Heavy Component Movement Strategies

HCM's which are "Significant Risks" at Design Stages

NOT normal routine construction MSD & WAH risks

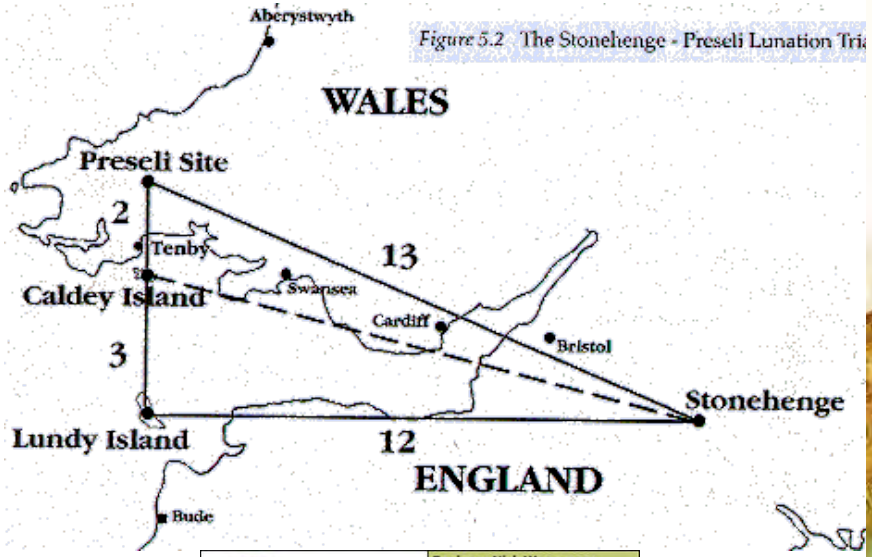
CDM DIFFERENTLY

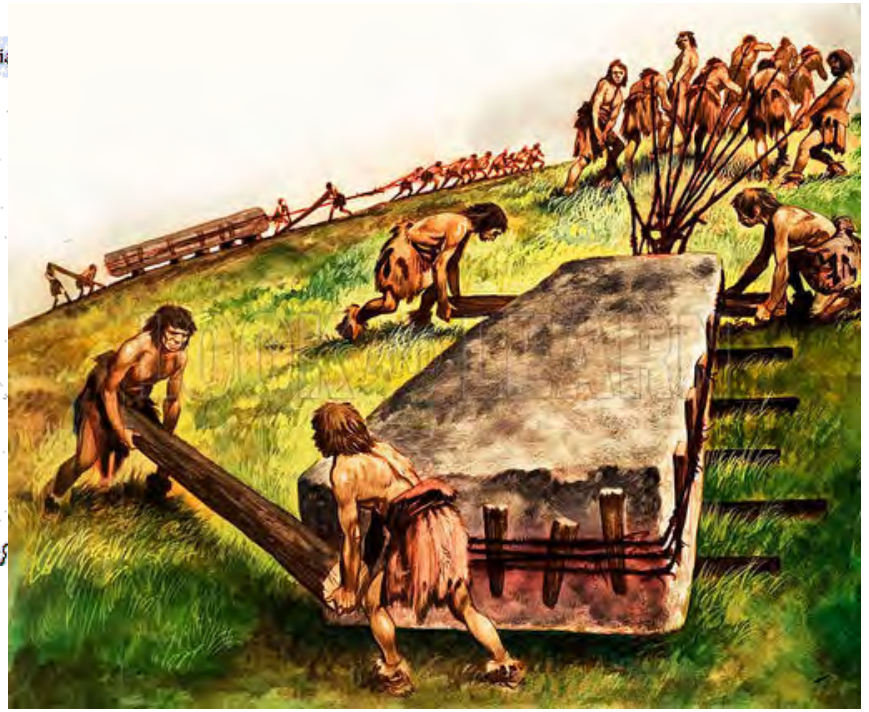
RIBA Architecture.com

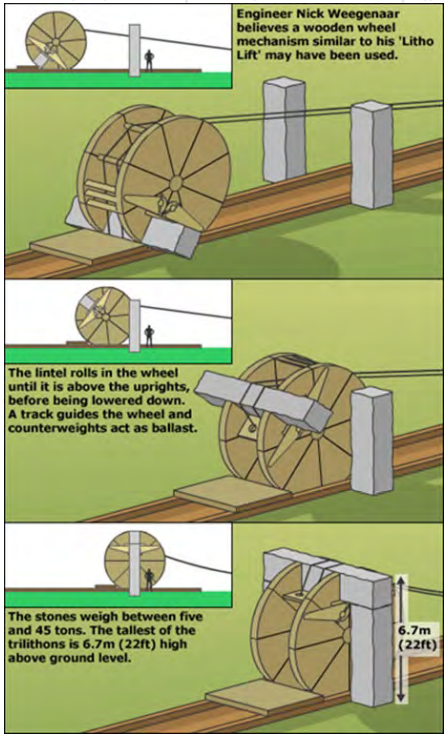
Stonehenge- Construction Mystery?

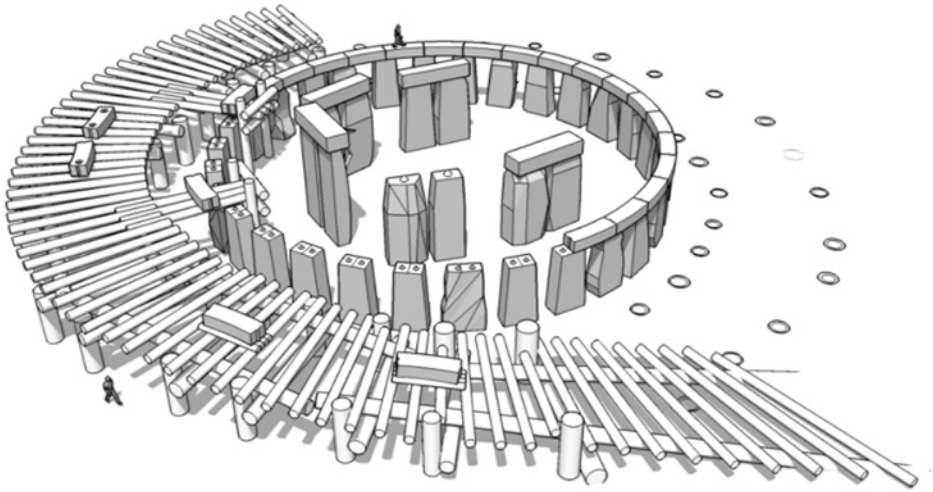
More than 5000 years ago

Moving Heavy Materials large distances

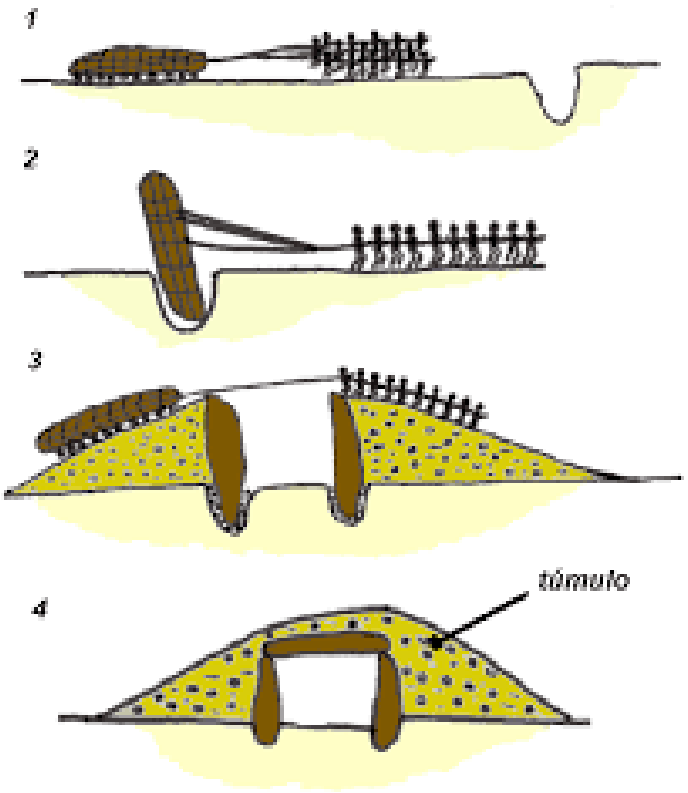








Lifting Heavy Stones into position




Southampton
SOLENT
University
Southampton Solent University

Designer CDM Analysis and Options Matrix - Hazard Identification and Significant Risk Management

Project & No:-:-	Solent University Campus	14677	Work Stage :-	F	Revision & Date:	19	Aug 21st 2015

HAZARDS and SIGNIFICANT RISKS	BUILDING FORM, MATERIAL, , ACTIVITY, LOCATION	ELIMINATE or AVOID risks (During early design stages) SFARP	REDUCE or MINIMIZE risks ALARP by :- (During all design stages) Safe systems of work & protection >	INFORMATION To be provided with the design eg Specialist Design & client input	CONTROL METHODS Contractor or Client Manage - ment Systems	ACTION OWNERS & DATES - OTHER SPECIALIST GUIDANCE & COMMENTS

1.0 PROJECT CDM APPROACH	This document is a visual and minimal text analysis of the key CDM Design stage issues identified by the project team with associated Significant Risks identified and design or control methods recommended. The Project Development team should help to resolve outstanding issues in the Detailed design stages plus add further issues identified for team discussion and resolution. This is a CDM Design and Issue Tracking document, and will ultimately be the Pre-Construction Information for the project for further development by the Contractor.	Project and Contractor Team to develop this document as scheme evolves.
1.0.1 FRONT ENTRANCE	The new entrance provides a stunning highly glazed vista into a New Academic world as viewed from East park.	

- WORK AT HEIGHT ISSUES
- ASBESTOS
- TEMPORARY PROPPING

CDM OVERVIEW:-

1. Atrium roof access to metal roofing , roof lights and gutters. specialists to be consulted.	Contractor and roofing specialists to liaise for construction and maintenance stages
2. Interface construction with Millais including Asbestos removal issues.	Contractor to agree extent and programme with specialist asbestos removal company
3. Construction during operation of existing Millais building and University Campus	Contractor and client to liaise. Contractor to make proposals .
4. Maintenence and cleaning of Atrium end glazed wall, inside and outside	Client prefers a MEWP on the raised podium and inside via large doors in elevation.
5. Large steel vertical fins to brace the atrium glazed wall will require cranage and temporary bracing until connected to roof structure	Cladding, steelwork and main contractors to liaise. Roof braced for horizontal loads
6. Integration of Smoke Vents at high level with maintenance access	Smoke venting details to be agreed, including make-up air in front elevation?

