

**FINAL ASSIGNMENT**

**DESIGN OF UPPER STRUCTURE OF SUNDA STRAIT  
SUSPENSION BRIDGE**

**Proposed to Fulfill Academic Requirement for  
Civil Engineering Degree in Faculty  
of Engineering of Sultan Agung Islamic University**



**By:**

**Andi Kurniawan Arifin**  
**NIM. 3.02.017.00197**

**CIVIL ENGINEERING DEPARTMENT ENGINEERING  
FACULTY  
SULTAN AGUNG ISLAMIC UNIVERSITY  
SEMARANG  
2019**

**FINAL ASSIGNMENT**

**DESIGN OF UPPER STRUCTURE OF SUNDA STRAIT  
SUSPENSION BRIDGE**

**Proposed to Fulfill Academic Requirement for  
Civil Engineering Degree in Faculty  
of Engineering of Sultan Agung Islamic University**



**By:**

**Andi Kurniawan Arifin**  
**NIM. 3.02.017.00197**

**CIVIL ENGINEERING DEPARTMENT ENGINEERING  
FACULTY  
SULTAN AGUNG ISLAMIC UNIVERSITY  
SEMARANG  
2019**

**PROPOSED FINAL ASSIGNMENT RESEARCH**

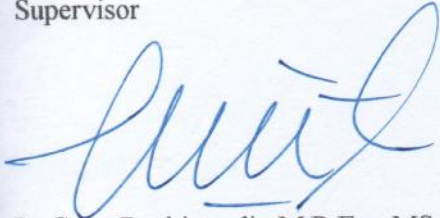
**DESIGN OF UPPER STRUCTURE OF SUNDA STRAIT SUSPENSION BRIDGE**

Proposed by:

**Andi Kurniawan Arifin**  
**NIM. 3.02.017.00197**

Approved by:

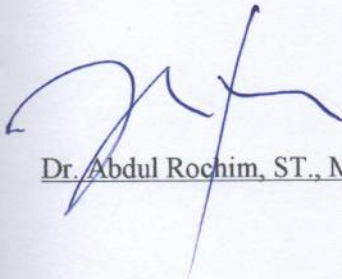
Supervisor



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

Date : 27/02/2019

Co-Supervisor



Dr. Abdul Rochim, ST., MT

Date : 27/02/2019

Approved By,

Head of Civil Engineering Department



Ari Sentani, ST., M.Sc



**YAYASAN BADAN WAKAF SULTAN AGUNG  
UNIVERSITAS ISLAM SULTAN AGUNG (UNISSULA)  
FAKULTAS TEKNIK**

Jalan Raya Kaligawe KM. 4 Po. BOX 1054 Telp. (024) 6583584 Ext. 507 Semarang 50112

**APPROVAL PAGE**

**“DESIGN OF UPPER STRUCTURE OF SUNDA STRAIT SUSPENSION BRIDGE”**

Dosen pembimbing:

By :

- 1. Nama : Ir. Gatot Rusbintardjo, M.R.Eng., M.Sc., Ph.D
- Jabatan Akademik : Lektor
- Jabatan : Dosen Pembimbing
- 2. Nama : Dr. Abdul Rochim, ST., MT
- Jabatan Akademik : Lektor
- Jabatan : Dosen Pembimbing



Nama : Andi Kurniawan Arifin  
NIM : 3.02.017.00197

Judul : Design of Upper Structure of Sunda Strait Suspension Bridge

Has been approved in Semarang, February 27, 2019

No	Tahapan	Tanggal	Keterangan
1.	Penunjukan dosen pembimbing		
2.	Proposisi		
3.	Pengumpulan data		
4.	Analisis data		
5.	Selanjutnya		
6.	Penyusunan Tugas Akhir / Skripsi ini dibantu dan dipantau oleh pembimbing-pembimbing yang berkepentingan		

- Examiner Team
1. Ir. Gatot Rusbintardjo, M.R.Eng., M.Sc., Ph.D
  2. Dr. Abdul Rochim., ST., MT
  3. Prof. Dr., Ir. Antonius, MT

Signature

Sultan Agung Islamic University  
Civil Engineering Department  
Engineering Faculty  
Head,



Ari Sentani, ST. M.Sc



**YAYASAN BADAN WAKAF SULTAN AGUNG  
UNIVERSITAS ISLAM SULTAN AGUNG ( UNISSULA )  
FAKULTAS TEKNIK**

Jalan Raya Kaligawe KM. 4 Po. BOX 1054 Telp.(024)6583584 Ext.507 Semarang 50112

**BERITA ACARA BIMBINGAN TUGAS AKHIR**

**Nomor: / / / 2019**

Pada hari ini, 12 Pebruari 2019 berdasarkan surat keputusan rektor Universitas Islam Sultan Agung ( UNISSULA ) Semarang perihal penunjukan dosen pembimbing dan asisten dosen pembimbing:

1. Nama : Ir. Gatot Rusbintardjo, M.R.Eng., M.Sc., Ph.D  
Jabatan Akademik : Lektor  
Jabatan : Dosen Pembimbing I
2. Nama : Dr. Abdul Rochim., ST., MT  
Jabatan Akademik : Lektor  
Jabatan : Dosen Pembimbing II

Dengan ini menyatakan bahwa mahasiswa yang tersebut di bawah ini telah menyelesaikan bimbingan Tugas Akhir / Skripsi :

Nama : Andi Kurniawan Arifin  
NIM : 3.02.017.00197

Judul : Design of Upper Structure of Sunda Strait Suspension Bridge

Dengan tahapan sebagai berikut :

No	Tahapan	Tanggal	Keterangan
1	Penunjukan dosen pembimbing		
2	Proposal		ACC
3	Pengumpulan data		
4	Analisis data		
5	Penyusunan laporan		
6	Selesai laporan		ACC

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 MSc., Ph.D

Pembimbing II

Dr. Abdul Rochim, ST., MT



Mengetahui,  
Ketua Program Studi Teknik Sipil

Ari Sentani, ST., M.Sc

## DECLARATION OF PLAGIARISM

I, the undersigned below:

Name : Andi Kurniawan Arifin

NIM : 3.02.017.00197

hereby declare that my Final Assignment entitled: DESIGN OF UPPER STRUCTURE OF SUNDA STRAIT SUSPENSION BRIDGE is free of plagiarism. If in the future it is proven that there is plagiarism, then i am willing to accept sactions in accordance with the applicable laws and regulations.

