Community College of City University Building

香港城市大學
City University of Hong Kong

Aedas

Hyder Consulting

都市規劃顧問有限公司
CITY PLANNING CONSULTANTS LTD

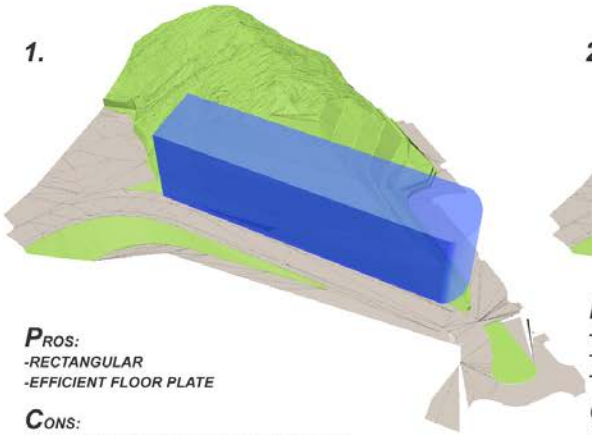
Kenneth Ng & Associates Ltd

February 2005

Community College of City University Building

Building Form Study

1.



Pros:
-RECTANGULAR
-EFFICIENT FLOOR PLATE

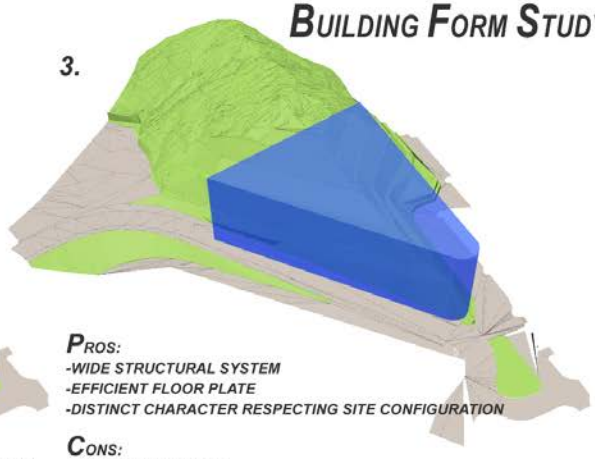
Cons:
-TOO LONG; EXPANSION JOINTS REQUIRED
-EXTENSIVE EXCAVATION
-NOT RESPECTING SITE AND SURROUNDINGS
-FORM NOT DISTINCTIVE

2.

Pros:
-REGTANGULAR
-GOOD UTILISATION OF SITE
-MODERATE RESPECT OF SITE

Cons:
-TOO NARROW
-HEAVY SHEAR WALLS MAY BE USED FOR LATERAL SUPPORT SYSTEM
-CONNECTION PROBLEM BETWEEN BLOCKS; LINK BRIDGE IS REQUIRED
-NO FOCUS POINT
-PROBLEMS IN PLANNING LARGE AREAS SUCH AS CANTEEN & MULTI-FUNCTION HALL

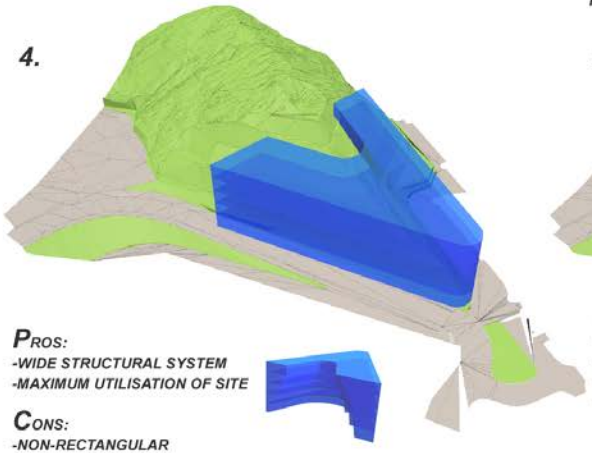
3.



Pros:
-WIDE STRUCTURAL SYSTEM
-EFFICIENT FLOOR PLATE
-DISTINCT CHARACTER RESPECTING SITE CONFIGURATION

Cons:
-NON-RECTANGULAR
-MORE COMPLICATED ANALYSIS FOR DIFFERENT DIRECTIONS
-DEEP FLOOR PLATE; LIGHTING AND VENTILATION PROBLEMS IN INNER AREAS
-EXTENSIVE EXCAVATION AT BACK

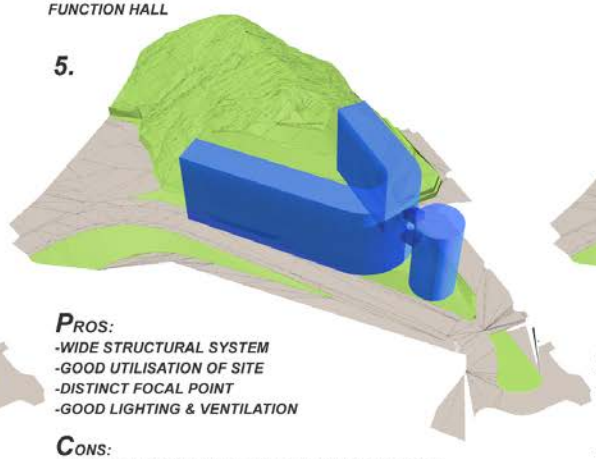
4.



Pros:
-WIDE STRUCTURAL SYSTEM
-MAXIMUM UTILISATION OF SITE

Cons:
-NON-RECTANGULAR
-MORE COMPLICATED ANALYSIS FOR DIFFERENT DIRECTIONS
-MAJOR CIRCULATION PROBLEM
-NO NATURAL LIGHTING IN INNER AREAS
-PROBLEMS IN PLANNING LARGE AREAS SUCH AS CANTEEN & MULTI-FUNCTION HALL

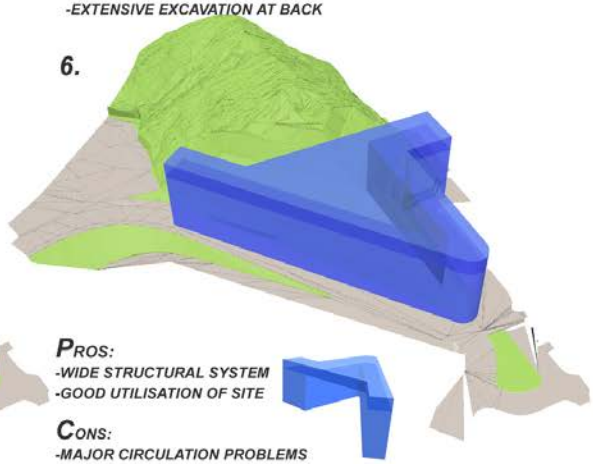
5.



Pros:
-WIDE STRUCTURAL SYSTEM
-GOOD UTILISATION OF SITE
-DISTINCT FOCAL POINT
-GOOD LIGHTING & VENTILATION

Cons:
-OPEN CHANNEL FORM NOT GOOD FOR STRUCTURE
-MOVEMENT JOINT REQUIRED AT THE TIP
-MAJOR CIRCULATION PROBLEM
-PROBLEMS IN PLANNING LARGE AREAS SUCH AS CANTEEN & MULTI-FUNCTION HALL
-INSUFFICIENT COMMON GATHERING AREA

6.

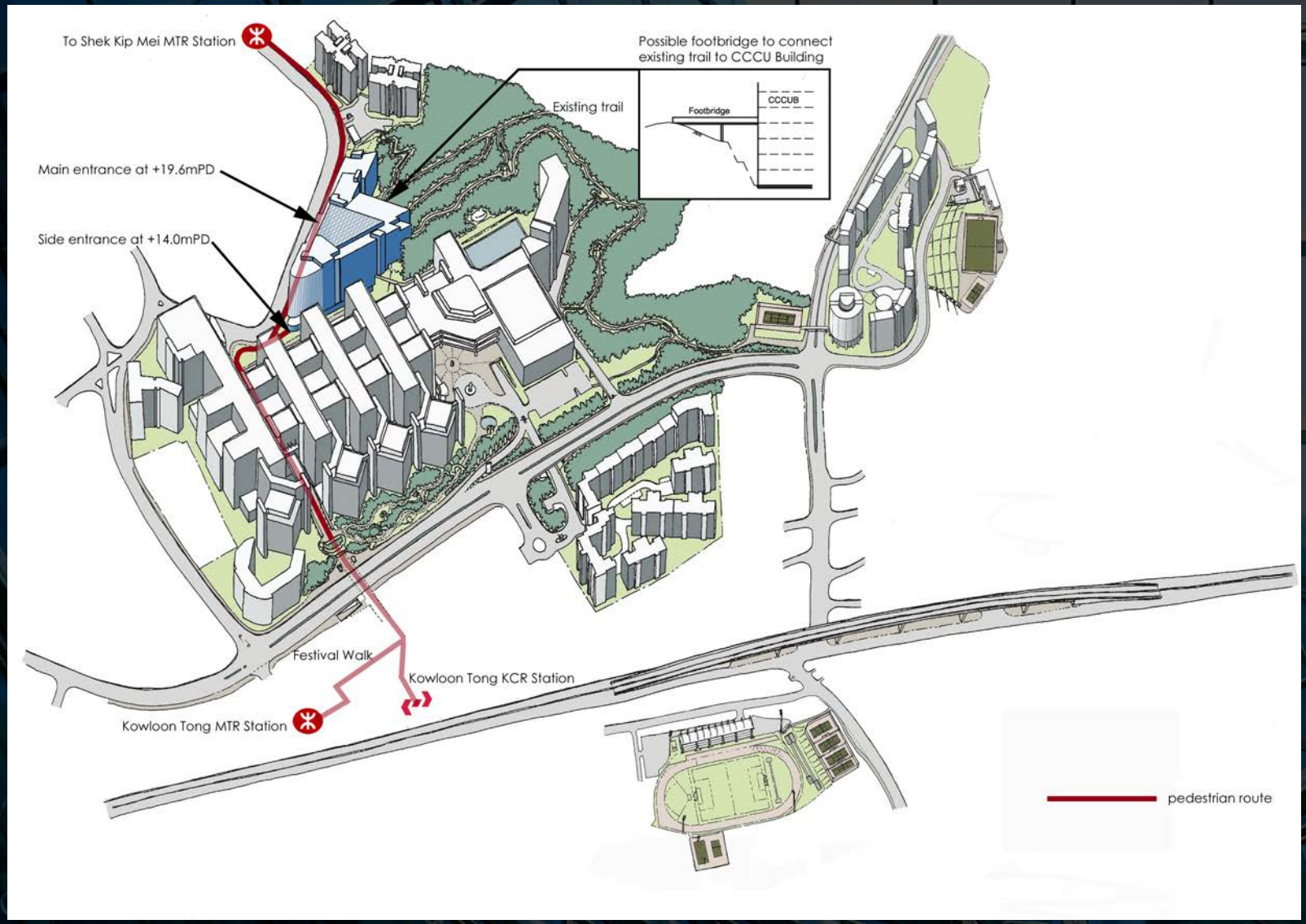


Pros:
-WIDE STRUCTURAL SYSTEM
-GOOD UTILISATION OF SITE

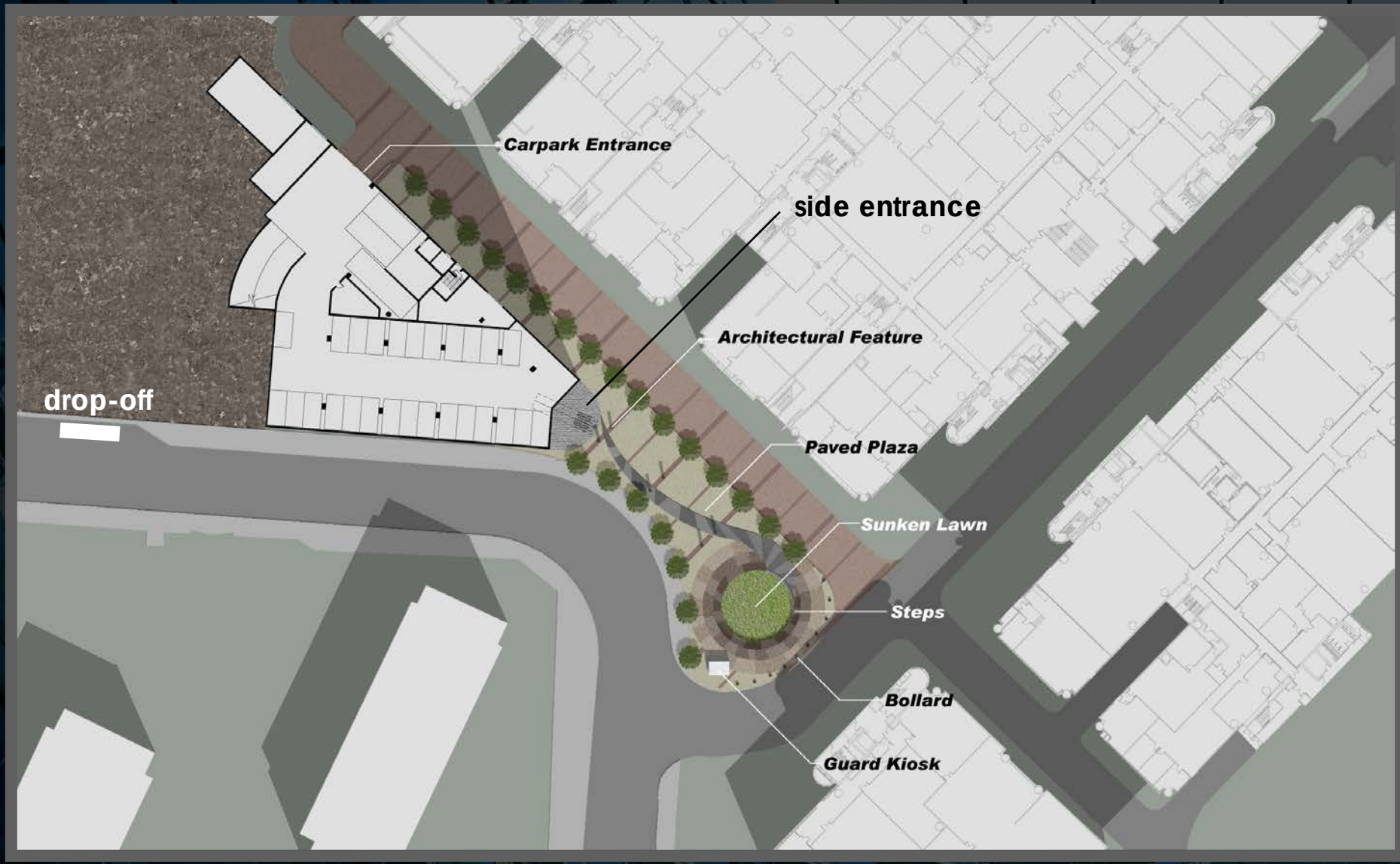
Cons:
-MAJOR CIRCULATION PROBLEMS
-CONSTRUCTION DIFFICULTY
-PROBLEMS IN PLANNING LARGE AREAS SUCH AS CANTEEN & MULTI-FUNCTION HALL
-OPEN CHANNEL FORM NOT GOOD FOR STRUCTURE
-MOVEMENT JOINT REQUIRED AT THE TIP

