Civil AI Estimator

Automating Quantity Takeoff in Revit 2025

Powered by OpenAI & Revit API

Developer: Lynn

THE PROBLEM

Manual takeoff is slow (hours/days).
Coding standards (CESMM4) is complex.
Excel spreadsheets are disconnected from BIM.

THE SOLUTION

A native **Revit Add-in** that connects to **ChatGPT**.

- ✅ Reads Geometry (Volumes/Areas)
- ✅ Identifies Materials
- ✅ Assigns Cost Codes automatically

INSTALLATION WORKFLOW

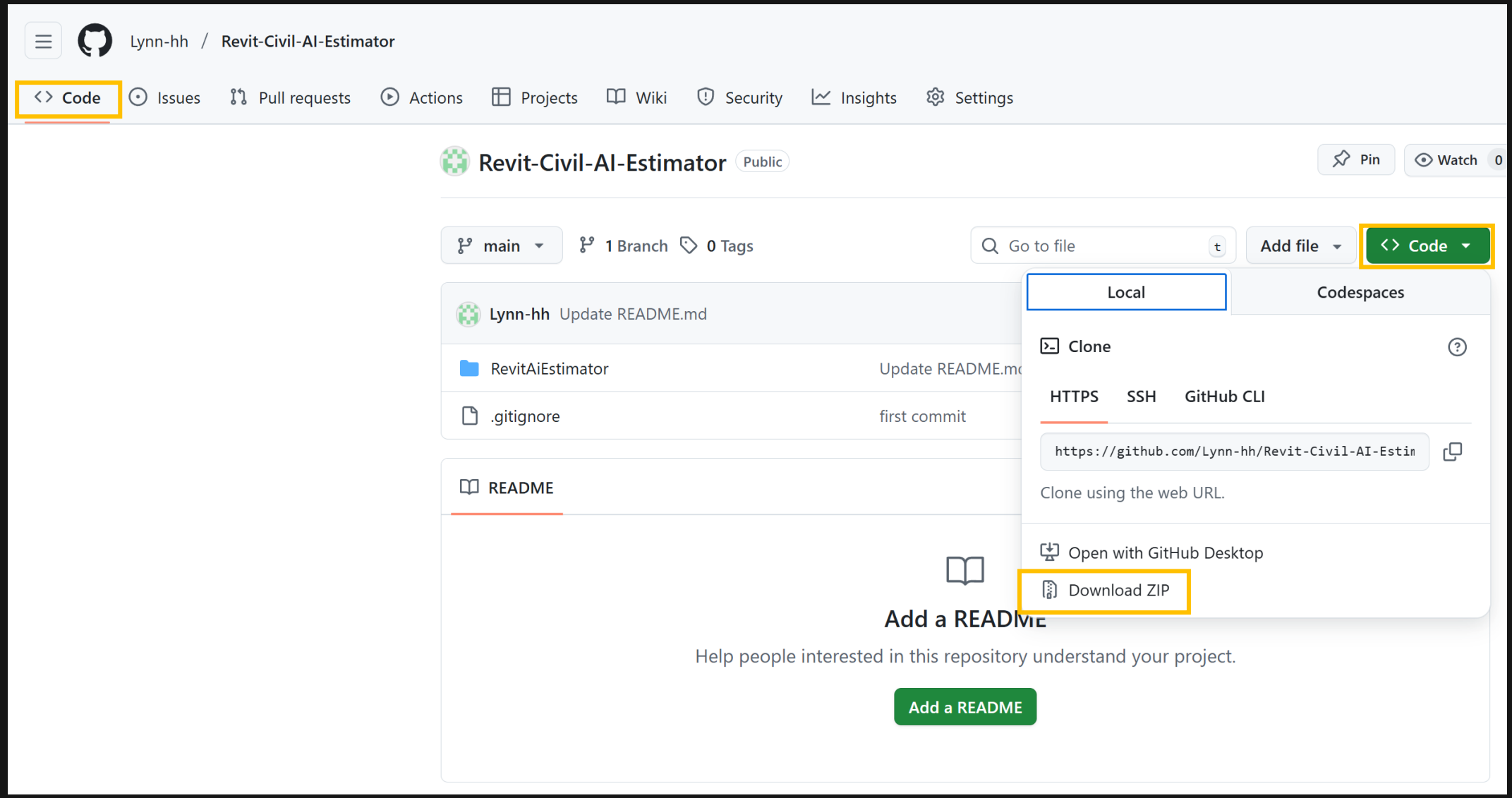
1. Download Source from GitHub
https://github.com/Lynn-hh/Revit-Civil-AI-Estimator/tree/main/RevitAiEstimator
2. Download VisualStudio
https://visualstudio.microsoft.com/

3. Paste API Key in AiService.cs
4. Build Solution (Ctrl+Shift+B)

Revit magically loads the plugin!

