

BIM 為建築界帶來的衝擊

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香港註冊建築師

信息化建築模型系統總建築師

Aedas Ltd 凱達環球

www.aedas.com

建築資訊

圖型性資訊

Plan 平面圖

Section 剖面圖

Elevation 立面圖

Area Diagrams 面積圖

Schematic Designs 方案圖

Building Plan 審批圖

Structural Plans 結構圖

E/M Drawings 機電圖

Schematics 機電示意圖

Details 大樣圖

Other Diagrams... 其他圖

非圖型性資訊

Area Schedule 面積表

Finishing Schedules 裝潢表

Door/Window/Louvre 門窗表

Beam/Column Schedule 樑柱

Equipment Schedule... 機器表

Program 進度

Cost Estimate 造價表

Quantity Take Off 材料表

Bills of Quantities 物料清單

Variation Assessments 變更

建築資訊

圖型性資訊

Plan 平面圖

Section 剖面圖

CAD 系統 圖

Area Diagrams 面積圖

Schematic Designs 方案圖

e.g. AutoCAD,

Microstation 結構圖

E/M Drawings 機電圖

Schematics 機電示意圖

Details 大樣圖

Other Diagrams... 其他圖

非圖型性資訊

Area Schedule 面積表

Finishing Schedules 裝潢表

Door/Window/Louvre 門窗表

Word 文書處理 Beam/Column Schedule 樑柱

Excel 試算表 Equipment Schedule... 機器表

Access (Data Base)

MS Project 進度

BQ Softwares 造價表

Quantity Take Off 材料表

Bills of Quantities 物料清單

Variation Assessments 變更

建築資訊

BIM

Building Information Modeling

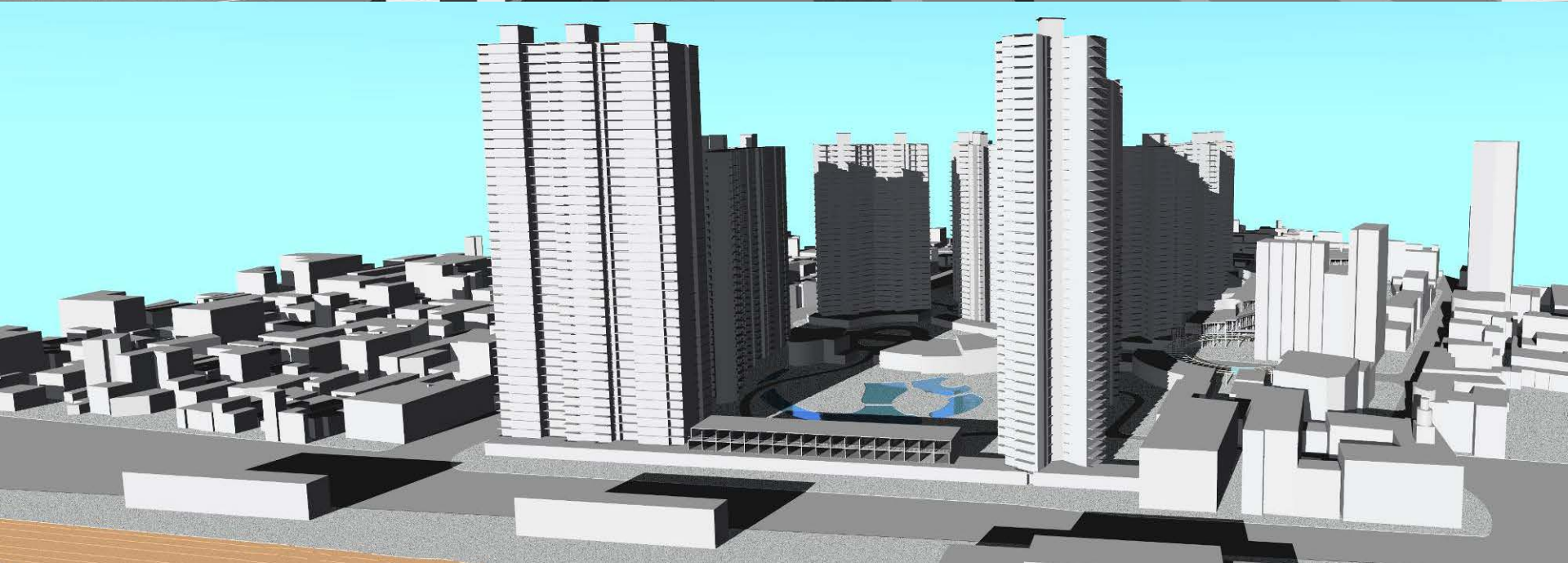
信息化建築模型

BIM 帶來的衝擊

1. 可視性型像化設計
2. 圖紙製作
3. 各專業協調合作
4. 物件清單及投標文件
5. 自動化送審文件
6. 科學性分析及可持續發展設計
7. 複雜幾何形狀建築
8. 生產制造構件

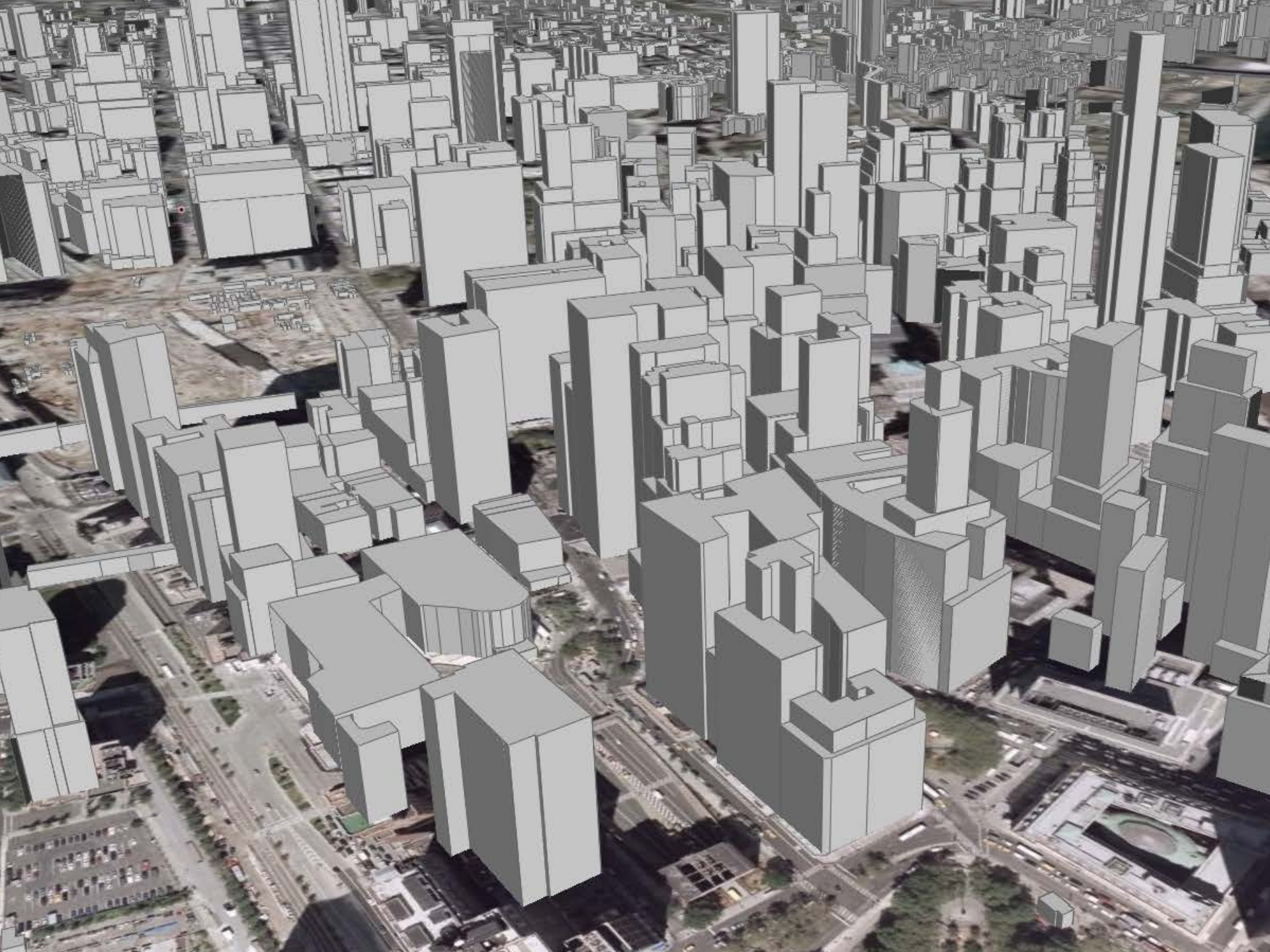
BIM 帶來的衝擊

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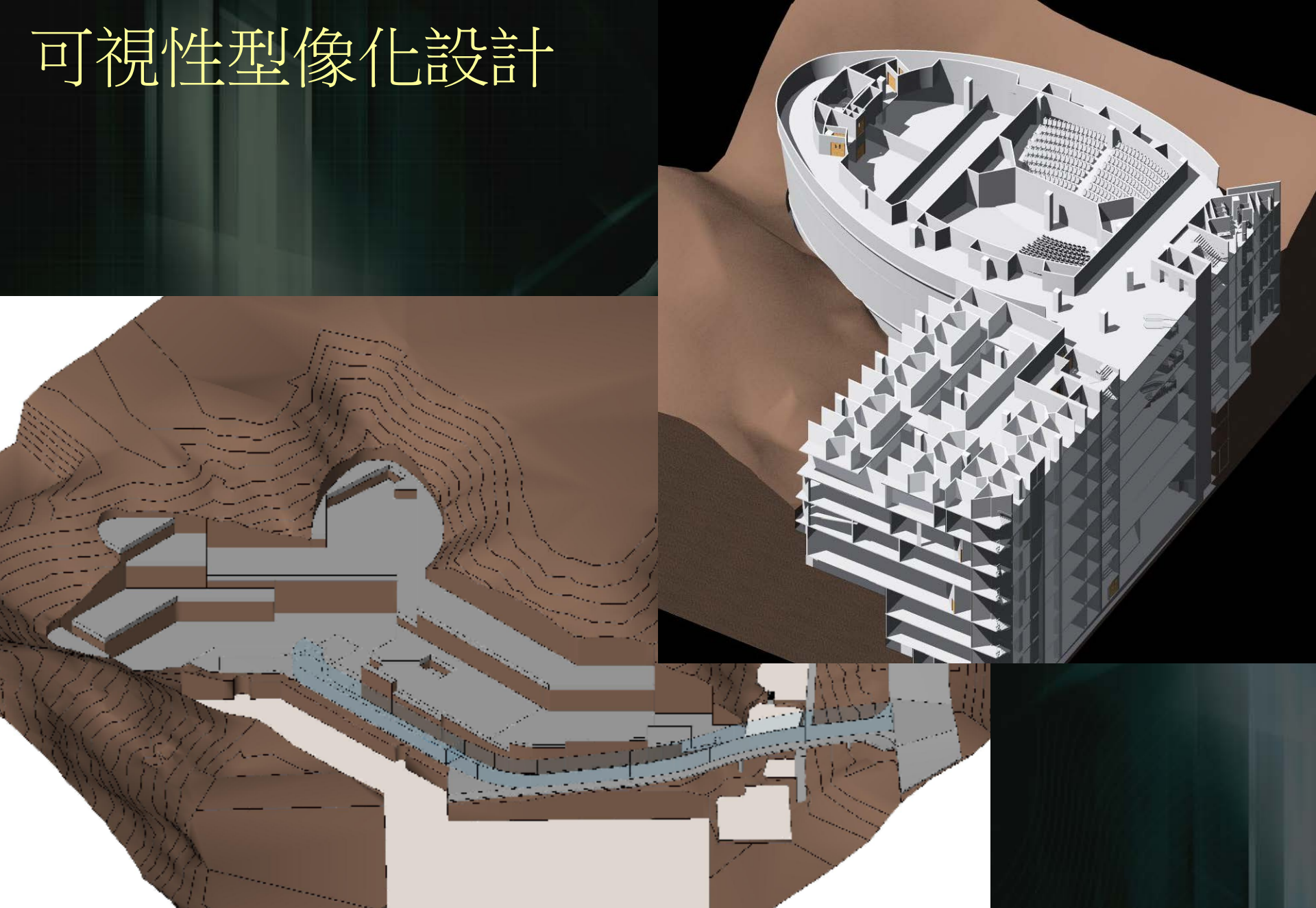


可視性型像化設計





可視性型像化設計



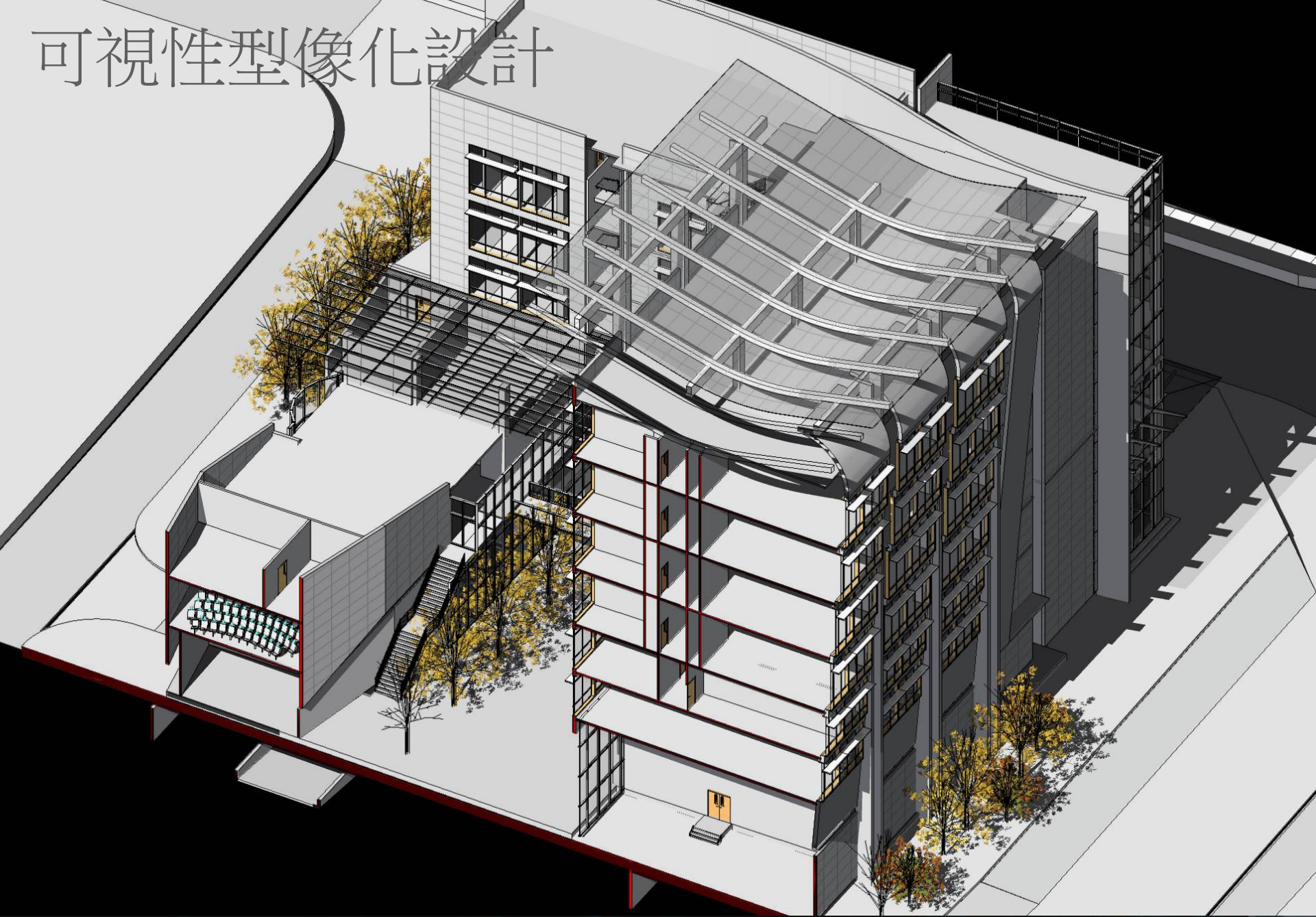
可視性型像化設計



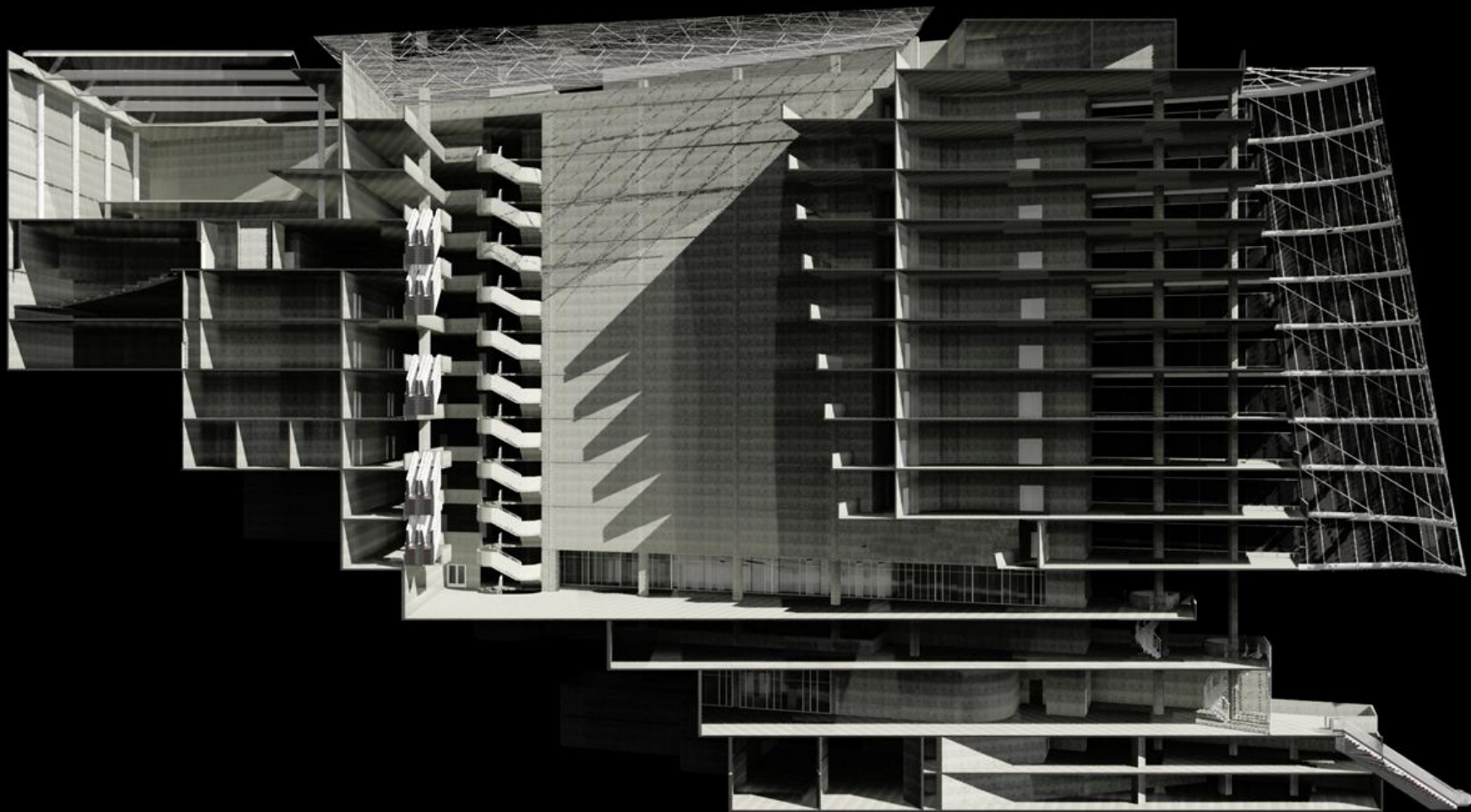
可視性型像化設計



可視性型像化設計



可視性型像化設計

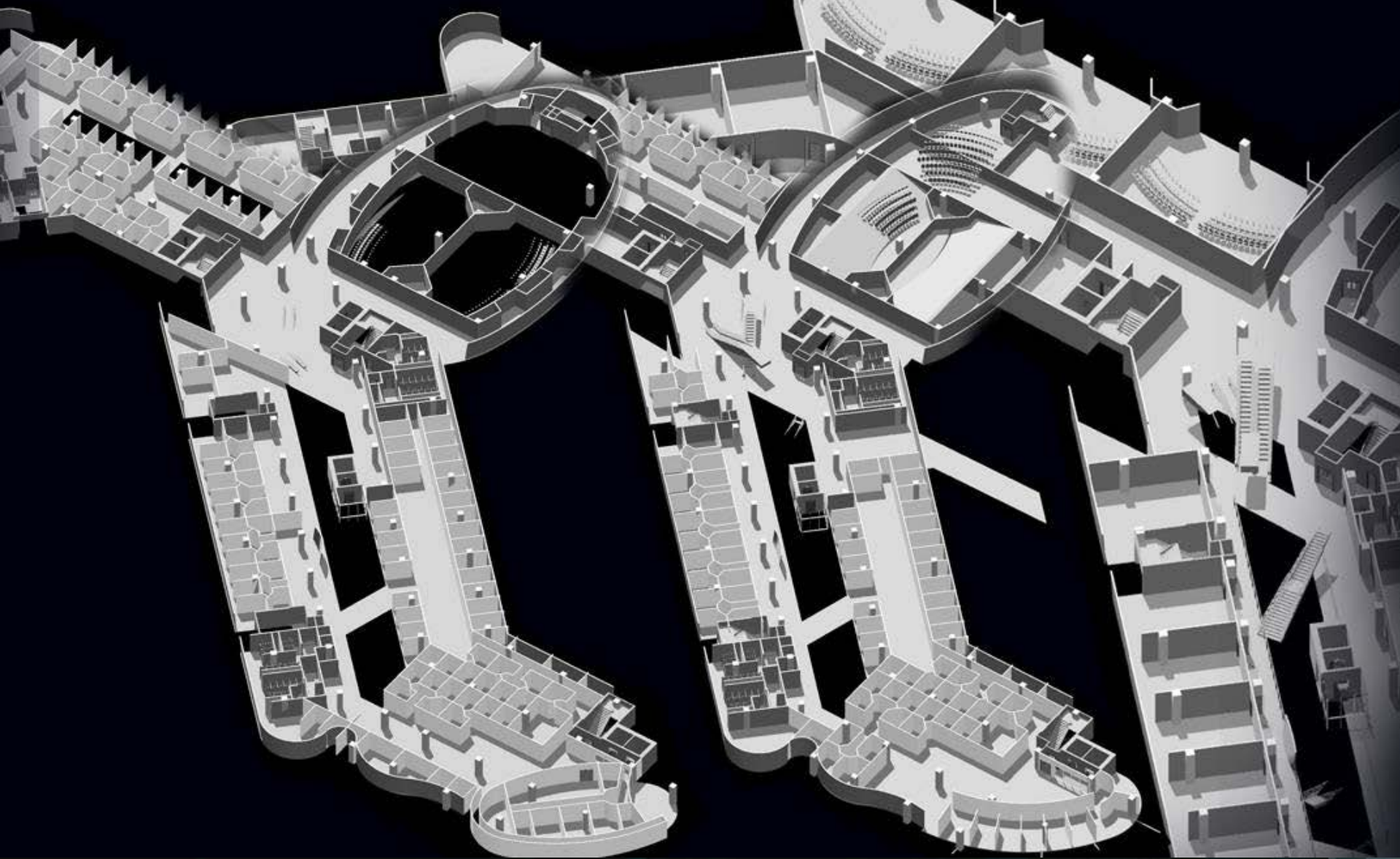


可視性型像化設計

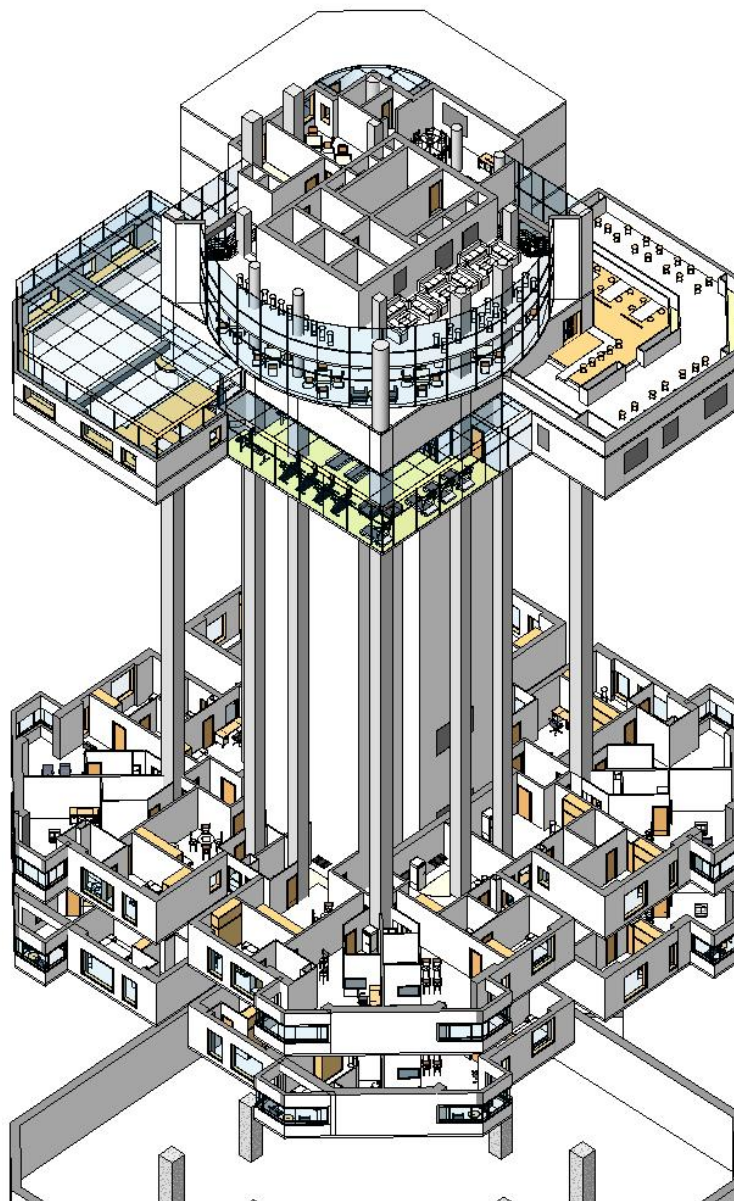




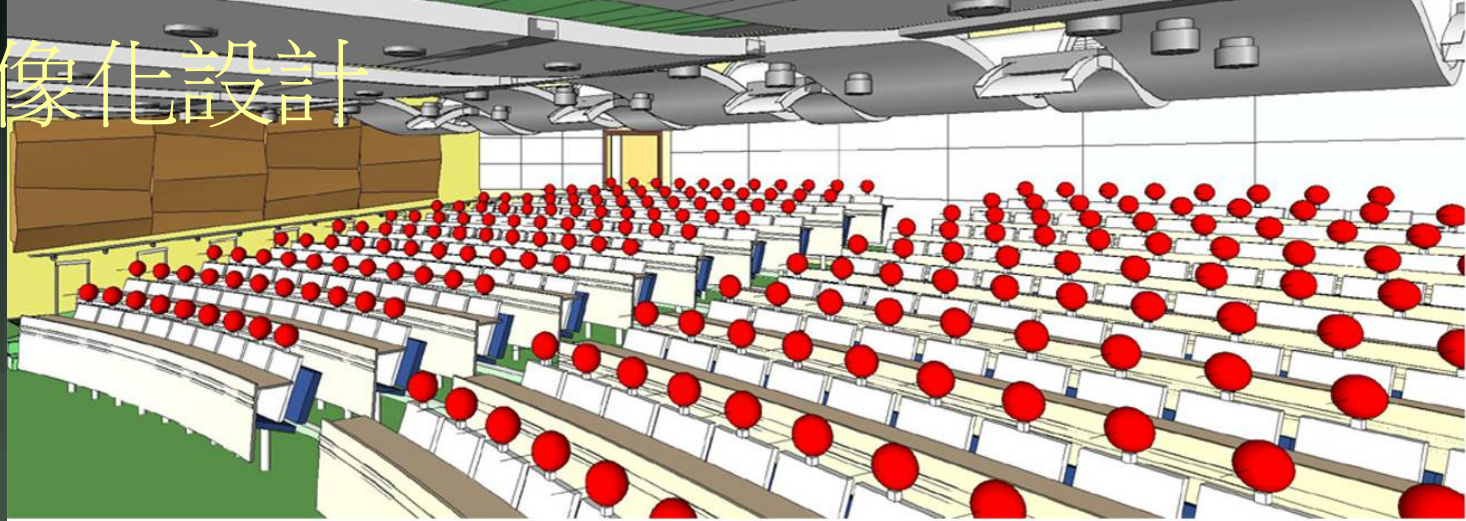
可視性型像化設計



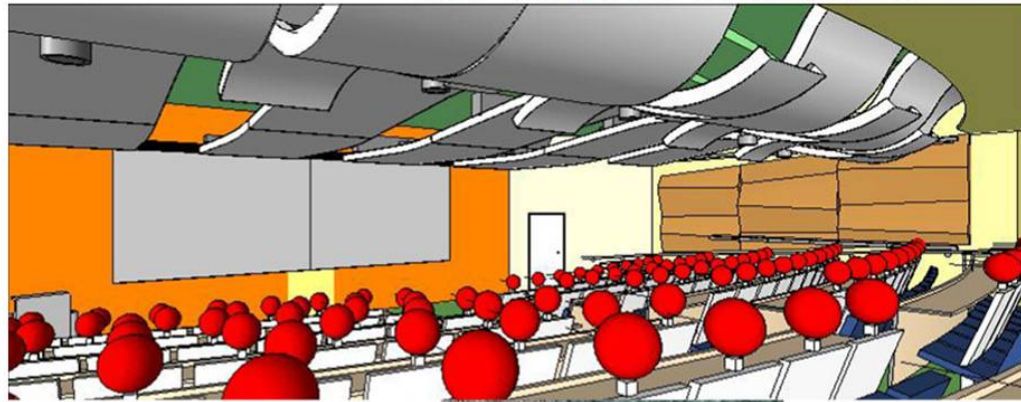
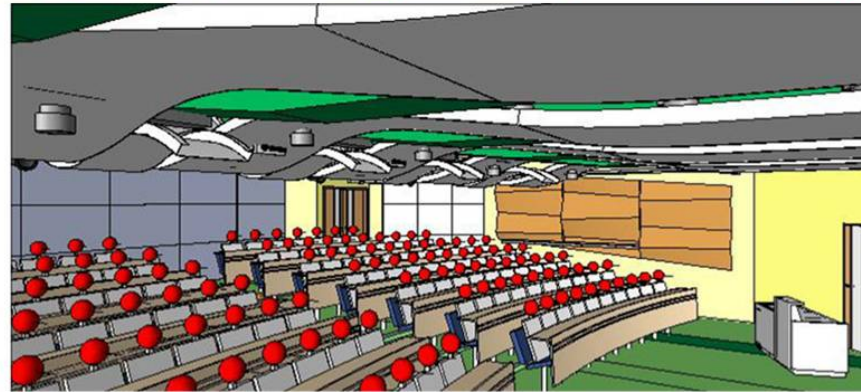
可視性型像化 設計



可視性型像化設計



Acoustical curved metal ceiling

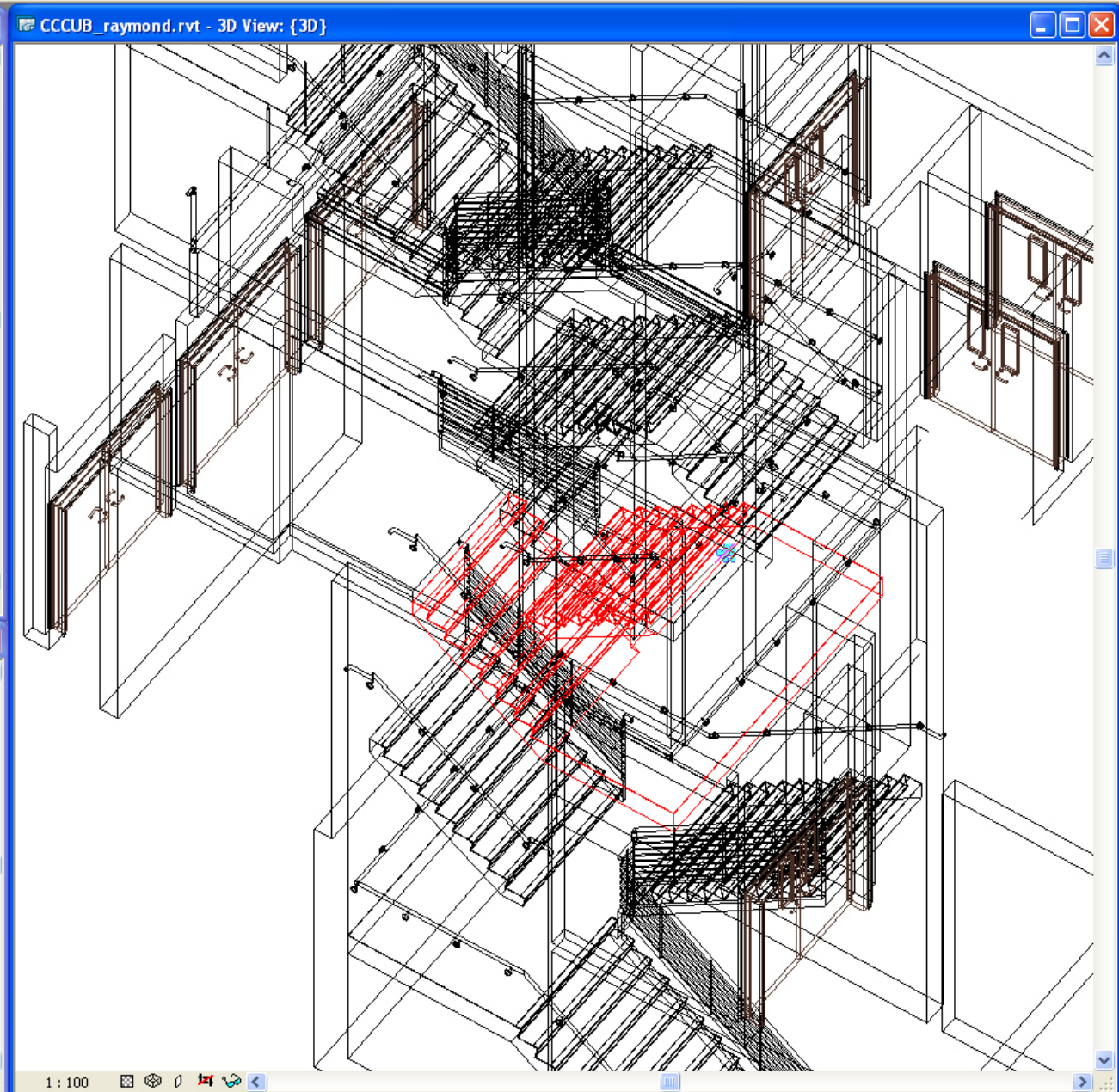
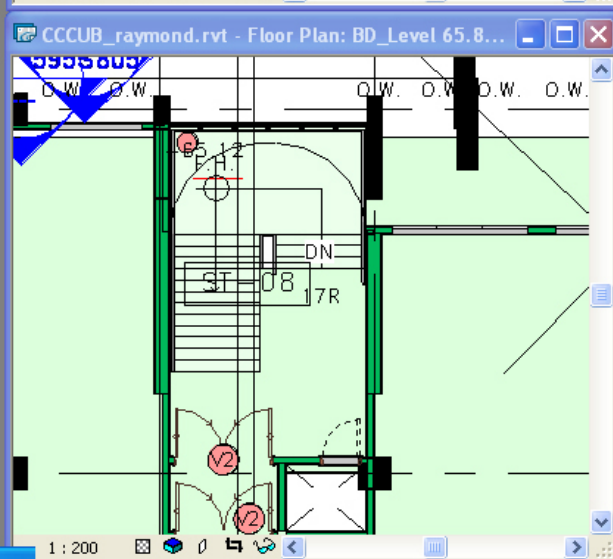
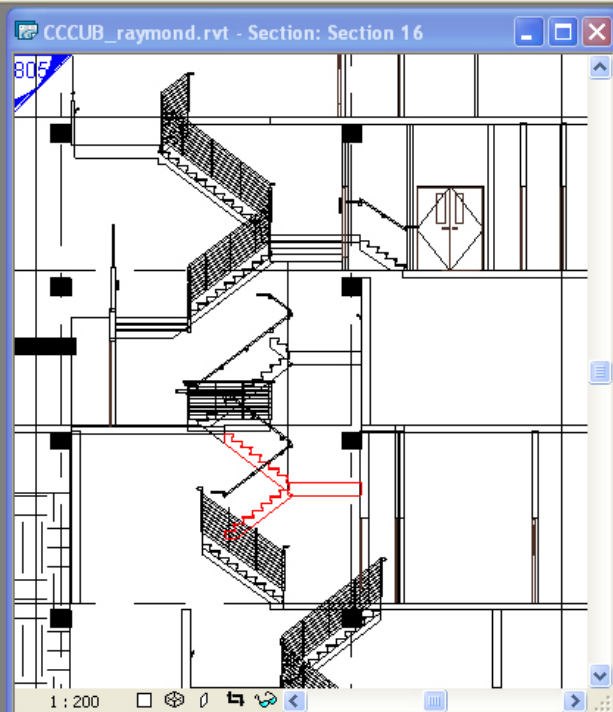


可視性型像化設計

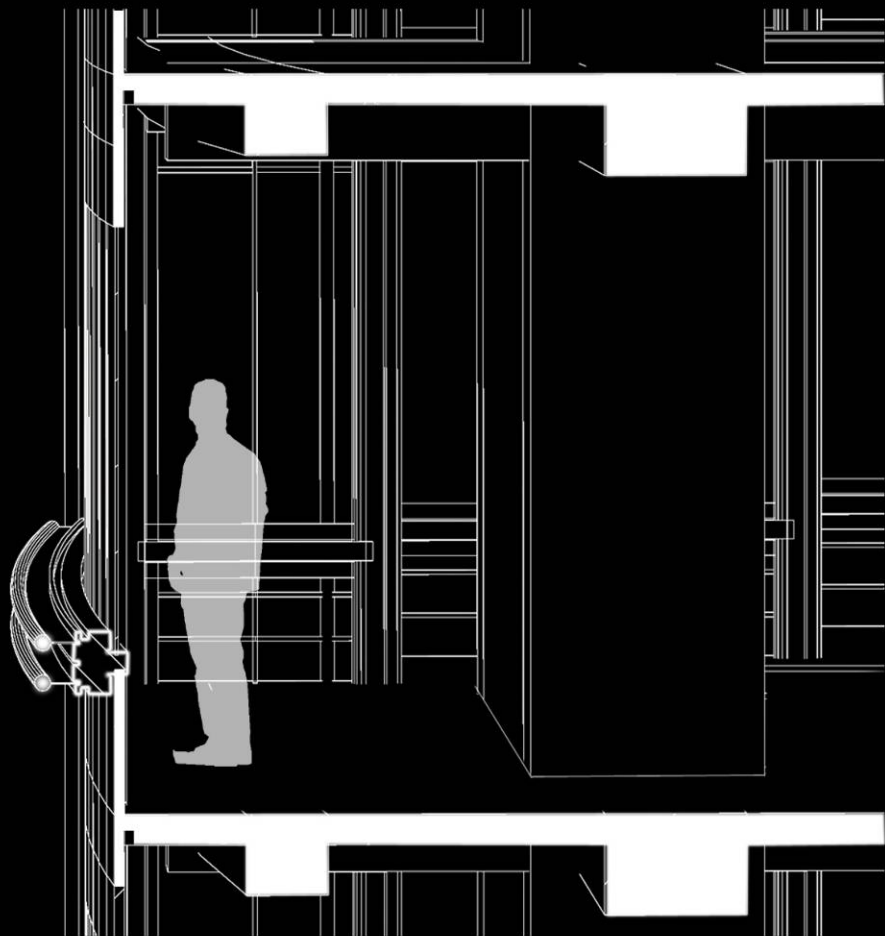


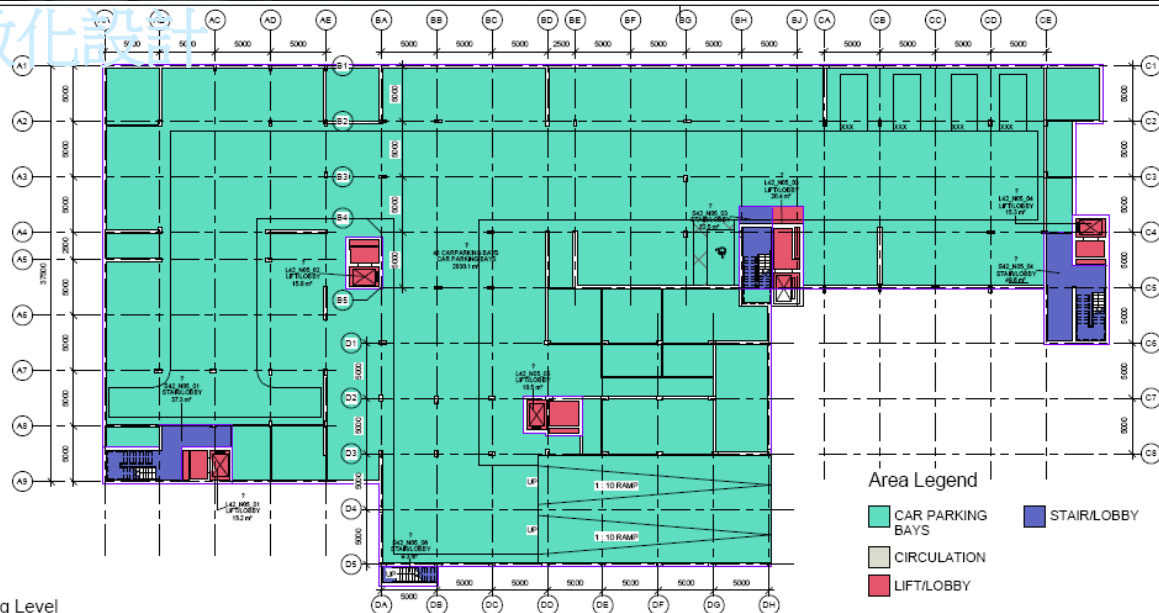
可視性型像化設計











1 Parking Level
1:200



2 Level 1
1:200

Key: 0 2 4 6 8 10
METERS

THE BLUE CITY
PHASE-1

Drawing No. 1-1.4.2 City Beach Apartments

Client: ASIT Al Sawadi Investment & Tourism Co.LLC

Developer: bluecity1 Blue City Company 1 SAOC

Project Engineer: ASSOCIATED CONSULTING ENGINEERS (ACE) INTL

Design Architect: AECO Development LLC

Deep Supervision: Aedas

Project Location: Section 1 - 1.4.2 City Beach Apartments

Drawing Title: NEIGHBORHOOD 05 BASEMENT & LEVEL 1 - AREA PLAN

Drawing Number: BC1-0420-PD-00A-01-060

Scale: 1:200 Date: 08/05/08 Rev: 000

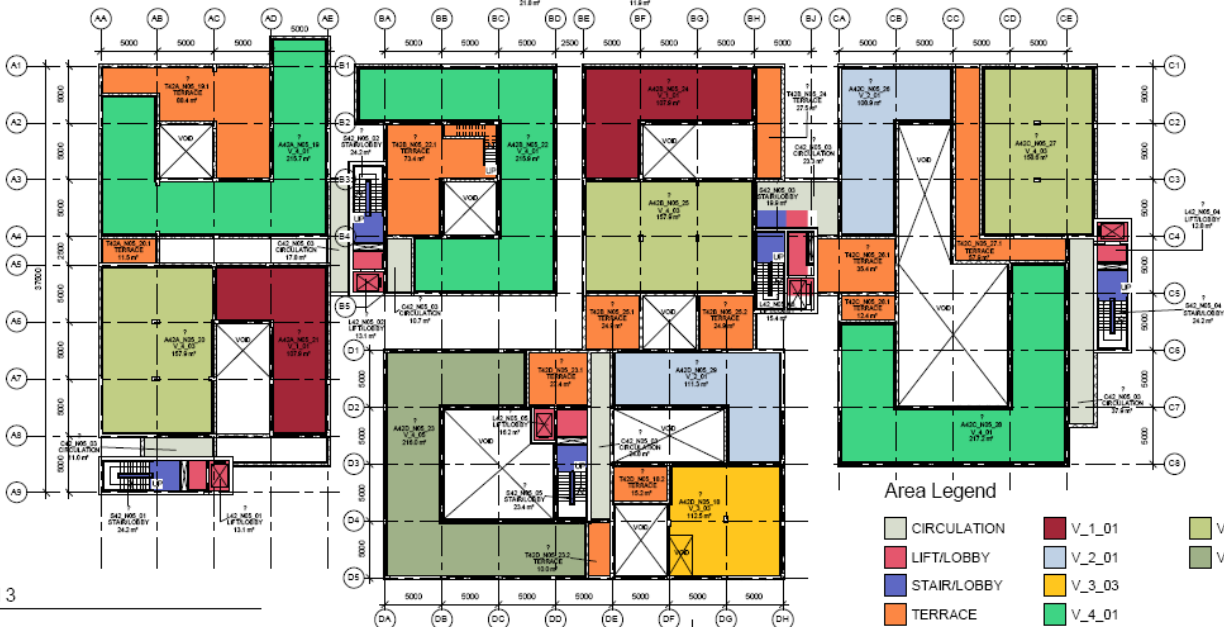
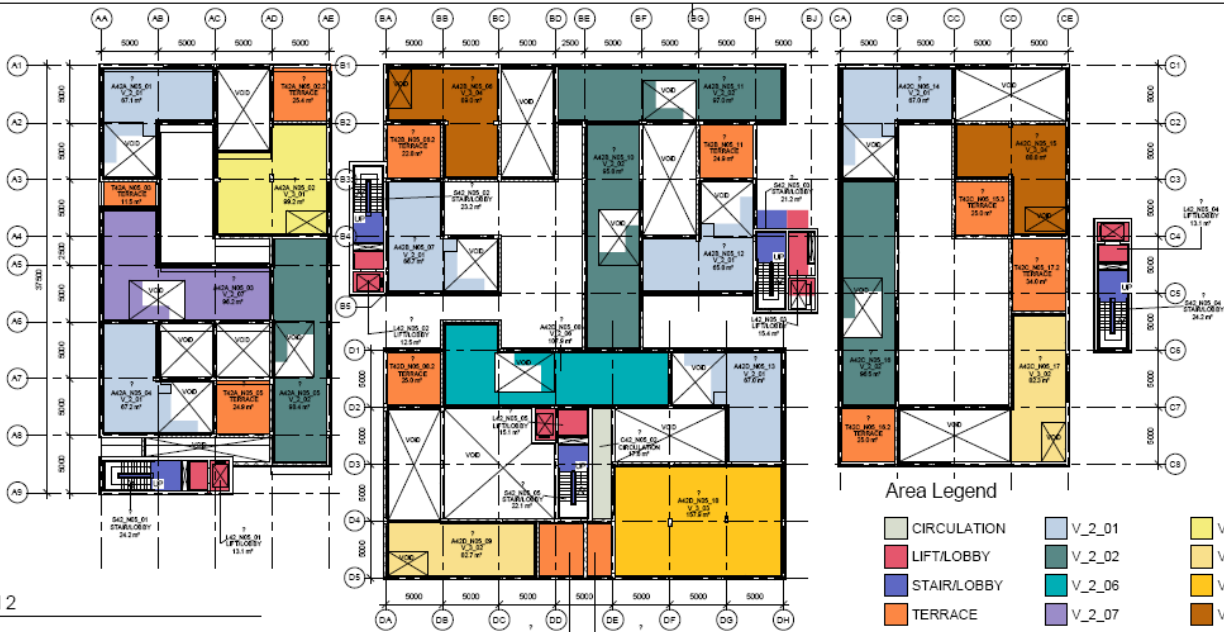
Submitted by: 07850

Checked by: EL

Drawn by: PS

Approved by: MCD

Approved by: AEC



Scale: 0 2 4 6 8 10 meters

THE BLUE CITY
PHASE-1

Owner/Client: Al Sawadi Investment & Tourism Co.LLC

Developer: bluecity1 Blue City Company 1 SAOC

Project Engineer: ASSOCIATED CONSULTING ENGINEERS (ACE) INTL

Design and Construction: AECO AECO Development LLC

Design Submission: Aedas

Project Name: NEIGHBORHOOD 05 LEVEL 2 & LEVEL 3 - AREA PLAN

Drawing No: BCI-0420-PO-00A-01-061

Scale: 1 : 200 Date: 08/05/08 No.: 000

Submitted/Project Number: 07860

Designer: EL

Drawn by: PS

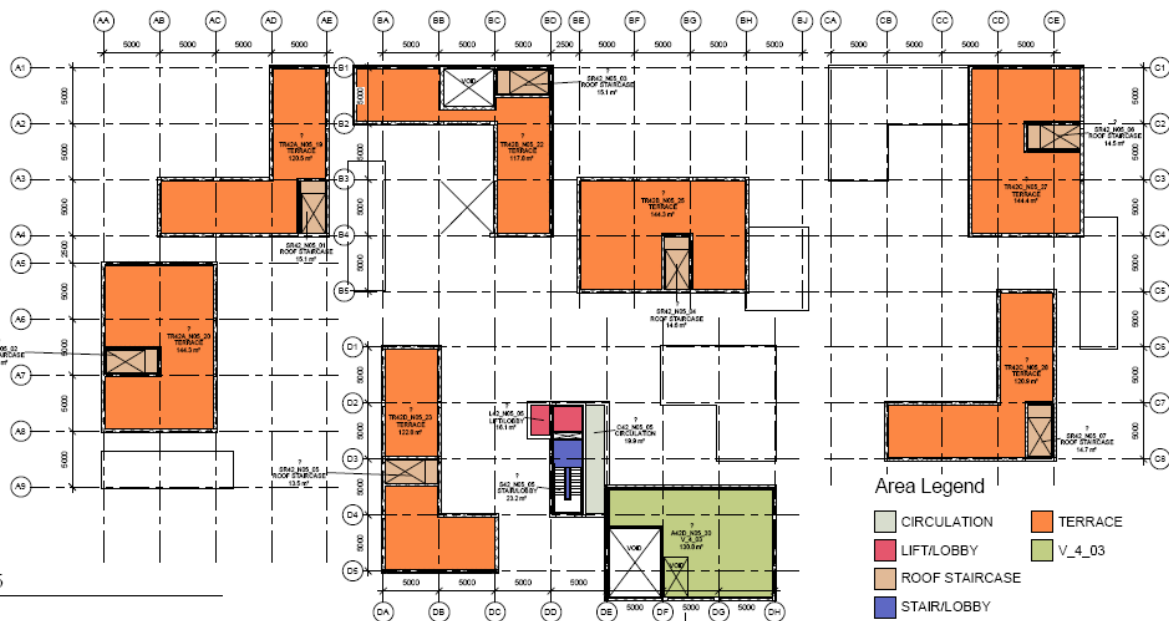
Approved by: PS

Approved by: PS

1 Level 4
1 : 200



2 Level 5
1 : 200



Key/Rev: 0 2 4 6 8 10
Meters

REVISION	DATE	BY	CHKD	DATE	BY	CHKD

Project: THE BLUE CITY
PHASE-1

Drawn by:

Client: ASIT Al Sawadi Investment & Tourism Co.LLC

Owner: bluecity1 Blue City Company 1 SAOC

Architect: ASSOCIATED CONSULTING ENGINEERS (ACE) INTL

Design Architect: AECO Development LLC

Design Architect: Aedas

Project Name: Section 1 - 1,4,2 City Beach Apartments

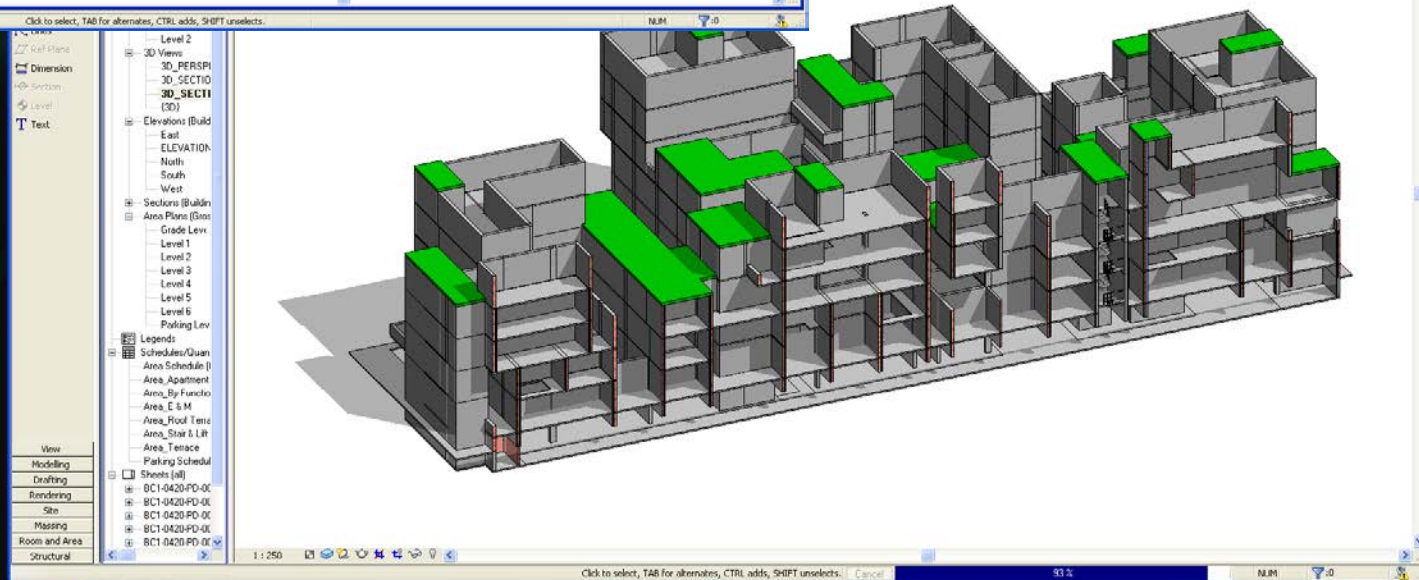
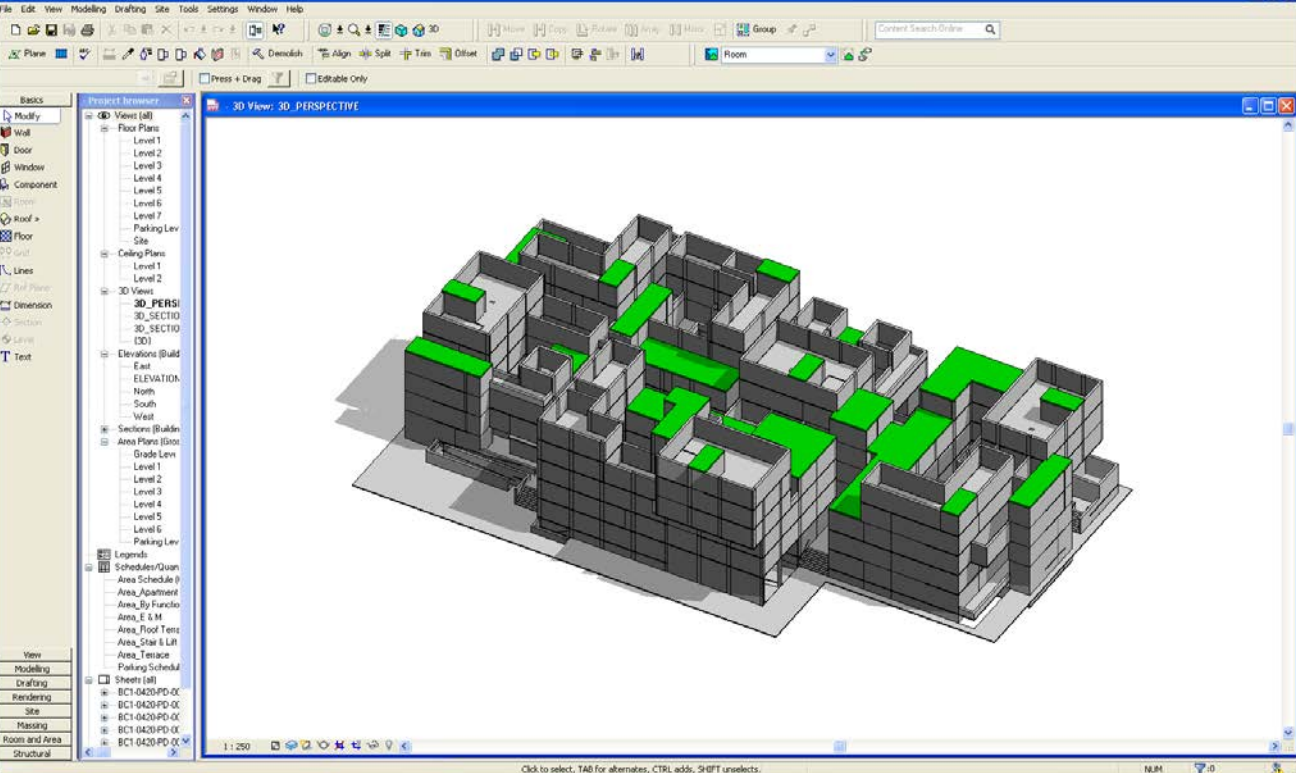
Drawing Title: NEIGHBORHOOD 05 LEVEL 4 & LEVEL 5 - AREA PLAN

Drawing Number: B01-0430-PD-00A-01-062

Scale: 1 : 200 Date: 08/05/08 Rev: 000

Submitted to Registration: 07850

Discipline	By	Rev
Structural		
Mechanical		
Electrical		
Plumbing		
Approved by AEC:		
Approved by AED:		



Basics

Modify

Wall

Door

Window

Component

Room

Roof »

Floor

Grid

Lines

Ref Plane

Dimension

Section

Level

Text

View

Modelling

Drafting

- Project browser

Views (all)

Floor Plans

Level 1

Level 2

Level 3

Level 4

Level 5

Level 6

Level 7

Parking Lev

Site

Ceiling Plans

Level 1

Level 2

3D Views

3D_PERSPI

3D_SECTION

3D_SECTION (3D)

Elevations (Build

East

ELEVATION

North

South

West

Sections (Buildin

Area Plans (Gros

Grade Lev

Level 1

Level 2

Level 3

Level 4

Level 5

Level 6

Parking Lev

Legends

Schedules/Quan

Area Schedule (I

Area_Apartment

Area_By Func

Area_E & M

Area_Roof Terra

Area_Stair & Lift

Area_Terrace

Parking Schedul

Sheets (all)

RC1_0420_00_00

Area_By Functions					
Level	Number	FP Number	AED Number	Name	Area
Level 1	A42A_N05_05		A42A_N05_05	V_2_02	79.2
Level 1	A42B_N05_10		A42B_N05_10	V_2_02	80.7
Level 1	A42B_N05_11		A42B_N05_11	V_2_02	80.7
Level 1	A42C_N05_16		A42C_N05_16	V_2_02	80.3
Level 2	A42A_N05_05		A42A_N05_05	V_2_02	98.4
Level 2	A42B_N05_10		A42B_N05_10	V_2_02	95.8
Level 2	A42B_N05_11		A42B_N05_11	V_2_02	97.0
Level 2	A42C_N05_16		A42C_N05_16	V_2_02	96.5
V_2_02: 8					708.5
Level 1	A42D_N05_08		A42D_N05_08	V_2_06	81.5
Level 2	A42D_N05_08		A42D_N05_08	V_2_06	107.9
V_2_06: 2					189.4
Level 1	A42A_N05_03		A42A_N05_03	V_2_07	80.2
Level 2	A42A_N05_03		A42A_N05_03	V_2_07	96.2
V_2_07: 2					176.4
Level 1	A42A_N05_02		A42A_N05_02	V_3_01	158.0
Level 2	A42A_N05_02		A42A_N05_02	V_3_01	99.2
V_3_01: 2					257.2
Level 1	A42C_N05_17		A42C_N05_17	V_3_02	187.3
Level 1	A42D_N05_09		A42D_N05_09	V_3_02	187.5
Level 2	A42C_N05_17		A42C_N05_17	V_3_02	82.3
Level 2	A42D_N05_09		A42D_N05_09	V_3_02	82.7
V_3_02: 4					539.8
Level 2	A42D_N05_18		A42D_N05_18	V_3_03	157.9
Level 3	A42D_N05_18		A42D_N05_18	V_3_03	112.5
V_3_03: 2					270.4
Level 1	A42B_N05_06		A42B_N05_06	V_3_04	157.8
Level 1	A42C_N05_15		A42C_N05_15	V_3_04	157.0
Level 2	A42B_N05_06		A42B_N05_06	V_3_04	89.0
Level 2	A42C_N05_15		A42C_N05_15	V_3_04	88.8
V_3_04: 4					492.5
Level 3	A42A_N05_19		A42A_N05_19	V_4_01	215.7
Level 3	A42B_N05_22		A42B_N05_22	V_4_01	215.9
Level 3	A42C_N05_28		A42C_N05_28	V_4_01	217.2
Level 4	A42A_N05_19		A42A_N05_19	V_4_01	91.5
Level 4	A42B_N05_22		A42B_N05_22	V_4_01	82.1
Level 4	A42C_N05_28		A42C_N05_28	V_4_01	91.5
V_4_01: 6					913.9
Level 3	A42A_N05_20		A42A_N05_20	V_4_03	157.9
Level 3	A42B_N05_25		A42B_N05_25	V_4_03	157.9
Level 3	A42C_N05_27		A42C_N05_27	V_4_03	158.6
Level 4	A42A_N05_20		A42A_N05_20	V_4_03	130.8
Level 4	A42B_N05_25		A42B_N05_25	V_4_03	130.8
Level 4	A42C_N05_27		A42C_N05_27	V_4_03	130.5
Level 4	A42D_N05_30		A42D_N05_30	V_4_03	158.9



REPETITIONS vs VARIATIONS

- Family
- Modify
- Family Type
- Dimension
- Model Lines
- Symbolic Link
- Opening...
- Ref Plane
- Reference Line
- Control
- Text
- Model Text
- Section
- Component
- Symbol
- Detail Component
- Solid Form
- Void Form
- Load into Project

Family Types

Name: AED-Bay Window

Parameter	Value	Formula
Lslab Overhang_Right	0.0	=
Lslab Overhang_Left	0.0	=
Lslab Overhang_Dept	0.0	=
Left Window Width	800.0	=
Height	1800.0	=Wall Height - (Opening Offset *
Width	3000.0	=
Bay Depth	500.0	=
Rough Width		=
Rough Height		=

Identity Data

IFC Parameters

Operation

Other

Family Types

New...

Rename...

Delete

Parameters

Add...

Modify...

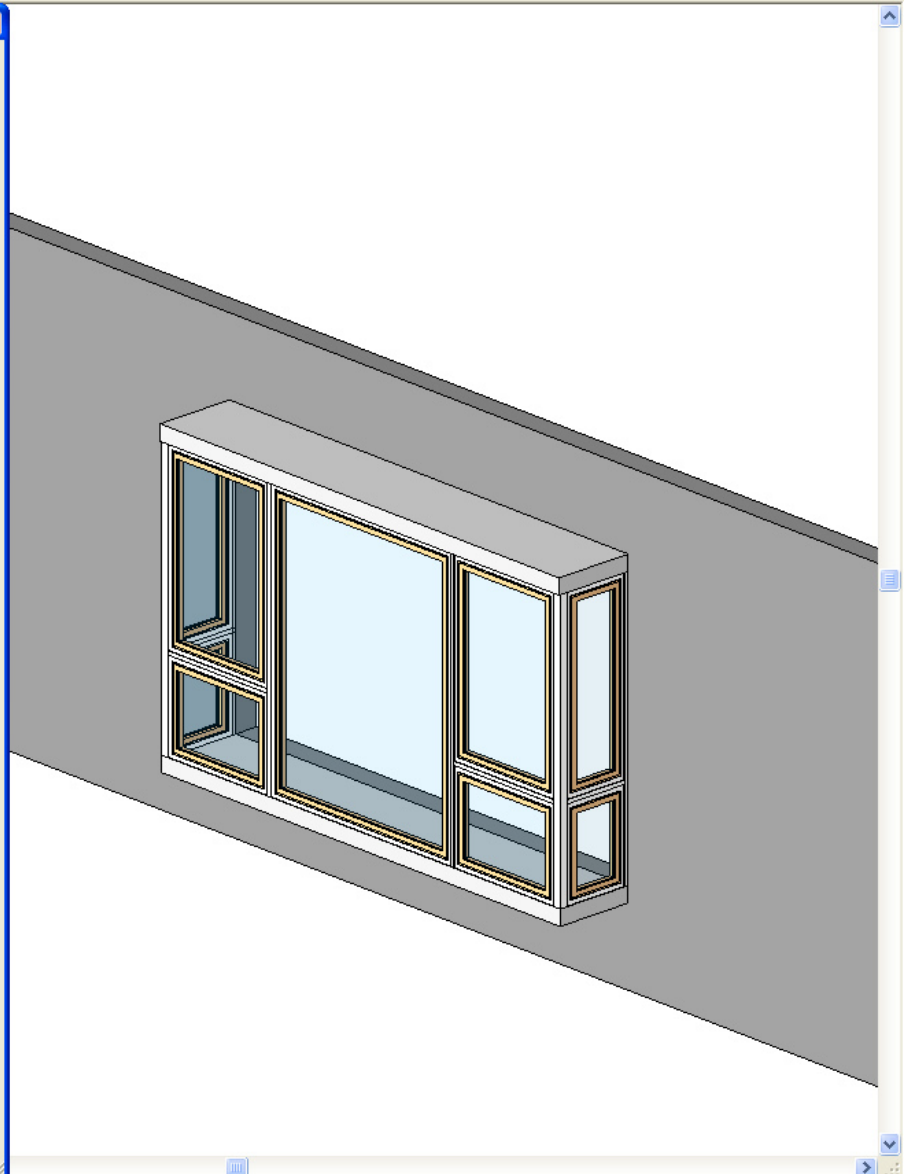
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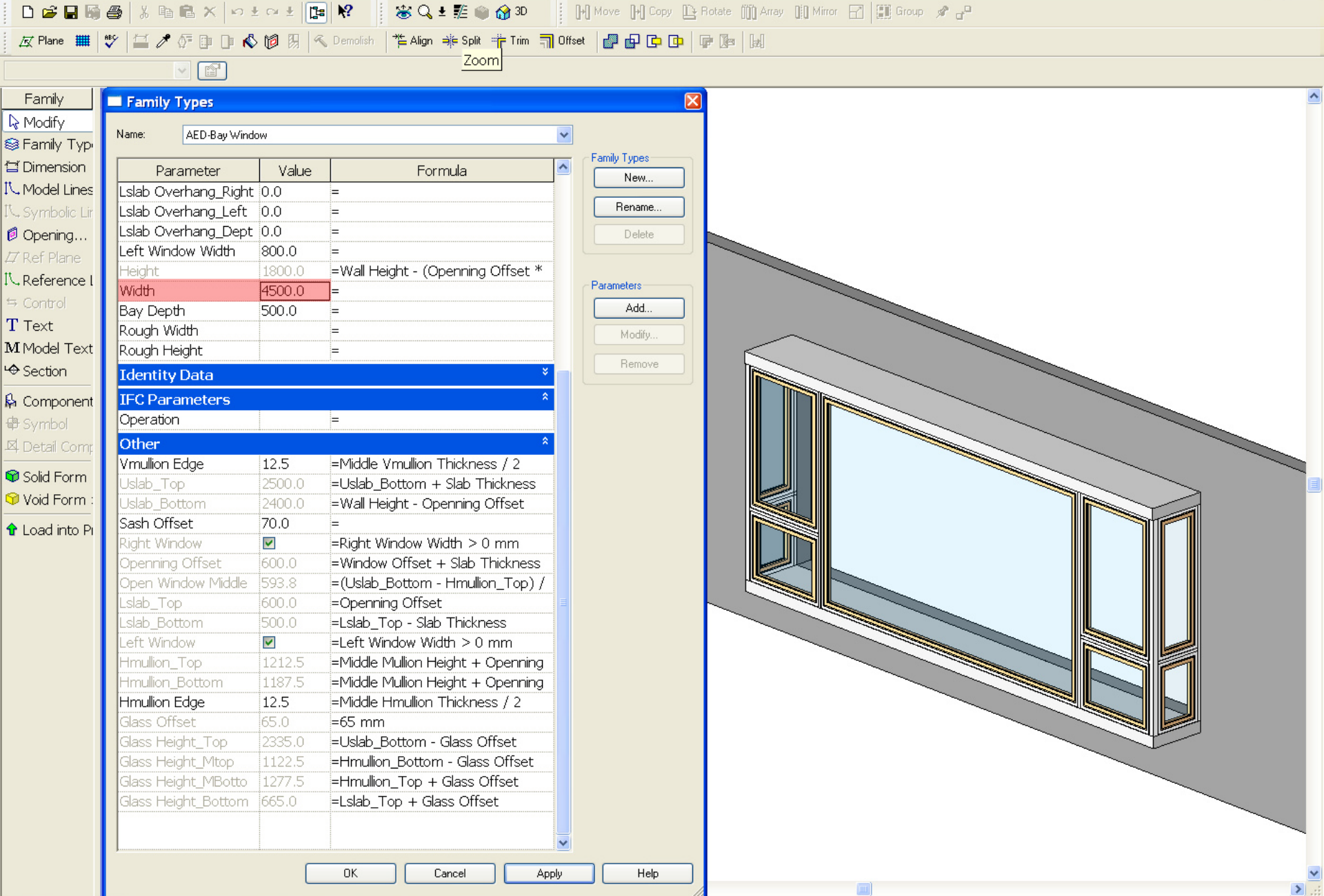
OK

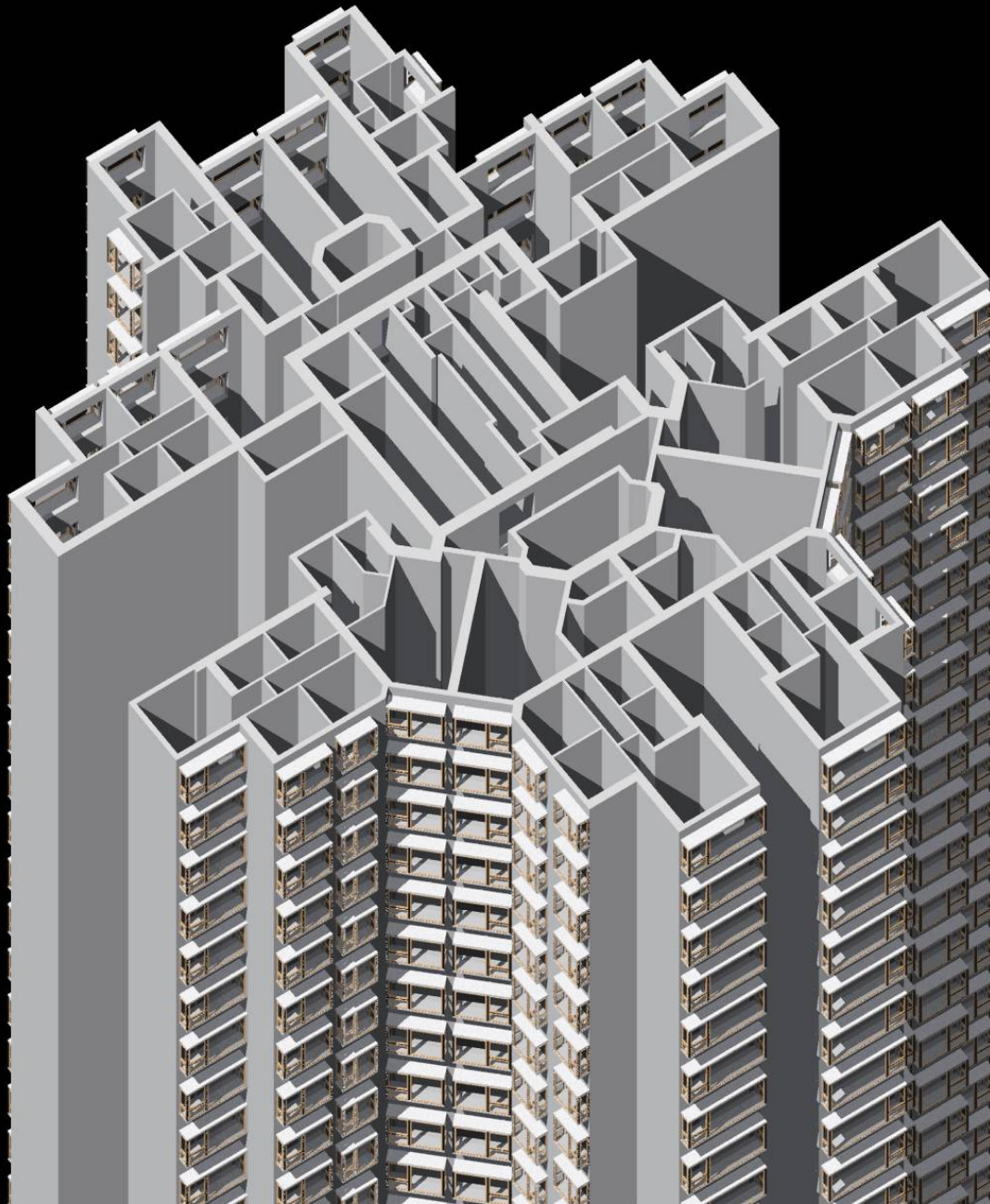
Cancel

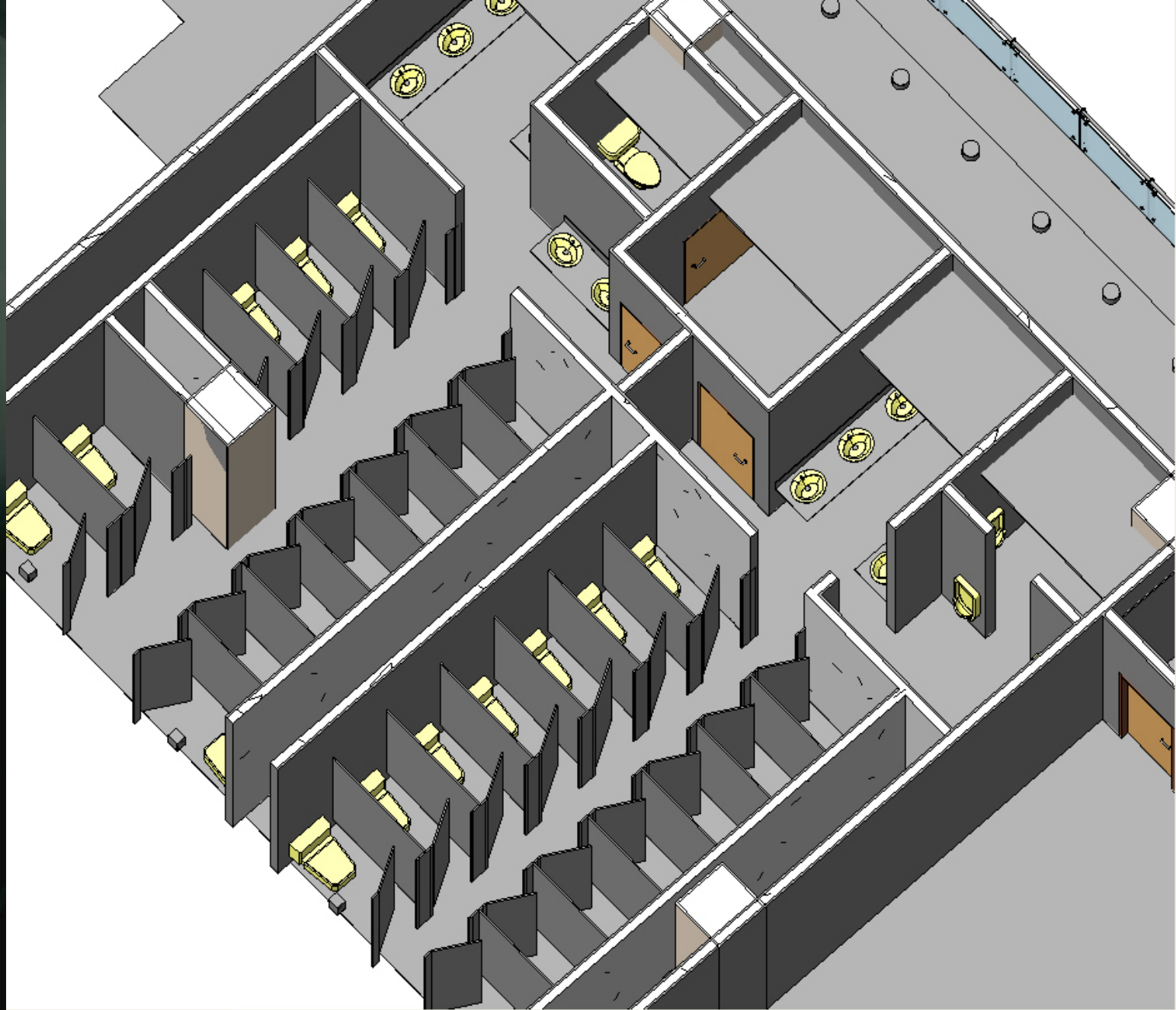
Apply

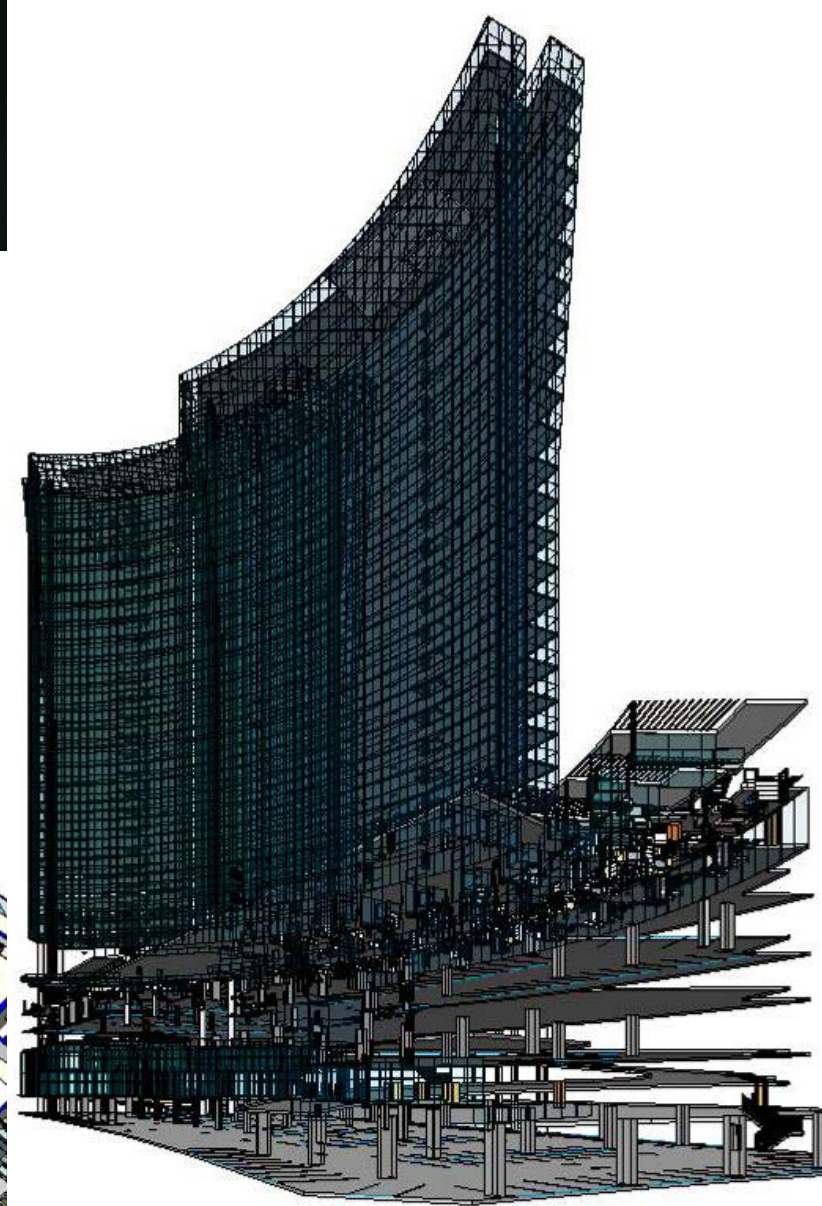
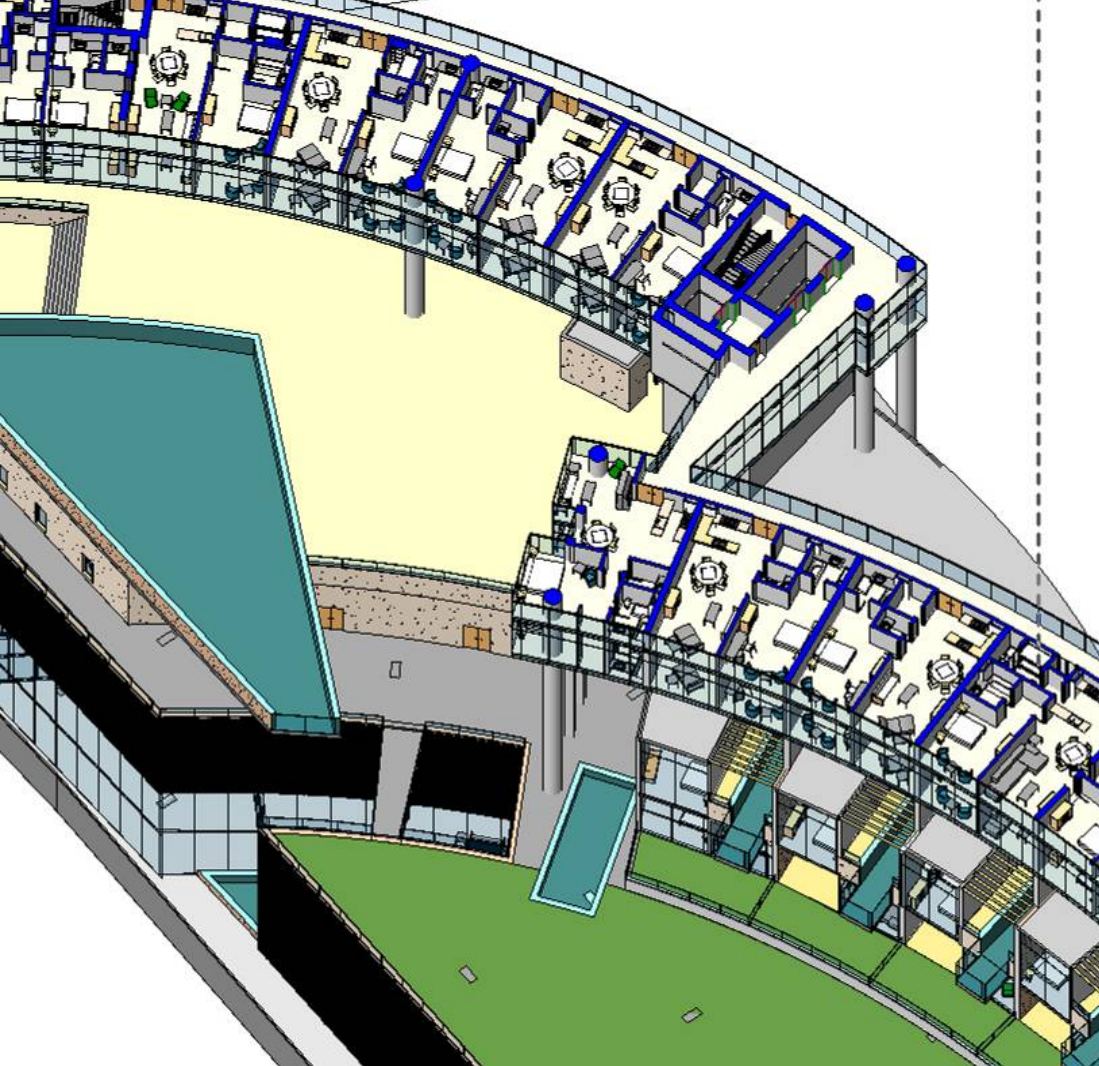
Help





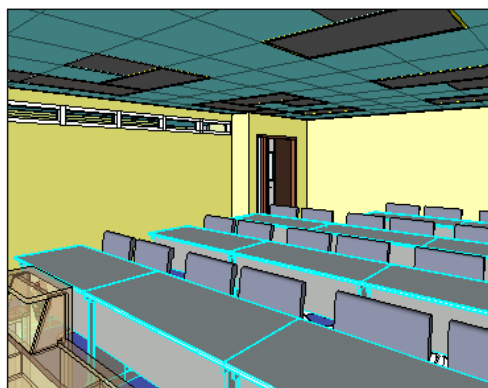




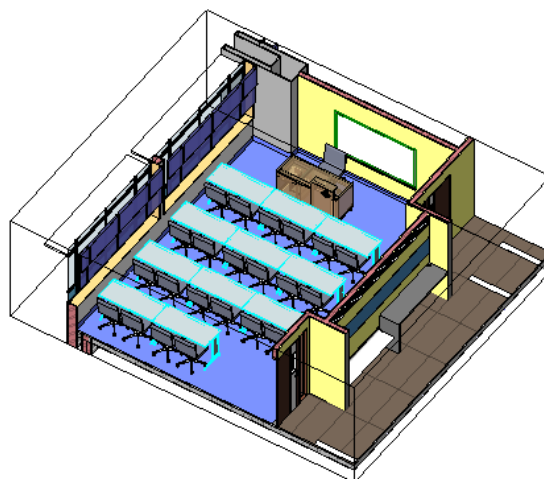


BIM 帶來的衝擊

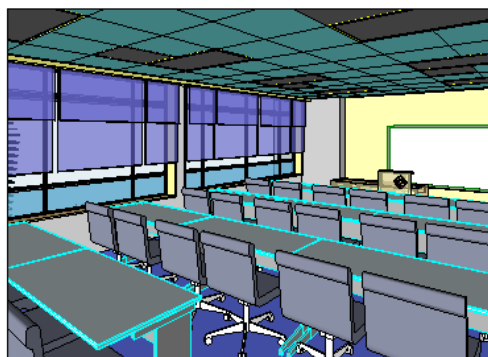
1. 可視性型像化設計
2. 圖紙製作
3. 各專業協調合作
4. 物件清單及投標文件
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8. 生產制造構件



