# Flowable Fill

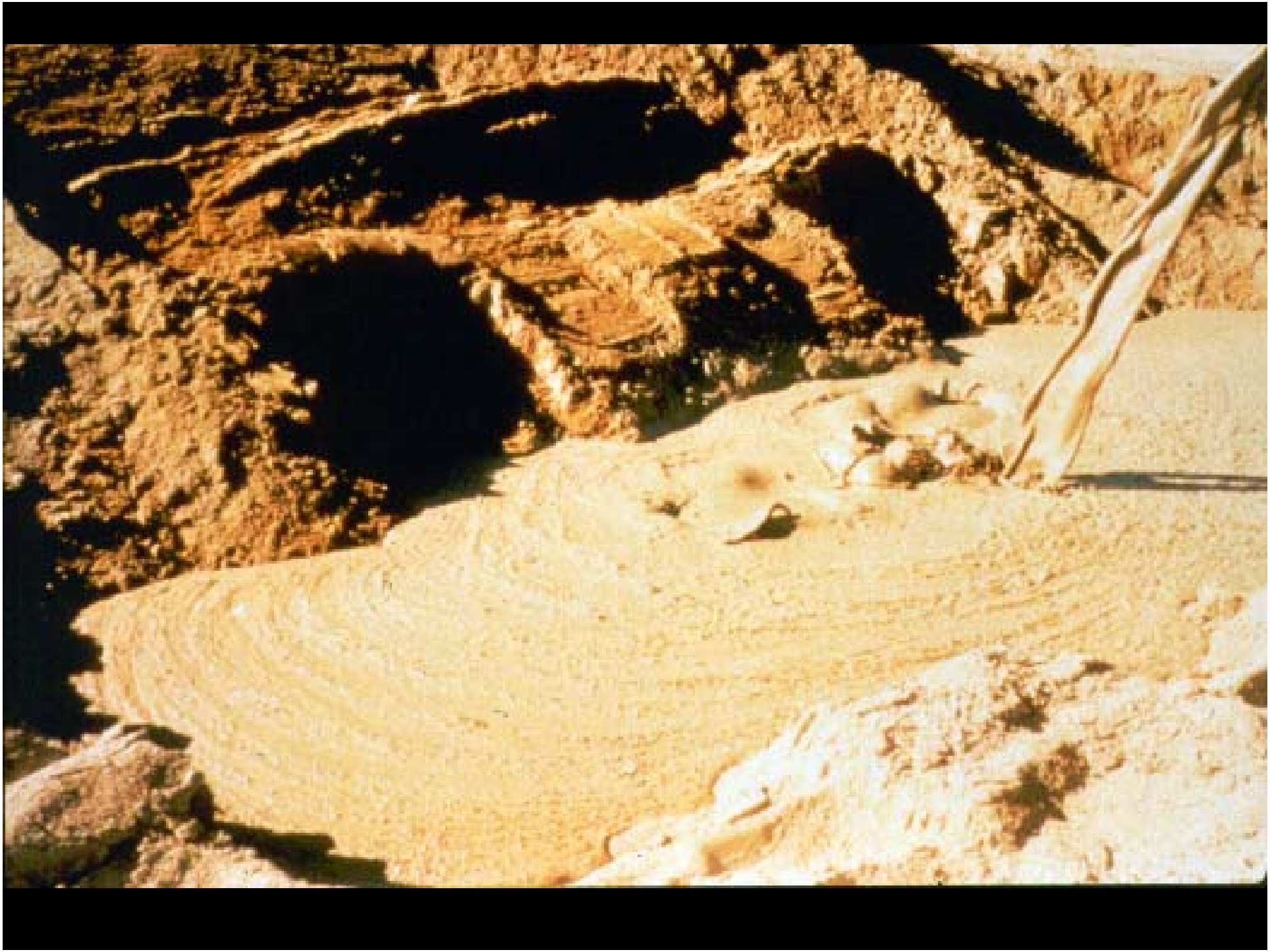
Sadí Torres, P.E.
Concrete Research Engineer
Louisiana Transportation Research Center
Department of Transportation and Development

# Outline

- Definition
- Advantages
- Applications
- DOTD Specifications

# Definition

- Controlled Low-Strength Material (CLSM)
- Self-compacted
- Cementitious material
- Alternative to compacted fill
- Commonly known as Flowable Fill
- Max compressive strength: 1,200 psi



# Advantages...

- Readily available
- Easy to deliver
- Ease of placement
- Product versatility
- Strong and durable
- Easily excavated
- Reduced field inspection
- Fast return to traffic