Building Form Study

February 2005

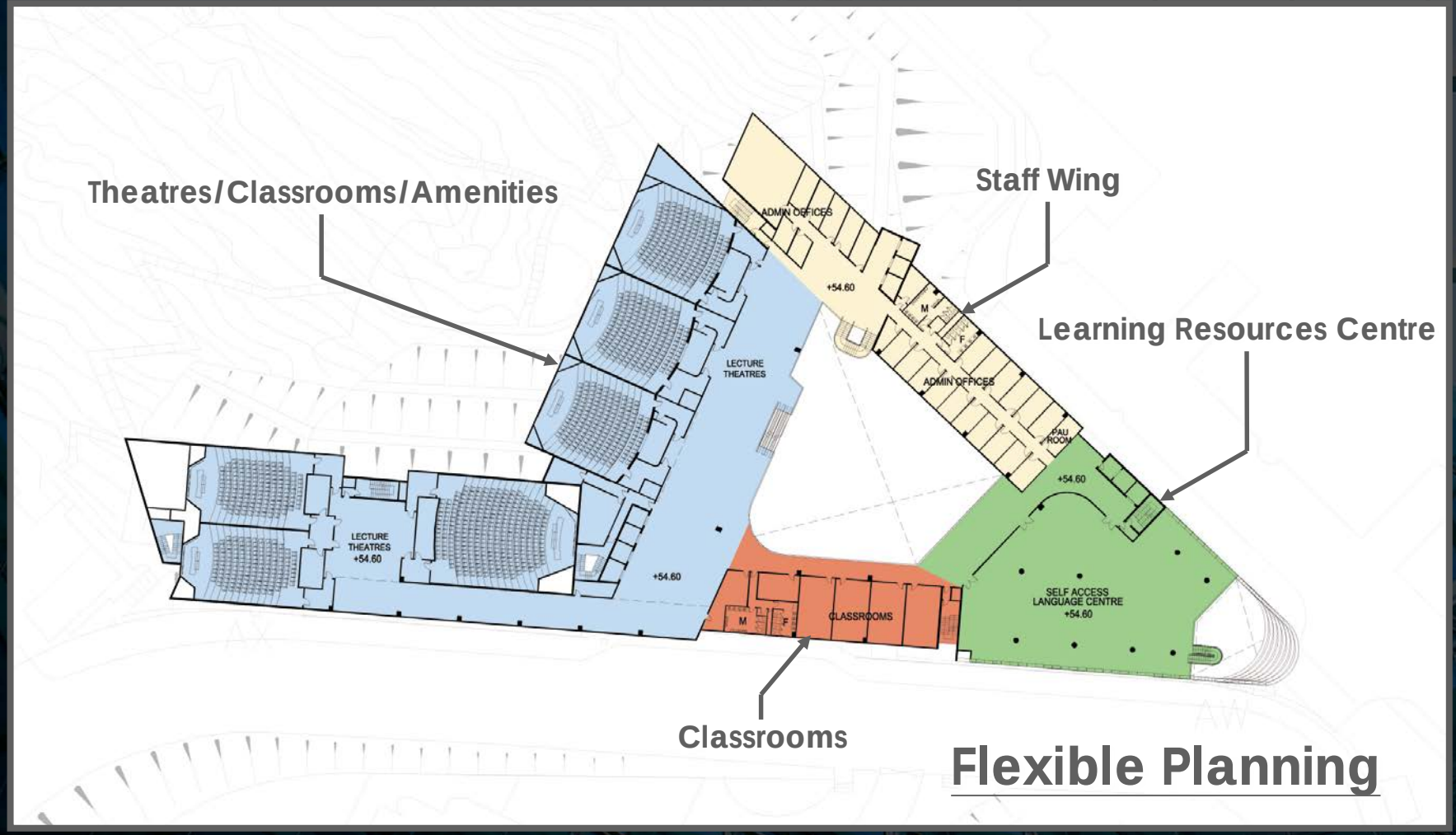


Site Context

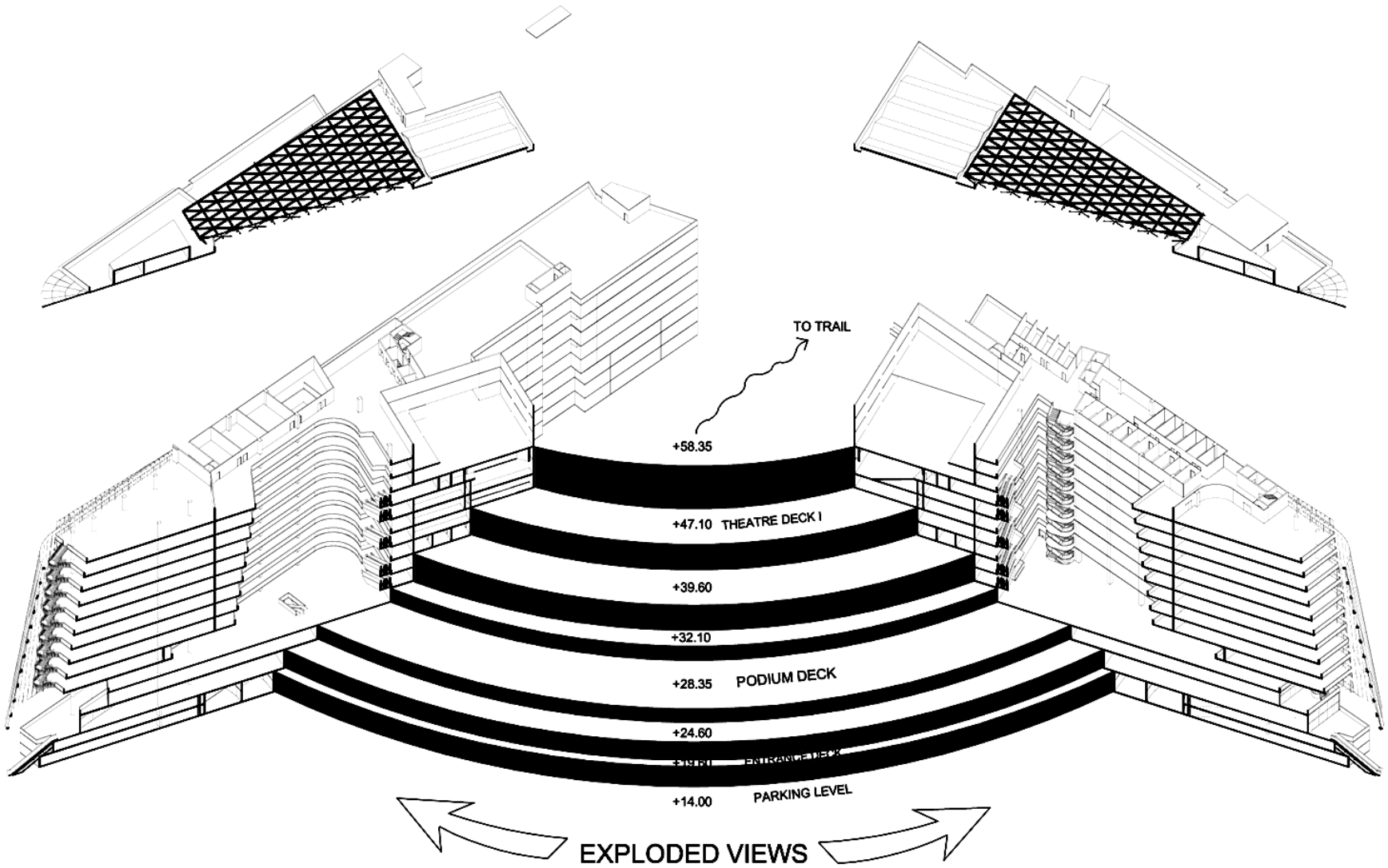


Corner Focal Point

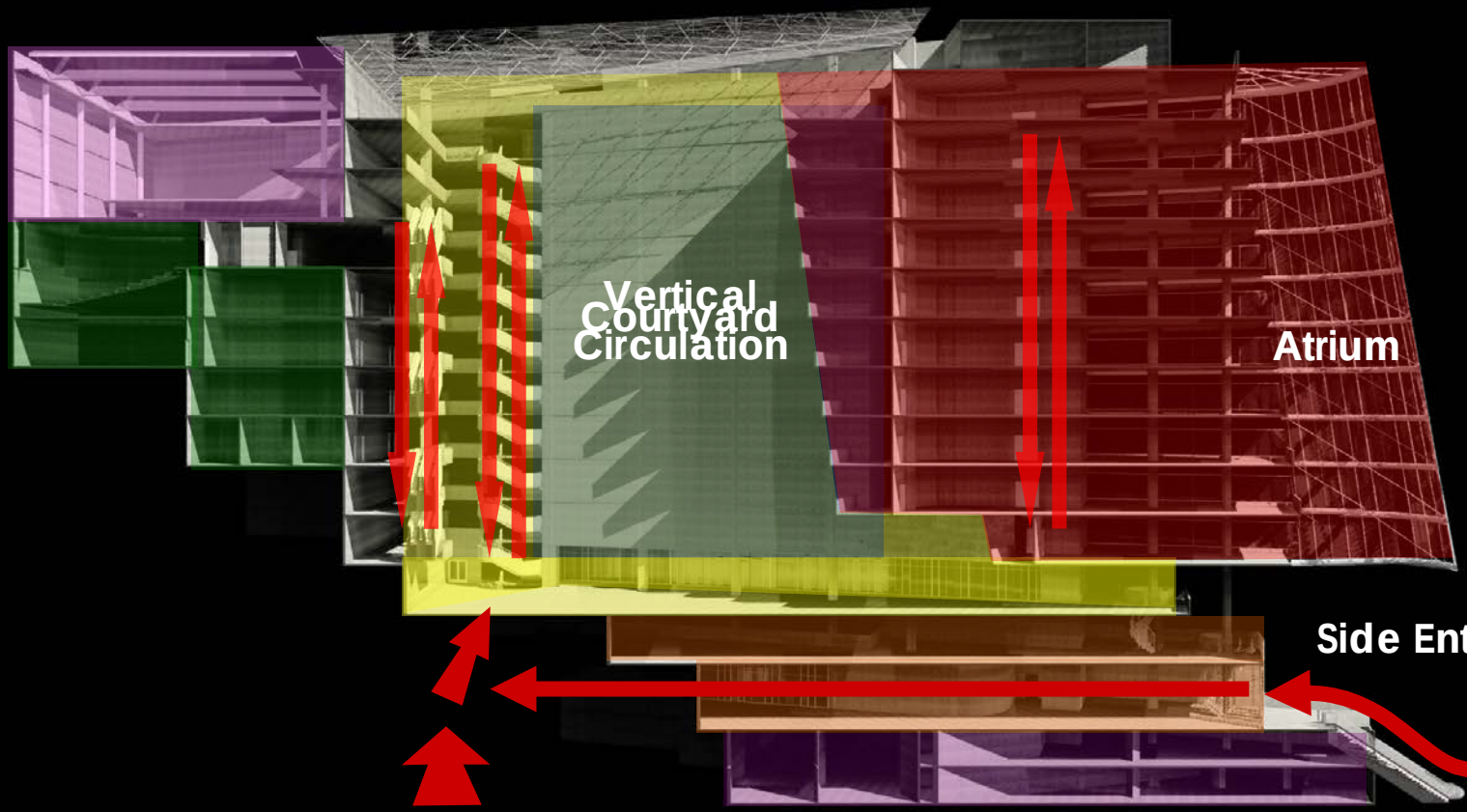


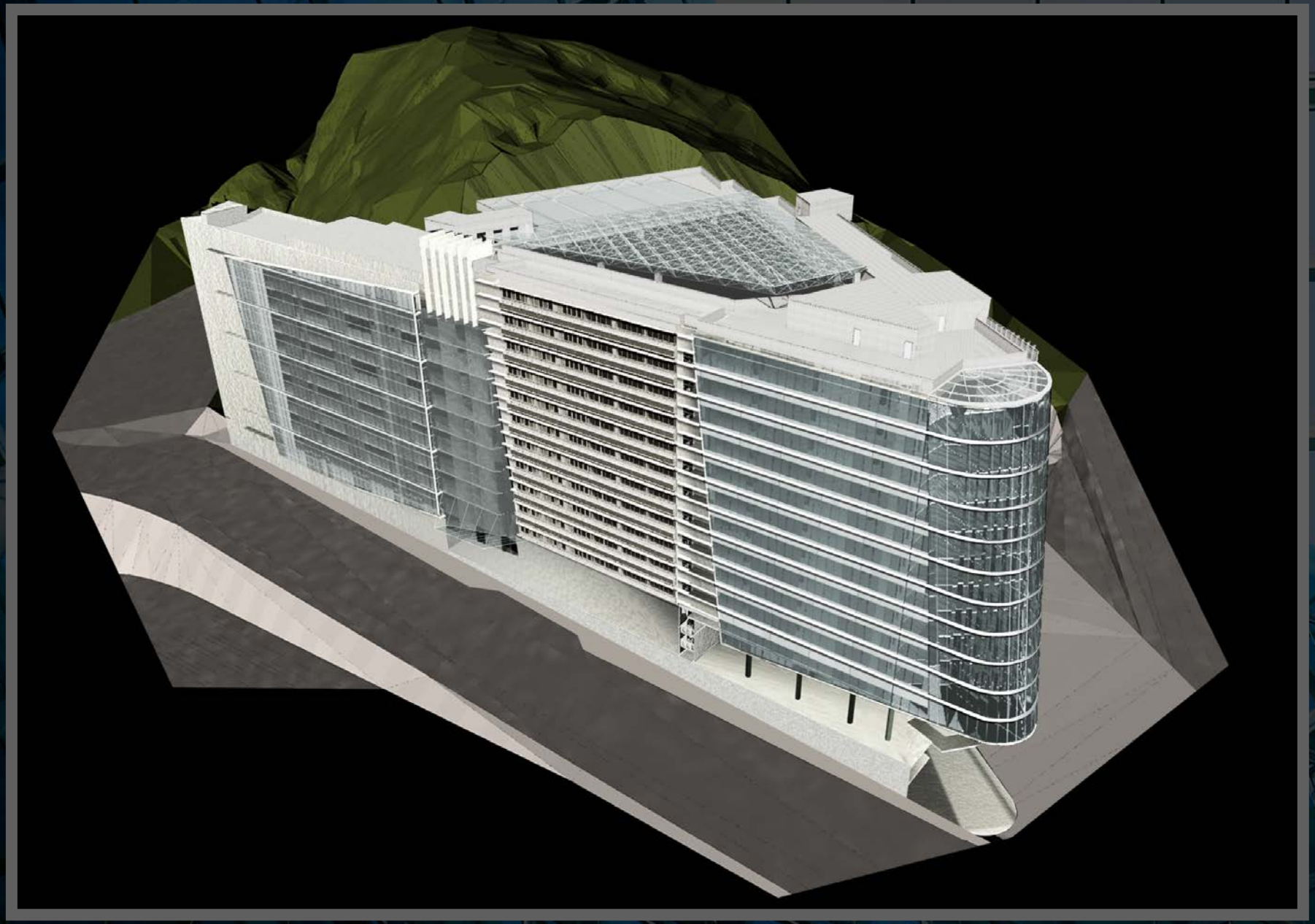
Flexible Planning

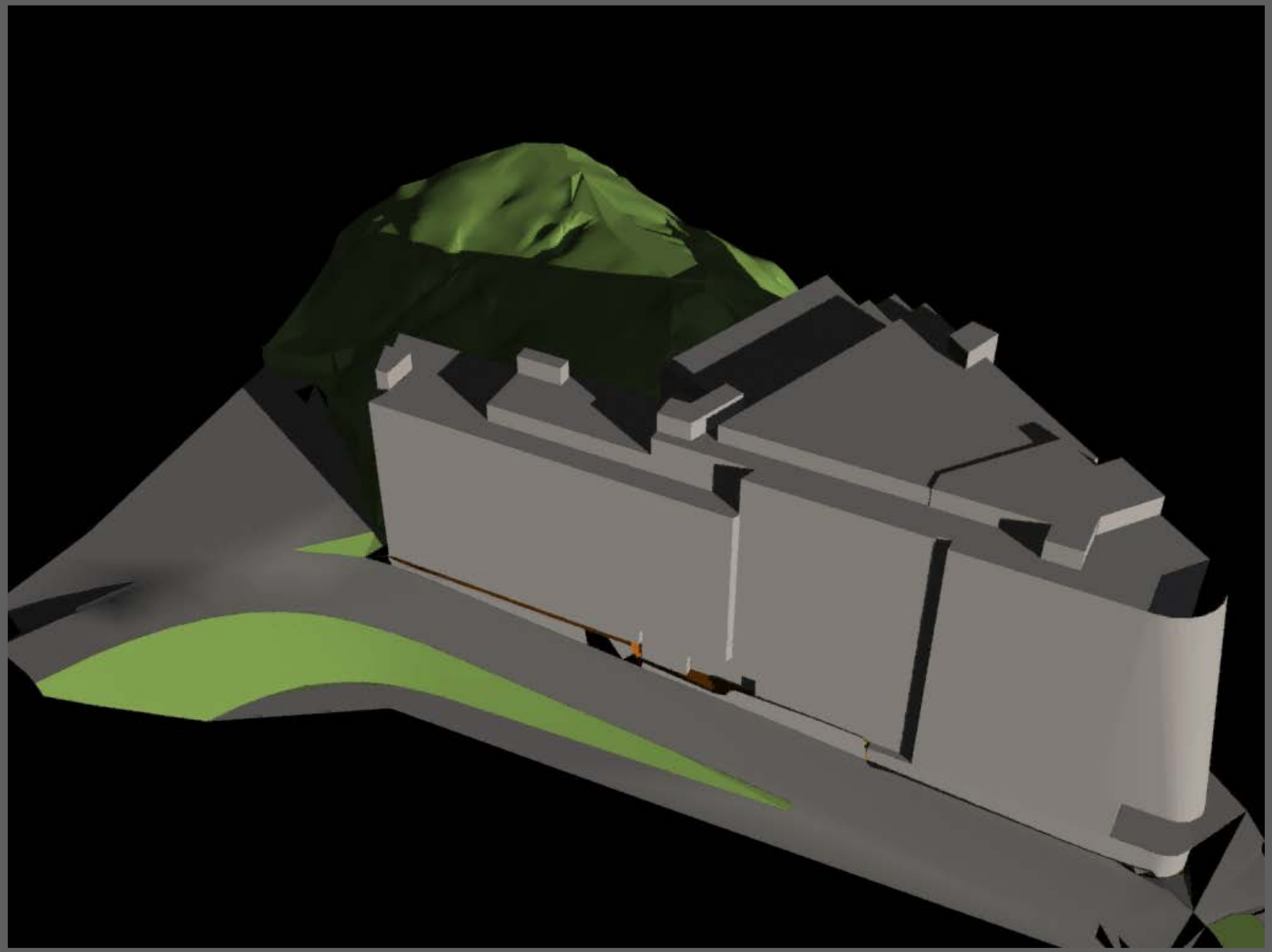


Exploded Views

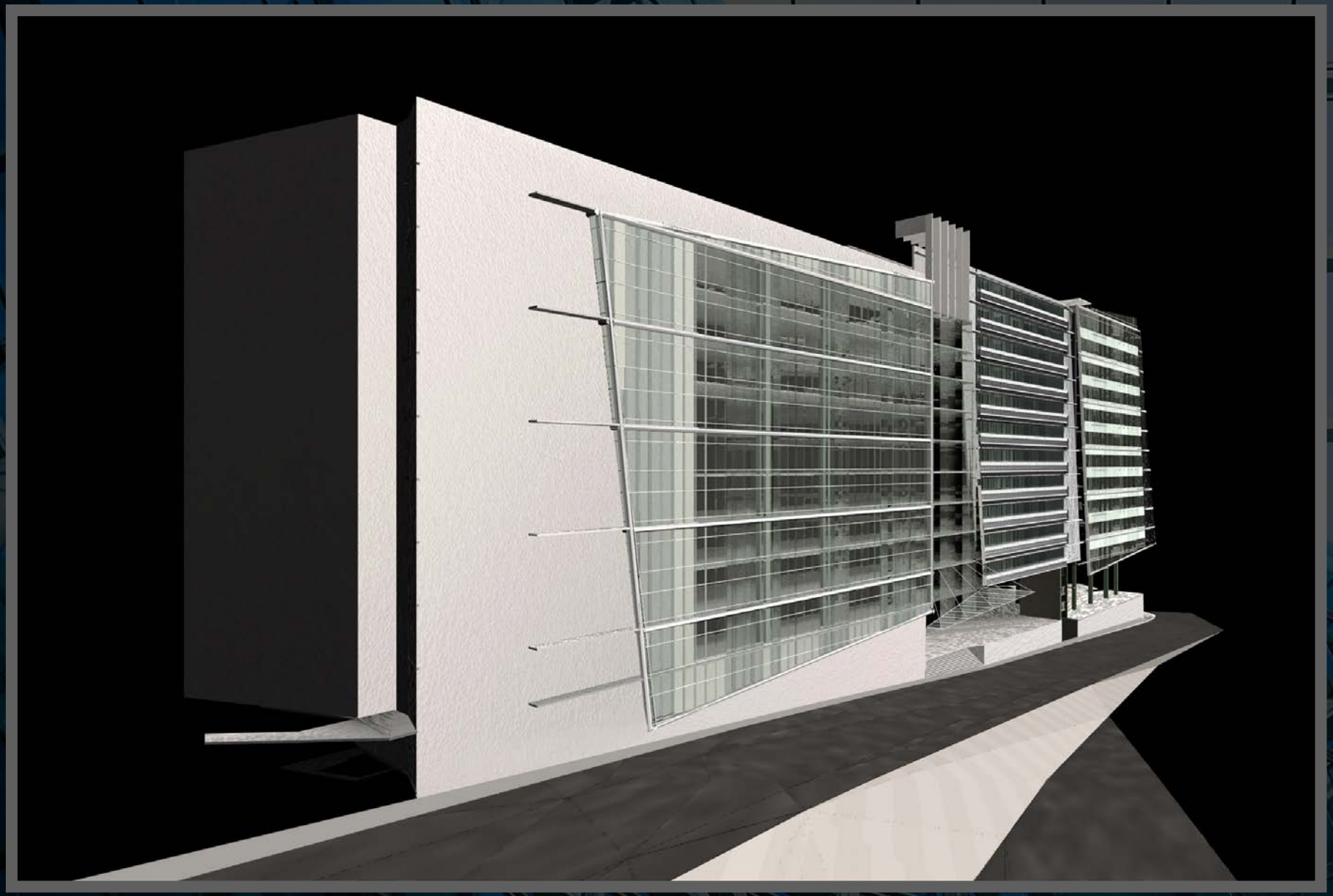


Zoning & Organization

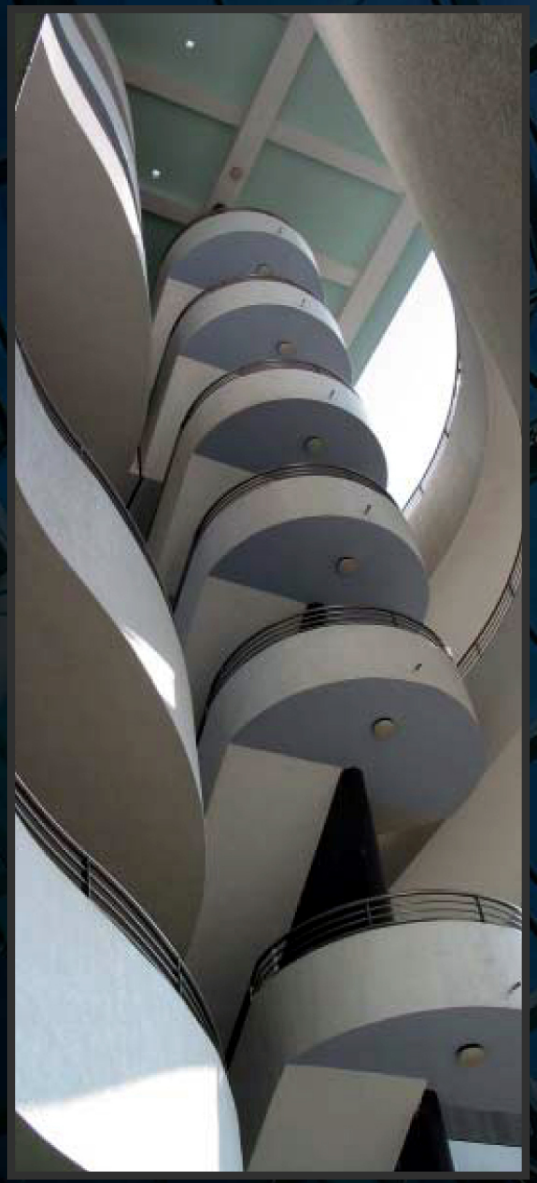


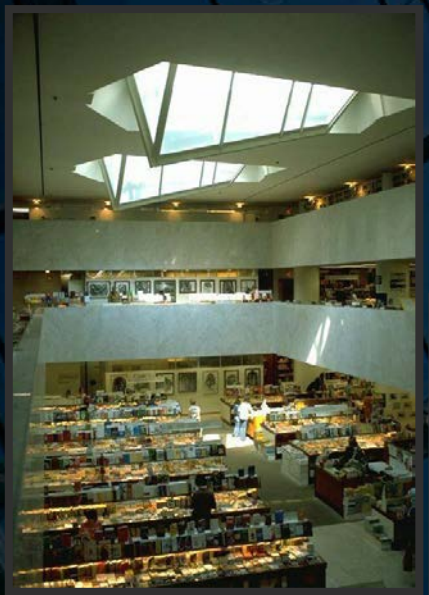


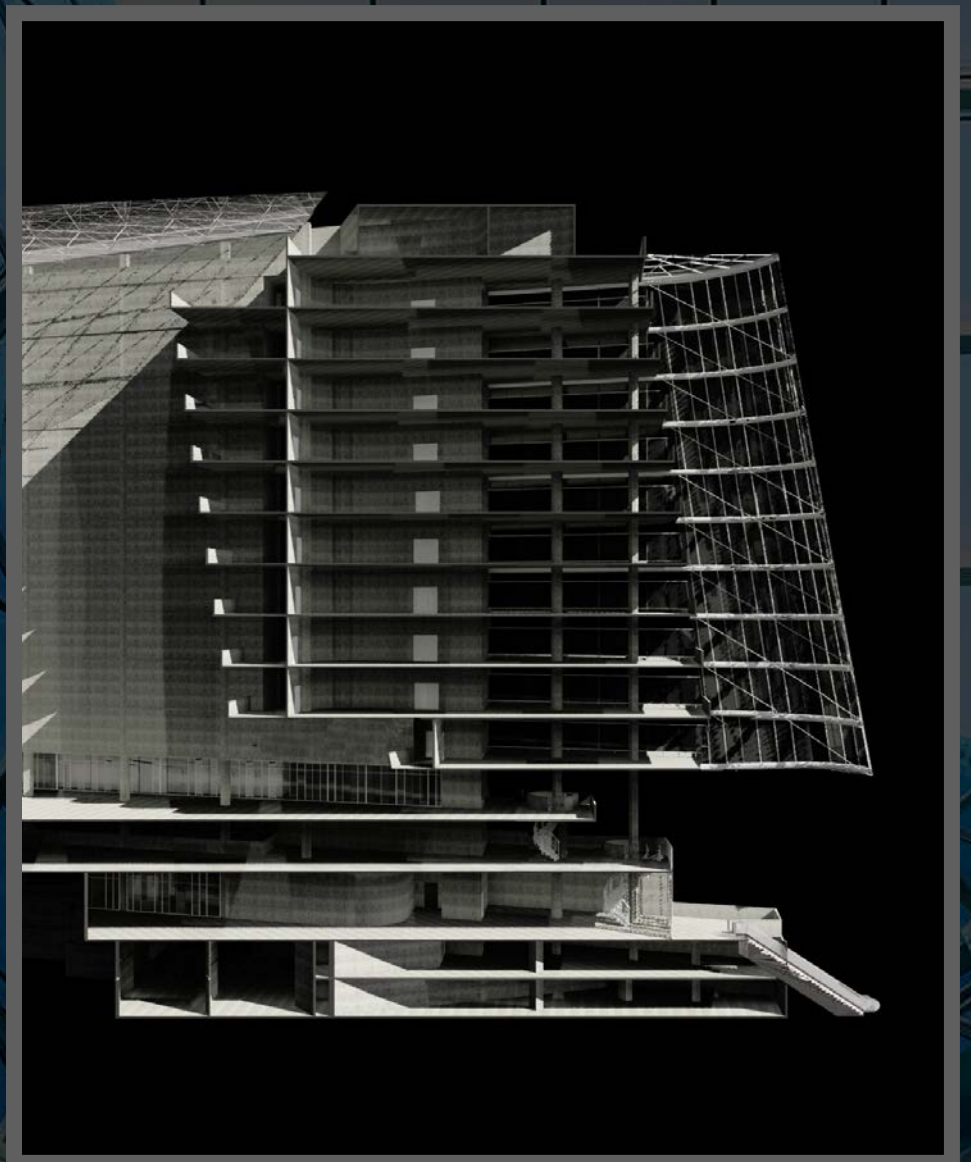
Solar Study 21/12/2004 7:00am – 6:00pm



Learning Resources Centre – Atrium

