#### 48-749 Parametric Modeling Lecture 2a

Carnegie Mellon University School of Architecture

## Revit 2010 Basics

Walls

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#### Modeling with Sketch based techniques

- using sweep and extrusion
- Doors, windows
- Floors, roofs
- Miscellaneous Functions

# Wall Types

#### Exterior Walls

exterior skin of the building model

#### Interior Walls

 interior partitions in a building project and have a non-bearing character

#### Foundation Walls

 walls that form the foundation or substrate of the main building structure

#### Curtain Walls

 predefined curtain walls or screen walls consisting of panels and mullions

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## Wall Types

 Wall tool Choose Home tab > Wall from the menu bar or choose the Wall tool from the Design Bar

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A	Home	Insert	Annotate M	Modify M	lassing & Site	Collaborate	View Manage			
Wall	Door	Window	Component	Column	Roof ∙	<ul> <li>Curtain Syster</li> <li>Curtain Grid</li> <li>Mullion</li> </ul>	n 🔊 Model Text I'. Model Line [6] Model Group	<ul> <li> <i>∰</i> Railing</li></ul>	-¹-⊕ 8 <sup>++</sup> Level Grid	<ul> <li> <i>B</i> Beam ▼         </li> <li>         Brace         </li> <li> <i>B</i> Foundation ▼         </li> </ul>
				Build			Model	Circulation	Datum	Structure



#### Type Selector Bar

# Wall Properties

- The Properties button predefined properties of the selected wall type.
- When you choose this button, the Element Properties dialog box is displayed.

ranniy:	System Family: Cur		oad
Туре:	Curtain Wall 1	Dup	licate
		Rer	name
Type Param	eters		
	Parameter	Value	
Constru	uction		
Function		Exterior	
Automat	ically Embed		
Curtain F	Panel	None	
Join Con	dition	Not Defined	
Vertica	l Grid Pattern		
Layout		None	
Spacing			
Adjust fo	or Mullion Size		
Horizor	ntal Grid Patter	n	
Layout		None	
Spacing			
Adjust to	or Mullion Size		
Vertica	l Mullions		
Interior <sup>•</sup>	Туре	None	
IBorder 1	Tvne	None	

# Wall Type Parameters

• To view and modify the type parameters of a wall, choose the **Edit/New** button in the **Instance Properties** dialog box.

Instance Properties	
Family: System Family: Basic Wal	Load
Type: Co-house - Exterior - Brid	k on CMU 💌 🛛 Edit Type
Instance Parameters - Control selected	d or to-be-created instance
Parameter	Value 🔷
Constraints	*
Location Line	Wall Centerline
Base Constraint	1st Flr. Cnst.
Base Offset	0' 0"
Base is Attached	
Base Extension Distance	0' 0''
Top Constraint	Up to level: 5th PARAPET
Unconnected Height	38' 0"
Top Offset	0' 0"
Top is Attached	
Top Extension Distance	0' 0"
Room Bounding	
Related to Mass	
Structural	*
Structural Usage	Non-bearing
Dimensions	*
Length	32' 1 119/128"
	OK Cancel

Family: System Family: C	Curtain Wall 🔽 Load	
Type: Curtain Wall 1	Duplicate	
	Rename	
Type Parameters		
Parameter	Value	ľ
Construction	*	Í.
Function	Exterior	
Automatically Embed		
Curtain Panel	None	
Join Condition	Not Defined	
Vertical Grid Patterr	n *	
Layout	None	
Spacing		
Adjust for Mullion Size		
Horizontal Grid Patt	ern *	
Layout	None	
Spacing		
Adjust for Mullion Size		
Vertical Mullions	*	
Interior Type	None	
Border 1 Type	None	Ľ

## Wall Instant parameters

The Instance Parameters table in the Element Properties dialog box shows various parameters and their corresponding values the selected wall.



Parameter	Value
Top Extension Distance	0' 0"
Room Bounding	
Related to Mass	Γ
Structural	*
Structural Usage	Non-bearing
Dimensions	*
Length	56' 6"
Area	1130.00 SF
Volume	1836.25 CF
Identity Data	*
Comments	
Mark	

## Wall Assemblies

- Walls are comprised of layers of material
- it can be seen by Preview on in the Edit Assembly dialog box to view the graphical representation of the layers

		×	Edit Assembly					
				•	Family: E	Basic Wall		
amily: System Family: Basic	Wall Load				Type: E	xterior - Brick on CMU		
upe: Exterior - Brick on Ct		1			Total thickness: 1	' 7 1/2''	Sample Height:	20' 0''
Po. JExtendi - Brick off Cr		<u> </u>						
	Rename				Layers		DF	
Type Parameters:					Function	Material	Thickness	Wrap
Parameter	Value				1 Finish 1 [4]	Masonry - Bric	0'35/8"	
			///////////////////////////////////////	77	2 Thermal/Air L	Misc. Air Layer	0'3"	
Construction	*				3 Thermal/Air L	Insulation / Th	0'3"	
Structure	Edit				5 Core Pounds	vapor / Moistu	U' U" <b>D' D"</b>	
Wrapping at Inserts	Do not wrap			☆ –	6 Structure [1]	Masonry - Con	00	
Wrapping at Ends	None			$\sim$	7 Core Bounda	ary Lavers Below	0'0"	
Width	1' 7 1/2"				8 Finish 1 [4]	Metal - Furring	0'15/8"	
Wall Function	Exterior					INTERIOR SID	DE	
Graphics	*				Insert	Delete	Up	Down
Coarse Scale Fill Pattern					Default Wrapping			
Coarse Scale Fill Color	Black				At Inserts:	At I	Ends:	
Identity Data	*				Do not wrap	▼ No	ne	
Model					Modify Vertical Struct	ure (Section Preview only)	)	
Manufacturer				-	Modify	Merge Regions	: S	weeps
Manufacturer Type Comments				<b>•</b>	Modify	Merge Regions	:S	weeps
Manufacturer Type Comments URL				•	Modify Assign Layers	Merge Regions	s Si	weeps eveals
Manufacturer Type Comments URL Description			View: Floor Plan: Mo	► dify typ ▼	Modify Assign Layers Preview >>	Merge Regions Split Region OK	Cancel	weeps eveals He
Manufacturer Type Comments URL Description Assembly Description	Ext. Wall - Brick Composite		View: Floor Plan: Mo	▼ dify typ	Modify Assign Layers Preview >>	Split Regions	Si Si	eveals Hel
Manufacturer Type Comments URL Description Assembly Description Assembly Code	Ext. Wall - Brick Composite B2010156		View: Floor Plan: Mo	▼ dify typ	Modify Assign Layers Preview >>	Merge Regions Split Region OK	Cancel	eveals Hel