# ...Advantages

- Will not settle
- Reduces excavation costs
- Improves safety
- All-weather construction
- Reduced equipment needs
- Requires no on-site storage
- Makes use of waste by-product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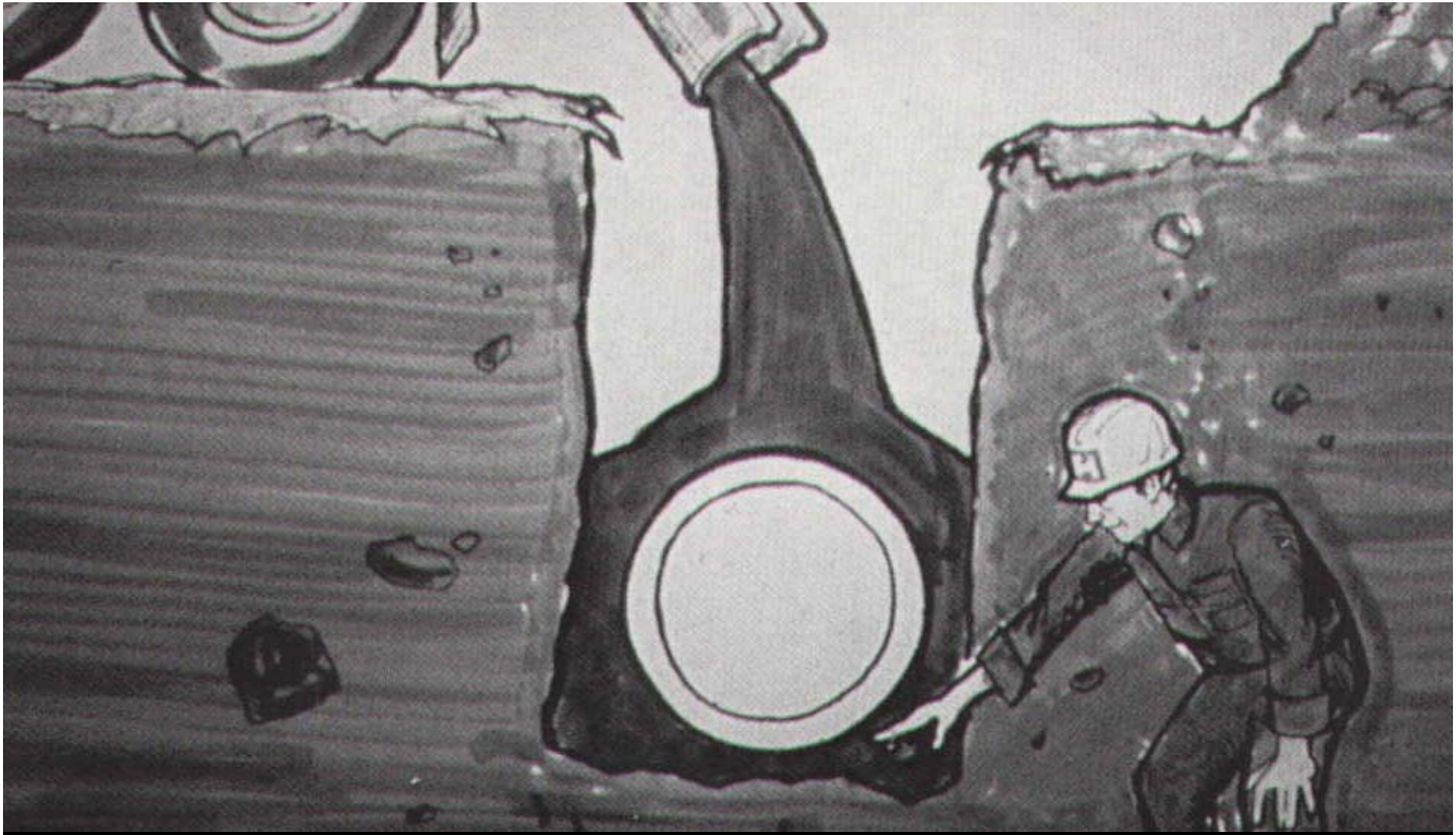
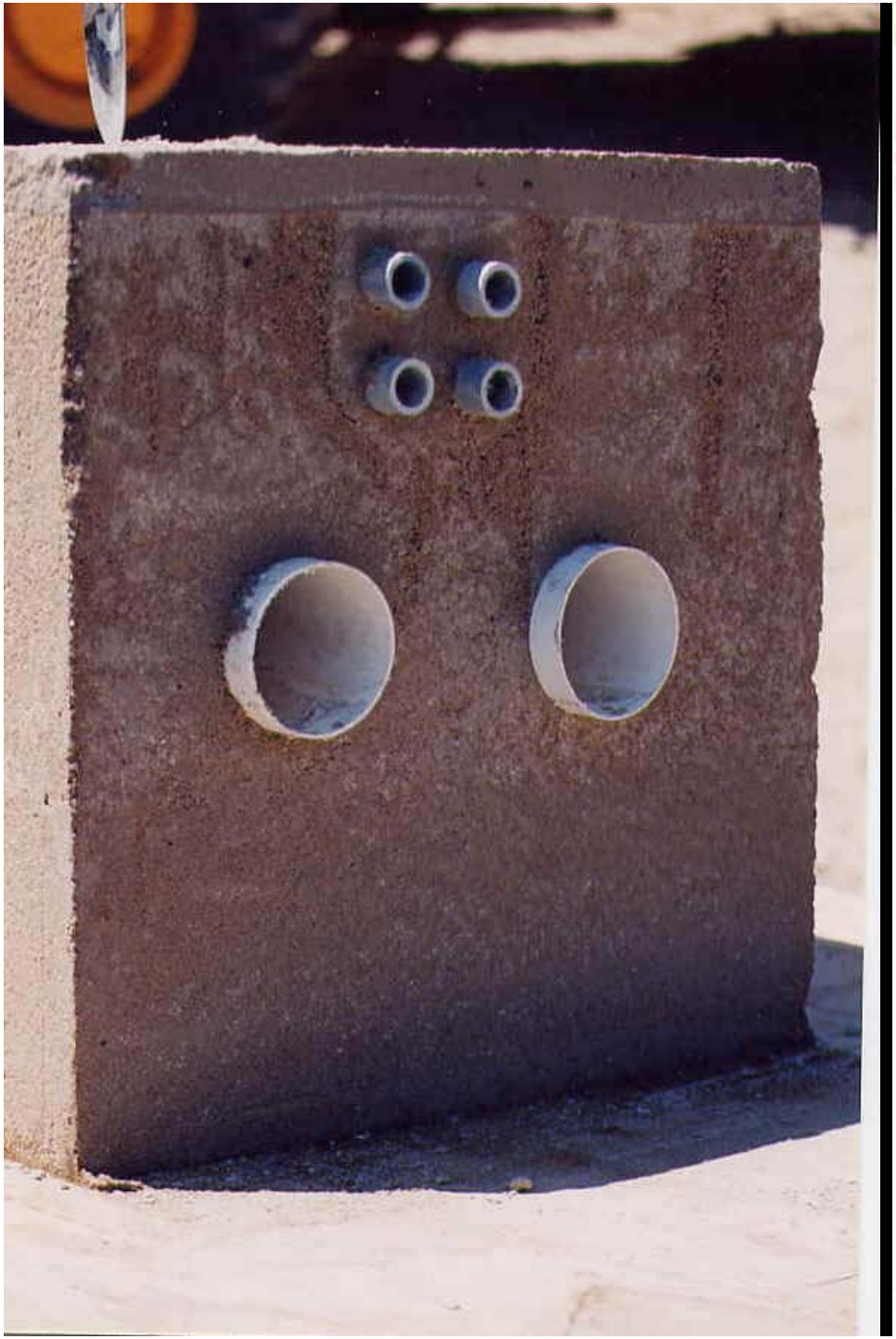
# Applications

