

# CI9925 - Gaming the System: Combine AutoCAD Civil 3D, Revit, InfraWorks, and Game Engines for Sites

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# Before we begin...

We are a big class...

**Please** hold all questions and comments until the end of the lecture.

Silence your phones now!!



# Class summary

This class is designed to show land development professionals techniques for creating renderings and movies of their proposed projects. Utilizing many of the programs provided in Infrastructure Design Suite software (AutoCAD Civil 3D software, InfraWorks software, Revit software, and 3ds Max software), this class will consist of a live demonstration showing how to create compelling and grade accurate visualizations of your site designs.

By treating InfraWorks 360 software as a “level builder” we will explore how to composite existing and proposed ground surfaces, build and apply coverages for pavement and pavement markings, and prepare tree surveys for 3D placement. Finally, we will explore the use of InfraWorks software models in real-time game rendering engines.

# Key learning objectives

At the end of this class, you will be able to:

- Develop quick workflows to create compelling and cost-effective visualizations using Infrastructure Design Suite
- Establish a model-based design as a means to coordinate with architects when creating realistic site renderings
- Composite AutoCAD® Civil 3D® surfaces and coverages (grass, pavement, markings) in InfraWorks® in order to create a detailed site model
- Use an InfraWorks model in a game engine to produce real-time visualization deliverable



***“Competing among the Goliaths on civil projects, one small firm uses BIM as their slingshot to success.”***

***-BimOnTheRocks.com about Civile's 3D workflows-***

**2015 Competition Winner Autodesk Excellence 2015 in Infrastructure Competition**

**1 Arup**

Arup was awarded the first place prize for MTR Shatin to Central Link, a 17km-long railway line expansion undertaken by MTR in Kowloon and Hong Kong Island...

2015 Infrastructure Excellence 1st place

**2 Costain, Ramboll – Parsons Brinckerhoff Joint Venture**

The second place prize was awarded to Costain, Ramboll Parsons Brinckerhoff Joint Venture for the Transport for London (TfL) Hammersmith Flyover...

2015 Infrastructure Excellence 2nd place

**HNTB**

HNTB received the third place prize for their work on the city of Los Angeles Bureau of Engineering Sixth Street Viaduct project...

2015 Infrastructure Excellence 3rd place

**Civile, LLC**

Civil E, LLC received the small projects award for the Walnut Park Apartment development, located in Austin, Texas. The site is approximately 18 acres and includes design challenges such as grade change of over 80 feet and more than

**Dawn Digital Pvt. Ltd.**

Dawn Digital Pvt. Ltd. has received the visualization award for Godrej BKC in Mumbai: A commercial property developed by Godrej Properties Ltd. SOM has designed this Class-A Mumbai Office Building to create the perfect architecture for a



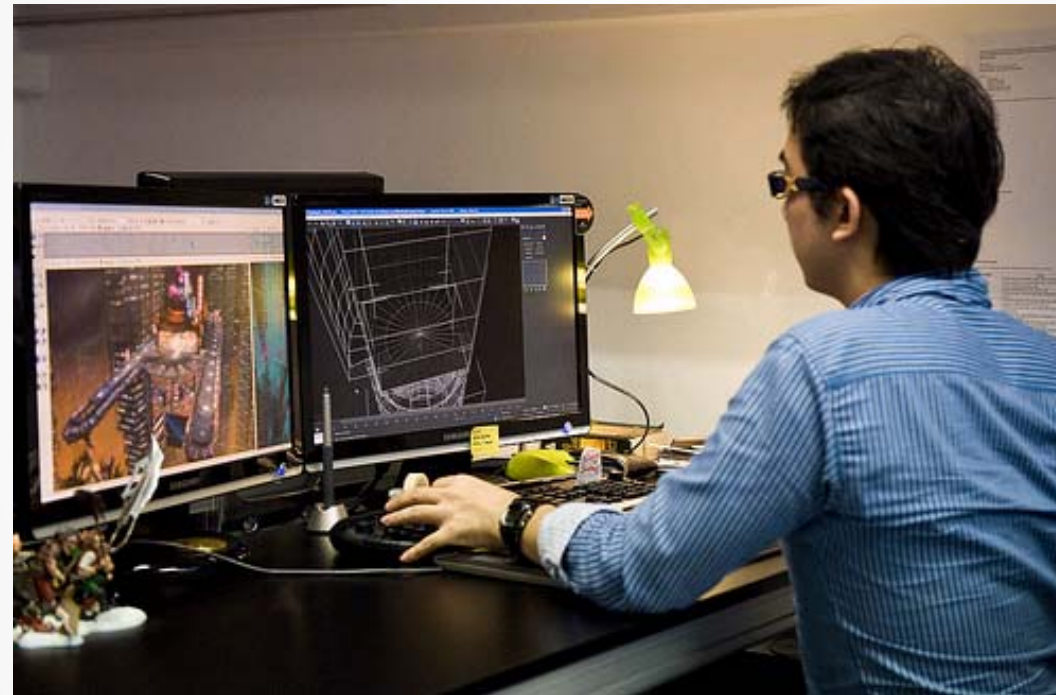
**The Goal: Get complex Civil3D designs into a game engine for creating visualizations**