## Sketching Walls



#### Sketching using sweep(In-Place Component)



## Sketching using sweep Step 01\_Type of Component



## Sketching using sweep Step 02\_Use Sweep to create a solid mass



### Sketching using sweep Step 03\_Pick the sweep path



## Sketching using sweep Step 04\_the reference plane on the path



## Sketching using sweep Step 05\_Edit Sweep profile



### Sketching using sweep Step 06\_Set up component parameters



## Sketching using sweep Step 06\_Component parameter settings

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	Parameter Properties		×
	Parameter Type		
	Family parameter		
	(Cannot appear in schedules or tags	)	
	◯ Shared parameter		
	(Can be shared by multiple projects / appear in schedules and tags)	and families, exported to ODBC, and	
	appear in schedules and tagsy		
		Select Export	
	Parameter Data		$\leq$
	Name:	Group parameter under:	
	length	Dimensions	
	Discipline:		
	Common	💿 Instance 🛛 Type	
	Type of Parameter:		
ame	Length		
	ОК	Cancel Help	

## Sketching using extrusion

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## Sketching using extrusion

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## Sketching using extrusion



# Importing and scaling images



# Importing and scaling images



## Importing and scaling images



## Doors and windows

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#### Doors and windows can be placed by choosing Door/ Window from the Home Tab

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	A Home	Insert	Annotate	Modify M	lassing & Site Collaborate V	ïew Manage 🛛 🖷	-							
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~~	ali D00i	VIIIdow	component.	- Column	' 🗁 Floor 🝷 🎛 Mullion	[영] Model Group •	🕸 Stairs	Level Ghu	👍 Foundation 🔹	*	🔚 Tag 🔹	🎵 Ref Plane	•	
				Build		Model	Circulation	Datum	Structure *	Roon	n & Area 🔻	Work Plane		

### Doors and windows

#### Doors and window types can be selected



## Door and window Properties



# Adding Doors and windows

Doors can be added to a building model in the plan, section, elevation or a 3D view, by clicking at the desired location.



Adding a door to an existing wall



An added door and its controls

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# Additional Door and window types

#### Doors can be added by loading from Family

K Load Family					<u>? ×</u>
Look in:	Doors			<b>_</b>	🖕 🜠 🗙 🙋 Views 👻
			-		Preview
	Name -	Size	Туре	Date Modif 🔺	
	Birold-2 Panel	212 KB	Revit Family	6/2/2008 7	
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	Curtain Wall Dbl Glass	208 KB	Revit Family	6/2/2008 7	
	Curtain Wall Sgl Glass	188 KB	Revit Family	6/2/2008 7	
	Curtain Wall-Store Front-Dbl	220 KB	Revit Family	6/2/2008 7	
History	Double-Flush	188 KB	Revit Family	6/2/2008 7	
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My Docum	Double-Glass 2	244 KB	Revit Family	6/2/2008 7	
	Double-Panel 1	212 KB	Revit Family	6/2/2008 7	
	Double-Panel 2	220 KB	Revit Family	6/2/2008 7	
$\sim$	Double-Uneven	188 KB	Revit Family	6/2/2008 7	
Favorites	Opening-Cased	188 KB	Revit Family	6/2/2008 7	
	Opening-Elliptical Arch	180 KB	Revit Family	6/2/2008 7	
	overhead-Rolling	184 KB	Revit Family	6/2/2008 7	
	🔜 Overhead-Sectional	176 KB	Revit Family	6/2/2008 7	N
Desktop	Sidelights 1	204 KB	Revit Family	6/2/2008 7 💌	45
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Imperial Lib					
	Files of type: Family Files (*.rfa)			•	
Too <u>l</u> s 👻				<u></u>	Den Cancel

#### Floor

#### Floor has to be sketched based on lines, walls



#### Floor



# Roof Types



# Roof Types



#### Specifying the sloping side





## Roof by Footprint



## Roof by Footprint (Flat)



# Roof by Footprint (Gable)



# Roof by Footprint (Hip)



# Roof by Footprint (Shed)



# Adding Levels

	Autodesk Revit Architecture 2010	- Student Version - [RAC_L	JB_02_Common_Tasks_i.rvt - Ele	add level	A • < ≿ ☆ ? - □ ×	1
Wall Door Window	Annotate Moolify Massing & Site Collaborate Roof • W Curtain Syst Component Column Floor • Mullion	View     Manage     Place Lev       em           Model Text	ailing 1. ↓ ↔ ↔ Ø Beam • amp airs Level Grid & Foundation •	Room Area - Set E Legend Tag - Ref Pla	ane •	
Place Level 🔽 Make Plan Vie	Build w Plan View Types Offset: 0' 0"	Model Circul	Level (LL)	Room & Area V Work Pl	ane	
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## Editing (copy, move, others)