- Backfills
- Structural fills
- Pavement bases
- Conduit bedding
- Erosion control
- Void filling





# DOTD Specifications...

- Alternative to compacted soil
- Backfill for:
  - Drainage structures
  - Trenches across pavement
  - Beddings
  - Void filling
- Cementitious mixture

# ...DOTD Specifications...

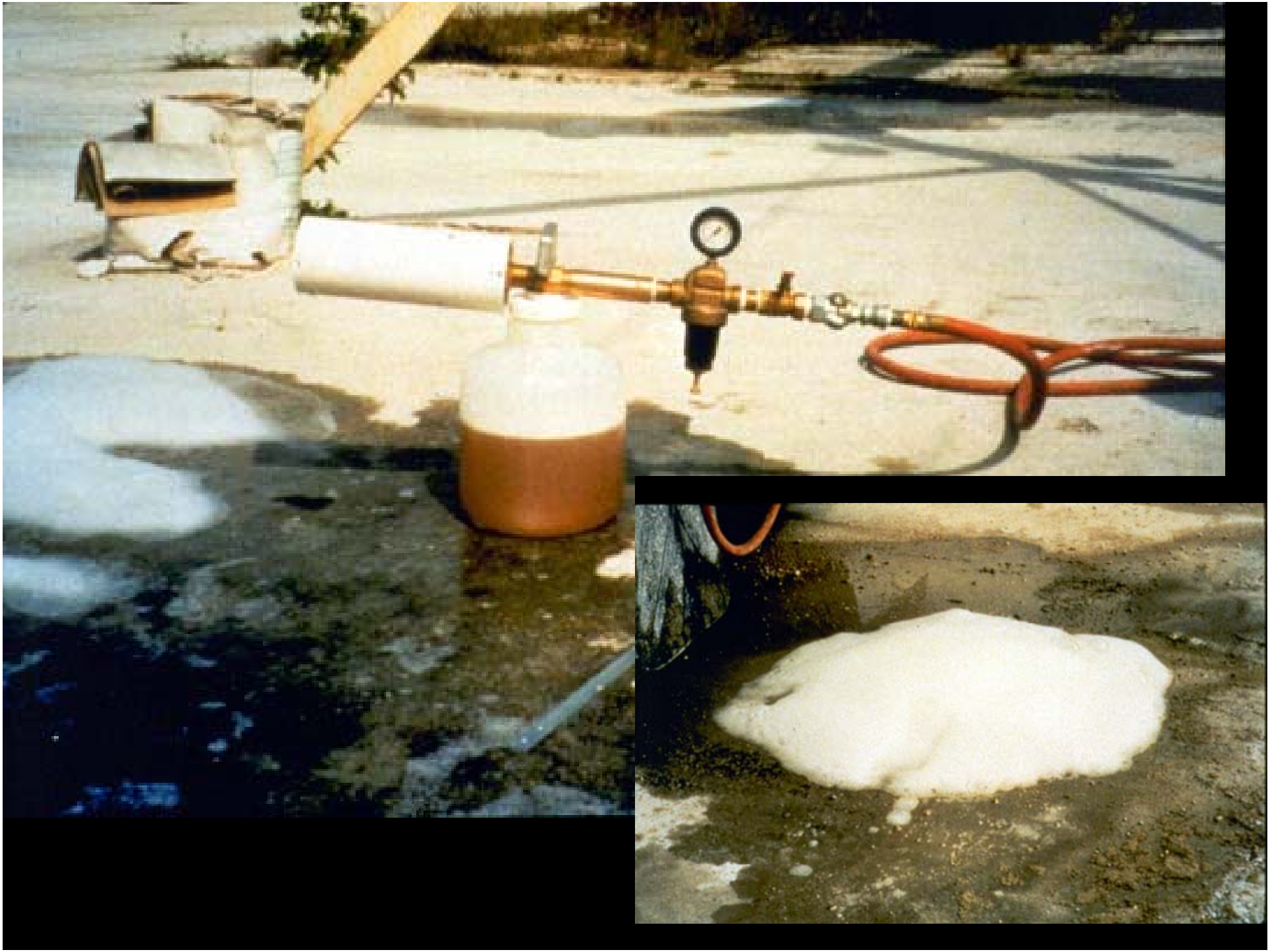
Materials shall comply to:

| | |
|---|---|
| Portland Cement | 1001.01 |
| Fine Aggregate | 1003.02 |
| Admixtures | 1011.02 |
| Water | 1018.01 |
| Fly Ash | 1018.15 |

# ...DOTD Specifications...

**Table 710-1 Flowable Fill Mix Design**

| Material | Excavatable | Non-Excavatable |
|---|---|---|
| Portland Cement | 75-100 lb/yd$^3$ | 75-150 lb/yd$^3$ |
| Fly Ash | 0-150 lb/yd$^3$ | 150-600 lb/yd$^3$ |
| Water** | Proportioned for good consistency | |
| Air*** | 10-35% | 5-20% |
| Concrete Sand | Proportioned to yield 1 yd$^3$ | |
| Unit Weight (wet)** | 90-110 lb/ft$^3$ | 100-125 lb/ft$^3$ |
| 28-day Comp. Strength** | 100 psi Max | 125 psi Min |

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# ...DOTD Specifications...

- Construction Requirements
  - Temporary enddams
  - Lines & grades
  - Freeze protection
  - Placement method
  - Hydrostatic pressure
  - Sampling & testing

# ...DOTD Specifications

- Measurement & Payment
  - Cubic yards (cubic meters)
  - Unit price by cubic yard (cubic meters)

Questions?