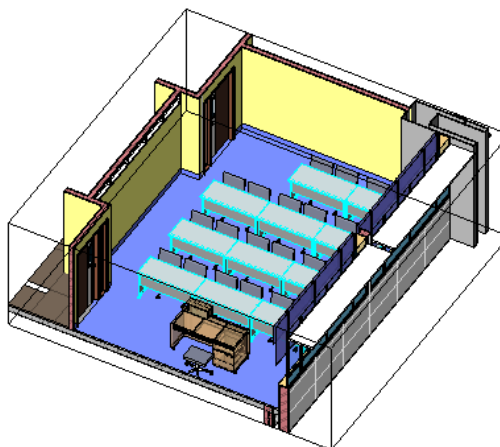
6 行政人員培訓室立體示意圖2



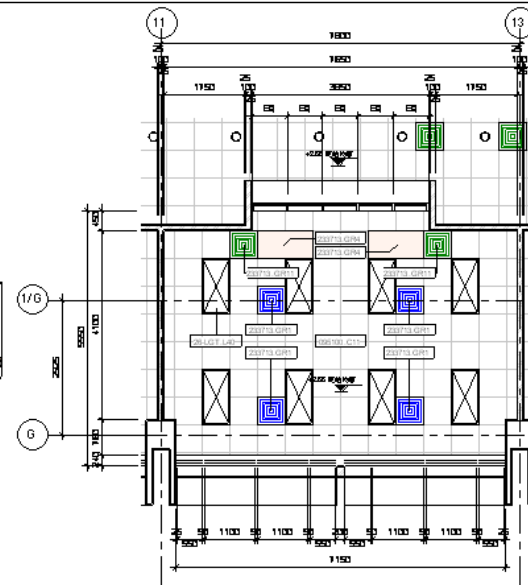
4 行政人员培训室立体剖面示意图2



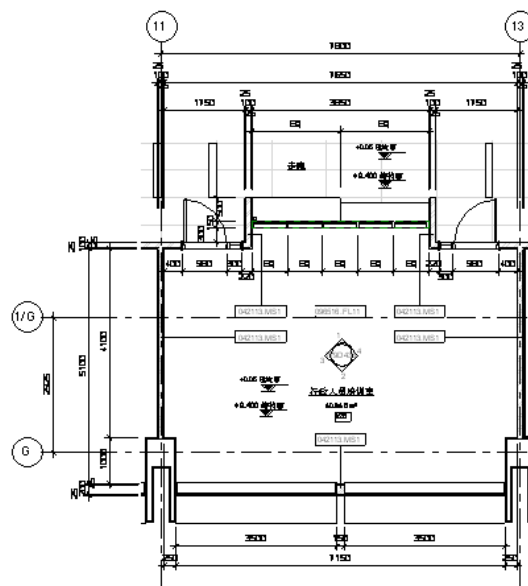
5 行政人员培训室立体示意图1



3 行政人员培训室立体剖面示意图1

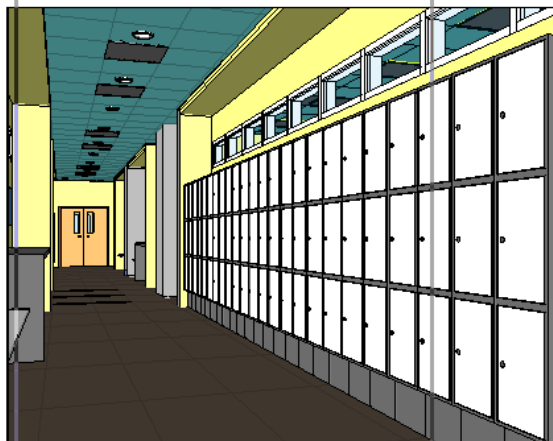


2 行政人员培训室天花平面图(高楼三层) 1:50

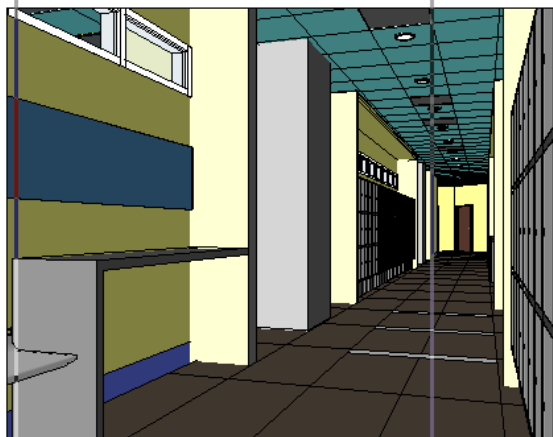


1 行政人员培训室平面图(高楼三层) 1:50

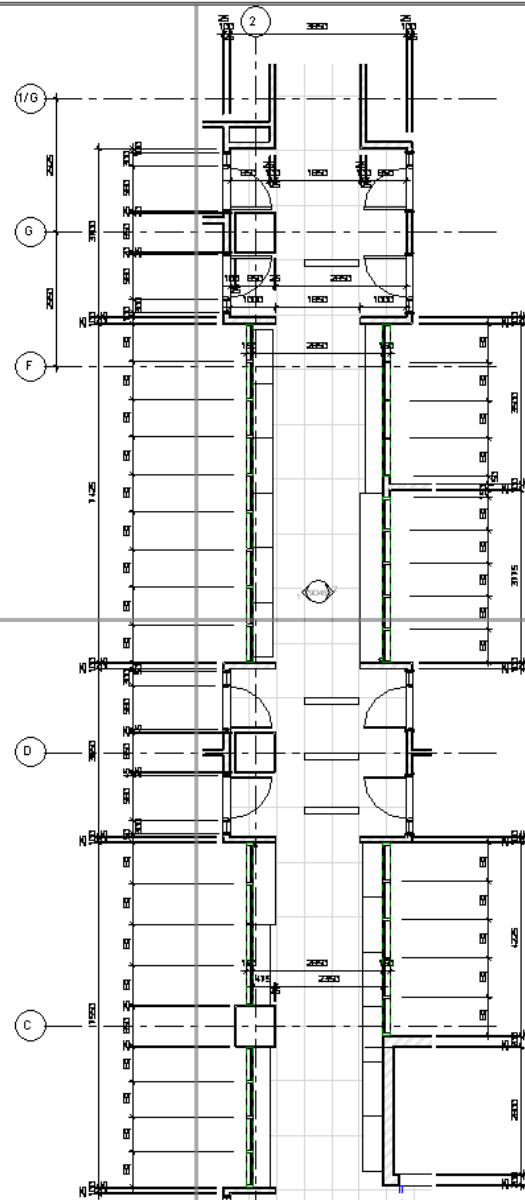
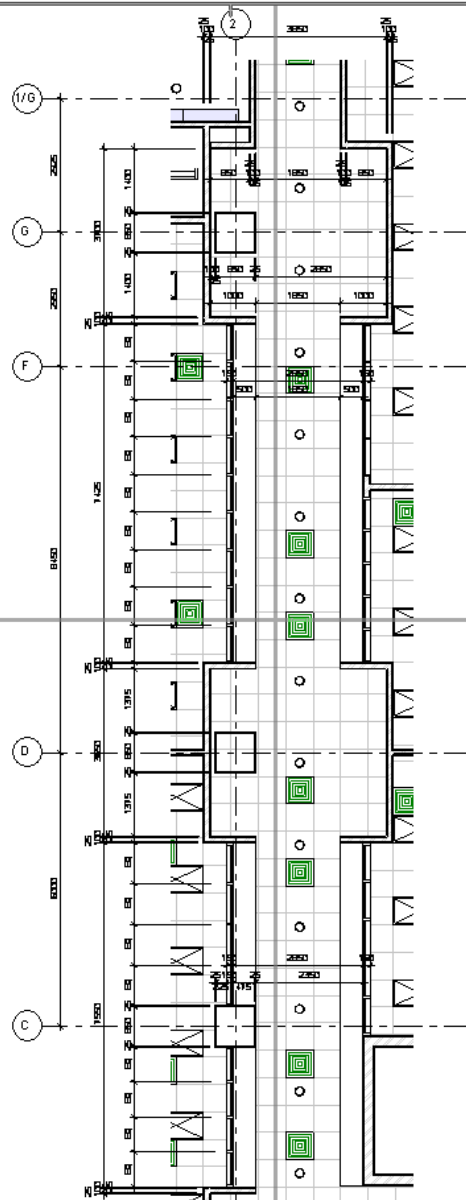
[illegible]



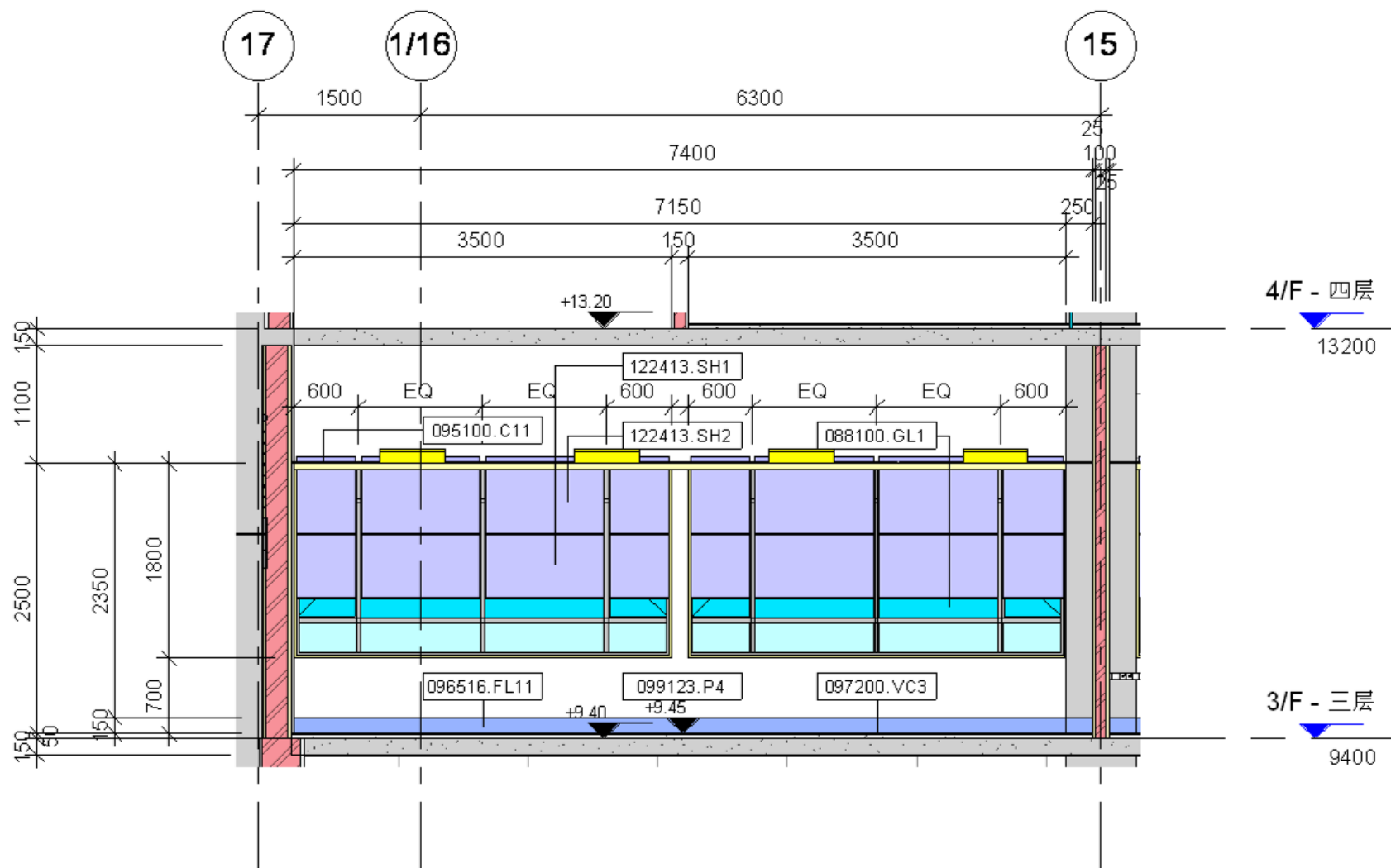
4 走廊立体示意图(低楼三至四层)2



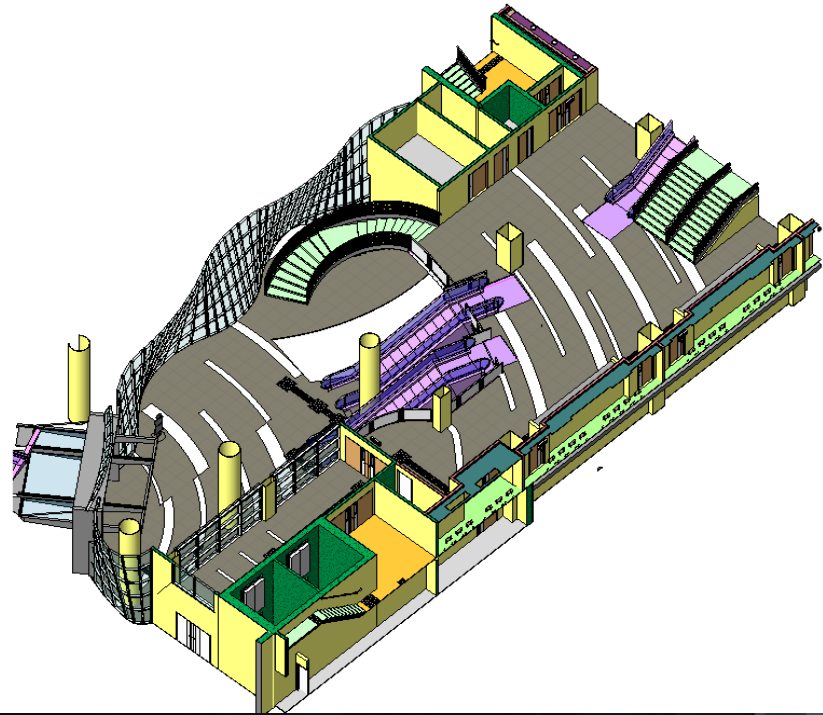
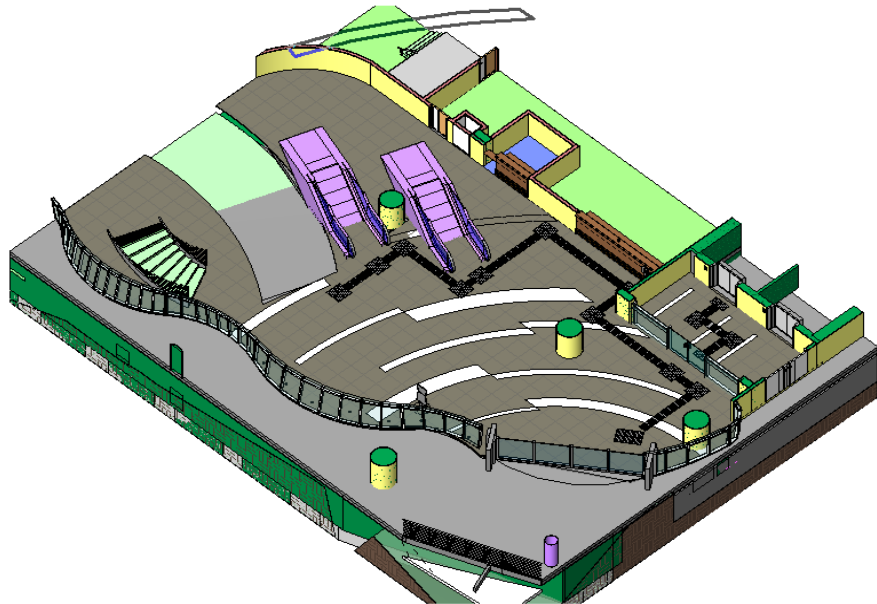
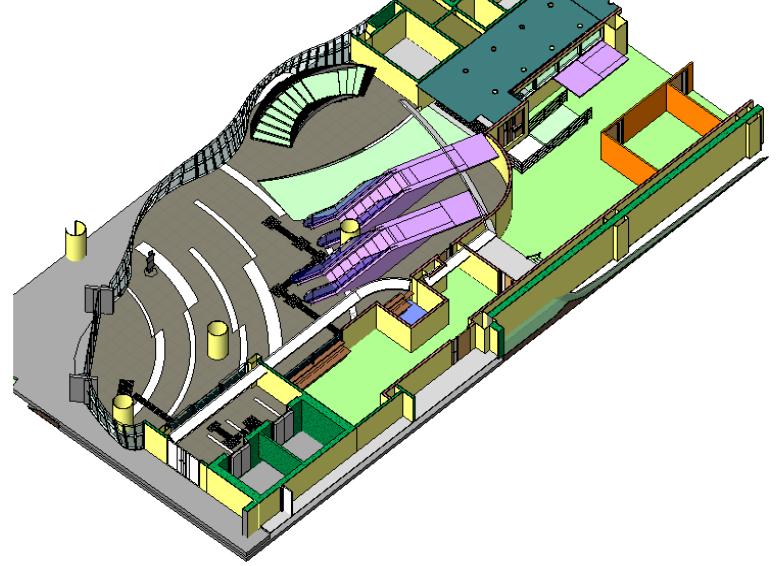
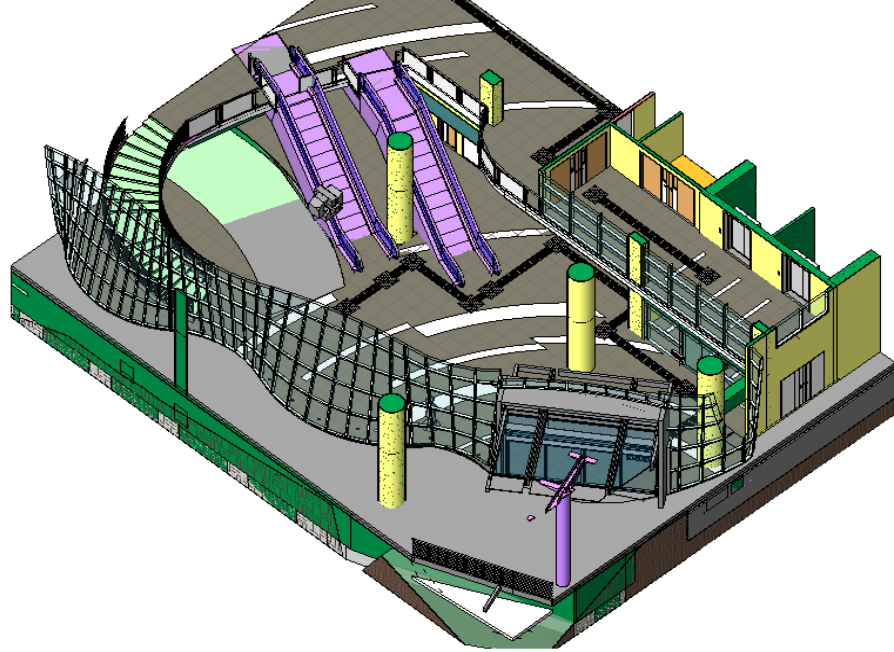
3 走廊立体示意图(低楼三至四层)1

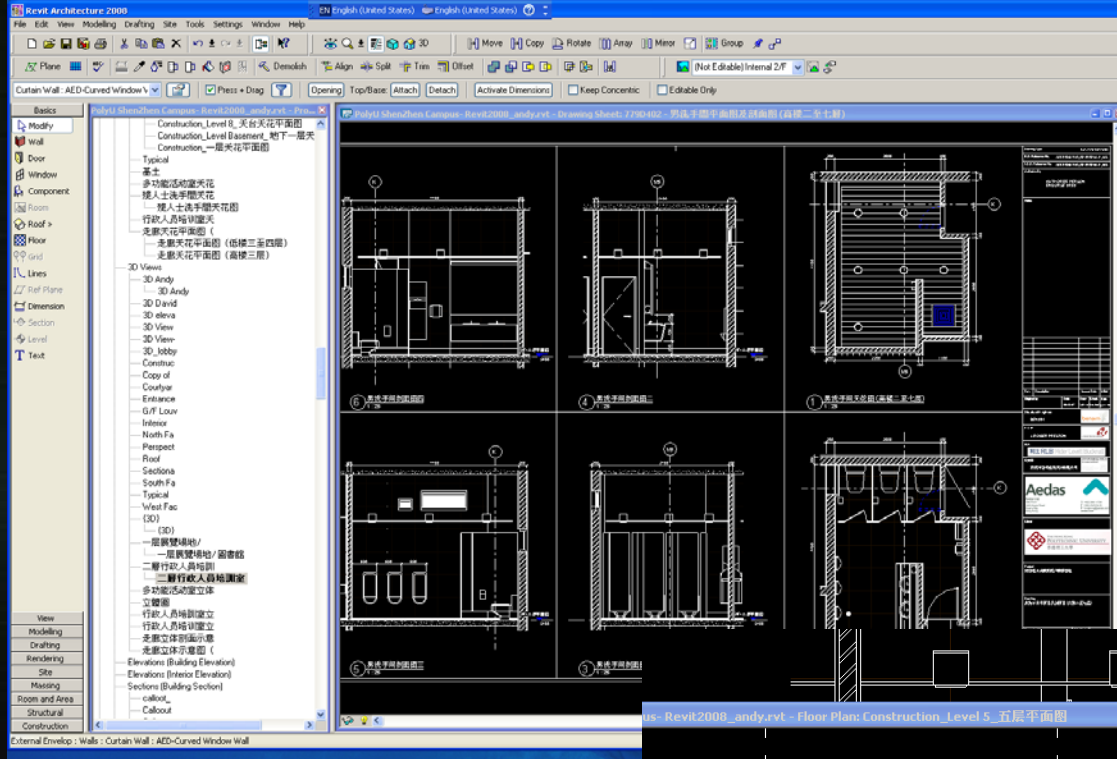


A vertical strip of various logos and advertisements. At the top, there are several small, partially visible logos. Below them is a large, empty rectangular box. Further down, there is a grid of small, empty rectangular boxes. Below the grid, there are logos for 'benaim' and 'Rider Levett Bucknall'. Below these, there is a logo for 'Aedas' and a logo for 'The Hong Kong Polytechnic University'. At the bottom, there are several small, partially visible logos.

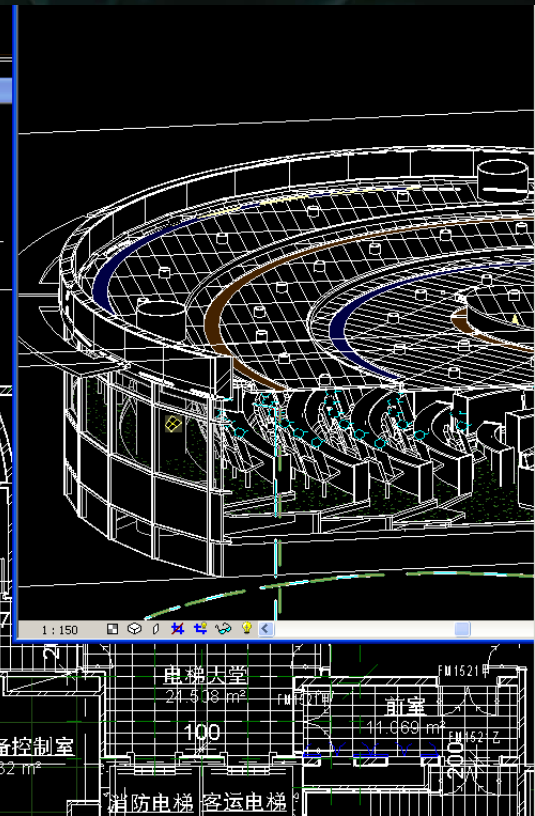


2 行政人员培训室立面图(高楼三层)6
1:50



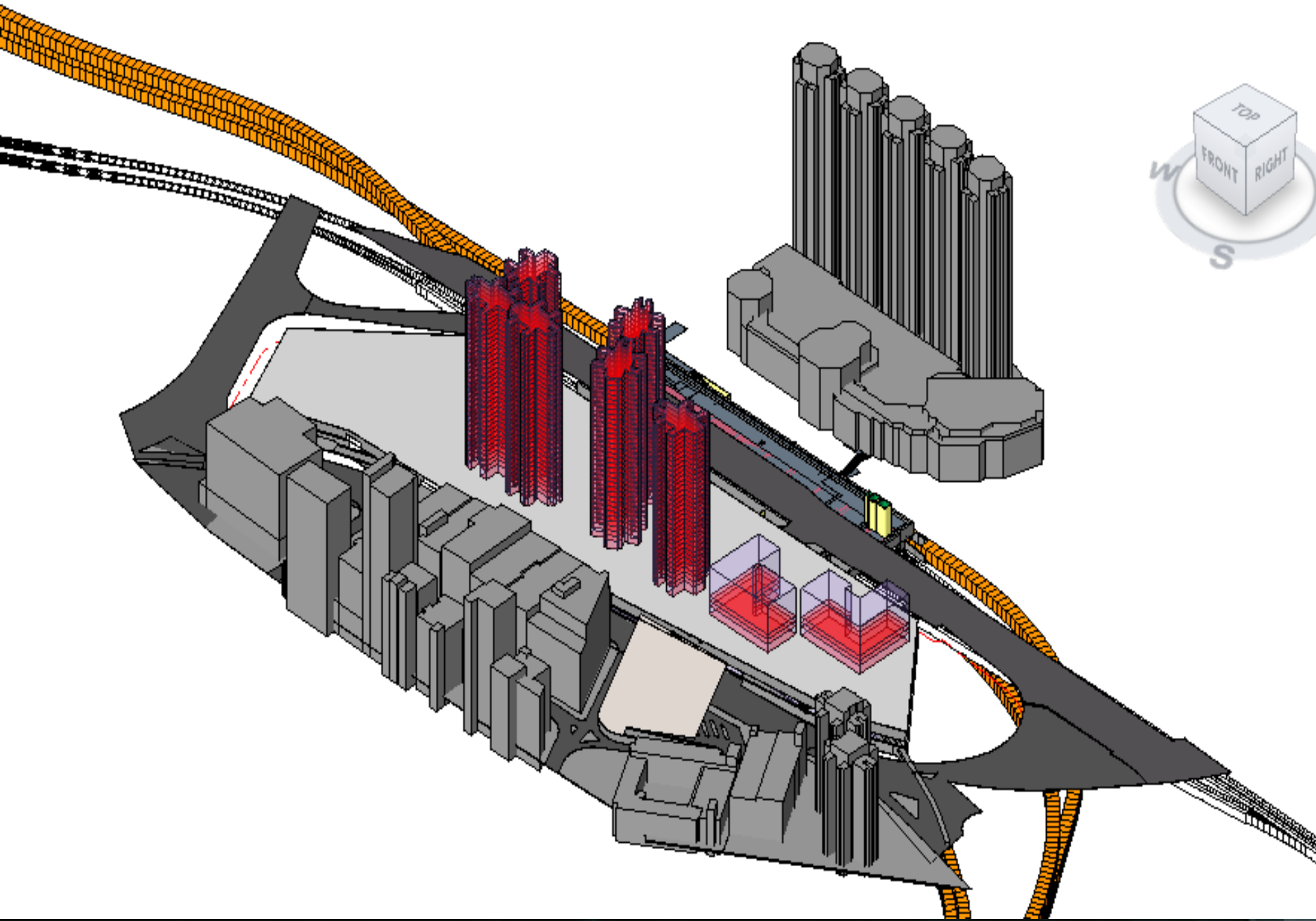


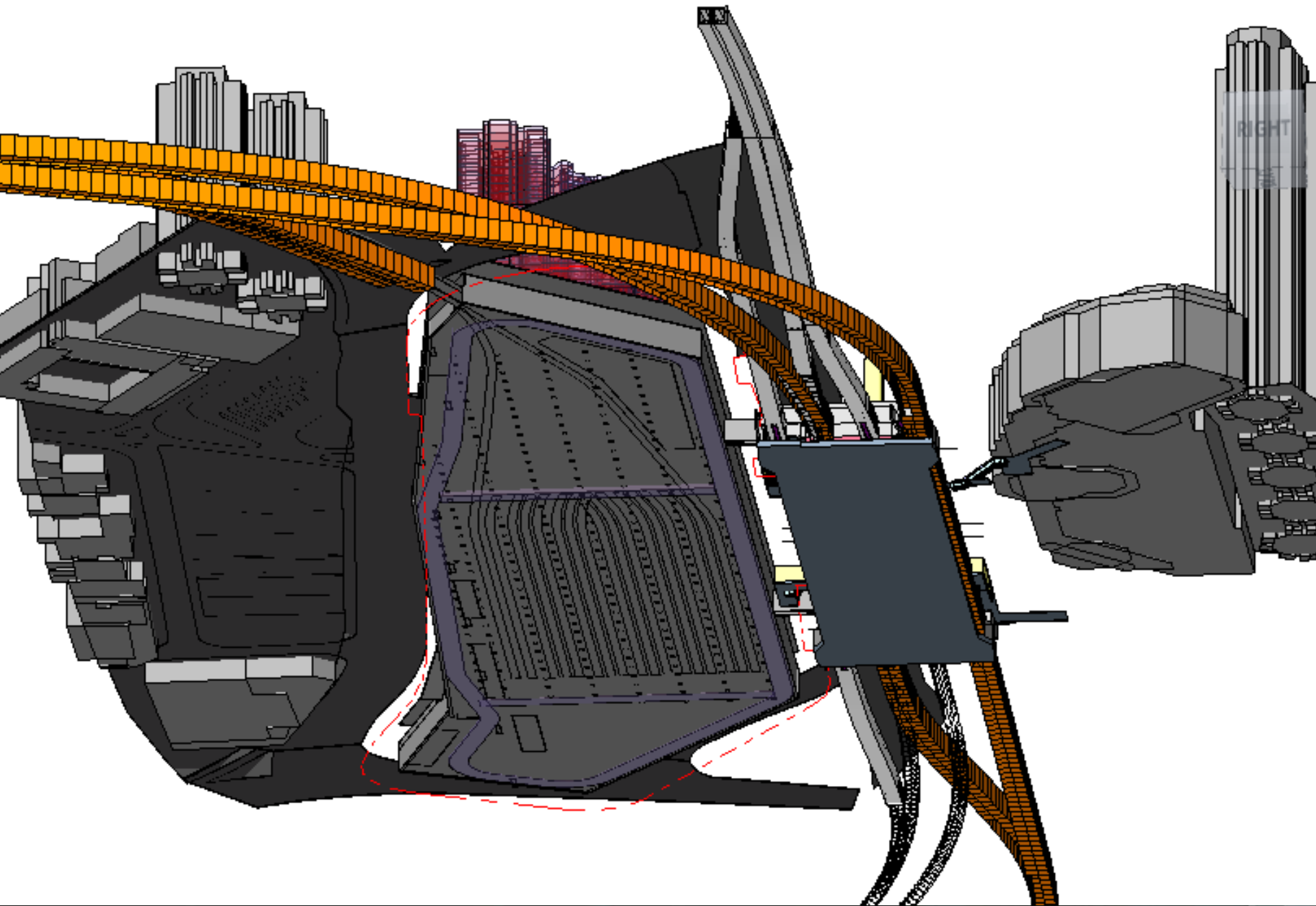
Revit2008_andy.rvt - Floor Plan: Construction_Level 5_五层平面图

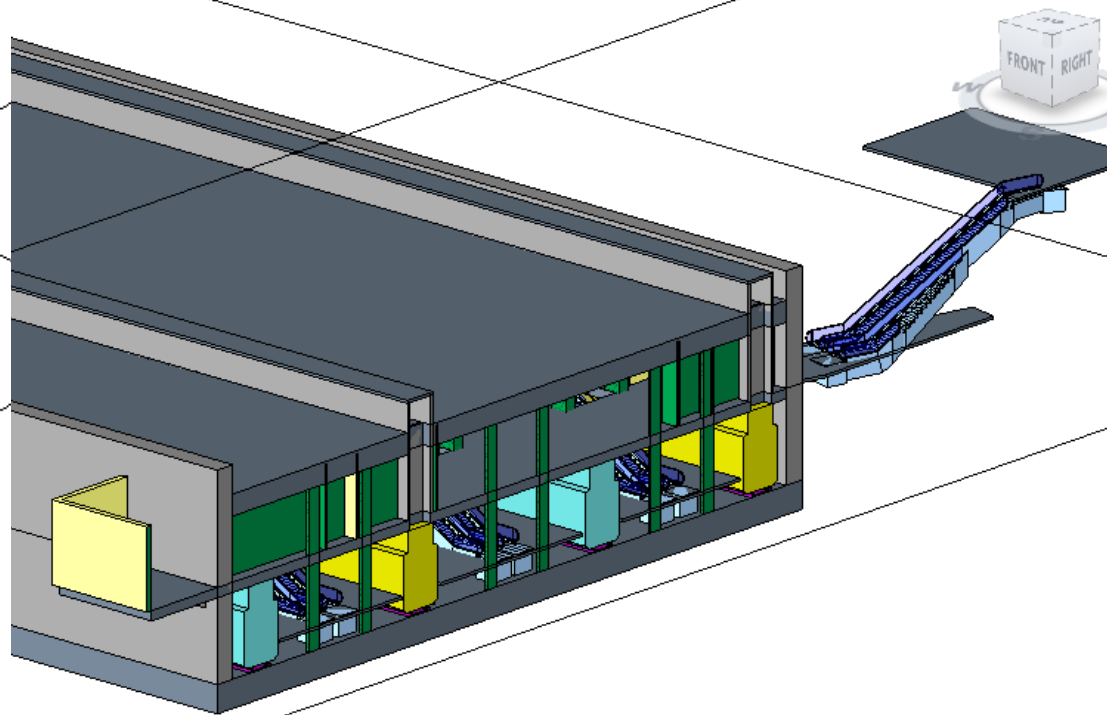
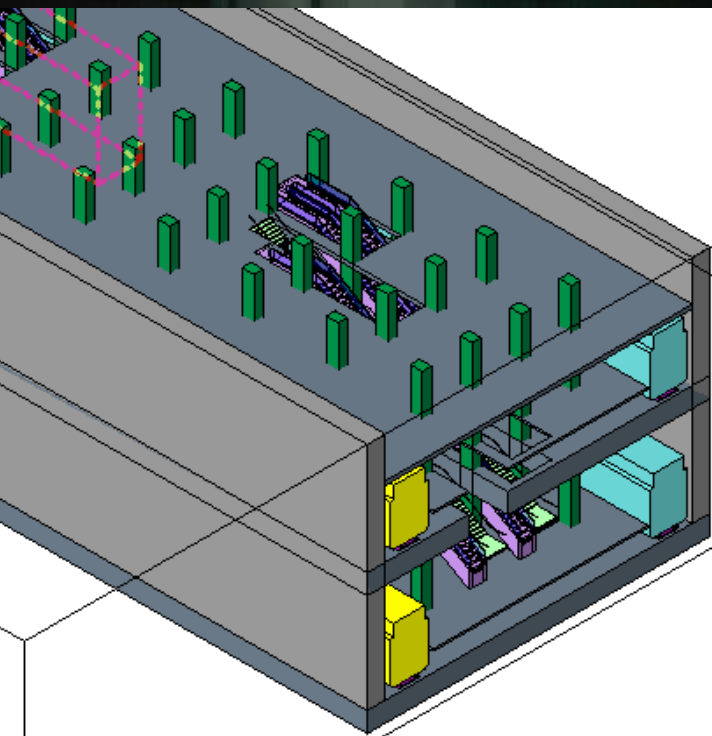


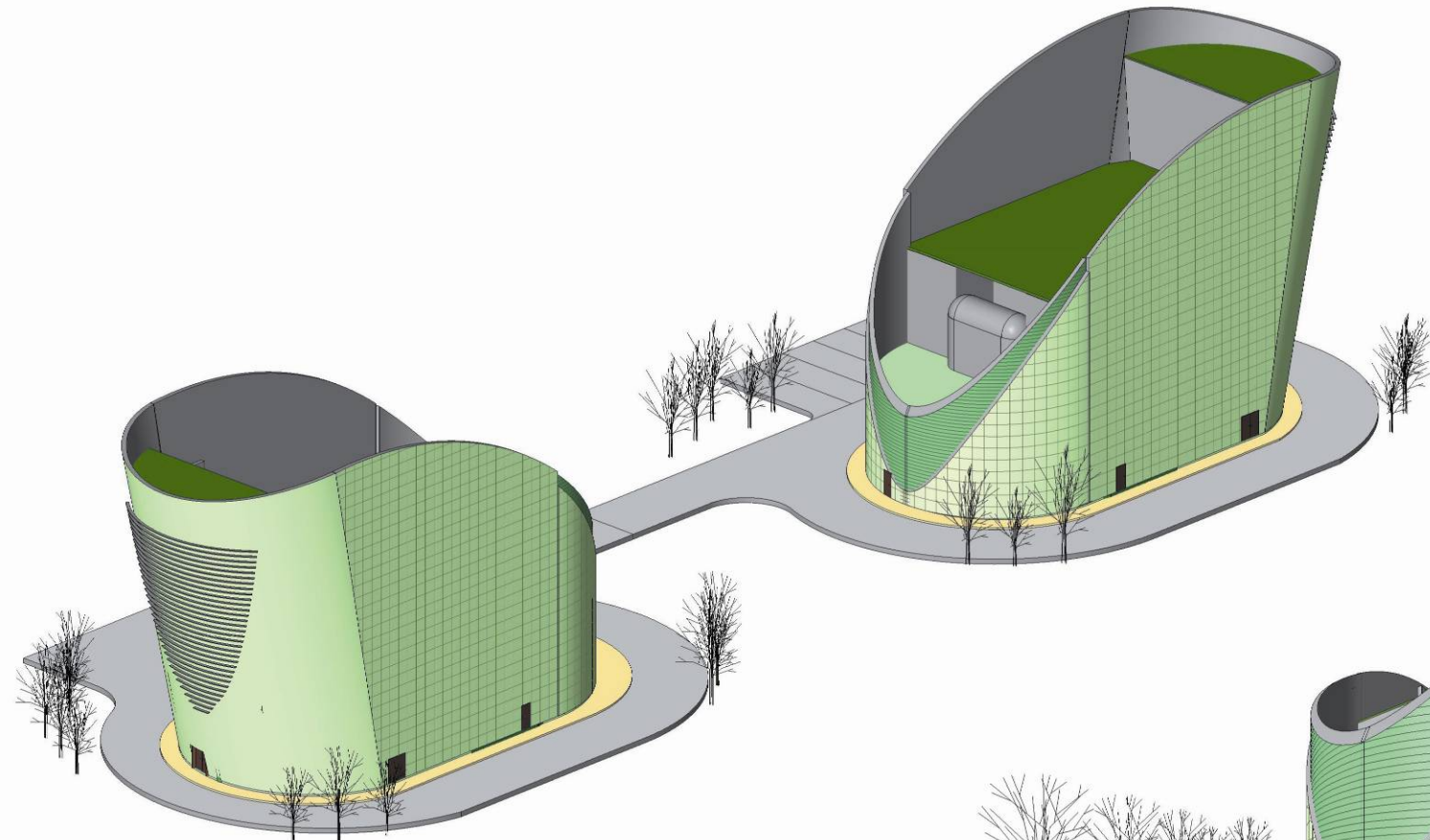
BIM 帶來的衝擊

1. 可視性型像化設計
2. 圖紙製作
3. 各專業協調合作
4. 物件清單及投標文件
5. 自動化送審文件
6. 科學性分析及可持續發展設計
7. 複雜幾何形狀建築
8. 生產制造構件



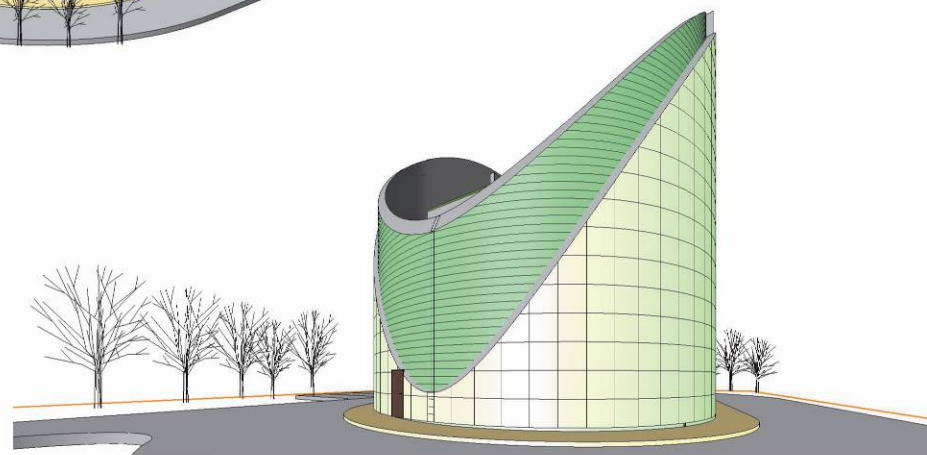




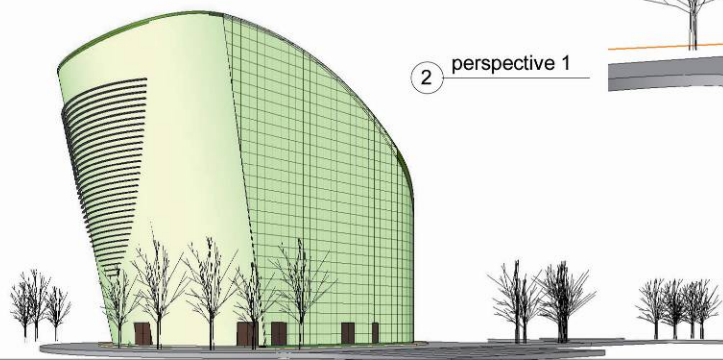


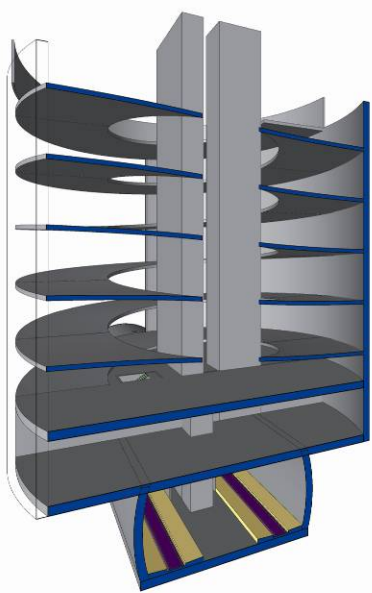
① 3D perspective

② perspective 1



③ perspective 2



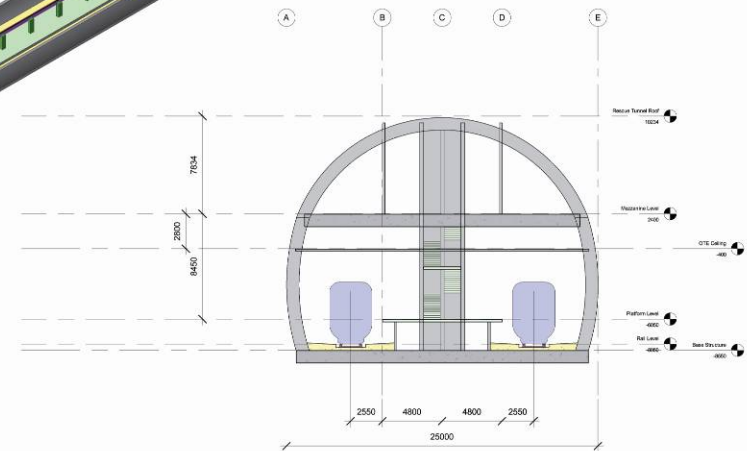


EVA

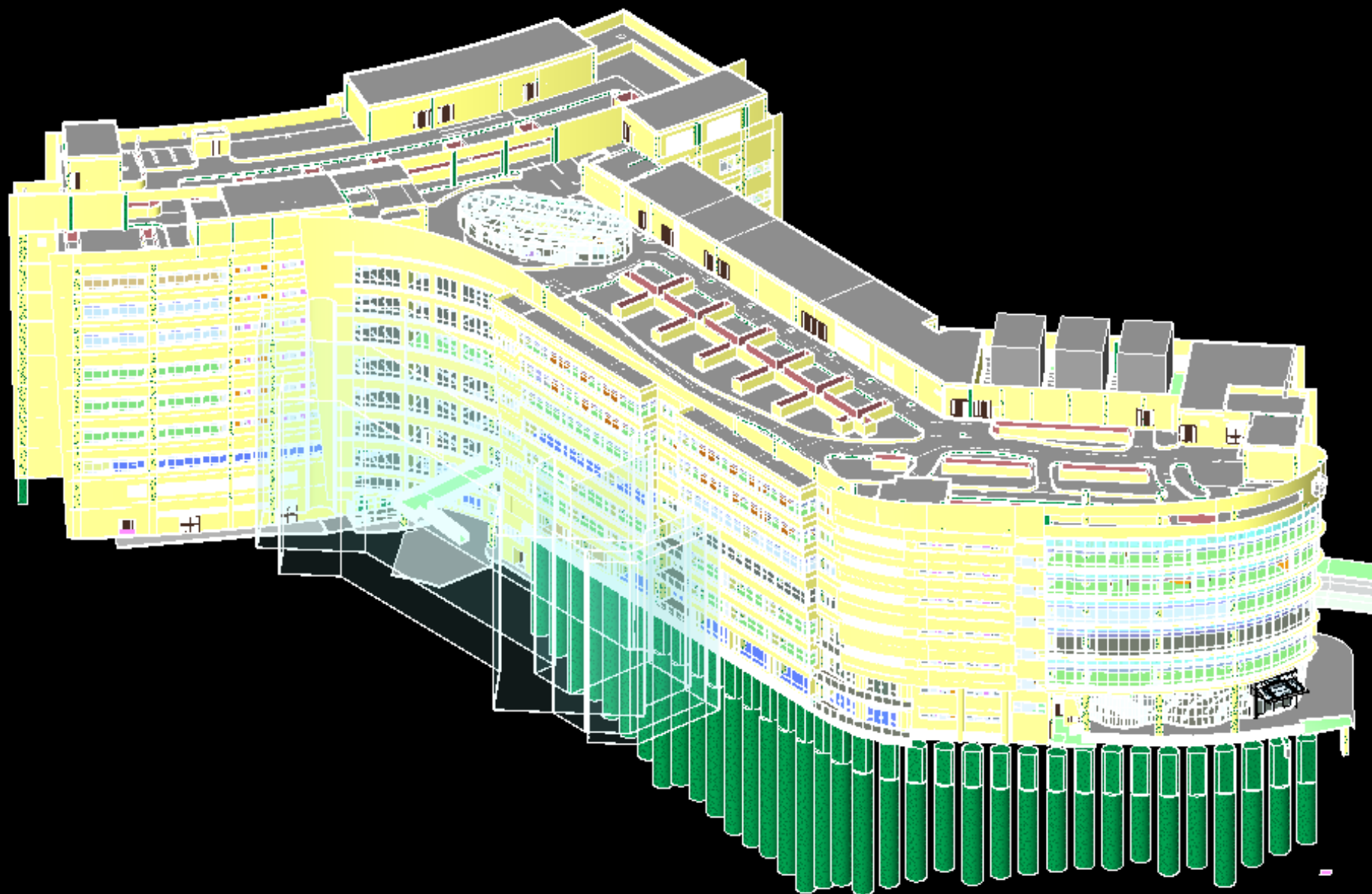
Rescue Tunnel Roof

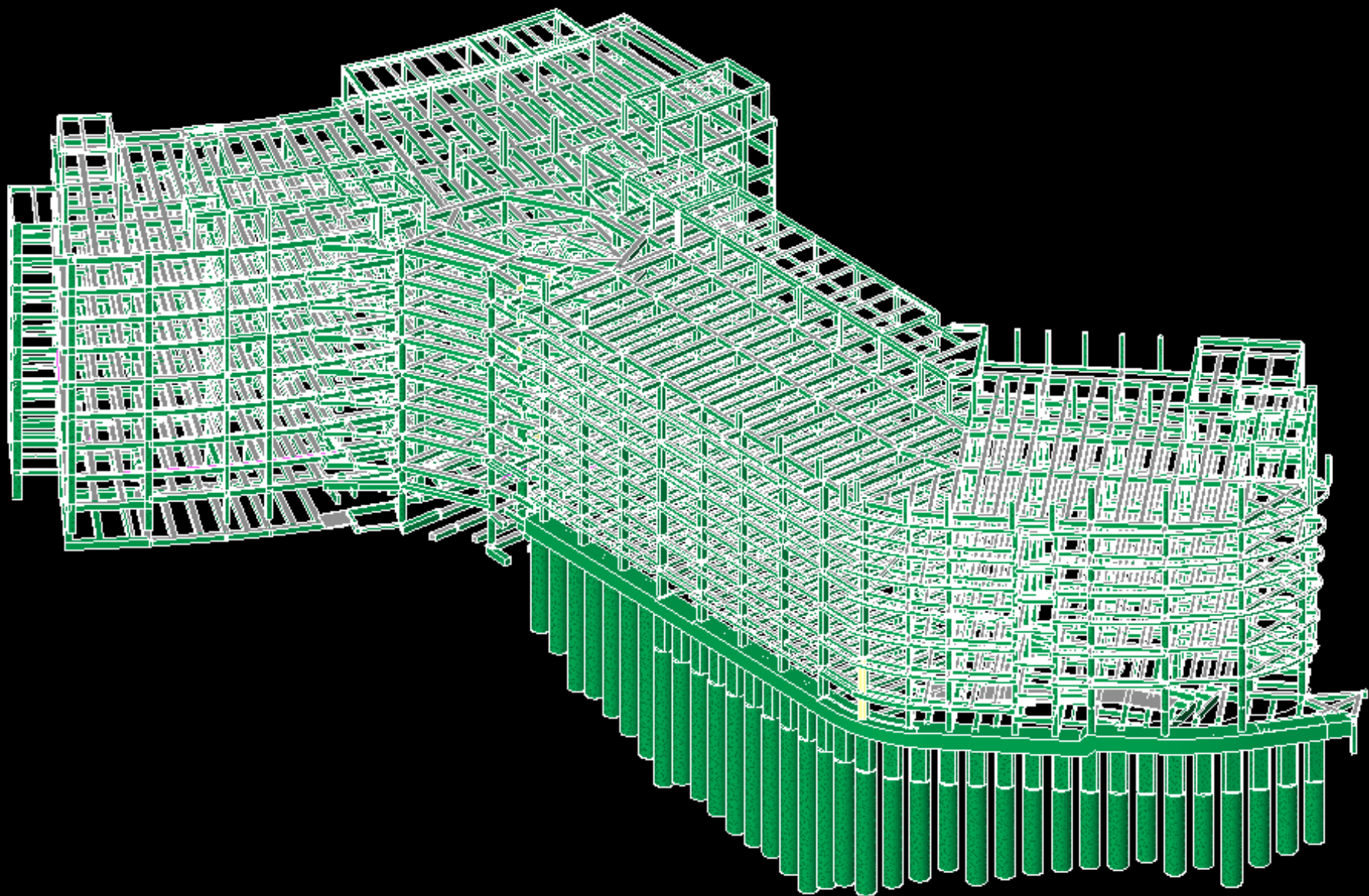
Mezzanine Level

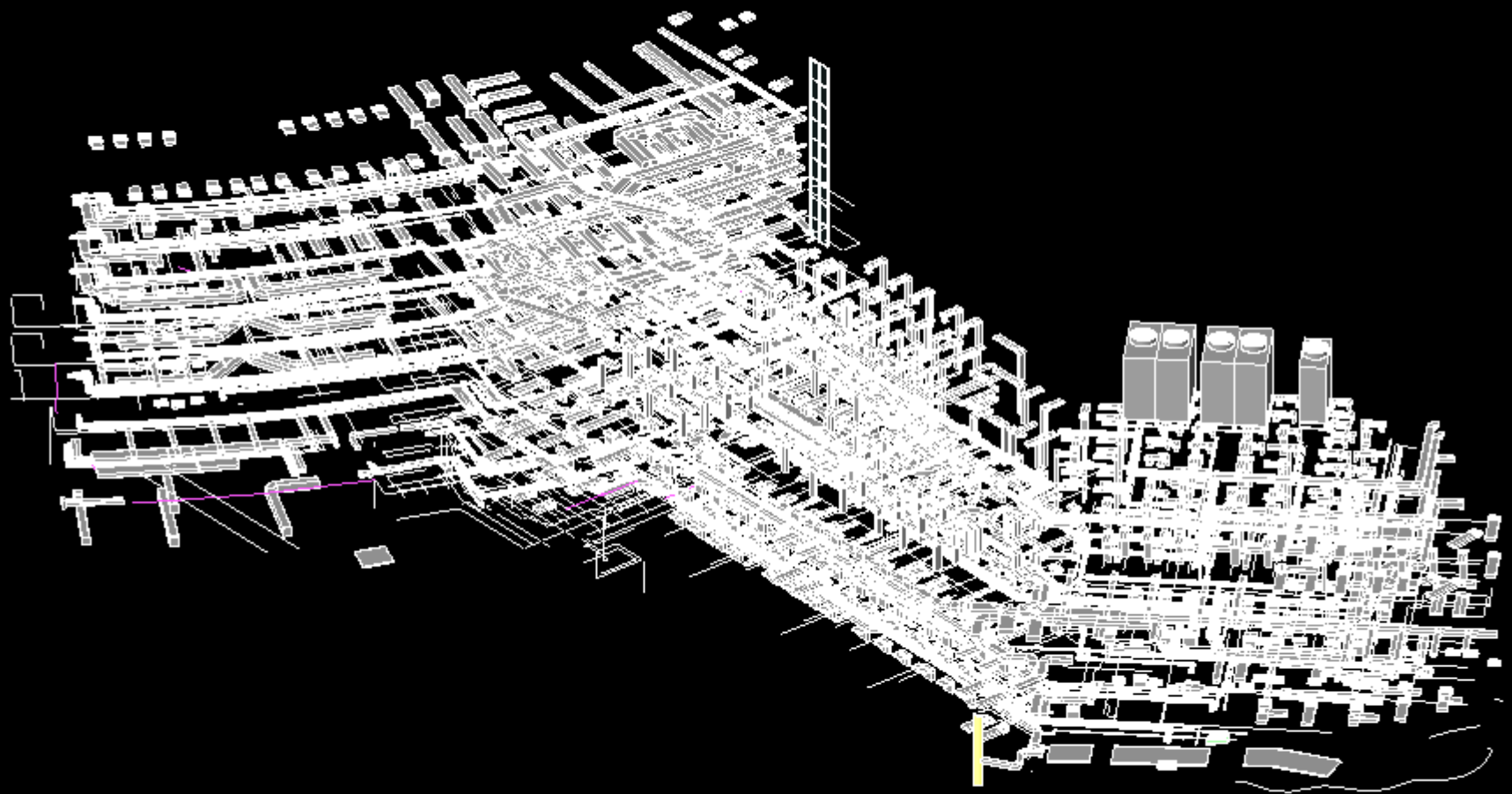
2 Platform Level

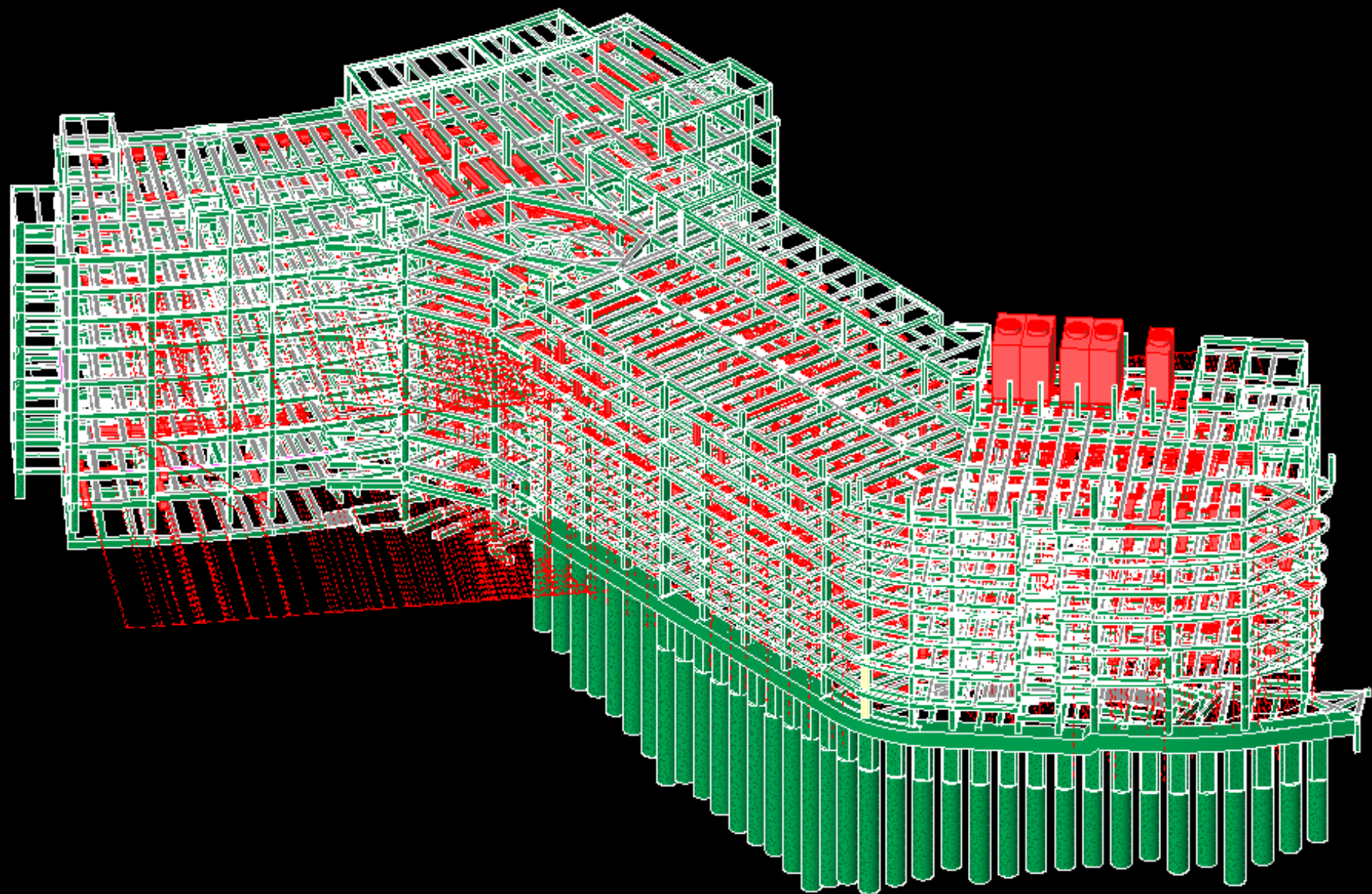


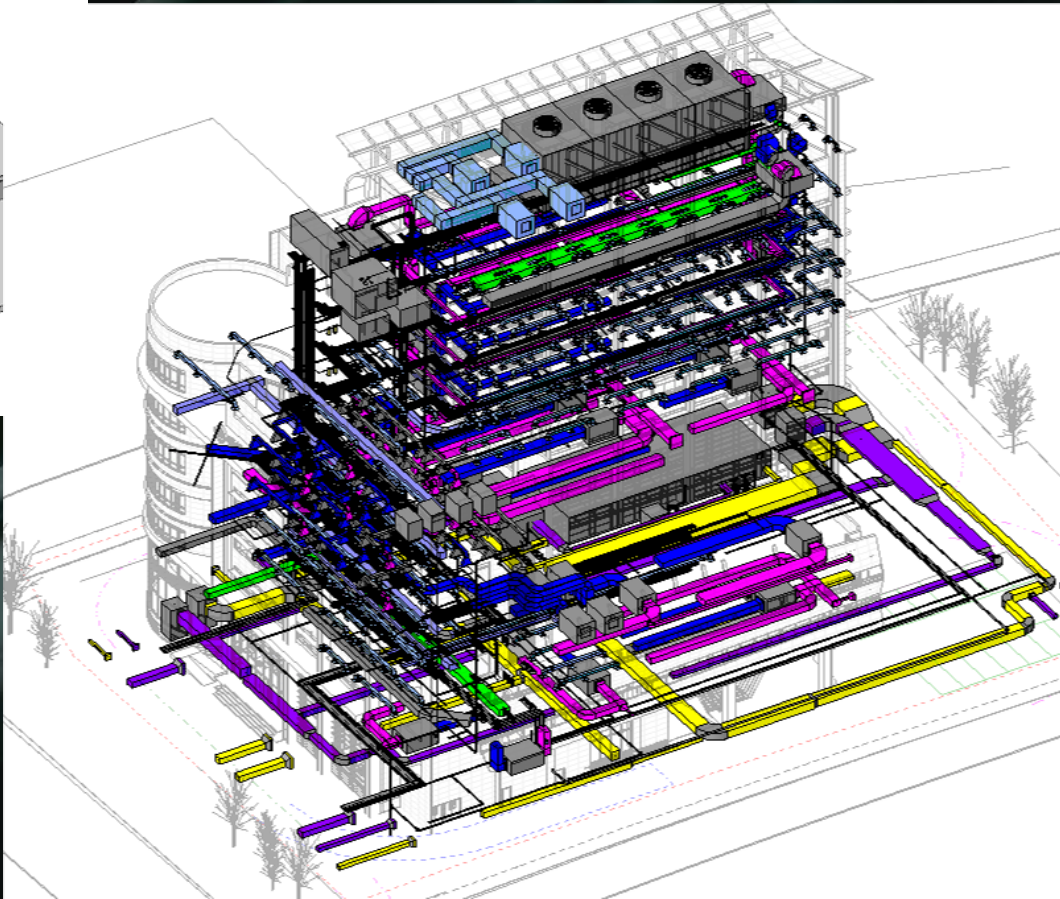
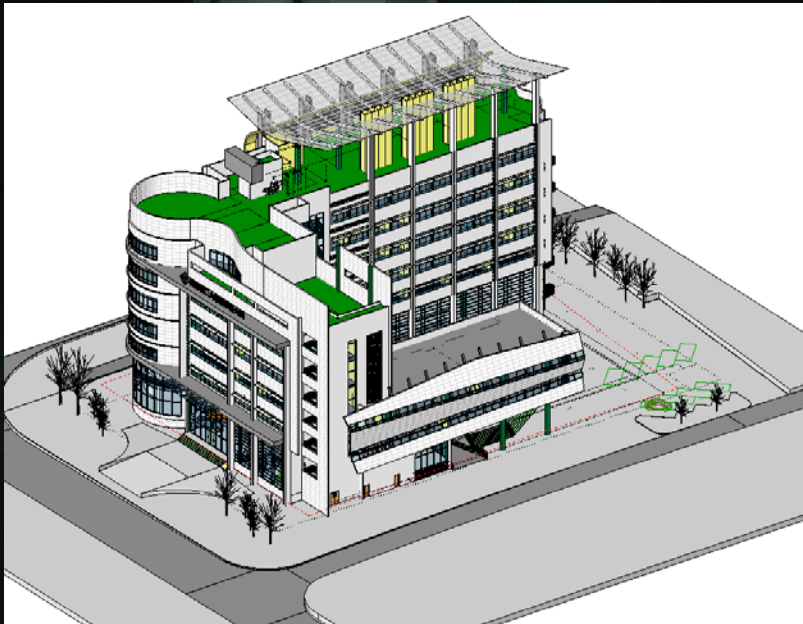
1 Section 1
1 : 200





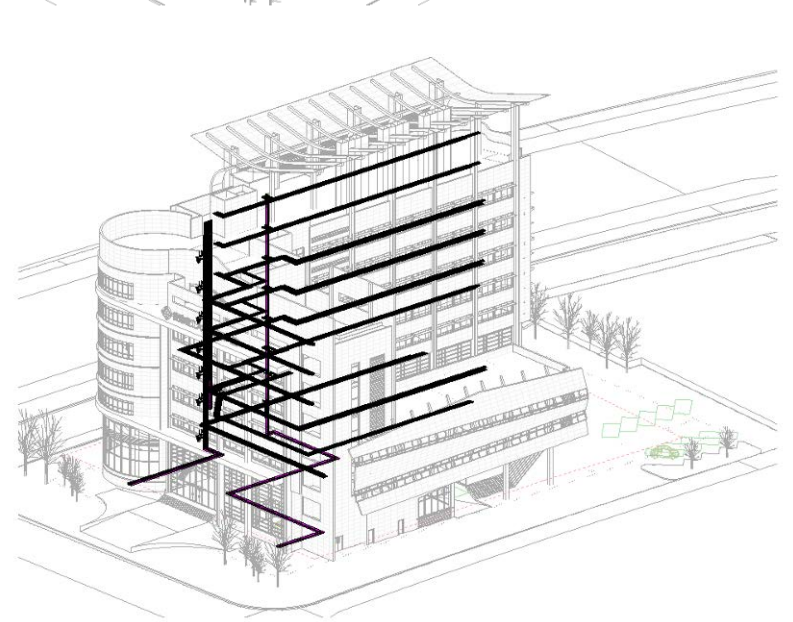
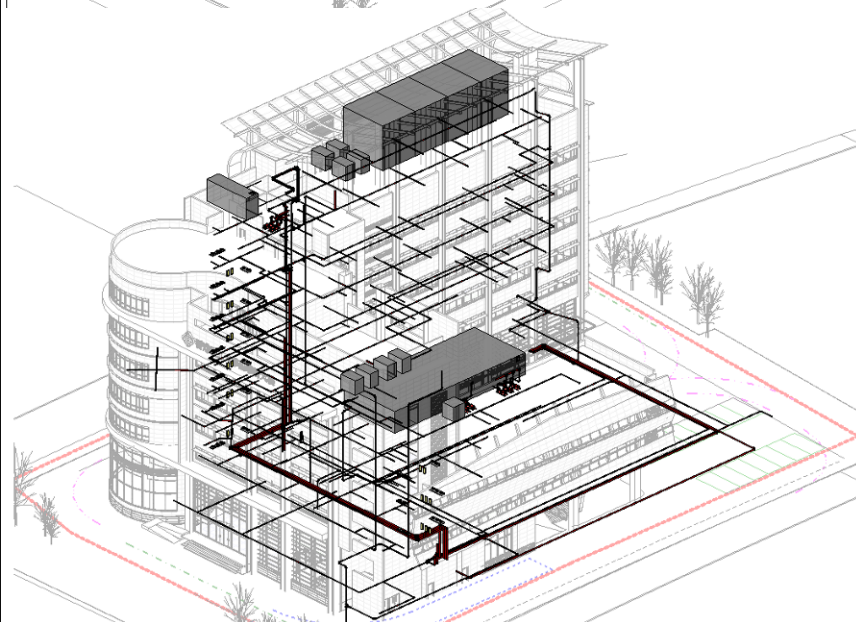
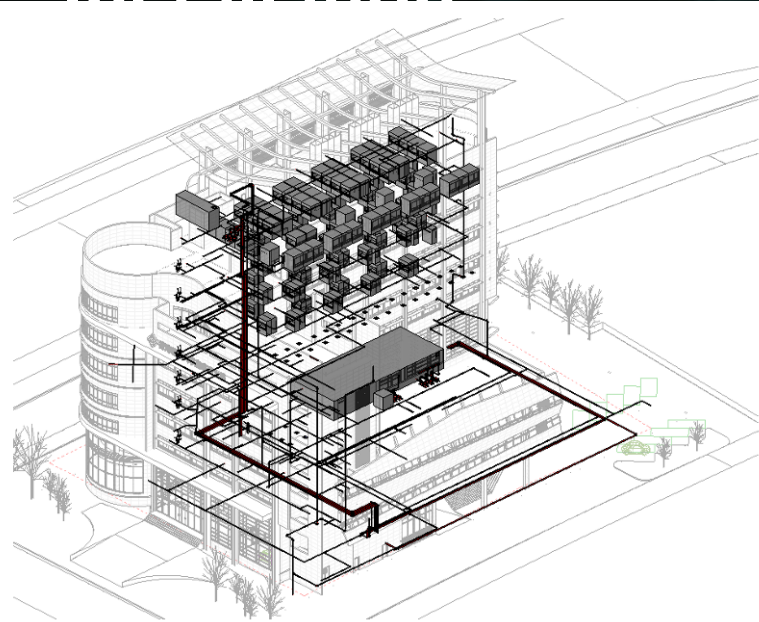
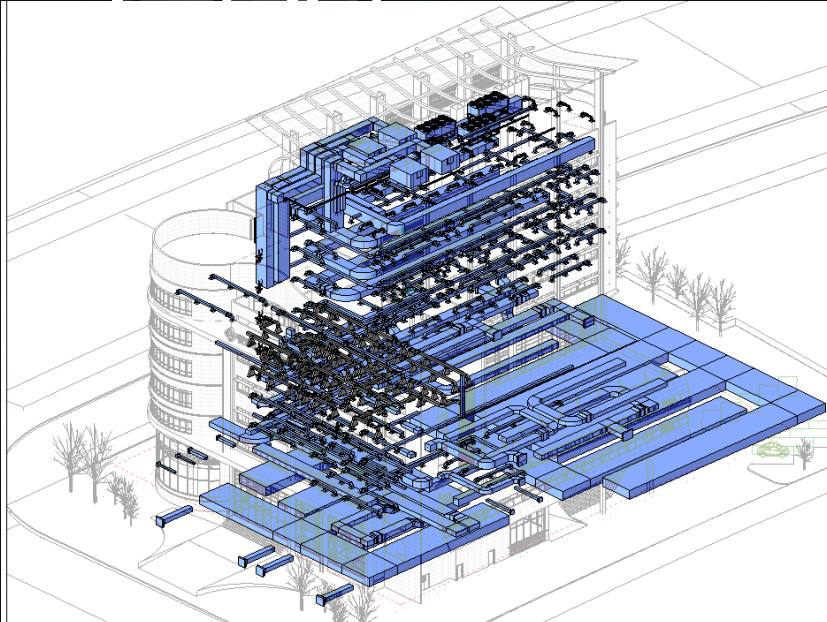






HVAC

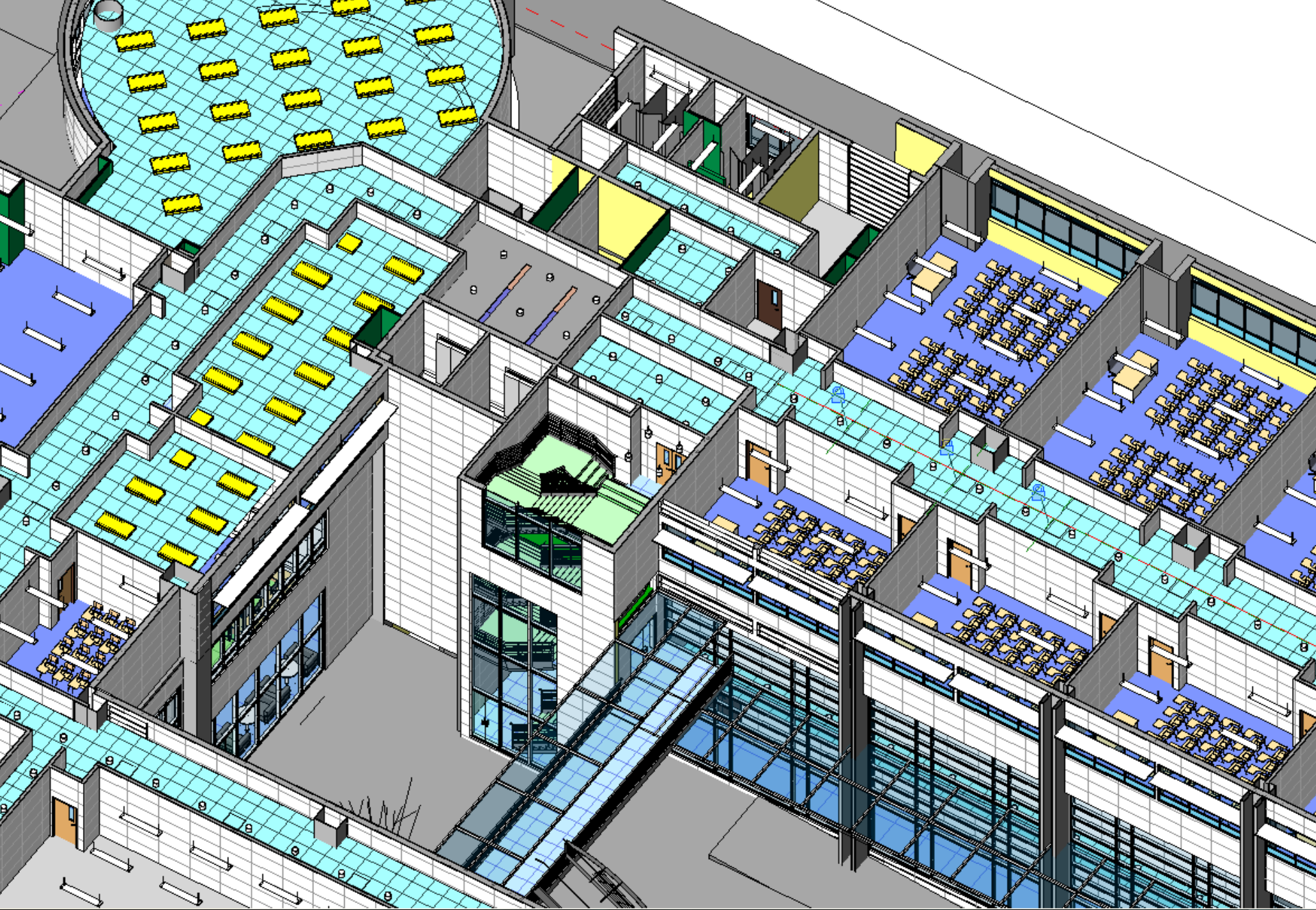
Fire Services Installation



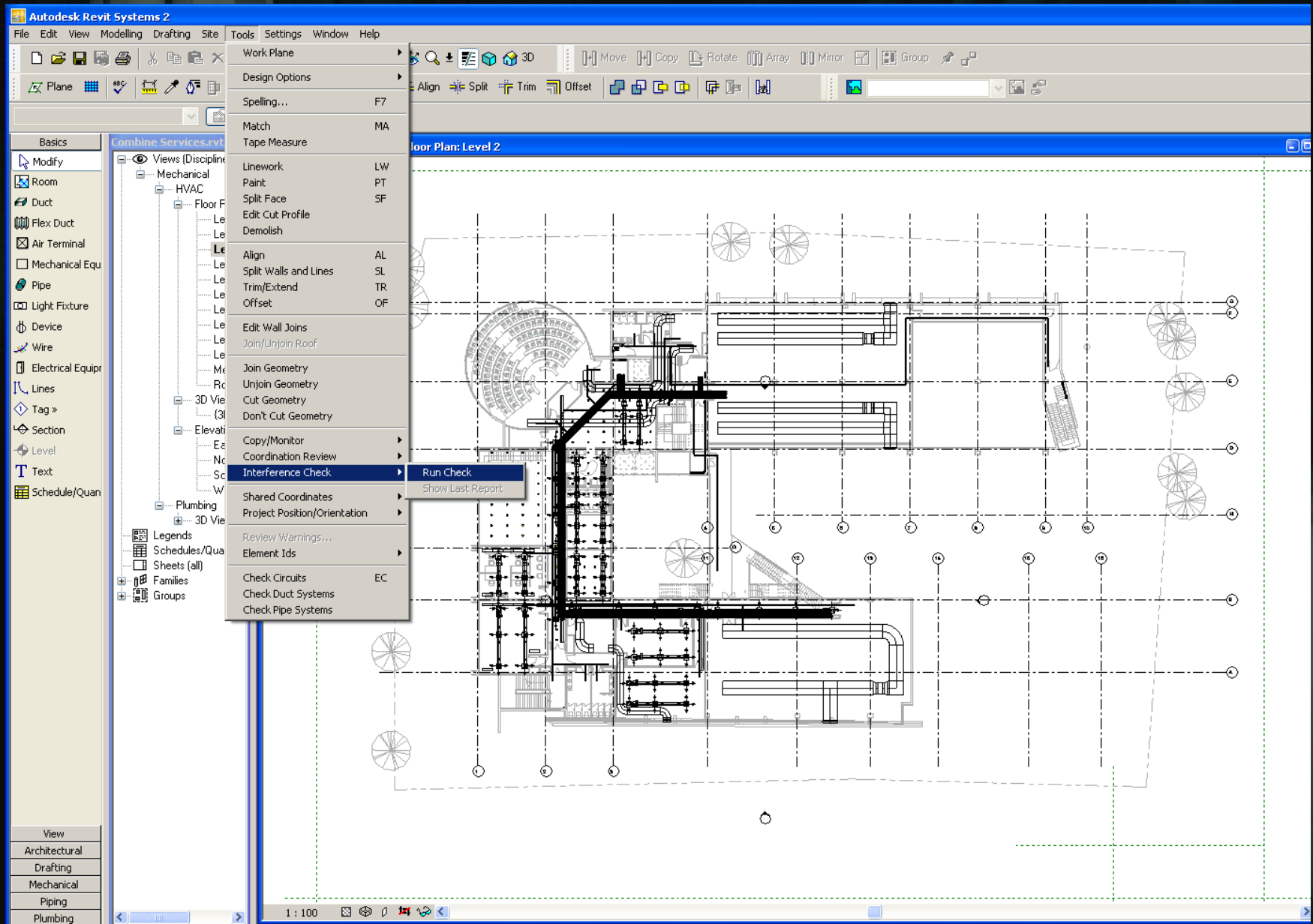
P/D Installation

Electricity Installation



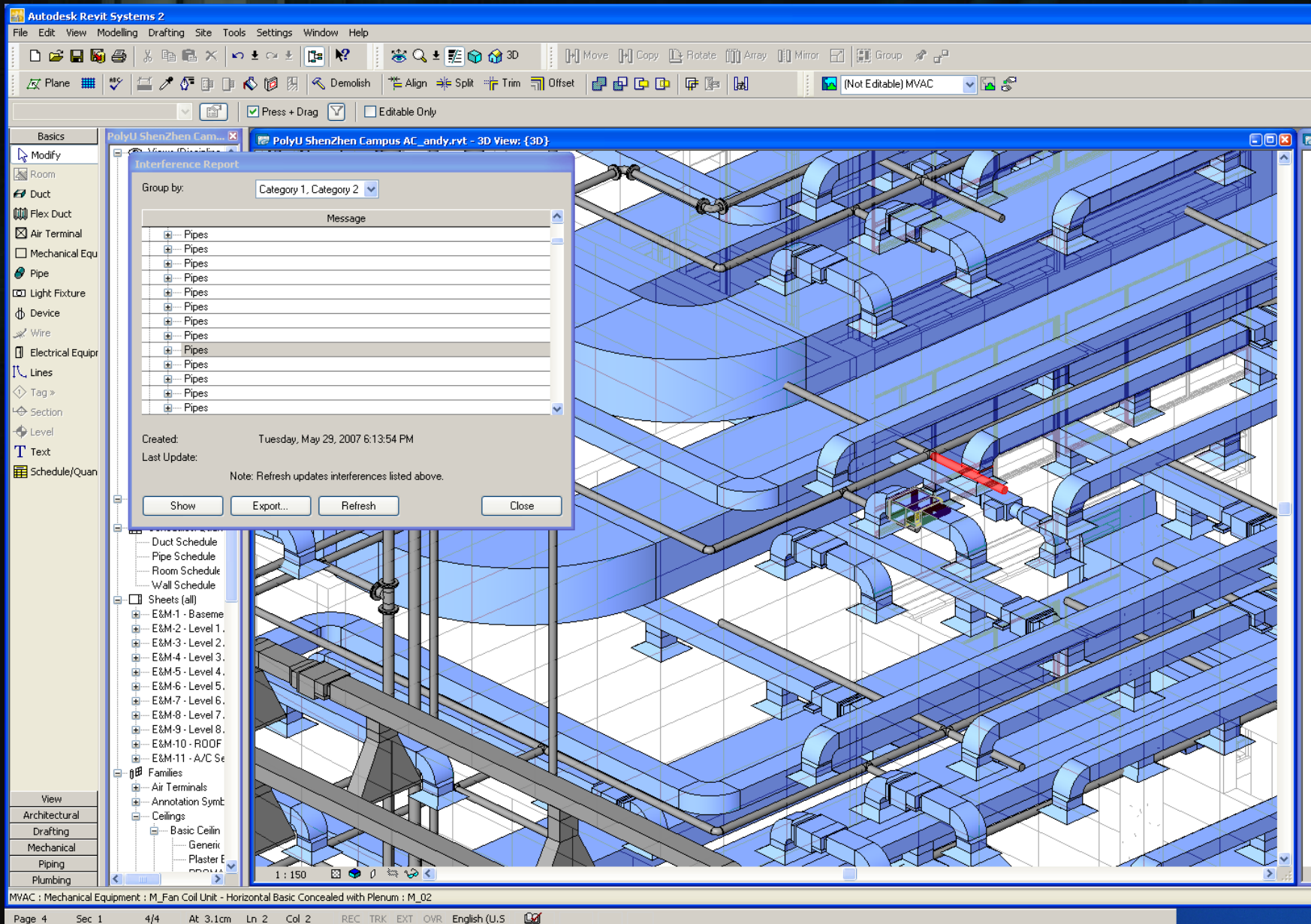


Work Flow – Clashes Report

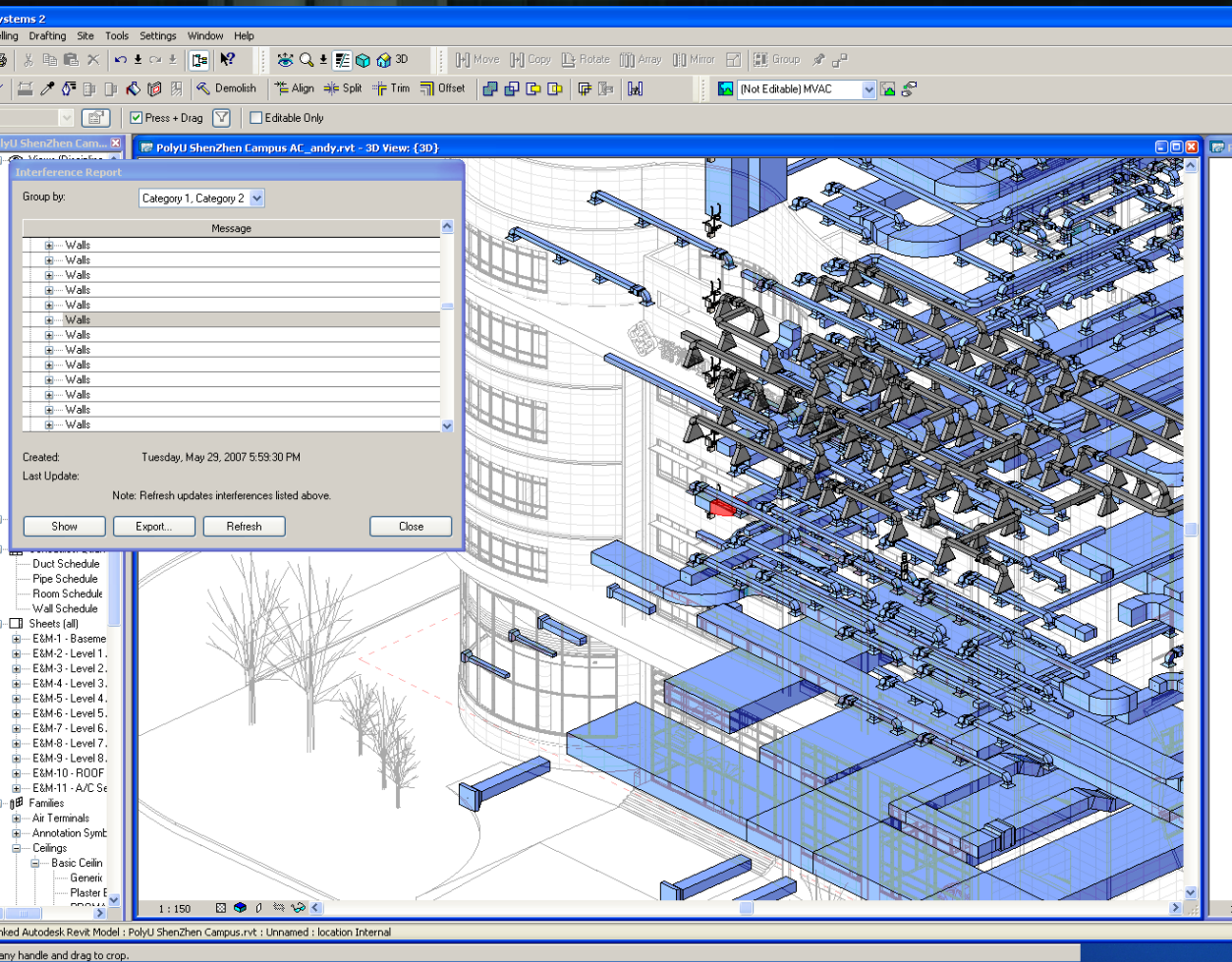


Run Interference Check on the current project, a selection, or a linked project.

Work Flow – Clashes Report



Work Flow – Clashes Report



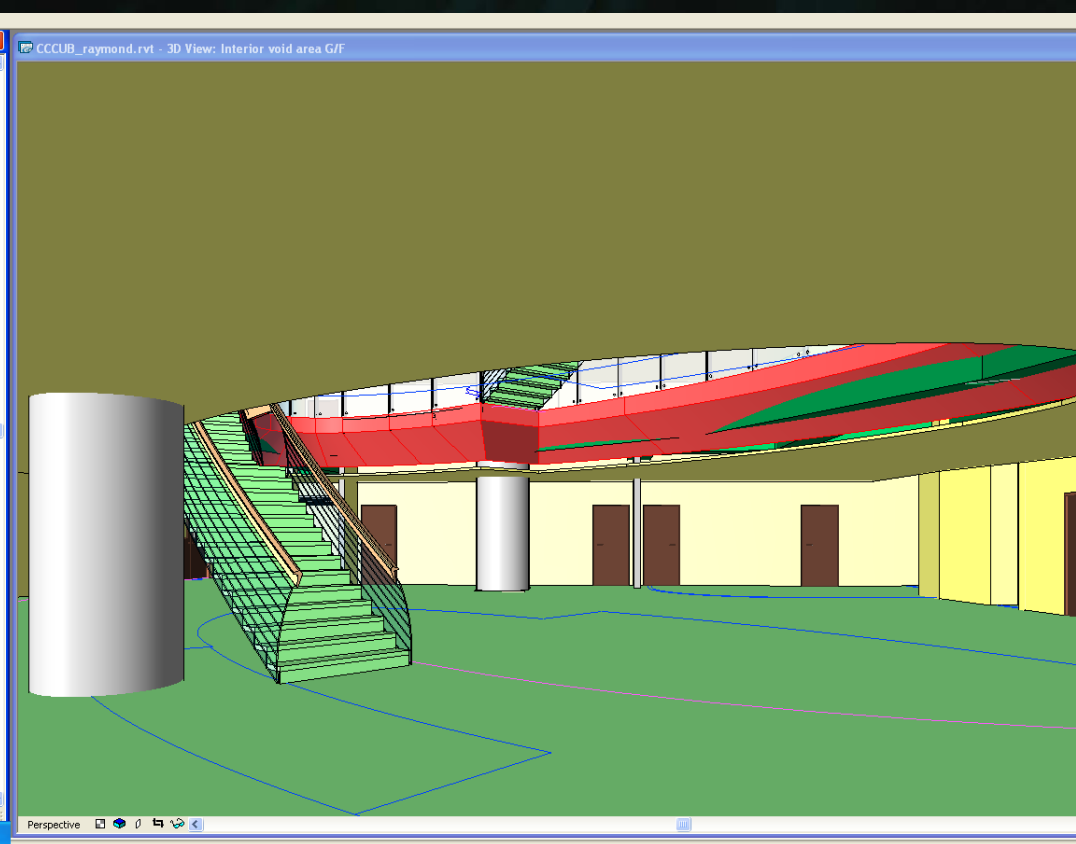
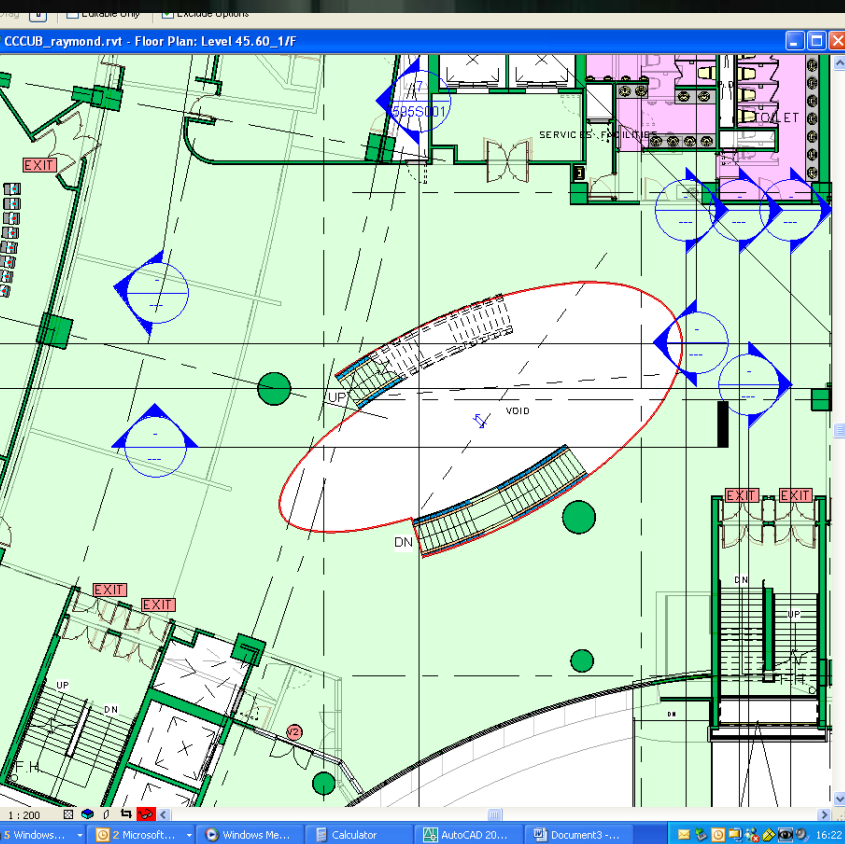
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Status	New
Clash Point	-74.537m, 2.437m, -11.450m
Date Created	2006/7/17 03:37:34
Approved By	

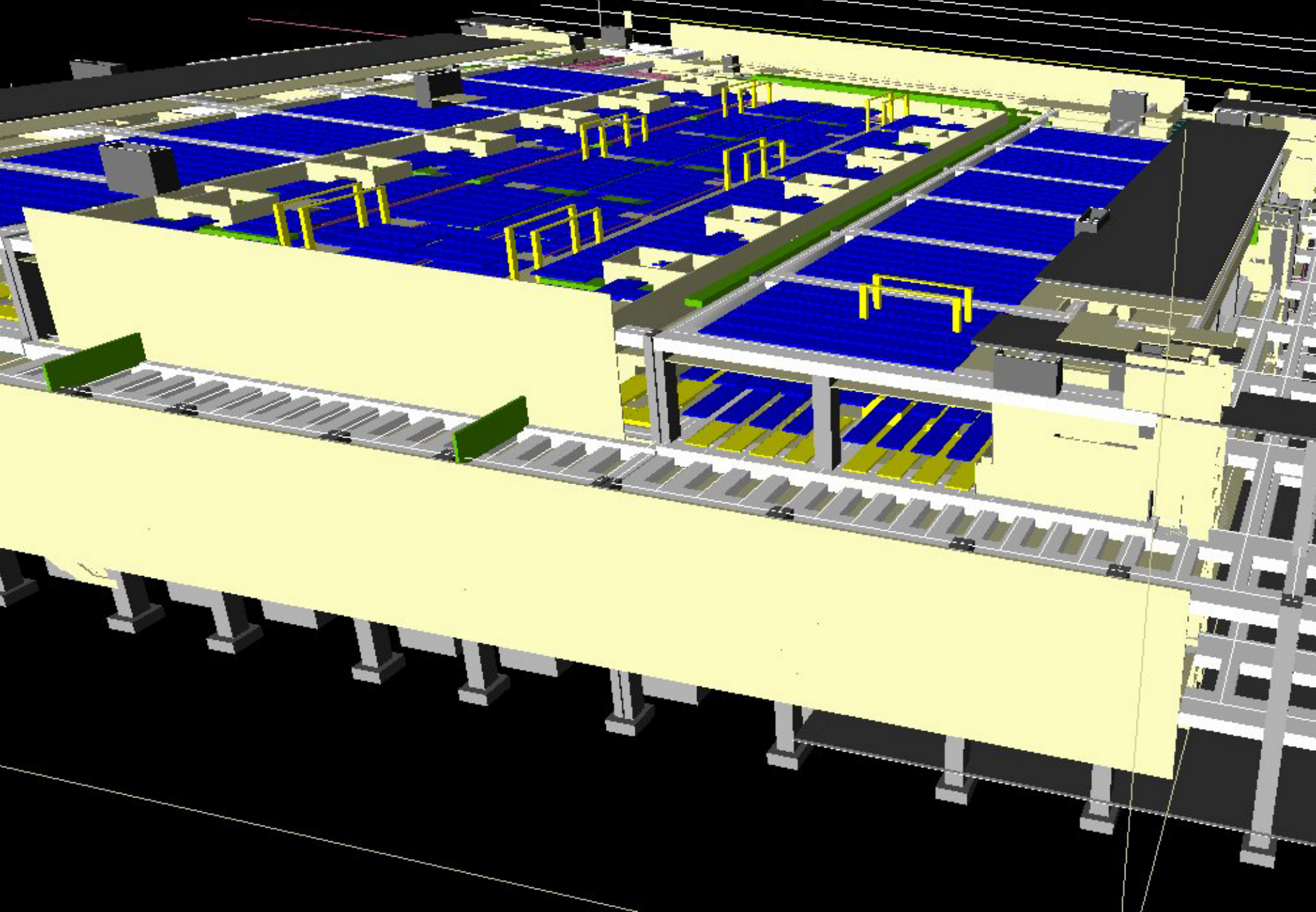
Item 1

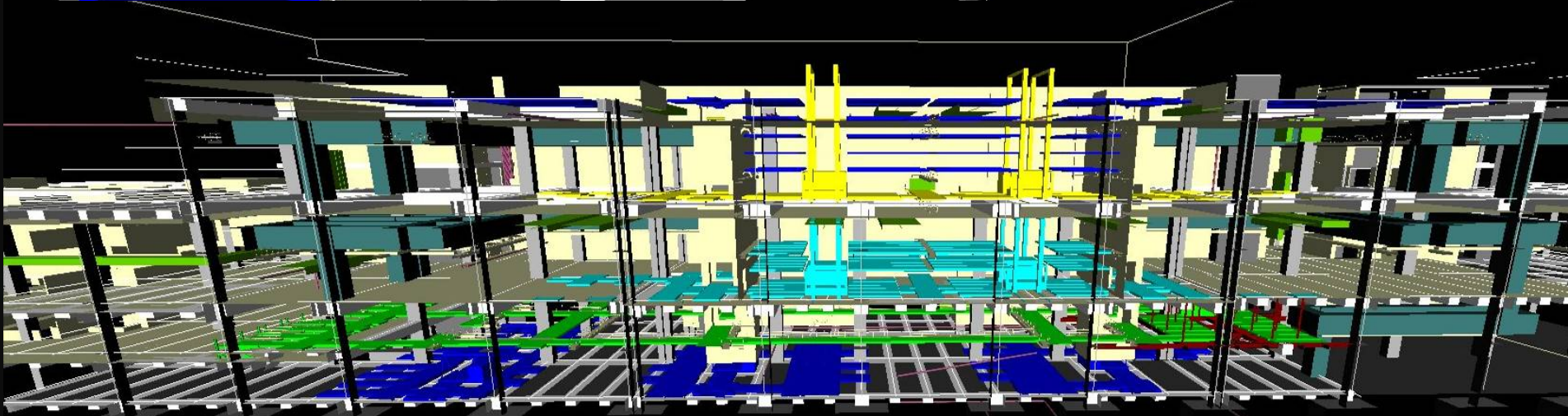
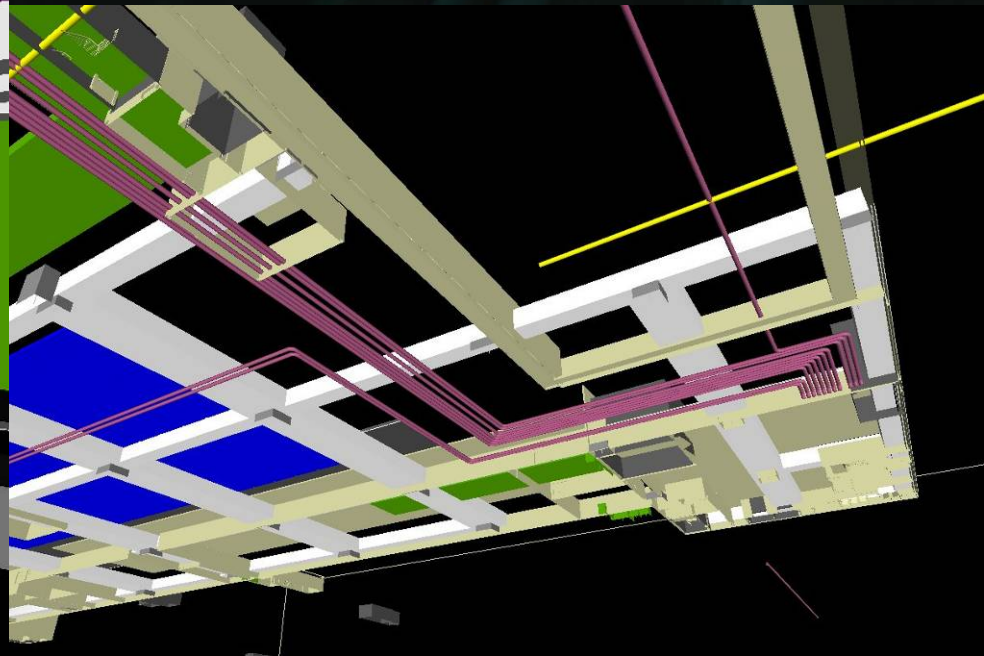
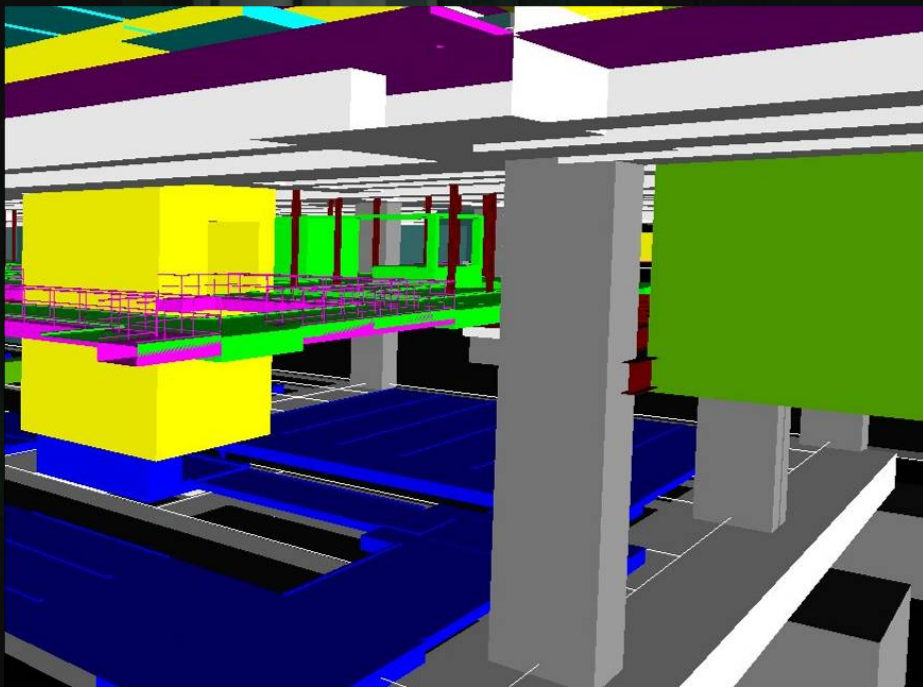
Path File ->File ->Basement 03.nwc -><No level> ->L2b1
500 x 700 ->L2b1 500 x 700 ->Solid

Item 2

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







BIM 帶來的衝擊

1. 可視性型像化設計
2. 圖紙製作
3. 各專業協調合作
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5. 自動化送審文件
6. 科學性分析及可持續發展設計
7. 複雜幾何形狀建築
8. 生產制造構件

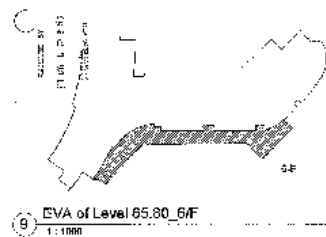
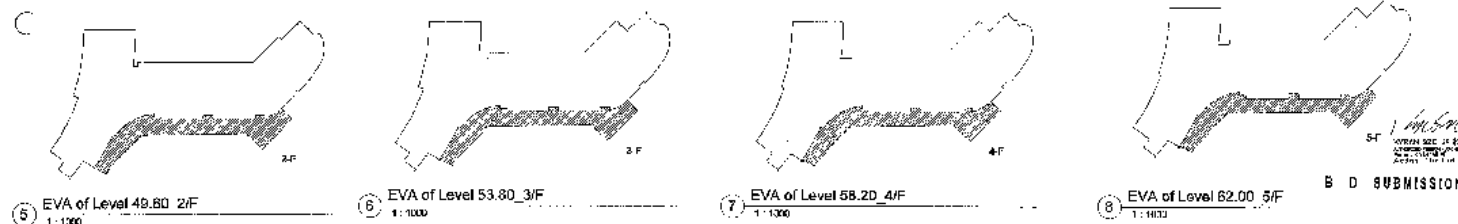
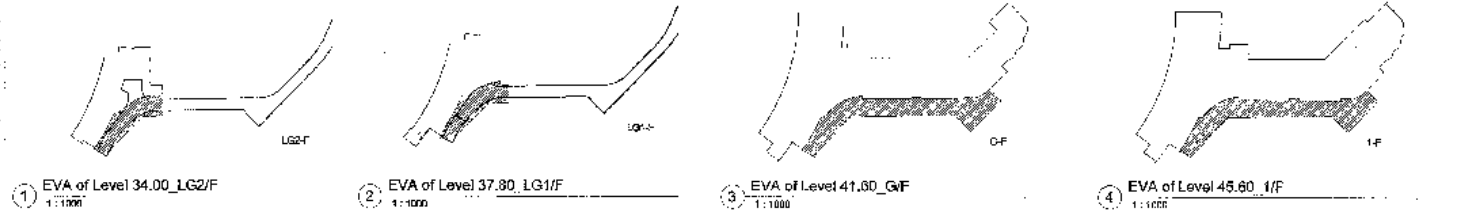
Wall Schedule							
Family	Family and Type	Length	Width	Count	Area	Volume	
Basic Wall: AED-Concrete - 50mm + Render One sides							
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.548 m2	0.027 m3	
Basic Wall	Basic Wall: AED-Concrete - 50mm + Render One sides	200	50	1	0.548 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	

BIM 帶來的衝擊

1. 可視性型像化設計
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5. 自動化送審文件
6. 科學性分析及可持續發展設計
7. 複雜幾何形狀建築
8. 生產制造構件

Architectural floor plan of the 3rd floor of the Aedas building. The plan shows a complex layout with various rooms, corridors, and a large central open area. The plan is overlaid with a grid system (1-24 horizontally, AA-JJ vertically). Key features include a large oval-shaped room in the center-left, a large rectangular room in the center-right, and a large open area at the bottom. The plan is labeled "PLAN 53.8F, 3/F" and "Aedas".