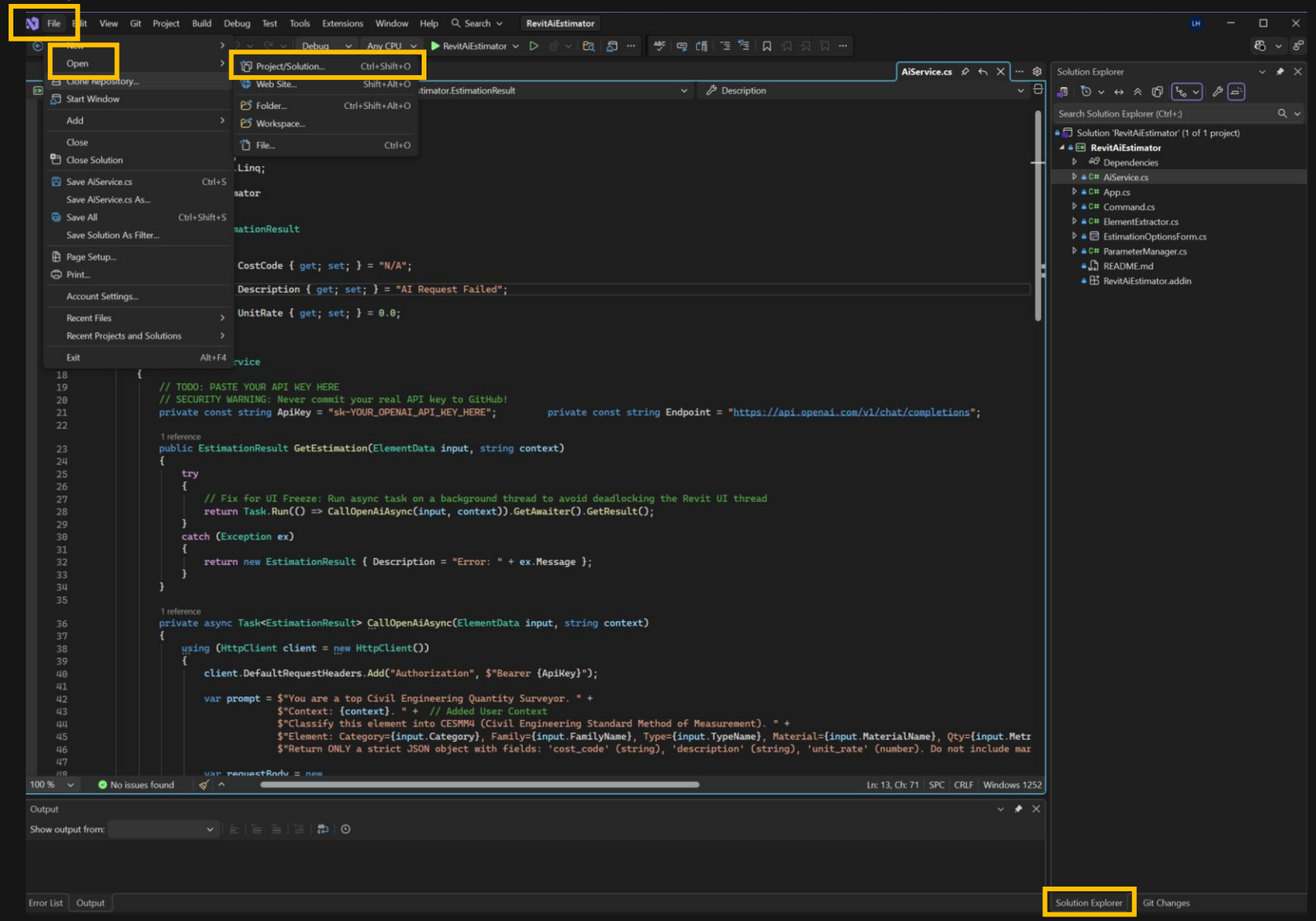
1.Download Source from GitHub

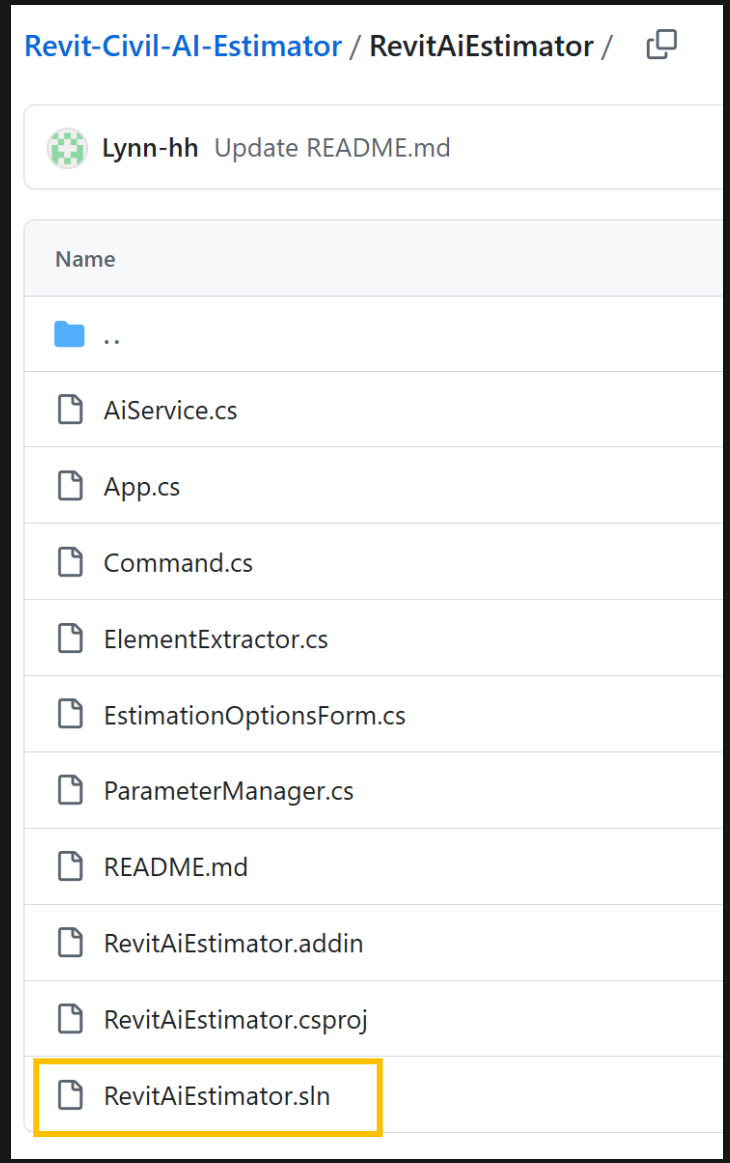
https://github.com/Lynn-hh/Revit-Civil-AI-Estimator/tree/main/RevitAiEstimator