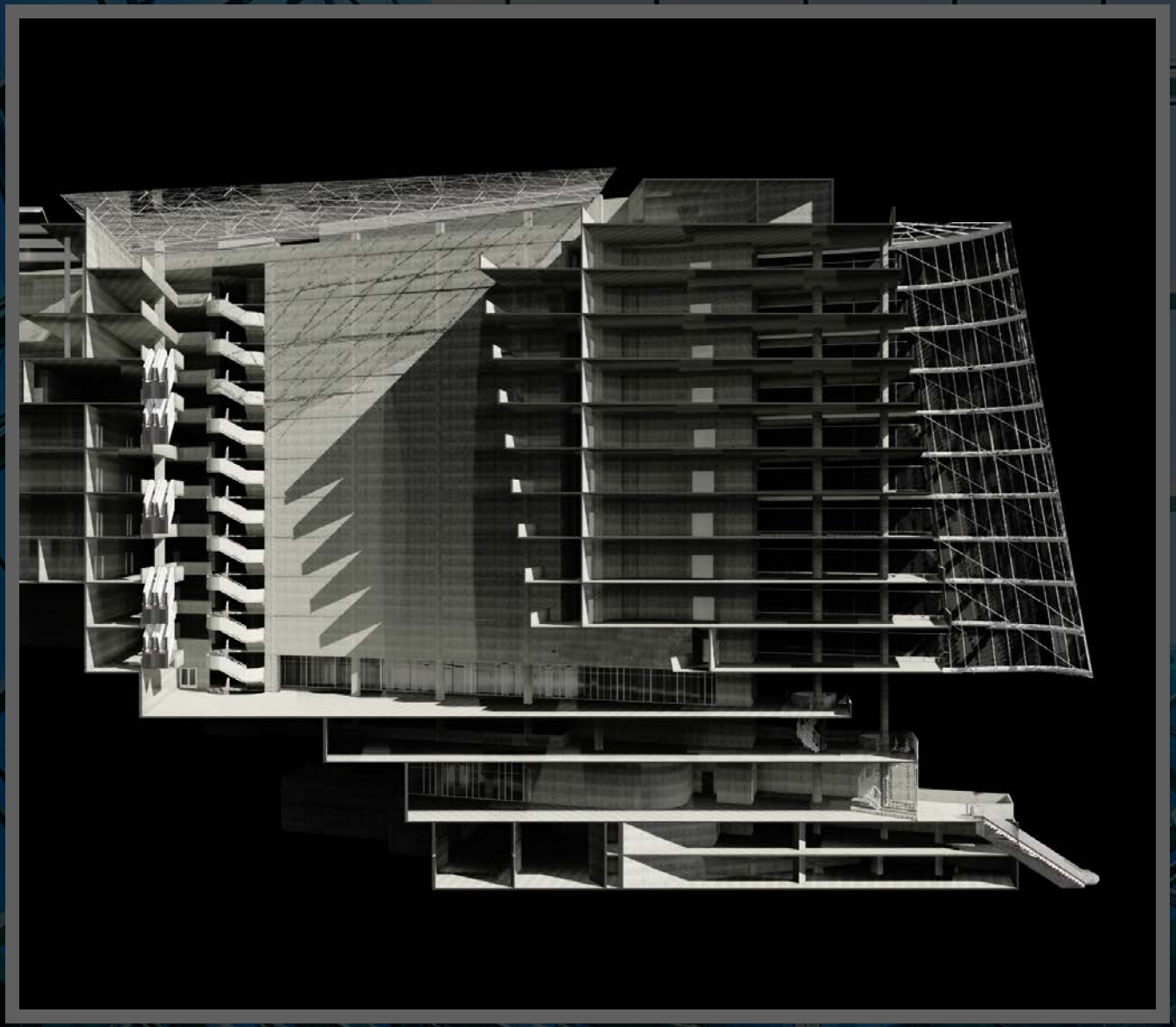




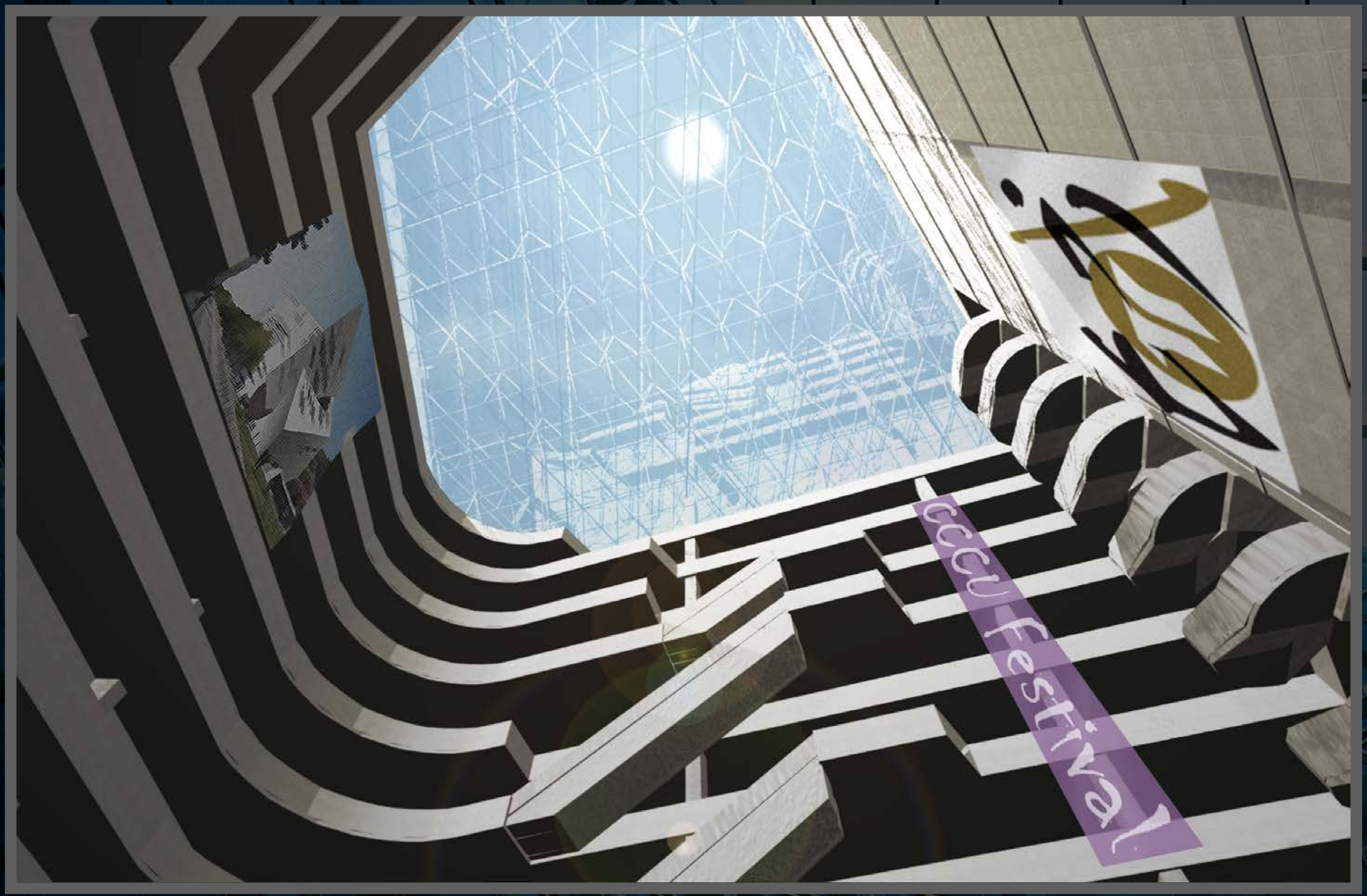


Learning Resources Centre – Atrium

Courtyard



Courtyard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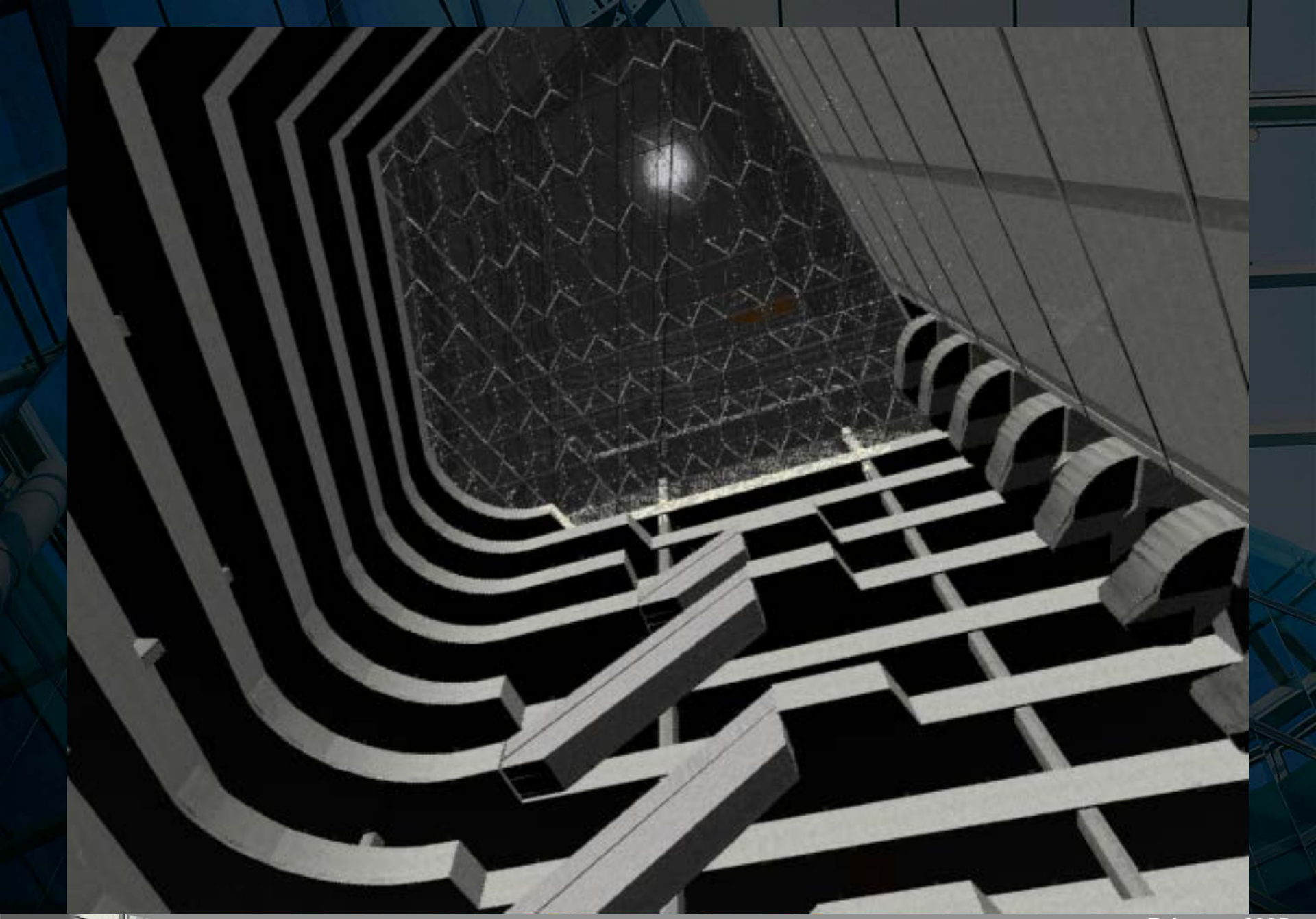
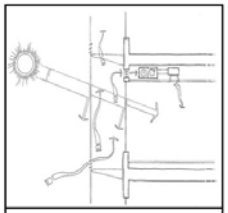




Double skin facade, vented outer skin, summer pre-cool

West facing lecture theaters assumed to have no windows

East facing wall to courtyard can have high transparency if courtyard is covered. This will result in reduced energy consumption and better indoor environmental condition