自動化送審文件



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

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

LEVEL	LEVEL NO.	LEVEL DESCRIPTION	LEVEL ELEVATION (m)	LEVEL AREA (sqm)	LEVEL PERIMETER (m)	LEVEL VOLUME (cu m)	LEVEL WEIGHT (kg)	LEVEL DENSITY (kg/cu m)	LEVEL STRENGTH (N/mm²)	LEVEL MODULUS OF ELASTICITY (N/mm²)	LEVEL THERMAL CONDUCTIVITY (W/mK)	LEVEL THERMAL MASS (kg/m²)	LEVEL THERMAL INERTIA (kg/m²K)	LEVEL THERMAL RESISTANCE (K/m²)	LEVEL THERMAL CAPACITY (kJ/m²K)	LEVEL THERMAL STABILITY (K)	LEVEL THERMAL COMFORT (K)	LEVEL THERMAL HEALTH (K)	LEVEL THERMAL WELL-BEING (K)
LG2/F	1	LG2/F	34.00	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
LG1/F	2	LG1/F	37.80	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
GF	3	GF	41.60	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
1/F	4	1/F	45.60	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
2/F	5	2/F	49.80	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
3/F	6	3/F	53.80	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
4/F	7	4/F	58.20	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
5/F	8	5/F	62.00	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
6/F	9	6/F	65.80	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

LEVEL	LEVEL NO.	LEVEL DESCRIPTION	LEVEL ELEVATION (m)	LEVEL AREA (sqm)	LEVEL PERIMETER (m)	LEVEL VOLUME (cu m)	LEVEL WEIGHT (kg)	LEVEL DENSITY (kg/cu m)	LEVEL STRENGTH (N/mm²)	LEVEL MODULUS OF ELASTICITY (N/mm²)	LEVEL THERMAL CONDUCTIVITY (W/mK)	LEVEL THERMAL MASS (kg/m²)	LEVEL THERMAL INERTIA (kg/m²K)	LEVEL THERMAL RESISTANCE (K/m²)	LEVEL THERMAL CAPACITY (kJ/m²K)	LEVEL THERMAL STABILITY (K)	LEVEL THERMAL COMFORT (K)	LEVEL THERMAL HEALTH (K)	LEVEL THERMAL WELL-BEING (K)
LG2/F	1	LG2/F	34.00	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
LG1/F	2	LG1/F	37.80	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
GF	3	GF	41.60	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
1/F	4	1/F	45.60	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
2/F	5	2/F	49.80	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
3/F	6	3/F	53.80	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
4/F	7	4/F	58.20	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
5/F	8	5/F	62.00	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
6/F	9	6/F	65.80	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

LEVEL	LEVEL NO.	LEVEL DESCRIPTION	LEVEL ELEVATION (m)	LEVEL AREA (sqm)	LEVEL PERIMETER (m)	LEVEL VOLUME (cu m)	LEVEL WEIGHT (kg)	LEVEL DENSITY (kg/cu m)	LEVEL STRENGTH (N/mm²)	LEVEL MODULUS OF ELASTICITY (N/mm²)	LEVEL THERMAL CONDUCTIVITY (W/mK)	LEVEL THERMAL MASS (kg/m²)	LEVEL THERMAL INERTIA (kg/m²K)	LEVEL THERMAL RESISTANCE (K/m²)	LEVEL THERMAL CAPACITY (kJ/m²K)	LEVEL THERMAL STABILITY (K)	LEVEL THERMAL COMFORT (K)	LEVEL THERMAL HEALTH (K)	LEVEL THERMAL WELL-BEING (K)
LG2/F	1	LG2/F	34.00	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
LG1/F	2	LG1/F	37.80	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
GF	3	GF	41.60	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
1/F	4	1/F	45.60	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
2/F	5	2/F	49.80	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
3/F	6	3/F	53.80	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
4/F	7	4/F	58.20	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
5/F	8	5/F	62.00	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
6/F	9	6/F	65.80	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

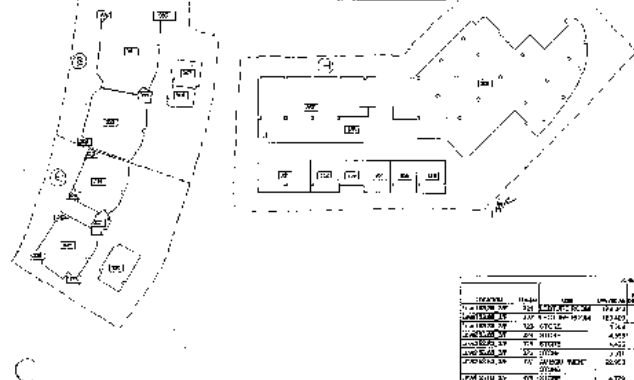
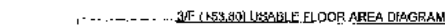
The Applicant
CITY OF HONG KONG
DEPARTMENT OF PLANNING
PLANNING AND DEVELOPMENT
1/F, 1/F, 1/F

DESIGNER DESIGNER'S NAME DESIGNER'S ADDRESS DESIGNER'S CONTACT INFORMATION	CLIENT CLIENT'S NAME CLIENT'S ADDRESS CLIENT'S CONTACT INFORMATION	PROJECT PROJECT NAME PROJECT ADDRESS PROJECT CONTACT INFORMATION	DATE DATE OF SUBMISSION DATE OF REVIEW DATE OF APPROVAL	REVIEWER REVIEWER'S NAME REVIEWER'S ADDRESS REVIEWER'S CONTACT INFORMATION	APPROVAL APPROVAL NAME APPROVAL ADDRESS APPROVAL CONTACT INFORMATION
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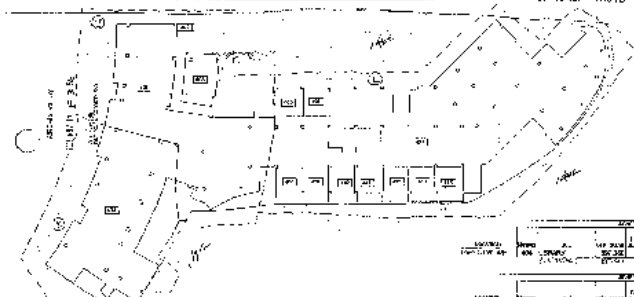
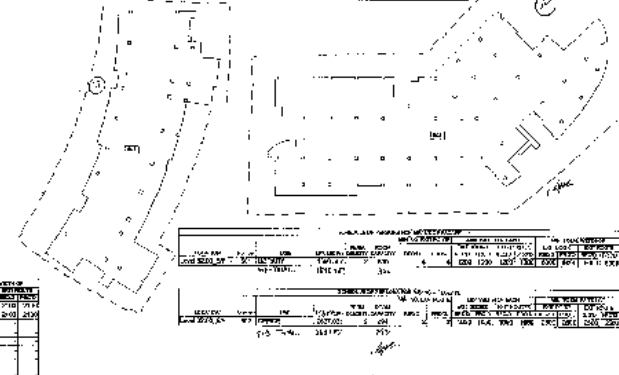
Aedas

1/F, 1/F, 1/F

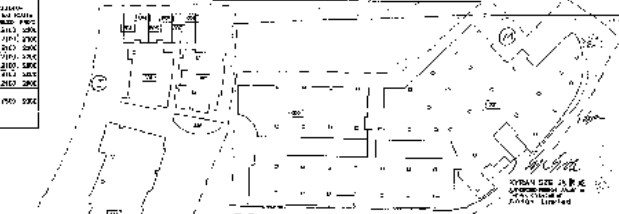
自動化送審文件

[illegible][illegible]

4/F (+58.20) USABLE FLOOR AREA DIAGRAM

[illegible][illegible][illegible][illegible]

6/F (+85.80) USABLE FLOOR AREA DIAGRAM



6 D SUBMISSION

[illegible][illegible]

LEWIS, J. ALAN
BANK TALKING SHOWER
RE BUILDING SOCIETY
76 DEC 2015

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UNIVERSITY OF ALABAMA

Level 5: 100%

2009年12月17日

0555

— CALLE 2
— 12-11-68
— 12-11-68

0909002

— **Agda**

Aqua

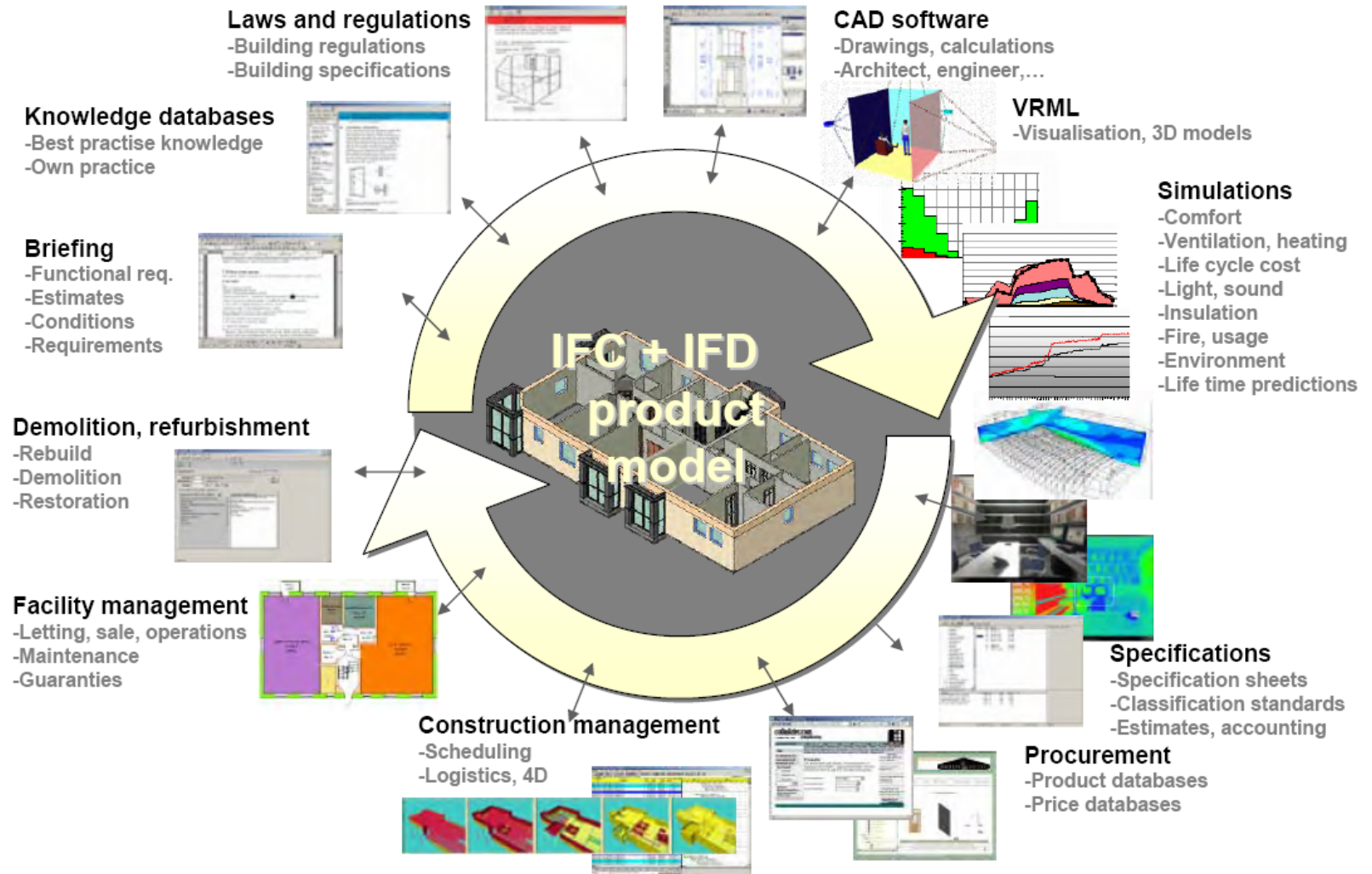
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BIM 帶來的衝擊

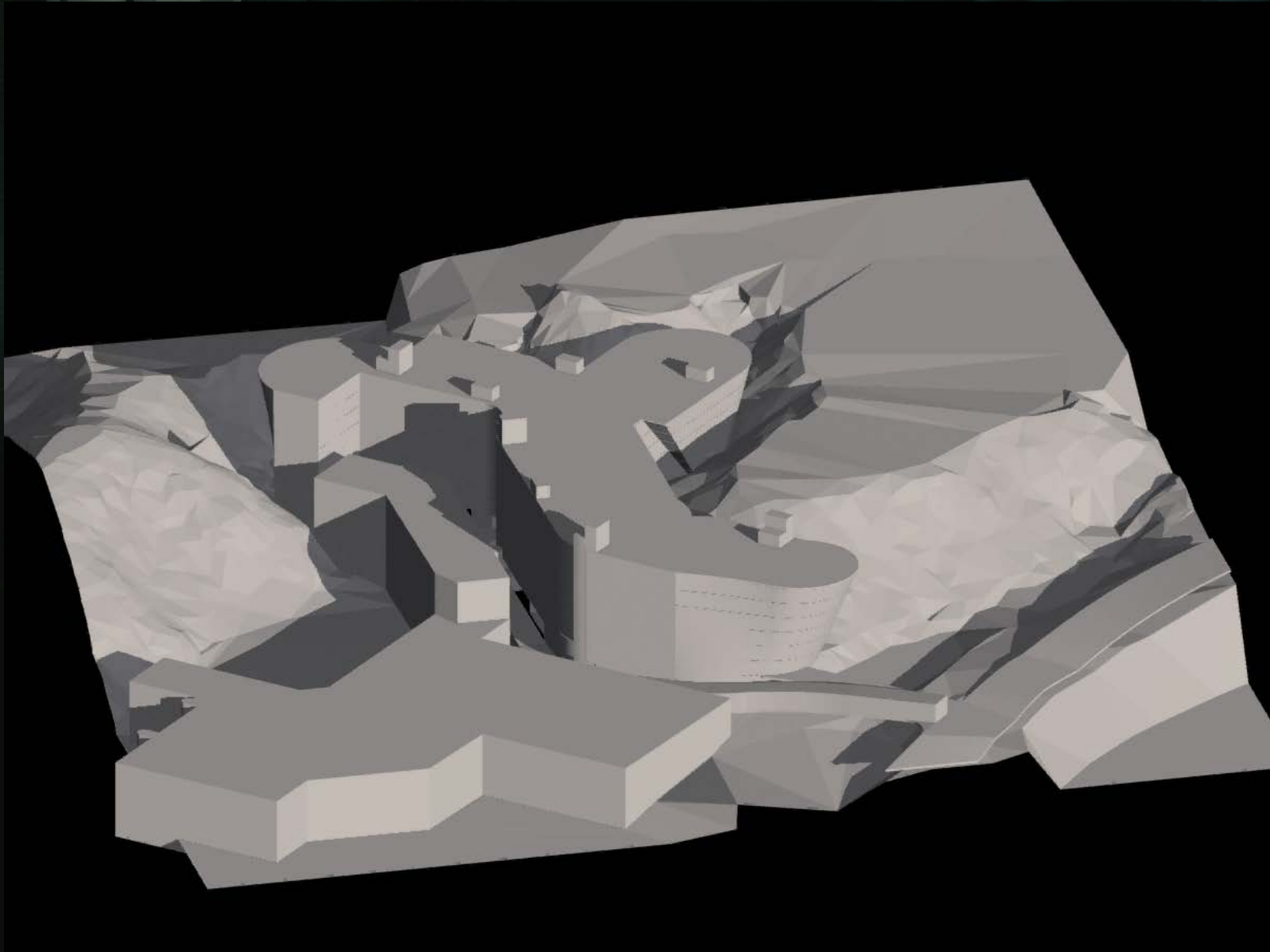
1. 可視性型像化設計
2. 圖紙製作
3. 各專業協調合作
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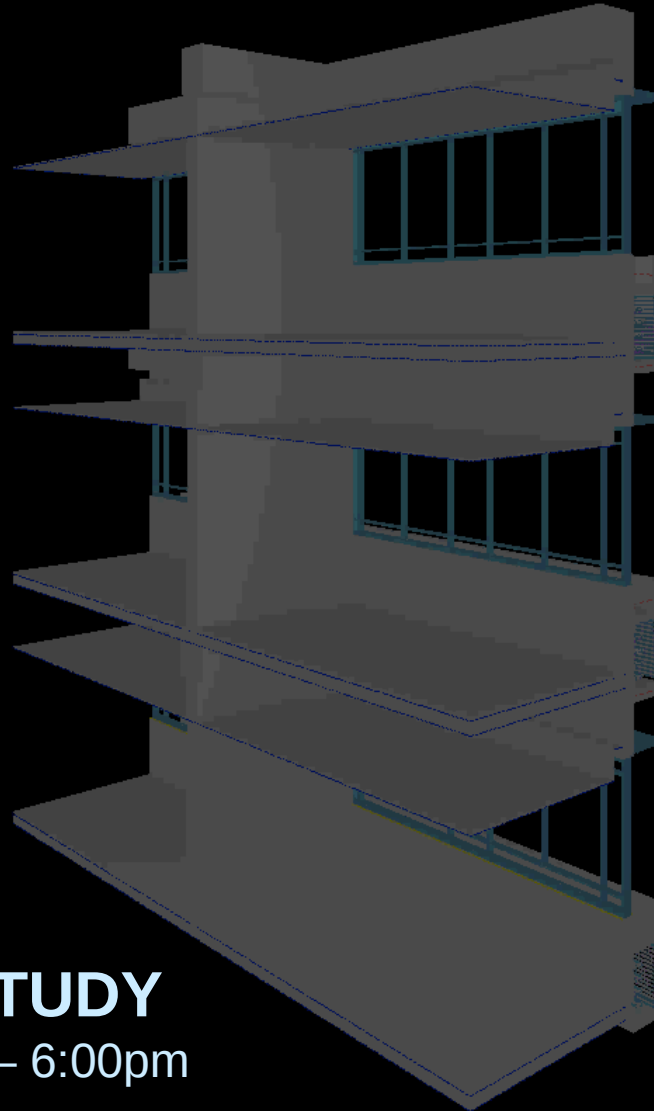
Tier 3 – Derived Lifecycle View



科學性分析及可持續發展設計



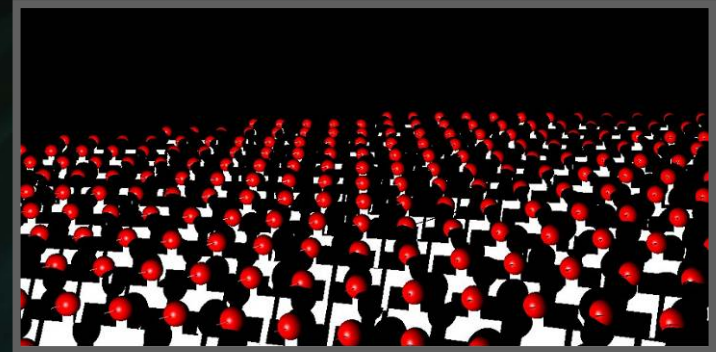
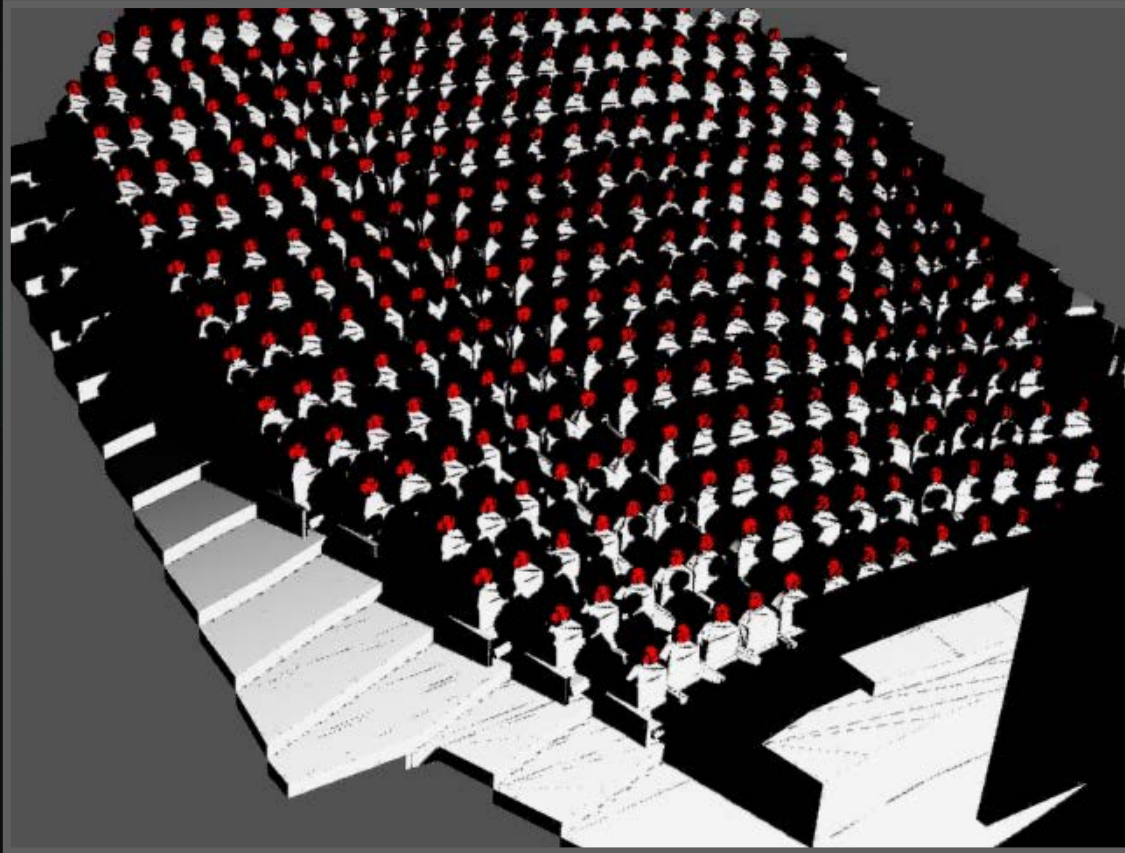
科學性分析及可持續發展設計



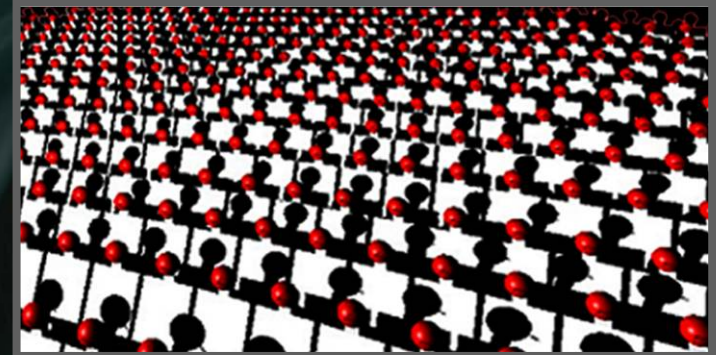
FAÇADE SOLAR STUDY

21/12/2008 7:00am – 6:00pm

科學性分析及可持續發展設計

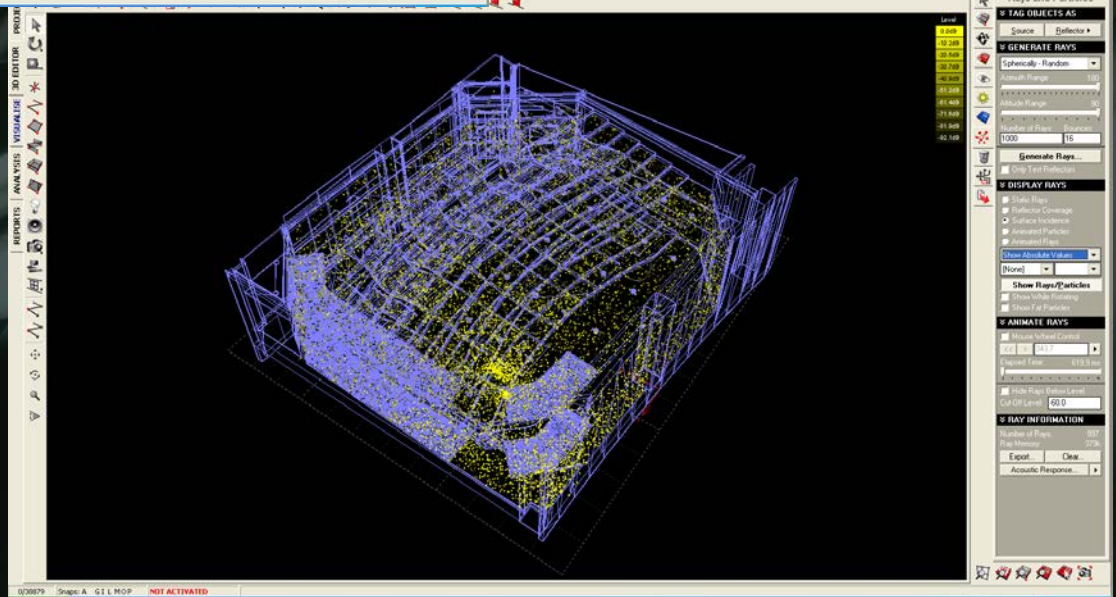
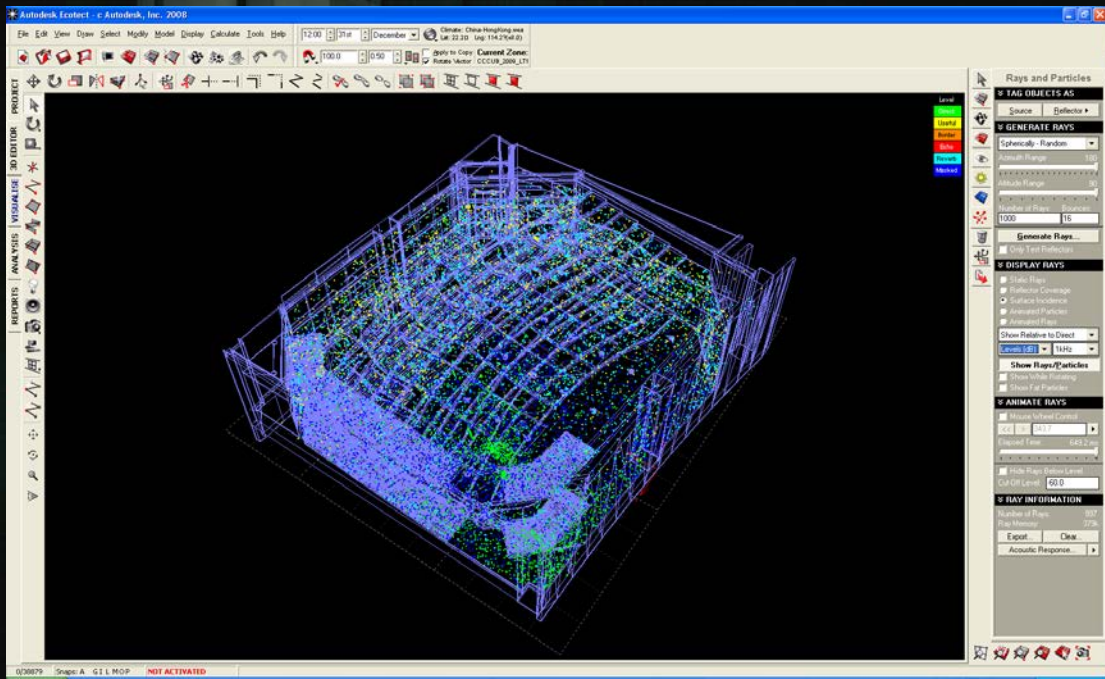


低可視性

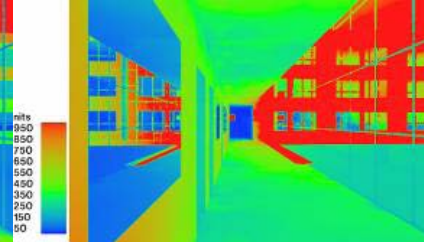
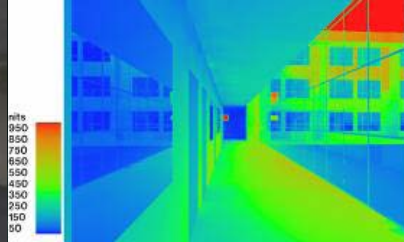
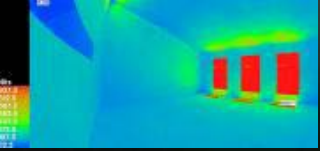
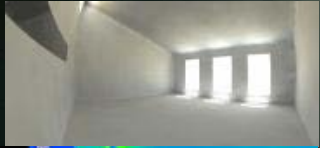


高可視性

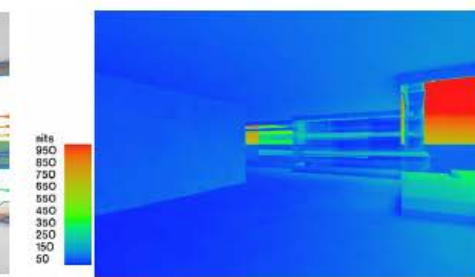
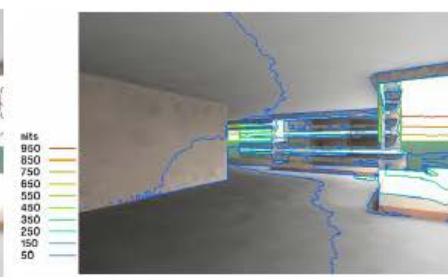
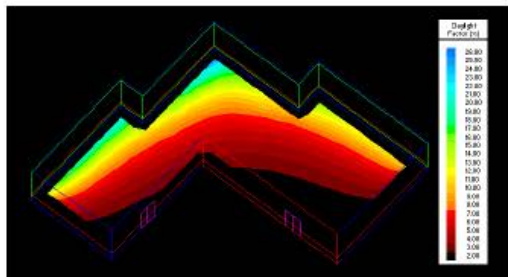
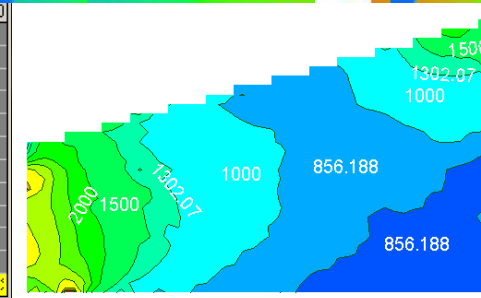
可視性設計



Sustainable Design

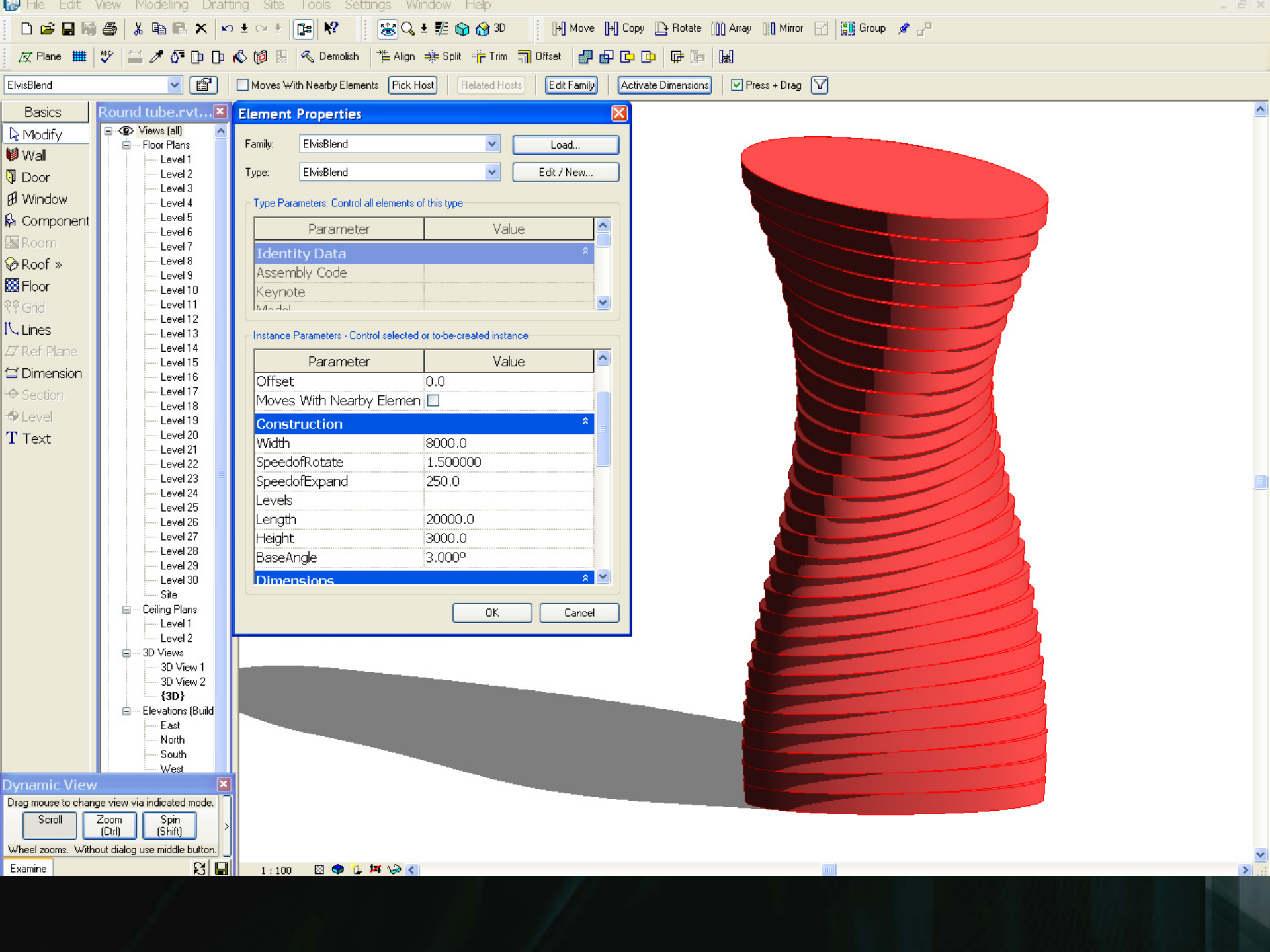
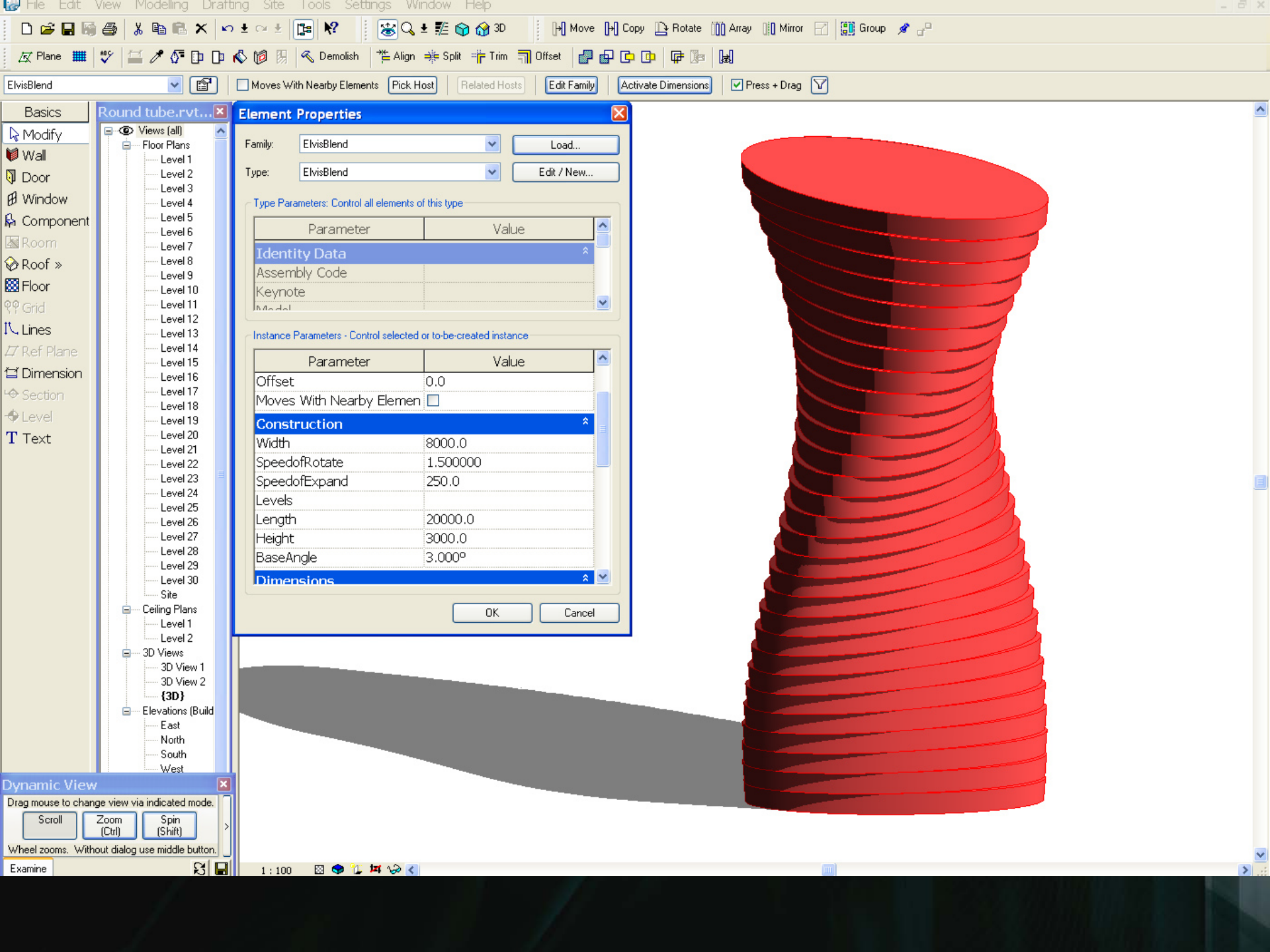


