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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : JURNAL ILMIAH

Judul Jurnal Ilmiah (Artikel)	:	Seismic microzonation of Semarang, Indonesia based on site response analysis using 30 M soil deposit model
Jumlah Penulis	:	4 Orang (Windu Partono, Sri Prabandiyani RW, Masyur Irsyam, Syamsul Maarif)
Status Pengusul	:	penulis pertama/ ~~penulis ke-~~ / ~~penulis korespondensi**~~
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Unit kerja : Departemen Teknik Sipil FT UNDIP

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Jurnal Teknologi Open Access
Volume 78, Issue 8-5, 2016, Pages 31-38

Seismic microzonation of Semarang , Indonesia based on site response analysis using 30 M soil deposit model (Article) (Open Access)

Partono, W.[a], Wardani, S.P.R.[a], Irsyam, M.[b], Maarif, S.[c]

[a]Diponegoro University, Semarang, Indonesia
[b]Bandung Institute of Technology, Bandung, Indonesia
[c]National Agency for Disaster Management, Indonesia

Abstract

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Seismic microzonation study of Semarang is still on-going following the recommendations from the Team for Revision of Seismic Hazard Maps of Indonesia 2010 (TRSHMI-2010). The study was performed by carrying one-dimensional site response analysis at 190 locations and implementing Lasem fault as a closest seimic source that significantly influence the hazard of the city. The analysis was performed using two soil deposit models, 30 m and real soil deposit models, to get ground surface peak acceleration (PGA) and amplification factor of PGA. The results obtained using the first model are then compared with the results obtained using the second model. To perform the analysis bedrock elevation and acceleration time histories data are needed. The bedrock elevation was estimated based on 218 single station seismometer measurements. Five different time histories representing different earthquakes with magnitude 6.5 MW and maximum distance 20 km are collected from worldwide historical earthquake records. The results of this study includes the distribution of surface PGA and amplification factor of PGA. The PGA and amplification factor calculated using 30 meter soil deposit model are greater than the same values calculated using real soil deposit model.

SciVal Topic Prominence

Topic: wave velocity | Shear waves | seismic hazard

Prominence percentile: 63.173

Author keywords

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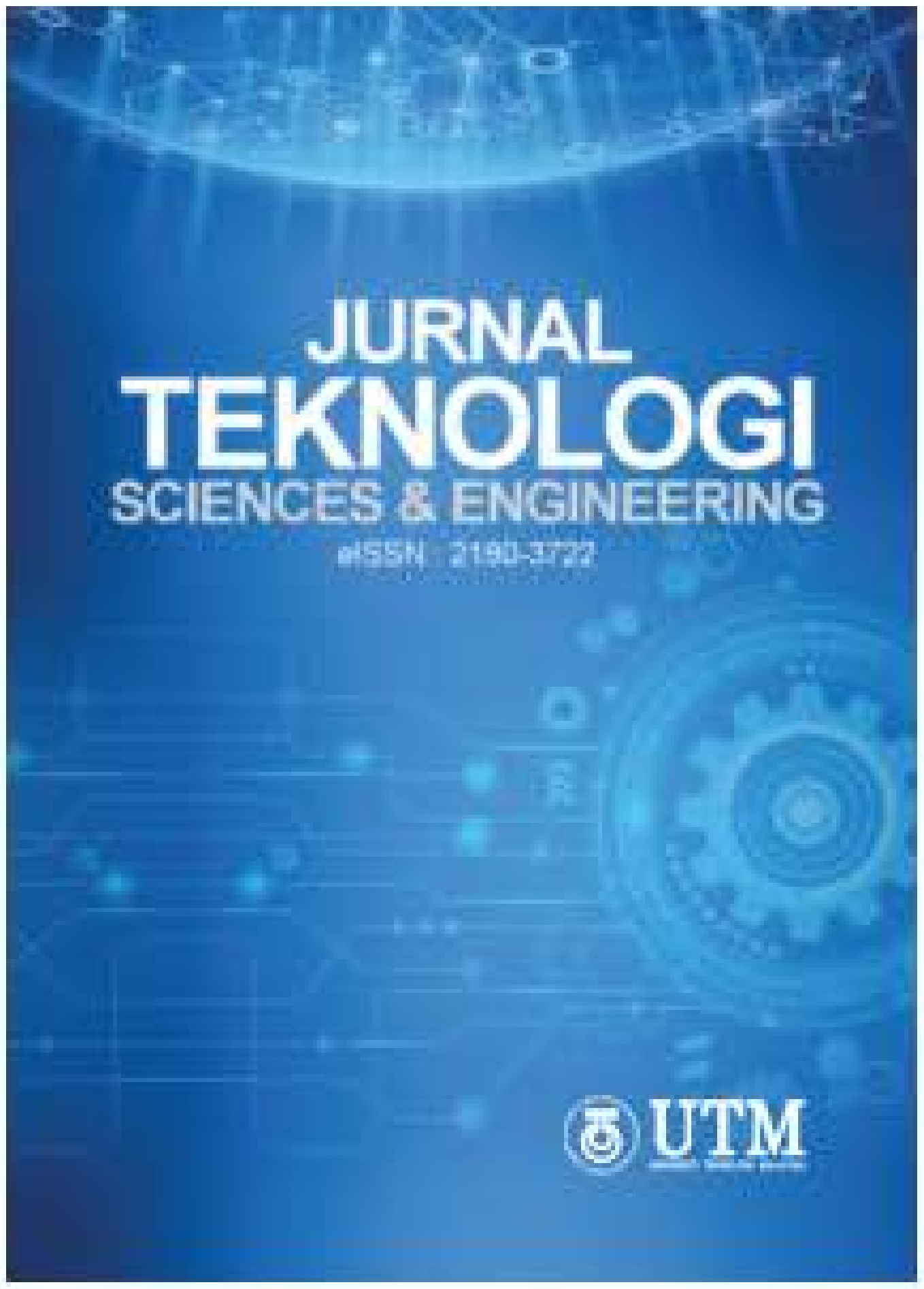
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Full Paper