Solar shading to reduce summer internal heat gain and cooling requirement. Option to employ double facade technique. Allows greater transparency with lower heat gain and energy consumption

Wall adjacent to the atrium can be fully transparent to maximize natural day light and reduce artificial lighting requirement to Learning Resource Centre

Atrium space will act as an environmental buffer for the Learning Resource Centre area against low level eastern sun

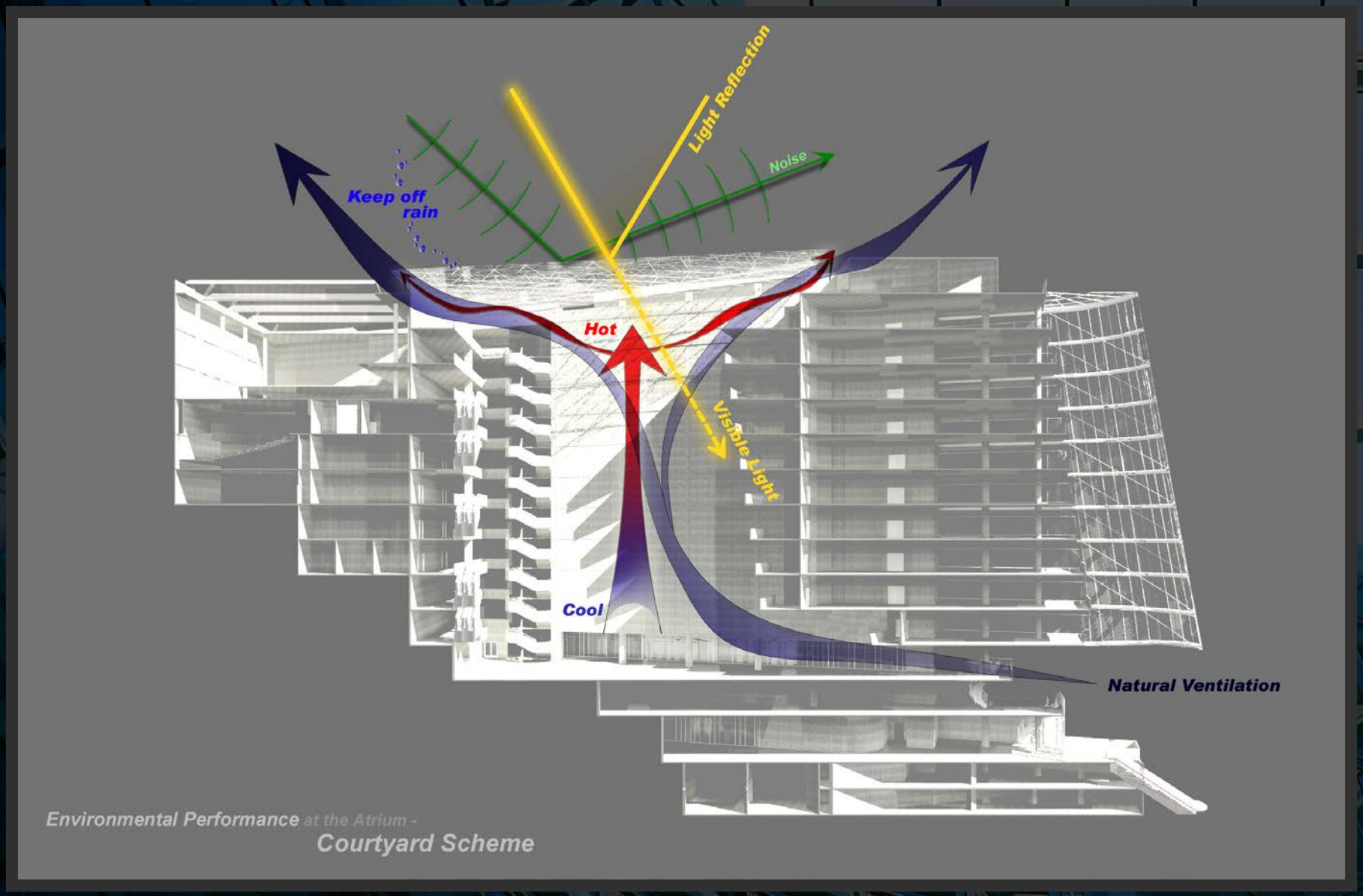
Natural for courtyard cover can be translucent fabric or membrane, which will reduce cooling requirement and artificial lighting to spaces facing the courtyard

