

# ZGF STRUCTURE reVISITED:

## A STUDY IN MASS TIMBER FOR REED RESIDENCE HALL



Picture Credit: ZGF Architects



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

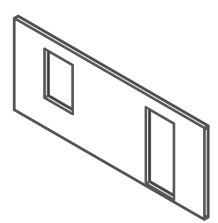


### FIRE

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

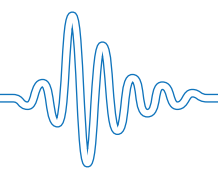
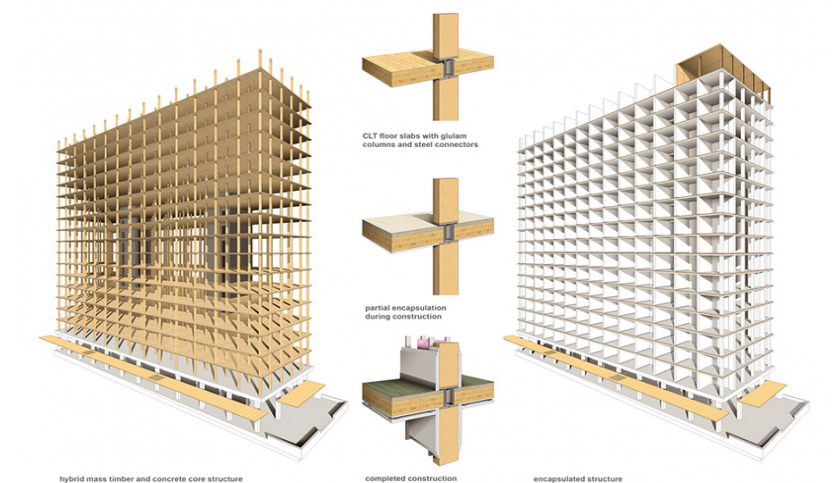


Protective Charring  
Picture Credit: XLAM



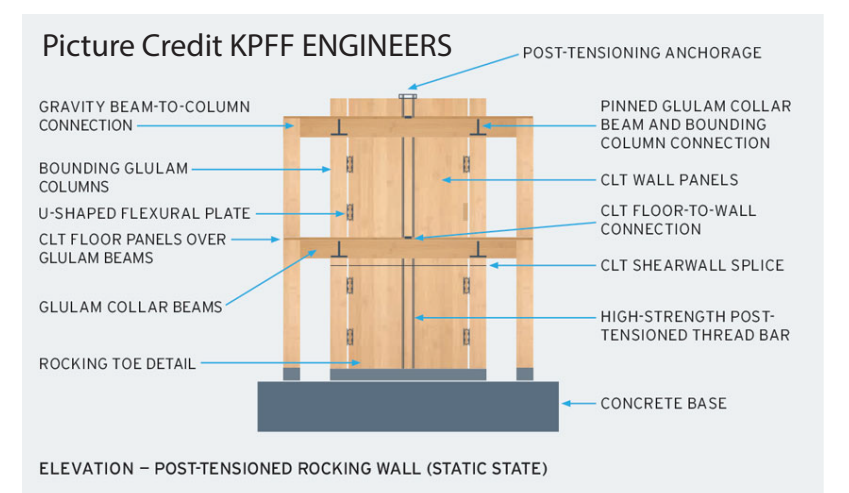
### STRUCTURE

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.

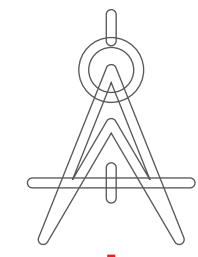


### SOUND

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.

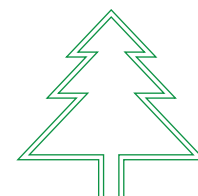


Picture Credit: KPFF ENGINEERS  
GRAVITY BEAM-TO-COLUMN CONNECTION  
BOUNDING GLULAM COLUMNS  
U-SHAPED FLEXURAL PLATE  
GLULAM COLLAR BEAMS  
ROCKING TOE DETAIL  
POST-TENSIONING ANCHORAGE  
PINNED GLULAM COLLAR BEAM AND BOUNDING COLUMN CONNECTION  
CLT WALL PANELS  
CLT FLOOR-TO-WALL CONNECTION  
CLT SHEARWALL SPLICE  
HIGH-STRENGTH POST-TENSIONED THREAD BAR  
CONCRETE BASE  
ELEVATION - POST-TENSIONED ROCKING WALL (STATIC STATE)



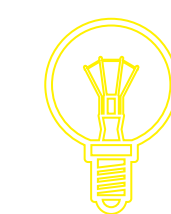
### DESIGN-FLEXIBILITY

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



### 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 LIMITATIONS FOR APPLICATION BUT ITS VERSATILITY, LIFECYCLE BENEFITS, AND AESTHETIC APPEAL PROVIDE NEW OPPORTUNITIES YET TO BE DISCOVERED. ESPECIALLY IN THE PACIFIC NORTHWEST!

