Portland State University PDXScholar

Research-Based Design Initiative

Research Centers, Institutes, and Collaborations

Fall 2017

ZGF Structure Revisted: A Study in Mass Timber For Reed Residence Hall

Portland State University. School of Architecture

Follow this and additional works at: https://pdxscholar.library.pdx.edu/research_based_design

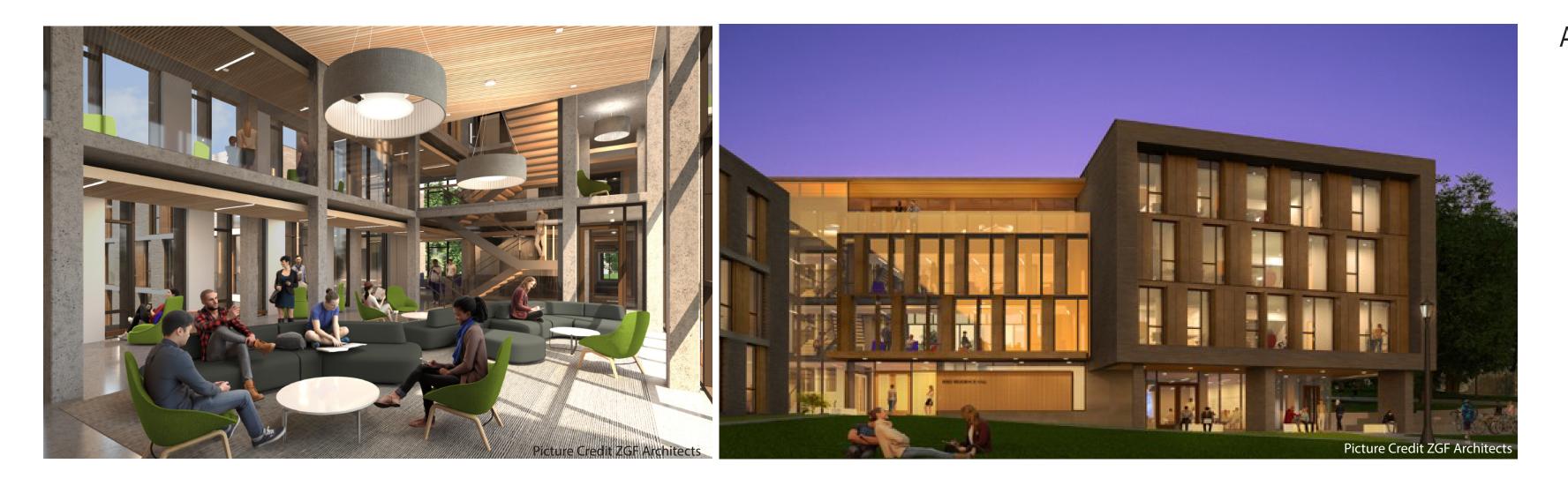
Part of the Architecture Commons Let us know how access to this document benefits you.

Recommended Citation

Portland State University. School of Architecture, "ZGF Structure Revisted: A Study in Mass Timber For Reed Residence Hall" (2017). *Research-Based Design Initiative*. 92. https://pdxscholar.library.pdx.edu/research_based_design/92

This Book is brought to you for free and open access. It has been accepted for inclusion in Research-Based Design Initiative by an authorized administrator of PDXScholar. Please contact us if we can make this document more accessible: pdxscholar@pdx.edu.

ZGF STRUCTURE reVISITED: A STUDY IN MASS TIMBER FOR REED RESIDENCE HALL



A study in the benefits of designing with CLT and Mass Timber versus PT Concrete and design flexibility between the two systems

FIRE

COMMON PERCEPTIONS REGARDING WOOD STRUCTURES AND SAFETY ARE UNWARRANTED BUT ARE A HURDLE THAT MUST BE ADDRESSED. CHARRING CREATES A FIRE BARRIER THAT PROTECTS STRUCTURE AND CREATES A 3 HR FIRE RATING WITH ONE LAYER OF TYPE X GYPSUM ON A 7" CLT



STRUCTURE	75% LIGHTER THAN CONCRETE, MASS TIMBER IS ABLE TO BE ASSEMBLED MORE QUICKLY WITH FEWER ONSITE WORKERS AND MINIMAL ONSITE TRASH. PRIMARY USE RECOMMENDATIONS ARE AS DIAPHRAGMS AND ACCENT WALLS. CLT RIGIDITY REQUIRES ADDITIONAL ENGINEERING TO BE USED AS A SHEAR WALL.	Picture Credit: XLAM
SOUND	ON ITS OWN CLT HAS POOR PERFORMANCE REGARDING STC (SOUND TRANSMISSION CLASS) BUT WHEN UTILIZED AS PART OF A SYSTEM IT PERFORMS WELL, OFFERING VERSATILITY.	PREMIUWE WITCHER OF THE COLUMN CONNECTION BOUNDING GLULAM COLUMNS U-SHAPED FLEXURAL PLATE U-SHAPED FLEXURAL PLATE U
DESIGN- FLEXIBILITY	PANELS ARE LIMITED TO A MAXIMUM SIZE OF 10' X40' BUT CAN BE MADE TO ANY SIZE OR SHAPE DESIRED SMALLER THAN THAT. ONSITE FITMENT AND MODIFICATION IS AN EASY AND SIMPLE PROCESS. PERFORMS WELL IN HYBRID STRUCTURES AND AS A STAND- ALONE SYSTEM	CLT SHEARWALL SPLICE GLULAM COLLAR BEAMS ROCKING TOE DETAIL ELEVATION - POST-TENSIONED ROCKING WALL (STATIC STATE)
LIFE CYCLE/ ECOLOGY	LIGHTWEIGHT, CARBON STORAGE, AND MINIMAL WASTE LEAD TO A VERY LOW TOTAL EMBODIED ENERGY. MANUFACTURER'S GLUE CHOICE IS A FACTOR THAT MUST BE CONSIDERED WHEN SOURCING AND SPECIFYING FOR CERTI-	
PROJECT TAKEAWAY	MASS TIMBER AND CLT IS A FANTASTIC TOOL FOR DESIGNERS TO HAVE IN THEIR TOOLBOX. LIKE ANY TOOL, THERE ARE LIM- ITATIONS FOR APPLICATION BUT ITS VERSATILITY, LIFECYCLE BENEFITS, AND AESTHETIC APPEAL A PROVIDE NEW OPPORTU- NITIES YET TO BE DISCOVERED.	

