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Journal Name:	British Journal of Mathematics & Computer Science
Manuscript Number:	2014_BJMCS_11299
Title of the Manuscript:	Evaluating numerical- mathematical model of base-isolated rectangular liquid tanks under Bi-directional seismic excitation
Type of the Article	Original Research Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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(<http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline>)



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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	1- Title should read: "Numerical analysis of the base-isolated rectangular storage tanks under bi-directional seismic excitation". 2- "Abstract" should focus on the authors' contribution, research method and summary of findings. 3- Abstract: "Recent researchers have shown many liquid storage tanks are unstable subjected earthquake". Avoid using such a statement in the abstract, because you need to refer it to other works and it is not possible in abstract. By the way, this reviewer does not agree with this statement. 4- Abstract: "The continuous liquid mass of the Tank was modelled as lumped masses referred as convective mass, impulsive and rigid mass". It is not clear what do the authors meant to say! It should clearly state that which part of the model refers to convective and which part refers to impulsive mass. 5- Abstract: What is the source of nonlinearity in this paper? 6- Literature review obviously is missed lots of important research papers about the seismic analysis of the tanks. Whole the literature section MUST be written. Please refer to the papers published mainly by Prof. Kianoush and Prof. Livaoglu. 7- Free surface sloshing is believed to be the most important parameter in seismic analysis of the shallow storage tanks. Authors should discuss this effect in detail. Please refer to: "Seismic Behaviour of Three Dimensional Concrete Rectangular Containers Including Sloshing Effects, Coupled System Mechanics, 1(1):79-98, 2012" and "Free Surface Sloshing Effect on Dynamic Response of Rectangular Storage Tanks, American Journal of Fluid Dynamics, 2(4):23-30, 2012".	1- Modified according to referee comment. 2- Modified according to referee comment. 3- Modified according to referee comment. 4- Modified according to referee comment. 5- The base-isolated structural systems contain an isolator layer composed by rubber like materials with obvious non-linear mechanical properties. The objective of this paper is to analyses the effects of these properties on base-isolation structure response. 6- Modified according to referee comment. 7- We are researching on coupled system for evaluating sloshing via a novel approach now. Hopefully will pre` research as a new paper..... 8- Modified according to referee comment. 9- Modified according to referee comment. 10- To explore the effects base isolation system on the seismic response of fluid/tank systems, the computer program ANSYS was selected to develop



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	8- Please use appropriate reference for the all equations used in the manuscript. 9- Title of section 3: No one say “FEM Numerical Model”! It is obvious that finite element model is a sub-domain of numerical analyses. Title should read: “Verification of the Finite Element Model” 10- Authors should clearly state that whether they developed their own finite element code or used the commercial one. 11- The authors did not discuss about the results obtained from verification process. How accurate their model is? This reviewer believes that the results of the proposed numerical model should be compared with other numerical models and the pros and cons should be discussed. A sample of numerical model can be found in the reference mentioned already in comment #7. 12- Title of section 4 should read: “Selected ground motion records”. 13- Section 4: there are many grammatical errors in this section. Should be written again. 14- Figure 2: The PGA of all the selected ground motions are less than 0.6. Thus there is no need to show them with the range of [-2, +2]! 15- The authors should clearly discuss how they selected “effective duration”. They can use the method proposed by Trifunac and Brady. 16- Figure 2: It seems that the second horizontal component of the ground motions is missed in this figure! 17- Figures 3 and 4: there is no need to show the background in blue. It makes the comparison really hard for the reader. These figures should be re-plotted. 18- Table 3: The authors should explain that how they designed the tank (how they obtained the dimensions)? 19- Figure 6 is very familiar for this reviewer. If it is adopted from someone else, it should be properly cited.	a Finite Element Analysis model of a rectangular liquid storage tank under seismic load. The ANSYS program was selected for its ability to include solid and structural concrete elements, contained fluid elements, fluid-structure interactions, material and geometric nonlinearities. The tank and the liquid were modeled using suitable ANSYS APDL code. 11- Comparison between experimental and numerical results on verification processes with the mann-whitney analysis shown, there is no significant difference between the numerical and experimental data: (P-value=0.619) > 0.05. That means the sloshing height values from the numerical analysis results are very close and converged to the experimental results. Also the first frequency of convective mode in both of rectangular contained liquid According to, ACI, 350.3 code is obtained from follow equations: First mode frequency of fluid that obtained from modal analysis is equal to 0.119 HZ, which was shown in table 1 of modal analyses.
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		$\omega_c = \frac{\lambda}{\sqrt{L}}$ $\lambda = \sqrt{3.16g \tanh[3.16(H_L/L)]}$ $T_c = \frac{2\pi}{\omega_c} = \left(\frac{2\pi}{\lambda}\right)\sqrt{L}$ $\omega_c = \frac{3.58}{\sqrt{22.6}} = 0.75$ $\lambda = \sqrt{3.16 \times 9.8 \times \tanh[3.16 \times (3.16/22.6)]} = 3.58$ $T_c = \left(\frac{2 \times \pi}{3.58}\right) \times \sqrt{22.6} = 8.34$ $f_c = \frac{1}{T_c} = \frac{1}{8.34} = 0.119$ 12- Modified according to referee comment. 13- Modified according to referee comment. 14- Modified according to referee comment. 15- Results of primary analysis showed the maximum of responses in water tank occurred in maximum acceleration in time history analysis, therefore to decreases analysis time with a suitable scale factor the effective time of earthquake records has been applied in FEM analysis. 16- Records in Figure 2 are used for seismic loading of tanks in both the horizontal directions (X, Y). 17- To show displacement contour in ANSYS program for modal analysis this is default and we need to use these colors.
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		18- Water Tank's Dimensions with 3.16 water Height were selected, based on Iranian code to set of ground water type maps, (Code 125). 19- Modified according to referee comment. And figure changed.
Minor REVISION comments	The paper is in need of many grammatical and spelling corrections as well as significant editing to make it coherent and readable.	
Optional/General comments		