



BIM in a Team

David Fung

Senior Associate, BIM Division Head; Registered Architect, HKIA, AIAB

Use of Building Information Modeling (BIM)

1. Design visualization
2. Drawing Productions
3. Services Co-ordination and Clash detection with other disciplines
4. Quantity taking and preparation of Tender Document
5. Automated Statutory Submission
6. Scientific analysis of different environmental aspects
7. Complex Geometry
8. Supply Chain Integration with manufacturing and production
9. Sustainability

Bible said, "Men do not live on bread alone, but on every word from the mouth of God."

Project directors said, "Projects are not done by individual alone, but by every contribution coming from each of the TEAM members."



TEAMS

1. **In - House Design & Production TEAM**
2. **Project TEAM**
3. **Other Consultant TEAM**

TEAM – Project groups

use of passive environmental controls, setting a precedent in Pakistan.

Our London and Manchester offices have collaborated with our specialist Advanced Modelling Group, using Ecotect analysis to interpret the climatic performance.

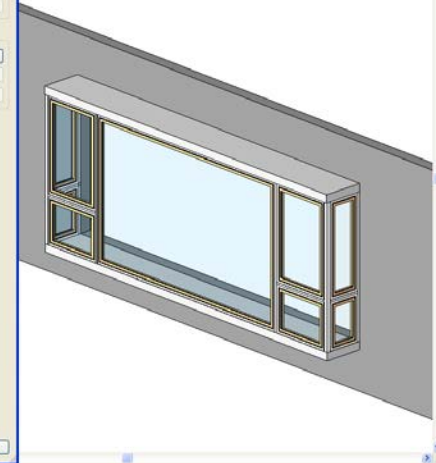
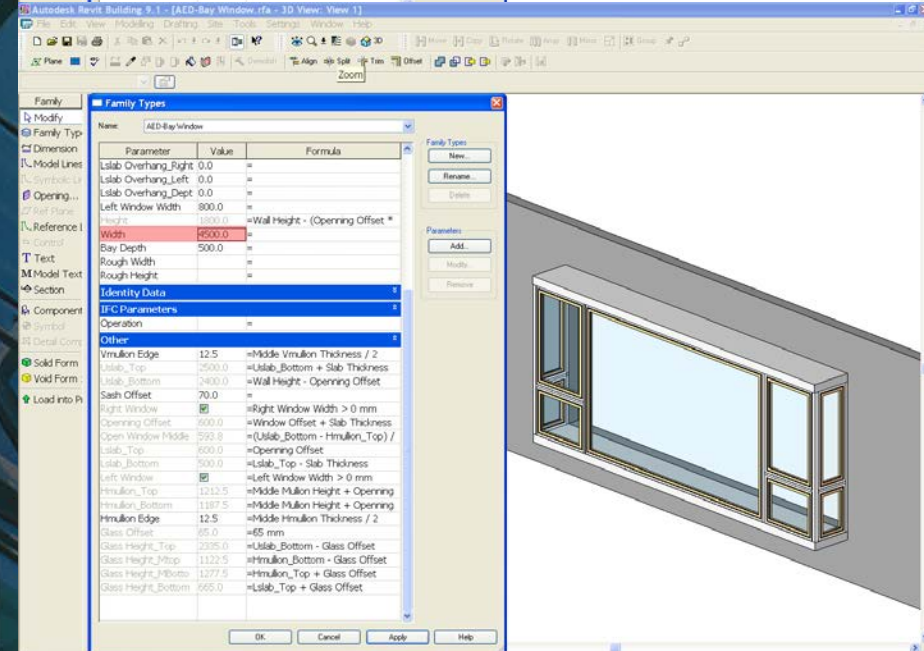
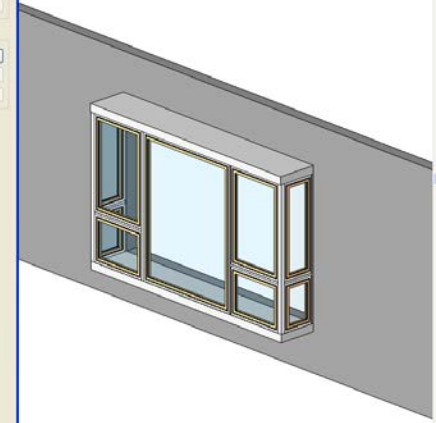
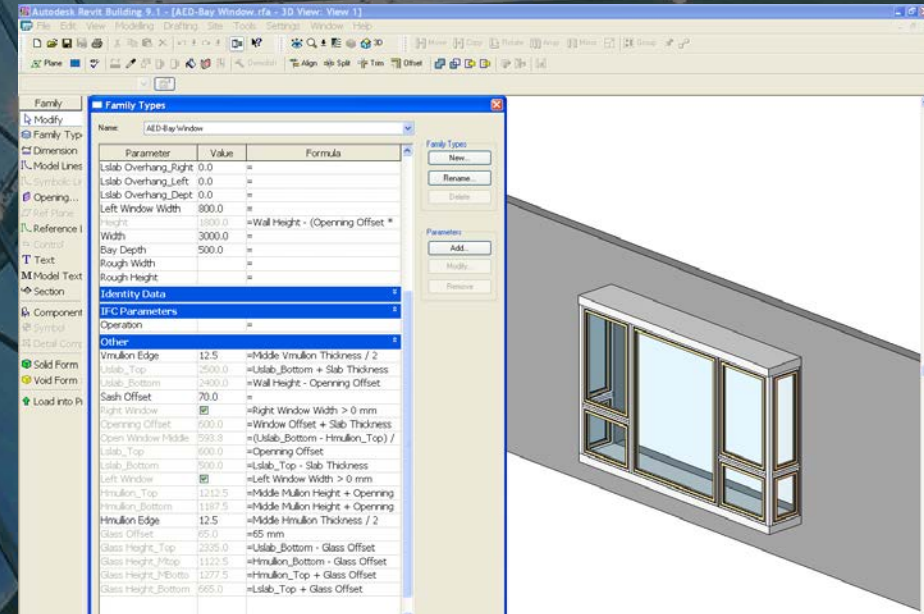


TEAM – Single Building, by elements



In-House Design & Production Team Structure

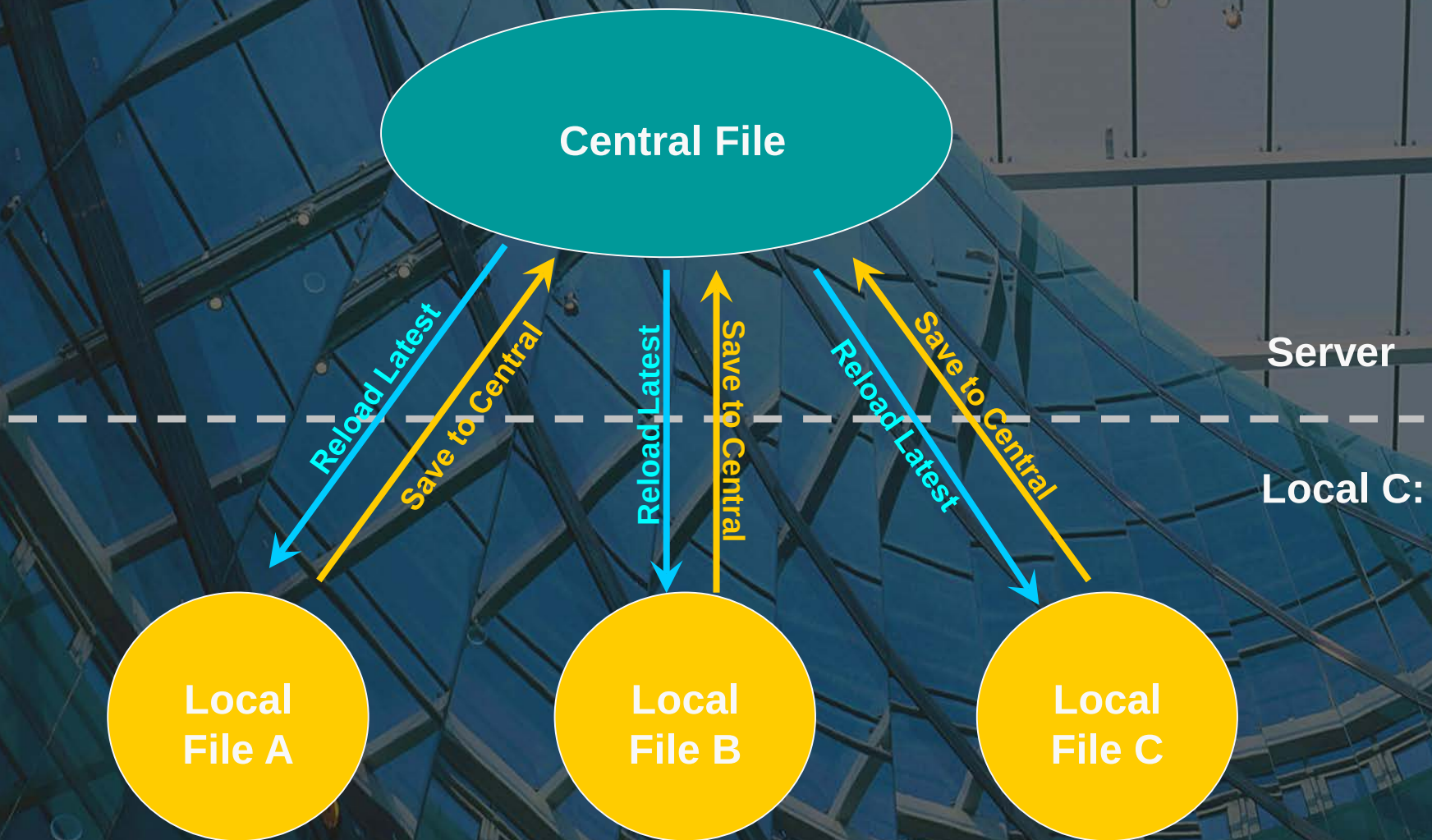
- Professional Designers
 - Know what to design professional
 - Know what to communicate!
- Family Man
 - Champion of System
 - Parametric Modeling
 - Mathematical Sense!!!
- Technicians
 - Competent BIM operators



In-House Design & Production Team Structure

- Same Reference System
- Same Co-ordinates, same Height
- Complex model broken into pieces
- Fast network
- Physical Communication
- Same BIM Project Standard - naming

In House Communication - Data Synchronization





Worksets

Active workset:

(Not Editable) Electrical

☐ Gray Inactive Workset Graphics

Name	Editable	Owner	Borrowers	Opened
External Envelop	No			Yes
Furniture	No			Yes
Internal	No			Yes
Internal-34 & 38	No			Yes
Internal-42	No			Yes
Internal-45	No			Yes
Internal-49	No			Yes
Internal-54	Yes	sze-hon.cheng		Yes
Internal-58	No			Yes
Internal-62	No			Yes
Internal-66	No			Yes
Landscape	No			Yes
Mass	No			Yes
Shared Levels and Grids	No			Yes
Sheet	No			Yes

New

Delete

Rename

Open

Close

Editable

Non Editable

Show:

☒ User-Created☐ Project Standards☐ Families☐ Views

OK

Cancel

Help

LOWER LT (120 SEATS)

ST-03

CLASS-80

ST-03

CLASS-40

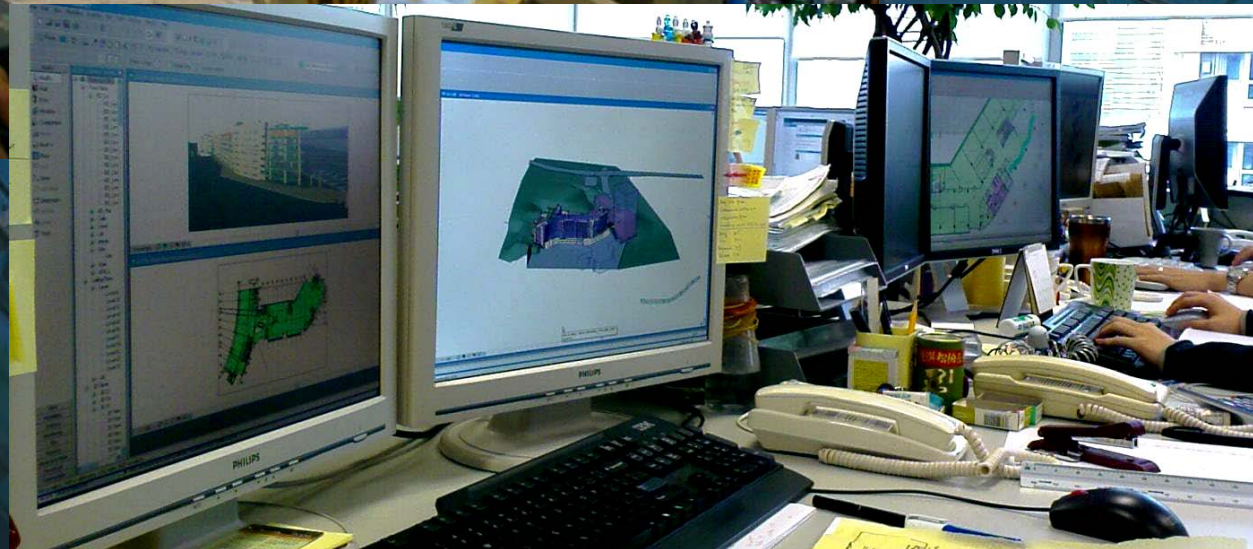
CLASS-40

CLASS-40

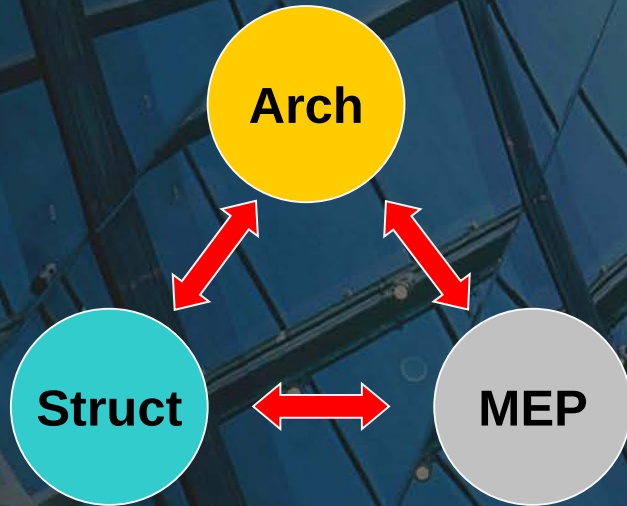
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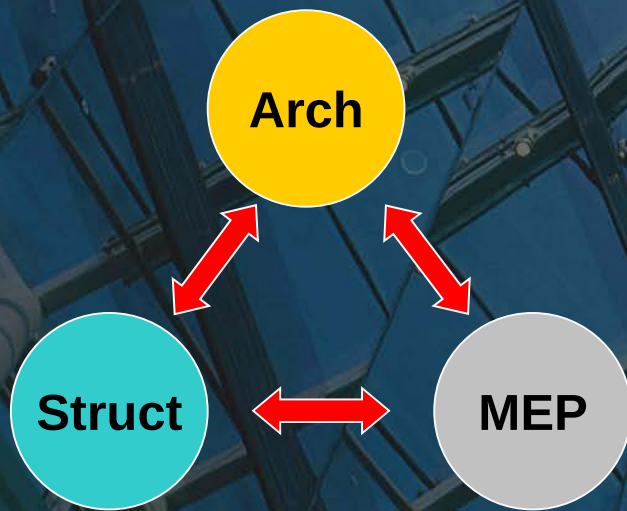
In-House Design & Production Team Structure



Full BIM Project Team Structure



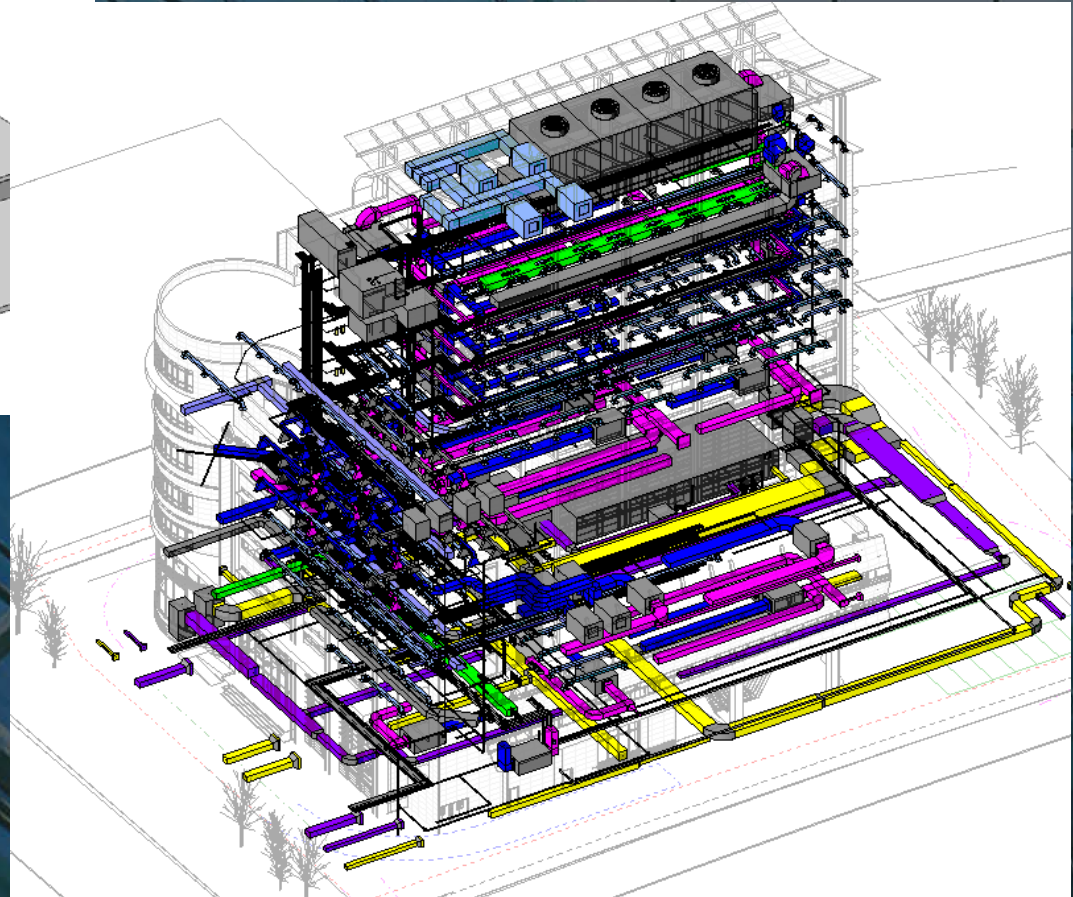
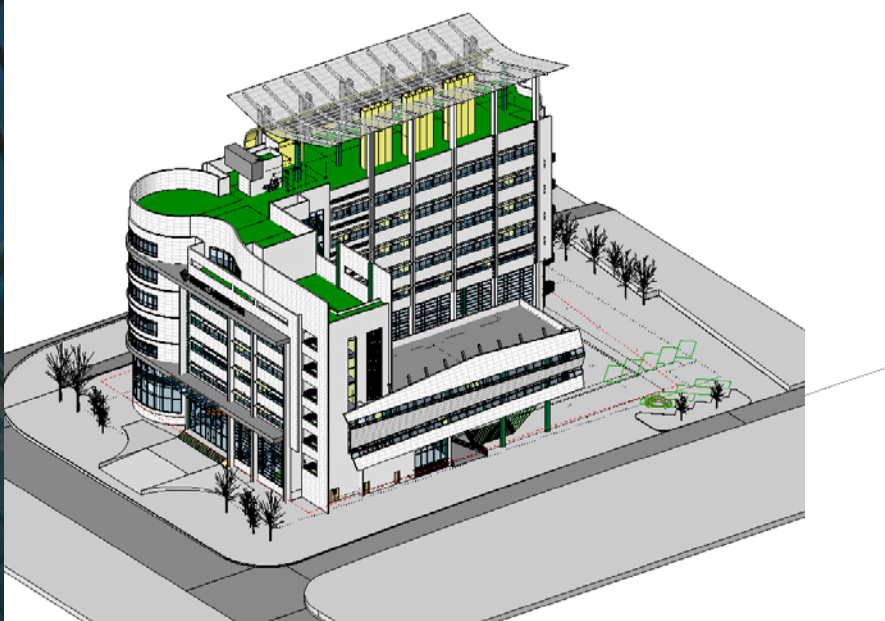
Full BIM Project Team Structure



Best Practice: Office with All Disciplines

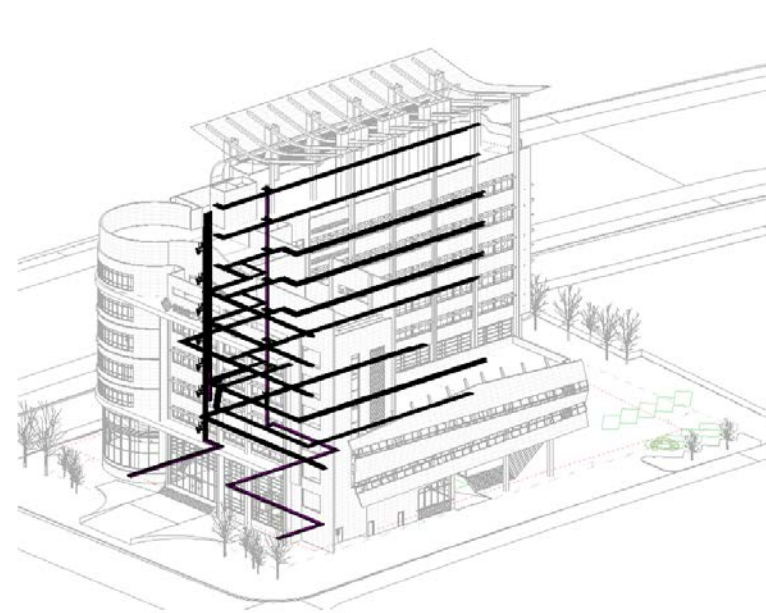
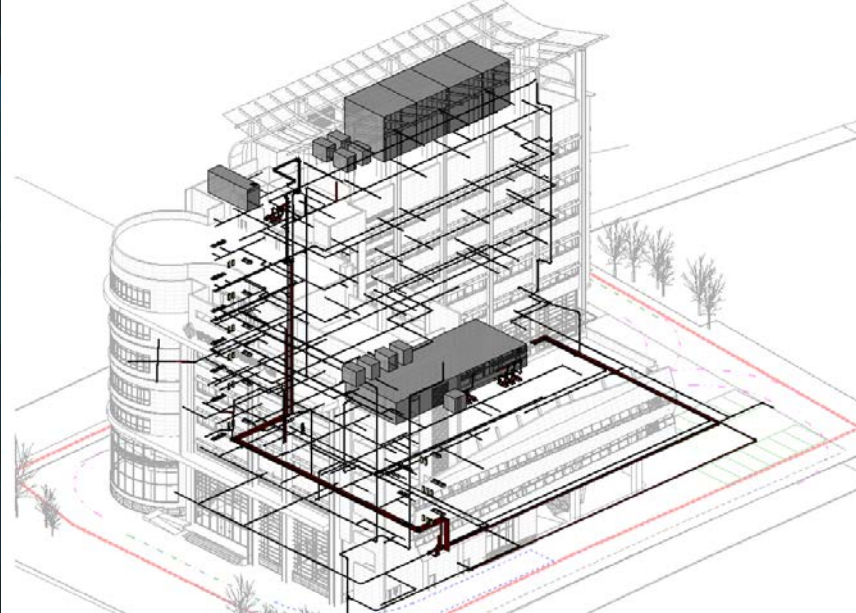
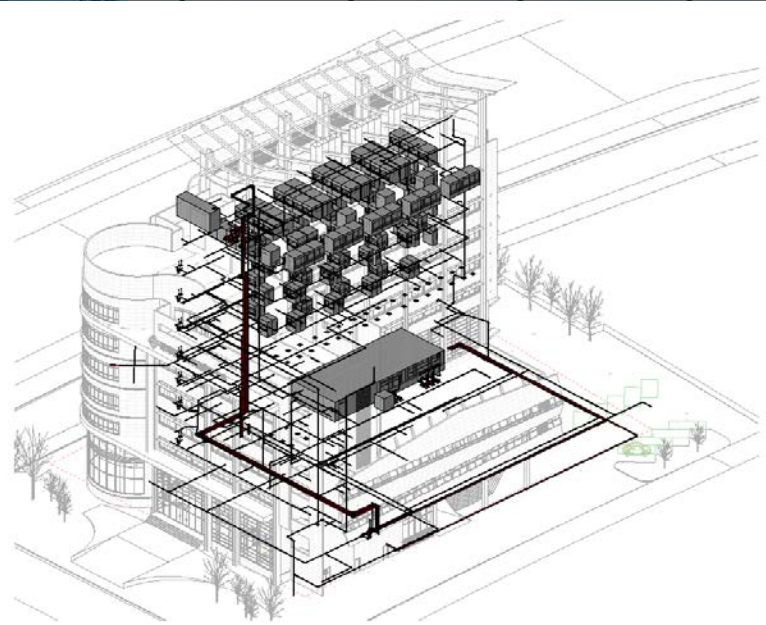
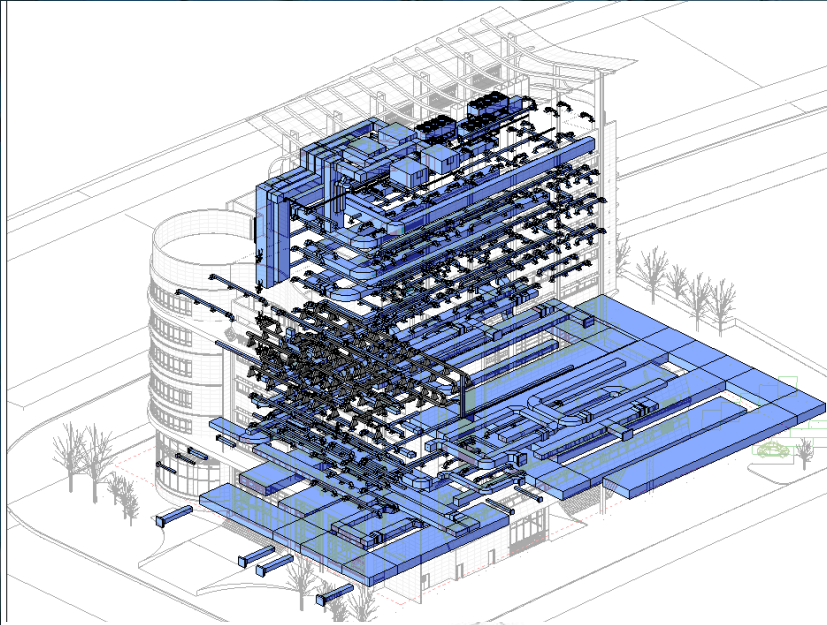
Second Best: Efficient Communication

BIM Project Team Structure



HVAC Installation

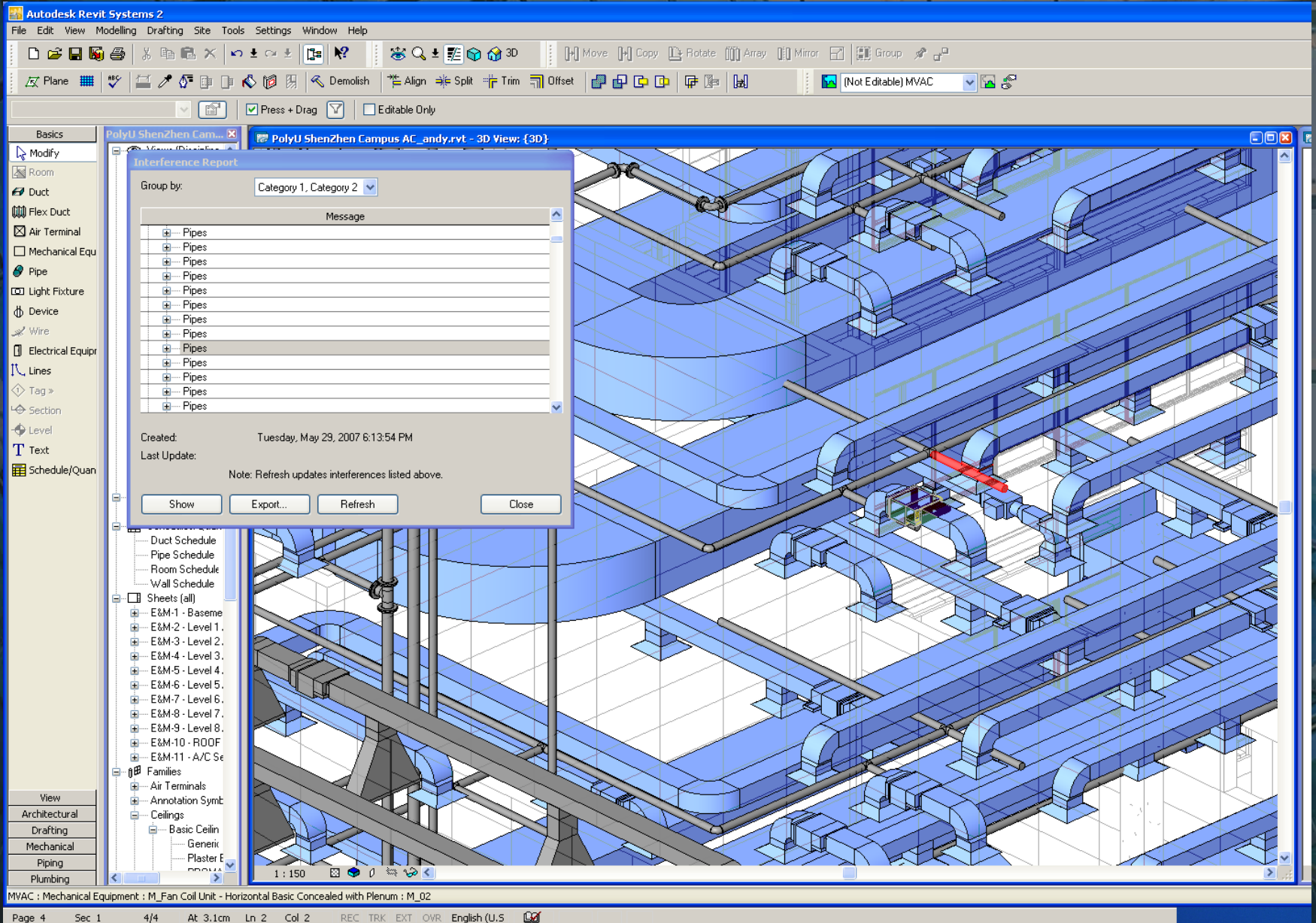
Fire Services Installation



P/D Installation

Electricity Installation

Clash Analysis

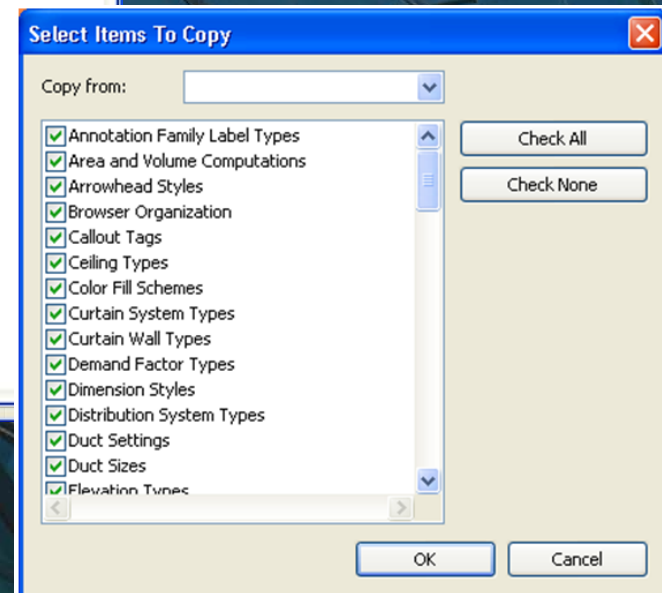
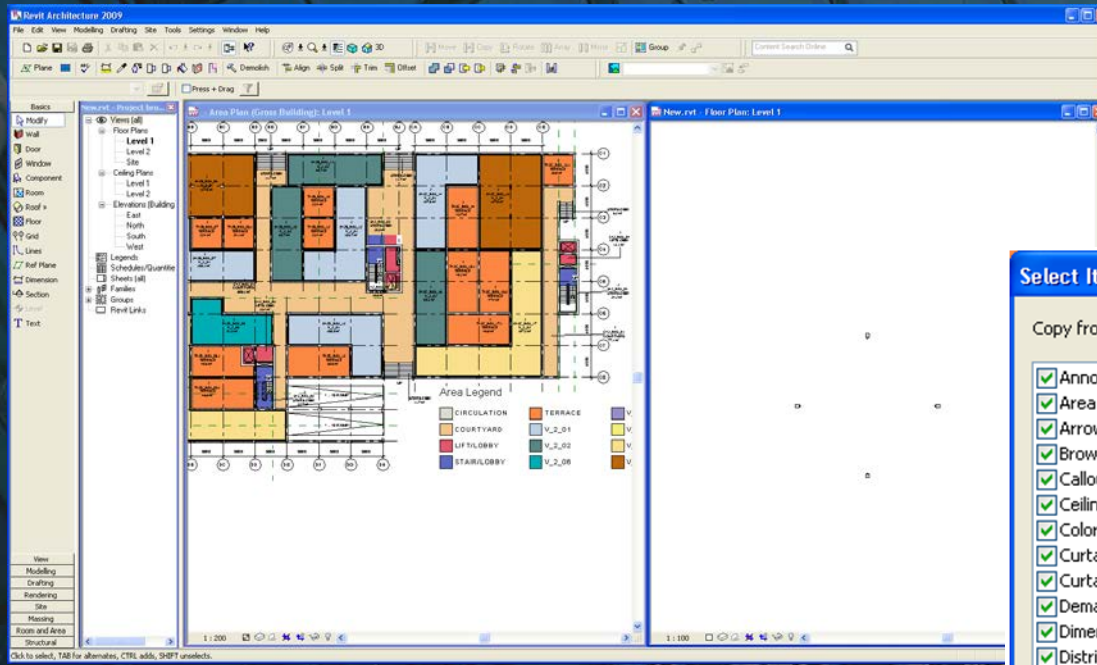


Partial BIM Project Team Structure



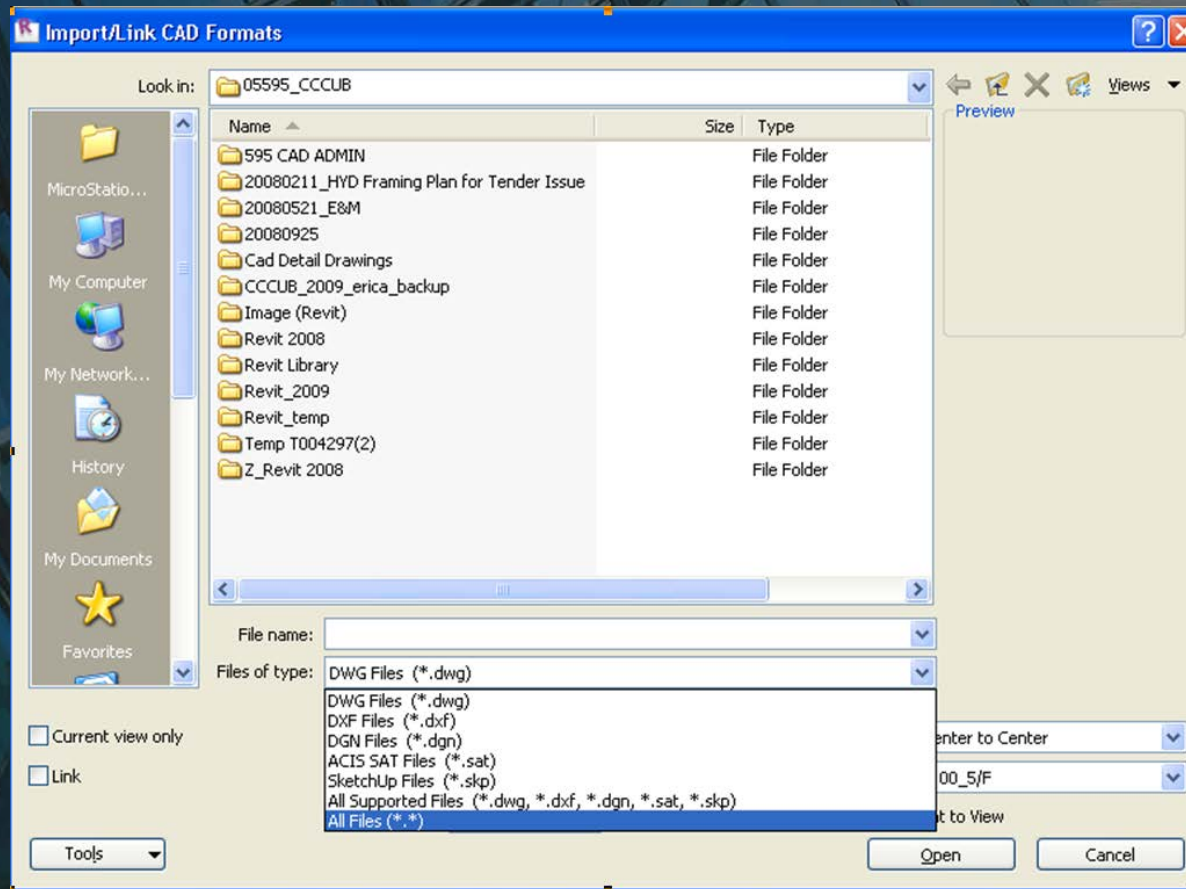
Partial BIM Project Team Structure

- Communication
 - Email (?) / FTP
 - Time Lag
 - Same Co-ordinate, Height
 - Different Project Standard



Partial BIM Project Team Structure

- Filing Conversion
 - Receive information – Rebuild from traditional 2D to 3D presentation



Partial BIM Project Team Structure

- Filing Conversion

- Release Information – Convert back to other 2D information, lost of information, CAD standard

Export Layers: C:\Program Files (x86)\Revit Architecture 2009\Data\exportlayers-dwg-AIA.txt

Category	Projection		Cut	
	Layer name	Color ID	Layer name	Color ID
Cut Pattern	A-WALL-PATT	2	A-WALL-PATT	2
Finish 1 [4]	{ A-WALL-MBNS }	2	{ A-WALL }	2
Finish 2 [5]	{ A-WALL-MBNS }	2	{ A-WALL }	2
Hidden Lines	A-WALL-HIDN	2	A-WALL-HIDN	2
Membrane Layer	{ A-WALL-MBNS }	2	{ A-WALL }	2
Structure [1]	{ A-WALL-MBNS }	2	{ A-WALL }	2
Substrate [2]	{ A-WALL-MBNS }	2	{ A-WALL }	2
Surface Pattern	A-WALL-PATT	2	A-WALL-PATT	2
Thermal/Air Layer [	{ A-WALL-MBNS }	2	{ A-WALL }	2
Wall Sweep - Corni	{ A-WALL-MBNS }	2	{ A-WALL }	2
Wall Sweeps	{ A-WALL-MBNS }	2	{ A-WALL }	2
Walls/Interior	I-WALL	2	I-WALL	2
Walls/Exterior	A-WALL	2	A-WALL	2
Walls/Foundation	S-FNDN	2	S-FNDN	2
Walls/Retaining	SITE-WALL	2	SITE-WALL	2
Window Tags	A-GLAZ-IDEN	6		
Windows	A-GLAZ	6	A-GLAZ	6
Architrave	{ A-GLAZ }	6	{ A-GLAZ }	6
Cavity Closer	{ A-GLAZ }	6	{ A-GLAZ }	6
Elevation Swing	{ A-GLAZ }	6	{ A-GLAZ }	6
Flashings	{ A-GLAZ }	6	{ A-GLAZ }	6
Frame-Sash	{ A-GLAZ }	6	{ A-GLAZ }	6
Frame/Mullion	A-GLAZ-FRAM	6	A-GLAZ-FRAM	6
Glass	A-GLAZ-GLAS	6	A-GLAZ-GLAS	6
Hidden Lines	{ A-GLAZ }	6	{ A-GLAZ }	6
Jamb Liner	{ A-GLAZ }	6	{ A-GLAZ }	6

Load... Standard... Save As...

OK Cancel Help

BIM Consultant Team Structure

Professional Knowledge
No BIM Operation Knowledge



BIM Operation Knowledge
Professional Knowledge???
– Rely on input of Professionals



Professional Knowledge
No BIM Operation Knowledge



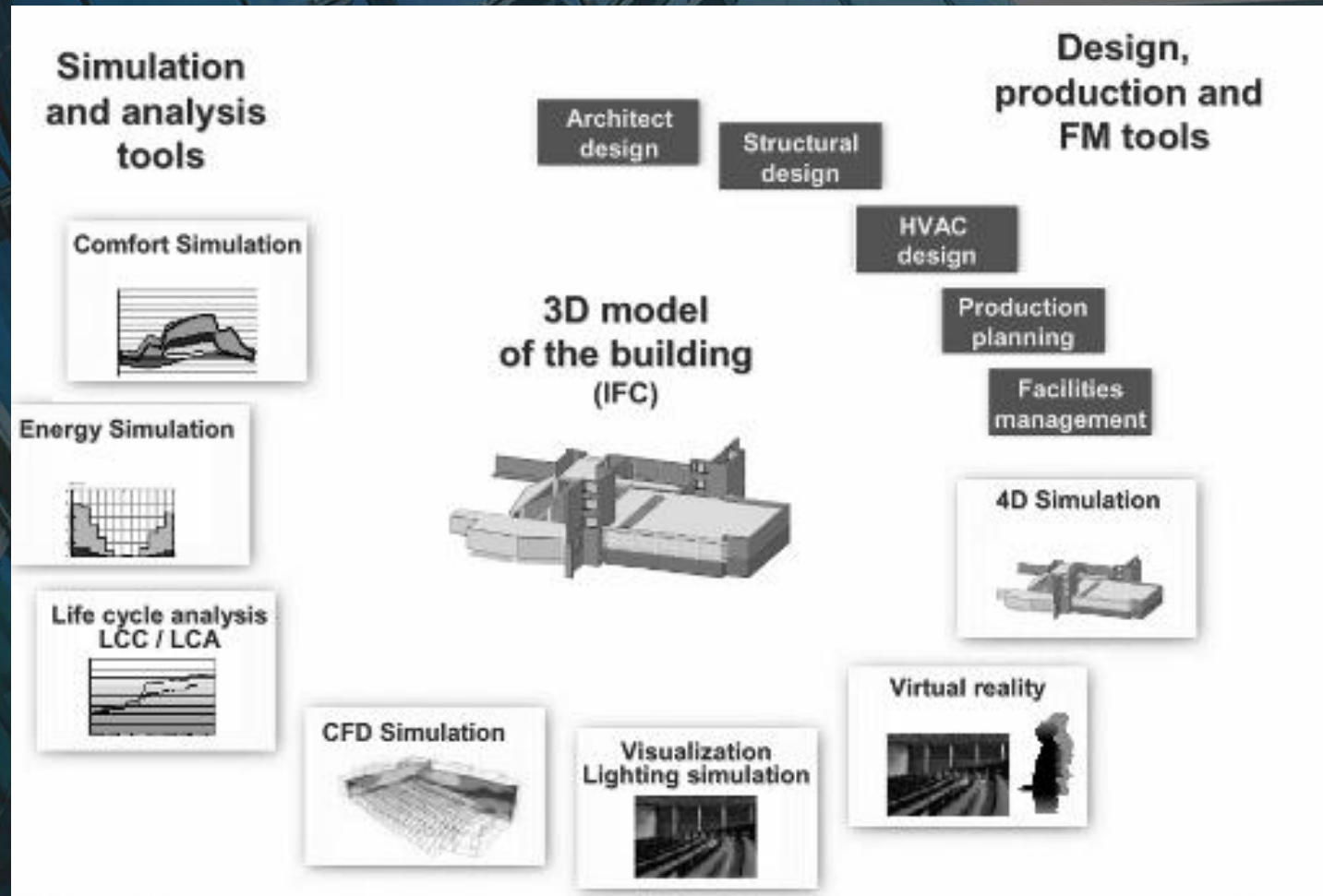
Professional Knowledge
No BIM Operation Knowledge

BIM Consultant

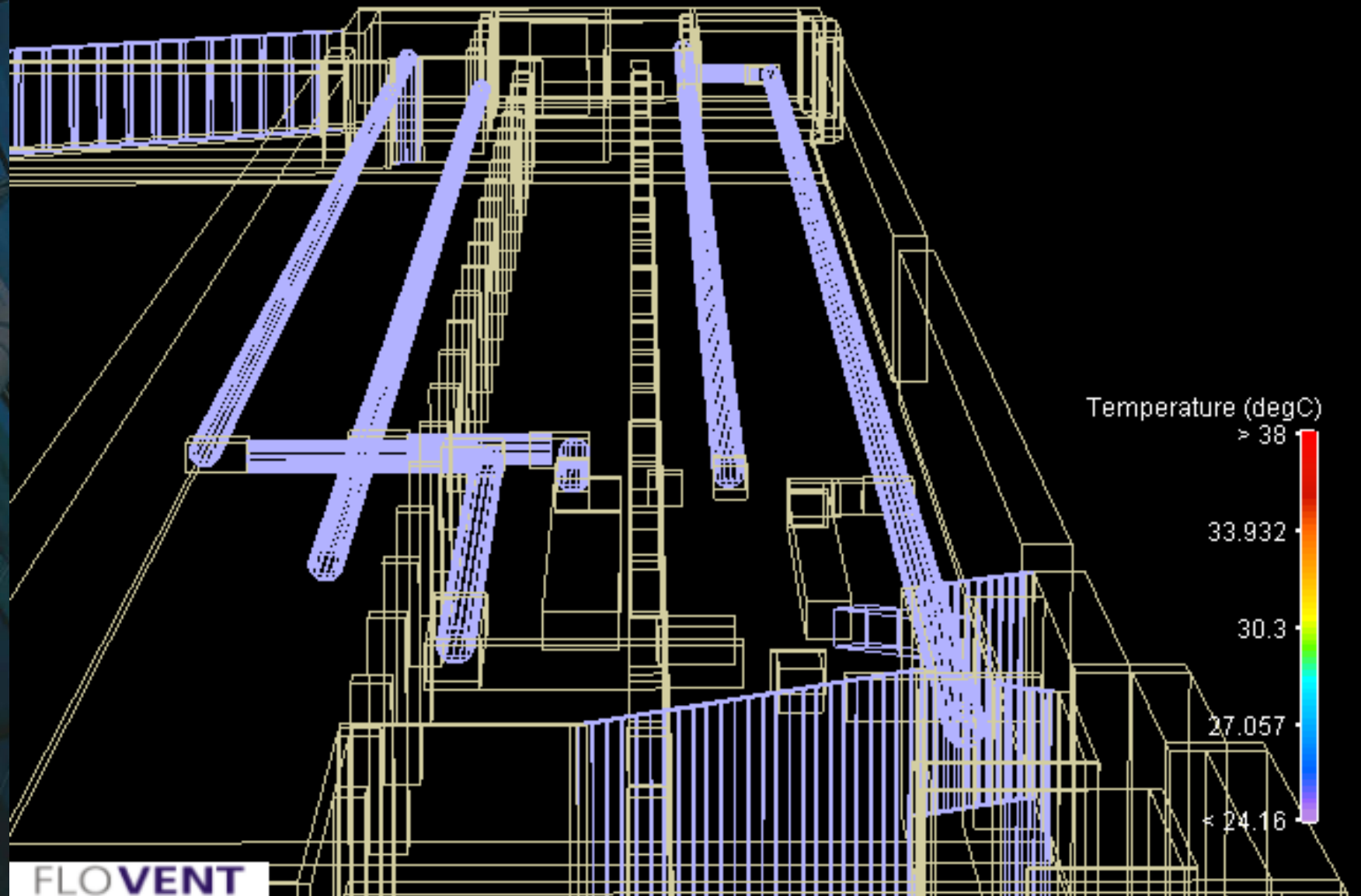
- Roles
- Professional Liability?
- Responsibility
- Training
- Knowledge Transfer

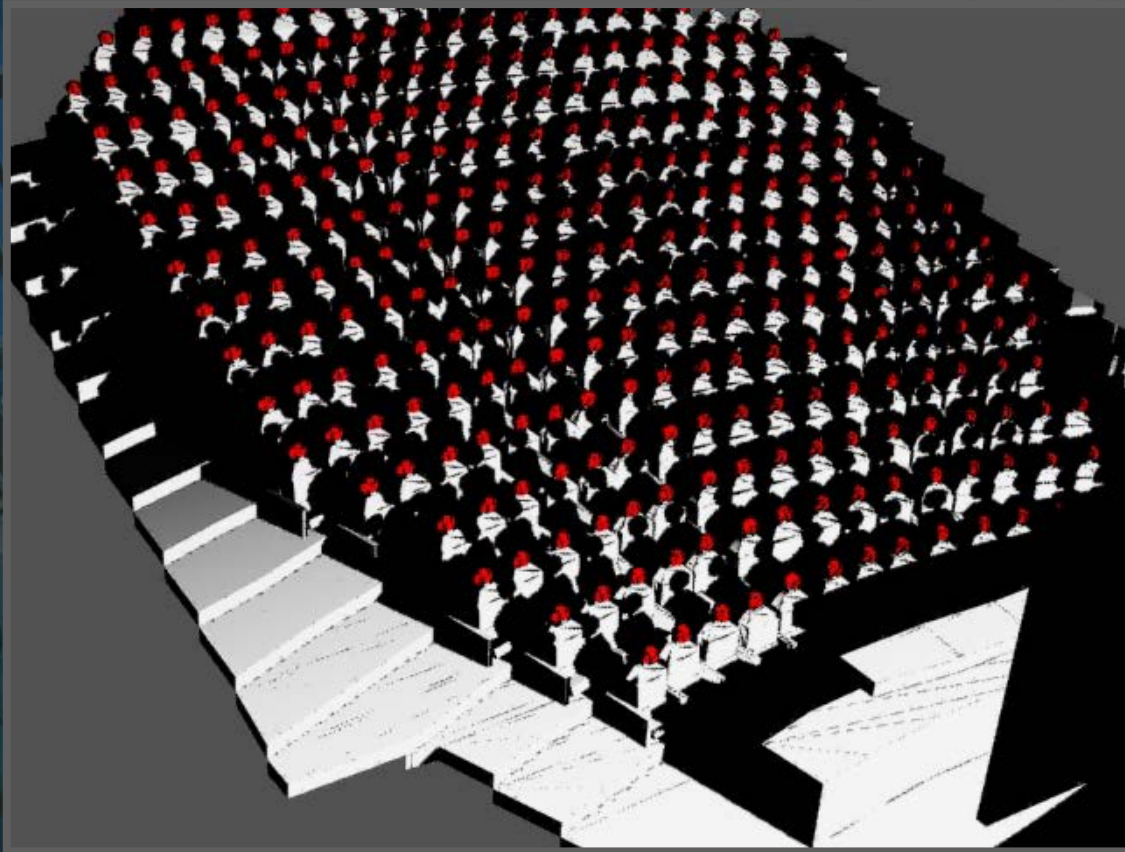
Other Consultants Team

- QS, Environmental Consultants
- Specialist...

