Green University of Bangladesh
Department of Computer Science and Engineering (CSE)
Faculty of Sciences and Engineering
Semester: (Spring, Year: 2022), B.Sc. in CSE (Day)

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Course Code: CSE-208 Section: 191DB

Lab Project Name: Padma Multipurpose Bridge in 3D

Student Details

	Name	ID
1.	Umme Loara	191002187
2.	Abu Yousuf Tamzid	191002092
3.	Mst. Mahmuda Akter Sumi	1910020308

Submission Date : 25-04-2022
Course Teacher's Name : Mr. Shabbir Mahmood

[For Teachers use only: Don't Write Anything inside this box]

Lab Project Status

Marks: …… **Signature: .....**

Comments: ..... **Date: .....**

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Chapter 1

Introduction

1.1 Introductions

AutoCAD is an industry-leading commercial CAD software. Used by AutoCAD AEC (Architecture, Engineers and Construction) to create and optimize 2D and 3D designs. AutoCAD is a widely used software program that can help you draft construction documents, explore design concepts, visualize concepts through photorealistic rendering, and mimic how a design works in the real world. (Autodesk) [1]

The project name is Padma Multipurpose Bridge using 3D Drawing. Padma Multipurpose Bridge project is "**Dream Bridge**" of Bangladeshi people. It is located about 40 km southwest of the capital Dhaka. It is a two-tiered steel truss bridge, with a two-way four-lane road at the top and a single-track railway at the bottom. [2]

The main purpose to construct the Padma Bridge is:

I. The Padma Bridge will provide an important link to Bangladesh's national road network, especially to the southwestern part of the country. The bridge will help develop an area where the road network is poorly served.

II. The bridge will save significant travel time between Dhaka Division and the South West Towards Bangladesh and possibly India. Travel time savings for cars and buses are expected to be around 2 hours and for trucks more than 10 hours. The Padma Bridge will rapidly reduce transportation costs and bring about significant economic structural changes in the south-western region. Changes in the relative value of the components of production, goods and services will encourage changes in economic activity, creation of new activities and changes in how current economic activities are followed.

III. Like the Jamuna Bridge, the inauguration of the Padma Bridge is expected to have a positive impact on poverty alleviation in the south-western region, especially in the Khulna and Barisal divisions, with increasing economic activity and consumption expenditure. [3]

This is the big constructions. By making this project we learn the basic of AutoCad and also by creating this large project we will able to make different types of bridge. And also we will gain a strong knowledge about 2D, 3D drawing in AutoCad.

1.2 Design Goals/Objective

- To enrich our knowledge in AutoCad.
- To enrich strong knowledge in 2D, 3D Modeling.
- To develop the idea of Padma Multipurpose Bridge.
- To gather knowledge of any type of Bridge.
- To enrich our knowledge how a bridge can reduce traffic, save times, estimate cost.