# Take a cue from the video game industry

- development is a coordination between three teams



**Artist**



**Level Builder**



**Programmer**

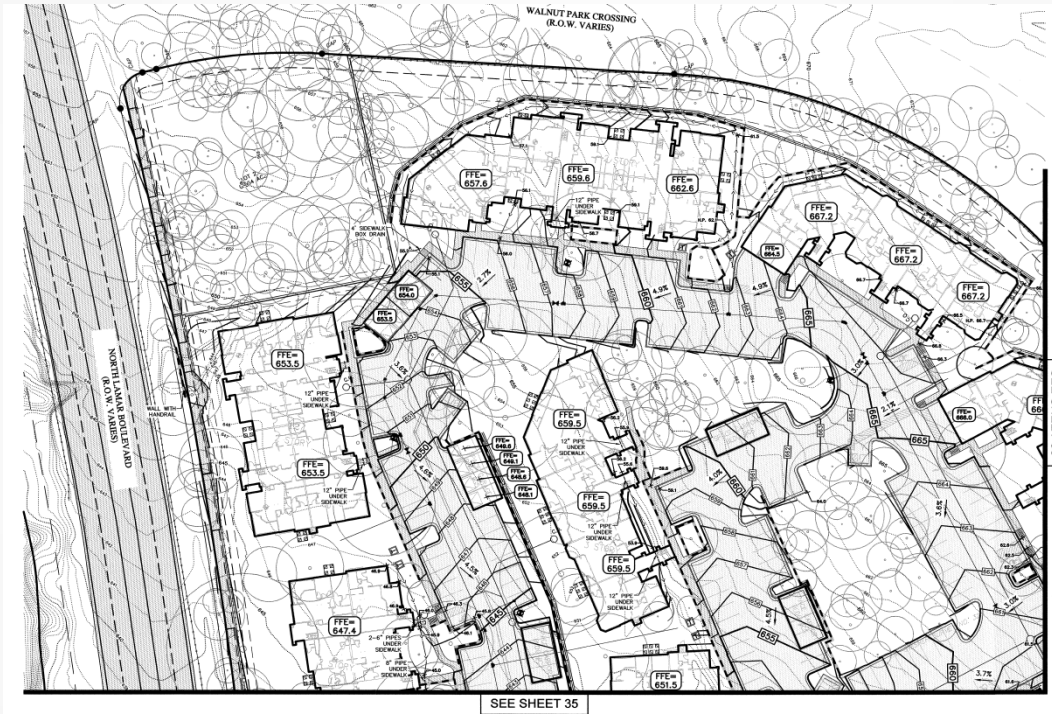


# Take a cue from the video game industry

- development is a coordination between three teams



**Land  
Planners**



**Civil Engineers &  
Architects**



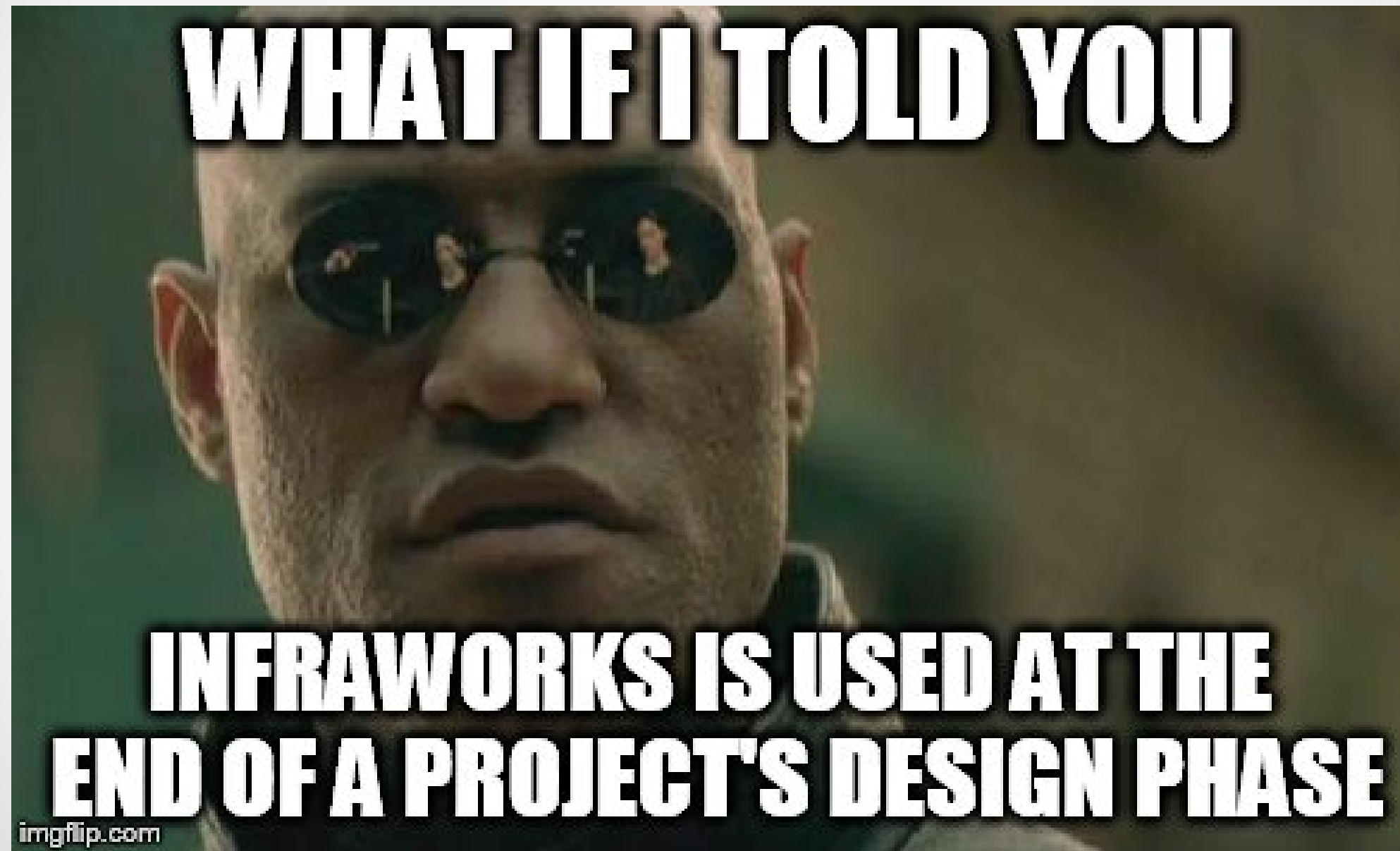
**Design  
software**



# Get your surfboard ready... waves (of change) are coming.

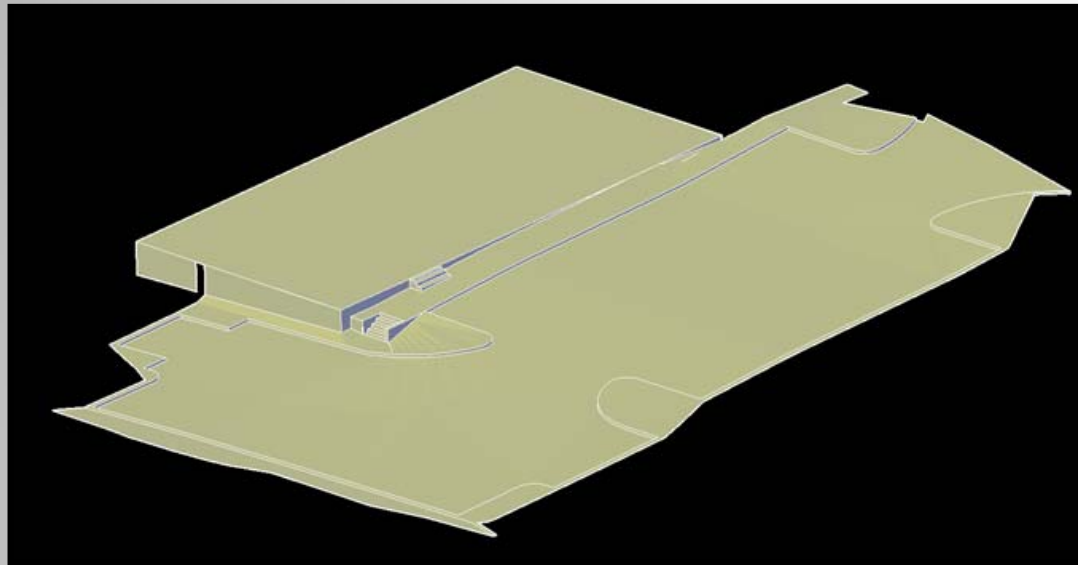


# Using Infracore at the End of Design Phase!?





# Building good 3D content matters. How to do it now!



**3D grading in Civil3D**



**Easy data compositing in  
InRoads**



**Revit Building Model**

# Work flow for this class

## Civil3D



(1)

- a) Existing Ground
- b) Site Plan
- c) Proposed Ground
- d) Coverages
- e) Tree Points

## Infraworks



(2)

- a) Composite Ground
- b) Aerial Overlay
- c) Coverages
- d) Trees
- e) FBX export

## Revit



(3)

- a) Building Conversions

## 3ds Max



(4)

- a) Material Adjustments
- b) Model Location Adjustments

## Lumion



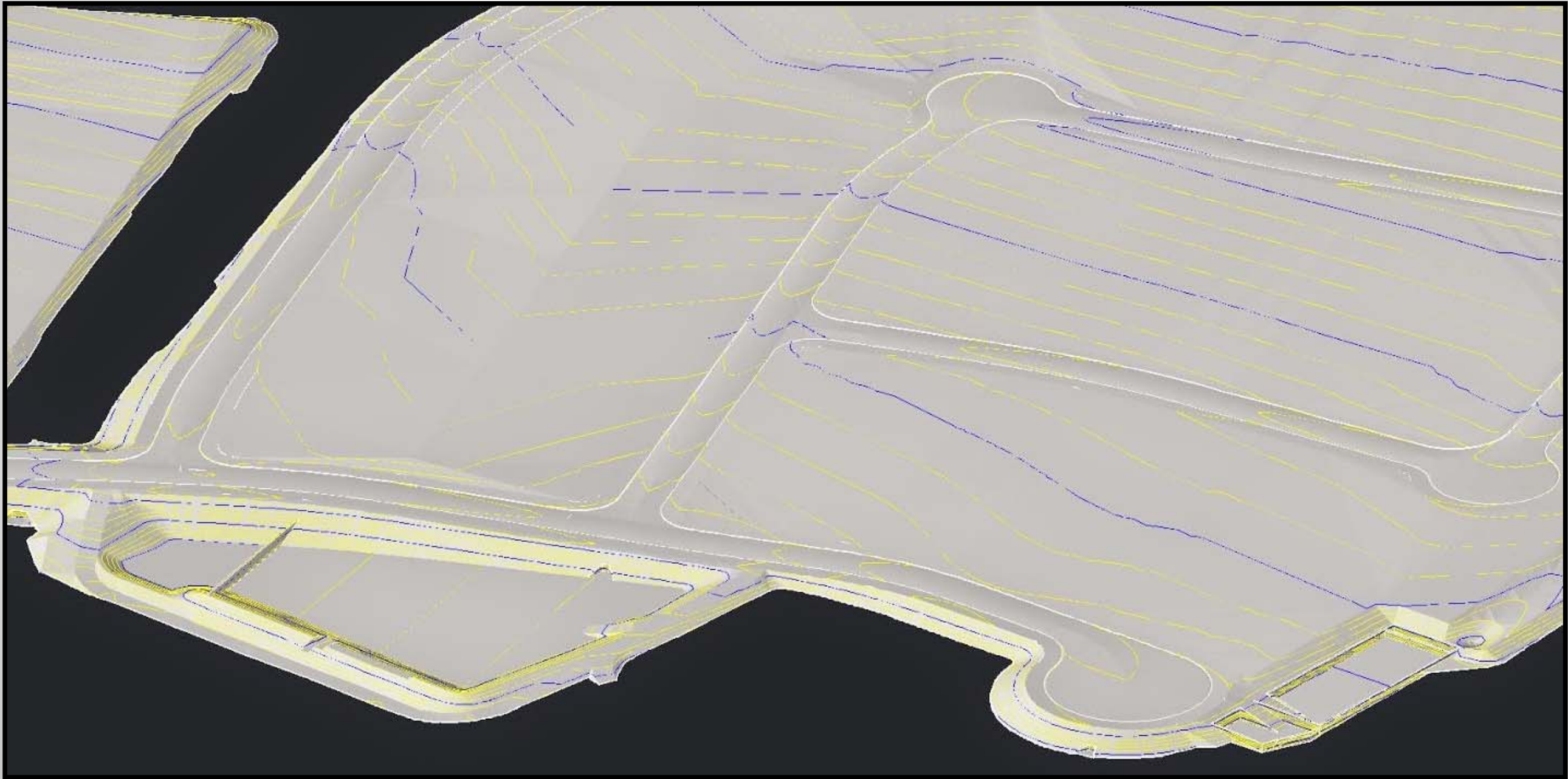
(5)

- a) Bring in the Site
- b) Bring in the Building
- c) Adding Assets
- d) Render Images