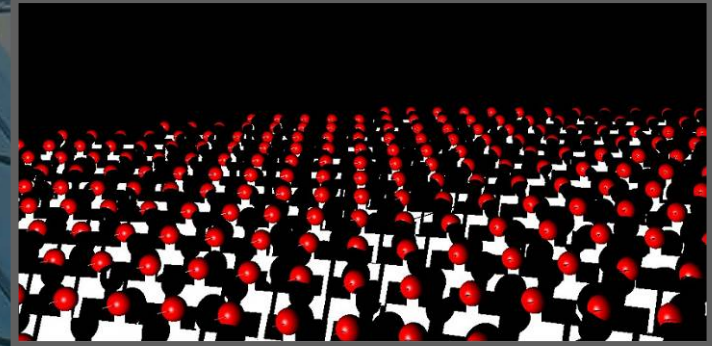


ANALYSIS

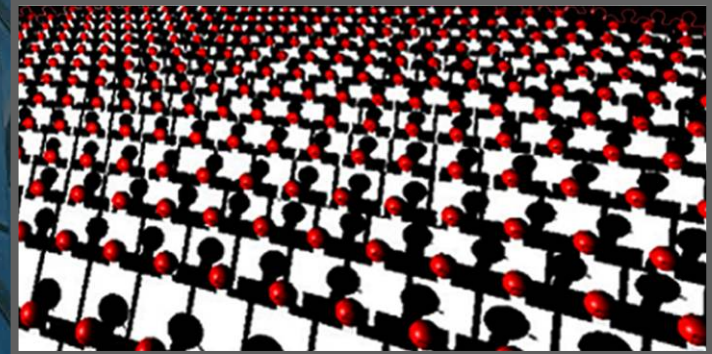




Radiating Light Method



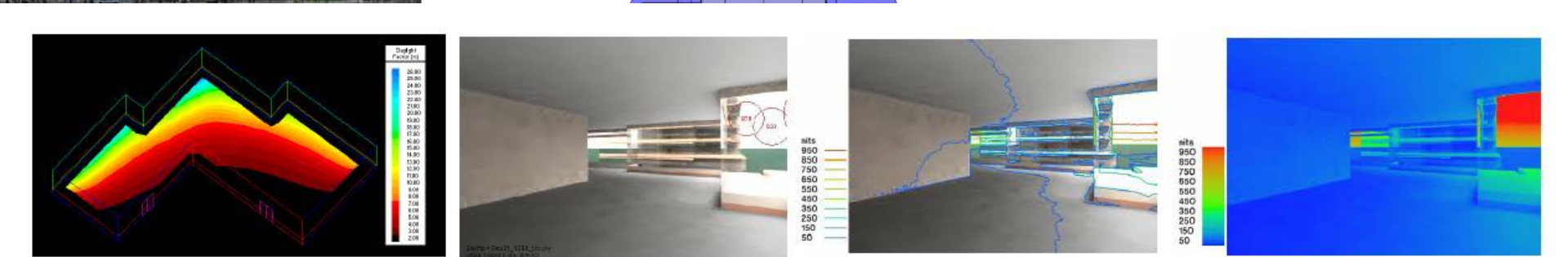
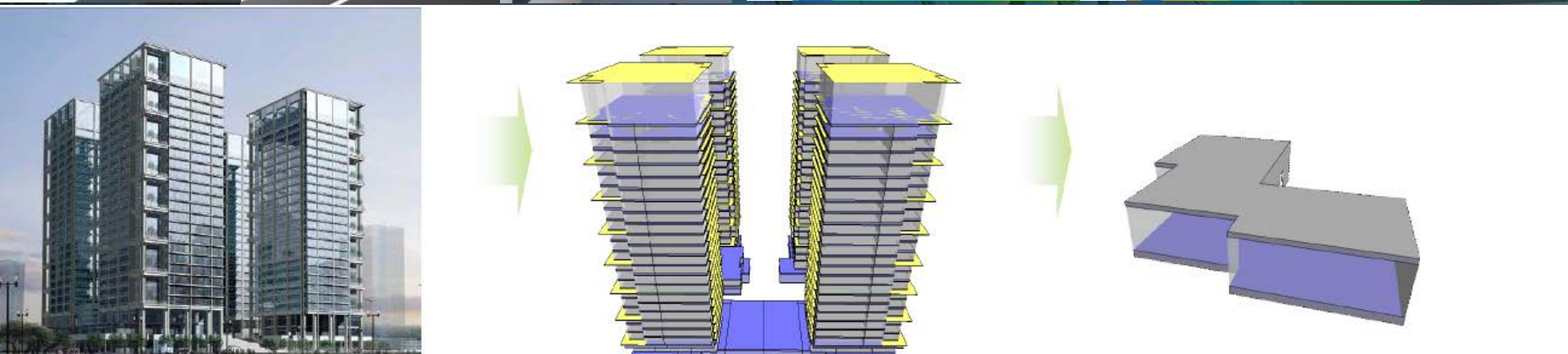
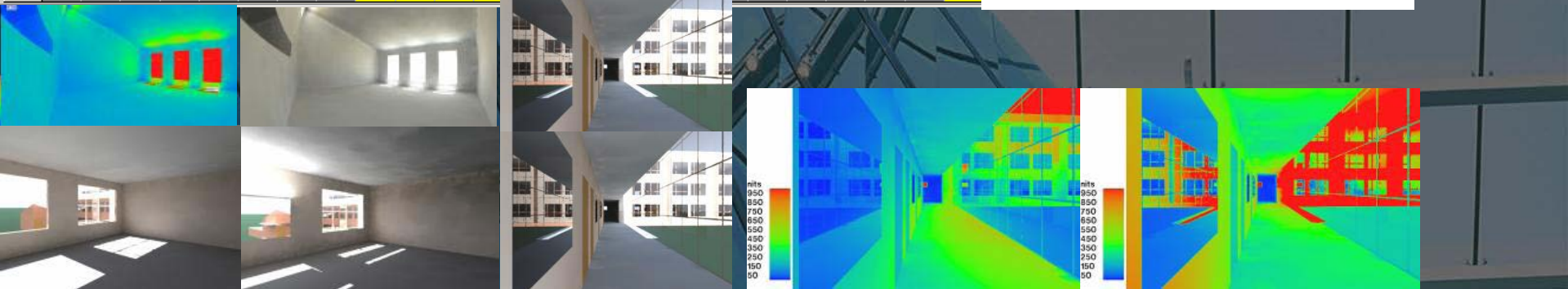
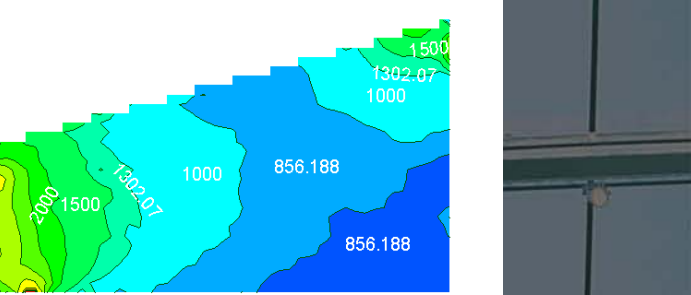
Unsatisfactory sightlines

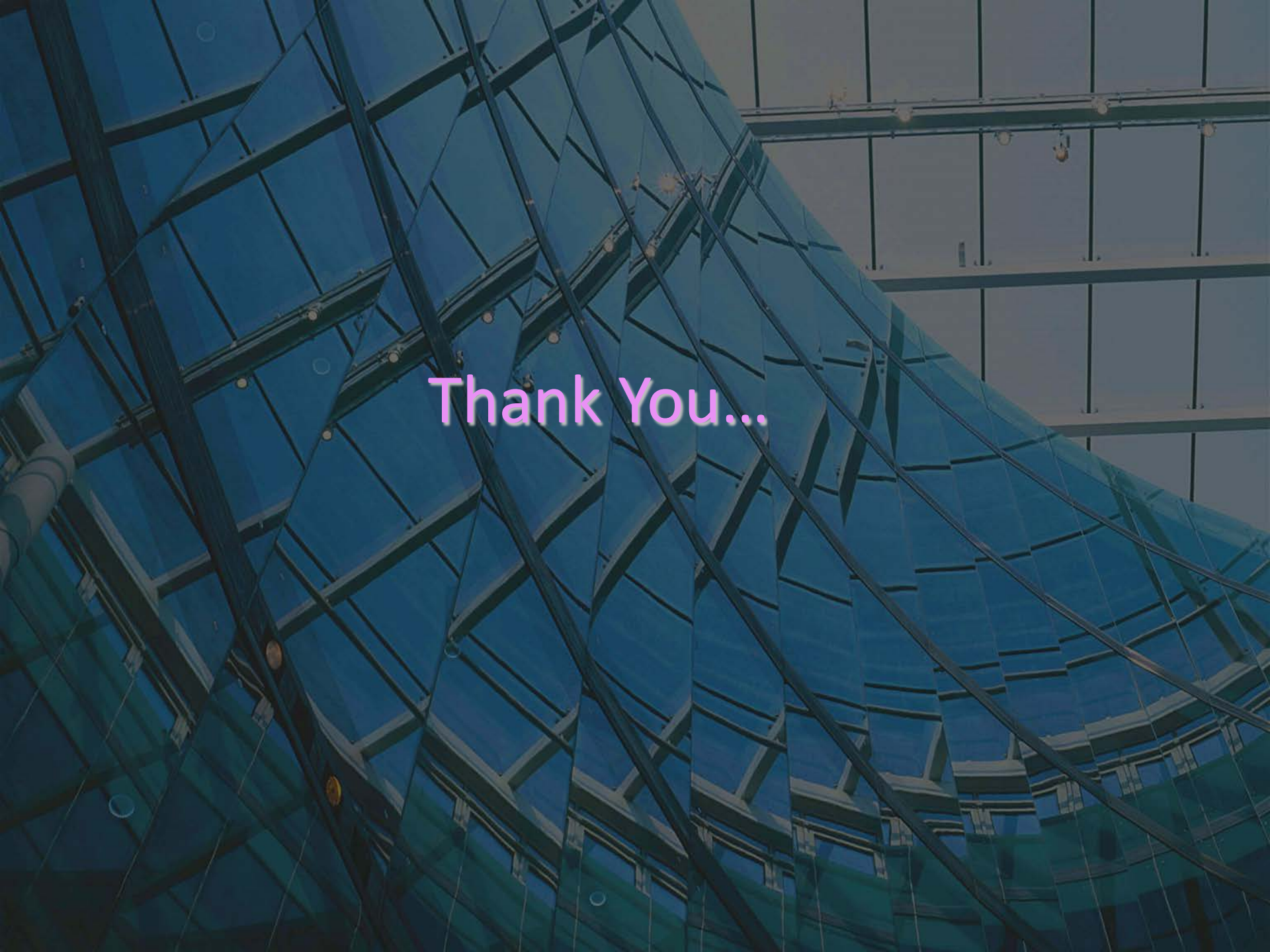


Satisfactory sightlines

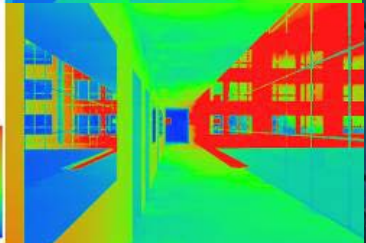
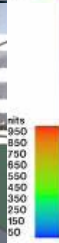
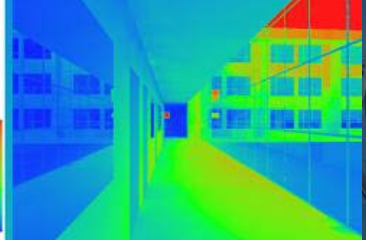
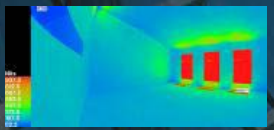
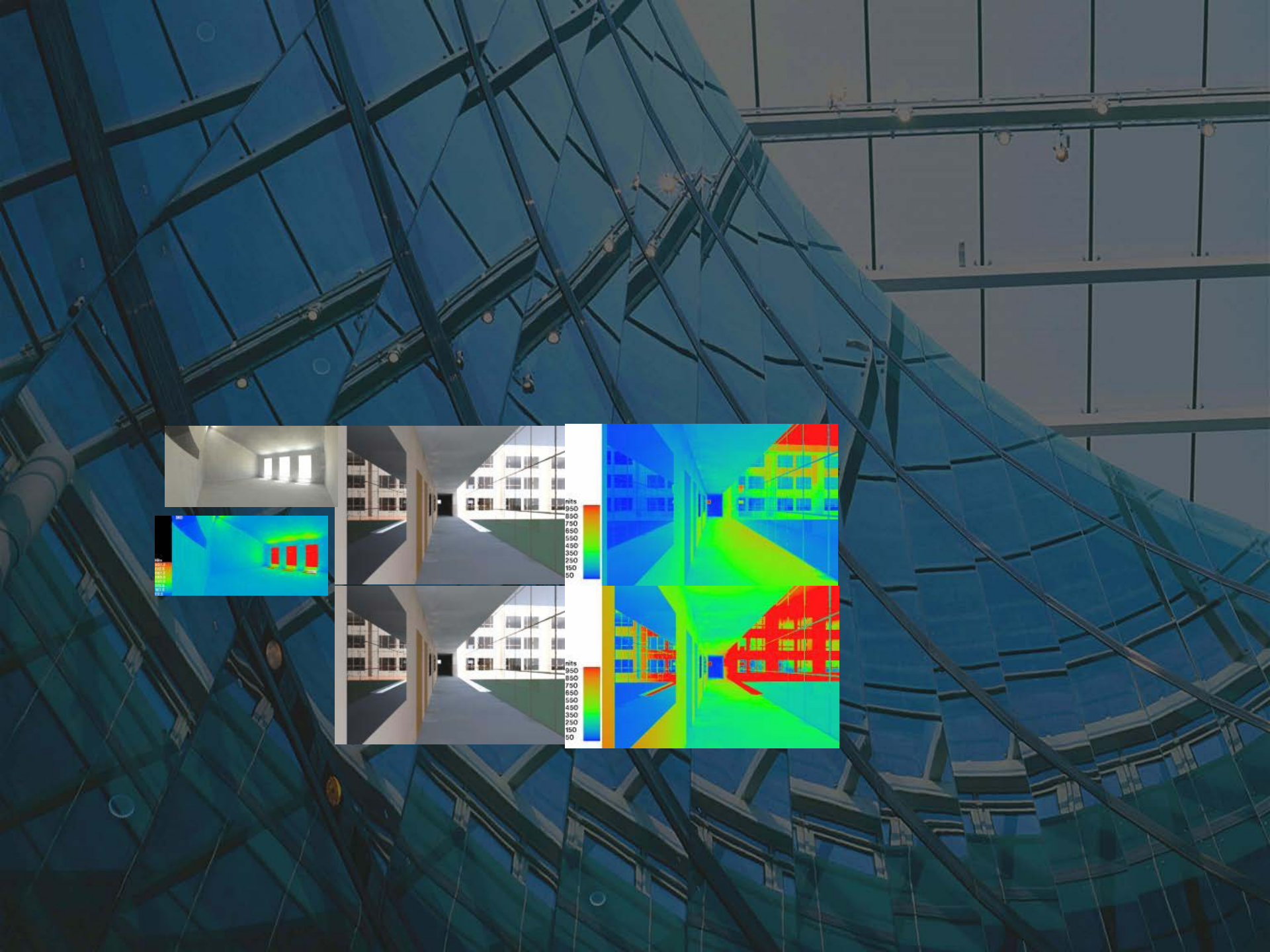
SIGHTLINE STUDIES

Month	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	
Jan									100.0	99.7	100.0	100.0	100.0	84.6	38.8	5.2									
Feb								100.0	100.0	100.0	100.0	100.0	100.0	98.7	73.9	32.7	3.0								
Mar							100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	91.5	60.4	25.7								
Apr					0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.0	84.0	51.3	0.0							
May					0.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	92.9	0.0	0.0	0.0						
Jun			0.0	0.0	0.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.5	0.0	0.0	0.0	0.0					
Jul			0.0	0.0	0.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.3	0.0	0.0	0.0	0.0	0.0				
Aug			0.0	0.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	90.2	64.8	0.0	0.0						
Sep			0.0	0.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	92.2	64.0	30.8	0.0							
Oct			0.0	0.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	95.0	63.7	26.7									
Nov			0.0	0.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	77.0	31.7	1.8									
Dec			0.0	0.0	0.0	100.0	100.0	100.0	100.0	95.1	93.6	100.0	100.0	77.0	31.7	1.8									71.82

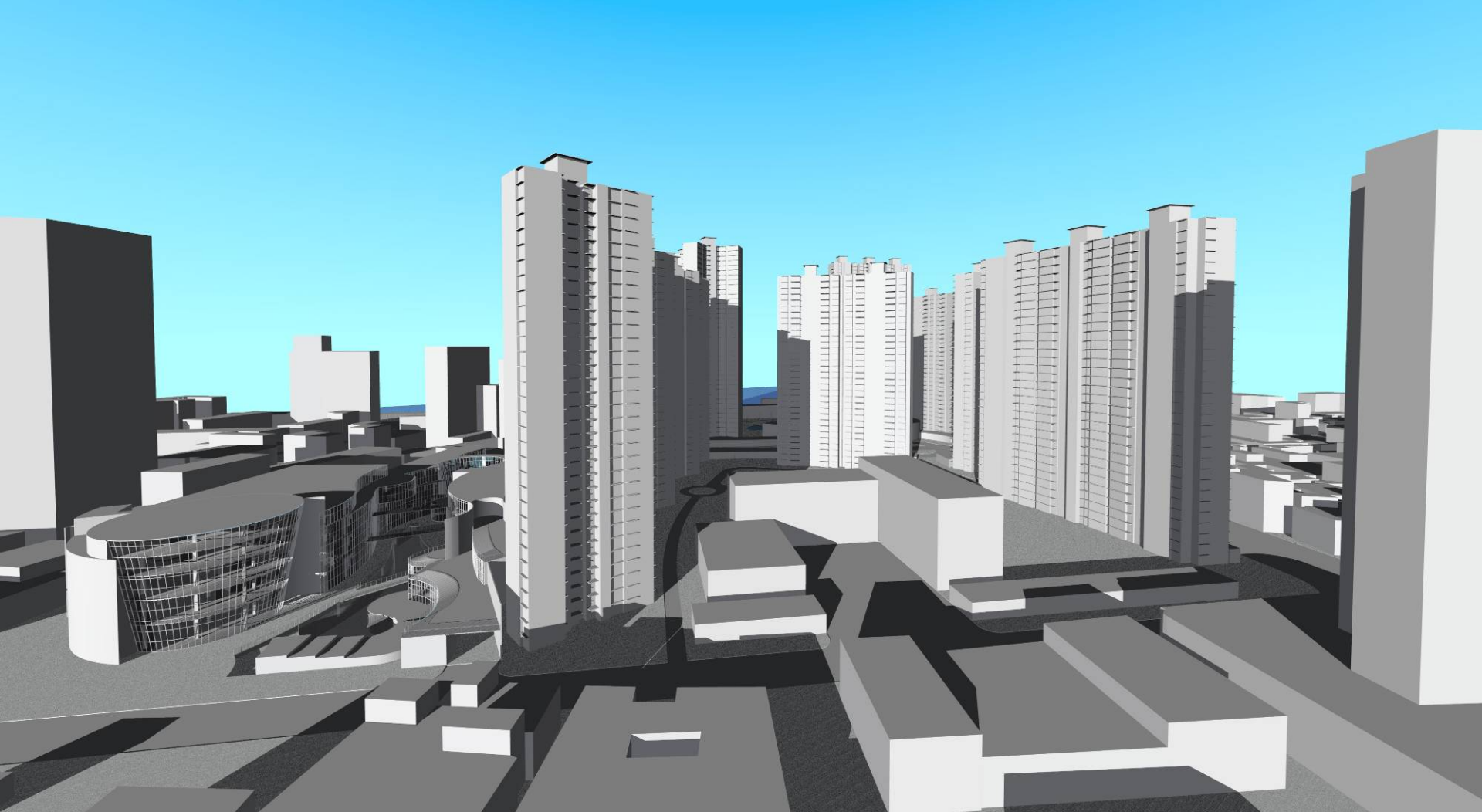




Thank You...



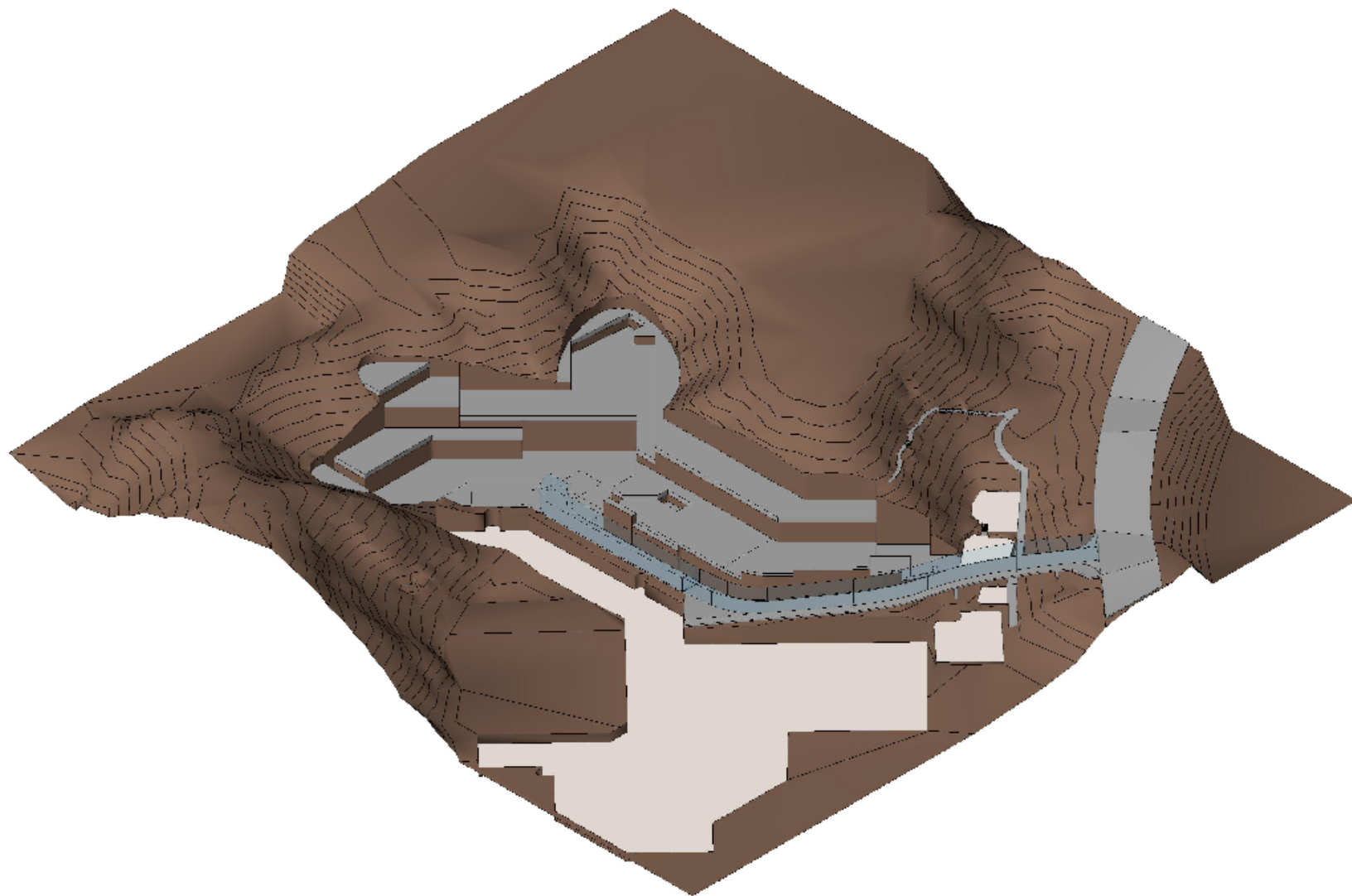




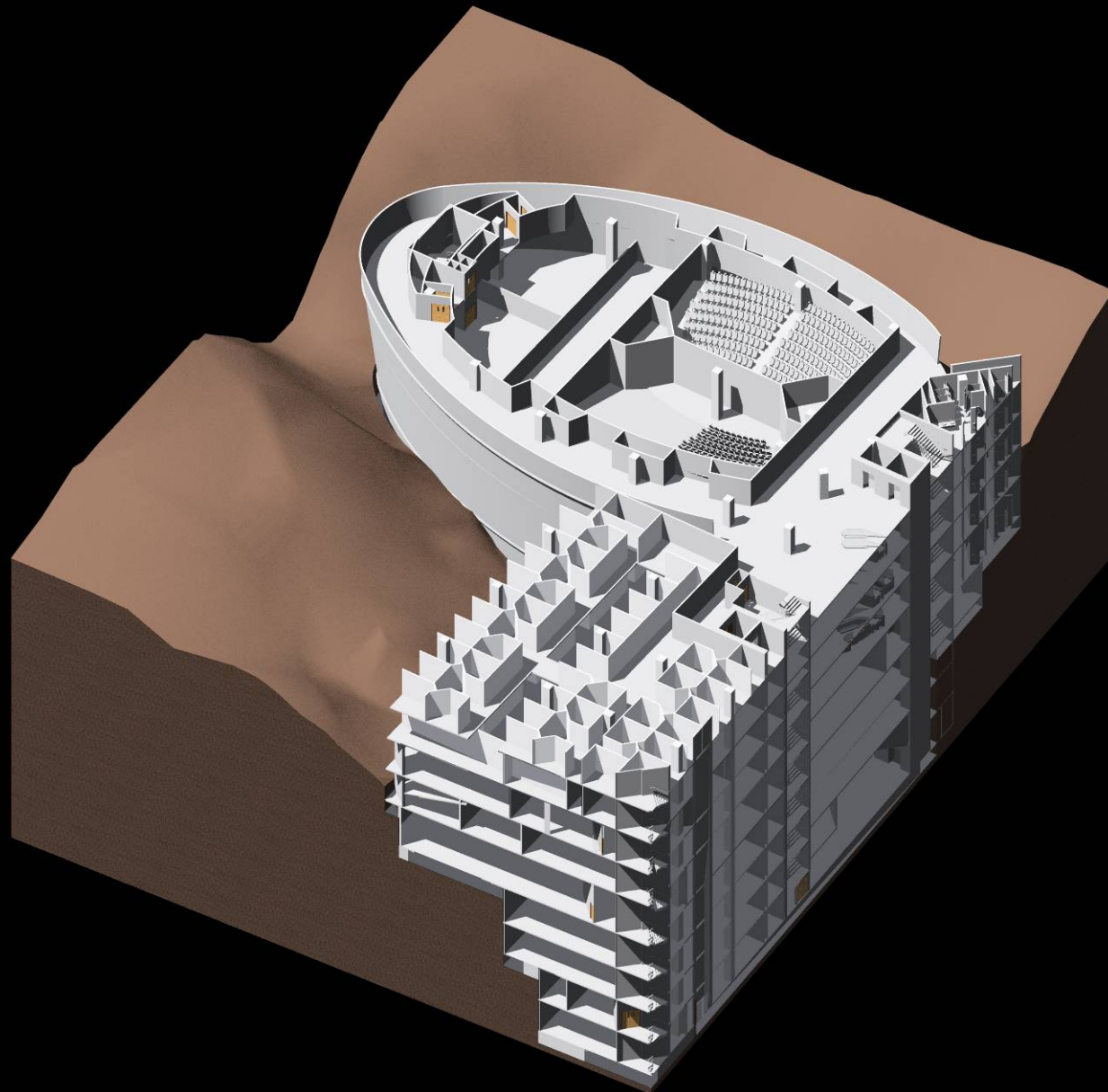
BUILDING IN CONTEXT

BUILDING IN GOOGLE EARTH





TOPOGRAPHY HANDLING



BUILDING IN SITE CONTEXT

VISUALIZATION & DRAWING PRODUCTION

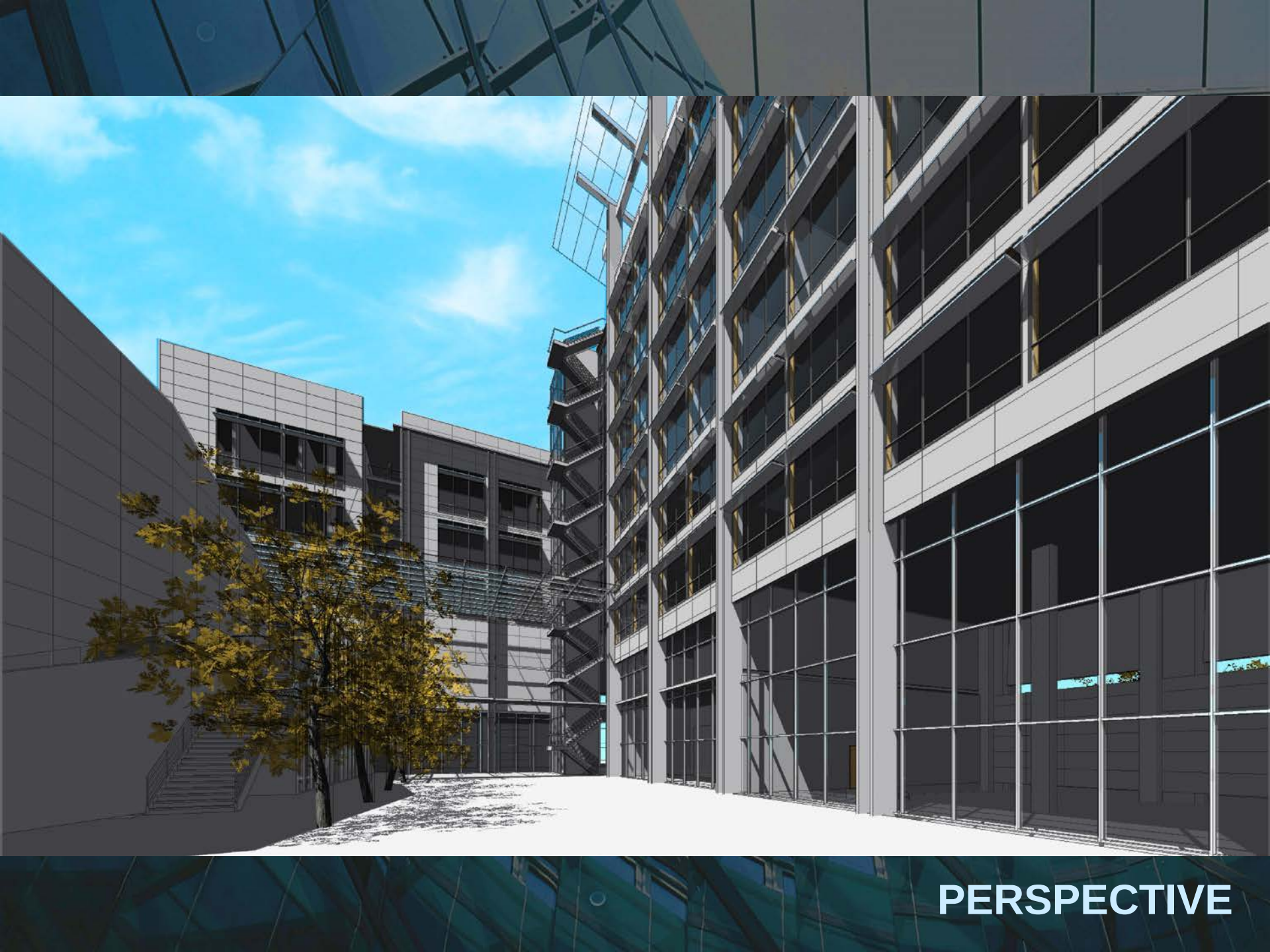


VISUALIZATION & DRAWING PRODUCTION



VISUALIZATION & PRODUCTION

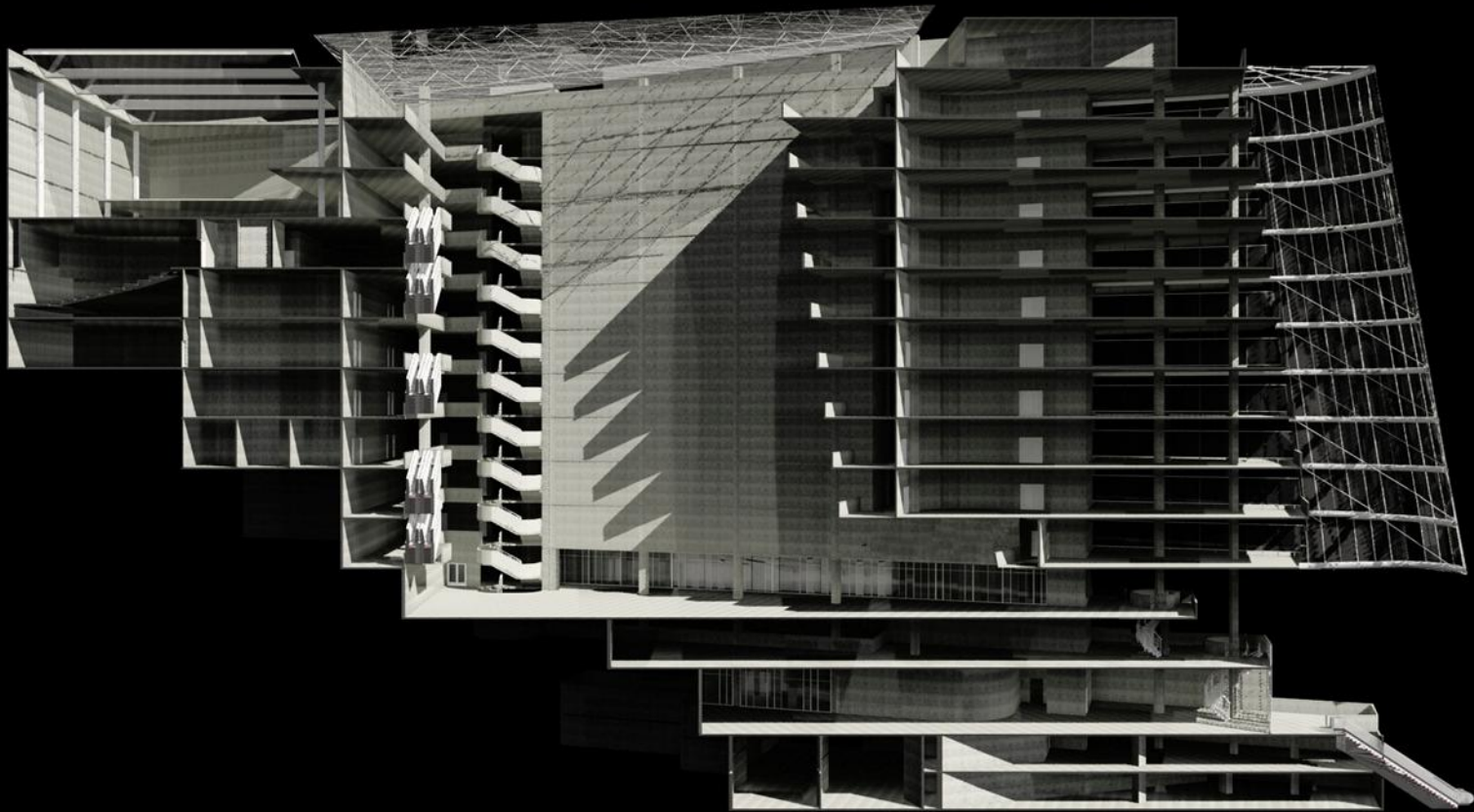




PERSPECTIVE



PERSPECTIVE



CUT AWAY PERSPECTIVE

VISUALIZATION & PRODUCTION



VISUALIZATION & PRODUCTION



VISUALIZATION & PRODUCTION

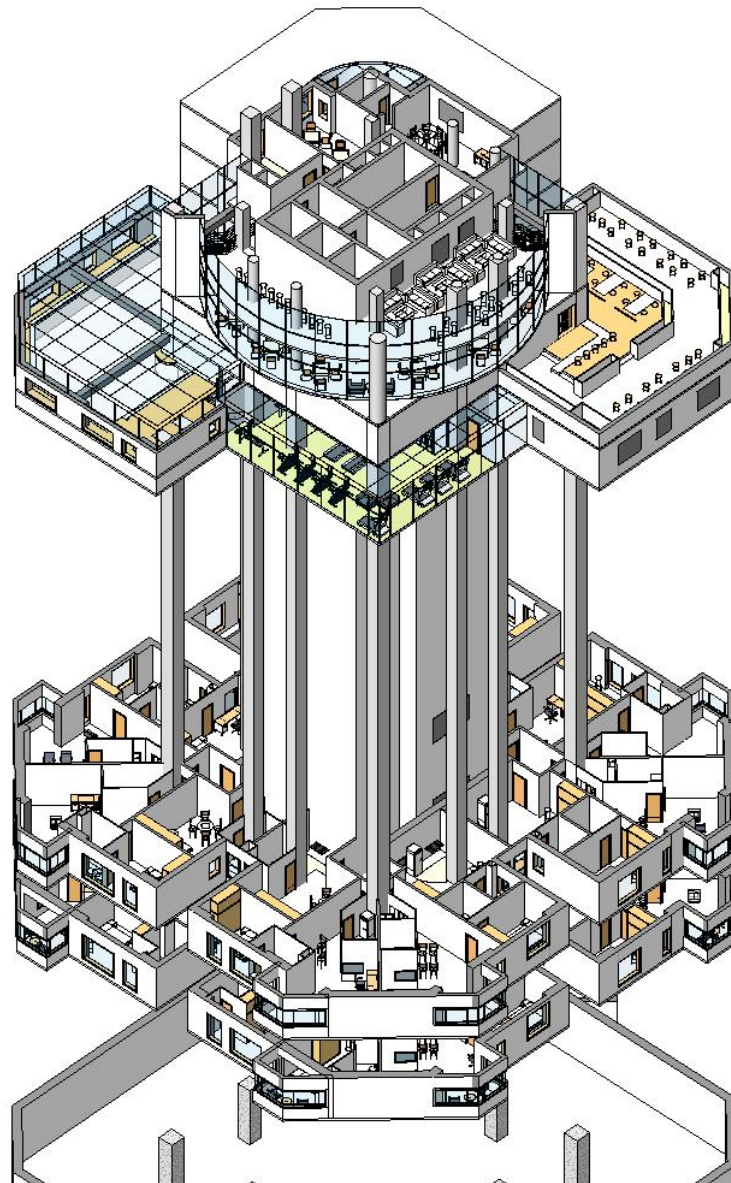




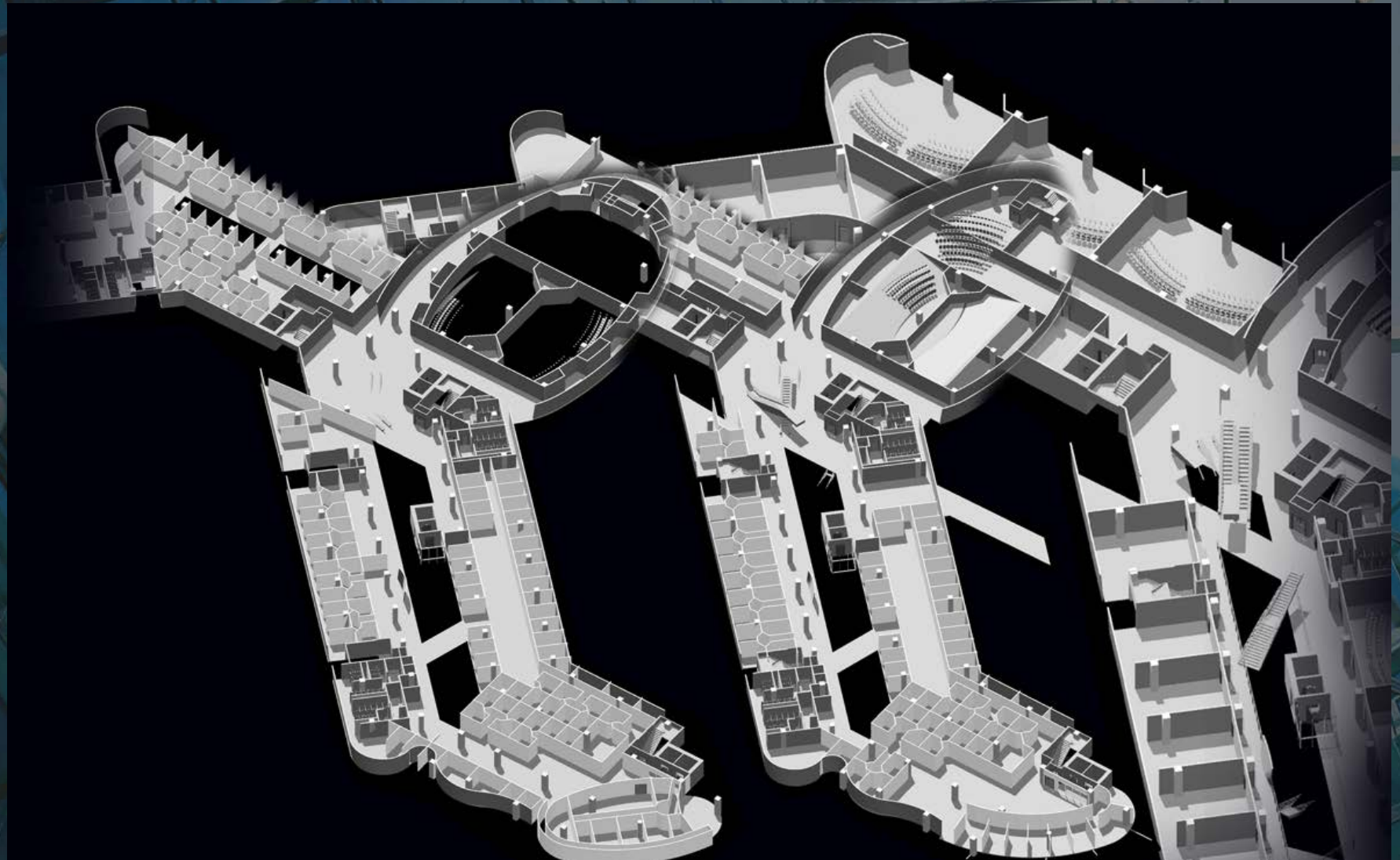
VISUALIZATION



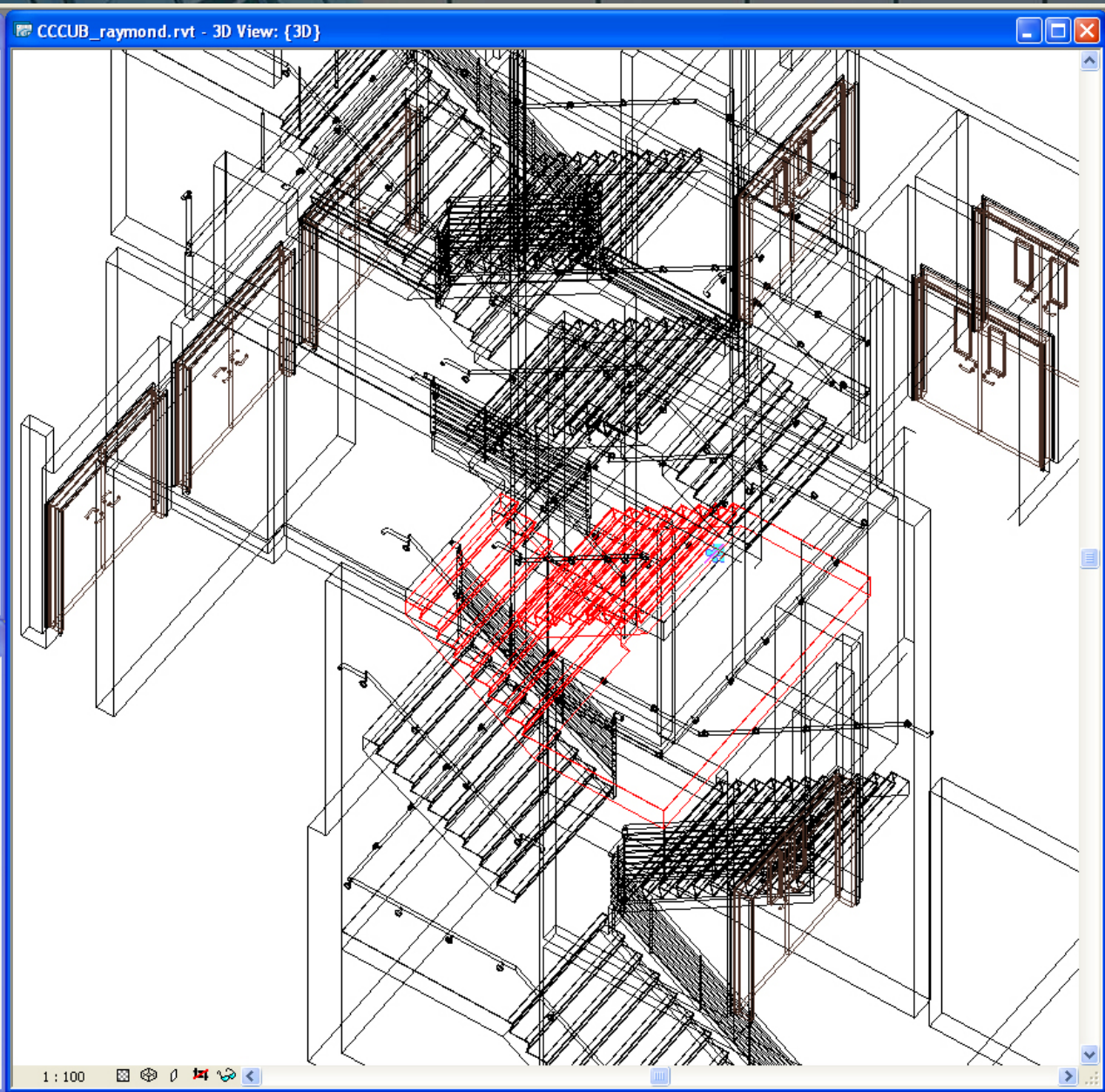
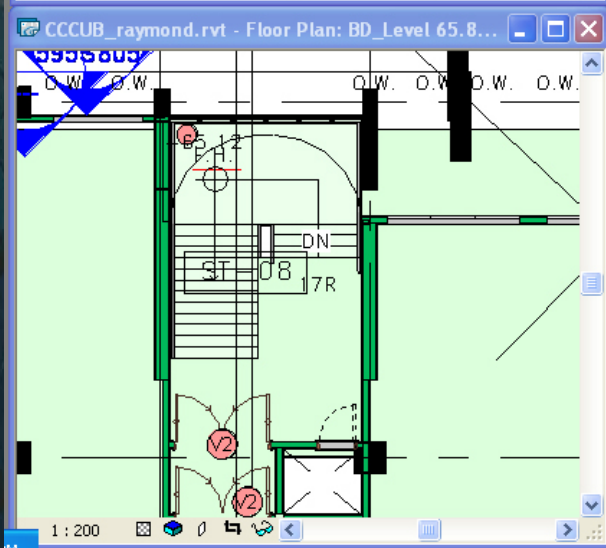
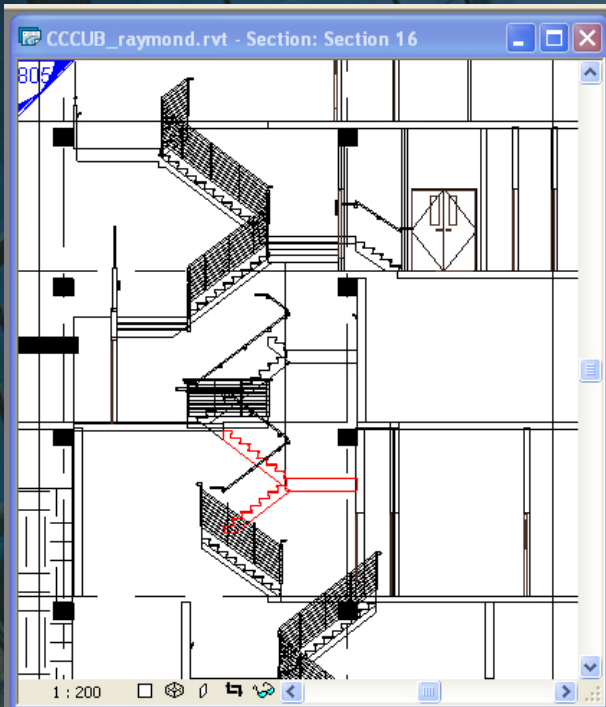
FAÇADE PANEL DESIGN