Partly covered courtyard area allows glazed areas facing the space to have high ventilation and also provides sheltered space for students

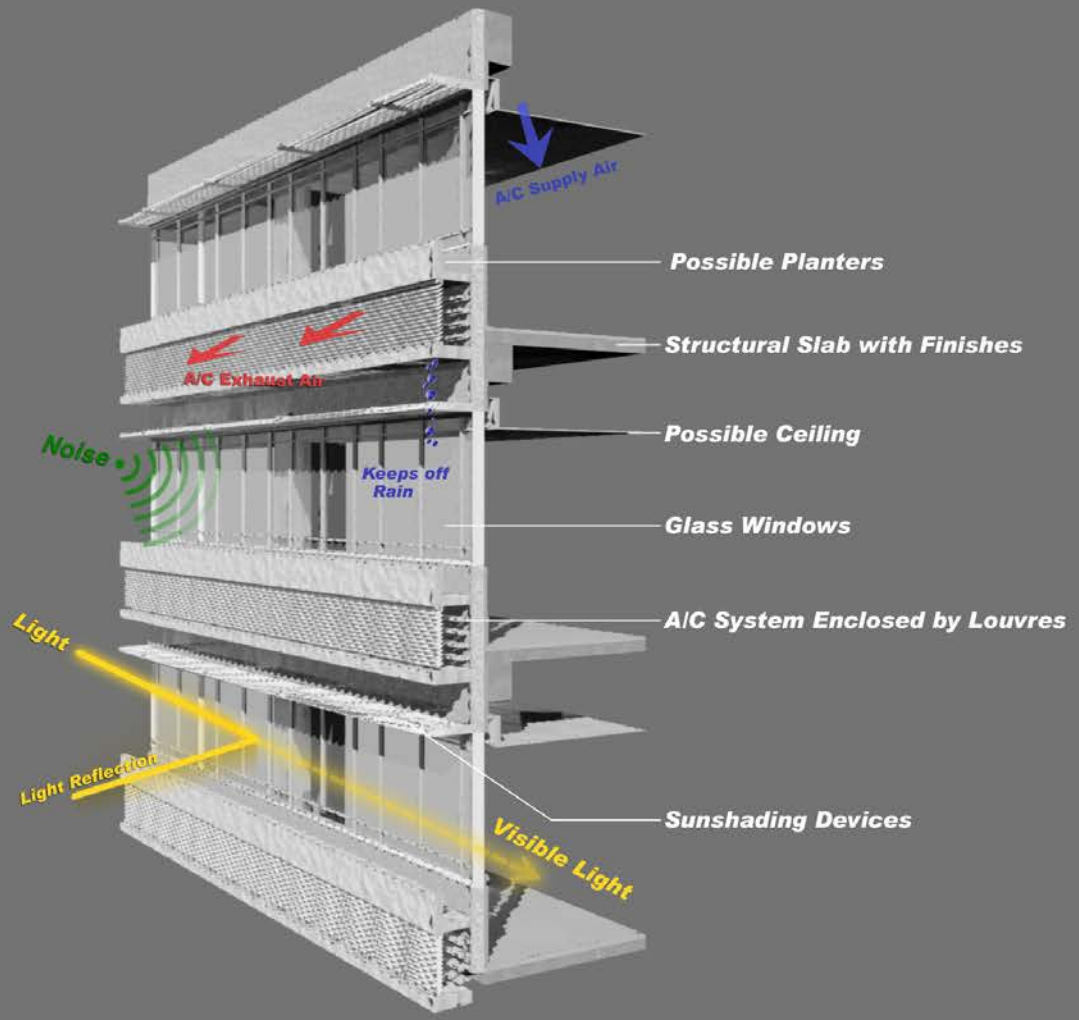
On south elevation, option to consider horizontal solar shading which allows increased transparency to glazing while reducing cooling requirement

Ventilation strategy within the learning resource centre area can take advantage of the stack effect created within the atrium space to assist the ventilation performance

NOTE: PRELIMINARY OPTIONS CONSIDERED TO IMPROVE THE PASSIVE PERFORMANCE OF THE BUILDING.

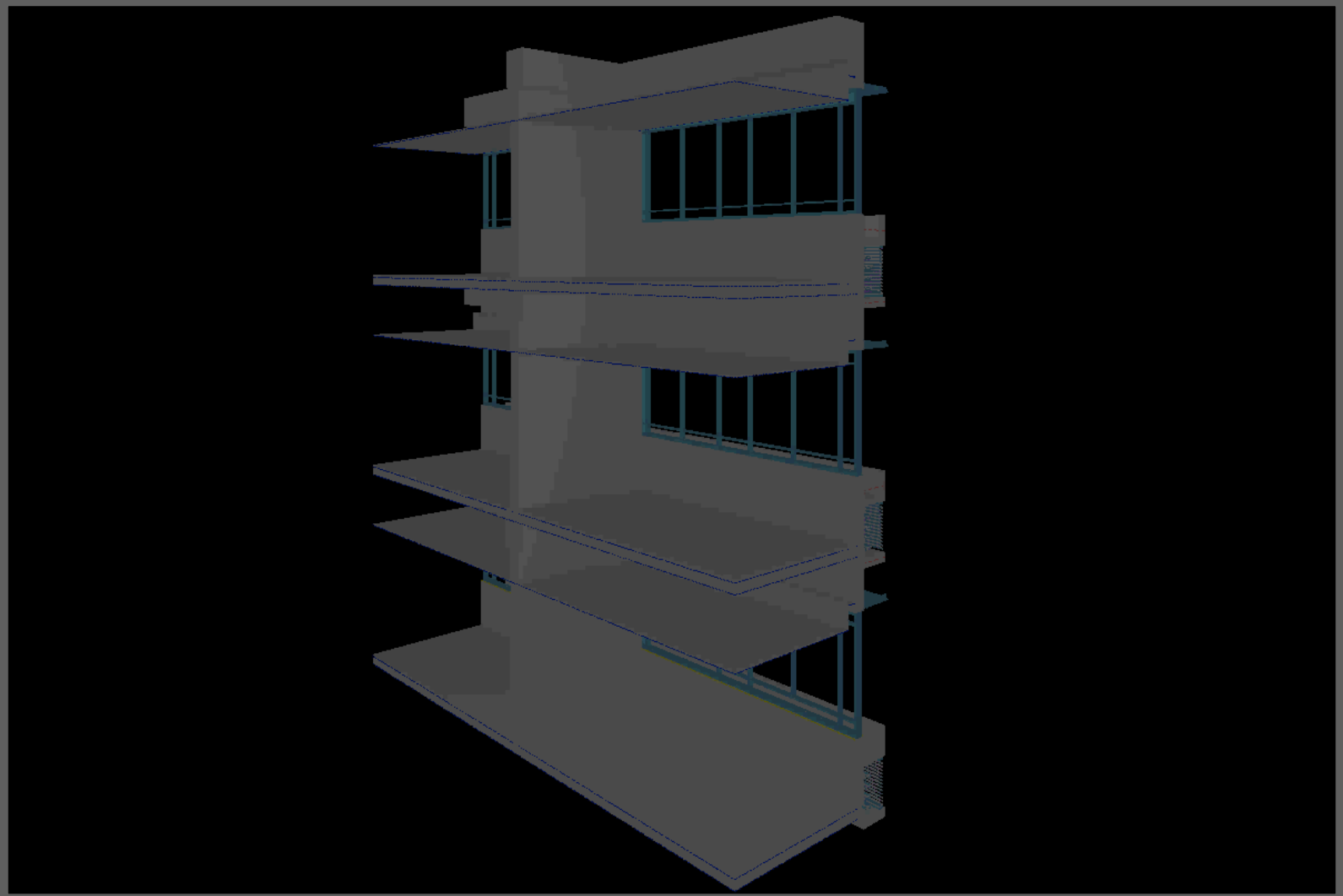


Environmental Performance of the Atrium



Analysis of the Facade -
Typical Classroom Modules

Façade Treatment



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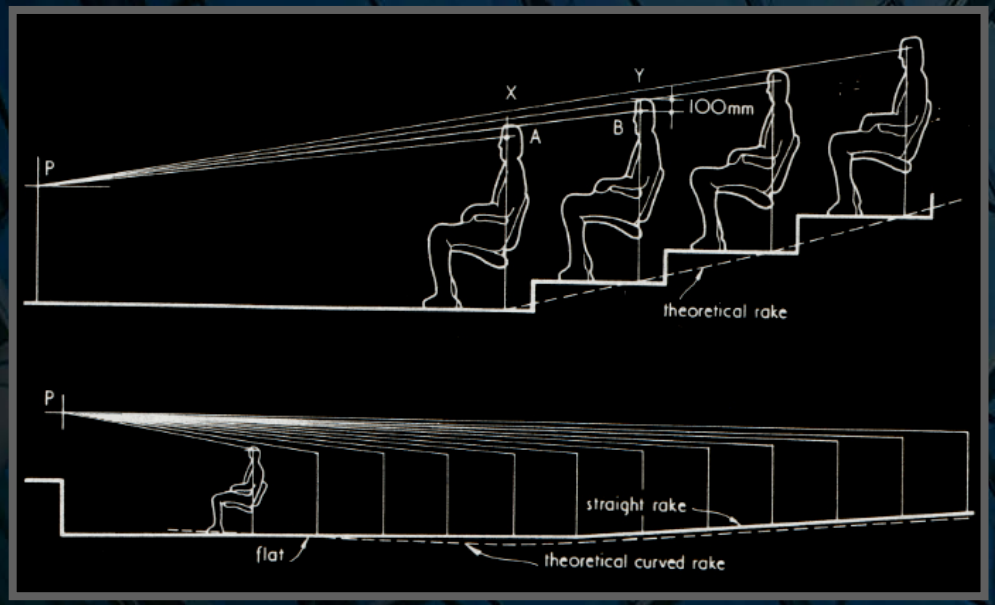
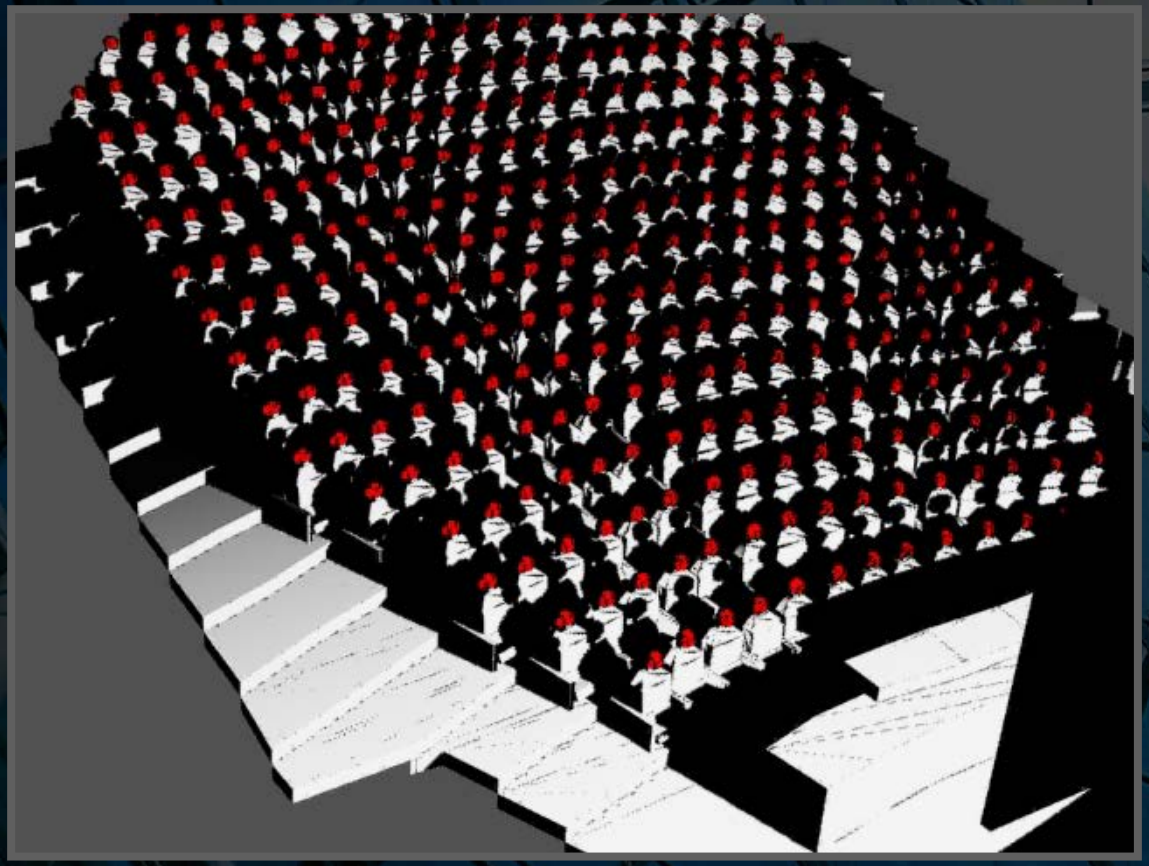
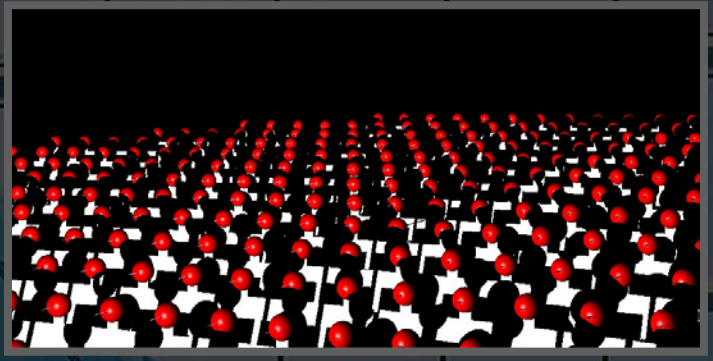


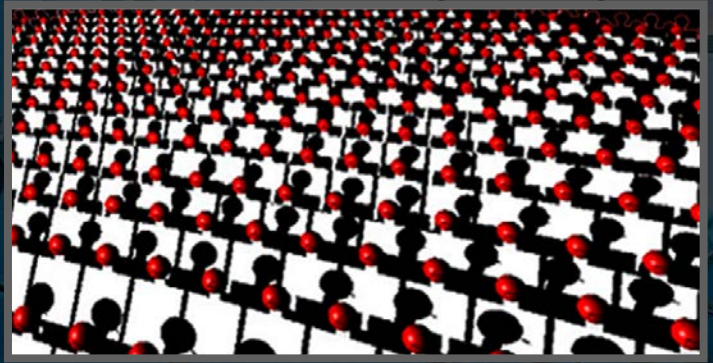
Traditional Sightline Study

Problems:
- Inaccurate measure of sight blockage.
- Cannot determine the positioning of sightlines of seats other than from the center row.