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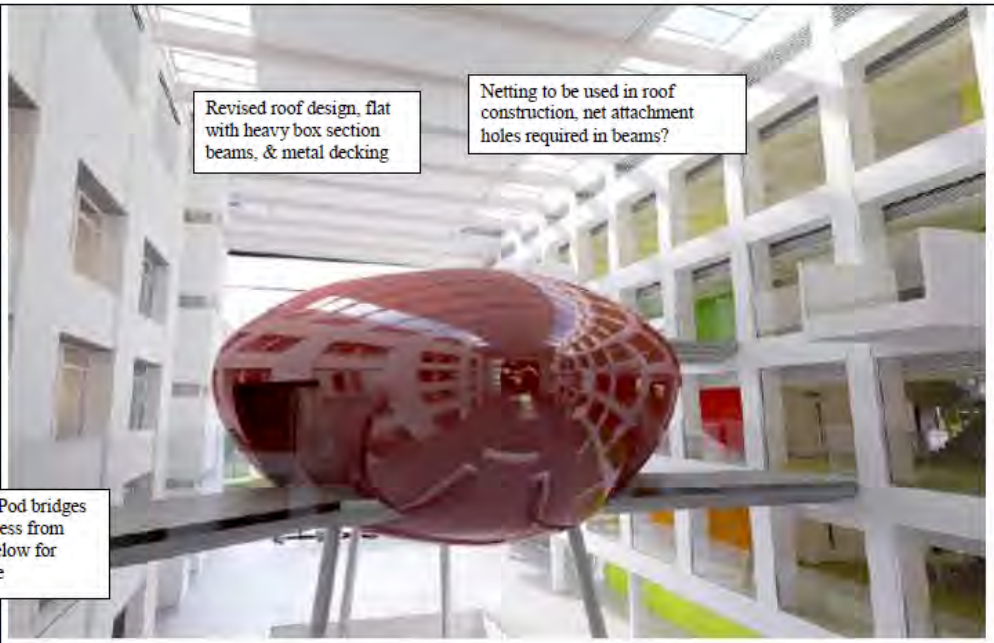
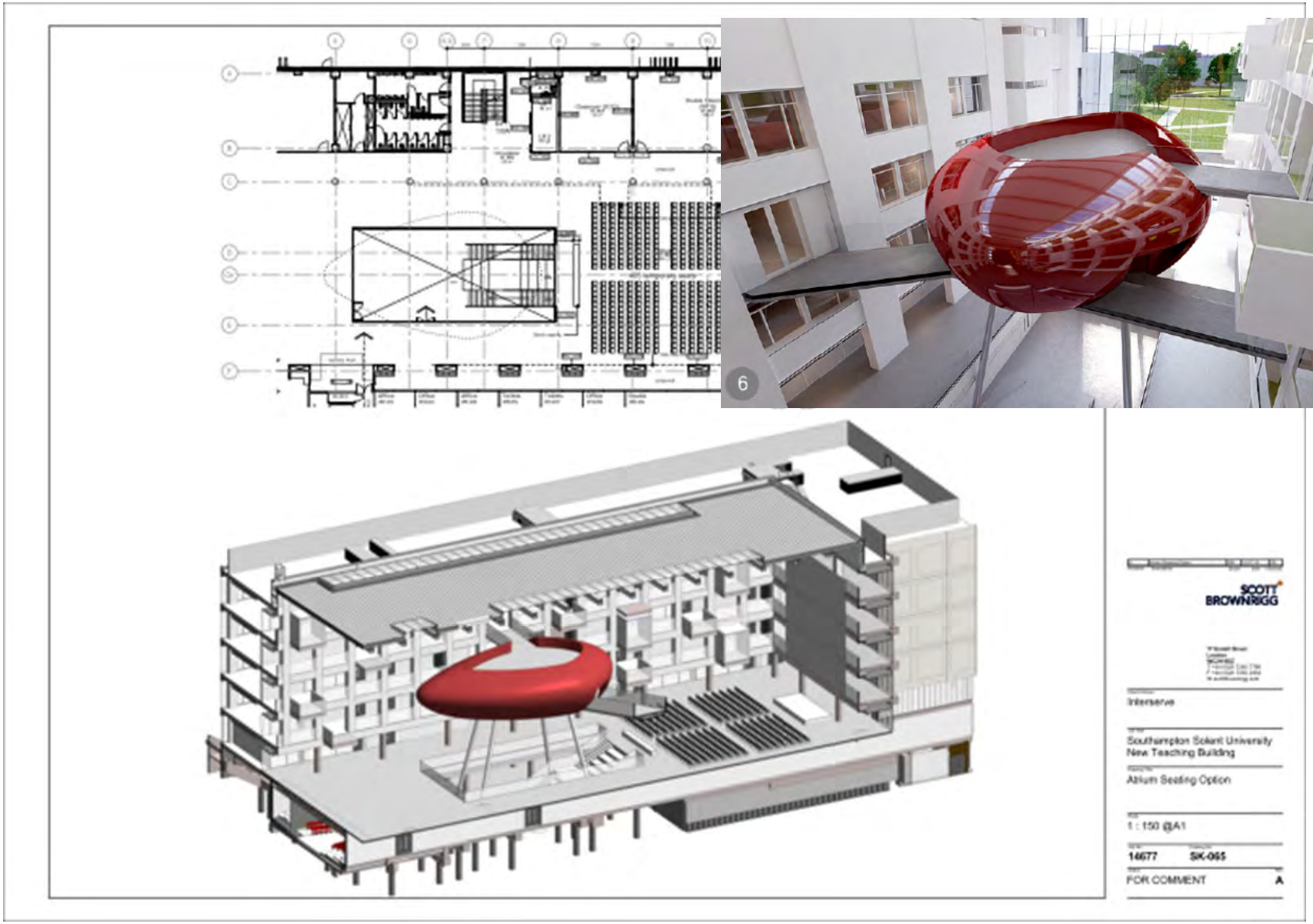
1.0.2
THE ATRIUM AND NEW ACADEMIC BUILDING

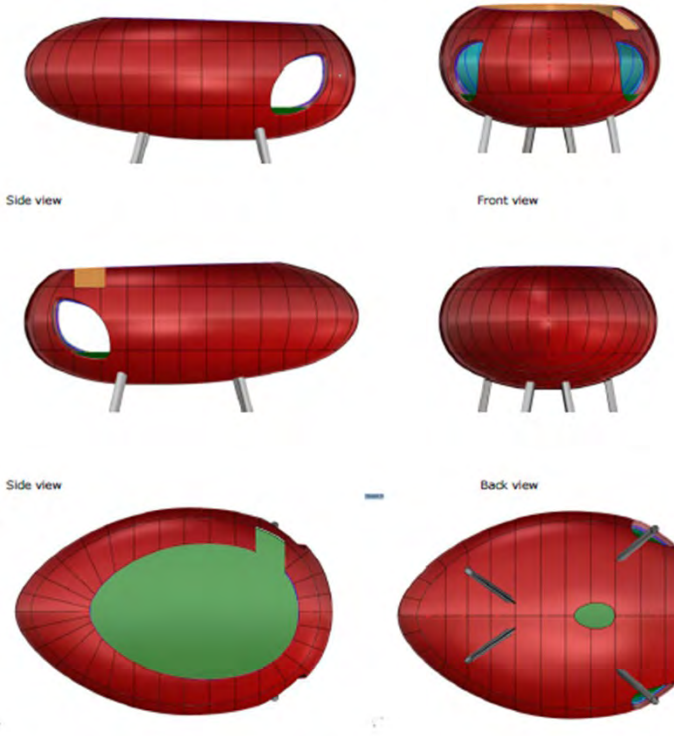
- WORKING AT HEIGHT
- ASBESTOS
- MULTIPLE TRADES IN CLOSE PROXIMITY
- HEAVY LIFTING OF LARGE OBJECTS
- FIRE STRATEGY

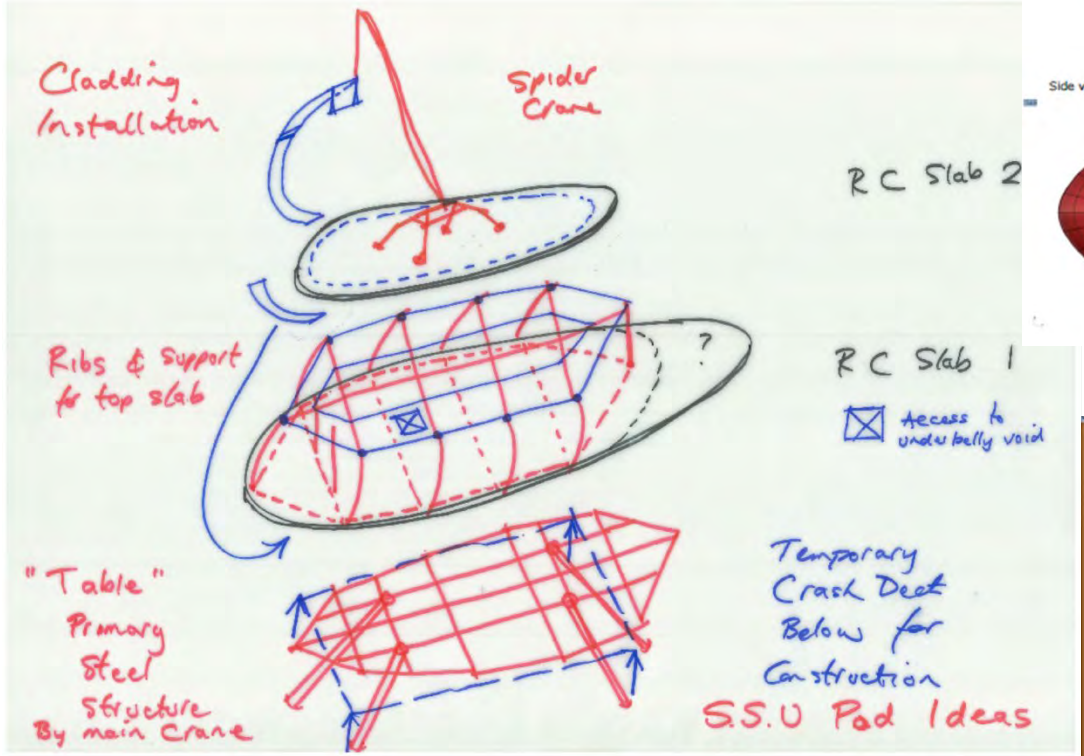


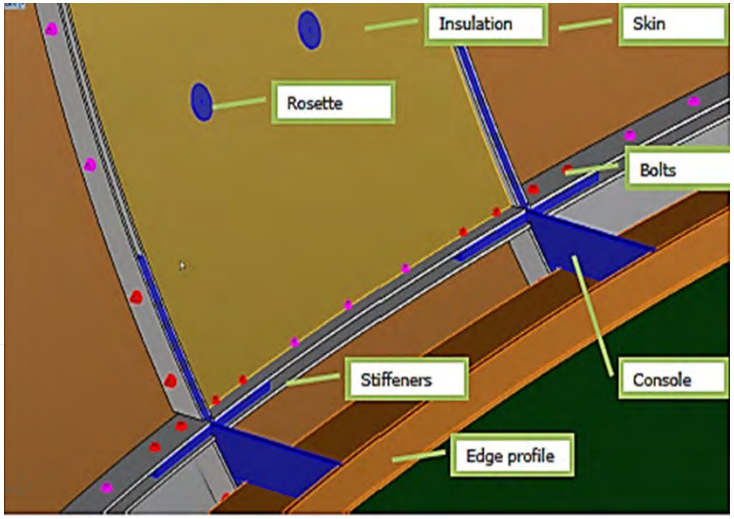
CDM OVERVIEW	Agreed / Agr'd in principle / Not yet actioned
1. Atrium Roof Construction and maintenance access- Revised design	MEWP access agreed with client internally. IRATA trained fall restraint access to external flat roof
2. Millais elevational and structural modifications with asbestos removal issues	Contractor to agree programme with client.
3. Open balcony construction to New Academic Building with associated temporary protection prior to final handrail installations. Minimize working at height.	In-situ slabs with possible offsite manufacture of balcony pods, craned into place.
4. Access to ceiling lighting on balconies to prevent falls over balustrade, by podium steps	Client agreed podium steps to be used on balconies.
5. Construction and maintenance of pod feature at centre of atrium. Offsite manufacture and cranage.	Contractor /designer to agree details with specialist. Proposal required at tender.
6. Fire Engineering of Atrium during construction phase with long travel distances and large amounts of scaffolding and temporary protection. Alternative exits from Millais required.	Construction phase fire strategy to be agreed between contractor and SSU , for operatives and users of Millais (see details later).
7. Access for construction vehicles into atrium due to raised levels above ground and hole in atrium slab.	Contractor site access plan to agreed
8. Retain occupation of Millais throughout works, ventilation, daylight v Noise, dust and distraction, Means of Escape.	Contractor and client to agree programme, timings, details. Noise will be very problematic to counter.


