CI123034 – Inventing The Civil World

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Manufacturing Content Manager - CADLearning
Infrastructure Content Manager - CADLearning

AUTODESK. UNIVERSITY

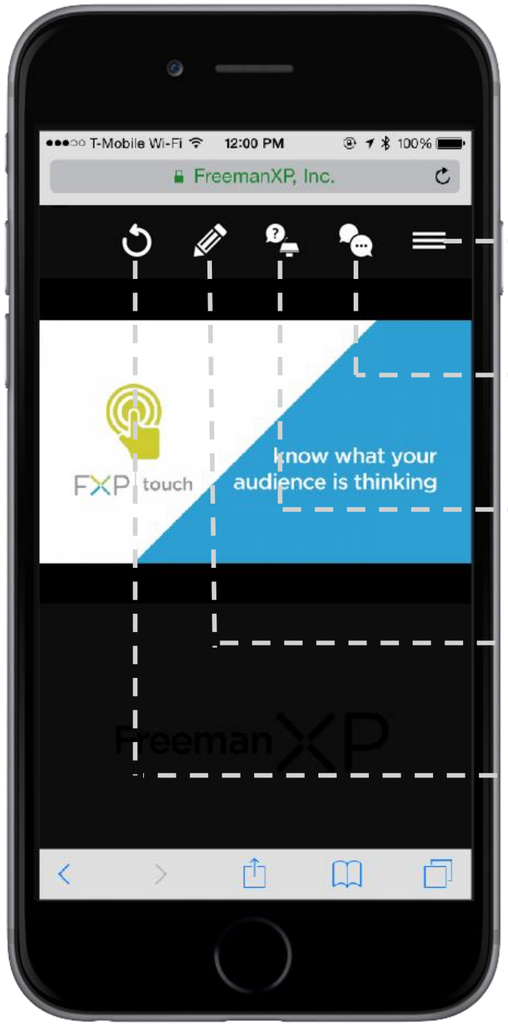
Welcome

MULTIPLOTTR

This Session Will Be Interactive!

http://join.fxptouch.com/123034

FXP | touch



- Personalize
- Chat
- Ask questions
- Take notes
- Move to current slide

Today’s class covers

- How to use Inventor LT or Inventor to create parts for the Infrastructure Parts Editor
- Best practices for creating and editing parts for InfraWorks and AutoCAD Civil 3D using Infrastructure Parts Editor
- How to use the Infrastructure Parts Editor to create new Part catalogs for InfraWorks and AutoCAD Civil 3D
- How to use parts that are created in Parts Editor in an InfraWorks model and an AutoCAD Civil 3D model

FXP Question

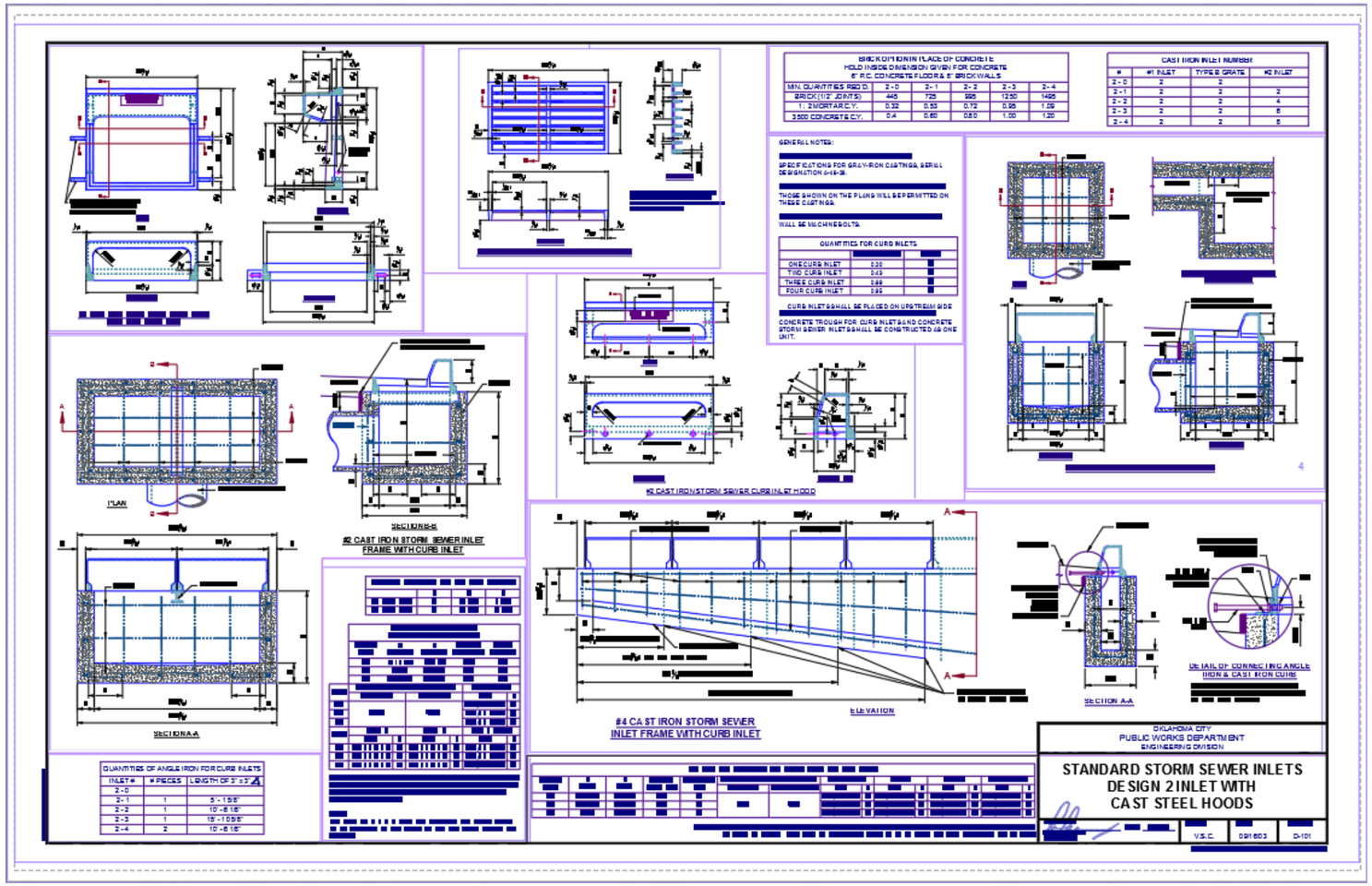
- Which Autodesk product(s) have you used? (*Select all that apply*)
  - Inventor
  - InfraWorks
  - Civil 3D
  - AutoCAD
  - Project Kameleon
  - None of the above

FXP Question

- Have you done 3D modeling involving primitives and Boolean operations?
  - Yes
  - No

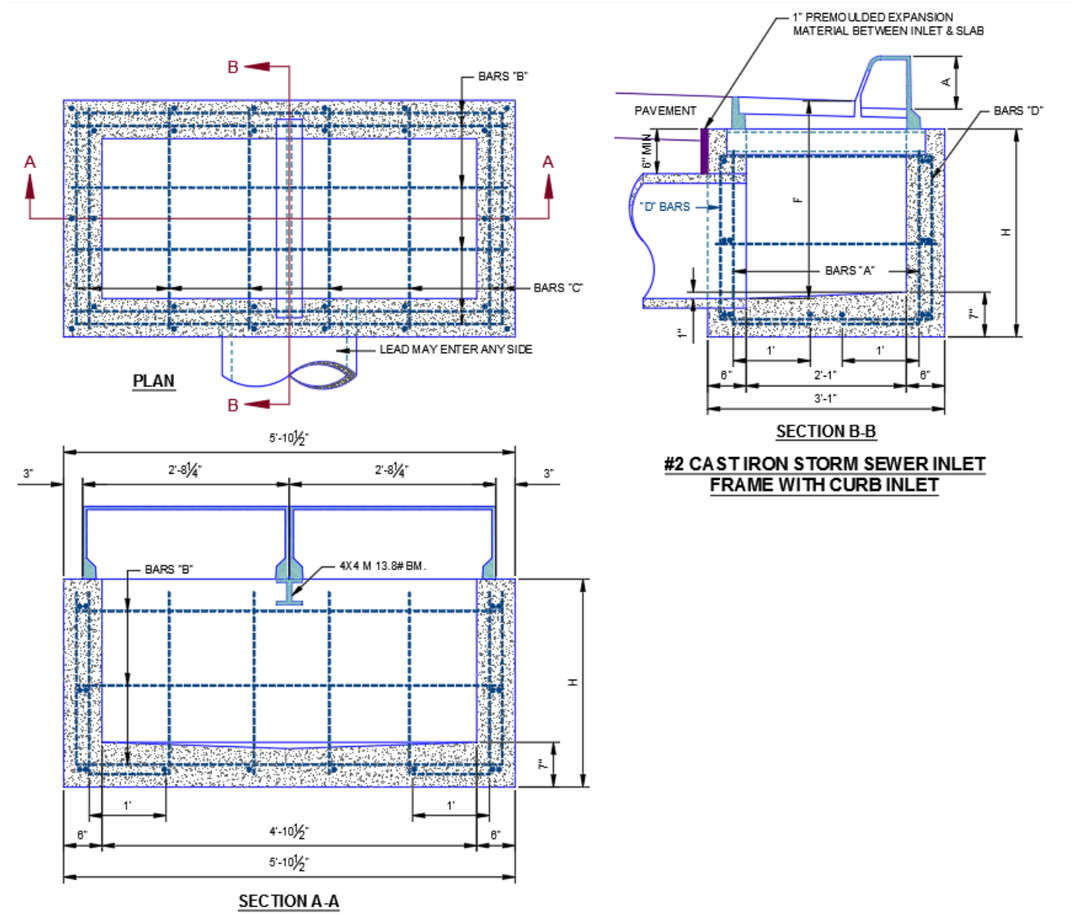
Project Basis

- Oklahoma City Public Works Dept.



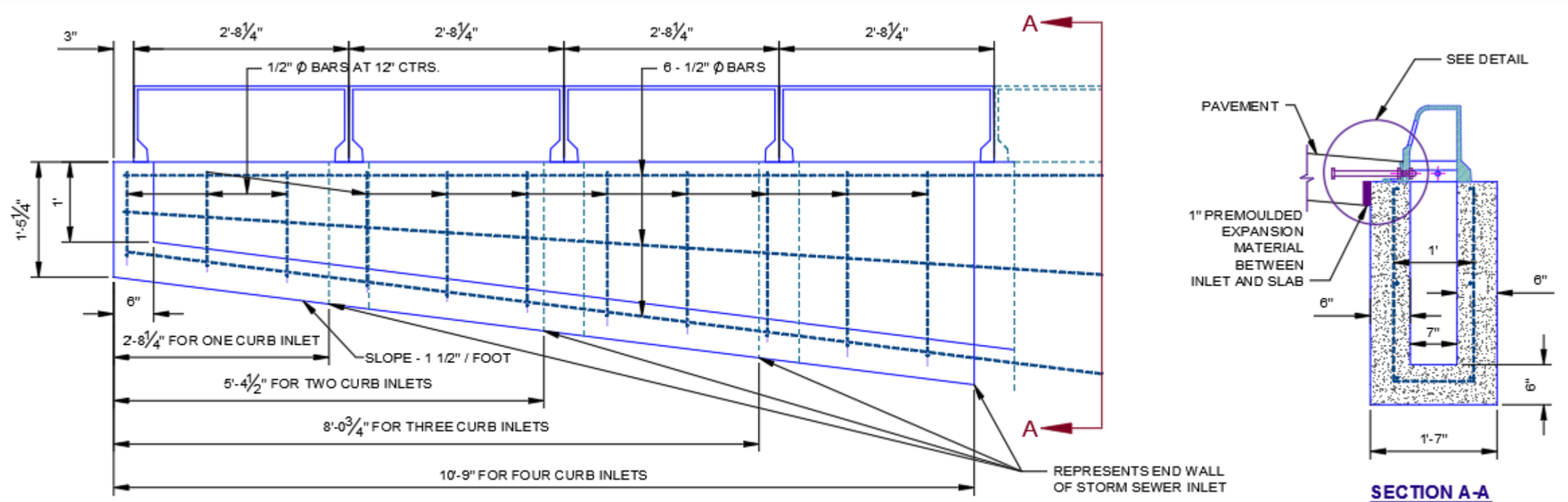
Project Basis

- Oklahoma City Public Works Dept.



Project Basis

- Oklahoma City Public Works Dept.



#4 CAST IRON STORM SEWER
INLET FRAME WITH CURB INLET

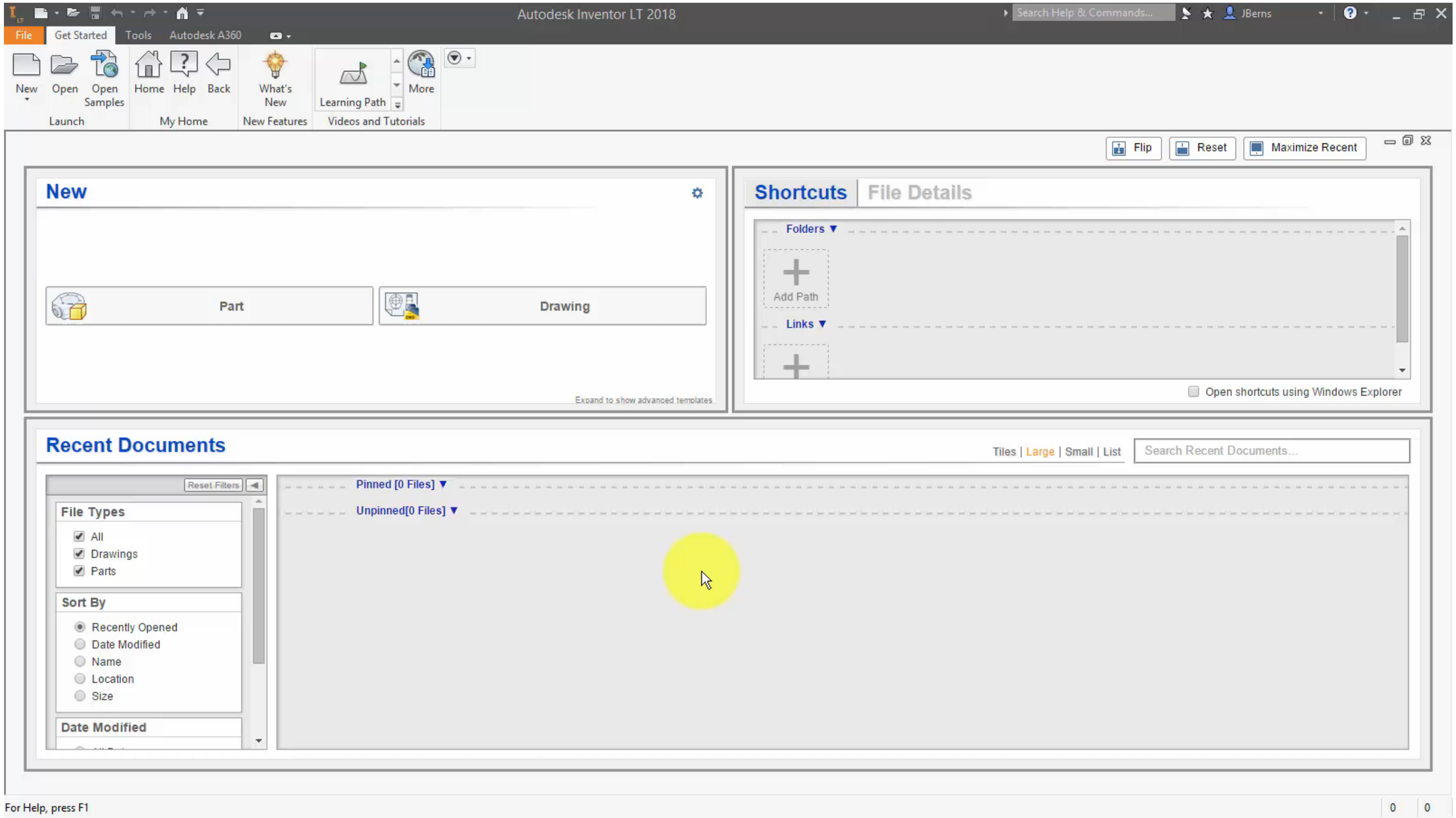
Inventor Overview

- Parametric modeler
  - Dimensions control geometry
  - Dimensional relationships
- Sketches
  - Geometric and dimensional constraints
- Features
  - Sketched
  - Placed