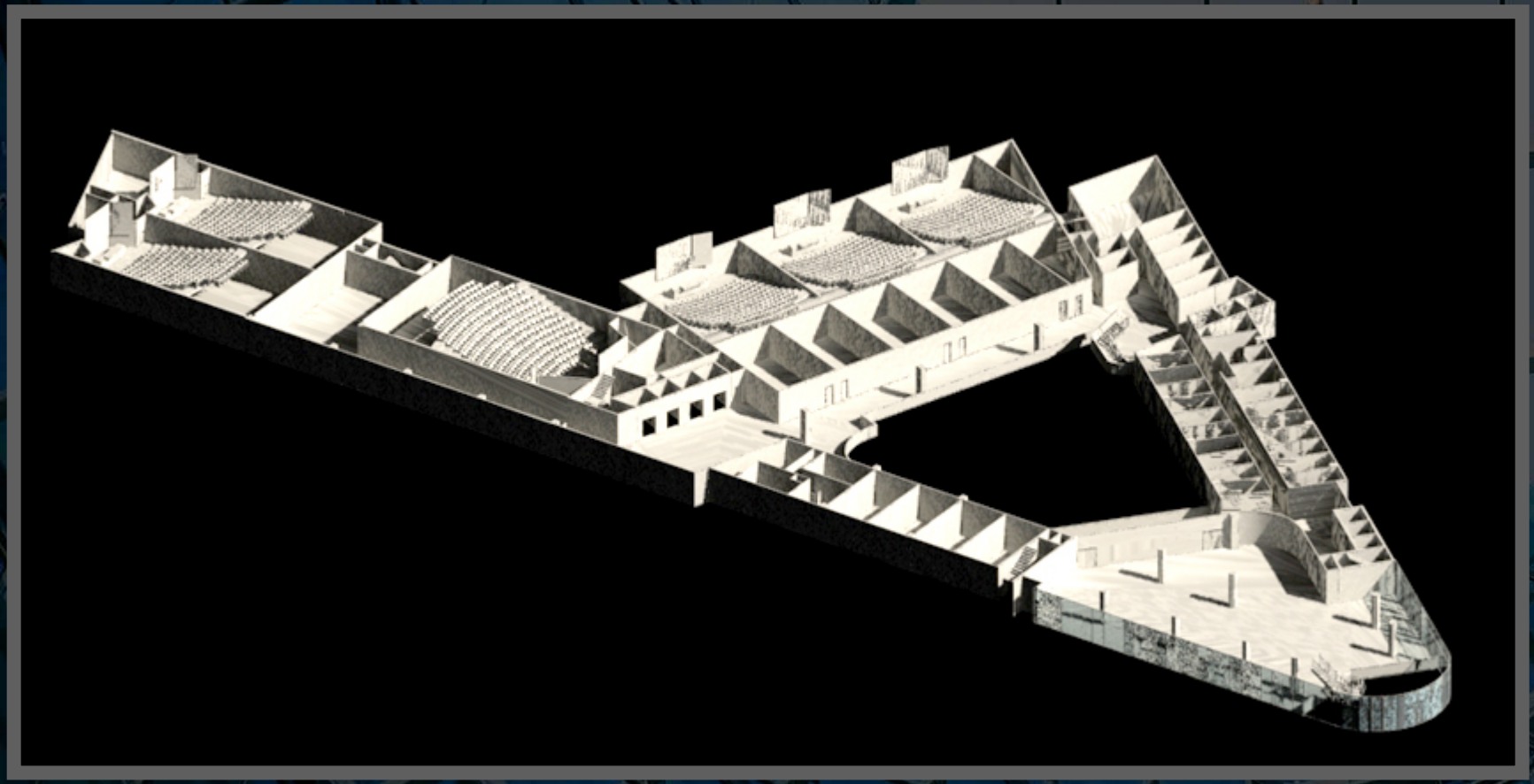
Unsatisfactory sightlines



Satisfactory sightlines

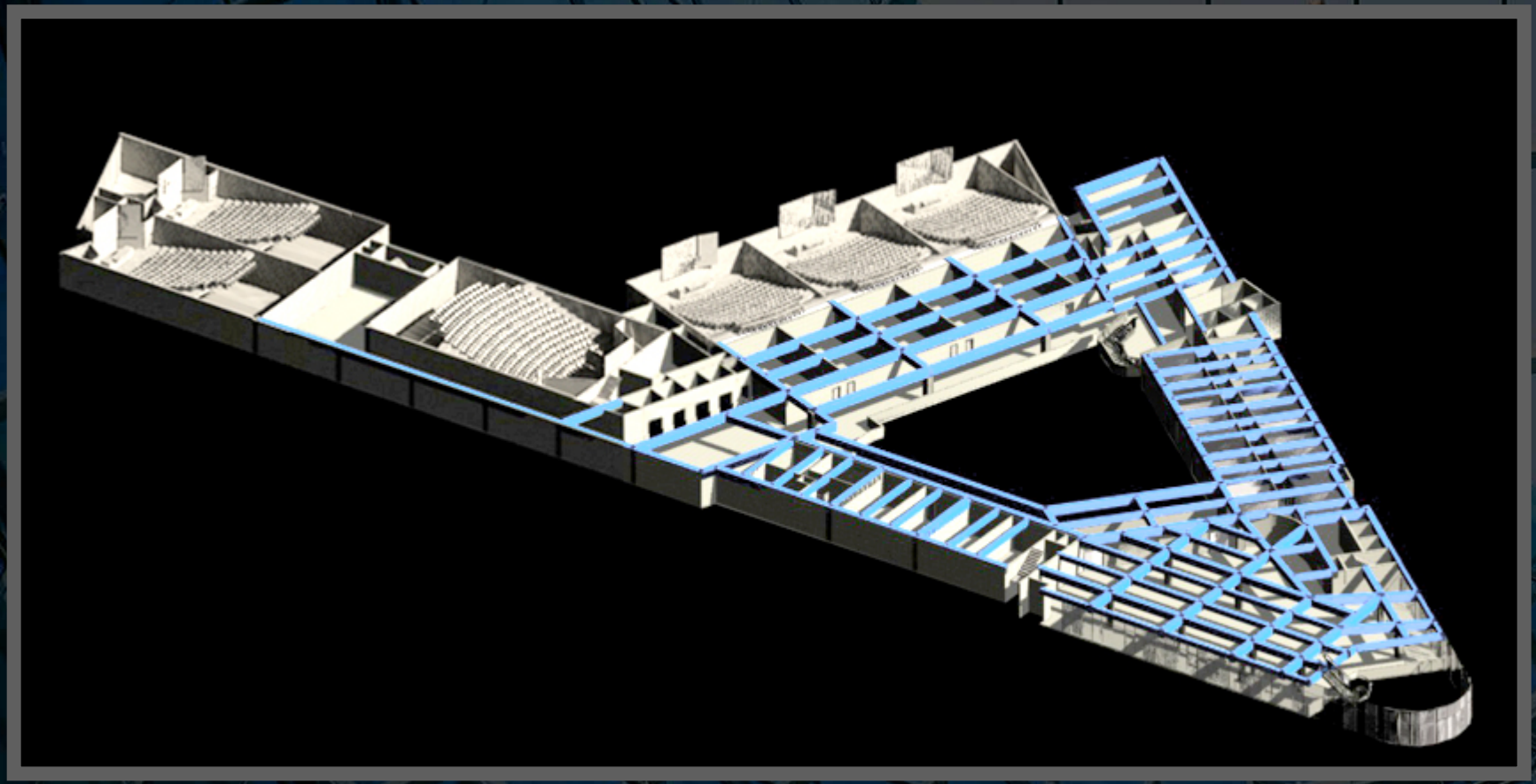
Radiating Light Method

Lecture Theatre



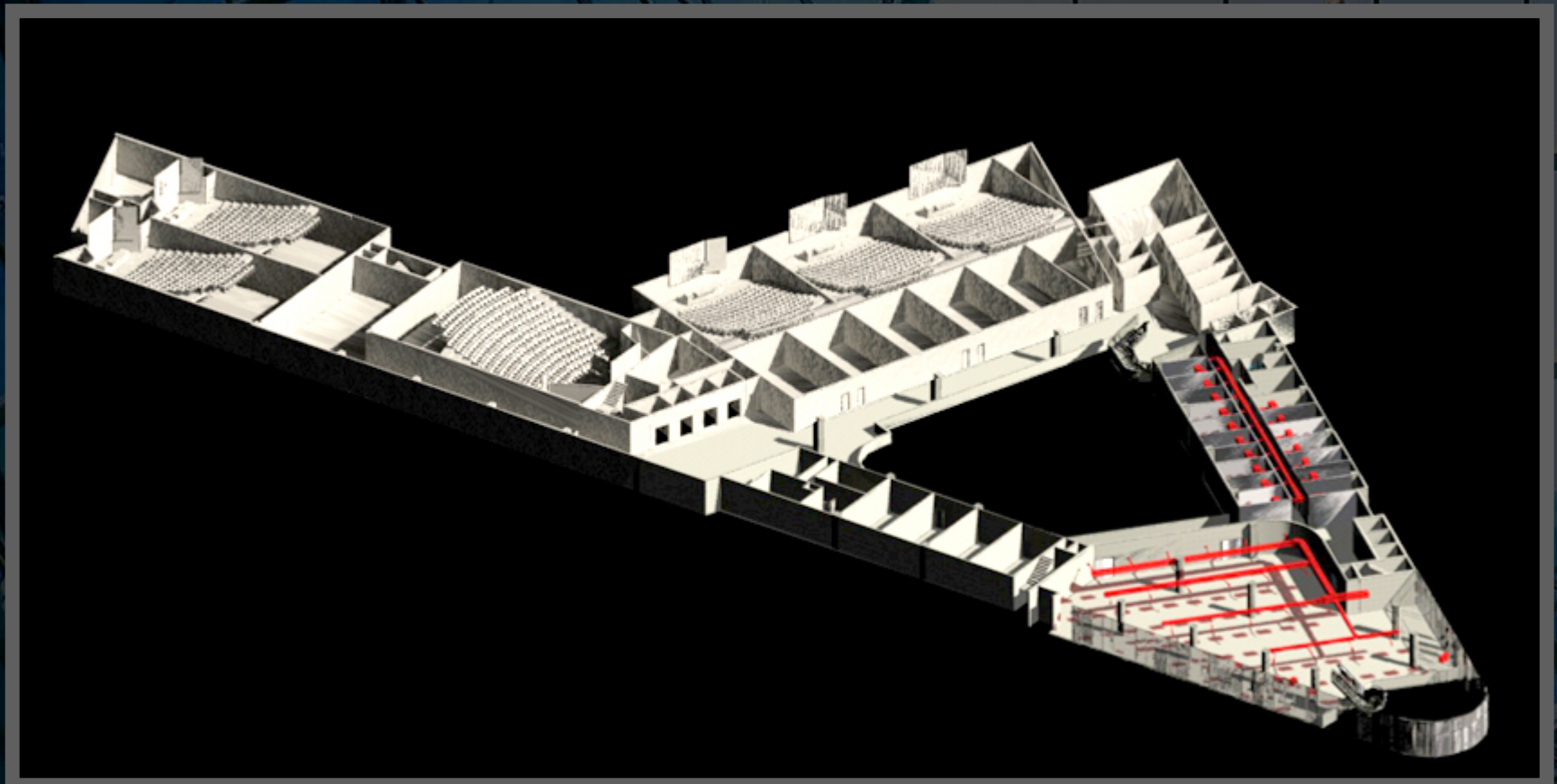
Architecture

Autodesk Architectural Desktop 2005 for Architecture



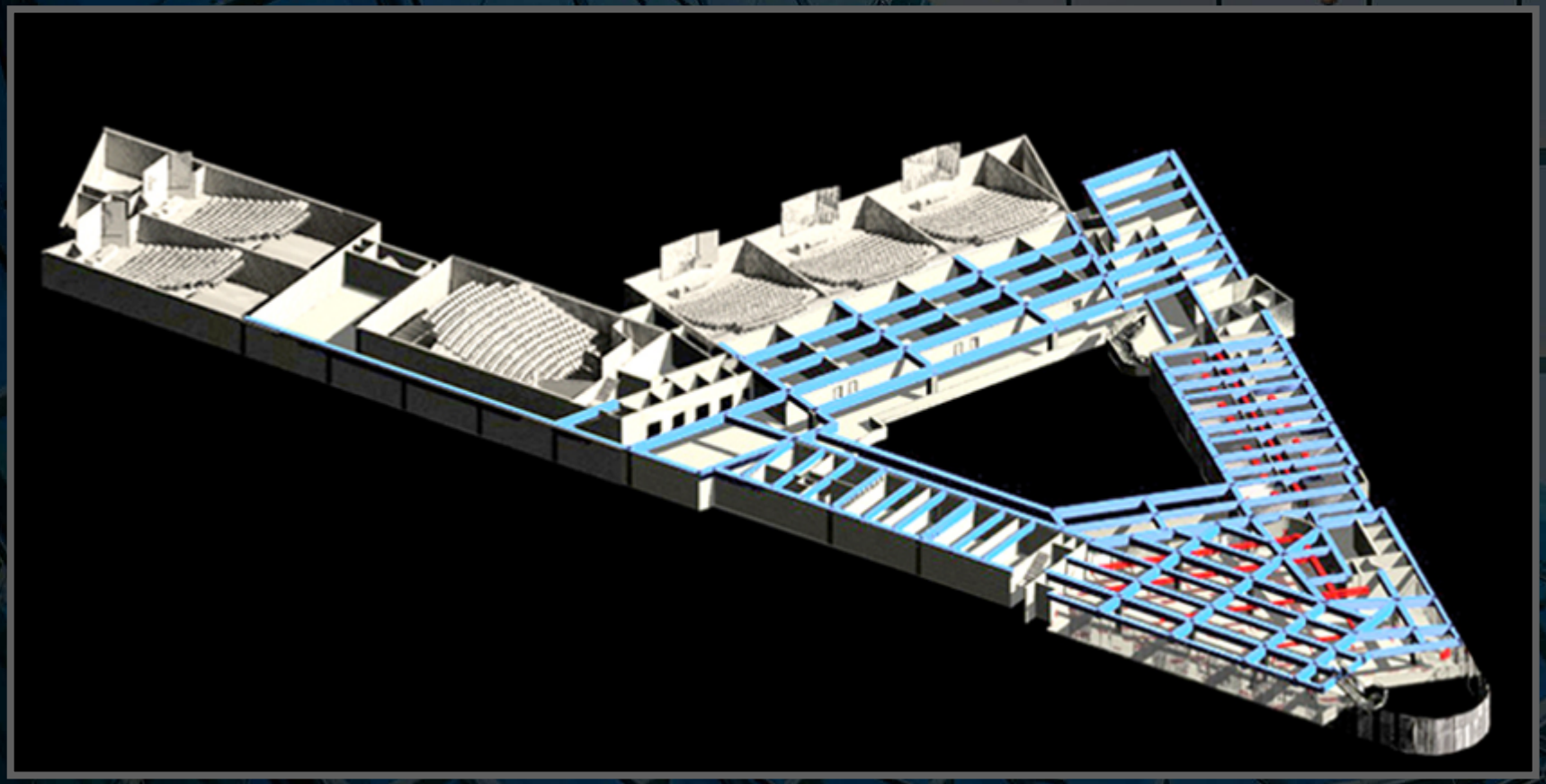
Architecture + Structure

Autodesk Architectural Desktop 2005 for Structure

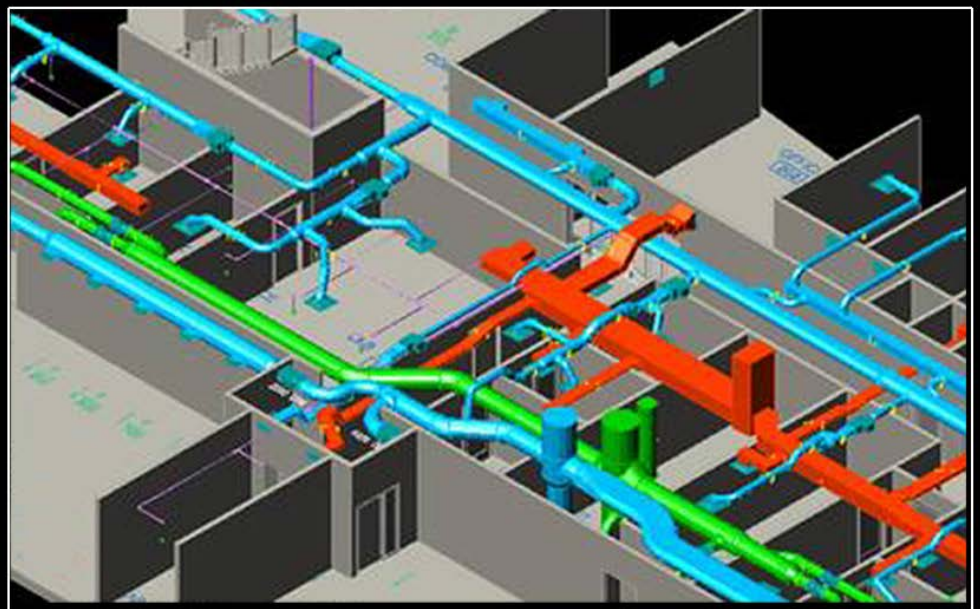


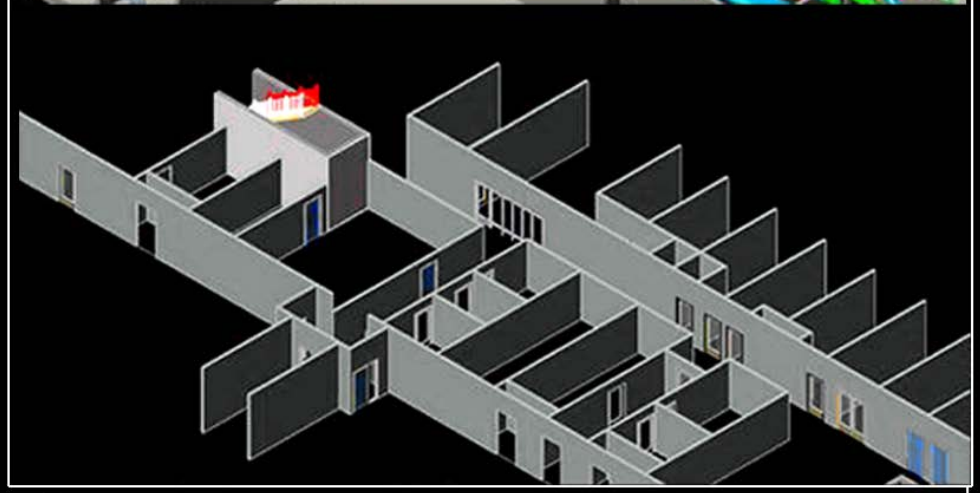
Architecture + E&M

Autodesk Building Systems 2005 for E&M



Architecture + Structure + E&M





Clash Analysis

Full set of construction Combined Services Drawings produced

Close-up collaboration

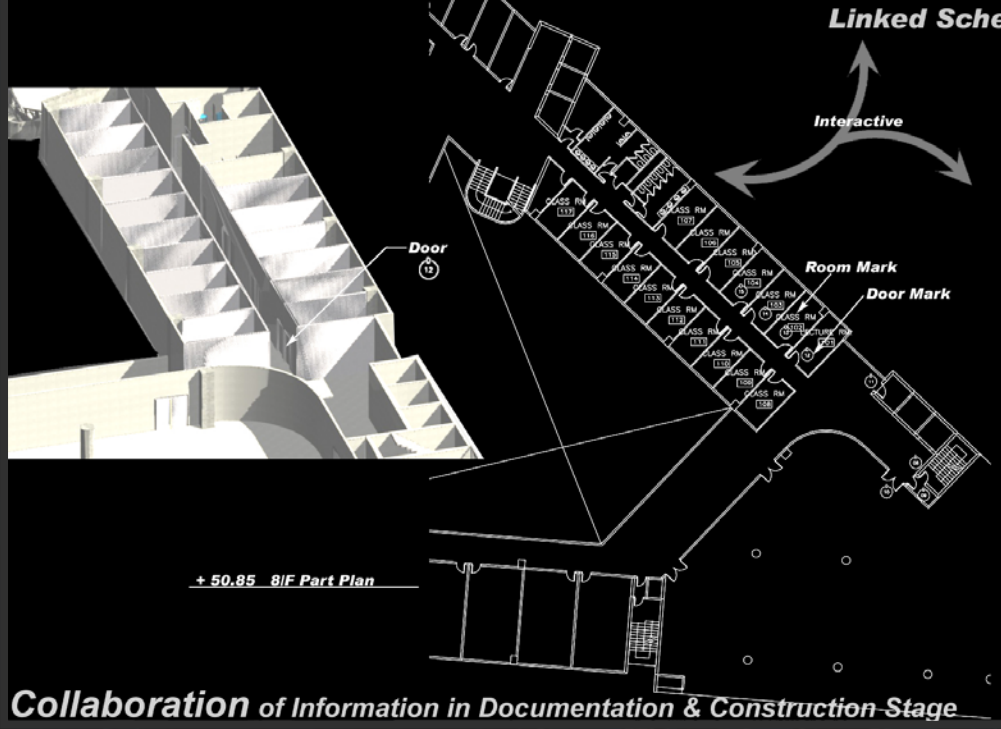
3D Collaboration of Design

ROOM FINISH SCHEDULE

Room No.	Room	FLOOR			WALLS												CEILING				HEIGHT	NOTES
		MATL		COL	NORTH			SOUTH			EAST			WEST			MATL		COLOR			
		CPT	HT	WHITE	EP	FB	VB	RED	WHITE	YEL	EP	FB	VB	RED	WHITE	YEL	EP	FB	VB	RED	WHITE	YEL	GB	WHITE		
101	LECTURE RM.		●	●	●					●	●					●			●			●	●	●	2750	--
102	LECTURE RM.	●		●	●				●		●				●				●			●		●	2750	--
103	LECTURE RM.	●		●			●	●					●	●					●	●				●	2750	--
104	LECTURE RM.		●	●	●			●			●			●					●	●				●	2750	--
105	LECTURE RM.	●		●	●				●		●				●				●			●		●	2750	--
106	LECTURE RM.		●	●		●			●			●			●				●			●		●	2750	--
107	LECTURE RM.		●	●	●					●	●					●			●				●	●	2750	--
108	LECTURE RM.		●	●	●				●		●				●				●			●		●	2750	--
109	LECTURE RM.		●	●		●		●				●		●					●			●		●	2750	--