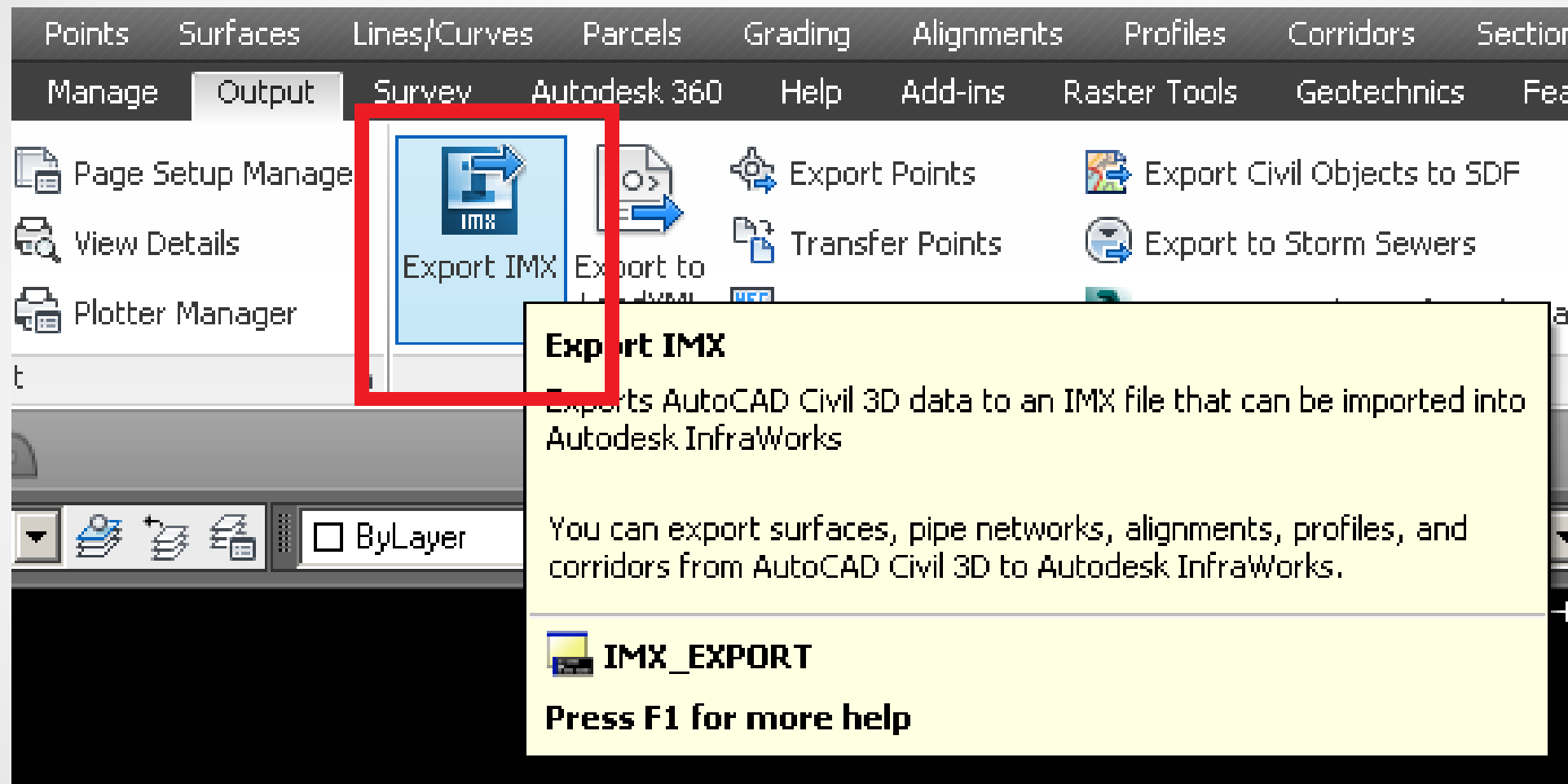




# Step 1: Create existing and proposed surfaces in Civil3D utilizing grading objects.

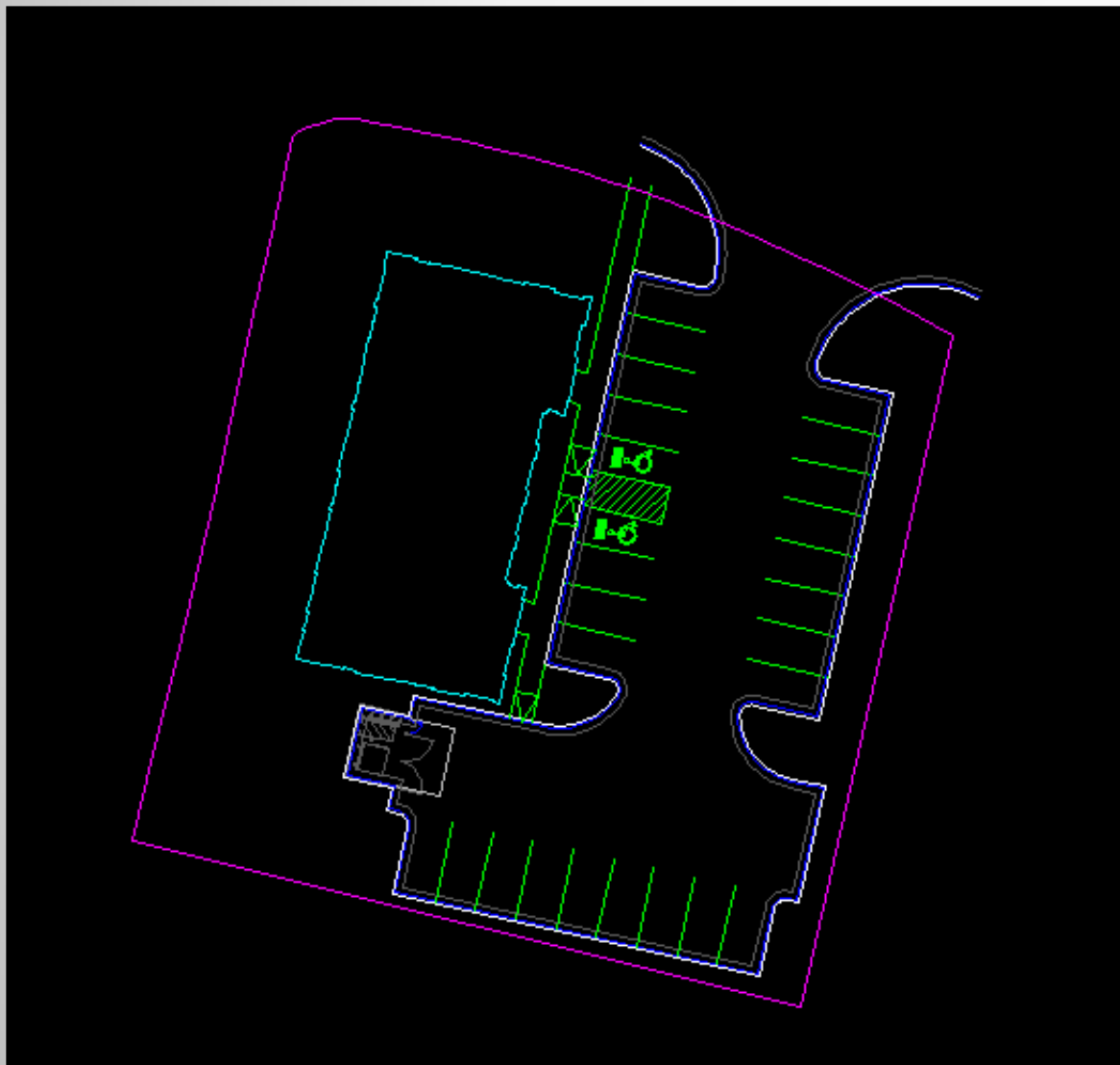


# Step 1: Export the existing and proposed ground as IMX files



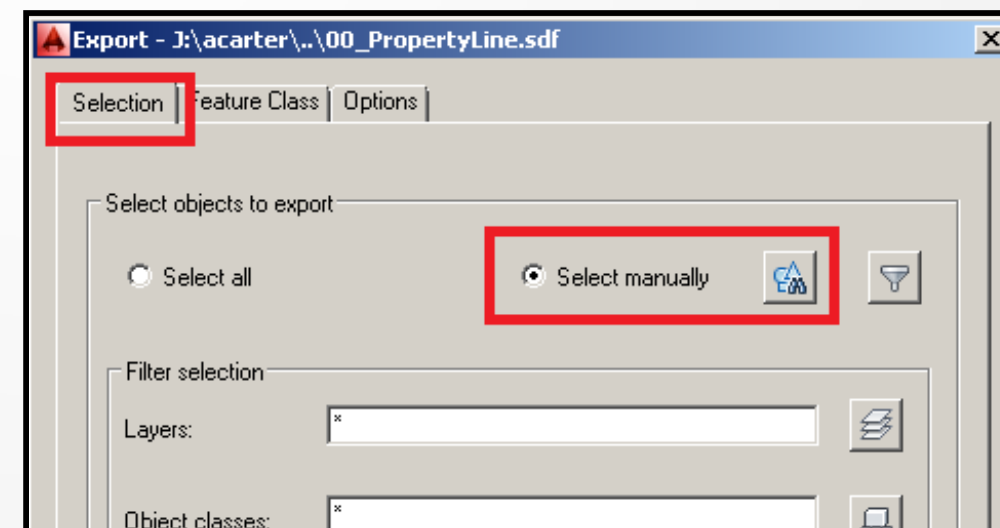
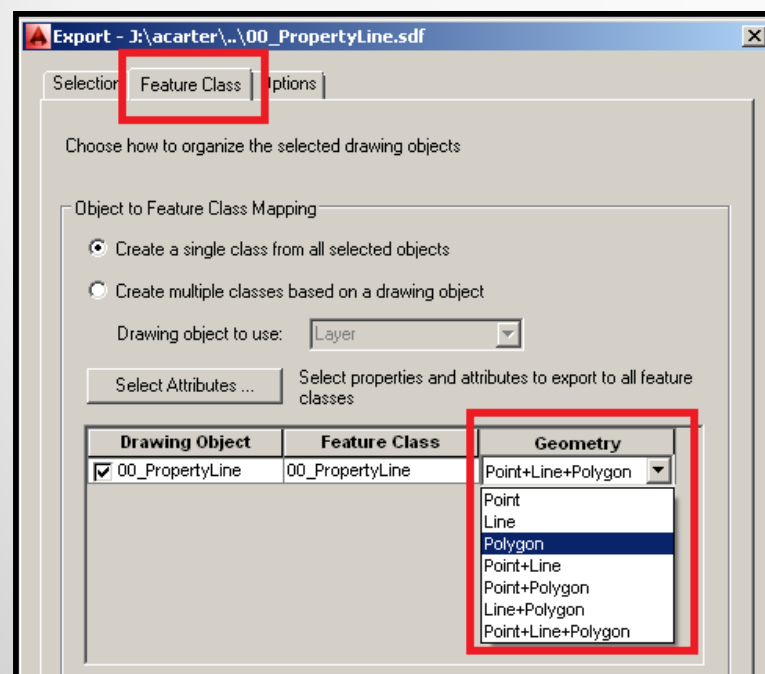
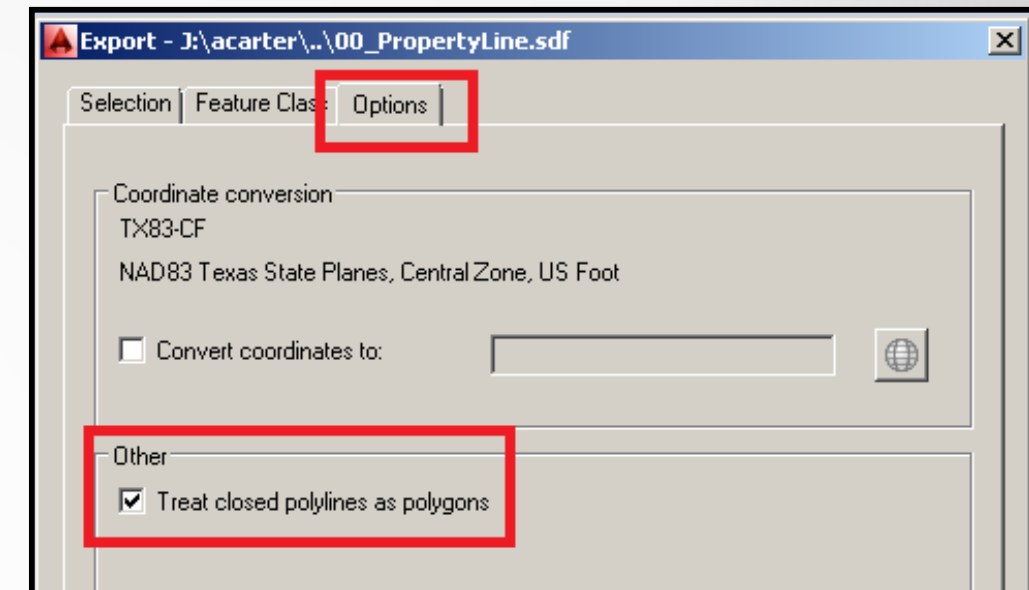
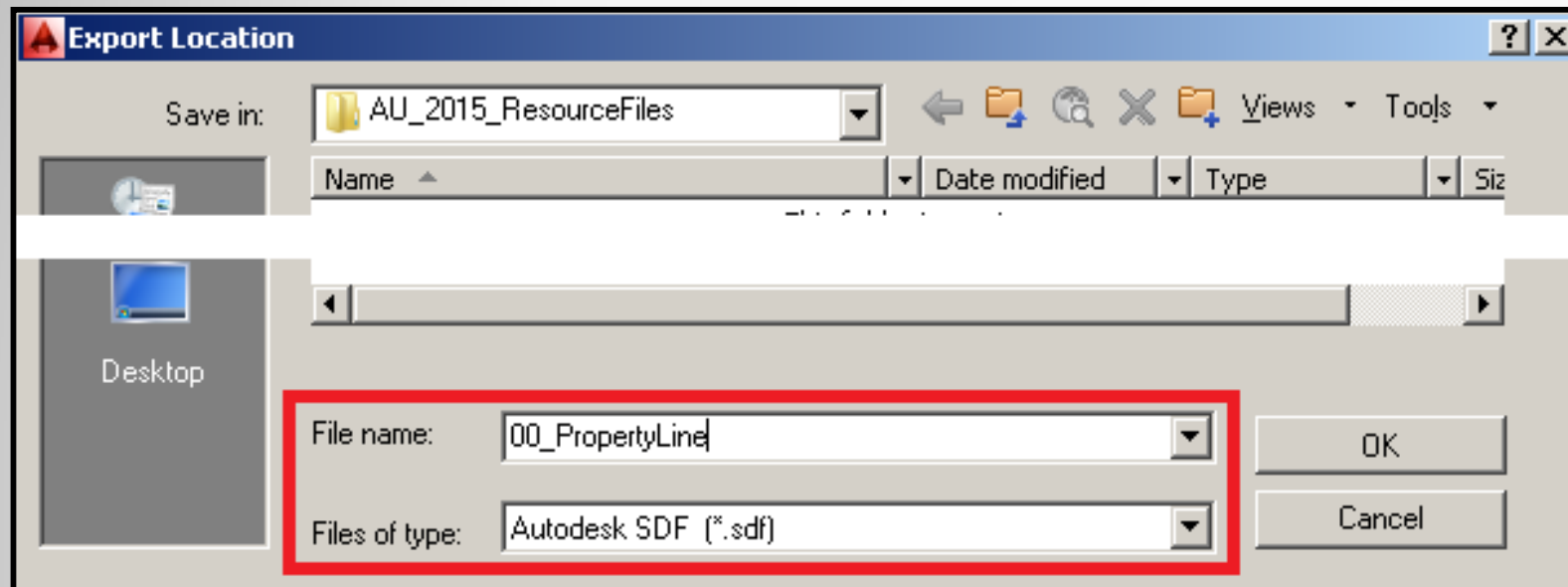