2.Download VisualStudio and open the github file: RevitAiEstimator.sln

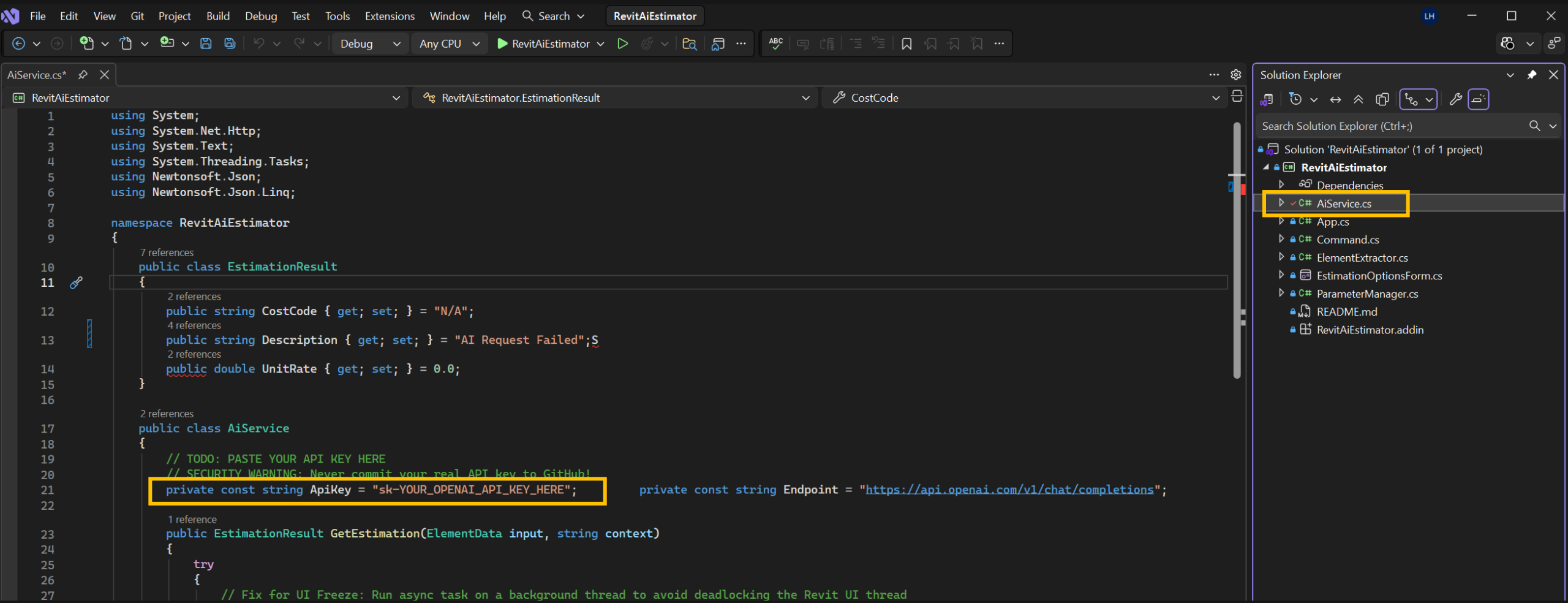
https://visualstudio.microsoft.com/





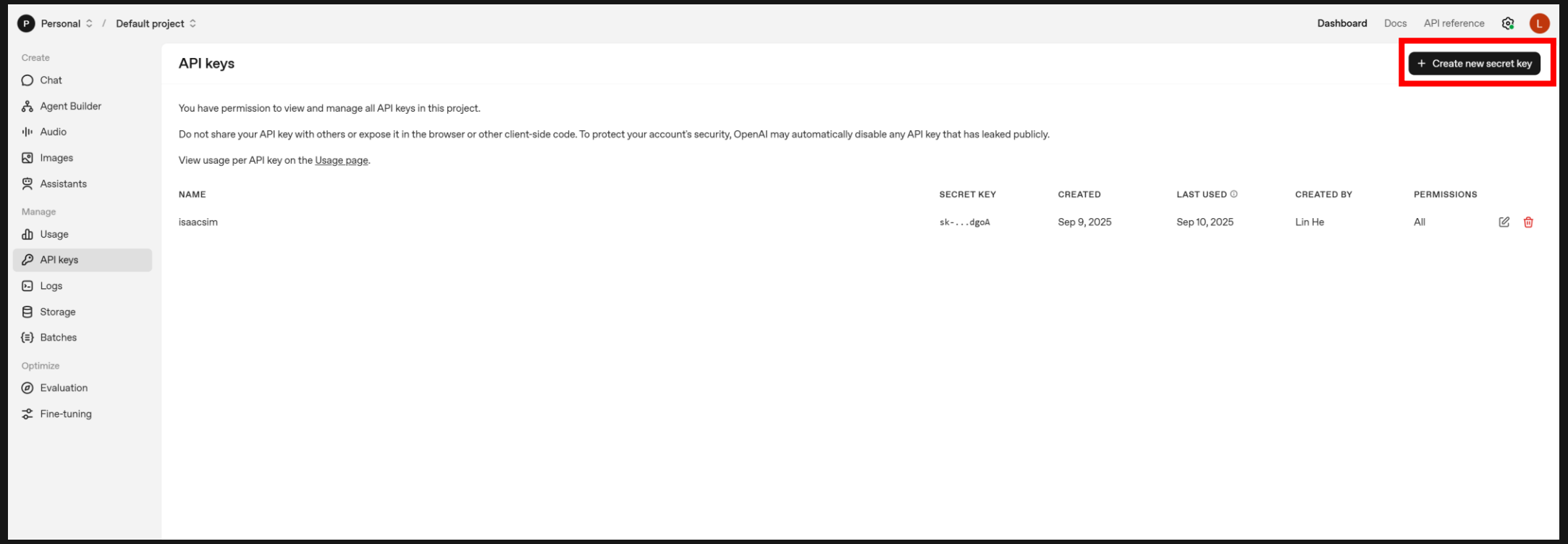
3. Add your GPT API Key in file AiService.cs

How to get GPT key (next slide)



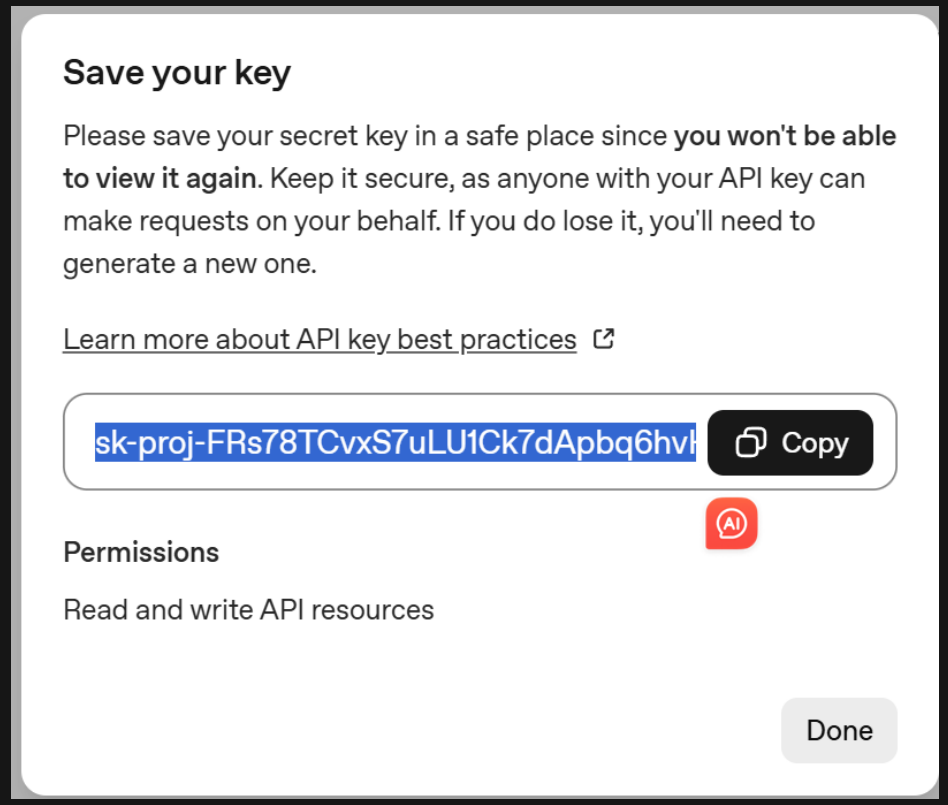
How to get GPT key

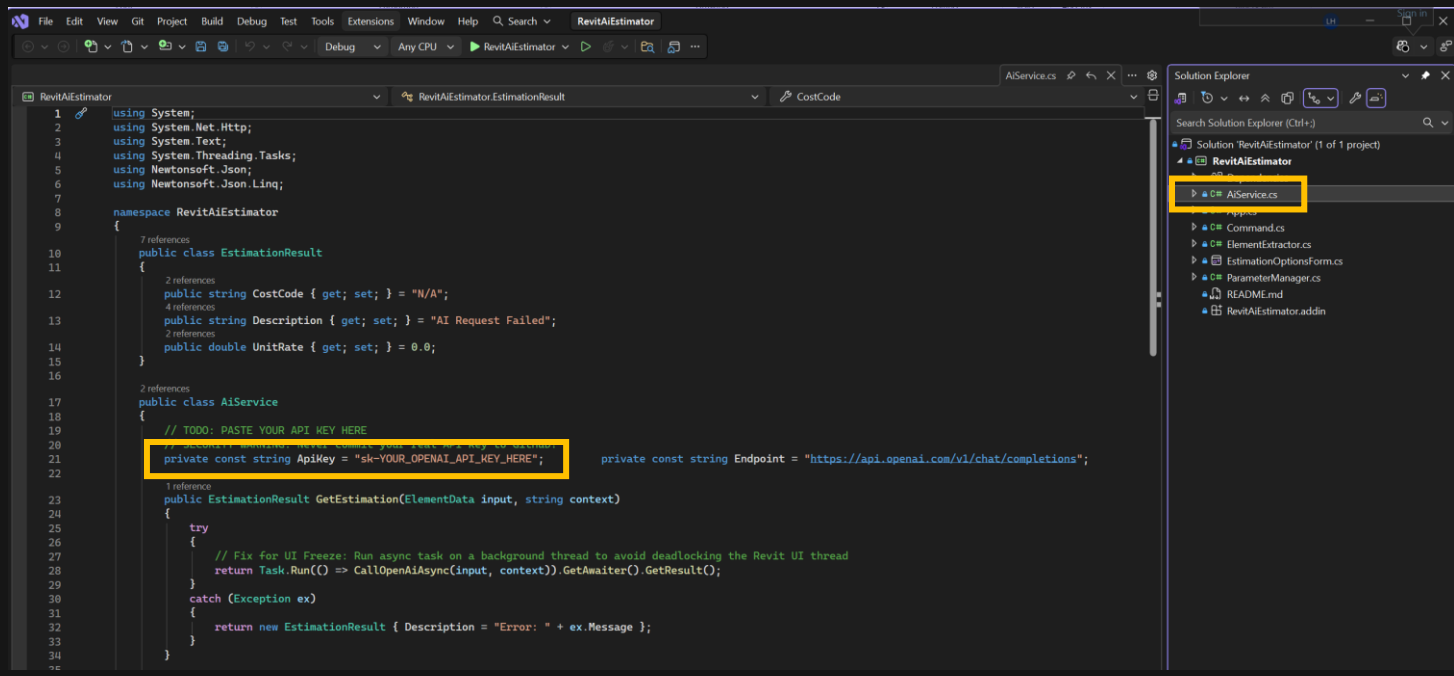
First: go to https://platform.openai.com/api-keys
Second: create new secret key