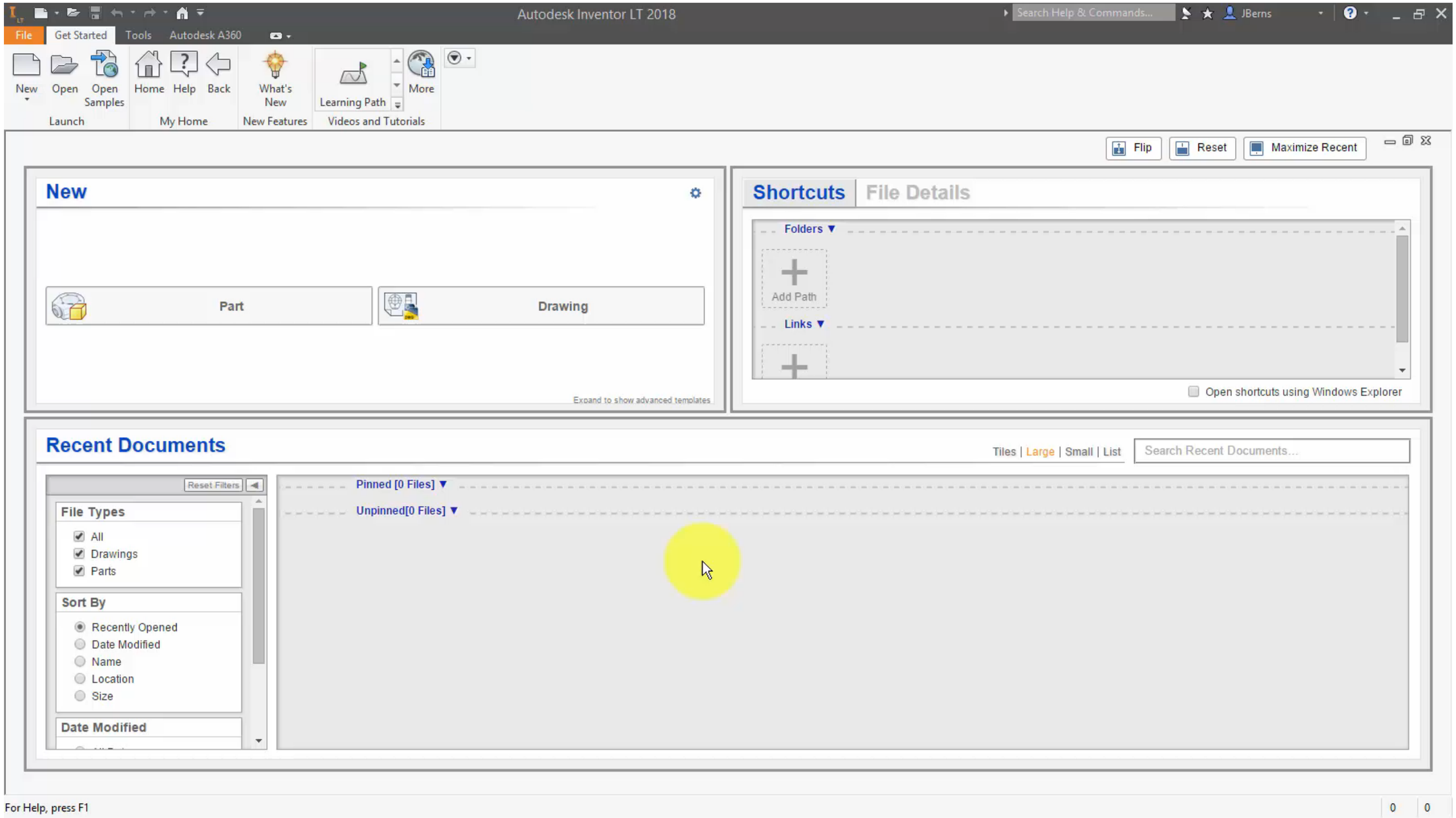
How to use Inventor LT or Inventor to create parts for the Infrastructure Parts Editor

- Configuration
- Templates

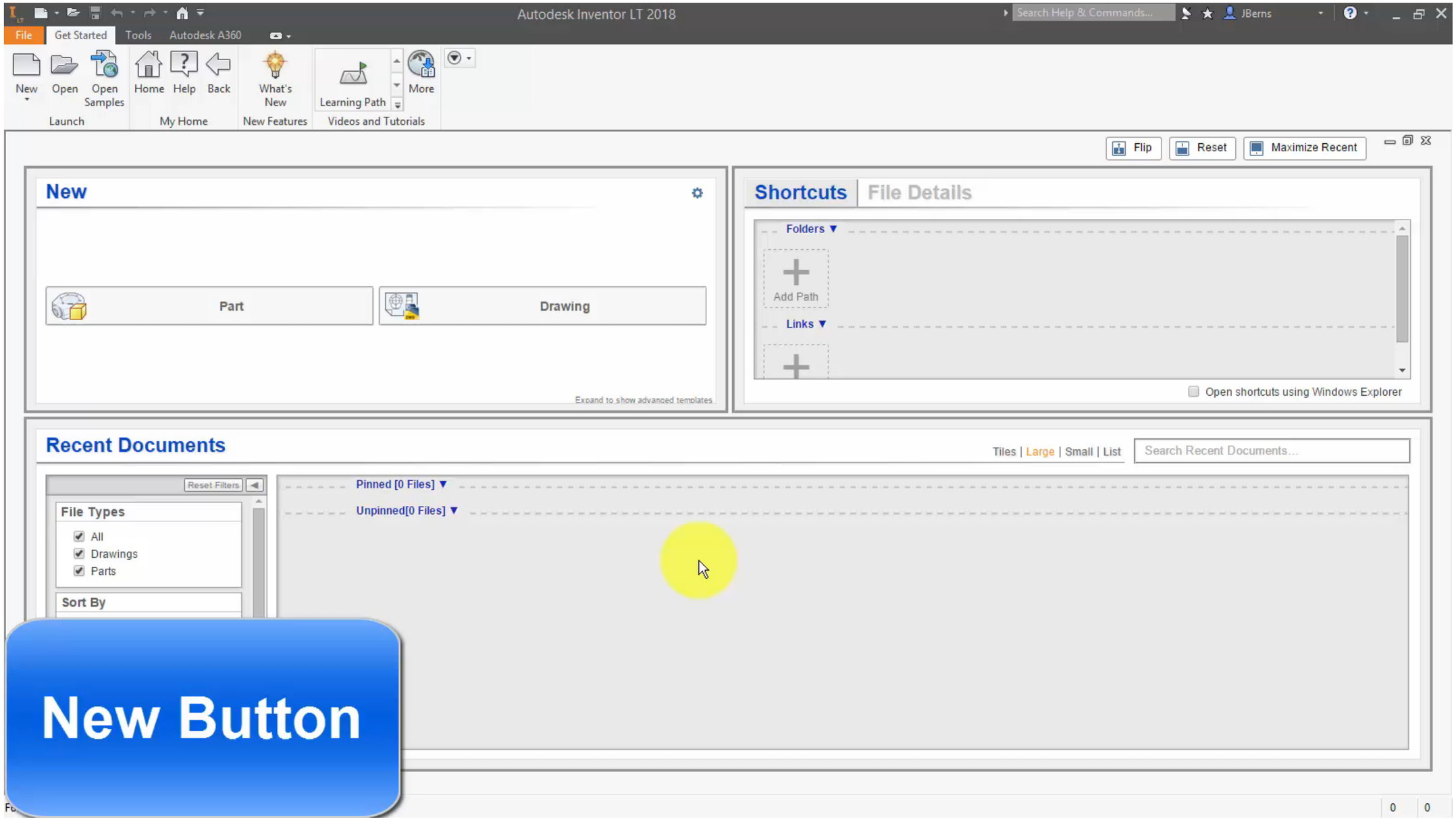
Inventor Configuration



Create Inventor Template for IPE



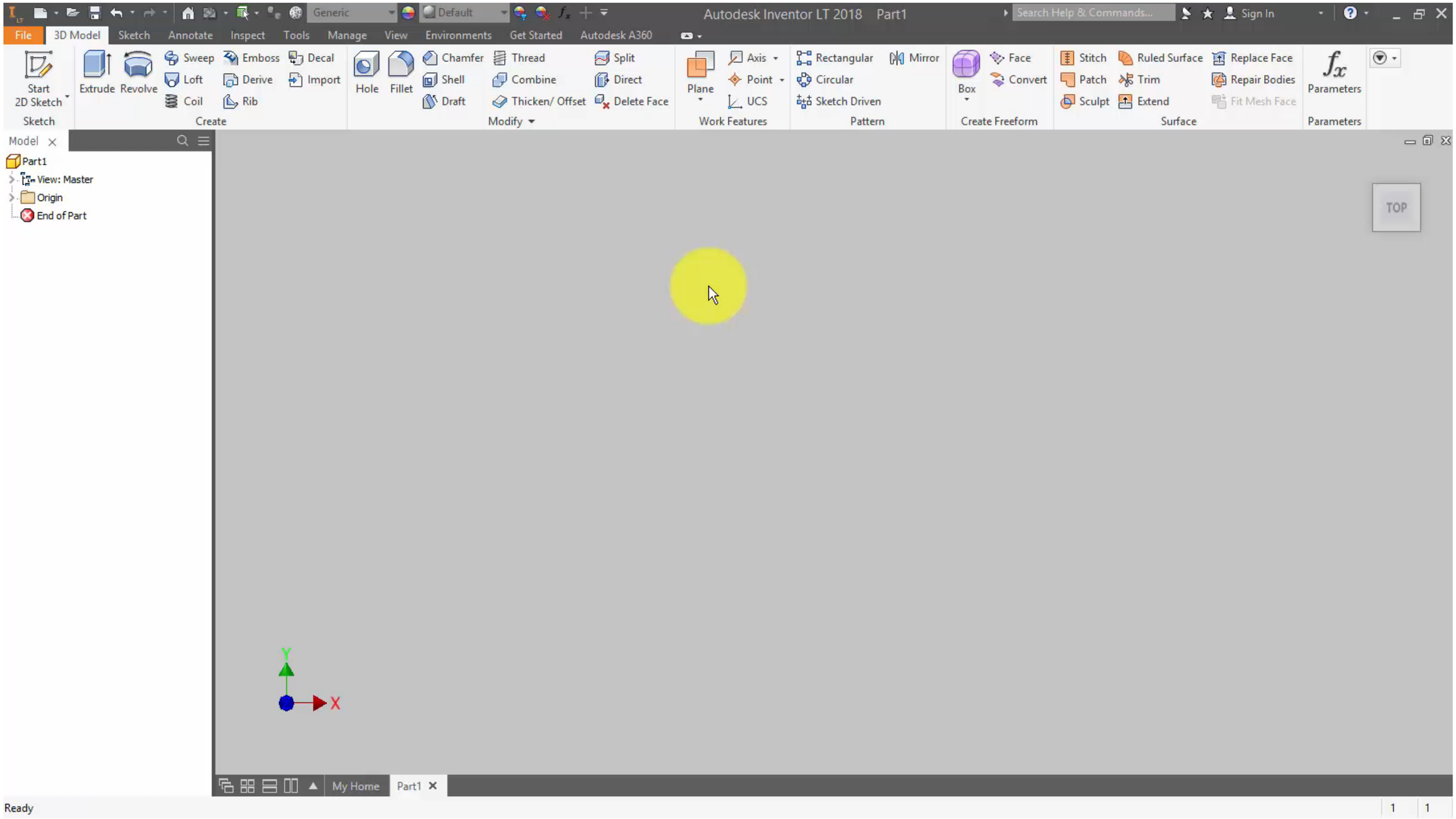
Access Inventor Template for IPE



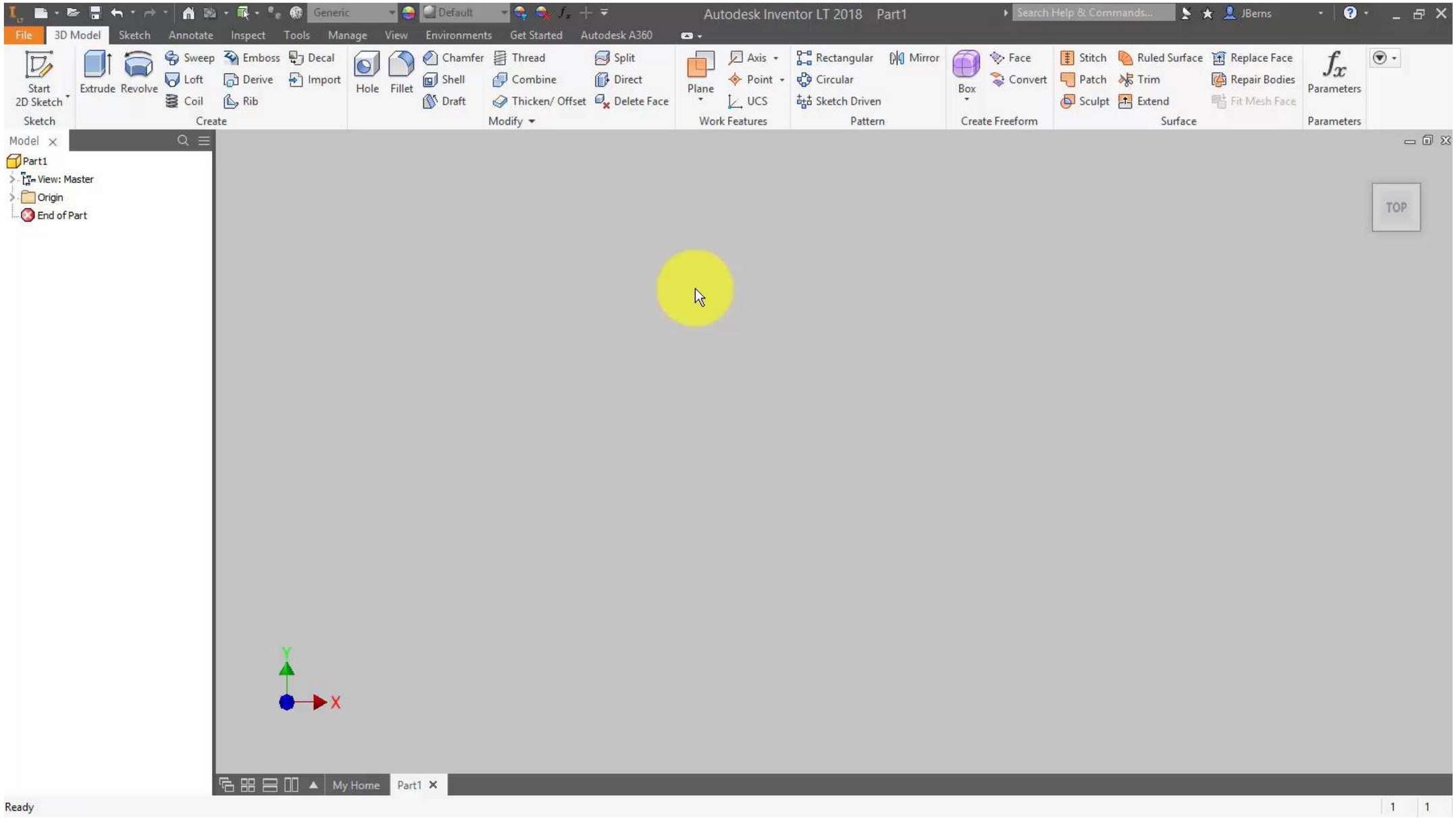
Create the IPE Shapes with Inventor

- Underground Structural Component (Vault)
  - Parameters
  - Extrusion
  - Shell
  - Work Planes & Axis
  - Loft
  - Shell
  - Mirror
  - Feature Properties
  - Test Configurations

