

AUTODESK UNIVERSITY

Create a 3D Model of your City for Free

Gordon Lockett

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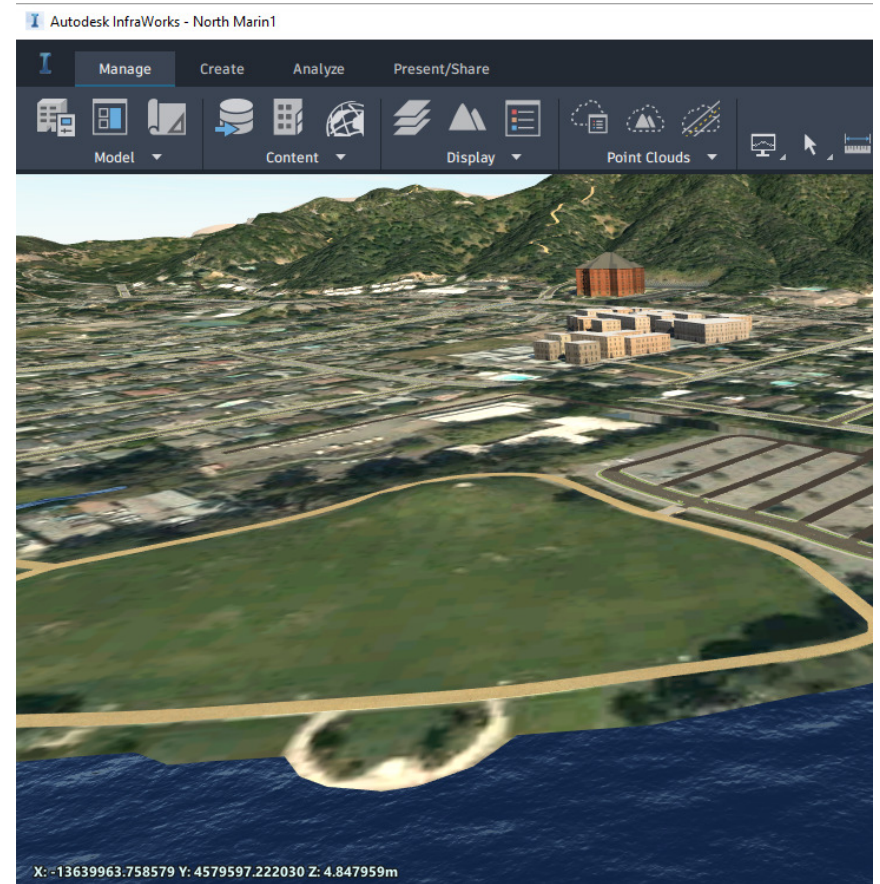


What is InfraWorks?

Neighbourhood or City Model

Tool to:

- **Model your city using existing data**
- **Create new features**
- **Analyze features**
- **Present to web or video/images**