110	LECTURE RM.	●		●			●		●				●		●				●			●		●	2750	--
111	LECTURE RM.		●	●			●		●				●		●				●			●		●	2750	--
112	LECTURE RM.	●		●		●		●				●		●					●			●		●	2750	--
113	LECTURE RM.	●		●	●					●	●					●			●				●	●	2750	--
114	LECTURE RM.		●	●	●				●		●				●				●			●		●	2750	--
115	LECTURE RM.	●		●			●	●					●	●					●	●				●	2750	--
116	LECTURE RM.	●		●			●		●				●		●				●			●		●	2750	--
117	LECTURE RM.		●	●	●				●		●				●				●			●		●	2750	--

AREA SCHEDULE

Room No.	Room	Dimension			
		Net Floor Area	Length	Width	Height
101	LECTURE RM.	14m²	5641	5772	2750
102	LECTURE RM.	13m²	5315	5772	2750
103	LECTURE RM.	14m²	5677	5772	2750
104	LECTURE RM.	14m²	5677	5772	2750
105	LECTURE RM.	13m²	5315	5772	2750
106	LECTURE RM.	14m²	5677	5772	2750
107	LECTURE RM.	14m²	5677	5772	2750
108	LECTURE RM.	12m²	5334	5303	2750
109	LECTURE RM.	12m²	5230	4958	2750
110	LECTURE RM.	12m²	5230	5303	2750
111	LECTURE RM.	12m²	5334	5303	2750
112	LECTURE RM.	12m²	5230	4958	2750
113	LECTURE RM.	12m²	5303	5303	2750
114	LECTURE RM.	12m²	5334	5303	2750
115	LECTURE RM.	12m²	5230	4958	2750
116	LECTURE RM.	12m²	5302	5303	2750
117	LECTURE RM.	12m²	5334	5303	2750



***Collaboration** of Information in Documentation & Construction Stage*

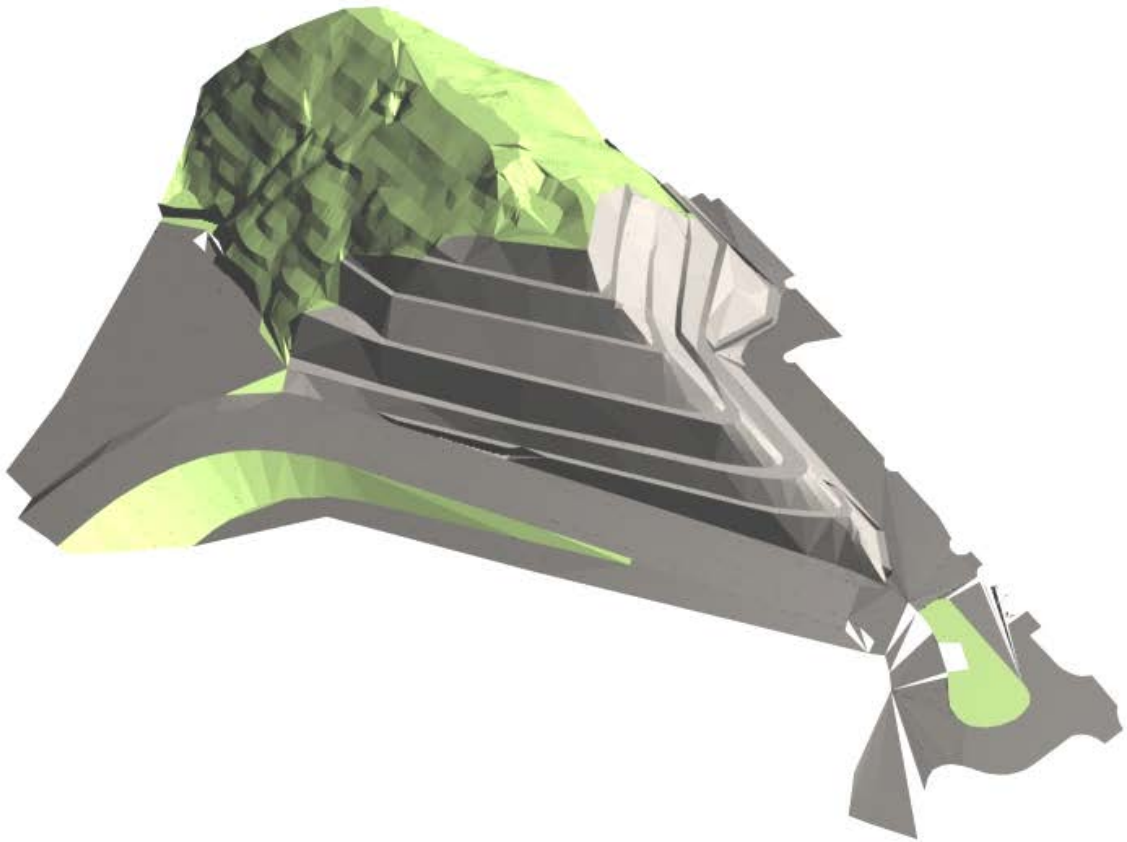
By using Autodesk Architectural Desktop, all schedules eg. Area Schedule, Finish Schedule, Door Schedule, Window Schedule are related to 3D model.

Change in model results in updating of schedules.