Vault – Parameters



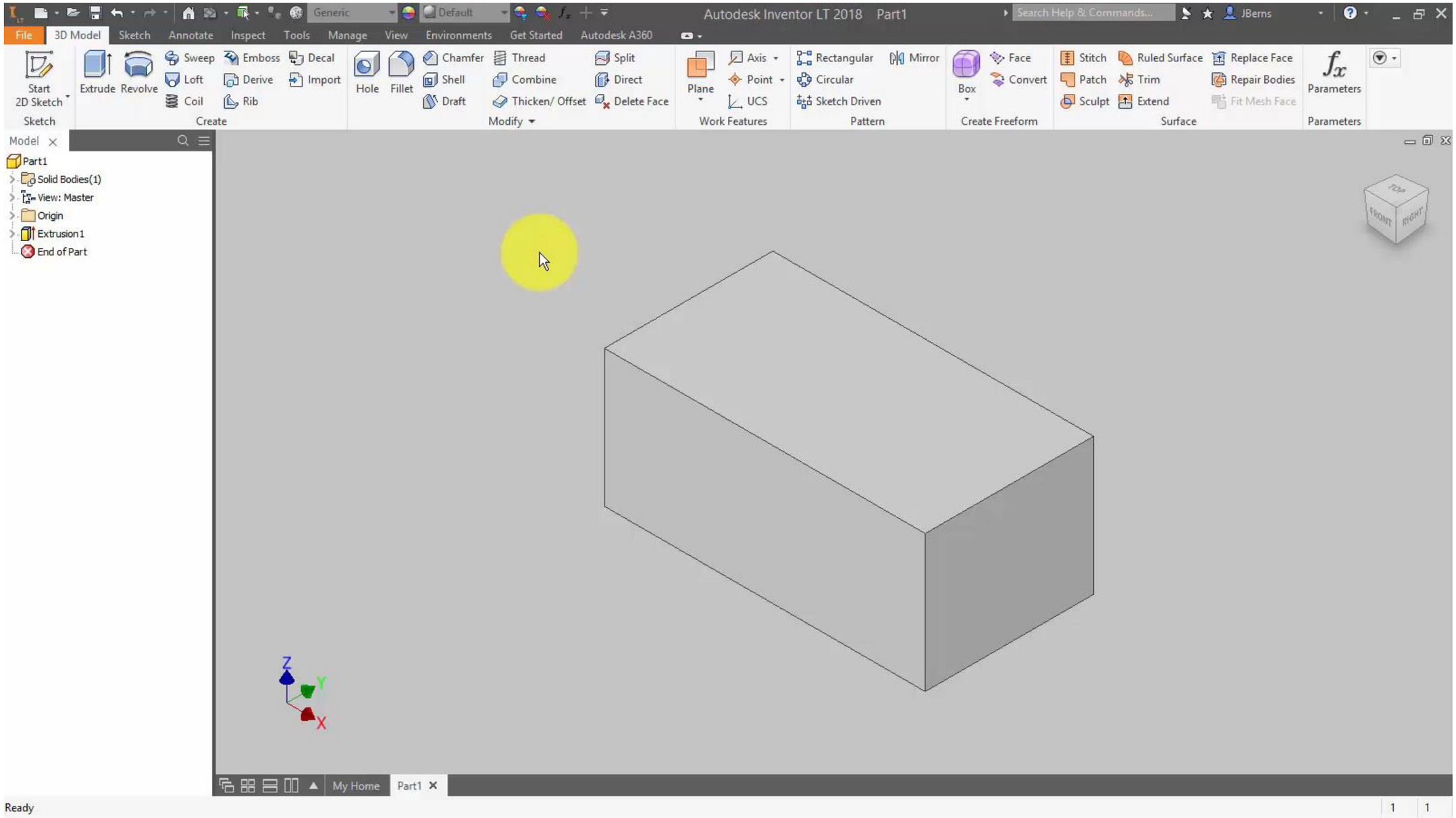
Vault – First Extrusion



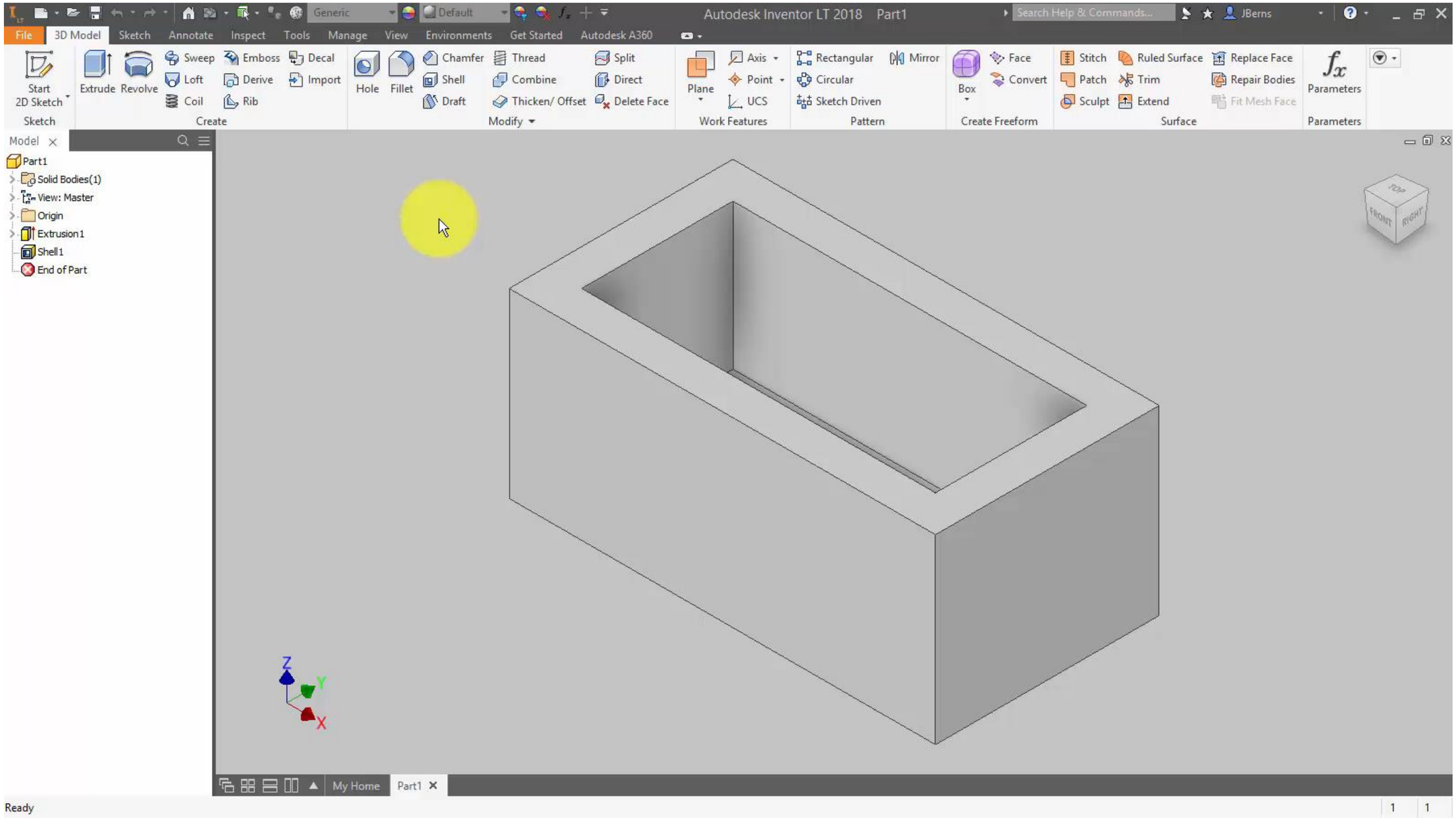
Create the IPE Shapes with Inventor

- Copying text from documents (docx, pdf)
- Watch for minus signs that have been converted to dashes
  - **(FlumeQty – 2 ul))** *En dash*
  - **(FlumeQty - 2 ul))** *Hyphen*

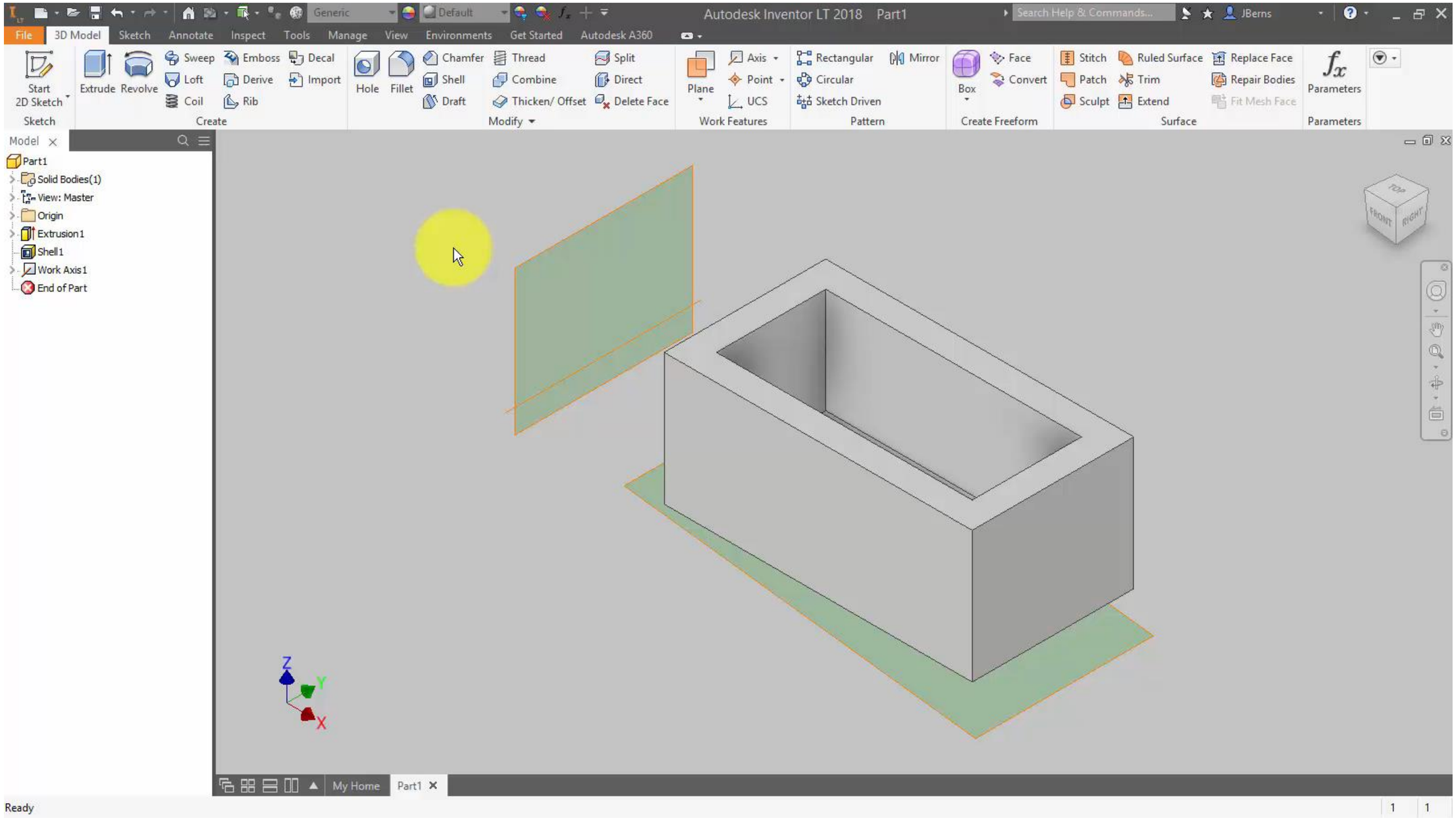
Vault – First Shell



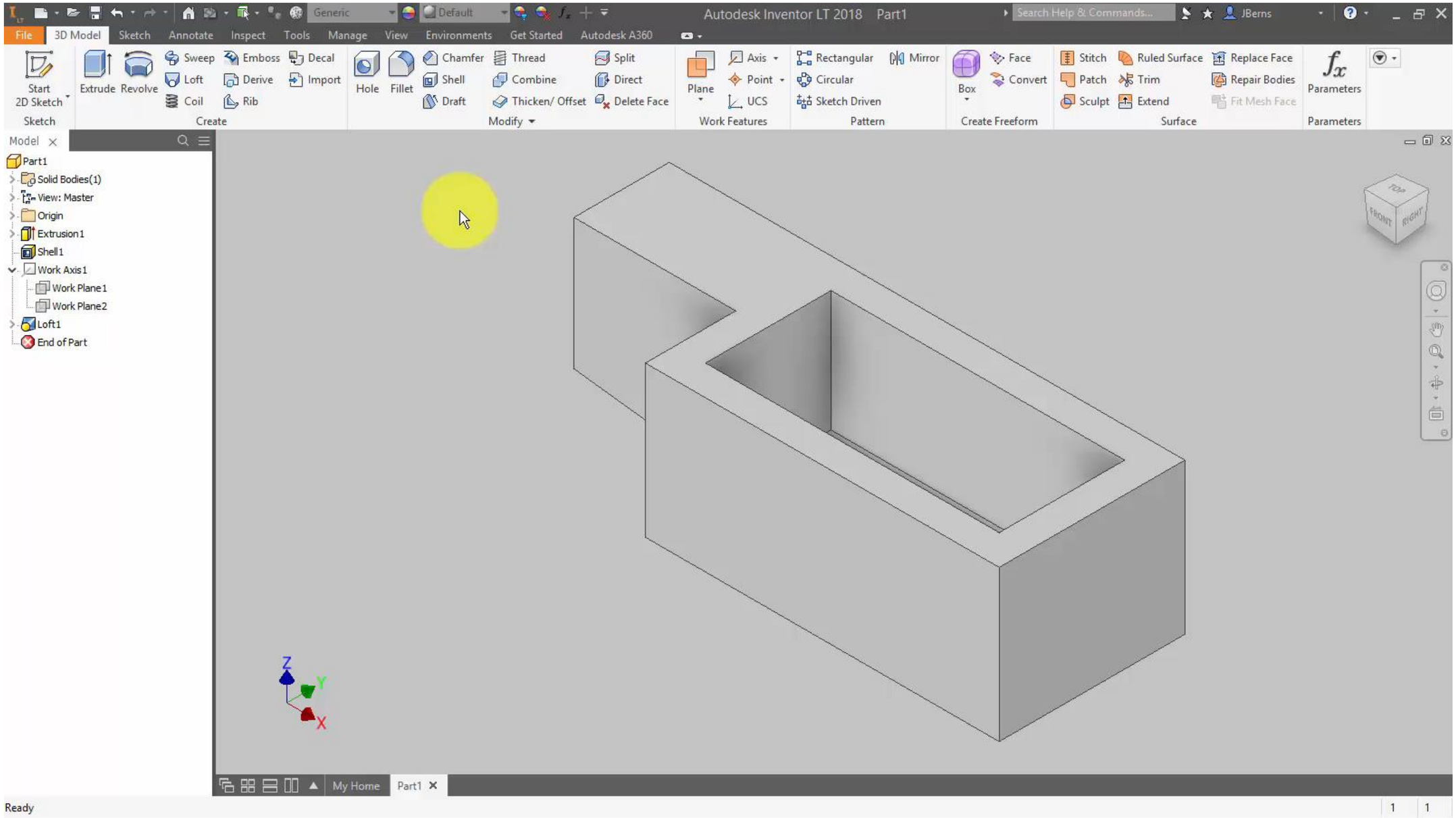
Vault – Work Planes & Work Axis



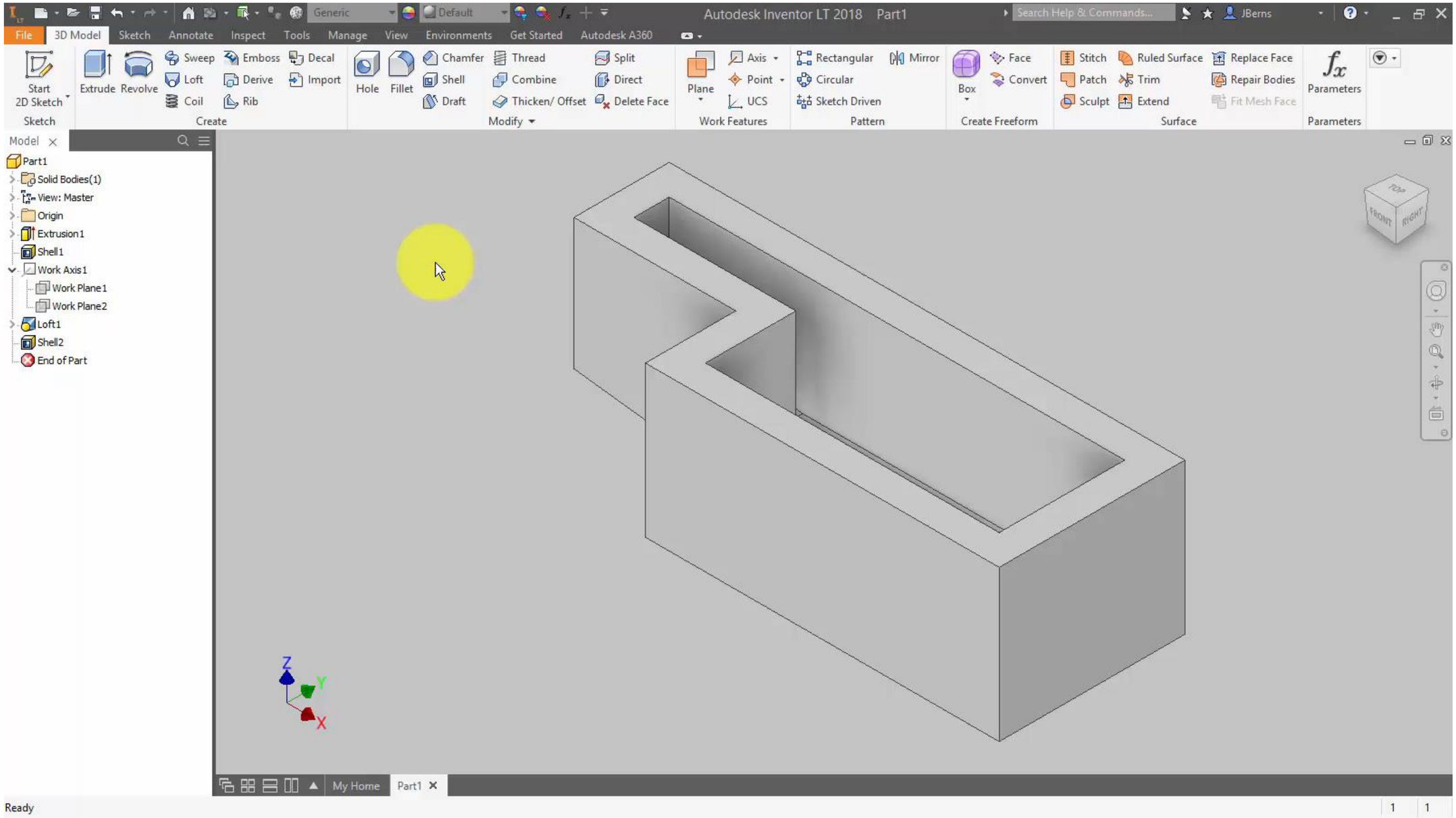
Vault – Loft


Autodesk Inventor LT 2018 Part1
Search Help & Commands...
JBerns
File
3D Model
Sketch
Annotate
Inspect
Tools
Manage
View
Environments
Get Started
Autodesk A360
Start 2D Sketch
Extrude
Revolve
Sweep
Loft
Coil
Emboss
Derive
Rib
Decal
Import
Hole
Fillet
Chamfer
Shell
Draft
Thread
Combine
Thicken/ Offset
Split
Direct
Delete Face
Plane
Axis
Point
UCS
Rectangular
Circular
Sketch Driven
Mirror
Box
Face
Convert
Stitch
Patch
Sculpt
Ruled Surface
Trim
Extend
Replace Face
Repair Bodies
Fit Mesh Face
Parameters
Sketch
Create
Modify
Work Features
Pattern
Create Freeform
Surface
Parameters
Model
Part1
Solid Bodies(1)
View: Master
Origin
Extrusion1
Shell1
Work Axis1
End of Part
FRONT
RIGHT
Z
Y
X
My Home
Part1
Ready