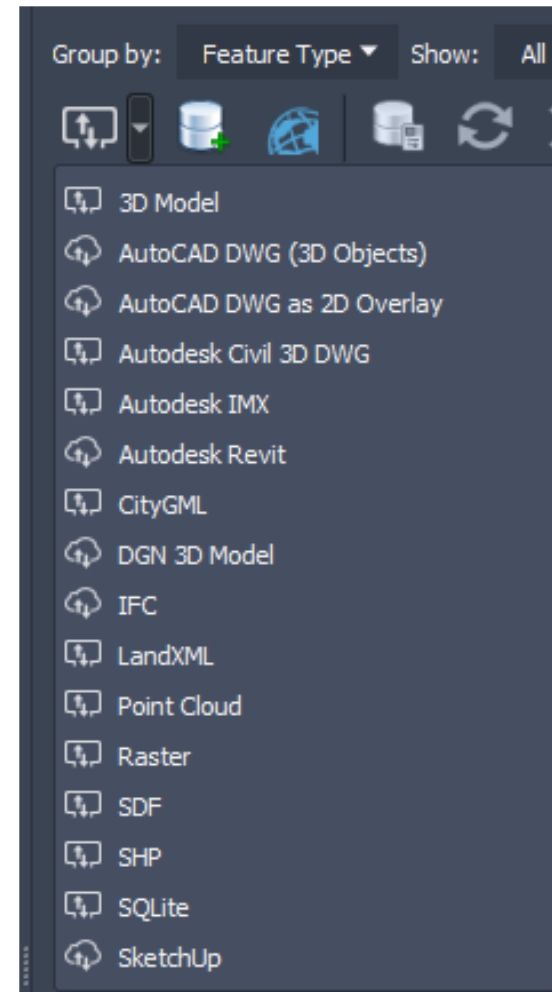


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Spatial Data

File-based

- DWG (AutoCAD 2D, 3D, Civil)
- DGN (Microstation files)
- IMX (Import/Export for InfraWorks)
- RVT (Revit Models)
- IFC (Industry Foundation Classes)
- CityGML (Geographic Markup Language)
- LandXML (Civil XML format)
- Point Cloud (LAS, LAZ, RCP, RCS)
- SDF/SHP/SQL Lite
- Sketchup