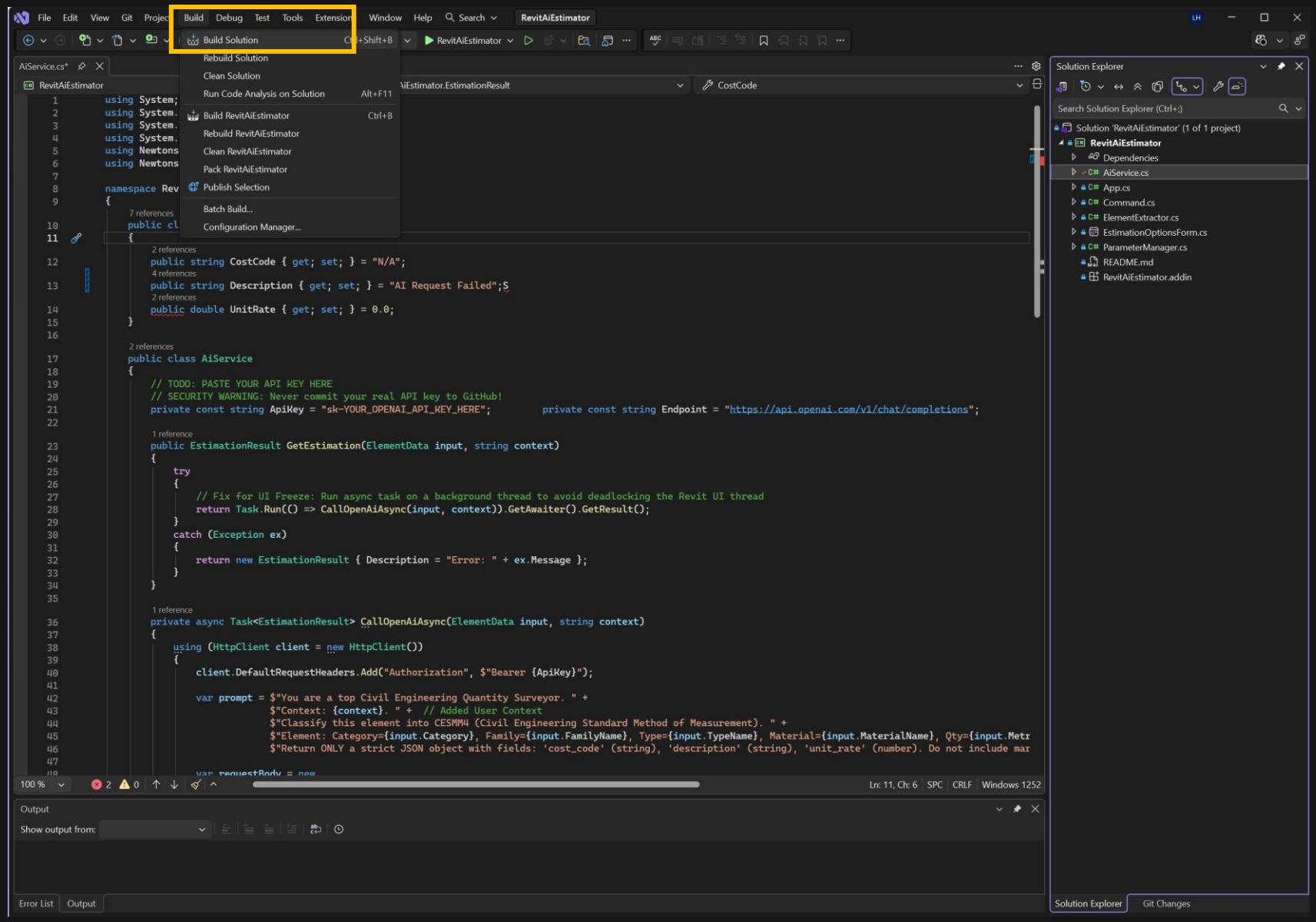
How to get GPT key

Third: get your key (Make sure not to expose your key to anyone on the internet, since it can generate expenses) and put it to excel





4.Build Solution (Ctrl+Shift+B)



5. Install to Revit:

Go to the output folder bin\Debug\net8.0-windows\.

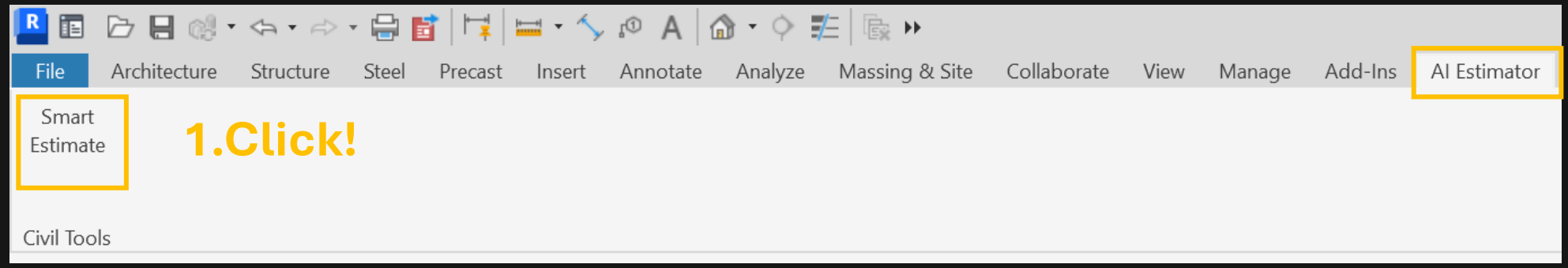
Open RevitAiEstimator.addin and check the path.

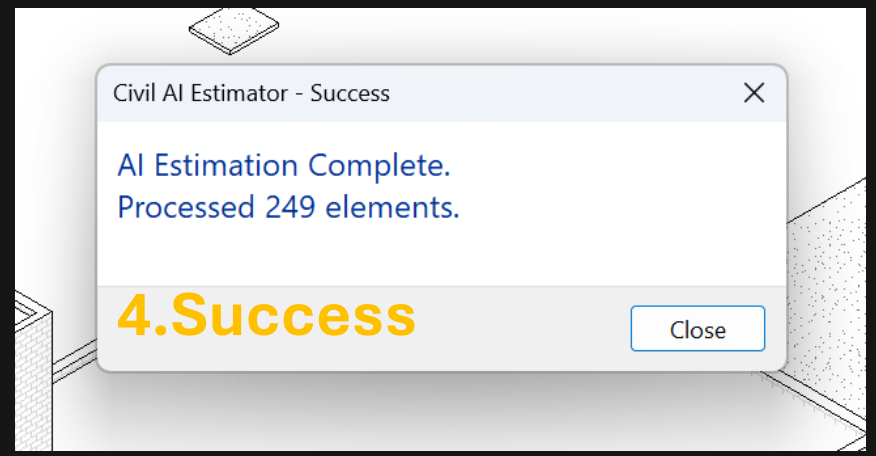
Copy **RevitAiEstimator.addin** to %ProgramData%\Autodesk**Revit\Addins**\2025\

Open Revit and choose **always load**

Revit magically loads the plugin!