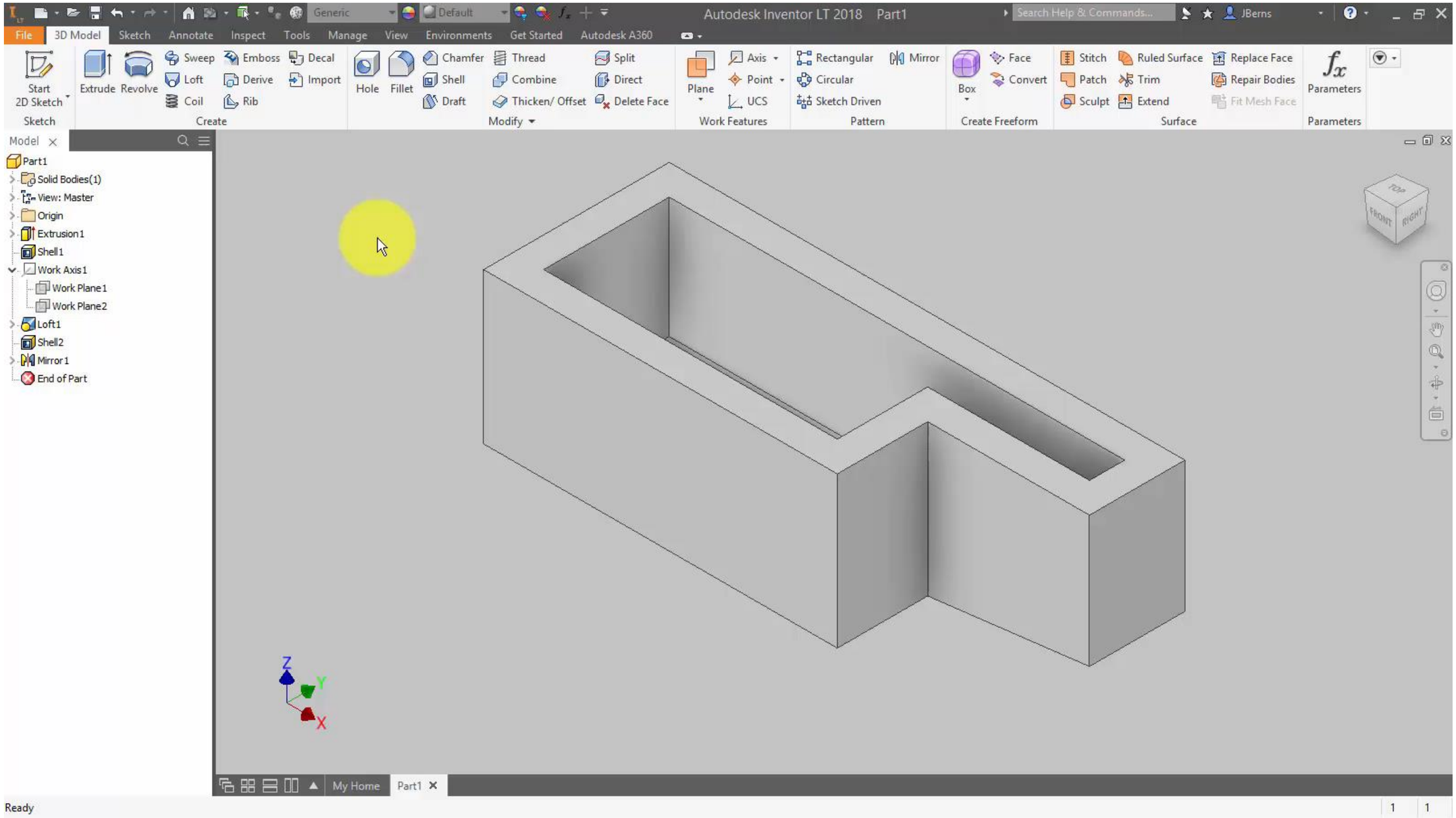
Vault – Second Shell



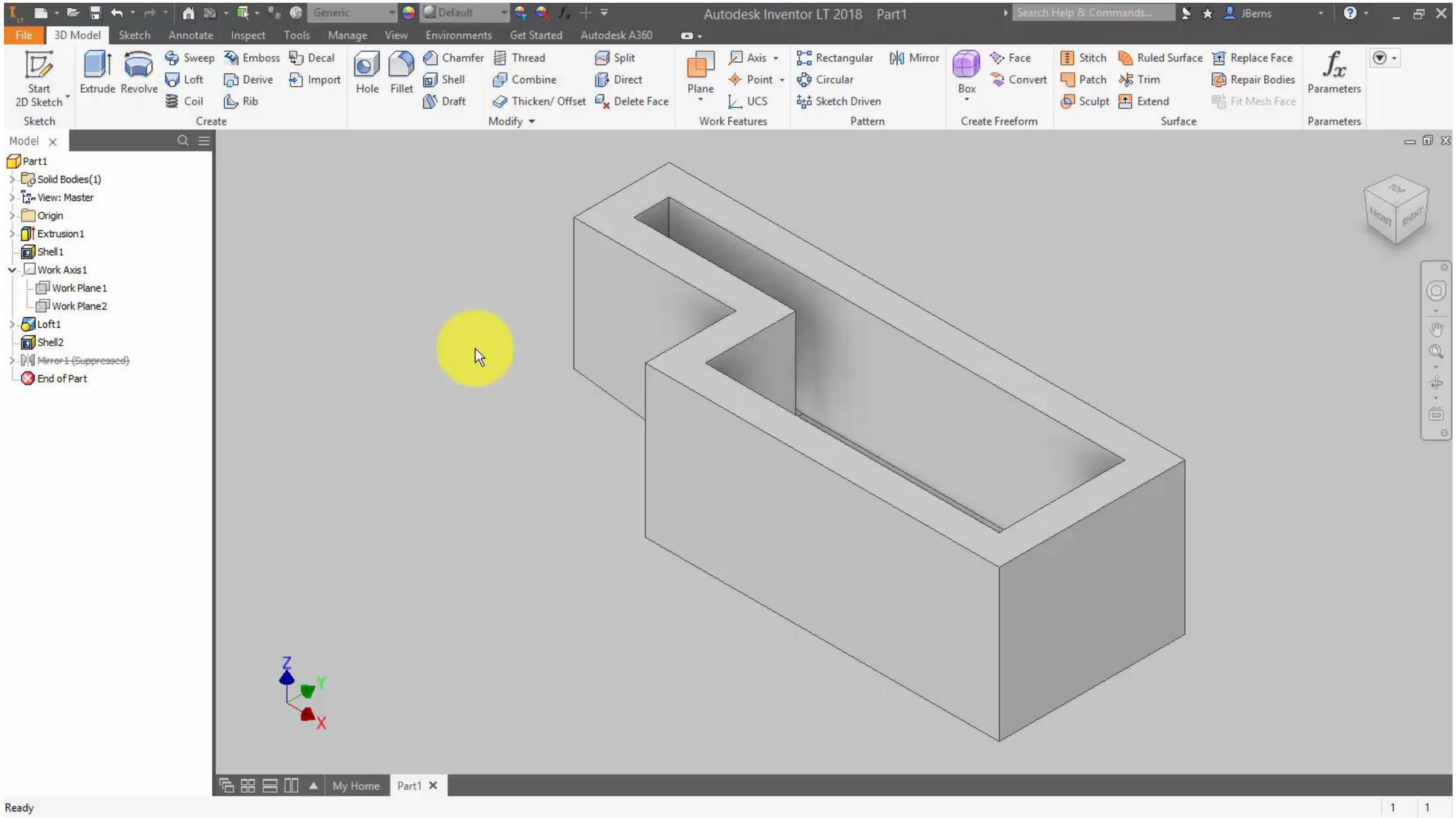
Vault – Mirror



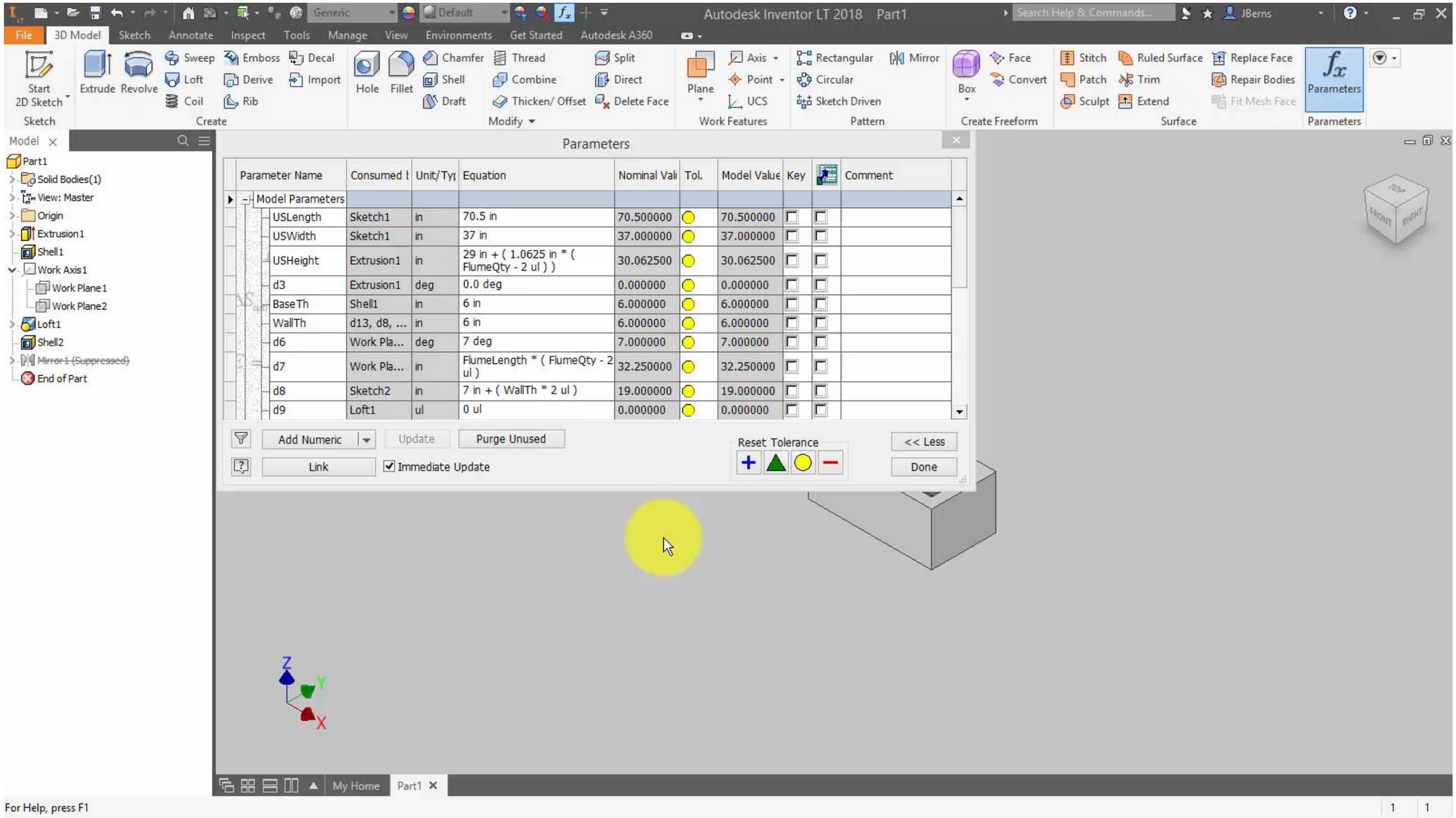
Vault – Feature Properties



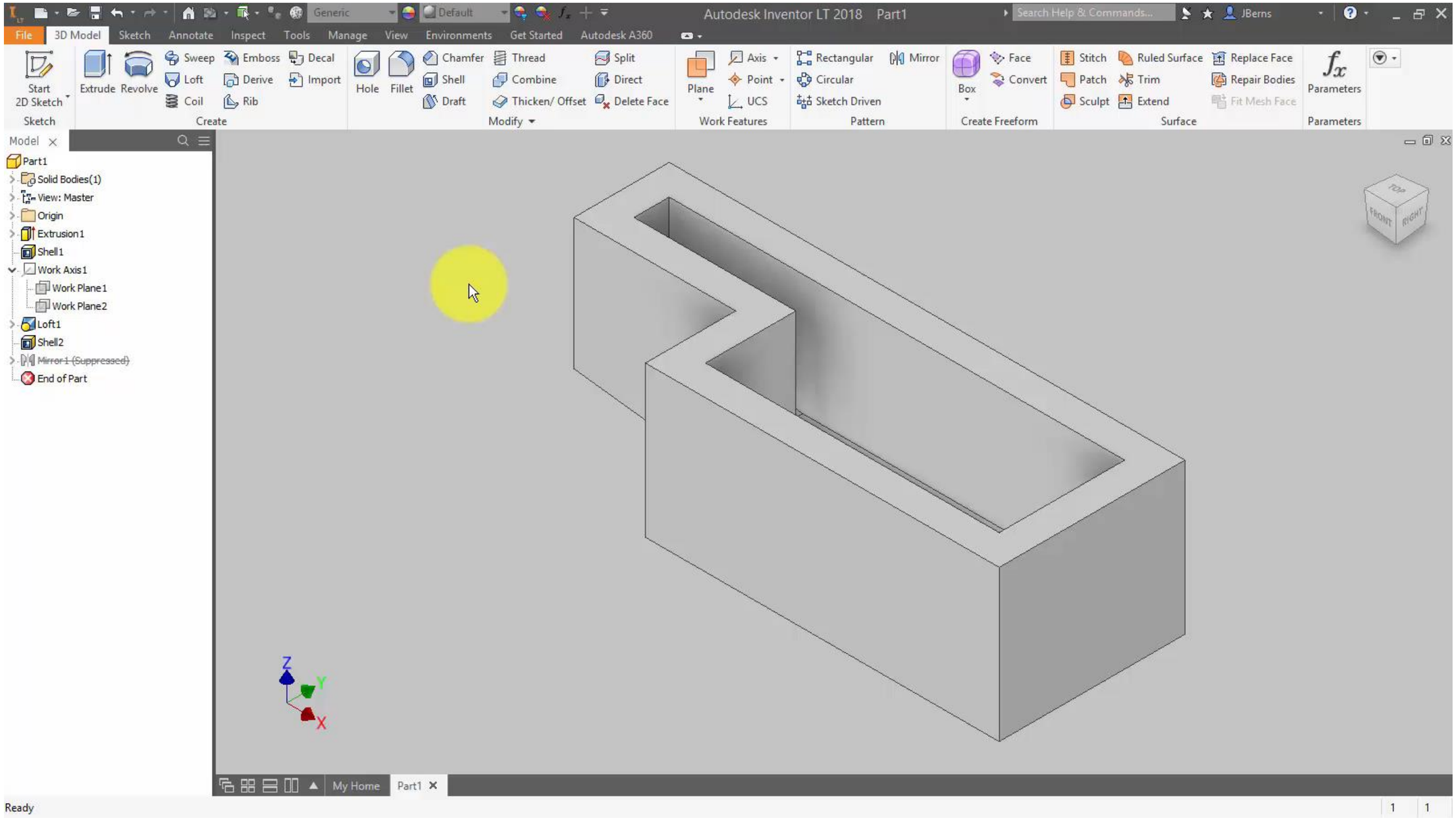
Vault – Test Configurations



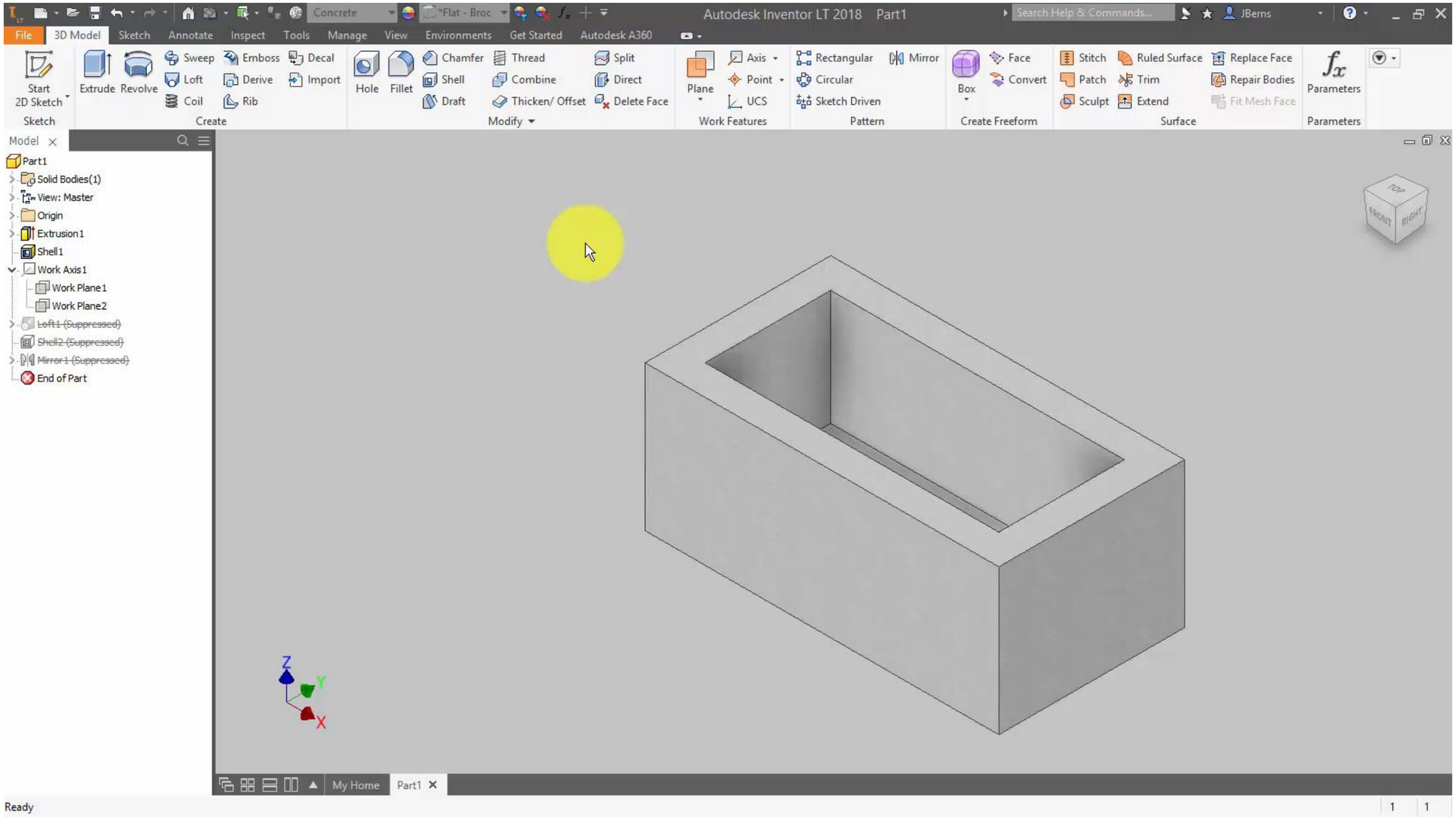
Vault – Key and Export Parameters



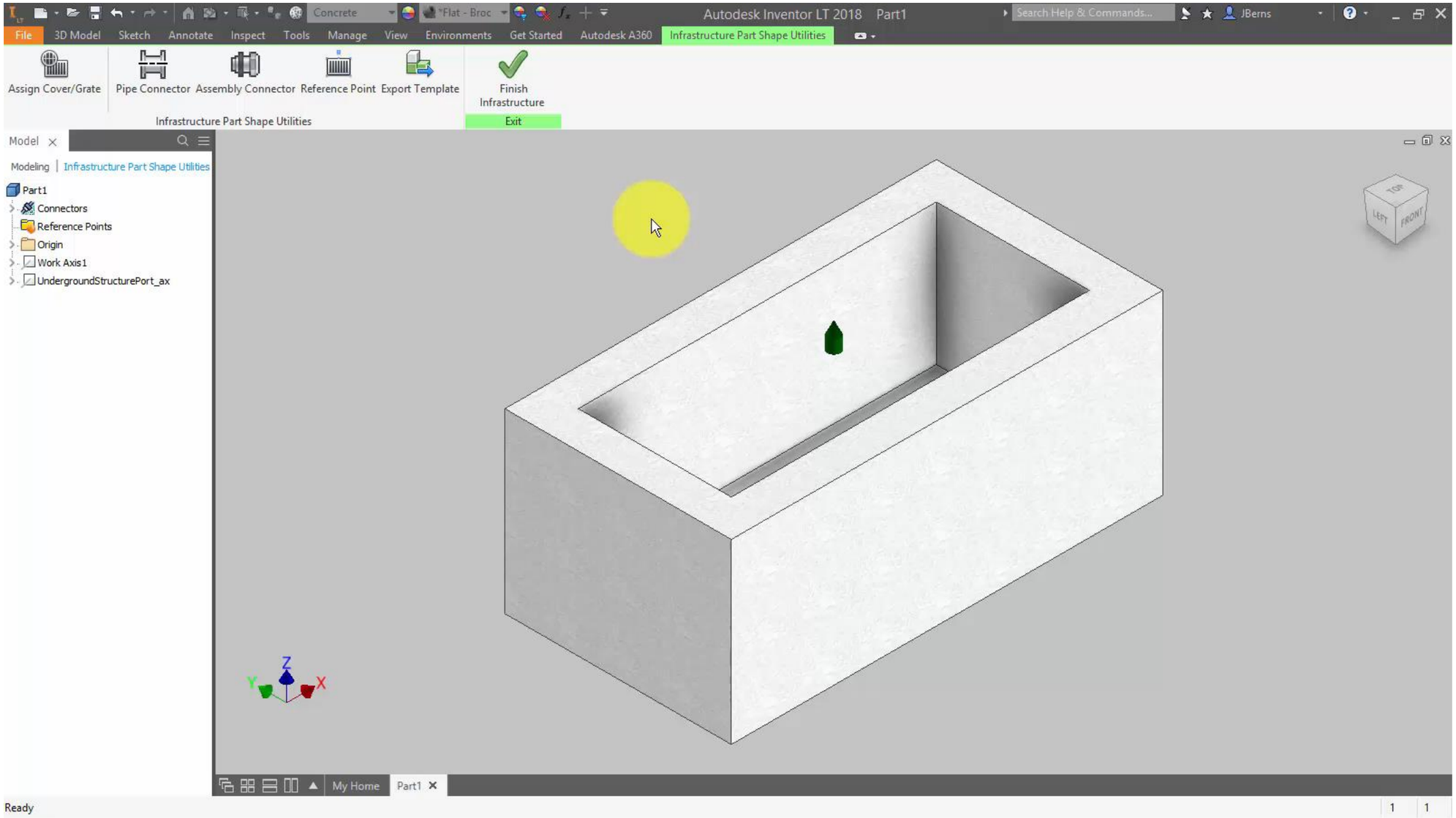
Vault – Material and Appearance



Vault – Infrastructure Part Shape Utilities