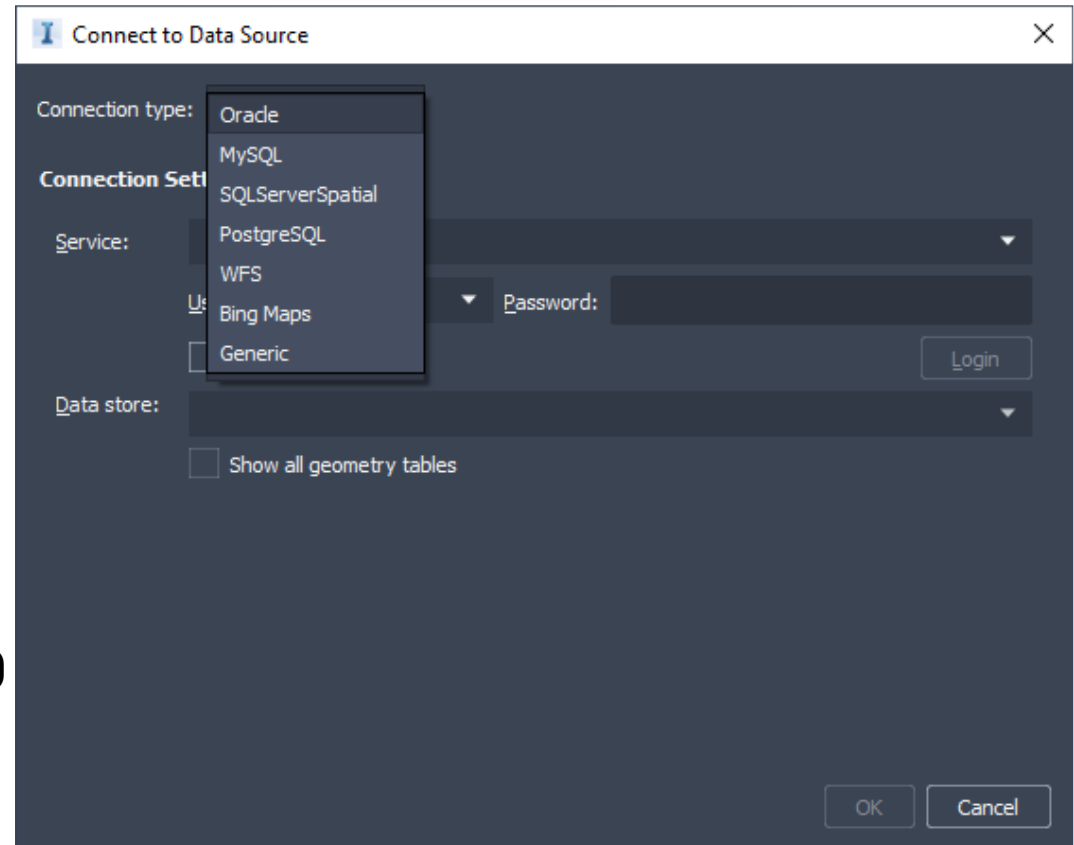


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Spatial Data

Data Sources

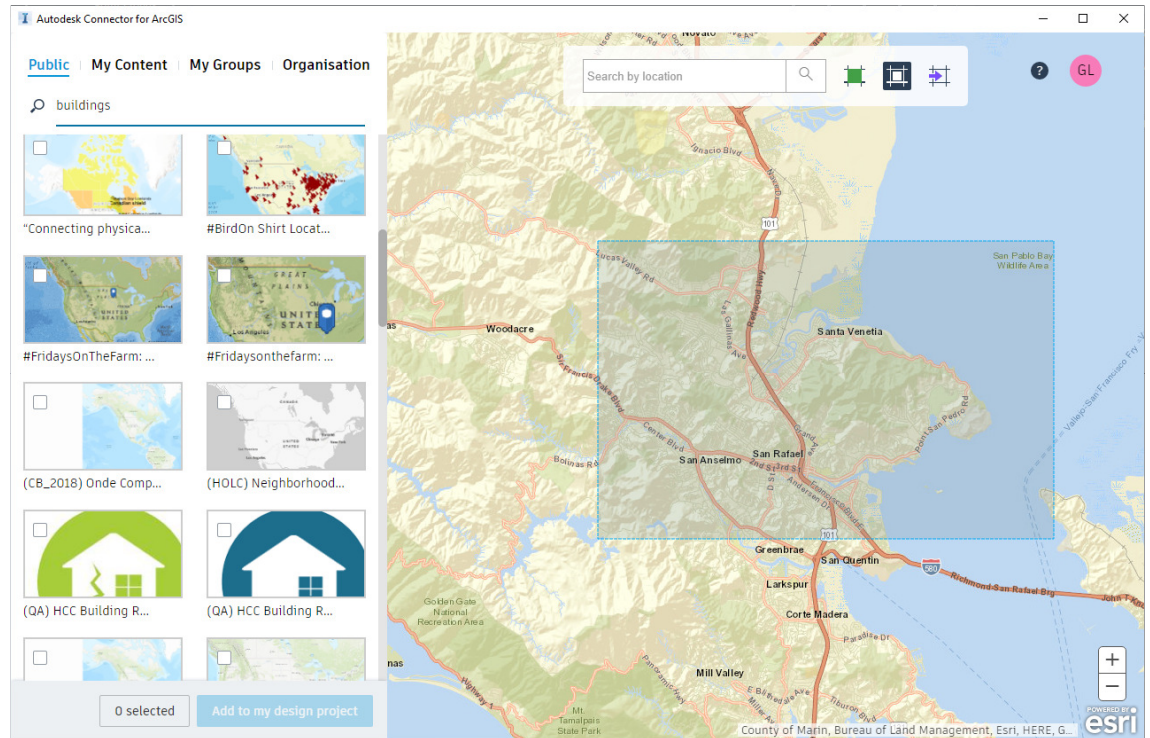
- **MySQL Database**
- **SQL Server Database**
- **PostgreSQL Database**
- **Oracle Database**
- **WFS (Web Feature Service)**
- **Bing Maps (background)**
- **Generic (OGR Provider – file based)**
e.g. ESRI File Geodatabase