SCOTT BROWNRIGG
Interserve
Southampton Solent University
New Teaching Building
Atrium Seating Option
1 : 150 @A1
14677
SK-065
FOR COMMENT
A

CDM 2015







SSU – POD-Sketch & Buildability

Visual risk analysis, storyboard or pathway

Designer CDM Analysis and Options Matrix - Hazard Identification and Significant Risk Management

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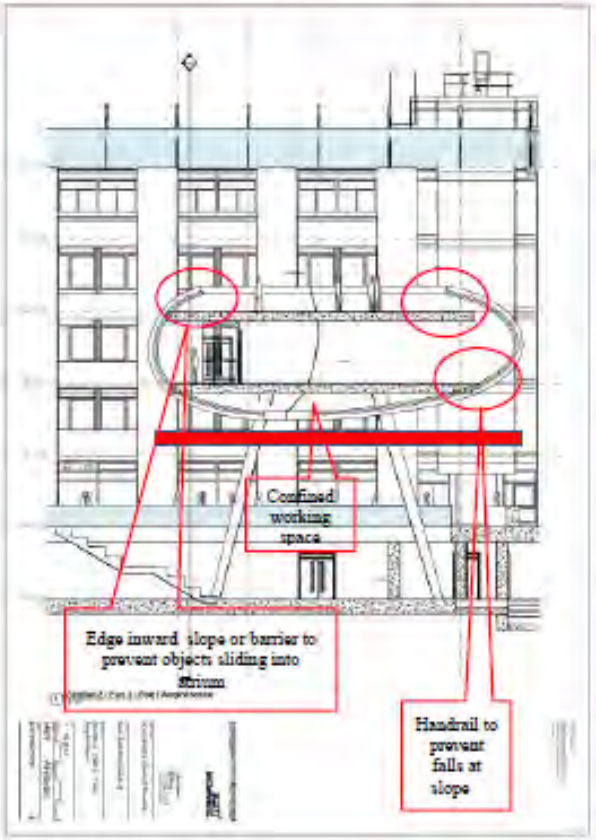
2.5 SECTIONS & VIEWS (PRECEDENT EXAMPLES)



1. Access to Atrium roof for cleaning over and adjacent to the pod- MEWP
2. Access to opening vents in roof for smoke ventilation- MEWP internally , access walkway externally.
3. Access to lighting in atrium, underside of walkways to pod and balconies, all require high level access unless via raised floor above?
4. Access to pod exterior for cleaning and maintenance to be via a MEWP.
5. Cleaning Front elevation internally and externally with MEWP that can access up the ramp and manoeuvre through the entrance doors (cleaning track internally omitted by client FM team)
6. Protection of atrium floor during cleaning & maintenance operations if required by MEWP?
7. Cleaning of Roof structure of dust from MEWP?
8. Lighting to amphitheatre steps under the pod to be designed for ease of access. Ideally from sides , handrails or floor lights to steps.
9. Temporary works to pod may require access and crash deck below.Confined working space in underbelly.

Team Sign -off status	Client	S. Solent University	Architect	Scott Brownrigg	Struct. Eng	SWH (Str)	Services Eng	Arups (Ser)	P. Contractor	Interserve (ICL)
Others	P.M	Gleeds	CDM-C	Scott Brownrigg	Landscape		Cost Consultant	F & Gould		

Designer CDM Analysis and Options Matrix - Hazard Identification and Significant Risk Management

Project & No:-:-	Solent University Campus	14677	Work Stage :- F	Revision & Date: 19	Aug 21st 2015

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2.5.3 POD MOCK-UP , FINISHING AND TRANSPORTATION

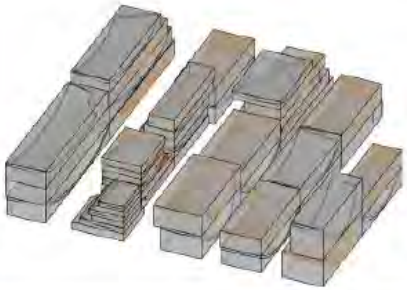
The PC will provide an accessible area and maneuvering space (no façade) to lift the crane into position and to remove the crane. CSC will take care of lifting the crane.
CSC will consult with the Client to determine the hoisting plan.

Spider crane to be used to lift steel panels into position. Crane to be hoisted onto pod roof slab for cladding installation. Spider crane removal after installation via bridge to NTAB and hoist to ground. Bridge and slab to take spider loads, including hoisting loads.

1. CSC Lifting plan to be agreed with PC to prevent conflicts with other trades.
2. Access and removal of crane to be agreed by PC & CSC
3. Upper slab and bridge to take spider crane and hoisting loads.

Creating a mock-up of app. 5m2 of an area of the steel skin pointed by the architect. (A suggestion from CSC is shown below). The mock-up will be a part of the connection of four parts of the steel panels. Steel edge profile and console are part of the mock-up.
This mock-up will give an indication regarding the materials and finishes. The actual performance by CSC will be carried out according to the Technical Specification
(objectively measurable). The Technical Specification will be determined after the approval of the mock-up.
Production of the Pod starts after approval of the mock-up and Technical Specifications.

4. Mock up 5m2 area will be part of the connection of 4 panels
5. Construction detailing to be confirmed and agreed for buildability
6. Location of mock up to be agreed , presumably at works in Holland or on site?

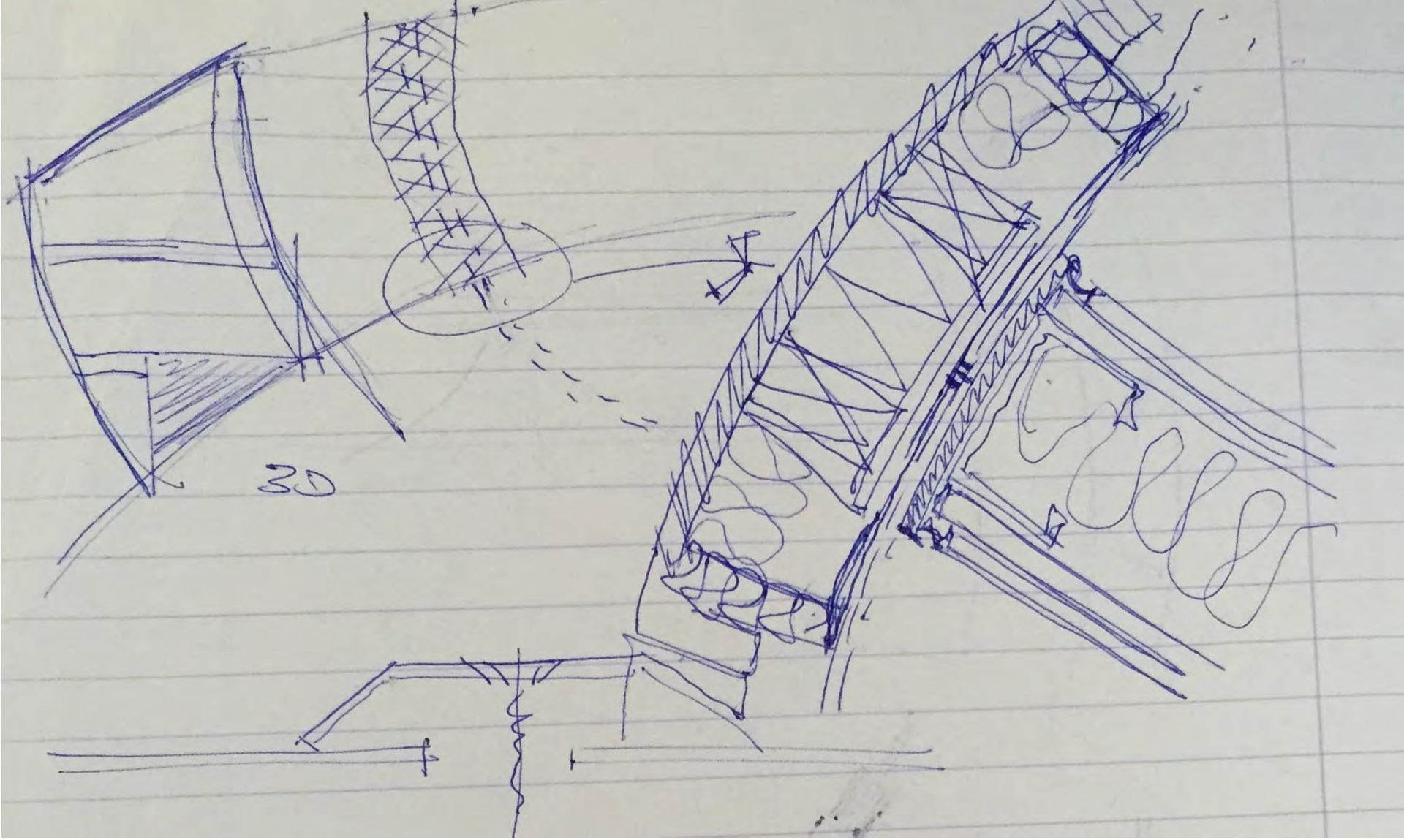


TRANSPORTATION
For the transport of the panels of the Pod are 9-10 trucks necessary. CSC will pack the panels in crates for protection and optimization of the transport.
The transport will be insured by CSC. Incoterms 2010, DAP.
Analyses of the panels. (half of the Pod)

7. Transportation, un-loading , storage and deployment to be agreed by PC & CSC

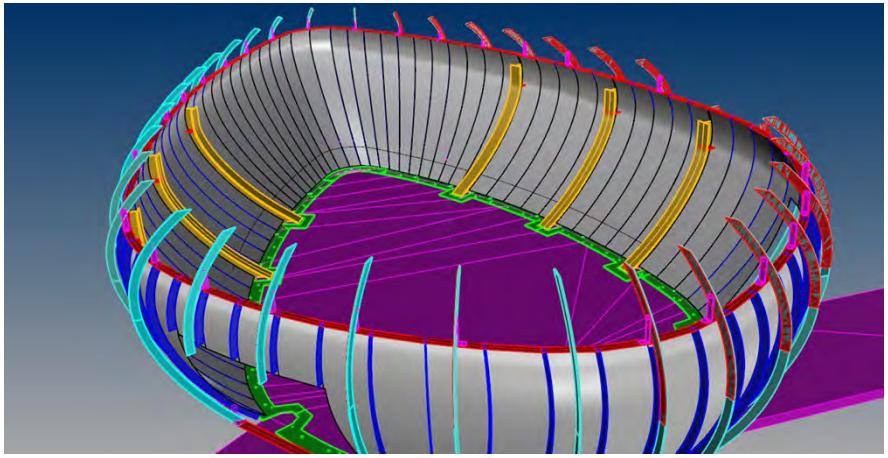
FINISHES TO POD
Front and backside of the skin and inner panels
The steel plates will be finished with the following painting system.
Blasting front and backside of the panels;
Protective layer; 1 coat 2-component epoxyprimer, PPG-NEXA P580-3005, minimum dry film thickness 100 microns
Application of filler to smoothen grinding traces and for irregularities

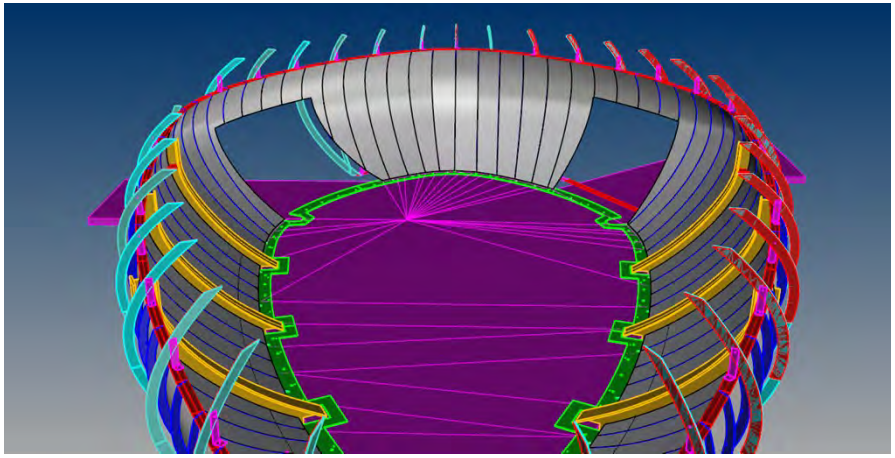
8. Spraying and painting and making joints good after installation in atrium and at high level. PC & CSC

