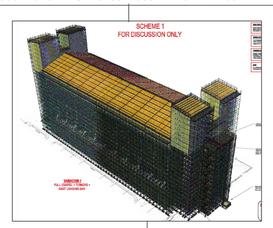
SCAFFOLD DESIGN - PROGRESSION FLOW CHART

INITIAL BRIEF - 28/04/2021

EXPLORE POTENTIAL SCAFFOLD SOLUTIONS FOR THE PROPOSED ROOF REPAIR WORKS. CONSIDER ALL OPTIONS. CONSIDER WORST CASE LOADINGS, THROUGH TO MINIMUM SCAFFOLD SOLUTIONS AND METHODS. THIS REVIEW IS TO CONSIDER MOST SUITABLE ACCESS, STRUCTURAL IMPACT, VISUAL IMPACT AND COST IMPACT.

SCHEME 1

SCHEME 1 WILL CONSIDER THE FULL ENCAPSULATION OF THE ENTIRE BUILDING. THIS WILL ALLOW FOR AN ASSESSMENT OF THE WORST POSSIBLE GROUND BEARING LOADS TO ALL AREAS. THE MODEL PRODUCED WILL ALSO ALLOW THE CLIENT TO HAVE A VISUAL REPRESENTATION OF THE PROPOSAL. IF REQUIRED, A COSTING FOR THIS PROPOSAL COULD BE CARRIED OUT



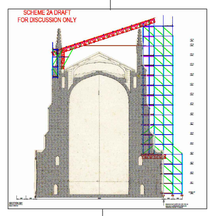
SCHEME 1 - 30/06/2021

AFTER DISCUSSION AT PROJECT MEETING 2, IT WAS DECIDED THAT A FULL ENCAPSULATION WOULD EXCEED THE BUDGET OF THE PROPOSED WORKS AND WOULD NOT BE SUITABLE FOR THIS PROJECT AND SO SHOULD NOT BE CARRIED FORWARD.

STOP

SCHEME 2

SCHEME 2 WILL CONSIDER THE OPTION OF A PART ENCAPSULATION. IT WAS SUGGESTED THAT THE NORTH ELEVATION OF THE SCAFFOLD WAS TO BE GROUND BEARING WITH ALL OTHER ELEVATIONS BEING SUPPORTED DIRECTLY ONTO THE BUILDING.



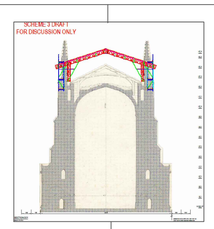
SCHEME 2 - 30/06/2021

AFTER DISCUSSION AT PROJECT MEETING 2, IT WAS DECIDED THAT SCHEME 2 WOULD NOT PROVIDE SUFFICIENT COST SAVINGS WHEN REVIEWED AGAINST ACCESS SOLUTIONS. IT WAS DECIDED THAT THIS PROJECT SHOULD NOT BE CARRIED FORWARD.

STOP

SCHEME 3

SCHEME 3 WILL CONSIDER THE OPTION OF THE ENTIRE ENCAPSULATION BEING SUPPORTED DIRECTLY ONTO THE BUILDING. A REVIEW OF ACCESSIBILITY TO GUTTERING AND METHODS OF FIXING THE SCAFFOLD TO THE BUILDING WILL BE REQUIRED TO ENSURE THE MOST SYMPATHETIC APPROACH IS IMPLEMENTED.