6. Revit magically loads the plugin





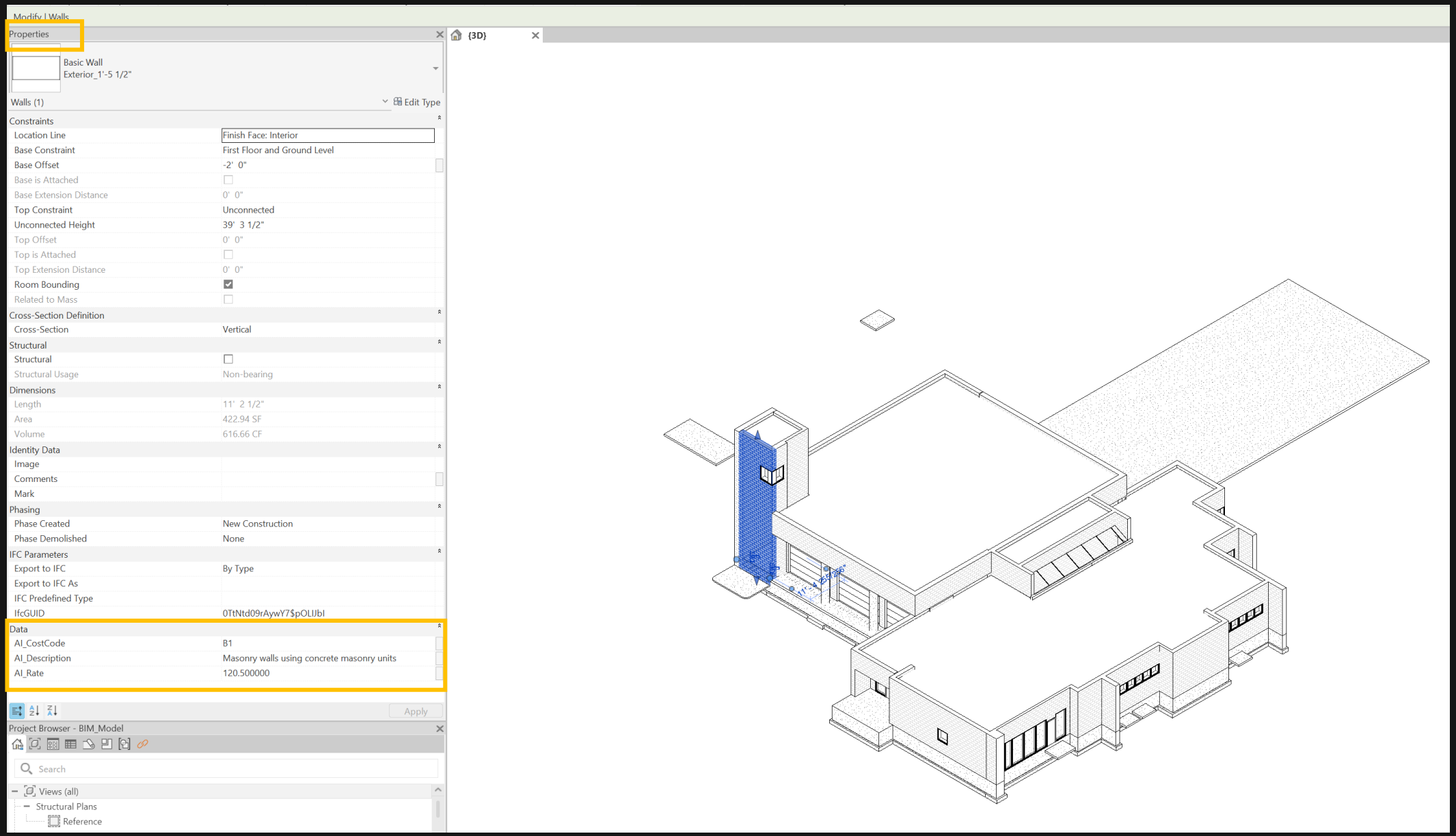
Demo: The "Magic" Button

We built a context-aware dialog:

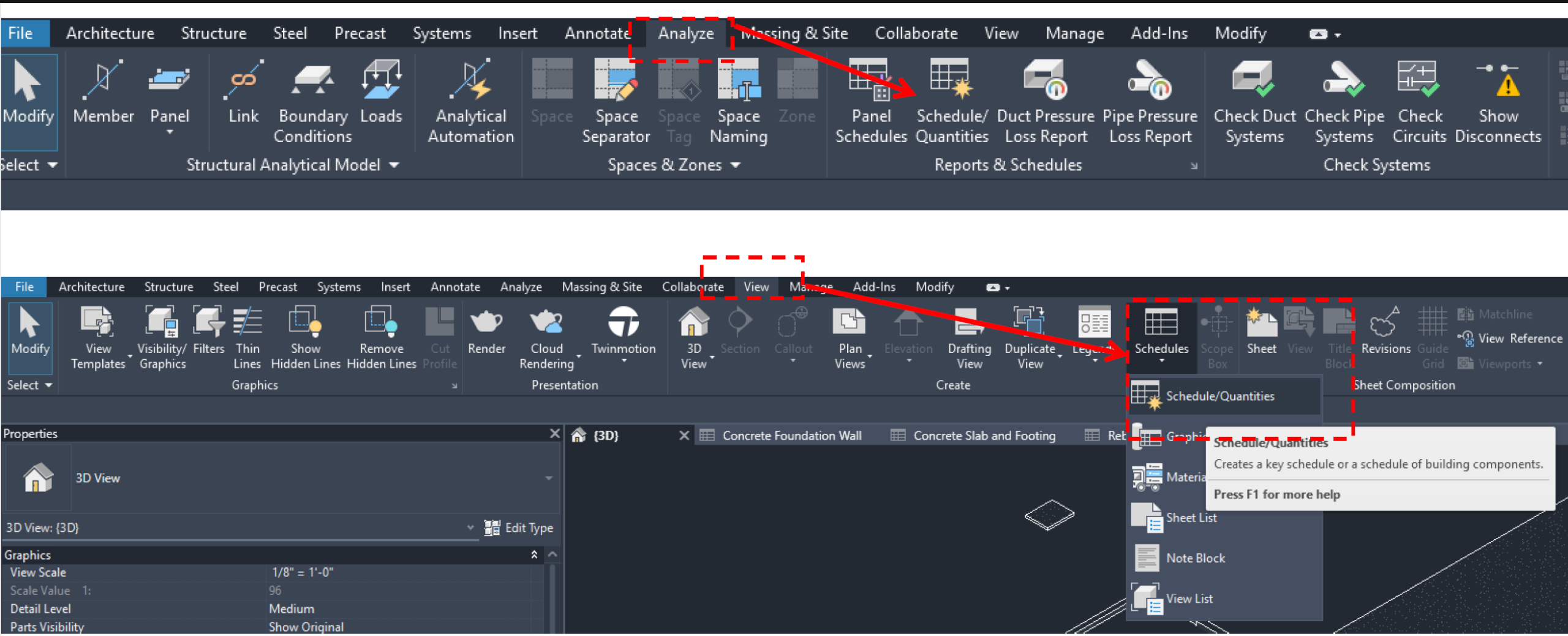
"Project located in Austin, Texas.
Use local labor rates & limestone excavation costs.
Currency: USD."

(AI adjusts prices based on THIS input!)