# Step 1: Create SDF files of the coverage from the Civil3D base file. (Used closed polylines)



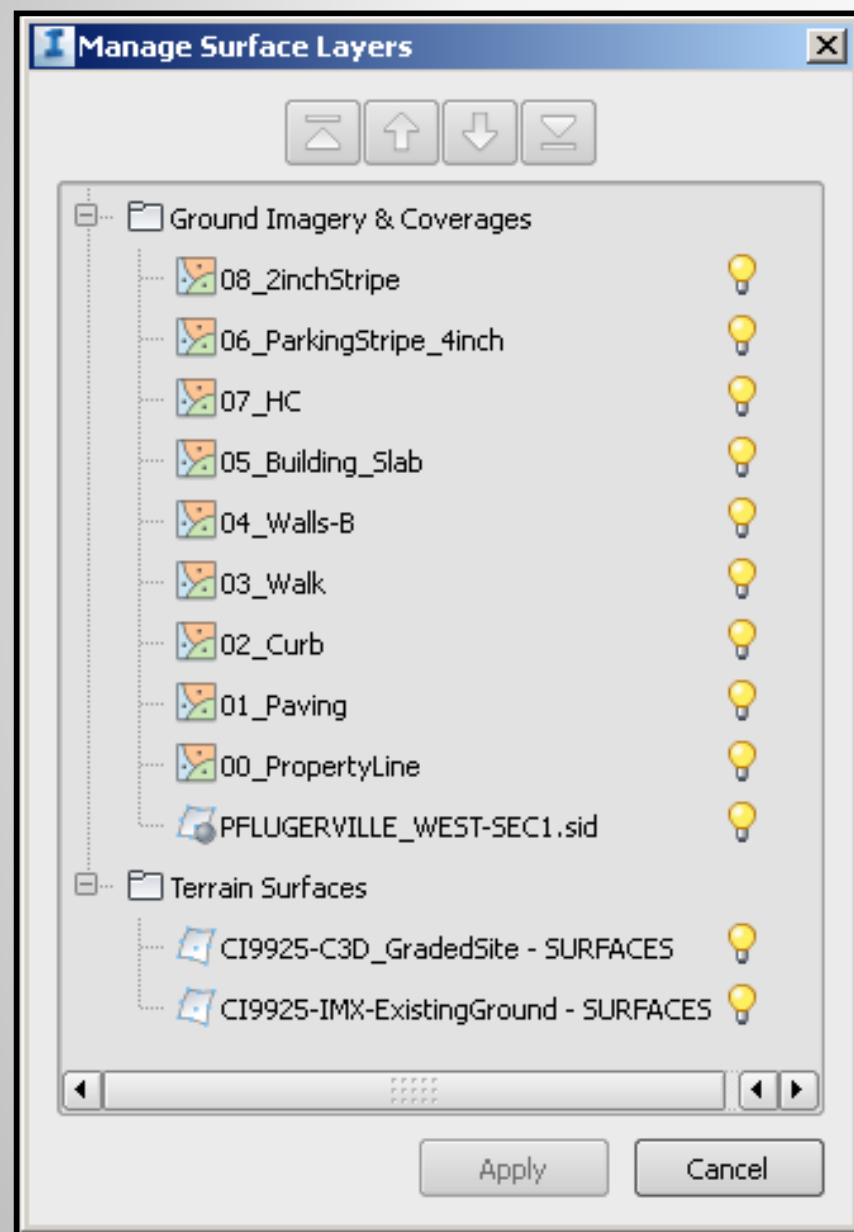
**Total site boundary**  
**Asphalt pavement limits**  
**Concrete gutter limits**  
**Sidewalks**  
**Building slabs**  
**Retaining walls**

# Step 1: Export the coverages as SDF files – “mapexport” command

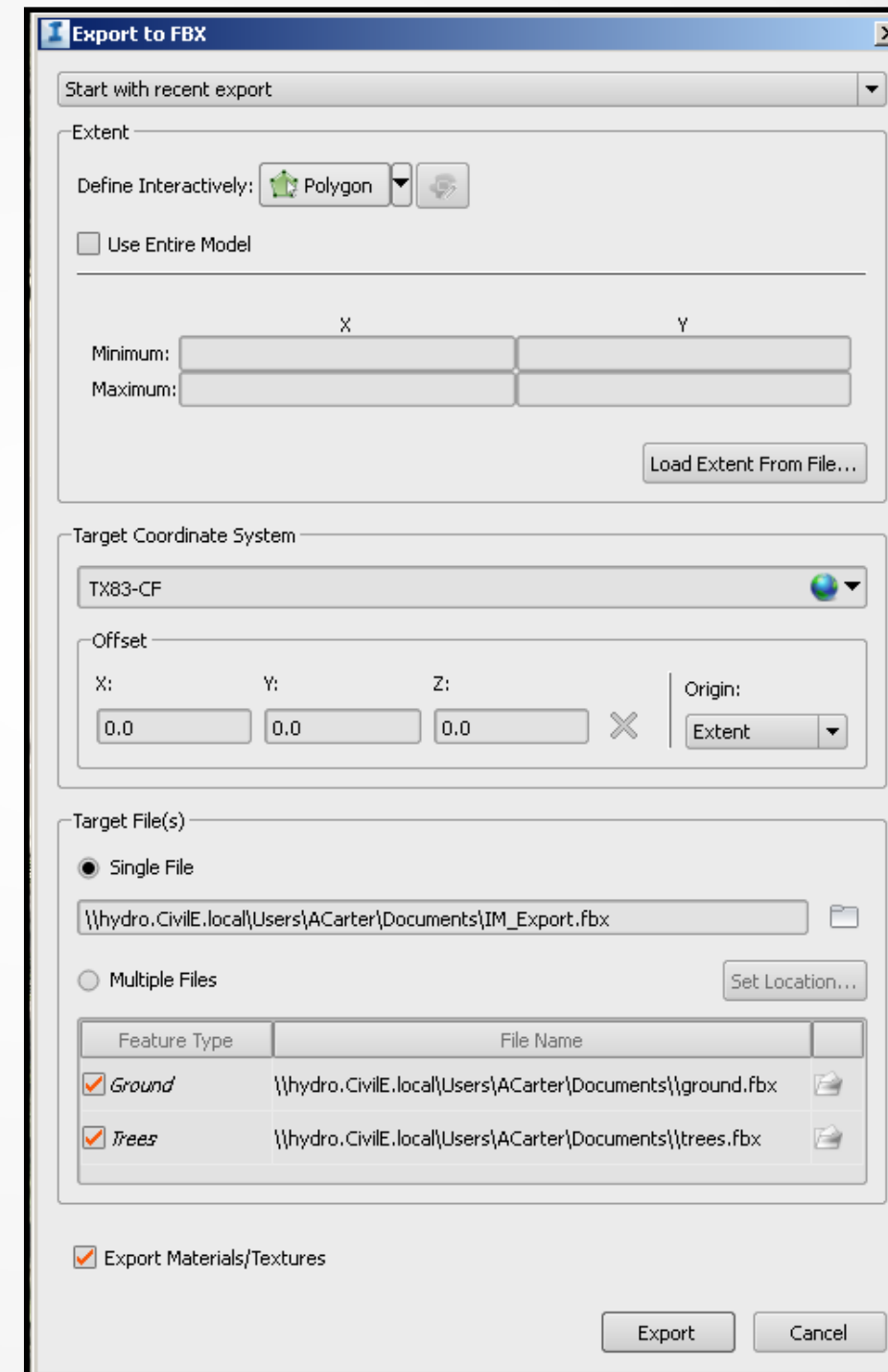
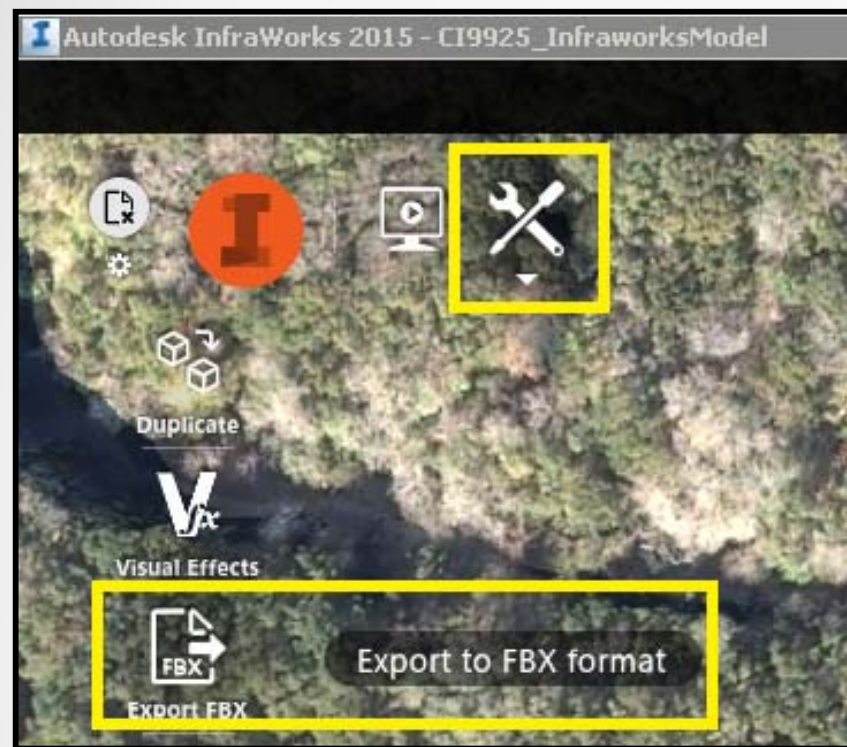