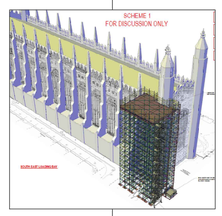


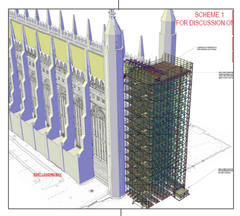
SCHEME 3 - 30/06/2021

AFTER DISCUSSION AT PROJECT MEETING 2, IT WAS DECIDED THAT THIS SCHEME WOULD OFFER A COST EFFECTIVE SOLUTION. IT WAS ALSO AGREED THAT THIS METHOD WAS THE LEAST VISUALLY IMPOSING AND RESULTED IN THE LOWEST DISRUPTION TO DAILY ACTIVITIES FOR THE CHAPEL. THE NEGATIVE IMPACT TO THE STRUCTURE WILL BE HOW THE SCAFFOLD IS CONNECTED AND A REDUCED WORKING AREA AROUND THE SCAFFOLD (AS IT WILL BE LOCATED WITHIN THE GUTTERING AREA). IT WAS DECIDED THAT THIS SCHEME WILL BE CARRIED FORWARD AND CONSTRUCTION SOLUTIONS REVIEWED.

ALL SCHEMES - LOADING BAY ACCESS

SUITABLE LOADING BAYS AND PERSONNEL ACCESS IS REQUIRED. IT HAS BEEN ADVISED THAT THE EAST ELEVATION WOULD BE THE MOST SUITABLE LOCATION DUE TO THE ABILITY TO LOAD MATERIALS DIRECTLY INTO A COMPOUND. A REVIEW OF LOCATION WILL BE REQUIRED SO THAT THE CLIENT CAN ASSESS THE STRUCTURAL IMPACT AND THE VISUAL IMPACT.





SOUTH EAST LOADING BAY - 30/06/2021

AFTER DISCUSSION AT PROJECT MEETING 2, IT WAS DECIDED THAT THIS LOCATION WAS MORE SUITABLE AND WILL BE CONTINUED AS THE MAIN ACCESS POSITION. GROUND LOADING REVIEWS CAN NOW BE ASSESSED IN THIS AREA.

CONTINUE TO FINAL SCHEME

EAST LOADING BAY - 30/06/2021

AFTER DISCUSSION AT PROJECT MEETING 2, IT WAS DECIDED THAT THE EAST LOADING BAY WOULD OBSCURE LIGHT TO THE EAST END WINDOW WHICH WOULD NOT BE FAVORABLE WITH THE CHAPEL ACTIVITIES AND SO SHOULD NOT BE CARRIED FORWARD.

STOP

SCHEME 3 - 30/06/2021

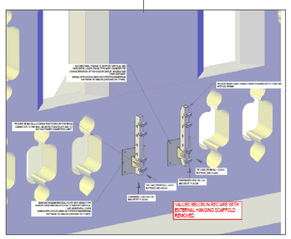
THE QUESTION WAS RAISED ON PART-BUILT SCAFFOLDING OVER THE ROOF AREAS IN RELATION TO COST AND VISUAL IMPACT.

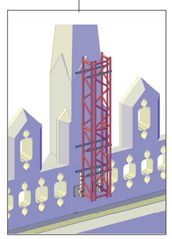
PROS - REDUCED MATERIALS ON SITE, BUILD TIME REDUCED TO INITIALLY START WORK ON FIRST PHASE, COSTING CAN BE PHASED OVER A DURATION OF TIME.

CONS - REDUCED WORKING AREAS, WATER RUNOFF ISSUES AND INGRESS PREVENTION, PHASE OVERLAP SIZE RESULTS IN INCREASE COSTS IN FINAL COSTING, THE END INFILL SCREENS WOULD NEED ERECTING MULTIPLES OF TIMES RESULTING IN A FINAL COST INCREASE.

SCHEME 3A - 15/07/2021

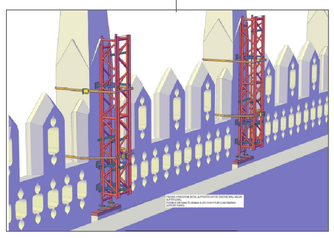
SCHEME 3A HAS REVIEWED USING MECHANICAL FIXINGS DIRECTLY INTO THE STONE AT THE BUTTRESSES LOCATIONS. THIS METHOD IS TO BE ACHIEVED BY USING A FIXED BASE PLATE TO CREATE A PINNED JOINT. FURTHER INVESTIGATION OF THE LOADS AND ECCENTRICITY EFFECTS IS TO BE CARRIED OUT TO ASSESS SUITABILITY AND IMPACT.