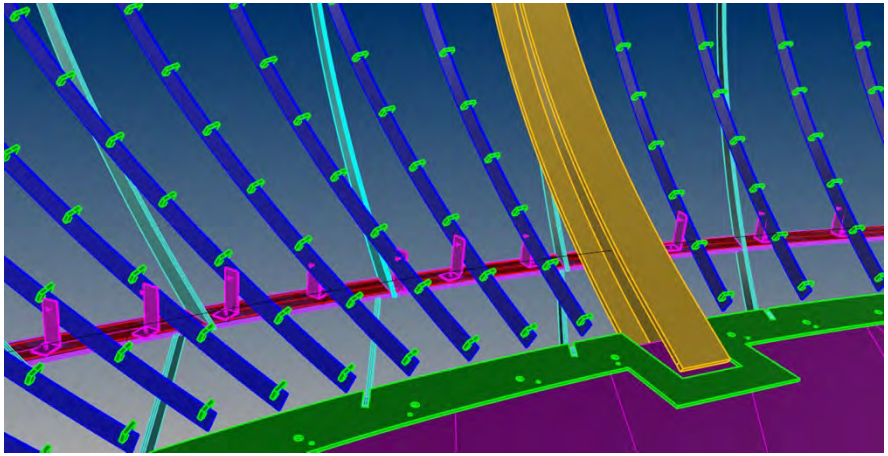


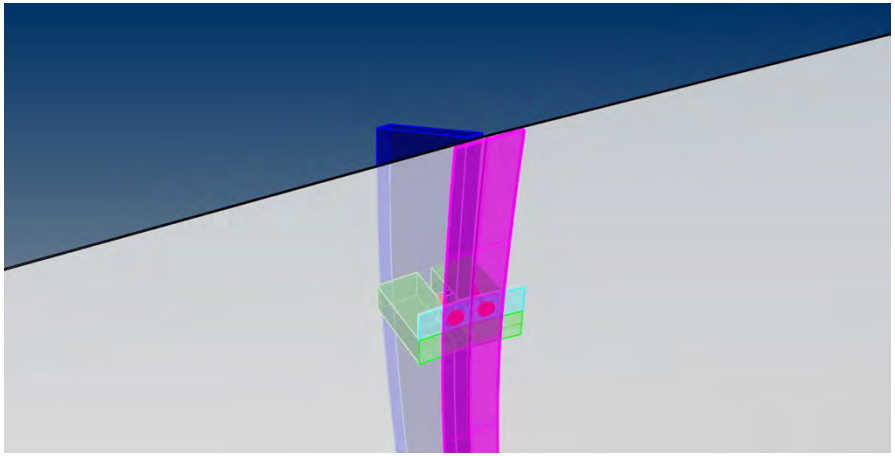
Pod Review Visit

Interface Detail Discussions









Pod Review Visit

CIG / Interserve Lining Proposals

Pod Review Visit

Pod Review Visit


MAMMOET
MAMMO
www.mammoet.com


SCOTT
BROWNRIGG


SCOTT
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SCOTT
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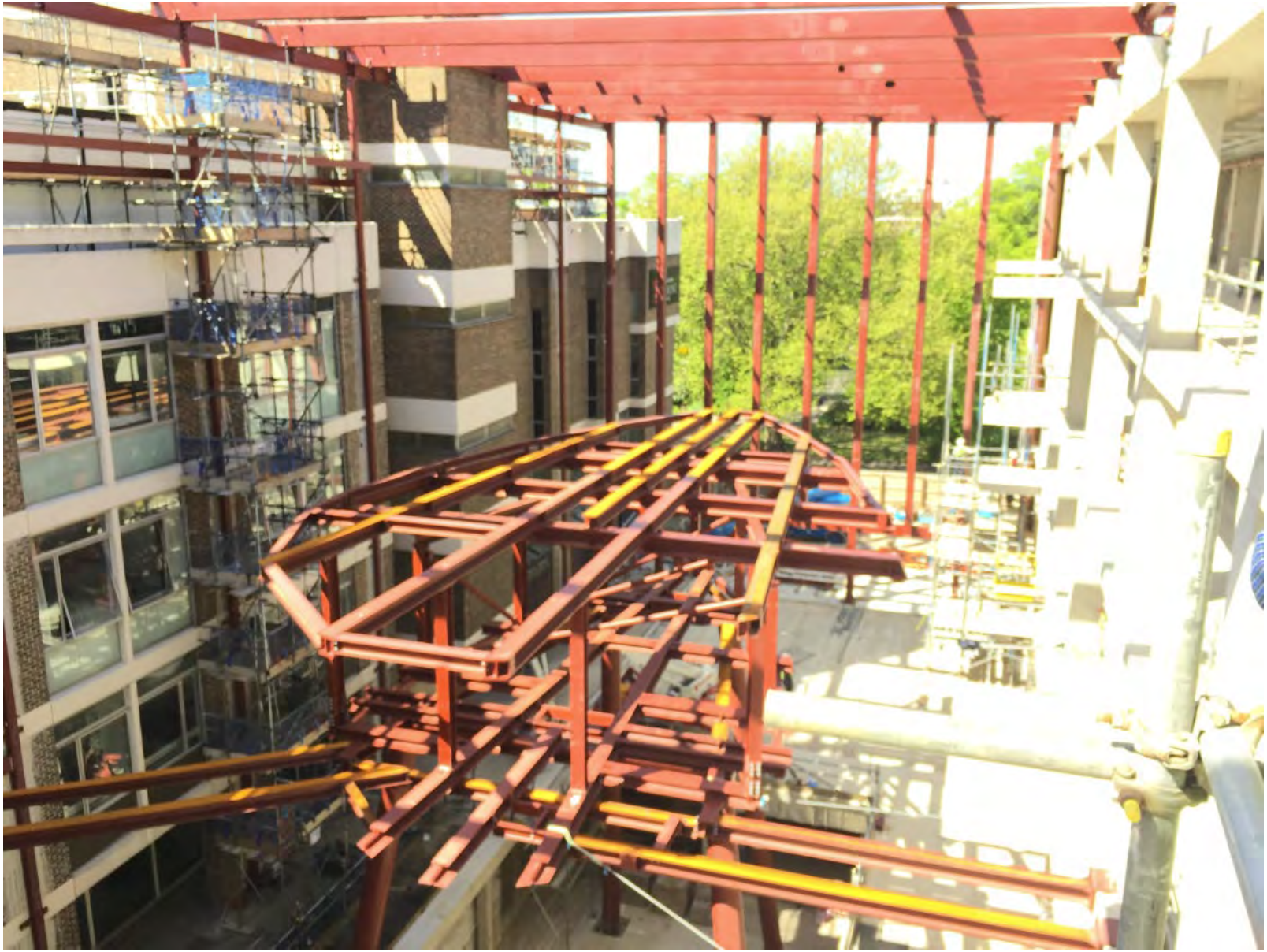
SCOTT
BROWNRIGG

