

FINAL ASSIGNMENT

**DESIGN OF UPPER STRUCTURE OF SUNDA STRAIT
TRUSS GIRDER BRIDGE**

**Proposed to Fulfill Academic Requirement for
Civil Engineering Degree in Faculty
of Engineering of UNISSULA**



By:

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UNIVERSITAS ISLAM SULTAN AGUNG
SEMARANG
2019**

PROPOSED FINAL ASSIGNMENT RESEARCH

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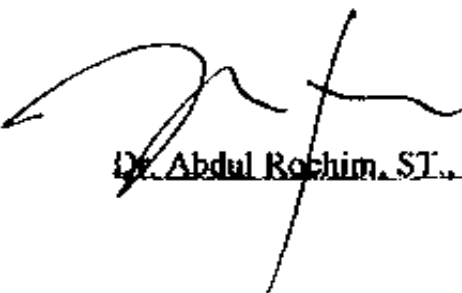
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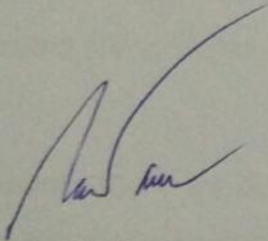
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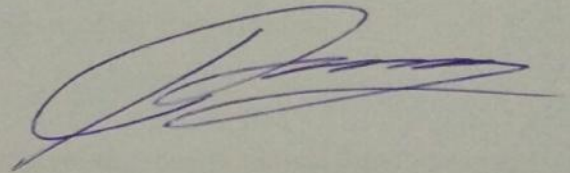
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MOTTO

“Bersikaplah kukuh seperti batu karang yang tidak putus-putusnya dipukul ombak. Ia tidak saja tetap berdiri kukuh, bahkan ia menenteramkan amarah ombak dan gelombang itu” (*Marcus Aurelius*)

“Apabila anda berbuat kebaikan kepada orang lain, maka Anda telah berbuat baik terhadap diri sendiri” (*Benyamin Franklin*)

DEDICATION

We 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

Alhamdulillahrabbi'l'amin, upon *Ridho* and *Rahmat Allah Subhana Wa Ta'ala* this final assignment report with title “**Design of Upper Structure of Sunda Strait Truss Girder 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 Rusbintardjo, 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 Mudiyono, 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 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, February 2019

M. Irwan Nur Rachman

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Semarang, February 2019

Risang Ardy Pradhana

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ABBREVIATIONS

Ae	= Effective section area
As	= section area of steel
C	= Cohesion
D	= diameter
DL	= Dead load
E	= Earthquake
Ec	= Elastic modulus of concrete
EL	= Earthquake load
EL	= East latitude
Es	= Elastic modulus of steel
ET	= Temperature effect
FB	= Shear force on placement/Friction
fc	= Yield stress
FS	= Safety factor
fy	= Tensile strength
H	= Height
I	= Moment of inertia
Ix	= Inertia moment x-direction
L	= Length
LL	= Live load
MA	= Superimpose dead load
M_{max}	= Maximum moment
Mn	= Nominal moment
MSL	= Mean sea level
Mu	= Ultimate moment
NL	= North latitude
No.	= Number
P_{max}	= Maximum axial force
Pn	= Nominal axial force

P_u	= Ultimate axial force
RSP	= Response spectrum
S	= Section modulus
SAP	= Structure analysis program
SDL	= Superimpose load
SF	= Safety factor
SL	= South latitude
TA	= Pressure soil active
TB	= Break force
TD	= Lane load
TEW	= Wind load
t_f	= Thickness of flange
t_p	= plate thickness
t_w	= Thickness of web
UL	= Uniform load
V_c	= Shear force
V_u	= Ultimate shear force
WL	= Wind load
W_{ma}	= Total additional dead load
W_{ms}	= Total self weigth of upperstructure