## Step 2: Import Surfaces and coverages into Infraworks. Order appropriately.

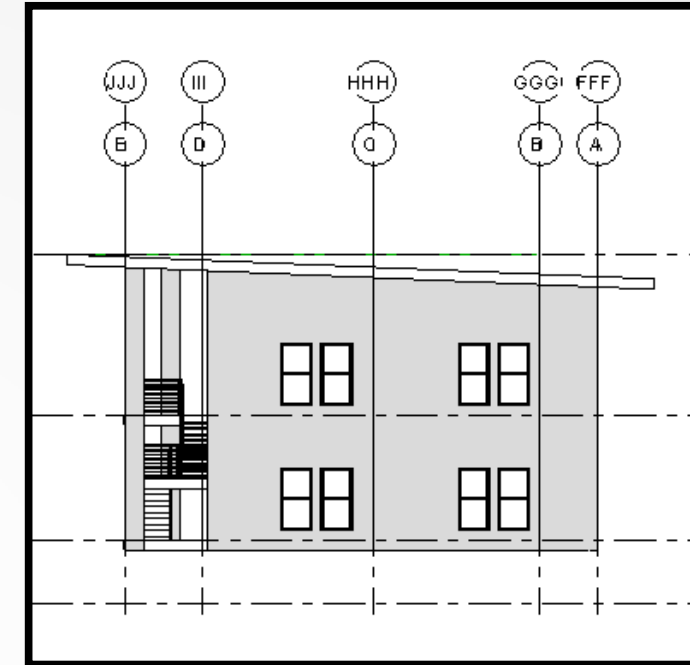
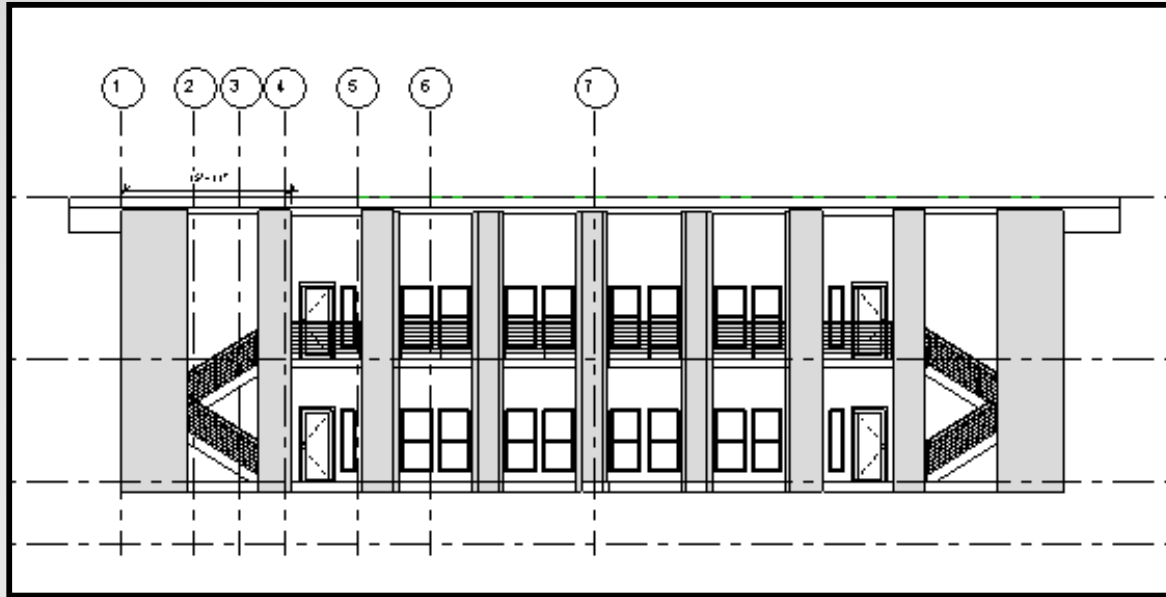