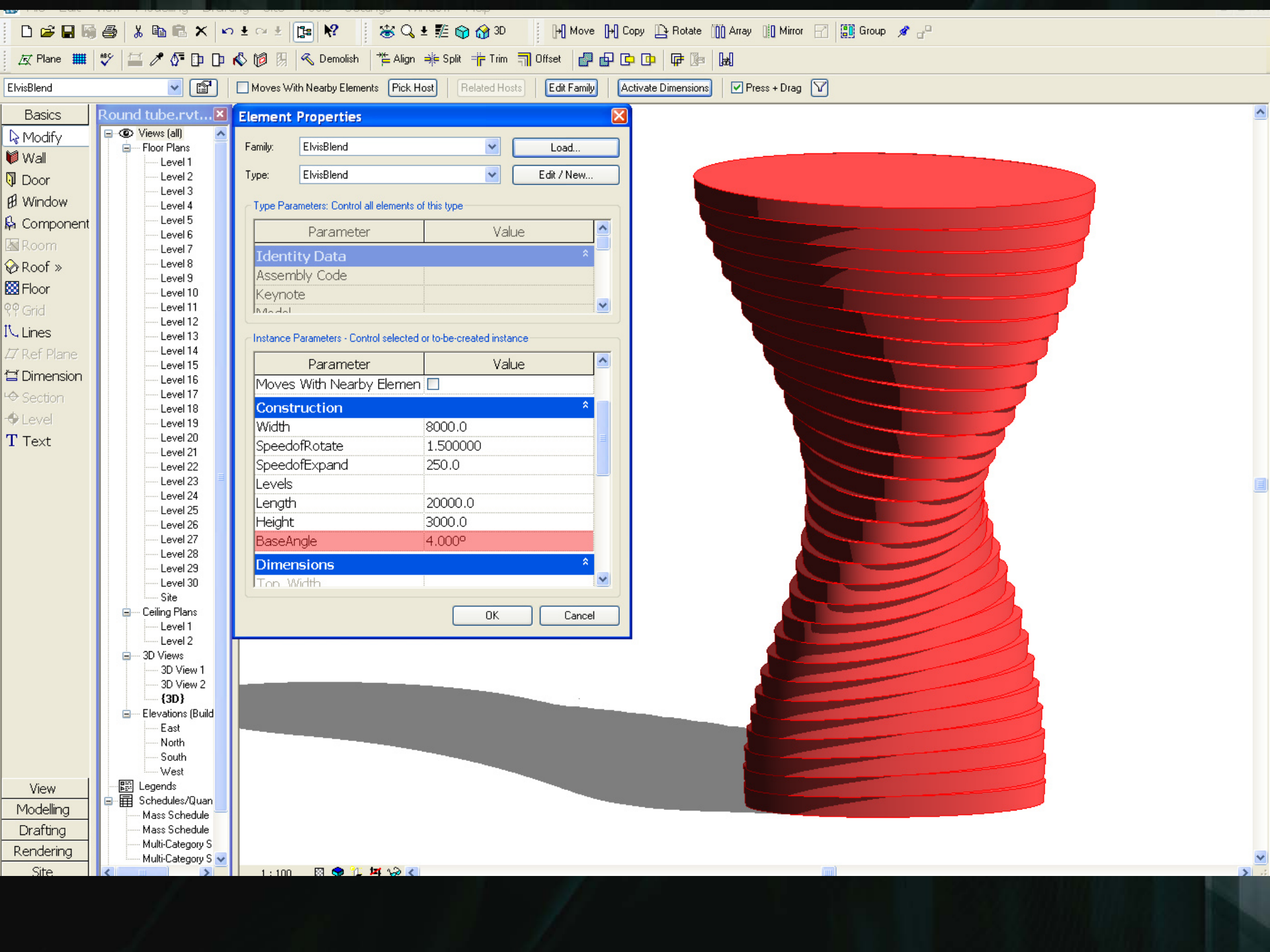
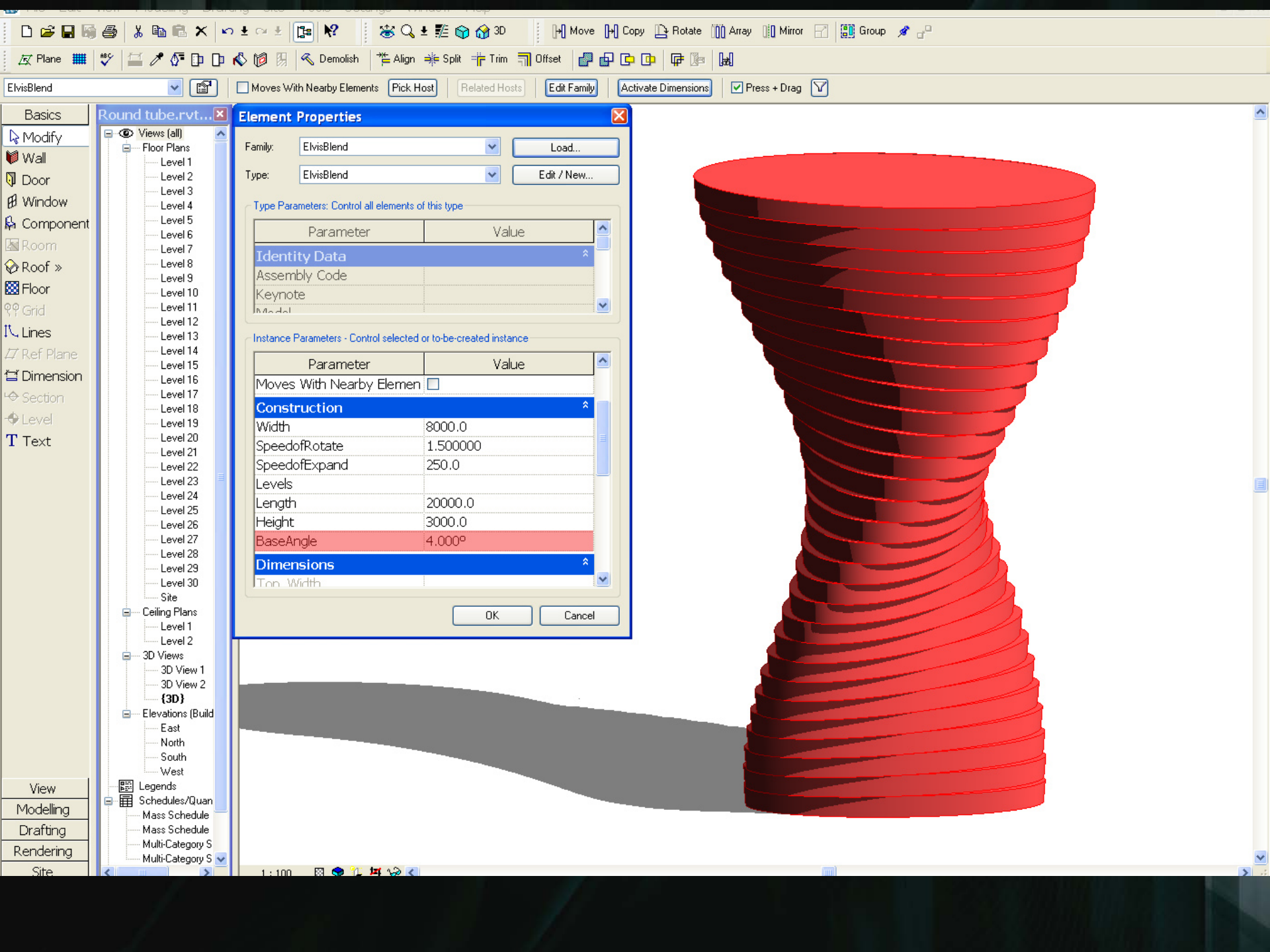
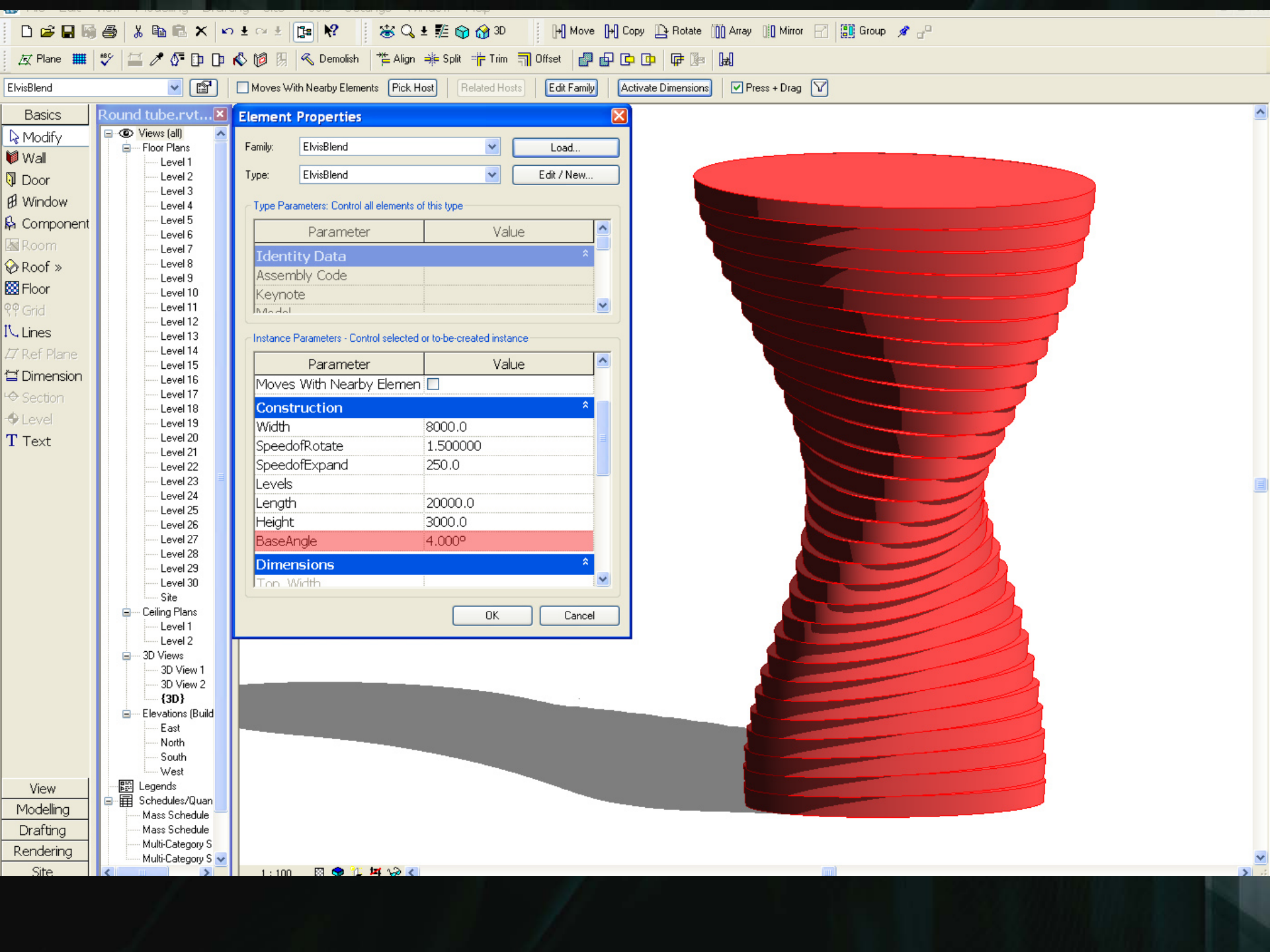
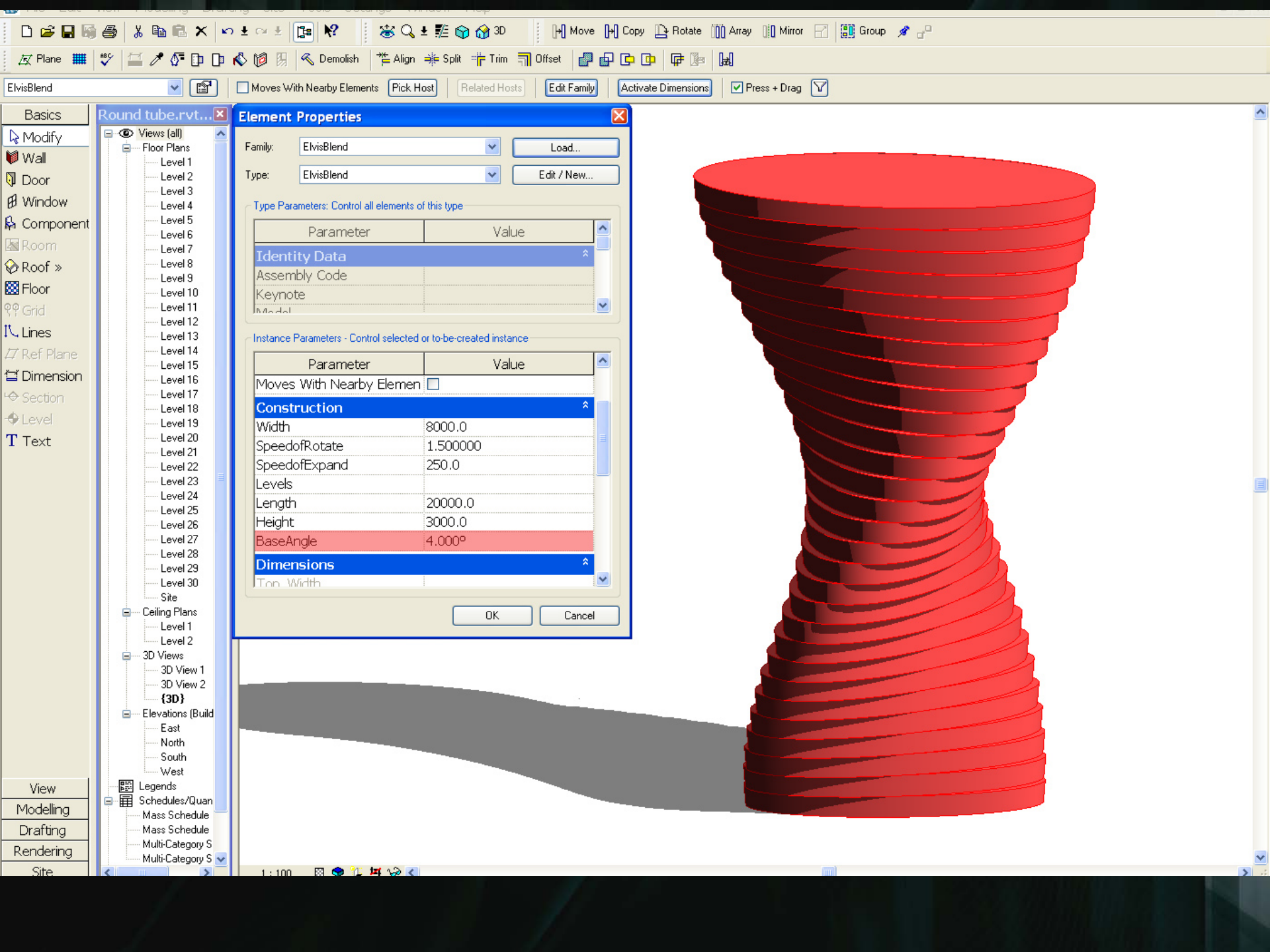
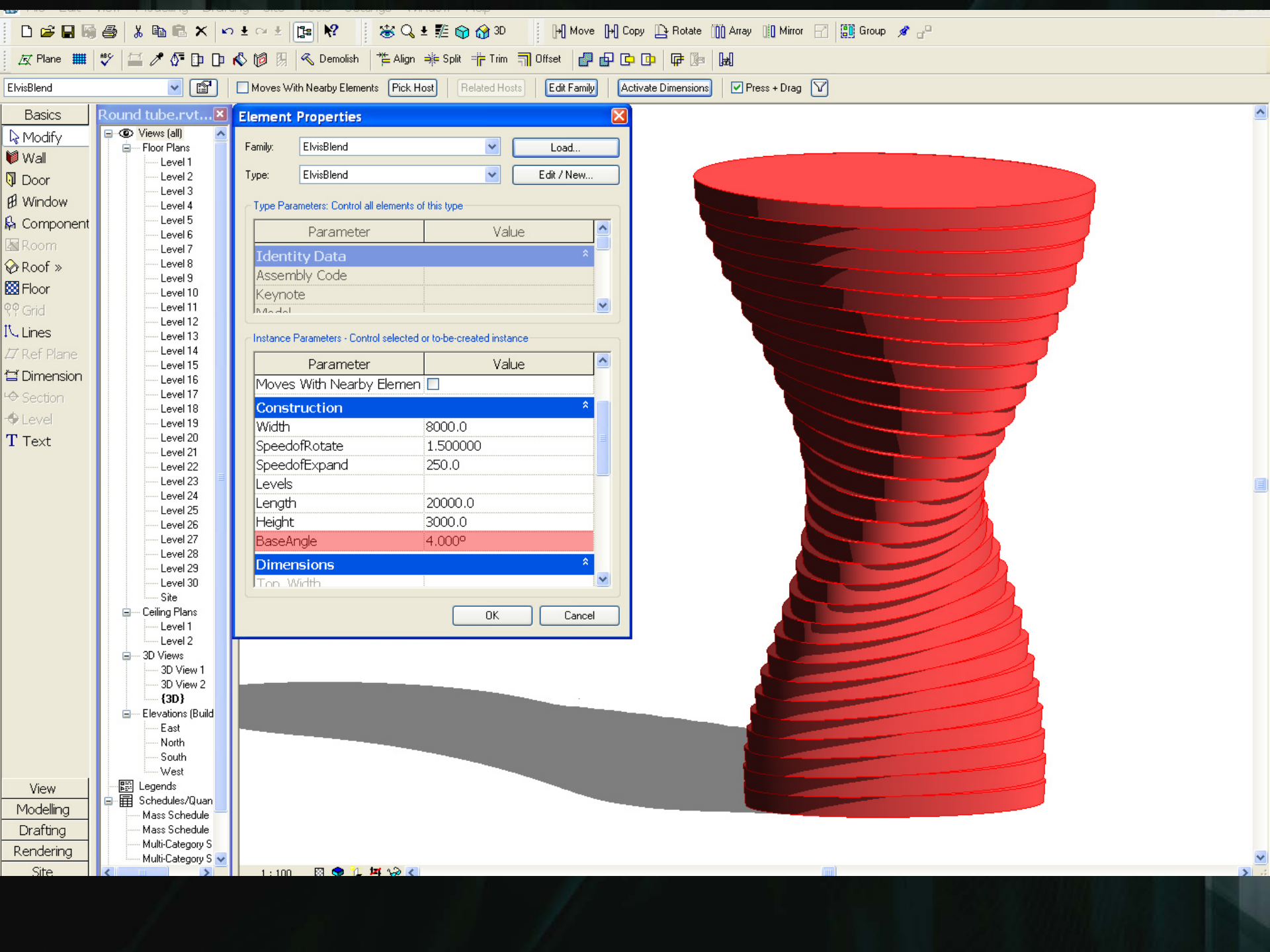
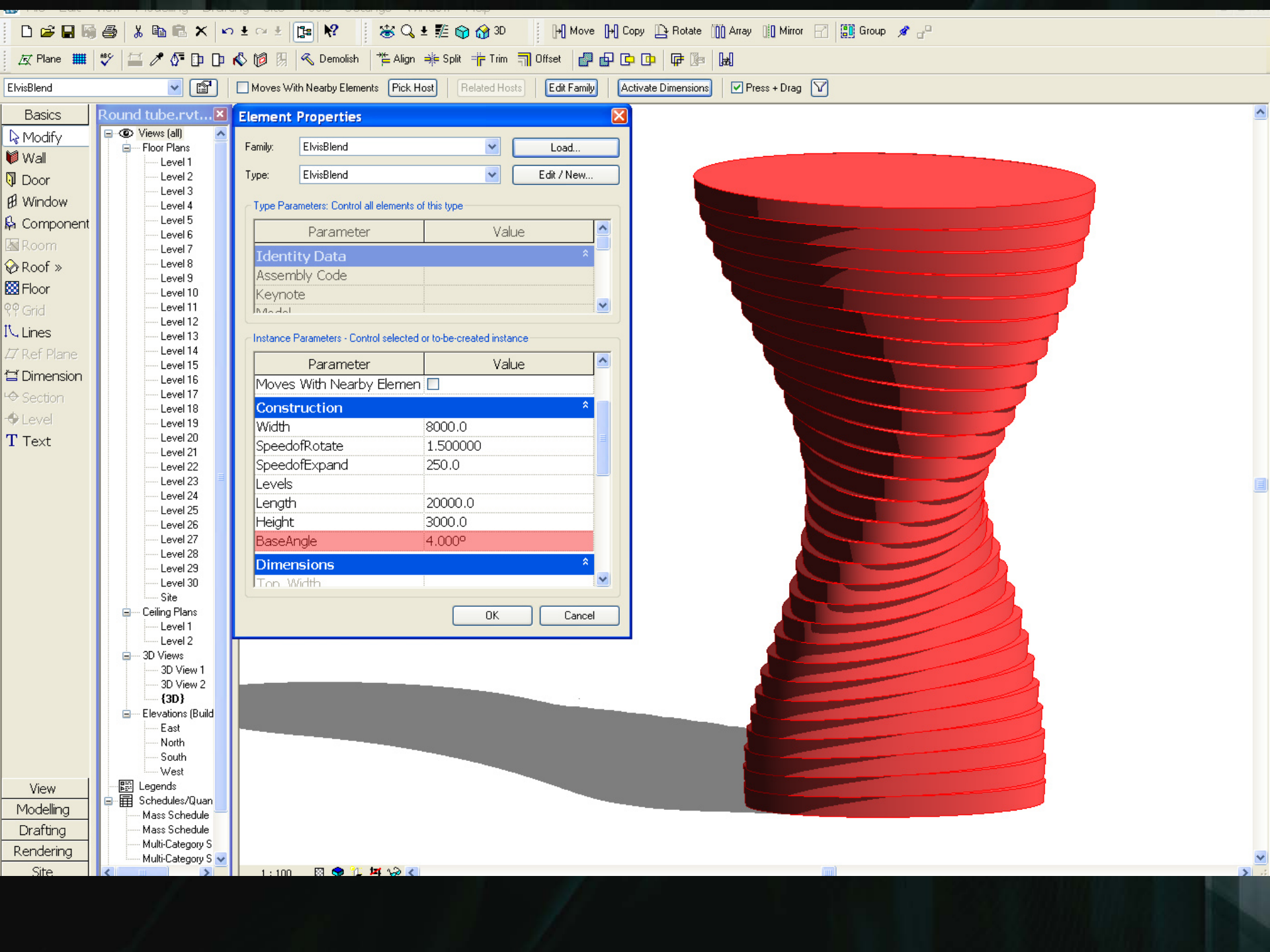
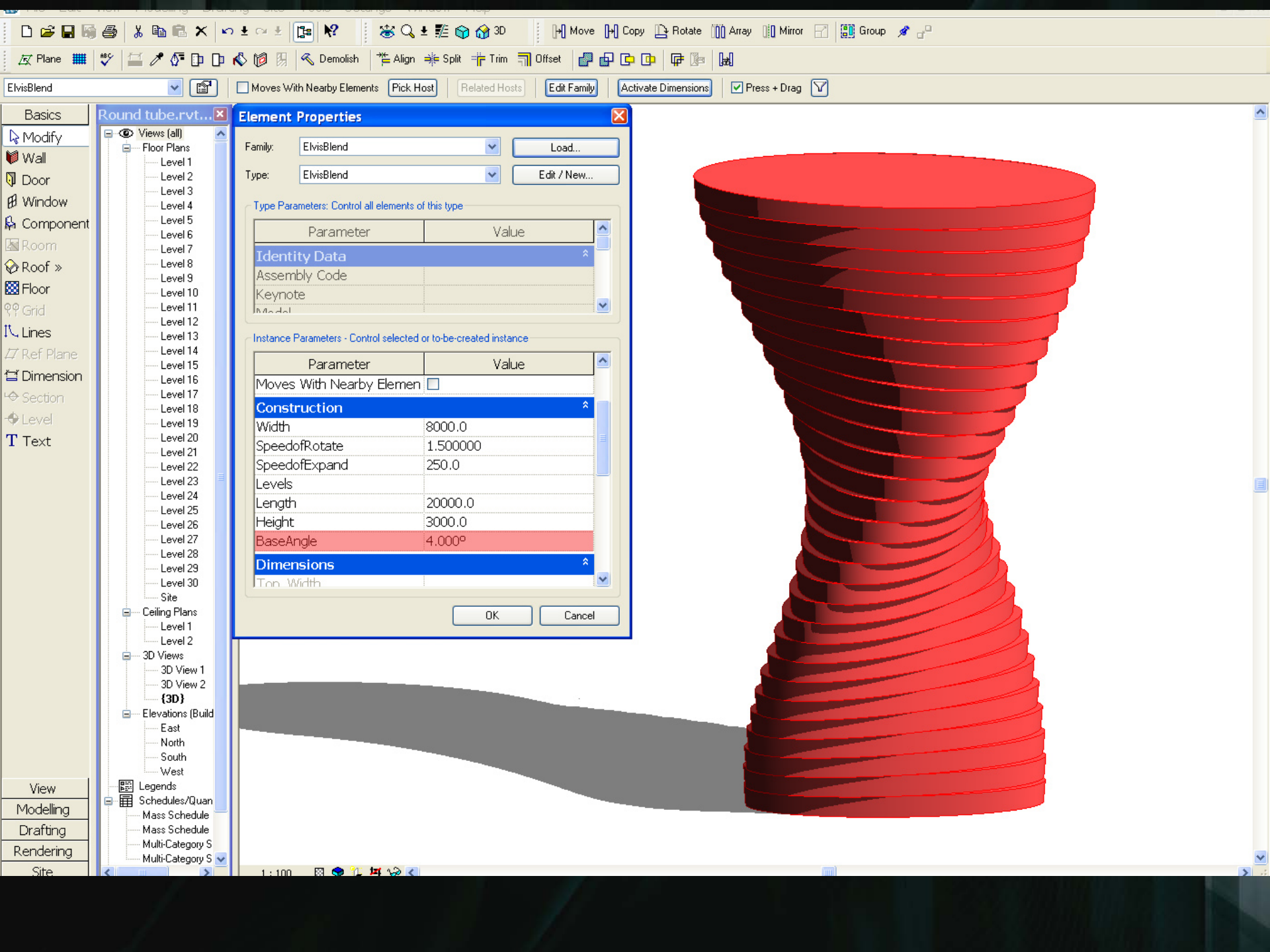
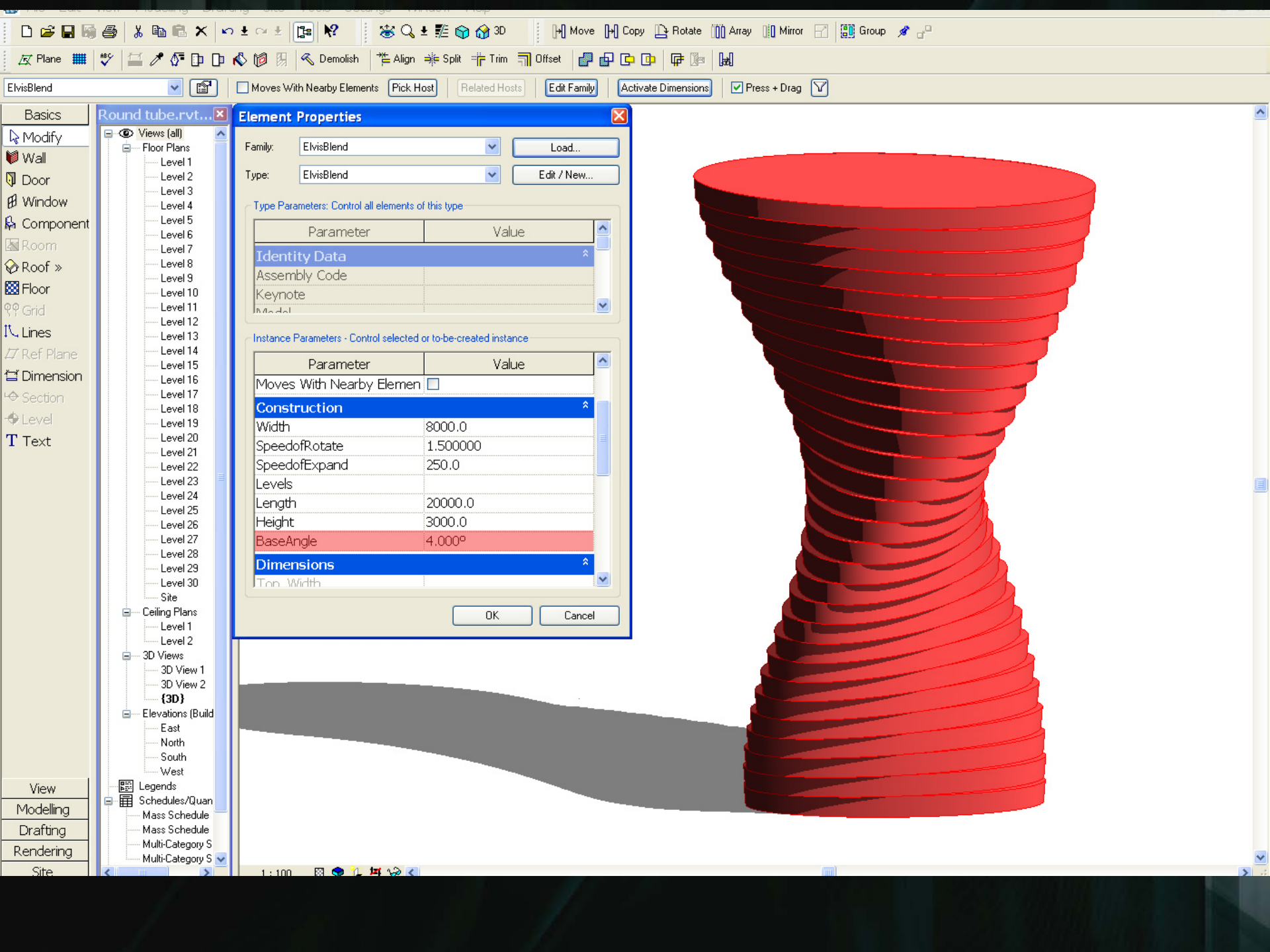
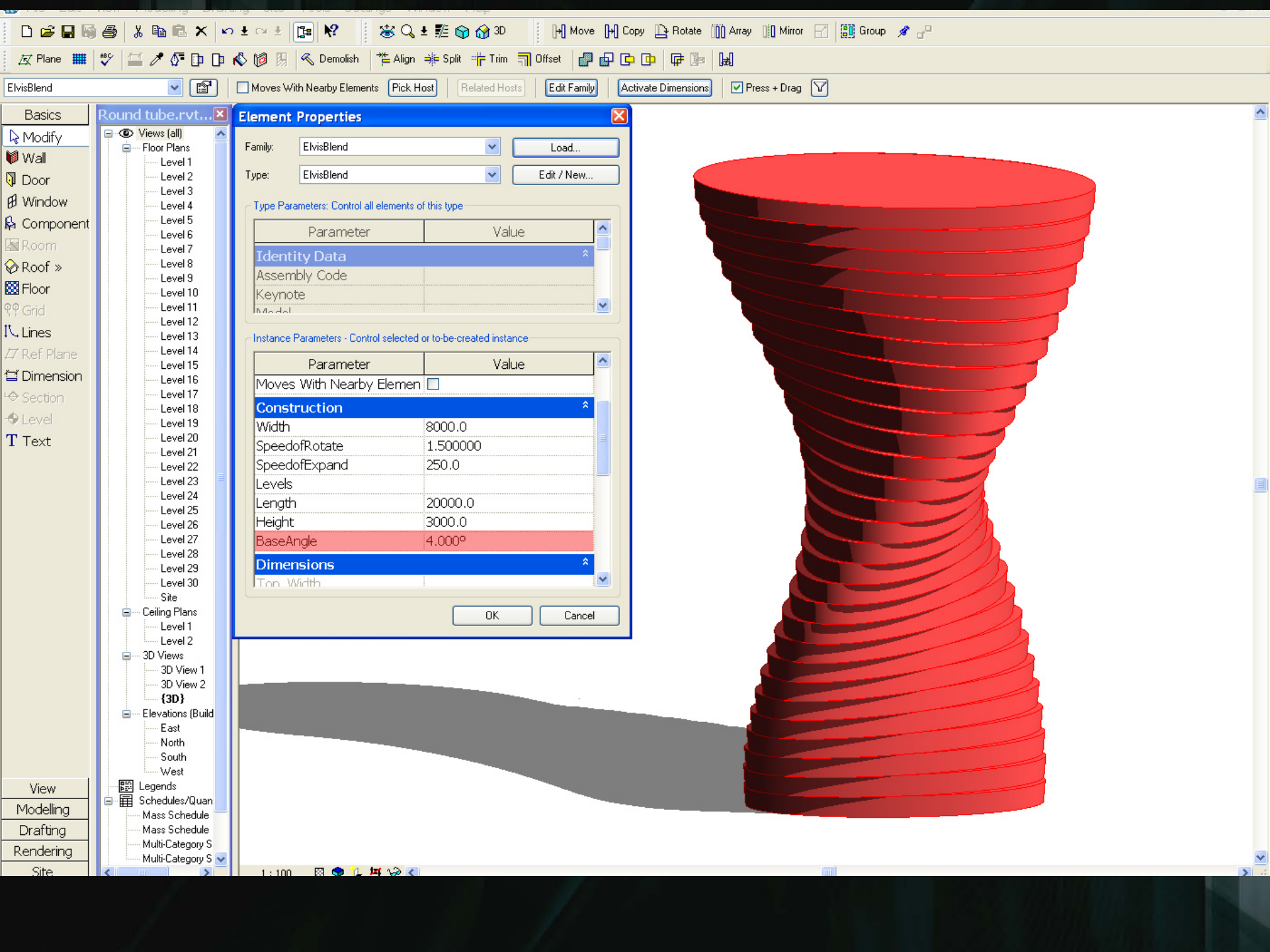
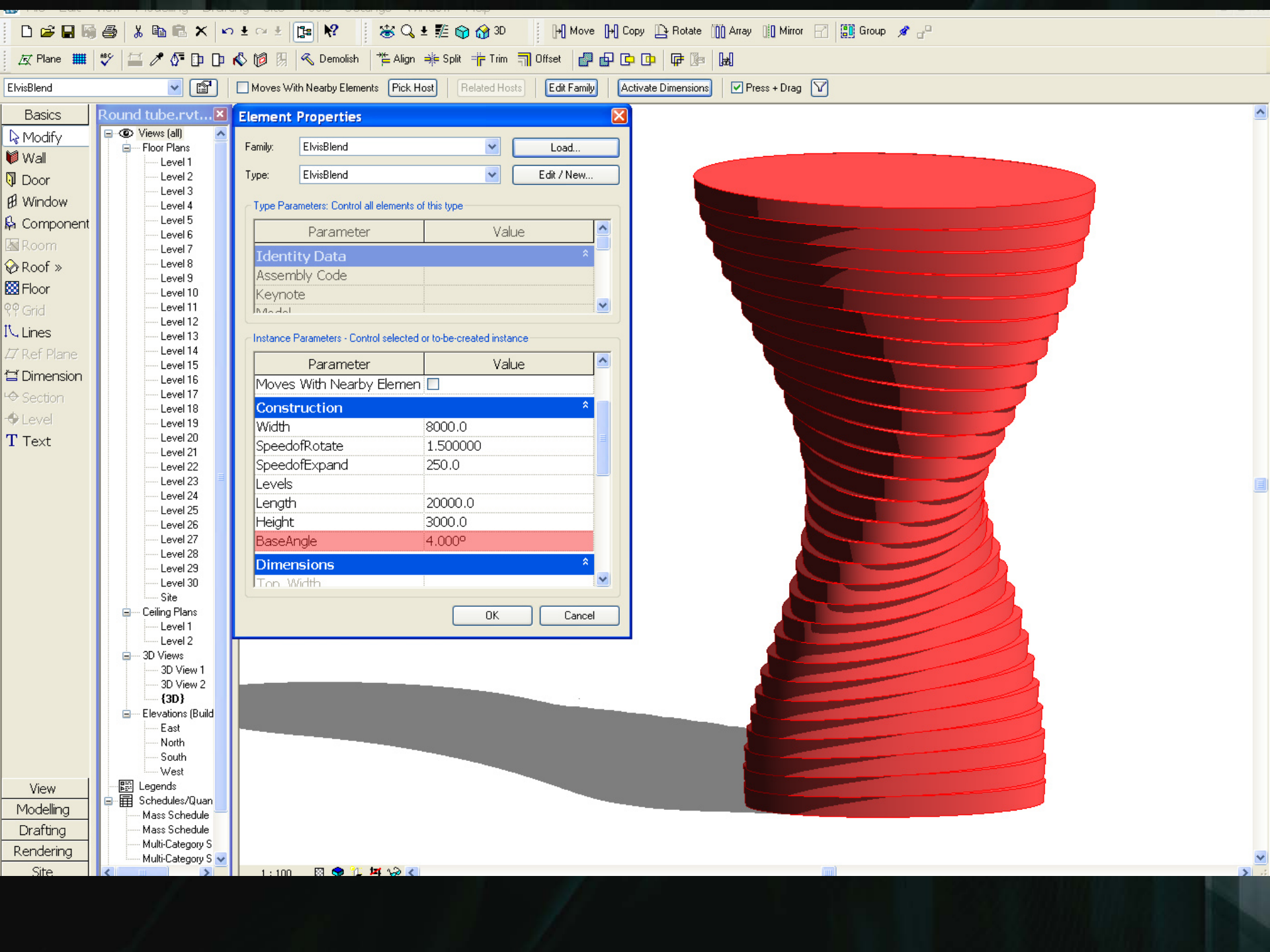
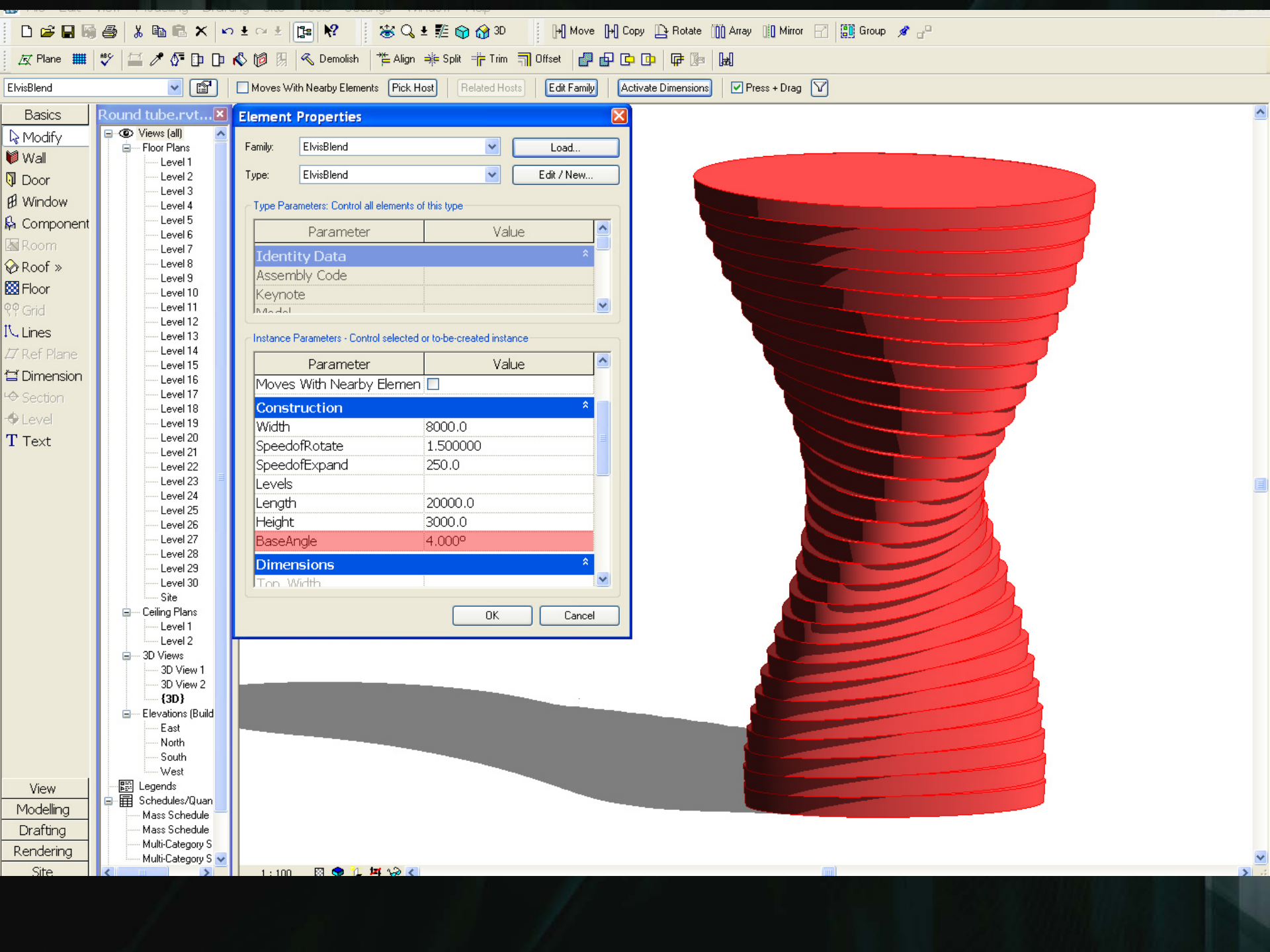
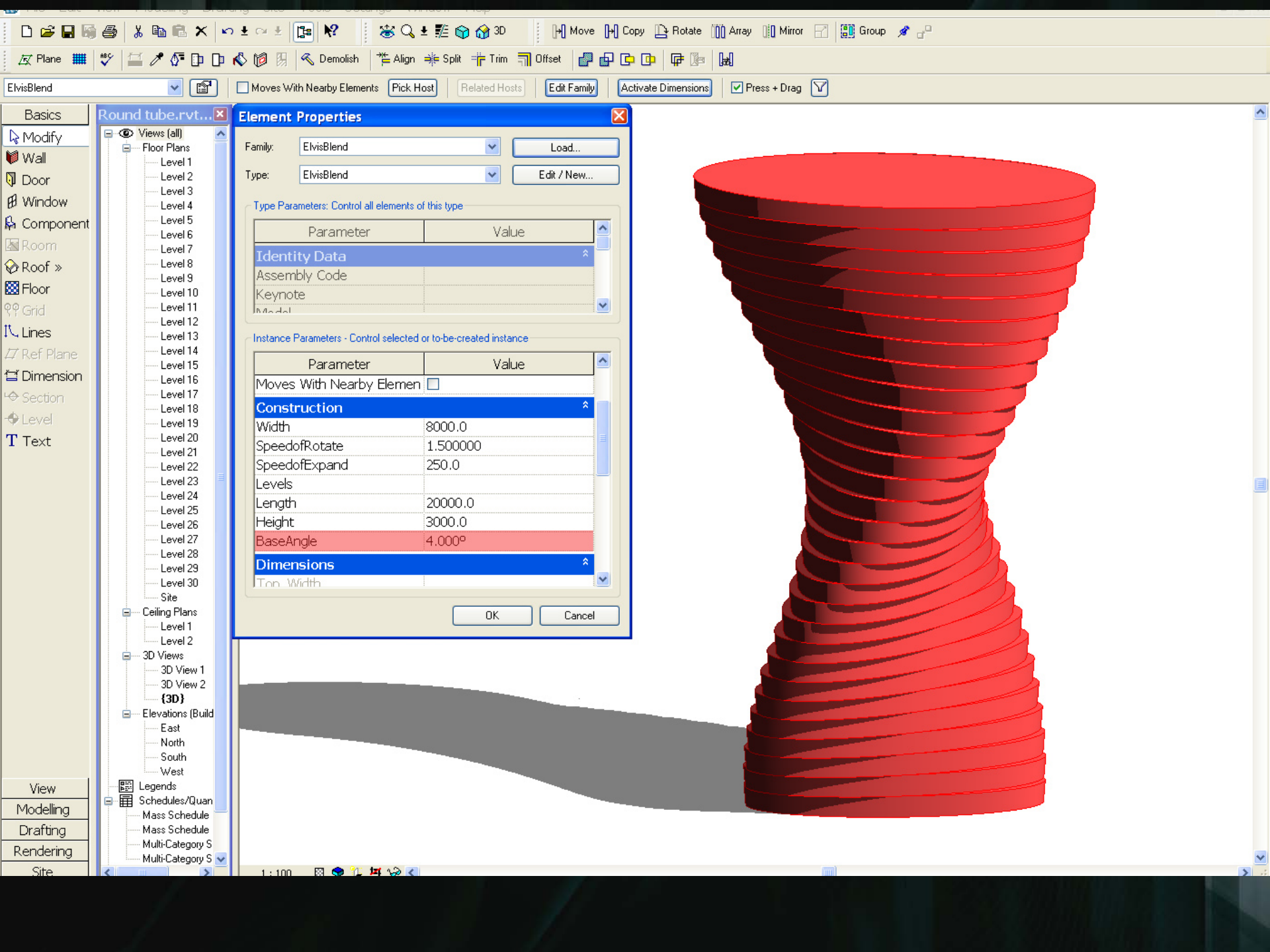
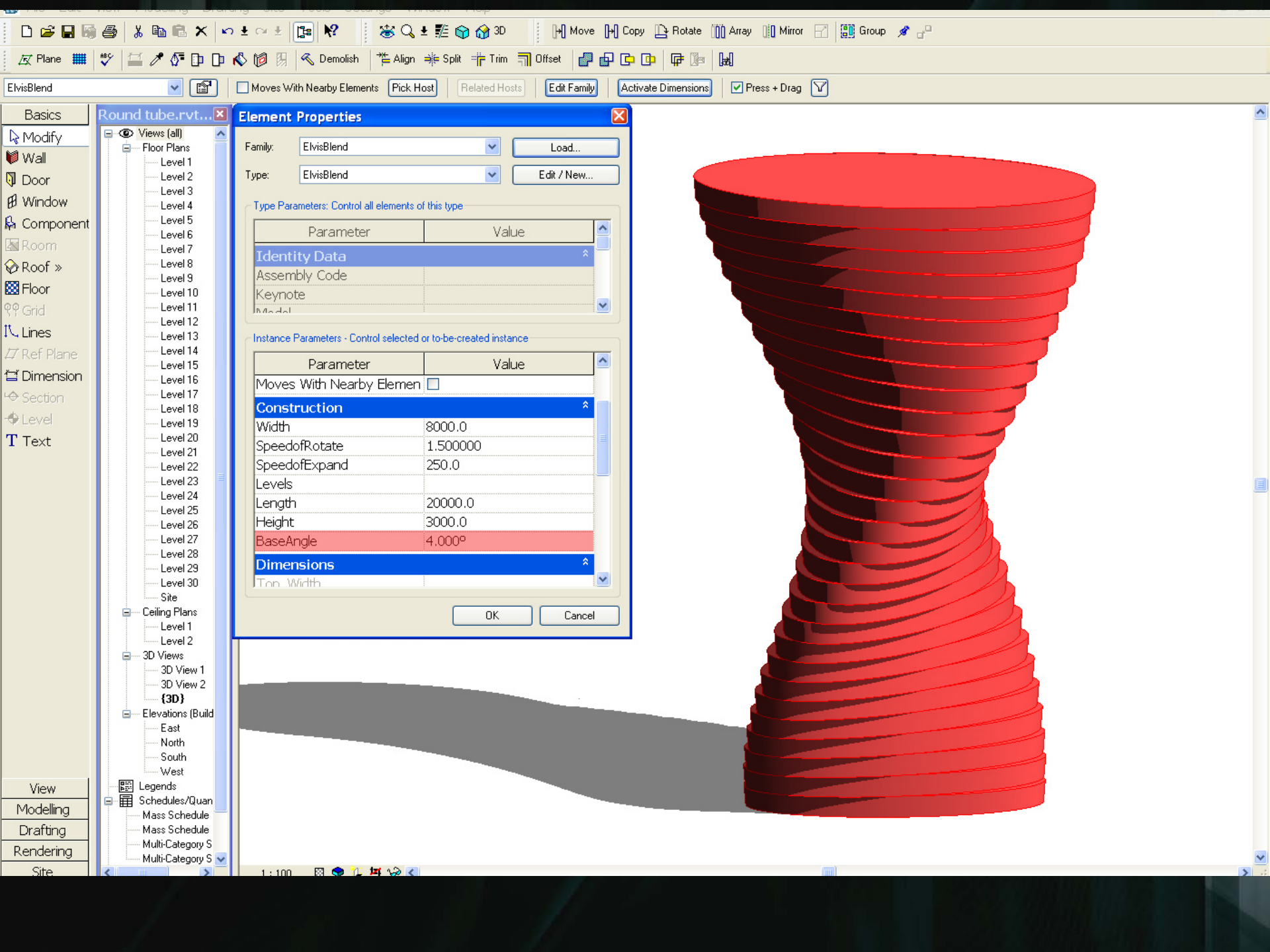
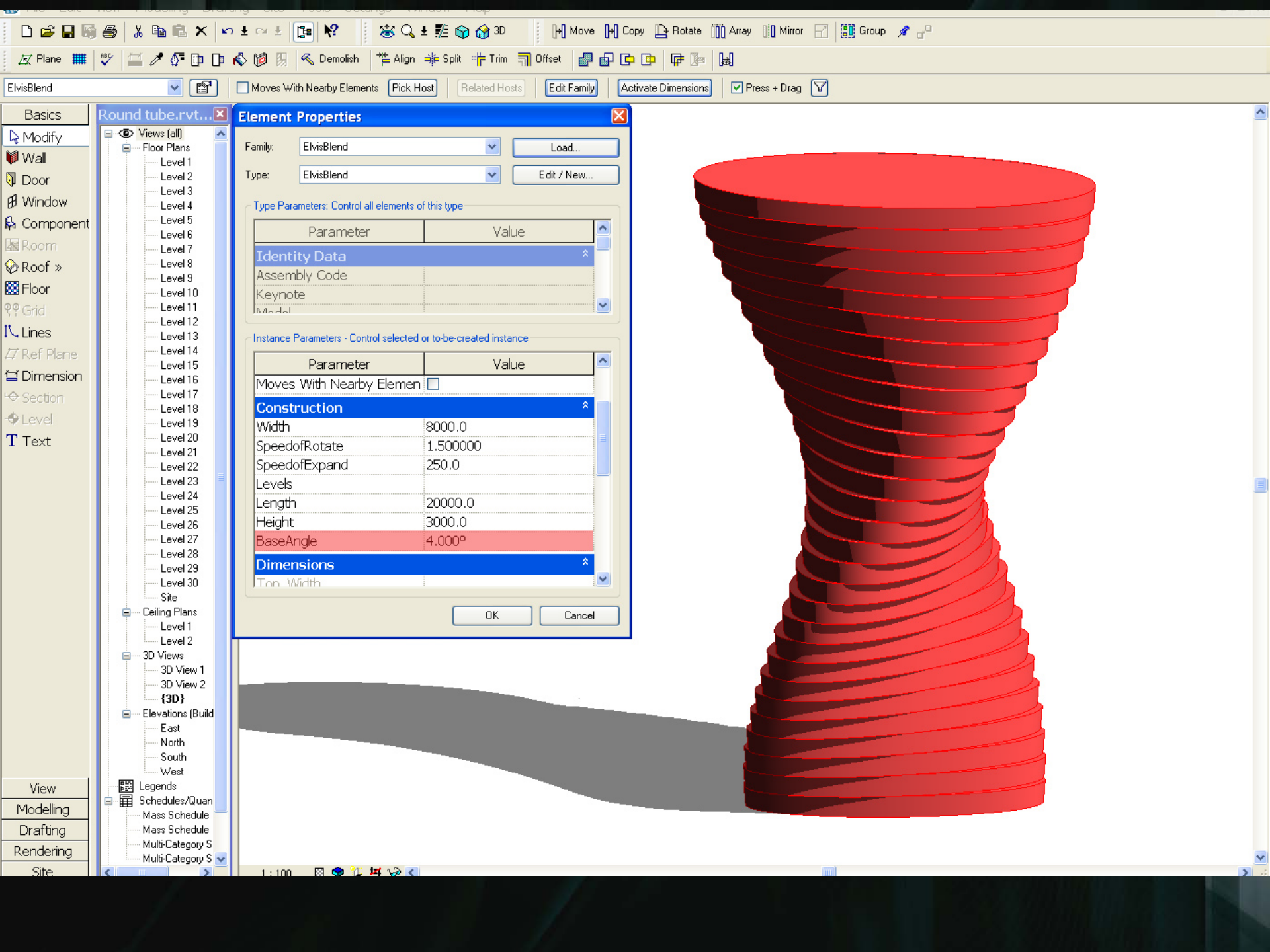
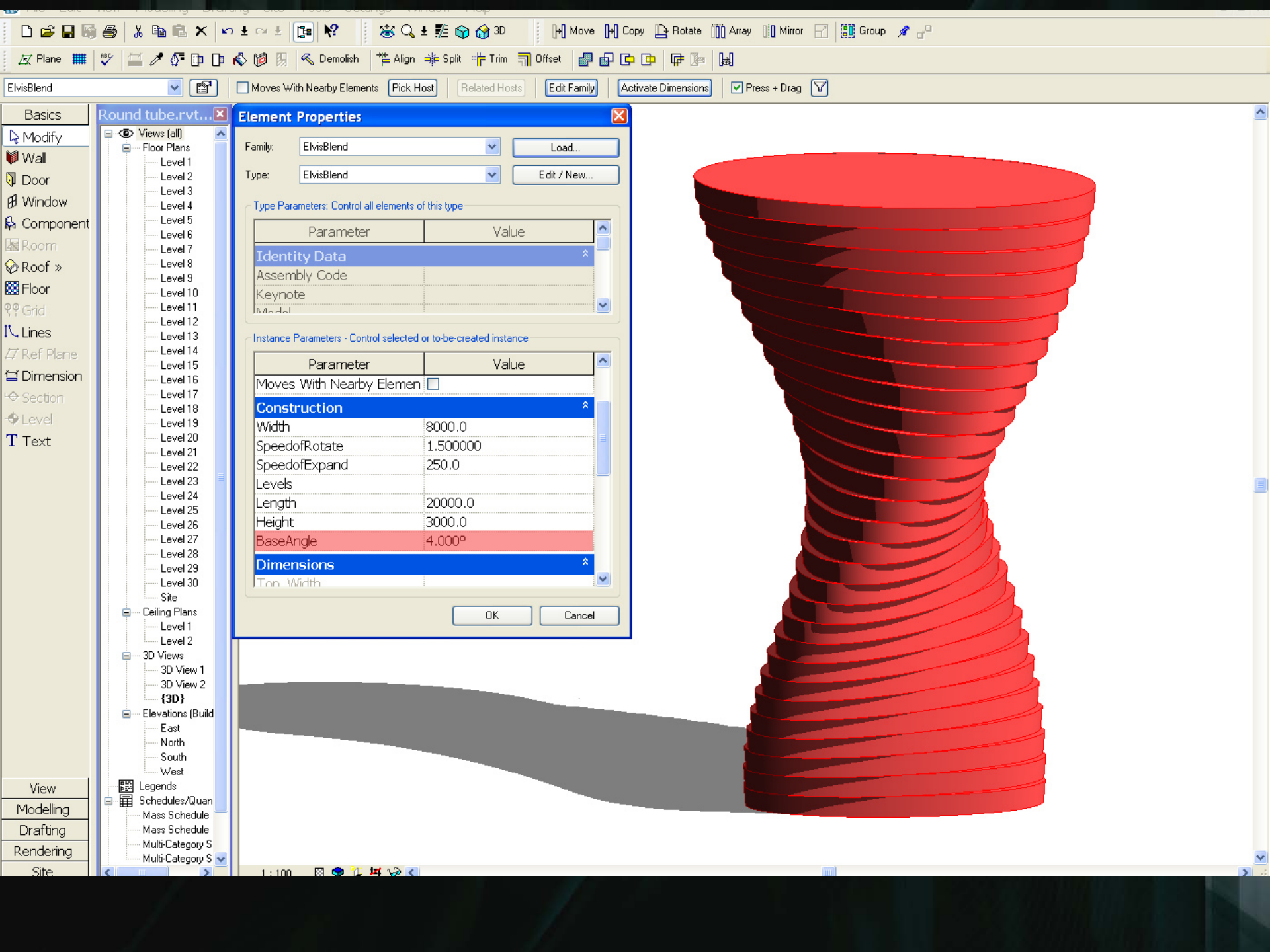
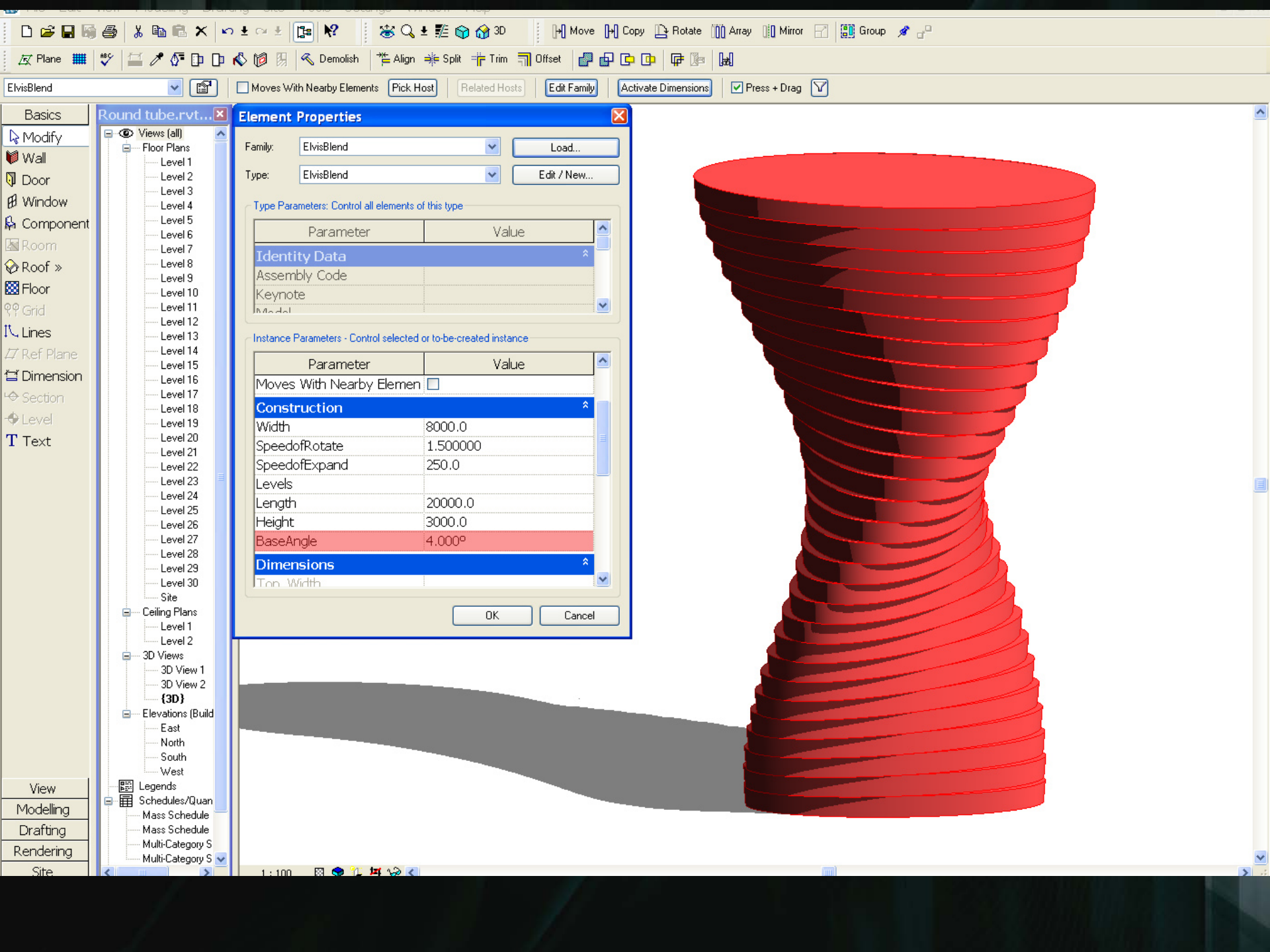
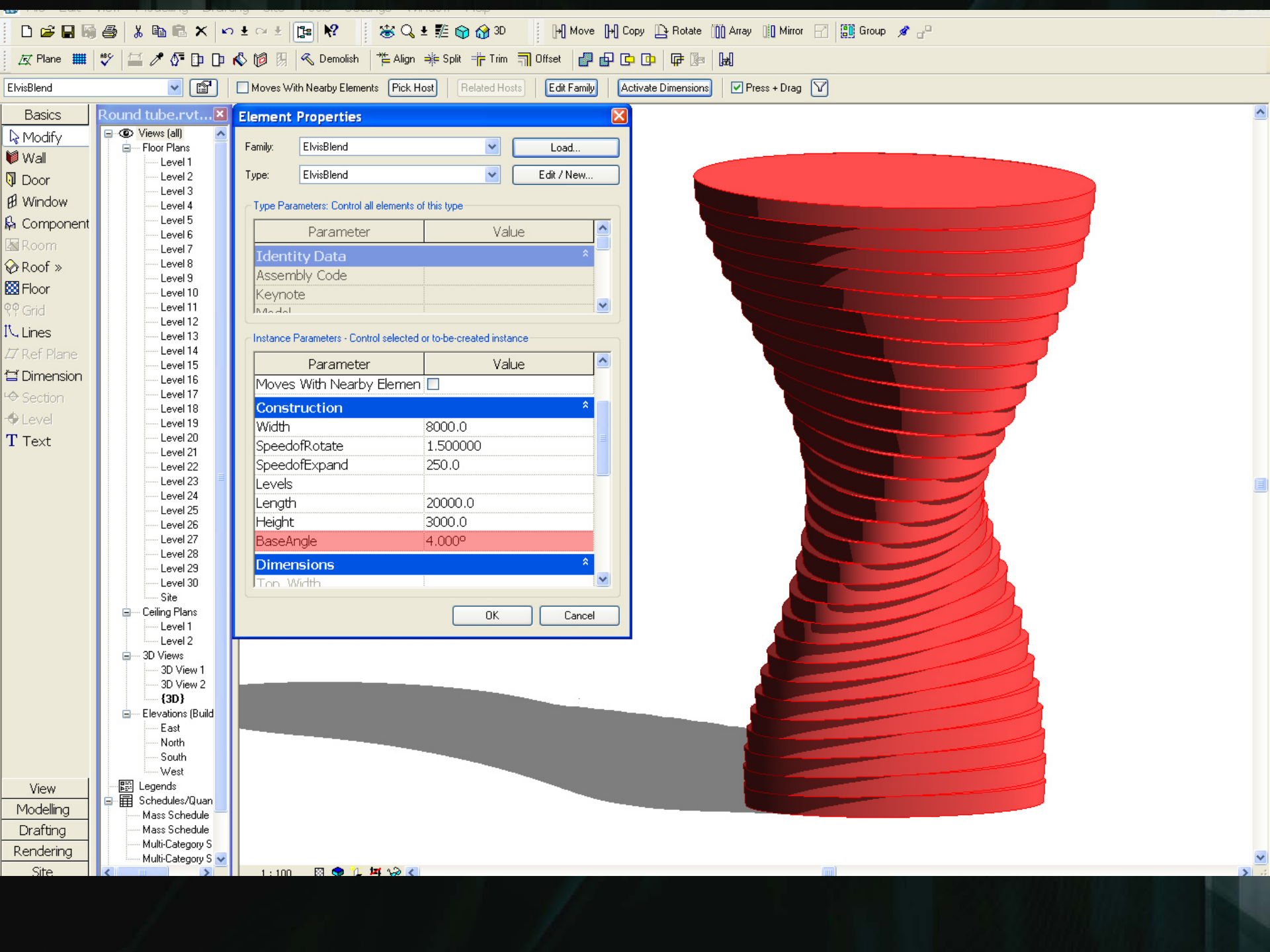
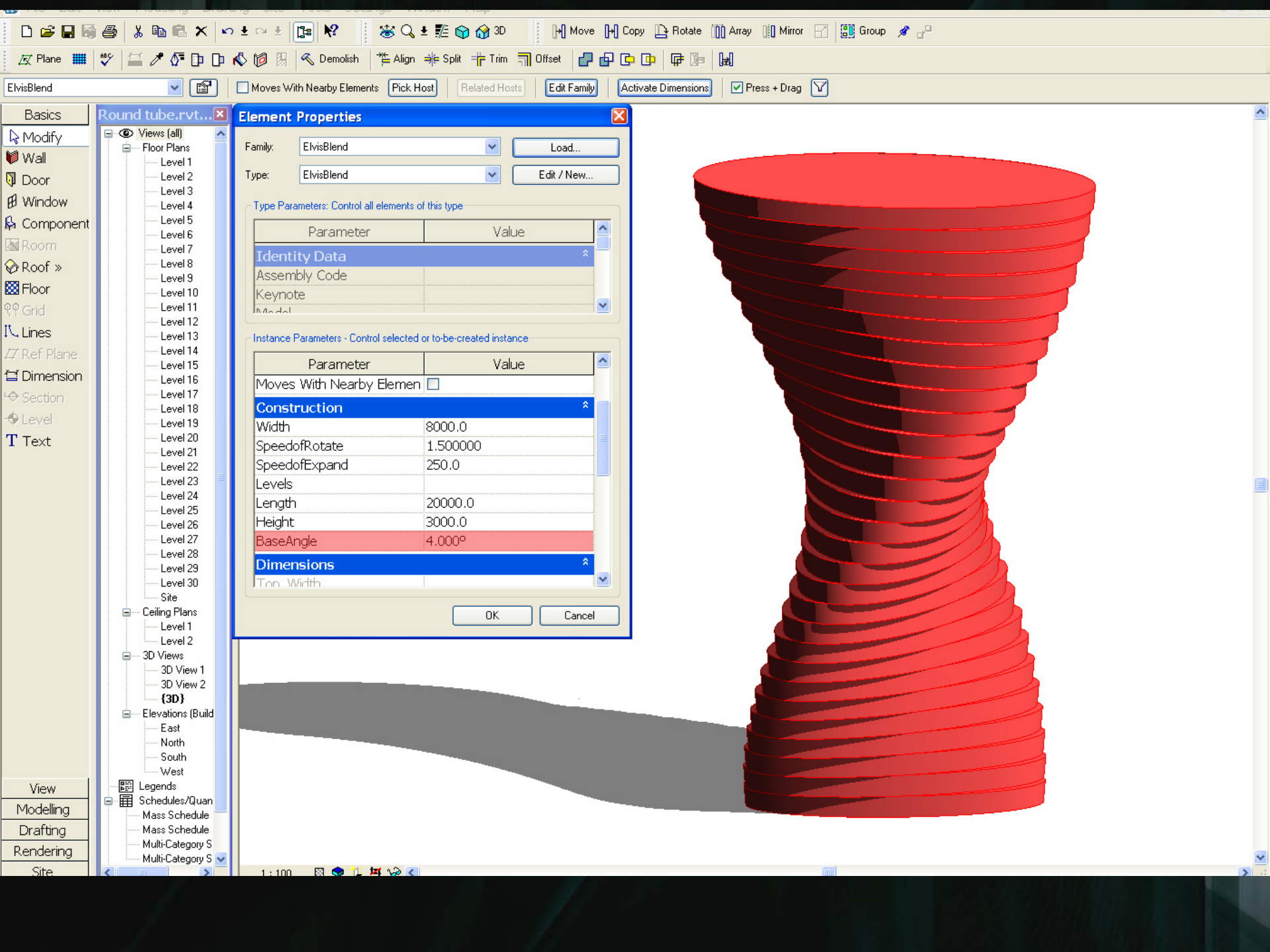
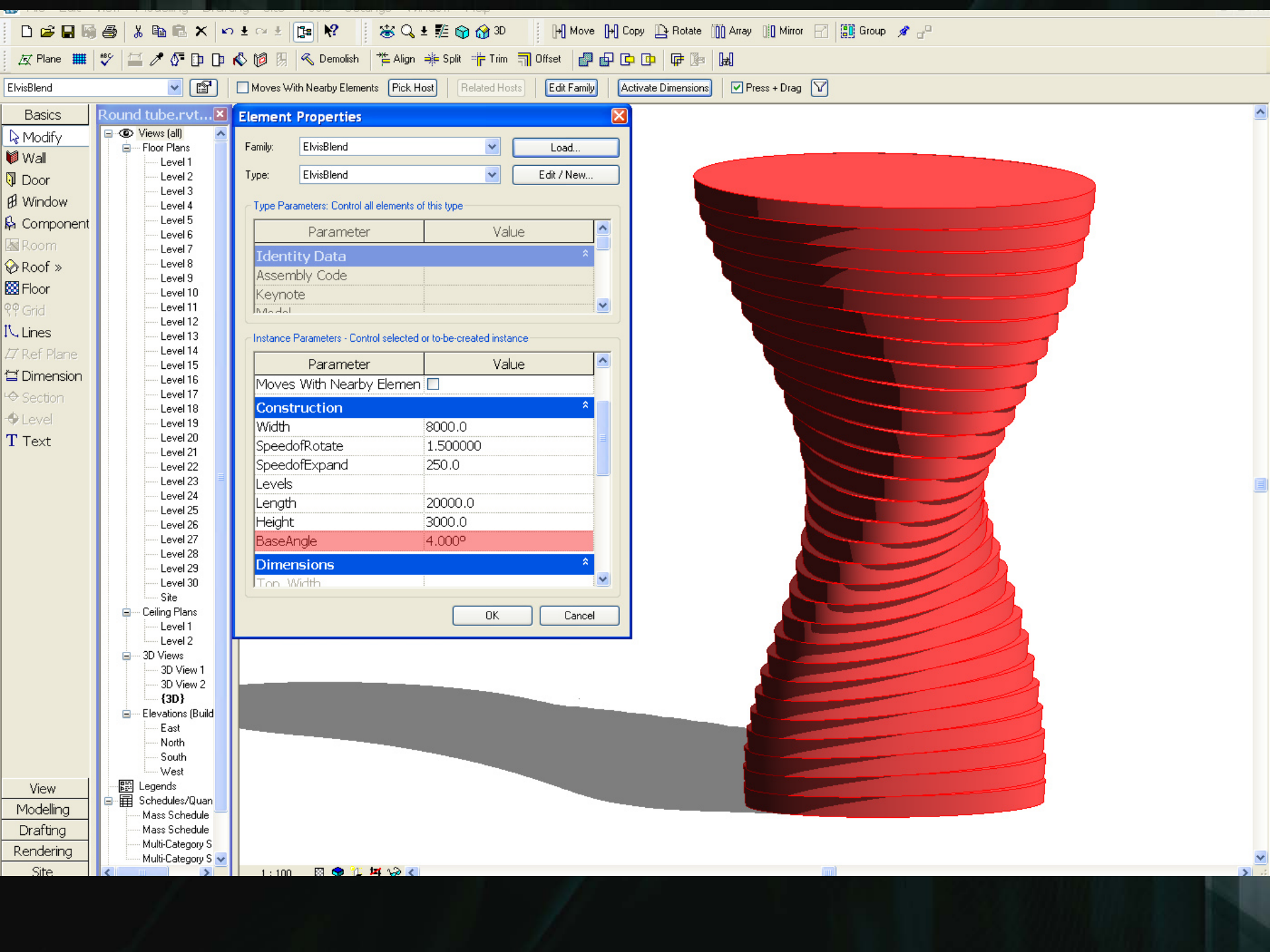
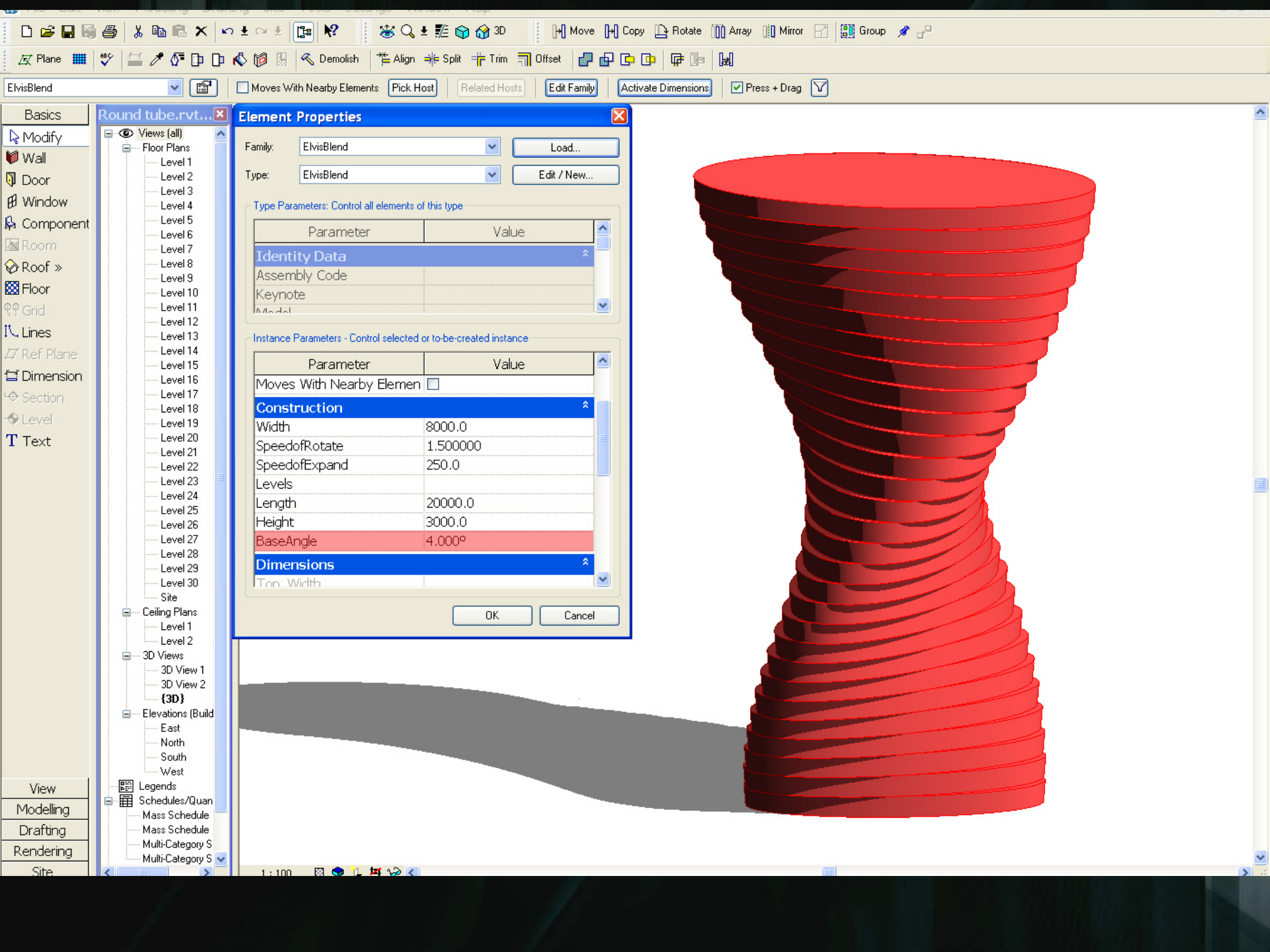
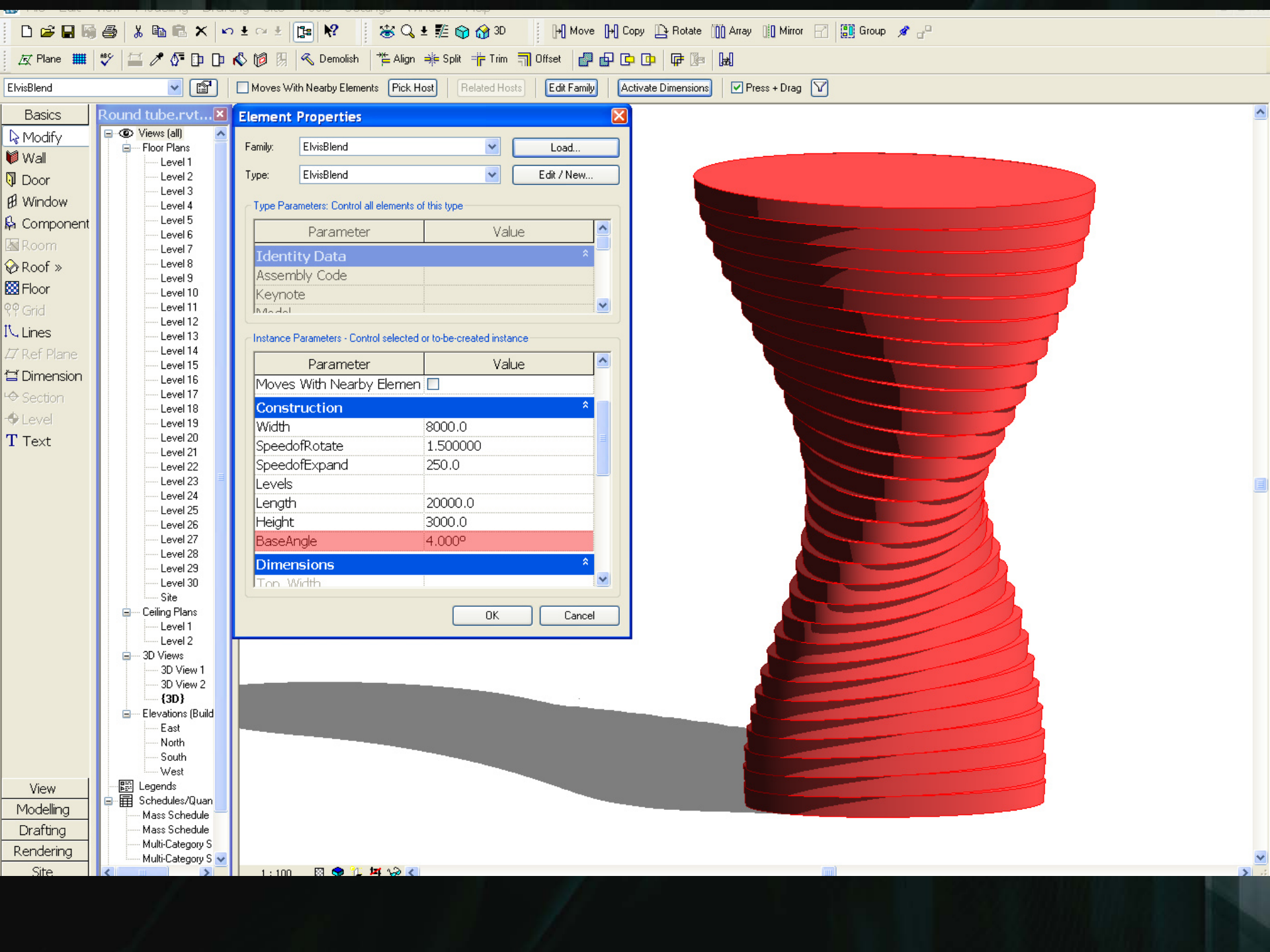
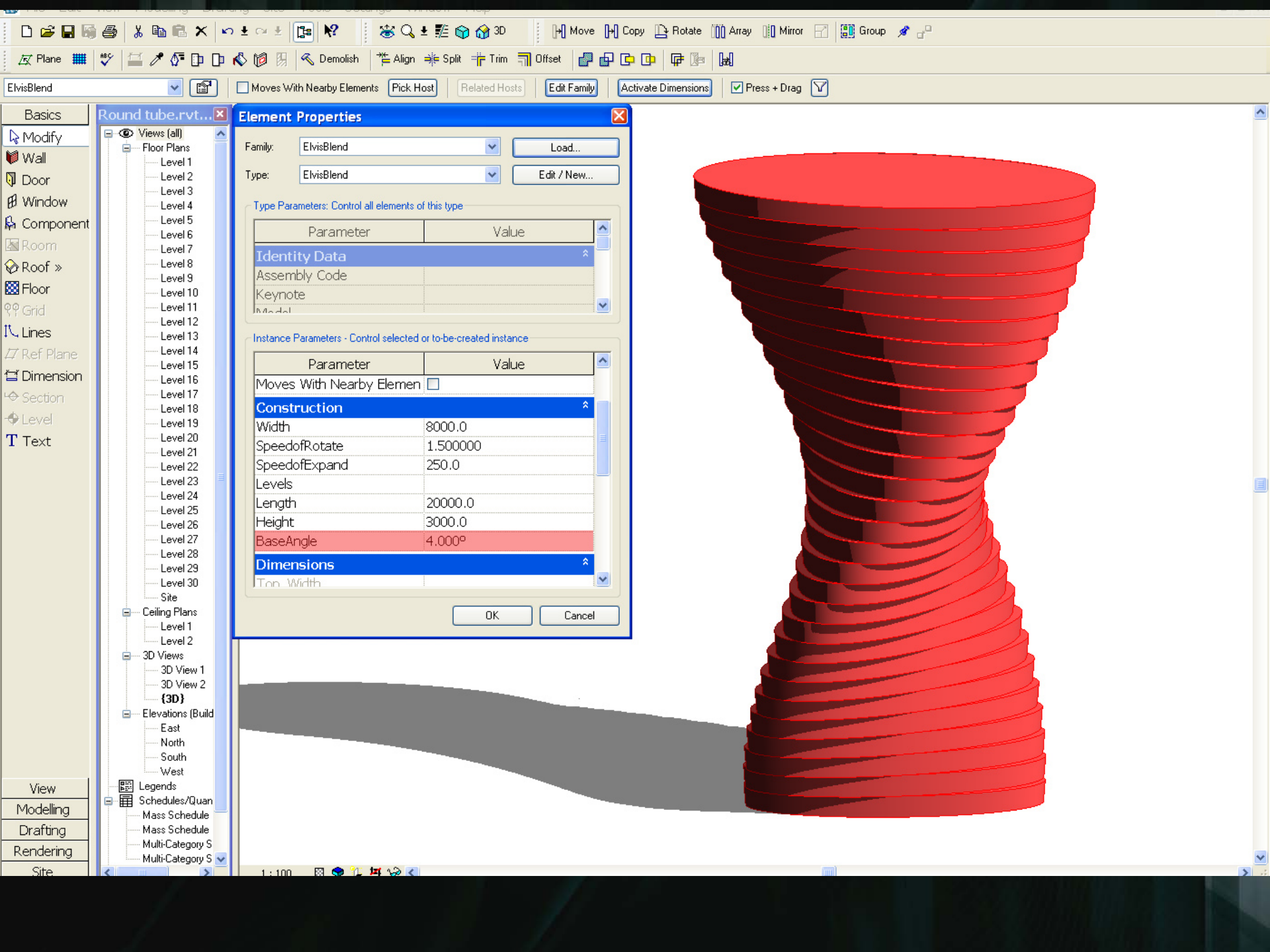
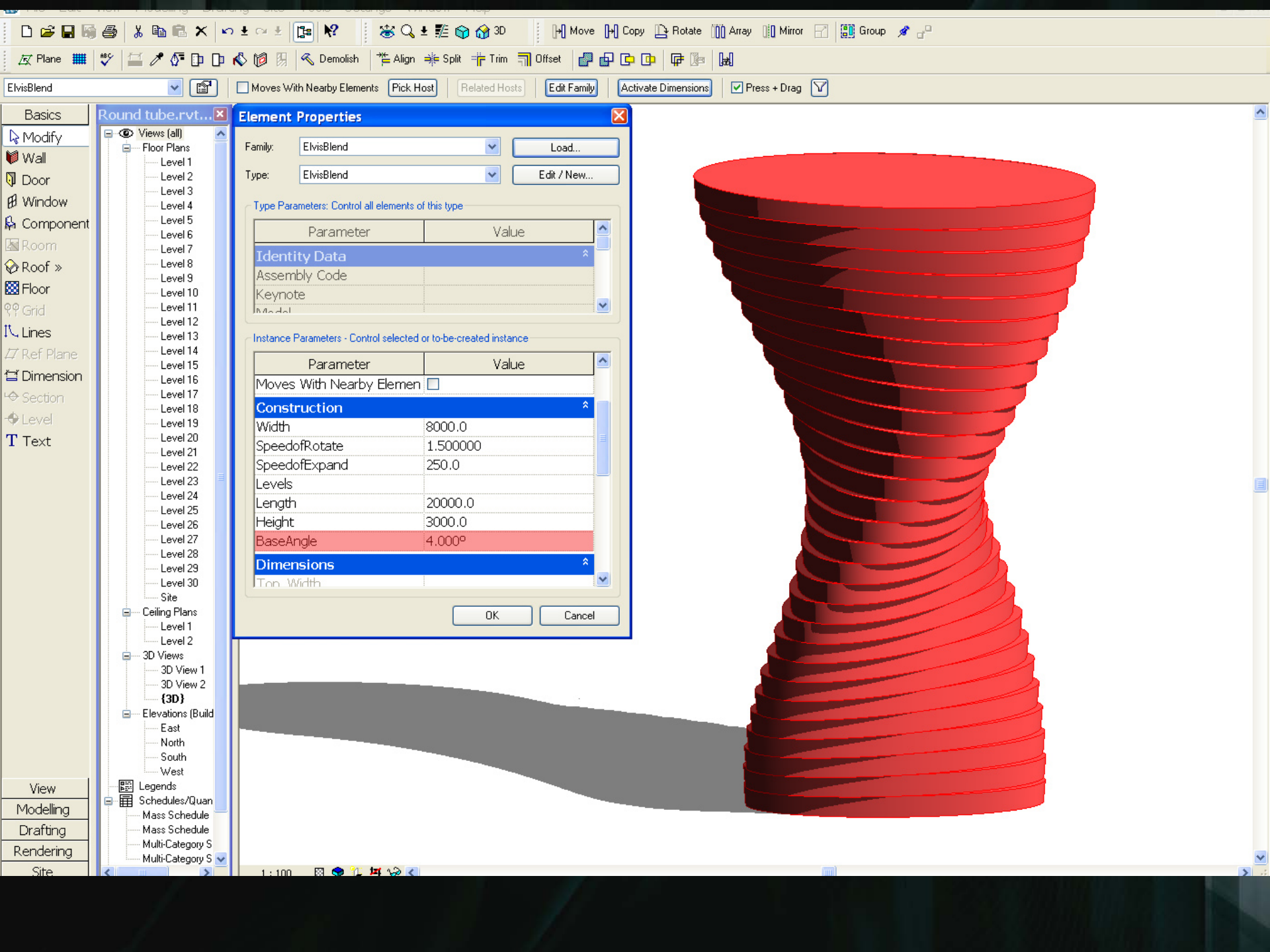
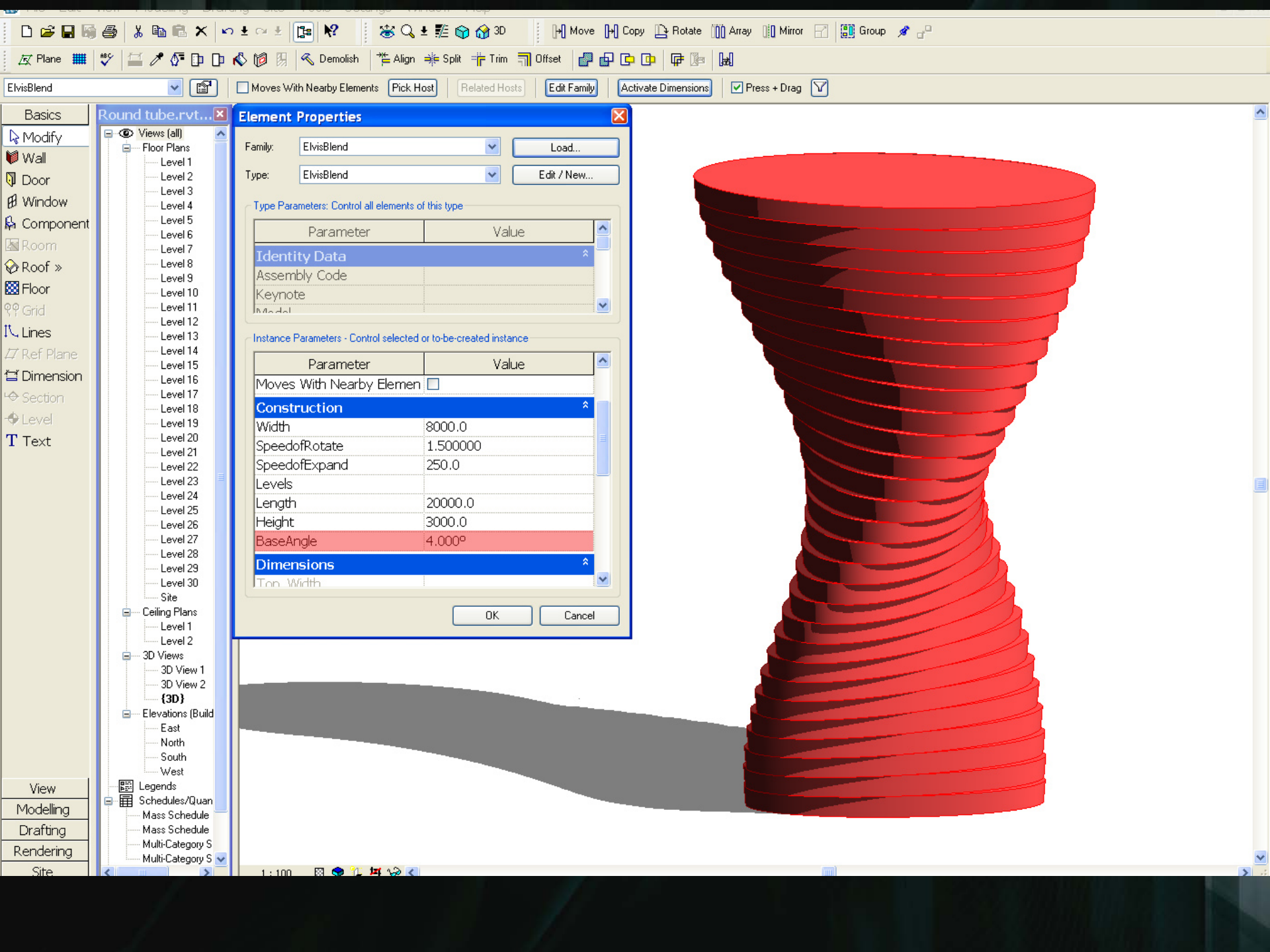
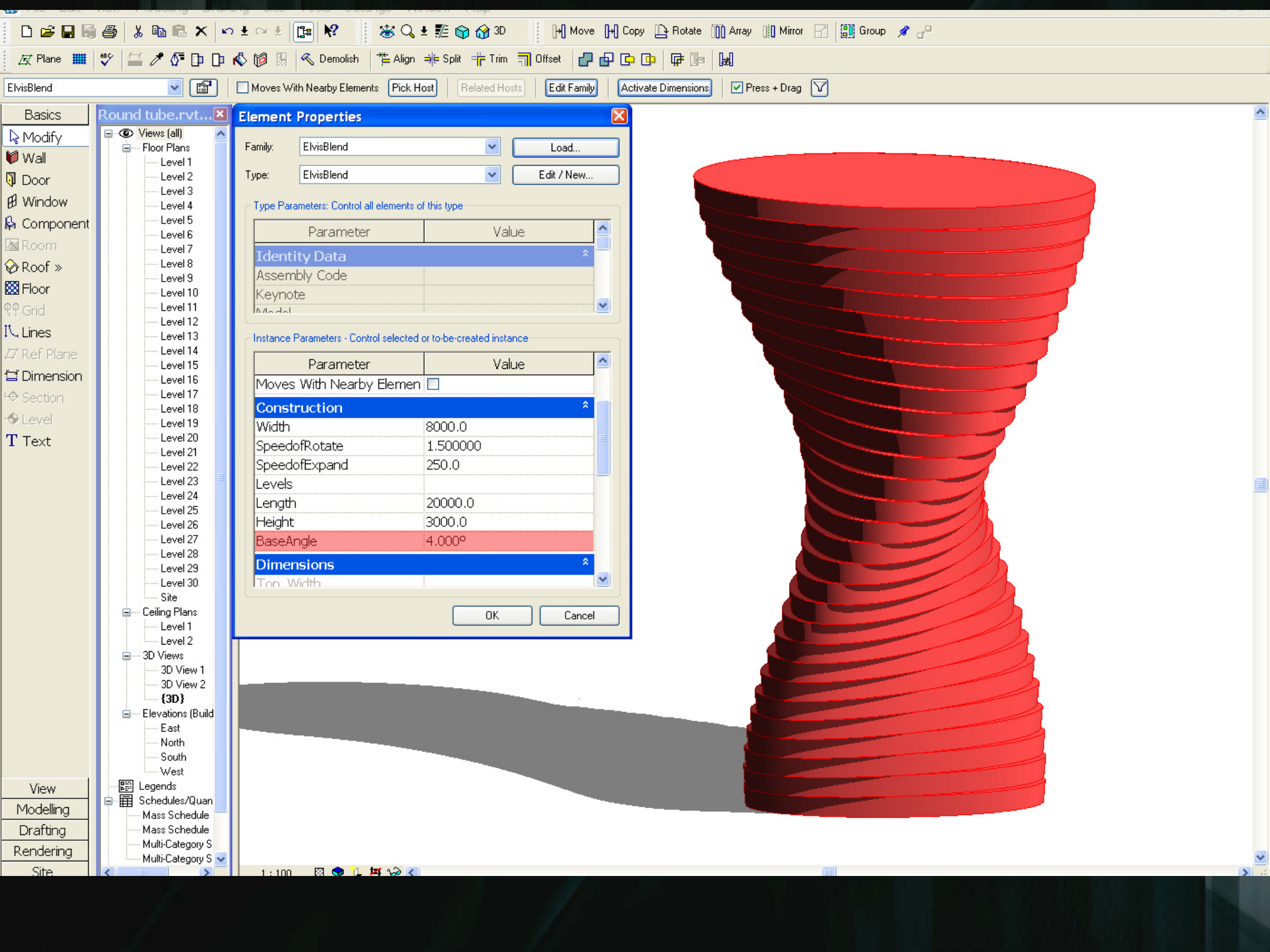
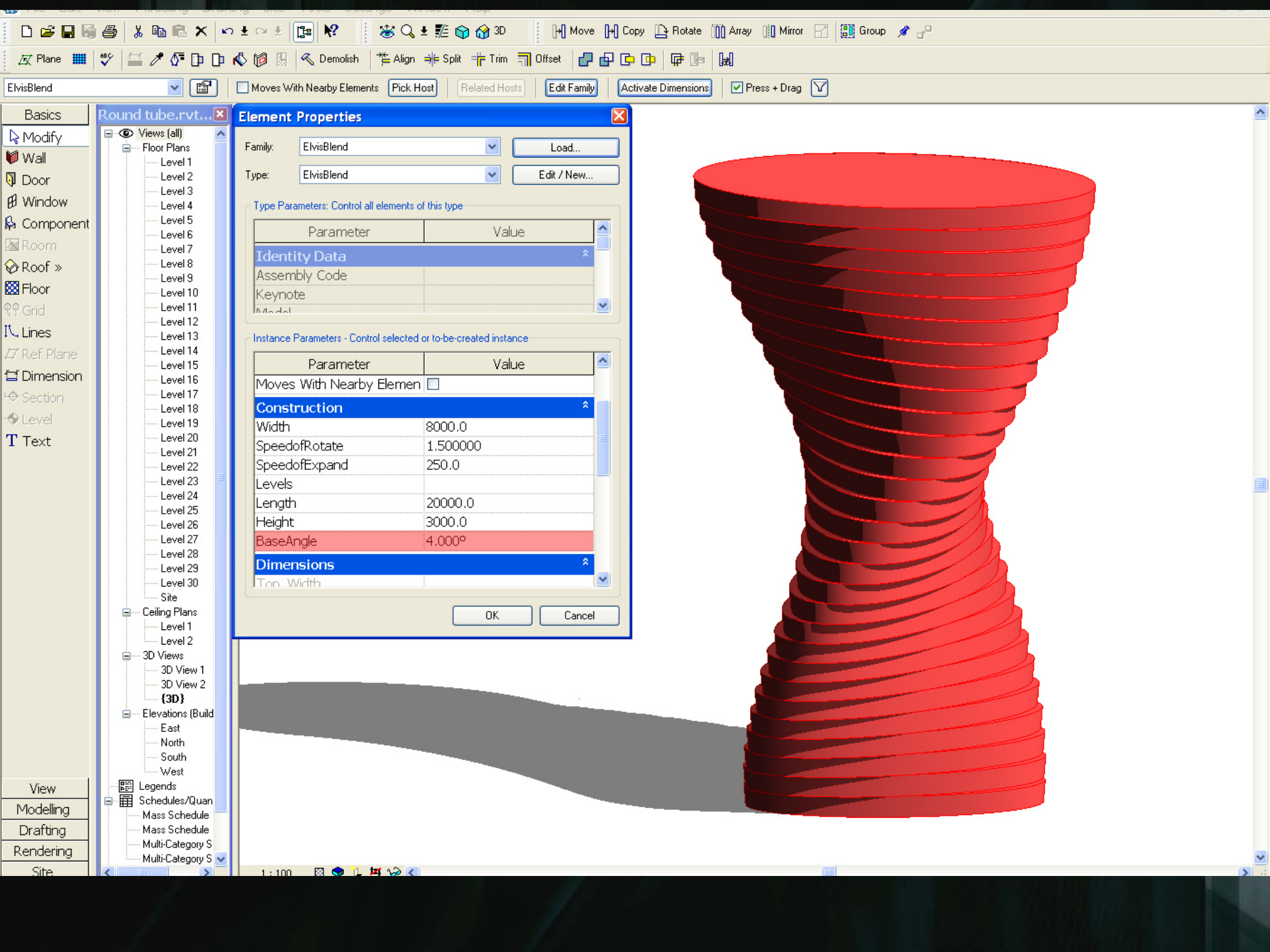
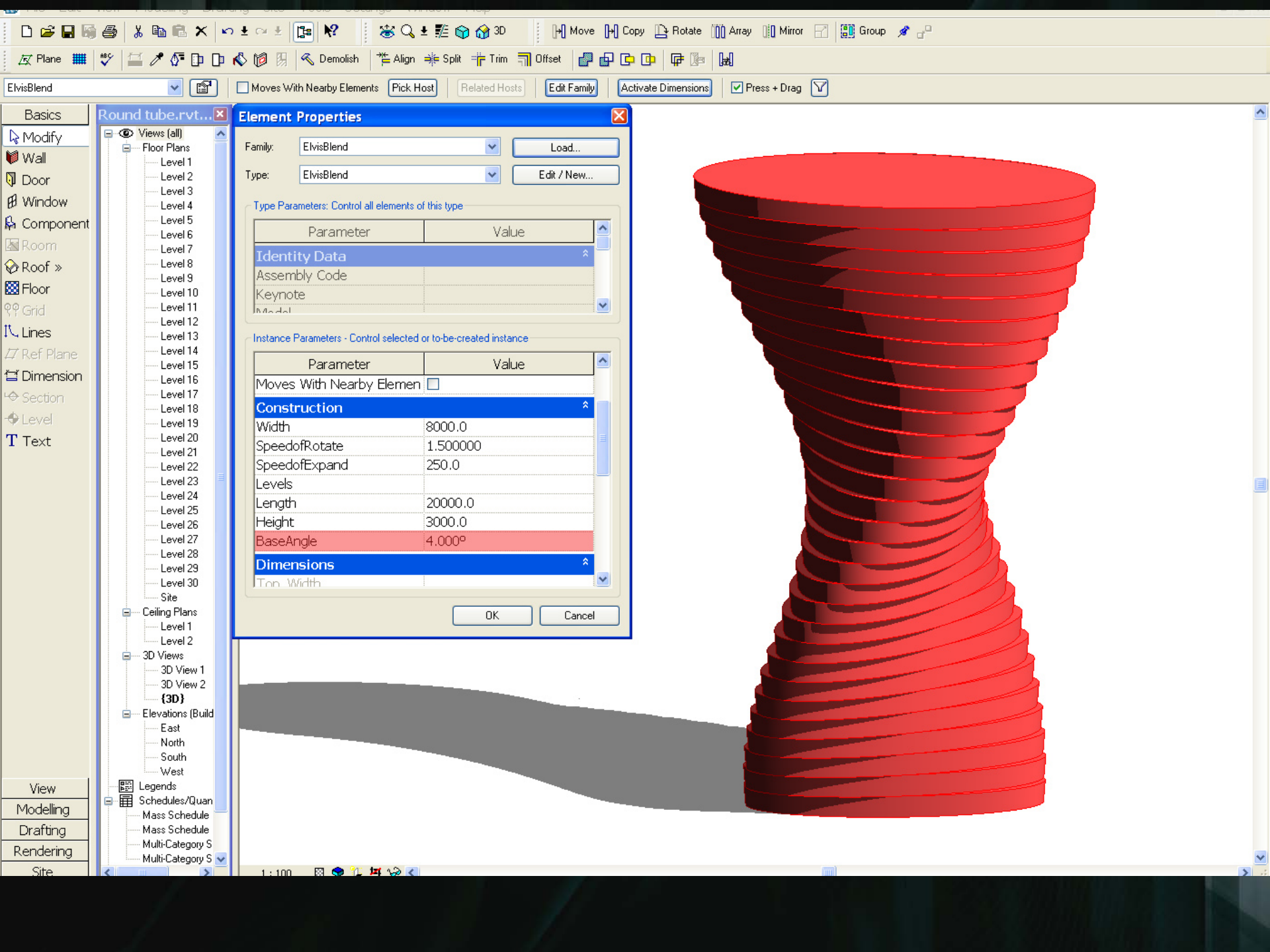
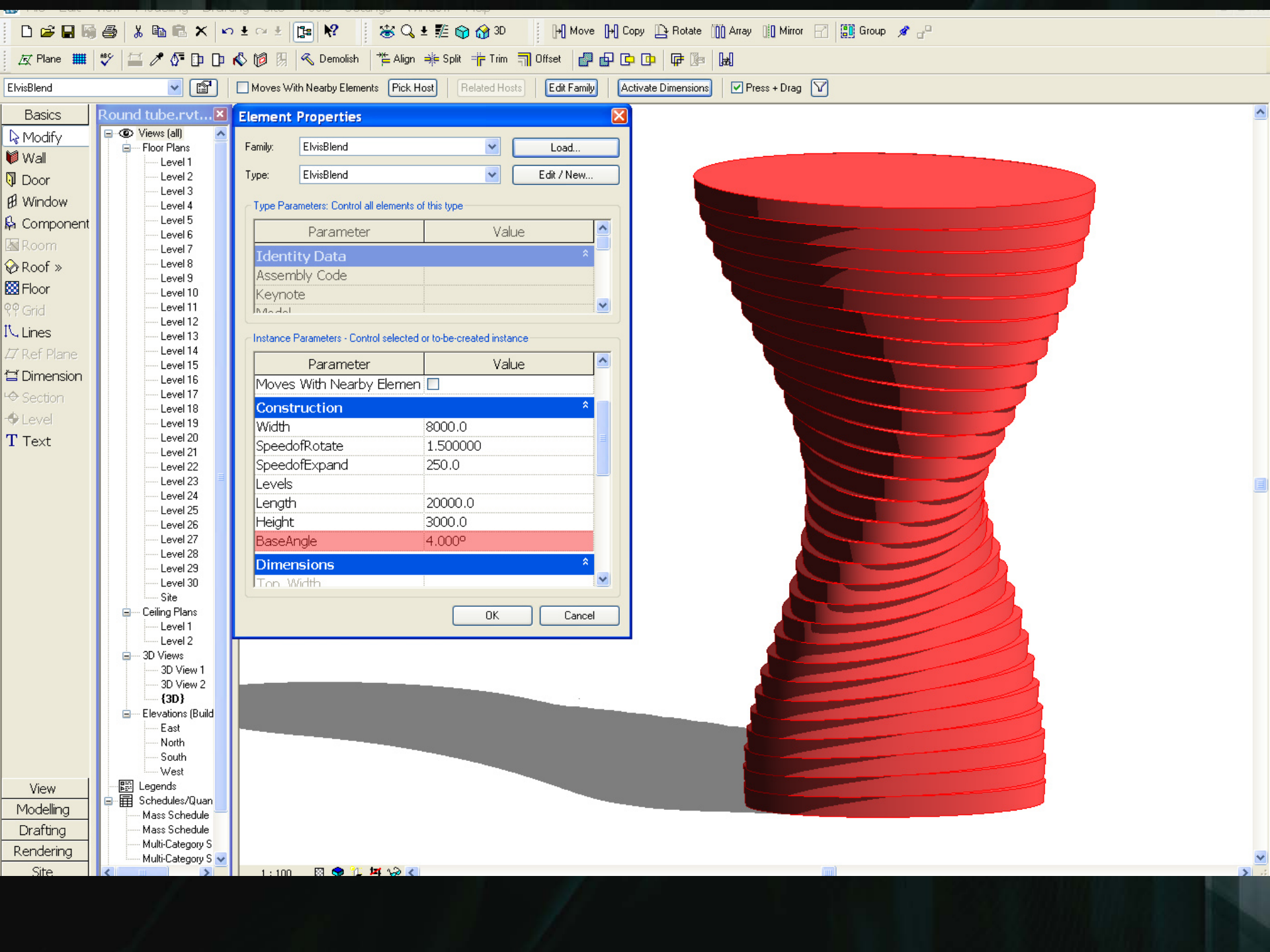
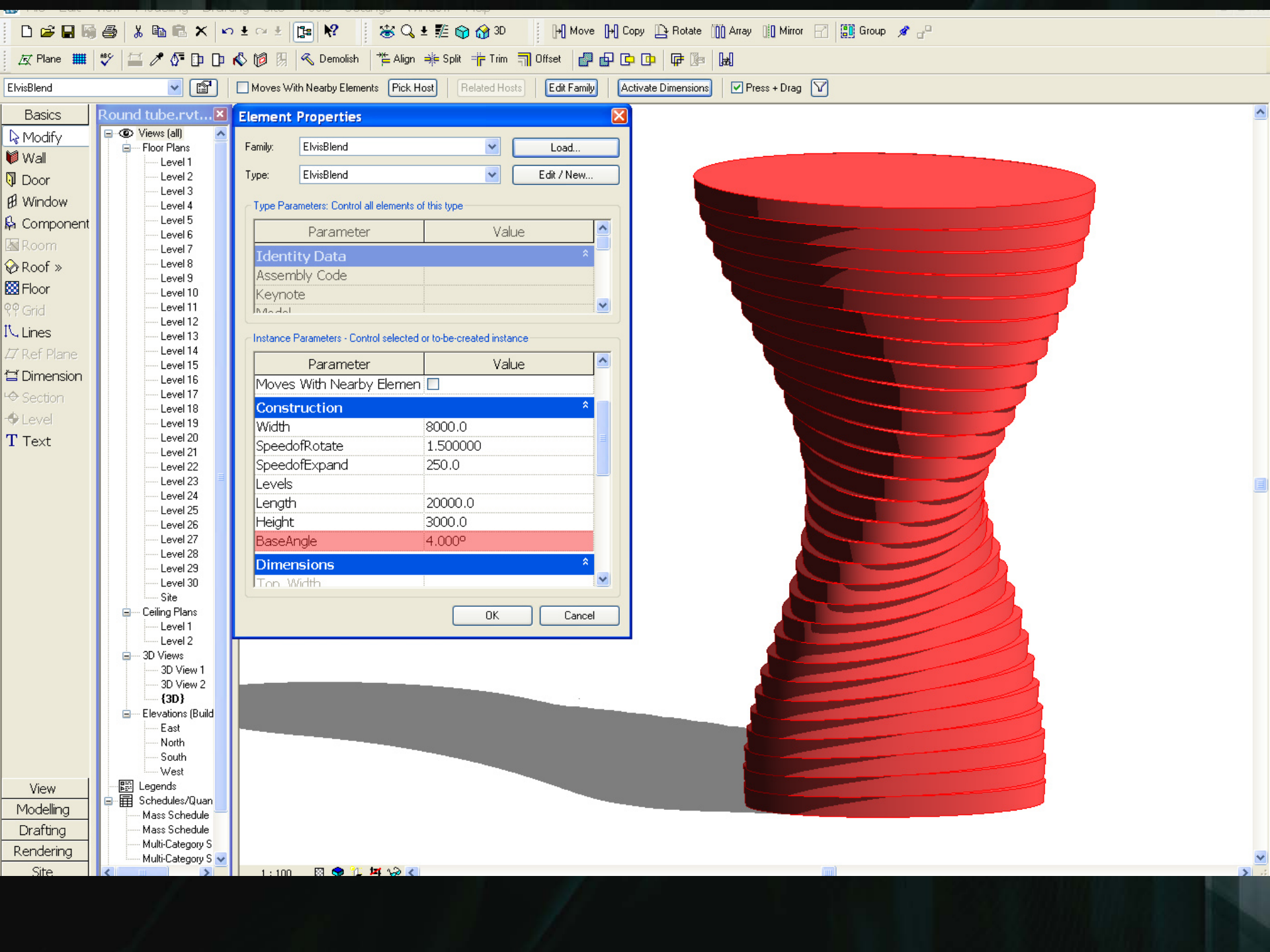
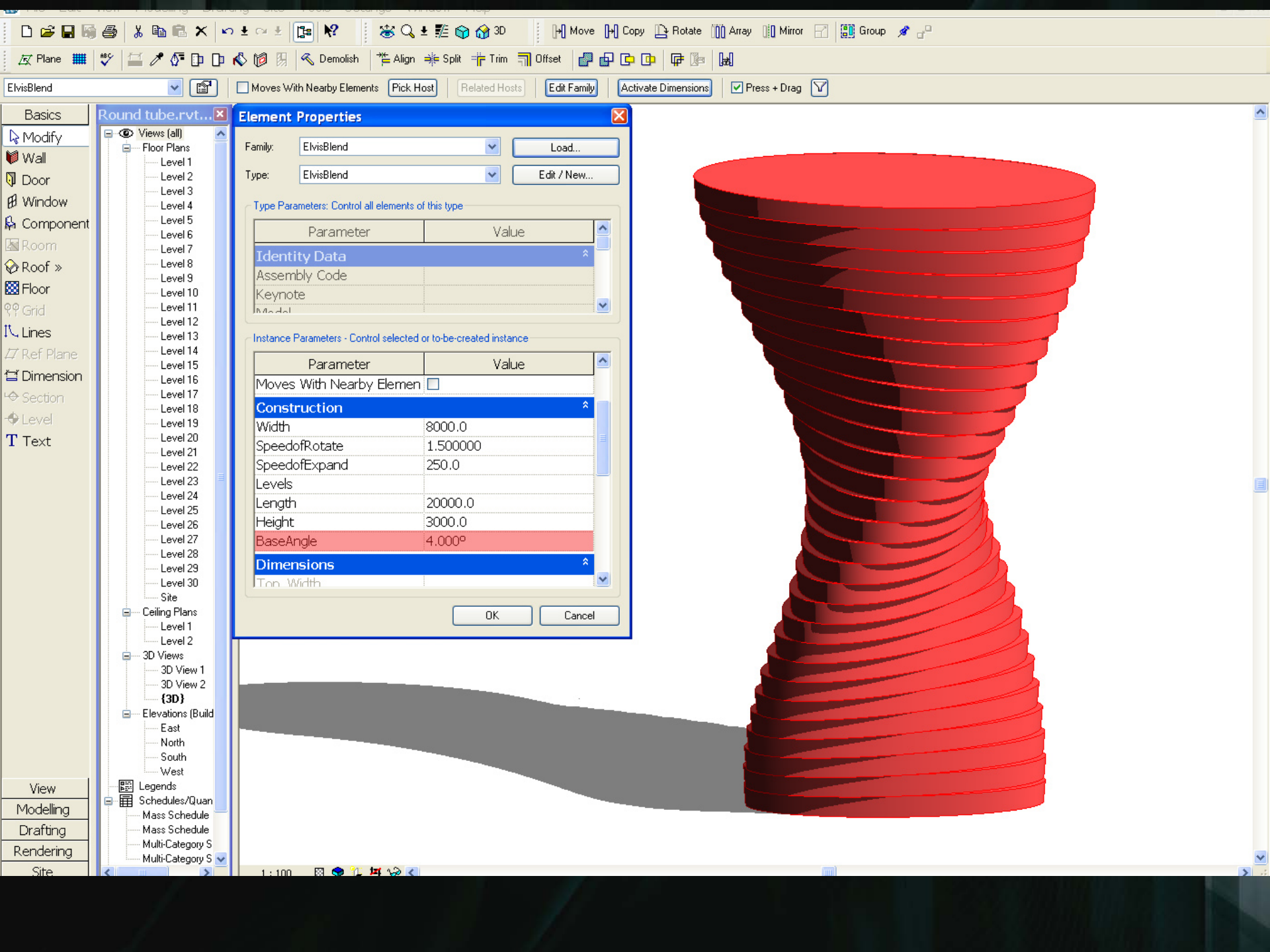
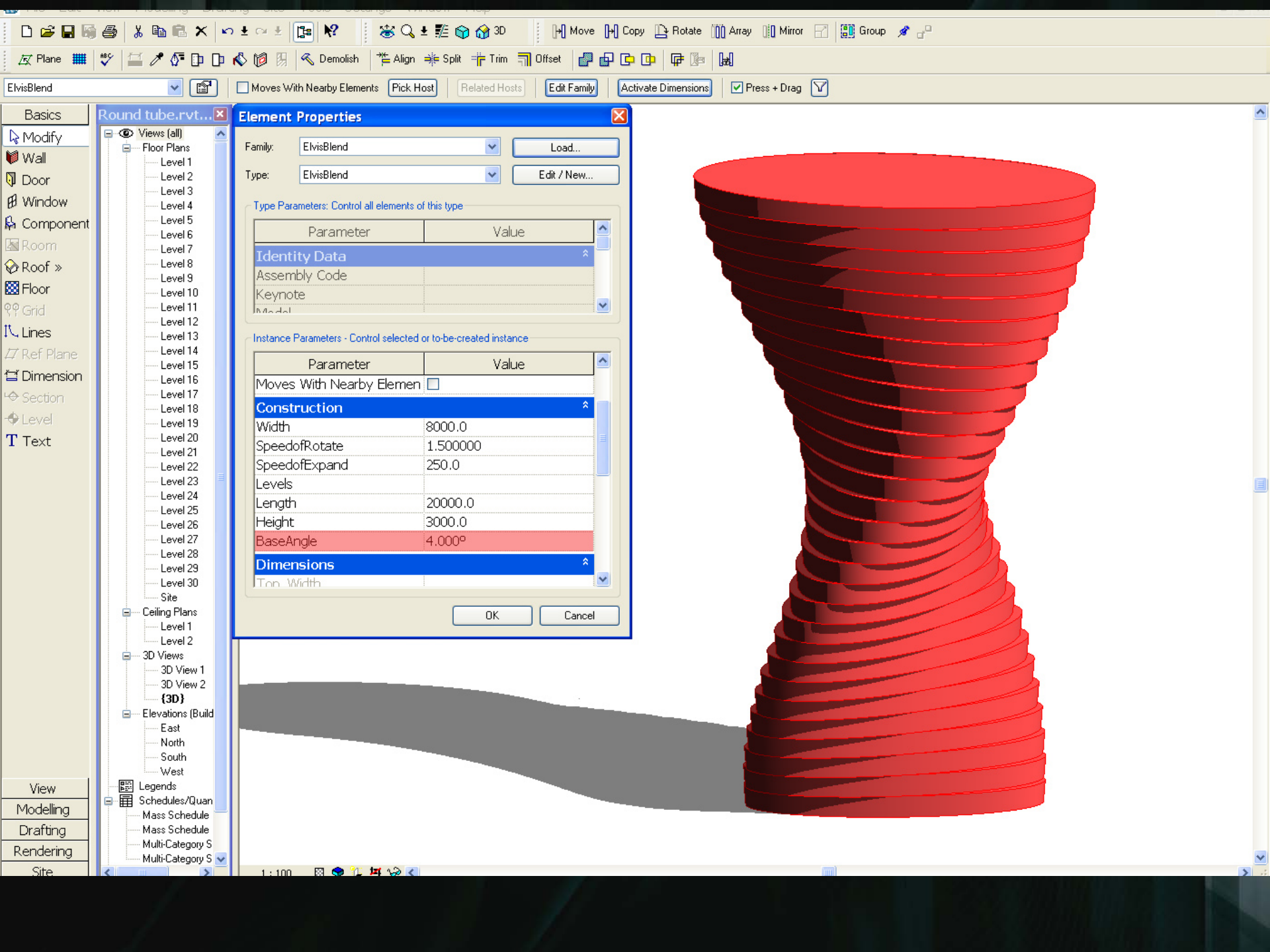
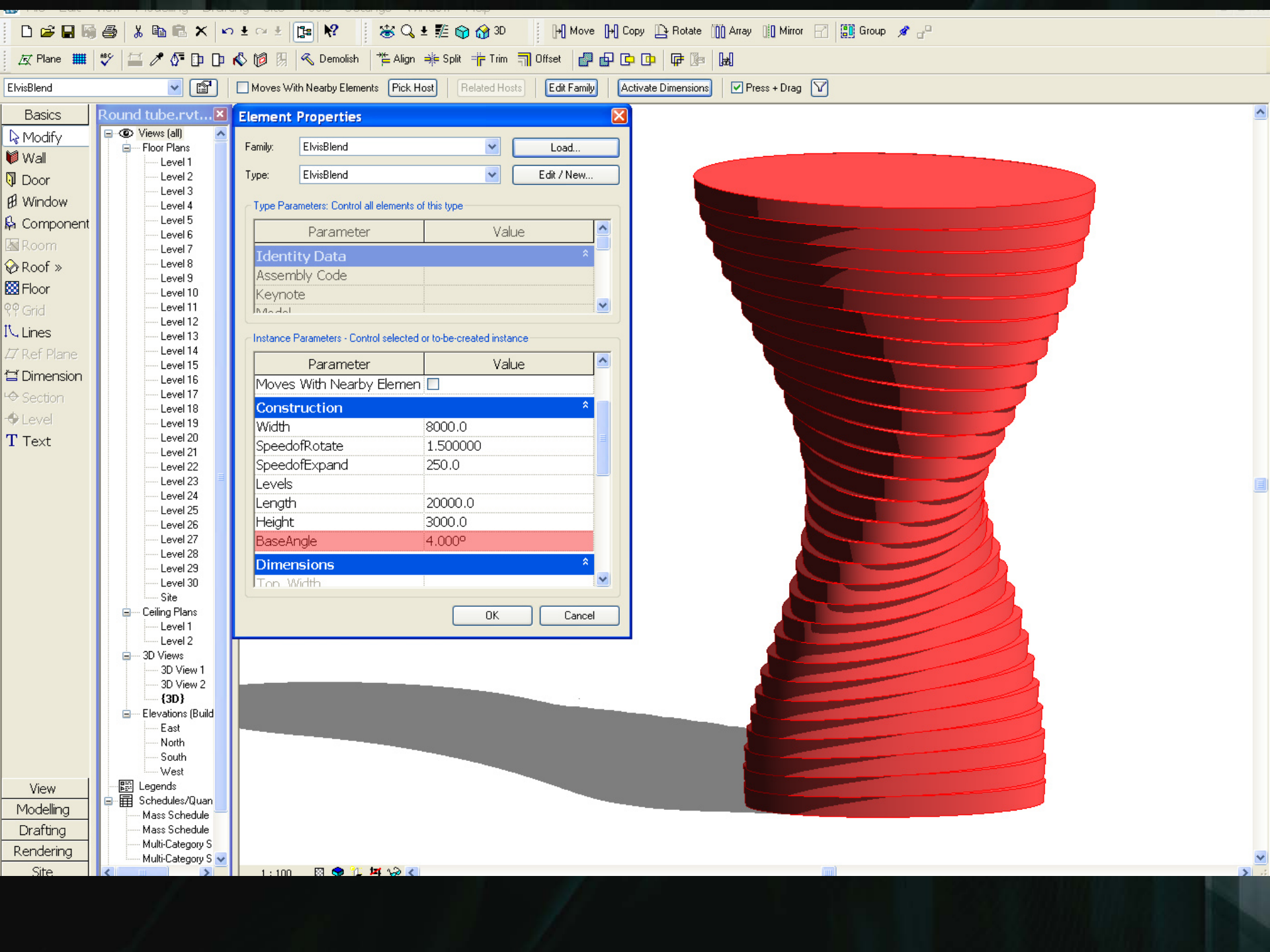
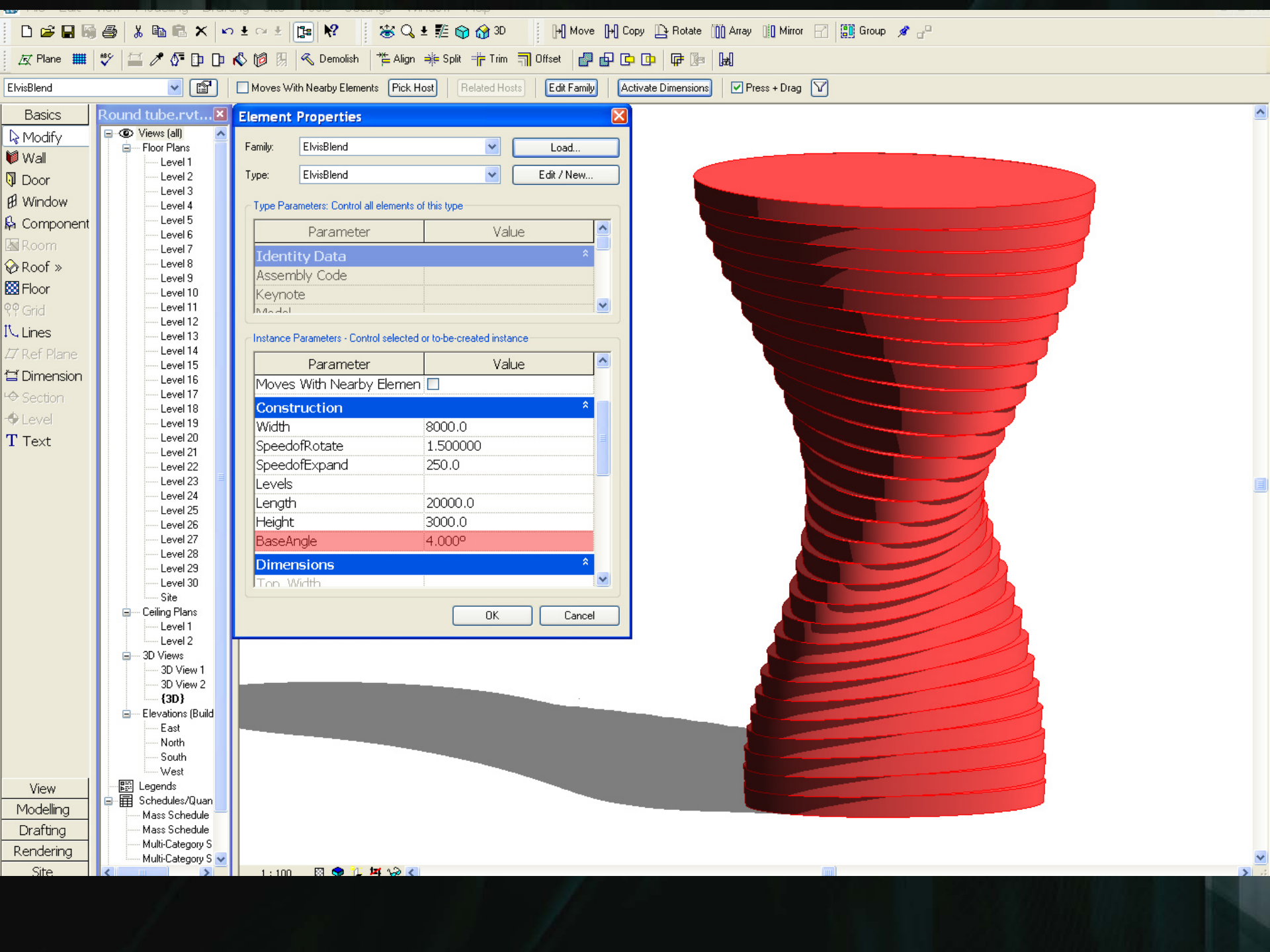
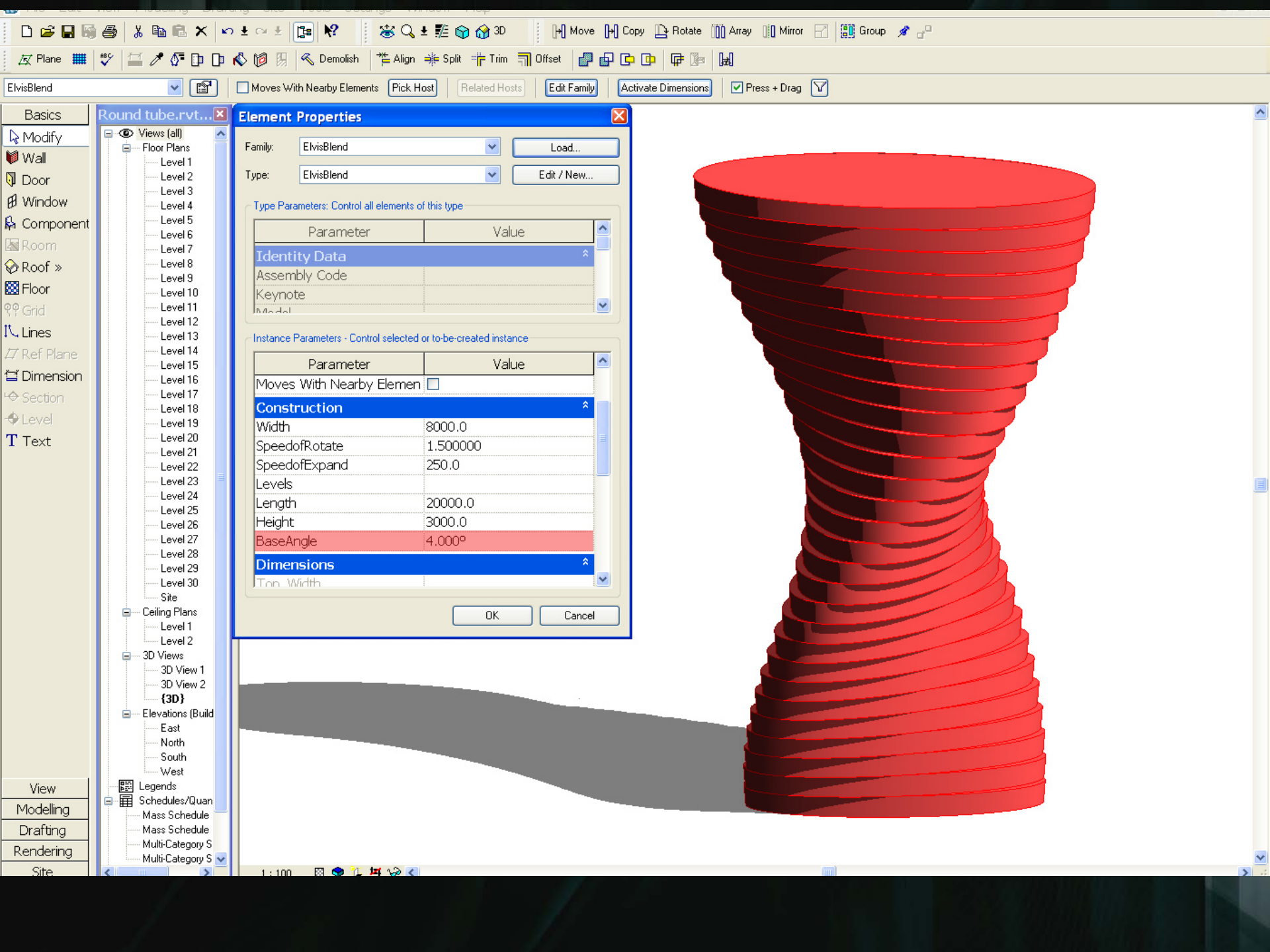
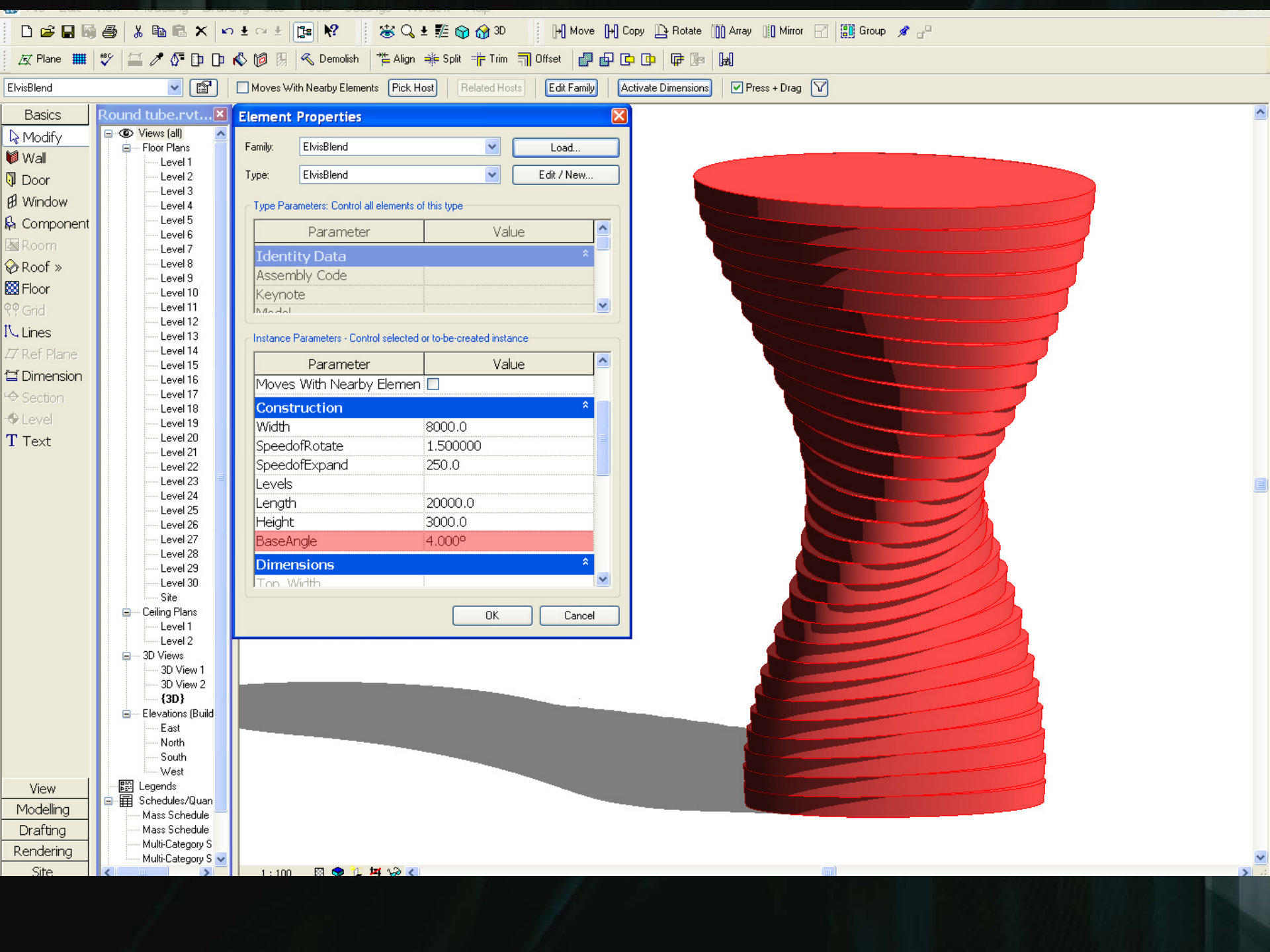
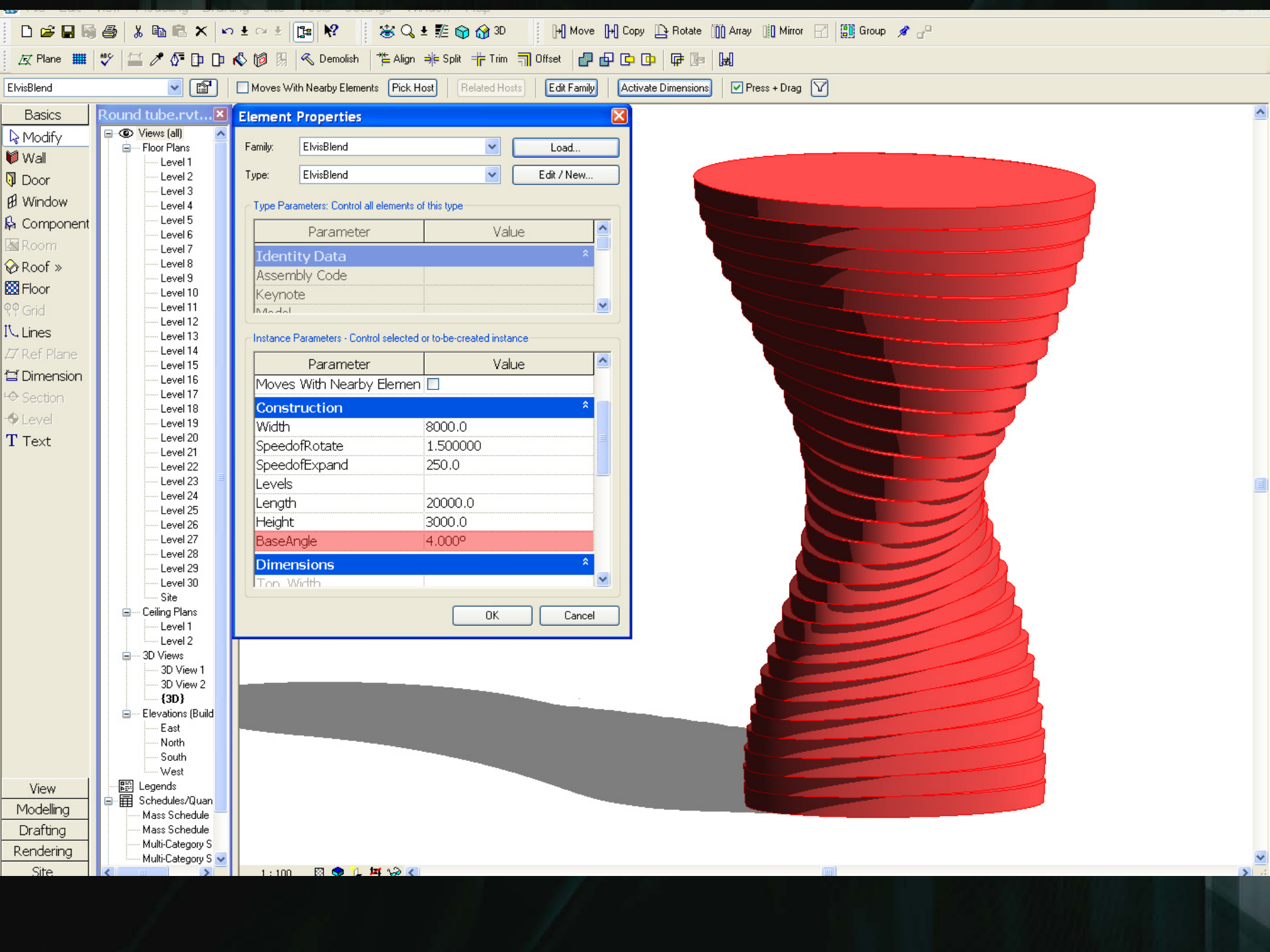
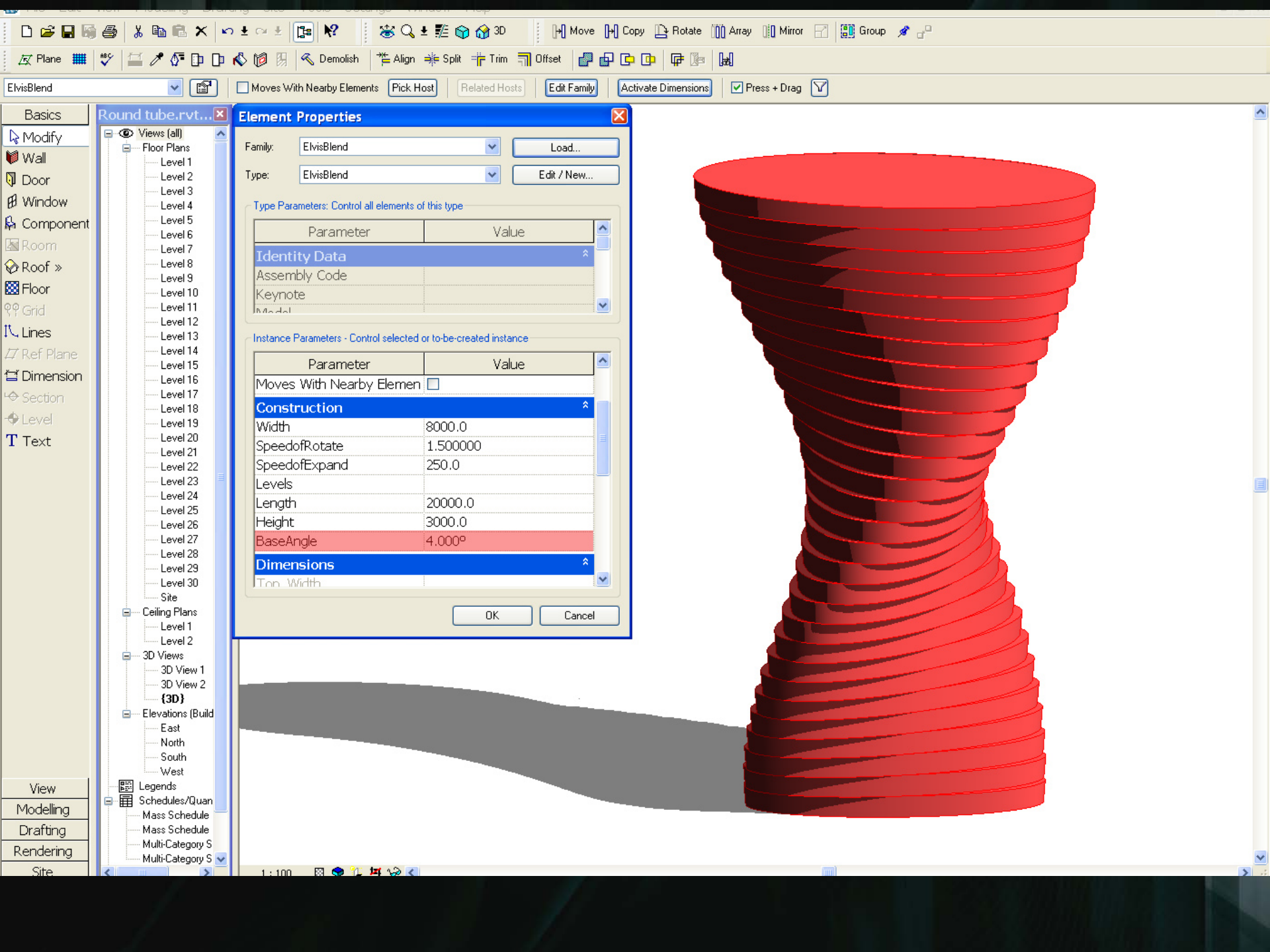
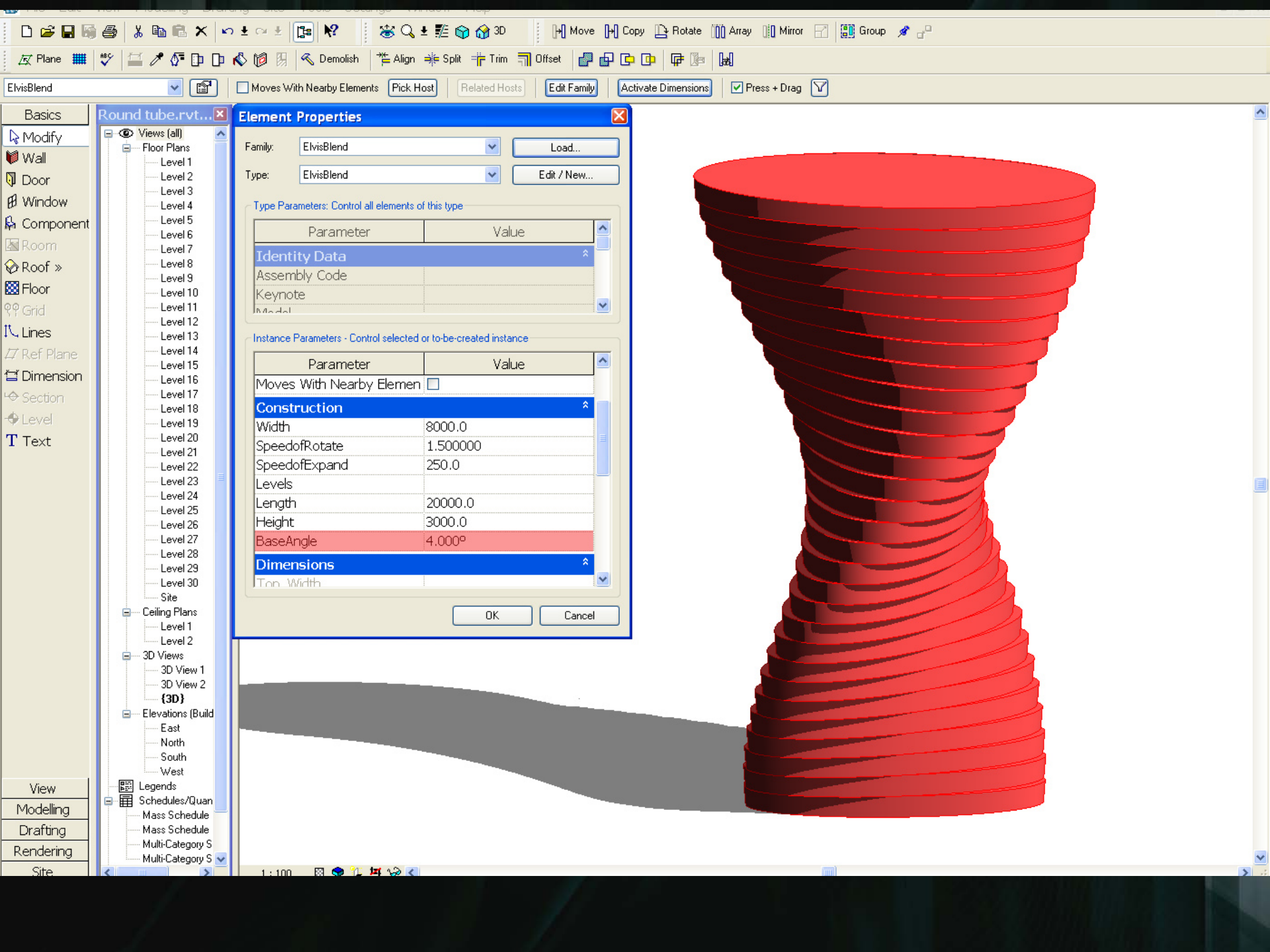
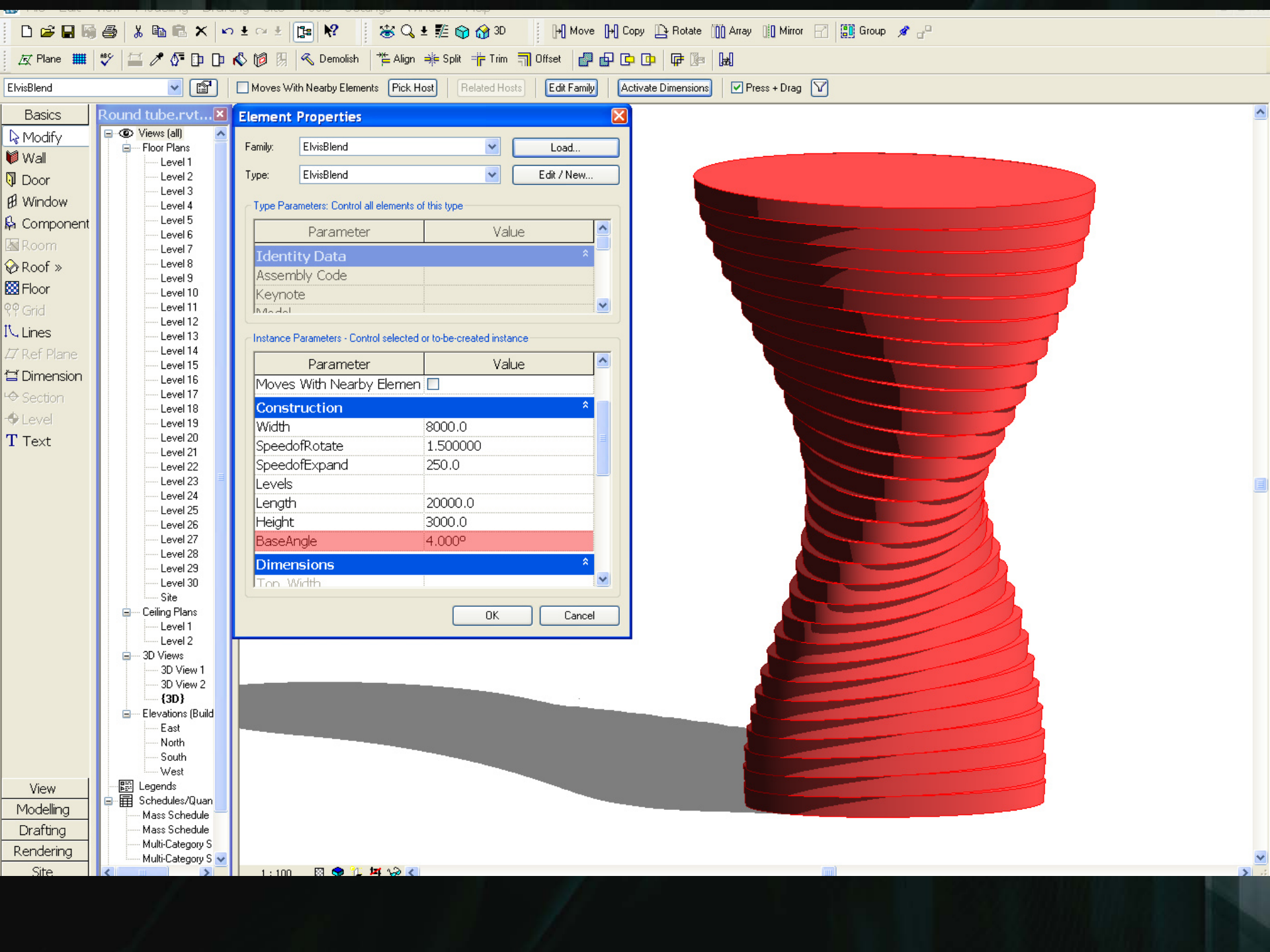
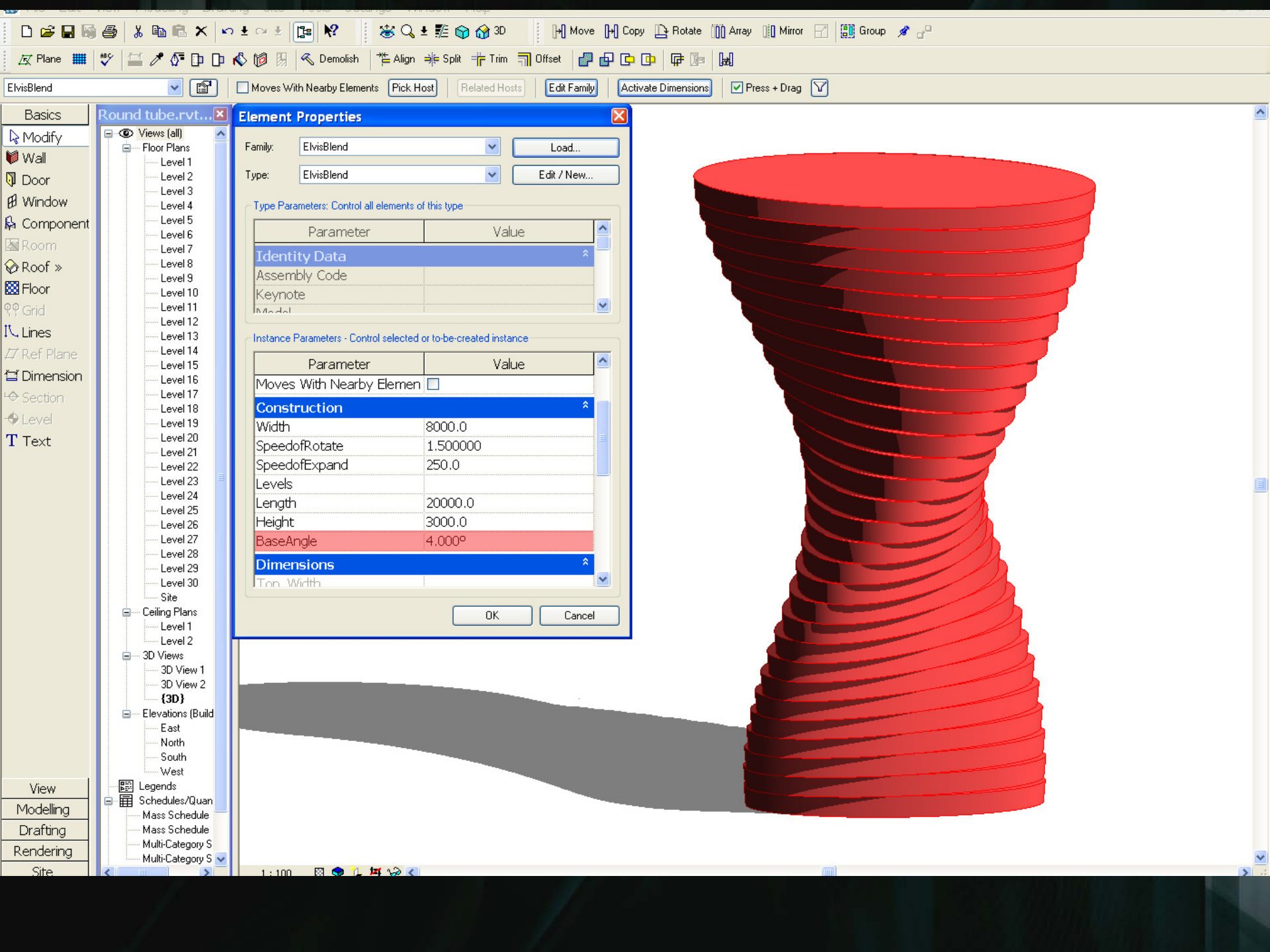
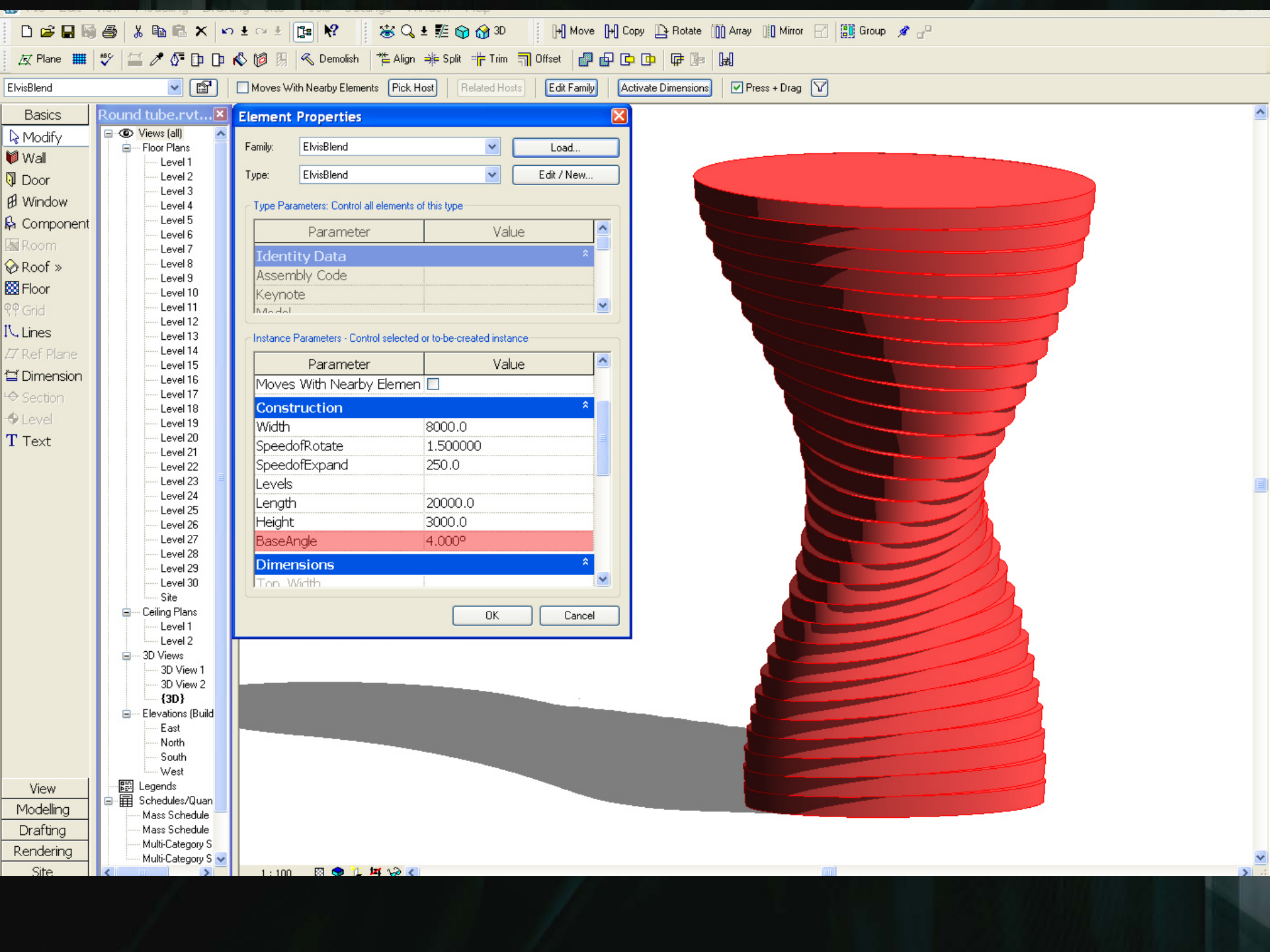
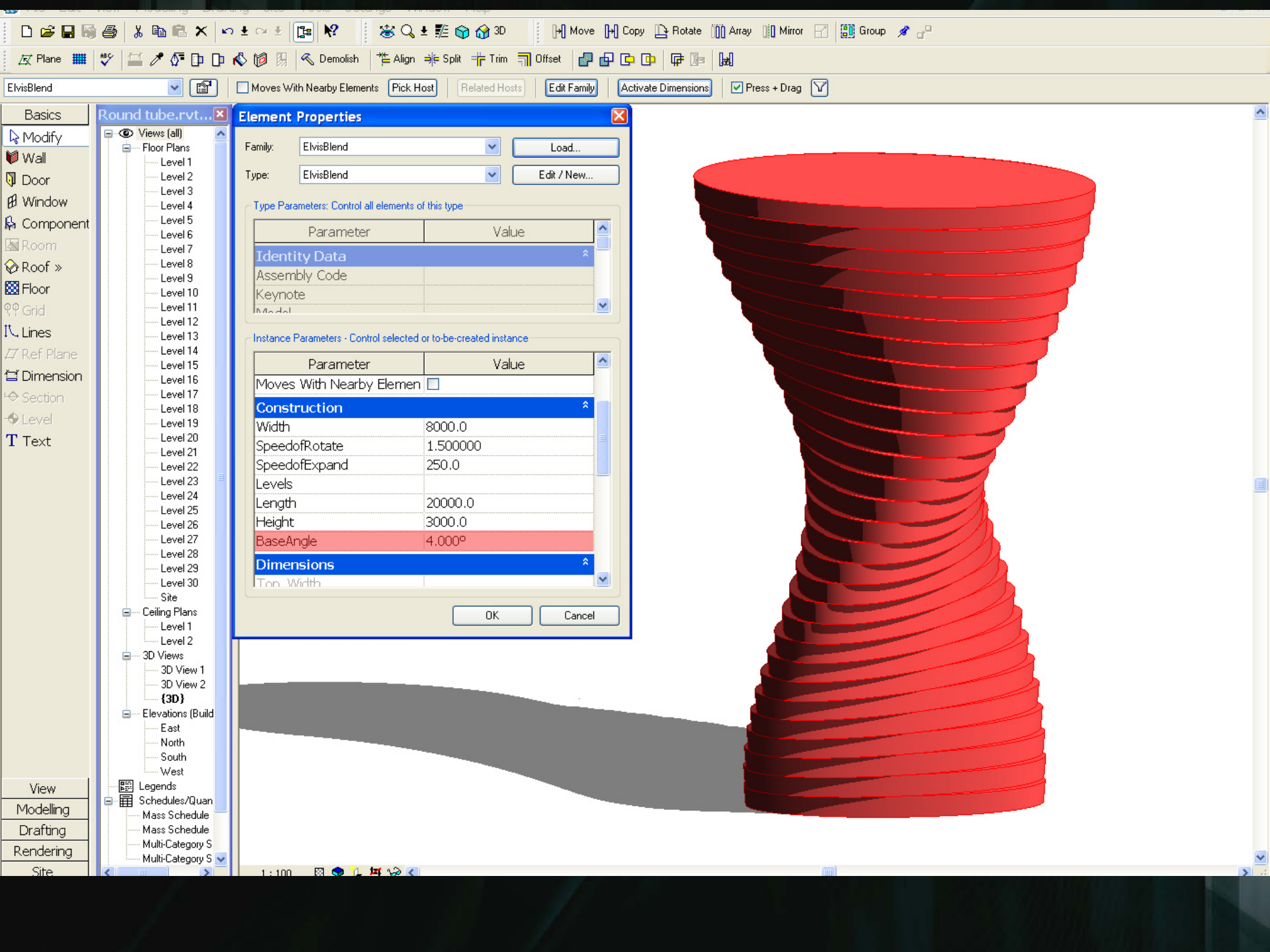
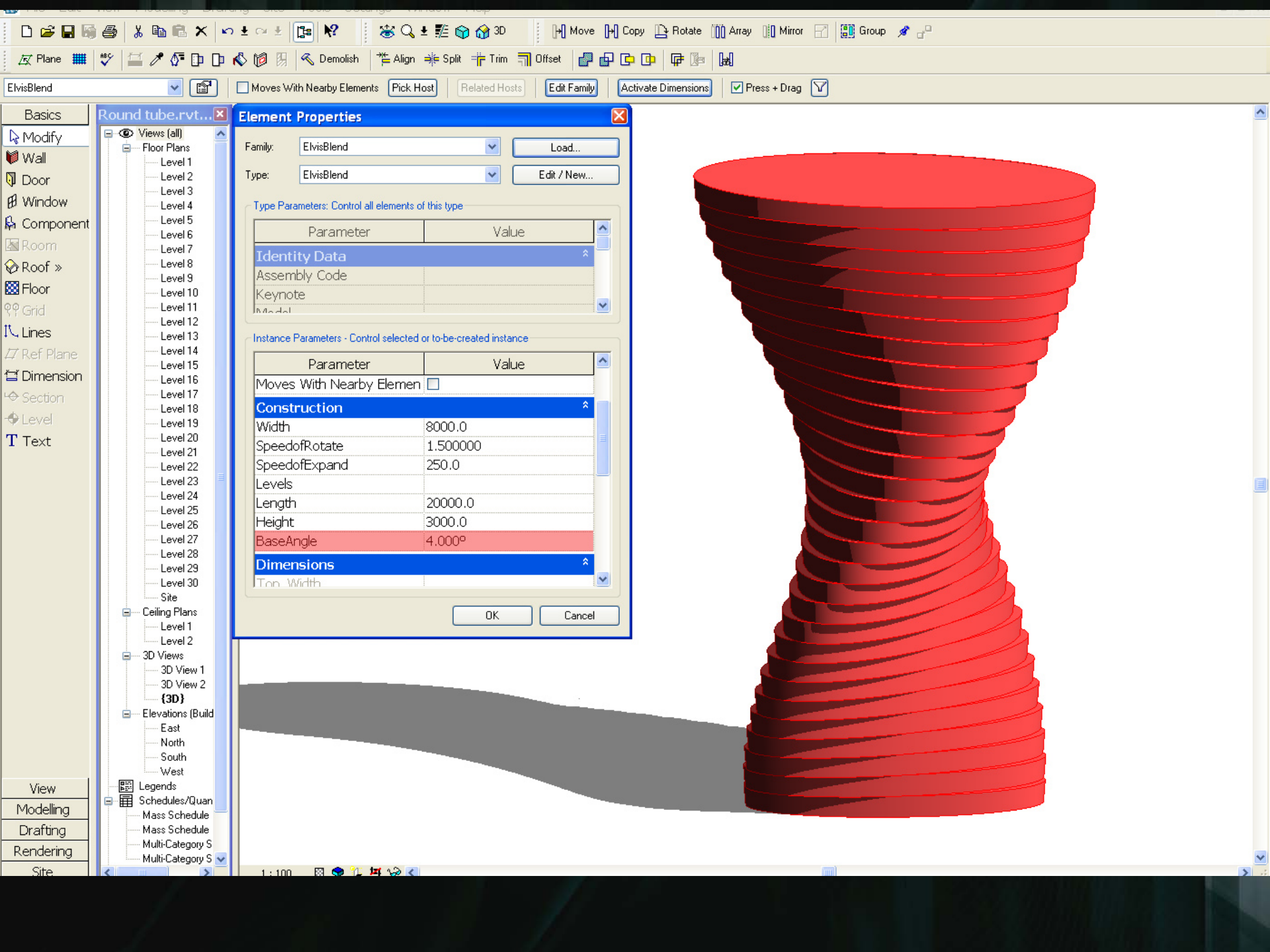
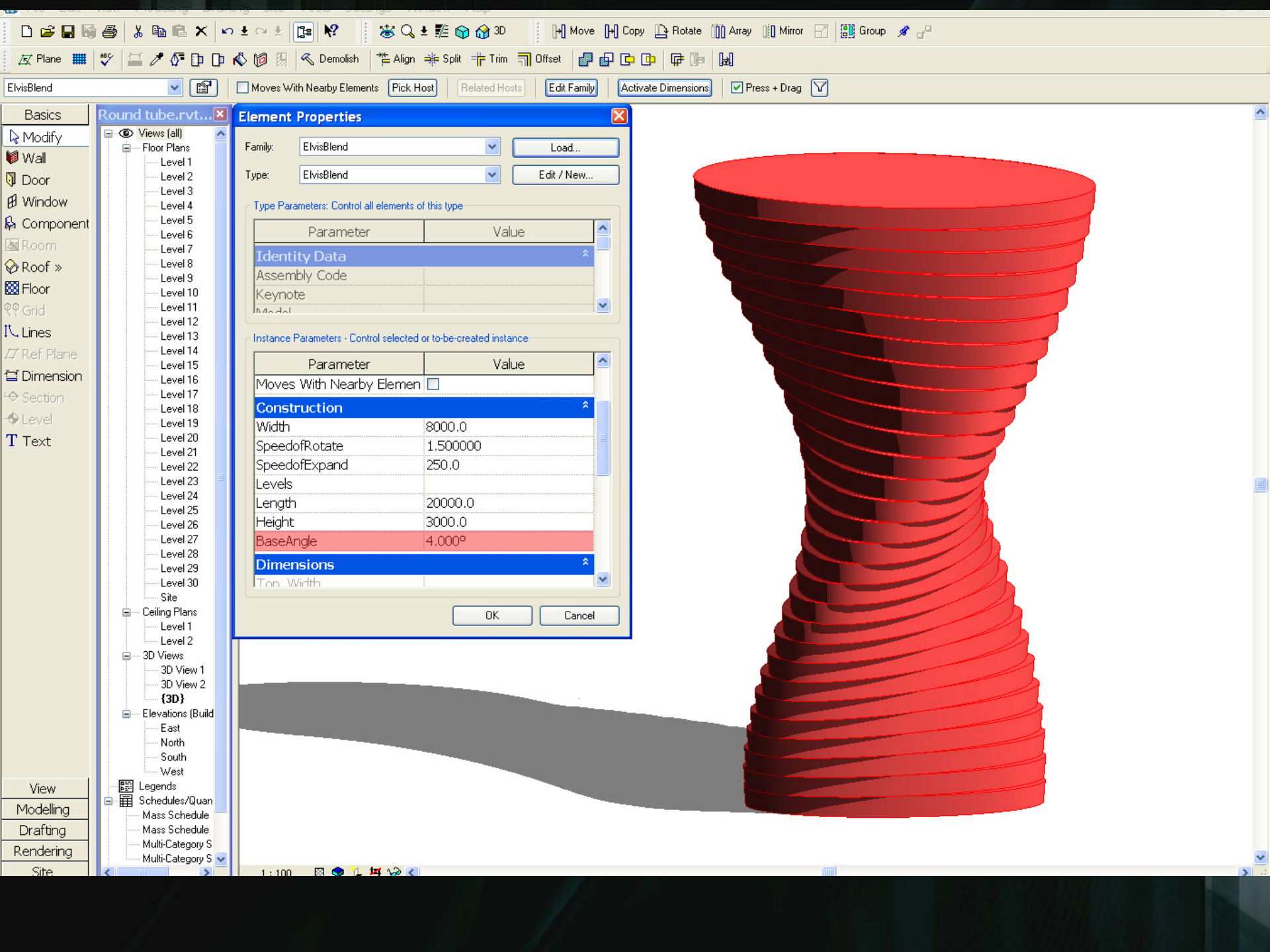
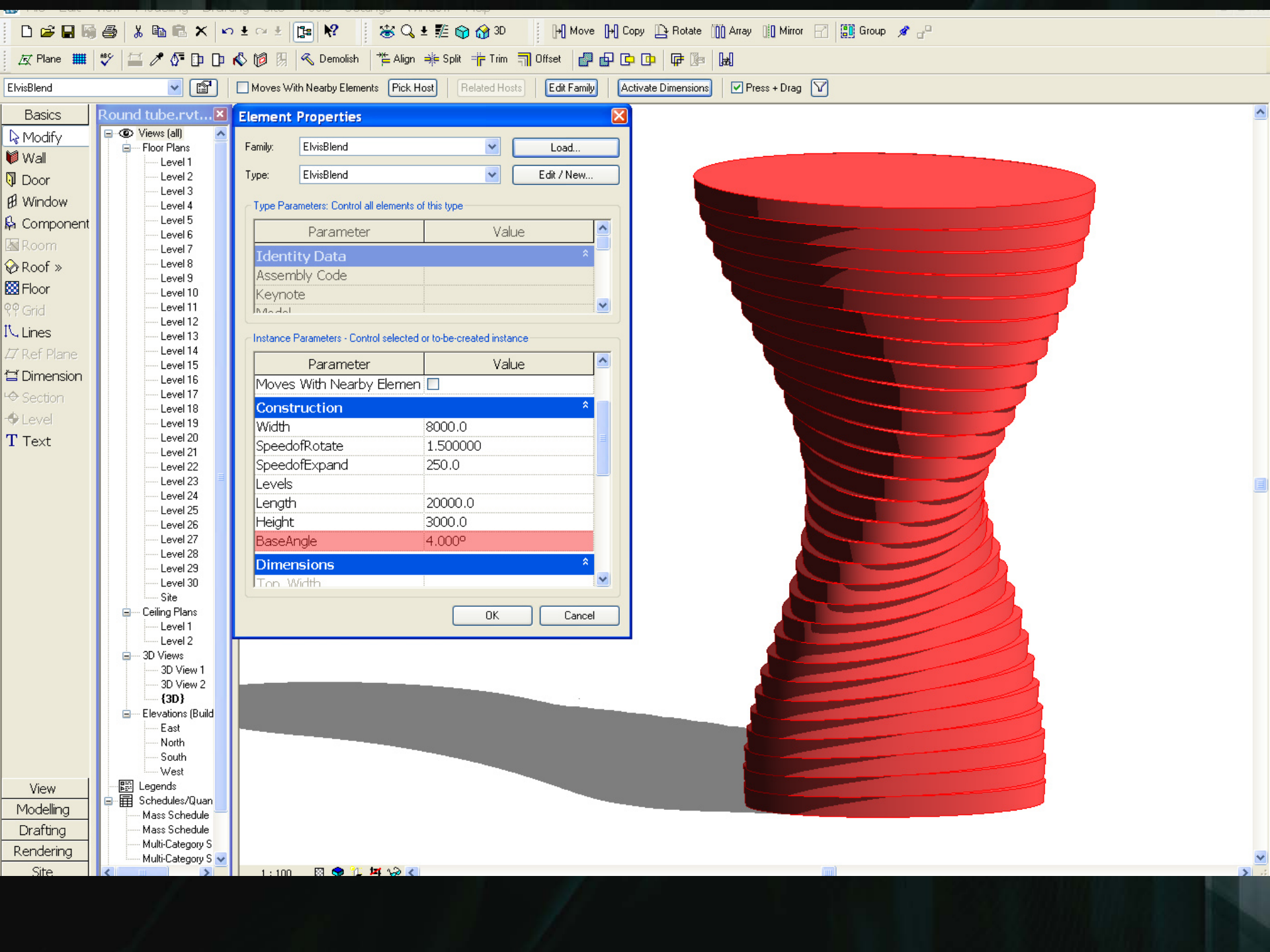
