

**FINAL ASSIGNMENT**

**DESIGN UPPER STRUCTURE OF CONCRETE DECK ARCH BRIDGE**

**Submitted to fulfill requirements in completing undergraduate education**

**In the Department of Civil Engineering Faculty of Engineering**

**Sultan Agung Islamic University**



**By:**

**ANGGI BAGUS PRASETYO NUGROHO**

**3.02.015.04.049**

**GILANG HARRY DEWANTO**

**3.02.015.04.130**

**DEPARTEMENT OF CIVIL ENGINEERING**

**FACULTY OF ENGINEERING**

**SULTAN AGUNG ISLAMIC UNIVERSITY**

**SEMARANG**

**2019**



**YAYASAN BADAN WAKAF SULTAN AGUNG  
UNIVERSITAS ISLAM SULTAN AGUNG SEMARANG  
FAKULTAS TEKNIK**

Jl. Raya kaligawe KM. 4 PO.BOX. 1054 Telp. (024) 6583584 Ext. 507 Semarang 50122

**APPROVAL PAGE OF FINAL ASSIGNMENT**

**DESIGN UPPER STRUCTURE OF CONCRETE DECK ARCH BRIDGE**

**By :**



**ANGGI BAGUS PRASETYO NUGROHO**  
30.2015.04.049



**GILANG HARRY DEWANTO**  
30.2015.04.130

Supervisor

Ir. Gatot Rusbintardjo, M.R.Eng.Sc., Ph.D.

Co - Supervisor

Ari Sentani, ST., MSc.

Approved By,  
Head of Civil Engineering Department, Engineering Faculty, UNISSULA

Ari Sentani, ST., MSc.



**YAYASAN BADAN WAKAF SULTAN AGUNG  
UNIVERSITAS ISLAM SULTAN AGUNG SEMARANG  
FAKULTAS TEKNIK**

Jl. Raya kaligawe KM. 4 PO.BOX. 1054 Telp. (024) 6583584 Ext. 507 Semarang 50122

**BERITA ACARA BIMBINGAN TUGAS AKHIR**

No: .....

Pada hari ini tanggal Februari 2019 berdasarkan surat keputusan Kepala Prodi Fakultas Teknik Sipil Unissula perihal penunjukan dosen pembimbing dan asisten dosen pembimbing :

1. Nama : Ir. Gatot Rusbintardjo, M.R.Eng.Sc., Ph.D.  
Jabatan Akademik : Lektor  
Jabatan : Dosen Pembimbing I
2. Nama : Ari Sentani, ST., MSc.  
Jabatan Akademik : Lektor  
Jabatan : Dosen Pembimbing II

Dengan ini menyatakan bahwa mahasiswa yang tersebut di bawah ini:

Nama : Anggi Bagus Prasetyo Nugroho      Nama : Gilang Harry Dewanto  
NIM : 3.02.015.04049                              NIM : 3.02.015.04130

Telah menyelesaikan bimbingan Tugas Akhir / Skripsi dengan judul "Design Upper Structure of Concrete Deck Arch Bridge"

Dengan tahapan sebagai berikut :

|   |                             |                |
|---|-----------------------------|----------------|
| 1 | Penunjukan dosen pembimbing | 10 April 2019  |
| 2 | Pengumpulan data            | 12 April 2019  |
| 3 | Penyusunan laporan          | 15 April 2019  |
| 4 | Selesai laporan             | 1 Agustus 2019 |

Demikian Berita Acara Bimbingan Tugas Akhir / Skripsi ini dibuat untuk diketahui dan dipergunakan seperlunya oleh pihak-pihak yang berkepentingan

Pembimbing I

Ir. Gatot Rusbintardjo, M.R.Eng.Sc., Ph.D.

Pembimbing II

Ari Sentani, ST., MSc.

Mengetahui,  
Ketua Program Studi Teknik Sipil

UNIVERSITAS ISLAM SULTAN AGUNG  
FAKULTAS TEKNIK  
UNISSULA  
Ari Sentani, ST., MSc.

## PLAGIARISM STATEMENT

The undersigned below:

Name : 1. Anggi Bagus Prasetyo Nugroho (30201504049)  
2. Gilang Harry Dewanto (30201504130)

Department : Civil Engineering

Hereby declare this our Final Assignment is entitled: "Design Upper Structure of Concrete Deck Arch Bridge" is a scholarly work free from plagiarism. If later there is proven plagiarism from this final assignment, then I am willing to accept section in accordance with applicable legislation.

Semarang, August 2019

By:

Student 1



**Anggi Bagus Prasetyo Nugroho**

Student 2



**Gilang Harry Dewanto**

## AUTHENTICITY STATEMENT

The undersigned below:

NAME : 1. Anggi Bagus Prasetyo Nugroho (30201504049)  
2. Gilang Harry Dewanto (30201504130)  
TITLE : Design Upper Structure of Concrete Deck Arch Bridge

This Final Assignment is the result of my own original research, thought and presentation. We do not include without recognition material – material that has been previously published or written by someone else, or an ingredient that has been submitted for a degree or diploma at the Sultan Agung Islamic University of Semarang or other universities.