VERTICAL CO-ORDINATION



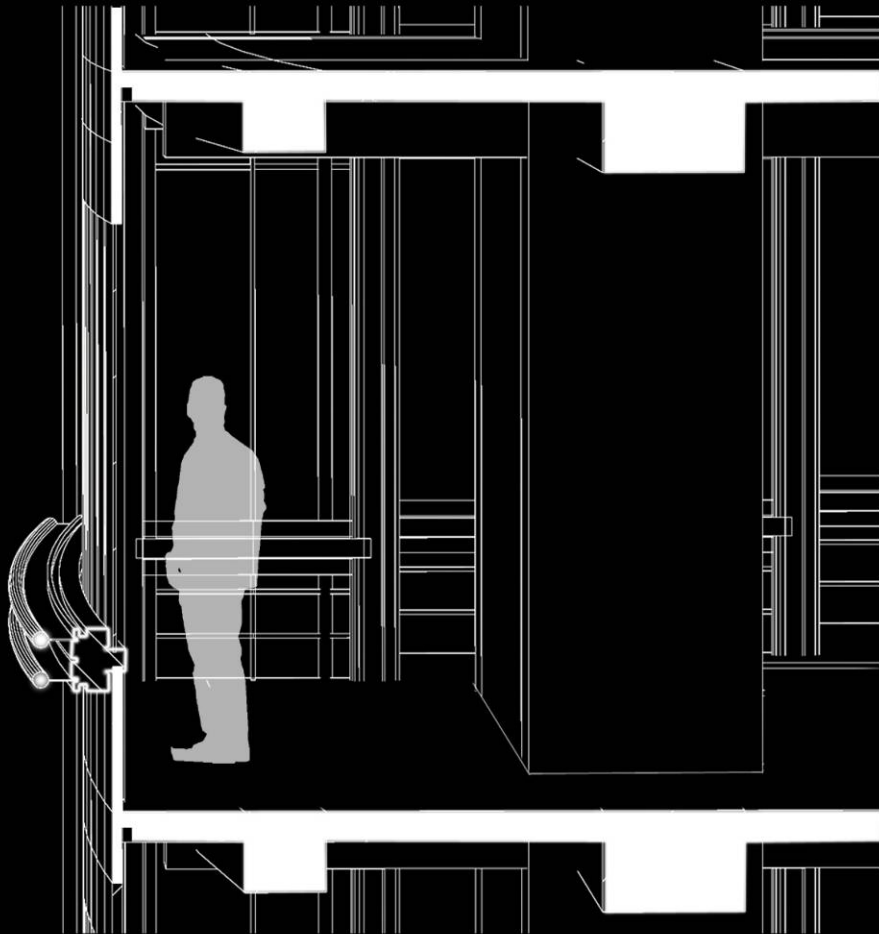
DIFFERENT DESIGN APPROACH



VERTICAL CO-ORDINATION



FAÇADE DESIGN and CO-ORDINATION

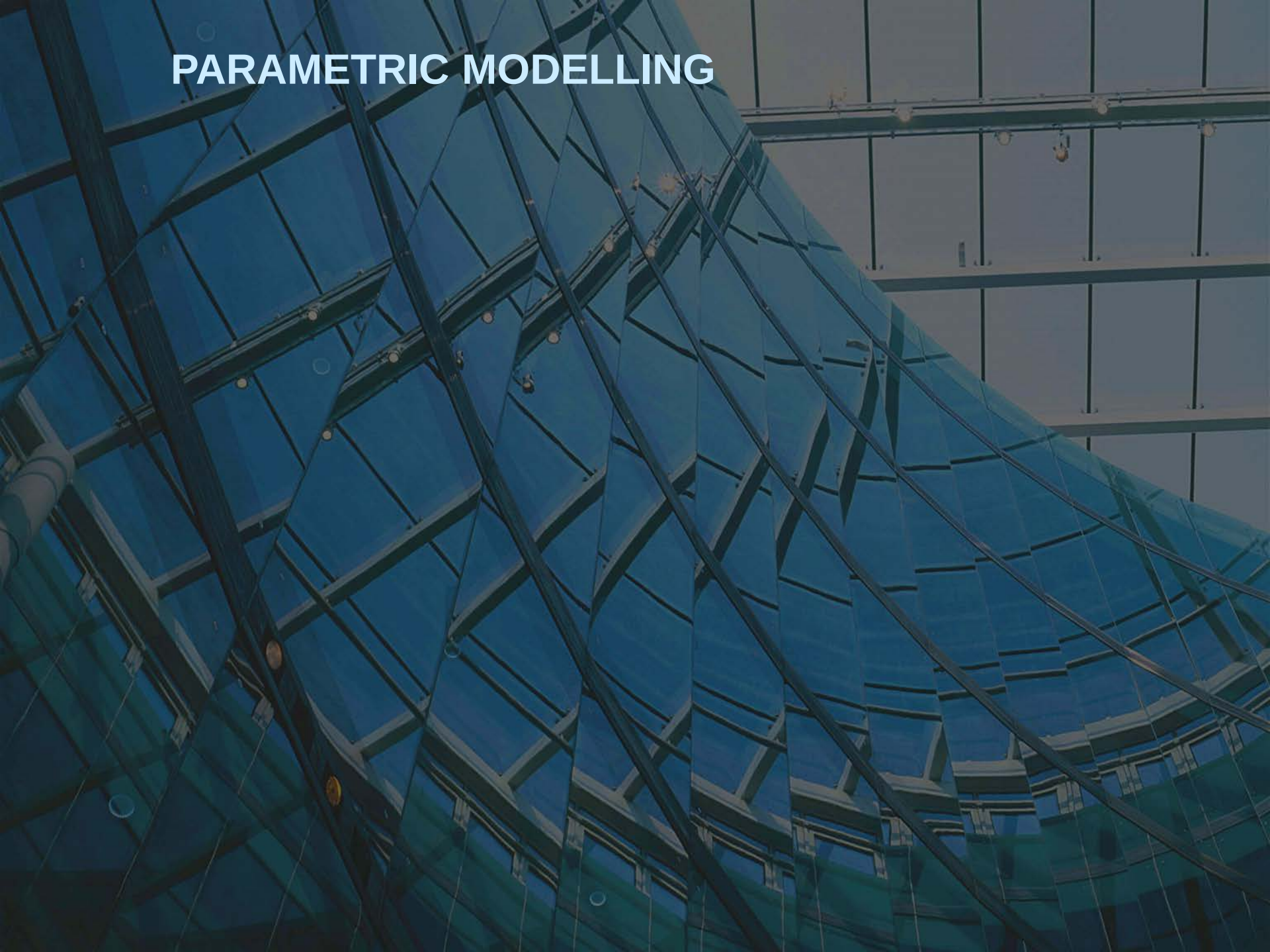


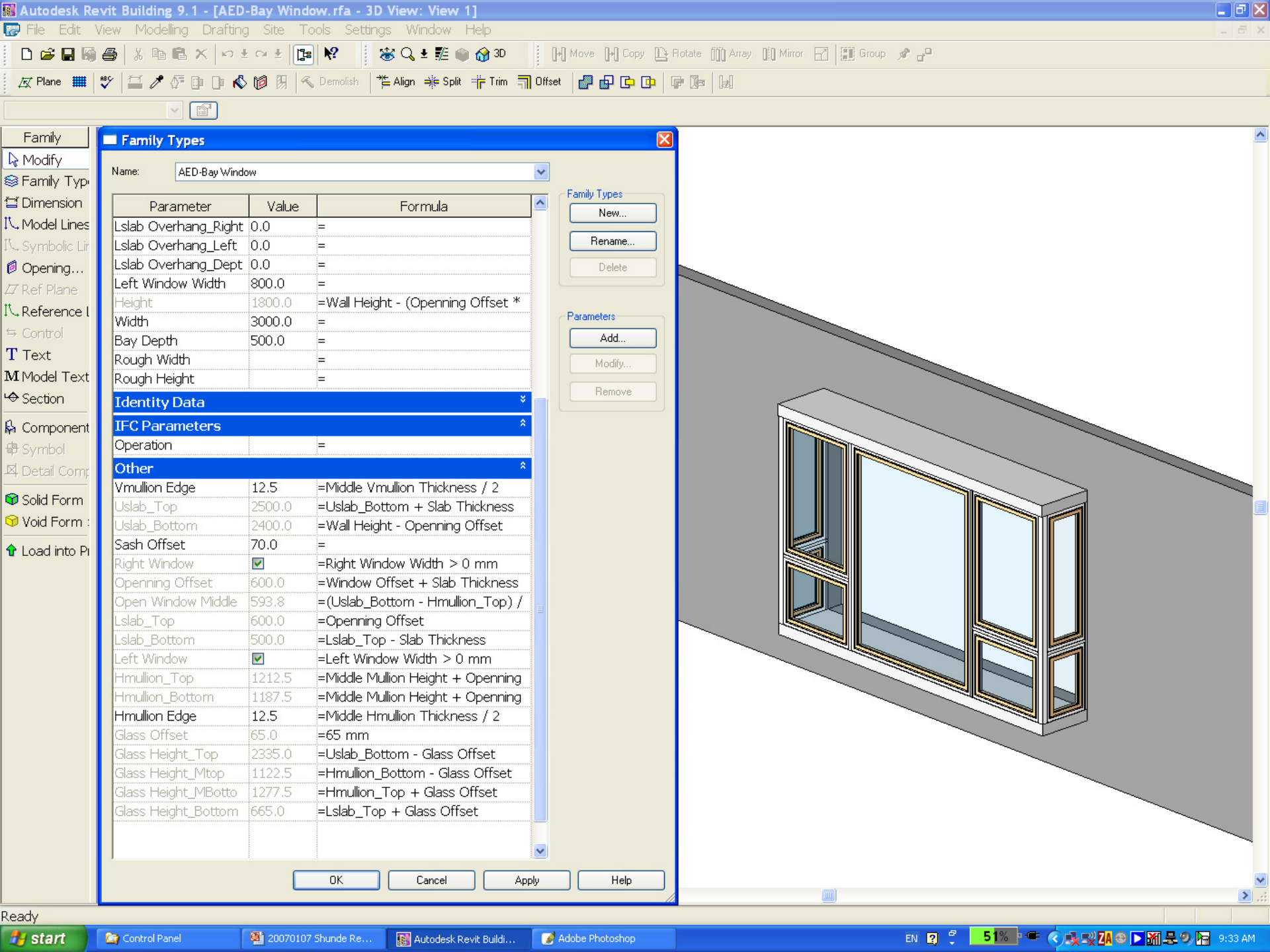
FAÇADE DESIGN and CO-ORDINATION

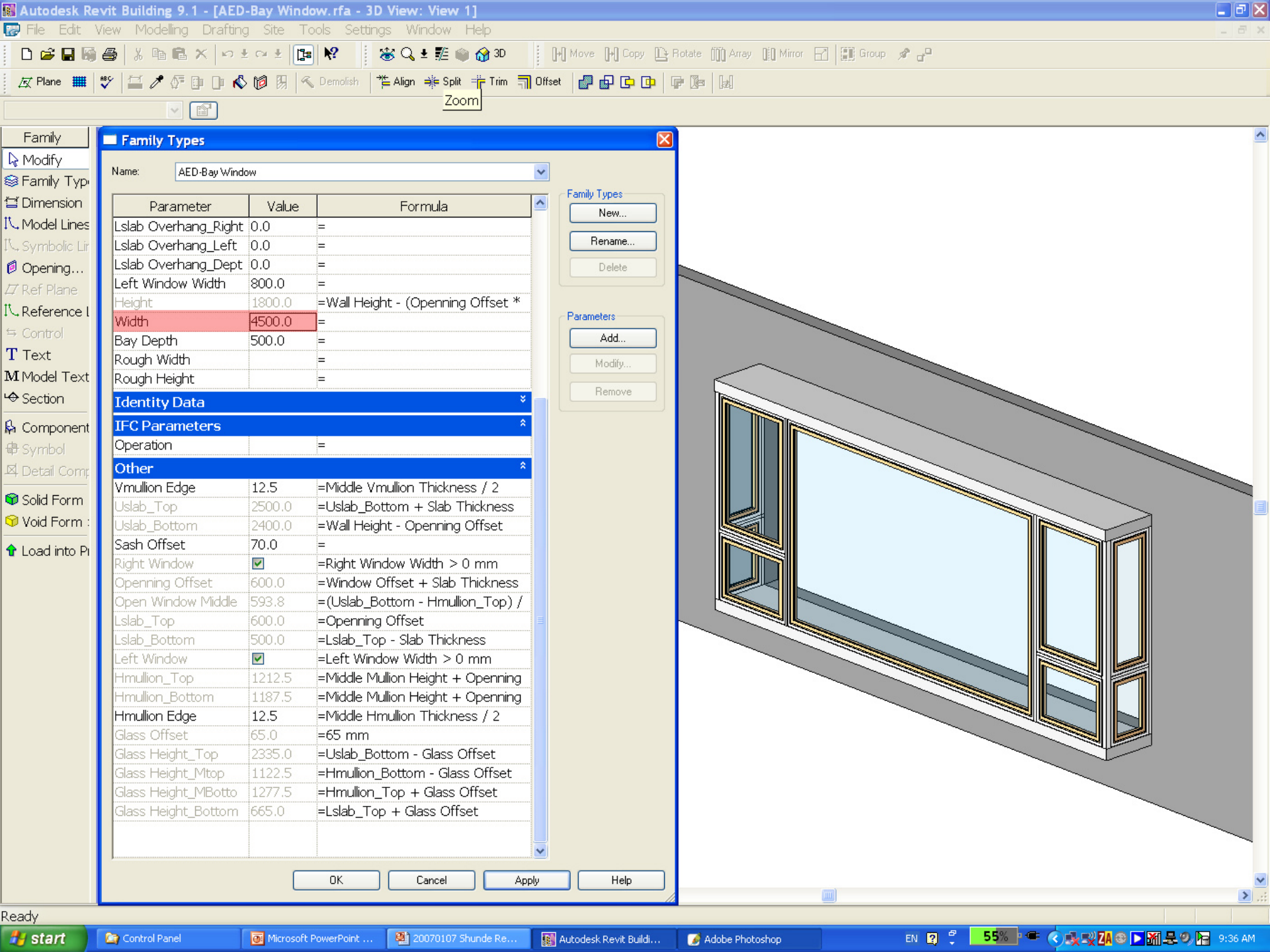


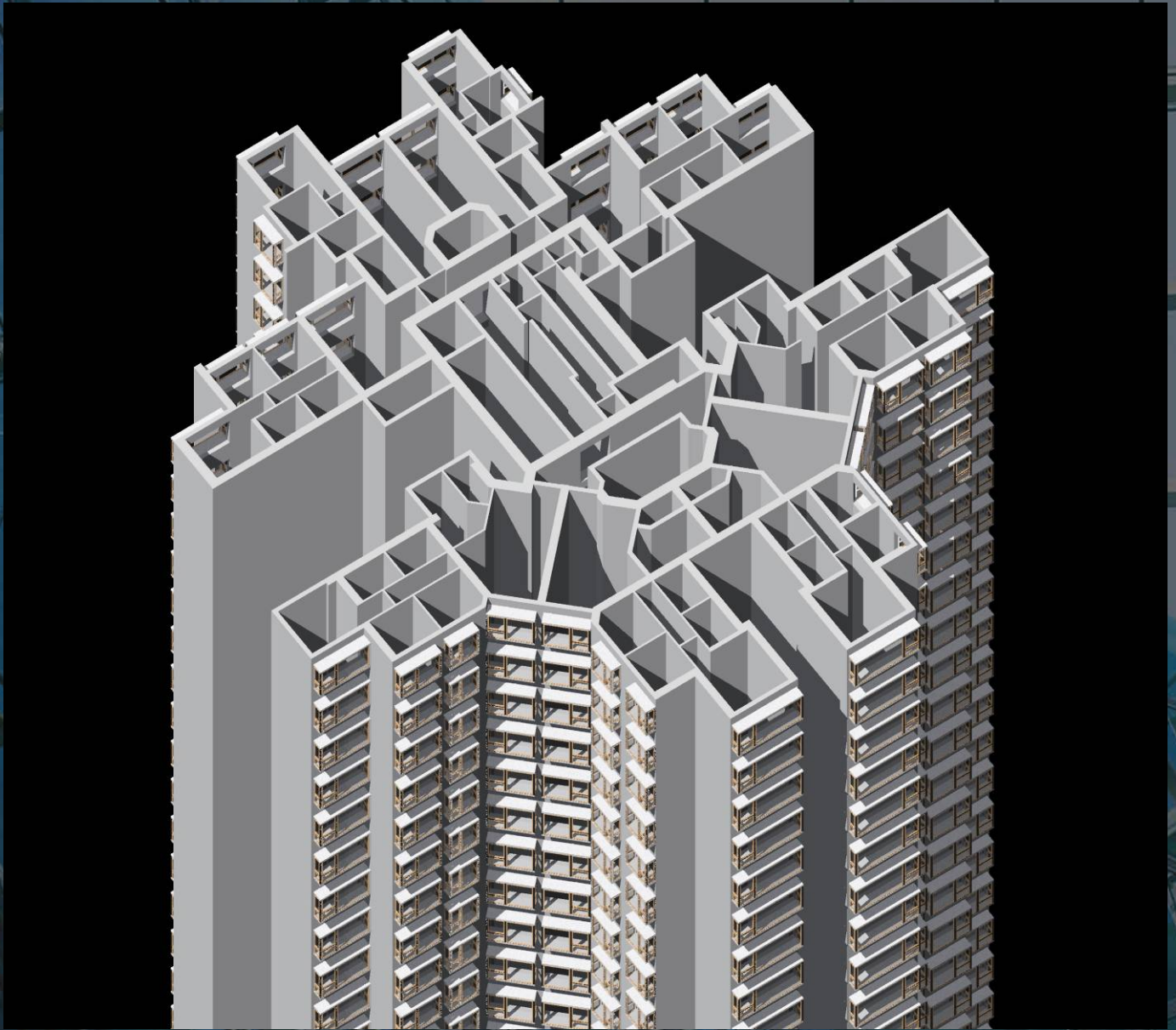
REPETITIONS vs VARIATIONS

PARAMETRIC MODELLING



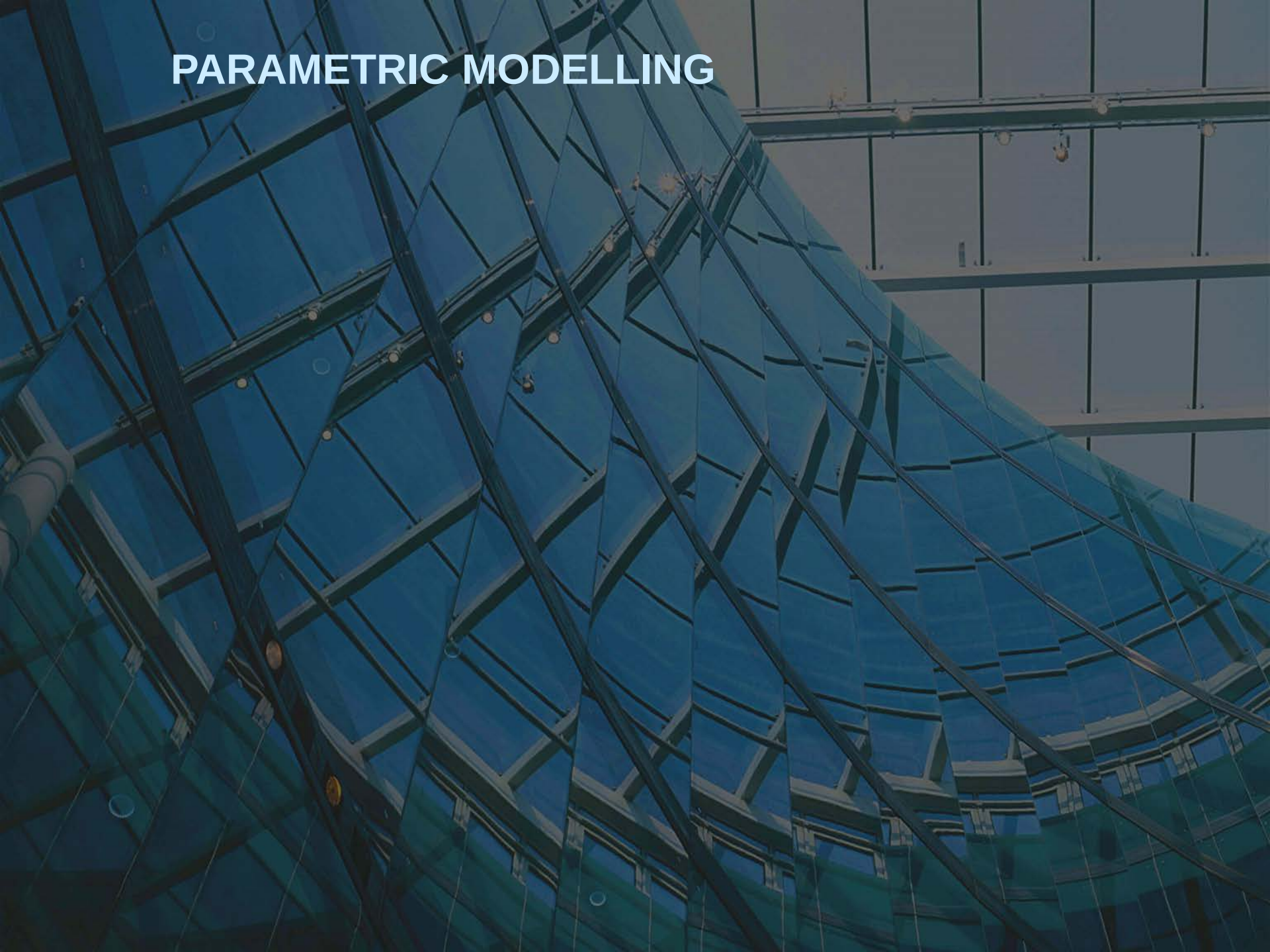


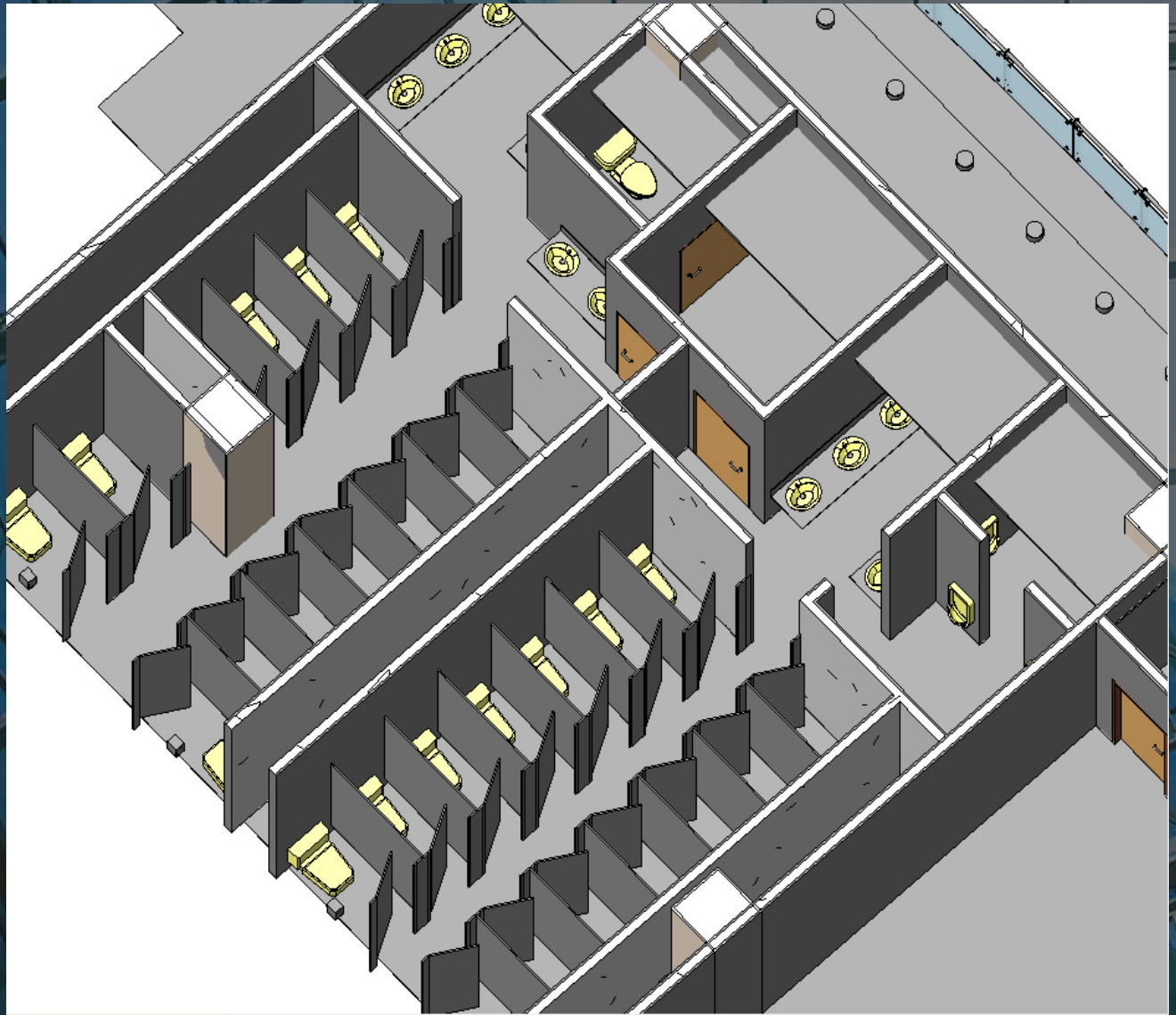




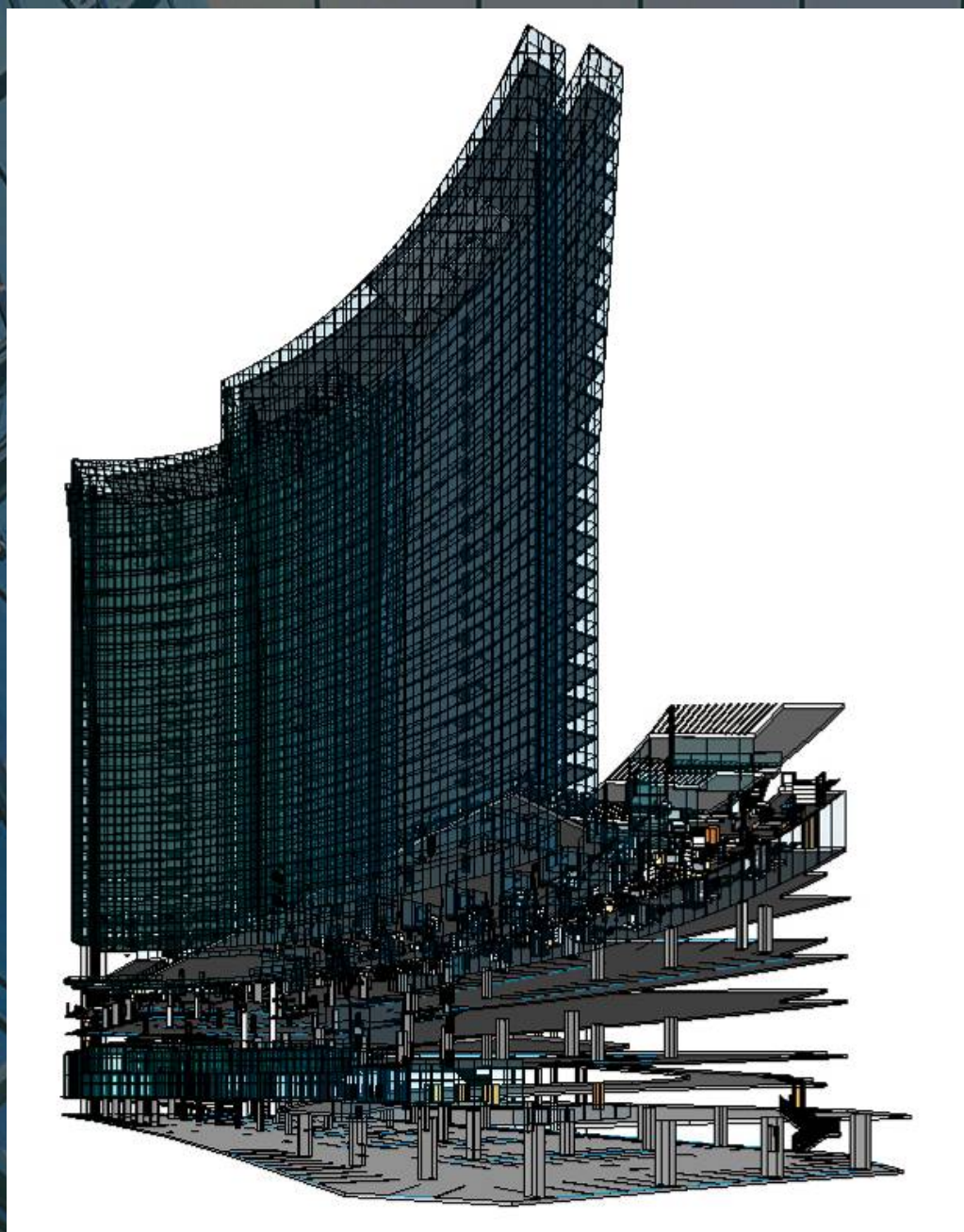
REPETITIONS vs VARIATIONS

PARAMETRIC MODELLING

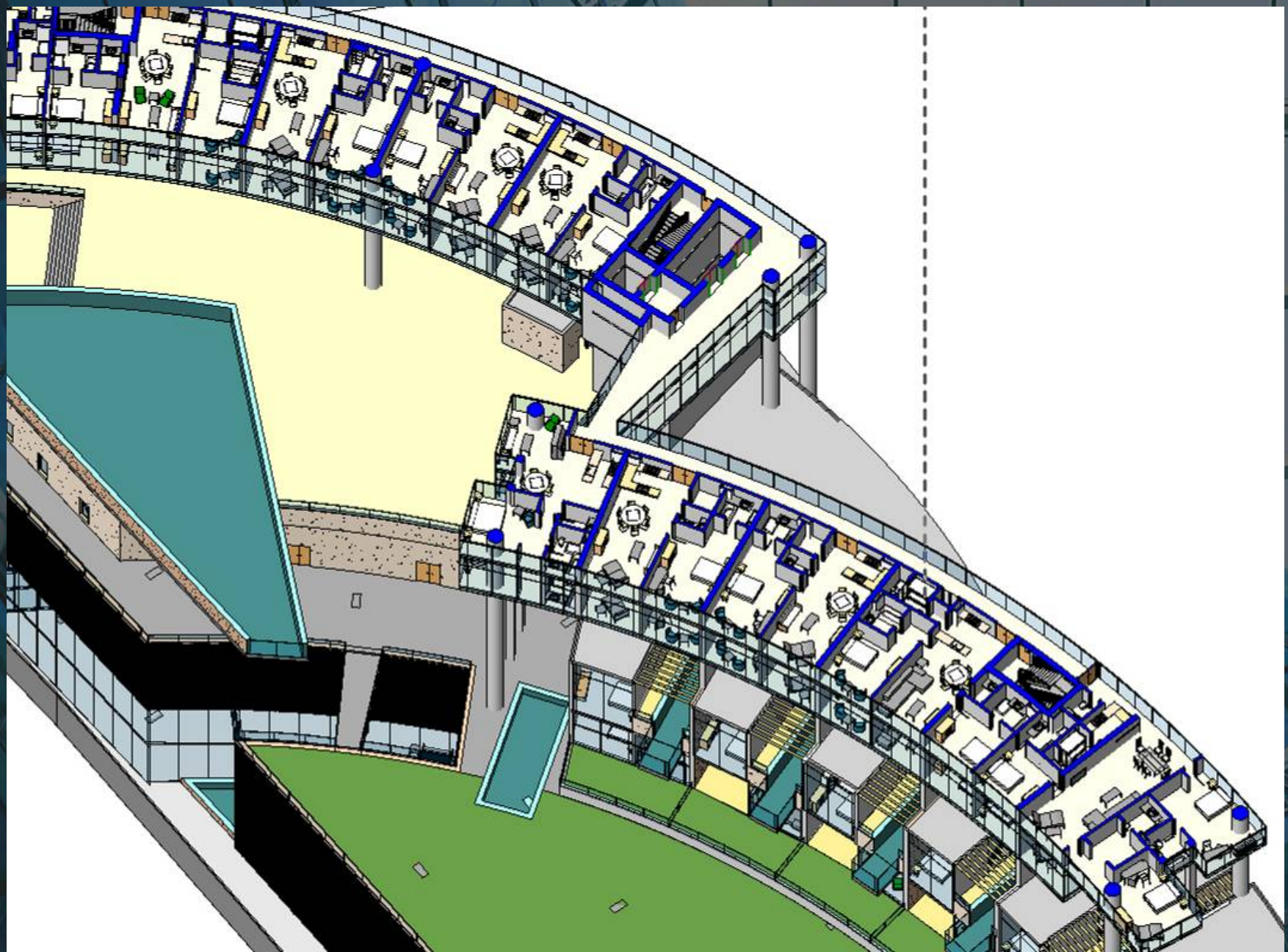




CREATIVE TOOLS



HORIZONTAL REPETITION / MODULARIZATION



MODULAR DESIGN

Use of Building Information Modeling (BIM)

1. Design visualization

2. Drawing Productions 図面製作

3. Services Co-ordination and Clash detection with other disciplines

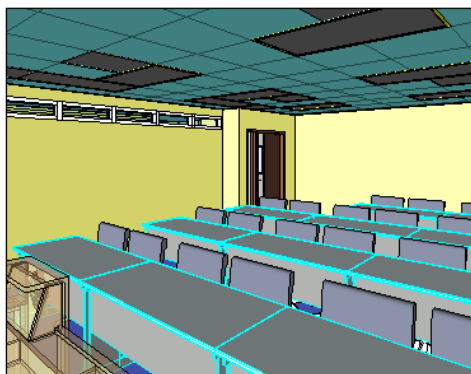
4. Quantity taking and preparation of Tender Document

5. Automated Statutory Submission

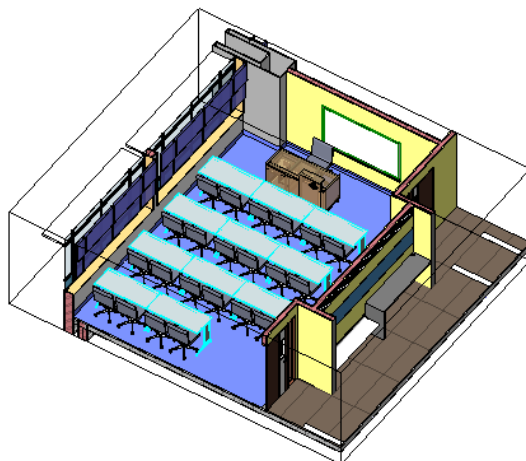
6. Scientific analysis of different environmental aspects

7. Supply Chain Integration with the manufacturing and production

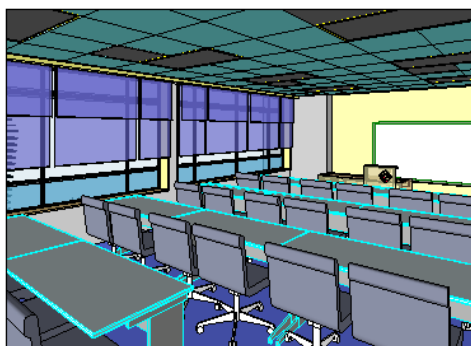
8. Complex Geometry



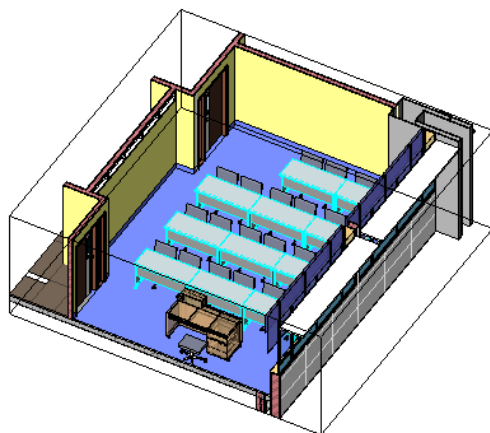
6 行政人員培訓室立體示意圖2



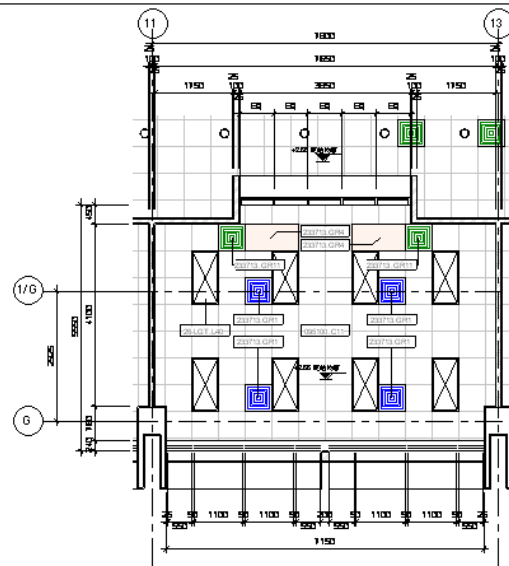
4 行政人員培訓室立體剖面示意圖2



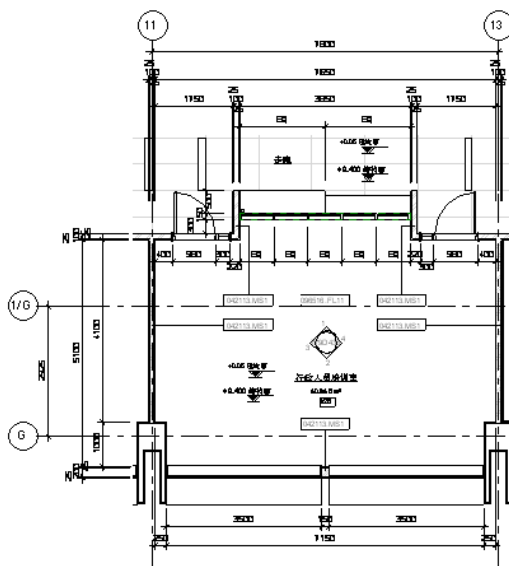
5 行政人員培訓室立體示意圖1



3 行政人員培訓室立體剖面示意圖1

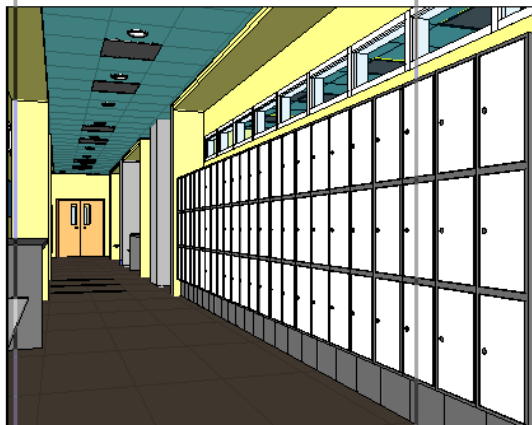


2 行政人員培訓室天花平面圖(高樓三层)1
1:50

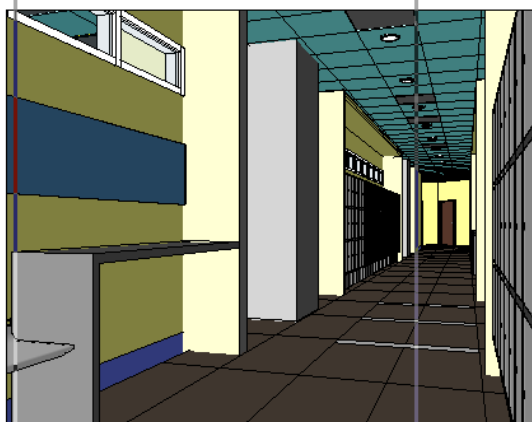


1 行政人員培訓室平面圖(高樓三层)1
1:50

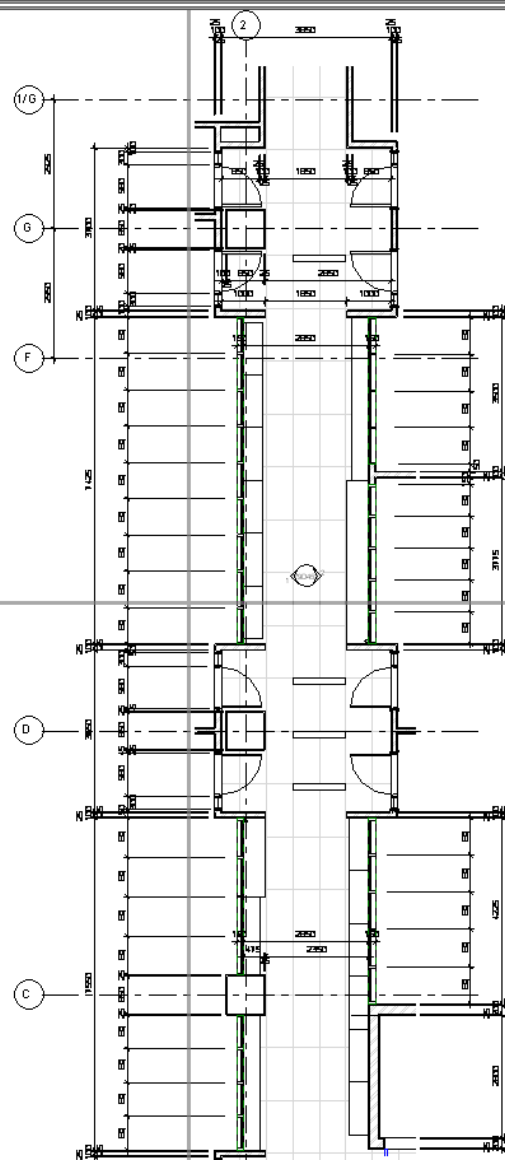
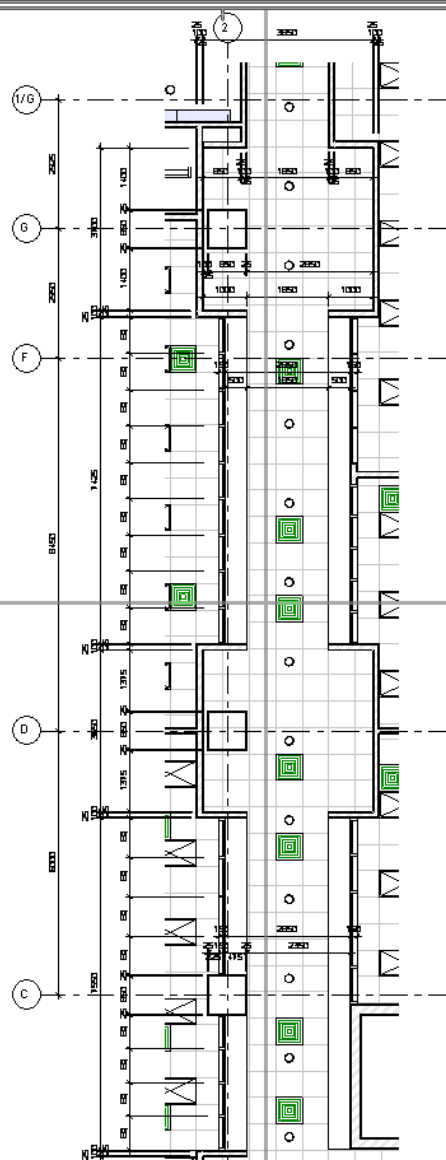
Drawing Type: S.D. SUBMISSION	
S.D. Submission No.: GOVERNMENT REFERENCE NO.	
T-221 Submission No.: GOVERNMENT REFERENCE NO.	
Author's Note:	
AUTHORIZE PERIOD S.D. SUB AREA	
Notes:	
Rev. Description	
Originator	
Drawn and Checked	
S.E.A.M.	
J. ROGER PARENTON	
G.D.	
利比 RLB Rider Levett Bucknall	
Aedas Ltd.	
The Hong Kong Polytechnic University	
Project: 香港理工大学	
Drawing: 行政人員培訓室平面圖(高樓三层)1	
Project Number: 00778	Scale: 1:50
Drawing Number: 778 0430	Rev: REV.