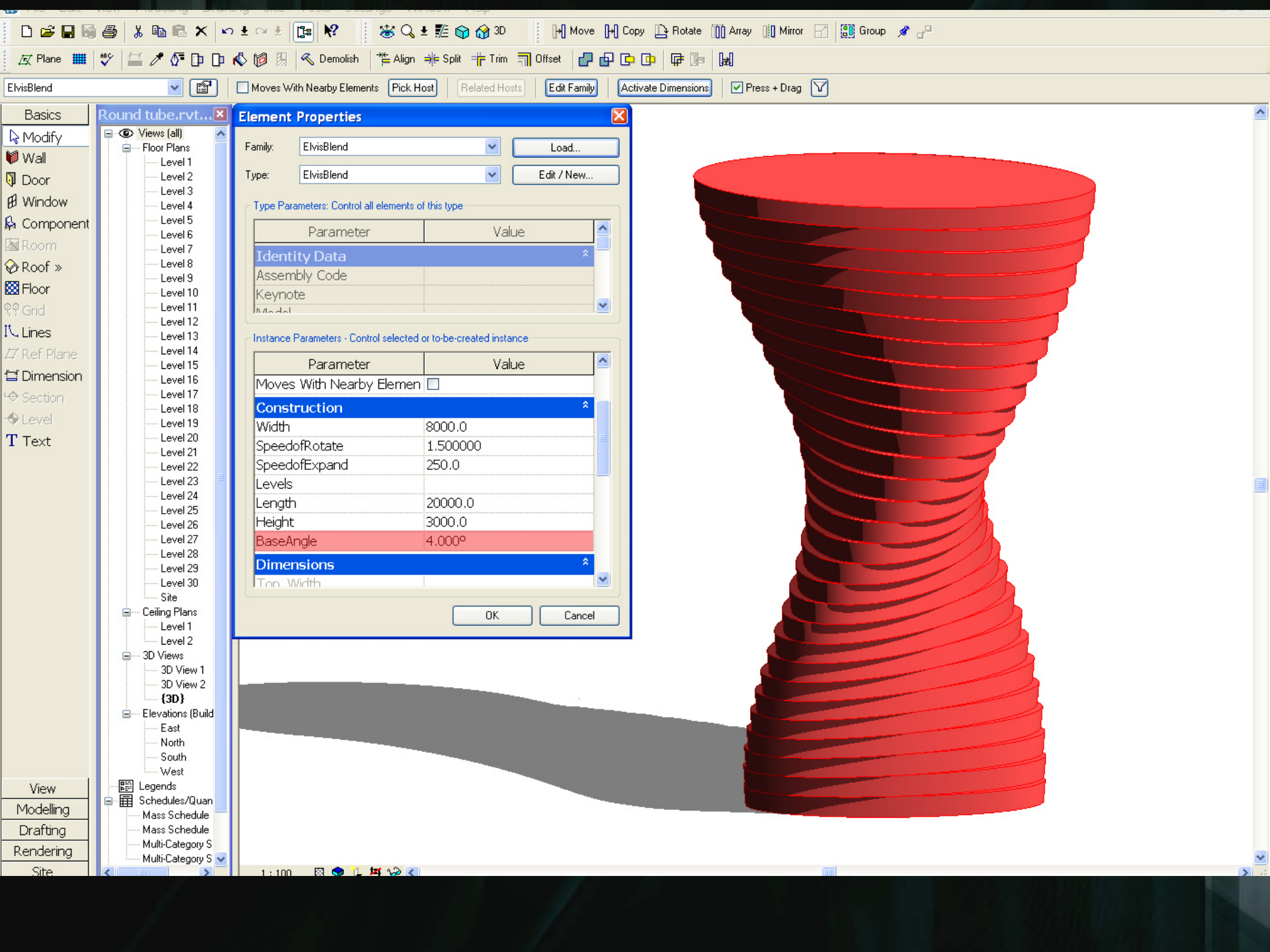
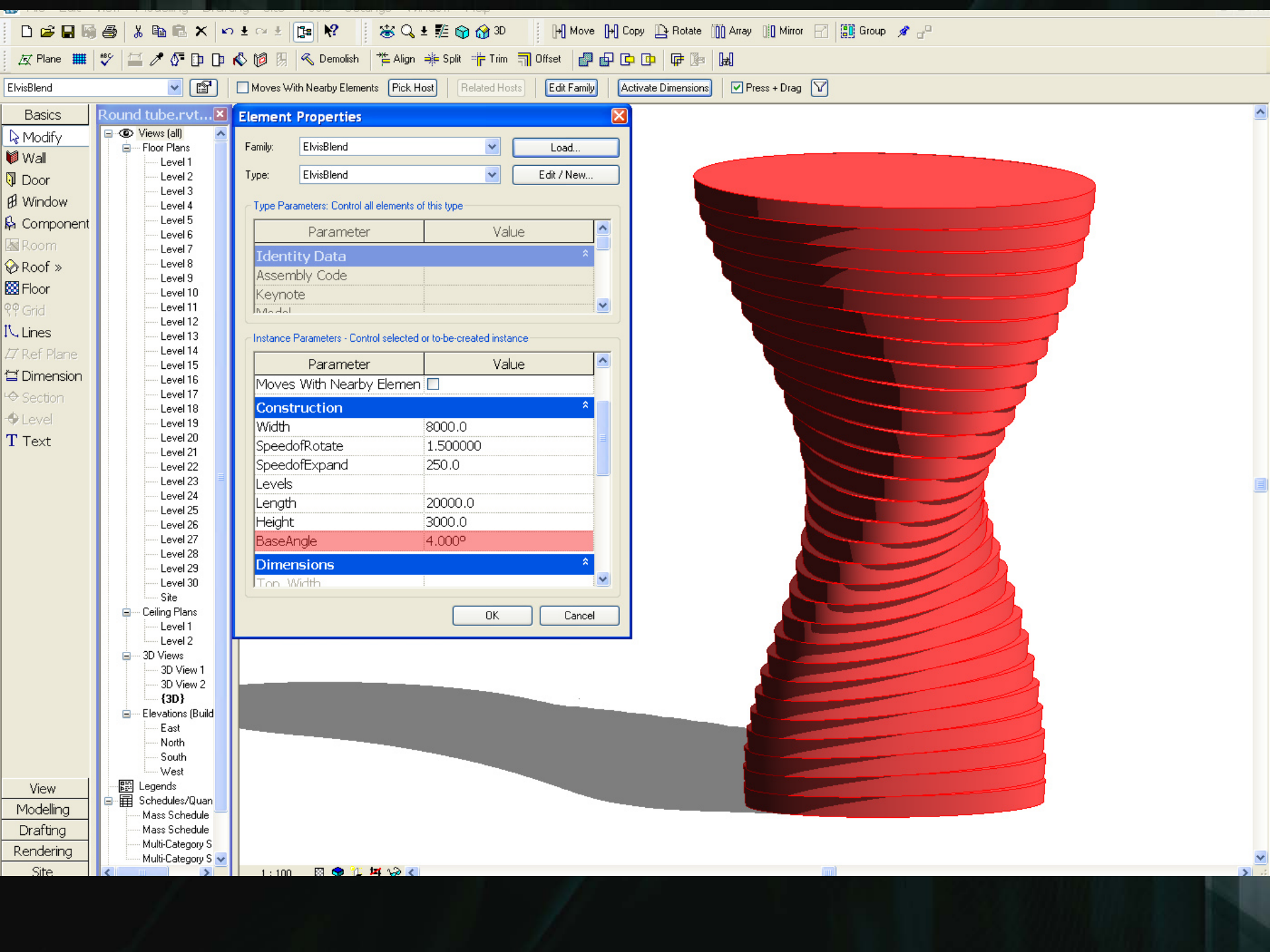
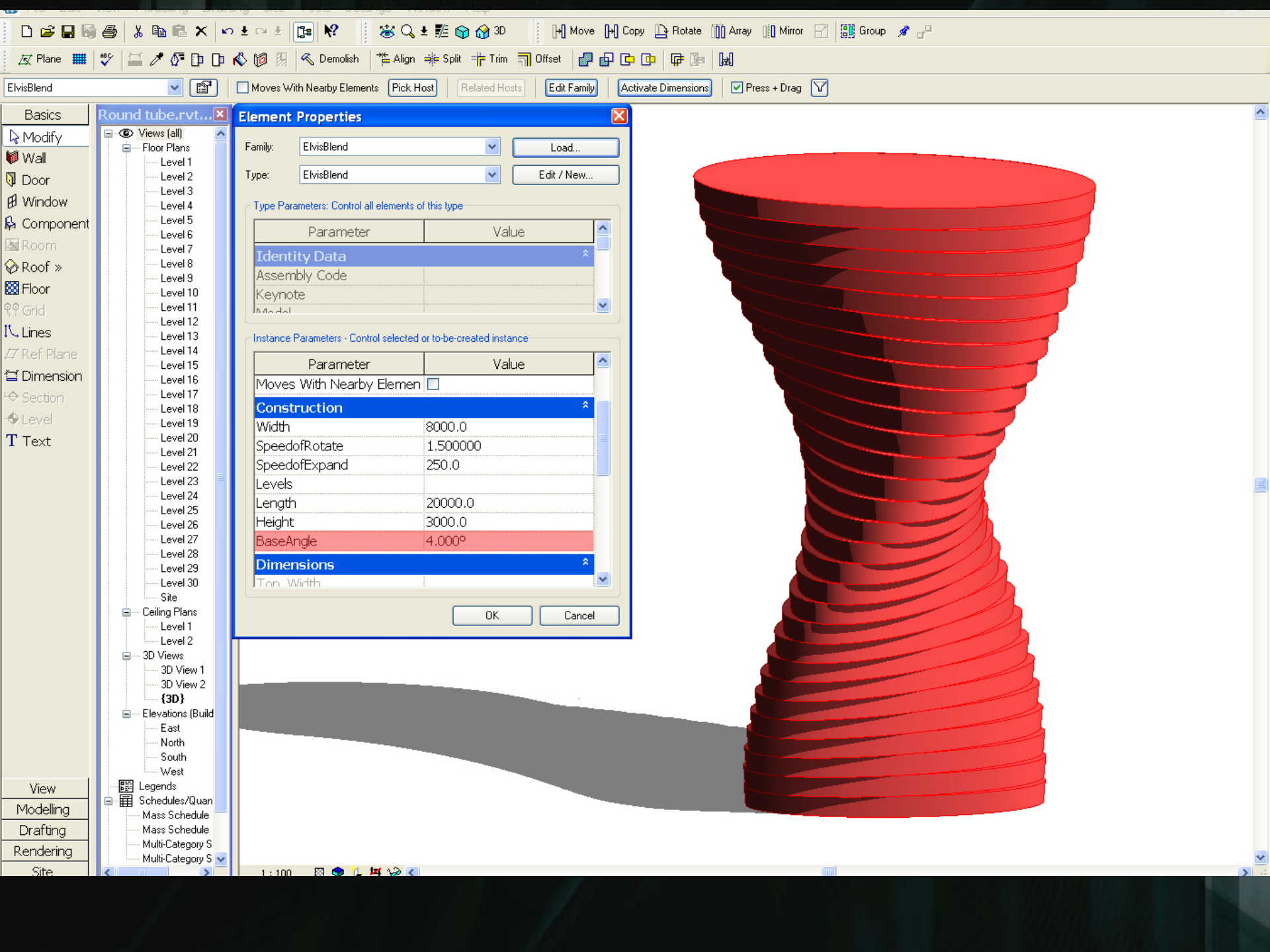
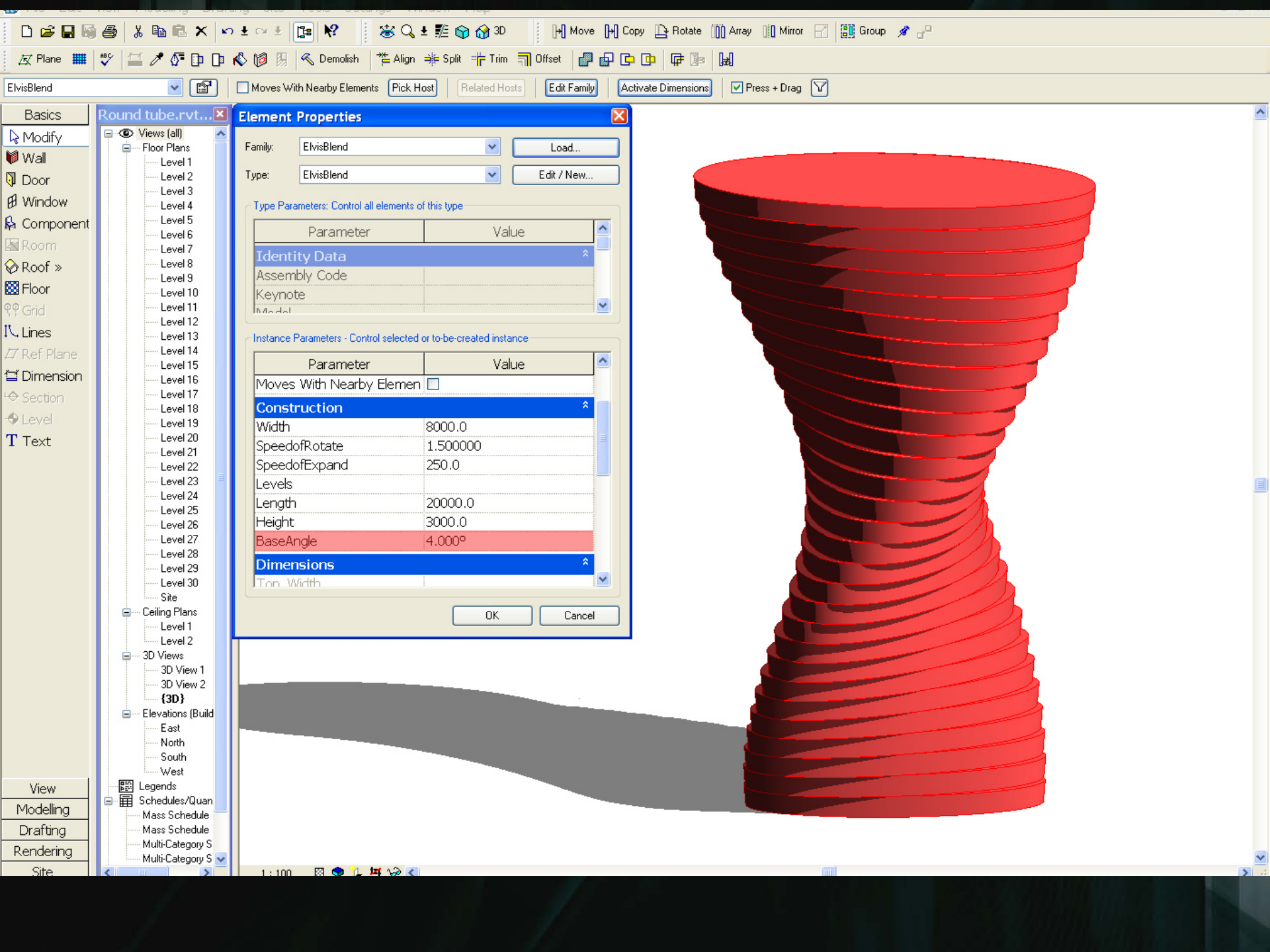
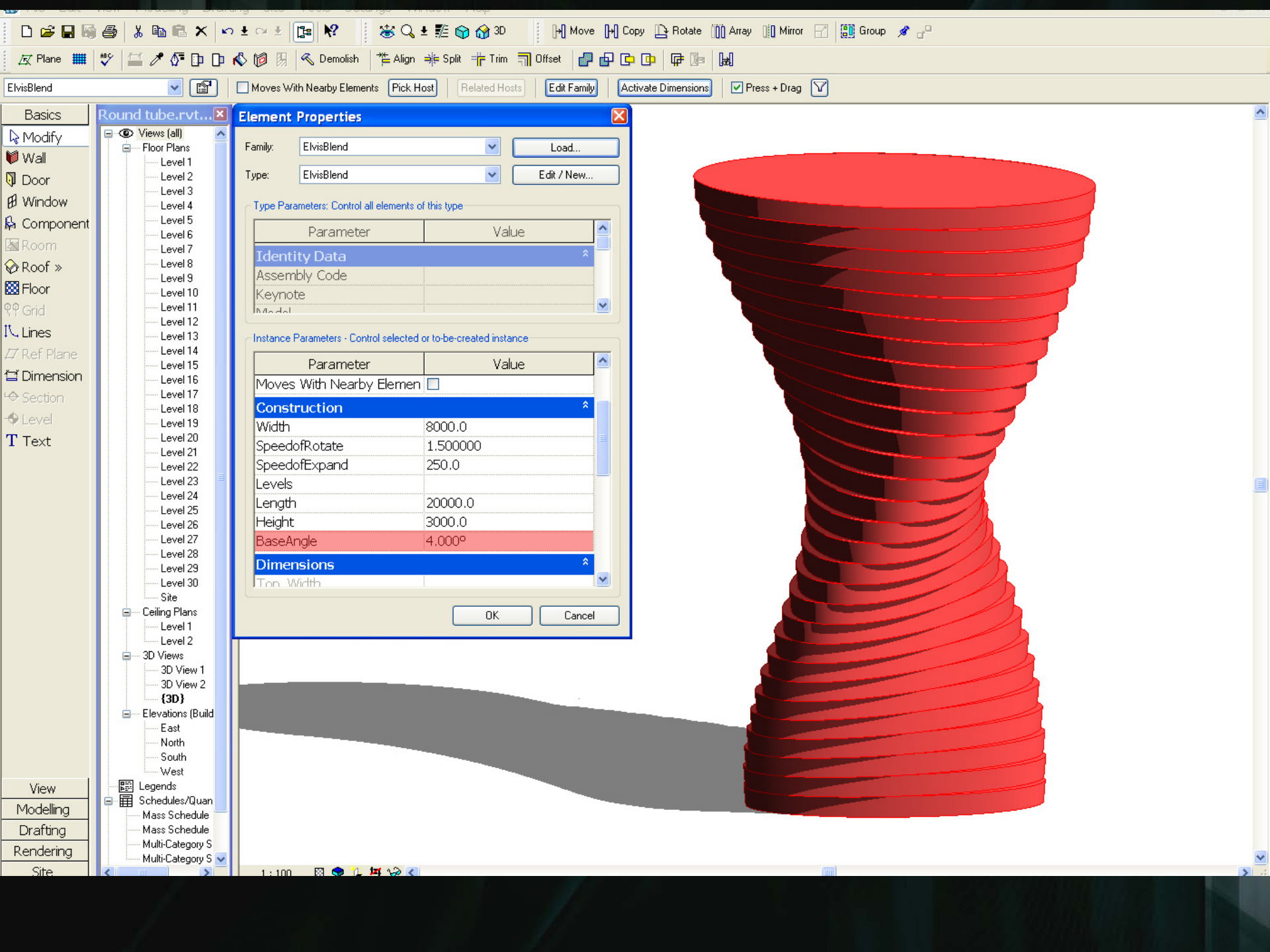
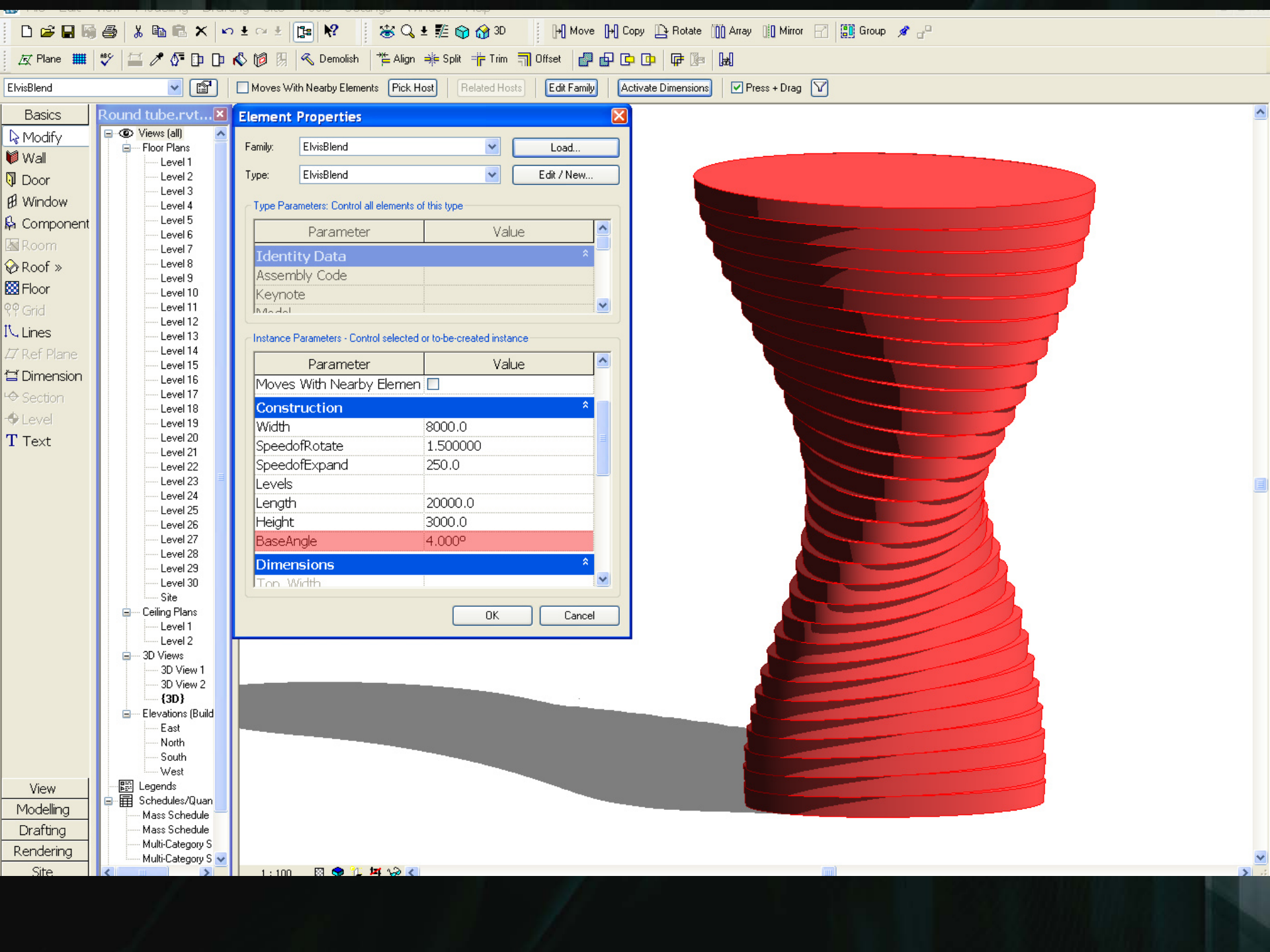
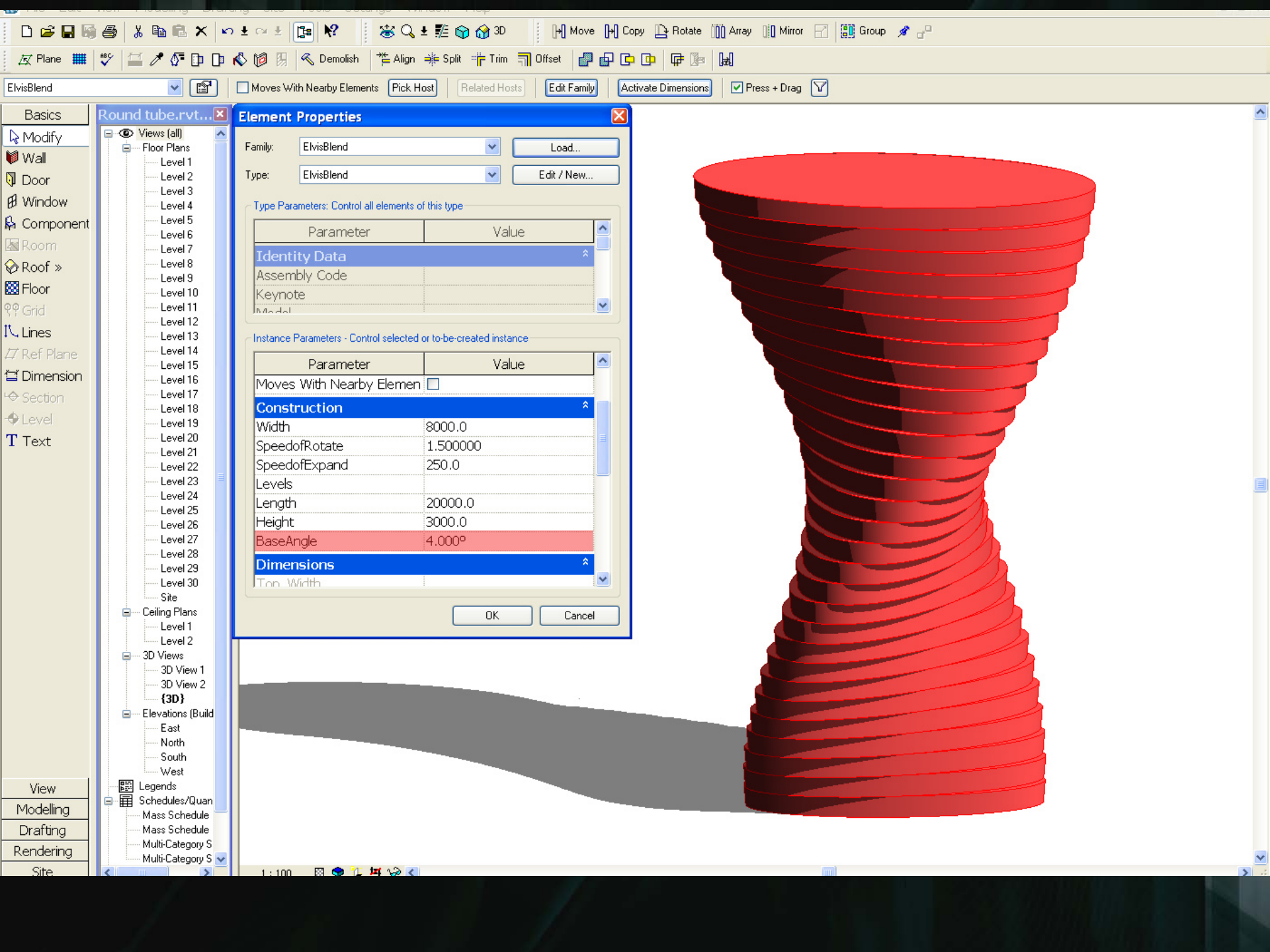
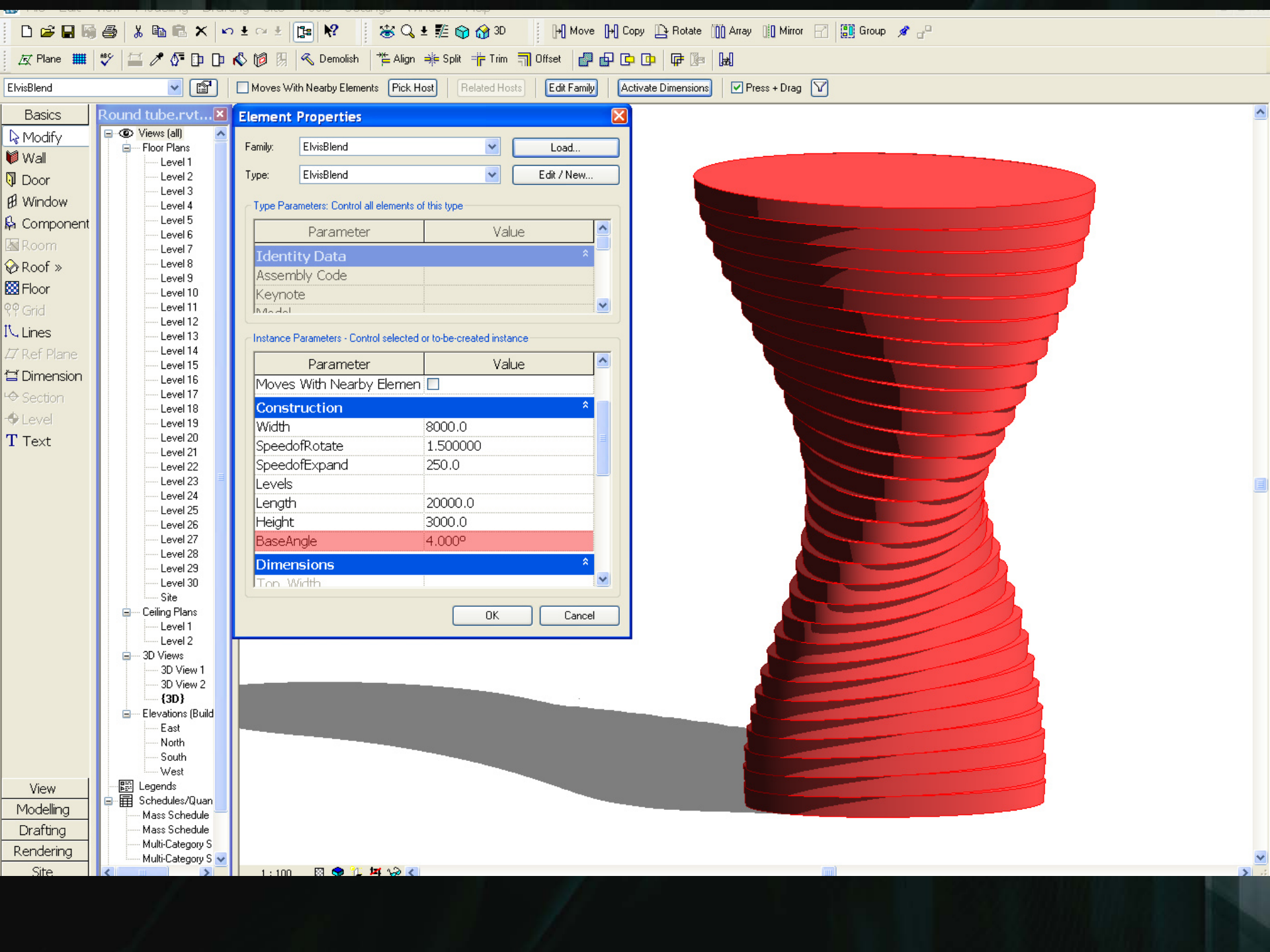
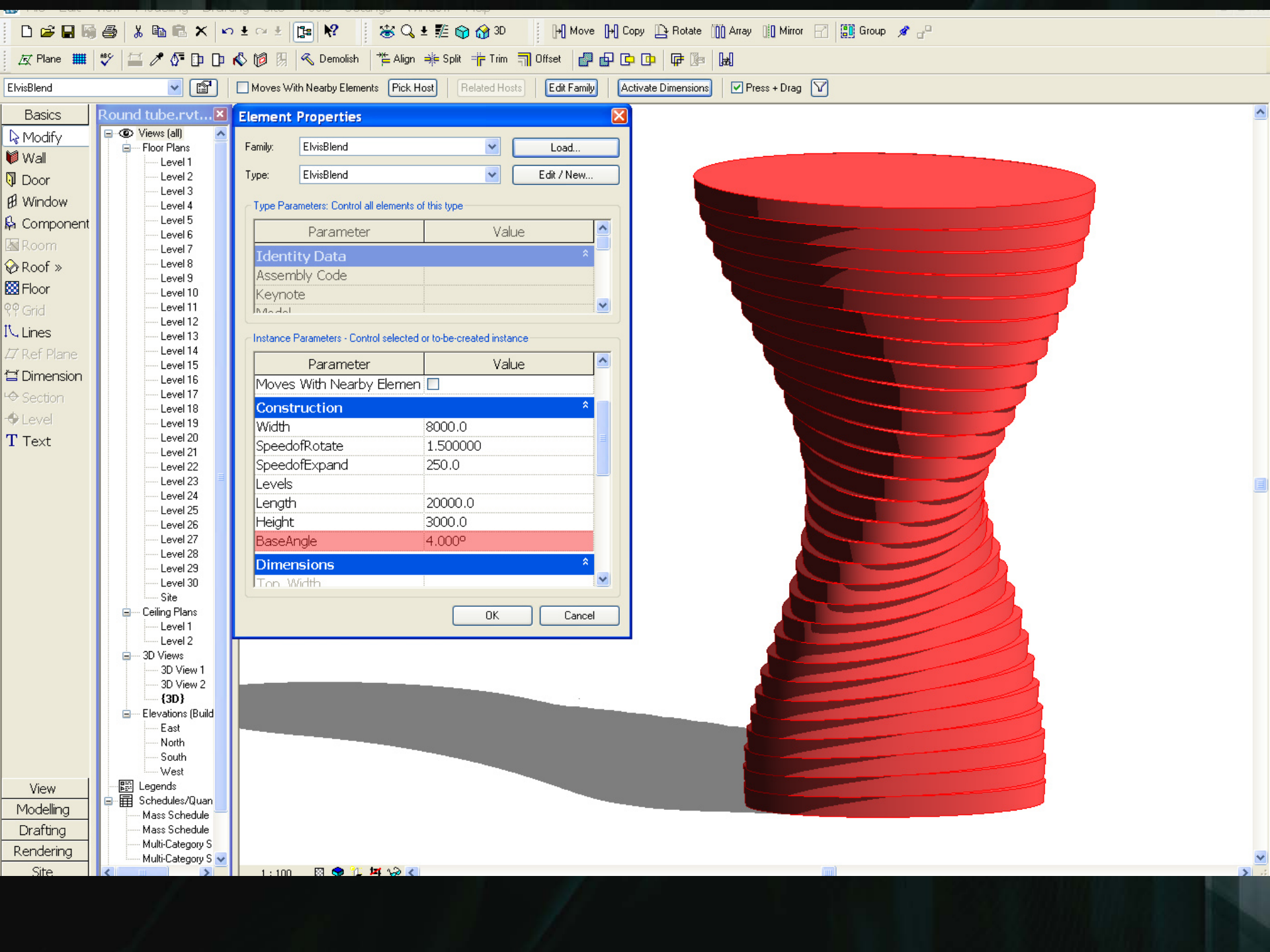
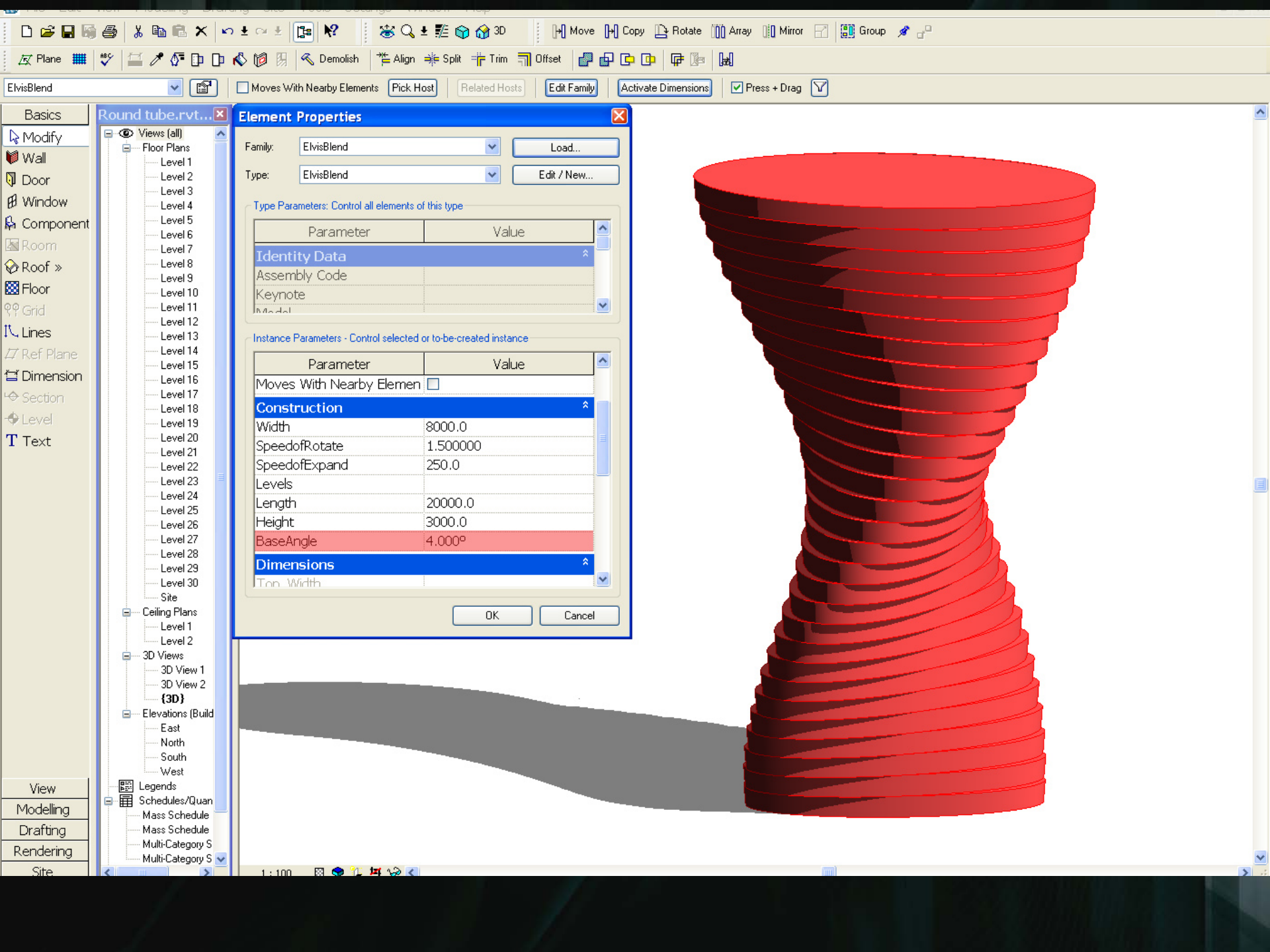
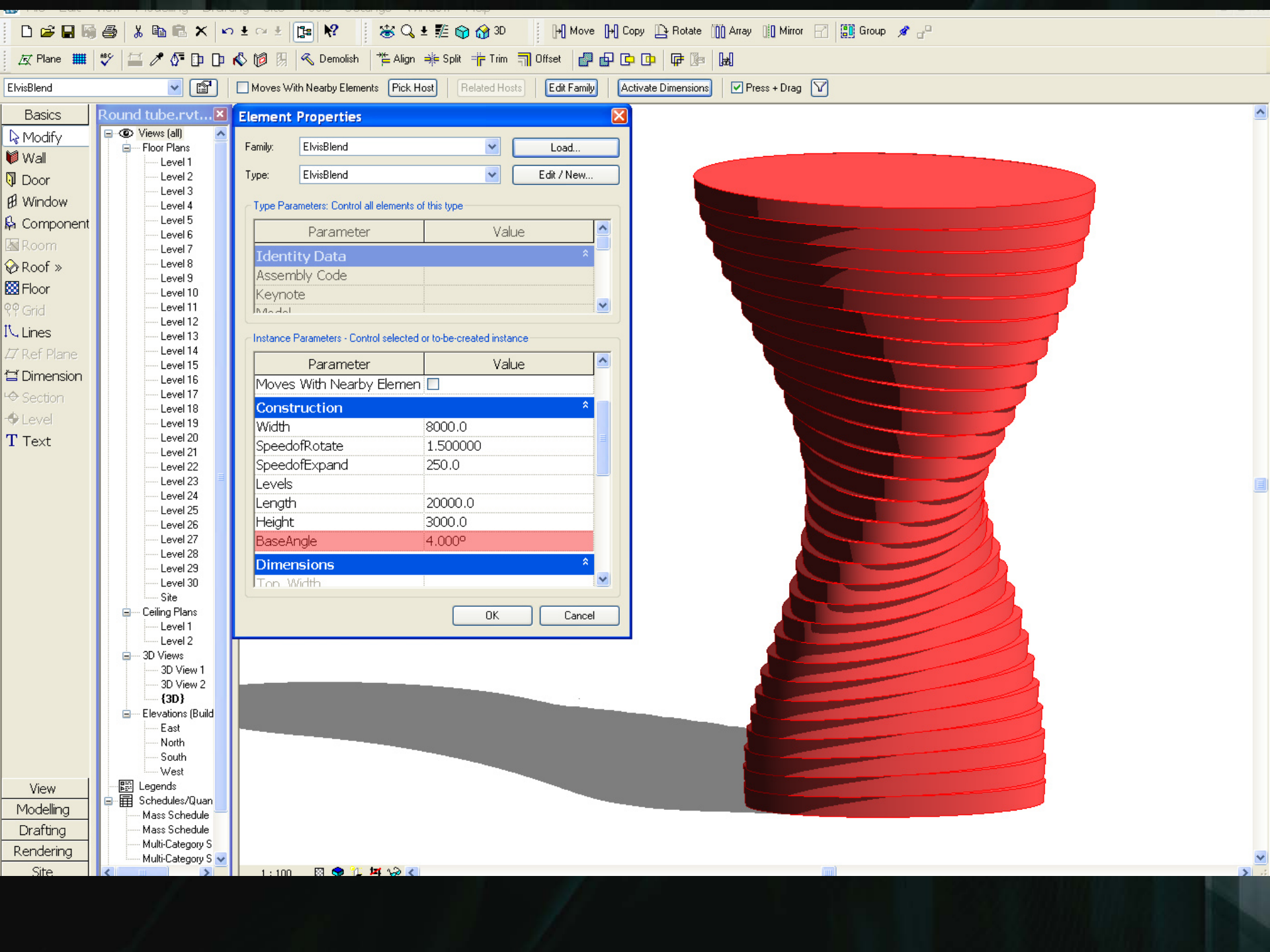
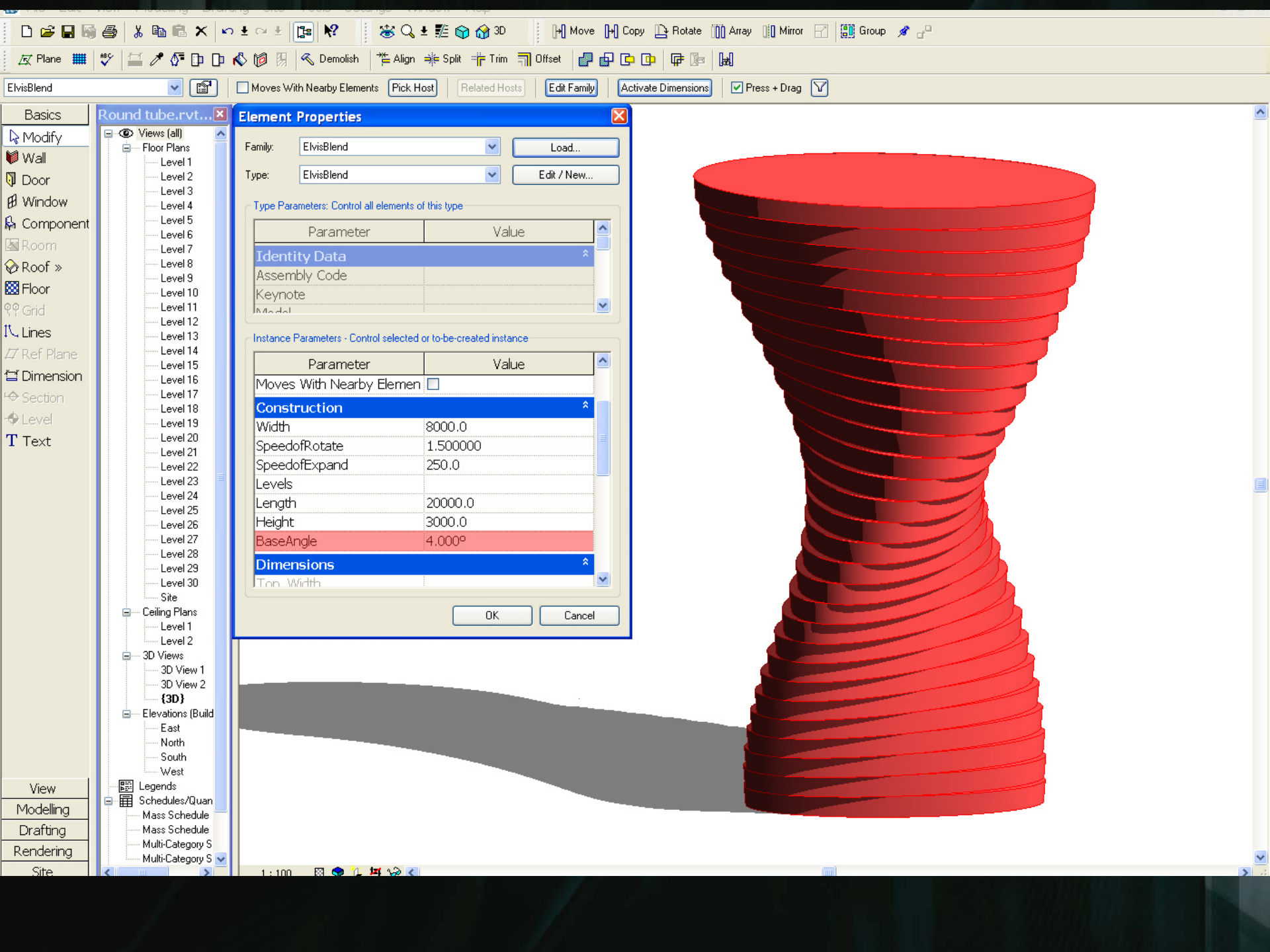
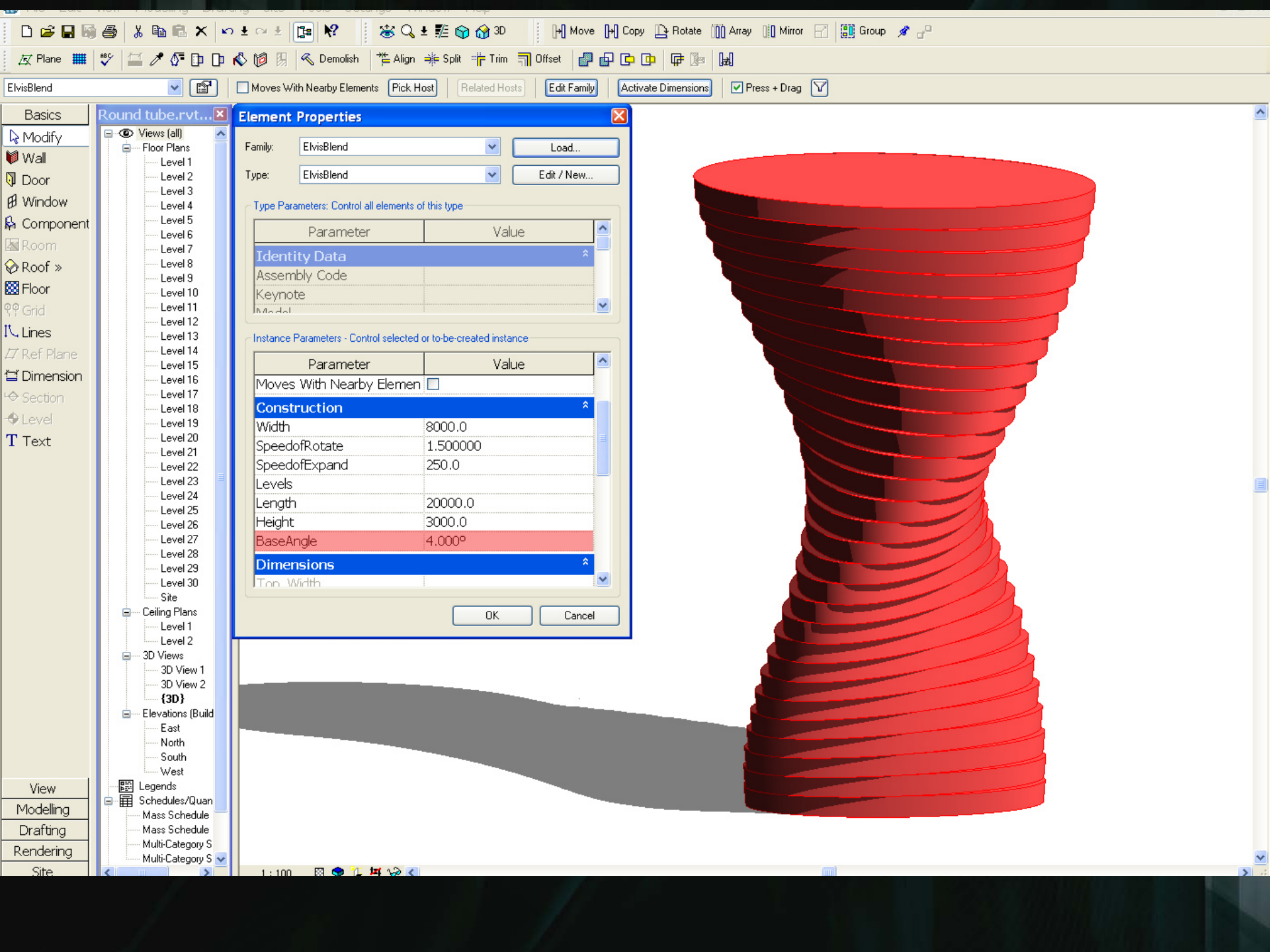
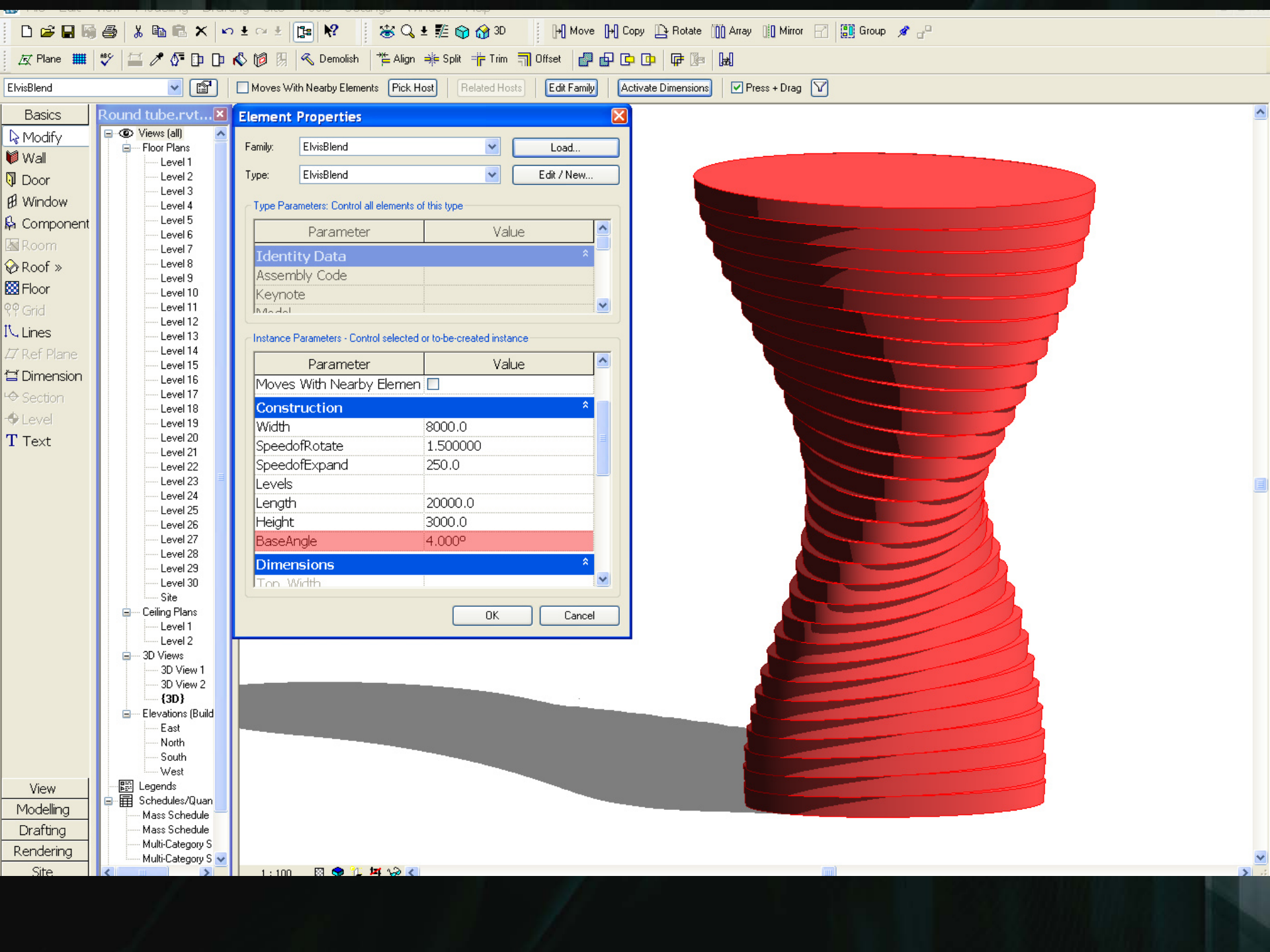
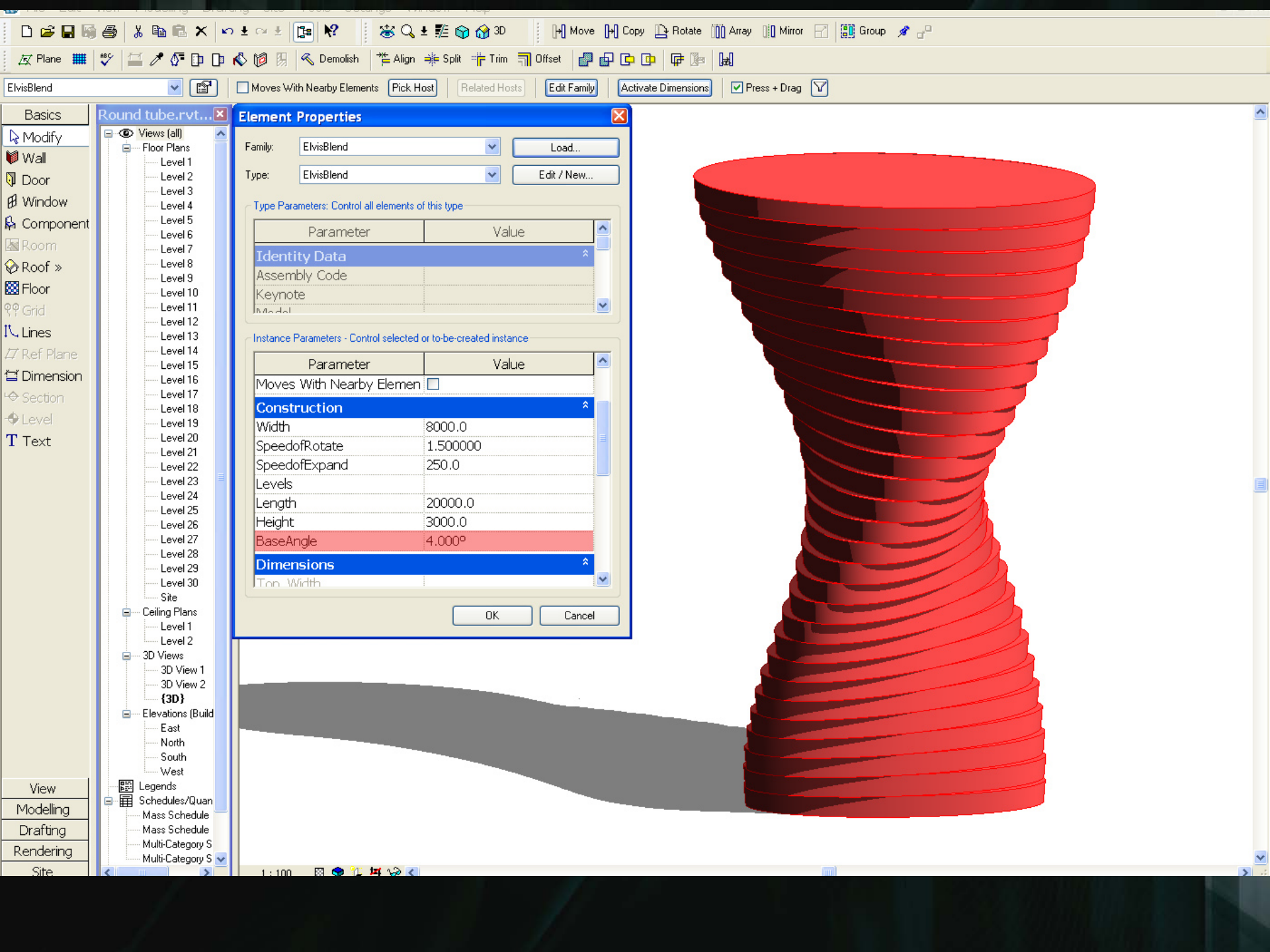
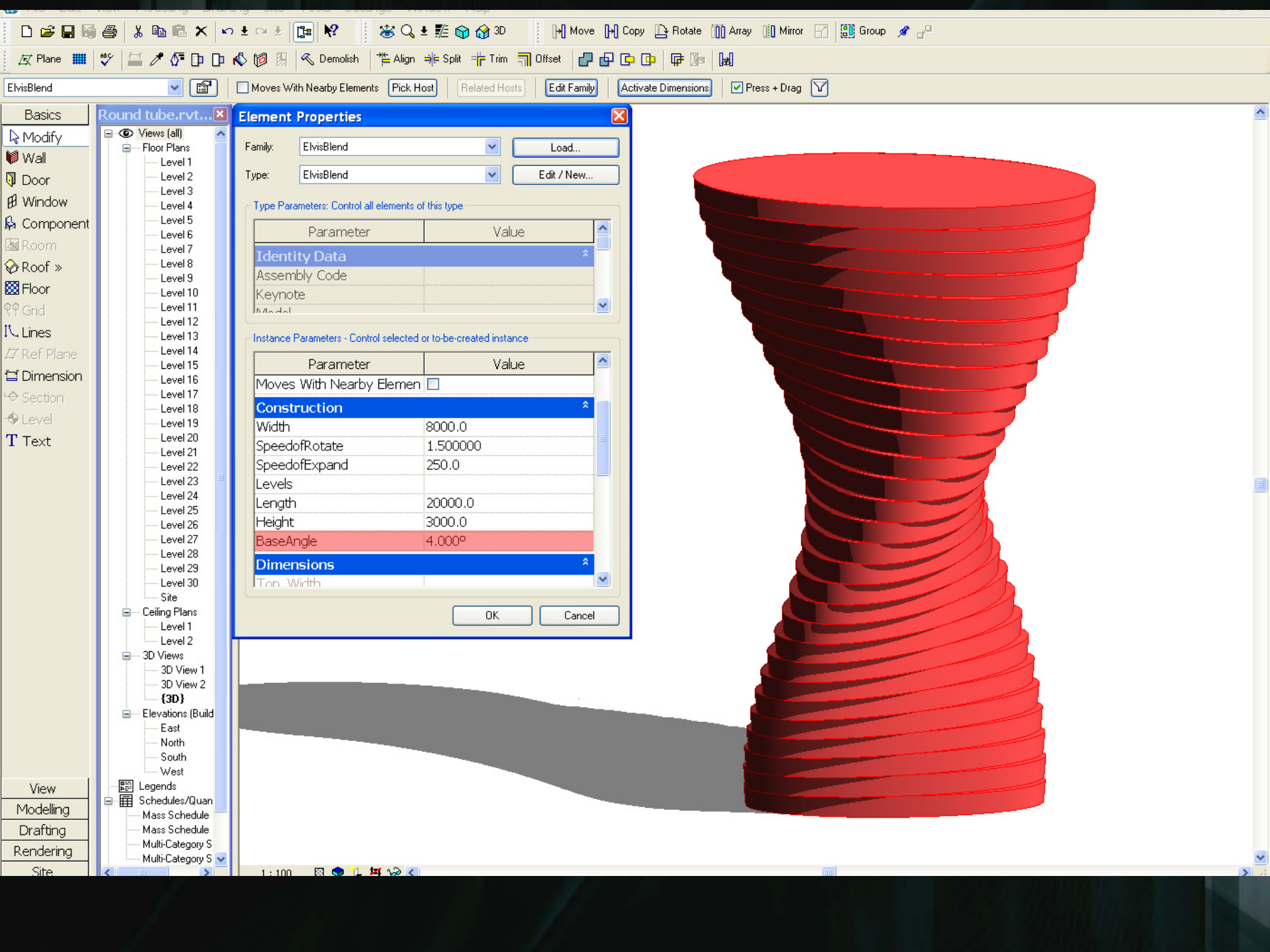
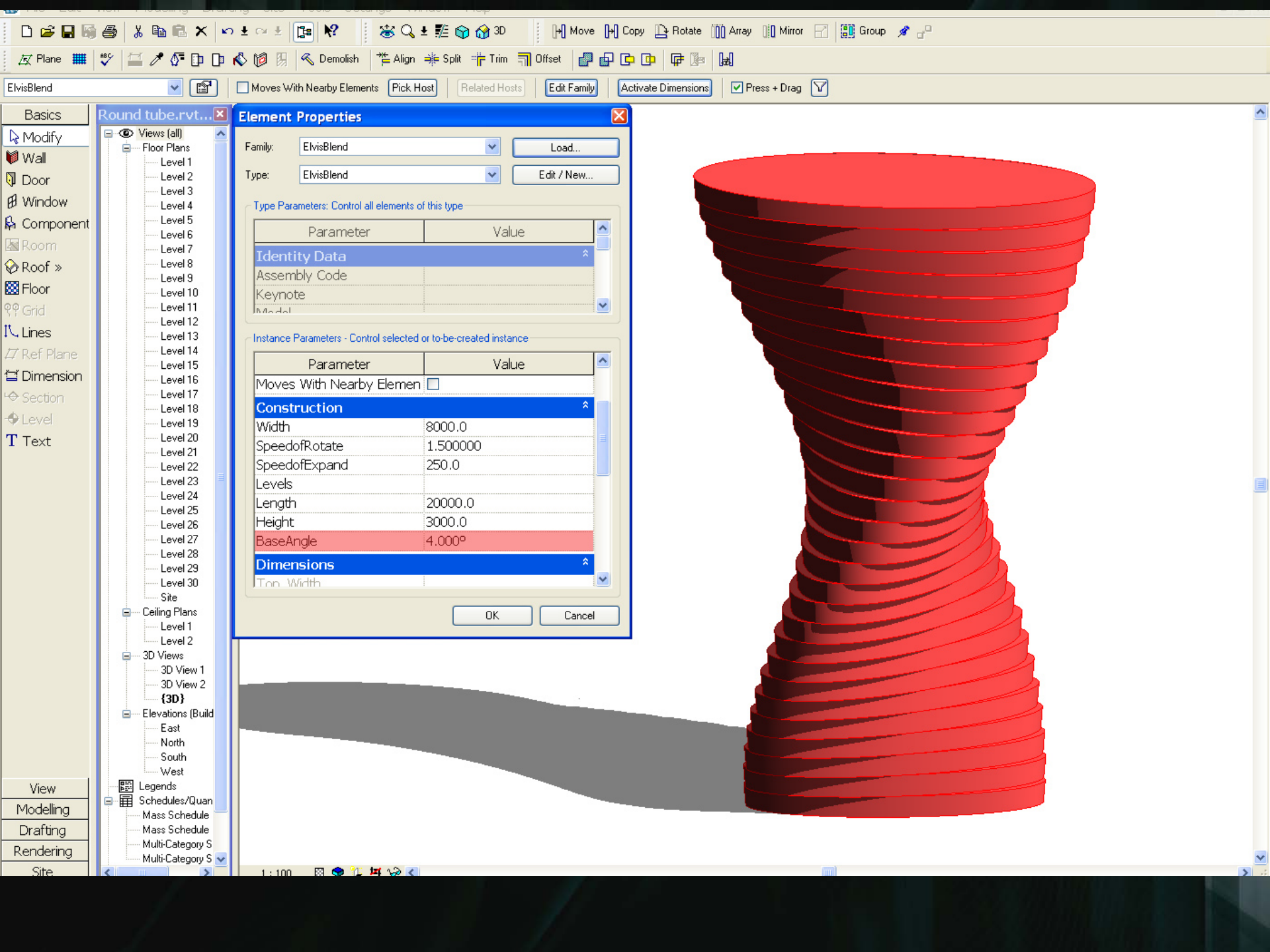
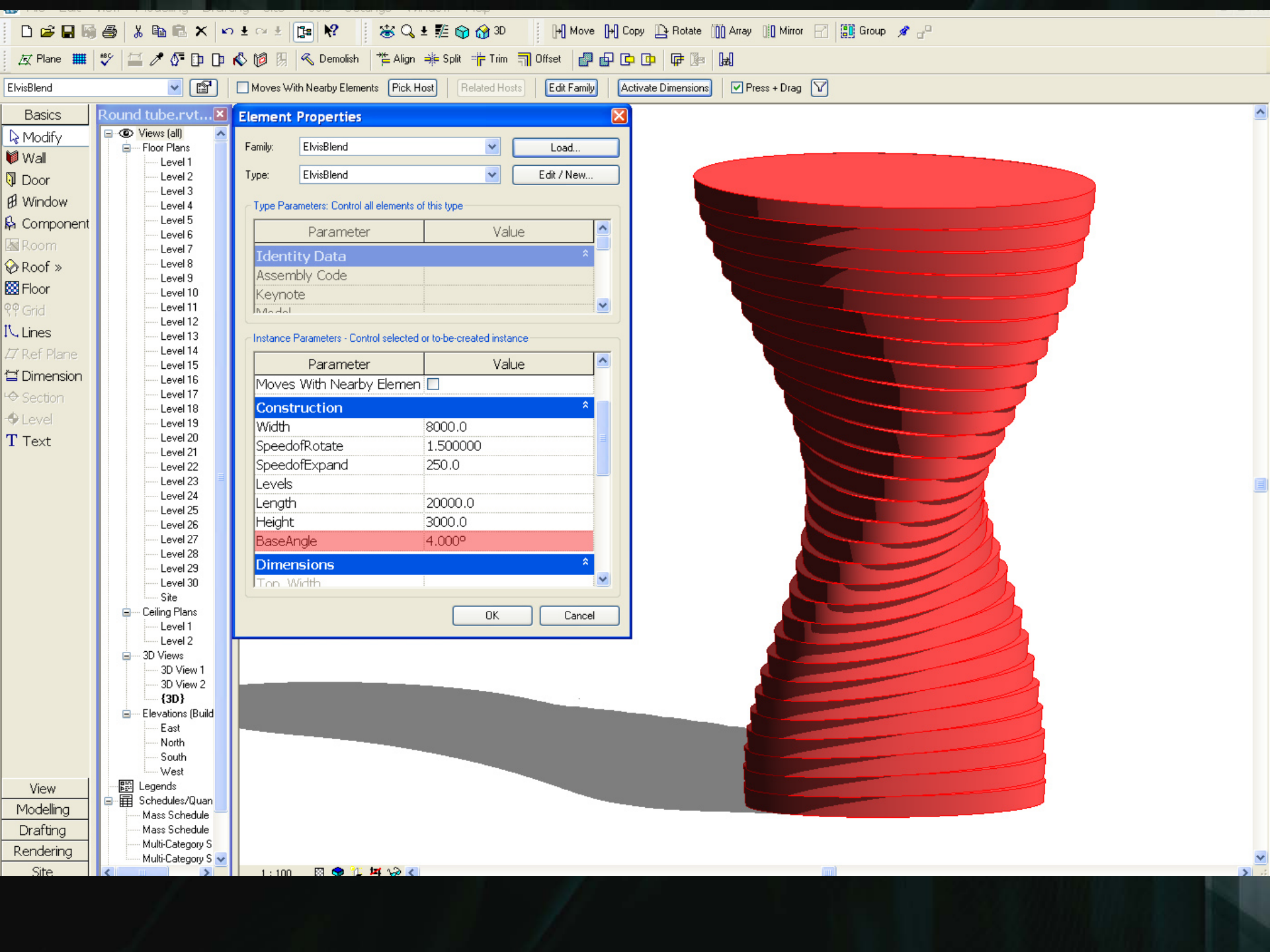
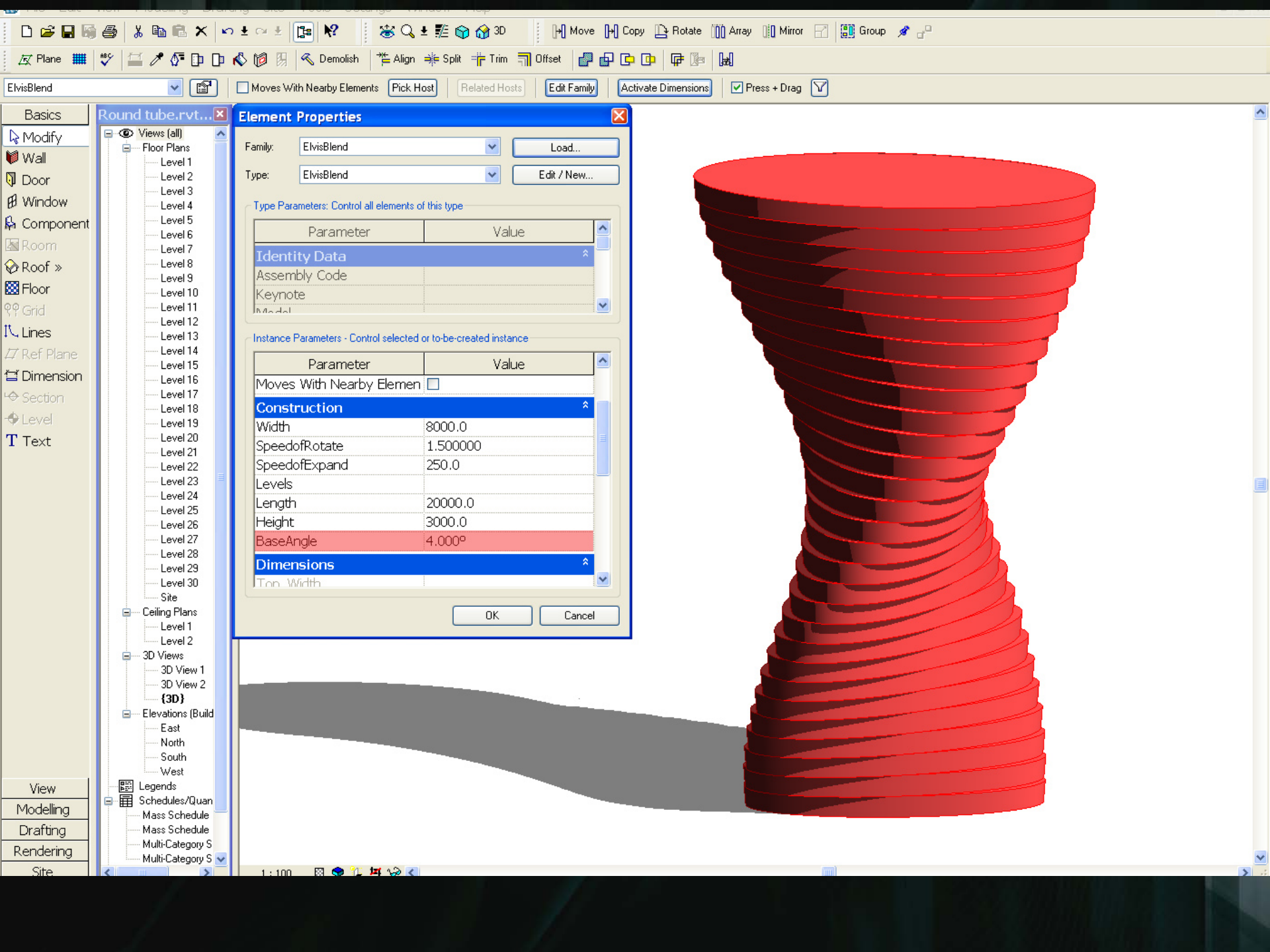
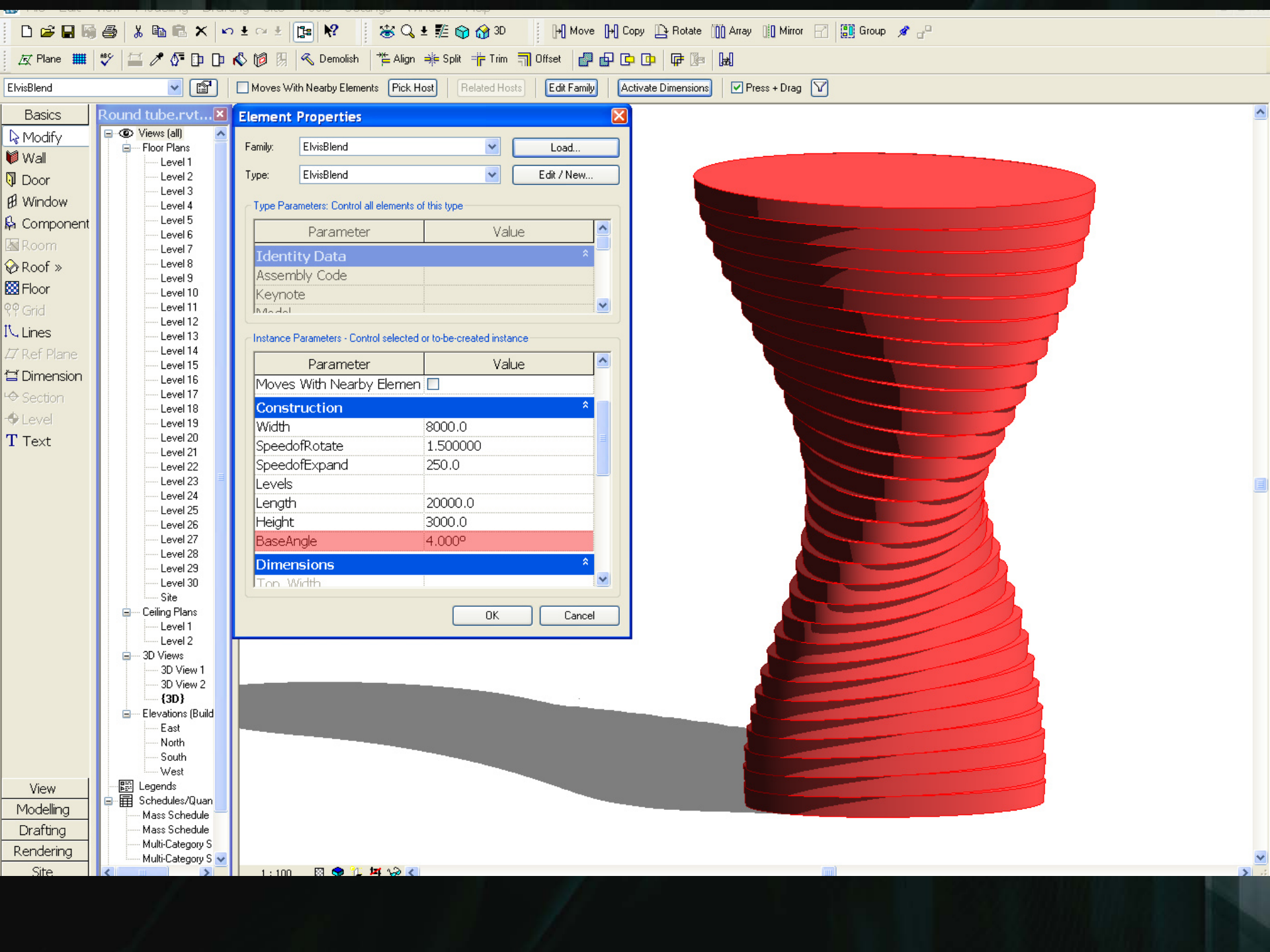
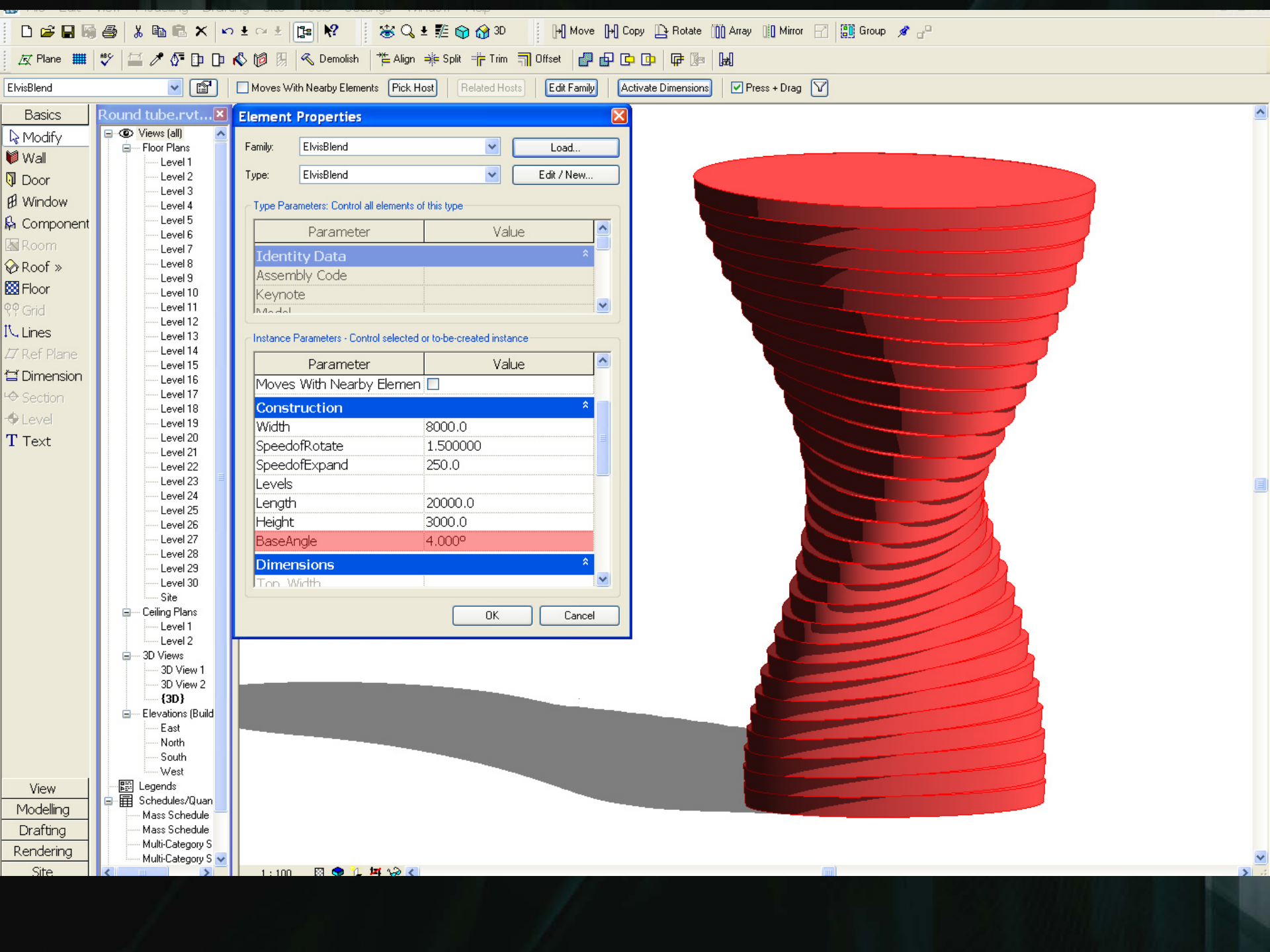
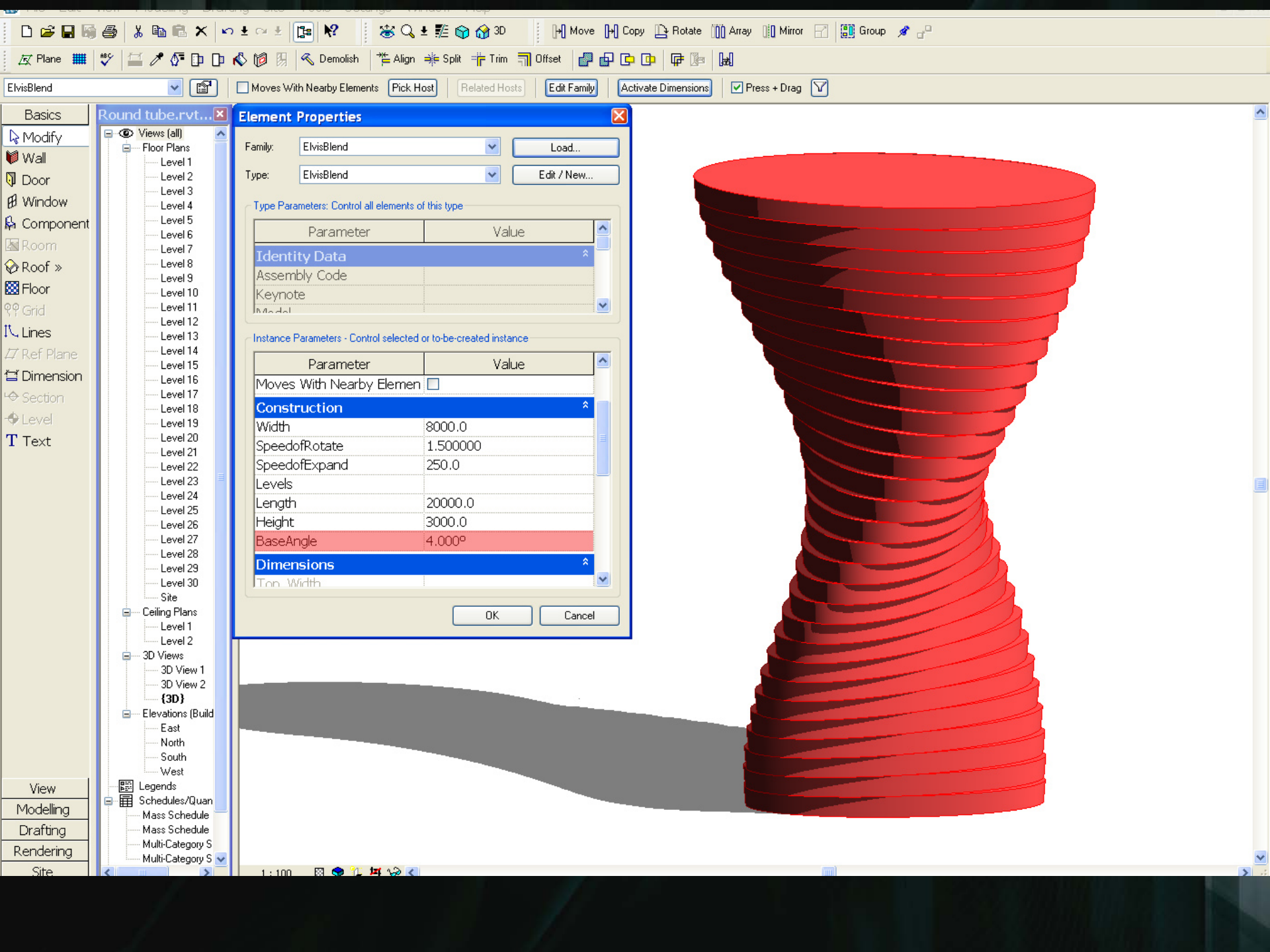
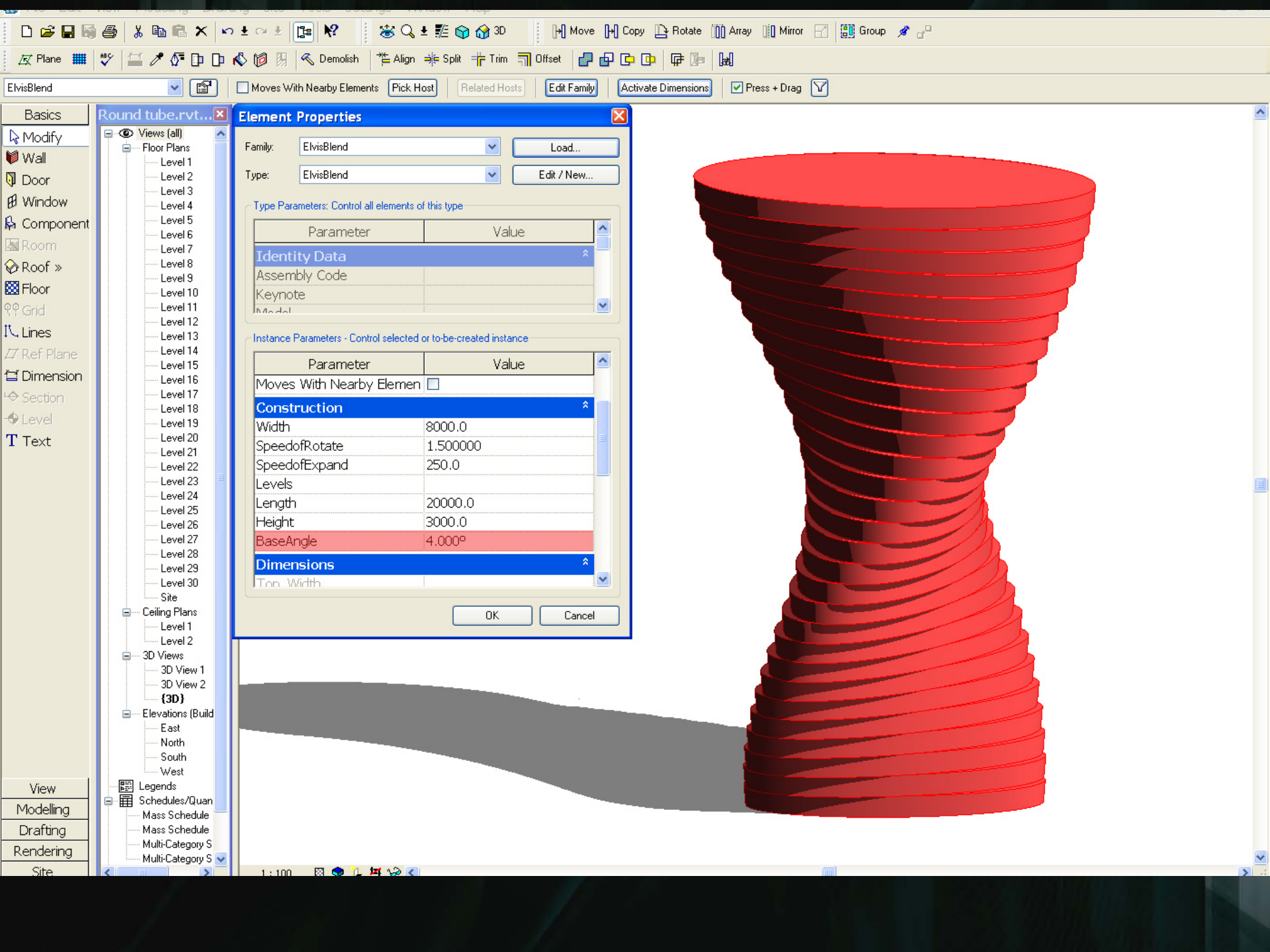
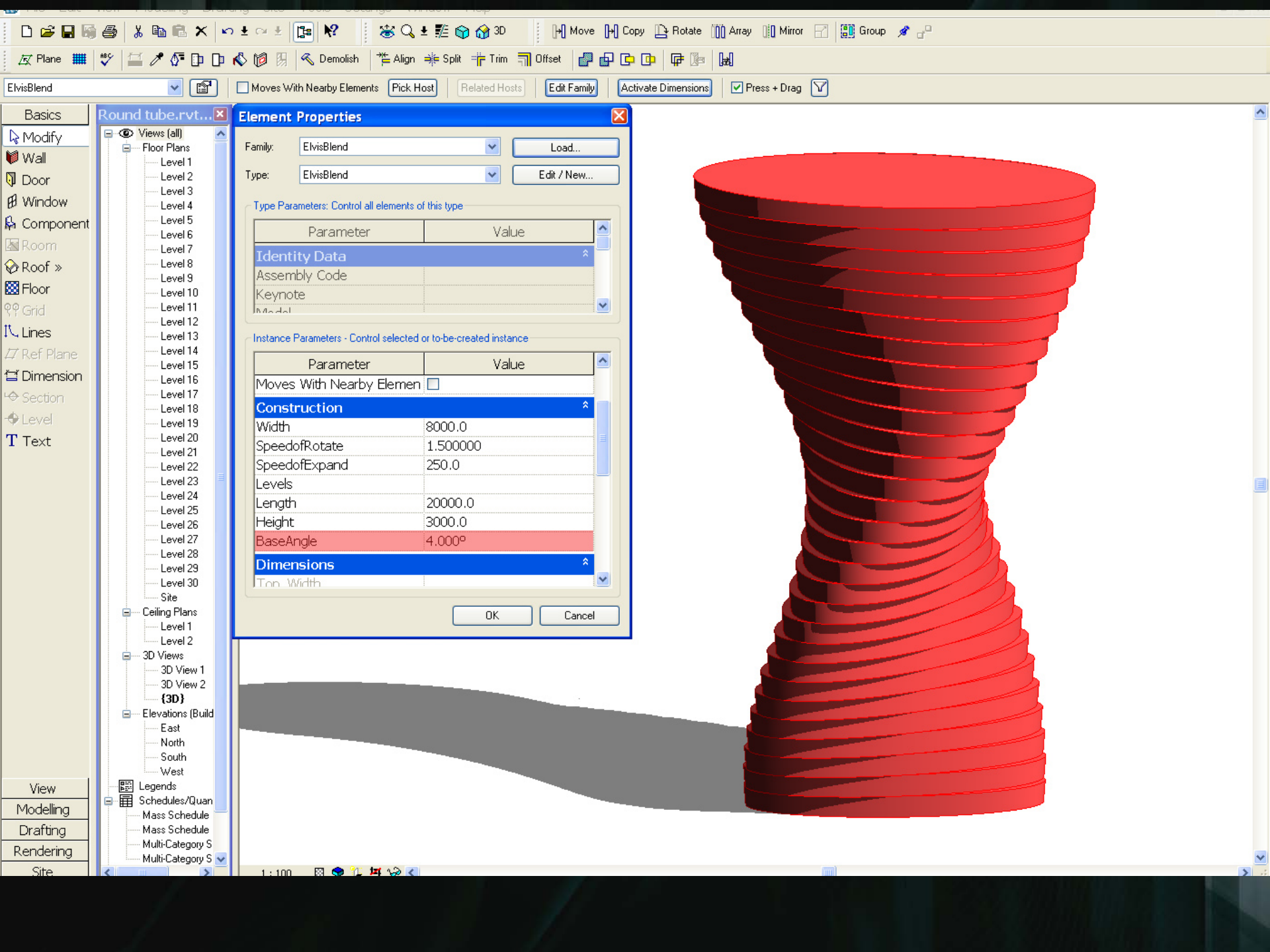
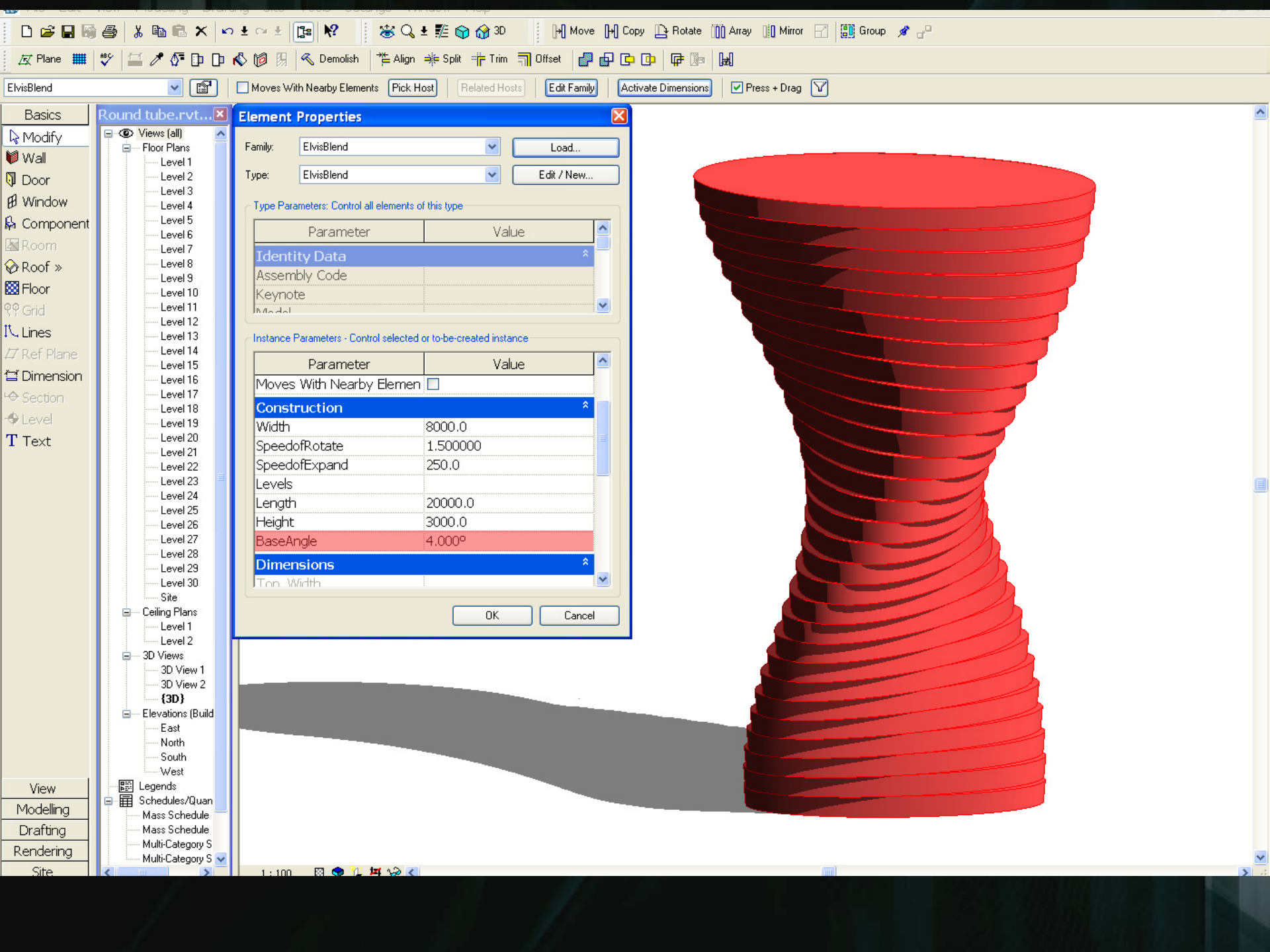
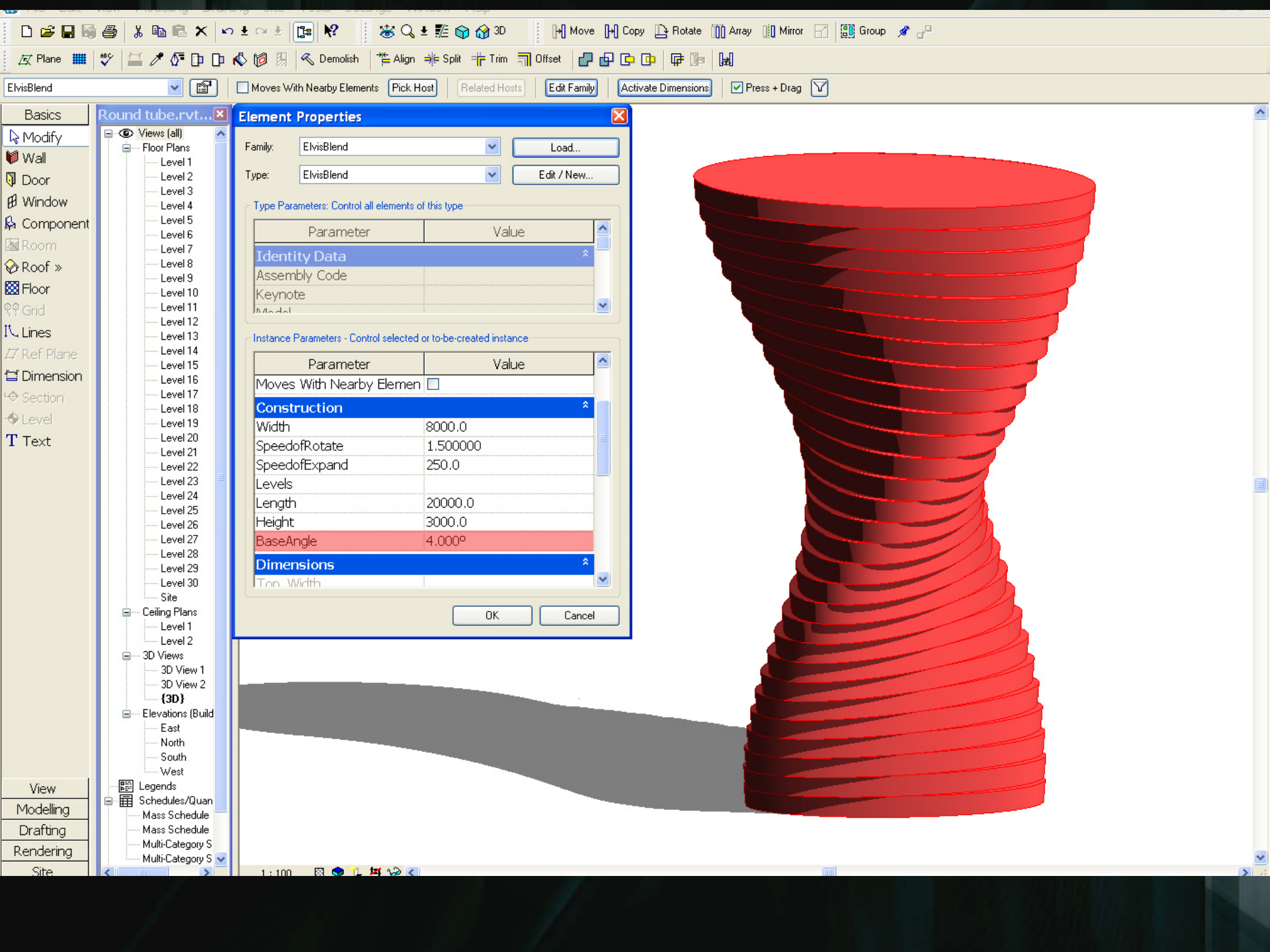
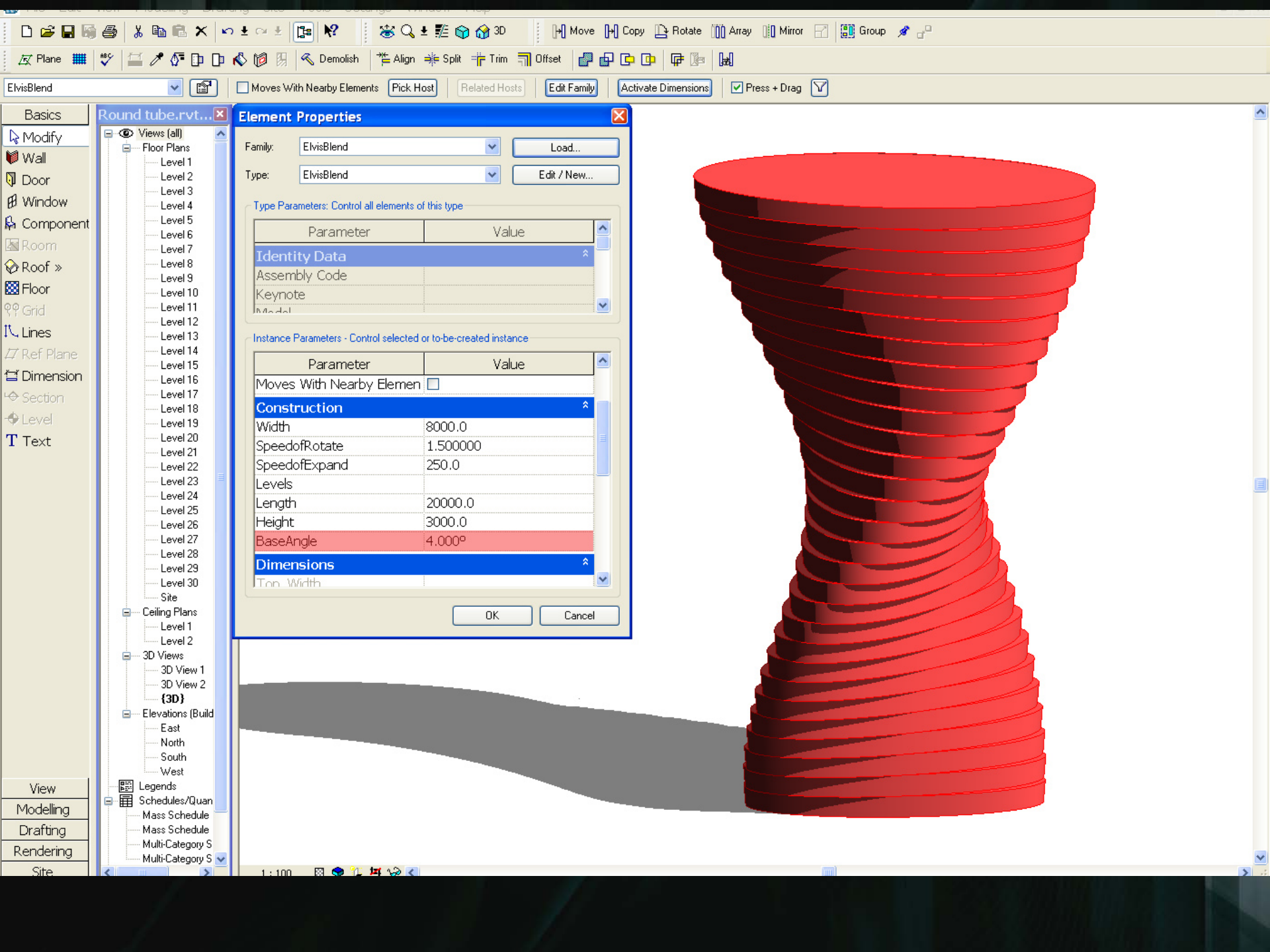
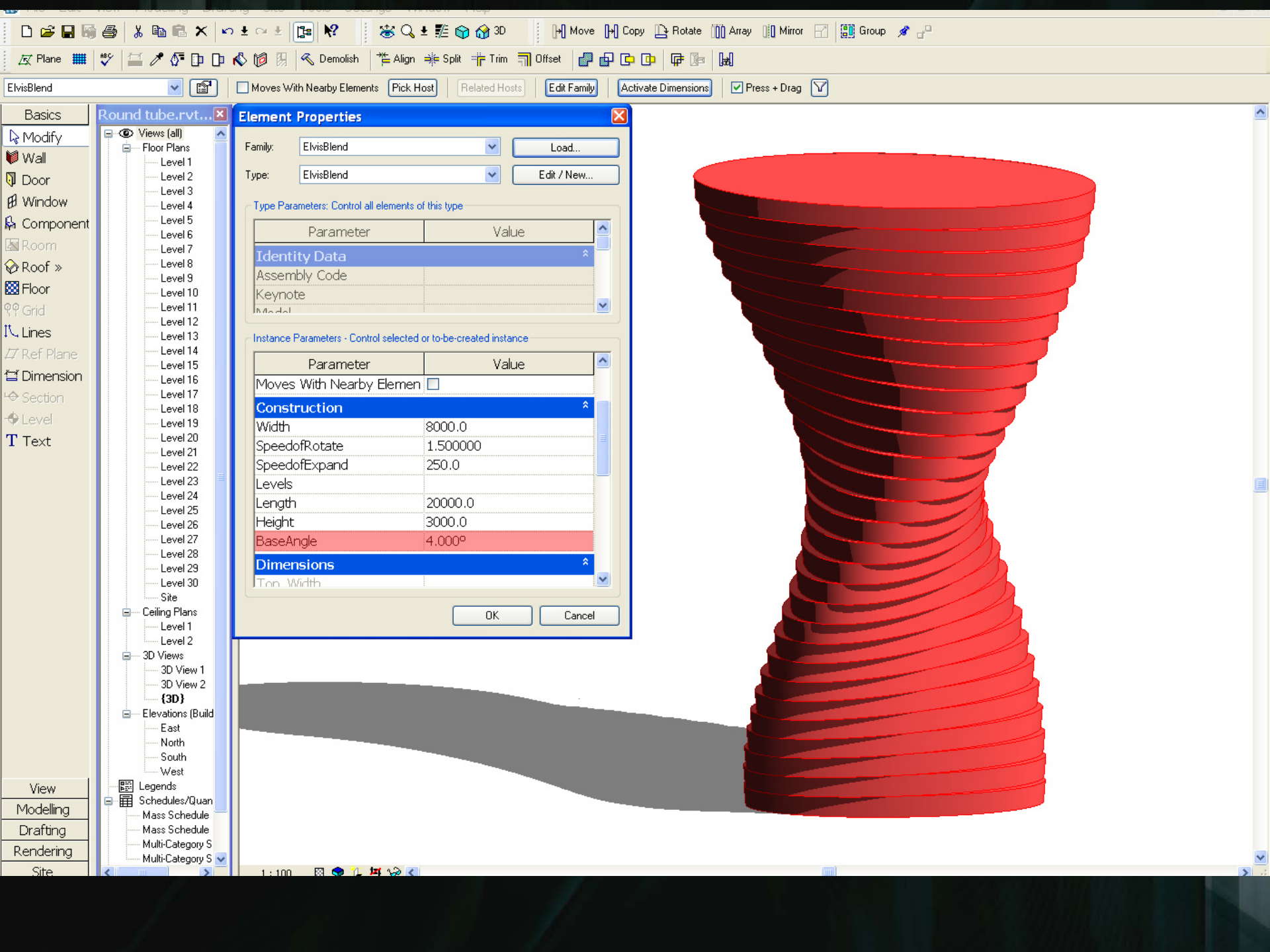
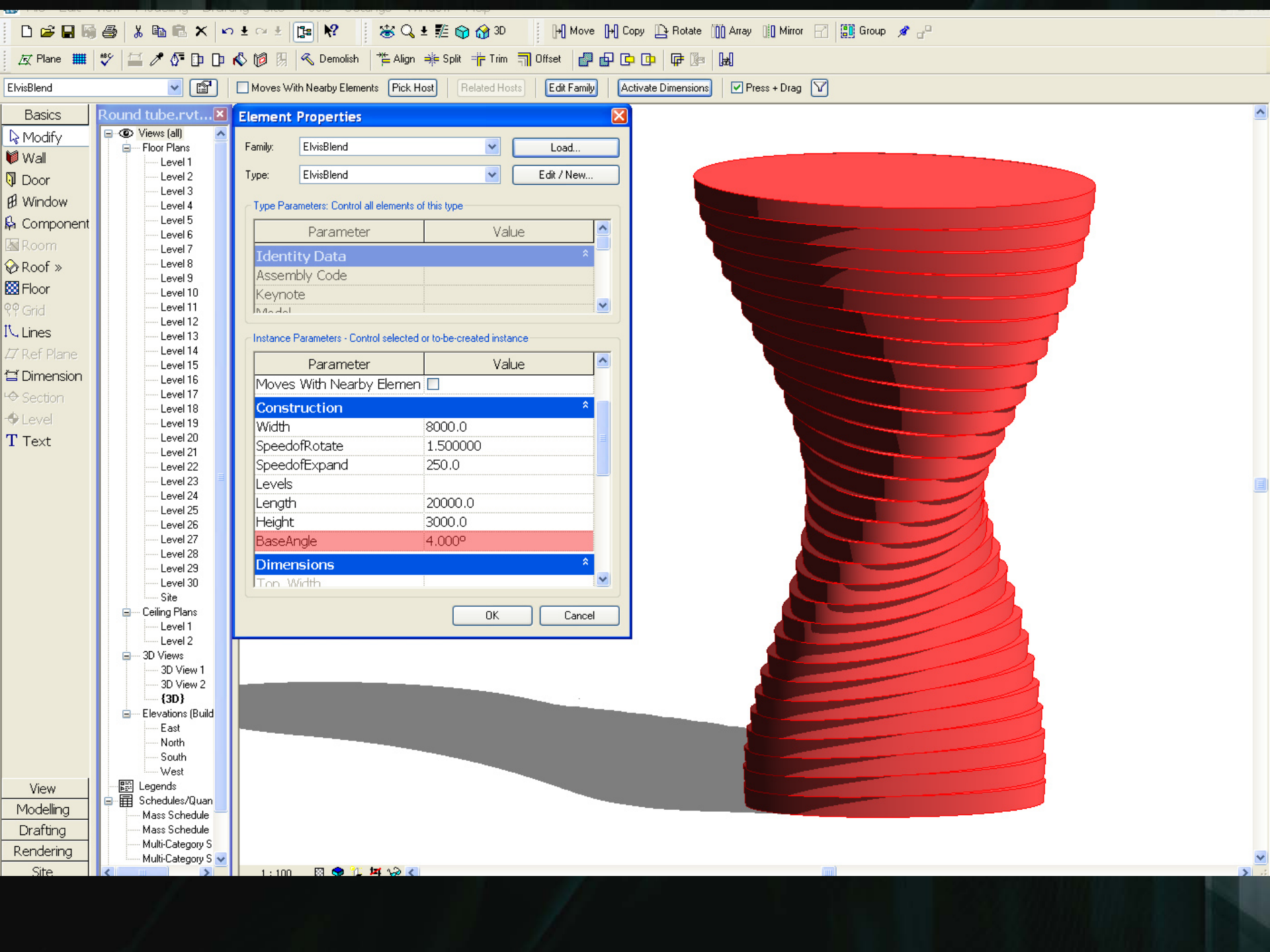
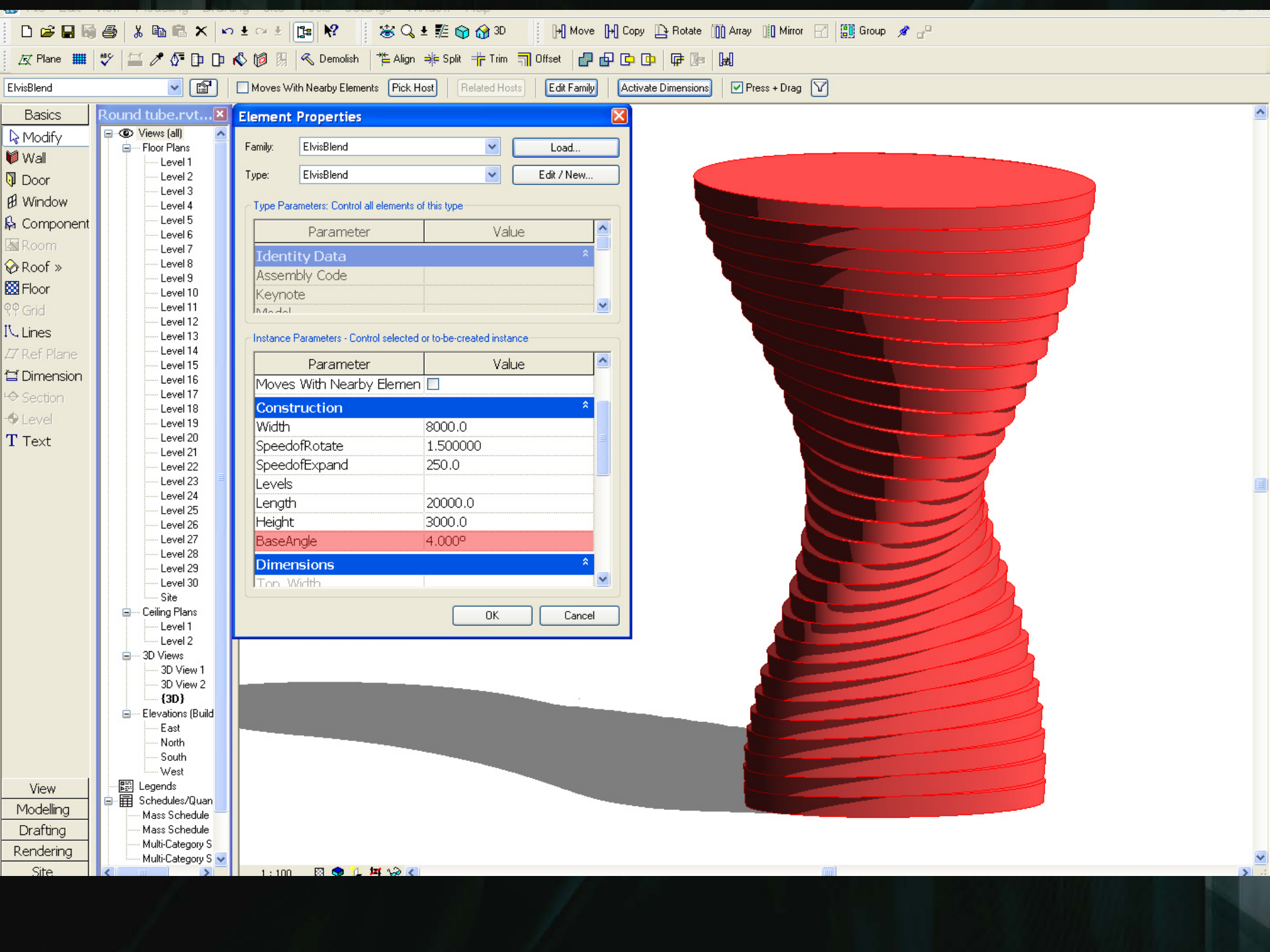
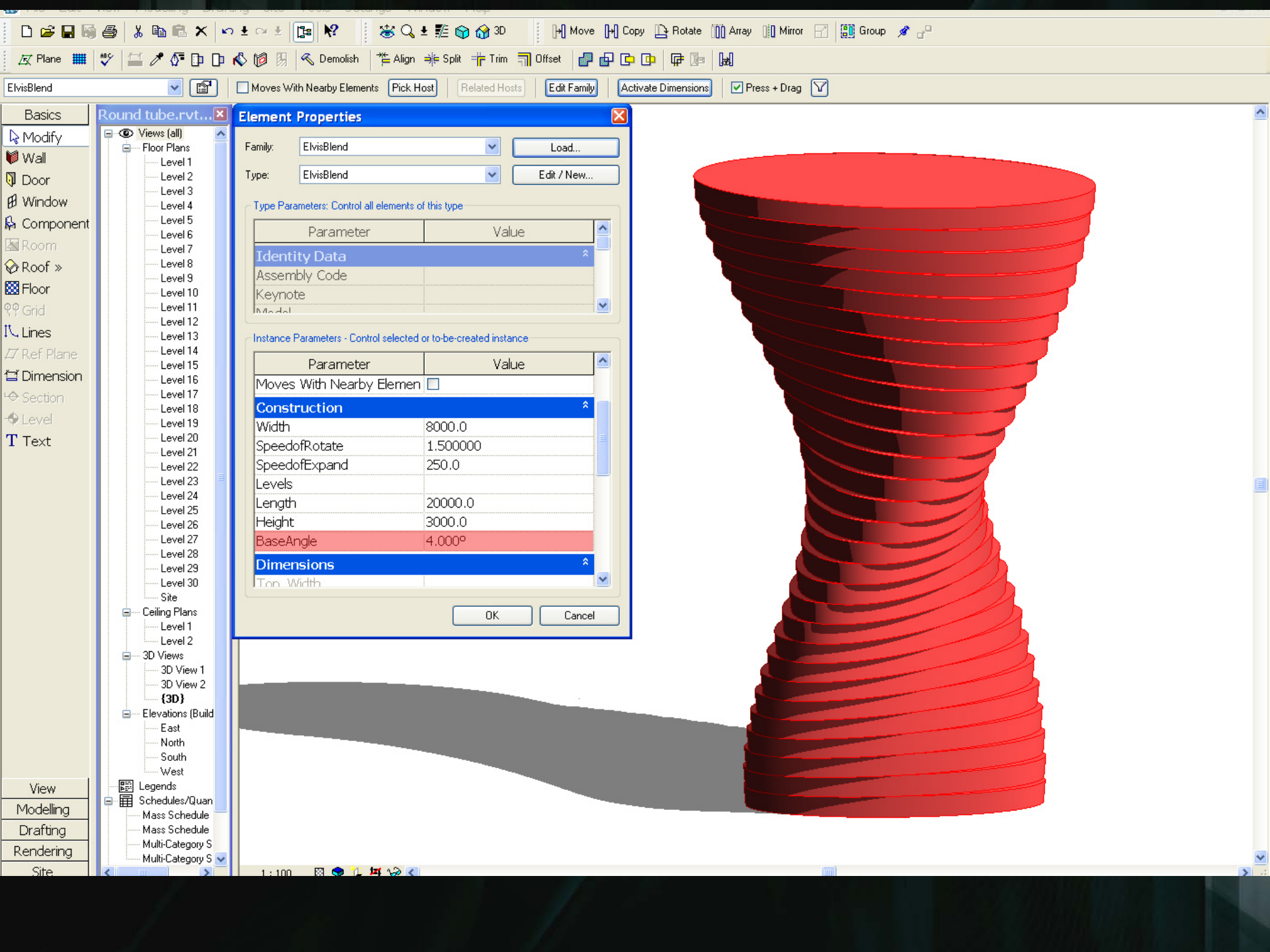
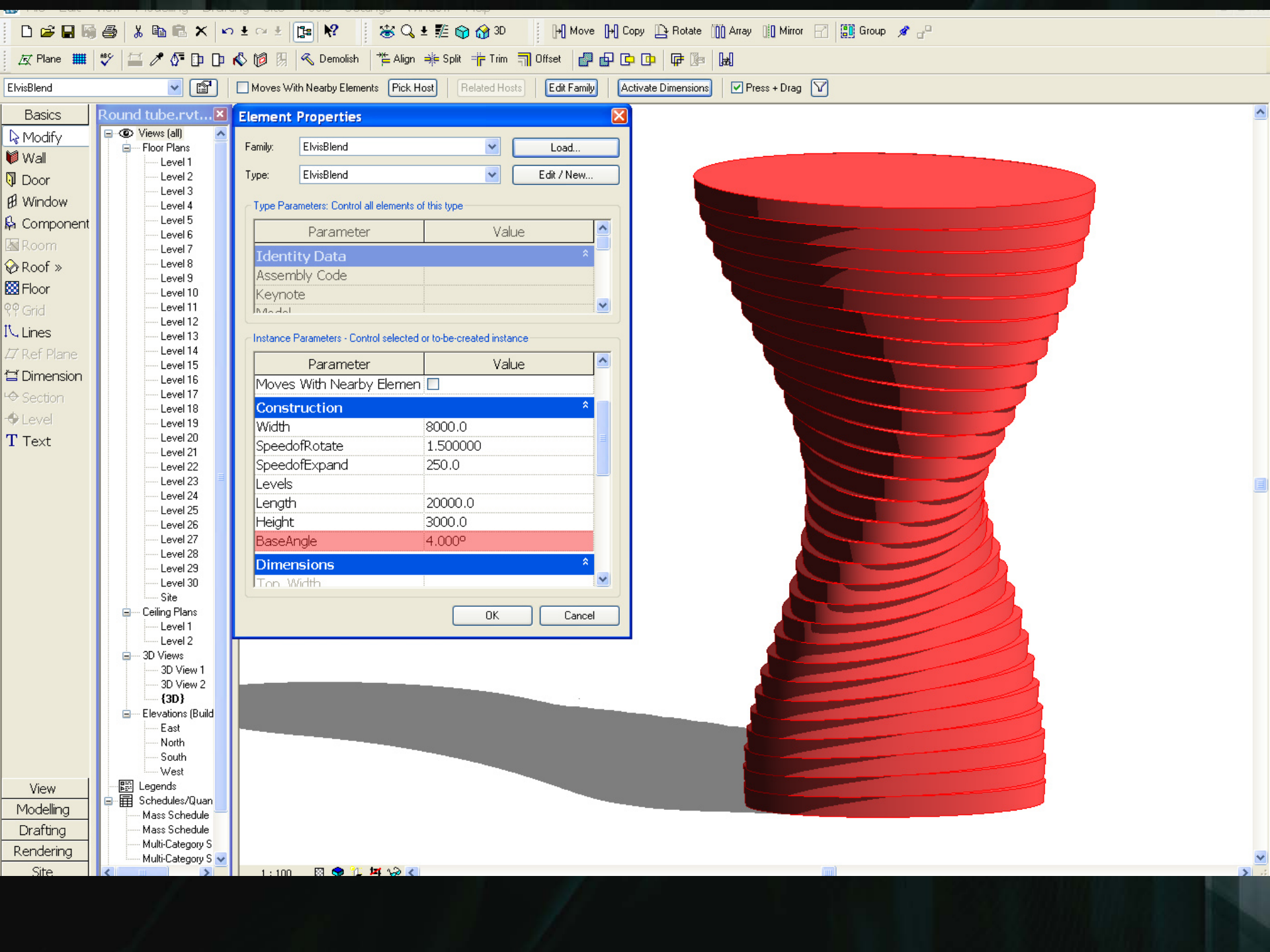
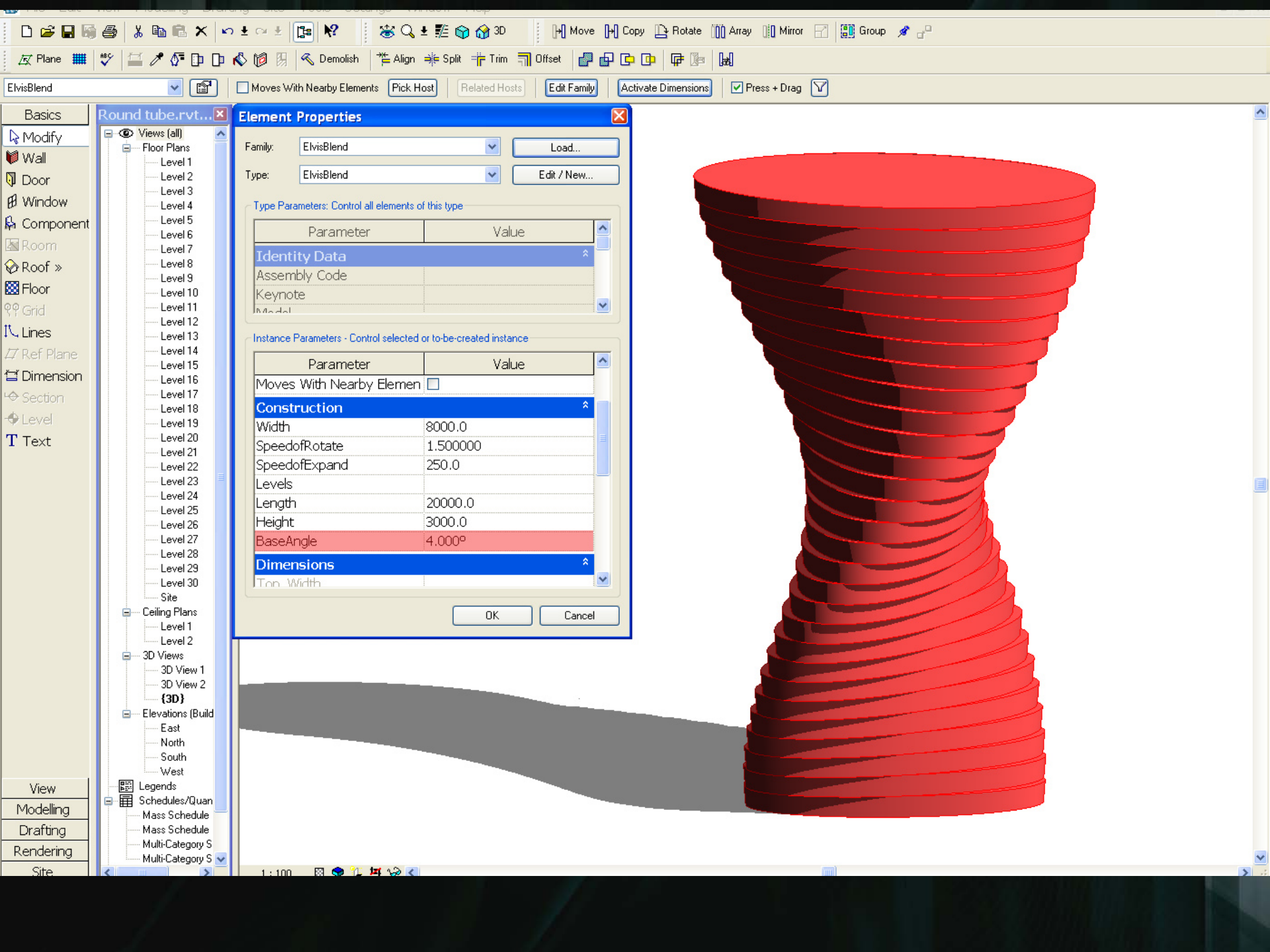
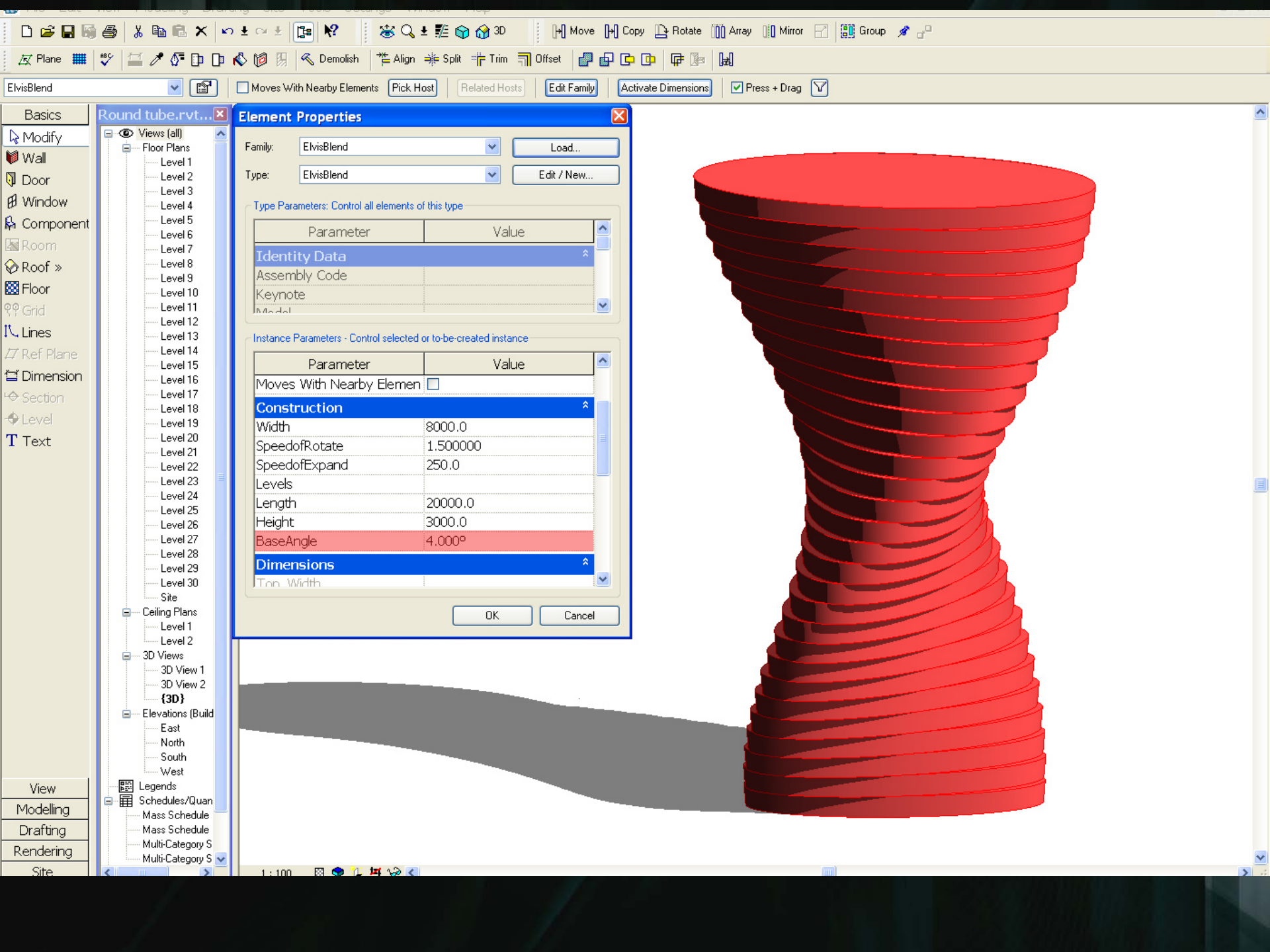
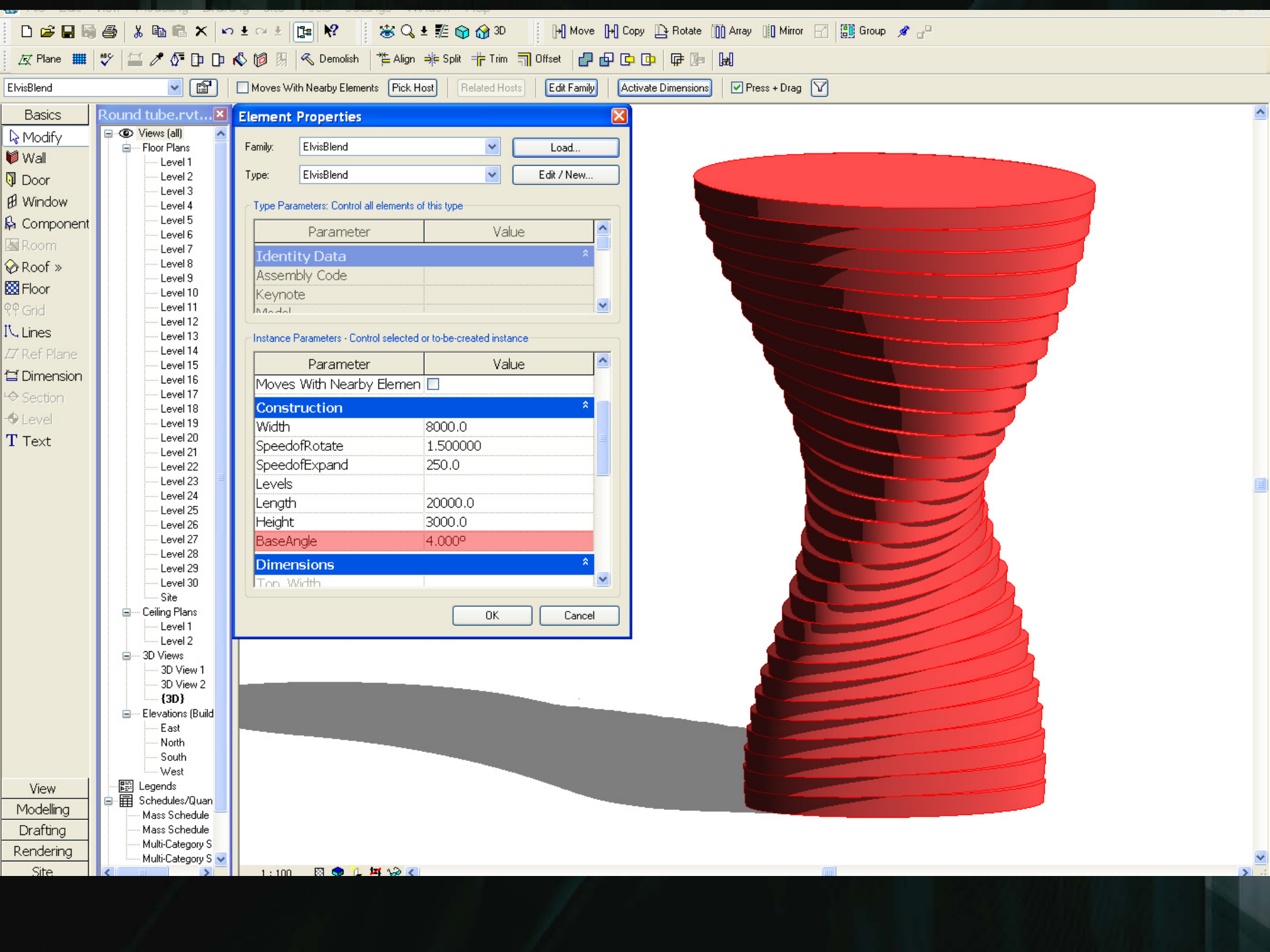
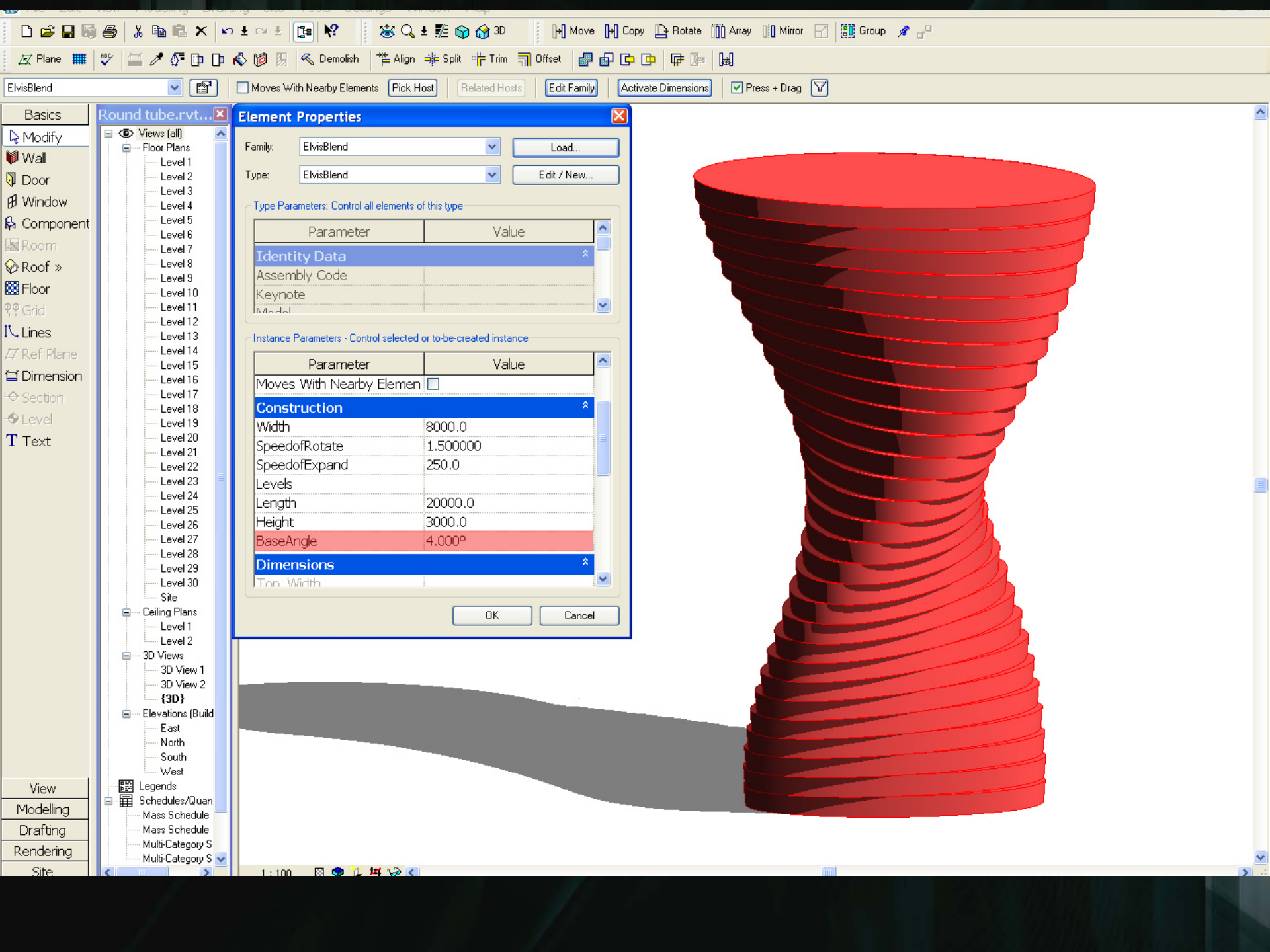
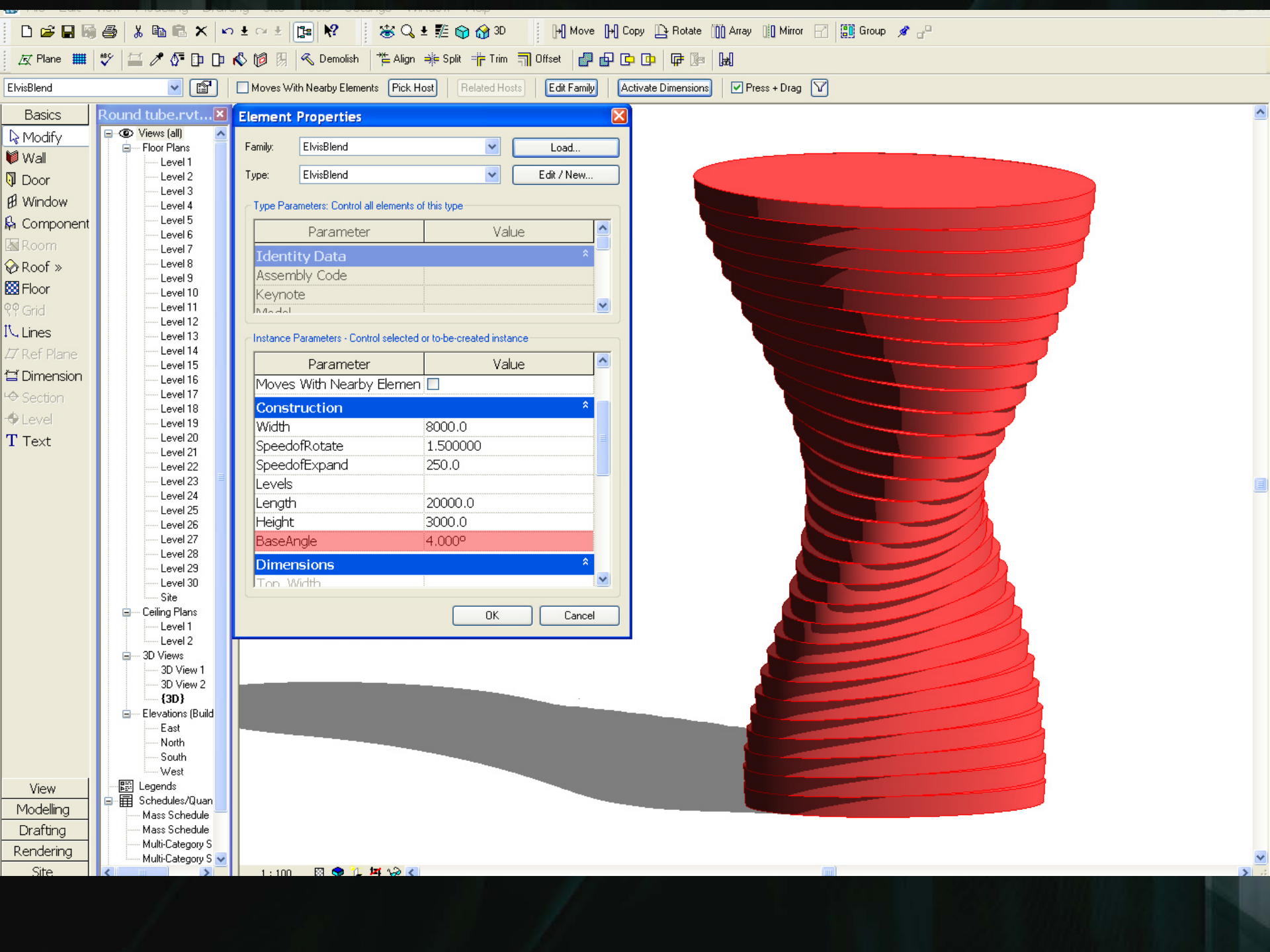
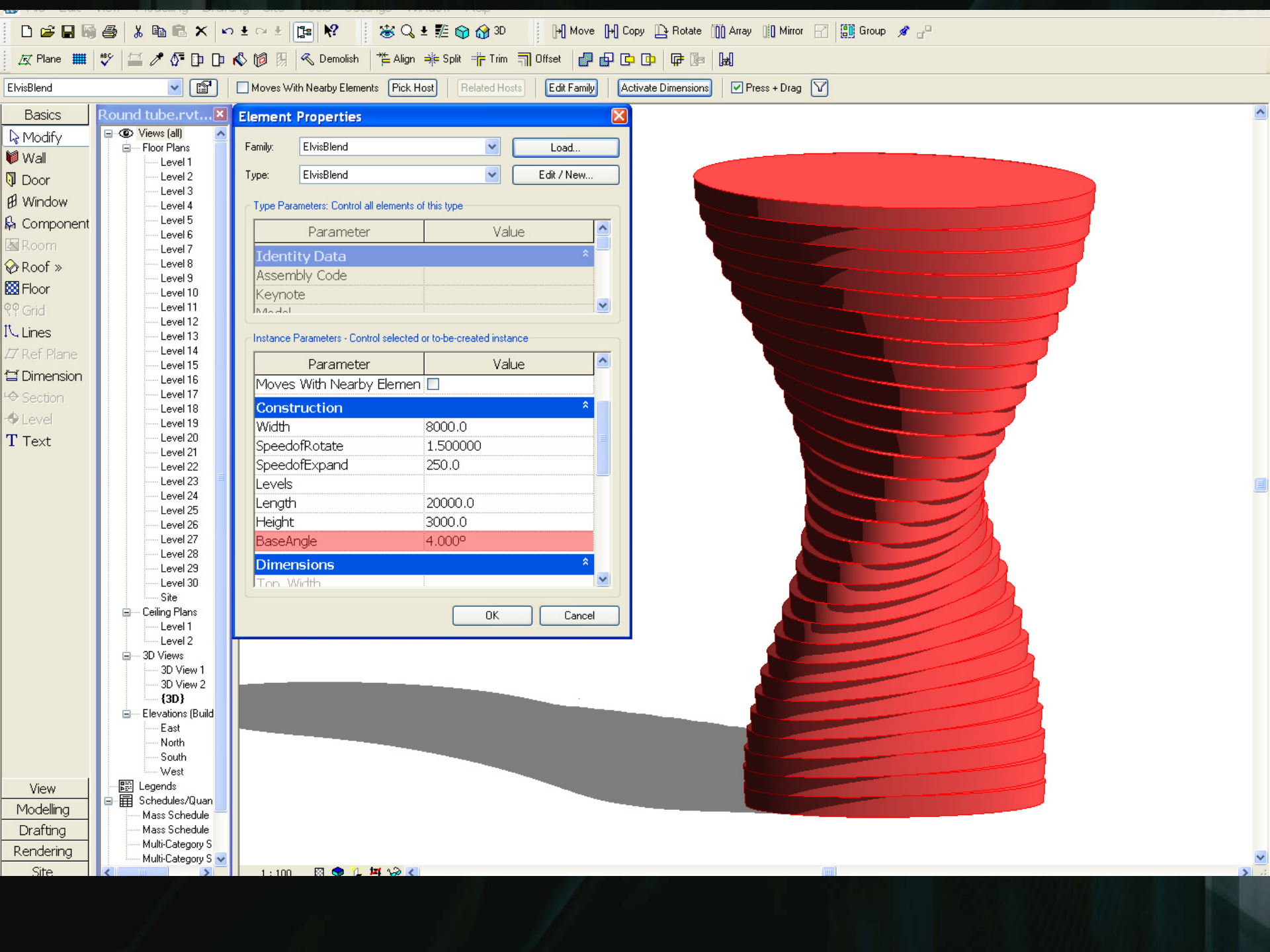
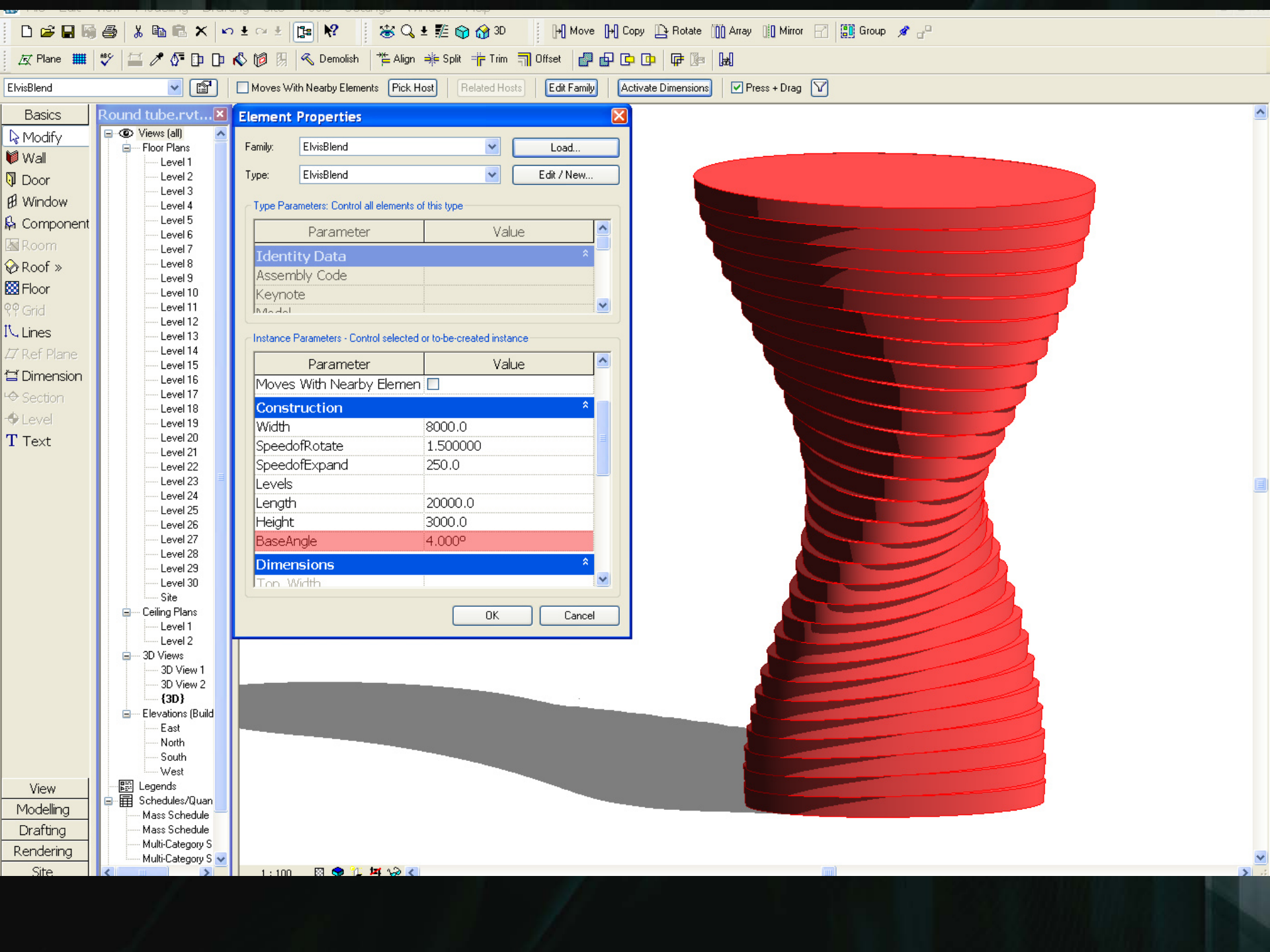
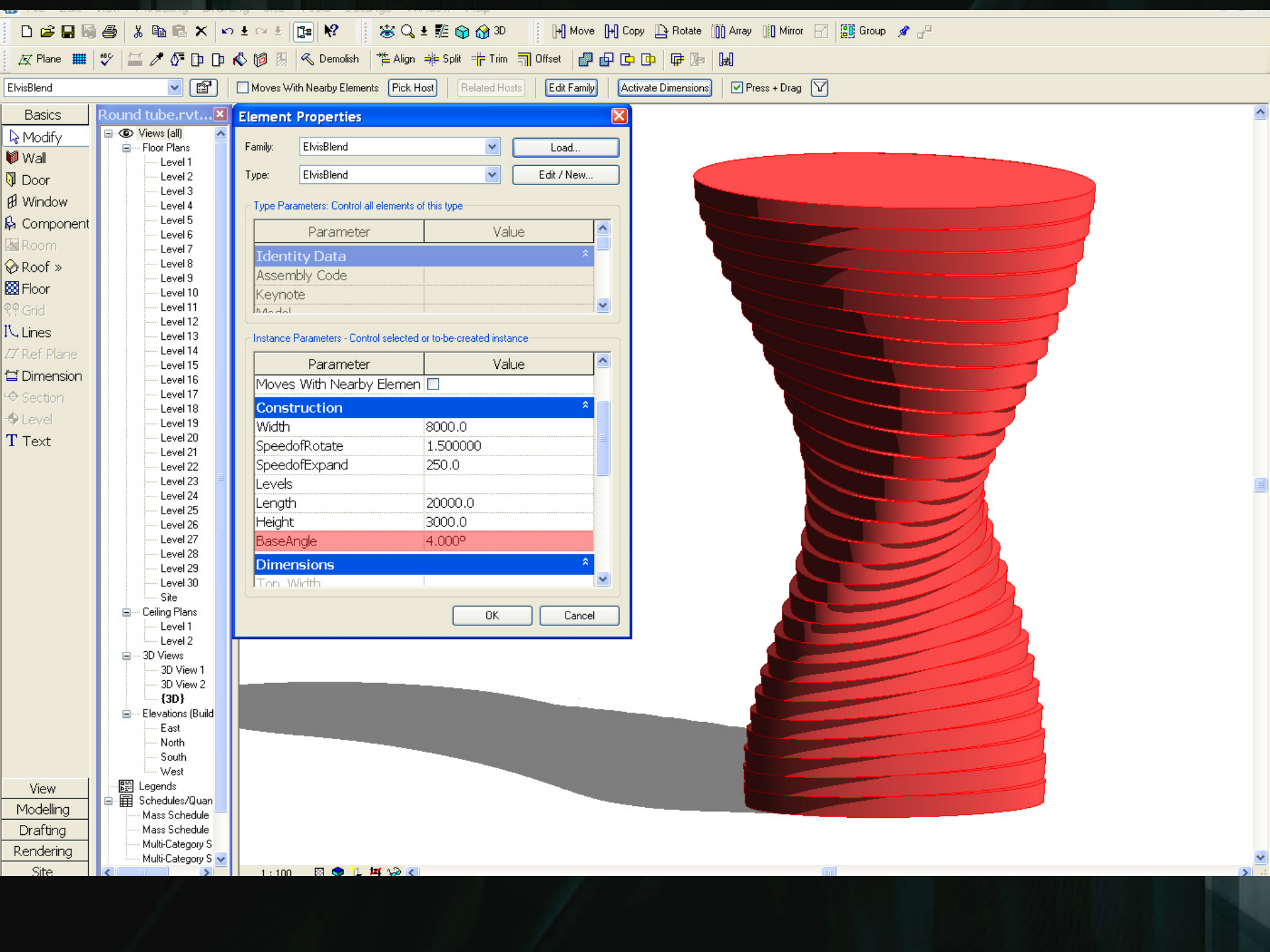
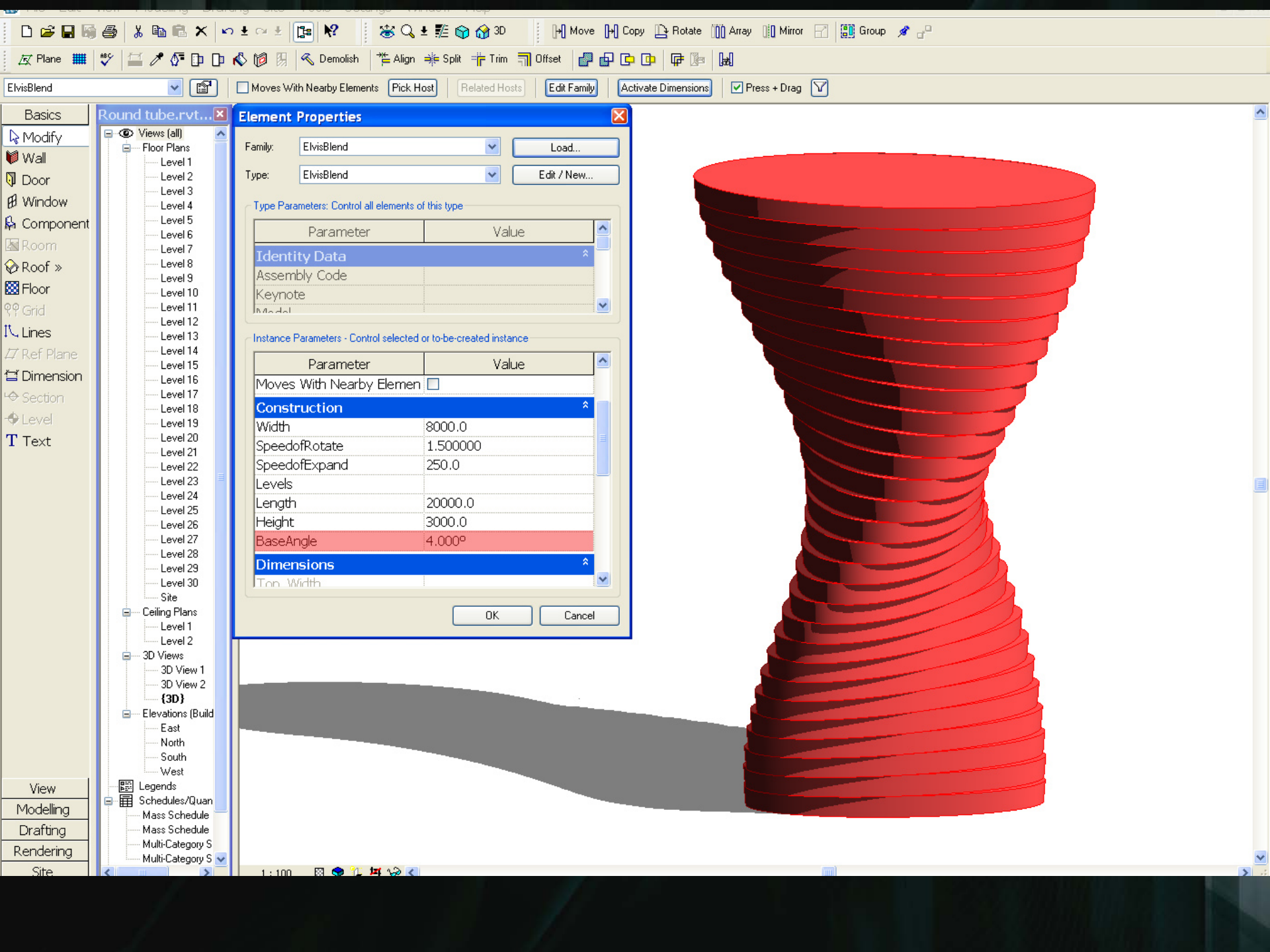
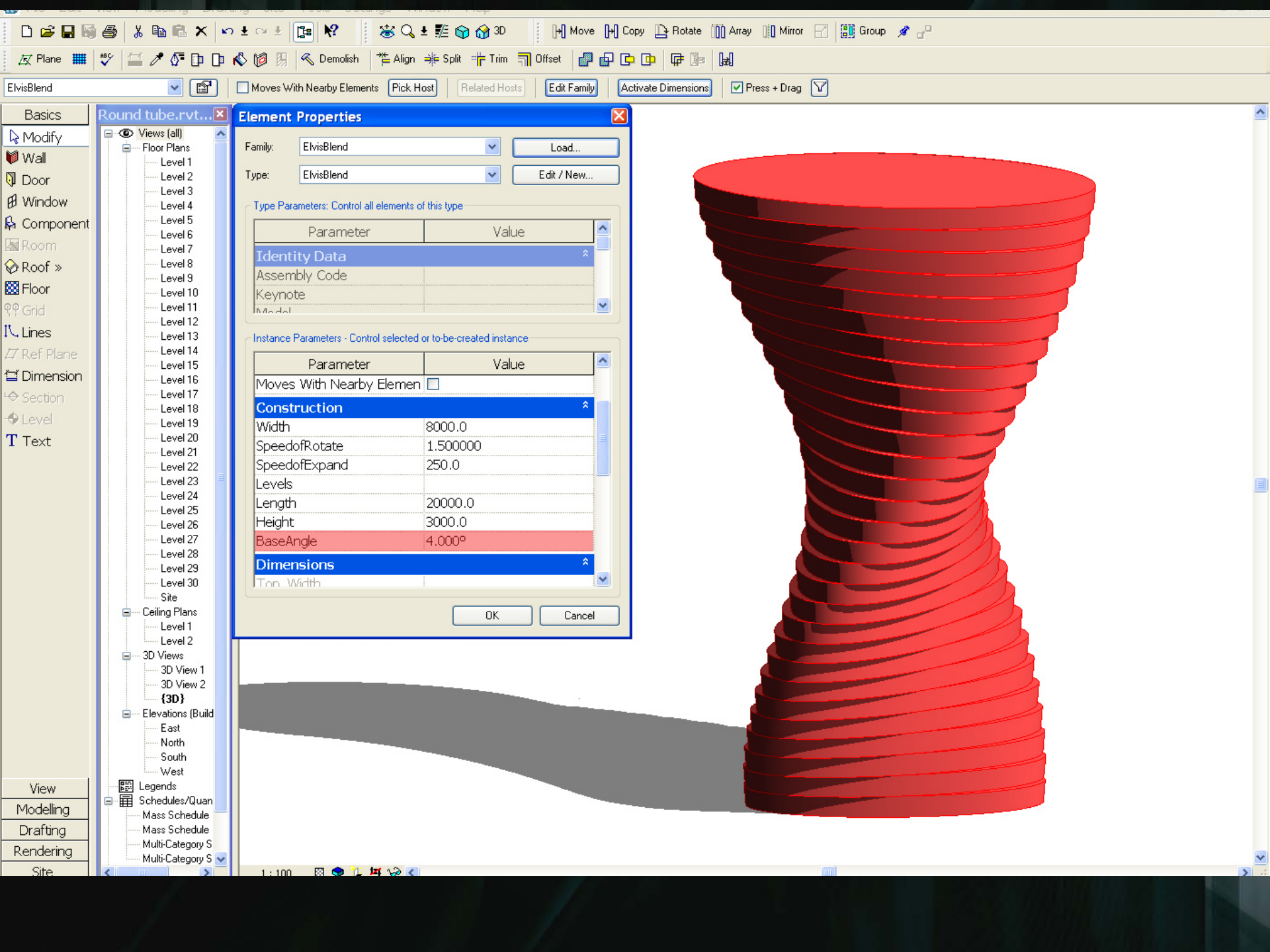
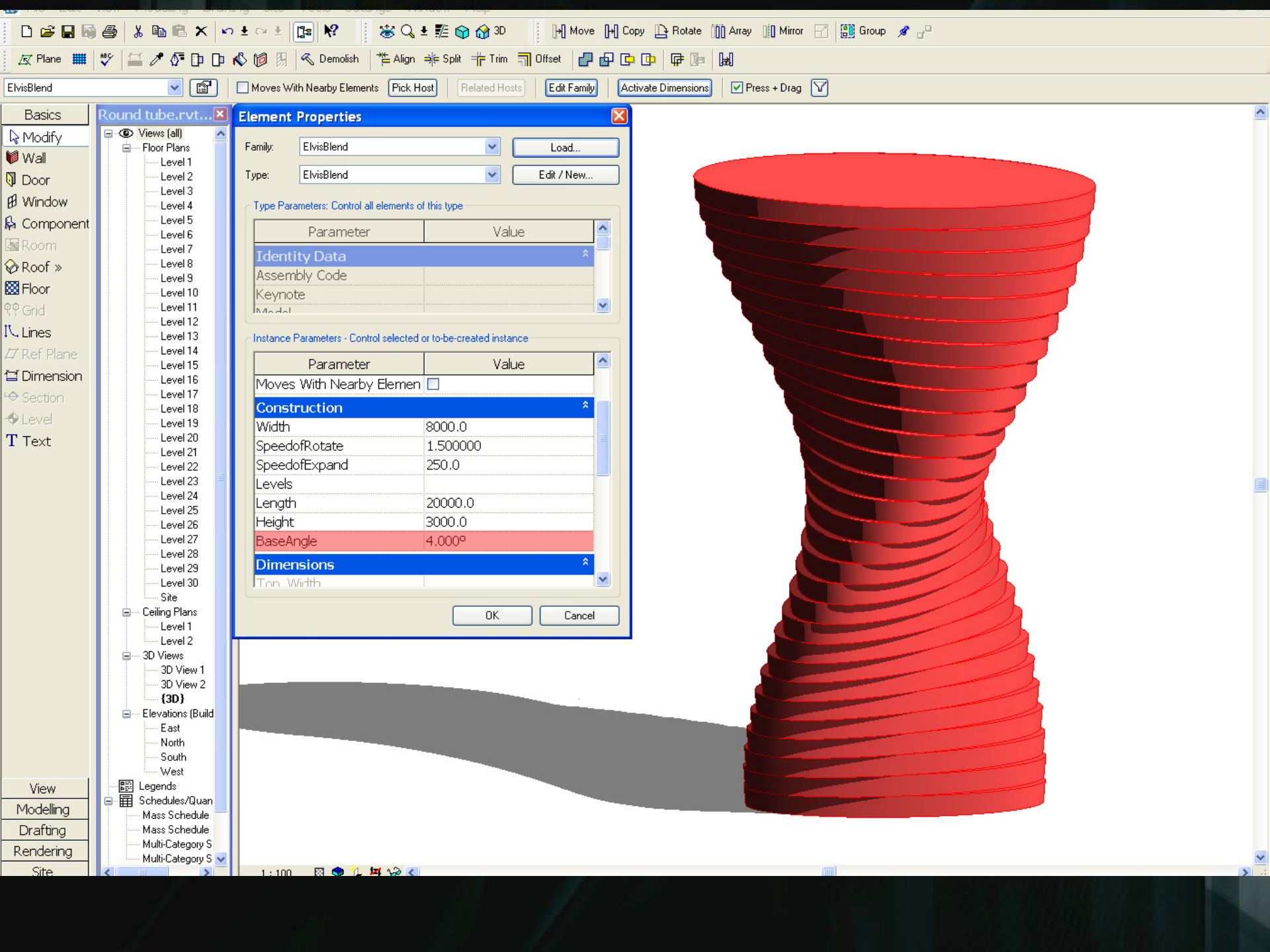
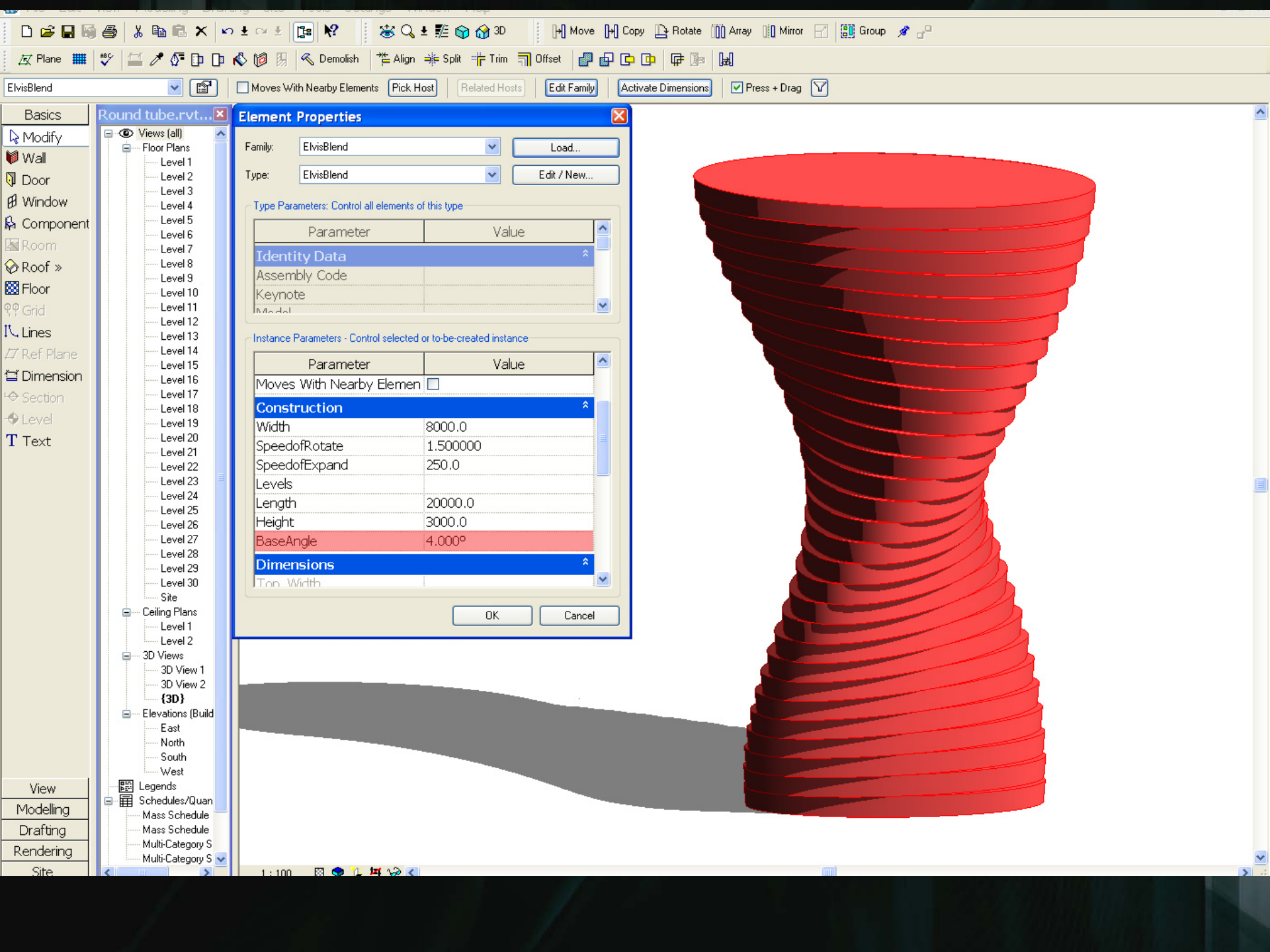
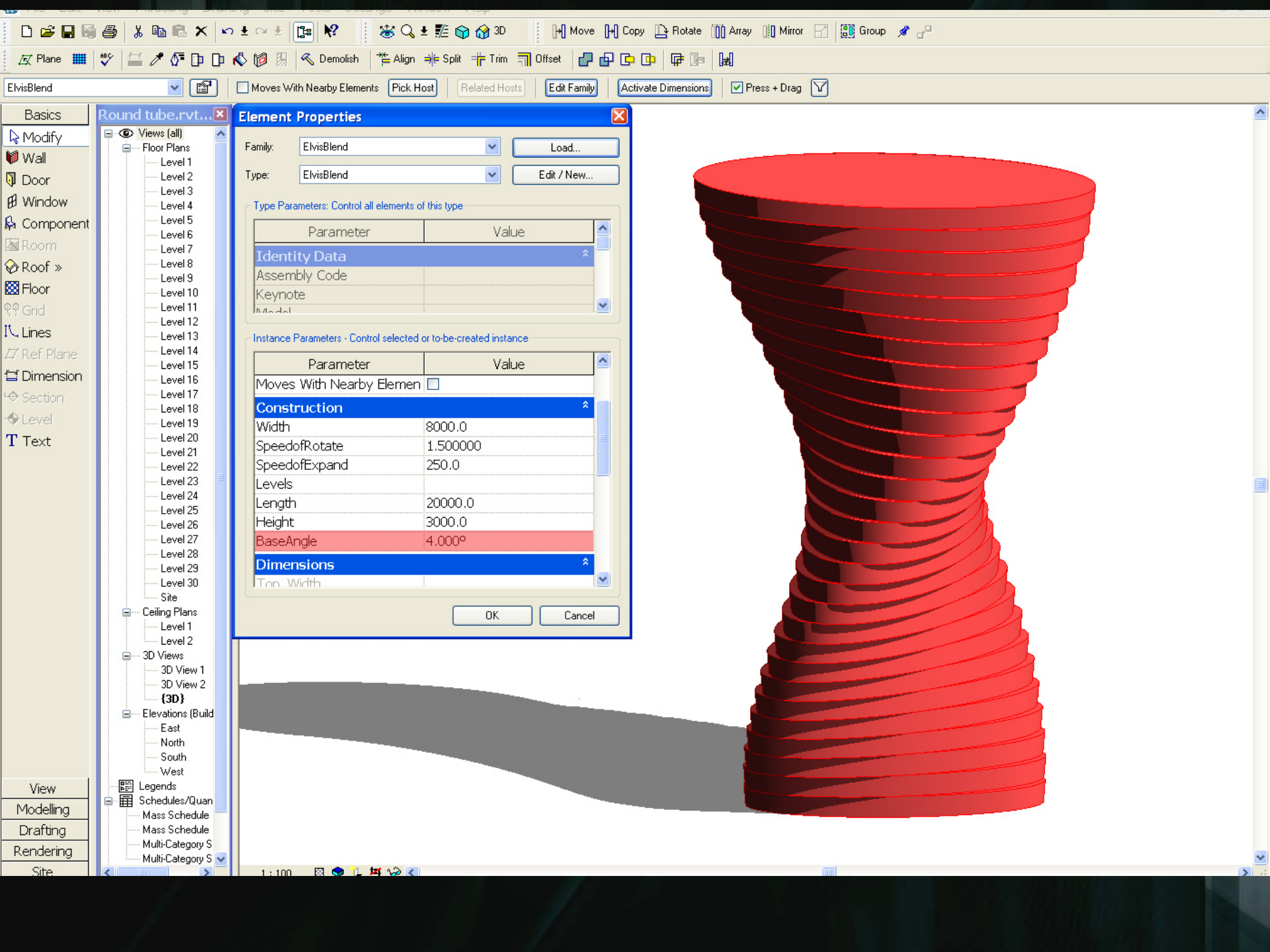