# Step 2: Export the Infracworks model as an FBX

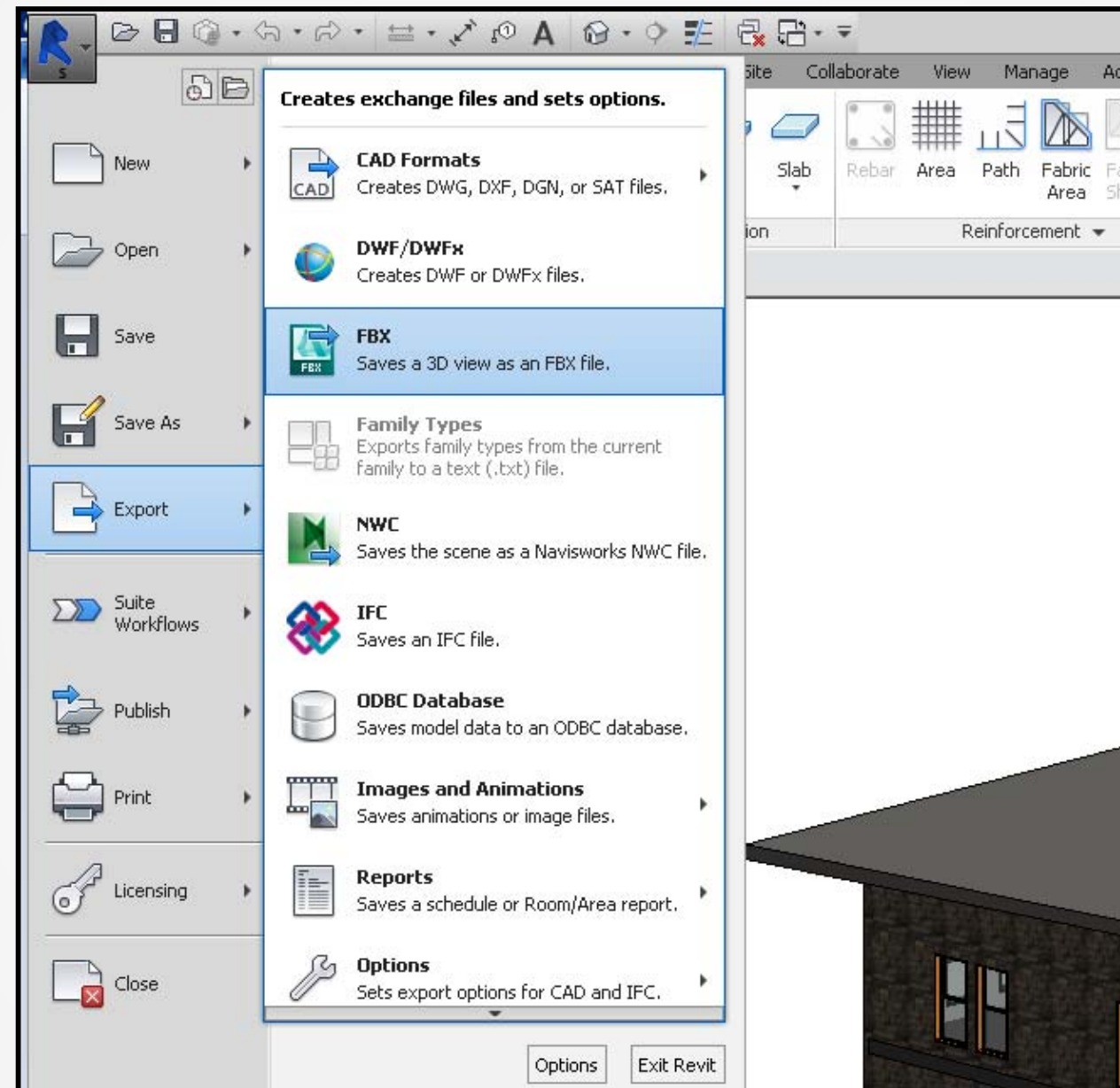




# Step 3: Revit Building Models

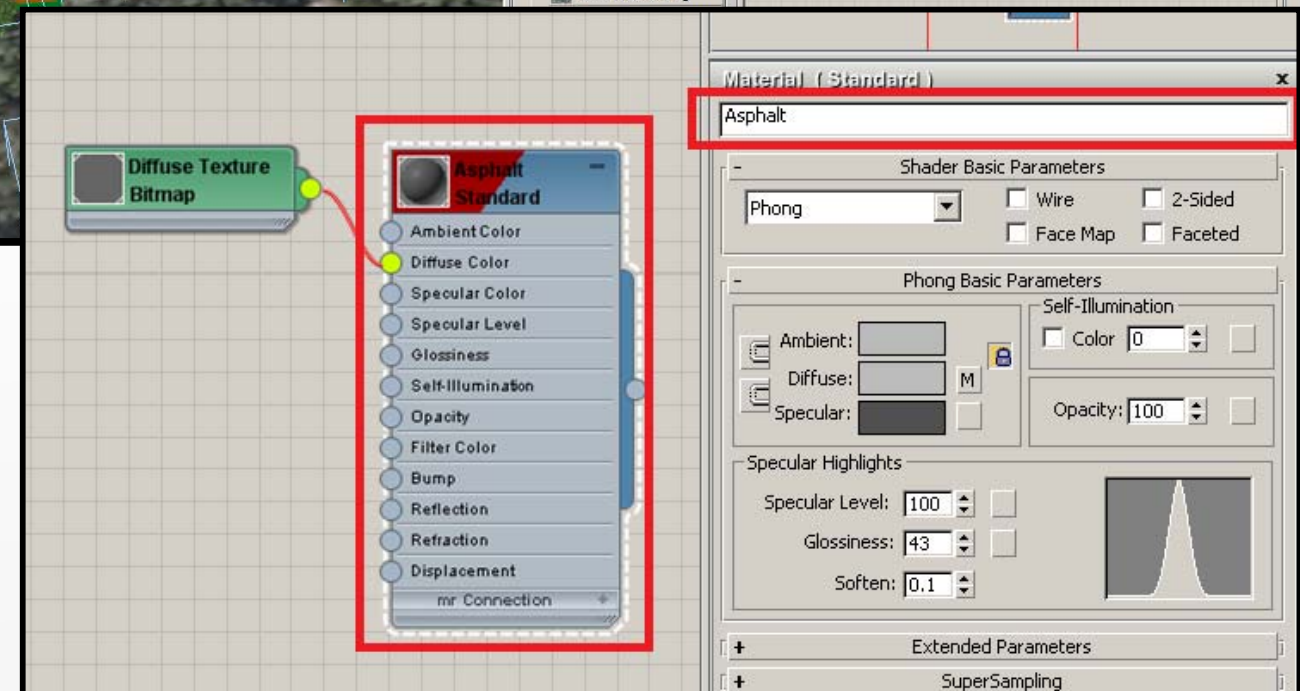
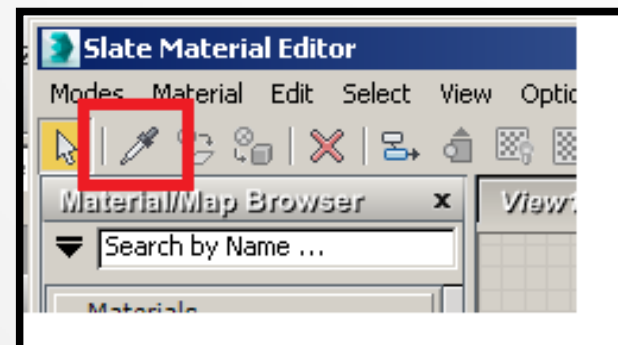
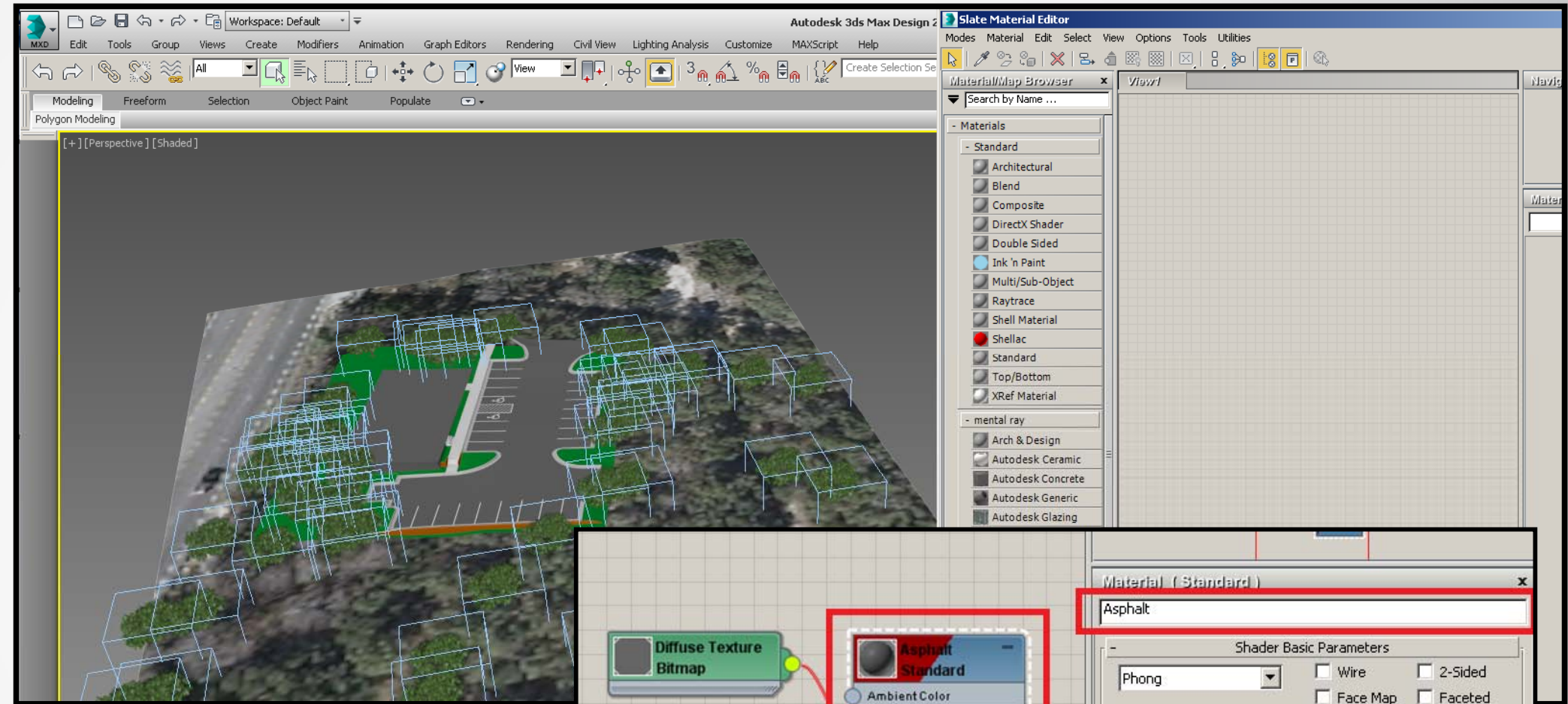
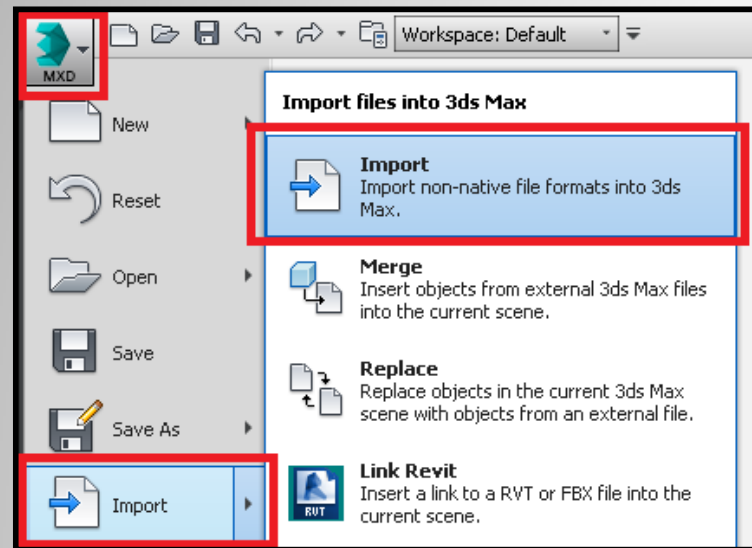


# Step 3: Export Revit Model as FBX

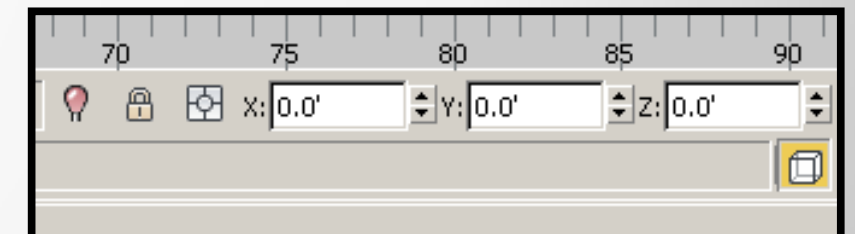
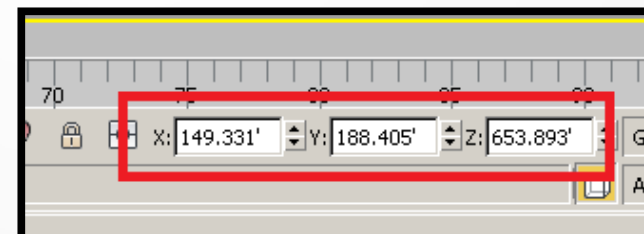
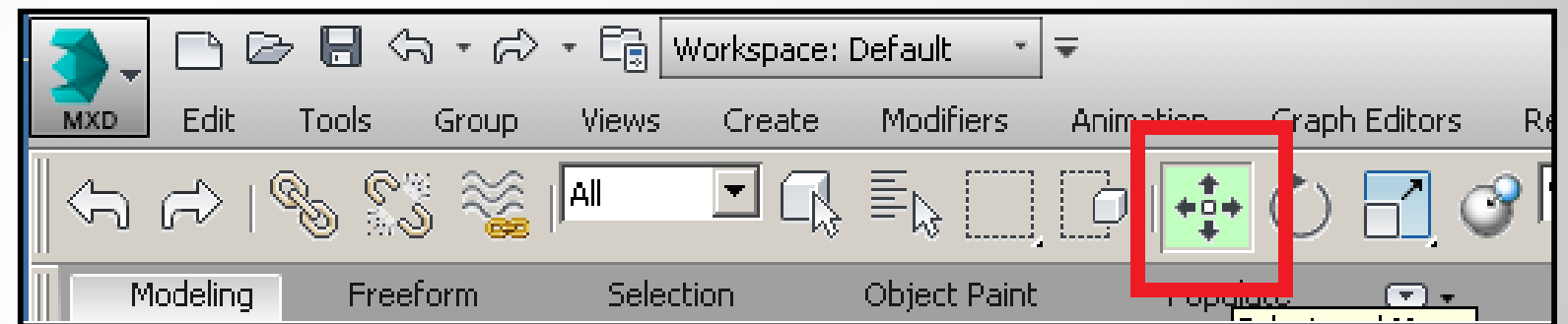
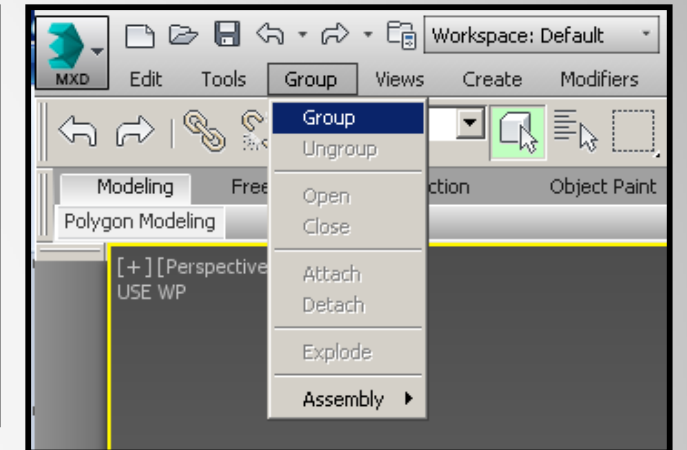
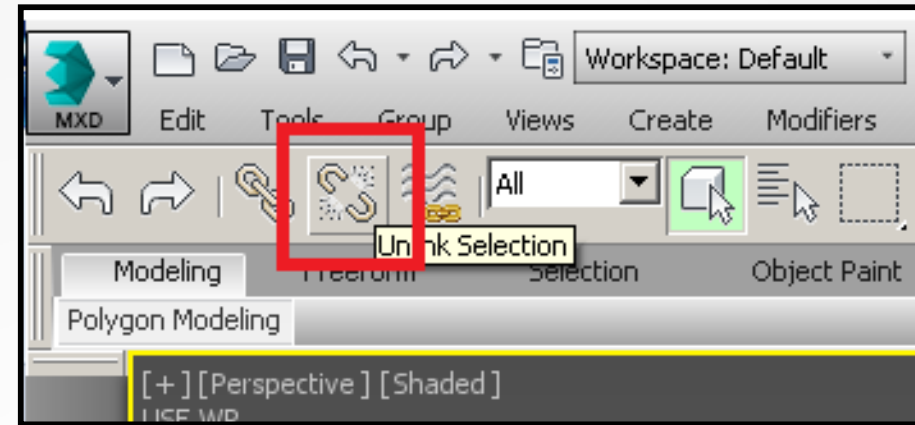
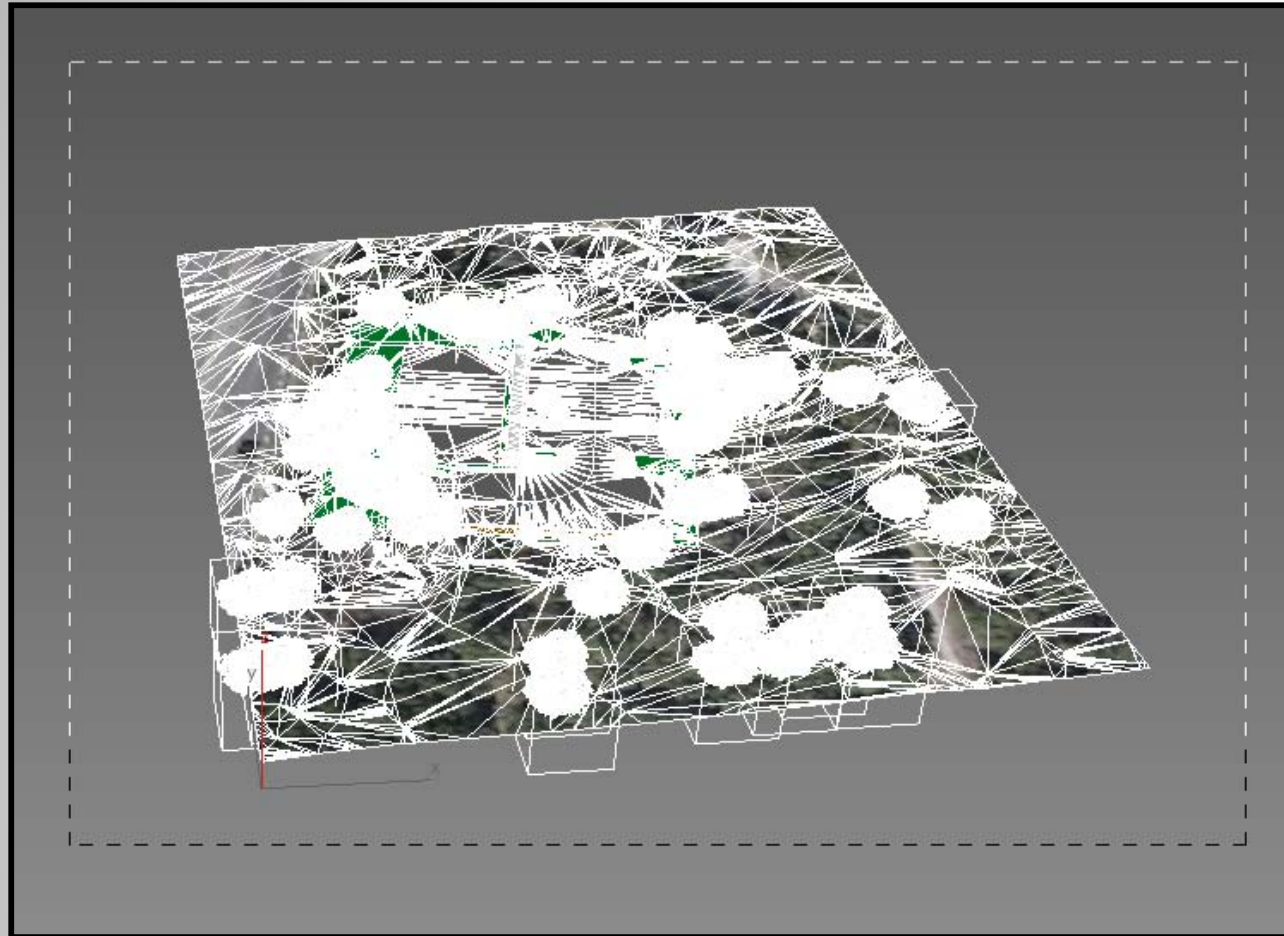