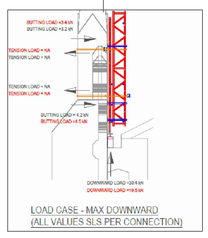




SCHEME 3B - 23/07/2021

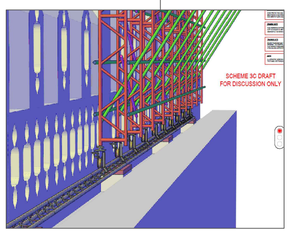
FURTHER TO DISCUSSION WITH JM STRUCTURAL CONSULTANTS, IT HAS BEEN DECIDED TO REVIEW AN ALTERNATIVE SUPPORTING METHOD TO REDUCE THE REQUIREMENT FOR HIGH NUMBERS OF FIXINGS TO THE VISUAL STONE WORK. A METHOD OF INSTALLING PERMANENT PAD STONES ADJACENT TO THE BUTTRESSES TO PROVIDE A DIRECT SUPPORT ONTO THE EXISTING WALL TO TRANSFER LOADS. IT WAS DECIDED TO CONSIDER STRAPPING THE SCAFFOLD FRAMES USING 50kN TENSION STRAPS AROUND THE BUTTRESSES TO PREVENT THE NEED FOR PENETRATING THE STONEWORK WITH FIXINGS.

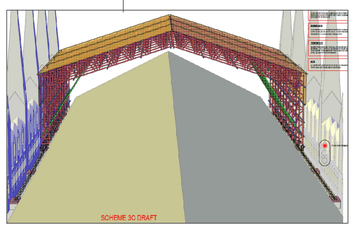




SCHEME 3C - 23/07/2021

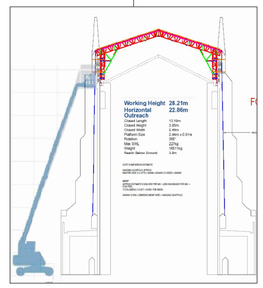
FURTHER TO REVIEWING THE POTENTIAL OF PAD STONES DIRECTLY ONTO THE EXISTING WALL, THE OPTION OF A RUNNING ROOF IS THEN MADE POSSIBLE AS A RUNNING TRACK CAN BE FORMED. THIS METHOD WOULD ALLOW FOR A SMALLER STRUCTURE TO BE CONSTRUCTED AND MOVED. THE NEGATIVE OUTCOME WOULD BE VERY LIMITED ACCESS TO THE GUTTER AREA AND THE STRUCTURE WOULD NEED TO BE POSITIONED WITHIN THE PINNACLES WHICH WOULD RESULT IN WEATHER INGRESS TO THIS AREA.





SCHEME 3 LOAD REDUCTION - 23/07/2021

FURTHER TO DISCUSSION WITH JM STRUCTURAL CONSULTANTS IT WAS AGREED THAT A REVIEW ON REDUCING THE LOAD ON THE BUILDING WOULD BE BENEFICIAL TO ASSESS FIXING / SUPPORT OPTIONS. THIS WAS CARRIED OUT BY REMOVING THE HANGING SCAFFOLDS OVER THE EXTERNAL ELEVATIONS THAT HAD BEEN PUT IN PLACE TO ACCESS THE HOPPERS. A CHECK OF SUITABLE MEWP ACCESS PLANT WAS CARRIED OUT TO ENSURE AN ALTERNATIVE METHOD WAS AVAILABLE. LOAD REDUCTION WAS APPROXIMATELY 10kN PER CONNECTION.
APPROXIMATE COST OFFSET = 25WKS MEWP = HANGING SCAFFOLD COST.



PROJECT
KING'S COLLEGE CHAPEL ROOF

CLIENT
KING'S COLLEGE, CAMBRIDGE

DRAWING
SCAFFOLD DESIGN - FLOW CHART

DATE	SCALE		
28/04/2021	AS NOTED		
DRAWN RH	CALCS	PROJECT NO 3974	DWG NO

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