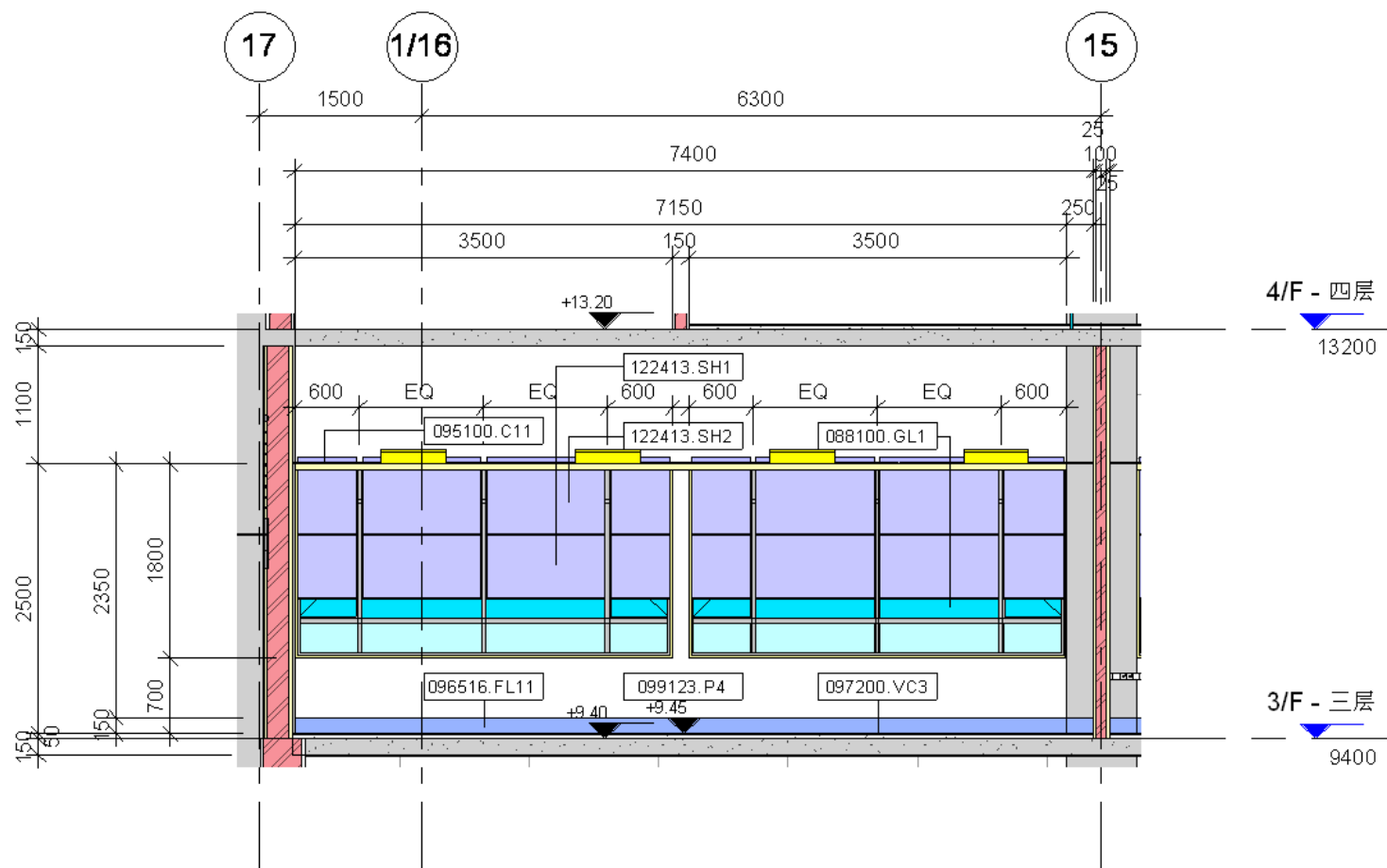
4 走廊立体示意图(低楼三至四层)2



3 走廊立体示意图(低楼三至四层)1



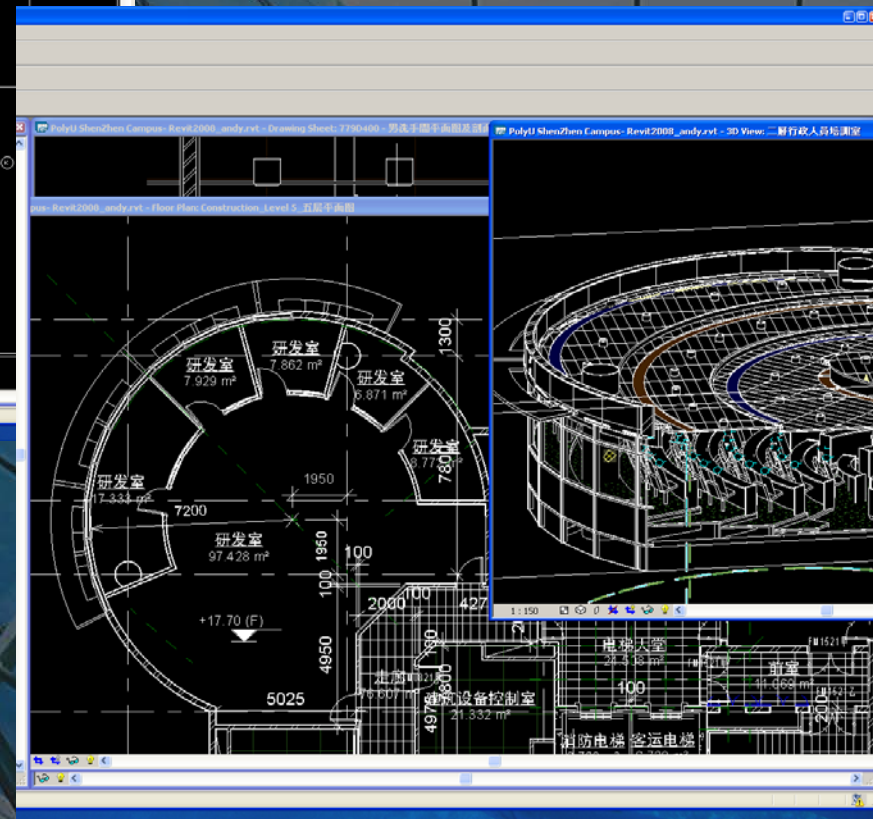
A vertical strip of various logos and brand names, including Aedas, The Hong Kong Polytechnic University, and others.



2 行政人员培训室立面图(高楼三层)6
1:50

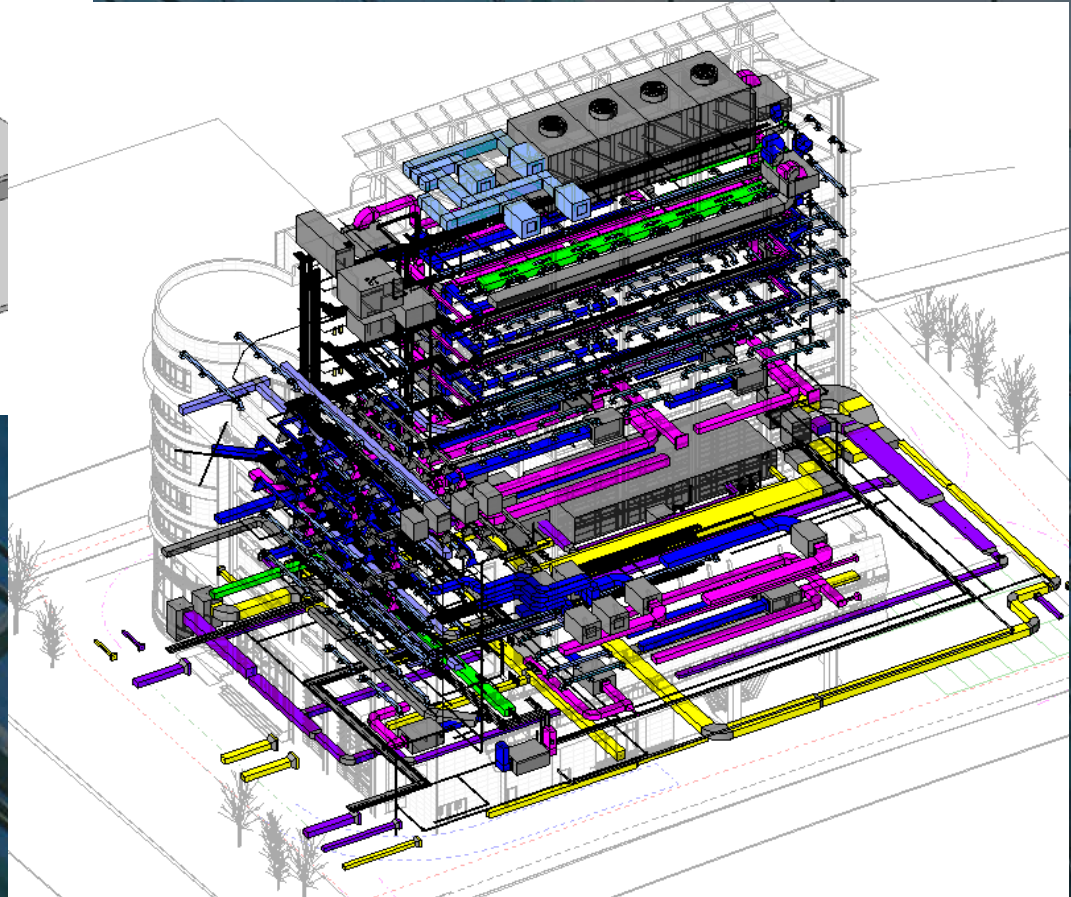
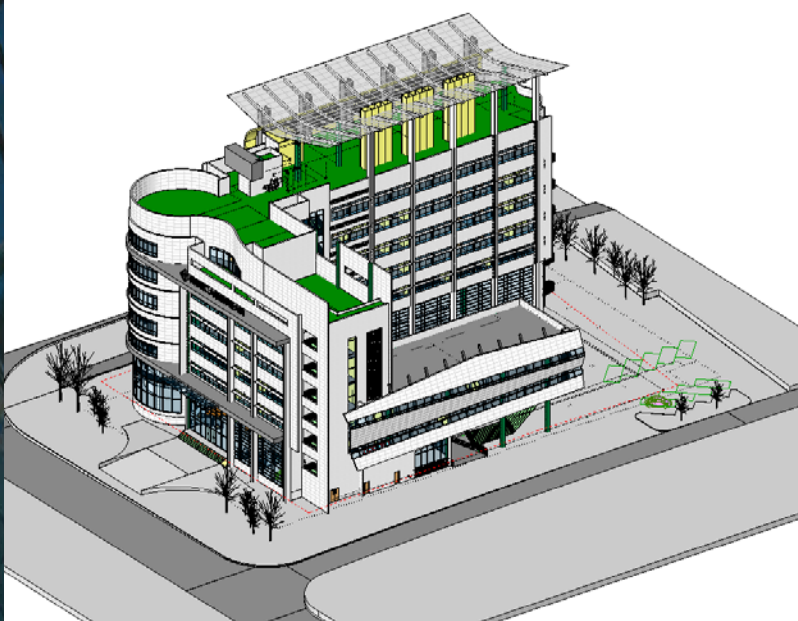
Use of Building Information Modeling (BIM)

1. Design visualization
2. Drawing Productions
- 3. Services Co-ordination and Clash detection with other disciplines**
多部門との連携と干渉チェック
4. Quantity taking and preparation of Tender Document
5. Automated Statutory Submission
6. Scientific analysis of different environmental aspects
7. Supply Chain Integration with the manufacturing and production
8. Complex Geometry

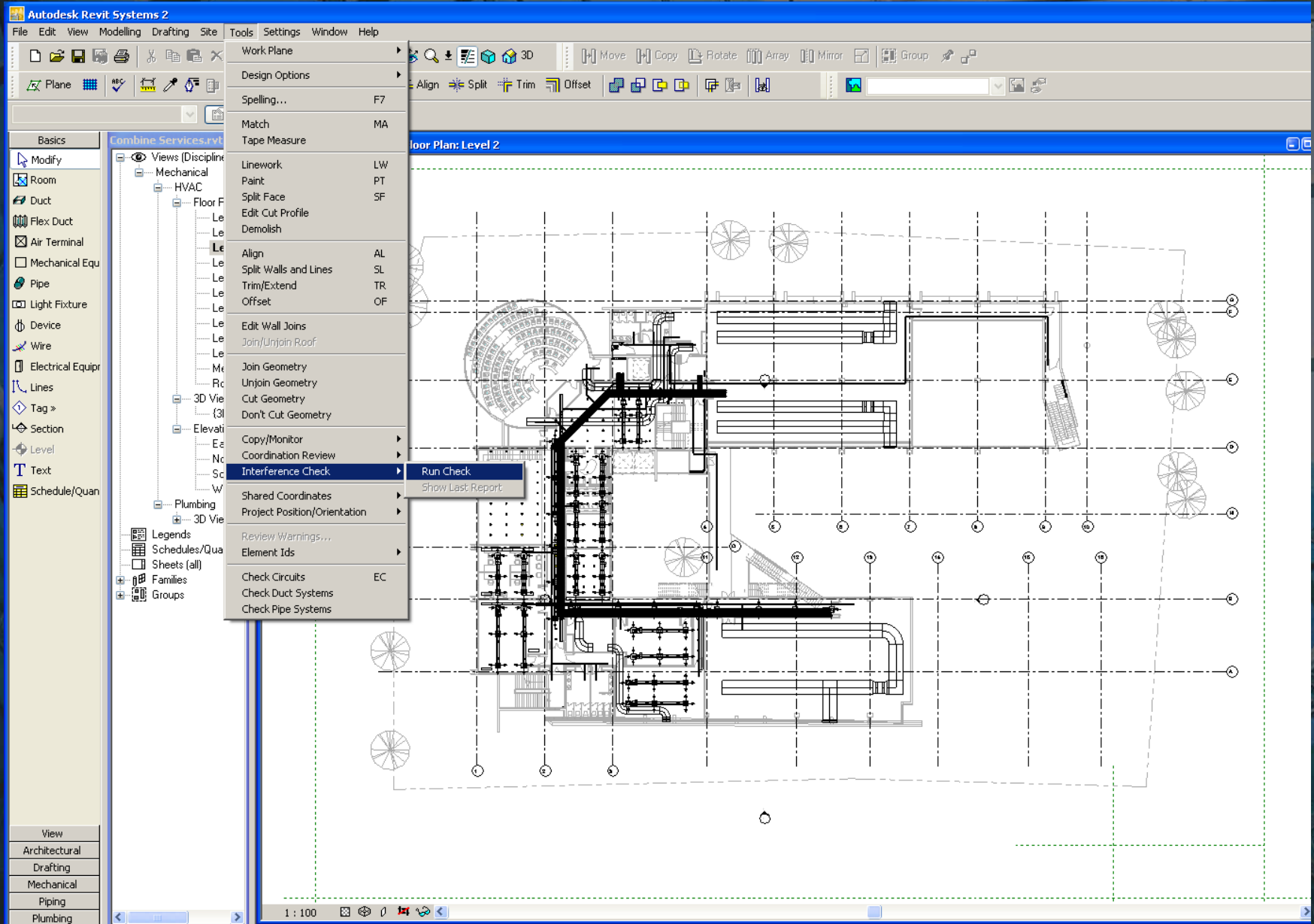


CO-ORDINATION / COLLABORATION

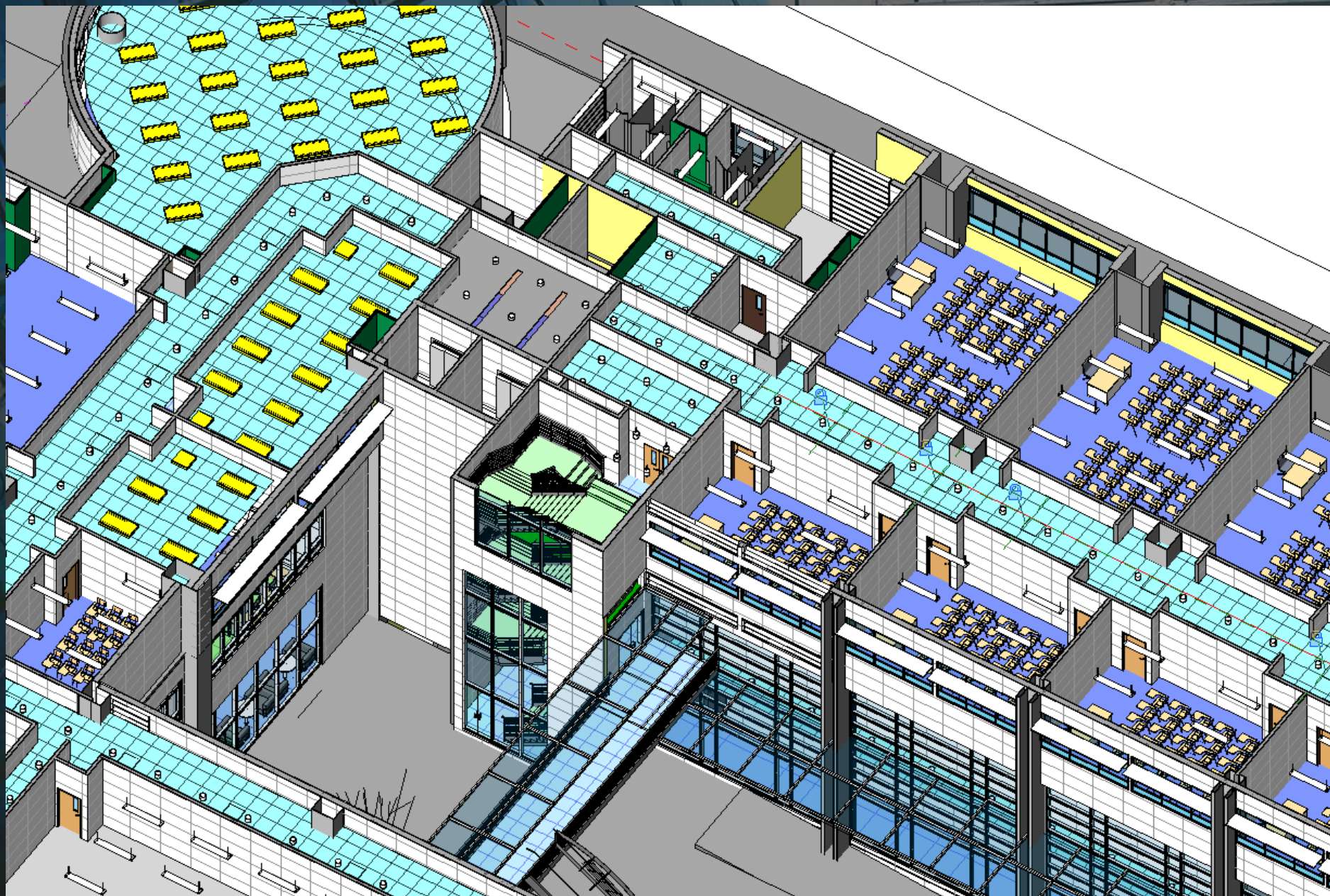
Work Flow – Establish BIM Models



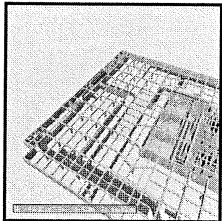
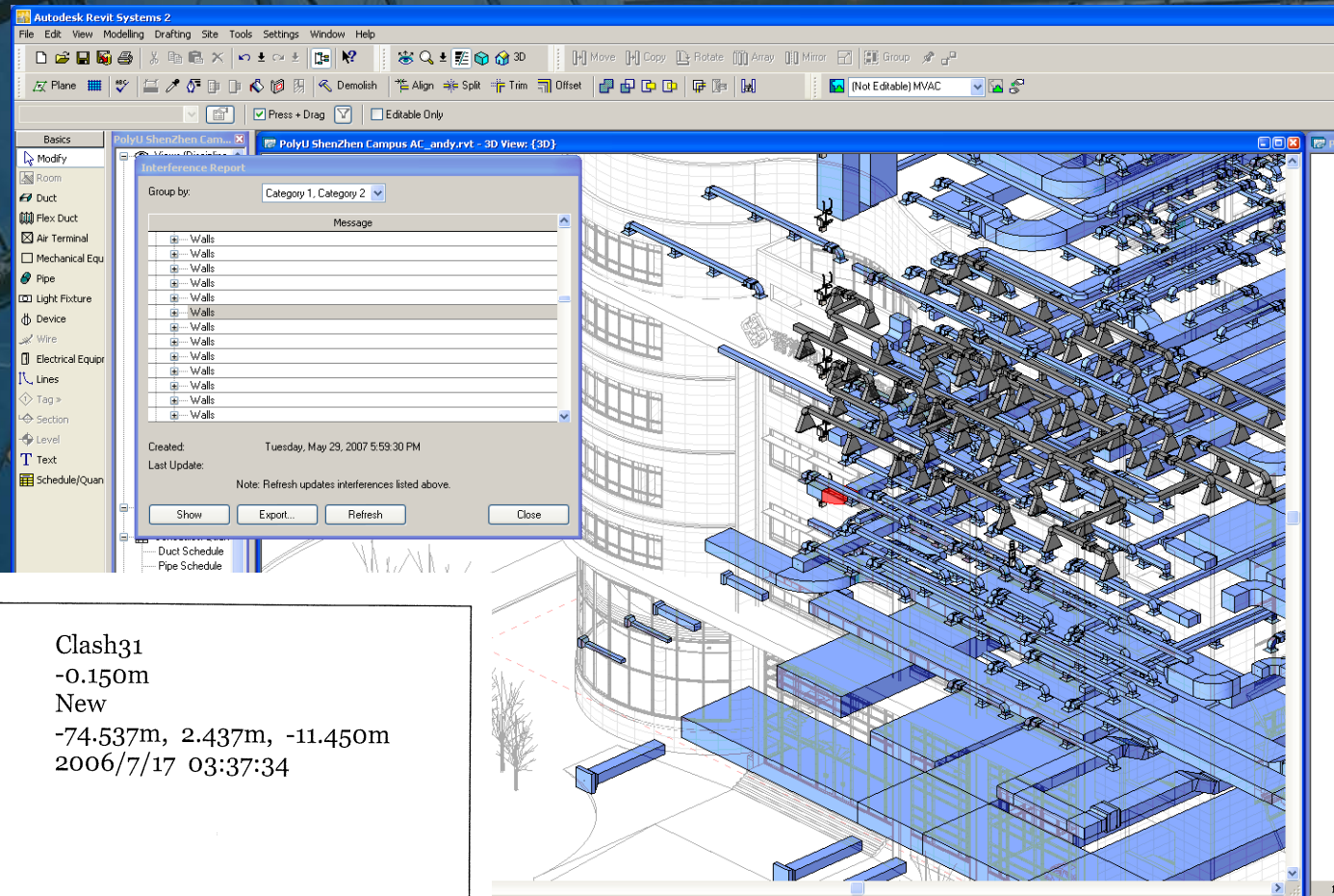
Work Flow – Clashes Report



Run Interference Check on the current project, a selection, or a linked project.



Work Flow – Clashes Report



Name Clash31
Distance -0.150m
Status New
Clash Point -74.537m, 2.437m, -11.450m
Date Created 2006/7/17 03:37:34
Approved By

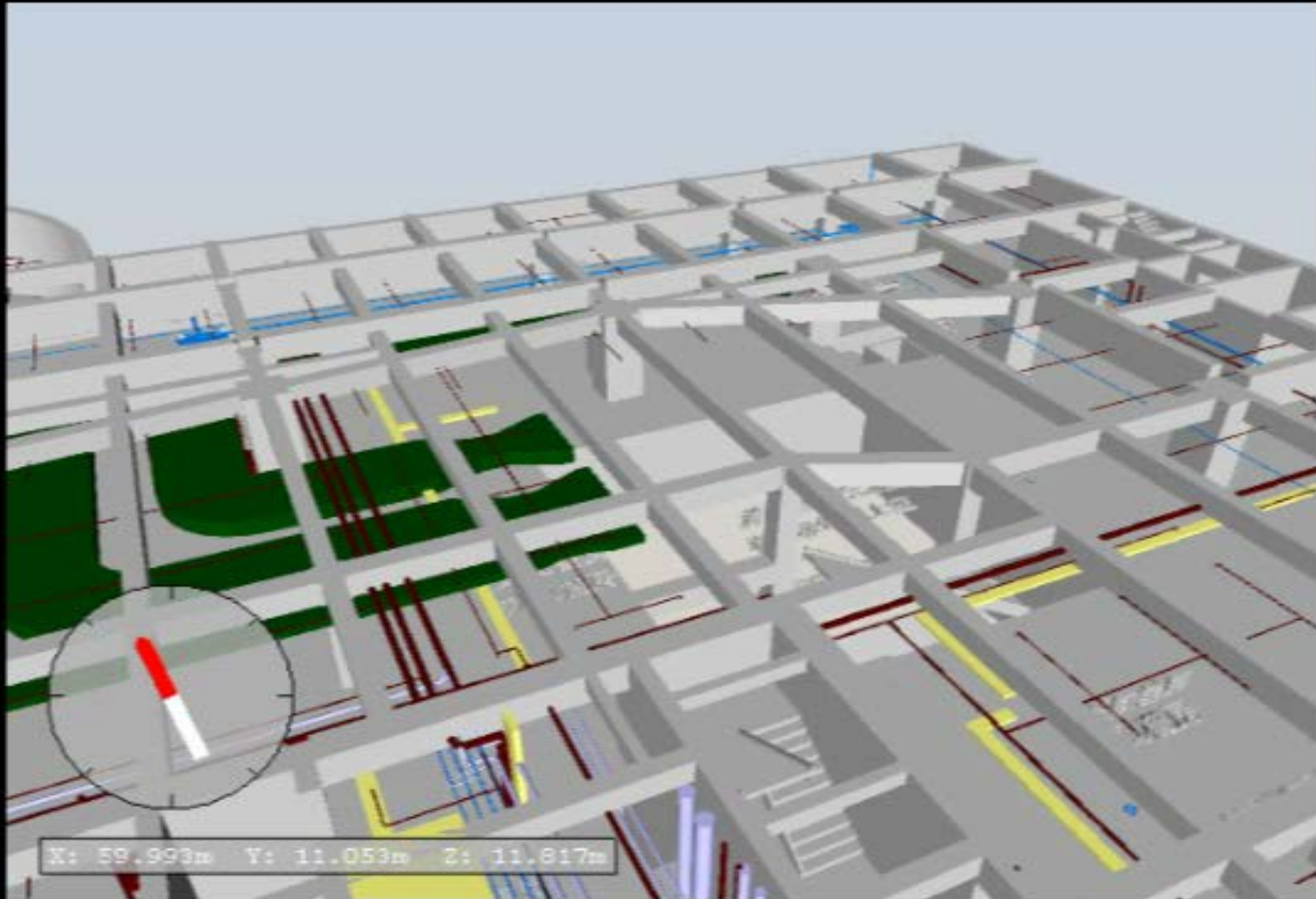
Item 1

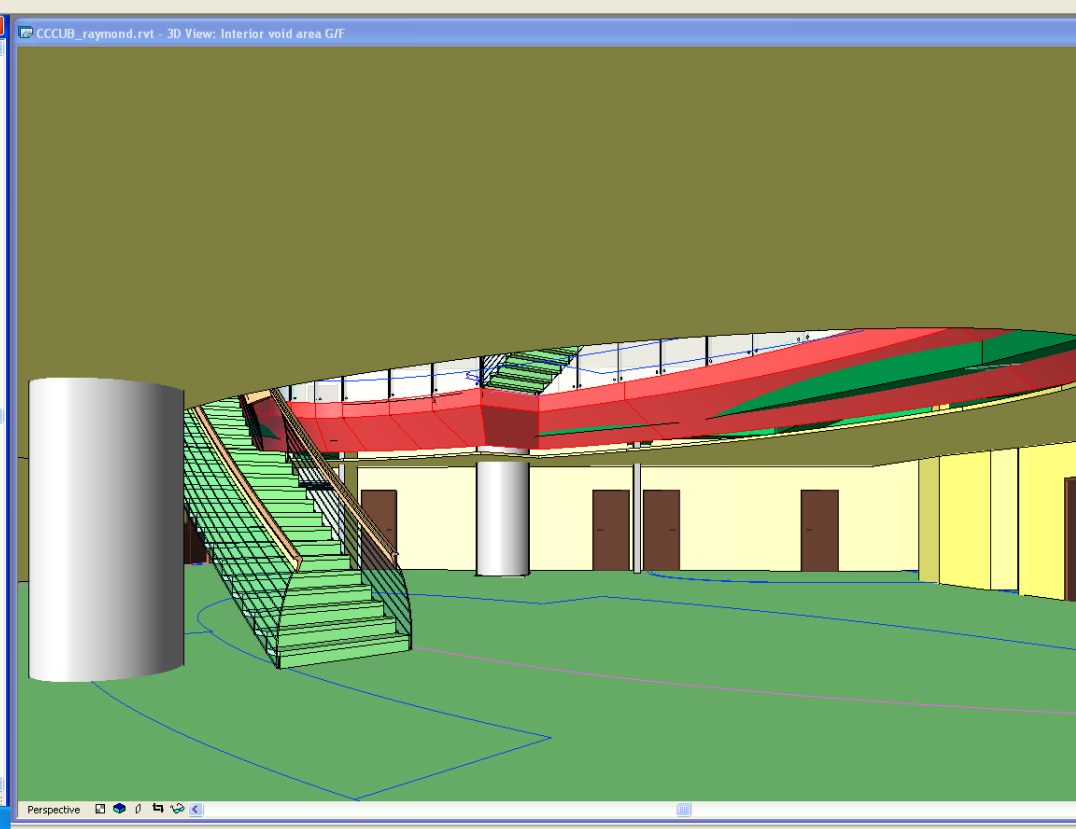
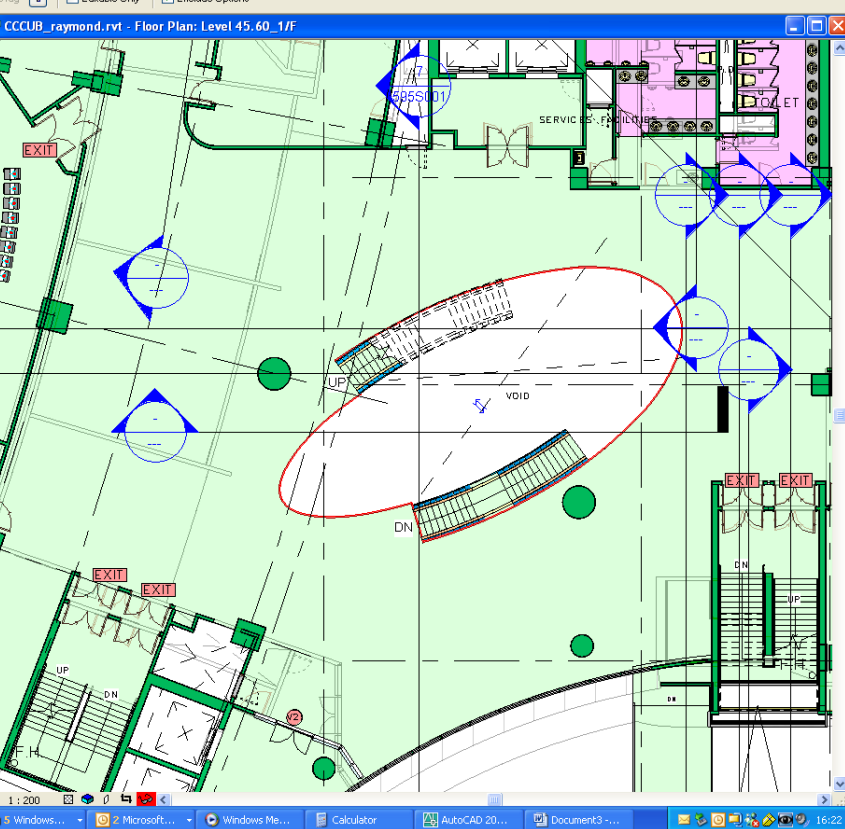
Path File ->File ->Basement 03.nwc -><No level> ->L2b1
 500 x 700 ->L2b1 500 x 700 ->Solid

Item 2

Entity Handle 2AD6
Path File ->File ->B3HVAC_Duct.nwd ->H-Ductwork-G ->Duct

Work Flow - Clashes Identification Processes

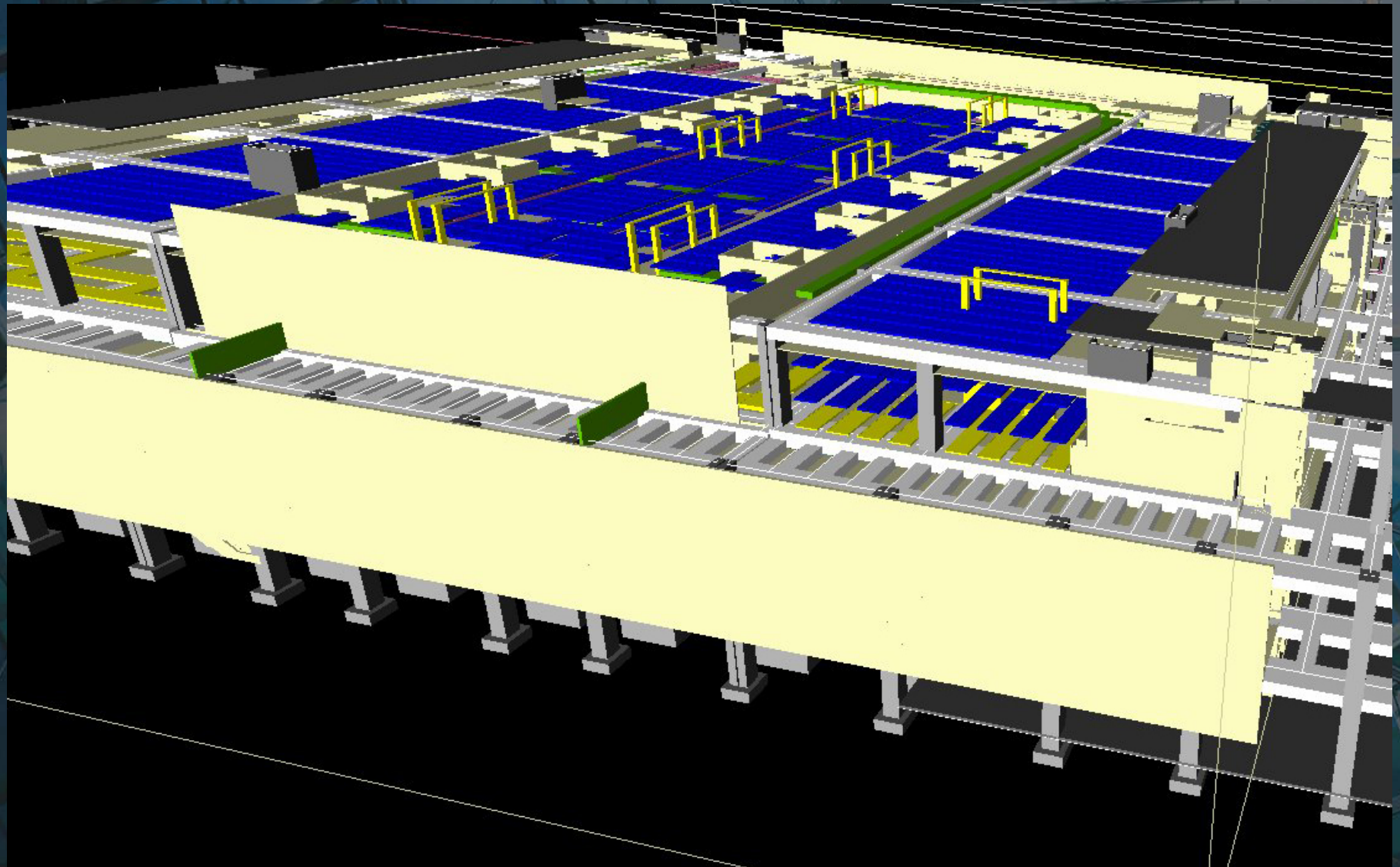




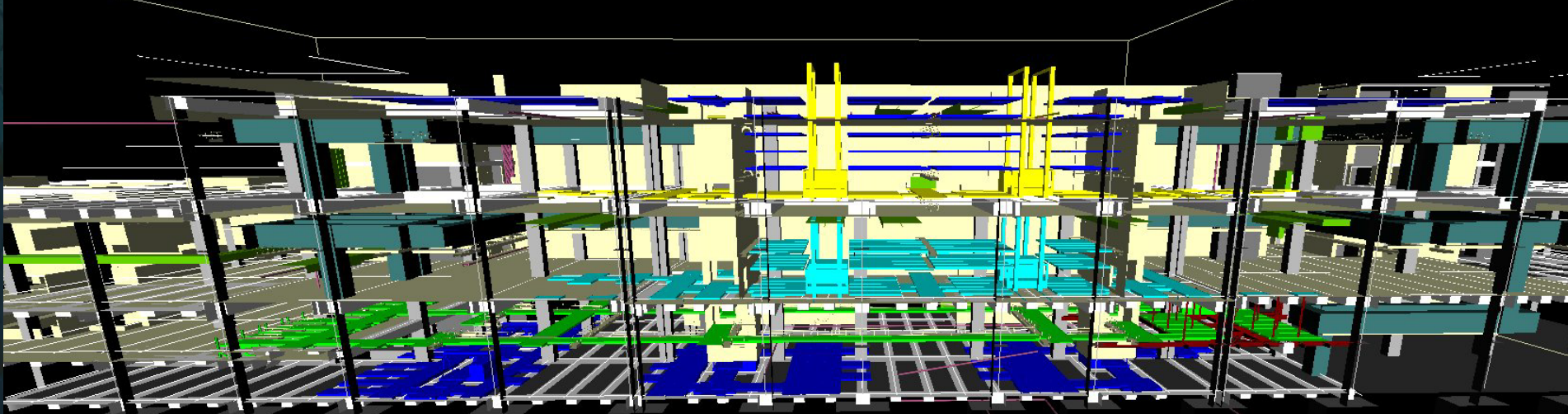
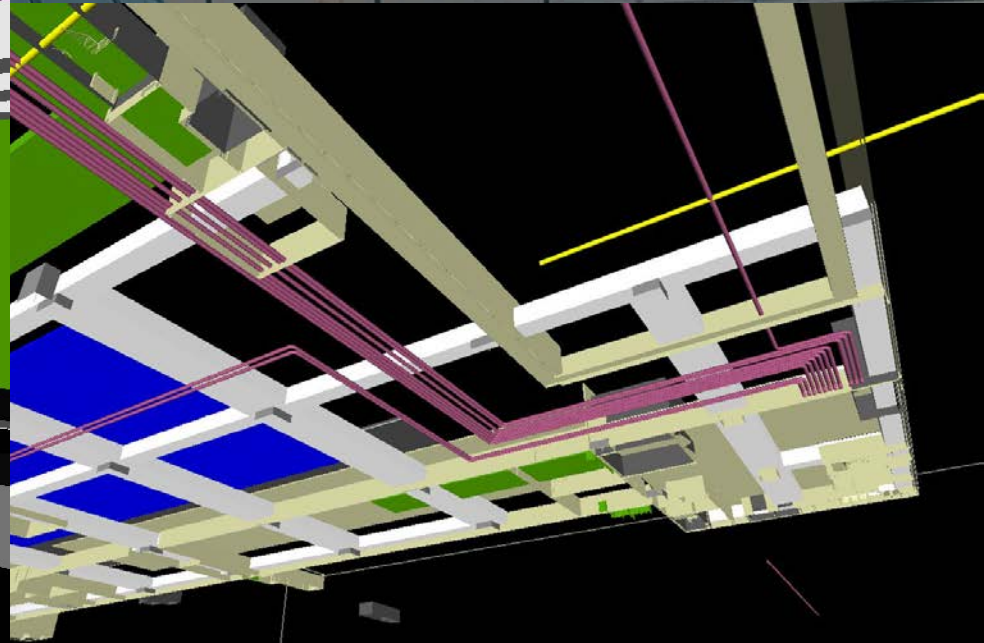
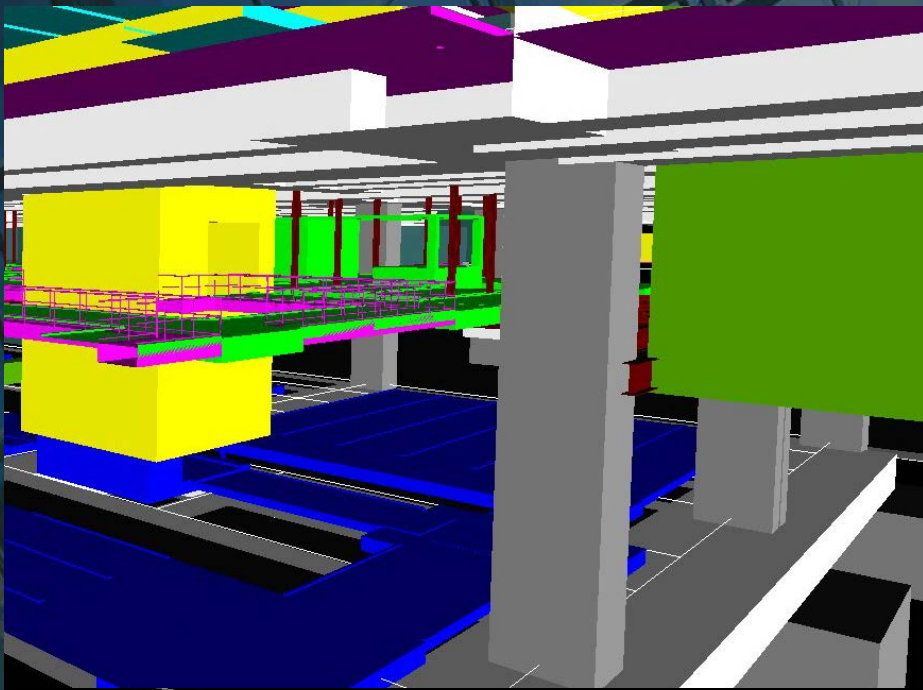
Results – No of Clashes

結果 – 碰撞數目

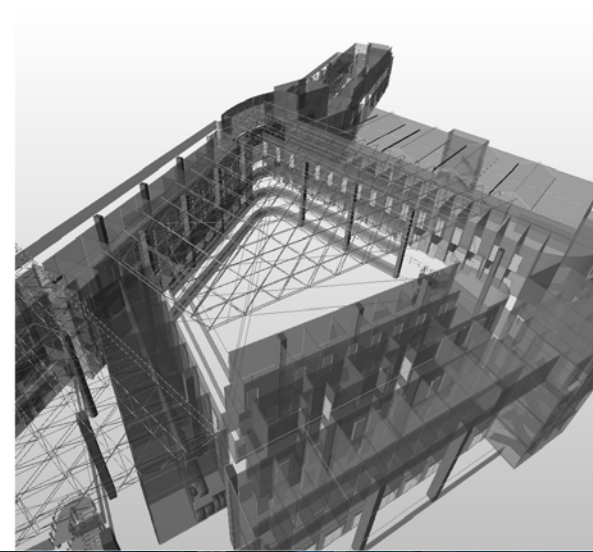
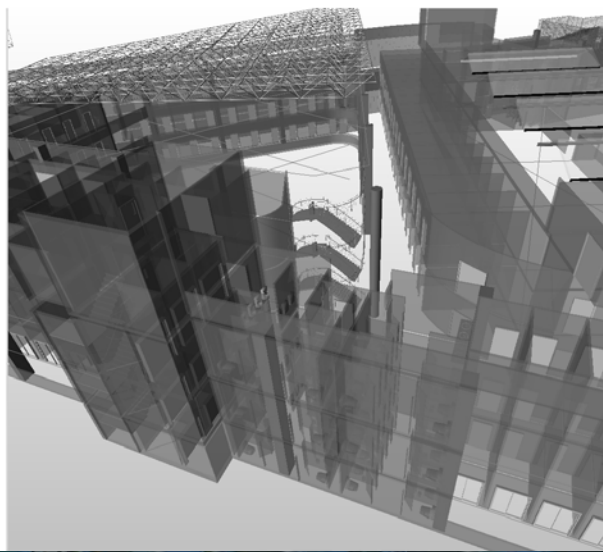
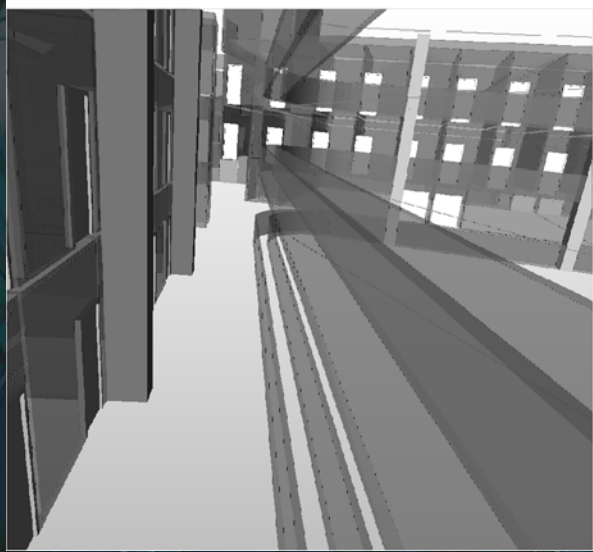
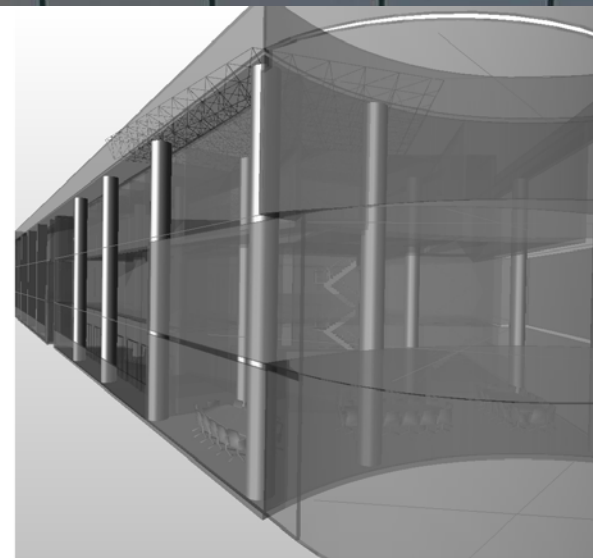
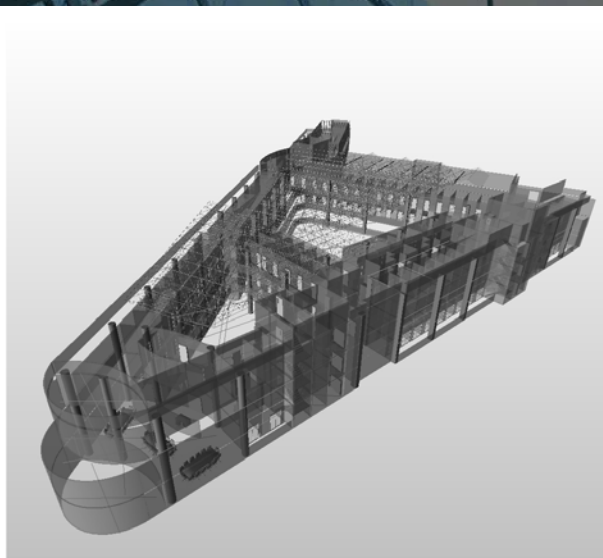
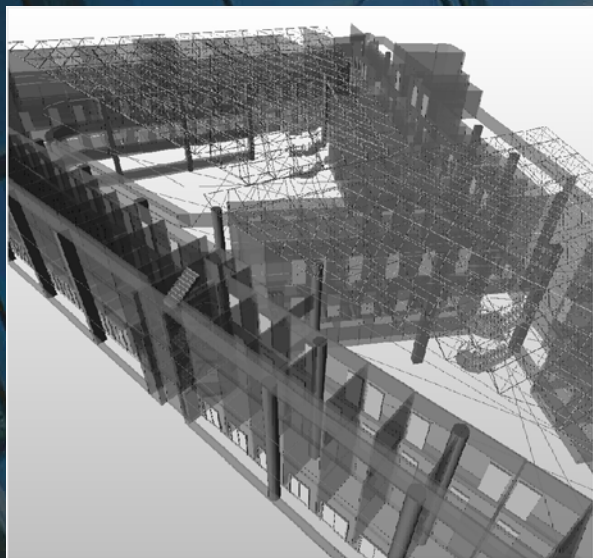
	HVAC Ductwork	Chiller Water Pipe	Fire Services	P&D	Electrical	Total
B1	0	0	0	0	0	0
B1M	0	0	0	0	0	0
B2	0	0	0	0	0	0
B3	0	0	0	0	0	0
Total	0	0	0	0	0	0