Assembly Connector



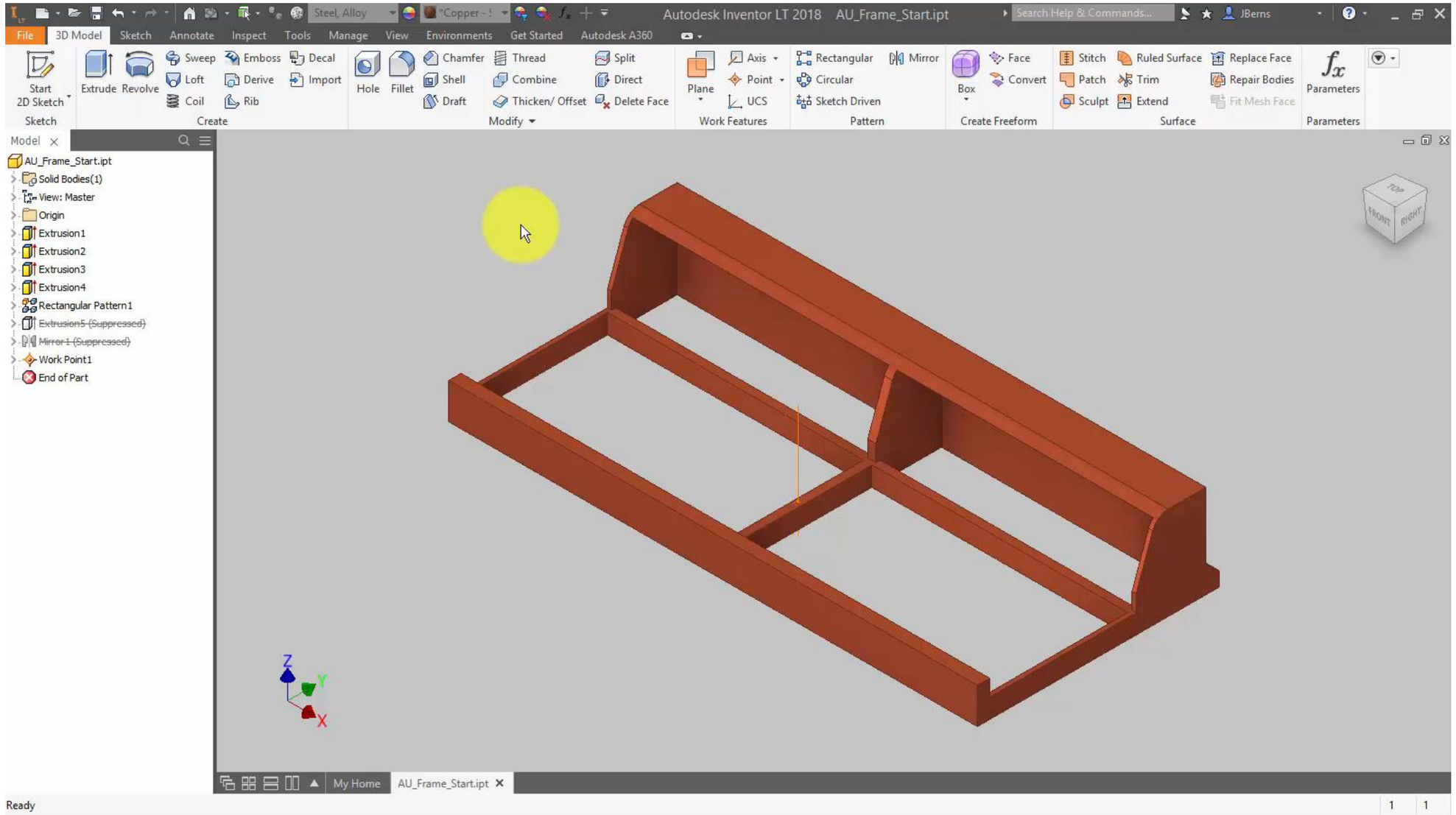
Vault – Infrastructure Part Shape Utilities Export Template



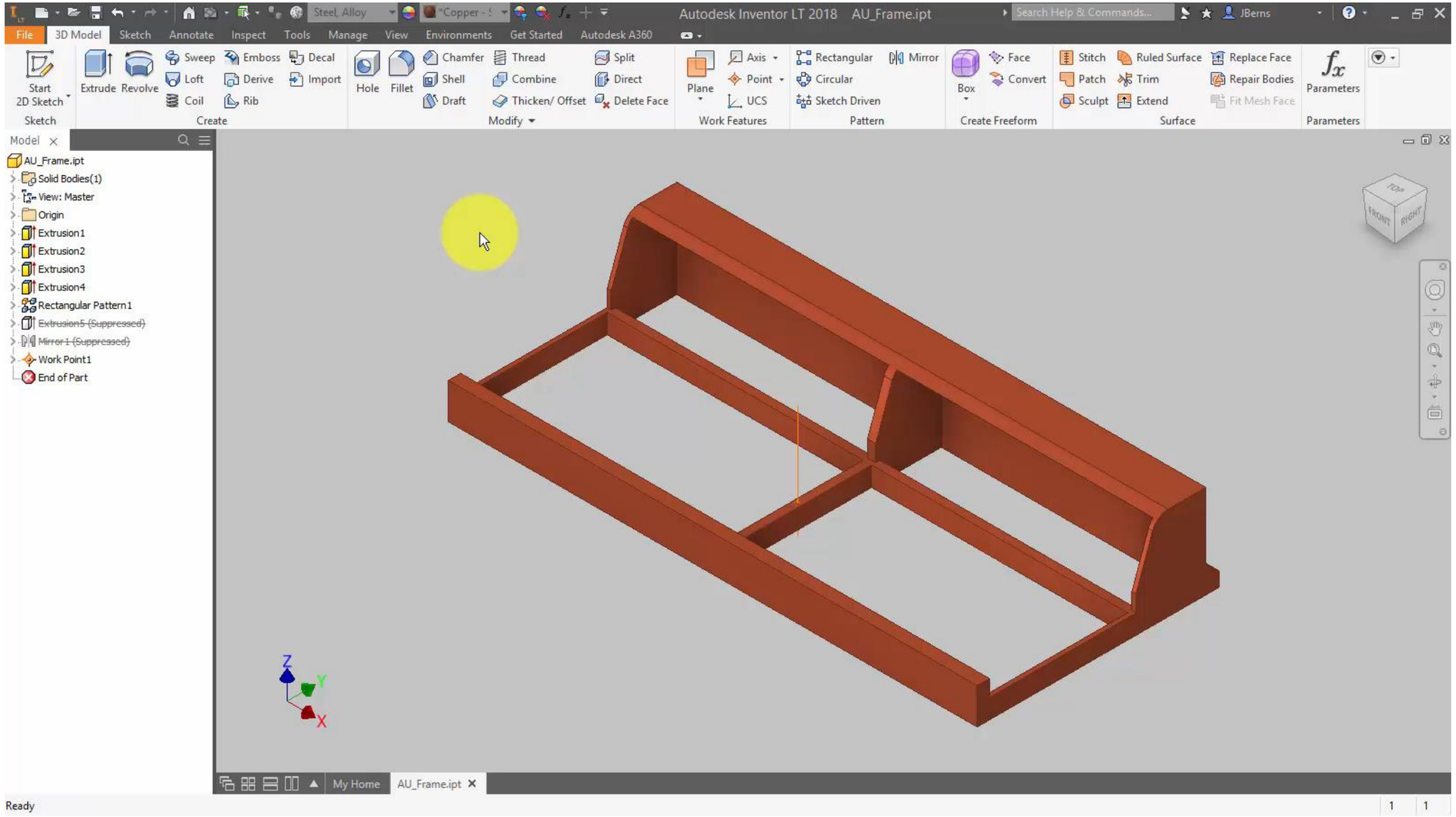
Create the IPE Shapes with Inventor

- Surface Structural Component (Frame)

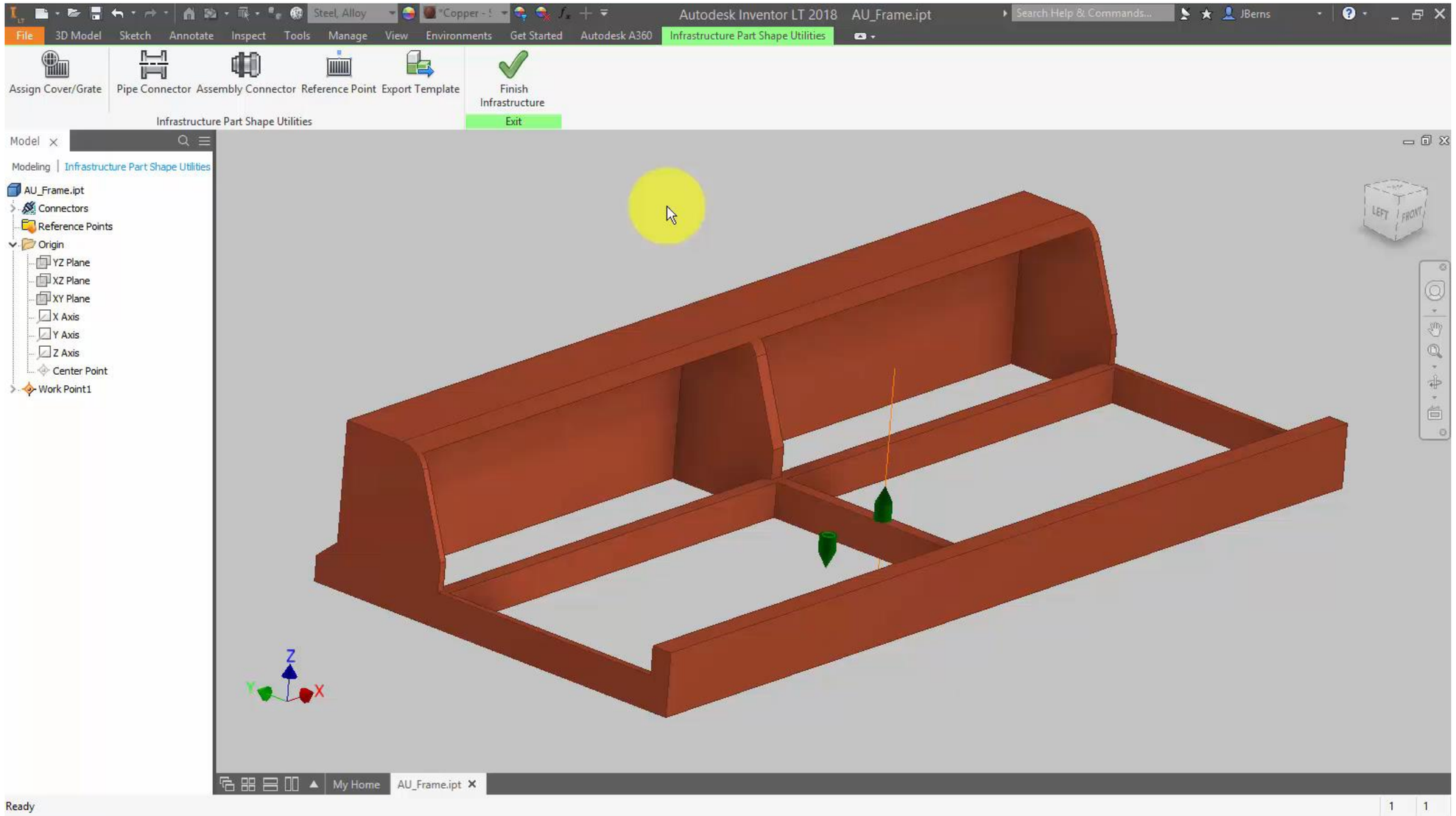
Frame – Test Configurations, Key and Export Parameters



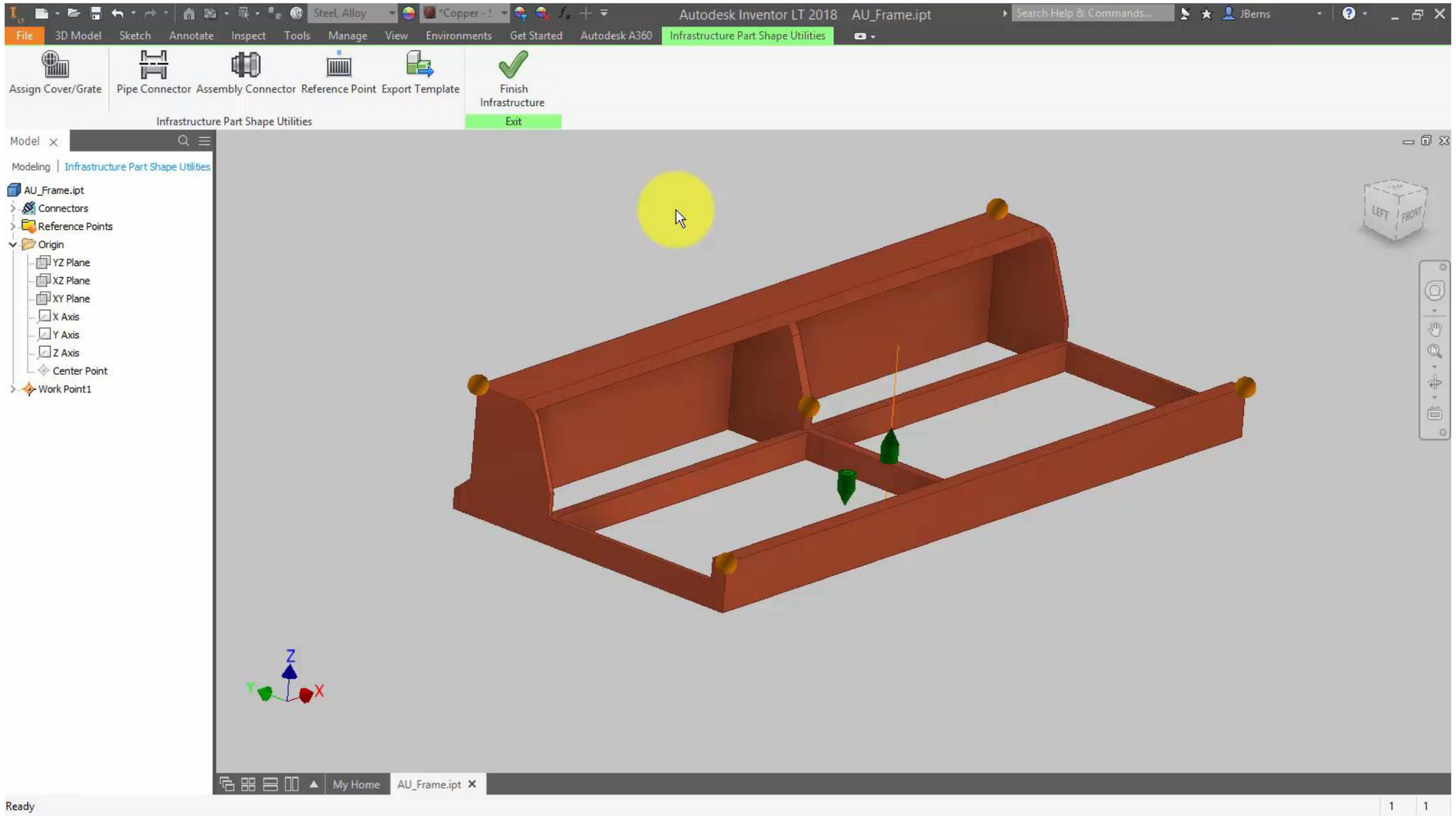
Frame – Infrastructure Part Shape Utilities Assembly Connectors



