



# Wild West Engineering

**Pavement and Storm Water Drainage Design**  
Morgan Petersen - Cassandra Fahl - DaVaughn Dixon



## Background

The Flamingo neighborhood (located in Santa Cruz, Bolivia) is a densely populated area, including a school, small businesses, and local transportation. Flooding in the area is affecting health, transportation, and living conditions.

During the rainy season the depth of water hinders transportation down the main road and prevents children from getting to school. The water floods homes of residents causing damage and an environment for bacteria and mold.

Standing flood water is a breeding ground for mosquitoes which carry multiple diseases that can infect local residents .

## Objectives

- Alleviate flooding in areas A, B and C
- Improve transportation
- Reduce health risks



## Environmental Impact

Contaminants in the storm water can be harmful to plant life, animals and people. Alleviating the flooding will reduce the amount of garbage and debris carried within the floodwaters and left behind in the neighborhood.

## Economic Impact

- Paving Flamingo Avenue will prevent wash outs and deterioration during the rainy season, which reduces the need for costly repairs
- Paving the road and alleviating flooding problems will create a better neighborhood and may cause an increase in property values.

## Drainage System Design Options

Three different systems were evaluated in order to efficiently drain the water from Flamingo Avenue to 5<sup>th</sup> Ring Canal.

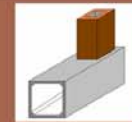
### Catch Basin:

Water flows into a storm water inlet, drops into a catch basin and then flows through a pipe under the road to 5<sup>th</sup> Ring Canal.



### Box Culvert:

Storm water drops through a grate into a box culvert and flows under the road to the canal.



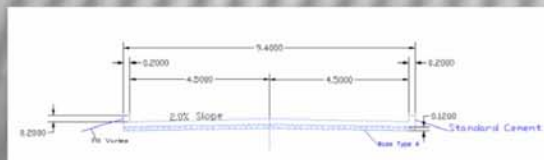
**Curb Inlet:** Water flows from Flamingo Avenue across 5<sup>th</sup> Ring Road and into a curb inlet that slopes into 5<sup>th</sup> Ring Canal.



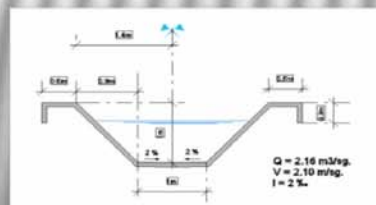
## Solution

1. Concrete pavement of Flamingo Ave.
2. Rehabilitation of 5<sup>th</sup> Ring Canal
3. Design of curb inlet drainage system
4. Fill areas B and C with excess cut from Flamingo Ave.

This design recommendation is expected to cost approximately \$140,600 USD.



1. Cross-section of Flamingo Avenue



2. Cross-section of 5<sup>th</sup> Ring Canal



3. Existing curb inlet design