

Chapter 4

Hydraulic Structures



This portion of the standard covers:

- Structural and Hydraulic Design Requirements for cast-in-place concrete structures having a design flow no greater than $100 \text{ m}^3/\text{s}$ and a maximum drop not exceeding 15 m.
- It does not cover the structural requirements of Precast Concrete Structures but can be used to determine the hydraulic design requirements

Cast-in-place Concrete Structures

- Check Structures
- Drop and Check-drop Structures
- Turnouts
- Wasteways
- Reservoir Outlets
- Tailout Structures
- Pipeline Inlets and Outlet Structures

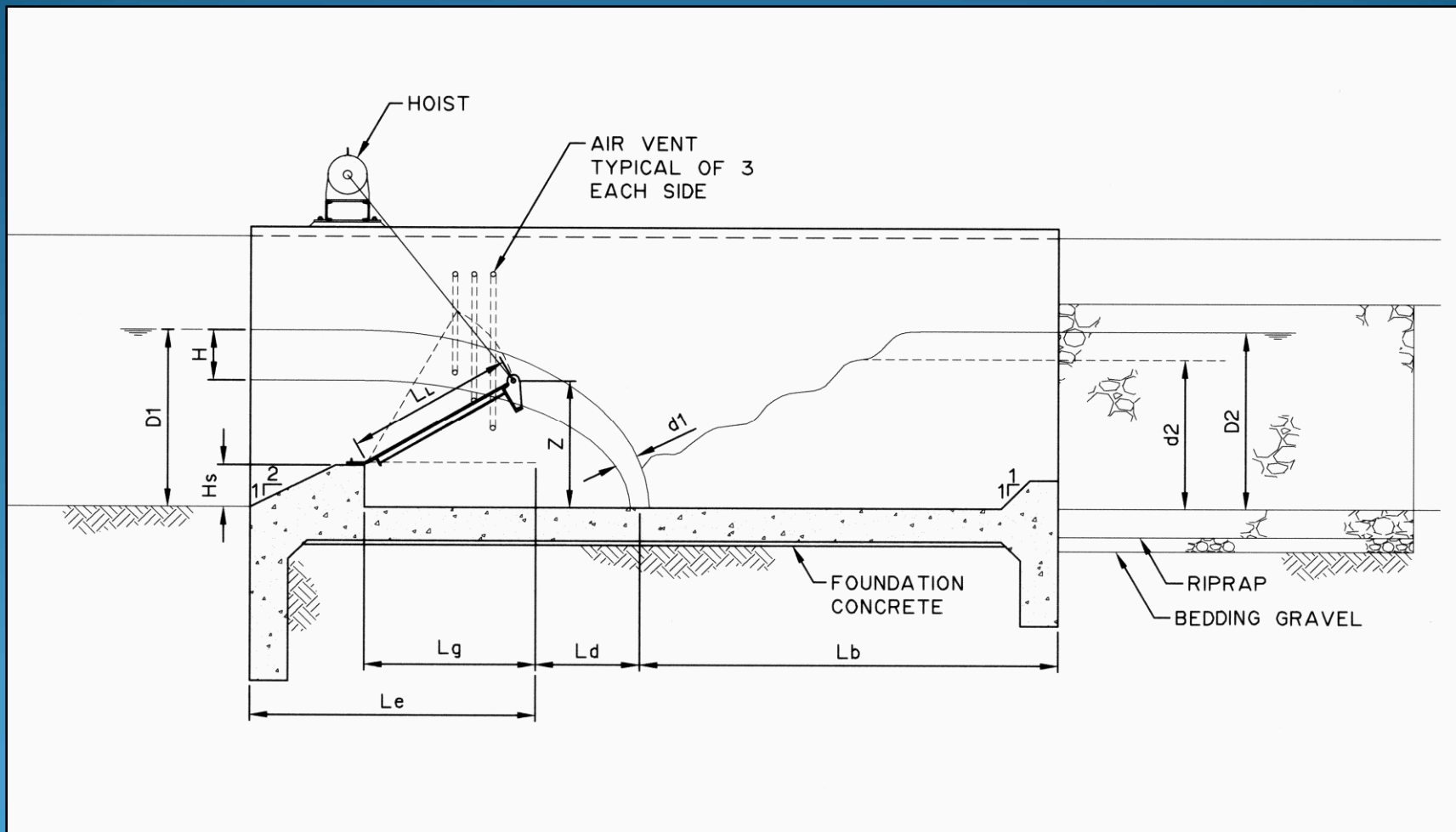
Standards Address:

- Concrete
- Reinforcing Steel
- Structure Freeboard
- Cut-Off and Curtain Walls
- Safety
- Sub-Slab Drainage
- Soft Soil Subgrade
- Sub-Slab Insulation – do not use
- Steel Components and Corrosion Protection
- Soil Loads and Hydrostatic Pressure
- Seepage Path
- Riprap and Bedding Gravel

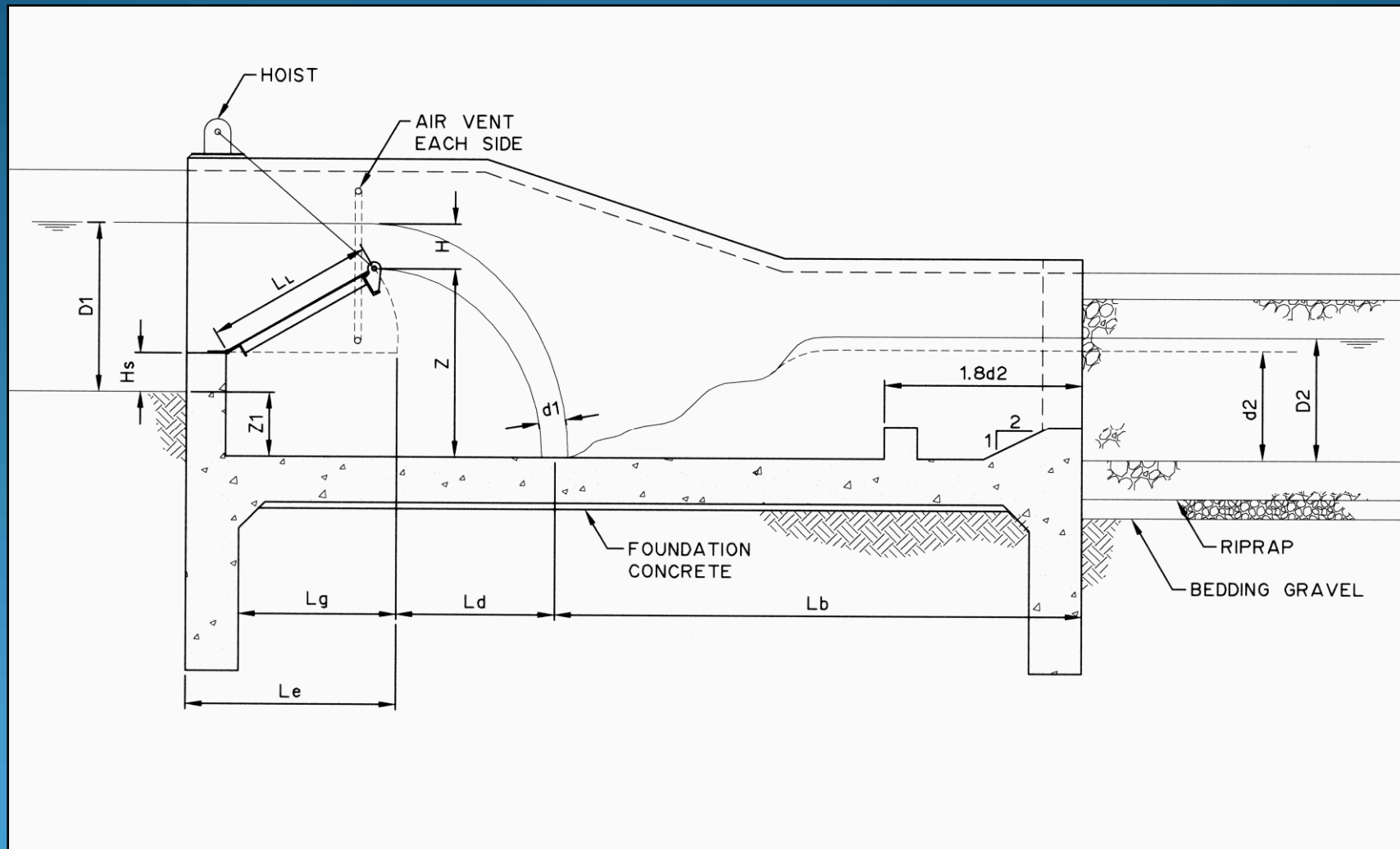
Standards For Concrete Address:

- Concrete Strength
- Reinforcement Concrete Cover
- Minimum Thickness of Slabs and Walls
- Expansion joints and Key Pours

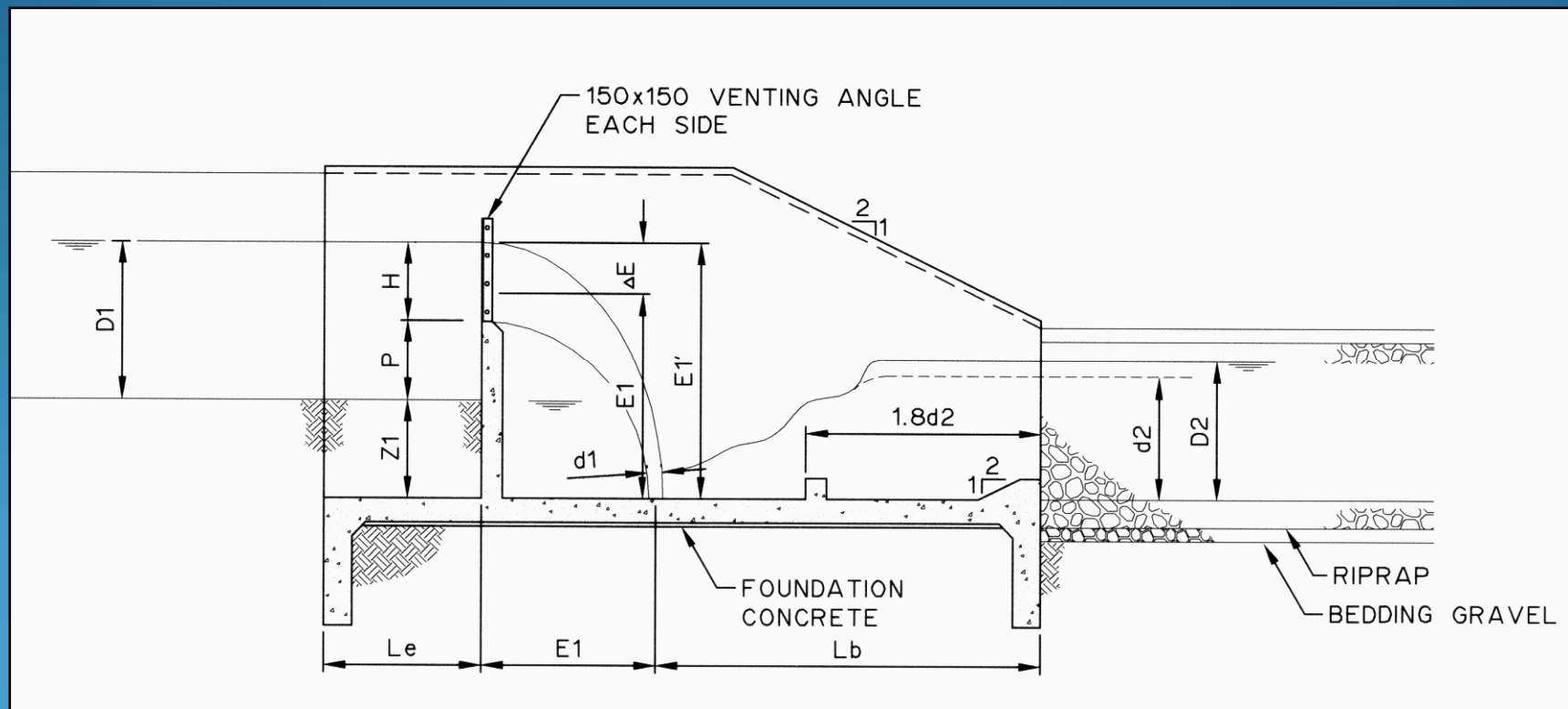