In the future there are deviations and untruths in this statement, then I am willing to accept academic sanctions in accordance with the regulations that apply at Sultan Agung Islamic University of Semarang.

Semarang, August 2019

By:

Student 1



**Anggi Bagus Prasetyo Nugroho**

Student 2



**Gilang Harry Dewanto**

## **MOTTO**

“Because in fact after the difficulty there is convenience (5) in fact after the difficulty there is convenience (6) then when you have finished something of an affair, work hard on other matters (7) and only to your god should you hope (8)”.

(QS. Al Insyirah: 5-8)

“Yes my rabb, lay it for me on my chest and make it easy for me my affairs and release the rigidity from my tongue so they understand my words”.

(QS. Thoha: 25-28)

“On this day every soul be rewarded with what it earned, no one harmed today.

Allah is swift at reckoning”.

(QS. Al Ghafir: 17)

## **DEDICATION**

“I Dedicated this final assignment to the knowledge of Civil Engineering in general and Bridge Engineering as in particular my worship to Allah Subhana Wa Ta’ala”

## ACKNOWLEDGEMENT

Bismillahirrahmanirrahiim. Thanks the author to Allah SWT, thanks to grace and guidance the author can complete this final assignment with the title “Design of Arch Concrete Bridge” to fulfill requirements in completing undergraduate education In the Department of Civil Engineering Faculty of Engineering Sultan Agung Islamic University.

Furthermore, the author would like to convey infinite gratitude to all parties who helped smooth the writing this final assignment, both in the form of moral and material encouragement. Because the author believes without help and support, it was difficult for the writer to finish writing this description. In addition, allow the author to express his gratitude and appreciation to:

1. Dean of the Engineering Faculty of UNISSULA Bapak Ir. H. Rachmat Mudiyo, MT., Ph.D.,
2. Head of Civil Engineering Department, Engineering Faculty of UNISSULA Bapak Ari Sentani, ST, MSc., for permission, to take final assignment as the requirement for reaching Bachelor Degree in Civil Engineering in Engineering Faculty of UNISSULA.
3. My supervisor Bapak Ir. Gatot Rusbintardjo, M.R.Eng.Sc., Ph.D., thank you for his encouragement, guidance, criticism, friendship, advice, and motivation. Without their continued support and interest, this final assignment report would not have been the same as presented here.
4. My co-supervisor Bapak Ari Sentani, ST., MSc., thank you for his encouragement, guidance, criticism, friendship, advice, and motivation. Without their continued support and interest, this final assignment report would not have been the same as presented here.
5. Mr. and Mrs. Lecturer Faculty of engineering who have provided their knowledge to the author. Hopefully, the knowledge that the author has obtained can be useful in the future.

Finally, the author hopes that the good deeds of all parties that have helped the writer in completing this final assignment get reward form the mercy of Allah SWT. Hopefully what has been written in this final assignment can be beneficial for all parties. Amiin ya Robbal ‘alamin.

Semarang, August 2019

Gilang Harry Dewanto

## ACKNOWLEDGEMENT

Bismillahirrahmanirrahiim. Thanks the author to Allah SWT, thanks to His grace and guidance the author can complete this final assignment with the title “Design of Arch Concrete Bridge” to fulfill requirements in completing undergraduate education In the Department of Civil Engineering Faculty of Engineering Sultan Agung Islamic University.

Furthermore, the author would like to convey infinite gratitude to all parties who helped smooth the writing this final assignment, both in the form of moral and material encouragement. Because the author believes without help and support, it was difficult for the writer to finish writing this description. In addition, allow the author to express his gratitude and appreciation to:

1. Dean of the Engineering Faculty of UNISSULA Bapak Ir. H. Rachmat Mudiyono, MT., Ph.D.,
2. Head of Civil Engineering Department, Engineering Faculty of UNISSULA Bapak Ari Sentani, ST, MSc., for permission, to take final assignment as the requirement for reaching Bachelor Degree in Civil Engineering in Engineering Faculty of UNISSULA.
3. My supervisor Bapak Ir. Gatot Rusbintardjo, M.R.Eng.Sc., Ph.D., thank you for his encouragement, guidance, criticism, friendship, advice, and motivation. Without their continued support and interest, this final assignment report would not have been the same as presented here.
4. My co-supervisor Bapak Ari Sentani, ST., MSc., thank you for his encouragement, guidance, criticism, friendship, advice, and motivation. Without their continued support and interest, this final assignment report would not have been the same as presented here.
5. Mr. and Mrs. Lecturer Faculty of engineering who have provided their knowledge to the author. Hopefully, the knowledge that the author has obtained can be useful in the future.

Finally, the author hopes that the good deeds of all parties that have helped the writer in completing this final assignment get reward form the mercy of Allah SWT. Hopefully what has been written in this final assignment can be beneficial for all parties. Amiin ya Robbal ‘alamin.

Semarang, August 2019

Anggi Bagus Prasetyo Nugroho