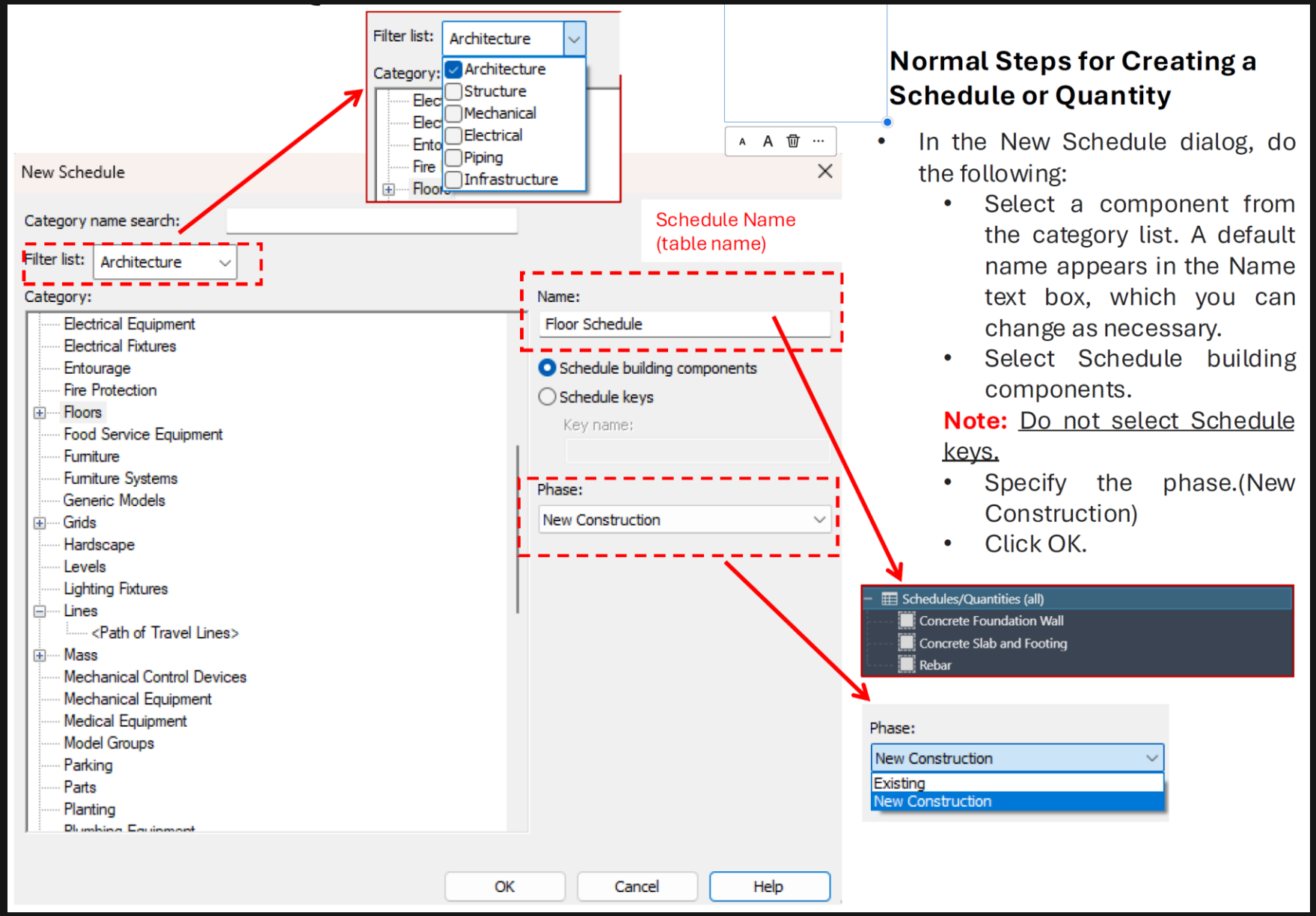
7. AI Data


Modify | Walls
Properties
Basic Wall
Exterior_1'-5 1/2"
Walls (1)
Edit Type
Constraints
Location Line
Finish Face: Interior
Base Constraint
First Floor and Ground Level
Base Offset
-2' 0"
Base is Attached
Base Extension Distance
0' 0"
Top Constraint
Unconnected
Unconnected Height
39' 3 1/2"
Top Offset
0' 0"
Top is Attached
Top Extension Distance
0' 0"
Room Bounding
Related to Mass
Cross-Section Definition
Cross-Section
Vertical
Structural
Structural
Structural Usage
Non-bearing
Dimensions
Length
11' 2 1/2"
Area
422.94 SF
Volume
616.66 CF
Identity Data
Image
Comments
Mark
Phasing
Phase Created
New Construction
Phase Demolished
None
IFC Parameters
Export to IFC
By Type
Export to IFC As
IFC Predefined Type
IfcGUID
0TtNtd09rAywY7$pOLlJbI
Data
AI_CostCode
B1
AI_Description
Masonry walls using concrete masonry units
AI_Rate
120.500000
Apply
Project Browser - BIM_Model
Search
Views (all)
Structural Plans
Reference
{3D}

8. Schedule/Quantities



8. Schedule/Quantities



Normal Steps for Creating a Schedule or Quantity

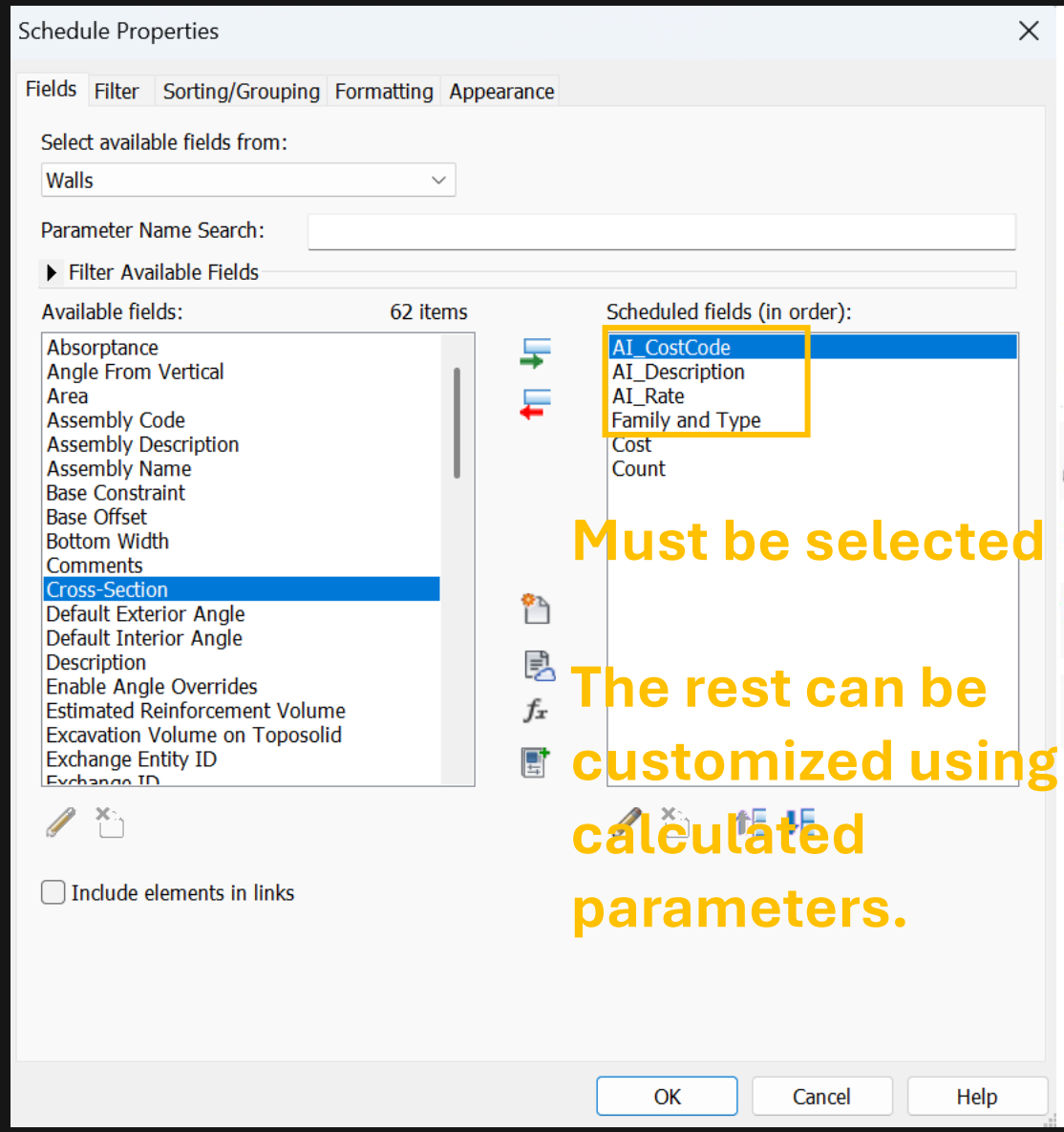
- In the New Schedule dialog, do the following:
  - Select a component from the category list. A default name appears in the Name text box, which you can change as necessary.
  - Select Schedule building components.

