

CASE HISTORY

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CONSTRUCTION OF PIPE CULVERT BY USING TECHFAB METAL GABIONS AT GHANA, SOUTH AFRICA

GHANA, SOUTH AFRICA



Hydraulic Works

| | |
|---------------------------------|---|
| Client: | Products used & Quantity supplied: |
| | <ul style="list-style-type: none">• TECHFAB METAL GABIONS ZINC+PVC COATED• NONWOVEN GEOTEXTILE |
| Main contractor: | |
| Manufacturer & Supplier: | Year of construction: |
| TECHFAB (INDIA) INDUSTRIES LTD. | SEPTEMBER 2019 |

Project description:

In October 2018, under government program of development of Ghana infrastructure, it was decided to build this Pipe culvert so that it will ease up to commute between two villages.

Project challenges:

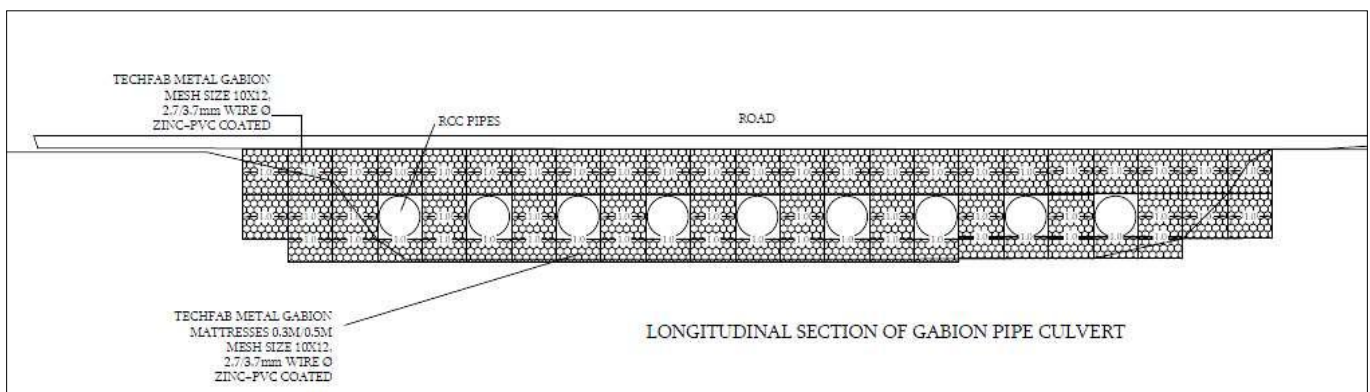
During monsoon, it was observed very high velocity flow in the river with 1m – 2m of water level in the River throughout the season and the access between two village was completely closed during this period, the Authority has earlier decided to construct the bridge which seems to be uneconomical at this location., Finally it was decided to construct the pipe culvert structure. The concrete pipe culvert again has some draw back during submerge condition so it was decided to construct flexible Gabion Pipe Structure in such condition.

Solution:

The proposed solution here is with the RCC Pipes and Flexible Techfab Metal Gabions and Gabion Mattresses as apron.

The gabion structures become a flexible, permeable and monolithic structure and cost effective compare to the reinforced cement concrete structures. In this type hydraulic application and especially in transverse structure, the flexibility of structure play very important role., which can be constructed easily with very low foundation depth, if require can be constructed underwater up to certain depth, and gabion structure will take care of unequal settlement may occur.

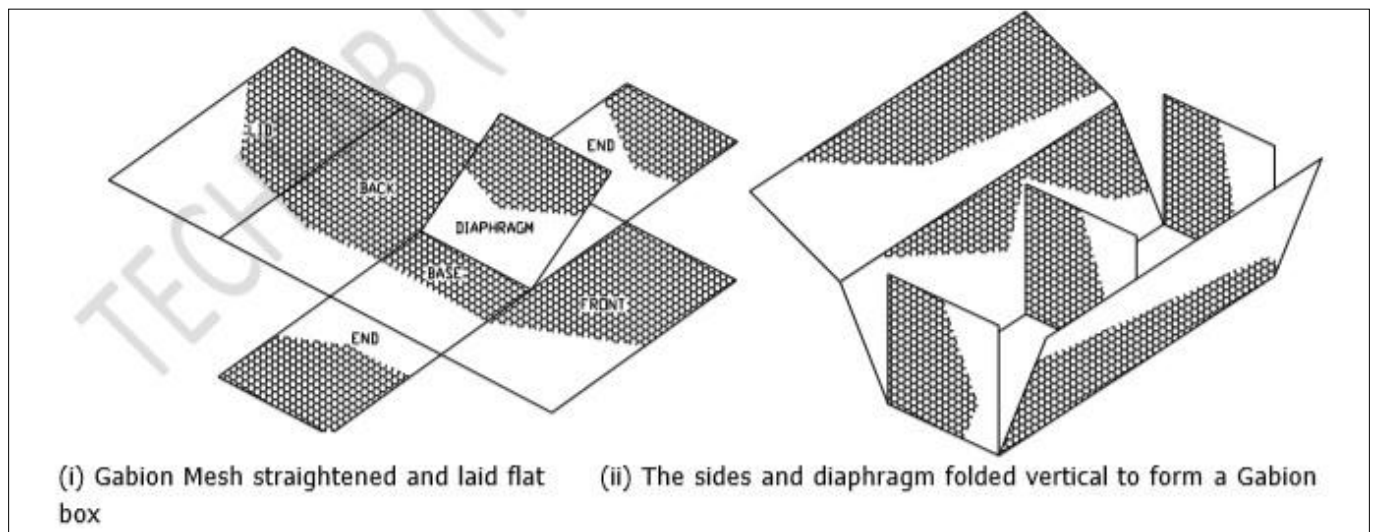
So, Authority has decided to construct Gabion Pipe Culvert with flexible Gabion mattress as scour apron.



Typical Longitudinal Section of Gabion pipe culvert

Execution on Site:

- The ground surface over which the gabions are to be laid was inspected for any irregularities or weak pockets. In case any irregularities or weak pockets are observed, they were rectified by removing the weak soil and replacing by good granular material.
- For the purpose of easy transportation and handling during transportation, the Gabions are bundled and packed in a flat folded manner. Each box should be carefully opened out, laid flat and straightened out so that all the kinks and creases are removed. The sides and the diaphragm are then lifted vertical and laced together to form a box like structure.



- The sides and the diaphragms were laced together using the lacing wire provided with Gabions / Mattress having the same quality of mesh wire, to form a gabion box.
- The selvedge wire along each edge was laced to the adjacent selvedge wire to give a continuous joint.
- Every box was laced to adjacent box and box below or above it, so that the whole structure is interconnected.
- Gabion was filled by using well graded stone fill and by hand packing of the stone fill.



During Construction



Completed Structure

Conclusion:

The Gabion pipe culvert is constructed successfully in September 2019 and the traffic has start moving. The Authority is very happy with the speed of construction and the working of structure as it is fulfilling the purpose for which it is constructed in well manner.

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