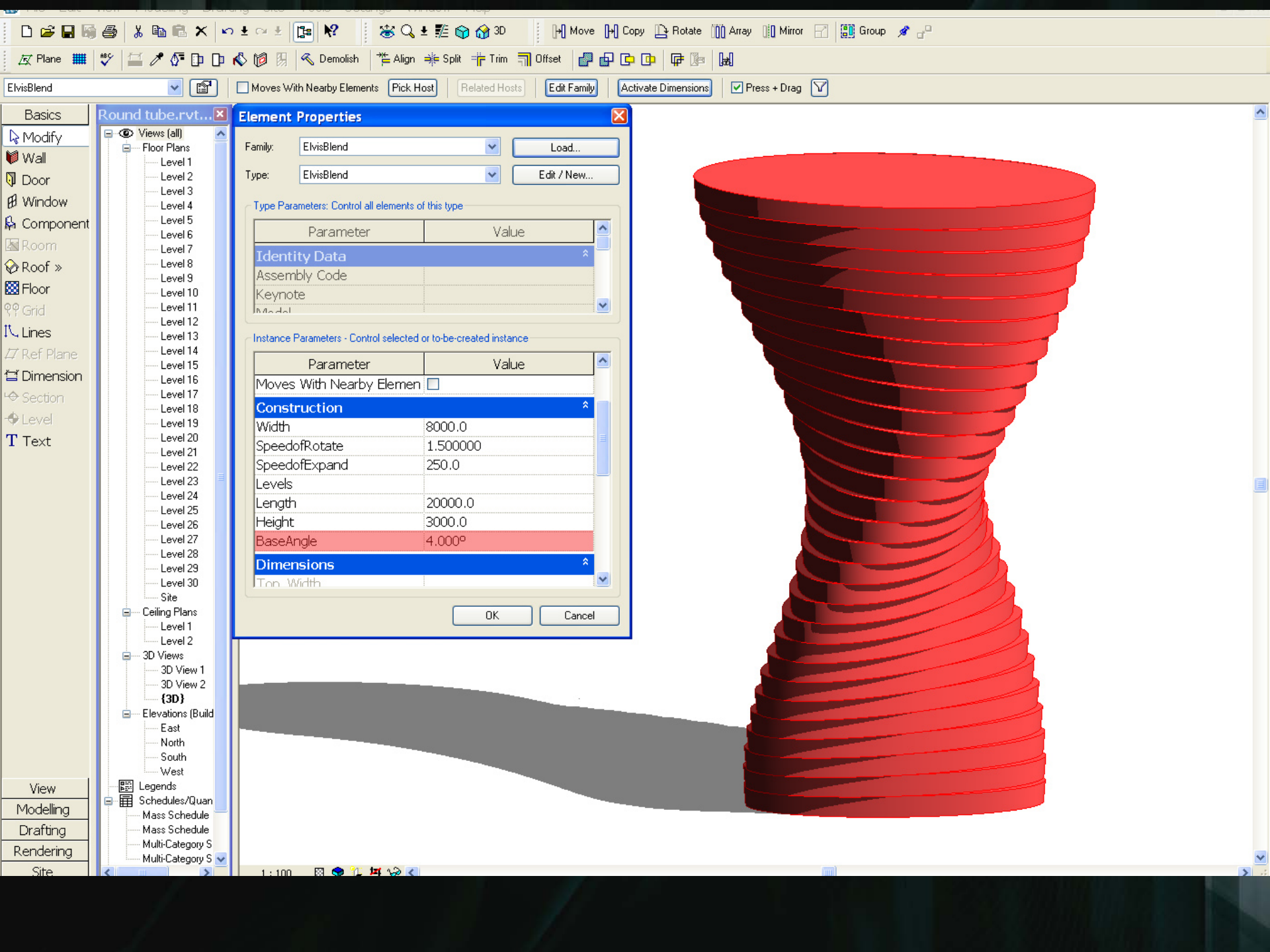
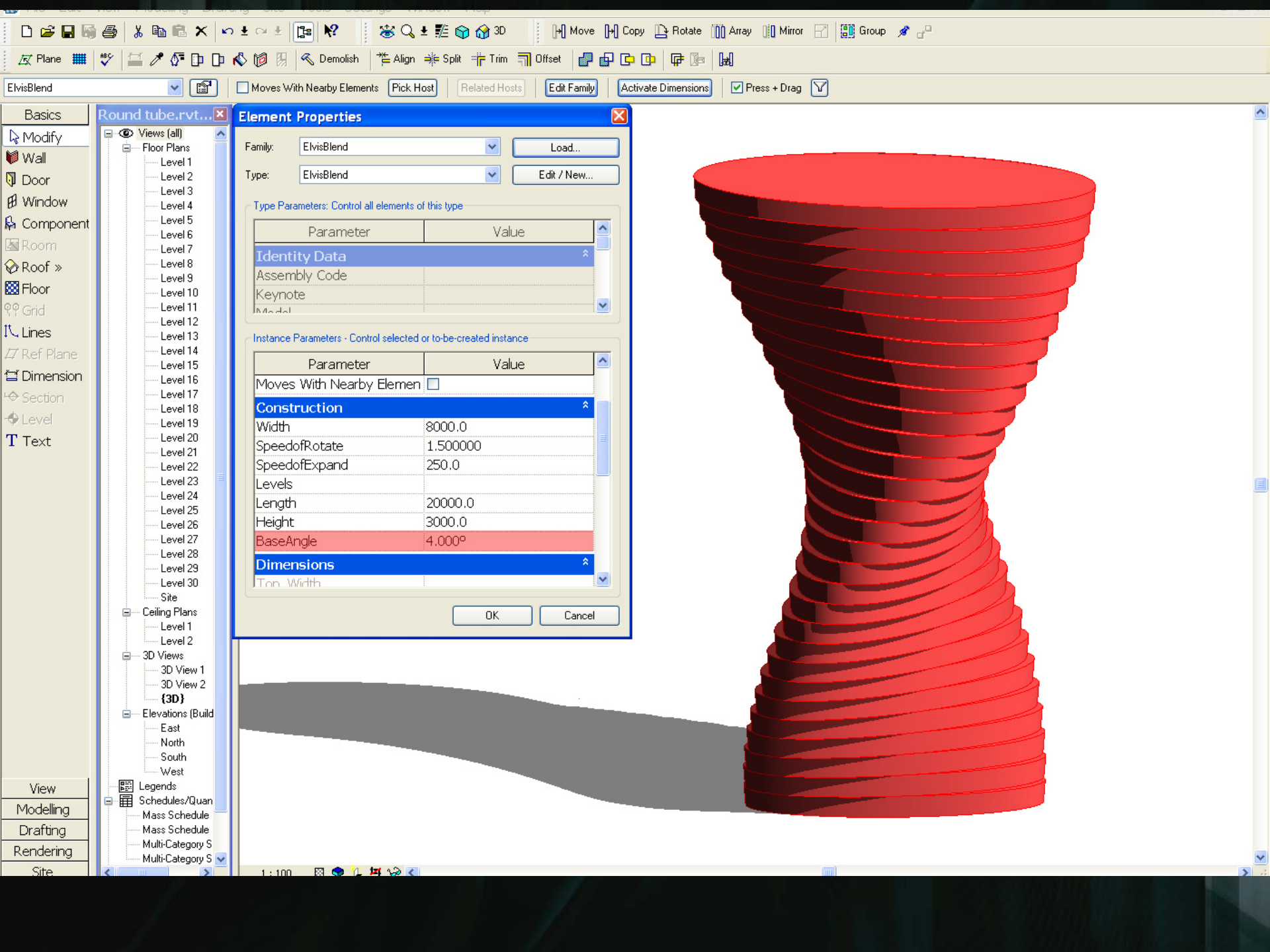
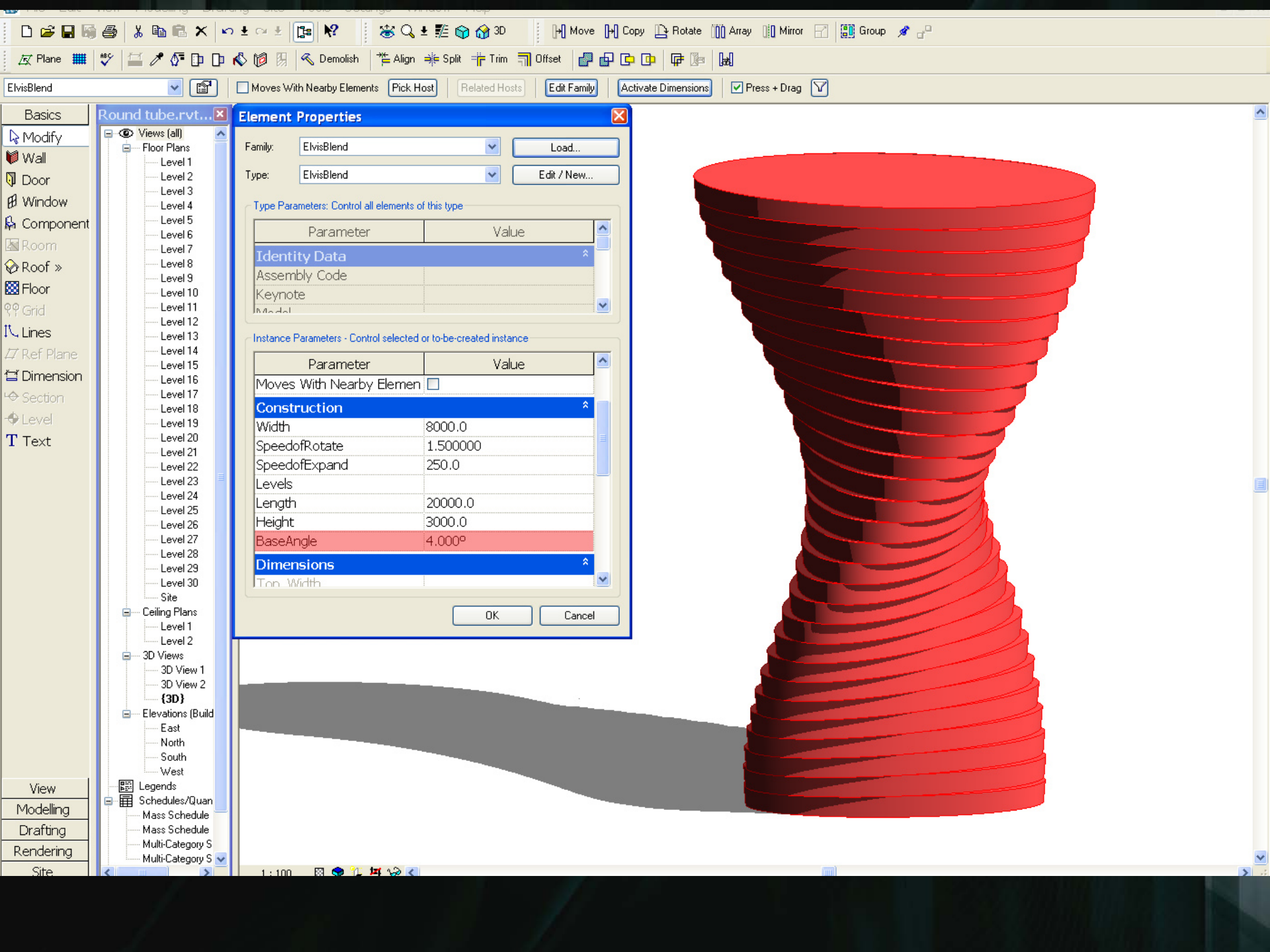
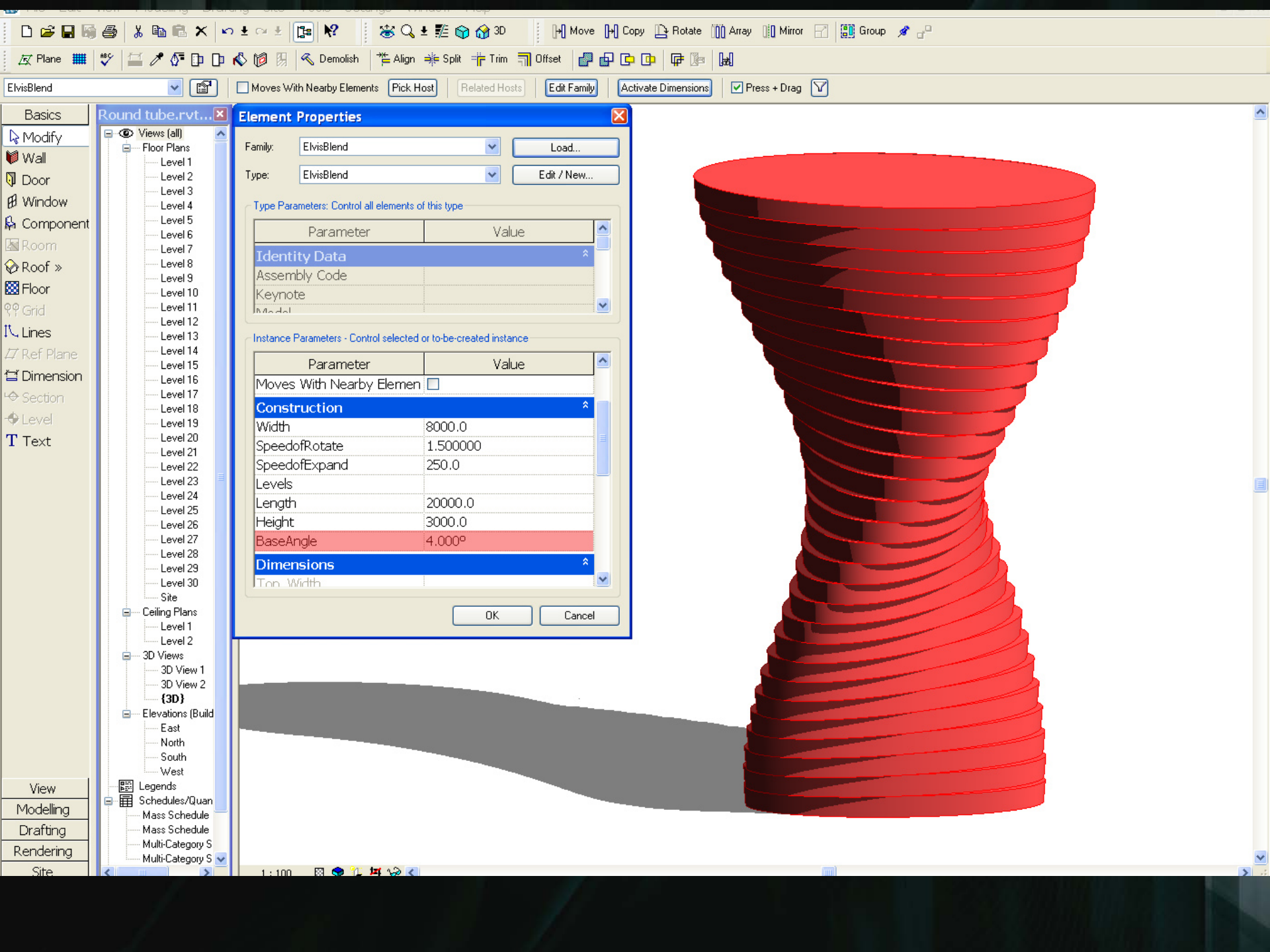
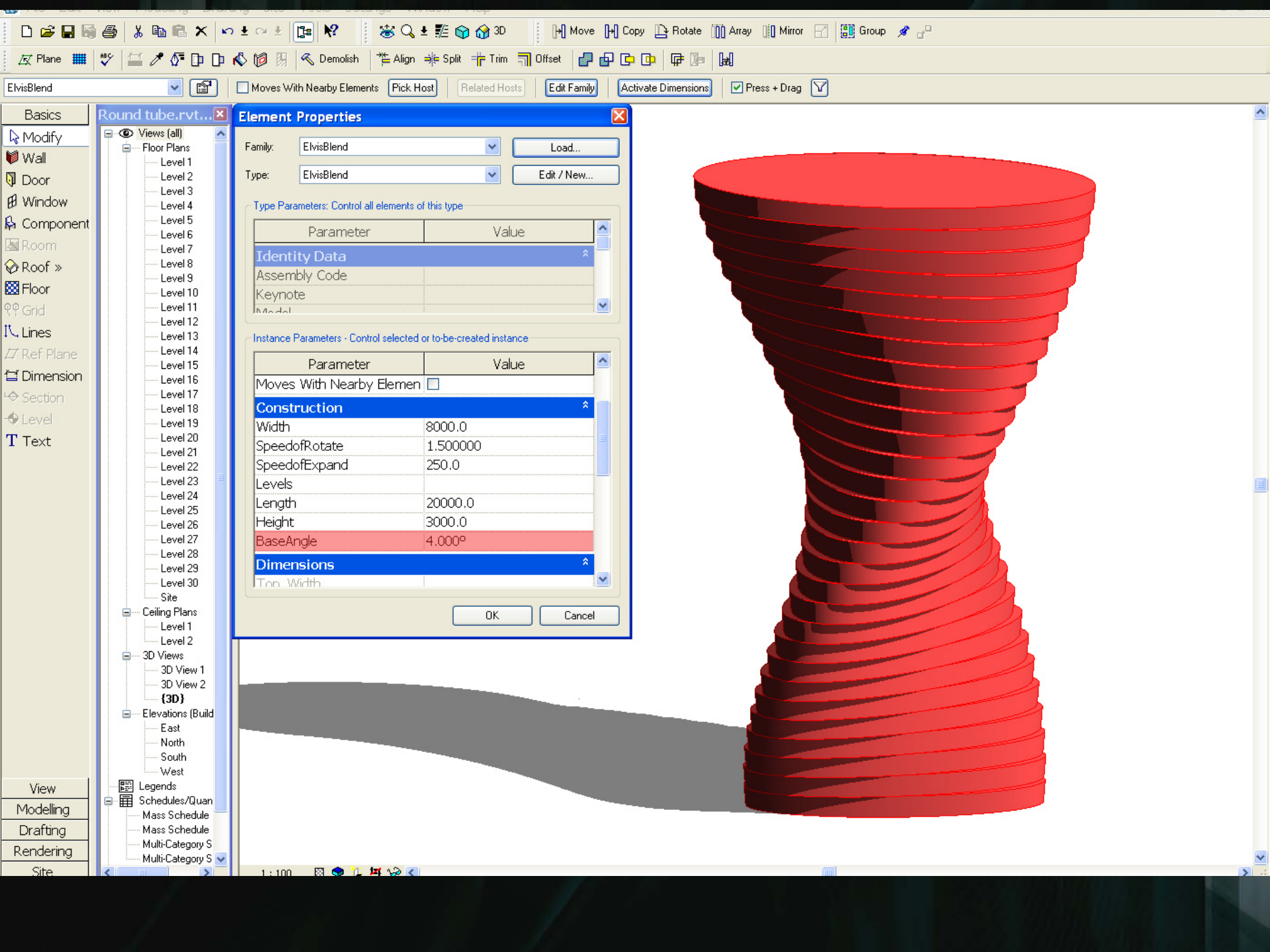
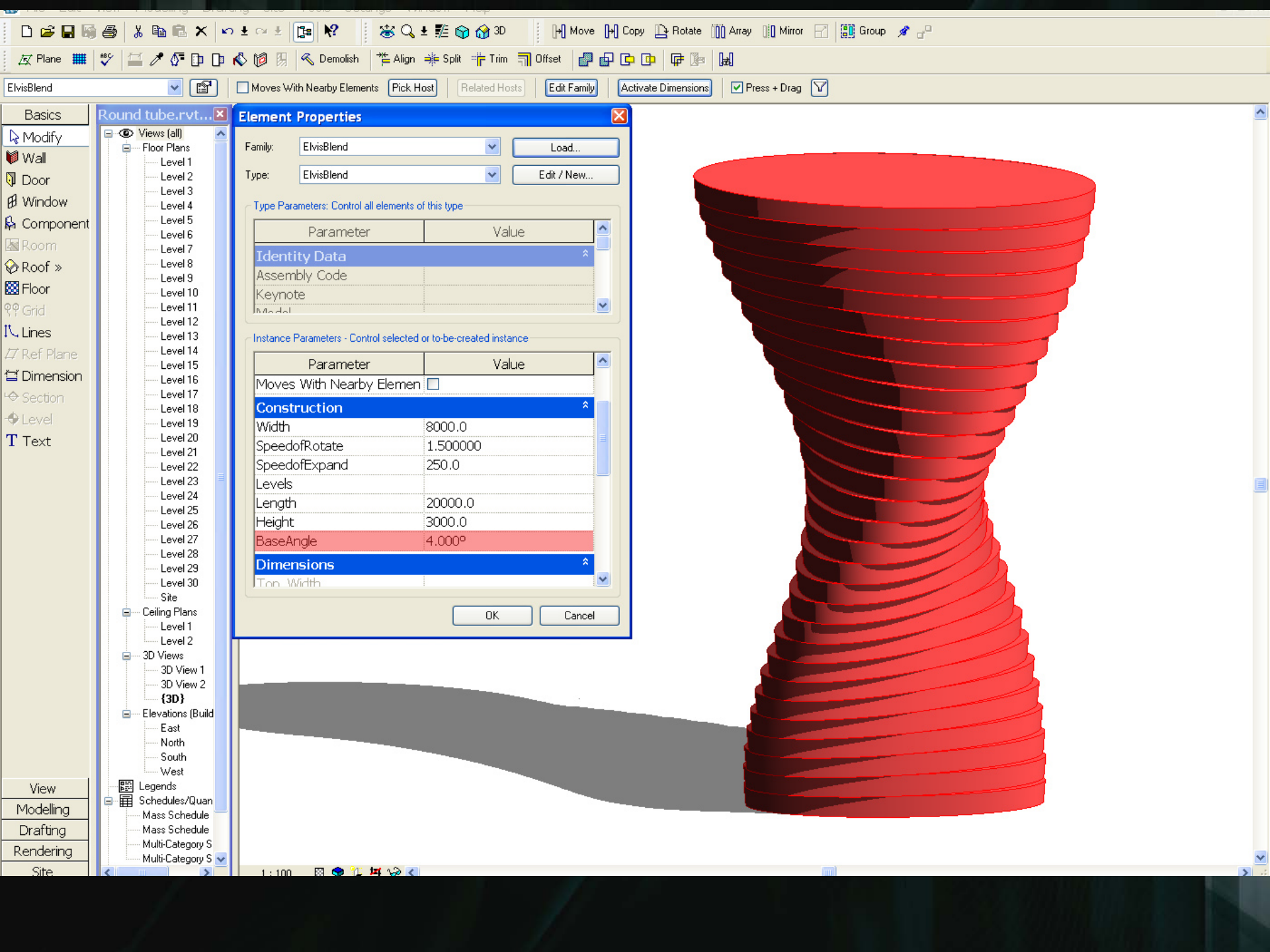
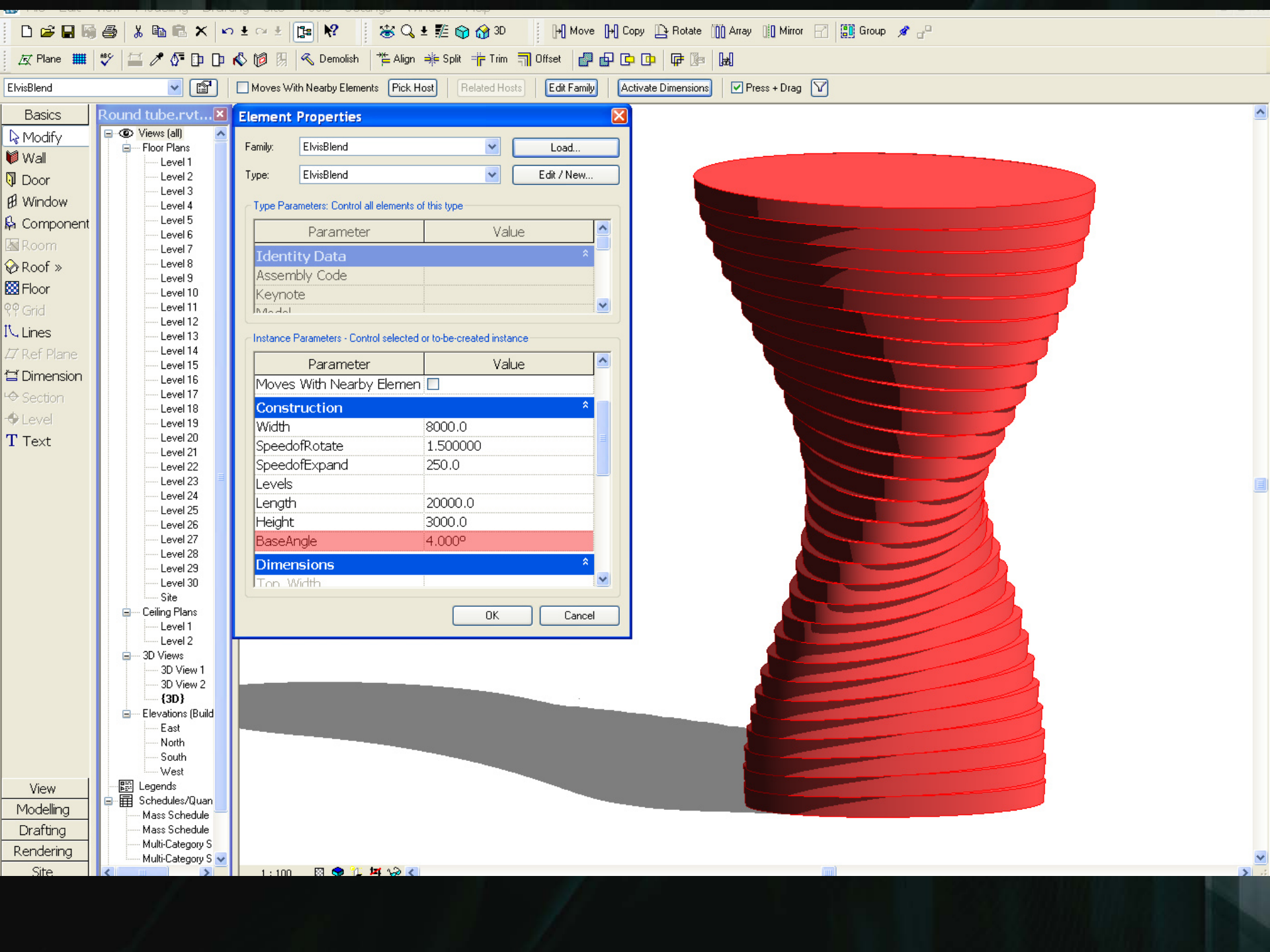
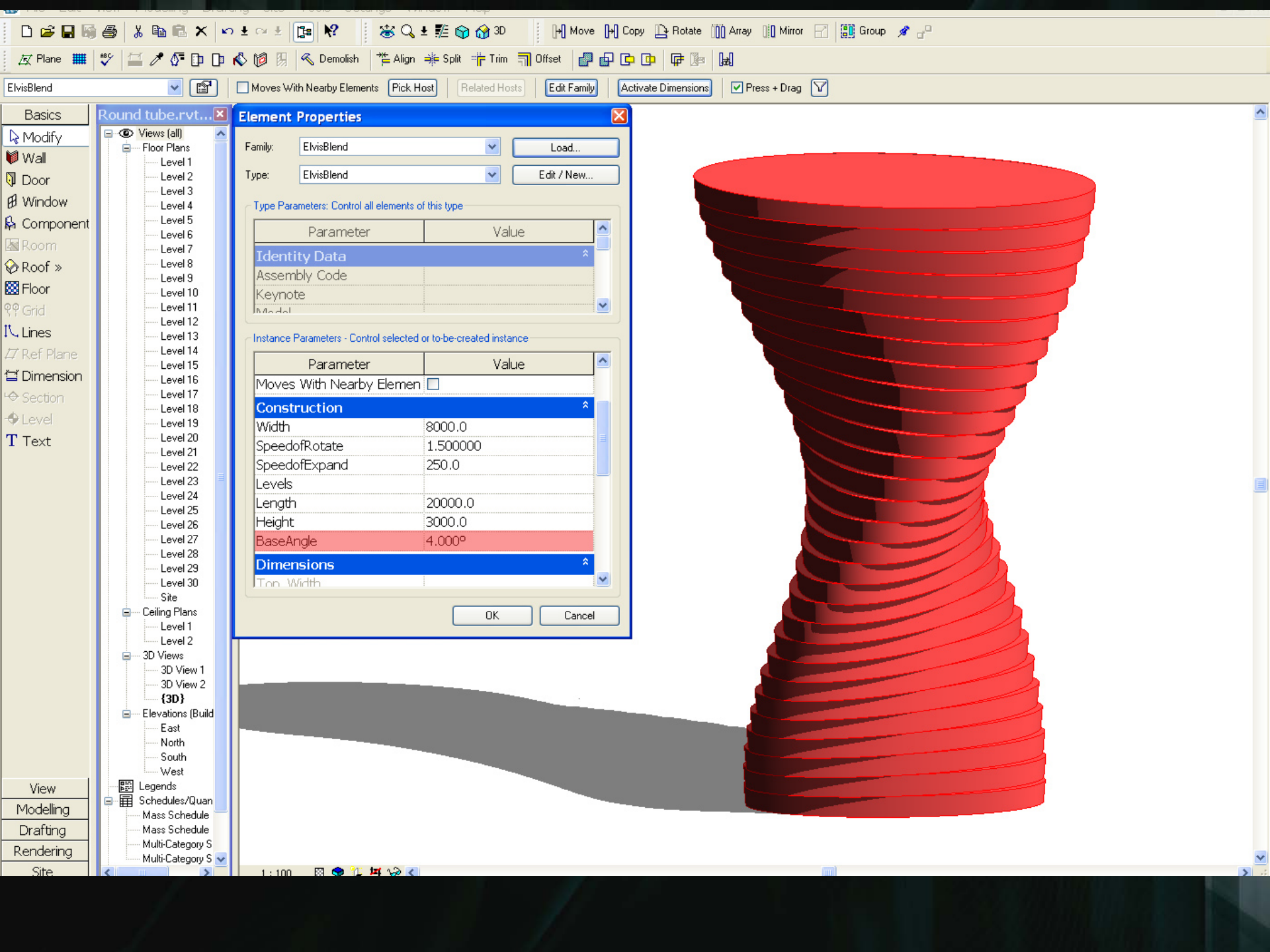
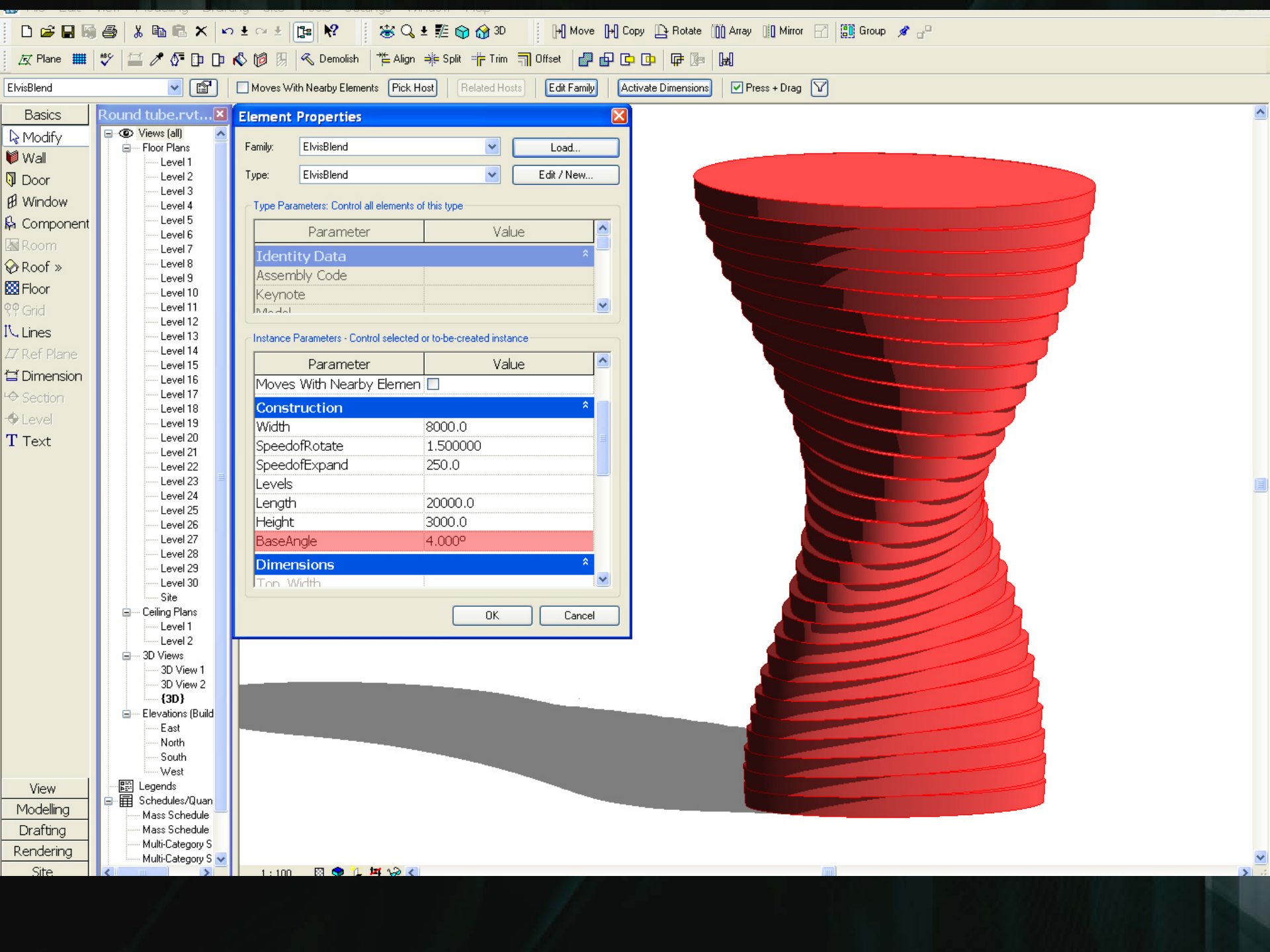
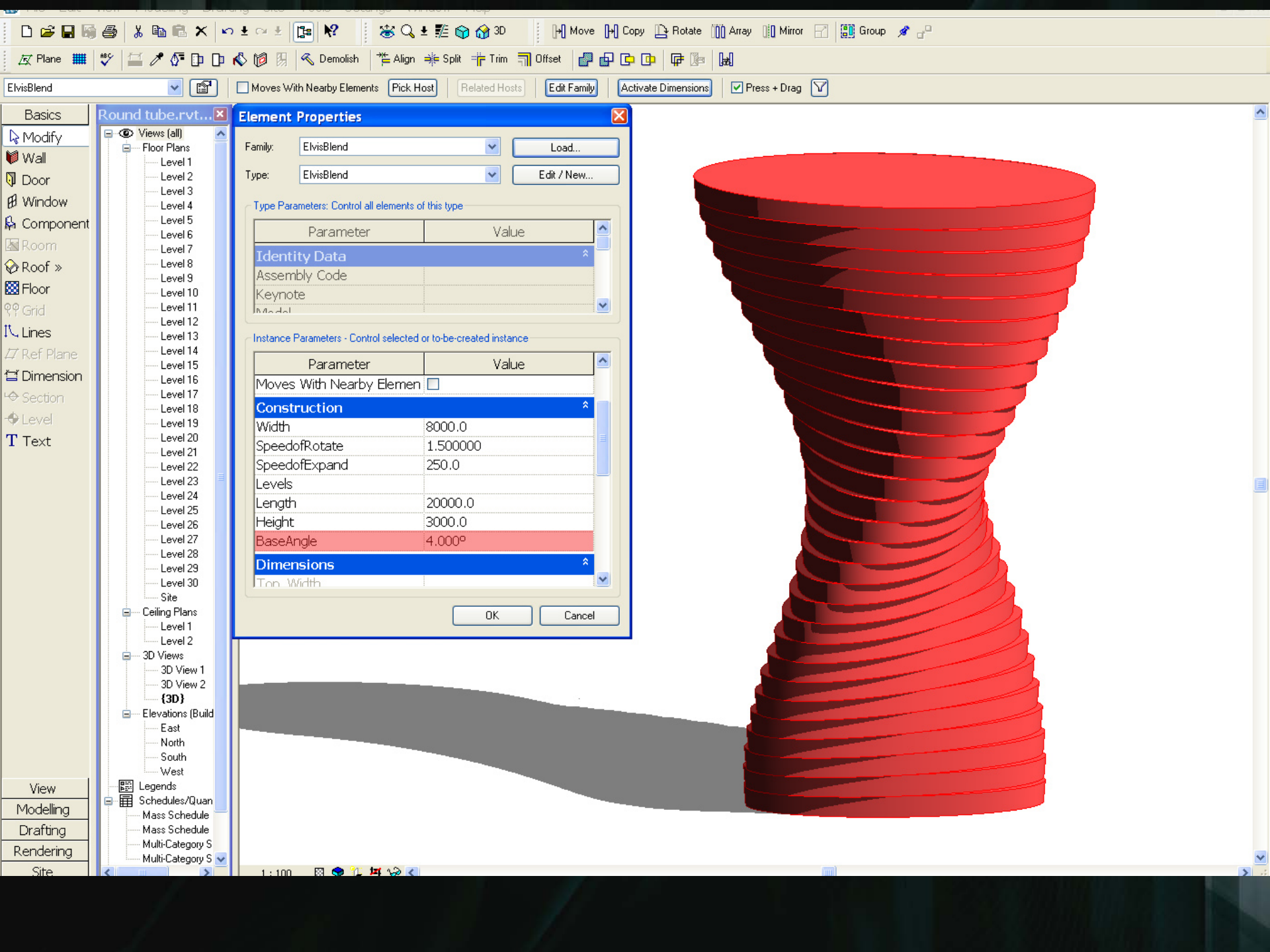
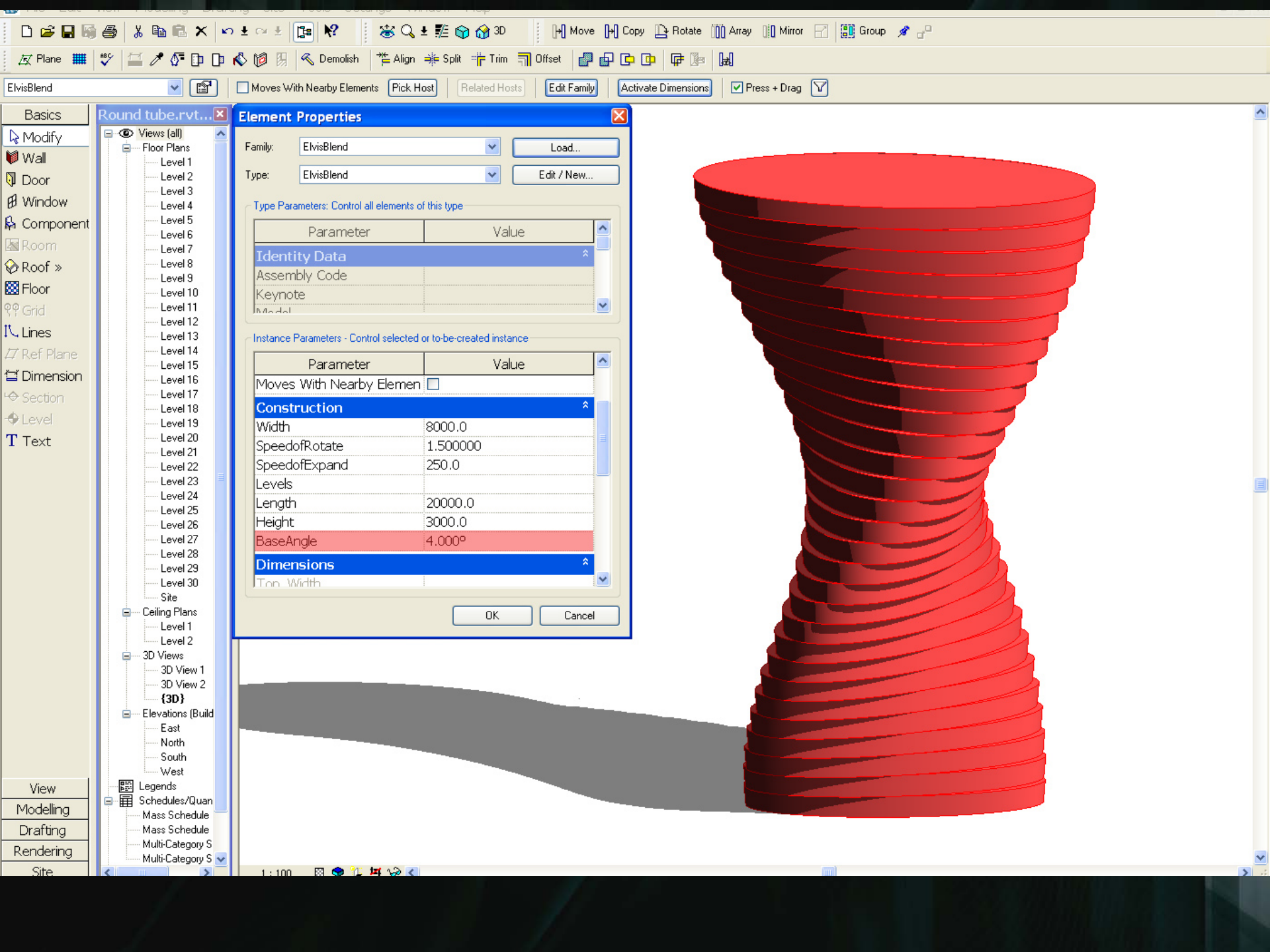
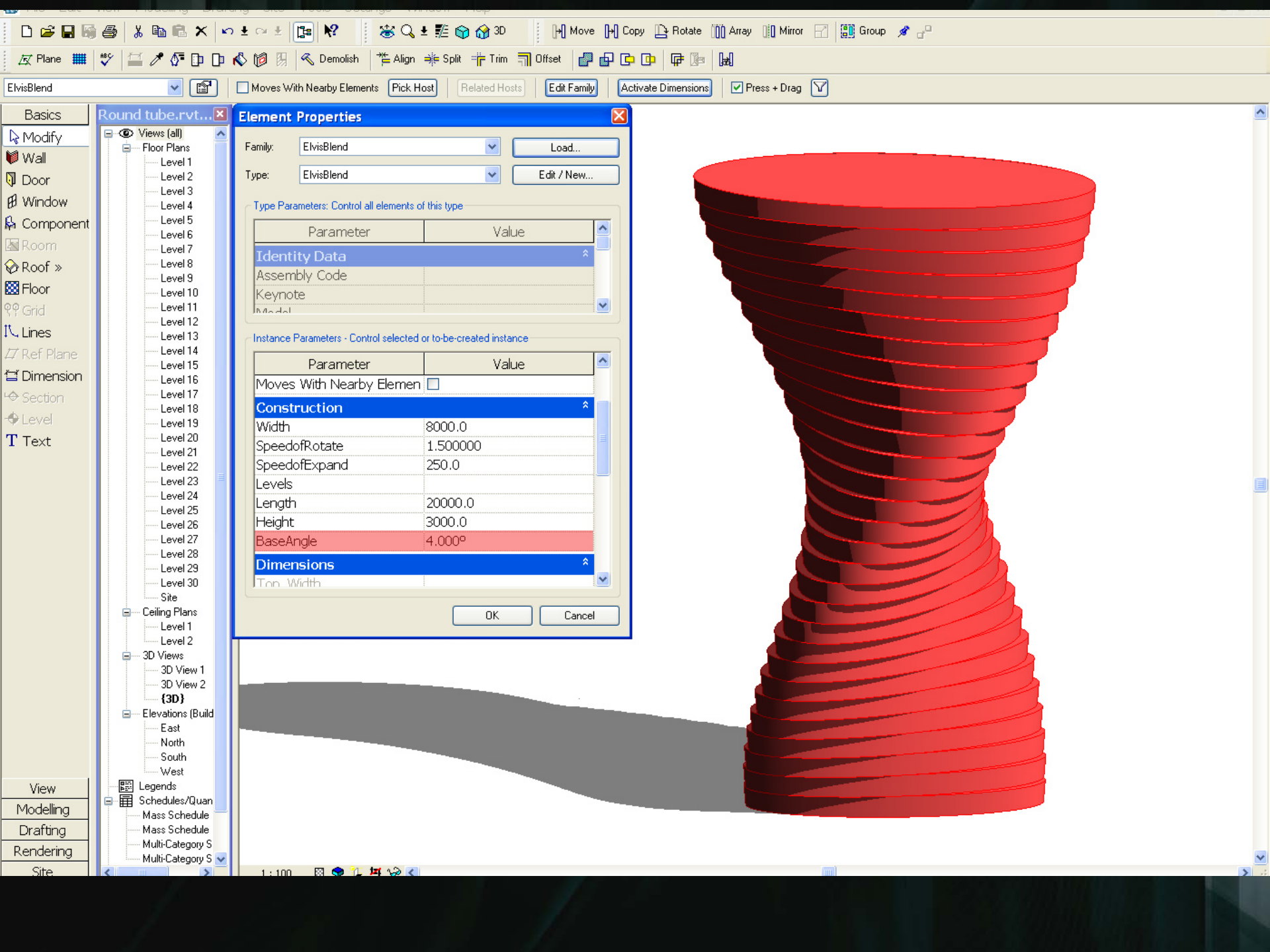
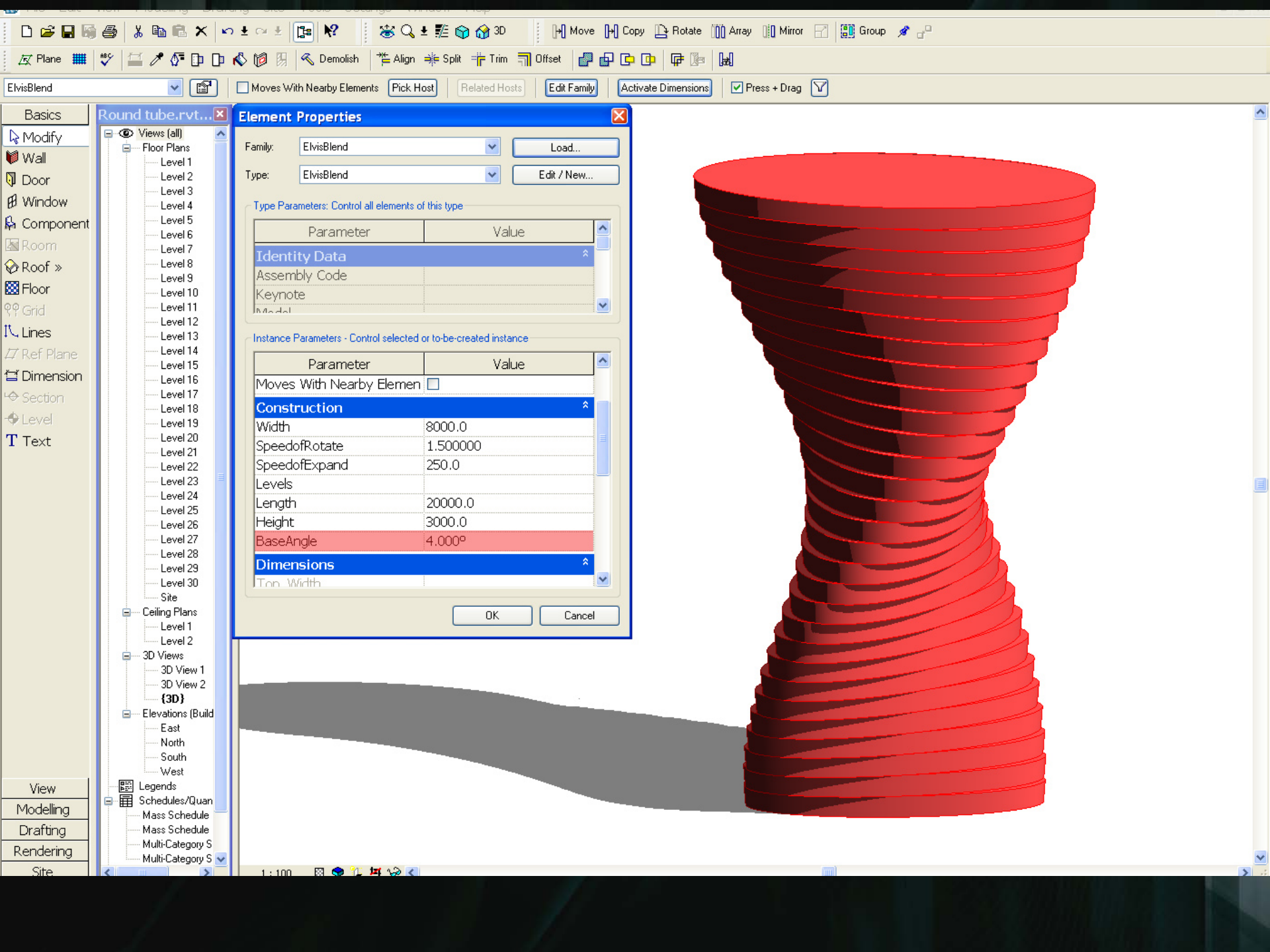
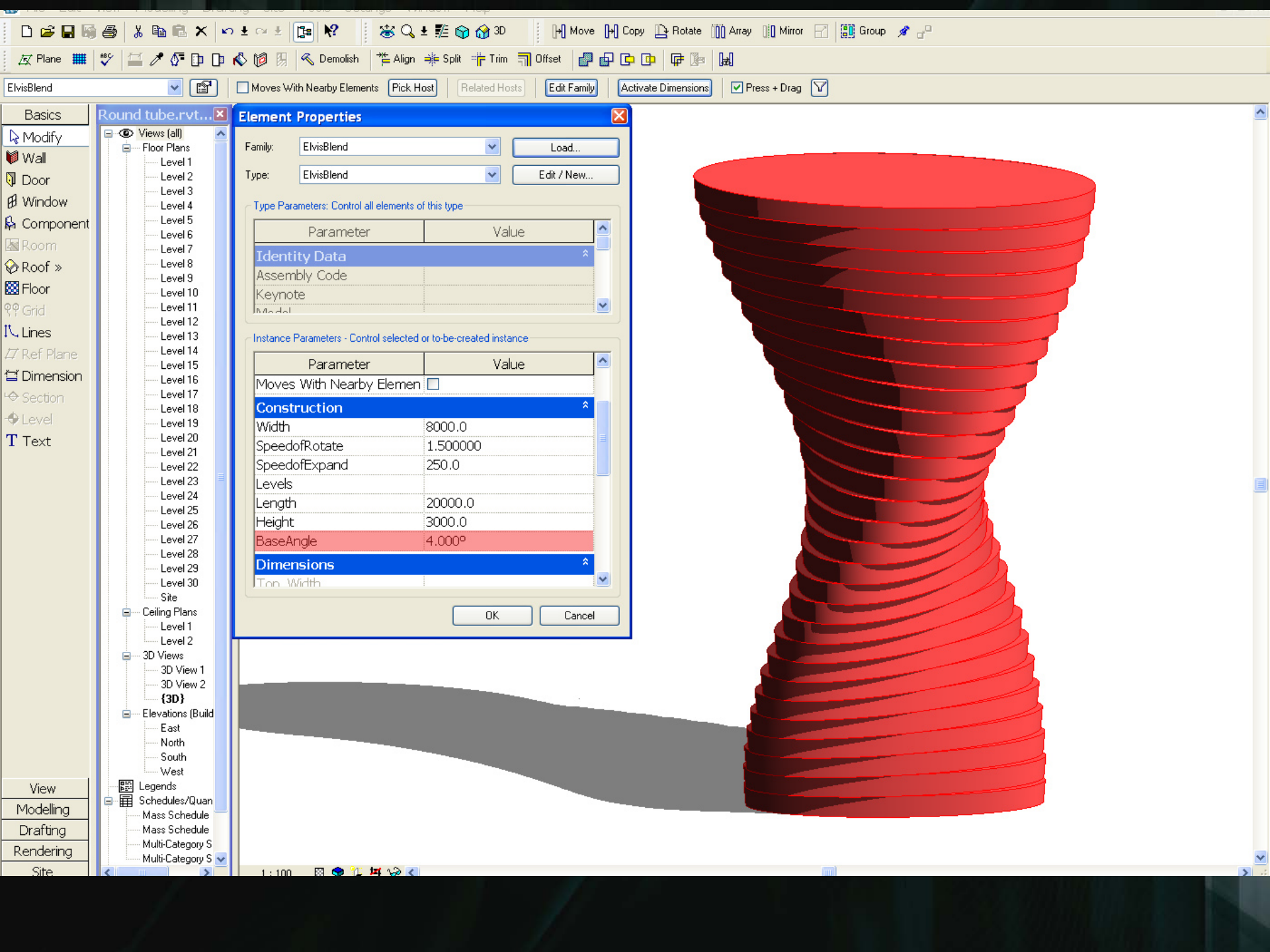
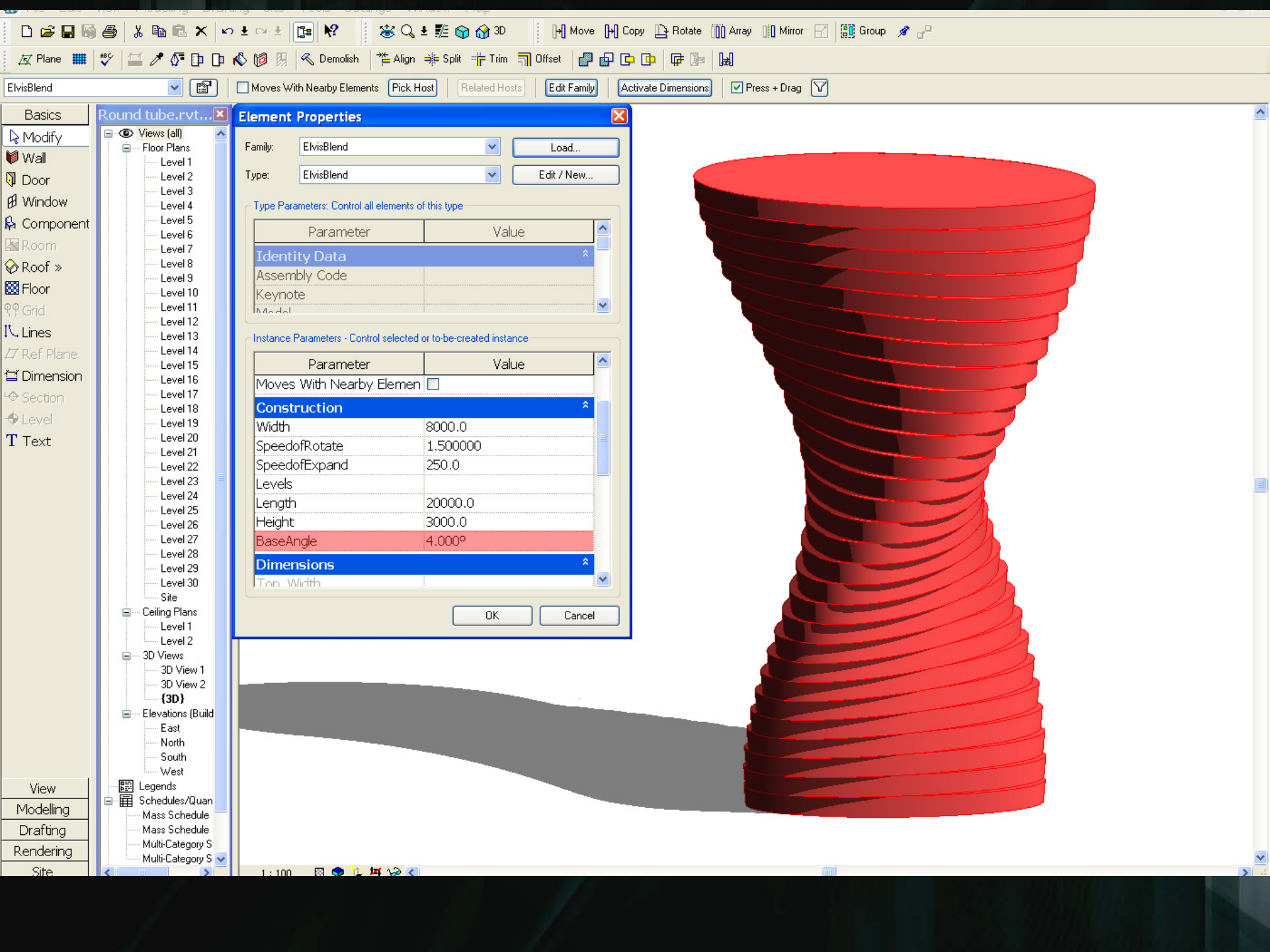
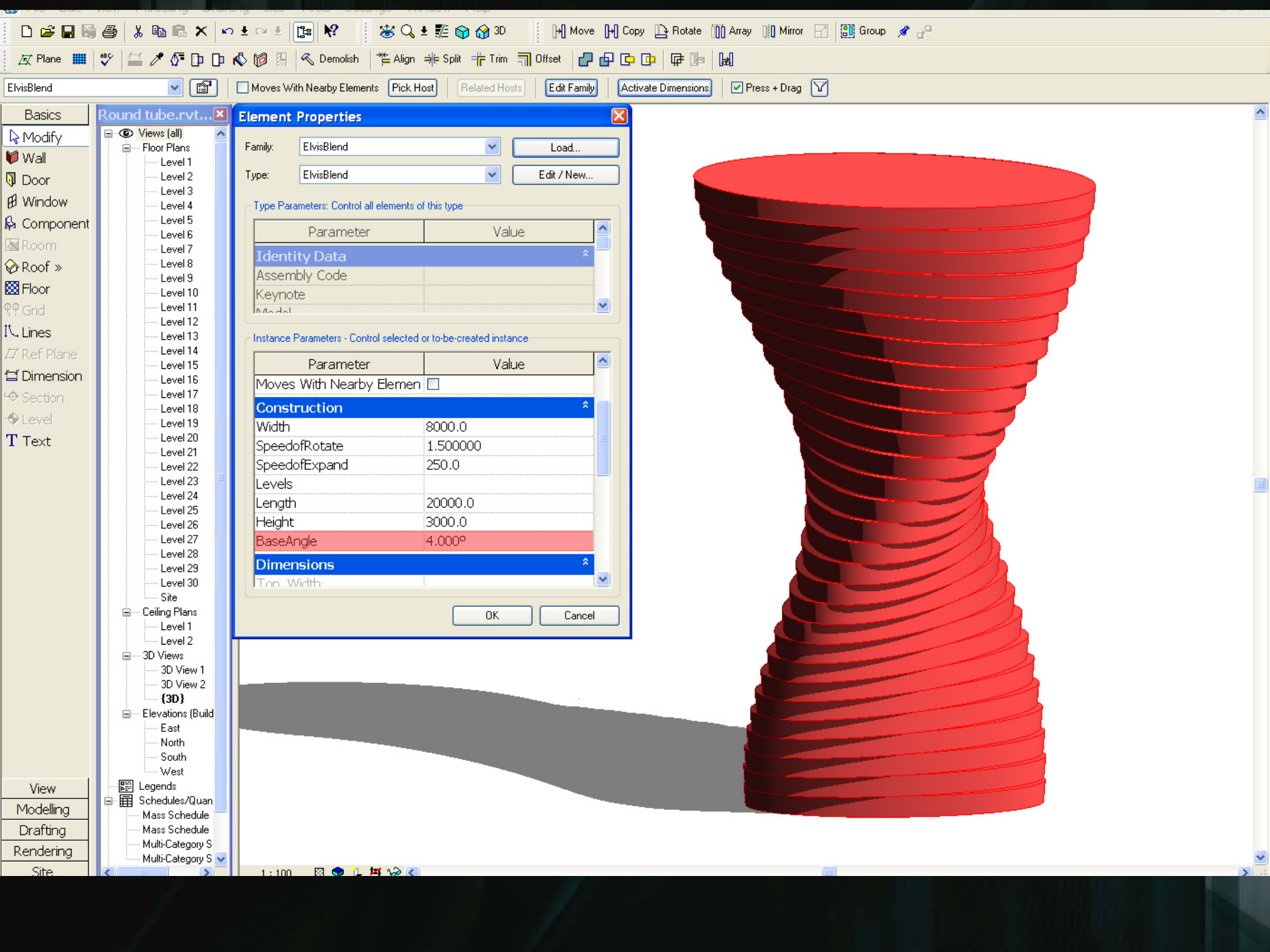
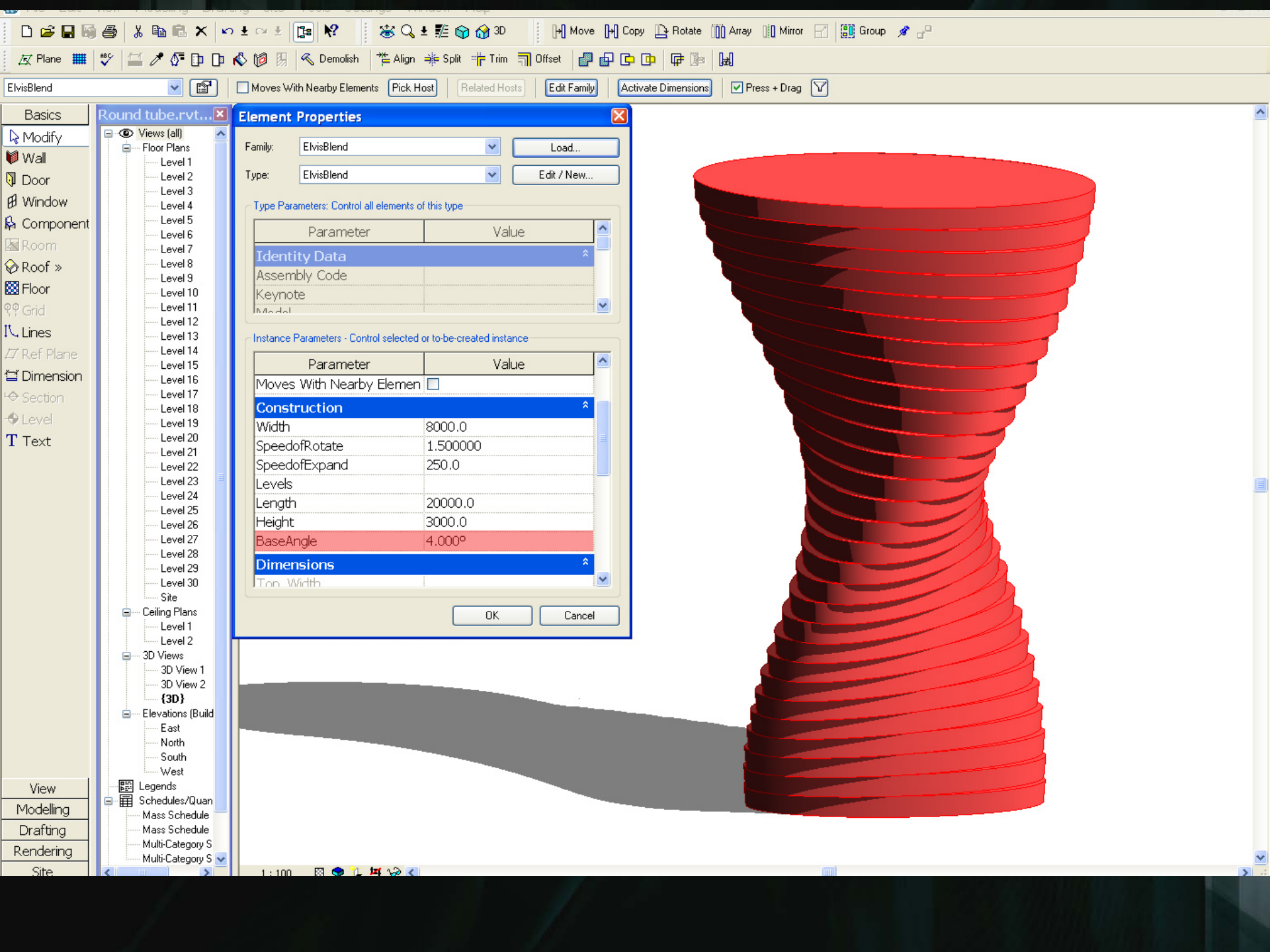
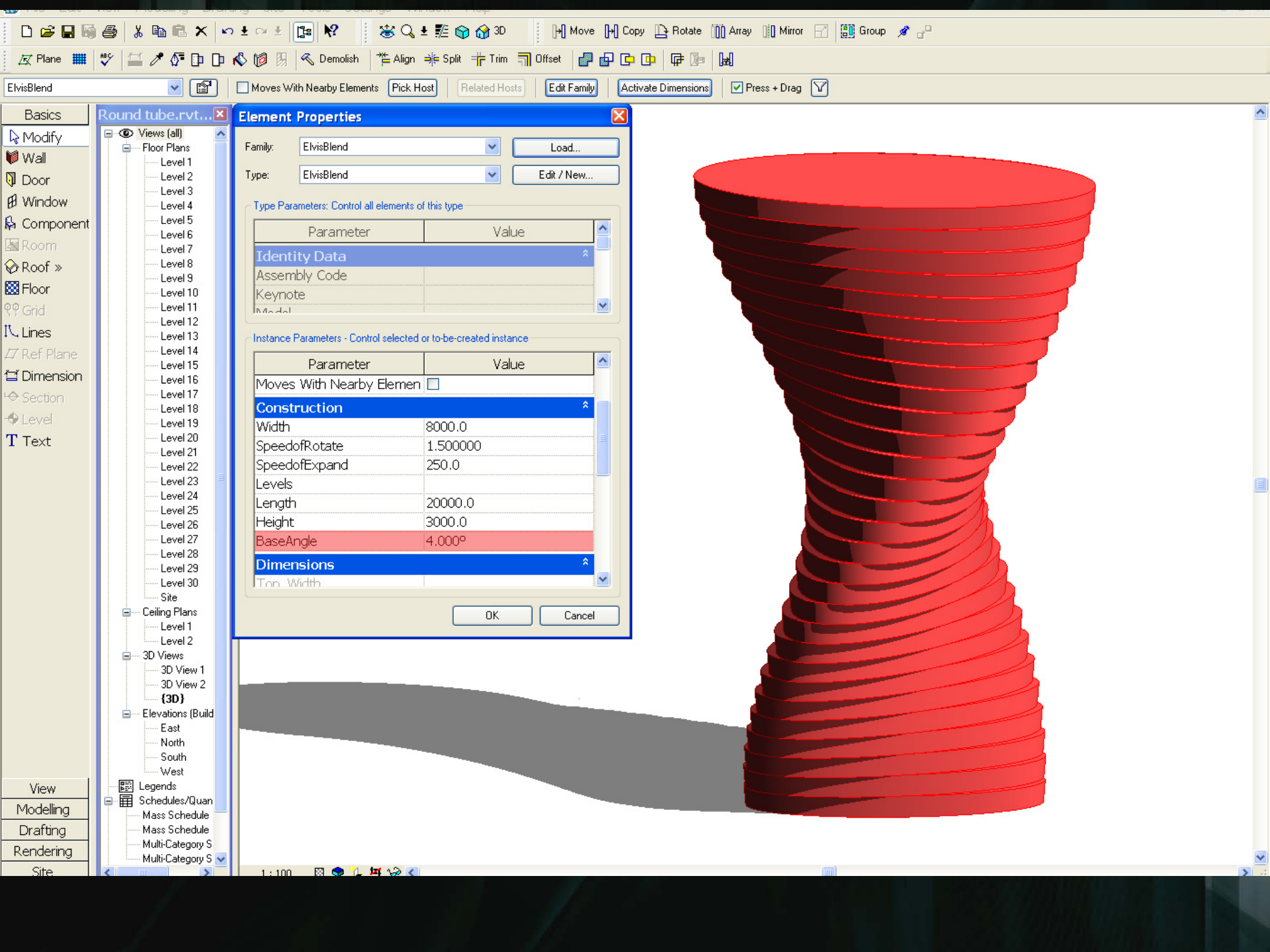
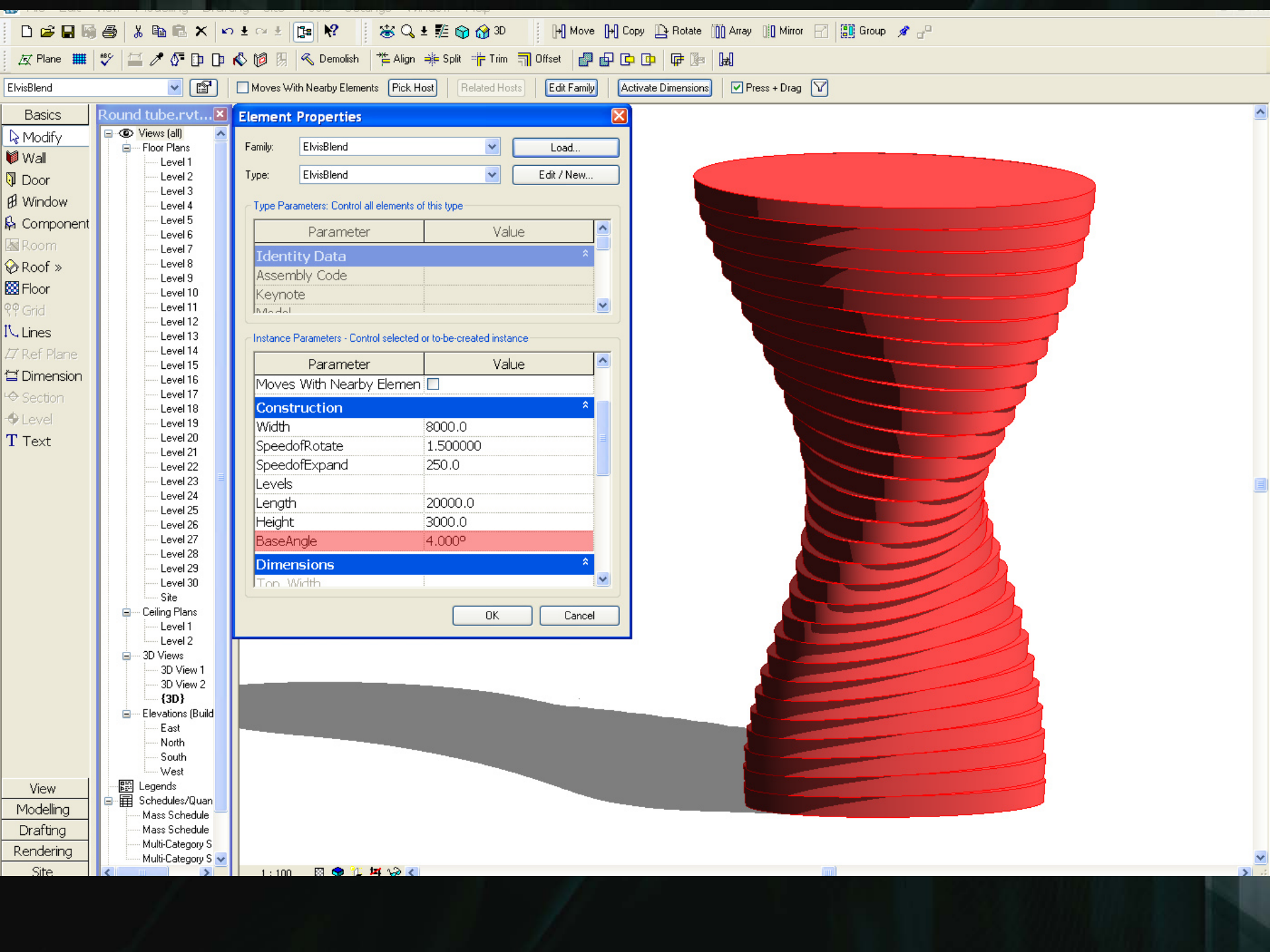
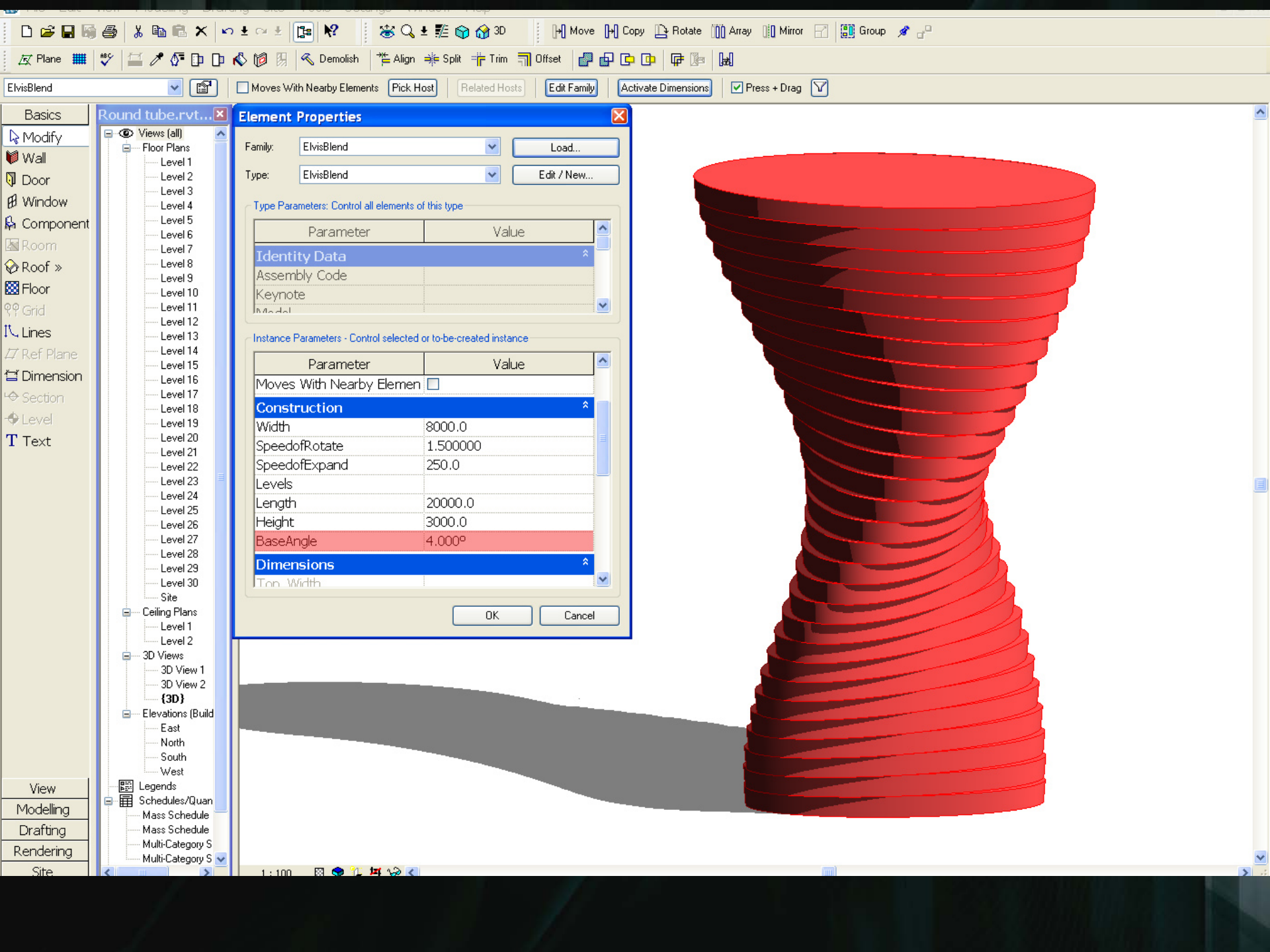
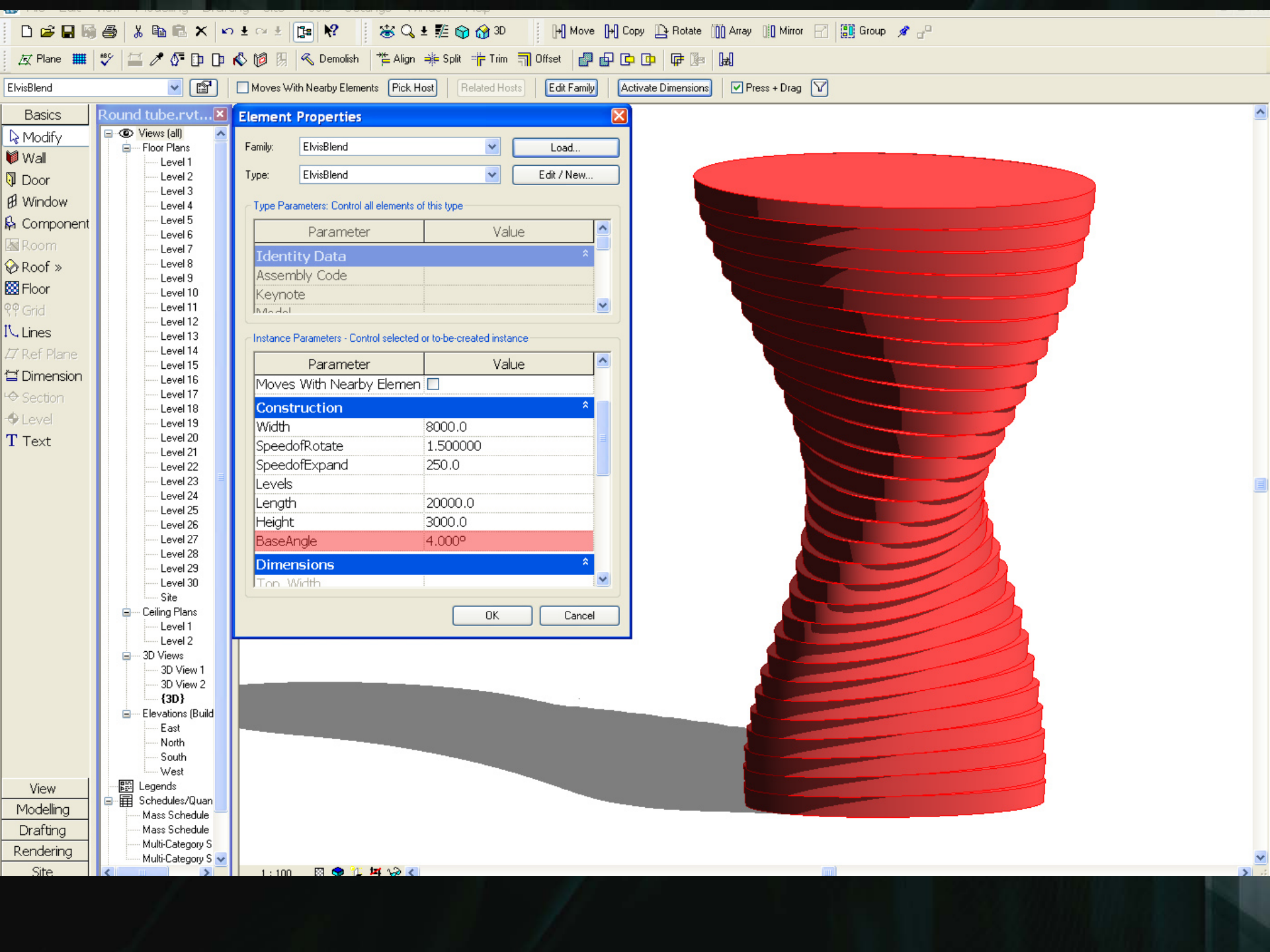
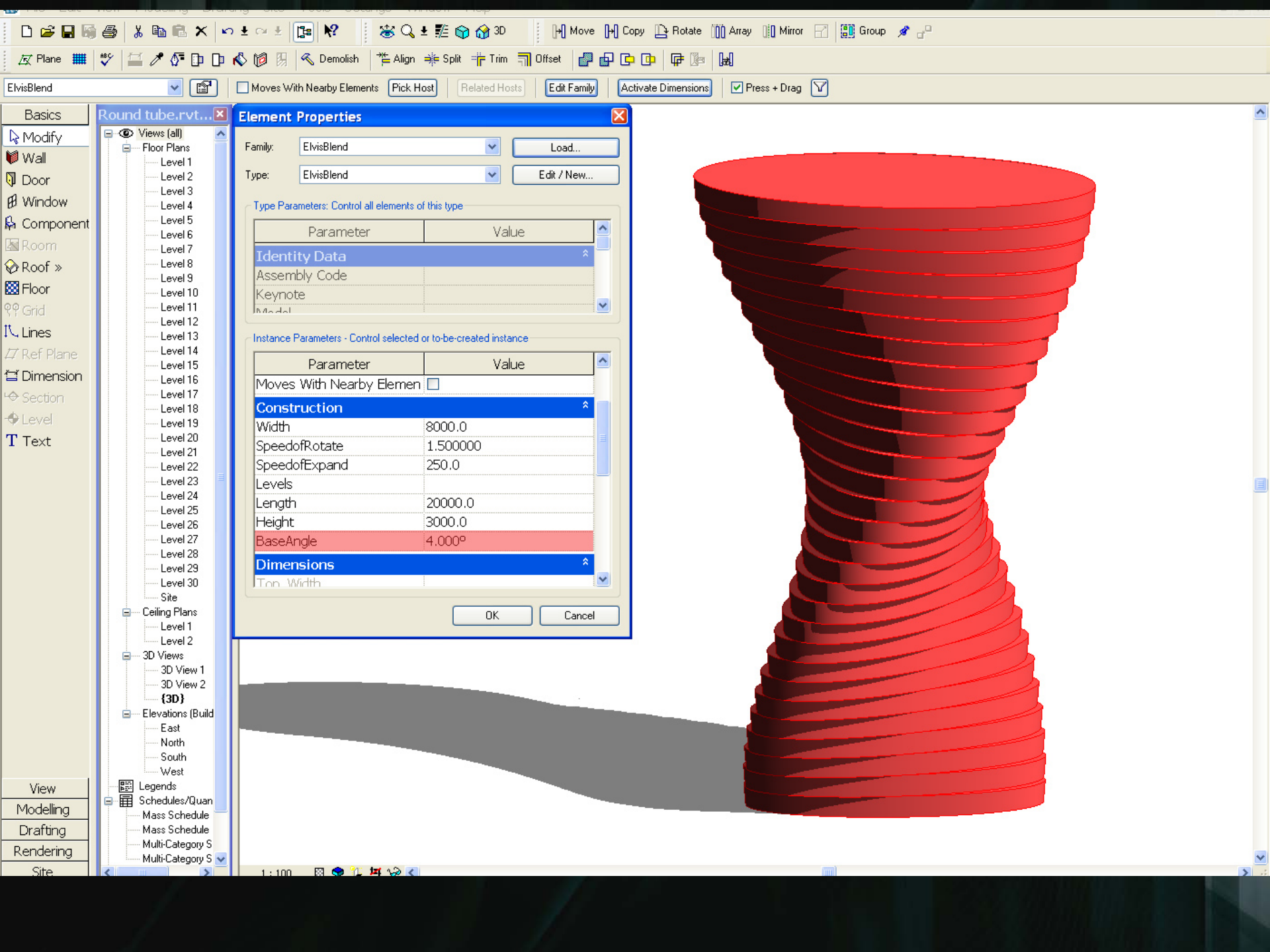
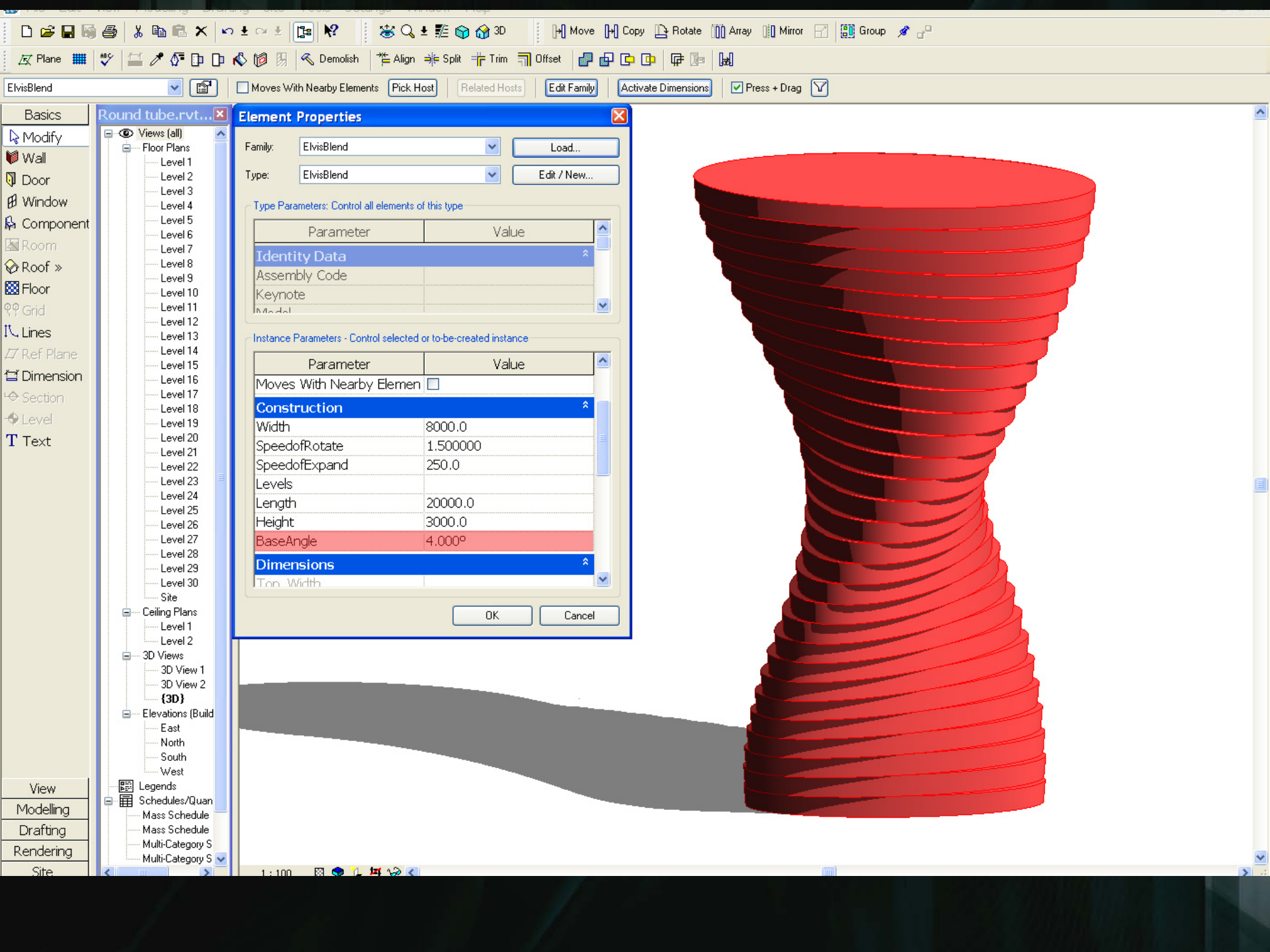
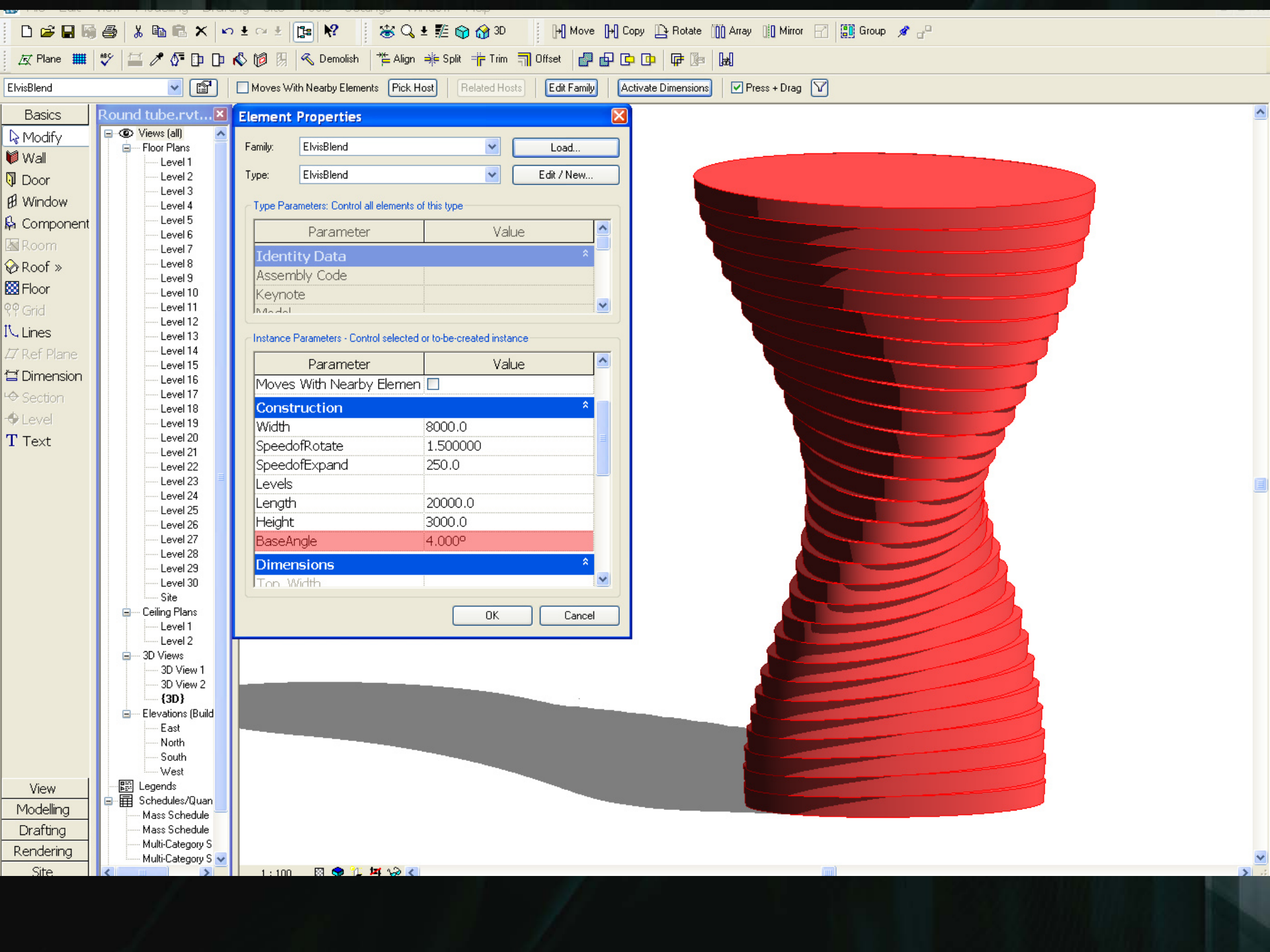
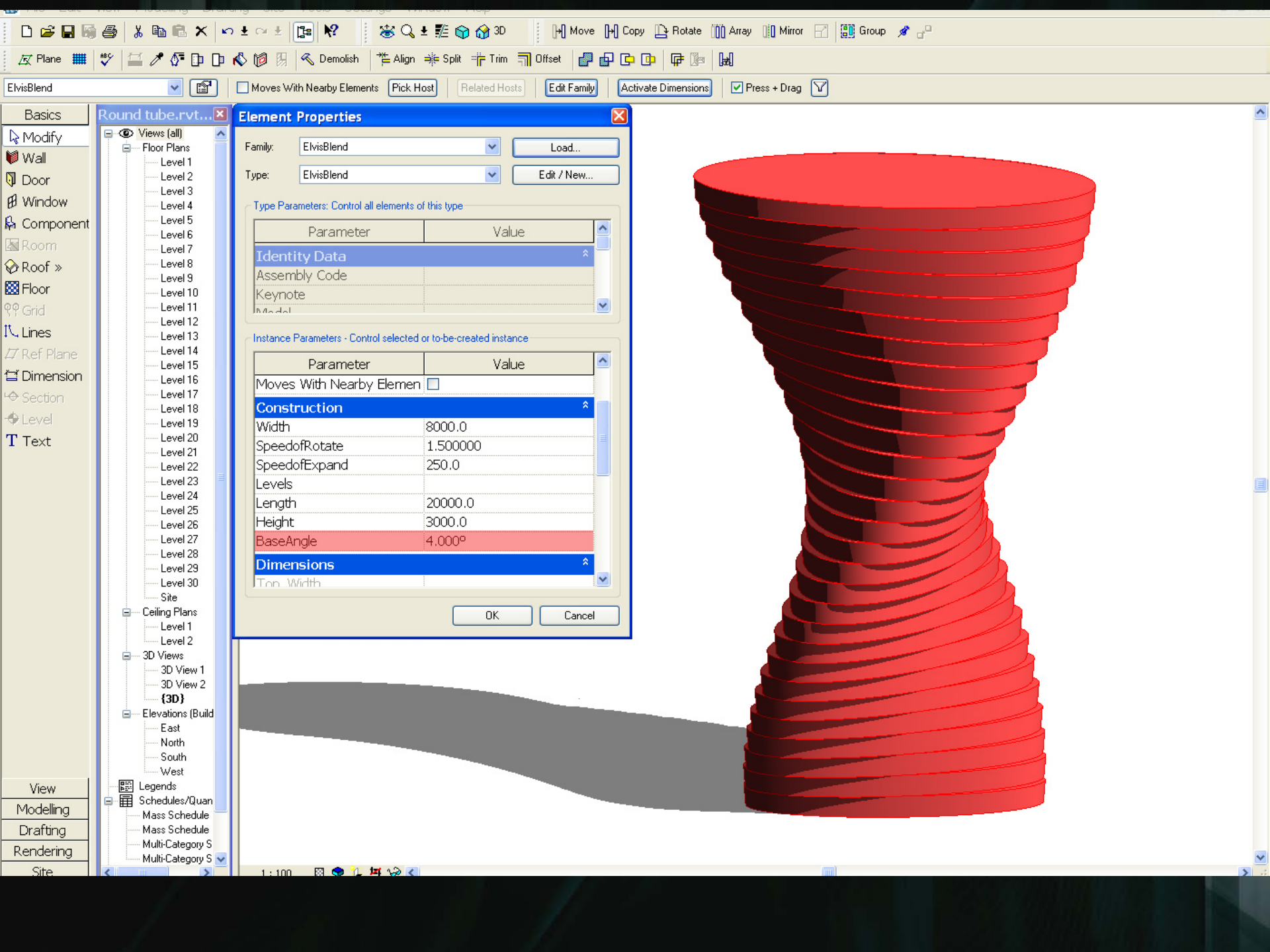
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Jan								100.0	99.7	100.0	100.0	100.0	84.6	38.8	5.2									
Feb								100.0	100.0	100.0	100.0	100.0	100.0	98.7	73.9	32.7	3.0							
Mar								100.0	100.0	100.0	100.0	100.0	100.0	100.0	91.5	60.4	25.7							
Apr						0.0		100.0	100.0	100.0	100.0	100.0	100.0	98.0	84.0	51.3	0.0							
May					0.0	0.0	0.0	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	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	96.3	0.0	0.0	0.0	0.0	0.0			
Aug				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	100.0	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				100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	95.0	63.7	26.7								
Nov					100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	77.0	31.7	1.8								
Dec								100.0	95.1	93.6	100.0	93.0	67.6	22.2										