Note: Do not select Schedule keys.

  - Specify the phase.(New Construction)
  - Click OK.

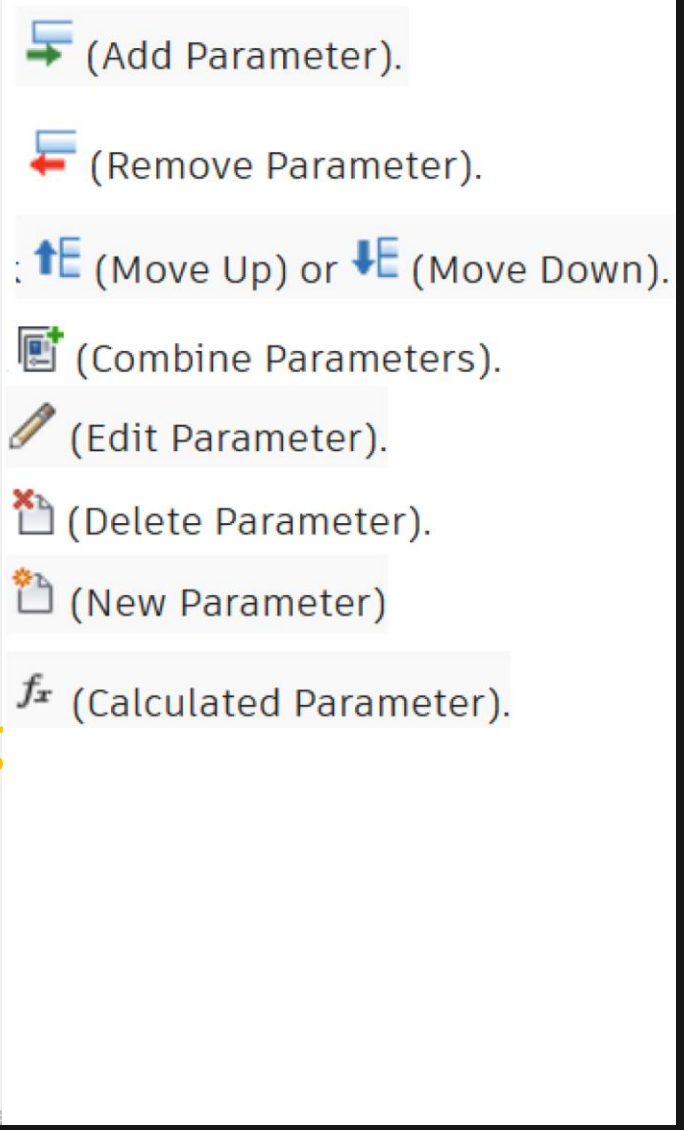
Choose Wall

7. Schedule/Quantities

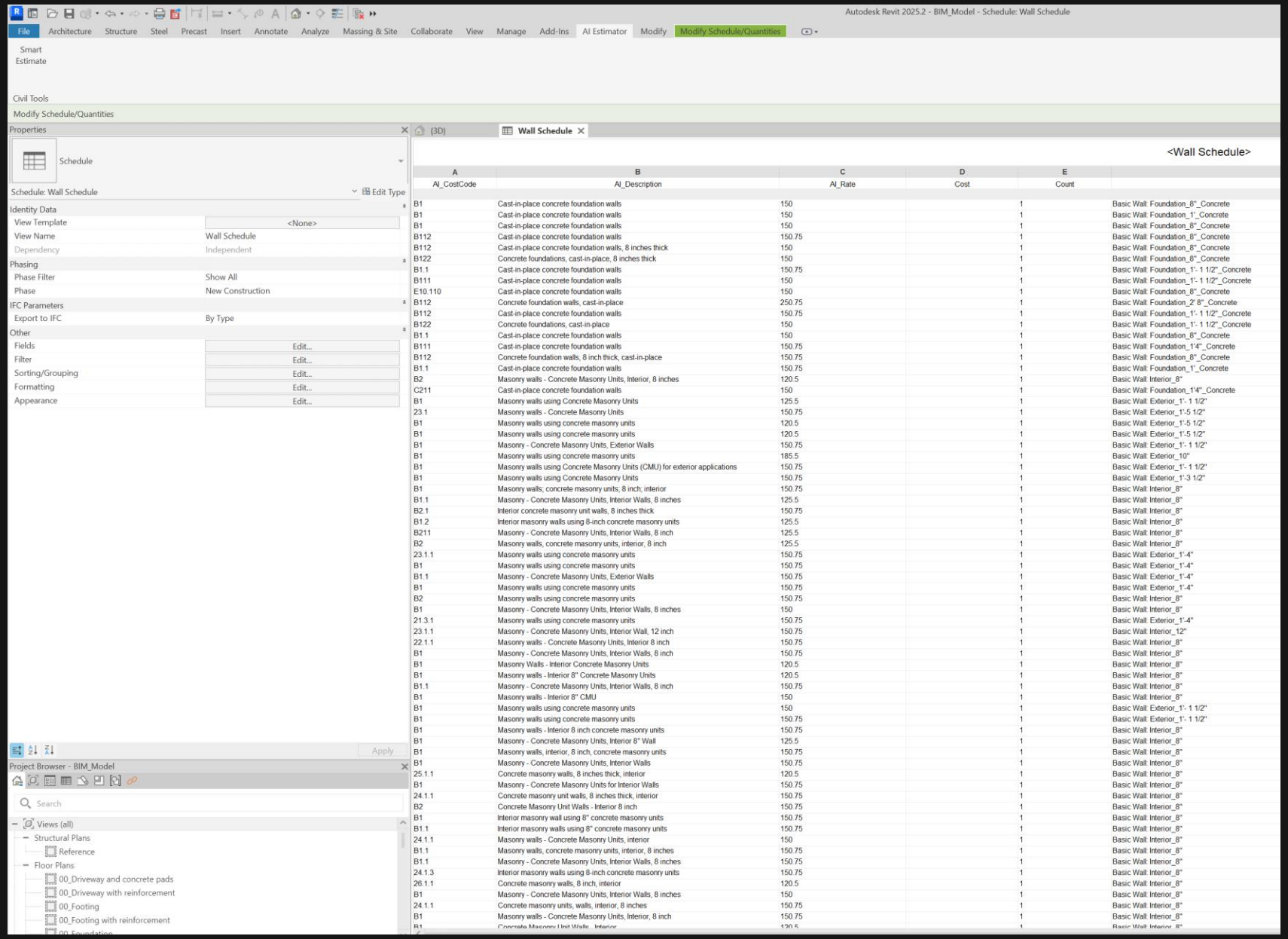


Must be selected

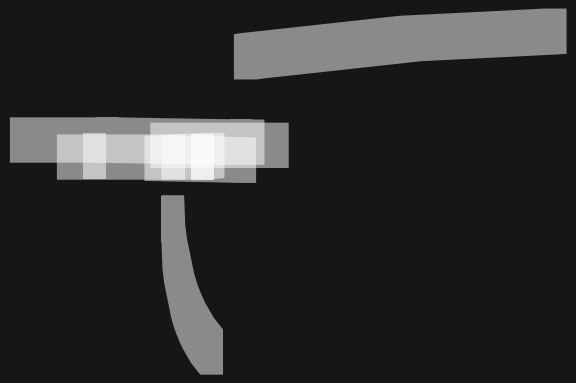
The rest can be customized using calculated parameters.