Frame – Infrastructure Part Shape Utilities Reference Points



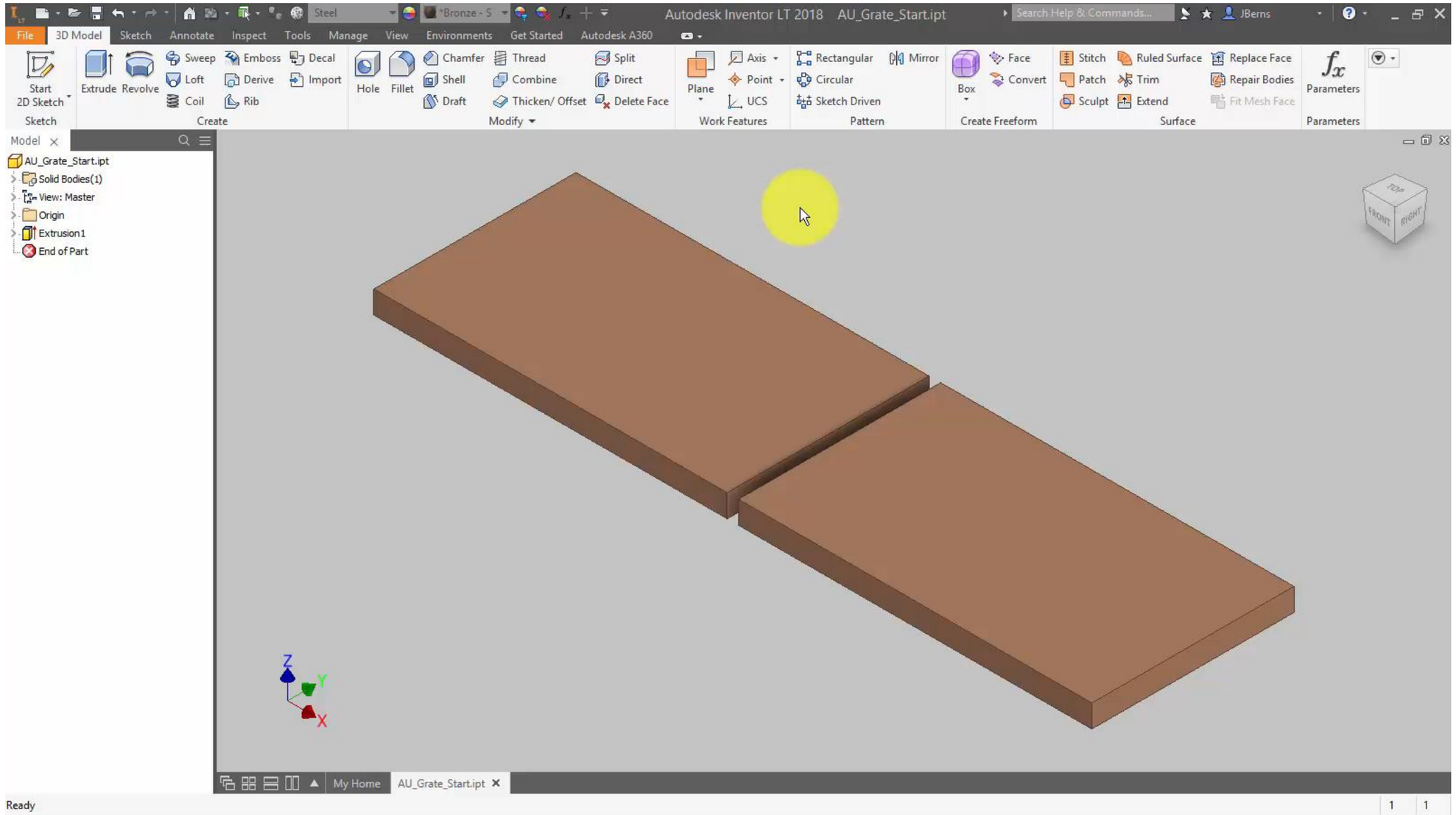
Frame – Infrastructure Part Shape Utilities Export Template



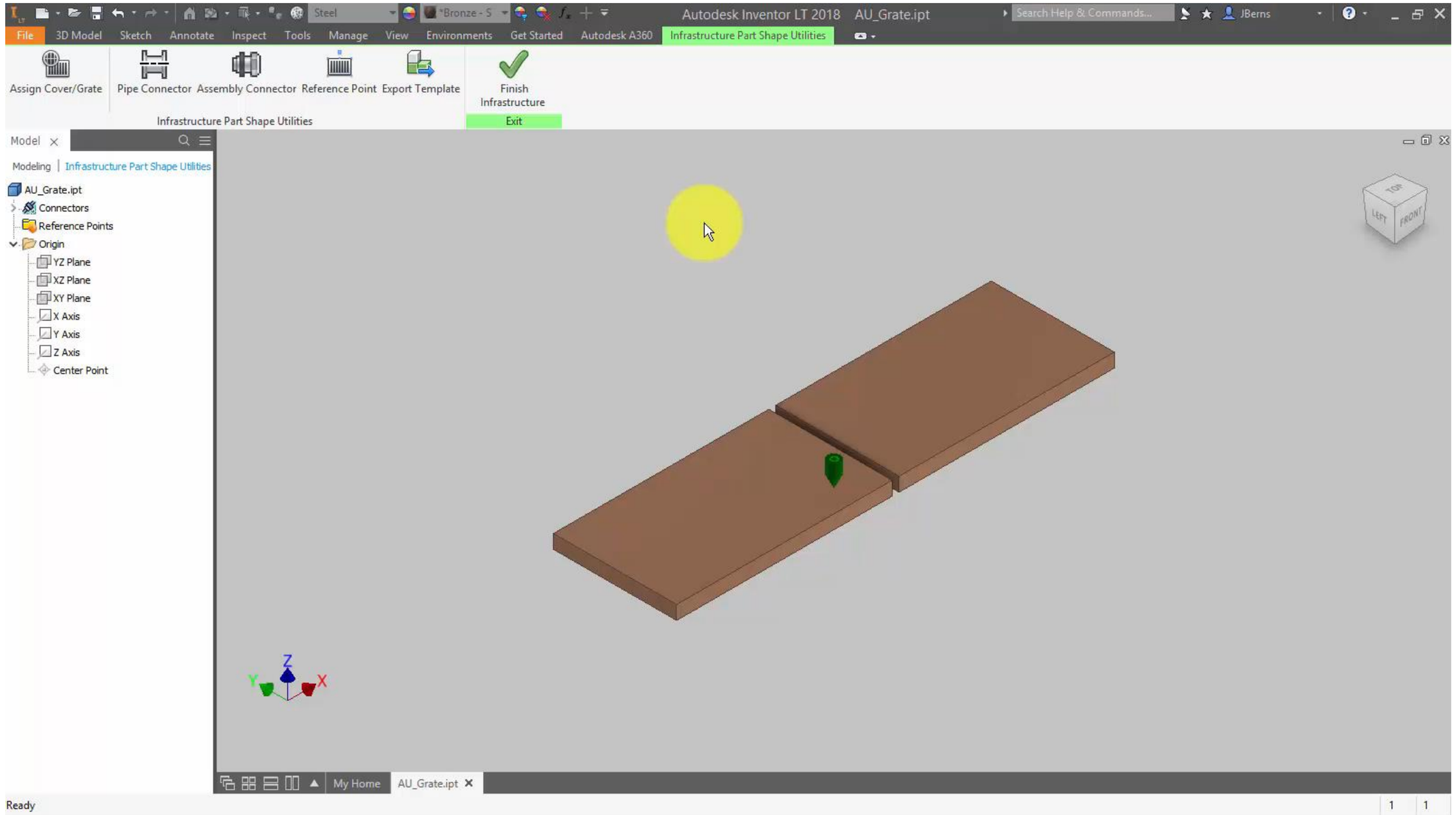
Create the IPE Shapes with Inventor

- Grate/Cover Structural Component (Grate)

Grate – Infrastructure Part Shape Utilities Assembly Connector



Grate – Infrastructure Part Shape Utilities Export Template

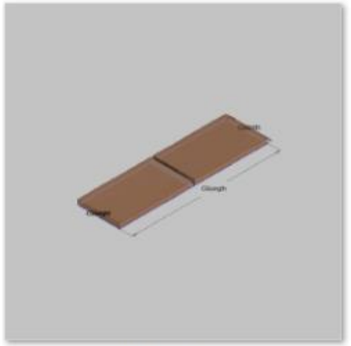


Structures – Exported to Inventor Workspace

AU_Grate.ipt

AU_Grate.xml

AU_Grate_200.jpg


AU_Grate_dim.jpg

AU_Frame.ipt

AU_Frame.xml

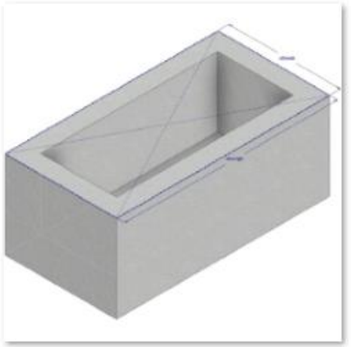
AU_Frame_200.jpg

AU_Frame_dim.jpg

AU_Vault.ipt

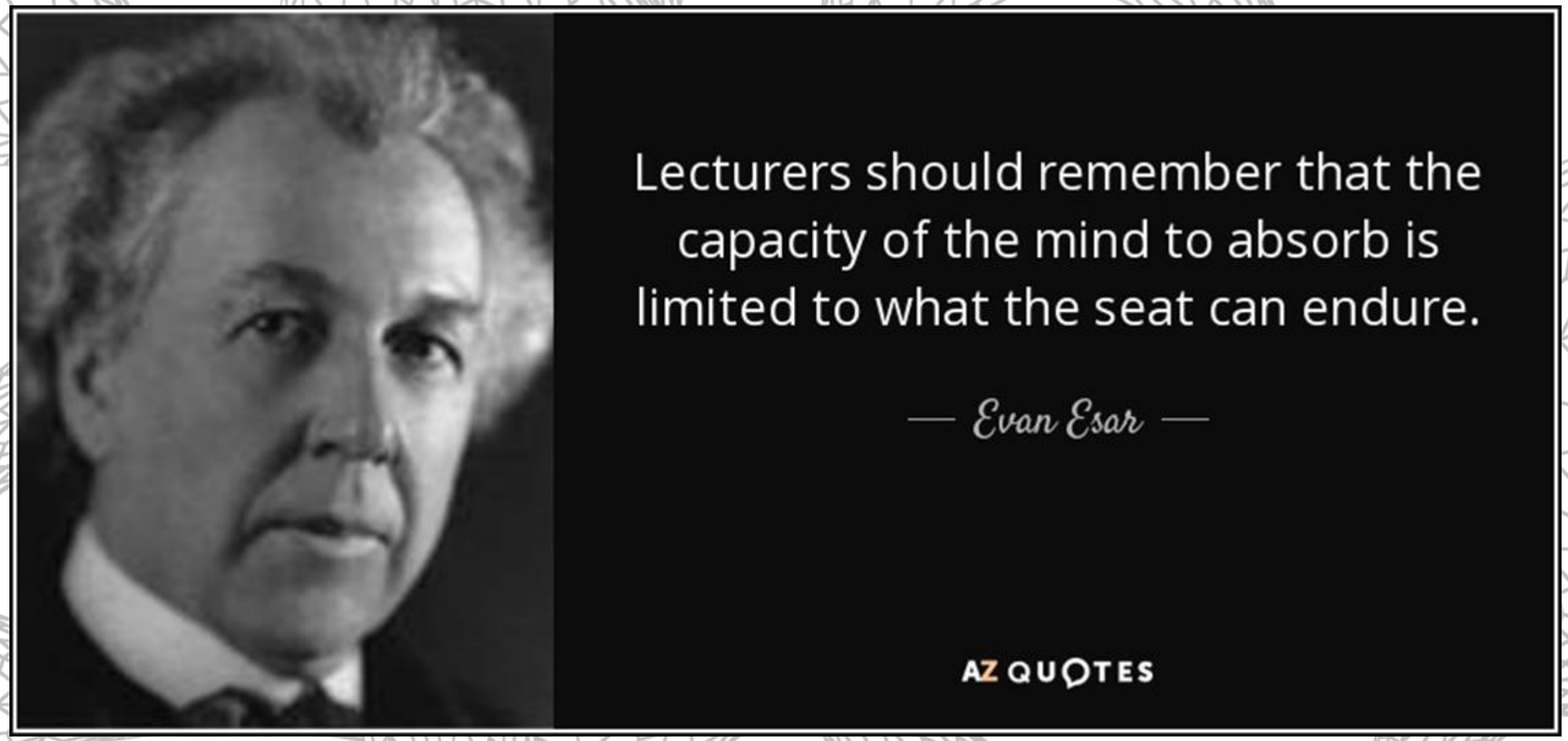
AU_Vault.xml

AU_Vault_200.jpg


AU_Vault_dim.jpg

2:15 PM

1:44 AM



Section break

02:30

tekhnologic

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*Poker chips are limited in availability.

Winner will be announced on December 1, 2017.

Infrastructure Parts Editor (IPE)

Which Civil 3D tool have you used?

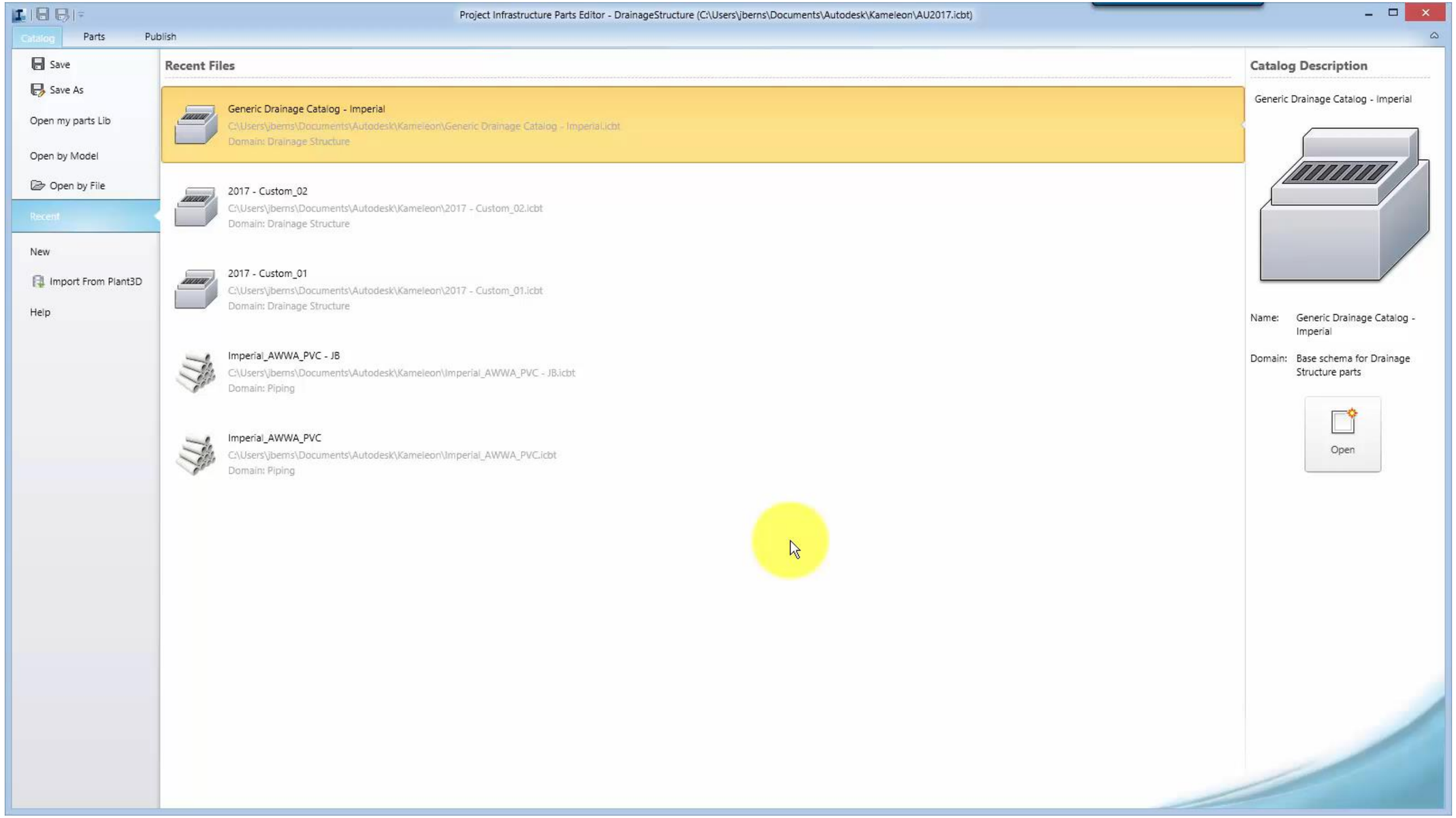
(*Select all that apply*)