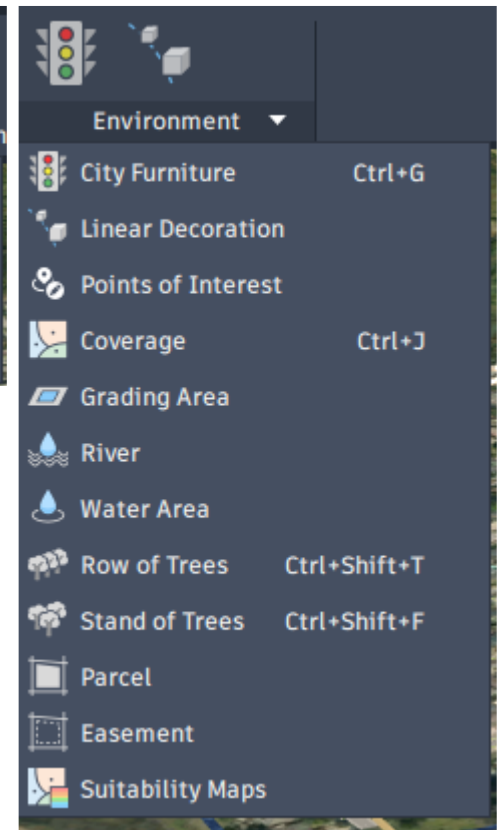
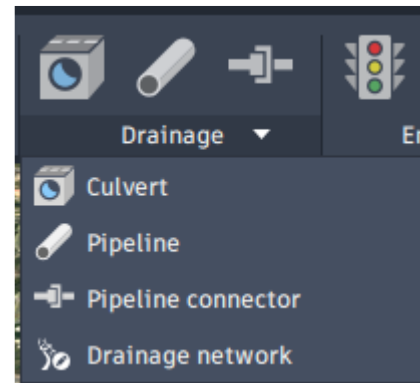
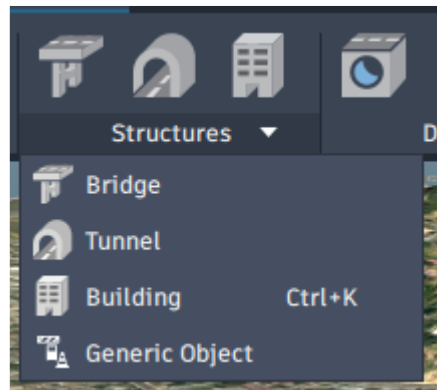
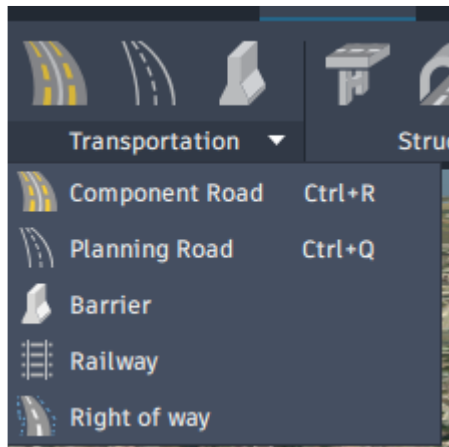
Spatial Data

ArcGIS Portal or ArcGIS Online

- ArcGIS.com
aka ArcGIS Online
- ArcGIS Enterprise (Portal)
– both intranet or internet




Creating New Features





Model Builder The Easy Way



AUTODESK
INFRAWORKS 2022

Open...

New...

Model Builder...

Recent

Autodesk Docs



What's new








Online Help

Community

Online Training Offers

Recent



Name	Model Type	Last Modified	
 Charlotte NC (December 2020)			
 Roads Tutorial (December 2020)			

The background is a dark, almost black, abstract composition. It features several sharp, angular shapes and lines that create a sense of depth and movement. Bright, white highlights are scattered along these edges, particularly in the upper left and lower right areas, giving the impression of light reflecting off a polished, metallic surface. The overall effect is one of a sleek, modern, and somewhat mysterious environment.

The Hard Way

Find Spatial Data

<https://gisopendata.marincounty.org/>



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Find Spatial Data

<https://gisopendata.marincounty.org/>

- **Building_Footprint.shp (and associated files such as PRJ, DBF, SHX)**
- **CITY_LIMITS.shp**
- **Roads.shp**
- **NHD_Waterbody.shp**

Find Spatial Data

<https://earthworks.stanford.edu/catalog/stanford-nh236hj3673>

The screenshot shows a web browser window with the URL <https://earthworks.stanford.edu/catalog/stanford-nh236hj3673>. The page features a dark red header with the "EarthWorks" logo and navigation links for "Login" and "Feedback". Below the header, the main content area displays the title "Digital Elevation Model (30m): San Francisco Bay Area, California, 2011" with icons for globe, Stanford, and a download arrow. The metadata is organized into a table-like structure with labels and values.