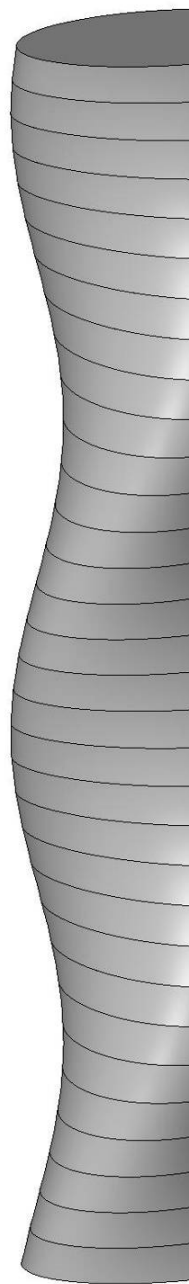
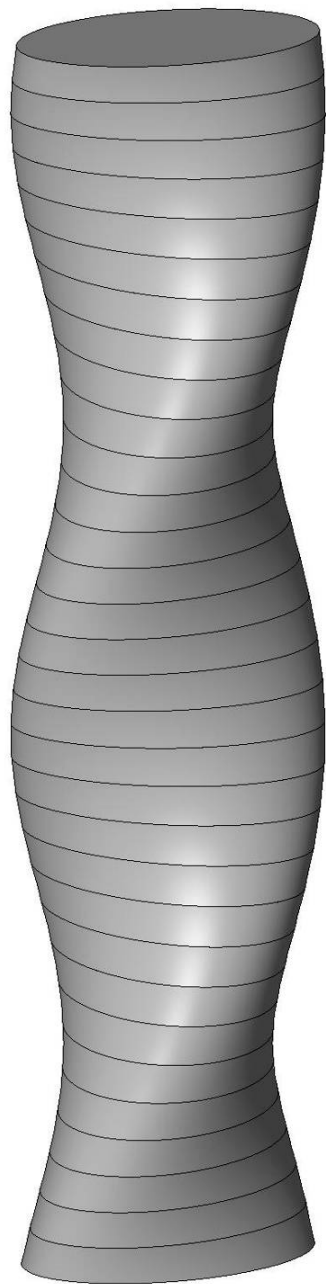
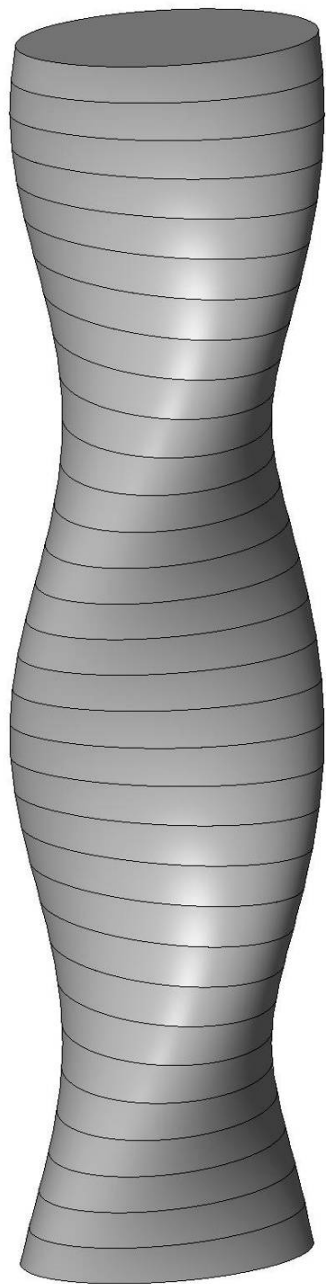
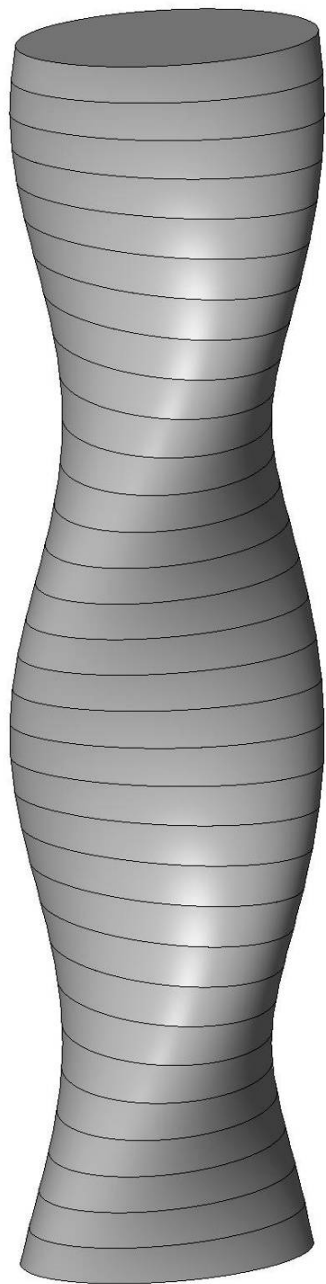
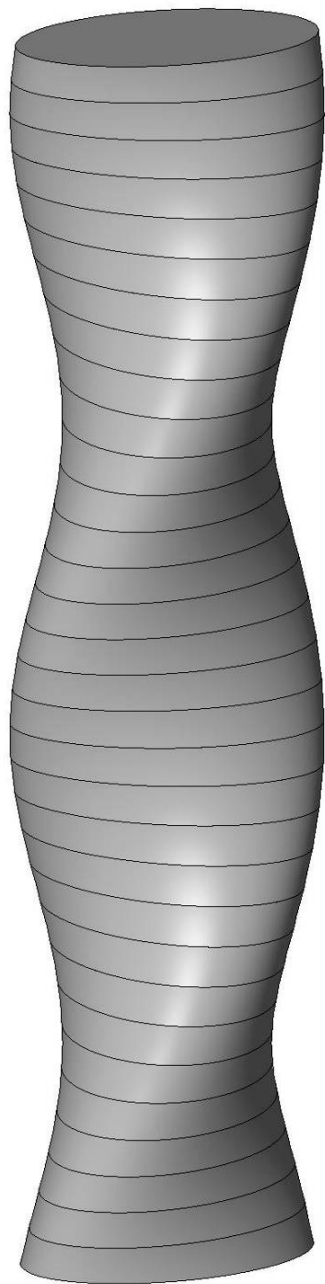


