

# VACANT COMMERCIAL BUILDING MODEL DESCRIPTION DOCUMENT (MDD)

Version 1.0



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## DOCUMENT REVISION HISTORY

Version	Description	Date
1.0	Initial Release	03/02/17

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## 1 MODEL OVERVIEW

### 1.1 DESCRIPTION

- A vacant commercial structure usually is defined as a commercial building or facility that was used for manufacturing, warehousing, or sales and currently is vacant.

### 1.2 REFERENCES

- 3D\_Model\_Development\_Process.docx
  - The 3D model development process details Dignitas Technologies' procedure for building 3D models.



Figure 1 Vacant Commercial Building Model (Unity Render)

### 1.3 MODEL VERSION AND HISTORY

Information about the model version can be found in the “Model\_Version.txt” file located in the model’s directory (same directory the model’s .fbx file is located).

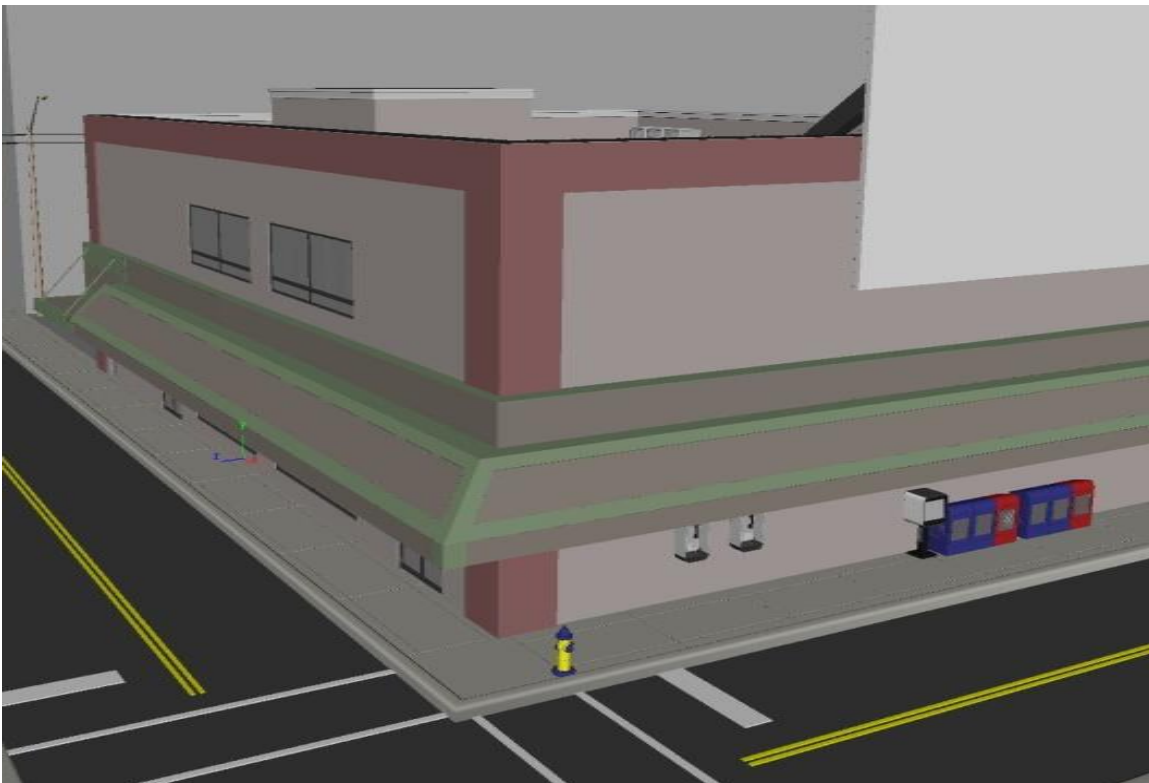
Table 1 Model Revision History

Version	Description	Date
1.0	Initial release of the Vacant_Commercial_Building .fbx	03/02/17

## 1.4 MODEL SUMMARY

**Table 2 Model Summary**

Model Name	Vacant_Commercial_Building
Unity Package	Vacant_Commercial_Building.unitypackage
Model Units	Meters
Coordinate System	Cartesian X, Y, Z (see Figure 2 below)
Model Origin	Origin is located at center mass. (0, 0, 0) (See figure 2 below)
Model Orientation Runtime	Forward: Positive Z Up: Positive Y
Model Orientation Maya	Forward: Positive Z Up: Positive Y



**Figure 2 Vacant Commercial Building Origin on Cartesian X, Y, Z Coordinate System (Maya Software Render)**



This model was imported into Unity 5.5.1 to verify the model (see Figure 3 below).