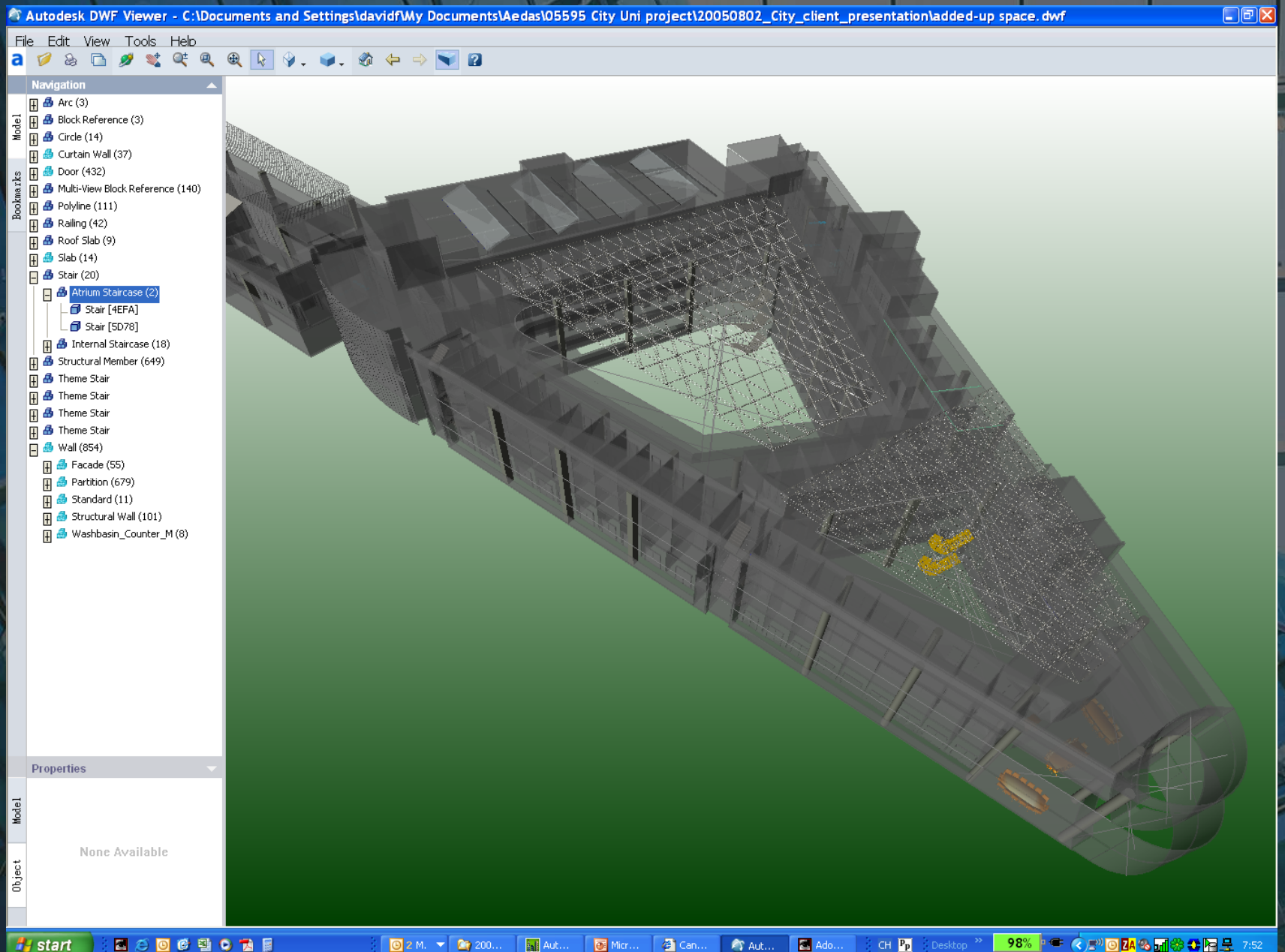
DISCIPLINES COLLABORATION



DISCIPLINES COLLABORATION



INTERACTIVE COMMUNICATION – DWF



INTERACTIVE COMMUNICATION – DWF

Use of Building Information Modeling (BIM)

1. Design visualization
2. Drawing Productions
3. Services Co-ordination and Clash detection with other disciplines
- 4. Quantity taking and preparation of Tender Document** 数量拾い及び
入札書類の作成
5. Automated Statutory Submission
6. Scientific analysis of different environmental aspects
7. Supply Chain Integration with the manufacturing and production
8. Complex Geometry

Wall Schedule							
Family	Family and Type	Length	Width	Count	Area	Volume	
Basic Wall: AED-Concrete - 50mm + Render One sides							
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.548 m2	0.027 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.548 m2	0.027 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.548 m2	0.027 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.548 m2	0.027 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.548 m2	0.027 m3	
0.548 m2: 5		1000		5	2.738 m2	0.137 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.578 m2	0.029 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.578 m2	0.029 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.578 m2	0.029 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.578 m2	0.029 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.578 m2	0.029 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.578 m2	0.029 m3	
0.578 m2: 6		1200		6	3.465 m2	0.173 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.608 m2	0.030 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.608 m2	0.030 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.608 m2	0.030 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.608 m2	0.030 m3	
0.608 m2: 4		800		4	2.430 m2	0.122 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.638 m2	0.032 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.638 m2	0.032 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.638 m2	0.032 m3	
0.638 m2: 3		600		3	1.913 m2	0.096 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	250	50	1	0.730 m2	0.037 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	250	50	1	0.730 m2	0.037 m3	
0.730 m2: 2		500		2	1.460 m2	0.073 m3	

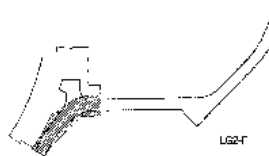
DISCIPLINES COLLABORATION

Use of Building Information Modeling (BIM)

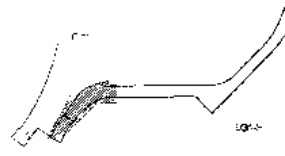
1. Design visualization
2. Drawing Productions
3. Services Co-ordination and Clash detection with other disciplines
4. Quantity taking and preparation of Tender Document
- 5. Automated Statutory Submission** 確認申請図書作成の自動化
6. Scientific analysis of different environmental aspects
7. Supply Chain Integration with the manufacturing and production
8. Complex Geometry

[illegible]

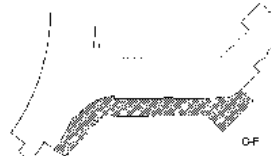
STATUTORY SUBMISSION



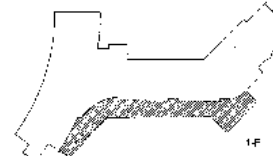
① EVA of Level 34.00_LG2/F
1:1000



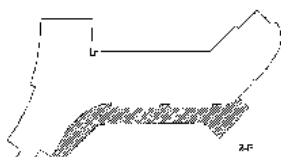
② EVA of Level 37.80, LG1/F
1:1000



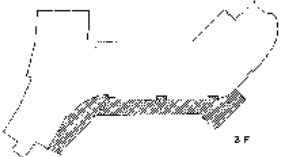
3 - EVA of Level 41.60_GIF
1:1000



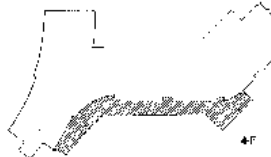
④ EVA of Level 45.60...1/F
1:1000



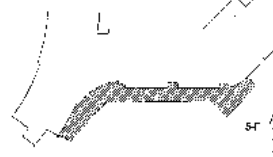
⑤ EVA of Level 49.80 2/F
1:1300



⑥ EVA of Level 53.80_3/F
1:1000

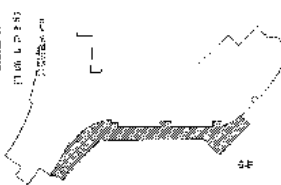


7 EVA of Level 5B.2D_4/F
1:1300



⑧ EVA of Level 62.00 5/F

B D SUBMISSION



9) EVA of Level 65.80_6/F

*Hatch area represents the total length of the building facade served by the EVA

CALCULATION OF TOTAL LENGTH OF BUILDING FACADE TO BE SERVED BY EVA AND HENGCHIAI
OF SUCH LENGTH OVER THE TOTAL LENGTH OF ALL THE PERIMETER WALLS OF THE BUILDING

[illegible]

姓名	性别	年龄	籍贯	民族	文化程度	职业	住址	备注
王德胜	男	45	山东	汉族	高中	教师	济南市	
李小明	男	32	河南	汉族	初中	工人	郑州市	
张小红	女	28	江苏	汉族	大学	医生	南京市	
赵国强	男	50	四川	汉族	小学	农民	成都市	
刘小华	女	35	湖北	汉族	高中	护士	武汉市	
陈伟明	男	40	广东	汉族	大学	工程师	广州市	
周丽娟	女	30	浙江	汉族	初中	售货员	杭州市	
吴大刚	男	55	湖南	汉族	小学	工人	长沙市	
孙小芳	女	25	安徽	汉族	高中	学生	合肥市	
郑国强	男	48	江西	汉族	大学	教授	南昌市	
王小红	女	38	福建	汉族	初中	工人	福州市	
李小明	男	35	广西	汉族	高中	教师	南宁市	
张小红	女	28	云南	汉族	大学	医生	昆明市	
赵国强	男	50	贵州	汉族	小学	农民	贵阳市	
刘小华	女	35	海南	汉族	高中	售货员	海口市	
陈伟明	男	40	宁夏	汉族	大学	工程师	银川市	
周丽娟	女	30	新疆	汉族	初中	工人	乌鲁木齐市	
吴大刚	男	55	内蒙古	汉族	小学	工人	呼和浩特市	
孙小芳	女	25	吉林	汉族	高中	学生	长春市	
郑国强	男	48	辽宁	汉族	大学	教授	沈阳市	
王小红	女	38	黑龙江	汉族	初中	工人	哈尔滨市	
李小明	男	35	河北	汉族	高中	教师	石家庄市	
张小红	女	28	山西	汉族	大学	医生	太原市	
赵国强	男	50	陕西	汉族	小学	农民	西安市	
刘小华	女	35	甘肃	汉族	高中	售货员	兰州市	
陈伟明	男	40	青海	汉族	大学	工程师	西宁市	
周丽娟	女	30	四川	汉族	初中	工人	成都市	
吴大刚	男	55	重庆	汉族	小学	工人	重庆市	
孙小芳	女	25	湖南	汉族	高中	学生	长沙市	
郑国强	男	48	湖北	汉族	大学	教授	武汉市	
王小红	女	38	河南	汉族	初中	工人	郑州市	
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张小红	女	28	内蒙古	汉族	初中	工人	呼和浩特市	
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陈伟明	男	40	河南	汉族	初中	工人	郑州市	
周丽娟	女	30	山东	汉族	高中	教师	济南市	

Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943	2944	2945	2946	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	2970	2971	2972	2973	2974	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The Applicant
 Chief Building Surveyor
 for the Local Authority

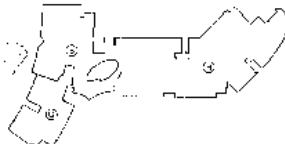
 UNIVERSITY OF NOTTINGHAM RUHR	Name: Heinrich Heine Address: Lincoln City Country: Germany Telephone: 0302 221 1411 Fax: 0302 221 1411 E-mail: heine@lincoln.ac.uk Web: http://www.lincoln.ac.uk	Name: University of Nottingham Address: University of Nottingham Country: United Kingdom Telephone: 0115 9513321 Fax: 0115 9513321 E-mail: nottingham@nottingham.ac.uk Web: http://www.nottingham.ac.uk	Name: Aedas Address: Aedas Country: Spain Telephone: 91 544 11 11 Fax: 91 544 11 11 E-mail: aedas@aedas.es Web: http://www.aedas.es
	Name: University of Nottingham Address: University of Nottingham Country: United Kingdom Telephone: 0115 9513321 Fax: 0115 9513321 E-mail: nottingham@nottingham.ac.uk Web: http://www.nottingham.ac.uk	Name: Aedas Address: Aedas Country: Spain Telephone: 91 544 11 11 Fax: 91 544 11 11 E-mail: aedas@aedas.es Web: http://www.aedas.es	Name: Aedas Address: Aedas Country: Spain Telephone: 91 544 11 11 Fax: 91 544 11 11 E-mail: aedas@aedas.es Web: http://www.aedas.es

STATUTORY SUBMISSION

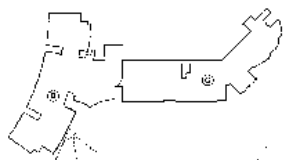
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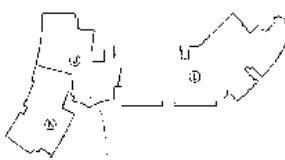
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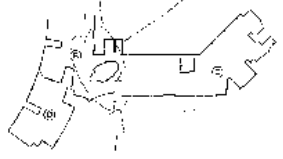
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4/F (+53.20) COMPARTMENT CALCULATION



1/F (+45.80) COMPARTMENT CALCULATION



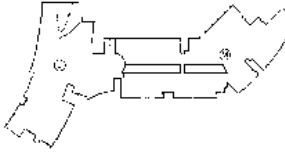
5/F (+52.00) COMPARTMENT CALCULATION



2/F (+49.80) COMPARTMENT CALCULATION



6/F (+55.80) COMPARTMENT CALCULATION



COMPARTMENT OF FLOOR				
FLOOR	AREA	PERIMETER	PERIMETER	PERIMETER
FLOOR	AREA	PERIMETER	PERIMETER	PERIMETER
LG/F	100.00	100.00	100.00	100.00
3/F	100.00	100.00	100.00	100.00
G/F	100.00	100.00	100.00	100.00
4/F	100.00	100.00	100.00	100.00
1/F	100.00	100.00	100.00	100.00
5/F	100.00	100.00	100.00	100.00
2/F	100.00	100.00	100.00	100.00
6/F	100.00	100.00	100.00	100.00

Total Capacity of COQUE				
Location	Use	Area	Factor	Total Capacity
LG/F	Office	275.442	9	31
G/F	Shop	54.208	3	19
G/F	Office	412.243	9	41
3/F	Restaurant	178.344	1	178
3/F	Kitchen	481.136	4.5	107
5/F	Office	212.144	9	294
6/F	Office	2031.235	9	228
6/F	Restaurant	178.557	1	177
6/F	Kitchen	166.561	4.5	42
6/F	Exhibition hall	704.244	2	353
Total number of students				6000
Total				874

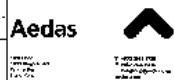
SCHEDULE 1: MINIMUM NUMBER & WIDTH OF EXIT ROUTES FROM EACH FLOOR

LOCATION	FLOOR	AREA	MIN. NO. OF EXIT ROUTES		MIN. WIDTH OF EACH EXIT ROUTE		MIN. TOTAL WIDTH OF EXIT ROUTES	
			REQD.	PHAS.	REQD.	PHAS.	REQD.	PHAS.
LG/F	1	100.00	1	1	1.00	1.00	1.00	1.00
3/F	1	100.00	1	1	1.00	1.00	1.00	1.00
G/F	1	100.00	1	1	1.00	1.00	1.00	1.00
4/F	1	100.00	1	1	1.00	1.00	1.00	1.00
1/F	1	100.00	1	1	1.00	1.00	1.00	1.00
5/F	1	100.00	1	1	1.00	1.00	1.00	1.00
2/F	1	100.00	1	1	1.00	1.00	1.00	1.00
6/F	1	100.00	1	1	1.00	1.00	1.00	1.00

THE RESISTANCE REQUIREMENTS FOR SUBSTRATE OF CONSTRUCTION									
COMPONENT	THICKNESS	RESISTANCE	RESISTANCE	RESISTANCE	RESISTANCE	RESISTANCE	RESISTANCE	RESISTANCE	RESISTANCE
1. FLOOR	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
2. WALL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
3. ROOF	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
4. CEILING	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
5. STAIR	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
6. ELEVATOR	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
7. SHED	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
8. GARAGE	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
9. DRIVEWAY	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
10. TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

1. Approved
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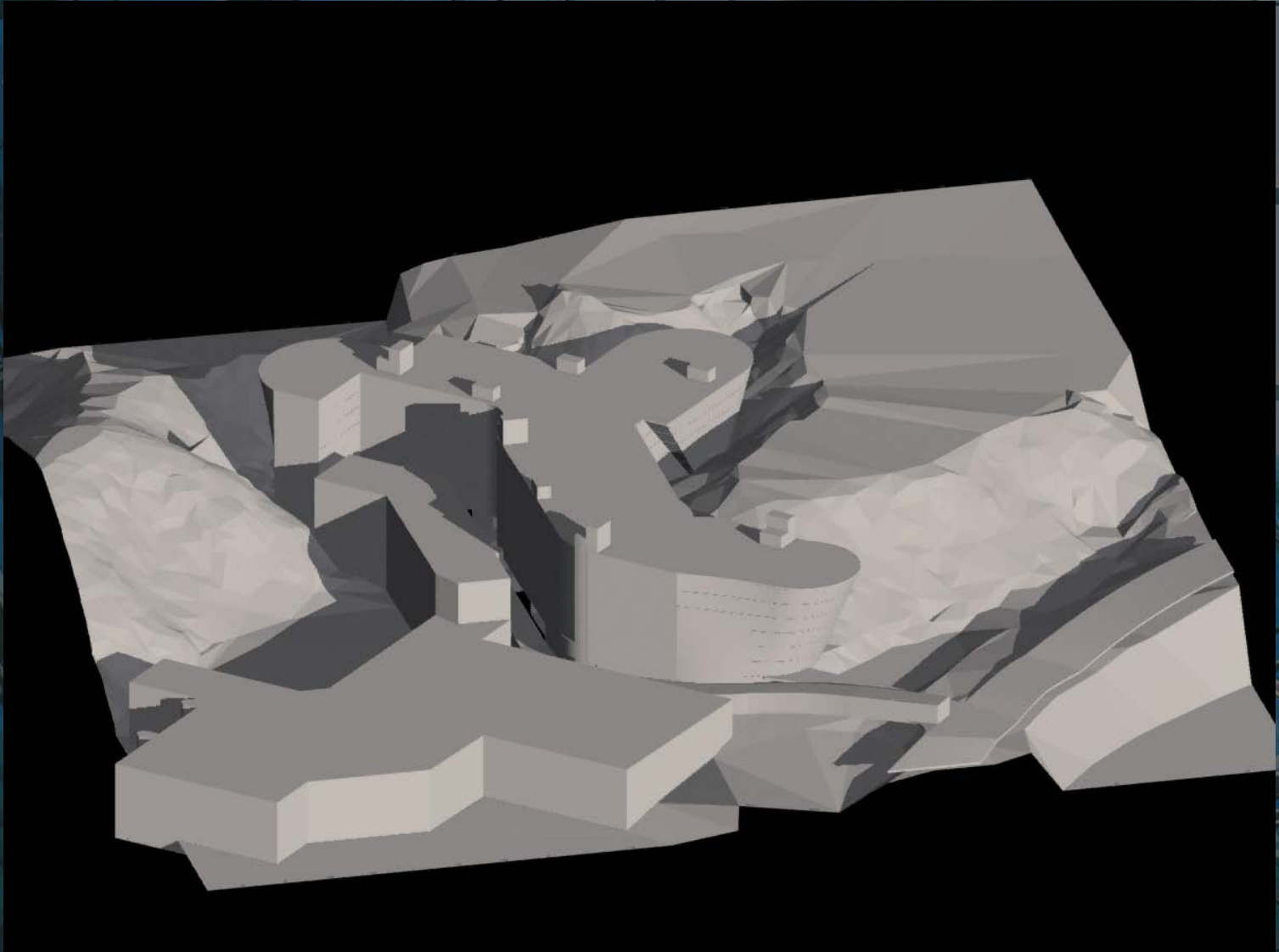
B D SUBMISSION



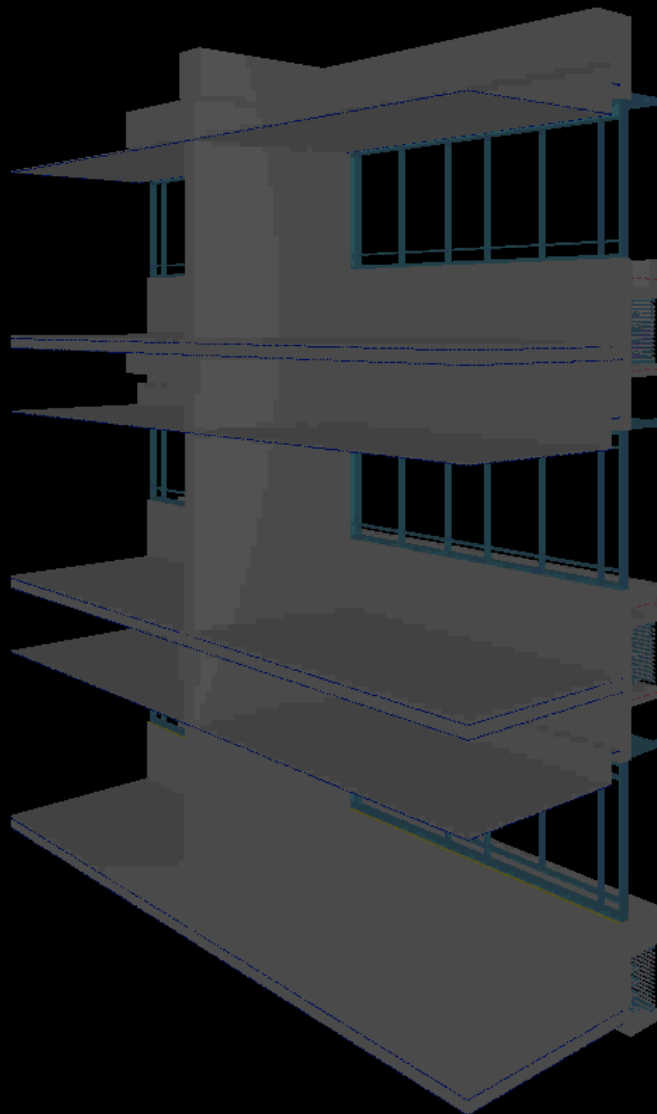
Use of Building Information Modeling (BIM)

1. Design visualization
2. Drawing Productions
3. Services Co-ordination and Clash detection with other disciplines
4. Quantity taking and preparation of Tender Document
5. Automated Statutory Submission
6. **Scientific analysis of different environmental aspects** 様々な環境解析
7. Supply Chain Integration with the manufacturing and production
8. Complex Geometry

ANALYSIS



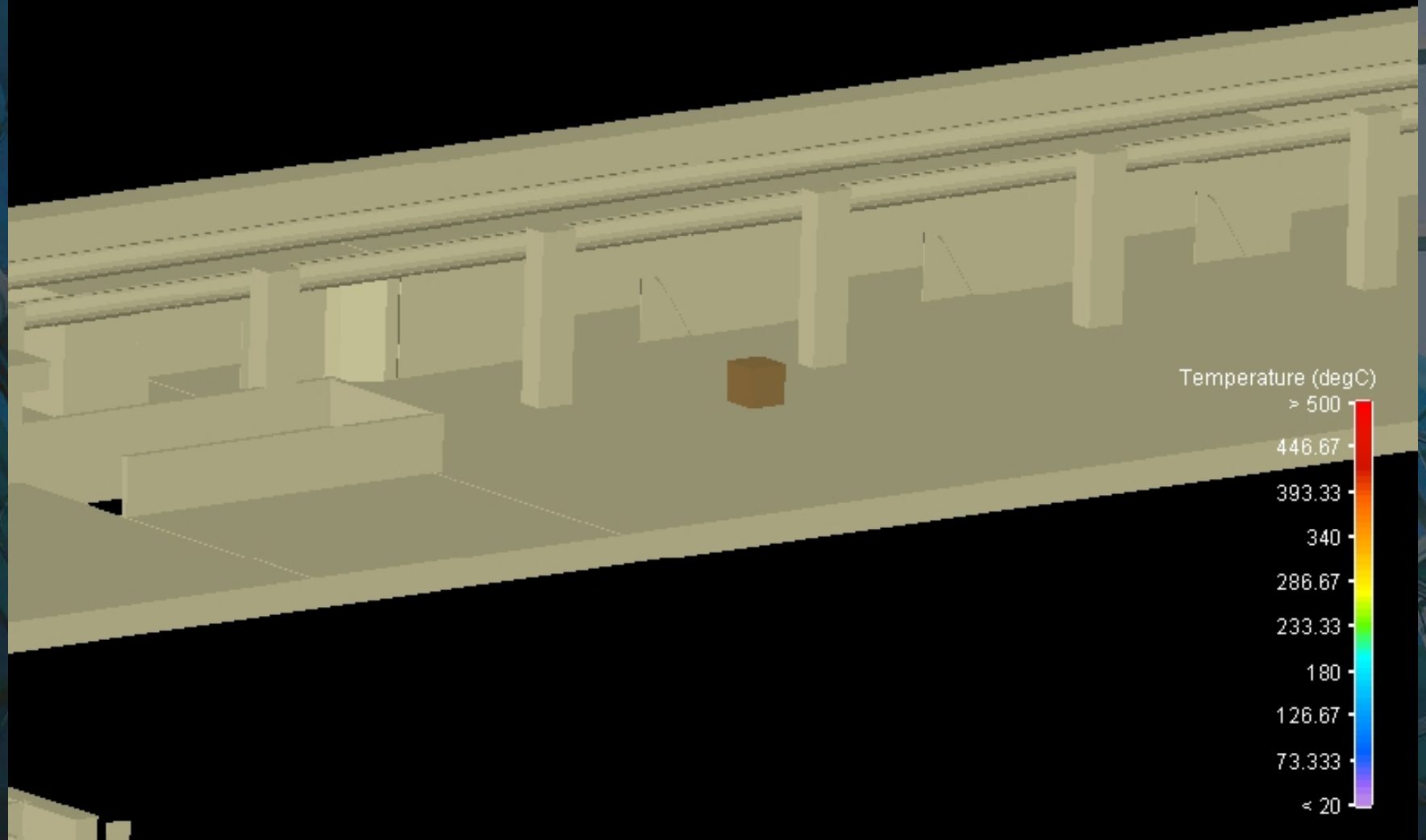
SUN STUDY



FAÇADE SOLAR STUDY
21/12/2006 7:00am – 6:00pm

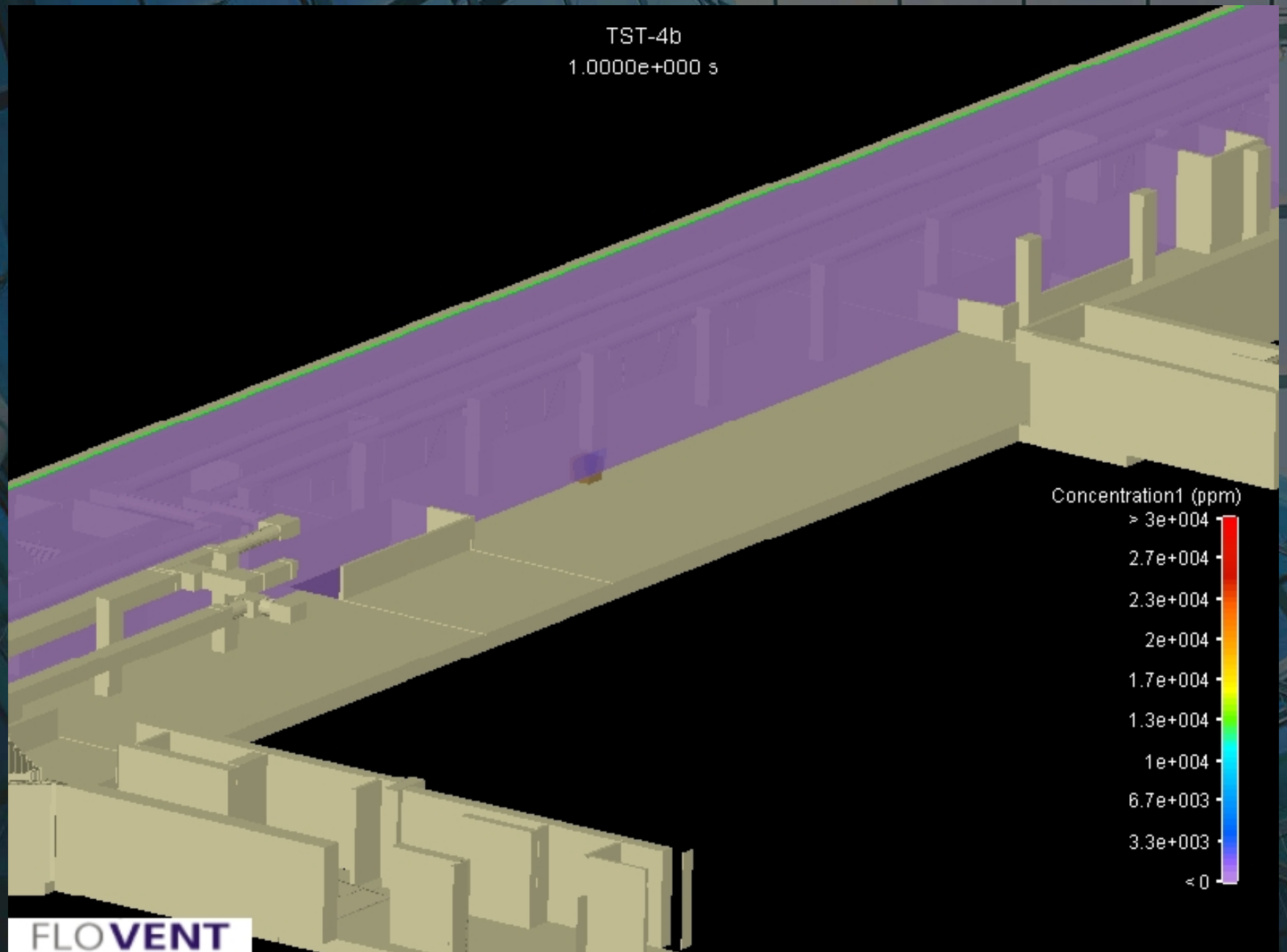
ANALYSIS

TST-4c
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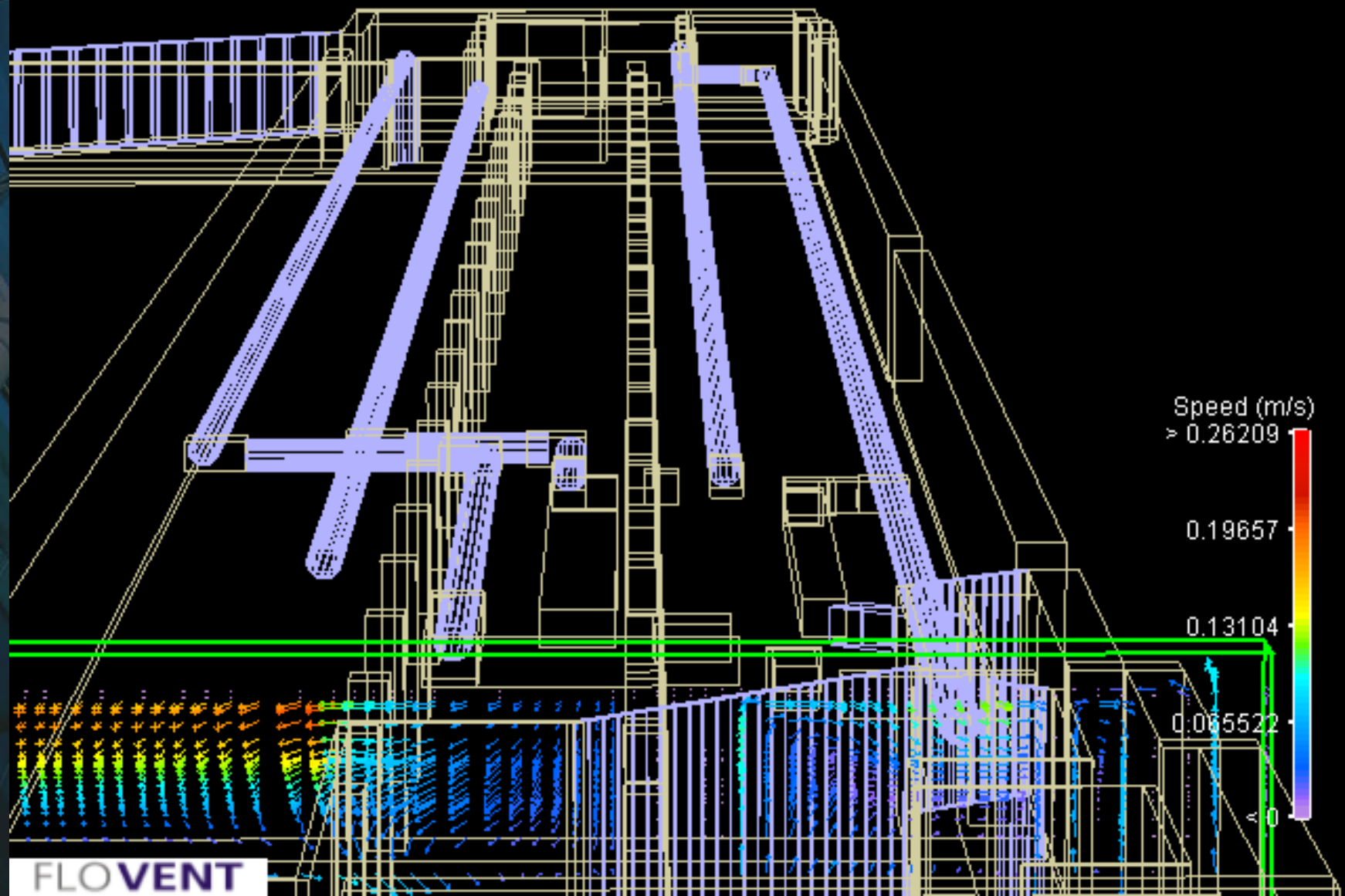


ANALYSIS

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ANALYSIS

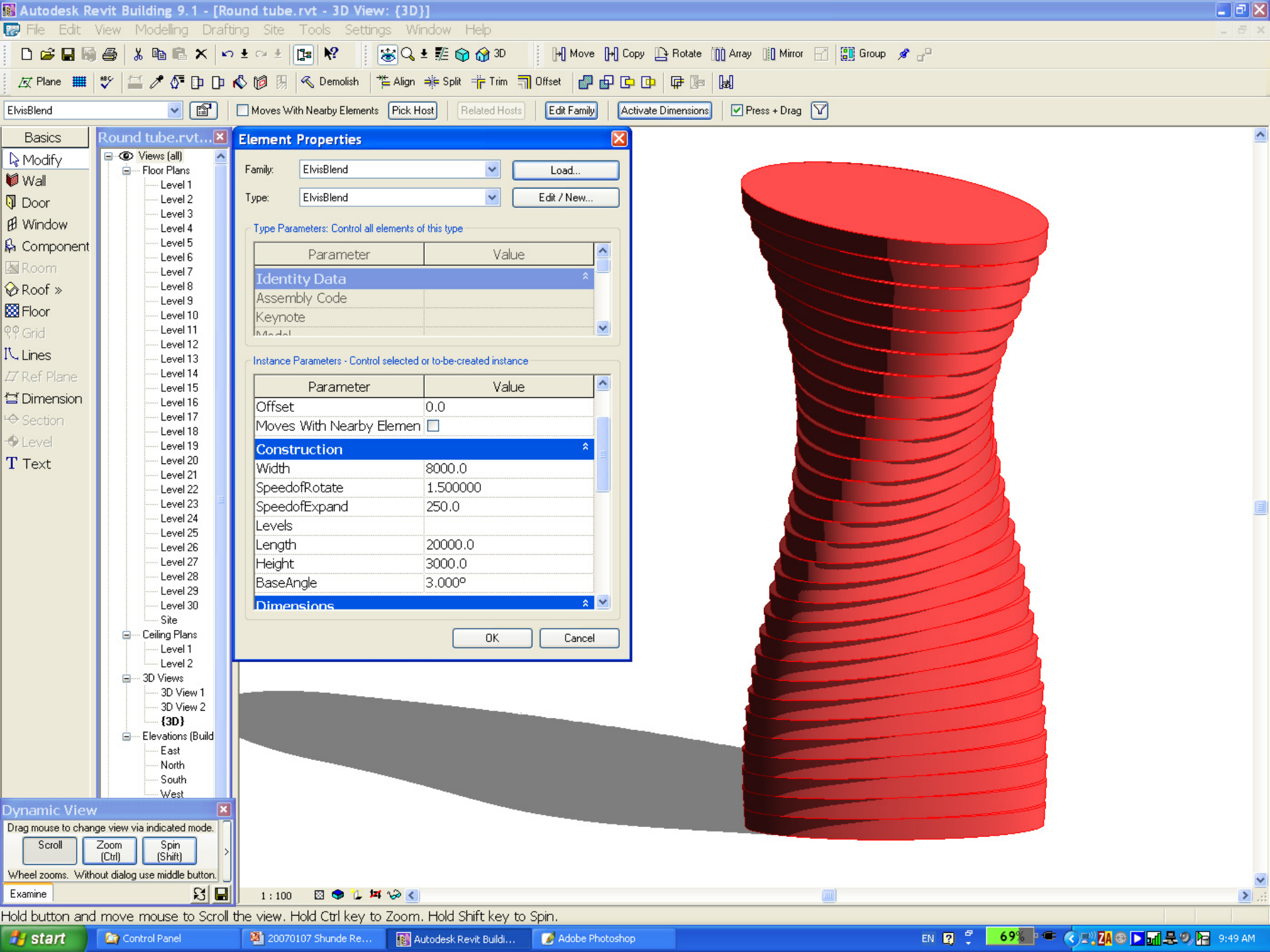


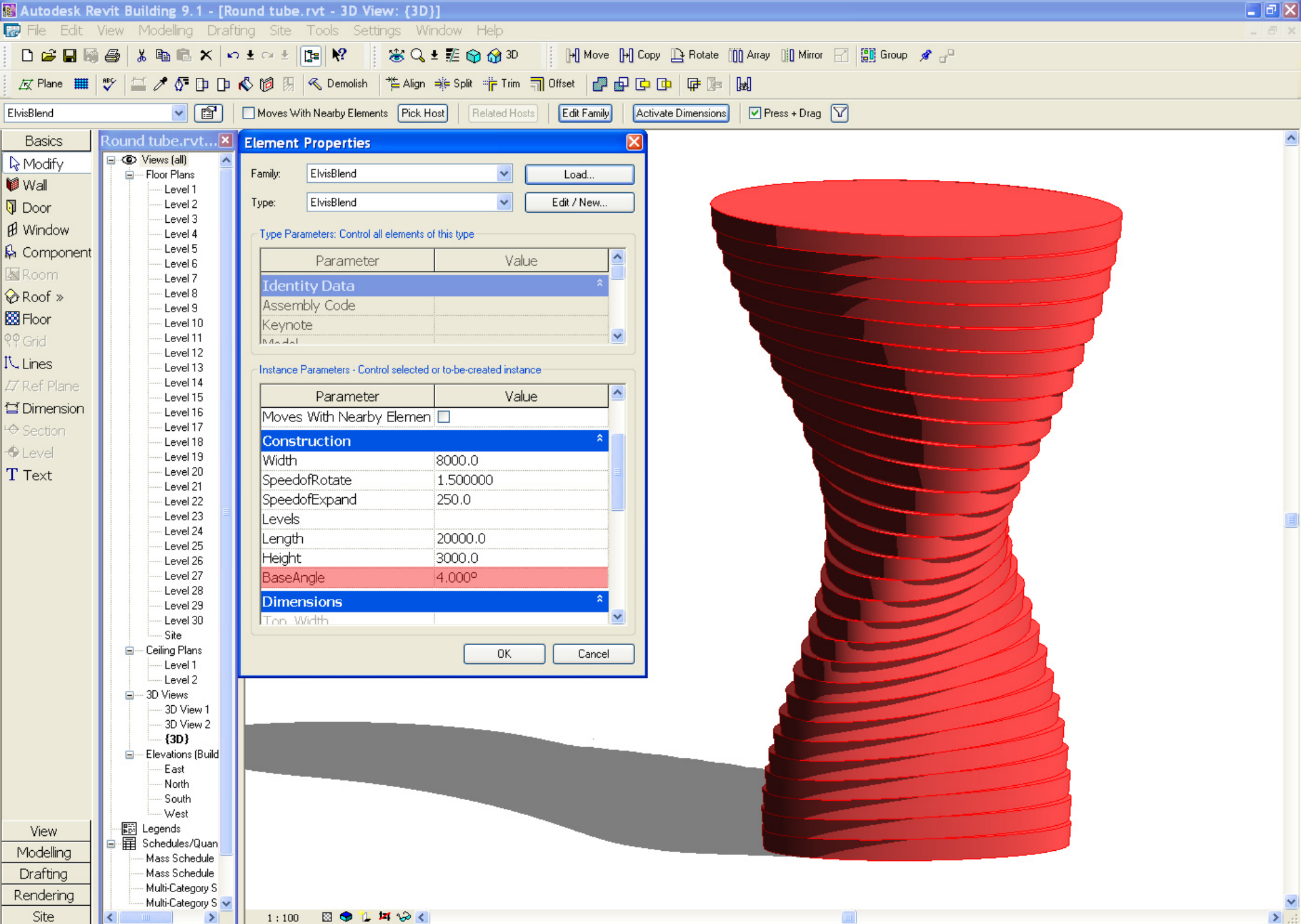
Use of Building Information Modeling (BIM)

1. Design visualization
2. Drawing Productions
3. Services Co-ordination and Clash detection with other disciplines
4. Quantity taking and preparation of Tender Document
5. Automated Statutory Submission
6. Scientific analysis of different environmental aspects
7. **Supply Chain Integration with the manufacturing and production**
サプライヤとの連携
8. Complex Geometry

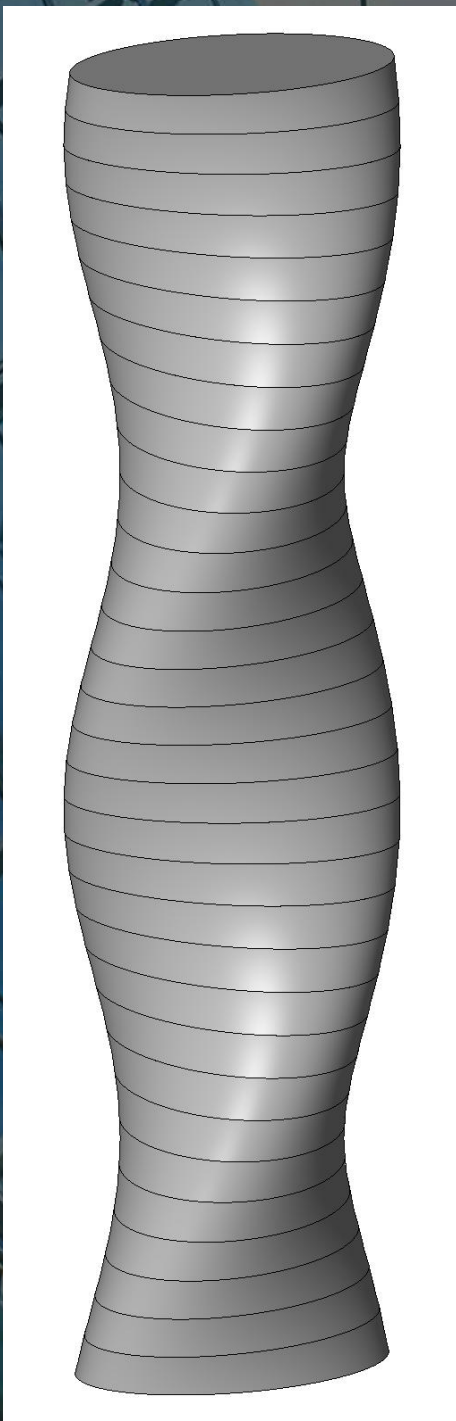
Use of Building Information Modeling (BIM)

1. Design visualization
2. Drawing Productions
3. Services Co-ordination and Clash detection with other disciplines
4. Quantity taking and preparation of Tender Document
5. Automated Statutory Submission
6. Scientific analysis of different environmental aspects
7. Supply Chain Integration with the manufacturing and production
8. **Complex Geometry** 複雑な形状を実現可能





Click to select, TAB for alternates, CTRL adds, SHIFT unselects.





absoluteworld BUILDING 2

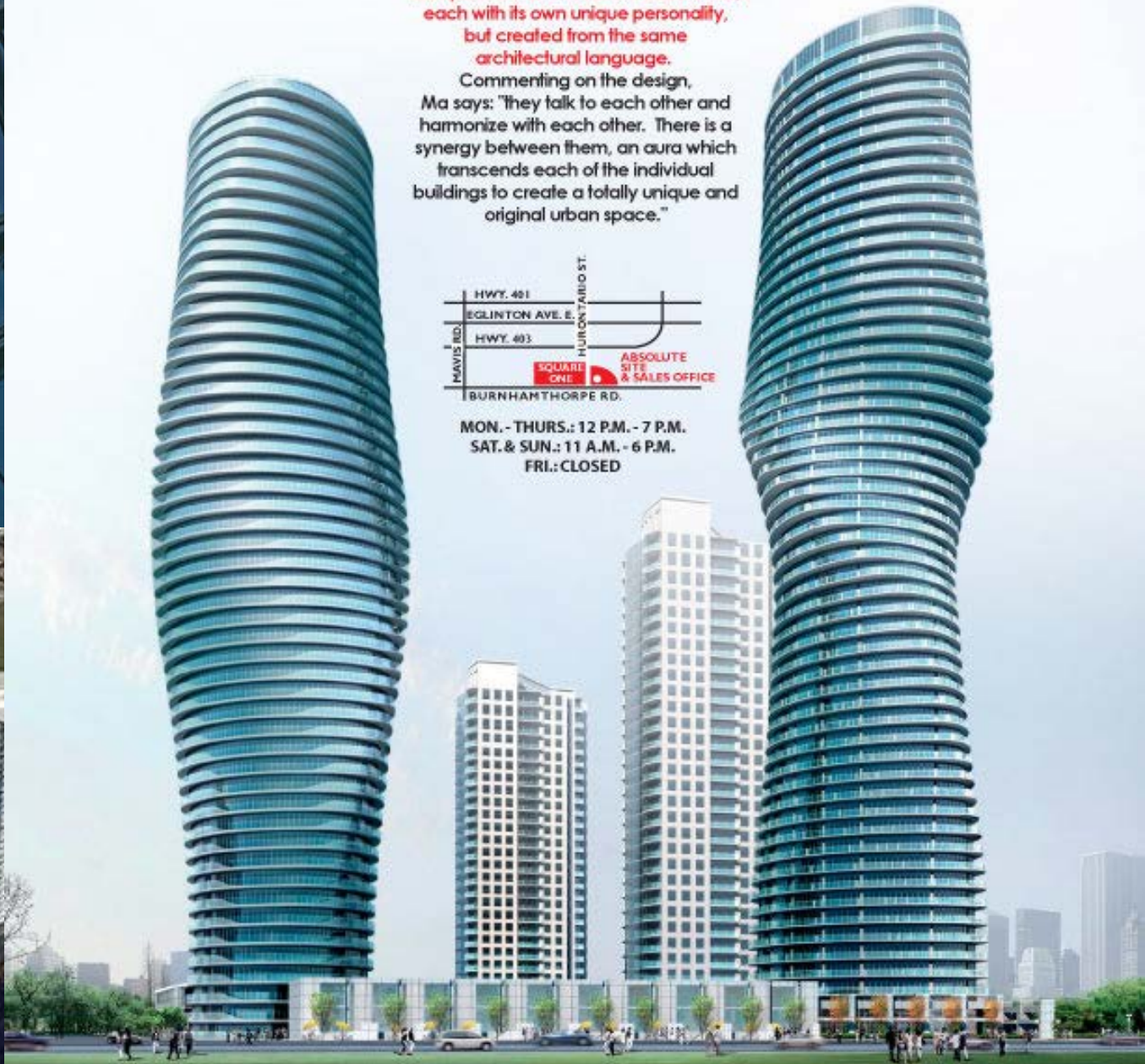
AbsoluteWorld's two buildings, as envisioned by their creator, Yansong Ma. The buildings were designed to complement and enhance each other, each with its own unique personality, but created from the same architectural language.

