Flowing with Precision

BY: LILLAH CLARK, ALLISON EWBANK, SIENNA HEASLEY, ZOE KUMPFMILLER, & SAMANTHA CIAMPA

COMMUNITY PARTNERS

ALEX E. PARIS CONTRACTING COMPANY INC.
Our Greatest Assets, Our Employees

COMMUNITY PARTNER LINK

BACKGROUND INFO LINK

BACKGROUND INFORMATION

EMANUEL PARIS

Company Name: Alex E. Paris Contracting Co, Inc.

- **Drainage System Process**
  - Drainage lines marked on ground based on design plans
  - Excavators dig trenches along lines
  - Depth and width depend on type of drain and how much water will be flowing though it
  - In some cases trenches run alongside the road to slope water into the drain
  - For subsurface drains, a network of pipes is laid in the ground (can be perforated or solid)
  - For surface drains, grates, catch basins, or inlets are installed (placed in low spots to collect runoff)
  - In some cases a geotextile fabric is placed around the pipe to stop soil from entering the system
  - Once installed, trench is back-filled with gravel or crushed stone to improve drainage and protect from external pressure
  - The back-fill is compacted to prevent setting and ensure stability
  - The road surface is then restored
- **Concerns When Installing**
  - appropriate pipe size for amount of flow
  - discharge point location
  - depth of pipe
  - pressure on pipe based on depth
  - grade or slope of pipe
- **Bigger Concerns with Impending Construction**
  - more impermeable surfaces that are installed increases the rate of rainfall getting to inlets or streams which increases the risk of flooding
  - can be helped by the use of stormwater detention ponds and structures
- **General Information**
  - drains replaced 2-3 times a year
  - if drain at low point, high pressure would be induced to the drain
  - on average 100-300 gallons of water per minute flows through drain
  - costs on average $3,500.00 to install a roadside drain

DATA TABLES

DATA TABLES LINK

Water Flow Rates (L/min)	Percentage of Coverage (%)
5.0	0
4.6	11
4.3	22
3.5	33
3.2	44
2.5	55
2.5	66
2.7	77
2.3	88

Water Flow Rate (L/min) vs. Percentage of Drain Covered (%)

- Water Flow Rate (L/min) — $5.16 + -0.0596x + 3.14E\text{-}04x^2$ $R^2 = 0.961$

x-axis: Percentage of Drain Covered (%)
y-axis: Water Flow Rate (L/min)

PROTOTYPE LINK

COST BREAKDOWN

SLIDESHOW
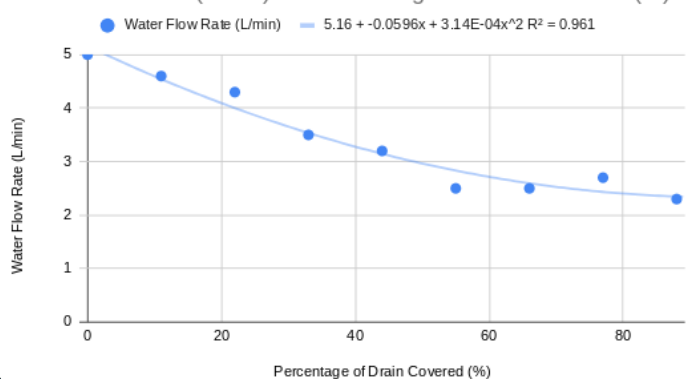
DEMO OF PROTOTYPE

COST BREAKDOWN LINK

CONSTRUCTION PROCESS

LINK TO SLIDESHOW

WORKS CITED LINK

CONSTRUCTION PROCESS LINK

WORKS CITED