**Figure 3 Vacant Commercial Building - Alley (Unity View)**



**Figure 4 Vacant Commercial Building - Roof (Unity View)**



**Figure 5 Vacant Commercial Building - Interior (Unity View)**



**Figure 6 Vacant Commercial Building – Side (Unity View)**



## 2 UNITY PACKAGE

### 2.1 IMPORTING THE UNITY PACKAGE

1. Download the “Vacant\_Commercial\_Building.unitypackage” file from Google Drive or Bit Bucket.
2. Open the “CCDMMAI” Unity Project in Unity 5
3. In the top menu bar go to “Assets → Import Package → Custom Package...”
4. A window should pop up showing you the contents of the Unity Package being imported
  - a. This Unity Package should look like this:

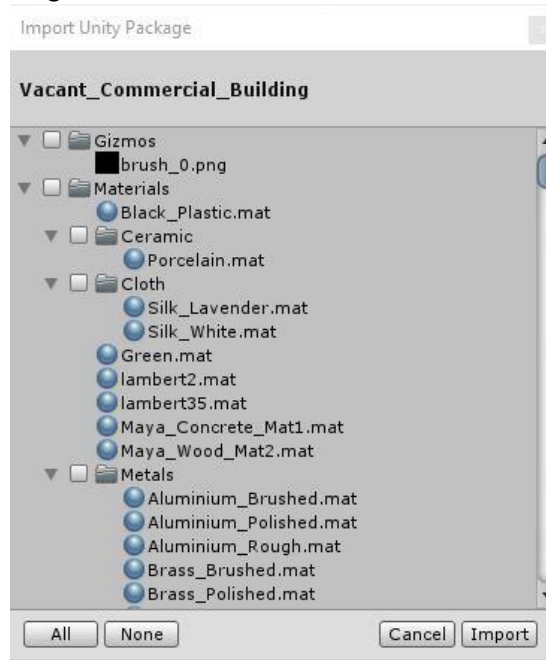


Figure 7 Unity Import Package

5. Press “Import” and the model and materials will be placed into the Assets section.
6. Make sure that when dragging in the model that you select all of the Prefabs instead of the FBXs as the prefabs have the materials stored on them correctly.
7. Make sure that the prefab is dragged into the hierarchy instead of directly into the scene to make sure that the transforms are correct.

### 3 MODEL ATTRIBUTES

#### 3.1 POLYGON ALLOCATION

Polygon allocation is the number of triangles and vertices for a given state and Level of Detail (LODs) in the model. The method for calculating the number of polygons is to gather each model state then count the polygons present in each representation. Animations are not included in the polygon allocation. The Vacant Commercial Building model has a single LOD which is labeled LOD0.

**Table 3 Polygon Allocation**

Model	# of Triangles	# of Vertices
Vacant Commercial Building	142665	100696

#### 3.2 LEVEL OF DETAIL (LODS)

TBD

#### 3.3 TEXTURE MAPS

For most models in this scene we used tileable textures, most of which comprise of diffuse, normal, metalness, and specular maps. For the materials that use specularity, the spec maps are found in the Alpha Channel of the Metalness maps.

1. Texture Map Formats – JPG, PNG, TGA
2. Texture Map Types – Diffuse, Normal, Metalness, Specularity
3. Average Texture Map Sizes – 2048 x 2048

##### 3.3.1 DECALS

Decals are used for the grime and damage details. These decal materials are fully customizable as far as color, opacity, normal maps etc. Each decal is a separate object that can be moved, deleted, hidden or copied. Feel free to modify as needed.

##### 3.3.2 TERRAIN

This environment uses a Unity Terrain skin which comprises the grass, pavement, and trees in the scene.

To manipulate the Terrain select it from the hierarchy in Prefab\_Warehouse -> Terrain, or by simply clicking on the Terrain skin twice in the viewer.

In the Inspector you will see the Terrain panel. The Terrain toolbar has 7 buttons on it as seen in Figure 10 below.

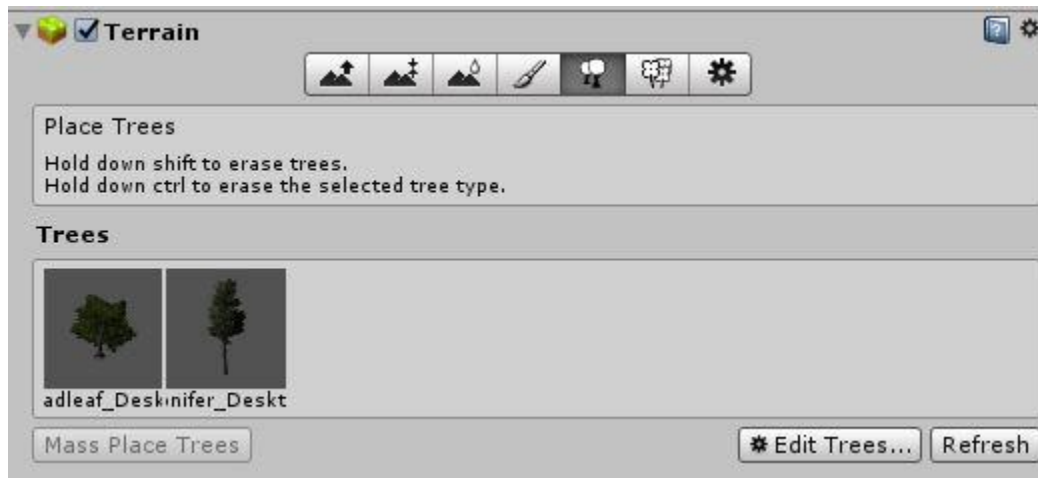


Figure 8 Unity Terrain Panel

The button that is selected is for the trees. To remove pre-existing trees from the scene just click the tree type and hold down shift to paint them out.

#### 3.4 SENSOR VIEWS

N/A

#### 3.5 MODEL STATES

N/A

#### 3.6 SKELETAL STRUCTURE

N/A

## 4 ANIMATIONS

N/A

## 5 VERIFICATION APPROACH

### 5.1 RUNTIME SYSTEMS

The 3D model was tested using the following tools:

- Unity 5.5.1

## 6 LIMITATIONS

N/A

## 7 CONTACT INFORMATION

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