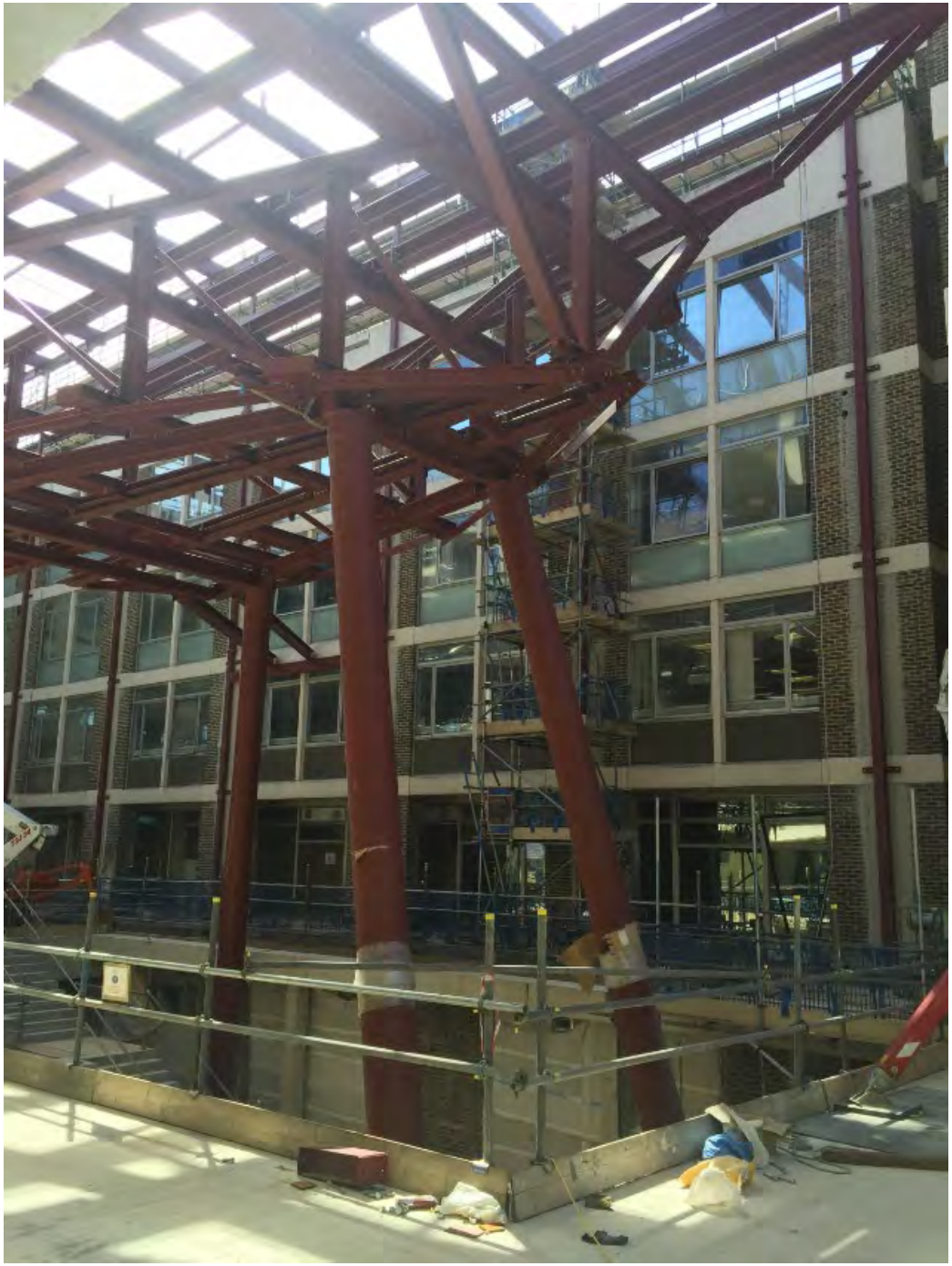

SCOTT
BROWNRIGG
ABUS 16/51

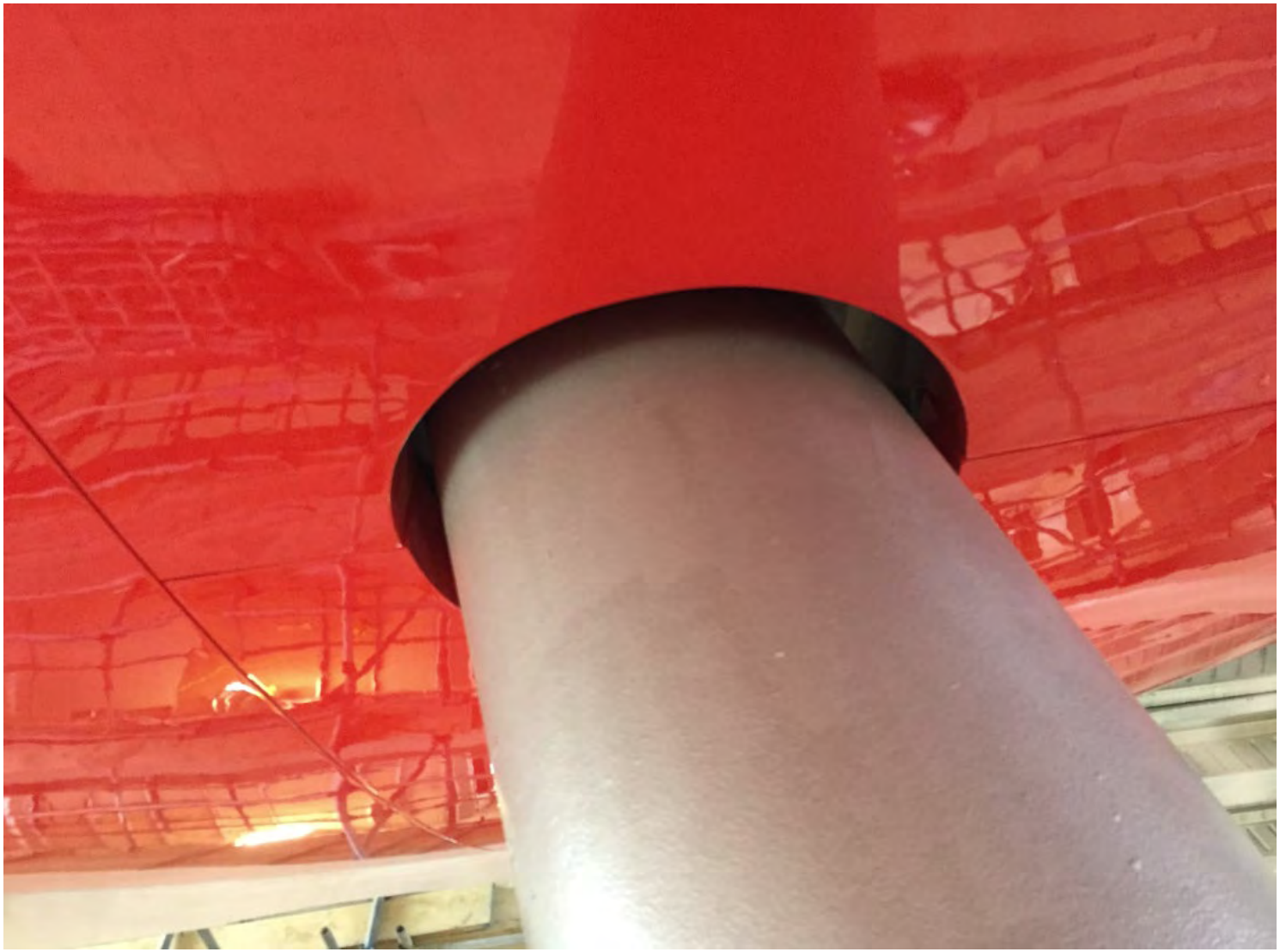

Gesamttragf. 16t
ABUS 16/5t
SCOTT
BROWNRIGG

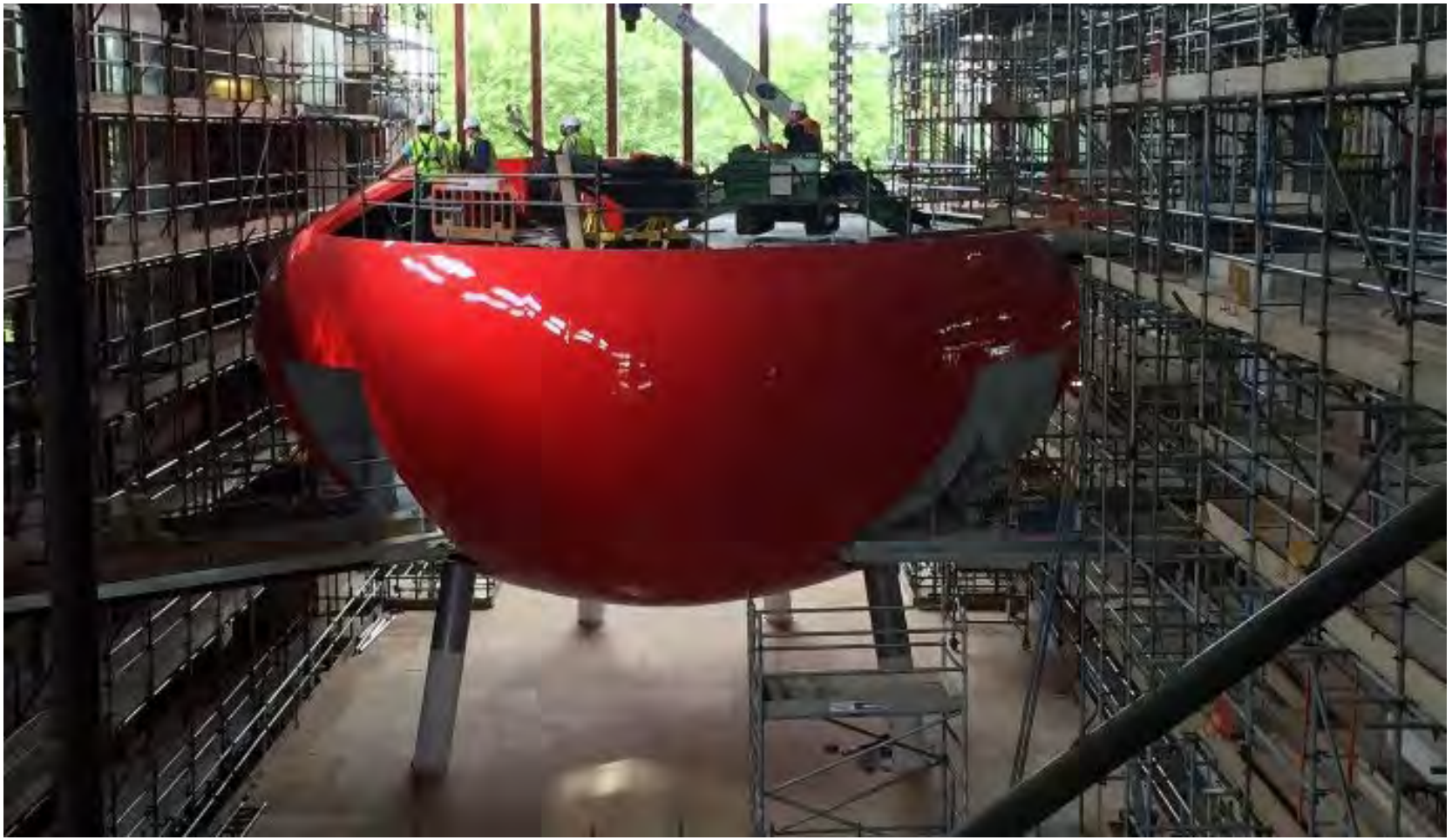
Pod Review Visit

Shipping Methodology










Vision:
Confident
Bold
Dynamic
Vibrant
Energising
Warm
Welcoming
SCOTT
BROWNRIGG

Royal Court Theatre Act III
CDM Report Stage 4 Revision XX

ALLFORD
HALL
MONAGHAN
MORRIS

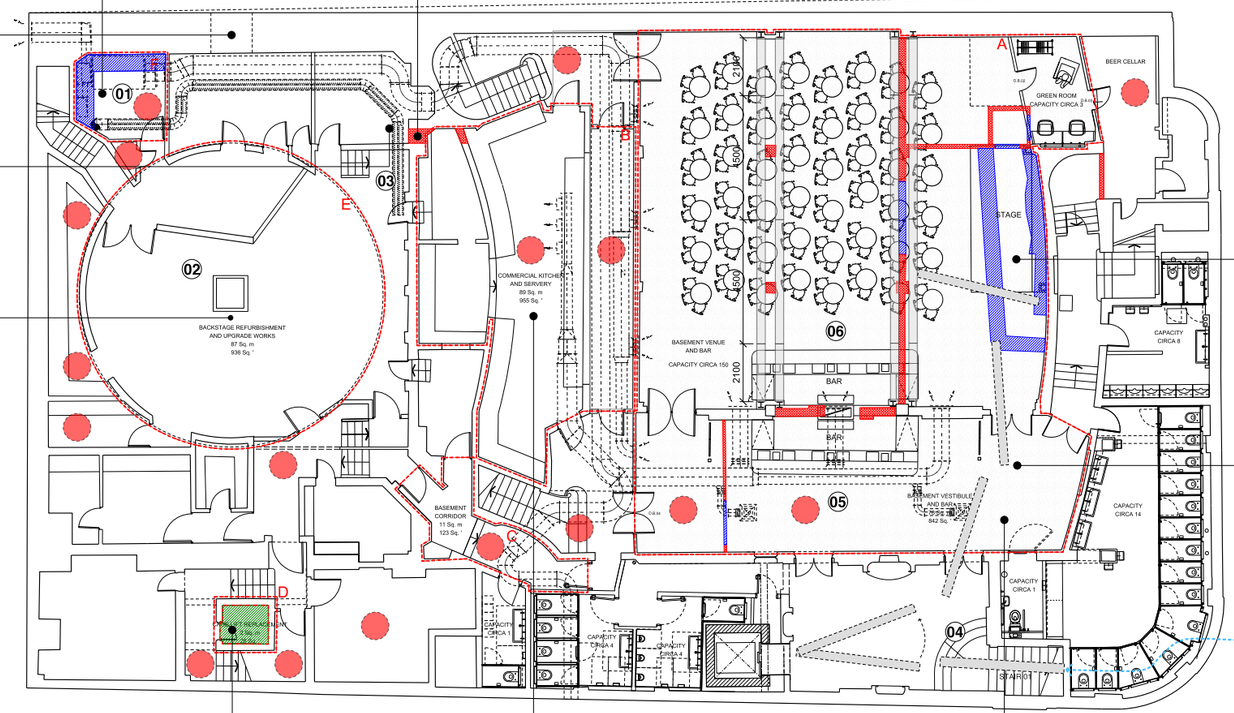
Installation of AHU - will access be okay? Potentially come through in sections?
CDM B.04

Is this route achievable for pipework? Structural review and investigations to take place
CDM B.05

Existing vent to be opened up for investigation works on neighbouring wall
CDM B.03

Identify clashes in pipework
CDM B.02

Be good to identify existing well for future works / maintenance
CDM B.01



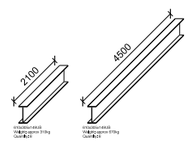
Confirmation of existing structure in basement from Structural Engineers
CDM B.06

Installation of new steels - this needs to be planned. Steel contractor to advise.

Diagram showing steels spliced into 4 and transported down the stairs.

