

BTI - Technical Review				
Company Name :- ESPAC -				
Technology :- Precast Aerated concrete Reinforced panels(load bearing walls + Floor from PAC panels)				
Issue Date :-01.Mar. 2018				
#	Requirements	Availability		Observations
		Yes	No	
1	Proposed Technology - Brief			
1.01	Company to provide brief on the proposed technology with technical write up and/or A/V presentation	✓		
1.02	Is this technology proven elsewhere			
	a. within KSA	✓		
	b. within Middle East	✓		
	c. elsewhere in the world	✓		
1.03	List of projects by region shall be submitted with its type and quantity of different prototypes	✓		
1.04	Is this technology uses patterned assembly or custom made assemblies?			
1.05	If patterned assembly, list those patterns applicable for Villas, Townhouses and Apartments within KSA, complete with details of those patterns and its test reports?	✓		PAC panels are patterned but final product is custom
1.06	If custom made assembly, how individual assemblies are designed, fabricated and tested against the requirements? eg: Structural stability, Fire resistance, Acoustic performance, Thermal performance, Seismic etc.,	✓		
1.07	Any other item which may illustrate on the proposed technology	✓		
2	Method of Construction			
2.01	Step by step method of construction from design, fabrication, handling, transportation, construction / assembly, completion,	✓		
2.02	On-site or Off-Site factory?			
2.03	If on-site, Space and other requirements within or nearby project?			
2.04	If off-site, Location of off-site factory and type of fabrication / production at factory to be clarified.	✓		Dammam precast aerated concrete.
2.05	List of on-site and off-site works to be clarified			
2.06	Logistics plan including type of modules, its size, handling at site factory & at site, transportation etc., to be clarified		✓	The company stated (Loading of the truck done on the factory by special machines- avr. 25m3/ truck)
2.07	List of dependencies from outside KSA such as molds, form works, machinery or any special materials etc., to be clarified	✓		The company stated all machines & spare parts from KSA)
2.08	Submit drawings / sketches showing cross section of the proposed assembly with identification material and its specification	✓		

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2.09	Clarify on the foundation type and its assembly / joint etc.,	✓		
2.10	Clarify on the method of assembly, joint and treatment for finishes, fire, ingress and acoustic protections	✓		
3 Code compliance of the proposed technology				
3.01	Is this technology approved within KSA? If yes, list those governmental agencies	✓		
3.02	Is this technology approved within Middle East? If yes, list those governmental agencies, countries and independent third parties		✓	
3.03	Is this technology approved elsewhere in the world? If yes, list those governmental agencies, countries and independent third parties	✓		
3.04	Is this technology complies with Saudi Building Code?			
	a. If Yes, please demonstrate its extent of compliance.	✓		
	b. If No, what is the proposed method to get it complied?			
3.05	Is this technology complies with KSA Civil Defense requirements?			
	a. If Yes, please demonstrate its extent of compliance.	✓		
	b. If No, what is the proposed method to get it complied?			
3.06	List of international codes and extent of compliance	✓		
4 List of material and its code compliance				
4.01	List of materials used to be clarified - Concrete, Steel, Polystyrene, Tiles etc.,	✓		
4.02	Specification of the individual material to be confirmed with its code compliance within KSA	✓		
5 Particular requirements				
5.01	Structural analysis & calculation sheet of the proposed assembly for various prototypes such as Villas (2 1/2 Story), Townhouses (2 1/2 Story) and Apartment G+6 Story Buildings to be clarified.	✓		The company submitted the design concept only.
5.02	Technical limitations of the technologies, if any, to be clarified, such as number of storeys, size of modules etc.,	✓		Max high 6m
5.03	What is the tested fire rating of the wall and slab? Please provide with details of assembly and certifications	✓		The company submitted data sheet only

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5.04	What is the tested thermal insulation of the wall and slab? Please provide with details of assembly and certifications	✓		The company submitted data sheet only
5.05	What is the tested acoustic insulation of the wall and slab? Please provide with details of assembly and certifications	✓		The company submitted data sheet only
5.06	Any tests on seismic done? If yes, please share those details		✓	
5.07	Is the slab or wall assembly be modified? eg: add opening or door etc.,	✓		
5.08	If yes, should the customer contact you or anyone can carryout modification?	✓		should contact the company
5.09	If anyone can carryout, what are the precautions to be taken?		✓	
5.10	How the ten years warranty for the structure and three years warranty for MEP Works will be supported by the company here in KSA, as per the requirements of the authorities having jurisdiction?	✓		
Recommendation				
<p>No objection' to the proposed method of construction. However, the following Notes that should be taken care:</p> <ol style="list-style-type: none"> 1- Structure design to suit the architecture plans & soil test reports of the project. 2- Fire rating , thermal insulation & acoustic insulation subject to design to meet SBC & other concerning authorities requirements. 3- In accordance with data sheet of Panels the system may need additional thermal insulation system (Floor & external walls) to meet SBC & other concerning authorities requirements. 4- The stairs system should be design to be matched with the accepted system. 5- The above comments shall be addressed and approved by the consultant, prior to commencement of construction. <p>It should be noted That Items # 5.03, 5.04 , # 5.05 which are related to fire rate, thermal insulation & acoustic insulation, The company submitted data sheet only (No test certificates).</p>				
Disclaimers				
<ol style="list-style-type: none"> 1. The above review is limited to technical aspects of the proposed technology only (Phase:1) which doesn't release the company from complying with the requirements of the local authorities having jurisdiction. 2. The capabilities of the company shall be demonstrated in the next phase to BTI team once technical review is complete and the team agreed to proceed to next phase (Phase: 2). 3. The proposed technology, it's specific assembly for the agreed housing products and materials used etc., are subject to approval of the authorized third party consultant who will be appointed by the developer during design and supervision phases of the project (Phase:3). 				