Commenting on the design, Ma says: "They talk to each other and harmonize with each other. There is a synergy between them, an aura which transcends each of the individual buildings to create a totally unique and original urban space."

absoluteworld BUILDING 1



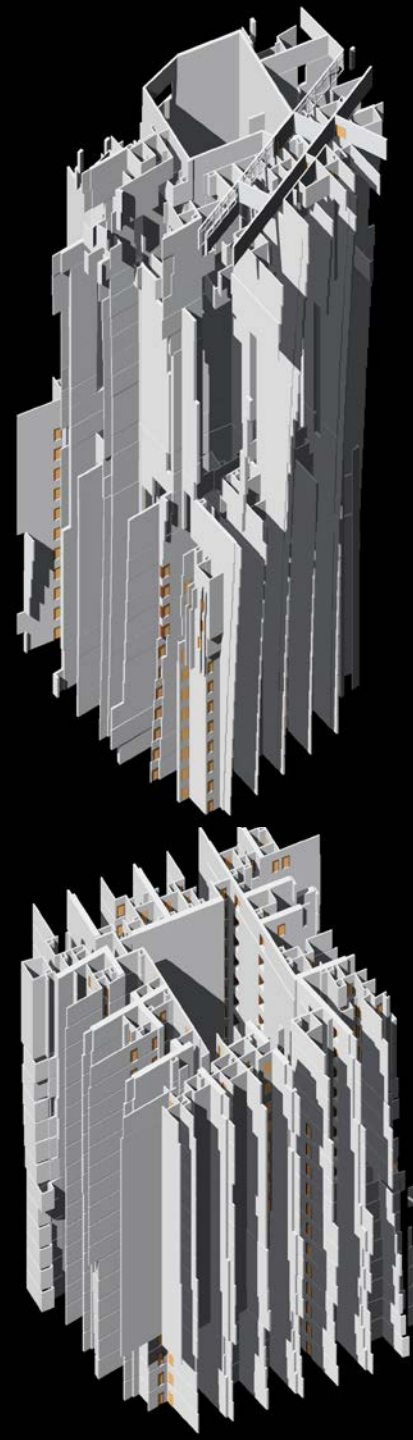
MON. - THURS.: 12 P.M. - 7 P.M.
SAT. & SUN.: 11 A.M. - 6 P.M.
FRI.: CLOSED



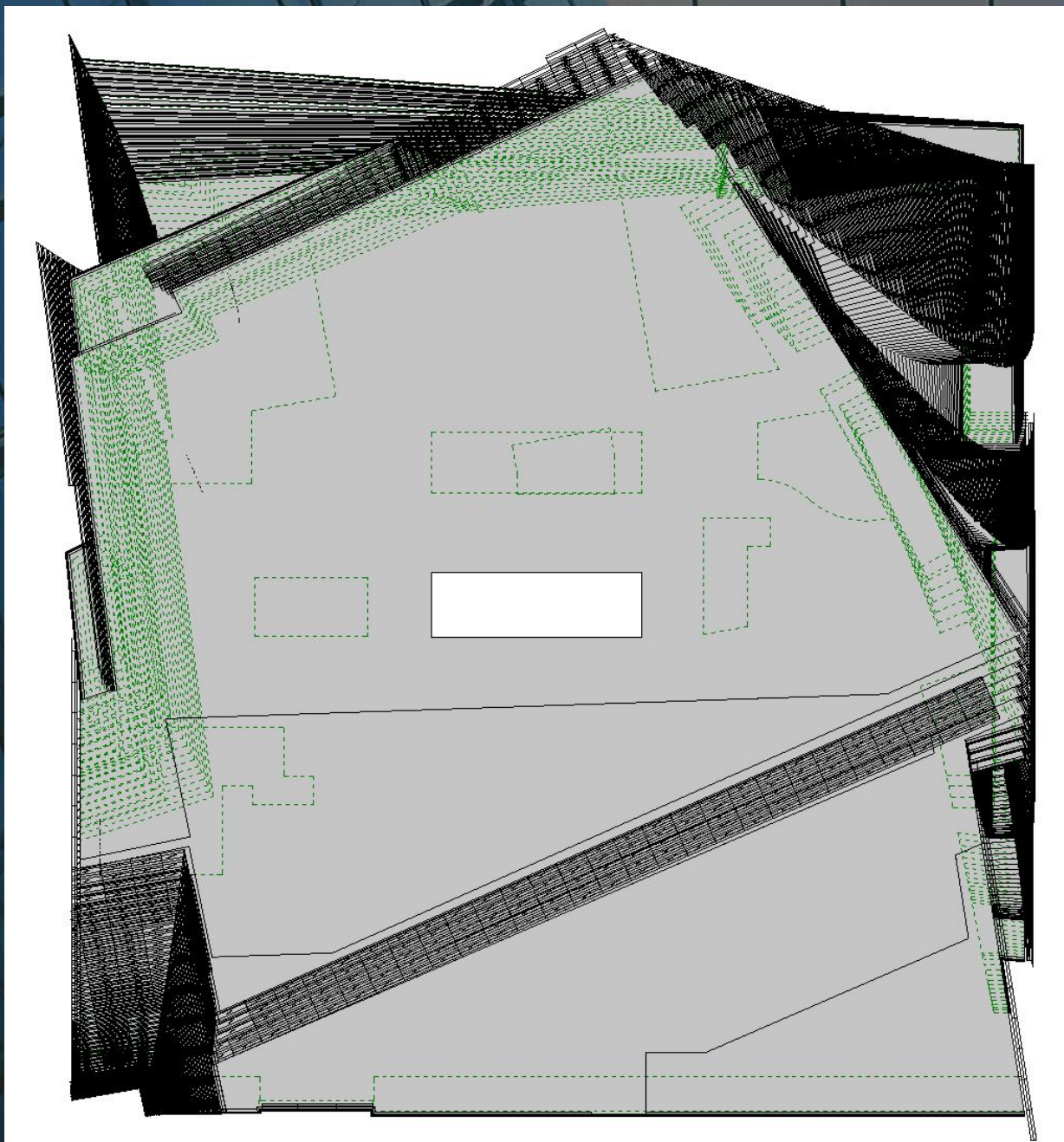
Program: Residential, Site Area: 3,746 sqm
Floor Area: 659,659 sqm | Building Height: 345 m

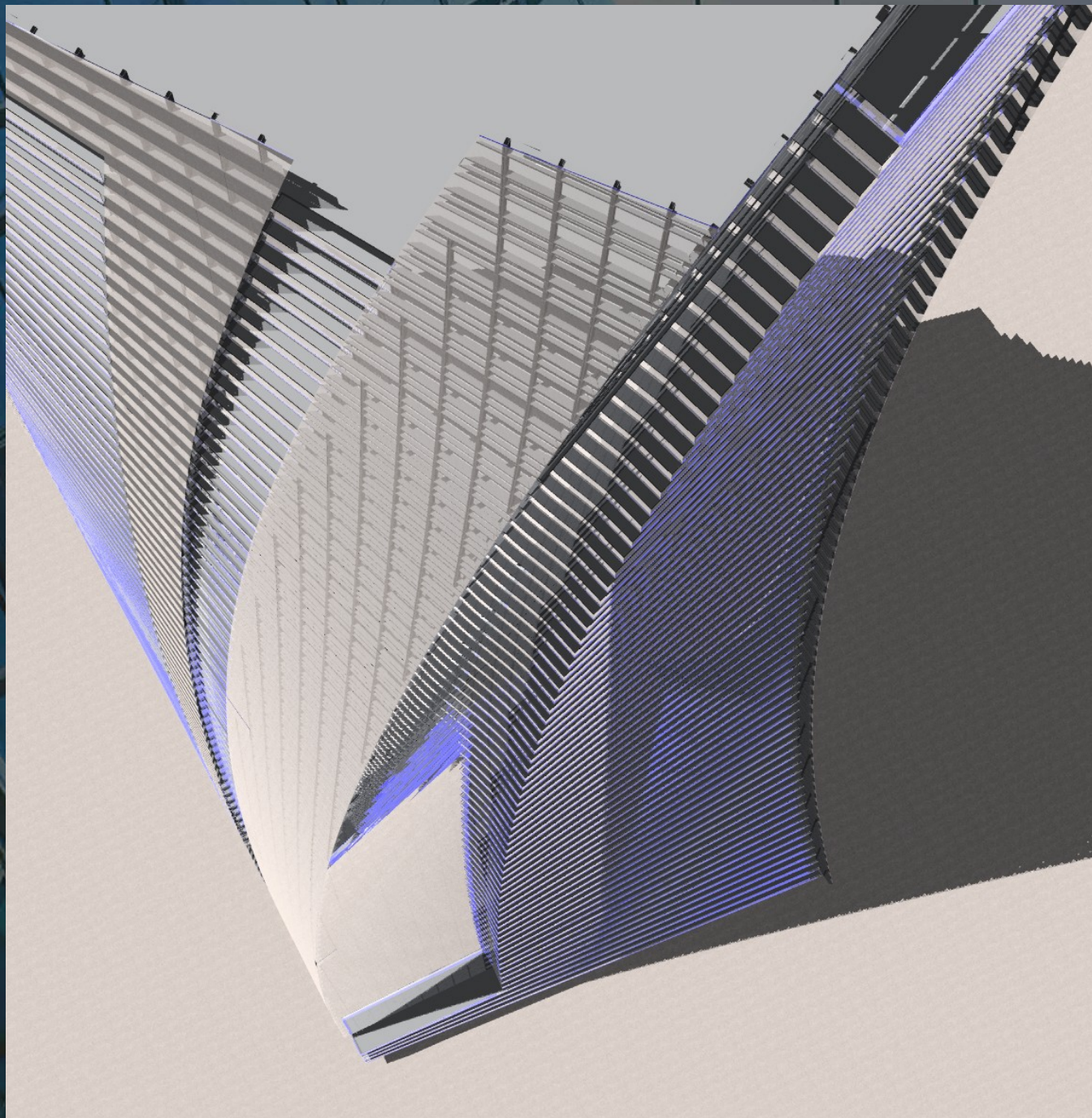


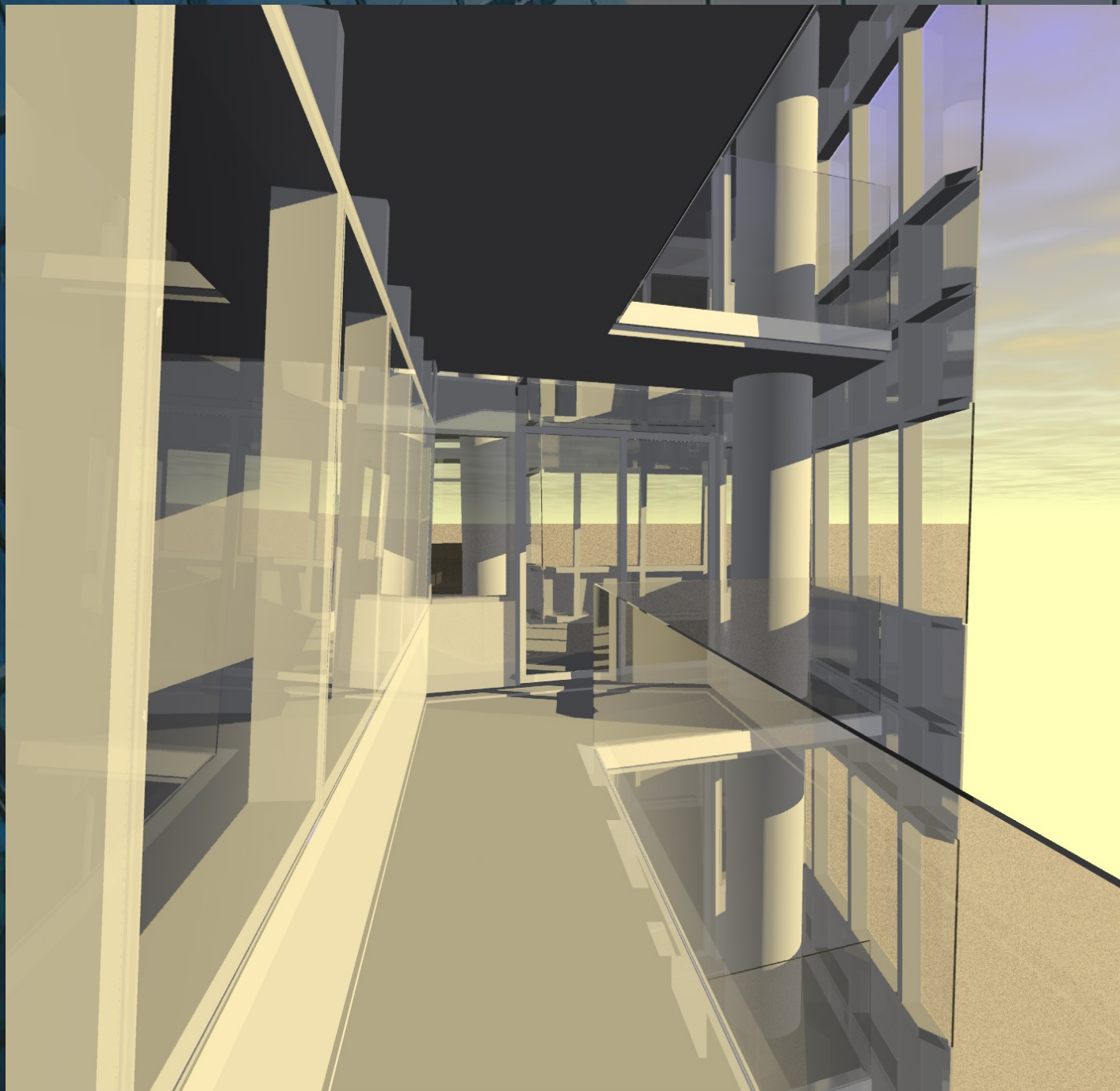
Dubai **Ocean Heights One**

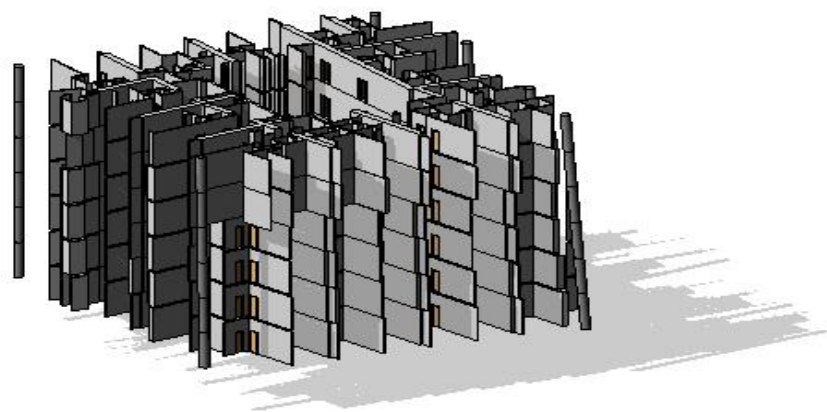


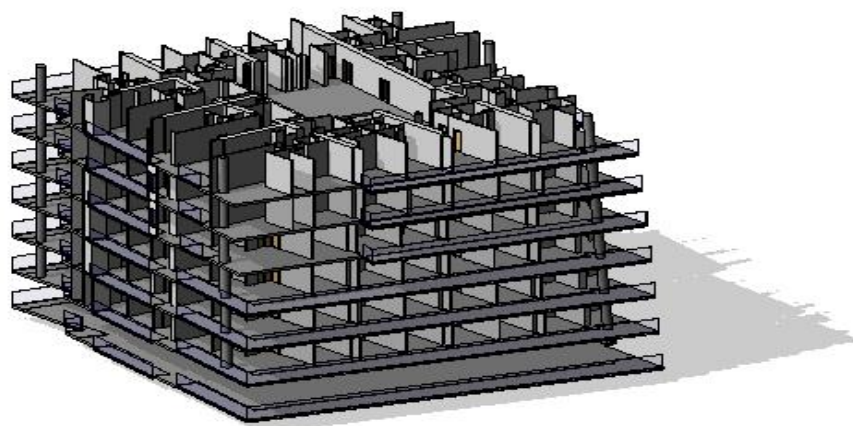
COMPLEX GEOMETRY





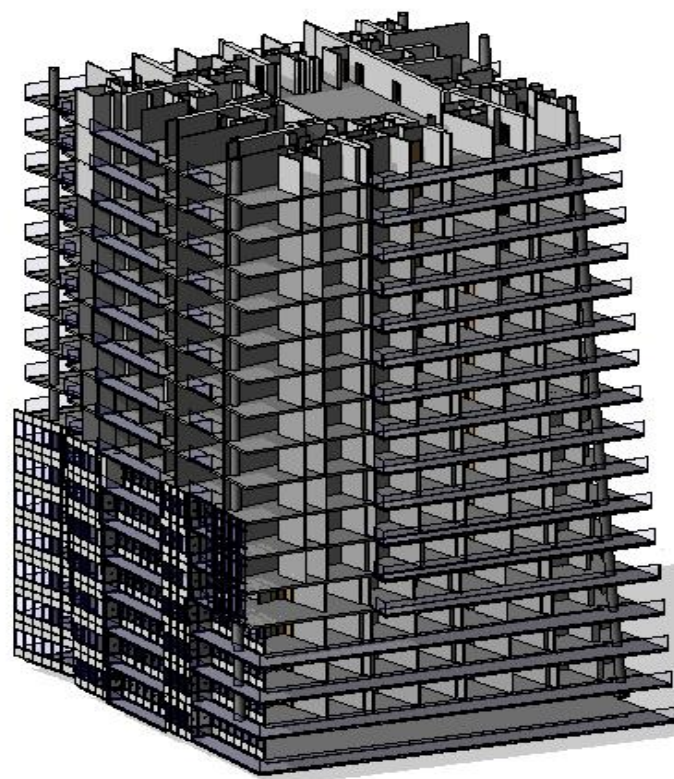




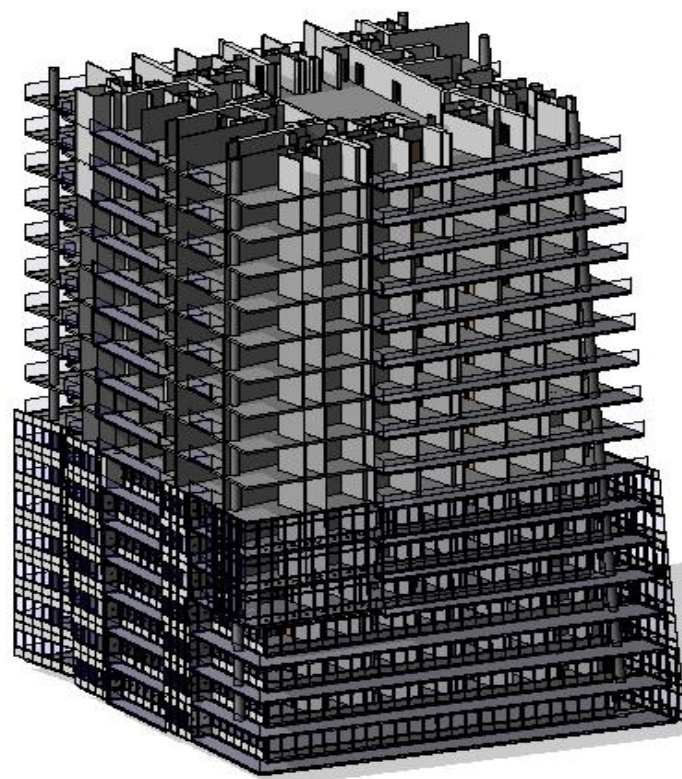










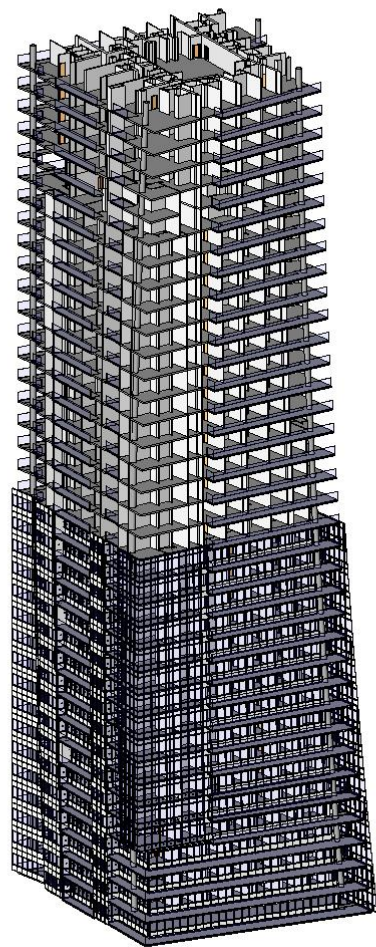


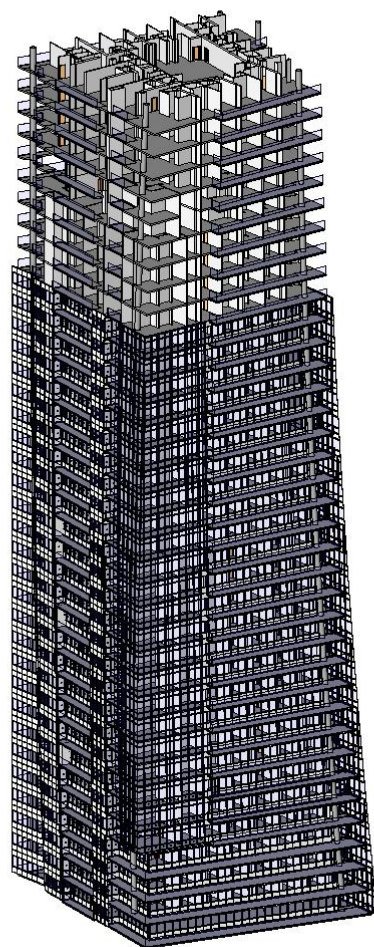


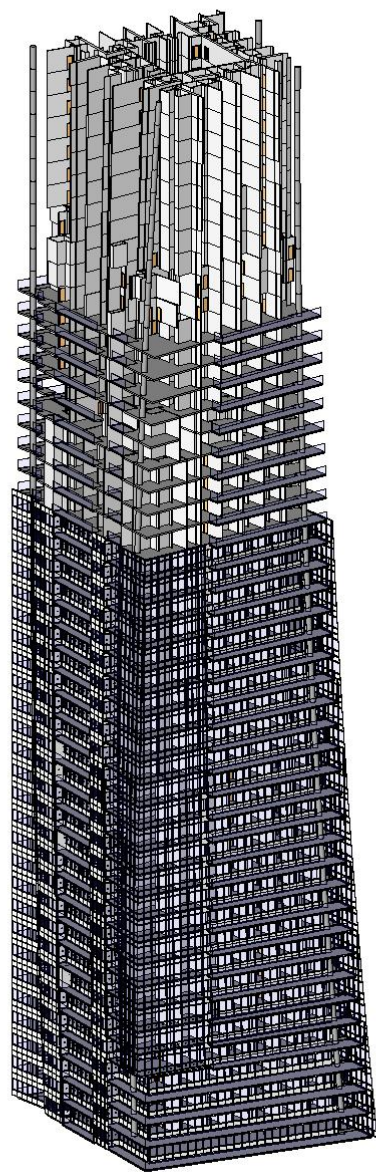


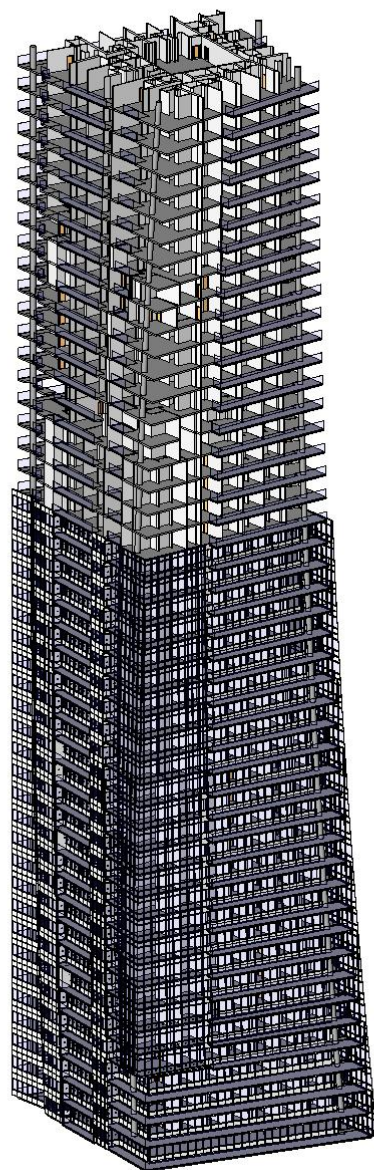


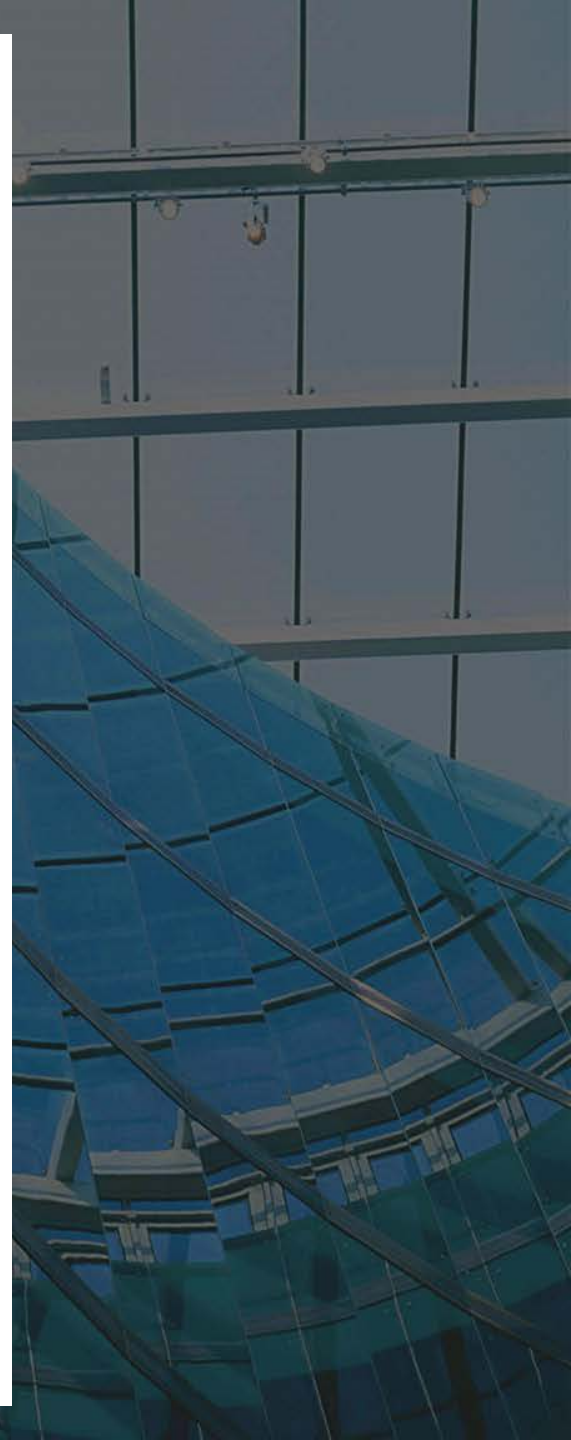
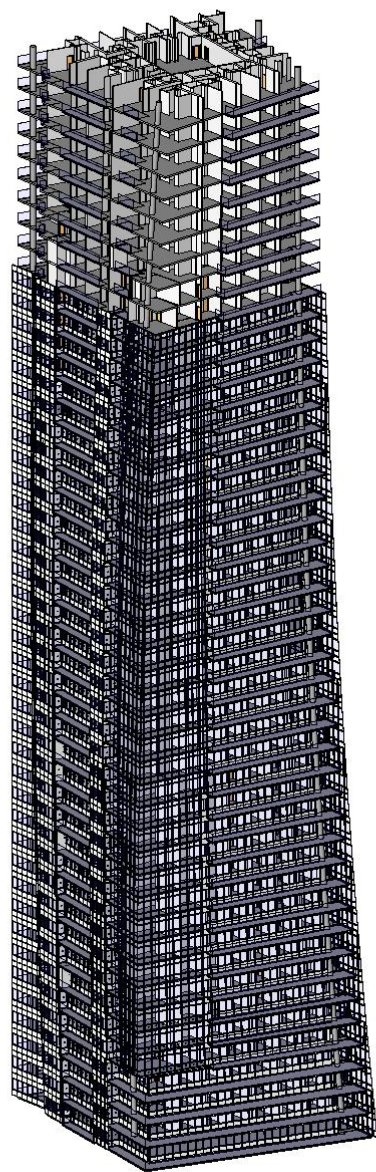


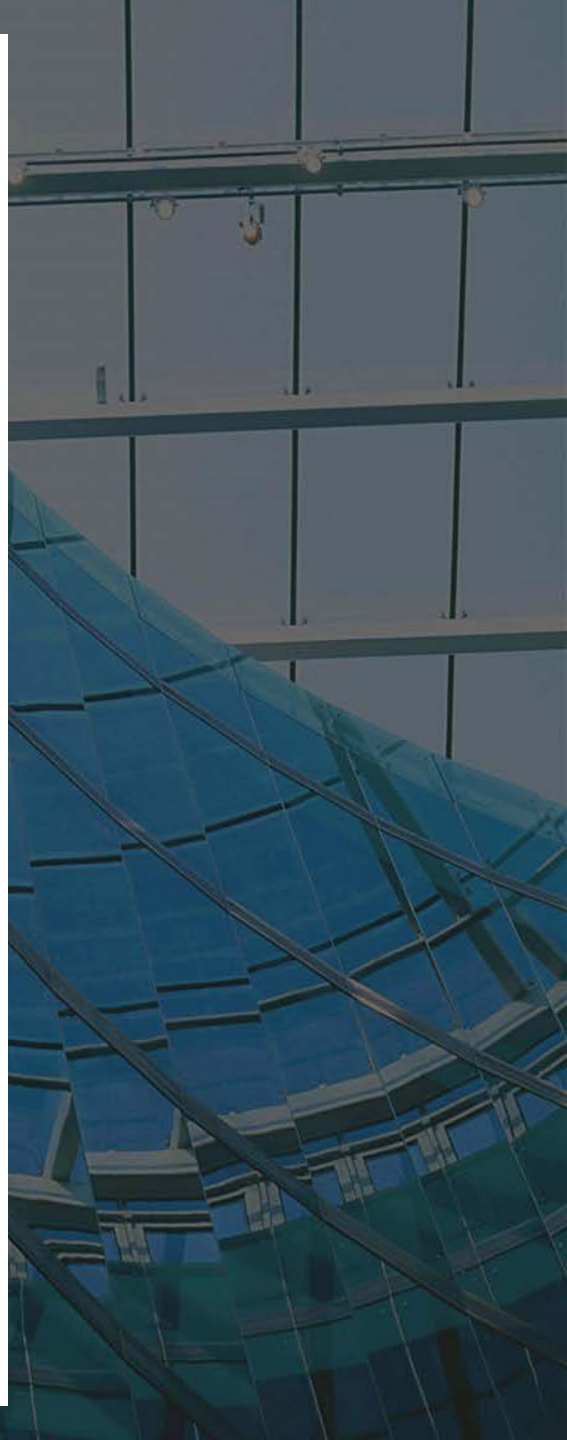
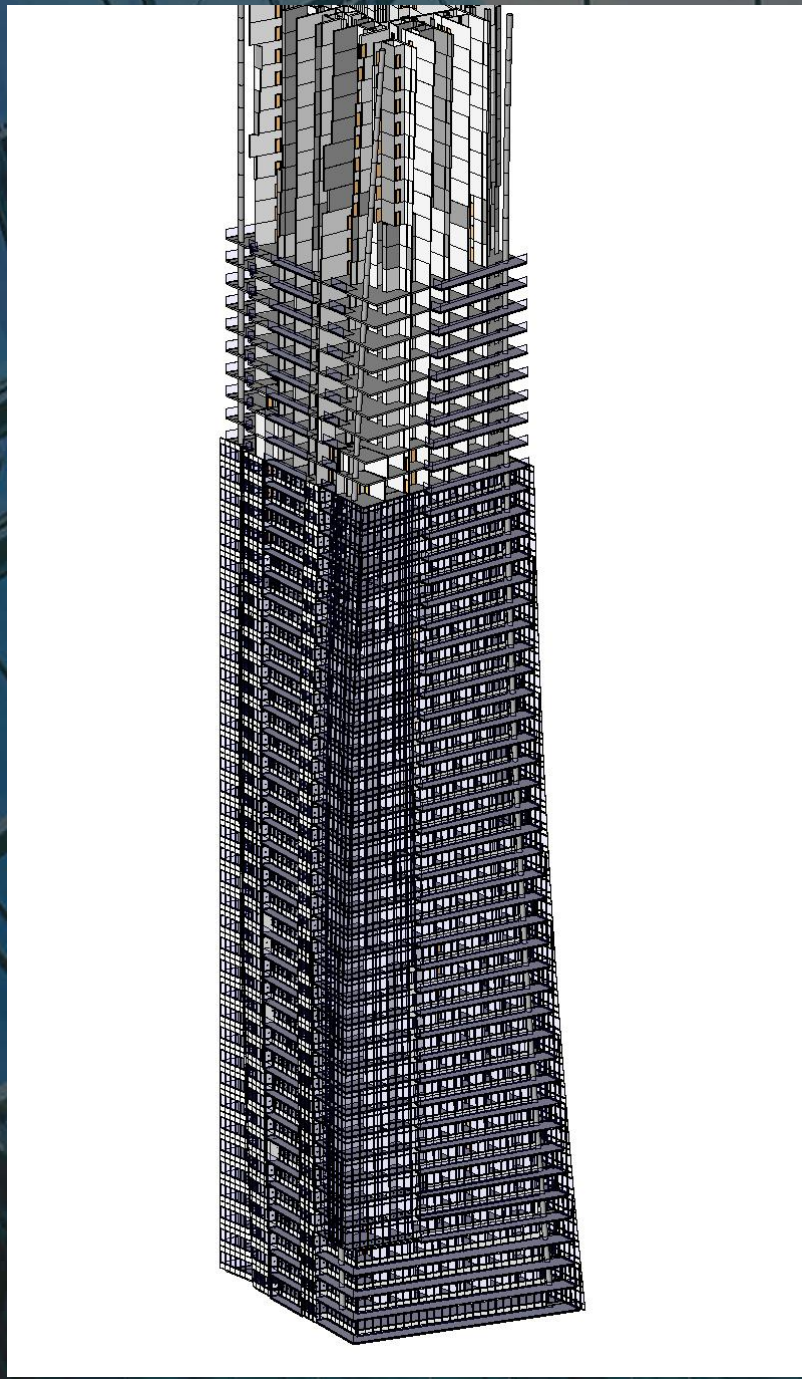


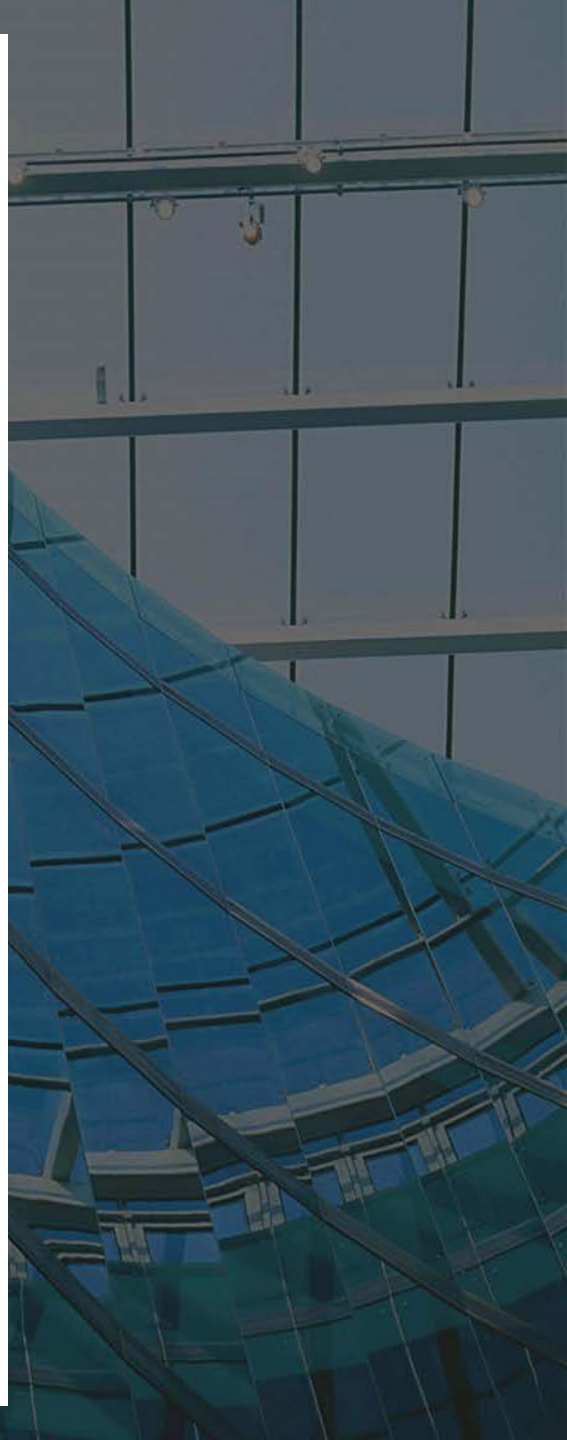
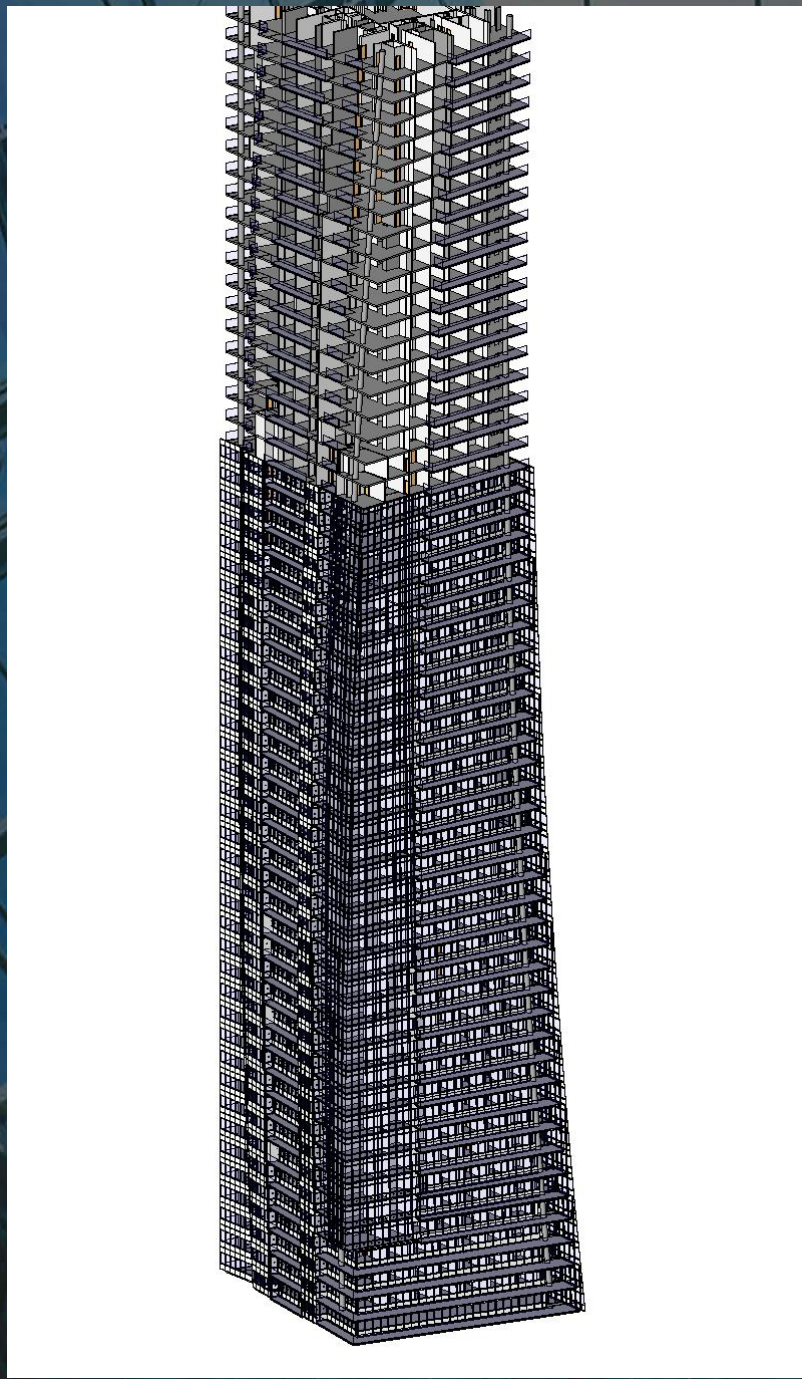