Chapter 2

Design/Development/Implementation of the Project

2.1 Implementation:

2.1.1 Main Blocks:

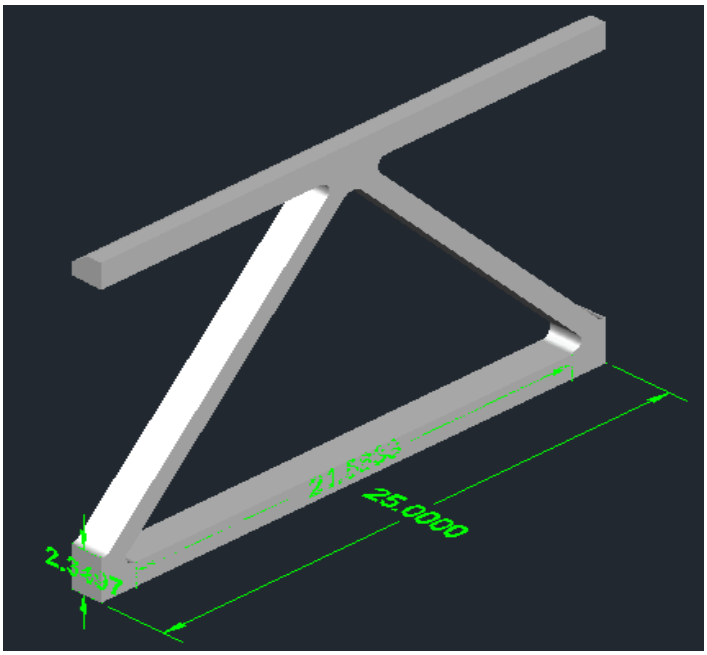

Fig-1: Span block

Fig-2: Pillar

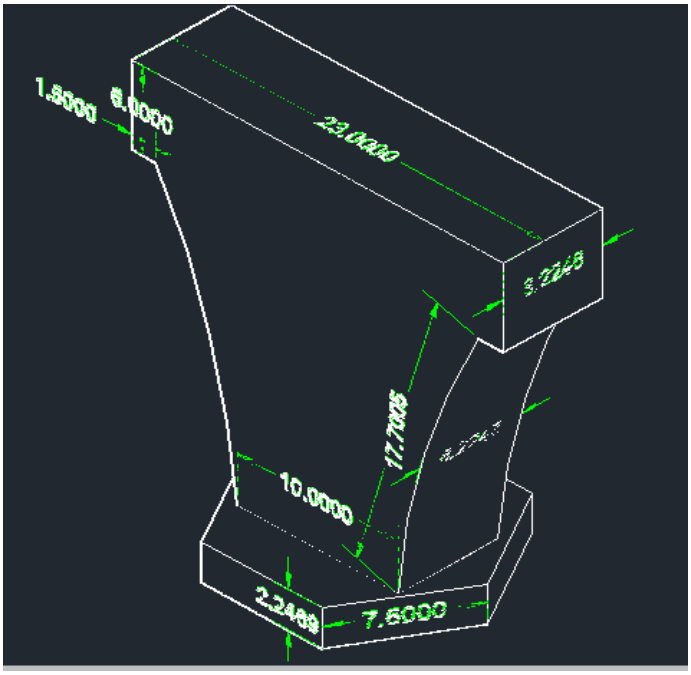

Fig-3: Pillar with Annotation

2.1.2 Rail line blocks:

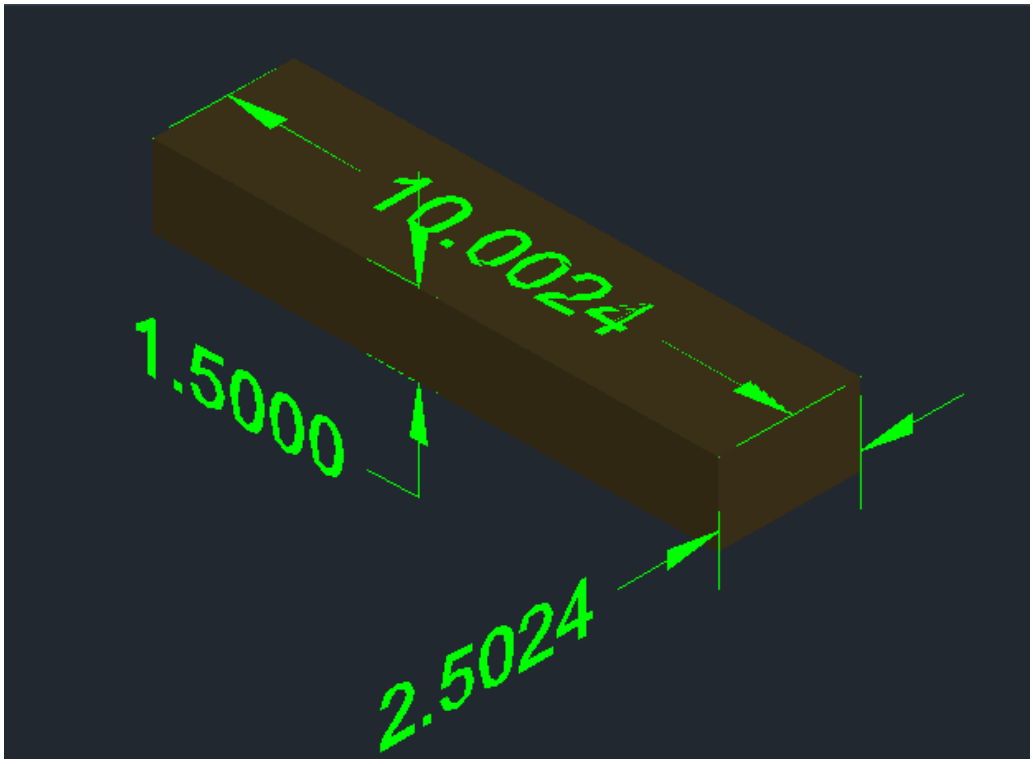

Fig-4: Sleeper

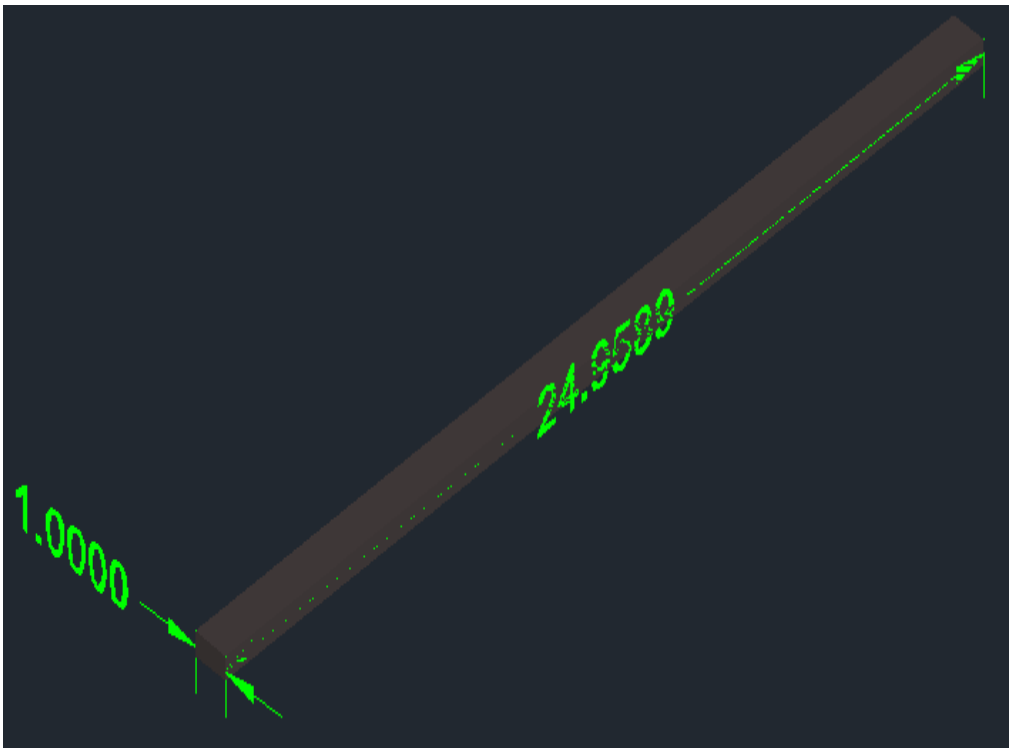

Fig-5: Rail

2.1.3 Road blocks:

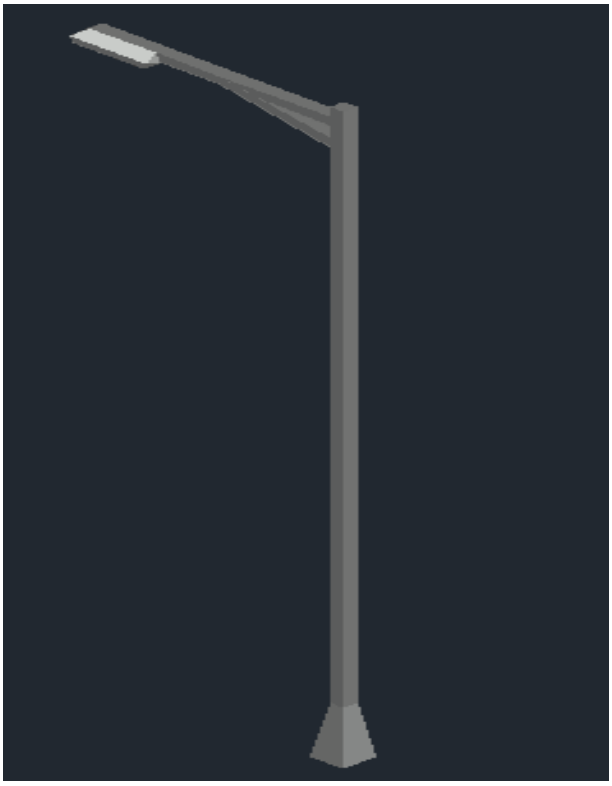