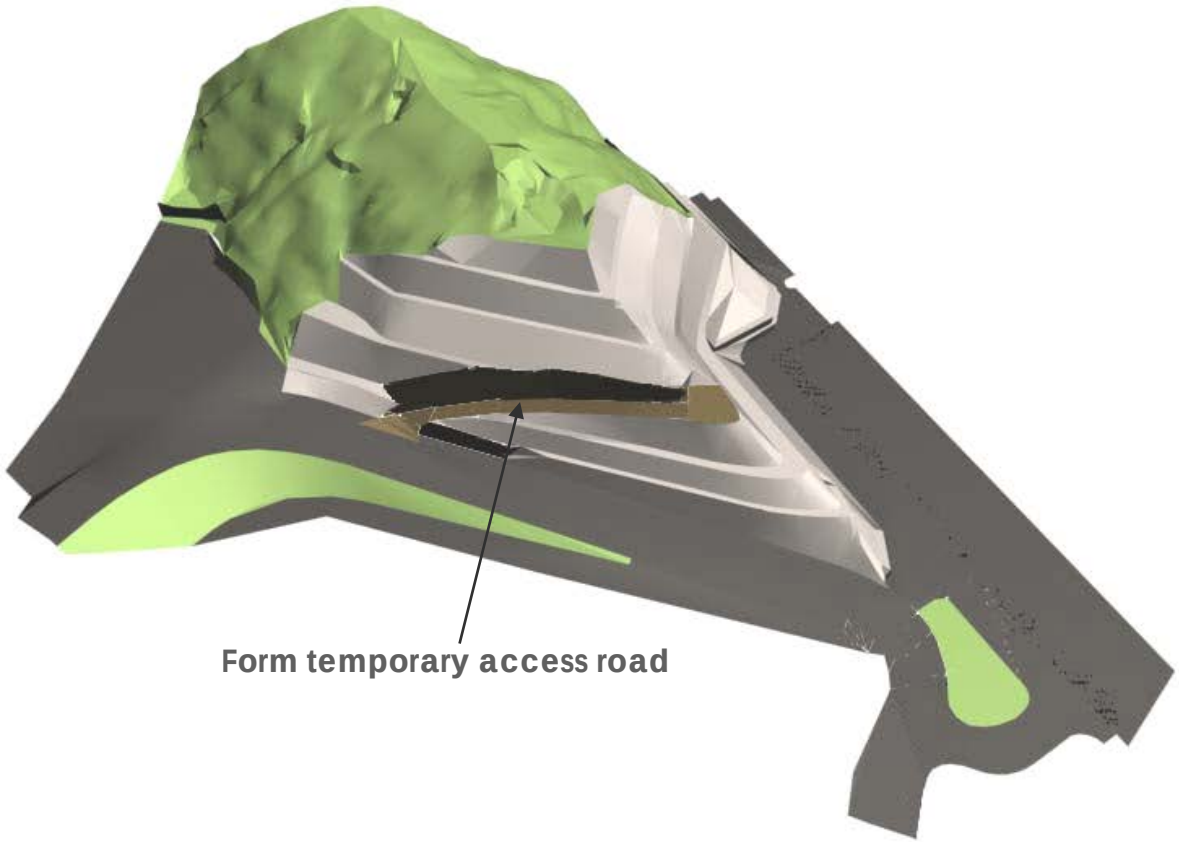
DOOR AND FRAME SCHEDULE

MARK	DOOR								FRAME					FIRE RATING LABEL	HARDWAR	
	SIZE			MATL	GLAZING	LOUVER			MATL	EL	DETAIL					
	WD	HGT	THK			WD	HGT				HEAD	JAMB	SILL		SET NO	KEYSI RM N
8	750	2000	50	TM	--	0	0		ST	--	T05	T06	T07	1/2HR	--	--
9	750	2000	50	TM	--	0	0		ST	--	T05	T06	T07	1/2HR	--	--
10	1800	2000	40	--	WG	0	0		--	--	--	--	--	2HR	--	--
11	900	2000	50	TM	TG	0	0		ST	--	T05	T06	T07	1HR	--	--
12	900	2000	50	TM	TG	0	0		ST	--	T05	T06	T07	1HR	--	--
13	900	2000	50	TM	TG	0	0		ST	--	T05	T06	T07	1HR	--	--
14	900	2000	50	TM	TG	0	0		ST	--	T05	T06	T07	1HR	--	--
15	900	2000	50	TM	TG	0	0		ST	--	T05	T06	T07	1HR	--	--
16	900	2000	50	TM	TG	0	0		ST	--	T05	T06	T07	1HR	--	--
53	750	2000	50	TM	--	0	0		ST	--	T05	T06	T07	1/2HR	--	--
54	750	2000	50	TM	--	0	0		ST	--	T05	T06	T07	1/2HR	--	--
55	900	2000	50	TM	TG	0	0		ST	--	T05	T06	T07	1HR	--	--
56	900	2000	50	TM	TG	0	0		ST	--	T05	T06	T07	1HR	--	--
57	900	2000	50	TM	TG	0	0		ST	--	T05	T06	T07	1HR	--	--
58	900	2000	50	TM	TG	0	0		ST	--	T05	T06	T07	--	--	--
59	900	2000	50	TM	TG	0	0		ST	--	T05	T06	T07	--	--	--
60	750	2000	50	TM	--	0	0		ST	--	T05	T06	T07	--	--	--
61	900	2000	50	TM	TG	0	0		ST	--	T05	T06	T07	--	--	--
62	900	2000	50	TM	TG	0	0		ST	--	T05	T06	T07	--	--	--
63	900	2000	50	TM	TG	0	0		ST	--	T05	T06	T07	--	--	--
64	900	2000	50	TM	TG	0	0		ST	--	T05	T06	T07	--	--	--

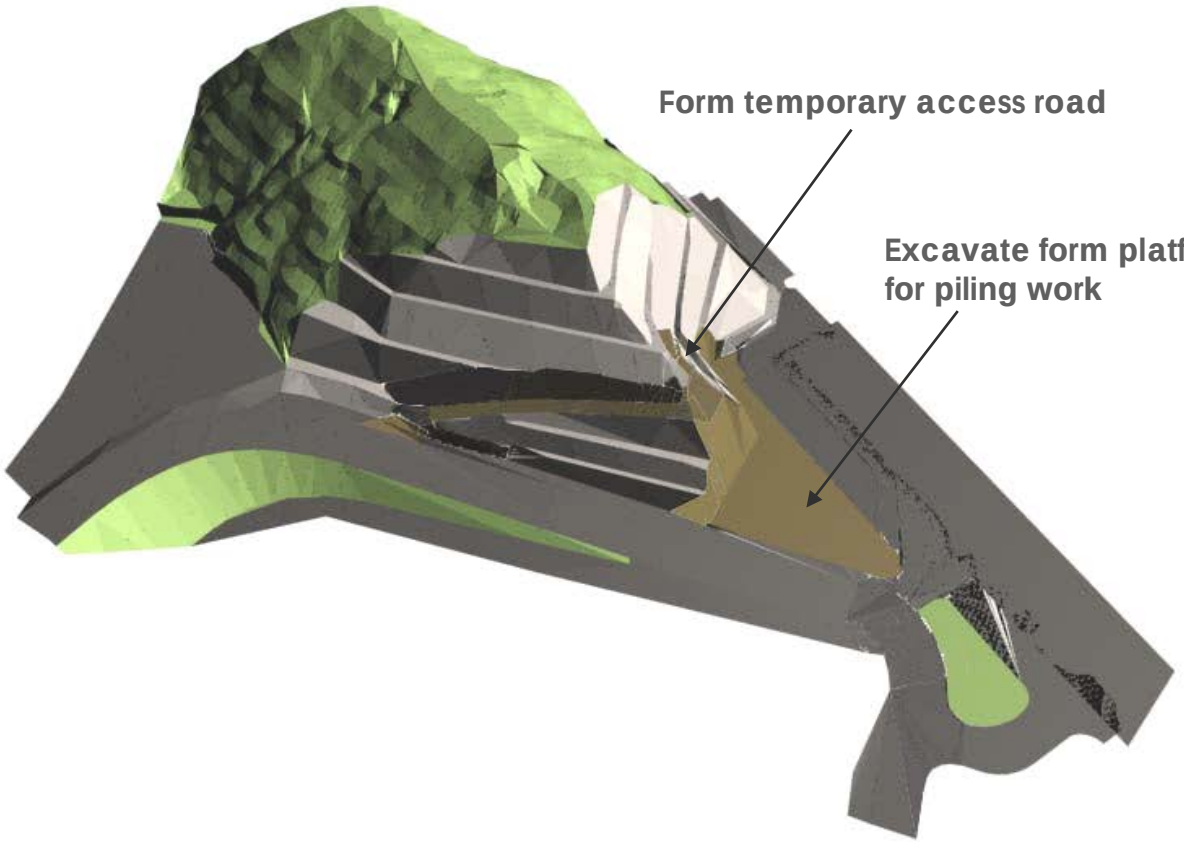
Interactive Collaboration of Information



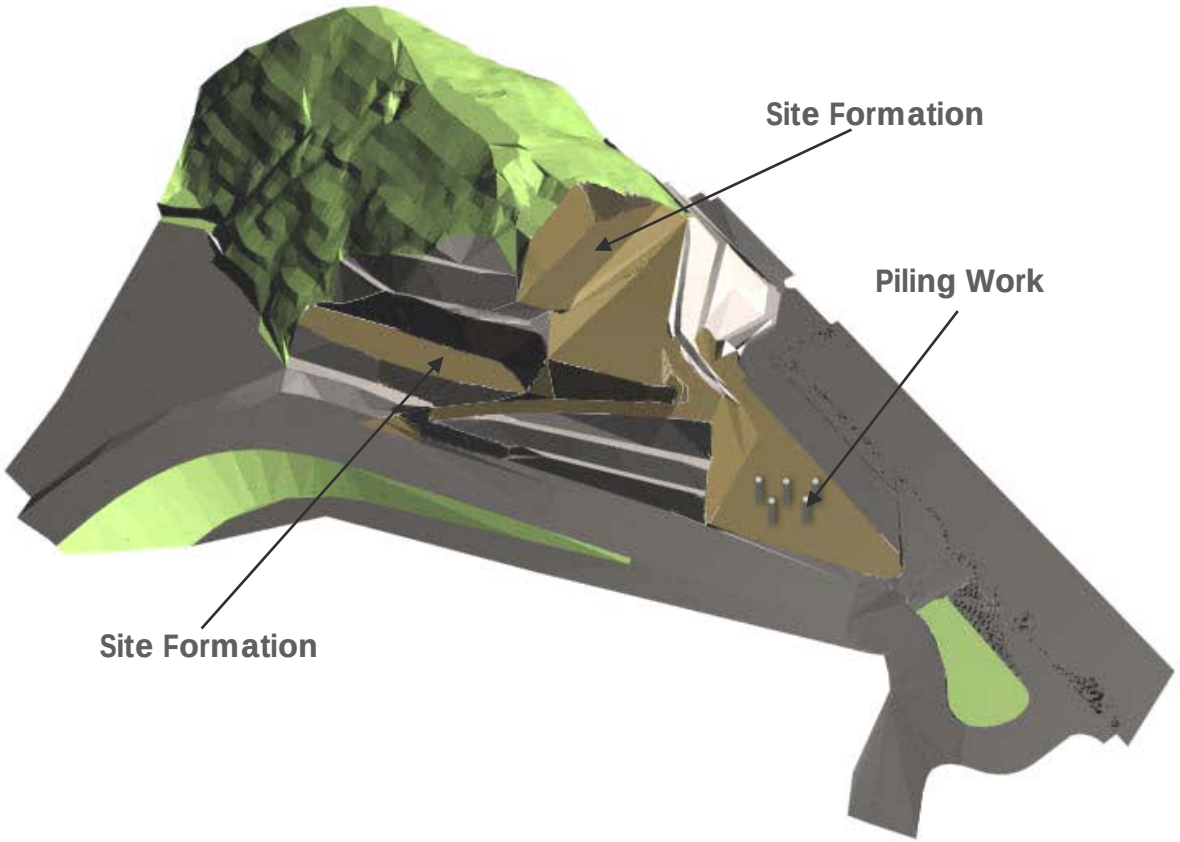
Existing Site



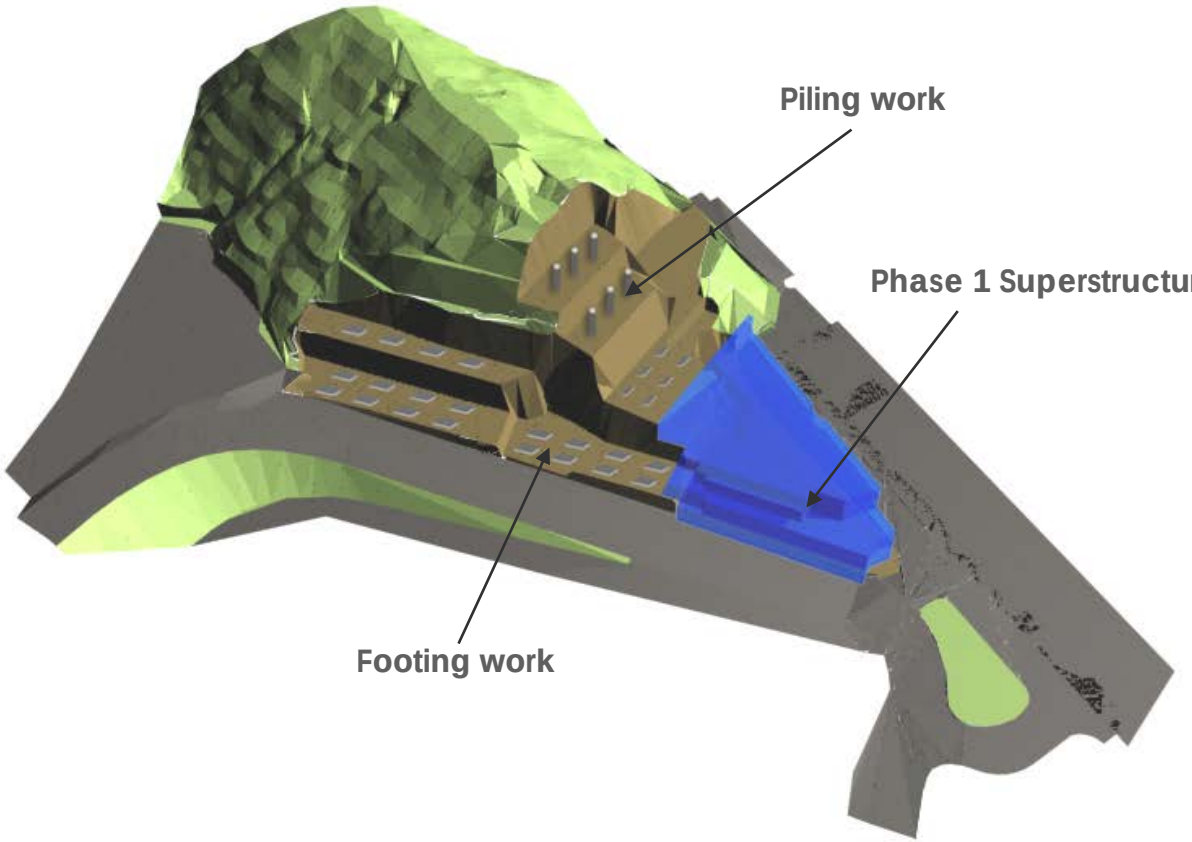
Stage 1


Form temporary access road
Excavate form platform for piling work

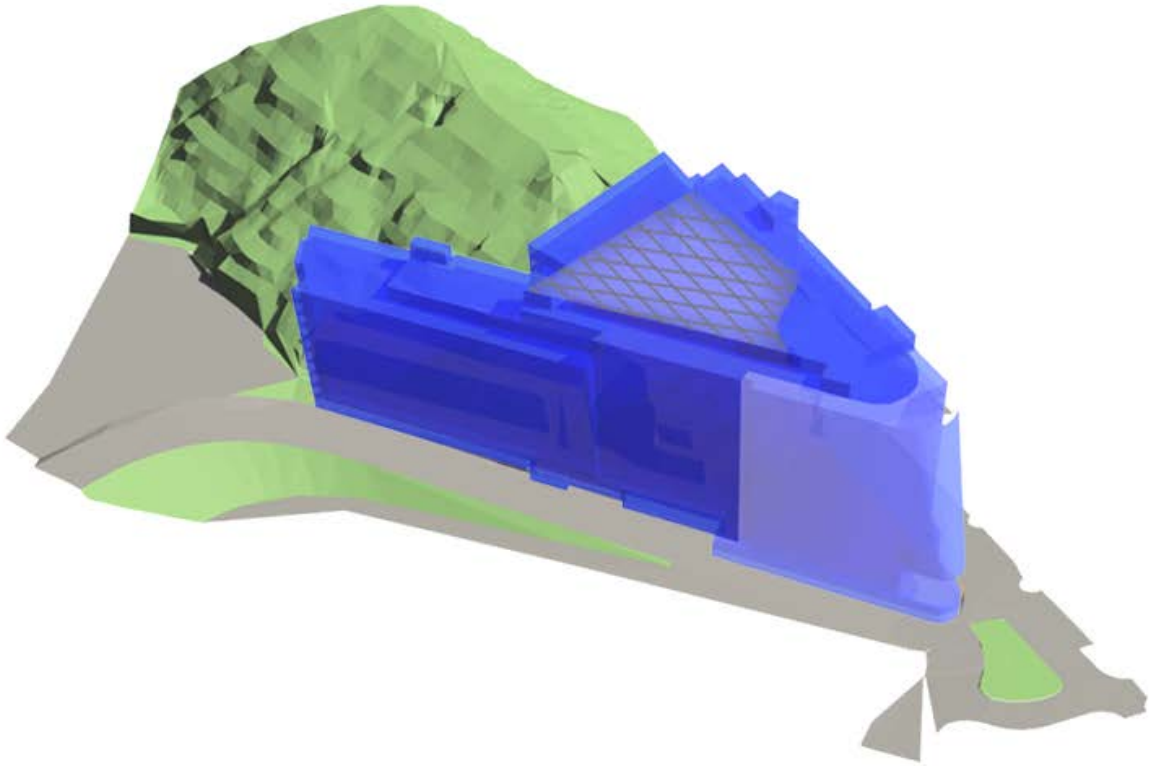
Stage 2



Stage 3



Stage 4



Completion