# Step 4: Material assignments in 3DS Max



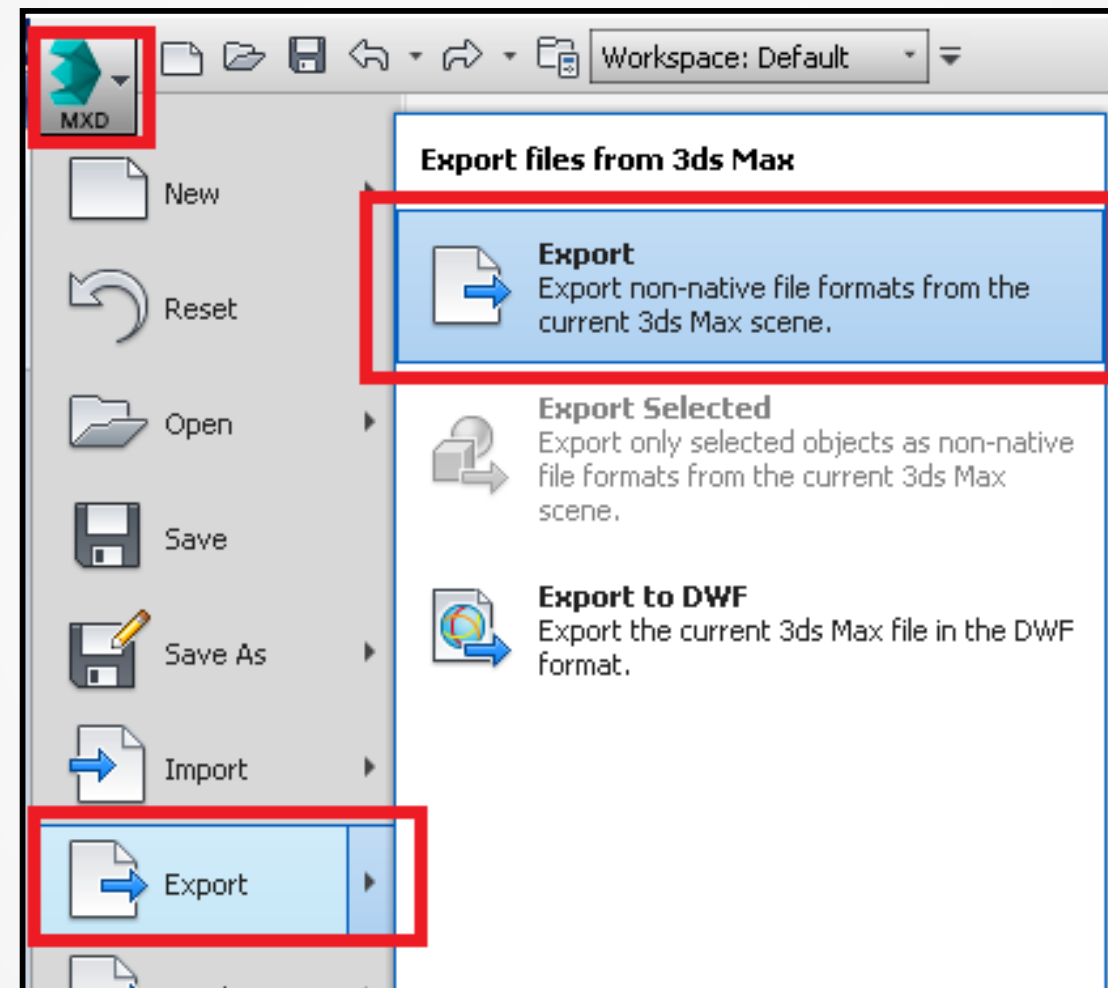
# Step 4: Model relocation in 3DS Max



Select All... Unlink... Group... Move

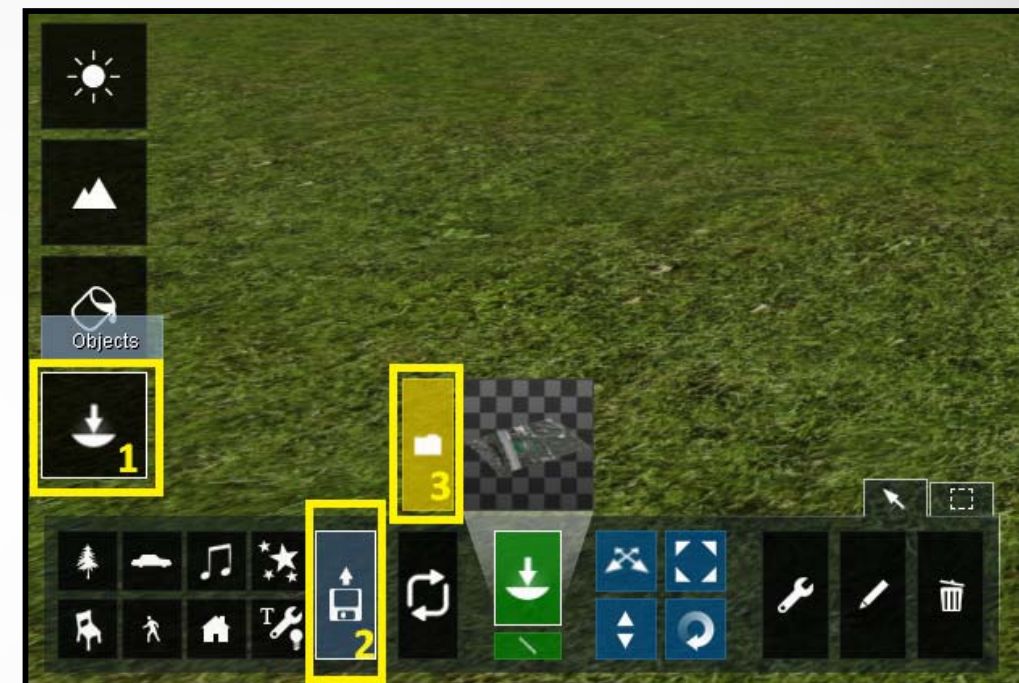
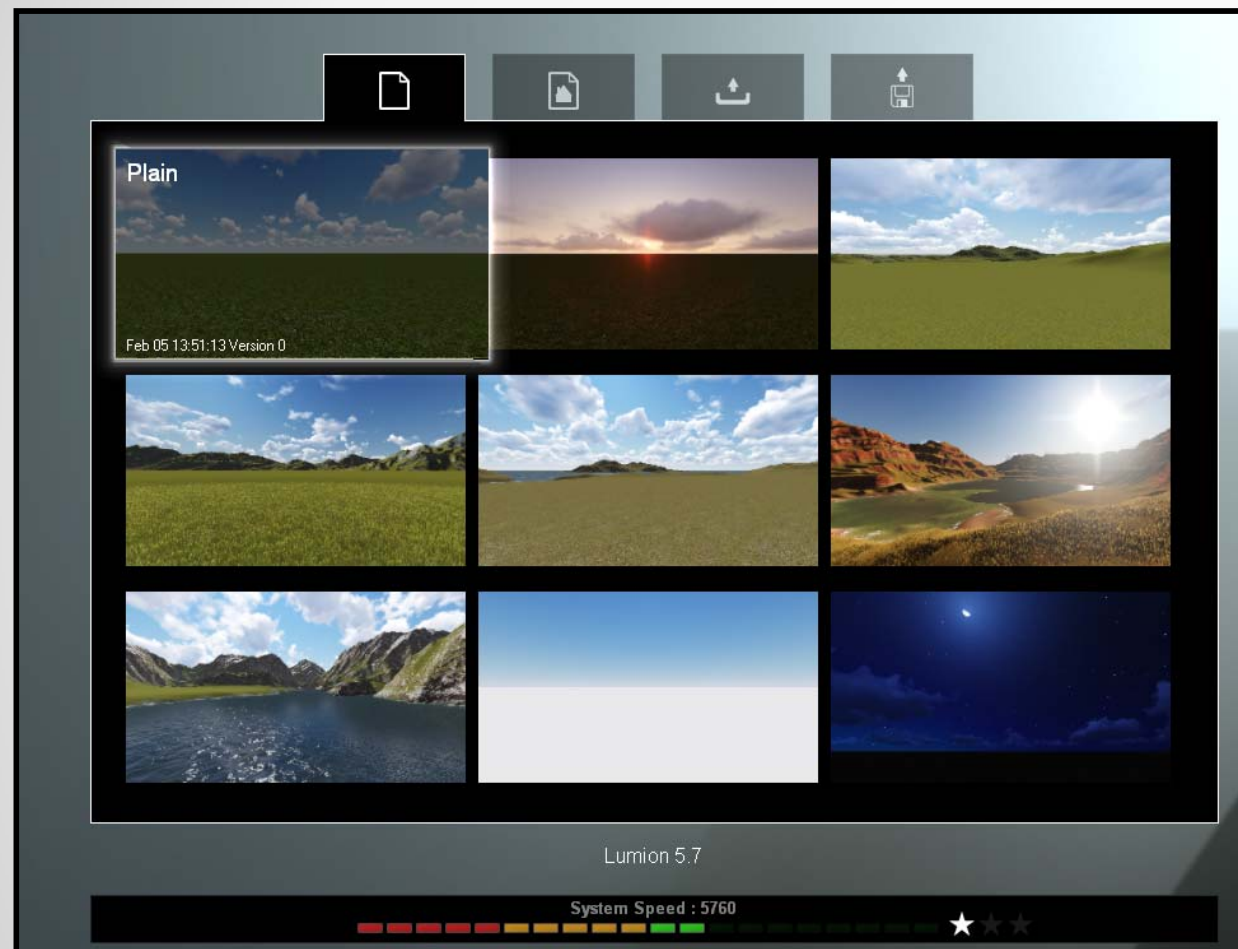