Contractor to be aware that the large section of steel weighs approx. 670kg and the smaller sections approx. 310kg
CDM B.07

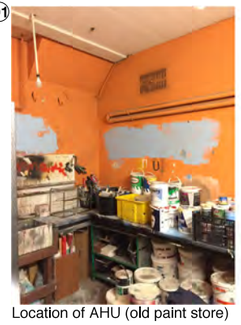
From above (removal of glazing in cafe next to St Johns entrance)



Lift pit required? Size tbc
CDM B.09

Installation of Kitchen - will access be okay? How big are the pieces of kit?
CDM B.08

Note: It is assumed sub-basement ventilation runs are retained as existing. No remedial works required

01

Location of AHU (old paint store)

02

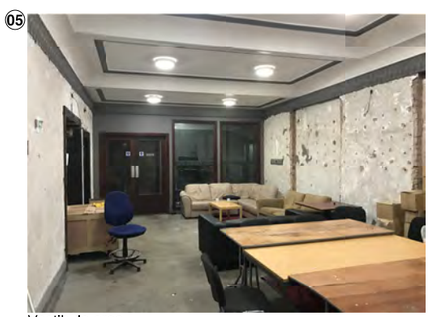
Man hole access to well

03

Ductwork running through BOH area

04

Basement stair

05

Vestibule area

06

Queen Mary Room

Generic Risks:

- **Asbestos present - refer to asbestos survey report**
- **Confined spaces**
- **Airborne fibres & materials - silicosis**
- **Transportation of materials - musculoskeletal**
- **Working at height**

SCOPE KEY / DESCRIPTION OF WORKS

A. REFURBISHMENT OF QUEEN MARY ROOM
- ASSOCIATED STRUCTURAL WORKS TO CREATE COLUMN-FREE SPACE.
- NEW VENTILATION SYSTEM TO SERVICE ENLARGED VENUE FOR 150 PEOPLE.
- CREATION OF ASSOCIATED GREEN ROOM.
- RELOCATED AND RECONFIGURED DOUBLE SIDED BAR TO SERVE VENUE, AND EXISTING VESTIBULE LOBBY

B. SERVERY REFURBISHMENT INCLUDING NEW COMMERCIAL KITCHEN

C. LIGHT TOUCH REFURBISHMENT TO CORRIDOR

D. CAGE LIFT FULL REPLACEMENT

E. TURNTABLE WORKS

F. CONVERSION OF BACK OF HOUSE SPACES TO ACCOMMODATE NEW AHU TO SERVICE QUEEN MARY ROOM

CDM KEY

- CDM 000 REFER TO 16005_CDM HAZARD AWARENESS & RISK MANAGEMENT REGISTER
- CAUTION OF A SIGNIFICANT DESIGN RISK AND SITE HAZARD
- FURTHER INFORMATION REQUIRED
- DESIGN RISK TOLERABLE
- FURTHER CONSIDERATION REQUIRED
- DESIGN RISK NOT TOLERABLE
- ACCESS

DEMOLITION KEY

- EXTENT OF PHASE OF WORKS 'ACT III'
- EXISTING WALL DEMOLITION
- EXISTING DOOR/WINDOW/FLOOR/STEP/FURNITURE DEMOLITION
- REPLACEMENT LIFT CAGE - REFER TO SUB-CONTRACTORS INFORMATION
- EXISTING CEILING DEMOLITION

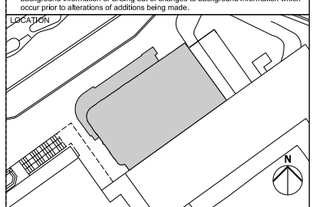
FOR SPECIFICATION REFER TO NBS: C10 / XXX

REV	DATE	COMMENT
A	10/03/17	Preliminary Issue
B	XX/03/17	XX

NOTE

1. Do not scale from this drawing, other than for Planning purposes.
2. All dimensions to be checked on site by the contractor and such dimensions to be his responsibility.
3. Report all drawing errors, omissions and discrepancies to the architect.
4. This document may be issued in an uncontrolled CAD format to enable others to use it as background information to make alterations and/or additions. In that instance the file will be accompanied by a PDF version. It is for those making such alterations and additions to ensure that they make use of current background information. AHMM Ltd accepts no liability for any such alterations or additions to the background information or arising out of changes to background information which occur prior to alterations of additions being made.

LOCATION



ALLFORD HALL MONAGHAN MORRIS
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TEL 020 7251 5261 FAX 020 7251 5123 WEB WWW.AHMM.CO.UK

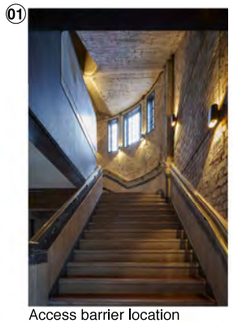
job title: ROYAL COURT THEATRE ACT III

drawing title / location: PROPOSED BASEMENT PLAN CDM

drawn by	checked	scale	status
SG	DW	1:100@A1; 1:200@A3	INFORMATION

project	zone	source	classification	drawing no.	revision
16005	3	A	[64]	109	B

01

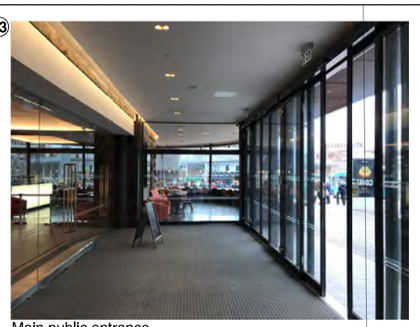


Access barrier location

02

Removal of glazing from cafe for steel transportation into the basement

03



Main public entrance

Temporary office space while works are going on?

CDM G.03

FD30S could these doors be upgraded?

CDM G.04

Temporary office on stage?

Note: existing escape routes through goods yard to be maintained during works

CDM G.10

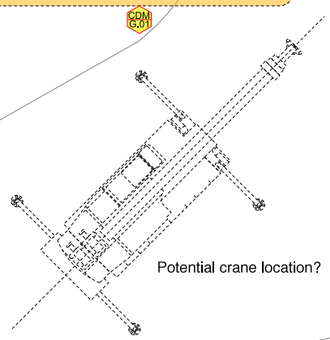
Usable yard for new welfare facilities?

CDM G.02

How often do staff use this entrance?

CDM G.01

Potential crane location?



Lift installation and access issues

Temporary handrail on treads?

CDM G.09

Material access to hoist for works on balcony?

CDM G.08

Aircurtain - can purlins be cut to accommodate so unit is flush?

CDM G.07

Removal of glazing for transportation into basement? (steels, AHU, kitchen etc.)

Will entrance to St Johns need to be closed from this side?

Structural engineer to liase with sub contractor for advice

CDM G.05

Access barrier in and out of use a safety issue?

CDM G.06

Generic Risks:

- Asbestos present - refer to asbestos survey report
- Confined spaces
- Airborne fibres & materials - silicosis
- Transportation of materials - musculoskeletal
- Working at height

SCOPE KEY / DESCRIPTION OF WORKS

A. NEW 'STAGE DOOR' SIGNAGE (REMOVED FROM SCOPE)

B. REPLACEMENT CAGE LIFT

C. WORKS RELATED TO DUCT ROUTING FROM BASEMENT VENUE

D. PROPOSED INSTALLATION OF A/C UNIT IN CEILING ZONE OF DISABLED WC WITH GRILLES IN BOX OFFICE SPACE TO PROVIDE COOLING

E. NEW PROPOSED FIRE DOORS (AUTO-CLOSING ON FIRE ALARM ACTIVATION) PROVIDING ALTERNATIVE PROTECTED ROUTE TO EXIT FROM BASEMENT VENUE AND PROVIDING NEW SECURE LINE

F. PROPOSED NEW AIR-CURTAIN ABOVE ENTRANCE DOORS

G. A/C UNIT WITHIN CAFE (POSITIONING TO BE AGREED) TO PROVIDE COOLING

H. DEMOUNTABLE GATE TO LIMIT PUBLIC ACCESS TO UPPER FLOORS WHEN REQUIRED (DESIGN TO BE DEVELOPED)

J. RETRACTABLE SLIDING SCREENS TO STALLS BAR

OTHER WORKS NOT HIGHLIGHTED (TBC):

- REPAIR WORKS TO DAMAGED FRETWORK TO U/S OF CIRCLE
- WORKS RELATED TO STAGE/ BACK OF HOUSE
- ACCESS BETWEEN MAIN LOBBY AND STAGE DOOR ENTRANCE (UNDER REVIEW)
- CHANGES TO STAGE DOOR OPERATION TO REDUCE CLOSER MOTOR OPERATION
- NEW BRASS COUNTER TO COVER CAFE COUNTER GATE

CDM KEY

- CDM 000 REFER TO 16005_CDM HAZARD AWARENESS & RISK MANAGEMENT REGISTER
- CAUTION OF A SIGNIFICANT DESIGN RISK AND SITE HAZARD
- FURTHER INFORMATION REQUIRED
- DESIGN RISK TOLERABLE
- FURTHER CONSIDERATION REQUIRED
- DESIGN RISK NOT TOLERABLE
- ACCESS

DEMOLITION KEY

- EXTENT OF PHASE OF WORKS 'ACT III'
- EXISTING WALL DEMOLITION
- EXISTING DOOR/WINDOW/FLOOR/STEP/FURNITURE DEMOLITION
- REPLACEMENT LIFT CAGE - REFER TO SUB-CONTRACTORS INFORMATION
- EXISTING CEILING DEMOLITION

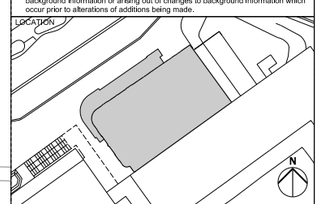
FOR SPECIFICATION REFER TO NBS: C10 / XXX

REV	DATE	COMMENT
A	10/03/17	Preliminary Issue
B	XX/03/17	XX

NOTE

1. Do not scale from this drawing, other than for Planning purposes.
2. All dimensions to be checked on site by the contractor and such dimensions to be his responsibility.
3. Report all drawing errors, omissions and discrepancies to the architect.
4. This document may be issued in an uncontrolled CAD format to enable others to use it as background information to make alterations and/or additions. In that instance the file will be accompanied by a PDF version. It is for those making such alterations and additions to ensure that they make use of current background information. AHMM Ltd accepts no liability for any such alterations or additions to the background information or arising out of changes to background information which occur prior to alterations of additions being made.

LOCATION



ALLFORD HALL MONAGHAN MORRIS
ARCHITECTS Ltd
MORELANDS, 5-23 OLD STREET LONDON EC1V 9HL
TEL 020 7251 5261 FAX 020 7251 5123 WEB WWW.AHMM.CO.UK

job title
ROYAL COURT THEATRE ACT III

drawing title / location
PROPOSED GROUND FLOOR PLAN
CDM

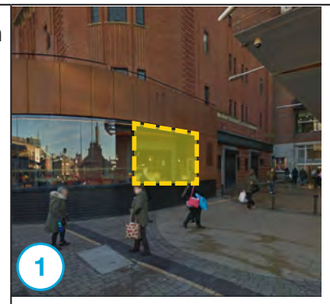
drawn by	checked	scale	status
SG	DW	1:100@A1; 1:200@A3	INFORMATION

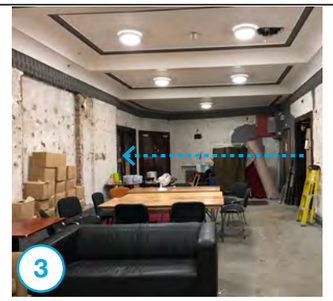
project	zone	source	classification	drawing no.	revision
16005	3	A	[64]	110	B

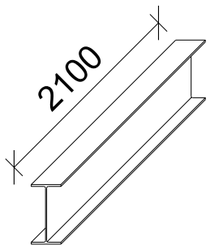
Project & No: **16005 - Royal Court Theatre Act III**		Workstage - **4**		Revision: **Rev A** Date: **XX/04/2017**		
AREA, ELEMENT, or SIGNIFICANT RISK ISSUE	BUILDING FORM, MATERIAL, ACTIVITY, LOCATION HAZARDS (Identfiied)	ELIMINATE or AVOID risks (SFARP) During early design stages	REDUCE risks (ALARP) Safe systems & work protection	INFORMATION To be provided with the design eg.Specialist Design & Client input	DESIGN CONTROL METHODS Action, Dates, Comments, Guidance, etc	ACTIONS Done On Going Not Agreed

CDM B.07 - Installation of new steels in the Queen Mary Room.

