimizes odour	++	-	???	+++
Self-cleaning	++	-	+	+++
Minimizes need for flow conditioning	+	+++	-	+++
Suitable for a wide range of flows	+	+++	++	+++