# Step 4: Export the modified model from 3DS Max as an FBX file



# Step 5: Bring it into a Game Engine

Currently, we like Lumion for ease of use and speed. Import the FBX files





## Step 5: Assign Materials to the Imported FBX





# Step 5: Bring in the building. Assign Materials and rotate into place





# Step 5: Add assets... Cars, Landscape, light poles, dumpsters, fences





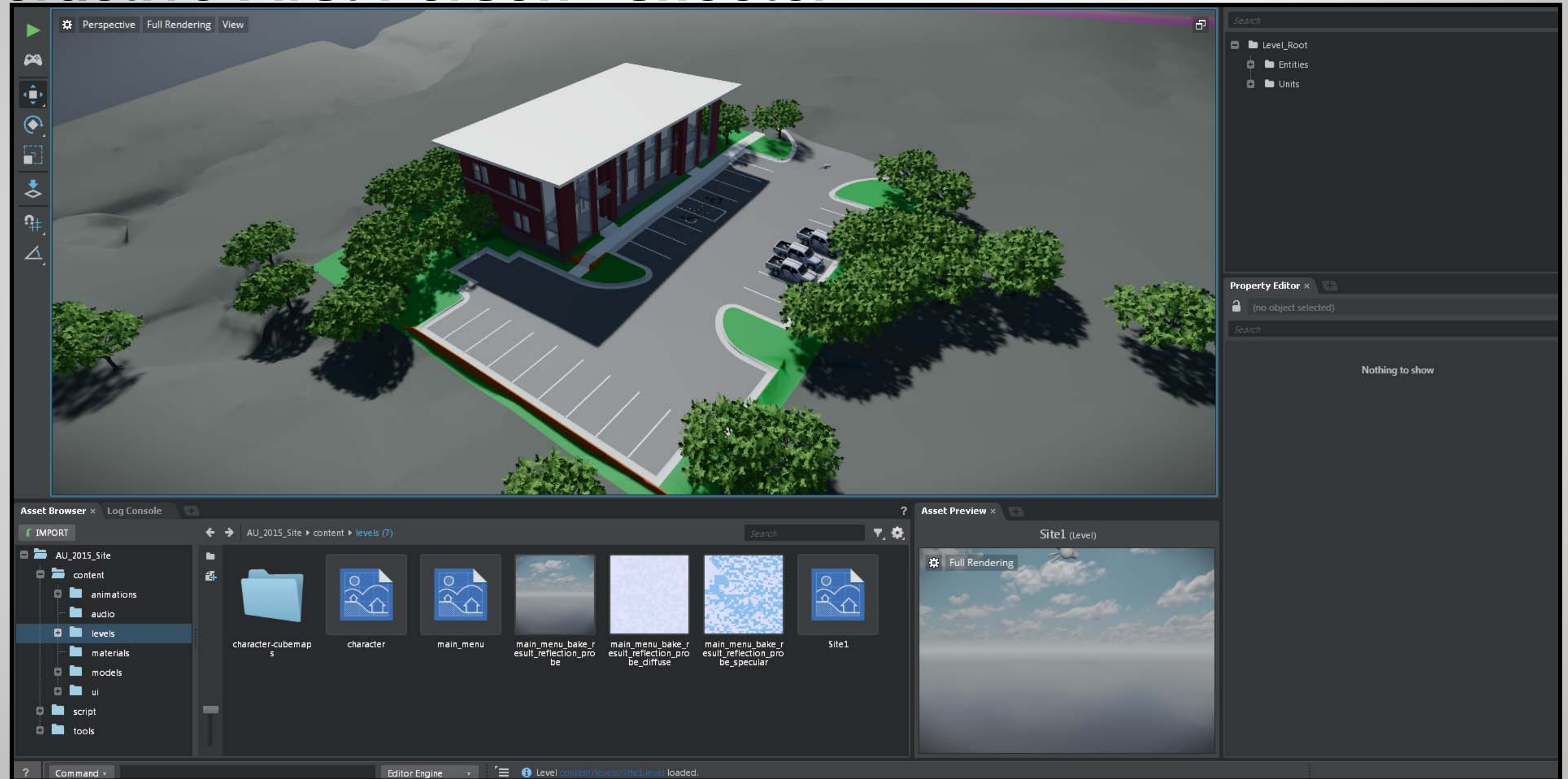
## Step 5: Render images!





# Bonus Material: Stingray Game Engine

## Interactive First Person - shooter

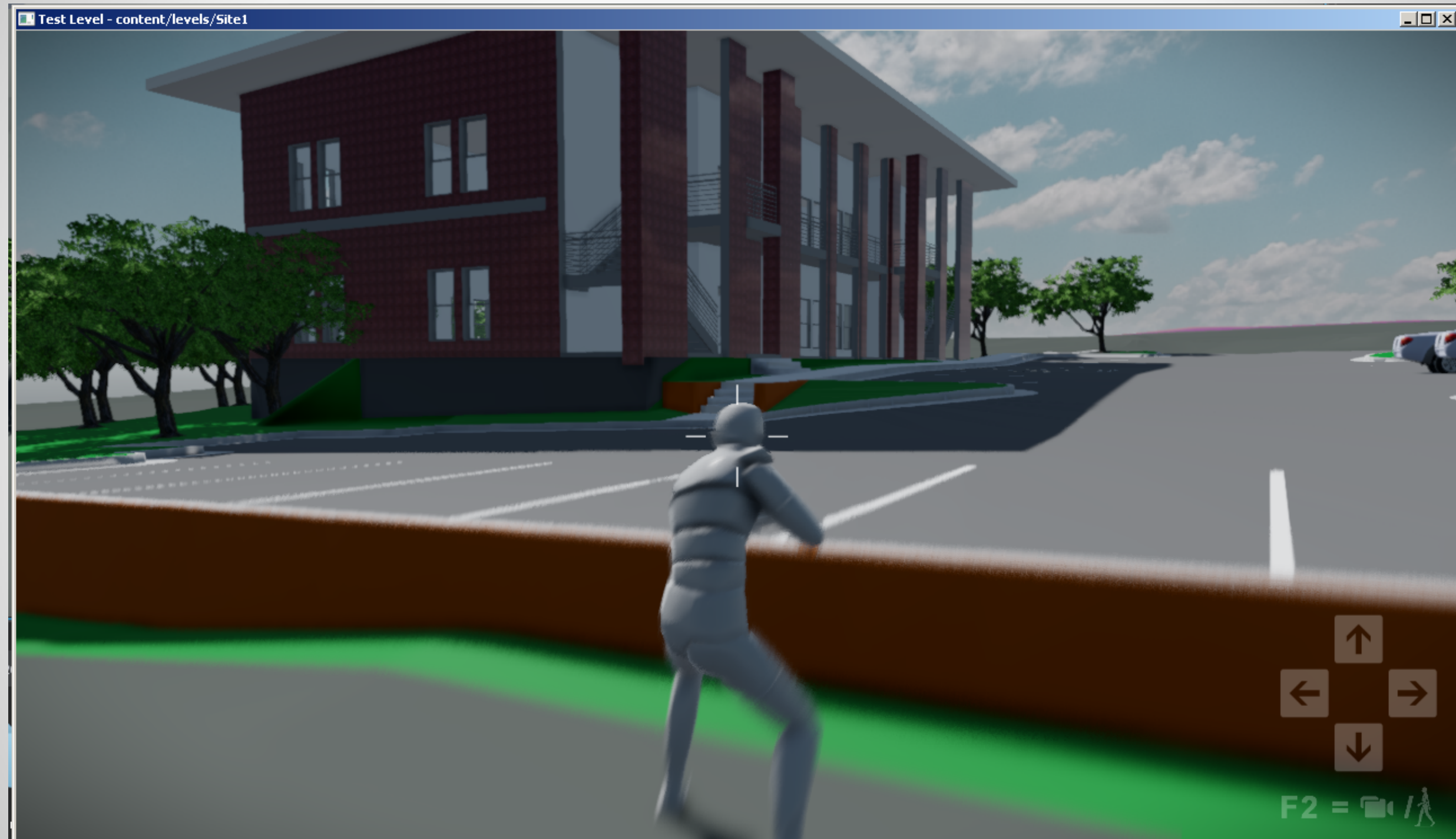


# Bonus Material: Stingray Game Engine





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