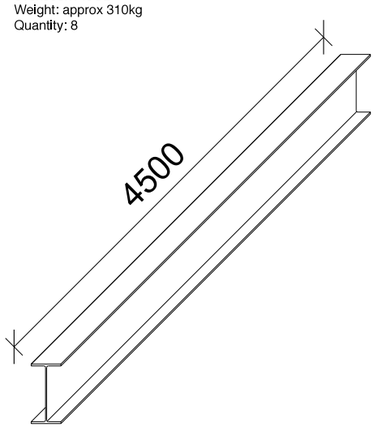
Basement, Queen Mary Room



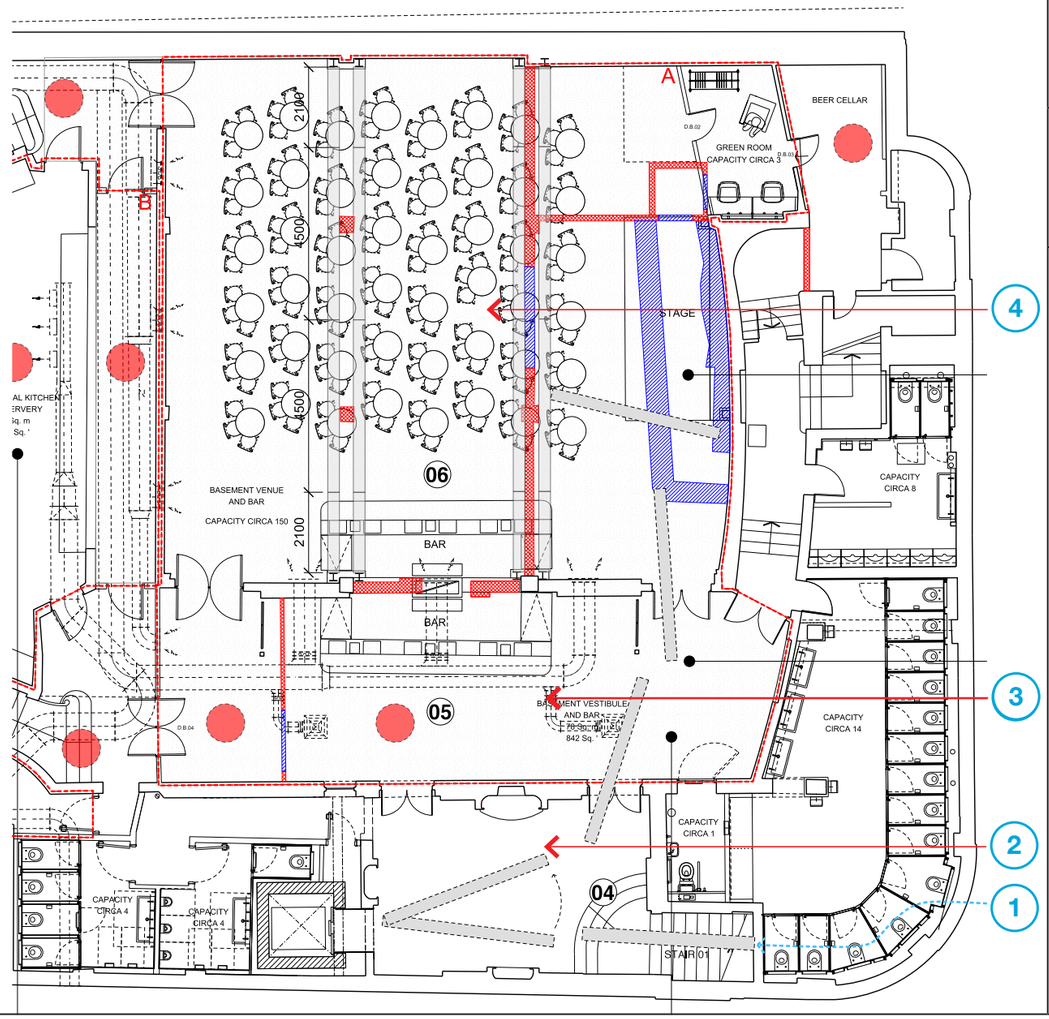




610x305x149UB
Weight: approx 310kg
Quantity: 8



610x305x149UB
Weight: approx 670kg
Quantity: 8



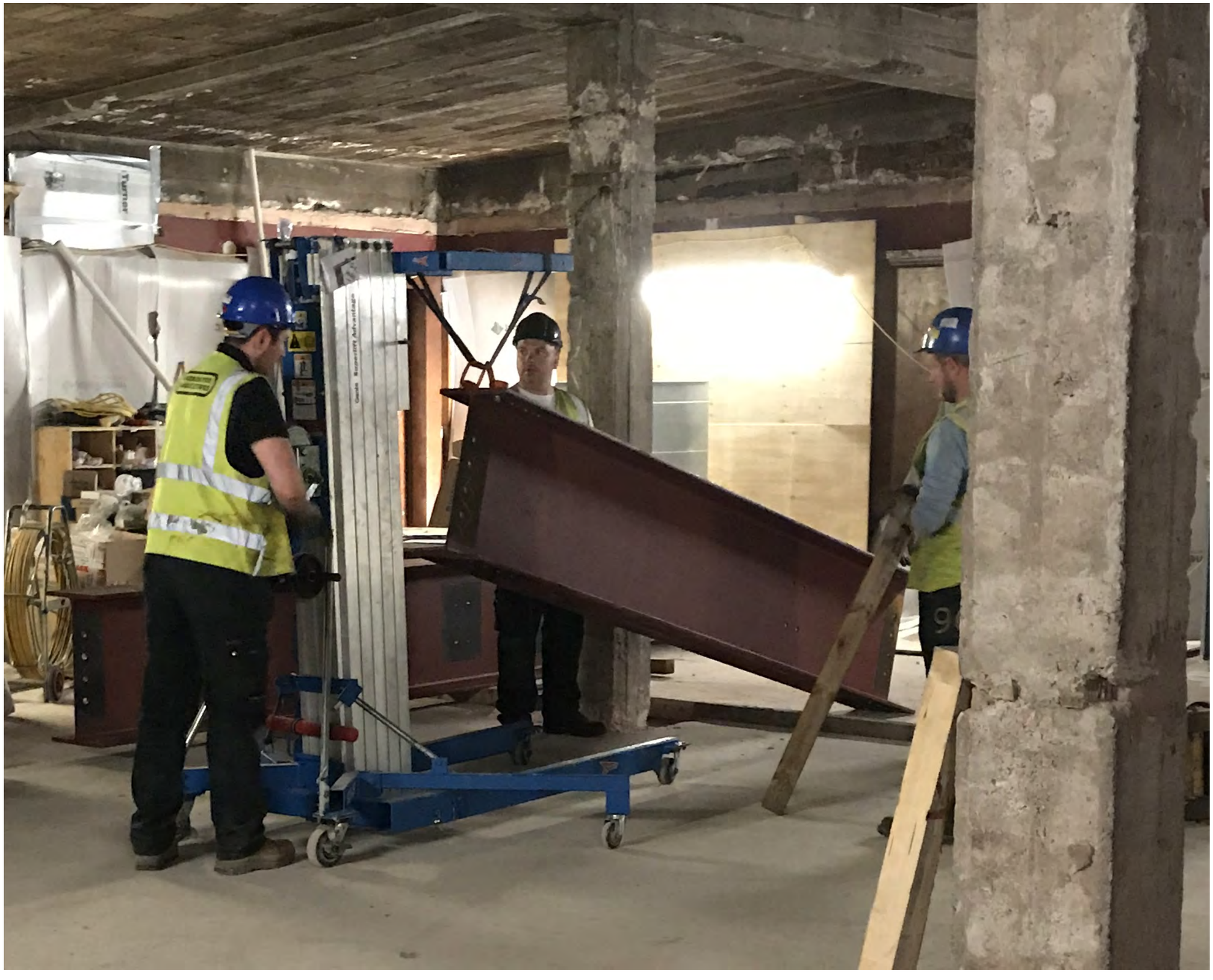
1	Glazing to be removed in the cafe, facing St Johns shopping centre entrance. Need to investigate best time to do this - will entrance need to be temporarily shut?	RCT / MOD / THOM / AHMM
2	Steels to be transported down the existing staircase to the basement. The structural integrity of this stair will need to be checked to ensure they can take the load of each steel before commencing works on site.	RCT / MOD / THOM / AHMM
3	Steels transported through vestibule area. Doors will need to be propped open / temporarily removed during this phase of works.	RCT / MOD / THOM / AHMM
4	Spliced steels arrive in their final destination, the Queen Mary Room. How will they be lifted into place? Machinery may need to follow same route down / utilise the lift dependant on dimensions.	RCT / MOD / THOM / AHMM

DESIGN TEAM STATUS			
Client	RCT	**Architect**	AHMM
QS / PM	Modero	**Structural / PH**	Thomasons
M&E Services	Steven Hunt & Associates	**Client H&S Advisor**	Innov8
Principal Contractor	-		


WARRINGTON
FABRICATIONS

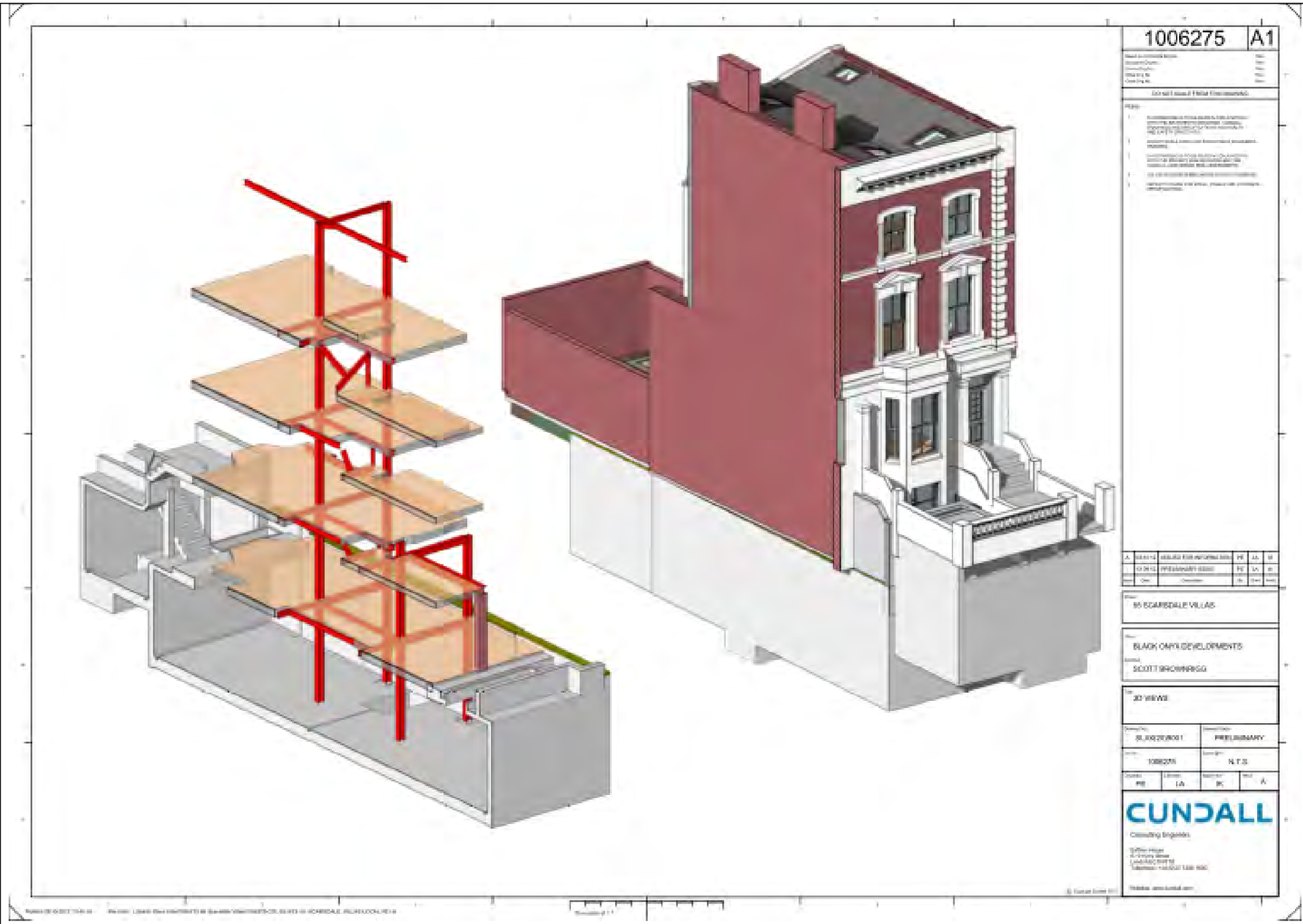

SLA-25
SLA-25


B4


Turner
Genie Superlift Advantage

Designer CDM Options Matrix - Hazard Identification and Significant Risk Management						**ALL SIGNIFICANT RISKS**		
Project & No:-	**55 Scarsdale Villas**		**15033**	Work Stage :-	**D/F**	Revision & Date:	**2nd Issue**	**Oct 23rd 2012**
HAZARDS and SIGNIFICANT RISKS	**BUILDING FORM, MATERIAL, , ACTIVITY, LOCATION**	**ELIMINATE or AVOID risks** (During early design stages) **SFARP**	**REDUCE or MINIMIZE risks ALARP by :-** (During all design stages) Safe systems of work & protection **>**			**INFORMATION** To be provided with the design eg **Specialist Design & client input**	**CONTROL METHODS** Contractor or Client Manage - ment Systems	**ACTIONS & DATES and OTHER SPECIALIST GUIDANCE & COMMENTS Eg. References**

2.0- EXISTING BUILDING TO BE ANALYSED FOR STRUCTURAL STABILITY DURING DEMOLITION AND RE-CONSTRUCTION



2.1- Temporary works coordination role to be clarified and appointed by client for façade and external fabric retention during demolition and reconstruction phases.
If subcontractor to provide method statements structural engineer or 3rd party engineering company to review recommendations.