Author(s)	Bay Area Open Space Council, Conservation Lands Network, San Francisco Bay Area Upland Habitat Goals Project, and GreenInfo Network (Firm)
Description	This raster dataset depicts a 30 meter resolution Digital Elevation Model (DEM) stitched together for the nine county San Francisco Bay Area Region, California. This layer is used to create viewsheds, hillshades, slope, aspect, etc. for a variety of analyses. This dataset was developed/compiled for use in the San Francisco Bay Area Upland Habitat Goals Project, a Project used to identify a Conservation Lands Network (CLN) for biodiversity preservation to inform conservation investments and lasting cooperative conservation partnerships. The Conservation Lands Network GIS Database is the primary output of the Project. The data depicts the spatially explicit CLN that is recommended for the nine county San Francisco... Read more
Publisher	Bay Area Open Space Council
Place(s)	San Francisco Bay Area (Calif.), Alameda County (Calif.), Contra Costa County (Calif.), Marin County (Calif.), Napa County (Calif.), San Francisco County (Calif.), San Mateo County (Calif.), Santa Clara County (Calif.), Solano County (Calif.), and Sonoma County (Calif.)
Subject(s)	Digital elevation models, Relief models, Altitudes, Imagery and Base Maps, and Elevation
Year	2011

On the right side of the page, there are three utility sections:

- Tools:** Includes links for Bookmark, Citation, Email, Web services, and Metadata.
- Downloads:** Features a prominent blue button labeled "Original ArcGRID".
- Export Formats:** Shows "GeoTIFF" as an option with a corresponding blue "Export" button.