BIM 帶來的衝擊

1. 可視性型像化設計
2. 圖紙製作
3. 各專業協調合作
4. 物件清單及投標文件
5. 自動化送審文件
6. 科學性分析及可持續發展設計
7. 複雜幾何形狀建築
8. 生產制造構件









absoluteworld BUILDING 2

AbsoluteWorld's two buildings, as envisioned by their creator, Yansong Ma.

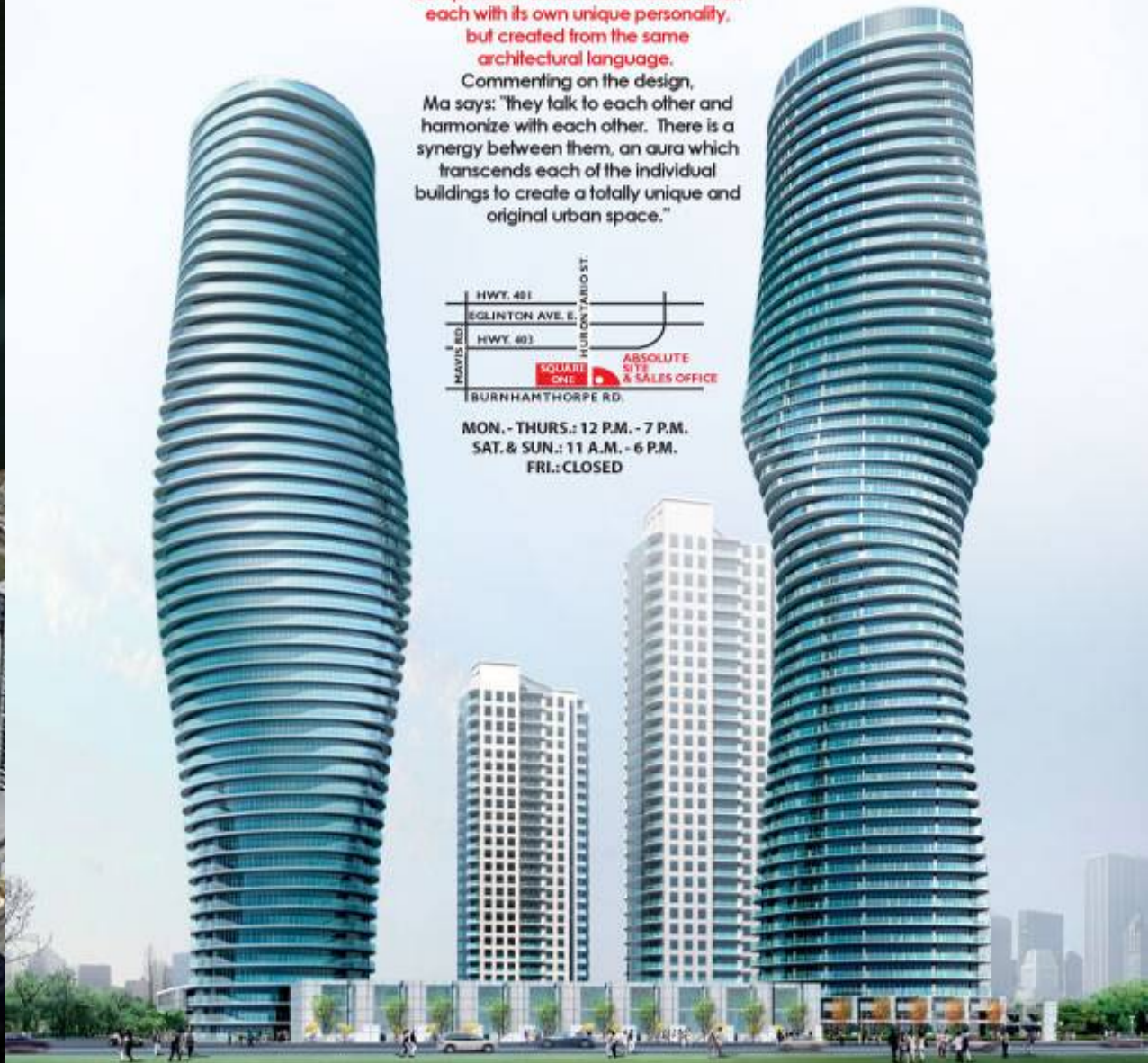
The buildings were designed to complement and enhance each other, each with its own unique personality, but created from the same architectural language.

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."



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

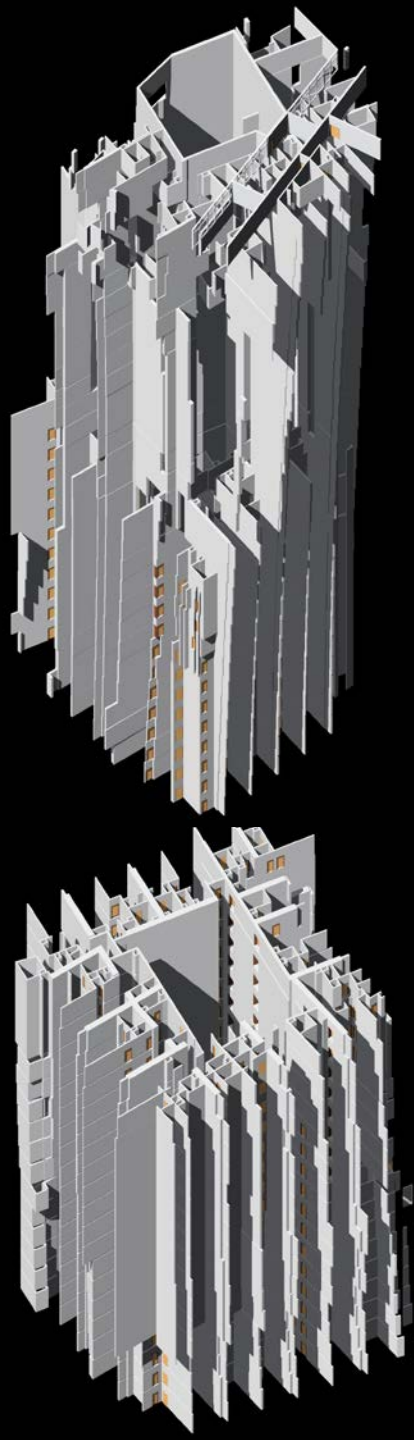
absoluteworld BUILDING 1

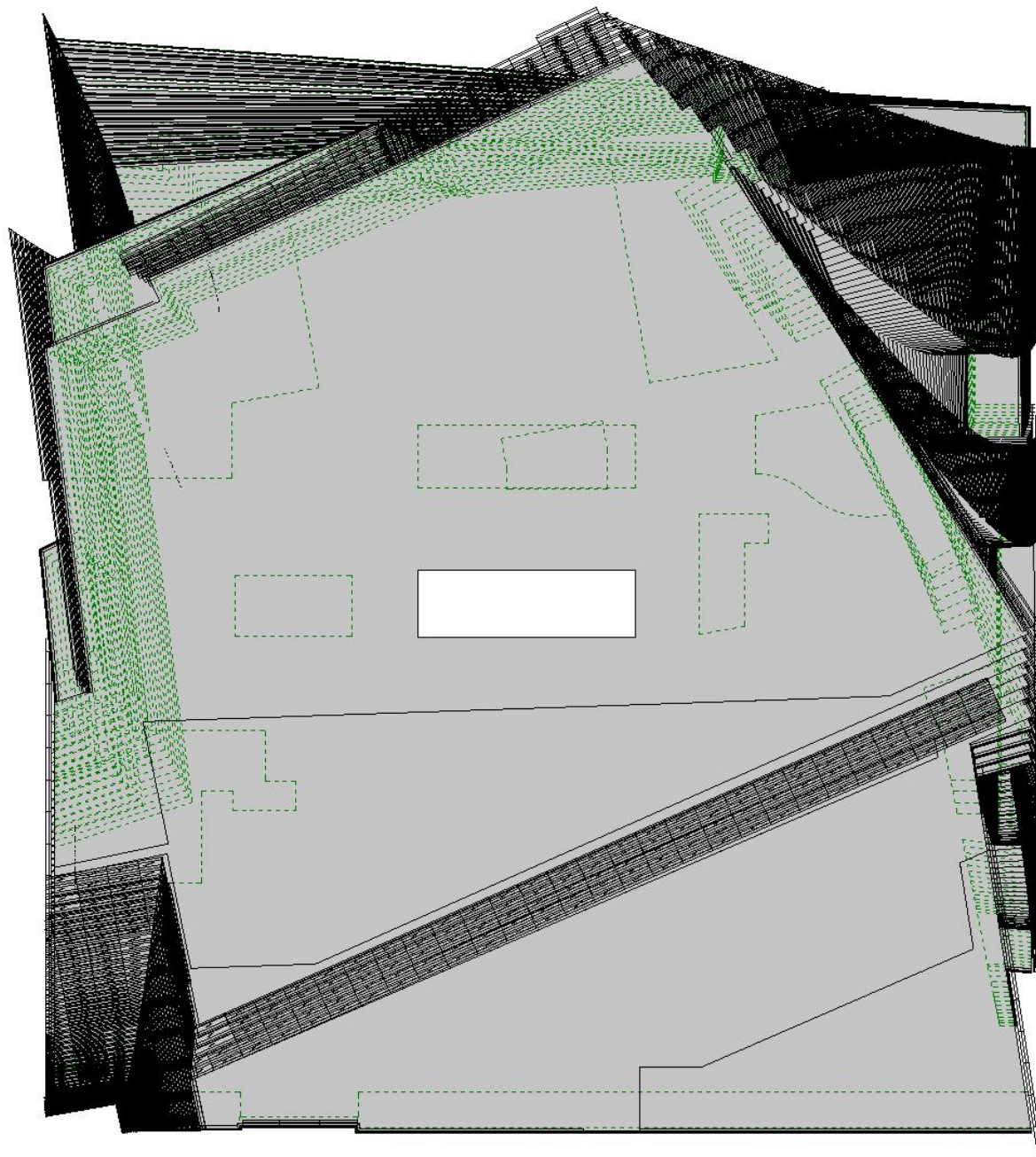


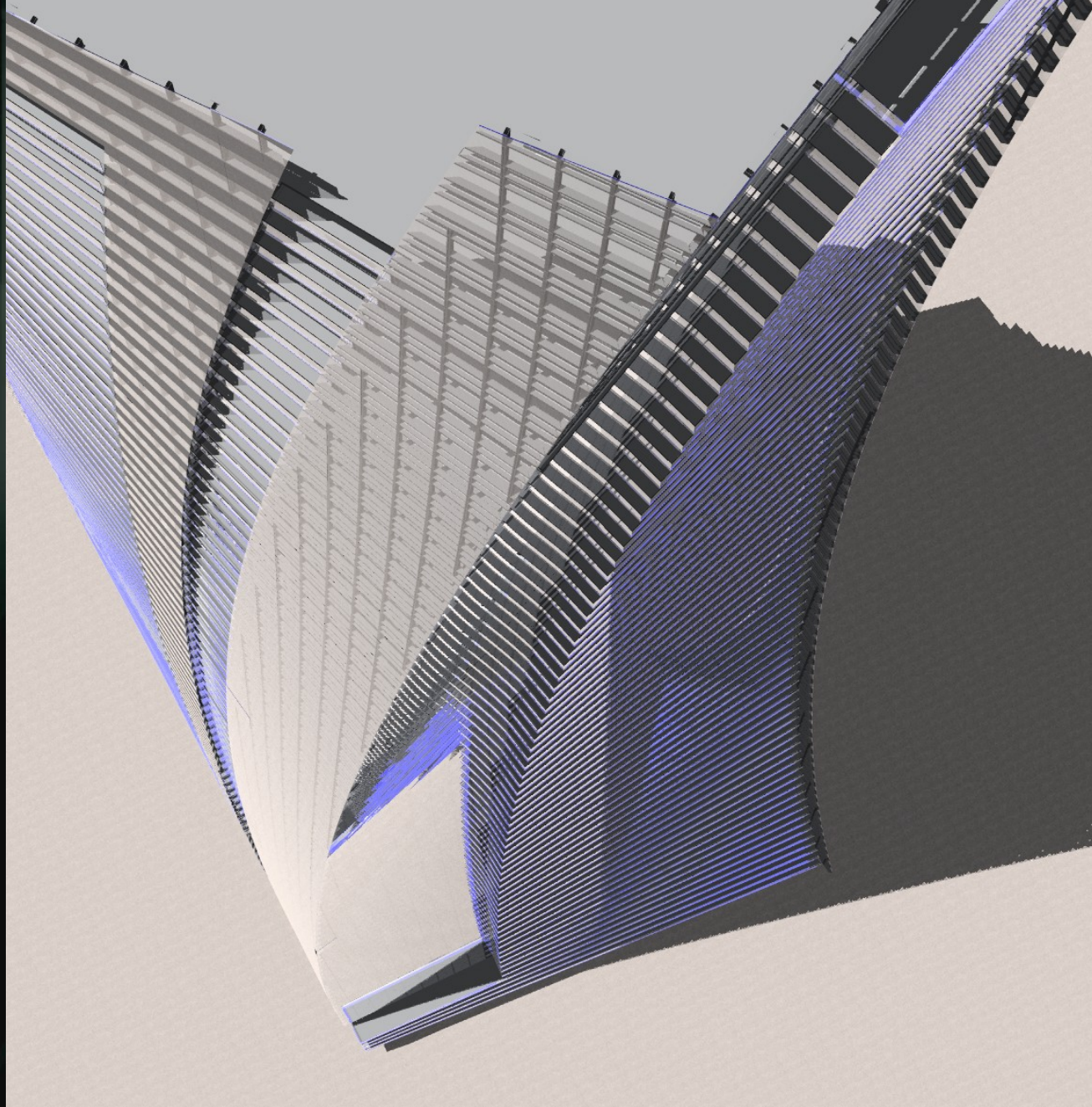
Program: Residential Site Area: 3,746 sqm
Floor Area: 659,652 sqm Building Height: 347 m

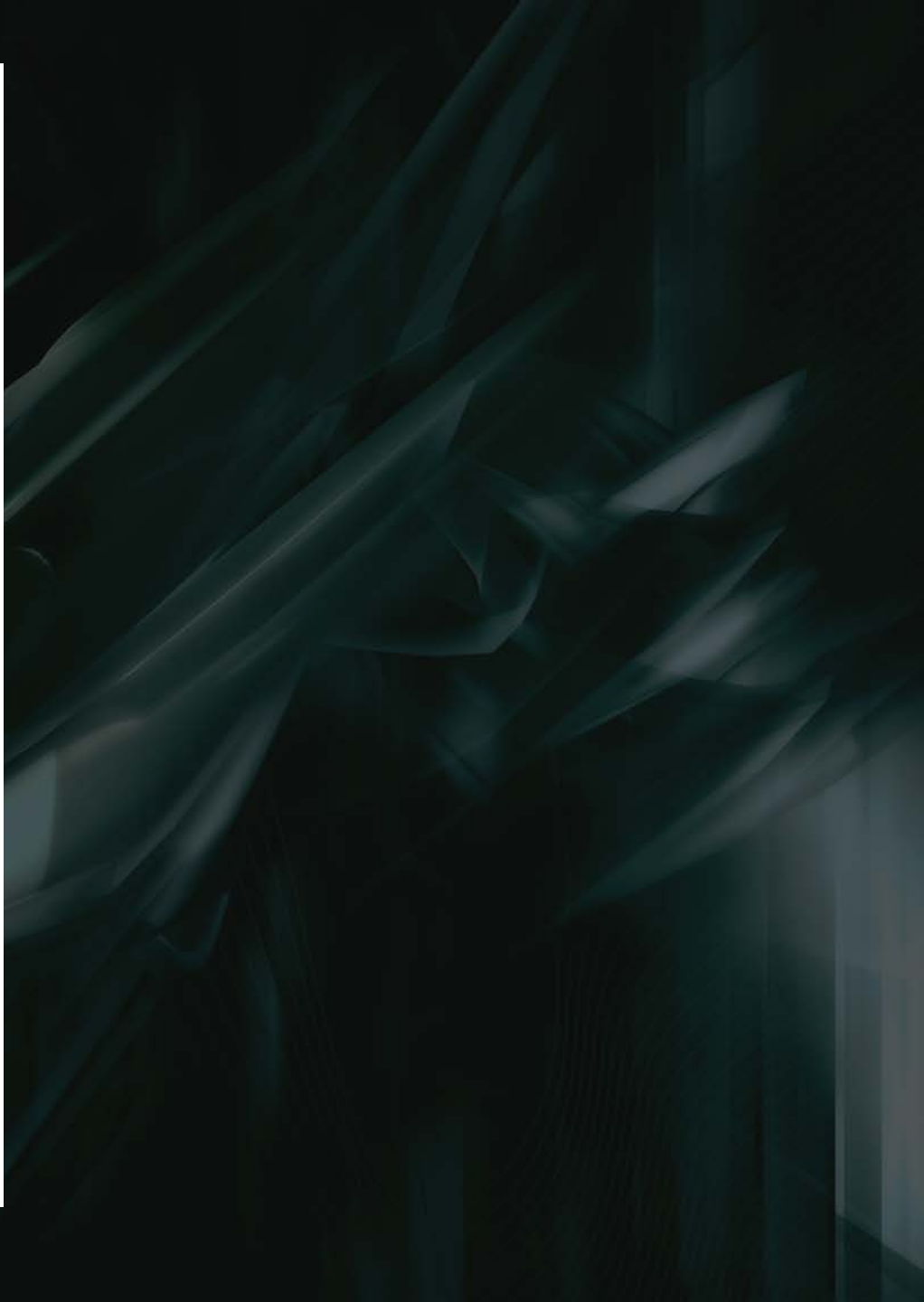
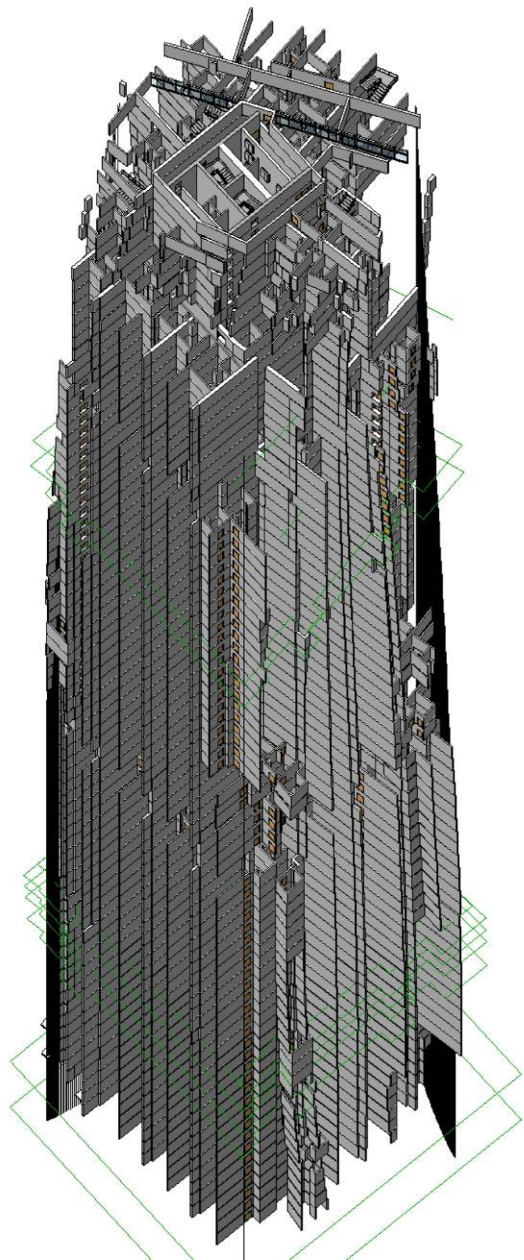


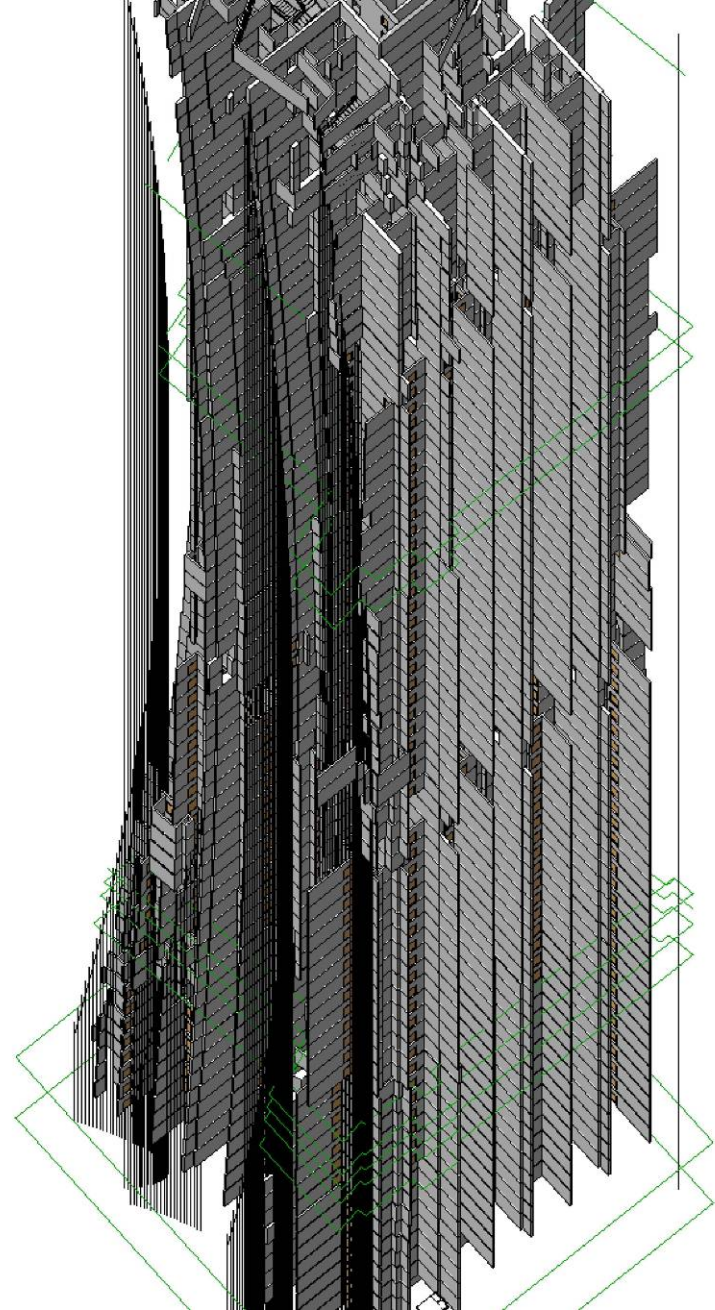
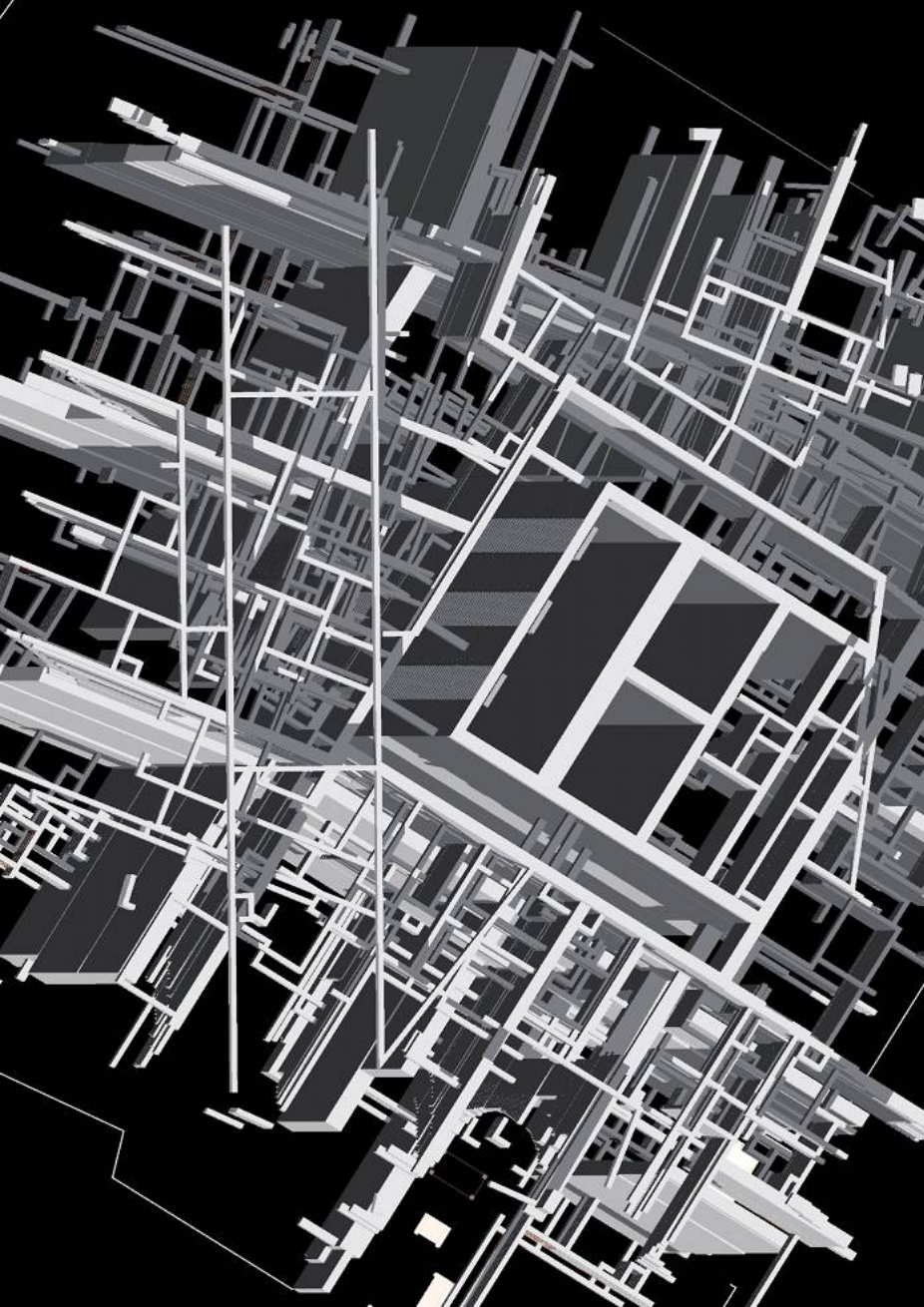
Dubai **Ocean Heights One**

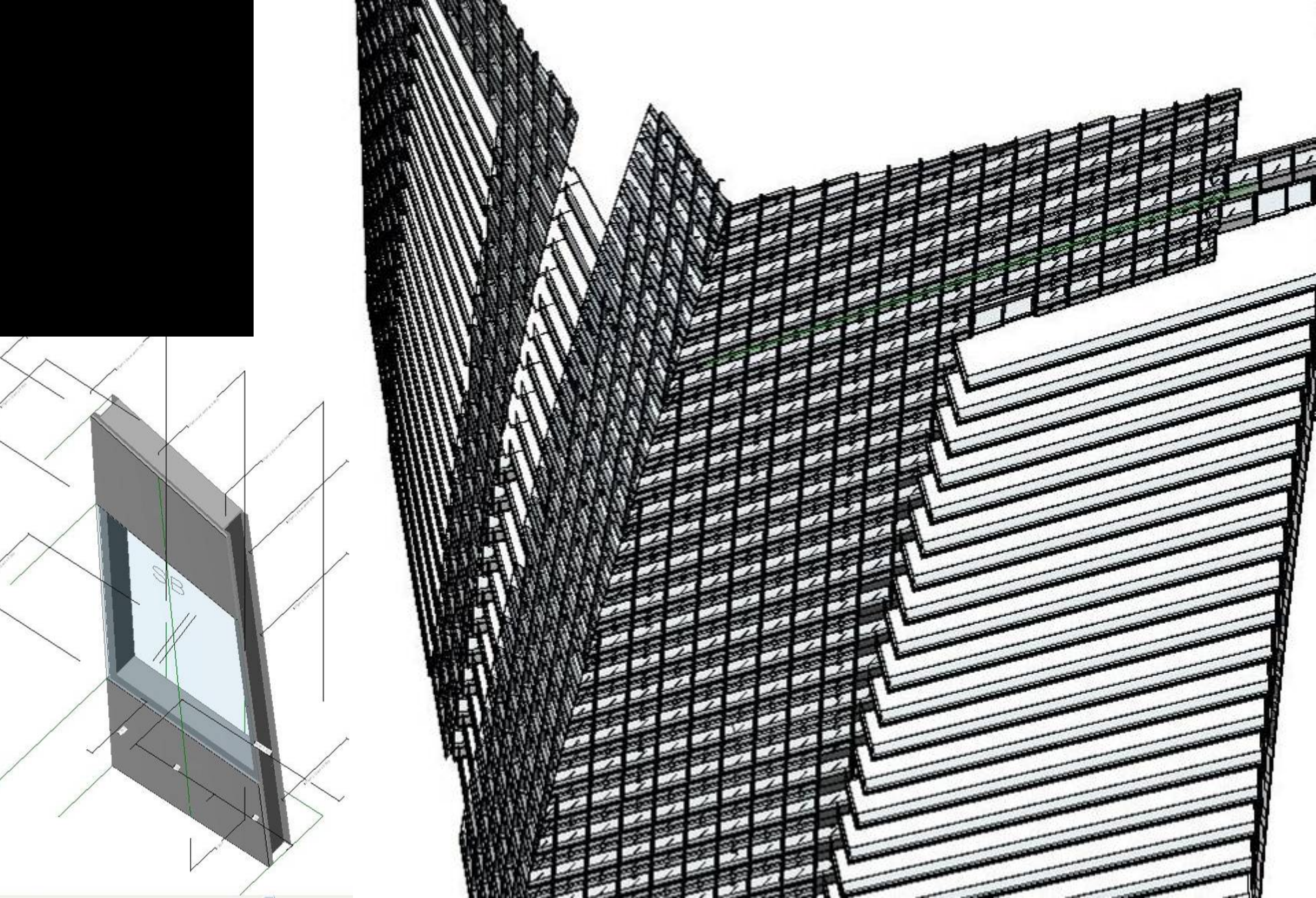


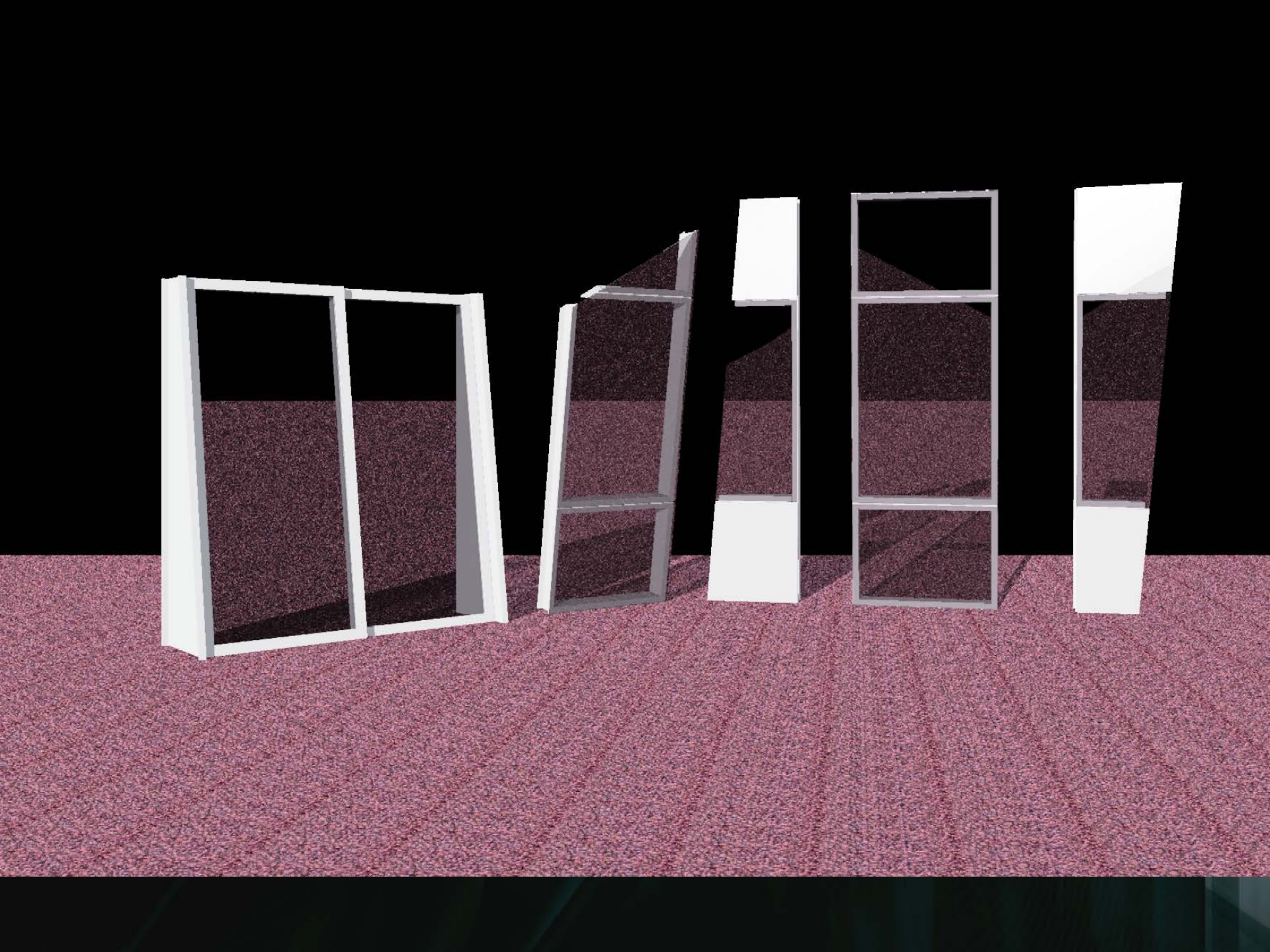












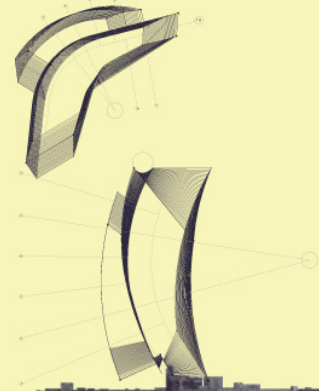
Abu Dhabi Dancing Towers

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.

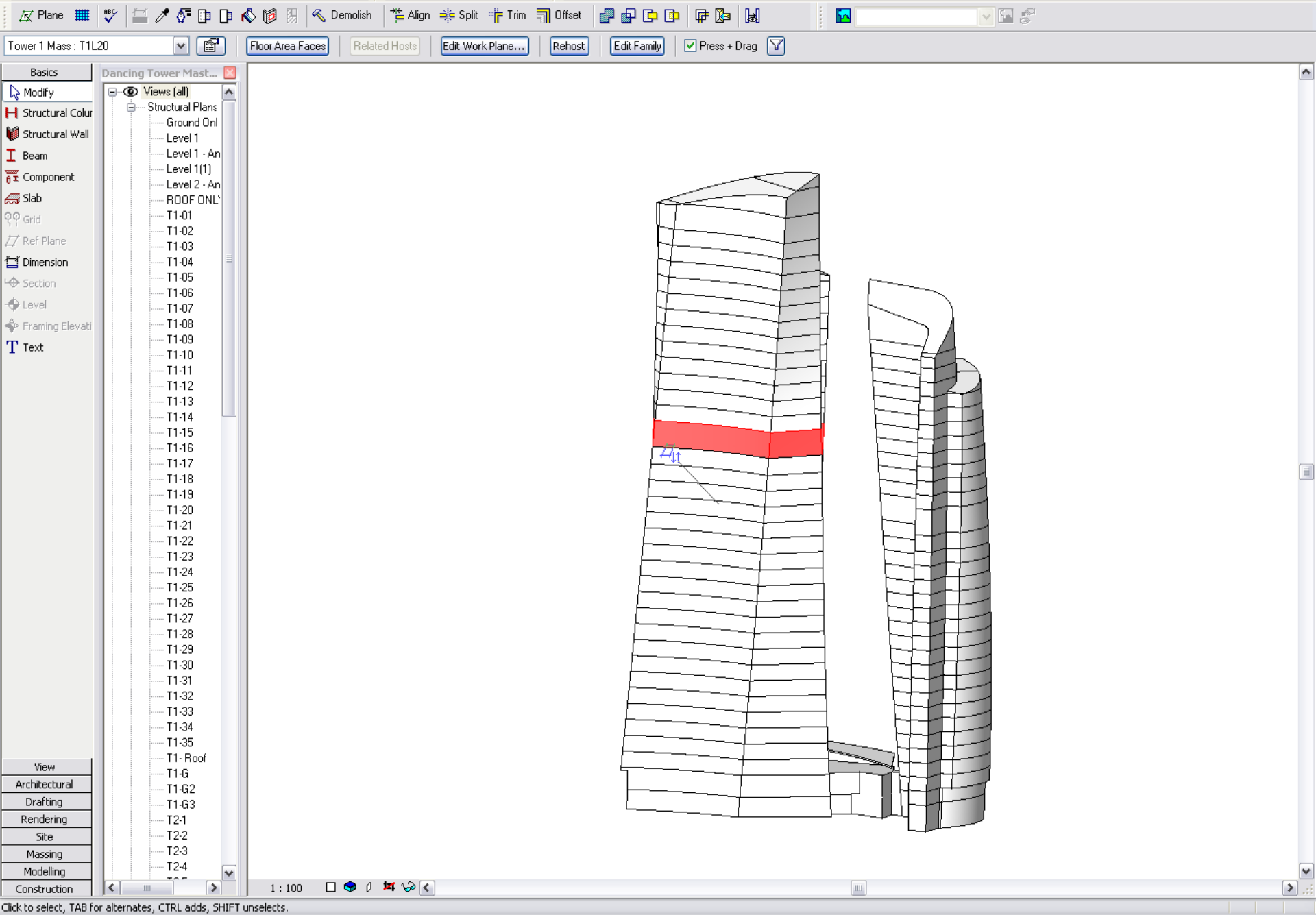
However, the two towers quickly lean, rotate, bend and warp to respond to each other, the adjacent sites and ultimately the view to the ocean at their horizon. These two figures fluidly respond to each other, dynamically engaged and flowing – and ultimately tied together in a passionate dance •

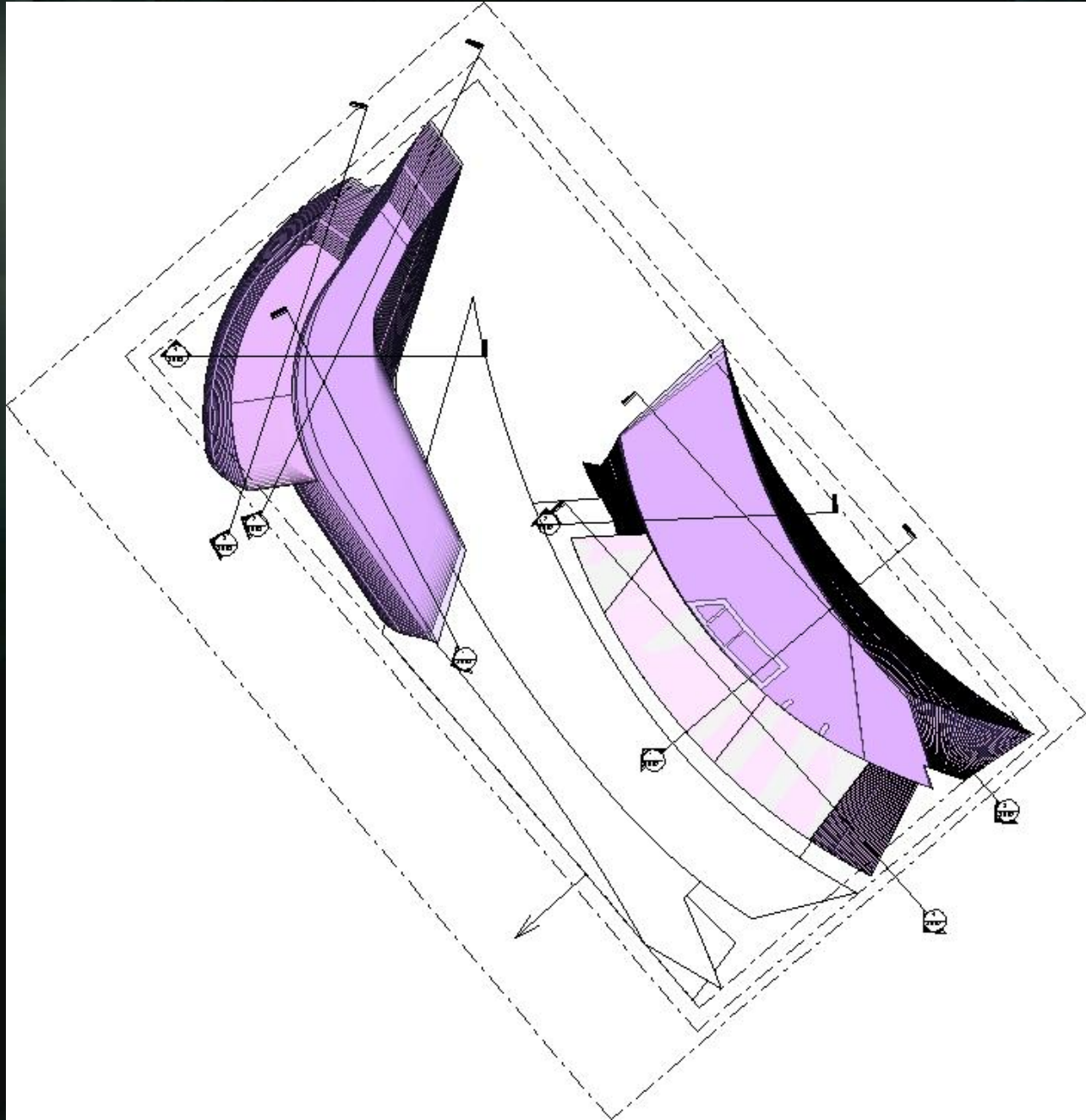


Program Mixed Use, Site Area 4,180 sqm
Floor Area 44,235 sqm, Building Height 160 m



Abu Dhabi **Dancing Towers**





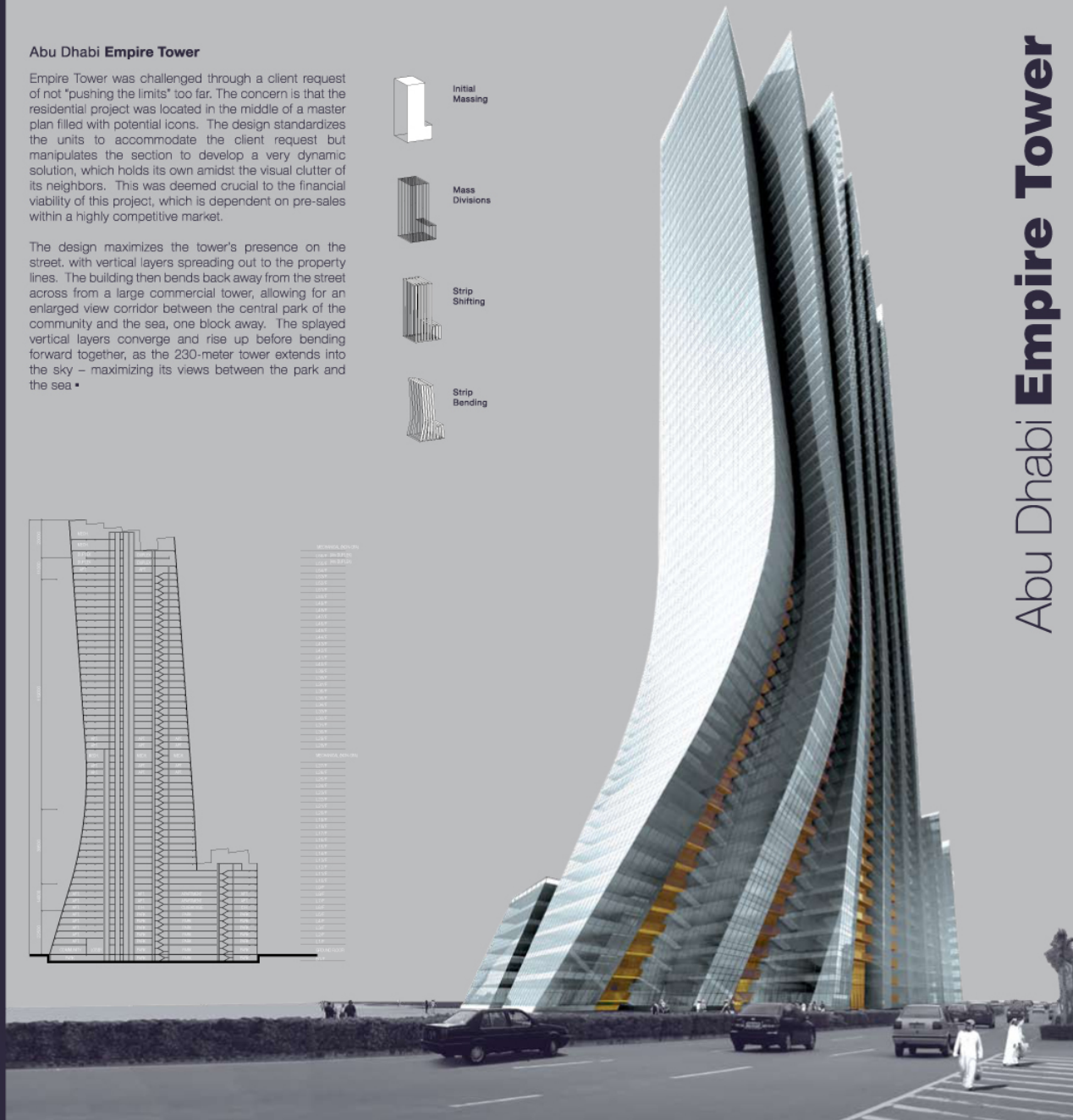
Abu Dhabi **Empire Tower**

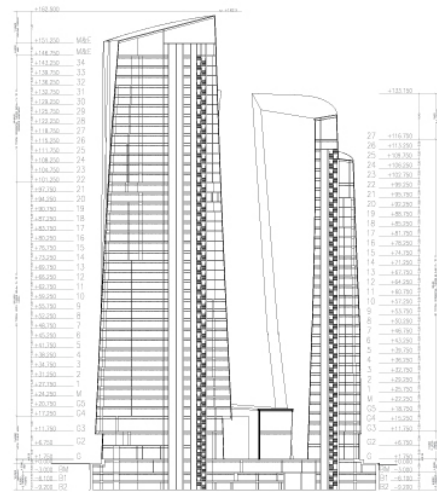
METABOLIC, 80-100

- 100th Floor
- 99th Floor
- 98th Floor
- 97th Floor
- 96th Floor
- 95th Floor
- 94th Floor
- 93rd Floor
- 92nd Floor
- 91st Floor
- 90th Floor
- 89th Floor
- 88th Floor
- 87th Floor
- 86th Floor
- 85th Floor
- 84th Floor
- 83rd Floor
- 82nd Floor
- 81st Floor
- 80th Floor

MC KINNEY, 60-79

- 79th Floor
- 78th Floor
- 77th Floor
- 76th Floor
- 75th Floor
- 74th Floor
- 73rd Floor
- 72nd Floor
- 71st Floor
- 70th Floor
- 69th Floor
- 68th Floor
- 67th Floor
- 66th Floor
- 65th Floor
- 64th Floor
- 63rd Floor
- 62nd Floor
- 61st Floor
- 60th Floor



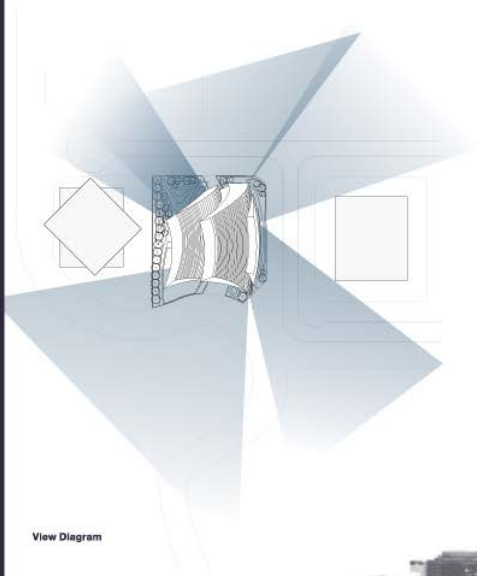


Section

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.

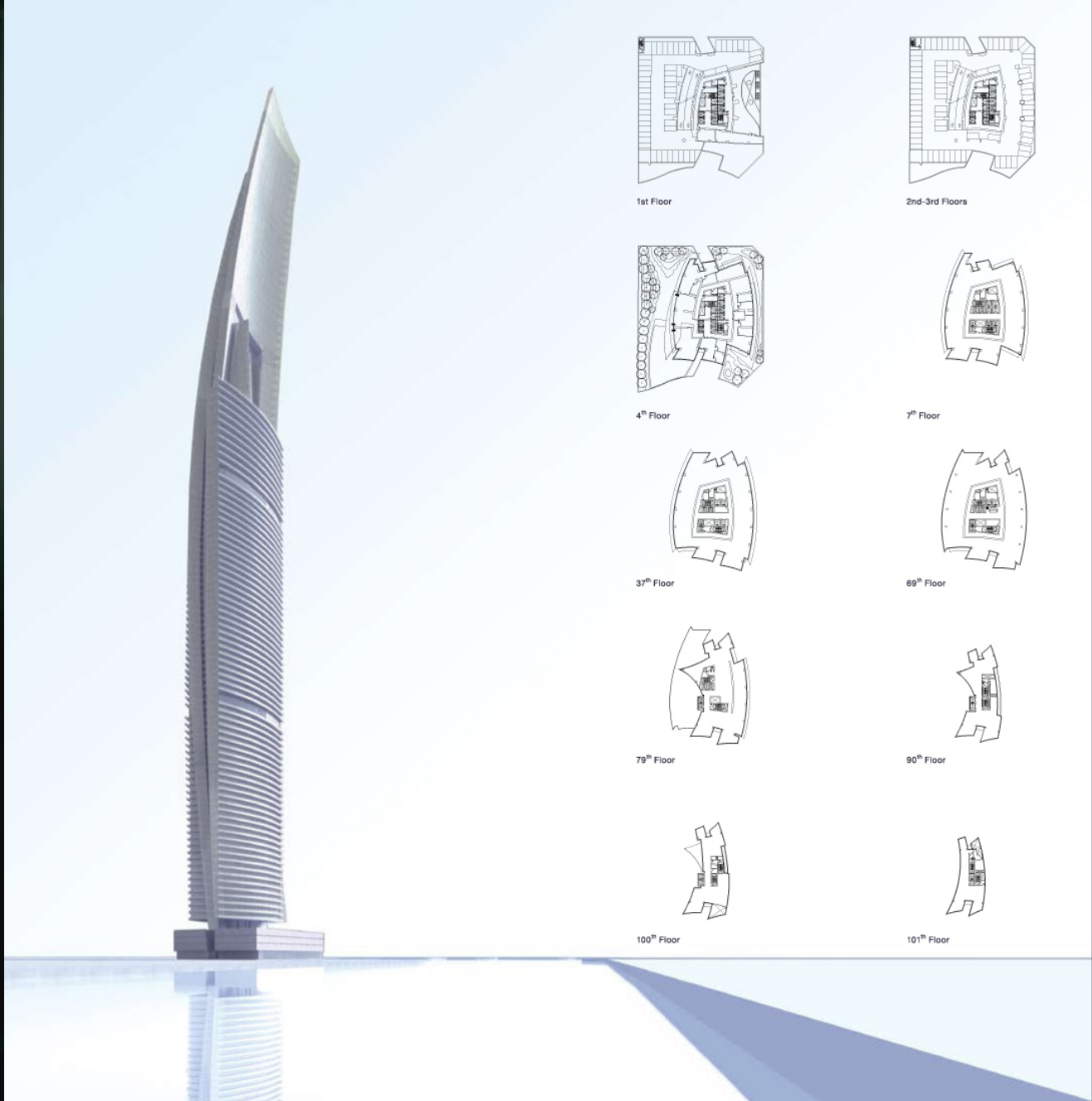
The first 60th floors of the tower are intended to be service apartments, which in order to be marketable, needed to have the majority of units standardized. The curved shape of the tower improves views past its densely located neighbors. The playfulness of this tower was concentrated into the two most 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 •



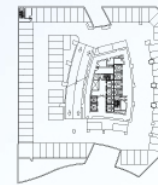
View Diagram



Dubai Ocean Heights Two



1st Floor



2nd-3rd Floors



4th Floor



7th Floor



37th Floor



89th Floor



79th Floor



90th Floor



100th Floor



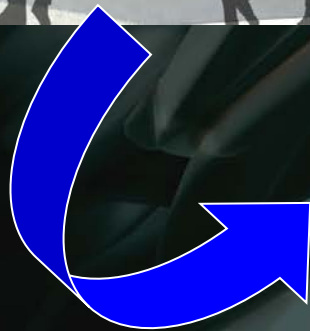
101st Floor

Ocean Heights II



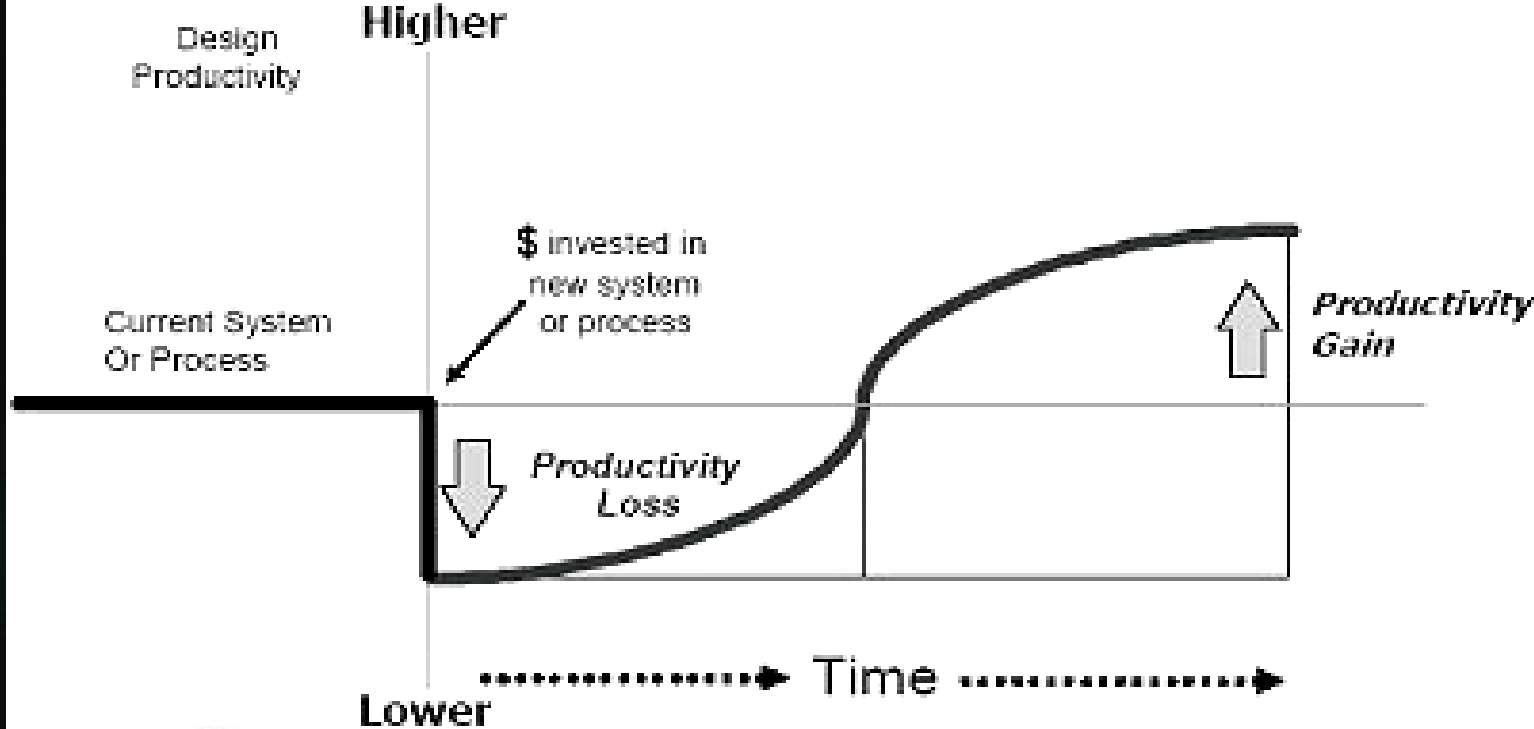
BIM 帶來的衝擊

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建築行業在改變嗎？





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

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%

資料來源 26/1/07:

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

生產效率 >60%

Design and Construction

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- Architecture & Engineering
- CAD Standards
- ▶ 3D-4D Building Information Modeling
 - 3D-4D-BIM Overview
 - Spatial Program Validation
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 - 3D Laser Scanning
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- Sustainable Design
- Urban Development
- Design and Construction Delivery Process

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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 Modeling (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

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