Check Structure



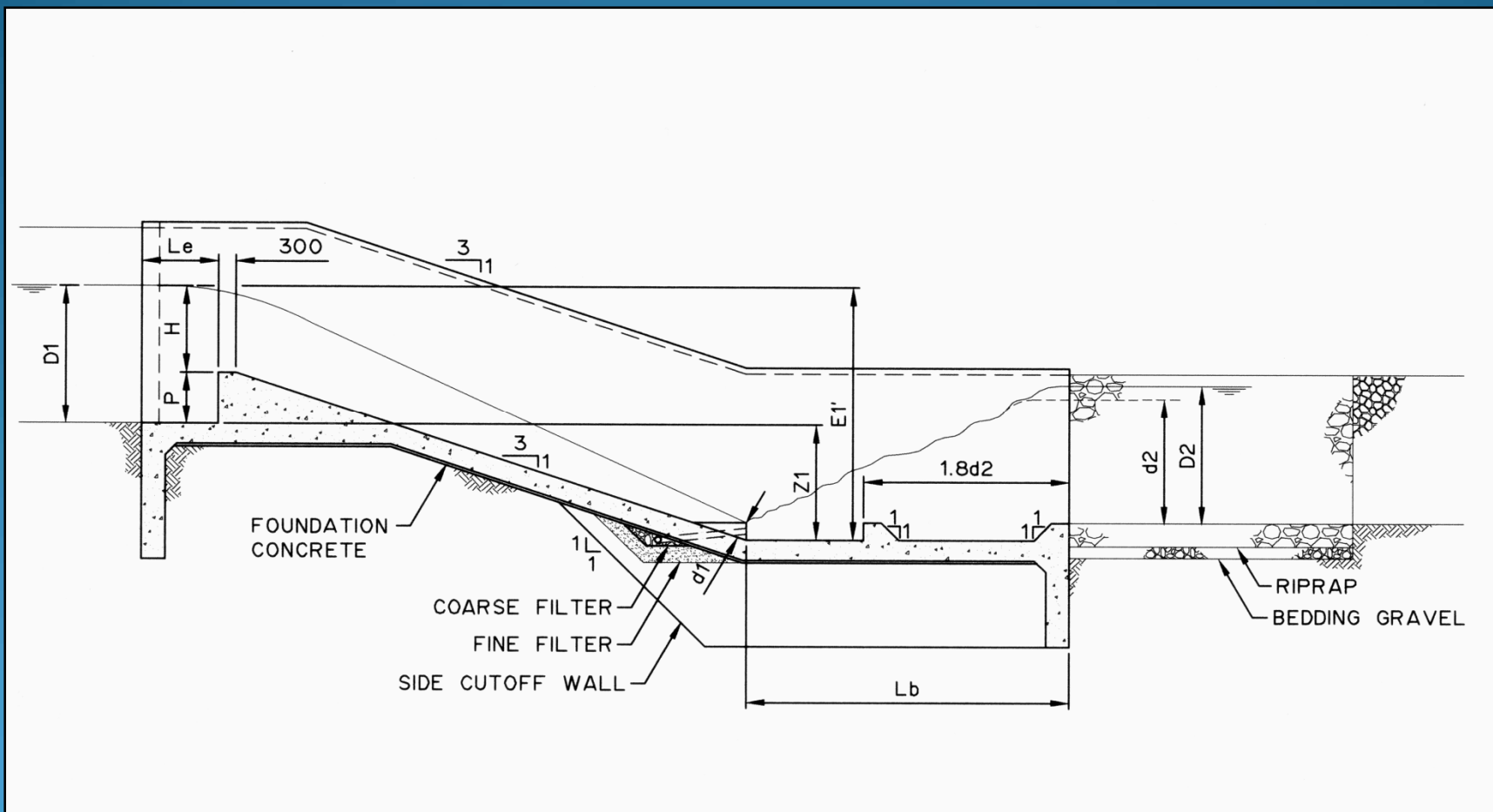
Vertical Check-Drop Structure



Vertical Drop Structure



Chute Drop Structure



Chute Check-Drop Structure