SEISMIC MICROZONATION OF SEMARANG, INDONESIA BASED ON SITE RESPONSE ANALYSIS USING 30 M SOIL DEPOSIT MODEL

Windu Partono[a*], Sri Prabandiyani Retno Wardani[a], Masyhur Irsyam[b], Syamsul Maarif[c]

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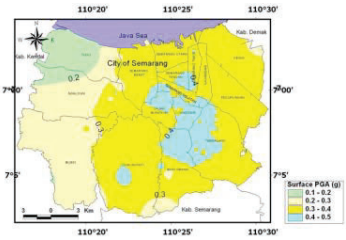

Abstract

Seismic microzonation study of Semarang is still on-going following the recommendations from the Team for Revision of Seismic Hazard Maps of Indonesia 2010 (TRSHMI-2010). The study was performed by carrying one-dimensional site response analysis at 190 locations and implementing Lasem fault as a closest seimic source that significantly influence the hazard of the city. The analysis was performed using two soil deposit models, 30 m and real soil deposit models, to get ground surface peak acceleration (PGA) and amplification factor of PGA. The results obtained using the first model are then compared with the results obtained using the second model. To perform the analysis bedrock elevation and acceleration time histories data are needed. The bedrock elevation was estimated based on 218 single station seismometer measurements. Five different time histories representing different earthquakes with magnitude 6.5 MW and maximum distance 20 km are collected from worldwide historical earthquake records. The results of this study includes the distribution of surface PGA and amplification factor of PGA. The PGA and amplification factor calculated using 30 meter soil deposit model are greater than the same values calculated using real soil deposit model.

Keywords: Seismic microzonation, site response analysis, seismometer, PGA, amplification factor

1.0 INTRODUCTION

Semarang is the capital city of Central Java Province. The city is located at 6°55'S to 7°8'S and 110°16'E to 110°29'E and covers an area of about 374 km^2. Based on the topographic relief the city can be divided into two different regions, a coastal plain area in the Northern part and the hilly area in the center and Southern parts.

Based on the earthquake data from 1900 to 2009, three different seismic sources that significantly influence Semarang and probably produce earthquake in the future are the Java subduction zone, subduction megathrust and benioff, and shallow crustal faults ([1], [2] and [3]). Four large earthquakes due to the subduction zone were reported by [3] and [4] including 7.9 Ms (1903), 7.2 Ms (1937), 7.9 Ms (1977) and 8.3 Mw (1943) events. The 2006 Yogyakarta earthquake of 6.3 Mw caused by Yogya fault (Opak fault) is the latest earthquake caused by shallow crustal fault. The tectonic environment for Semarang is quite similar with Yogyakarta. Lasem fault at the Eastern part of Semarang is the closest seismic source that can produce earthquake in the future. The 2006 Yogyakarta earthquake was an earthquake that caused thousands of casualties in Yogyakarta Province and Central Java Province [5]. Learning from Yogyakarta earthquake and recommendations from TRSHMI-2010, a comprehensive seismic microzonation