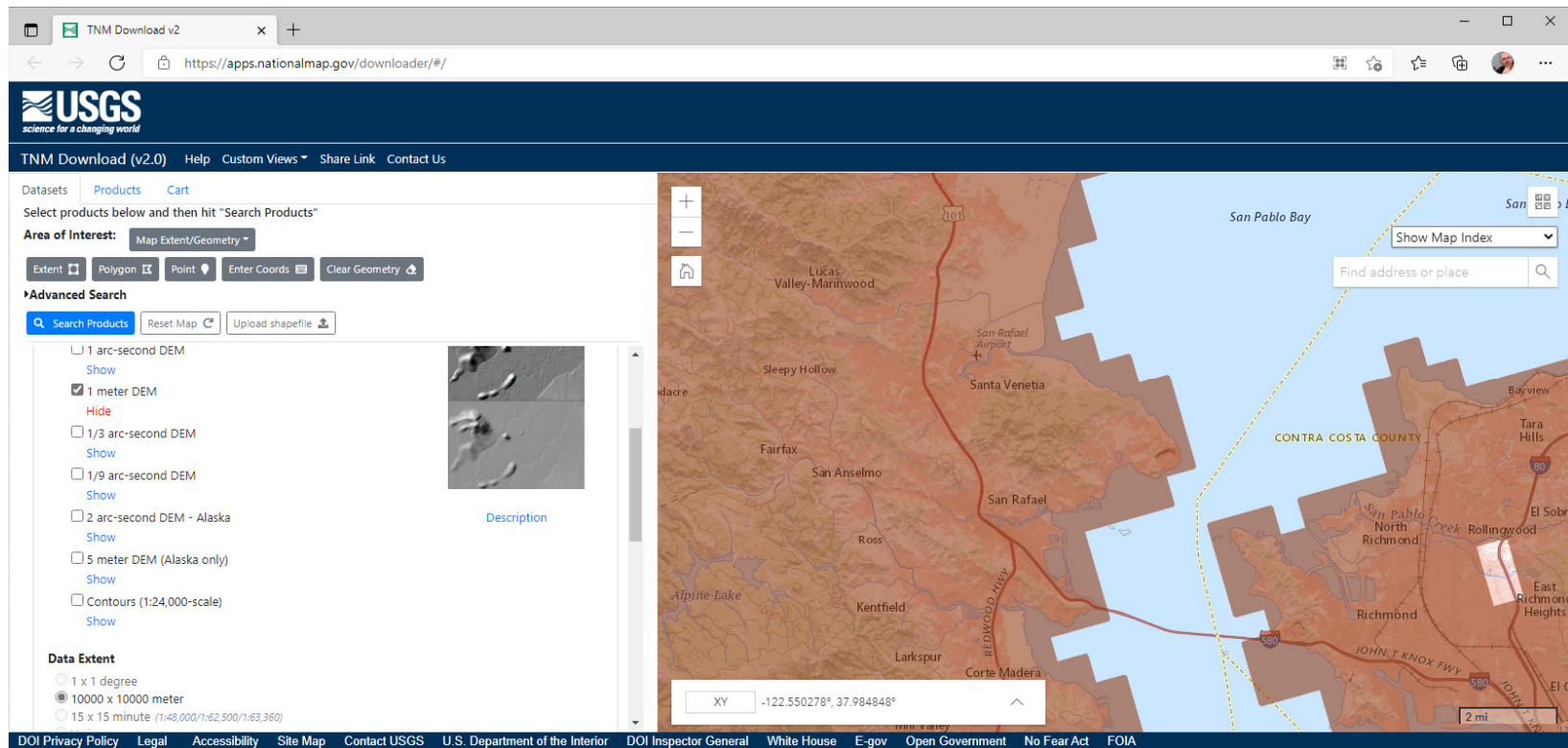
Find Spatial Data

<https://earthworks.stanford.edu/catalog/stanford-nh236hj3673>


- **stanford-sanrafael-geotiff.tif**

Find Spatial Data

<https://apps.nationalmap.gov/downloader/#/>



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INFRAWORKS 2022

Open...

New...

Model Builder...

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Autodesk Docs







What's new

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Recent

Name	Model Type	Last Modified	
 SAN RAFAEL		19/08/2021	...
 Charlotte NC (December 2020)			...
 Roads Tutorial (December 2020)			...



Customize with Style Rules

Marin OpenData

Building Footprints

Building Types..

Building Footprint | Building Foo x

https://gisopendata.marincounty.org/datasets/MarinCounty::building-footprint/explore?location=38.004504%2C-122.533404%2C17.98

Marin GeoHub

< About Data

113,271 records

Create a Map
Start a map with this data

Create a Story
Open in ArcGIS StoryMaps

View API Resources
Try out the API Explorer

OGC WMS
https://gis.marinpublic.com/arcgi

GeoService
https://gis.marinpublic.com/arcgi

GeoJSON
https://opendata.arcgis.com/data

Open in API Explorer
Customize the query for your needs

View Data Source
Select to open in a new tab

Building Footprint

OBJECTID	101031
SourceCode	Vargis_2004 10cm (urban-area_orthophoto)
SourceDateYear	2004
BuildingType	General / Residential
BuildingName	
BaseElevationMinFeet	
PeakElevationMaxFeet	
RuleID	Rule_1
Shape	
SHAPE.STArea()	5907.850954728343
SHAPE.STLength()	412.3369208162788

Zoom to

Marin OpenData

Building Footprints

Building Types..

Layer: Building Footprint (ID: 41) ×

← → ↺ 🔒 https://gis.marinpublic.com/arcgis/rest/services/MarinMap2/Open_Data_Download/MapServer/41

ArcGIS REST Services Directory

Home > services > MarinMap2 > Open_Data_Download (MapServer) > Building Footprint

[JSON](#)

Layer: Building Footprint (ID: 41)

Parent Layer: [cadaster \(parcels and related\)](#)

Name: Building Footprint

Display Field: BuildingName

Type: Feature Layer

Geometry Type: esriGeometryPolygon

Description:

```
"name": "BuildingType",
"type": "esriFieldTypeString",
"alias": "BuildingType",
"length": 25,
"domain": {
  "type": "codedValue",
  "name": "WS3_BuildingFootprint_BuildingType",
  "description": "Valid BUILDING_FOOTPRINT BuildingType values.",
  "codedValues": [
    {
      "name": "General / Residential",
      "code": "1"
    },
    {
      "name": "Hospitality",
      "code": "10"
    },
    {
      "name": "Airport",
      "code": "11"
    },
    {
      "name": "Industrial",
      "code": "12"
    },
    {
      "name": "CommunityCenter",
      "code": "13"
    },
    {
      "name": "Government",
      "code": "2"
    }
  ]
}
```