9. Get the result



A	B	C	D	E	
AI_CostCode	AI_Description	AI_Rate	Cost	Count	
B1	Cast-in-place concrete foundation walls	150		1	Basic Wall: Foundation_8"_Concrete
B1	Cast-in-place concrete foundation walls	150		1	Basic Wall: Foundation_1'_Concrete
B1	Cast-in-place concrete foundation walls	150		1	Basic Wall: Foundation_8"_Concrete
B112	Cast-in-place concrete foundation walls	150.75		1	Basic Wall: Foundation_8"_Concrete
B112	Cast-in-place concrete foundation walls, 8 inches thick	150		1	Basic Wall: Foundation_8"_Concrete
B122	Concrete foundations, cast-in-place, 8 inches thick	150		1	Basic Wall: Foundation_8"_Concrete
B1.1	Cast-in-place concrete foundation walls	150.75		1	Basic Wall: Foundation_1'- 1 1/2"_Concrete
B111	Cast-in-place concrete foundation walls	150		1	Basic Wall: Foundation_1'- 1 1/2"_Concrete
E10.110	Cast-in-place concrete foundation walls	150		1	Basic Wall: Foundation_8"_Concrete
B112	Concrete foundation walls, cast-in-place	250.75		1	Basic Wall: Foundation_2' 8"_Concrete
B112	Cast-in-place concrete foundation walls	150.75		1	Basic Wall: Foundation_1'- 1 1/2"_Concrete
B122	Concrete foundations, cast-in-place	150		1	Basic Wall: Foundation_1'- 1 1/2"_Concrete
B1.1	Cast-in-place concrete foundation walls	150		1	Basic Wall: Foundation_8"_Concrete
B111	Cast-in-place concrete foundation walls	150.75		1	Basic Wall: Foundation_1'4"_Concrete
B112	Concrete foundation walls, 8 inch thick, cast-in-place	150.75		1	Basic Wall: Foundation_8"_Concrete
B1.1	Cast-in-place concrete foundation walls	150.75		1	Basic Wall: Foundation_1'_Concrete
B2	Masonry walls - Concrete Masonry Units, Interior, 8 inches	120.5		1	Basic Wall: Interior_8"
C211	Cast-in-place concrete foundation walls	150		1	Basic Wall: Foundation_1'4"_Concrete
B1	Masonry walls using Concrete Masonry Units	125.5		1	Basic Wall: Exterior_1'- 1 1/2"
23.1	Masonry walls - Concrete Masonry Units	150.75		1	Basic Wall: Exterior_1'-5 1/2"
B1	Masonry walls using concrete masonry units	120.5		1	Basic Wall: Exterior_1'-5 1/2"
B1	Masonry walls using concrete masonry units	120.5		1	Basic Wall: Exterior_1'-5 1/2"
B1	Masonry - Concrete Masonry Units, Exterior Walls	150.75		1	Basic Wall: Exterior_1'- 1 1/2"
B1	Masonry walls using concrete masonry units	185.5		1	Basic Wall: Exterior_10"
B1	Masonry walls using Concrete Masonry Units (CMU) for exterior applications	150.75		1	Basic Wall: Exterior_1'- 1 1/2"
B1	Masonry walls using Concrete Masonry Units	150.75		1	Basic Wall: Exterior_1'-3 1/2"
B1	Masonry walls; concrete masonry units; 8 inch; interior	150.75		1	Basic Wall: Interior_8"
B1.1	Masonry - Concrete Masonry Units, Interior Walls, 8 inches	125.5		1	Basic Wall: Interior_8"
B2.1	Interior concrete masonry unit walls, 8 inches thick	150.75		1	Basic Wall: Interior_8"
B1.2	Interior masonry walls using 8-inch concrete masonry units	125.5		1	Basic Wall: Interior_8"
B211	Masonry - Concrete Masonry Units, Interior Walls, 8 inch	125.5		1	Basic Wall: Interior_8"
B2	Masonry walls, concrete masonry units, interior, 8 inch	125.5		1	Basic Wall: Interior_8"
23.1.1	Masonry walls using concrete masonry units	150.75		1	Basic Wall: Exterior_1'-4"
B1	Masonry walls using concrete masonry units	150.75		1	Basic Wall: Exterior_1'-4"
B1.1	Masonry - Concrete Masonry Units, Exterior Walls	150.75		1	Basic Wall: Exterior_1'-4"
B1	Masonry walls using concrete masonry units	150.75		1	Basic Wall: Exterior_1'-4"
B2	Masonry walls using concrete masonry units	150.75		1	Basic Wall: Interior_8"
B1	Masonry - Concrete Masonry Units, Interior Walls, 8 inches	150		1	Basic Wall: Interior_8"
21.3.1	Masonry walls using concrete masonry units	150.75		1	Basic Wall: Exterior_1'-4"
23.1.1	Masonry - Concrete Masonry Units, Interior Wall, 12 inch	150.75		1	Basic Wall: Interior_12"
22.1.1	Masonry walls - Concrete Masonry Units, Interior 8 inch	150.75		1	Basic Wall: Interior_8"
B1	Masonry - Concrete Masonry Units, Interior Walls, 8 inch	150.75		1	Basic Wall: Interior_8"
B1	Masonry Walls - Interior Concrete Masonry Units	120.5		1	Basic Wall: Interior_8"
B1	Masonry walls - Interior 8" Concrete Masonry Units	120.5		1	Basic Wall: Interior_8"
B1.1	Masonry - Concrete Masonry Units, Interior Walls, 8 inch	150.75		1	Basic Wall: Interior_8"
B1	Masonry walls - Interior 8" CMU	150		1	Basic Wall: Interior_8"
B1	Masonry walls using concrete masonry units	150		1	Basic Wall: Exterior_1'- 1 1/2"
B1	Masonry walls using concrete masonry units	150.75		1	Basic Wall: Exterior_1'- 1 1/2"
B1	Masonry walls - Interior 8 inch concrete masonry units	150.75		1	Basic Wall: Interior_8"
B1	Masonry - Concrete Masonry Units, Interior 8" Wall	125.5		1	Basic Wall: Interior_8"
B1	Masonry walls, interior, 8 inch, concrete masonry units	150.75		1	Basic Wall: Interior_8"
B1	Masonry - Concrete Masonry Units, Interior Walls	150.75		1	Basic Wall: Interior_8"
25.1.1	Concrete masonry walls, 8 inches thick, interior	120.5		1	Basic Wall: Interior_8"
B1	Masonry - Concrete Masonry Units for Interior Walls	150.75		1	Basic Wall: Interior_8"
24.1.1	Concrete masonry unit walls, 8 inches thick, interior	150.75		1	Basic Wall: Interior_8"
B2	Concrete Masonry Unit Walls - Interior 8 inch	150.75		1	Basic Wall: Interior_8"
B1	Interior masonry wall using 8" concrete masonry units	150.75		1	Basic Wall: Interior_8"
B1.1	Interior masonry walls using 8" concrete masonry units	150.75		1	Basic Wall: Interior_8"
24.1.1	Masonry walls - Concrete Masonry Units, interior	150		1	Basic Wall: Interior_8"
B1.1	Masonry walls, concrete masonry units, interior, 8 inches	150.75		1	Basic Wall: Interior_8"
B1.1	Masonry - Concrete Masonry Units, Interior Walls, 8 inches	150.75		1	Basic Wall: Interior_8"
24.1.3	Interior masonry walls using 8-inch concrete masonry units	150.75		1	Basic Wall: Interior_8"
26.1.1	Concrete masonry walls, 8 inch, interior	120.5		1	Basic Wall: Interior_8"
B1	Masonry - Concrete Masonry Units, Interior Walls, 8 inches	150		1	Basic Wall: Interior_8"
24.1.1	Concrete masonry units, walls, interior, 8 inches	150.75		1	Basic Wall: Interior_8"
B1	Masonry walls - Concrete Masonry Units, Interior, 8 inch	150.75		1	Basic Wall: Interior_8"
B1	Concrete Masonry Unit Walls - Interior	120.5		1	Basic Wall: Interior_8"



THANK YOU!

EXTEND & CUSTOMIZE

This add-in can be customized.Just extend the source code