A Part Builder

B Content Catalog Editor

C None of the above

IPE – Create Catalog



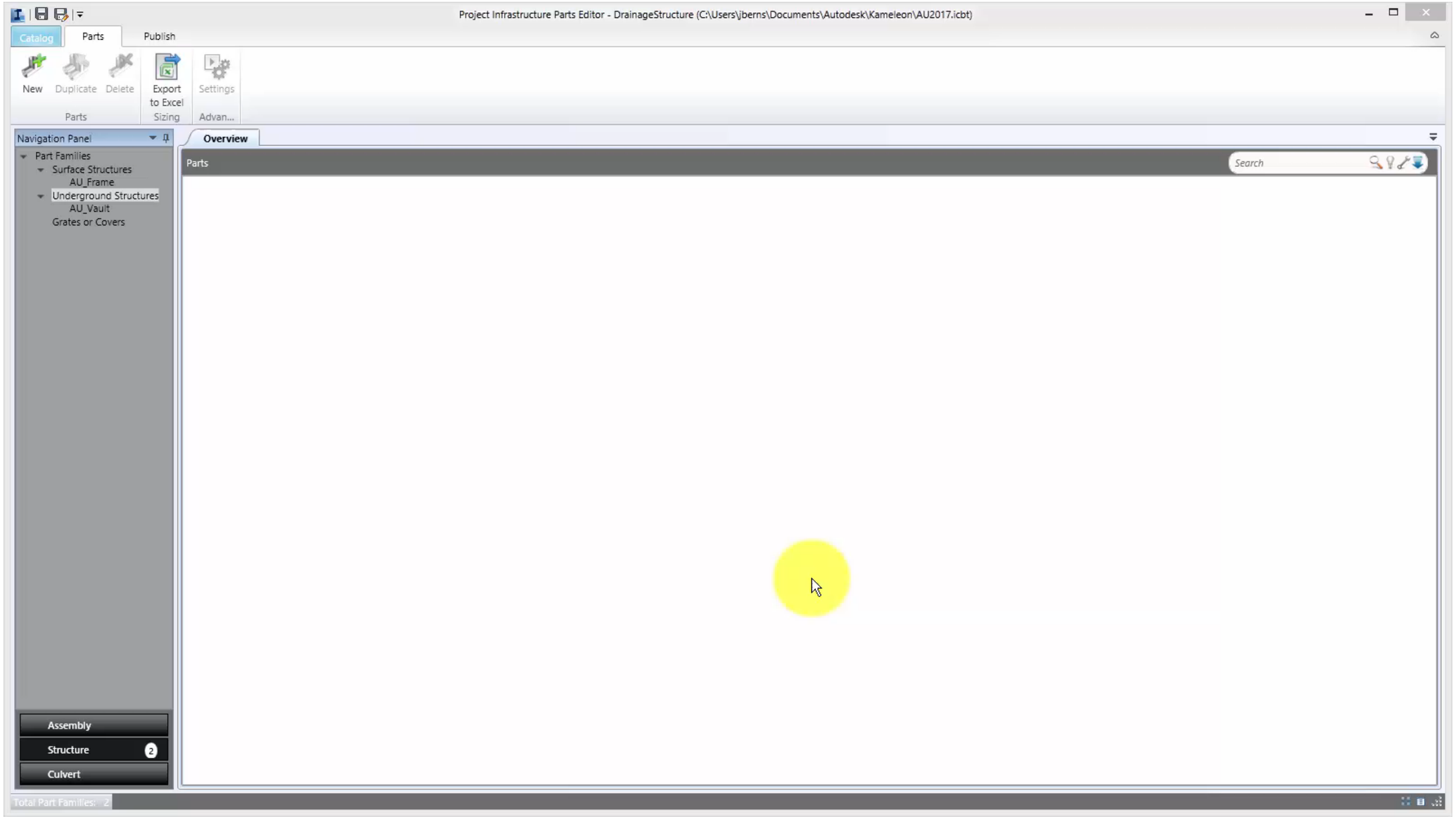
Best practices for creating and editing parts in Infrastructure Parts Editor (IPE)

- Import IPT from Inventor
  - Creates multiple structures
- Import IAM from Inventor
  - Creates single structure
- After import both can be "published"
  - Part Editing Tables
  - Assemblies

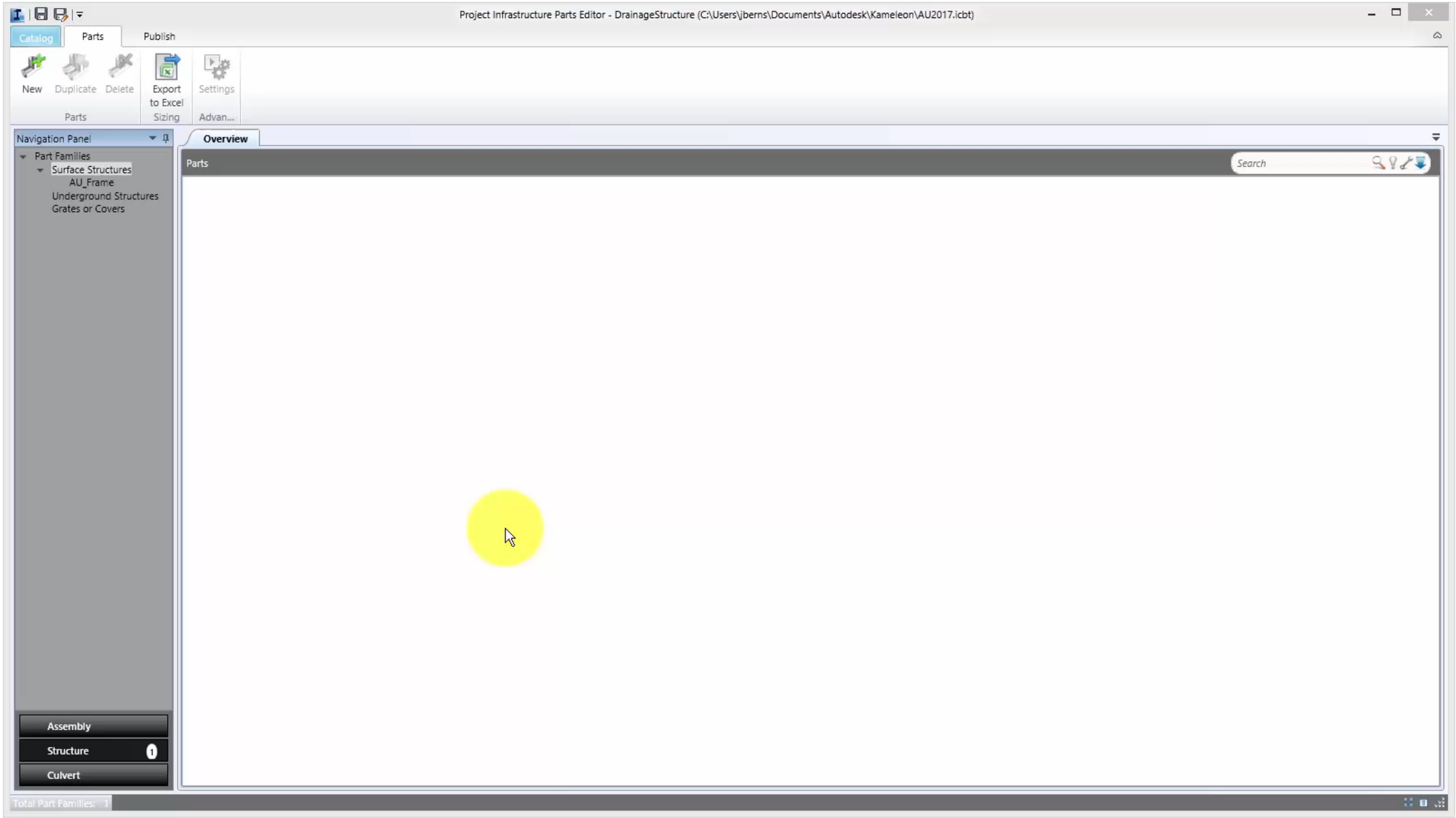
Part Editing Table

- Create rows
- Fill Out 1 row
- Export to Excel
- Import from Excel
- Repeat for other structures
- SPLength, SPWidth
- Columns that must match between structures

IPE – Grate


Project Infrastructure Parts Editor - DrainageStructure (C:\Users\jberns\Documents\Autodesk\Kameleon\AU2017.icbt)
Catalog
Parts
Publish
New
Duplicate
Delete
Export to Excel
Settings
Parts
Sizing
Advan...
Navigation Panel
Part Families
Surface Structures
AU_Frame
Underground Structures
AU_Vault
Grates or Covers
Assembly
Structure
2
Culvert
Overview
Parts
Search
Total Part Families: 2

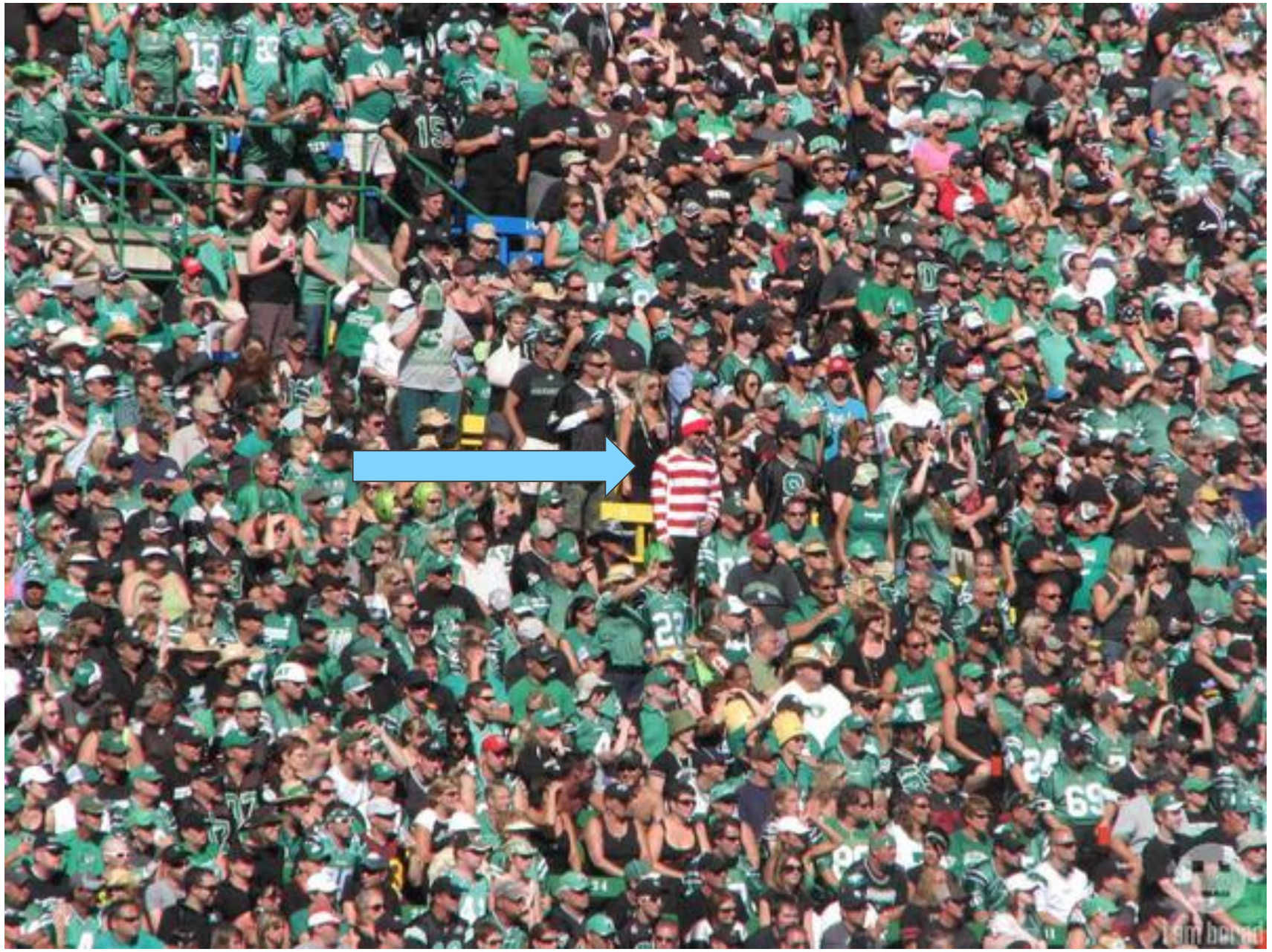
IPE – Vault


Project Infrastructure Parts Editor - DrainageStructure (C:\Users\jberns\Documents\Autodesk\Kameleon\AU2017.icbt)
Catalog
Parts
Publish
New
Duplicate
Delete
Parts
Export to Excel
Sizing
Settings
Advan...
Navigation Panel
Part Families
Surface Structures
AU_Frame
Underground Structures
Grates or Covers
Assembly
Structure
1
Culvert
Overview
Parts
Search
Total Part Families: 1

Everything
Must
Match

MATCHING

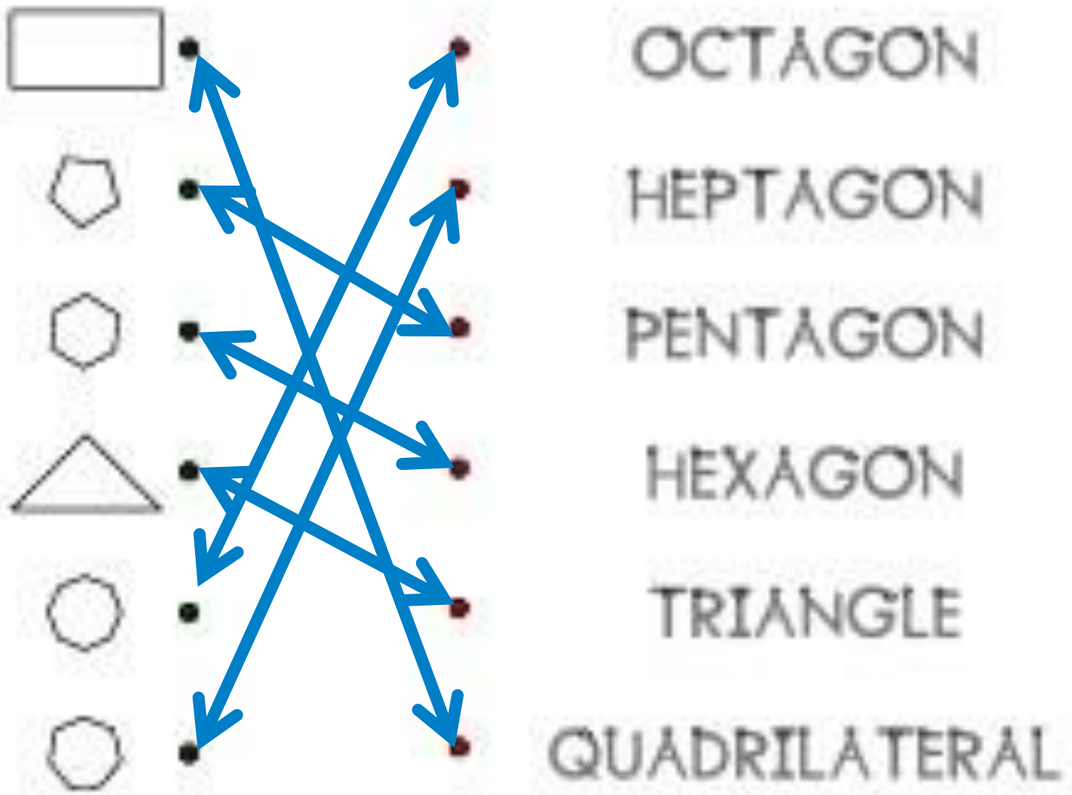
LESSON	PRACTICE

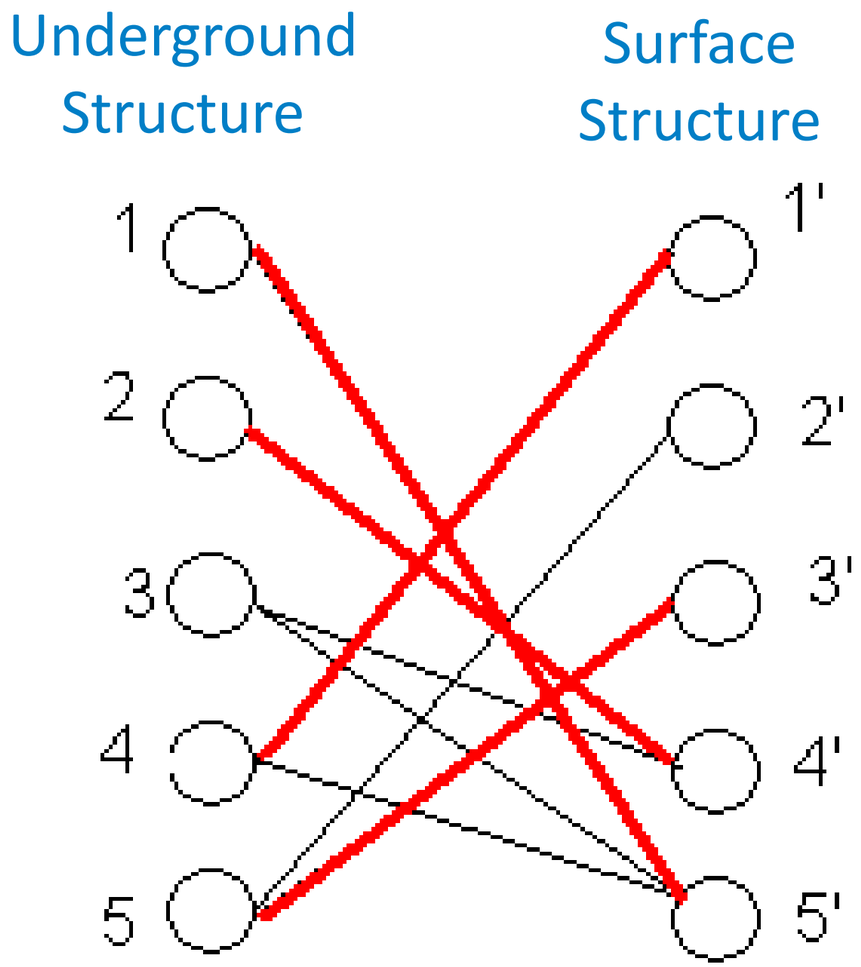


Like Terms

- For terms to be "like terms" everything must match except the coefficients.
- Which of the following are like terms?

