

Layer Name: Rooftops

File Name: Rooftops<AreaName>.mdb
Area Names: DowntownAndMoilili, KaimukiE, KaimukiW, Kakaako, Kapiolani, Kapahulu, Waikiki

Layer Type: 3D Multipatch

Status: Complete

Geog. Extent: Downtown Honolulu to Diamond Head

Projection: State Plane Zone 3 (Feet)

Datum: NAD 83

Description: Building Rooftops with Height and Area Information

Source: Data acquired from CyberCity 3D in February, 2013 by the Hawaii State Office of Information Management and Technology (OIMT). Data was derived from 2008 remote sensing imagery at 0.5 ft GSD with 80% overlap and 30% sidelap. The original photo scale was 1:8400. CyberCity used their proprietary software, CC-Modeler, to convert aerial, satellite, and laser data using photogrammetric workstations into groups of polygons accurately configured and presented as 3D city models. Using stereo pairs of aerial images, relevant roof points were measured and coded. CC-Modeler automatically converts these codes or “point clouds” to 3D roof structures. The walls are derived by intersecting the roof polygons with the Digital Terrain Model (DTM) and back-projecting to the roof. This ensures the new 3D data is consistent with the existing 2D data. Quality management and editing was then done using CC-Edit. Hawaii State GIS staff extracted 2D shapefiles depicting solar roof exposure and runoff from the data using the Multipatch Footprint tool in ArcGIS 3D Analyst.

Feature Classes: Basic_Facade (Basic Wall Layer):

OBJECT ID: Polygon ID number
SHAPE: Polygon geometry
EGID: Building ID number
SURFACE_TOTALE: Area of polygon in square feet
DATE: Date of creation of the output file

Basic_Roof (Basic Roof Layer):

EGID: Building ID number
ALTITUDE MAX: Highest point of structure from sea level in feet.
HOUSE_HEIGHT: Highest point of structure from ground level.
SURFACE_TOTAL: The surface area in a 3D environment in feet.
SURFACE_TOTAL_XY: The surface area in a 2D environment in feet. (Viewed as a footprint)
SLOPE_MIN: Minimum slope of surfaces.
SLOPE_MAX: Maximum slope of surfaces.
SLOPE_MEAN: The averaged slope of surfaces.
ROOF_TYPE: Combination, pyramid hip, shed, and saddle
H2O_RUNOFF: Volume of runoff water from 1 inch of rain expressed in gallons.
(Calculation: total square feet X .623 X .90 = water in gallons: 1 inch of water on 1 square foot of surface area with a negative coefficient factor of 10% for average absorption)

Entity (Complete Polygon Geometry):

OBJECT ID: Polygon ID number
SHAPE: Polygon geometry
EGID: Building ID number
DATE: Date of creation of the output file

Solar_Roof (Roof Attributes for Solar Exposure Calculations):

EGID: Unique Building ID number
ORIEN_TO NORTH: Roof polygon compass orientation.
ROOF_PITCH: Pitch of roof polygon in degrees.
AREA: The roof polygon area in a 3D environment in feet.
AREA_XY: The roof polygon area in a 2D environment in feet. (Viewed as a footprint).
SOLAR_POTENTIAL: Value derived from ORIEN_TO _NORTH and minimum AREA of 100 sf.
DATE: Date of creation of the output file

Solar Potential:

0: 0-80 degrees, 281-360 degrees
1: 81-160 degrees, 201-280 degrees
2: 161-200 degrees

SP_Facade (Structure Walls Under 96sf That Do Not touch Ground):

OBJECT ID: Polygon ID number
SHAPE: Polygon geometry
EGID: Building ID number
SURFACE_TOTALE: Area of polygon in square feet
DATE: Date of creation of the output file
SPID: Attribute for internal use by CyberCity 3D and has no relevant data

SP_Roof (Structure Roofs Under 96 sf That Do Not Touch Ground):

OBJECT ID: Polygon ID number
SHAPE: Polygon geometry
EGID: Building ID number
ALTITUDE_MAX: Highest point of structure from sea level in feet
SURFACE_TOTALE: Area of polygon in square feet
DATE: Date of creation of the output file
SPID: Attribute for internal use by CyberCity 3D and has no relevant data

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