



Study of Hydraulic Bridge

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ABSTRACT

The point of this venture is to plan and construct another sort of extension that will consequently raise itself when the water level in a stream or channel rises or when boats need an entry through sensors on the scaffold. The scaffold will bring down again when the plants on the extension are diminished and the boat disregards the extension. The scaffold will likewise be utilized to forestall extreme overtopping and flooding during high streams that can cause primary disappointment or even death toll. Scour and other water driven cycles can be answerable for compromising the soundness of assembled framework. The component of the scaffold will be planned by a mechanical specialist who knows about the mechanical part and the subtleties of the development of the extension in like manner. A structural designer will come into the image some other time while planning an extension. Nobody can keep the significance from getting this review. bridge

Keywords: Sensors, Overtopping, Flooding, Hydraulic Bridge, River.

1. INTRODUCTION

A bridge which licenses passage of the watercrafts or cargo boats is regularly known as the portable scaffold. Exactly when improvement relies upon the water driven structures then it is delegated Water driven a bridge. For building a model, consistently used pressure driven gear are needles. As the scaffold is on and on opened and shut, weakness disappointment is the most disturbing element than disappointment under consistent burden. Furthermore, the structure is more perplexing in light of the fact that we can't give any balance (other than the arch help) to allow watercrafts/boats to pass.

2. LITERATURE SURVEY

1. Study entitled "Design and Fabrication of a Retractable Bridge"

Published by Froylan Noel Cannon Gracias in December 2017

The objective of the project was to design and build a new type of bridge that would retract automatically to give way for ships to pass when movement in the river or canal is picked up by a sensor on the bridge. The idea of the retraction was to bring about an innovative design of bridge structure that couldn't be found easily at some part of the world. The mechanism of the retractable part would be design that would able to support while maintaining balance and position the retractable part in correct order every time it's retracted.

2. Study entitled "Hydraulic Analysis of Bridge Piers Replacement"

Published by Stasa Vosnjak, Gorazd Novak

Hydraulic analysis of bridge piers construction impacts was carried out on the Salzach river in Austria. The construction of a new bridge due to the expansion of the double track railway to three tracks foresees two new bridge piers in addition to the four existing ones. Since it is not possible to interrupt the traffic, a new parallel railway bridge has to be constructed first, and only afterwards the old piers will be removed. Since such a number of bridge piers will cause the conveyance reduction of the river, hydraulic modeling was demanded and performed at the technical university Graz.

3. Dimension and Material Specifications:

3.1. Span Overall:

The Water powered Scaffold deck should be of length 800mm with a recompense of +/- 20mm. Deck should be divided into halves of length 400mm each and a pivot component should be introduced to such an extent that every half deck turns about its individual pivot (pivot among arch and deck). The

greatest width of the scaffold ought to be 80mm with a remittance of ± 10 mm (arch avoided). The scaffold should have just two vertical arches and the range (disconnected in two segments) and focus to focus distance between arch should be 600mm with a stipend of ± 10 mm.

The street (on the top) should be persistent and should allow a 65mm x 65mm x 65mm vehicle to go through the whole length of the scaffold. All out vertical distance of the lower part of the base harmony of the deck from the foundation of the balance should fall inside the degree 100mm to 130mm • The greatest vertical distance between arch top and base of the balance ought to be 400mm with a remittance of ± 10 mm (Punishment Models for previously mentioned rules: Punishment of 5% of all out score (allude Scoring area) will be deducted for each aspect surpassing as far as possible. Further augmentation in aspect values will prompt direct preclusion. The dead heap of the bridge should be under 1.7 kg. (Punishment: Members will be precluded in the event that this standard isn't fulfilled).

3.2 Scaffold Arch:

The element of the balance of the arch ought to be 135mm x 100mm for the arch. The level of the balance should not be in excess of 50 mm from ground base. Members are permitted to utilize quite a few stick till this level. (It is exceptionally empowered assuming members use step balance yet the level should be inside 50mm starting from the earliest stage The arch segments should not be thicker than 15mm. Something like two sticks ought to be available at any even cross segment of arch to give cross-propping. Punishment: Members will be excluded assuming any of the over 3 guidelines are abused. The deck should fit between the two segments of the arch. The attachment part of the pivoting component (as portrayed later) should be fixed to arch

3.3 Scaffold Deck:

The deck support between the top harmony and the base harmony should be a bracket (not a shaft) whose individuals are made of Popsicle sticks. The scaffold deck ought to be upheld on just two longitudinal supports. The dividing between cross bracings (whenever gave) ought not be under 60 mm. The all out length of deck ought to be 800mm ± 20 mm which should be divided longitudinally into precisely two identical parts (around 400mm each, say deck A (left piece of complete endlessly deck B (right piece of complete deck)).