$3x^2$	$2x^3$ ⇐
$2x^2$	$7x^2$


OCTAGON
HEPTAGON
PENTAGON
HEXAGON
TRIANGLE
QUADRILATERAL

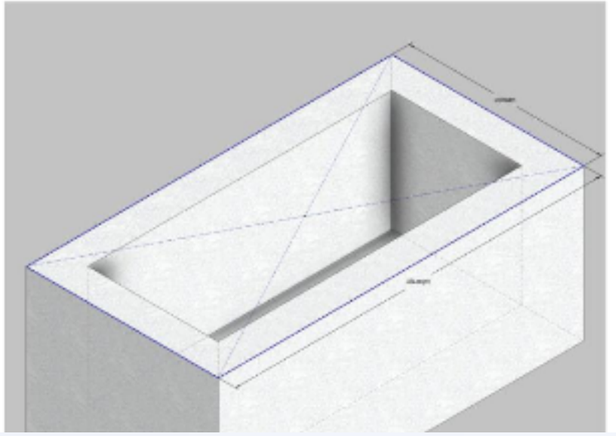

Underground Structure
Surface Structure
1
2
3
4
5
1'
2'
3'
4'
5'

Part Editing

Part Size Local Name	Part Size Id	Size	*USLength	*USWidth	*SPLength	*SPWidth	*FlumeQty	*FlumeRightHand
CI_Vault, -- 1 --	99de2911-b4eb-7a73-e513-007ef8182057	6 FL R	70.500	37.000	1.000	1.000	6.000	1.000
CI_Vault, -- 2 --	76fc6c75-e10d-3697-2226-a82d3f2bb780	5 FL R	70.500	37.000	2.000	2.000	5.000	1.000
CI_Vault, -- 3 --	ac2def09-4917-1fb5-4708-e443b145d5e0	4 FL R	70.500	37.000	3.000	3.000	4.000	1.000
CI_Vault, -- 4 --	e65e14d2-8ca7-5846-ff9b-11a3a3d5a2ff	3 FL R	70.500	37.000	4.000	4.000	3.000	1.000
CI_Vault, -- 5 --	a5ffd6c7-7ae5-892b-4daa-637976941a91	2 FL	70.500	37.000	5.000	5.000	2.000	0.000
CI_Vault, -- 6 --	2d18bf27-0796-5558-3b4d-88cf78a1f718	3 FL L	70.500	37.000	6.000	6.000	3.000	0.000
CI_Vault, -- 7 --	0ec96fea-cd72-6e53-875f-26eabb52f7b9	4 FL L	70.500	37.000	7.000	7.000	4.000	0.000
CI_Vault, -- 8 --	5b23a6cb-797f-b987-f540-0f8f3ec8615e	5 FL L	70.500	37.000	8.000	8.000	5.000	0.000
CI_Vault, -- 9 --	101f5e12-00aa-7103-7fa4-0853cae7a4bd	6 FL L	70.500	37.000	9.000	9.000	6.000	0.000

Add Row | Delete Row | Export To Excel | Import From Excel | Add Properties...

Dimension Image



Part Family Properties | Shapes | Detailed Properties | **Part Editing** | Size Validation

Part Editing Details: CIFrame

Instructions

Author a complete part family by adding or editing the size data in each row.
All parametric dimension values must be completed. The Dimension Preview Image provides guidance on parametric dimension values. If you need more screen space, this image can be undocked, resized, and repositioned elsewhere on the screen.
You can customize the property columns in the table by clicking the Add Properties button.

Optionally, the sizing table can be exported and edited in Excel.

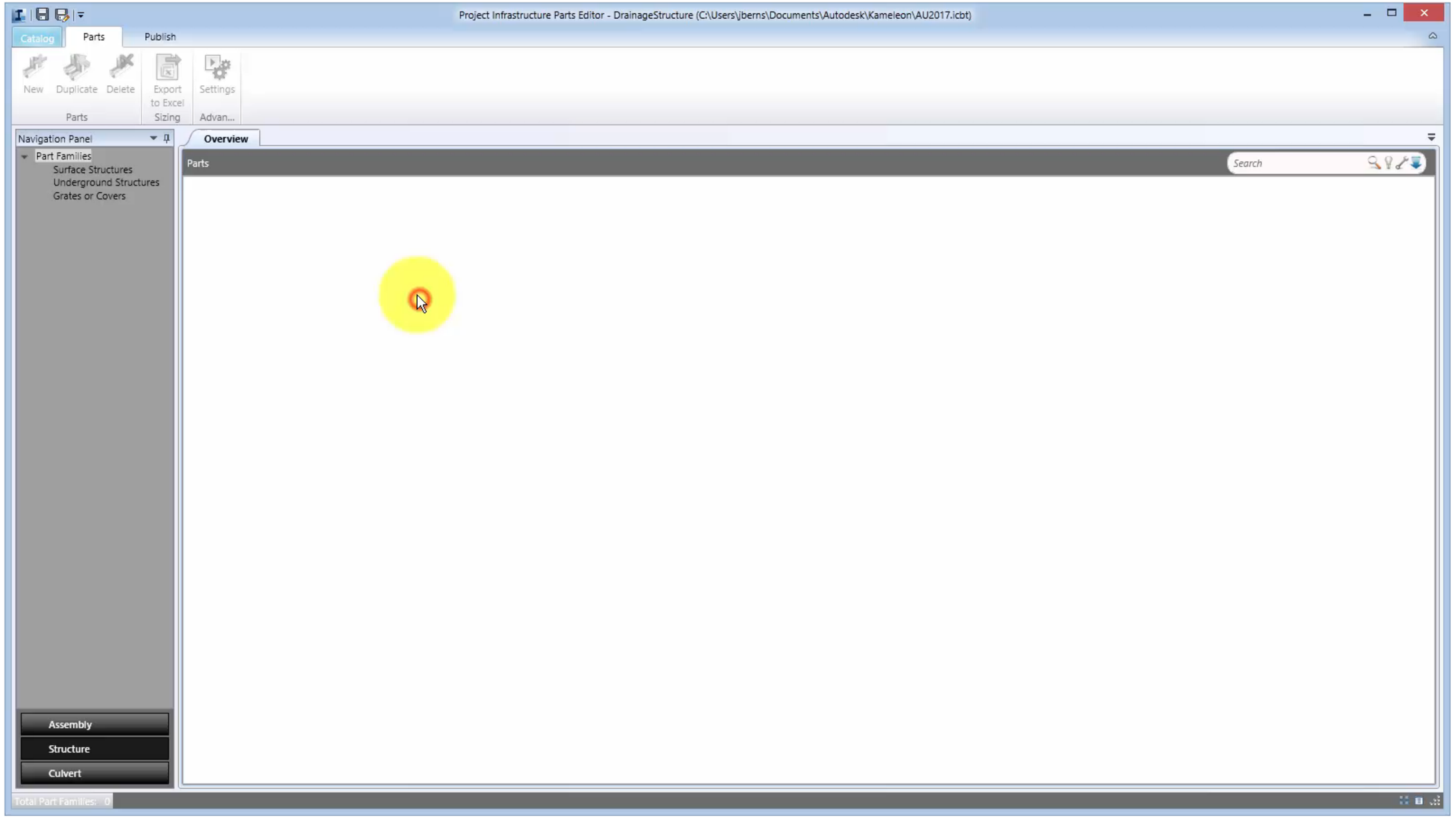
Part Editing

Part Size Local Name	Part Size I	Size	Structure P	Structure Pc	Roadway Cross Slo	Roadway Gut	*SSWidth	*CurbHeight	*SSLength	*FlumeQty	*FlumeRig	*CGLength	*CGWidth	*CGHeight
CI_Frame, -- 1 --	8f24f404-5f	6 FL R	1.000	1.000	0.000	0.000	29.500	7.000	32.250	6.000	1.000	63.500	17.875	2.000
CI_Frame, -- 2 --	7620f96b-2	5 FL R	2.000	2.000	0.000	0.000	29.500	7.000	32.250	5.000	1.000	63.500	17.875	2.000
CI_Frame, -- 3 --	f561d76c-8	4 FL R	3.000	3.000	0.000	0.000	29.500	7.000	32.250	4.000	1.000	63.500	17.875	2.000
CI_Frame, -- 4 --	ad33425c-5	3 FL R	4.000	4.000	0.000	0.000	29.500	7.000	32.250	3.000	1.000	63.500	17.875	2.000
CI_Frame, -- 5 --	f9692c9a-0	2 FL	5.000	5.000	0.000	0.000	29.500	7.000	32.250	2.000	0.000	63.500	17.875	2.000
CI_Frame, -- 6 --	5627b49b-(	3 FL L	6.000	6.000	0.000	0.000	29.500	7.000	32.250	3.000	0.000	63.500	17.875	2.000
CI_Frame, -- 7 --	7d2d0b59-(	4 FL L	7.000	7.000	0.000	0.000	29.500	7.000	32.250	4.000	0.000	63.500	17.875	2.000
CI_Frame, -- 8 --	6a76fdbc-7	5 FL L	8.000	8.000	0.000	0.000	29.500	7.000	32.250	5.000	0.000	63.500	17.875	2.000
CI_Frame, -- 9 --	29fce15c-5	6 FL L	9.000	9.000	0.000	0.000	29.500	7.000	32.250	6.000	0.000	63.500	17.875	2.000

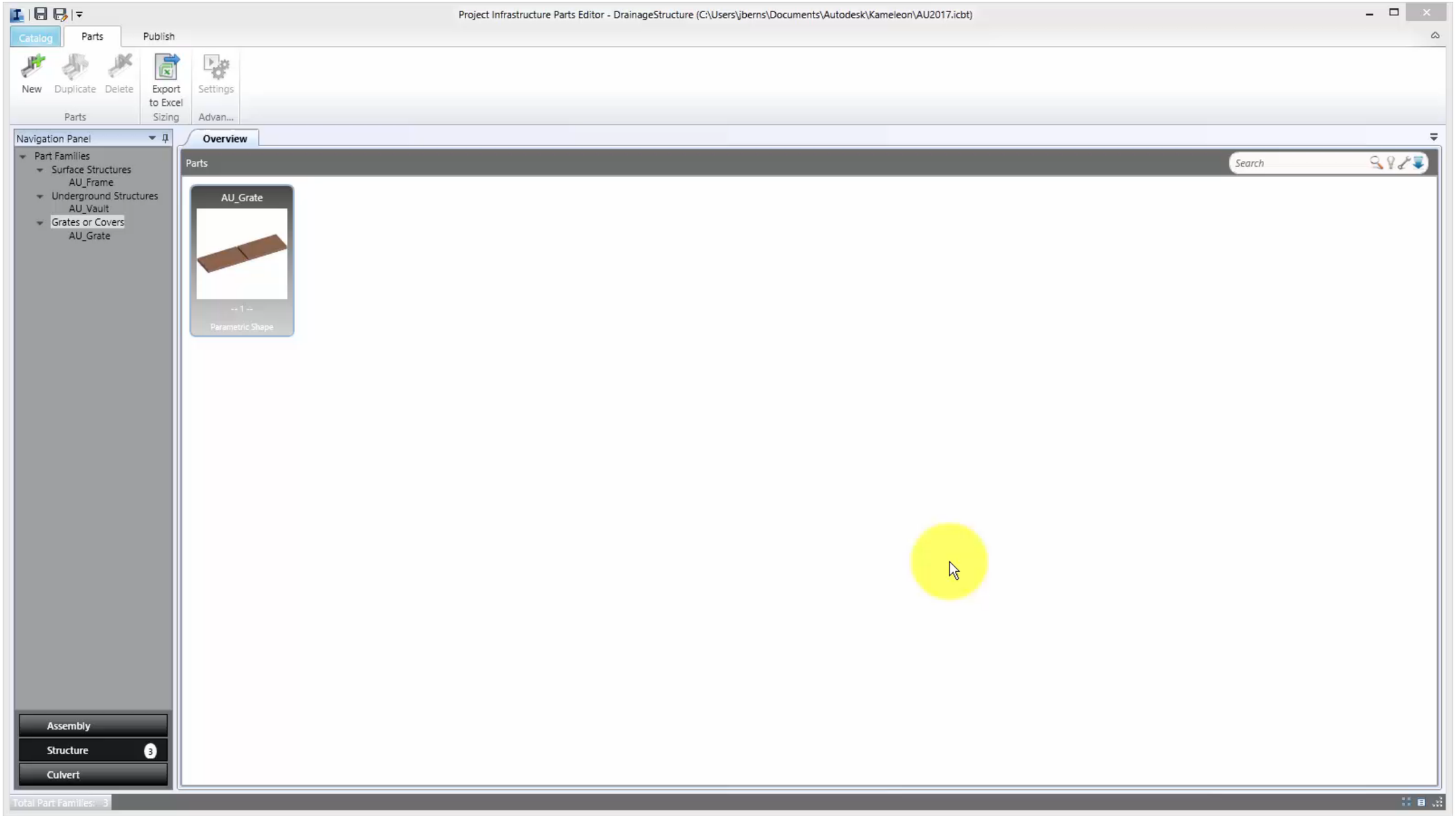
Add Row | Delete Row | Export To Excel | Import From Excel | Add Properties...

Dimension Image

IPE – Frame


Project Infrastructure Parts Editor - DrainageStructure (C:\Users\jberns\Documents\Autodesk\Kameleon\AU2017.icbt)
Catalog
Parts
Publish
New
Duplicate
Delete
Parts
Export to Excel
Sizing
Settings
Advan...
Navigation Panel
Part Families
Surface Structures
Underground Structures
Grates or Covers
Assembly
Structure
Culvert
Overview
Parts
Search
Total Part Families: 0

IPE – Assembly



How to create new part catalogs for InfraWorks and AutoCAD Civil 3D

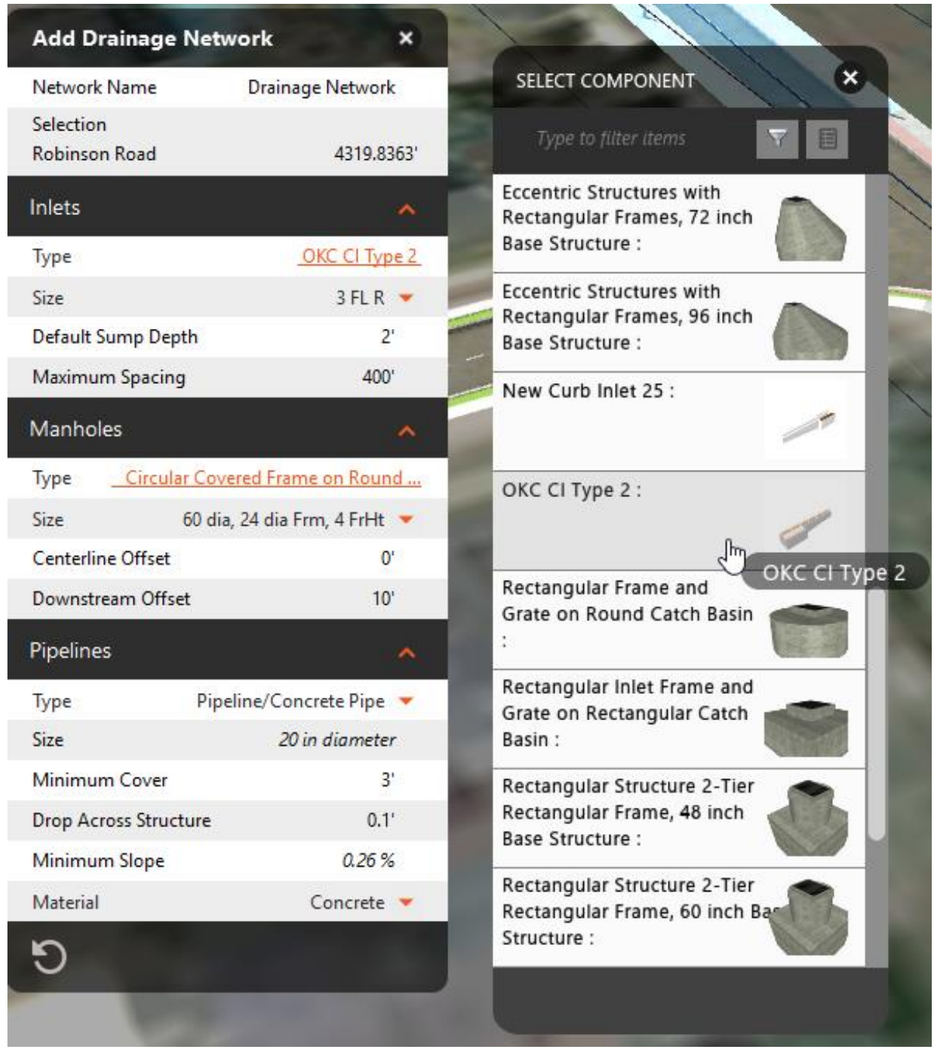
- Publish to InfraWorks
  - Entire collection
  - Model only
  - Both
  - Create new Catalog
  - Modify Existing Catalog
- Publish to Civil 3D
  - Create New Catalog
  - Modify Existing Catalog
  - Current known issues with publishing

Demo Publish

Going Down The Rabbit Hole

How to use parts that are created in IPE in an InfraWorks model and an AutoCAD Civil 3D model

- InfraWorks Pipe Networks
  - Creating Pipe Networks in InfraWorks
  - Modifying Pipe Connectors and Inlets in InfraWorks
- Civil 3D
  - Regen Catalog
  - Parts list update



Demo
InfraWorks

Was this class beneficial?

Thank You

Thank you for your time.

Jerry Berns – Manufacturing Content Manager
Heidi Boutwell – Infrastructure Content Manager

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Questions

2:50 PM

11:07 PM

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