Fig-6: Traffic light

Fig-7: Traffic light with no U-turn

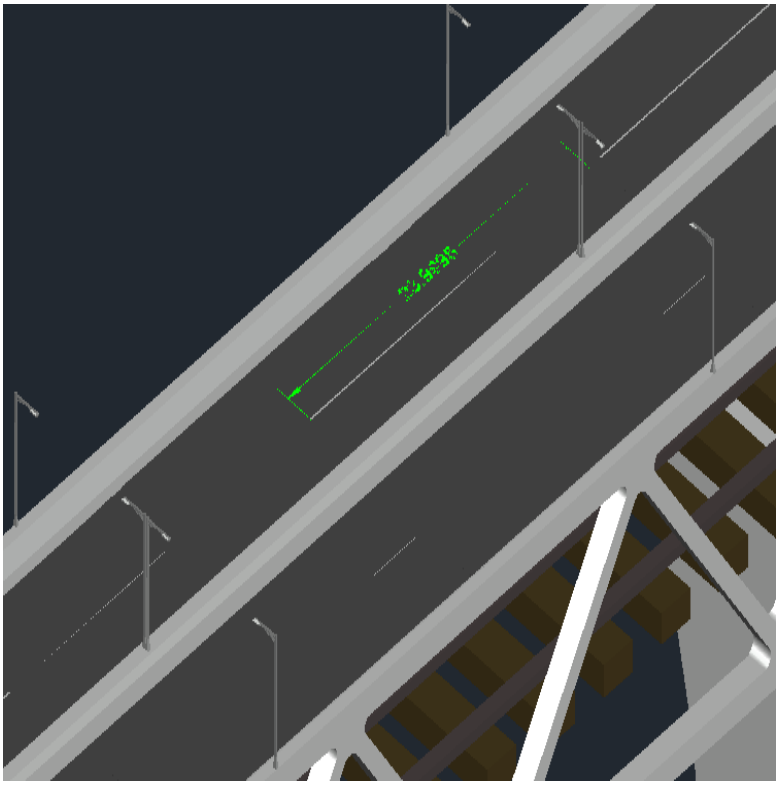

Fig-8: The 4-lane road

2.1.4 Slope & bridge:

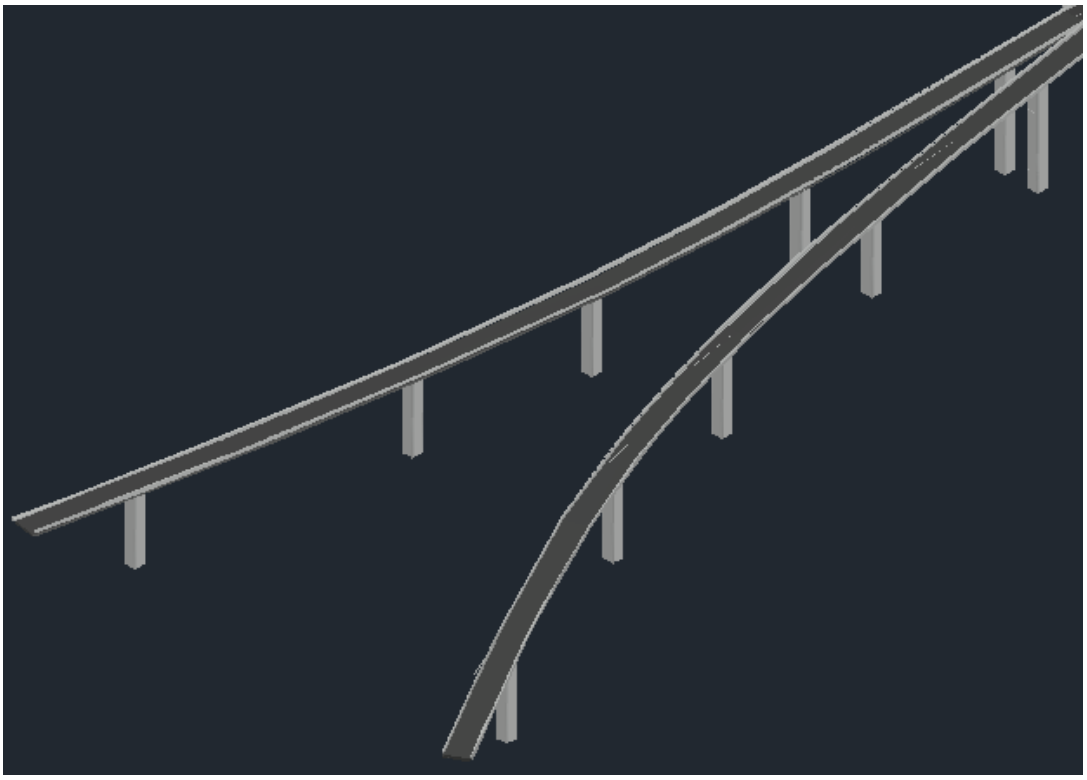

Fig-9: The sloping part

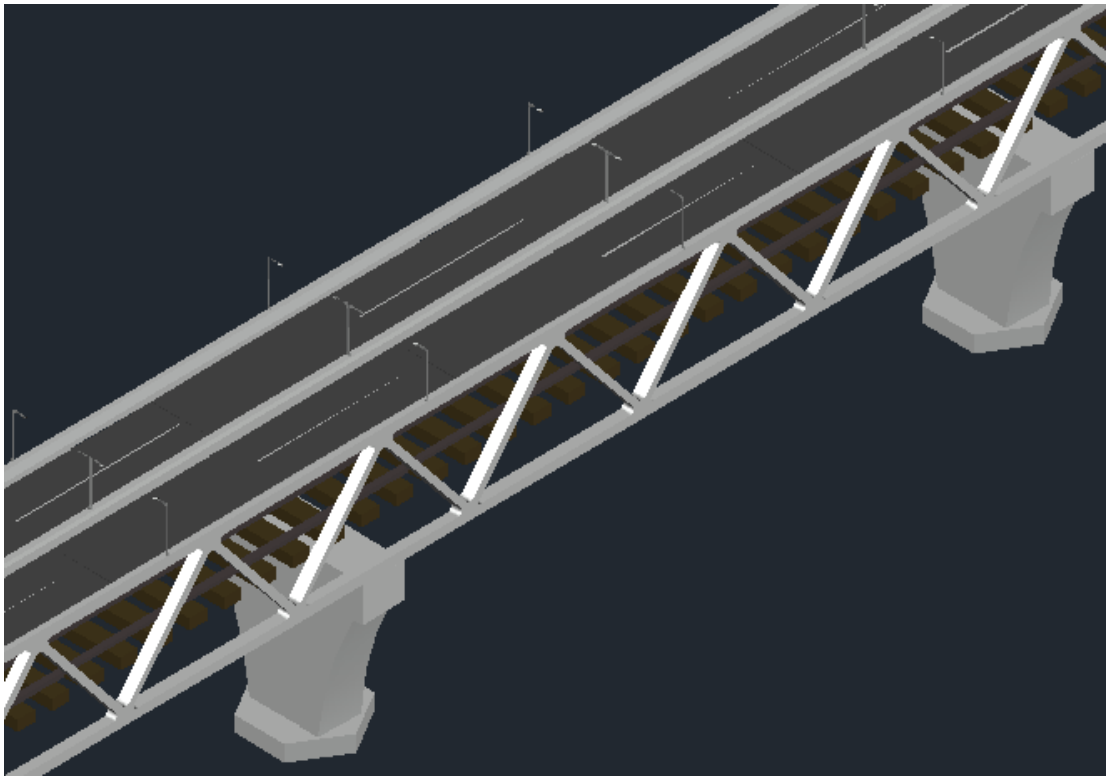

Fig-10: One part of the bridge

2.1.5 Overview of the Bridge

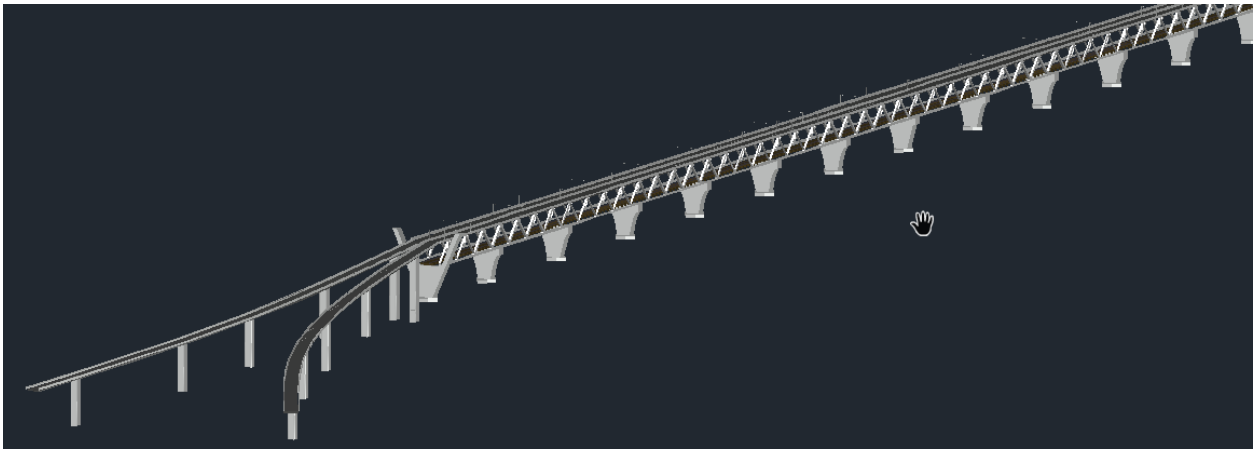

Fig-11: Half part of the Bridge

Chapter 3

Performance Evaluation

3.1 Results and Discussions

3.1.1 Discussions

Our project is Padma Multipurpose Bridge in 3D modeling using Autocad. We try to make our project as like Padma Bridge. But after making our project we see that, it is look like Padma Bridge but not like actual Padma Bridge. According to WIKIPEDIA the Padma bridge is with 150.12 m (492.5 ft) long 41 spans, 6.150 km (3.821 mi) total length and 22.5 m (74 ft) width. The highest depth of pile of this bridge is 122 metre. [4] But the bridge we make is not has 41 spans. It has 13 spans. Also the length of our bridge is not 6.150 km. But our bridge is two-tiered steel truss bridge, with a two-way four-lane road at the top and a single-track railway at the bottom. Also our bridge is multipurpose. Because it has rail line, four lane road, under the bridge the launch & boats also cross.

3.1.2 Analysis and Outcome

What we have analyzed for the construction of the Padma Bridge and what we have come up with is not the same. Although our bridge is multi-purpose like Padma bridge, it is not a complete measurement. A simple example of this is that the Padma Bridge will have 41 spans but there are 13 spans in our project and 14 pillars in our project. However, our project has a 4-lane road. And like the Padma Bridge, it has railways for trains.