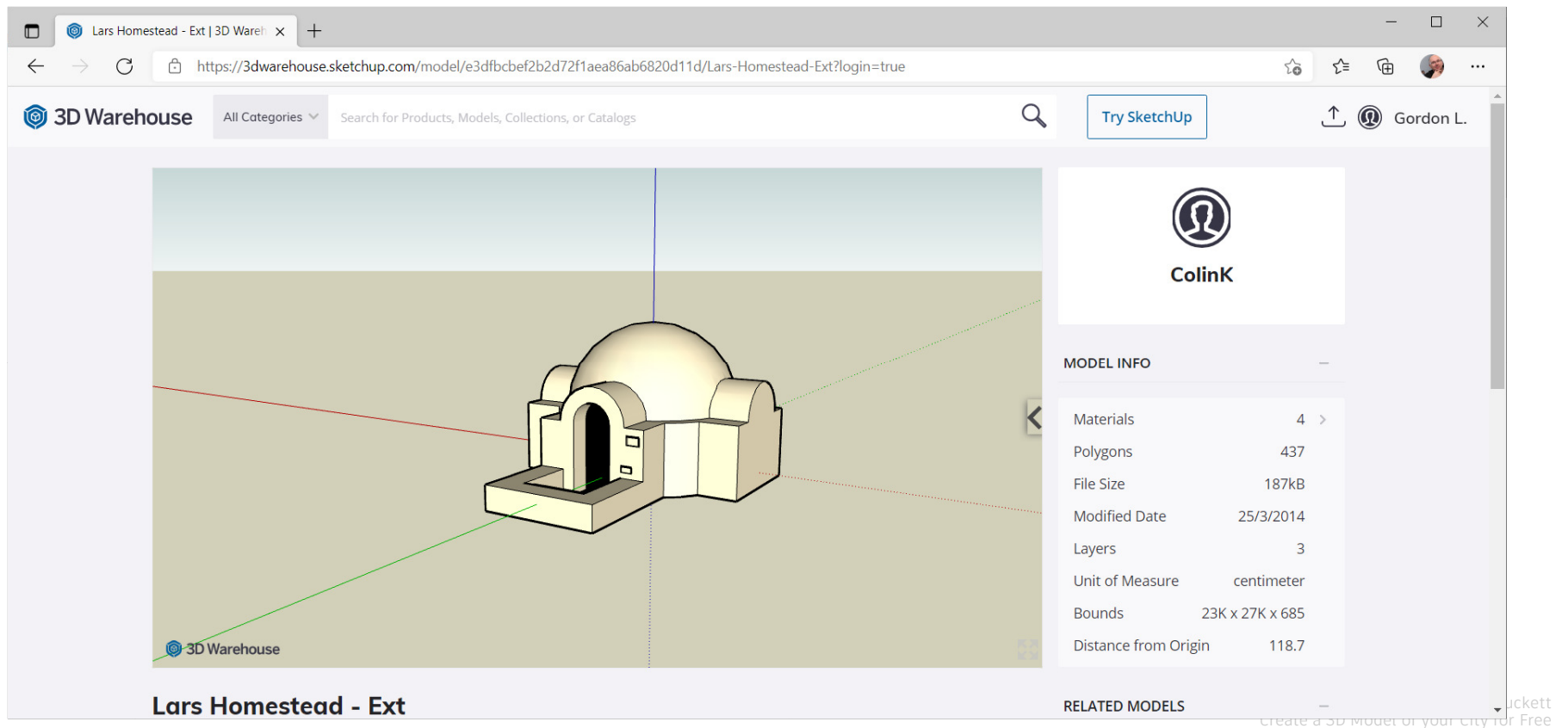
X: -122.529943 Y: 38.003651 Z: 0.999726m



Add Sketchup 3D Model

Finding Free Models

3dwarehouse - free







Summary

Summary

- **Model Builder – easiest (much data from OpenStreetMap and Bing)**
- **Find your own free data at County and Government Sites (such as Marin GIS or USGS)**
- **Import own data into InfraWorks**
- **Use Style Rules to alter many features**
- **Import individual models from free sites like 3dwarehouse**



Thanks!

The background of the slide is black. In the four corners, there are abstract, three-dimensional geometric shapes that look like they are made of a dark, reflective material. These shapes are composed of several flat planes that meet at sharp angles, creating a faceted, crystalline appearance. They are positioned such that they seem to be floating or attached to the corners of the frame.

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