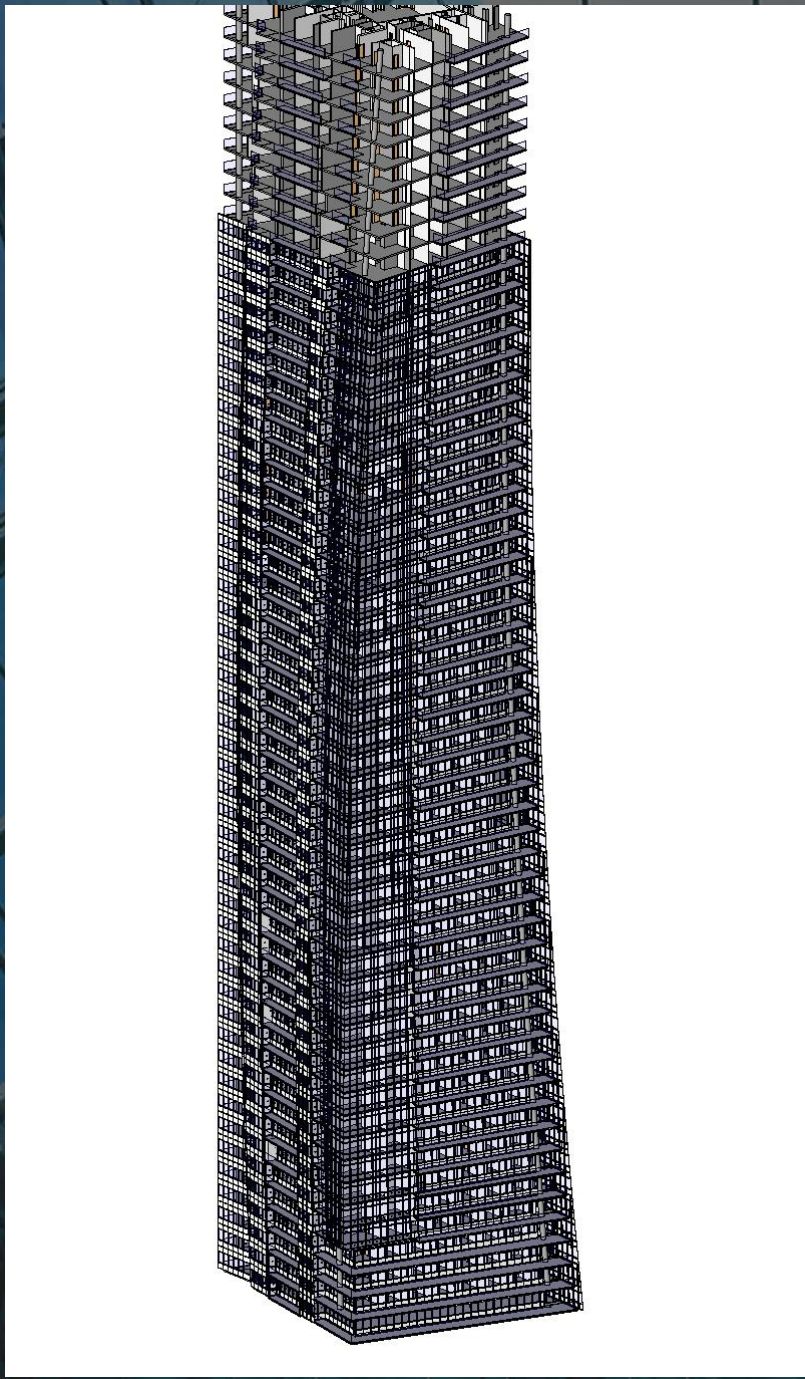






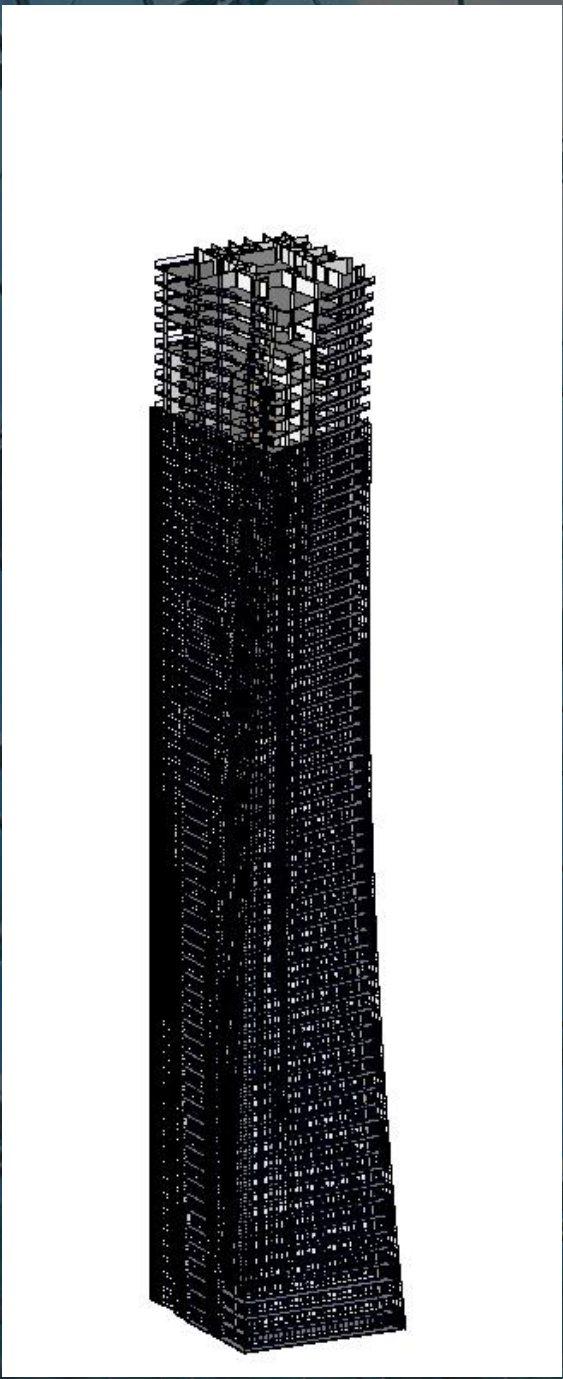




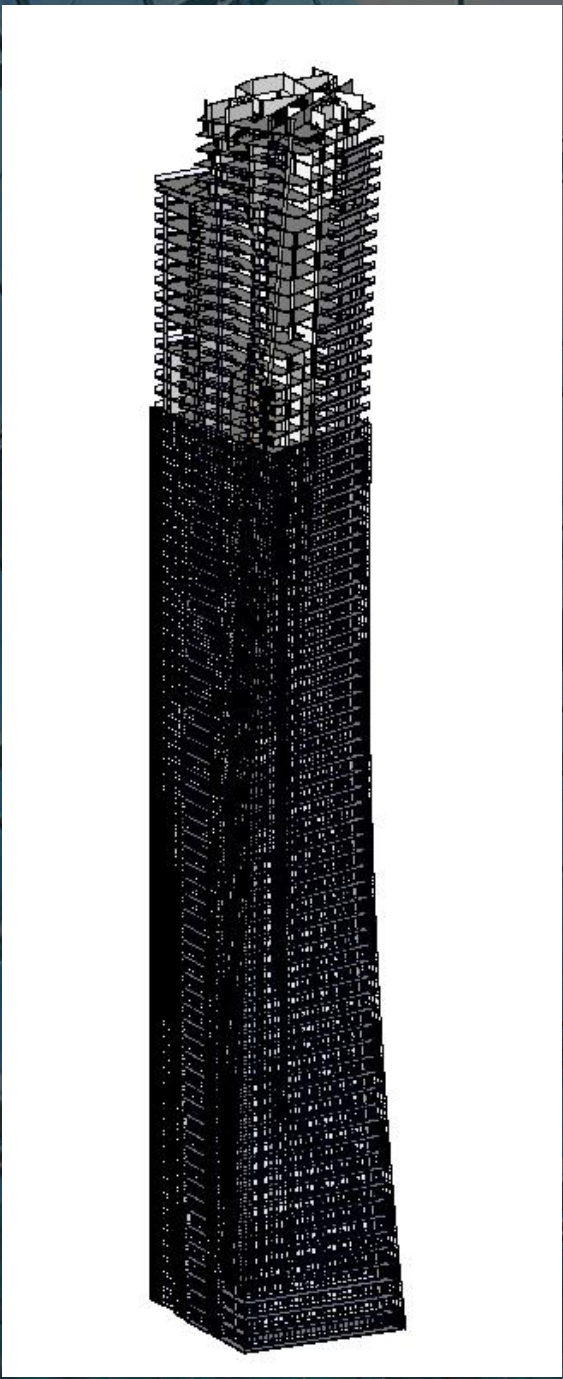






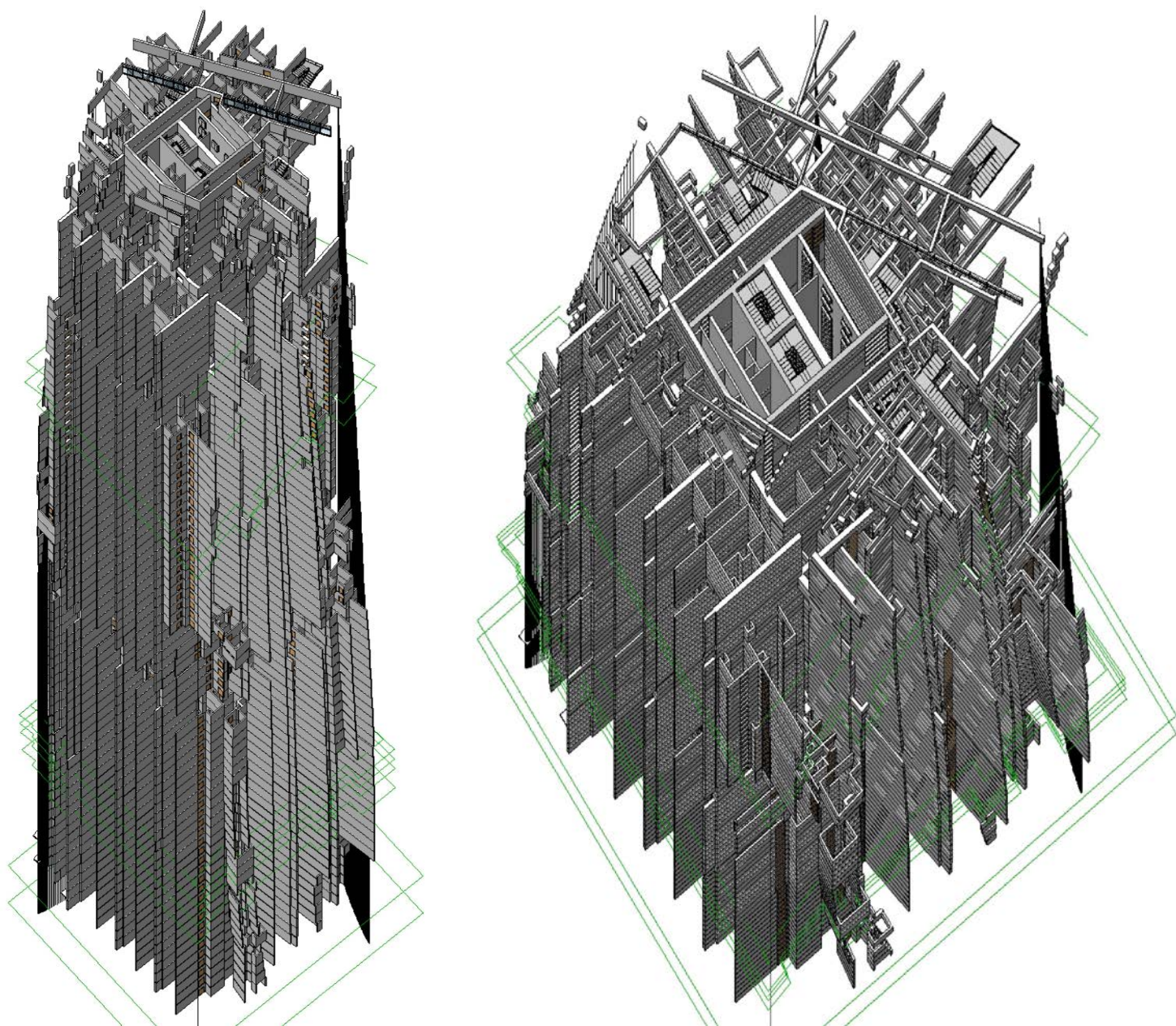




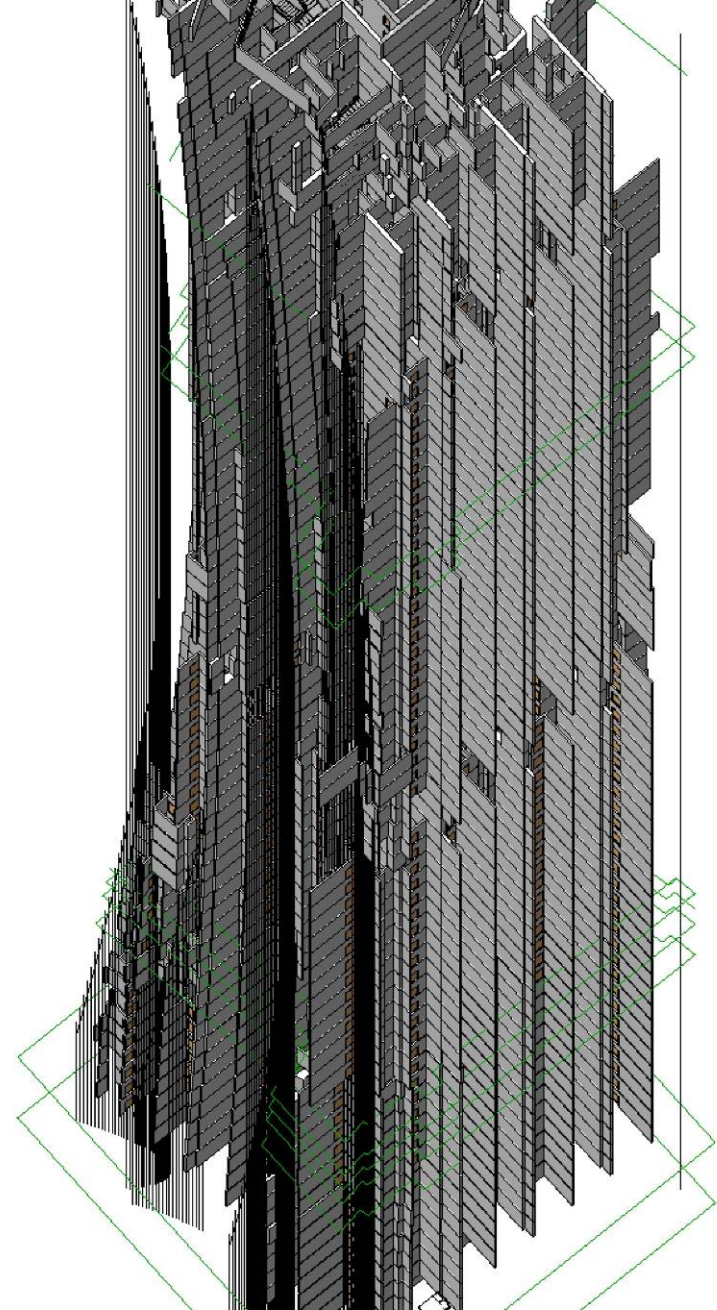
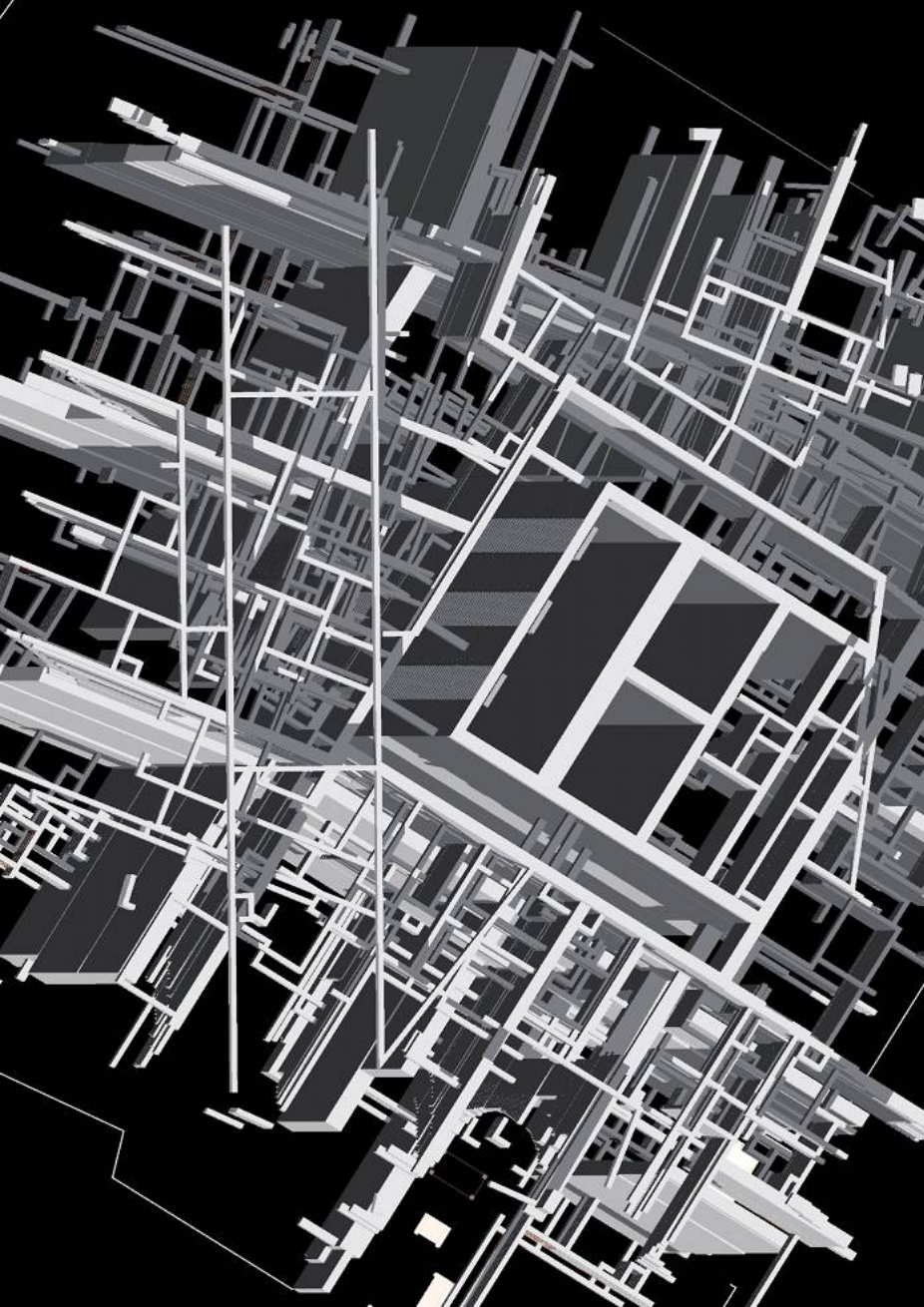




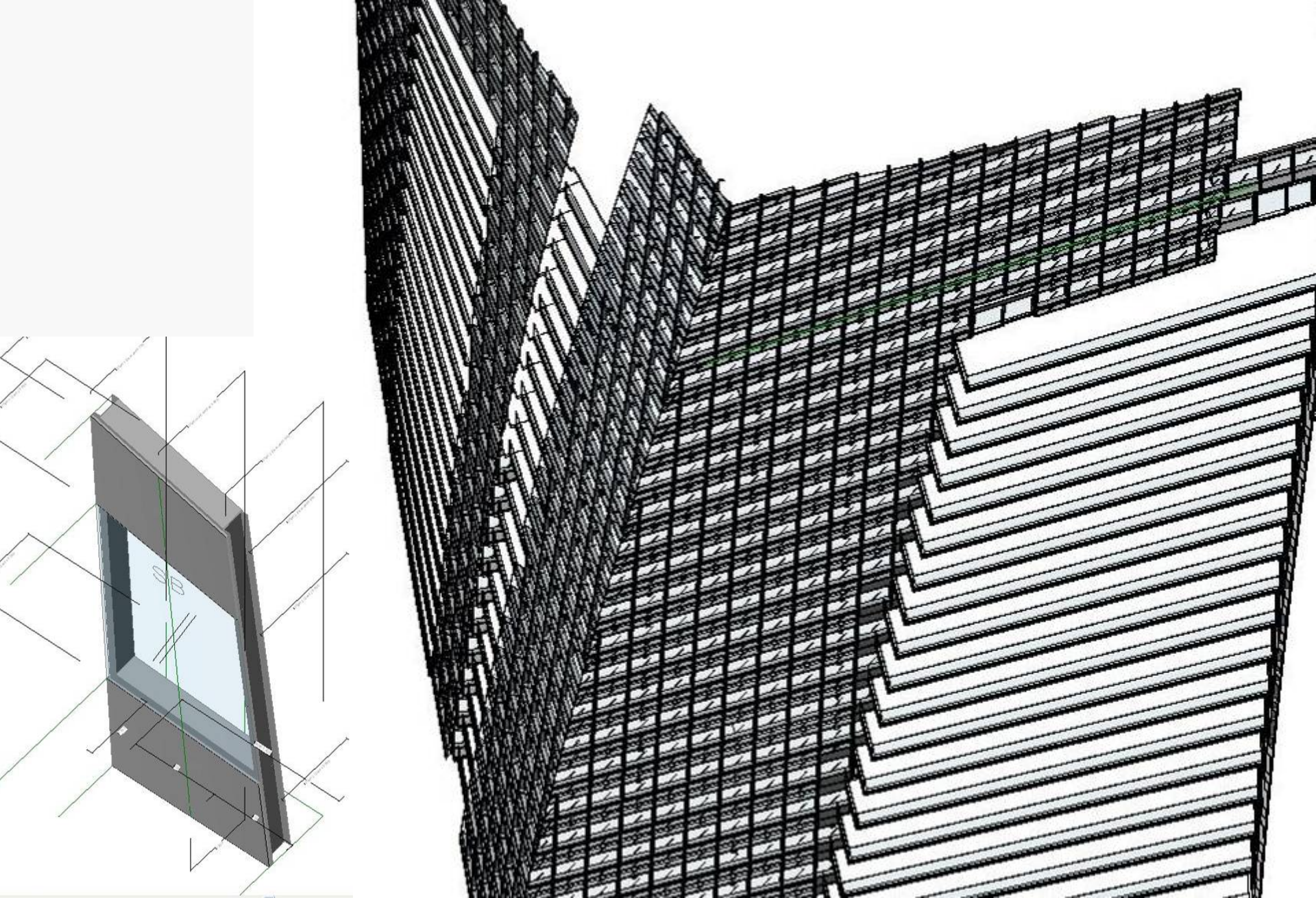




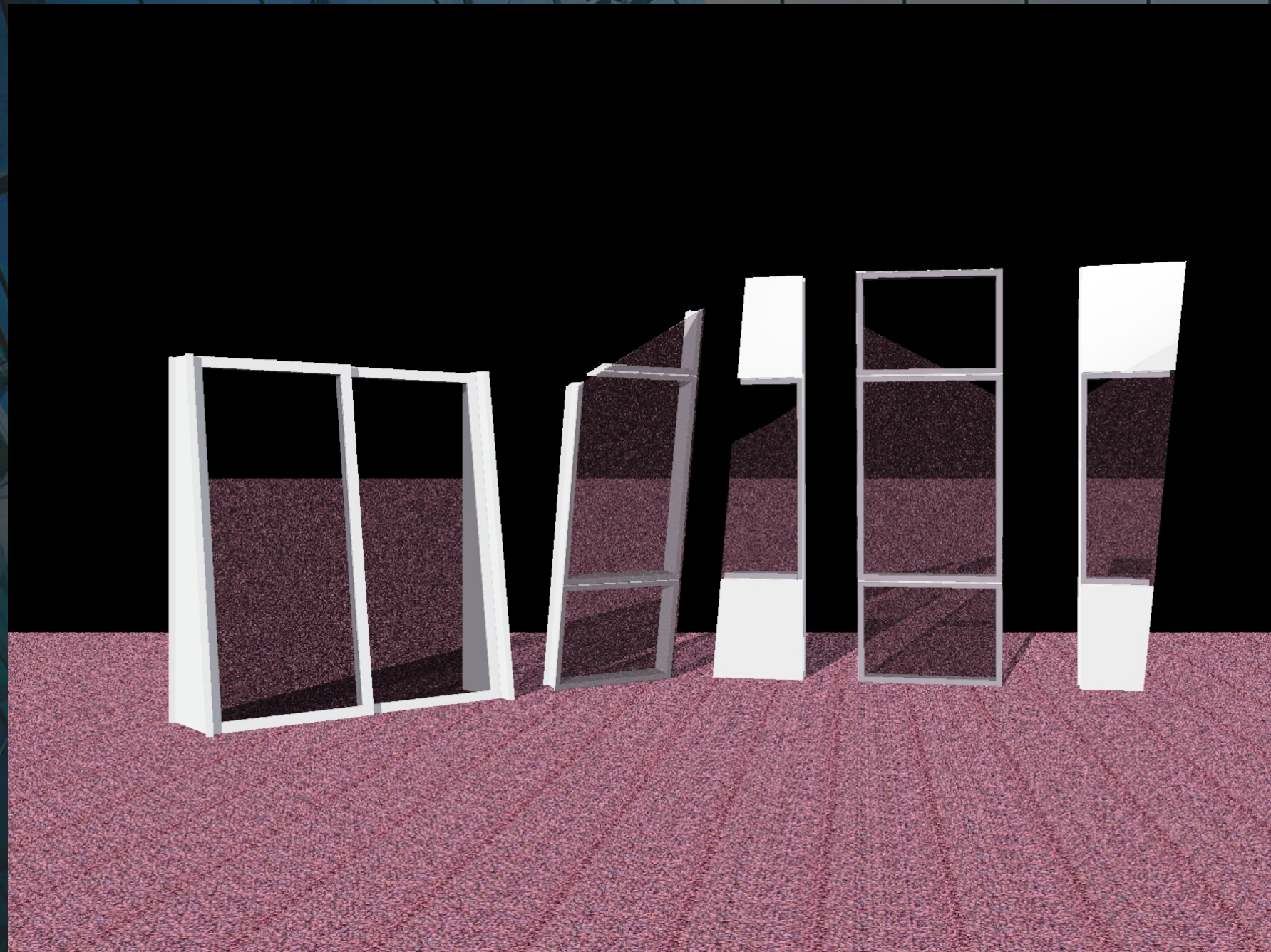
VERTICAL CO-ORDINATION



INTERNAL vs EXTERNAL

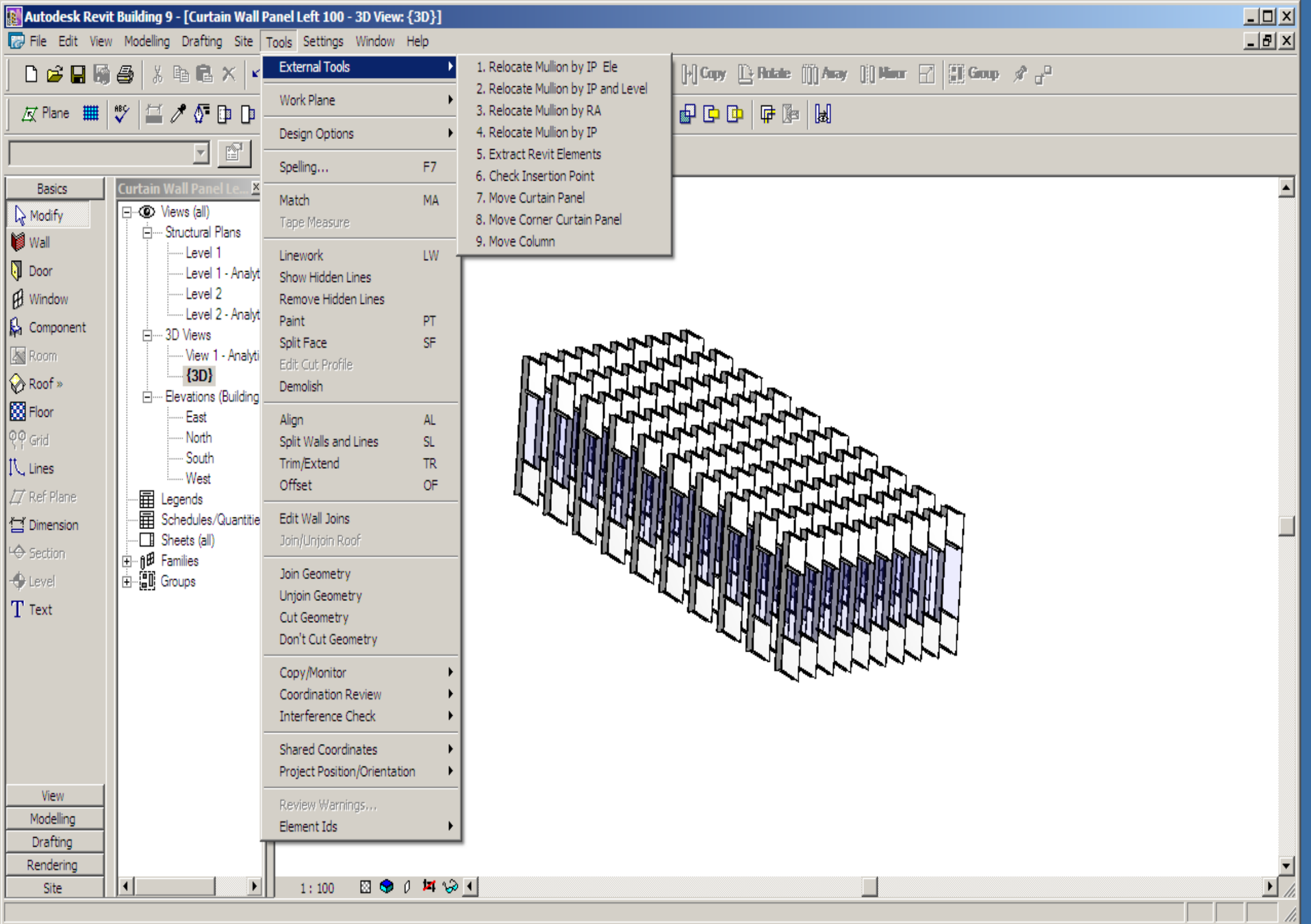


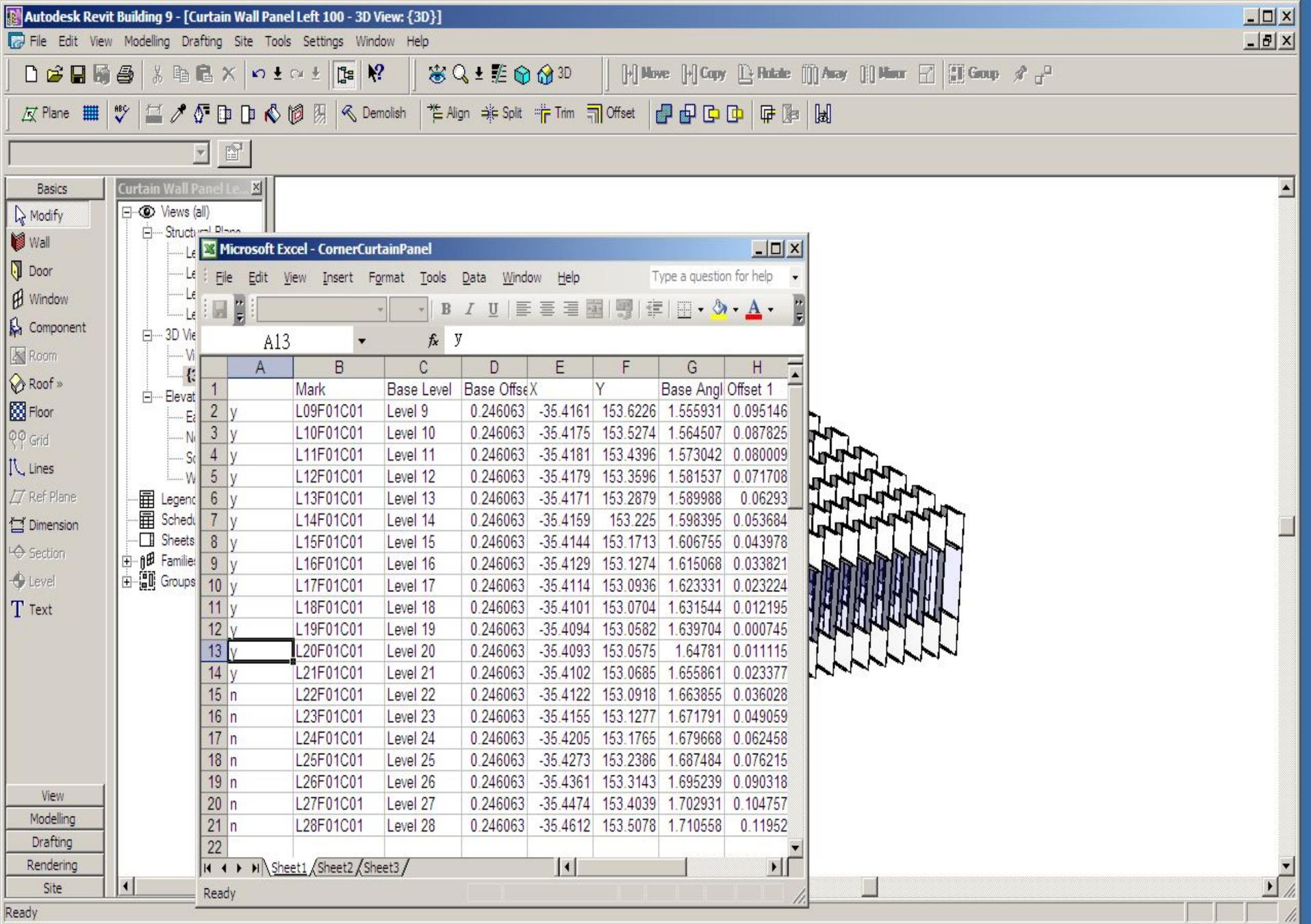
COMPLICATED CURTAIN WALL

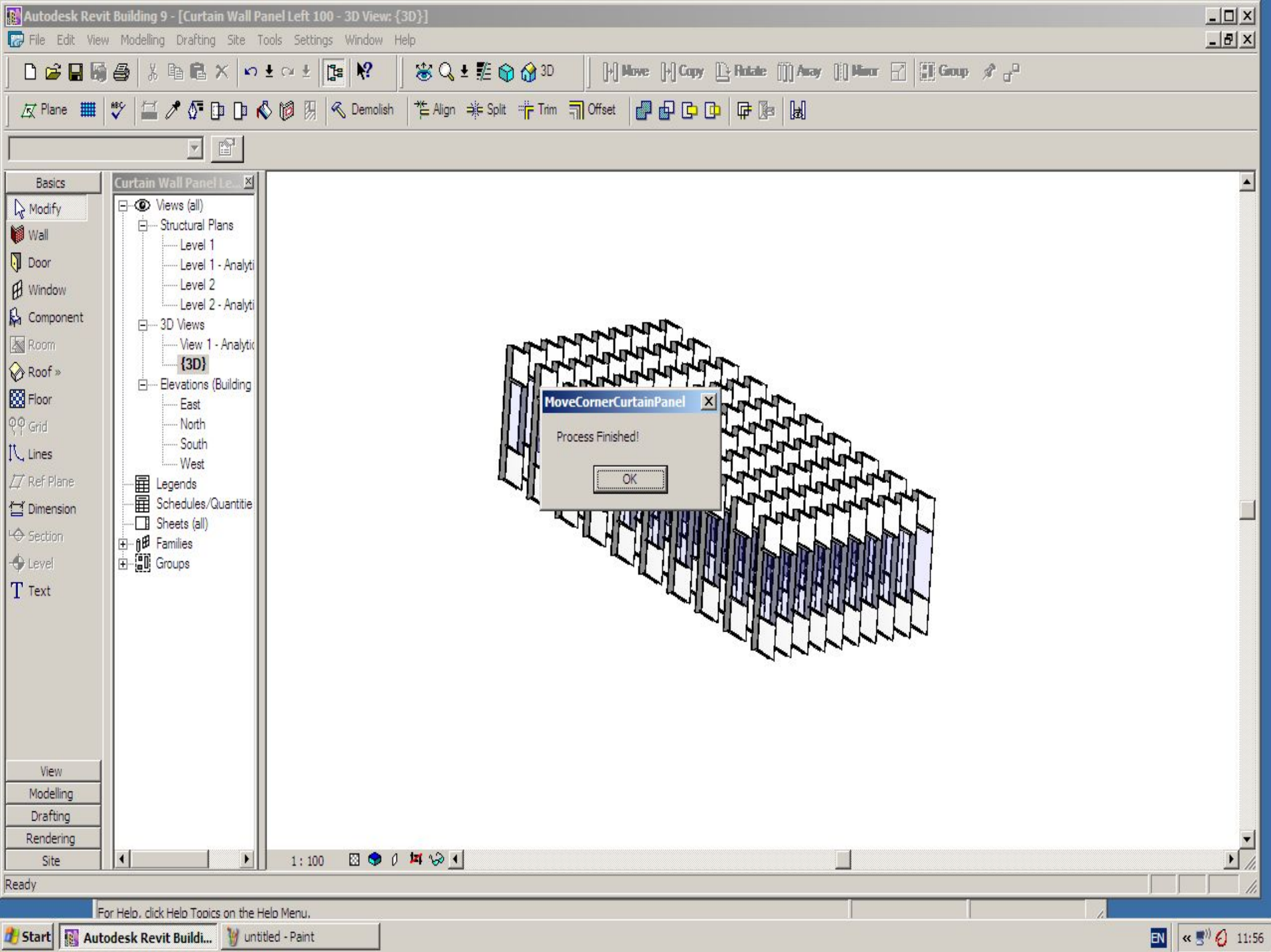


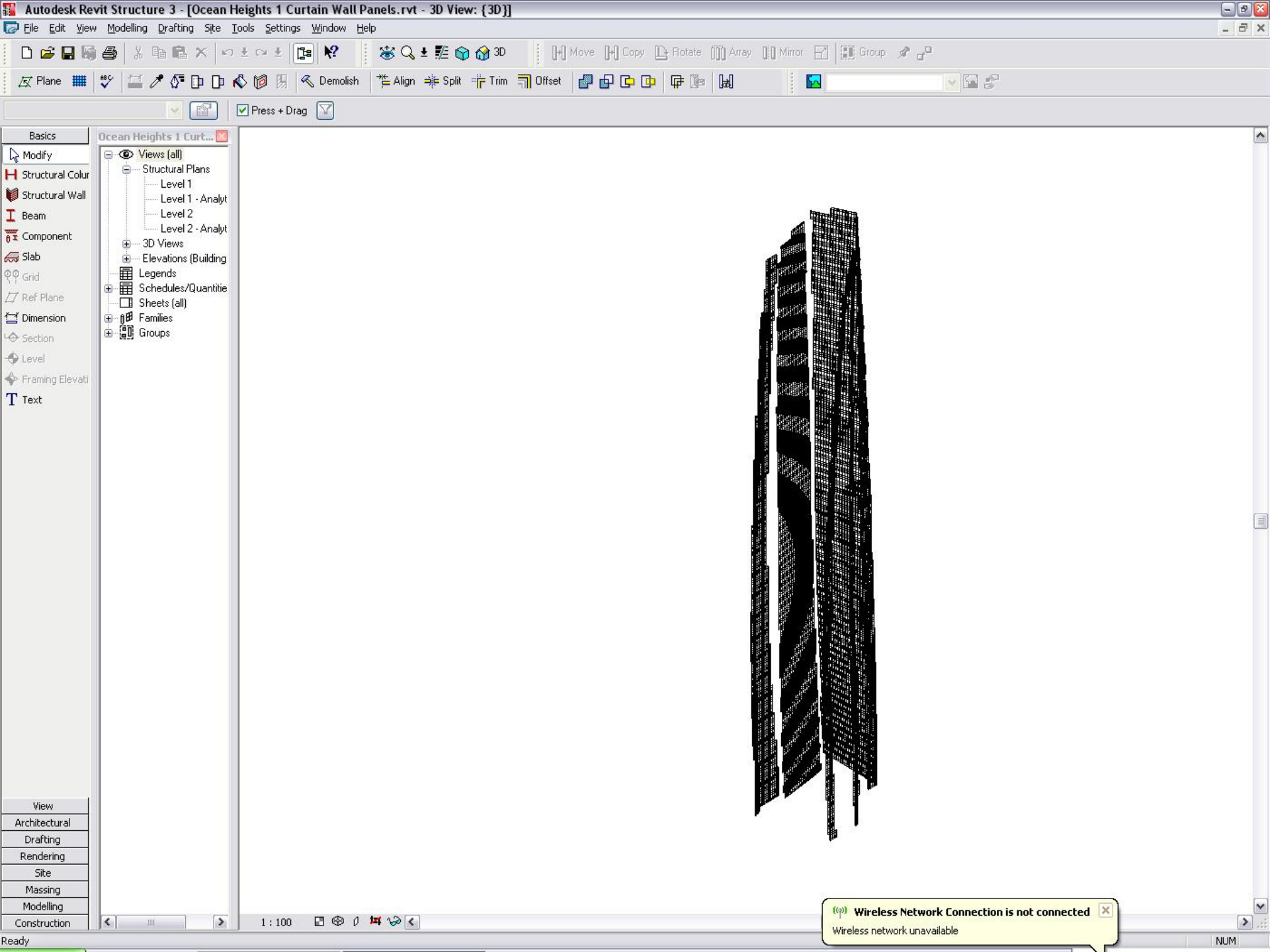
8

Ref Plane	Level 20	Sliding Door	L71B05D12	Level 71	2550.00		0.00
Dimension	Level 30	Sliding Door	L71B05D15	Level 71	2550.00		0.00
Section	Level 40	Sliding Door	L72B01D02	Level 72	2400.00		0.00
Level	Level 50	Sliding Door	L72B02D02	Level 72	2500.00		0.00
Framing Elevati	Level 60	Sliding Door	L72B04D01	Level 72	1800.00		0.00
Text	Level 65	Sliding Door	L72B05D03	Level 72	2550.00		0.00
	Level 70	Sliding Door	L72B05D05	Level 72	2550.00		0.00
	Level 75	Sliding Door	L72B05D08	Level 72	2550.00		0.00
	3D Views	Sliding Door	L72B05D10	Level 72	2550.00		0.00
	3D View 1	Sliding Door	L72B05D12	Level 72	2550.00		0.00
	3D View 2	Sliding Door	L72B05D15	Level 72	2550.00		0.00
	3D View 3	Sliding Door	L73B01D02	Level 73	2400.00		0.00
	3D View 4	Sliding Door	L73B02D02	Level 73	2500.00		0.00
	3D View 5	Sliding Door	L73B04D01	Level 73	1700.00		0.00
	3D View 6	Sliding Door	L73B05D03	Level 73	2550.00		0.00
	Copy of 3D V	Sliding Door	L73B05D05	Level 73	2550.00		0.00
	View 1 - Ana	Sliding Door	L73B05D08	Level 73	2550.00		0.00
	{3D}	Sliding Door	L73B05D10	Level 73	2550.00		0.00
	Elevations (Build	Sliding Door	L73B05D12	Level 73	2550.00		0.00
	East	Sliding Door	L73B05D15	Level 73	2550.00		0.00
	North	Sliding Door	L74B01D02	Level 74	2400.00		0.00
	South	Sliding Door	L74B02D02	Level 74	2500.00		0.00
	West	Sliding Door	L74B04D01	Level 74	1600.00		0.00
	Sections (Building	Sliding Door	L74B05D03	Level 74	2550.00		0.00
	Section 1	Sliding Door	L74B05D05	Level 74	2550.00		0.00
	Section 2	Sliding Door	L74B05D08	Level 74	2550.00		0.00
	Section 3	Sliding Door	L74B05D10	Level 74	2550.00		0.00
	Legends	Sliding Door	L74B05D12	Level 74	2550.00		0.00
	Schedules/Quan	Sliding Door	L74B05D15	Level 74	2550.00		0.00
	Multi-Category S	Sliding Door	L75B01D02	Level 75	2400.00		0.00
	Multi-Category S	Sliding Door	L75B02D02	Level 75	2500.00		0.00
	Sheets (all)	Sliding Door	L76B01D02	Level 76	2400.00		0.00
	Families	Sliding Door	L76B02D02	Level 76	2500.00		0.00
	Annotation Symb	Sliding Door	L77B01D02	Level 77	2400.00		0.00
	Ceilings	Sliding Door	L77B02D01	Level 77	2426.17		0.00
	Curtain Panels	Sliding Door	L78B01D02	Level 78	2400.00		0.00
	Curtain Systems	Sliding Door	L78B02D01	Level 78	2203.01		0.00
	Curtain Wall Mul	Sliding Door	L79B01D02	Level 79	2400.00		0.00
	Detail Items	Sliding Door	L79B02D01	Level 79	1974.15		0.00
	Doors	Sliding Door: 649					
	Floors	Sliding Door to Replace CW Pan	L10F01N10	Level 10	1255.77		-123.24
	Furniture	Sliding Door to Replace CW Panel: 1					
		Grand total: 9740					









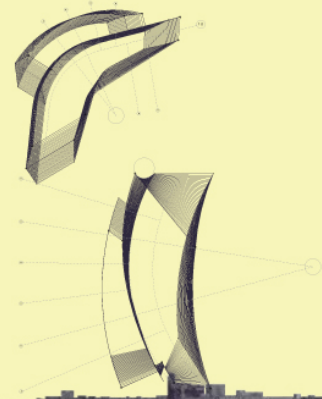
Abu Dhabi Dancing Towers

Located in the heart of Abu Dhabi, Dancing Towers was designed to appropriately fit its surrounding neighbors in scale.

The challenge was how to achieve this when the project was only 70,000 square meters and adjacent properties were relatively small, averaging 900 square-meter floor plates. Two slender towers as opposed to one singular tower was the first step, but the site itself was constrained, forcing a close proximity between the two buildings.

This site constraint is intensified in achieving a viable connective retail podium between the commercial and residential towers, drop-offs to the lobbies and access to supporting functions. The buildings were placed deliberately to maximize the uses down below.

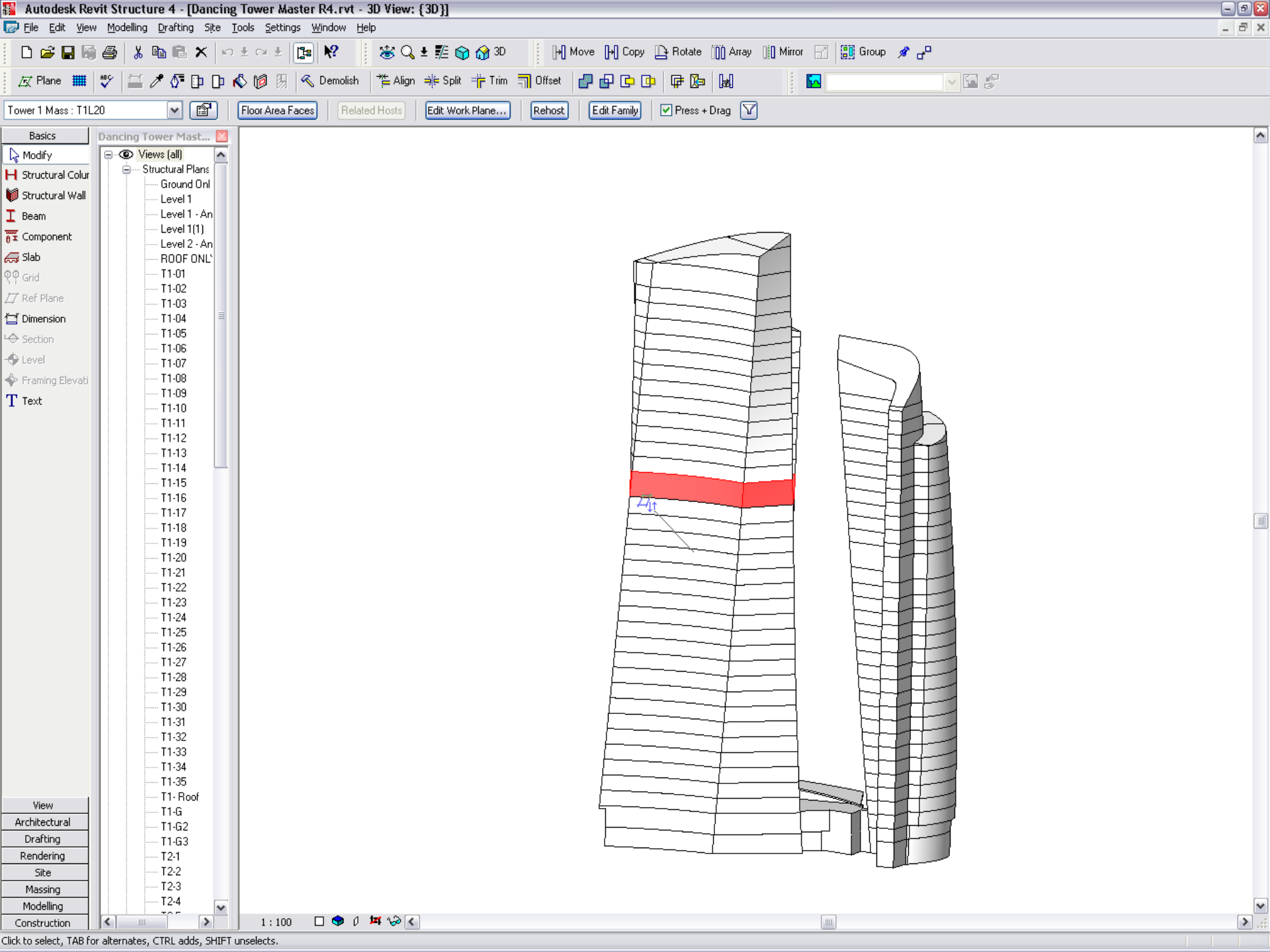
However, the two towers quickly lean, rotate, bend and warp to respond to each other, the adjacent sites and ultimately the view to the ocean at their horizon. These two figures fluidly respond to each other, dynamically engaged and flowing – and ultimately tied together in a passionate dance •

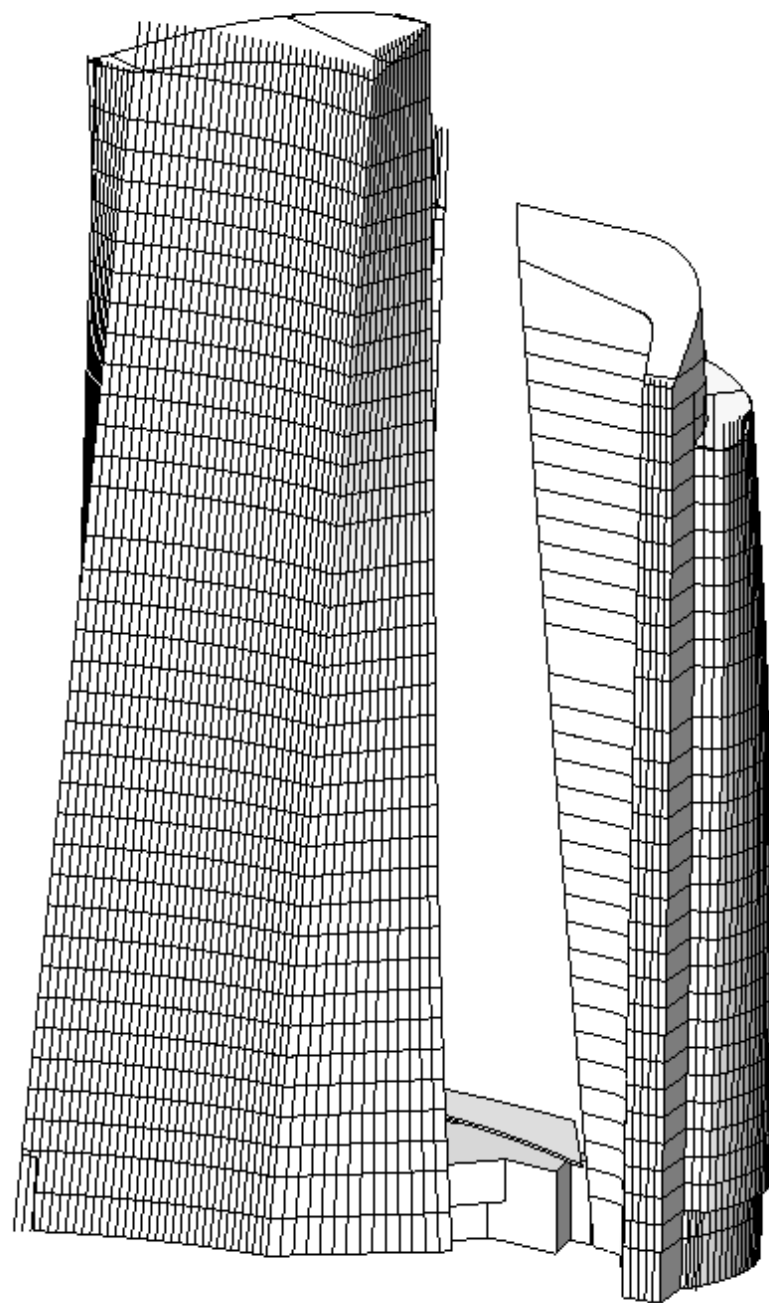


Program Mixed Use Site Area 4,180 sqm
Floor Area 44,235 sqm Building Height 160 m



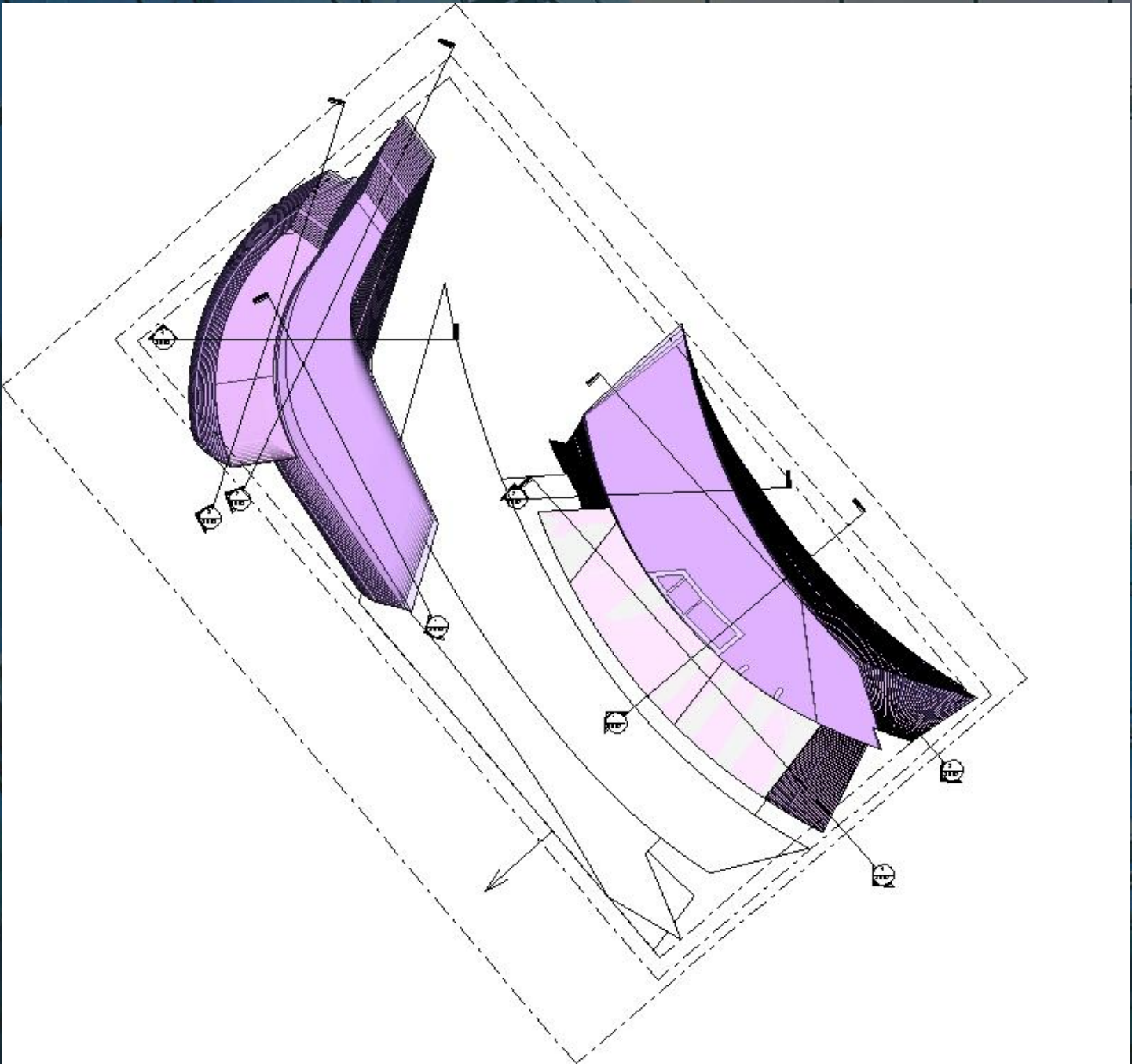
Abu Dhabi **Dancing Towers**







2006/08/25 18:19



Program: Residential, Site Area 7,007 sqm
 Floor Area 90,206 sqm, Building Height 225 m

Abu Dhabi Empire Tower

Empire Tower was challenged through a client request of not "pushing the limits" too far. The concern is that the residential project was located in the middle of a master plan filled with potential icons. The design standardizes the units to accommodate the client request but manipulates the section to develop a very dynamic solution, which holds its own amidst the visual clutter of its neighbors. This was deemed crucial to the financial viability of this project, which is dependent on pre-sales within a highly competitive market.