Focus to focus distance between arches at two furthest edge should be 600mm with a stipend of ± 10 mm. For the relationship between the two cantilever parts of deck, a cross-over plan ought to be made. This cross-over ought to follow these measures. The top harmony of deck A should be prolonged out in right side by 30 mm. Essentially, base harmony of Deck B ought to be prolonged out in right side by 30 mm to make a cross-over. Note that for no situation covering ought to surpass 30 mm ± 5 mm. Bombing this will draw in a punishment of P= 5% of all out score. The partition between the most elevated mark of the top harmony and the lower part of the base harmony of the deck should in the middle somewhere in the range of 40mm and 50mm. In the event that the profundity of deck is more than this provided aspect with a punishment of P= 5% of complete score will be deducted. The most extreme thickness of the both the top and base harmonies ought to be 12mm (for example 1 Popsicle stick width).

Cross-over standards for support people Not multiple Popsicle sticks ought to be covered longitudinally to make a bracket part for example the greatest thickness of a bracket part ought to be 5mm and most extreme width is 12mm for example width of one popsicle stick.

Joint measures for Bracket Individuals - Joints ought to look like a pin association for example all closures of individuals ought to meet precisely at the joint (an association of roughly 15 mm width) and not in excess of 10 Popsicle sticks ought to be covered at joints.

3.4 Turn Component:

Joint among arch and deck

Ball and Attachment joint should be available between the extension deck and arch help to give pivot system. Ball system should be presented on the scaffold deck as an outward raised block made of covering popsicle sticks (12 mm width and 12 mm profundity) covering the broadness of bridge deck and afterward it tends to be recorded. Comparably attachment system on arch help as an internal raised block made of covering Popsicle sticks (12 mm width and 12 mm profundity) covering the expansiveness arch help.

A screw can be fixed to keep the bridge deck ready. To embed the screw an opening can be made ready piece of joint and at comparing hub on arch segment. Opening distance across ought to be marginally greater than the screw's width so that can pivot unreservedly. A limit of 2 screws (one on every arch segment) can be utilized for single arch. (Punishment: Members will be straightforwardly precluded for defying this norm and the scaffold won't be

Tried). The instrument (ball and attachment) should be contained Popsicle sticks, Fevicol and limit of 4 screws (one on every segment of every arch) in particular.

3.5 Cylinder Instrument

A needle ought to be utilized as a cylinder to pivot (open) the scaffold deck. To make strain, air or water can be utilized in the needle. A limit of 4 needles ought to be utilized to make the total system for turning the scaffold. Lines can be utilized to interface two needles or for needle to connect association. On the off chance that needles or lines are straightforwardly associated with span in your component, it ought to be finished utilizing M-Seal simply to pivot the bridge deck, one needle should be appended as cylinders for each deck and arch association. This needle should be loaded up with a liquid and connected to one more needle which would be controlled by the member to turn the bridge deck. Members will not be permitted to contact the deck while pivoting

3.6 Material Limitations:

Popsicle sticks (most extreme length 120 mm, width 12 mm and thickness 2 mm) and Fevicol MR White paste should be utilized to build the bridge. The Popsicle sticks can be sliced or managed to any shape or size. Needle ought to be eliminated prior to utilizing plastic needles. M-Seal should simply be used to join needle to the scaffold arch and M-Seal shouldn't b utilized elsewhere. (Infringement of this standard will prompt direct exclusion) Glues can't be associated on the free surface of a section made of Popsicle sticks or syring to improve strength. The group will be precluded whenever found involving some other material other than those notice in any piece of the construction

Conclusion

This hydraulic bridge is effective in flood prone area to prevent severe impact on hydraulic structure and human life. Hydraulic bridge which gives alert of rise in water level of the respective sources so, we can stop the movement of traffic over the bridge.

References

1. Study entitled "Design and Fabrication of a Retractable Bridge"
2. Study entitled "Hydraulic Analysis of Bridge Piers Replacement"