Semarang, 27 February 2019

By,

A handwritten signature in black ink, consisting of a large, stylized initial 'A' followed by 'K' and 'A', with a horizontal line underneath.

Andi Kurniawan Arifin

## DECLARATION OF AUTHENTICITY

I, the undersigned below:

NAME : ANDI KURNIAWAN ARIFIN  
NIM : 3.02.017.00197  
TITLE : DESIGN OF UPPER STRUCTURE OF SUNDA STRAIT  
SUSPENSION BRIDGE

Hereby declare that this Final Assignment is the result of my own original research, thought and presentation. I don't include without recognition material-material that has been previously published or written by someone else, or as an ingredient that has been submitted for a degree or diploma at the Sultan Agung Islamic University of Semarang or other universities.

If 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, Semarang.

Thus I made this declaration.

Semarang, 27 February 2019

 By,  
 6000,-)  
Andi Kurniawan Arifin

## MOTTO

خَيْرُ النَّاسِ أَنْفَعُهُمْ لِلنَّاسِ

“Sebaik-baik manusia adalah yang paling bermanfaat bagi orang lain” (*Hadits Riwayat ath-Thabrani, Al-Mu’jam al-Ausath, juz VII, hal. 58, dari Jabir bin Abdullah r.a.. Dishahihkan Muhammad Nashiruddin al-Albani dalam kitab: As-Silsilah Ash-Shahîhah*)

مَنْ دَلَّ عَلَى خَيْرٍ فَلَهُ مِثْلُ أَجْرِ فَاعِلِهِ

“Barang siapa menunjuki kepada kebaikan, maka ia akan mendapatkan pahala seperti pahala orang yang mengerjakannya” (*HR. Muslim no. 1893*)

فَإِنَّ مَعَ الْعُسْرِ يُسْرًا ﴿٥﴾ إِنَّ مَعَ الْعُسْرِ يُسْرًا ﴿٦﴾

5. Maka sesungguhnya sesudah kesulitan itu ada kemudahan, 6. Sesungguhnya sesudah kesulitan itu ada kemudahan. (*QS. Al-Insyirah: 5-6*)

لَقَدْ كَانَ لَكُمْ فِي رَسُولِ اللَّهِ أُسْوَةٌ حَسَنَةٌ لِمَنْ كَانَ يَرْجُو اللَّهَ وَالْيَوْمَ الْآخِرَ وَذَكَرَ اللَّهَ كَثِيرًا

“Sesungguhnya telah ada pada (diri) Rasulullah itu suri tauladan yang baik bagimu (yaitu) bagi orang yang mengharap (rahmat) Allah dan (kedatangan) hari kiamat dan dia banyak menyebut Allah” (*QS. Al-Ahzab: 21*)

“Ilmu pengetahuan itu bukanlah ilmu yang dihafal, melainkan yang memberi manfaat” (*Imam Syafi’i*)

“Menyia-nyiakan waktu lebih buruk dari kematian. Karena kematian memisahkanmu dari dunia sementara menyia-nyiakan waktu memisahkanmu dari Allah SWT” (*Imam bin Al Qayim*)



## **DEDICATION**

I dedicated this final assignment to the knowledge of civil engineering in general and bridge engineering in special as my worship to Allah Subhana Wa Ta'ala

## ACKNOWLEDGEMENTS

Alhamdulillah rabbil' alamin, upon *Ridho* and *Rahmat Allah Subhana Wa Ta'ala* this final assignment report with title “**Design of Upper Structure of Sunda Strait Suspension Bridge**” can be completed.

Drafting of final assignment are one of academic requirements for college students of civil engineering UNISSULA to reach bachelor degree. By this final assignment, the college student can increase their knowledge and can practice their science.

On this opportunity let the drafter to thank to everyone who have helped drafter by power, thinking, costs, and advice. In particular, I wish to express my sincere appreciation to my main final assignment supervisor, Ir. Gatot Rusbiantardjo, M.R.Eng.Sc.,Ph.D., for his encourage, guidance, criticism, and friendship. I am also very thankful to my co-supervisor Dr. Abdul Rochim, ST., MT. for his guidance, advice, and motivation. Without their continued support and interest, this final assignment report would not have been the same as presented here.

My special thanks are addressed to Dean of the Engineering Faculty of UNISSULA, Ir. H. Rachmat Mudiyo, MT., Ph.D. and Head of Civil Engineering Department, Engineering Faculty of UNISSULA Ari Sentani, ST., M.Sc. for permission, to take final assignment as the requirement for reaching bachelor degree in Civil Engineering in Engineering Faculty of UNISSULA.

Very special thanks are given to my beloved parent and my family for all support. I also would like to thank to M. Irwan Nur Rachman and Risang Ardy Pradhana as my partners, for all that we have been through together. Thank to Harguna Jalu W and M. Taufiqul Hakim for their support, prayers, and cooperation during this study were always a blessing. Thank you to my college friends for their good cooperation during the studying in Engineering Faculty of UNISSULA 2017.

Semarang, 12 February 2019

Andi Kurniawan Arifin