The design maximizes the tower's presence on the street, with vertical layers spreading out to the property lines. The building then bends back away from the street across from a large commercial tower, allowing for an enlarged view corridor between the central park of the community and the sea, one block away. The splayed vertical layers converge and rise up before bending forward together, as the 230-meter tower extends into the sky – maximizing its views between the park and the sea •



Initial Massing



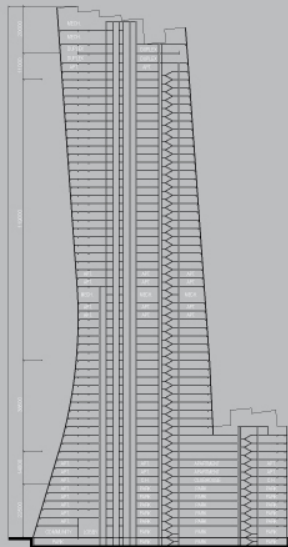
Mass Divisions



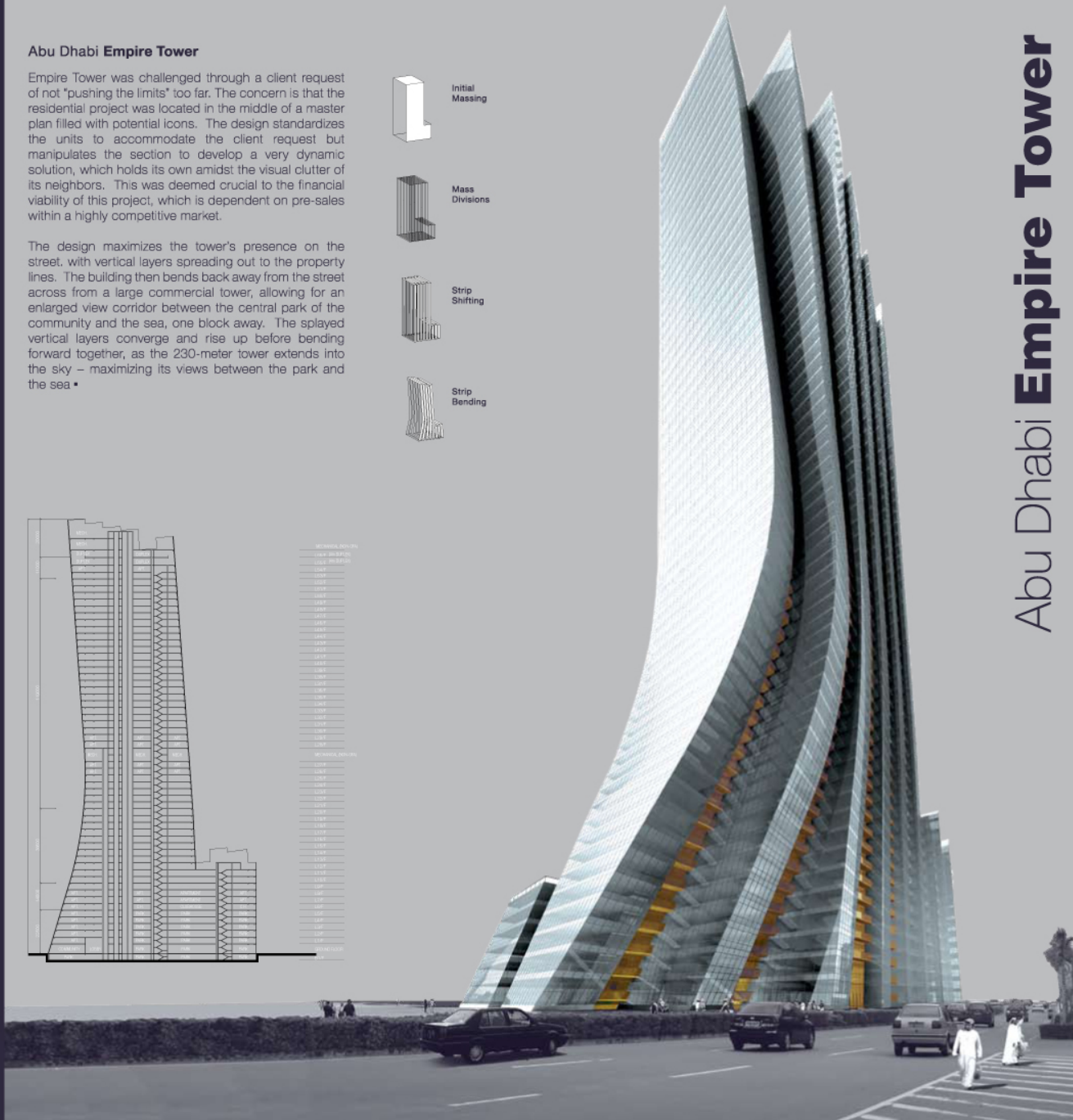
Strip Shifting



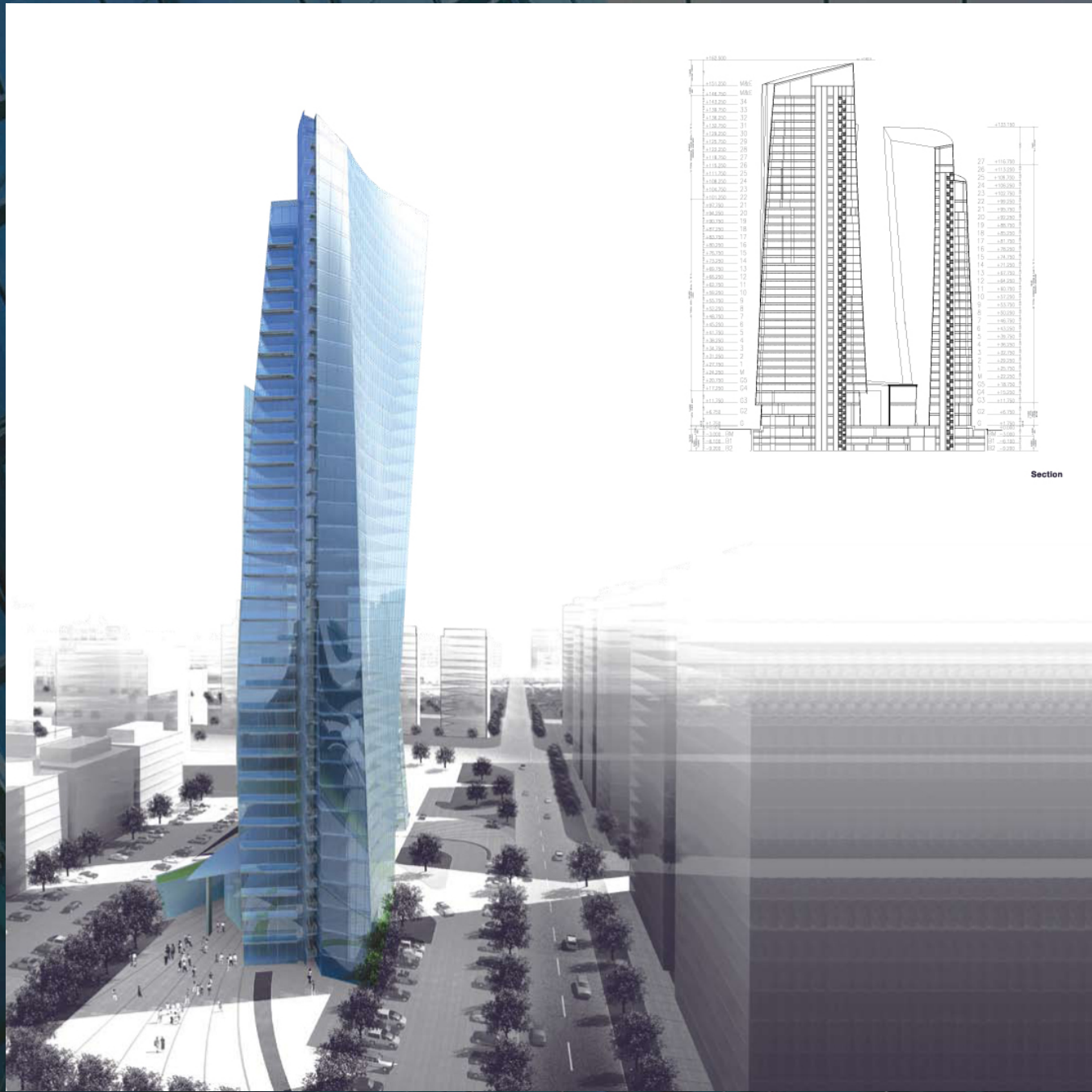
Strip Bending



SECTION DIVISION	SECTION DIVISION
12.00	12.00
11.00	11.00
10.00	10.00
9.00	9.00
8.00	8.00
7.00	7.00
6.00	6.00
5.00	5.00
4.00	4.00
3.00	3.00
2.00	2.00
1.00	1.00
0.00	0.00
-1.00	-1.00
-2.00	-2.00
-3.00	-3.00
-4.00	-4.00
-5.00	-5.00
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-7.00	-7.00
-8.00	-8.00
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Abu Dhabi **Empire Tower**

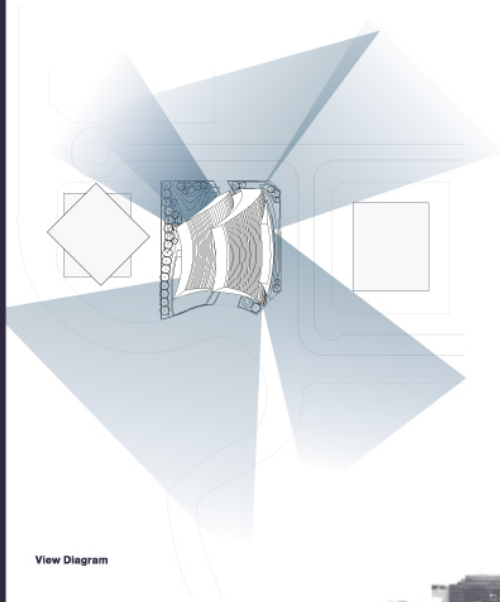


Program Residential Site Area 3,443sqm
Floor Area 197,975 sqm Building Height 460 m

Dubai Ocean Heights Two

Ocean Heights Two is also located in Dubai Marina, UAE, along with its sister project, Ocean Heights One. At 460 meters in height and 105 floors, it will be the tallest tower in its vicinity. However, unlike its predecessor, the requirements for more modulated units up to the 60th floor, forced a different approach while intending to maintain the spirit of its sister.

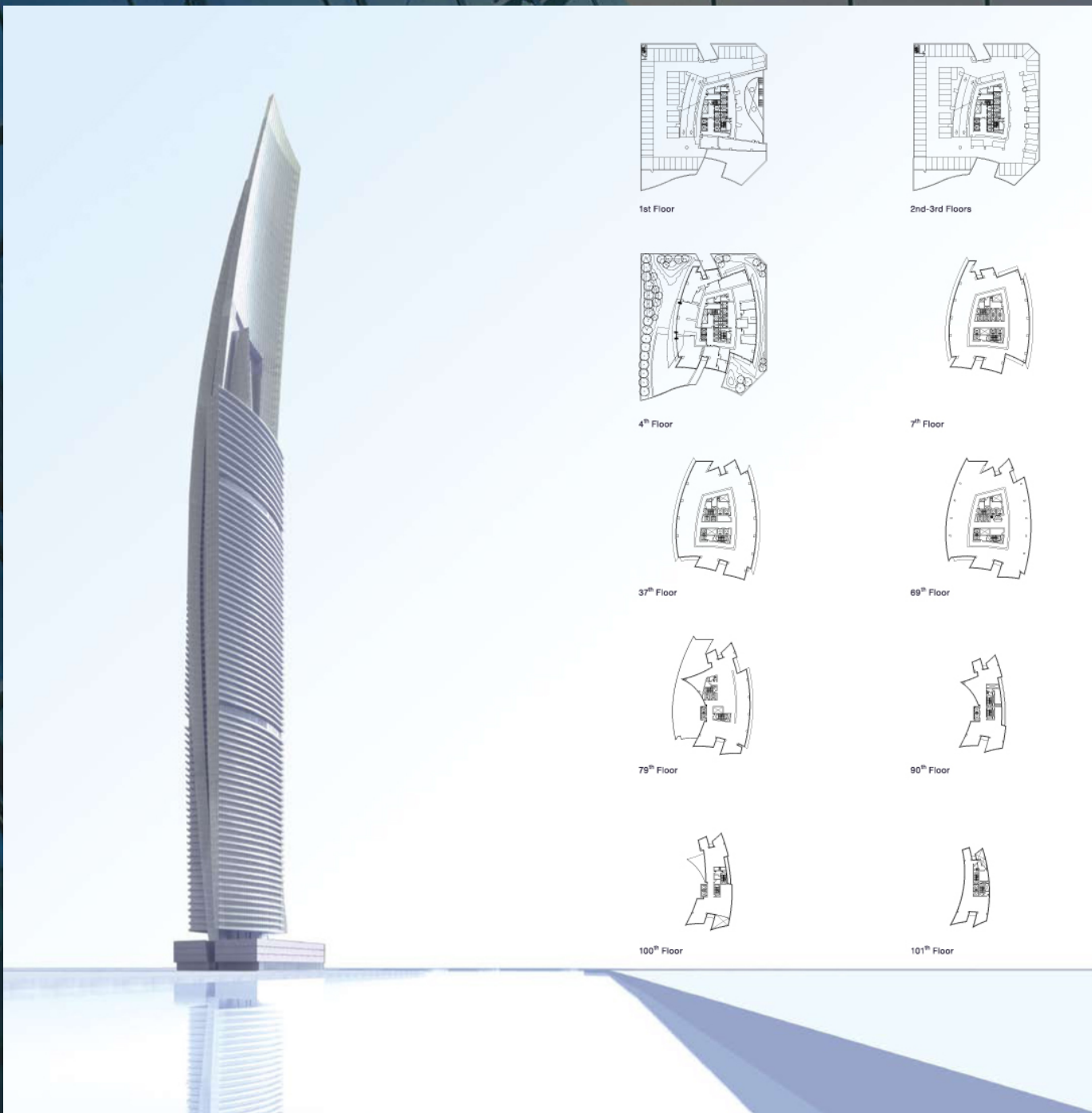
The first 60th floors of the tower are intended to be service apartments, which in order to be marketable, needed to have the majority of units standardized. The curved shape of the tower improves views past its densely located neighbors. The playfulness of this tower was concentrated into the two most visible faces, allowing units to bend up the tower in two blades. These blades were still modulated up to the 60th floor before the tight restrictions of unit area fluctuations become more relaxed. At this point, the modules drop off and the blades continue, tapering and bending into the sky ▪



View Diagram



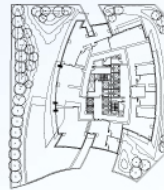
Dubai Ocean Heights Two



1st Floor



2nd-3rd Floors



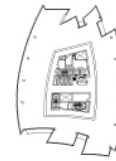
4th Floor



7th Floor



37th Floor



69th Floor



79th Floor



90th Floor

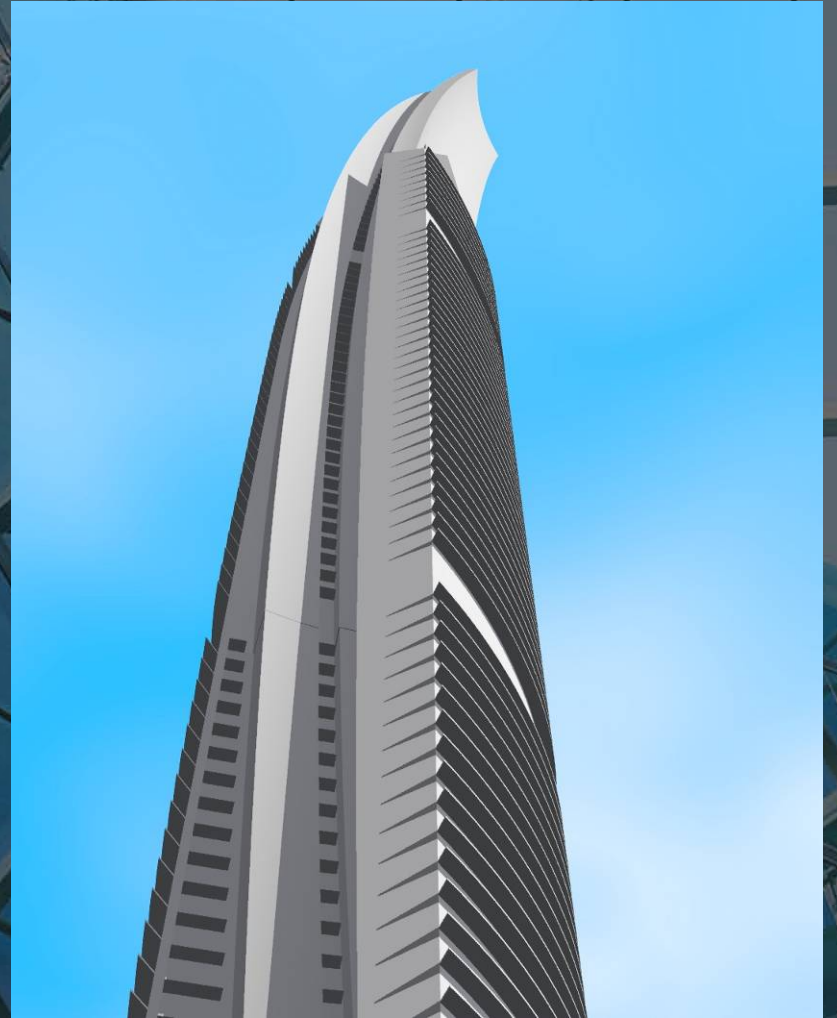


100th Floor

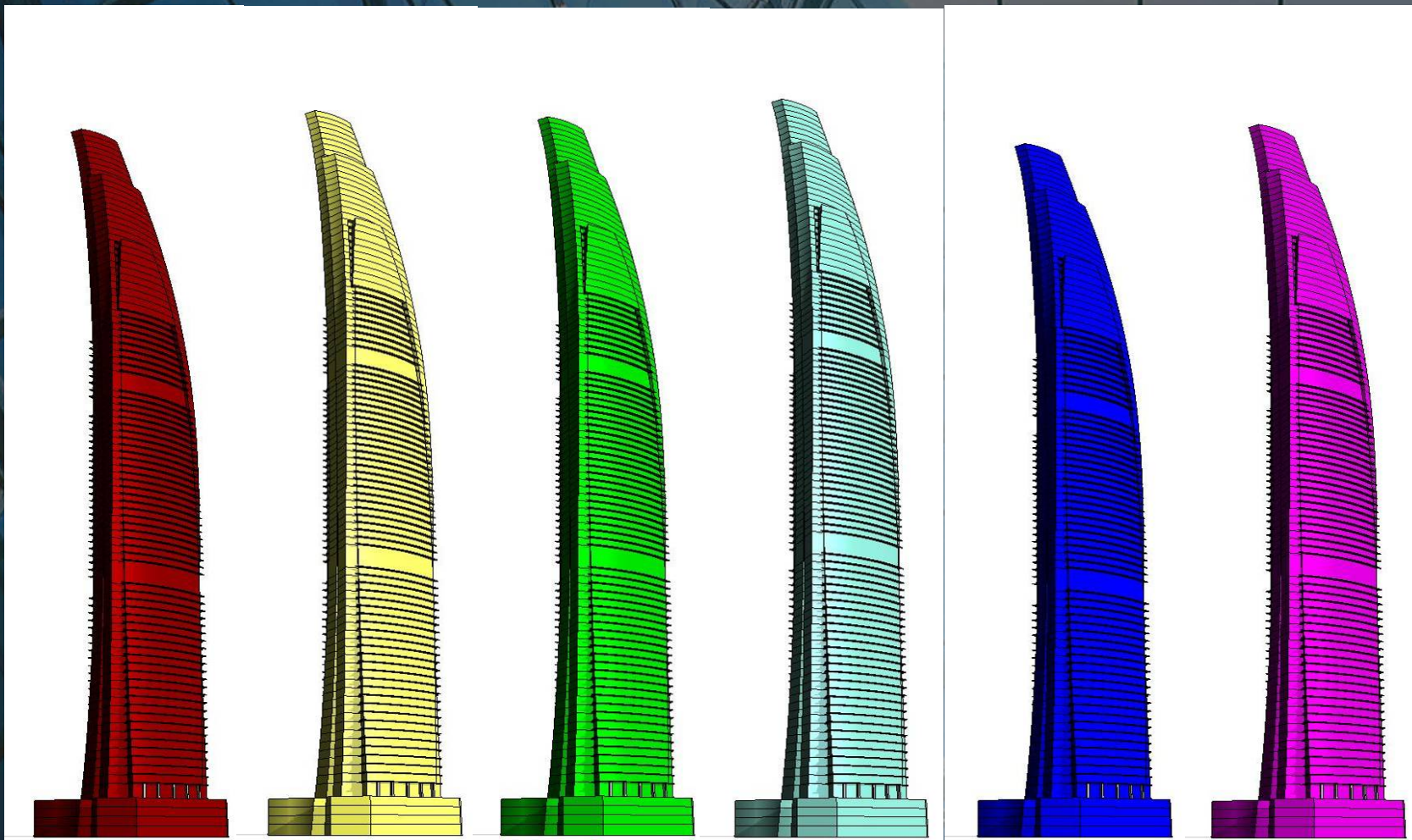


101st Floor

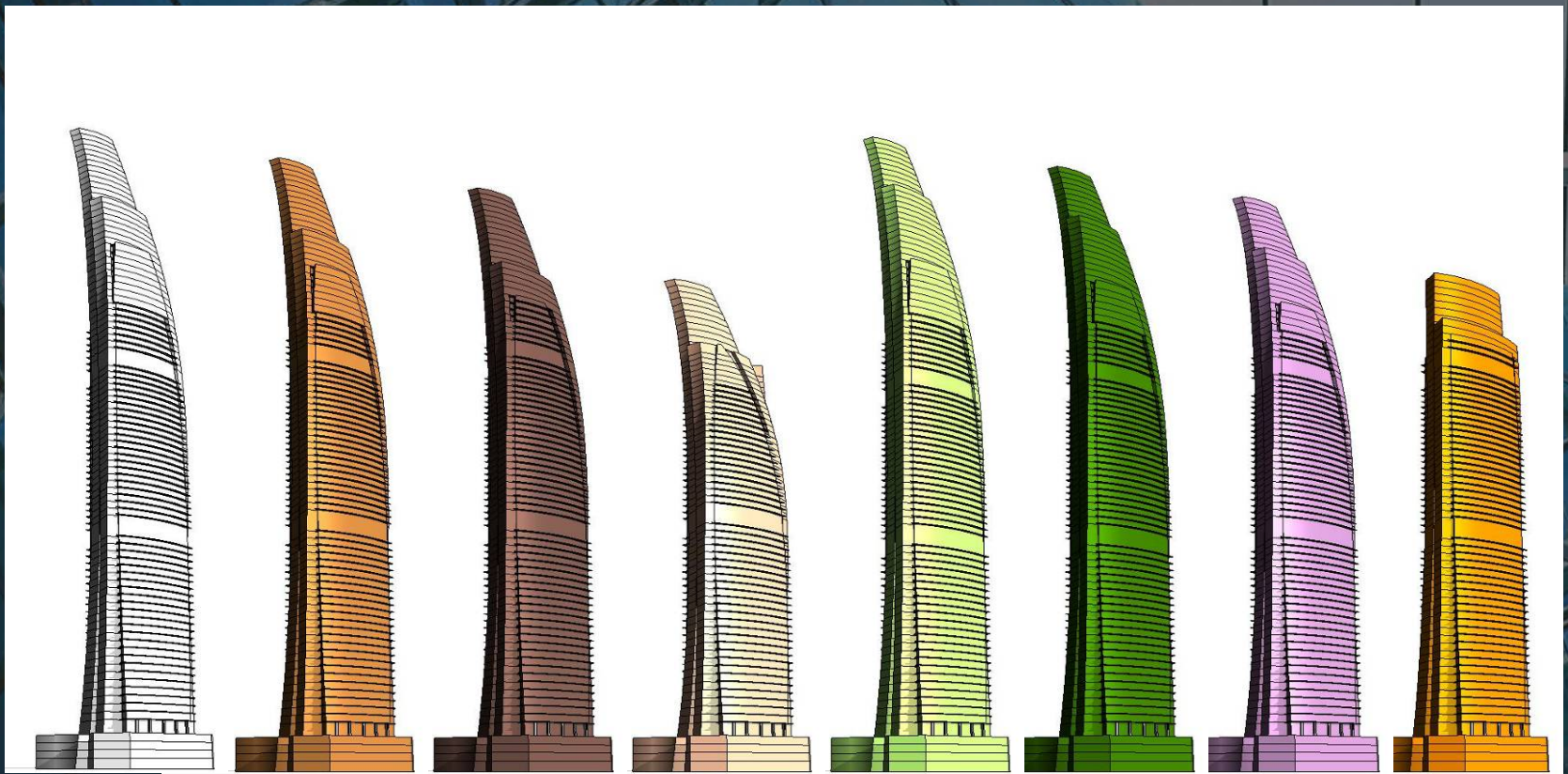
Ocean Heights II

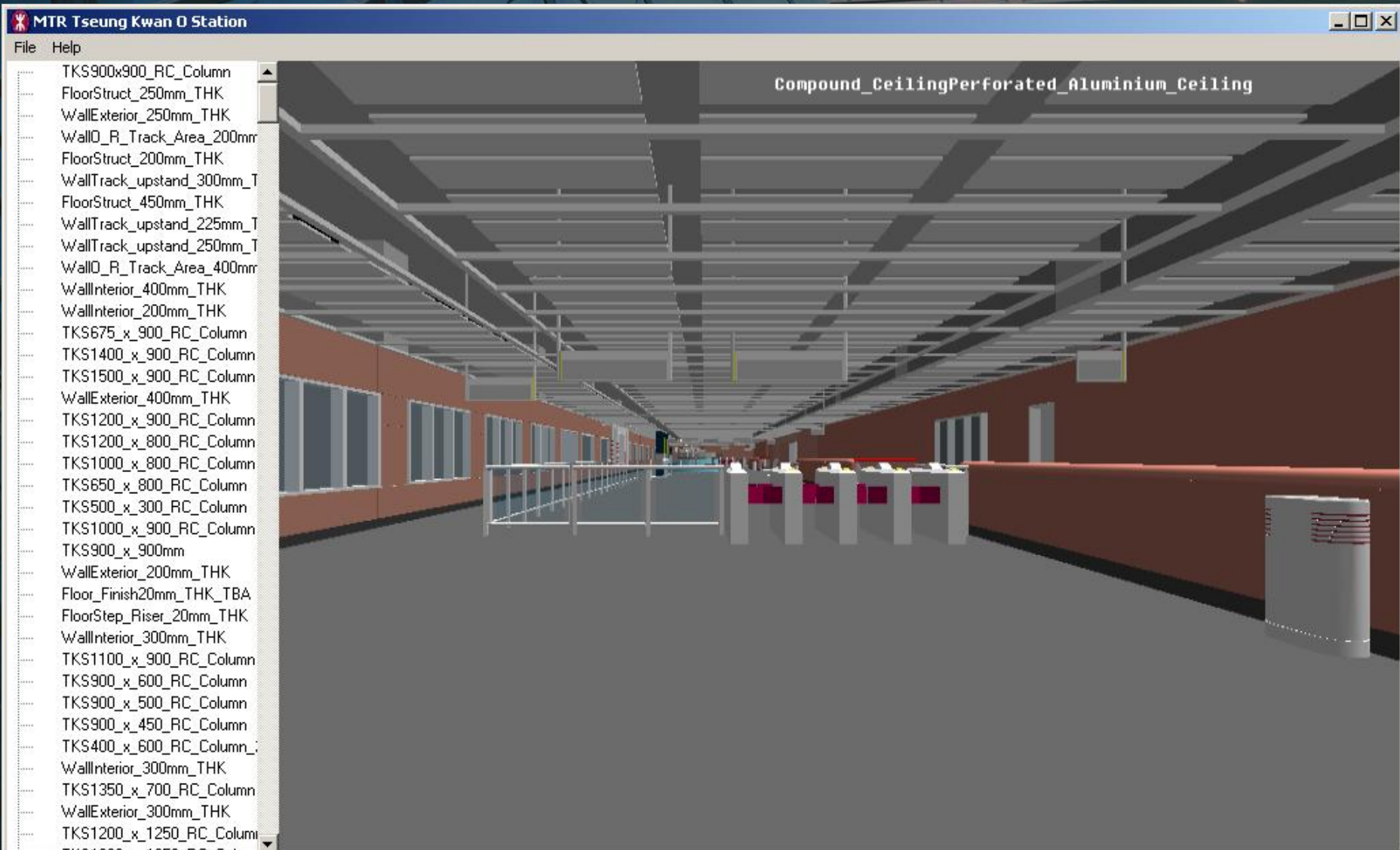


Ocean Heights II – Options



Ocean Heights II – Options





MTR Tseung Kwan O Station

File Help

Compound_CeilingPerforated_Aluminium_Ceiling

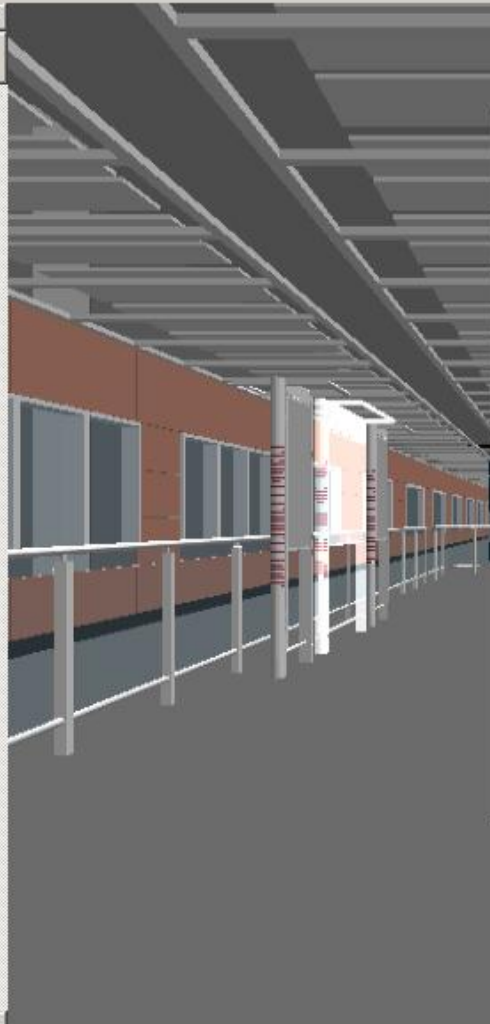
TKS900x900_RC_Column
FloorStruct_250mm_THK
WallExterior_250mm_THK
WallO_R_Track_Area_200mm
FloorStruct_200mm_THK
WallTrack_upstand_300mm_T
FloorStruct_450mm_THK
WallTrack_upstand_225mm_T
WallTrack_upstand_250mm_T
WallO_R_Track_Area_400mm
WallInterior_400mm_THK
WallInterior_200mm_THK
TKS675_x_900_RC_Column
TKS1400_x_900_RC_Column
TKS1500_x_900_RC_Column
WallExterior_400mm_THK
TKS1200_x_900_RC_Column
TKS1200_x_800_RC_Column
TKS1000_x_800_RC_Column
TKS650_x_800_RC_Column
TKS500_x_300_RC_Column
TKS1000_x_900_RC_Column
TKS900_x_900mm
WallExterior_200mm_THK
Floor_Finish20mm_THK_TBA
FloorStep_Riser_20mm_THK
WallInterior_300mm_THK
TKS1100_x_900_RC_Column
TKS900_x_600_RC_Column
TKS900_x_500_RC_Column
TKS900_x_450_RC_Column
TKS400_x_600_RC_Column
WallInterior_300mm_THK
TKS1350_x_700_RC_Column
WallExterior_300mm_THK
TKS1200_x_1250_RC_Column



MTR Tseung Kwan O Station

File Help

TKS900x900_RC_Column
 FloorStruct_250mm_THK
 WallExterior_250mm_THK
 WallO_R_Track_Area_200mm
 FloorStruct_200mm_THK
 WallTrack_upstand_300mm_T
 FloorStruct_450mm_THK
 WallTrack_upstand_225mm_T
 WallTrack_upstand_250mm_T
 WallO_R_Track_Area_400mm
 WallInterior_400mm_THK
 WallInterior_200mm_THK
 TKS675_x_900_RC_Column
 TKS1400_x_900_RC_Column
 TKS1500_x_900_RC_Column
 WallExterior_400mm_THK
 TKS1200_x_900_RC_Column
 TKS1200_x_800_RC_Column
 TKS1000_x_800_RC_Column
 TKS650_x_800_RC_Column
 TKS500_x_300_RC_Column
 TKS1000_x_900_RC_Column
 TKS900_x_900mm
 WallExterior_200mm_THK
 Floor_Finish20mm_THK_TBA
 FloorStep_Riser_20mm_THK
 WallInterior_300mm_THK
 TKS1100_x_900_RC_Column
 TKS900_x_600_RC_Column
 TKS900_x_500_RC_Column
 TKS900_x_450_RC_Column
 TKS400_x_600_RC_Column_
 WallInterior_300mm_THK
 TKS1350_x_700_RC_Column
 WallExterior_300mm_THK
 TKS1200_x_1250_RC_Column



Station Property Detail

Item : Floor_Mount_Information_SignINF
 Type : Perforated Aluminium Ceiling
 Station : Tseung Kwan O South Station
 Location : Paltform South Entrance
 Installed Date : 15 January, 2003
 Installed By : ABC Engineering Company
 Manufacturer : Aluminium Ceiling Factory
 Item WebLink : <http://ACF.com>
 History : 3 years 11 months
 Department : Operation and Facility Control
 Description : Item is under normal situation

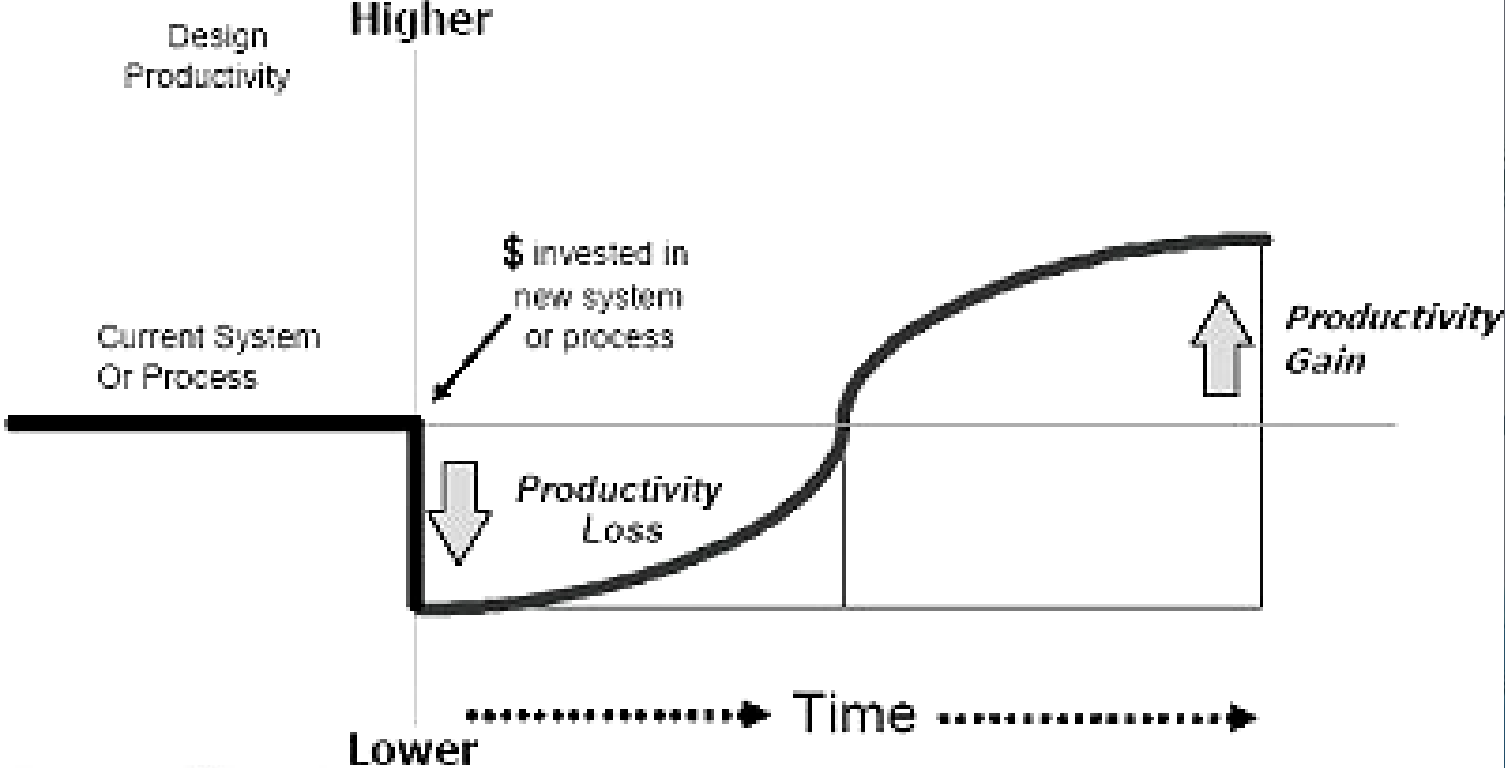
Use of Building Information Modeling (BIM)

1. Design visualization
2. Drawing Productions
3. Services Co-ordination and Clash detection with other disciplines
4. Quantity taking and preparation of Tender Document
5. Automated Statutory Submission
6. Scientific analysis of different environmental aspects
7. Supply Chain Integration with the manufacturing and production
8. Complex Geometry 複雑な形状を実現可能

Sustainable Design

Is the AEC Industry Changing?





$$\frac{(B - (\frac{B}{1+E})) \times (12 - C)}{A + (B \times C \times D)} = \text{First Year ROI}$$

A = cost of hardware and software (dollars)	
B = monthly labor cost (dollars)	
C = training time (months)	
D = productivity lost during training (percentage)	
E = productivity gain after training (percentage)	

A = cost of hardware and software	\$6,000
B = monthly labor cost	\$4,200
C = training time	3 months
D = productivity loss during training	50%
E = productivity gain after training	25%

Source 26/1/07:
<http://aec.cadalyst.com/aec/article/articleDetail.jsp?id=124222>

**PRODUCTIVITY
 >60%**

[Home](#) > [Buildings](#) > [Public Buildings](#) > [Design and Construction](#) > [3D-4D Building Information Modeling](#)

3D-4D Building Information Modeling

Since 2003, the General Services Administration (GSA) through its Public Buildings Service (PBS) Office of Chief Architect (OCA) has established the National 3D-4D-BIM Program. OCA has completed 10 pilot projects. It has 11 pilot projects underway in its current capital program, while assessing and supporting 3D, 4D, Building Information Modelling (BIM) applications in over 25 ongoing projects across the nation. The power of visualization, coordination, simulation, and optimization from three-dimensional (3D), four-dimensional (4D), and BIM computer technologies allow GSA to more effectively meet customer, design, construction, and program requirements. GSA is committed to a strategic and incremental adoption of 3D, 4D, BIM technologies.

There is a progression from 2D to 3D, 4D and BIM. While 3D models make valuable contributions to communications, not all 3D models qualify as BIM models since a 3D geometric representation is only part of the BIM concept.

Critical to successful integration of computer models into project coordination, simulation, and optimization is the inclusion of information—the "I" in BIM—to generate feedback. As a shared knowledge resource, BIM can serve as a reliable basis for decision making and reduce the need for re-gathering or re-formatting information. GSA is currently exploring the use of BIM technology throughout a project's lifecycle in the following areas: spatial program validation, 4D phasing, laser scanning, energy and sustainability, and courts design validation.

For all major projects (prospectus-level) receiving design funding in Fiscal Year 2007 and beyond, GSA will require spatial program BIMs be the minimum requirements for submission to OCA for Final Concept approvals by the PBS Commissioner and the Chief Architect. At the same time, all GSA projects are encouraged to deploy mature 3D, 4D, and BIM technologies—spatial program validation and beyond—at strategic project phases in support of specific project challenges.

[BIM Program Flyer](#)

The following are highlights of the GSA National 3D-4D-BIM Program:

- Established policy to phase in 3D, 4D, and BIM adoption for all major projects
- Leading 3D-4D-BIM pilot application on current capital projects
- Providing expert support and assessment for ongoing capital projects to incorporate 3D, 4D, and BIM technologies
- Assessing industry readiness and technology maturity
- Developed GSA-specific incentives for 3D-4D-BIM
- Developed solicitation and contractual language for 3D-4D-BIM services
- Partnered with BIM vendors, professional associations, open standard organizations, and academic/research institutions

CONTACTS

Charles Matta
(202) 219-2955
charles.matta@gsa.gov
• [View Contact Details](#)

Calvin Kam
(202) 208-0447
calvin.kam@gsa.gov
• [View Contact Details](#)

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GSA Organizations

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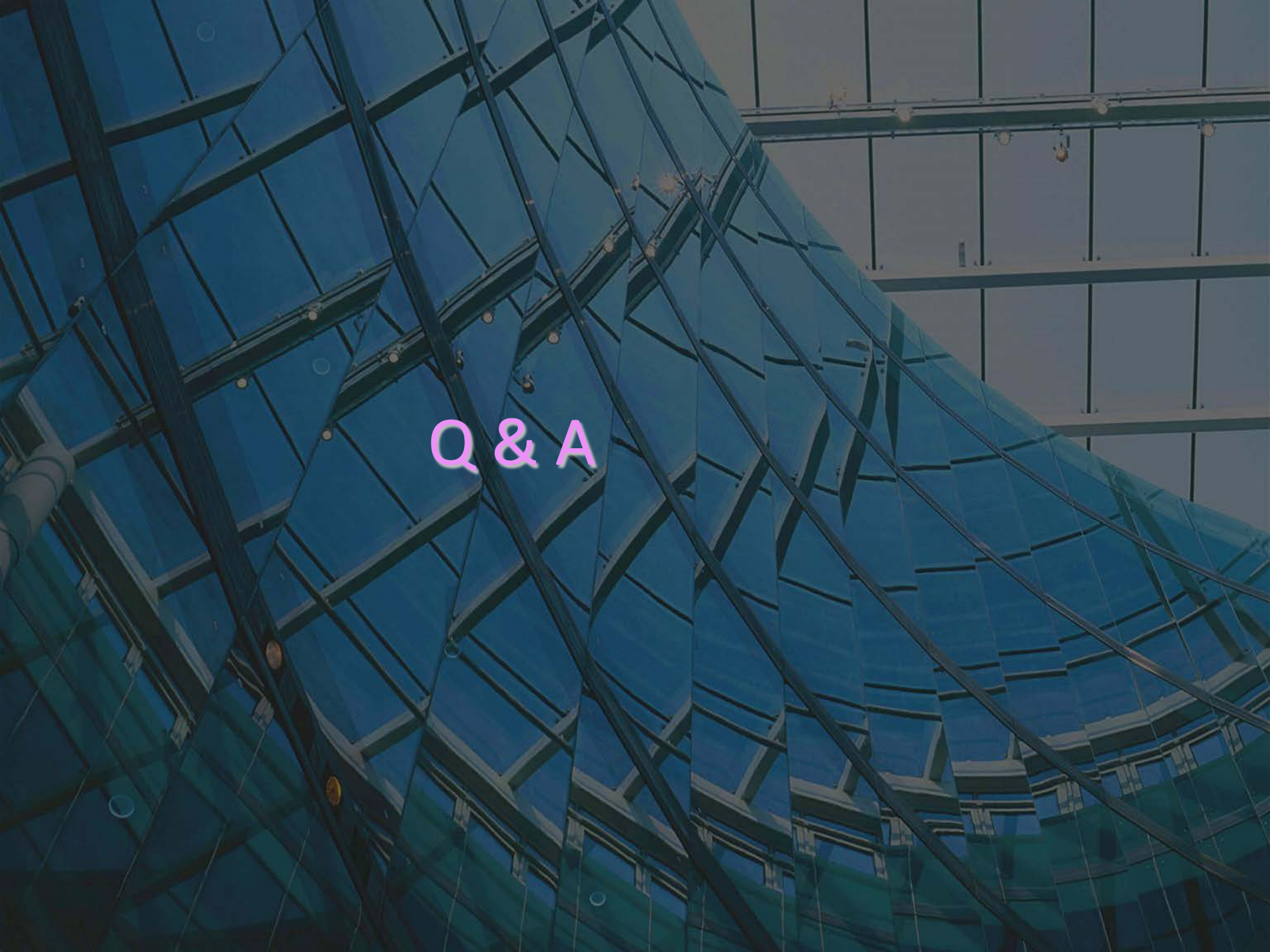
GSA Regions by State

Choose State: AK

QuickLinks

[A-Z Links to GSA Topics](#)

For all major projects (prospectus-level) receiving design funding in Fiscal Year 2007 and beyond, GSA will require spatial program **BIMs** be the **minimum requirements** for submission to OCA for Final Concept approvals by the PBS Commissioner and the Chief Architect.



Q & A