New Basement Structure
New Floors
New Steel support structure
Party Wall Structural Works

Team Sign -off status	Client	**Black Onyx Ltd**	Architect	**Scott Brownrigg**	Struct. Eng	**CUNDALL**	Services Eng	**Borght- CBC**	P. Contractor	**TBC**
Others	Dev..		CDM-C	**Scott Brownrigg**	Landscape		Cost Consultant	**Quantem**		

Designer CDM Options Matrix - Hazard Identification and Significant Risk Management						**ALL SIGNIFICANT RISKS**		
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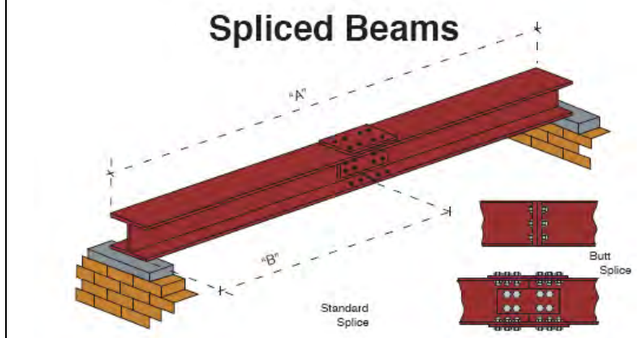
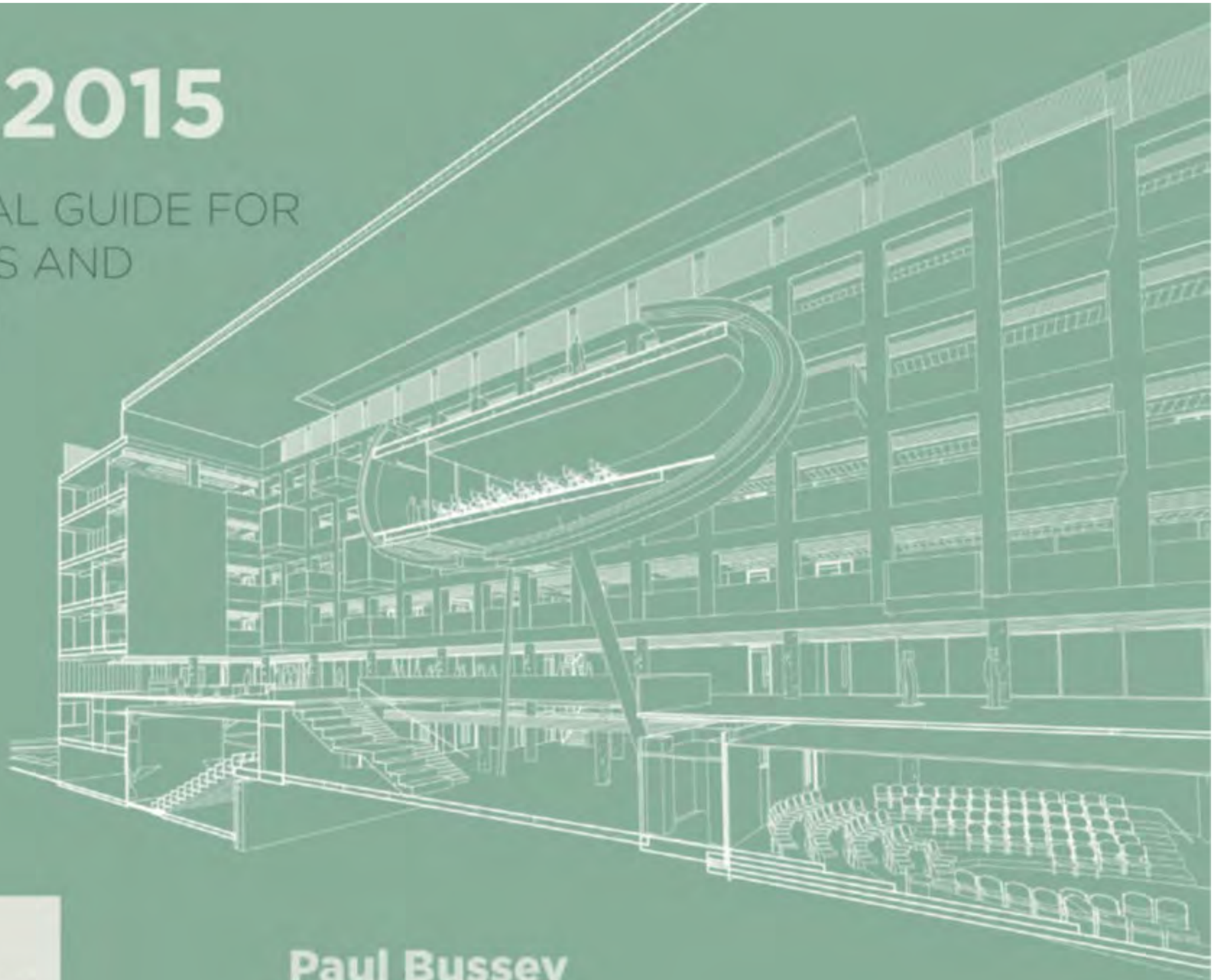
5.10 LARGE, LONG AND HEAVY STEEL STRUCTURAL BEAMS	Avoidance of musculoskeletal injuries to operatives 					Minimise length and weight of steel beams for installation at high level, especially where heavy lifting cranes or telehandlers cannot access eg rear elevation to garden. Lifting aides and spliced beams to be used		5.10 Manual handling to be minimised and safe systems of work implemented. CONTRACTOR to advise team of Safe System of Working adopted.
6.0 SURROUNDING ENVIRONMENT	Not aware of any other issues							
6.1 OTHER FACTORS TO CONSIDER	Not aware of any other issues							

Team Sign -off status	Client	**Black Onyx Ltd**	Architect	**Scott Brownrigg**	Struct. Eng	**CUNDALL**	Services Eng	**Borght- CBC**	P. Contractor	**TBC**
Others	Dev..		CDM-C	**Scott Brownrigg**	Landscape		Cost Consultant	**Quantem**		

CDM 2015

A PRACTICAL GUIDE FOR ARCHITECTS AND DESIGNERS



Paul Bussey

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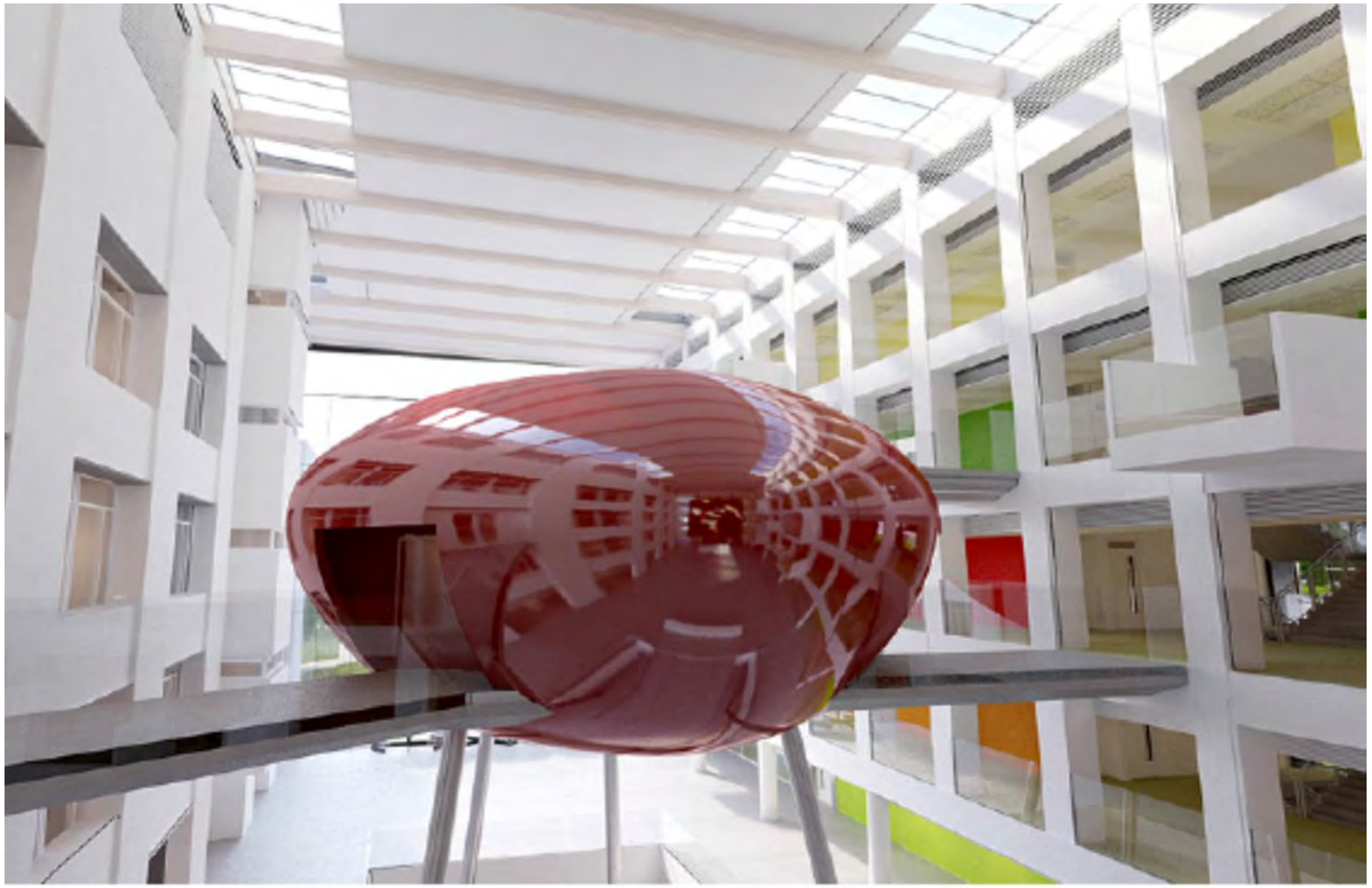

CDM
DIFFERENTLY

Paul Bussey, CDM, Fire and Inclusivity Lead

AHMM Architects

RIBA,FIFireE,FIIRSM,IMaPS

PBussey@ahmm.co.uk