Fig: The actual Padma Bridge

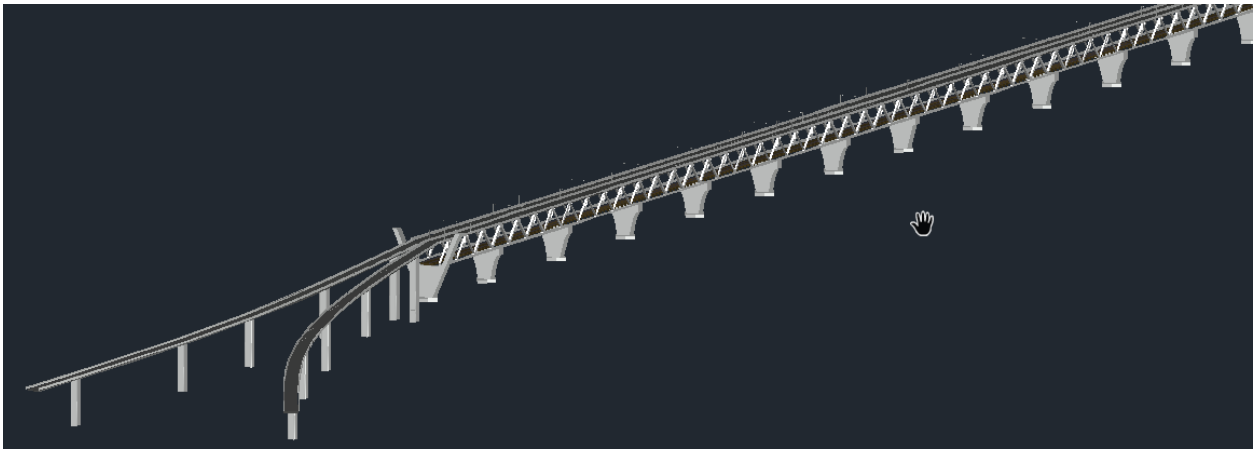

Fig: Our making Padma Bridge.

Chapter 4

Conclusion

4.1 Introduction

From this project we will tried to summarize the whole idea that we practiced and learned on our whole Engineering Drawing course. A person can demonstrate the basic concept of AutoCad.

4.1 Practical Implications

- ✓ Our project can help a beginner to learn the basic of AutoCad 2D & 3D drawing.
- ✓ Also our project can help a beginner to expert in drawing using AutoCad. He/ She will be able to do another types of bridge & also able to make different types of drawing.
- ✓ Our project is still under construction. It will impact in economic. When the construction is complete, the bridge's Benefit-Cost Ratio (BCR) will 2.1 per cent and the Economic Internal Rate of Return (ERR) will 22 per cent according to study report by Maunsell. So, the construction of this bridge is economically profitable. [5]
- ✓ After constructing the project, the GDP of the south increase by 2.0 per cent and the overall GDP of the country by more than 1.0 per cent. [5]
- ✓ Also after completing the project in real, the traffic will be reducing.

4.2 Scope of Future Work

Our project is done in full AutoCAD. And this project is now in construction phase in Bangladesh. Since we have been able to do this project, we can do 2D, 3D design of other bridges in the same way. And in our daily lives we have a lot of construction work such as construction of houses or construction of roads. And for all this we always take refuge in the engineer. By completing this project, we will be able to do many designs on our own. In the future, we will be able to design many short cuts myself.

In addition, if we talk about the Padma Bridge, the construction of the Padma Bridge will increase our GDP, reduce traffic, and reduce the risk of traveling on the river. A large amount will be added to the economy through tool booths.

References

[1] Last visit: 25/04/22; https://iastate.pressbooks.pub/visualgraphiccomm/chapter/chapter-1/

[2] Last visit: 25/04/22; http://www.crecg.com/english/10059090/10059186/10059566/index.html

[3] Last visit: 25/04/22; https://www.adb.org/sites/default/files/linked-documents/35049-01-ban-ea.pdf

[4] Last visit: 25/04/22; https://en.wikipedia.org/wiki/Padma_Bridge

[5] Last visit: 25/04/22; https://thefinancialexpress.com.bd/views/padma-bridge-its-huge-impact-on-economy-1613752119