

cyclomedia

# Street Ortho Web Map Services



Versie 1.1

17-05-2022

©2022 CycloMedia Technology

# Table of Contents

1. Introduction .....	3
1.1 Purpose .....	3
1.2 Audience.....	3
1.3 Prerequisites .....	3
2. Description Street Ortho.....	4
2.1 Base (layer) .....	4
2.2 Height (level).....	5
3. Web Map Services .....	6
3.1 TMS.....	6
3.1.1 TMS End point .....	7
3.2 WMS .....	8
3.2.1 WMS Endpoint.....	8
4. Security.....	8



# 1. Introduction

## 1.1 Purpose

This document describes the Street Ortho Tile Map Service (TMS).  
With this TMS it is possible to show Street Ortho imagery in GIS applications.

## 1.2 Audience

This document is intended for application managers or developers that want to add Street Ortho to their application.

## 1.3 Prerequisites

Street Ortho imagery must be paid for to access. That is why you need an Cyclomedia login and password.



## 2. Description Street Ortho

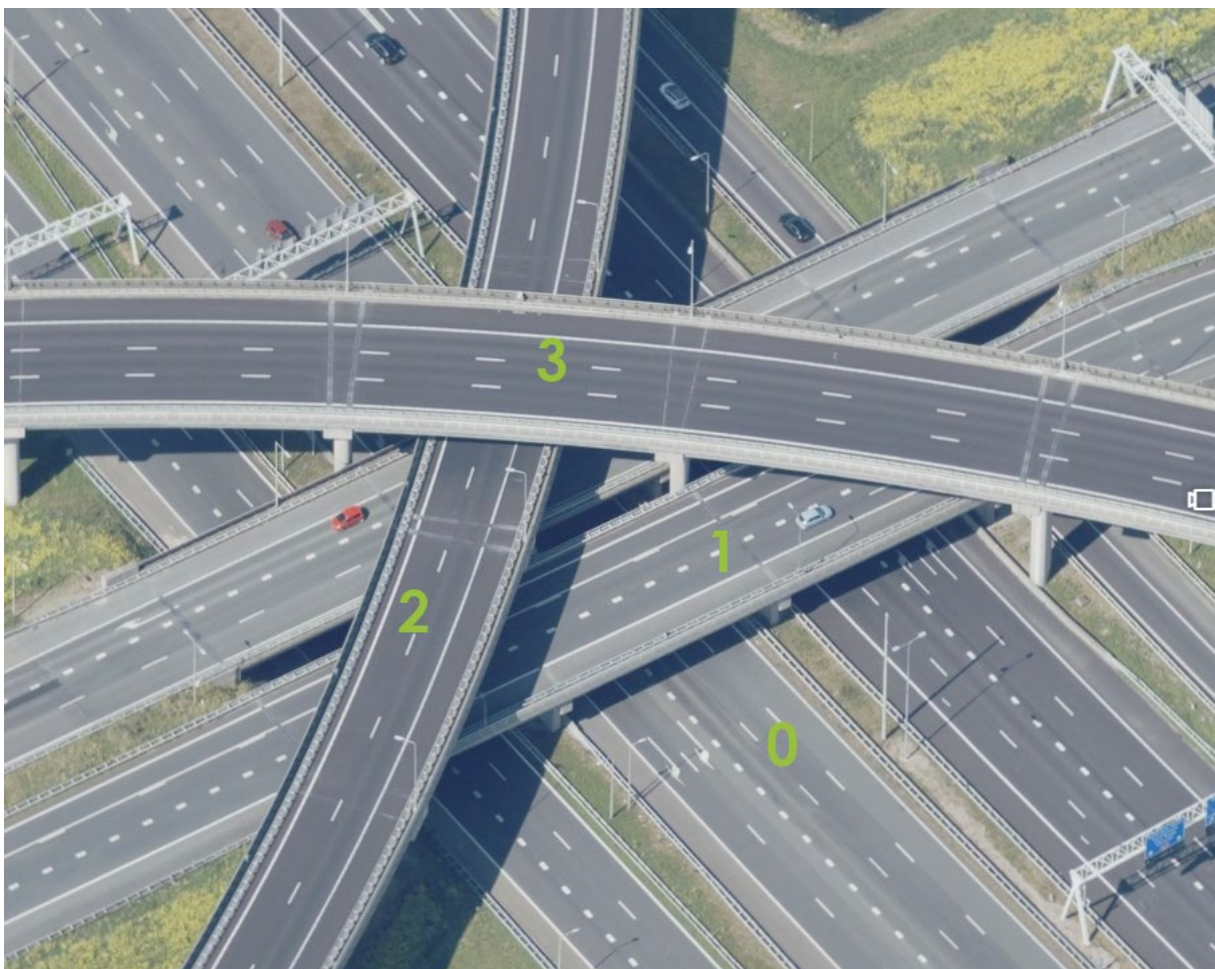
Street Ortho images are like [aerial ortho](#) images but then made from street level cycloramas and street level [LIDAR](#) data.

Street Ortho data will result in multiple layers on one location to understand the layer that you want to show we describe the values 'base' and 'height' that you see in the URL's shown in the next chapters.

### 2.1 Base (layer)

The 'base' parameter stands for base layer. While aerial ortho is always captured from one location (meaning the airplane's location) this is different for street ortho. As the data is captured from street level and roads can overlay each other the base value is created to distinguish the different roads. Figure 1 shows the different base layers.

Figure 1: Example of different base layers



Different base layers on a location.



## 2.2 Height (level)

Street Ortho images consists of 3 height levels.

- height (level) 0  
street ortho created out of point clouds with points maximum 30 centimetres above street level. The files inside this folder are in full colour.
- height (level) 1  
street ortho created out of point clouds with points minimum of 30 centimetres and a maximum of 2 meters above street level. The files inside this folder are coloured red.
- height (level) 2  
street ortho created out of point clouds with points minimum of 4 meters above street level. The files inside this folder are coloured green.

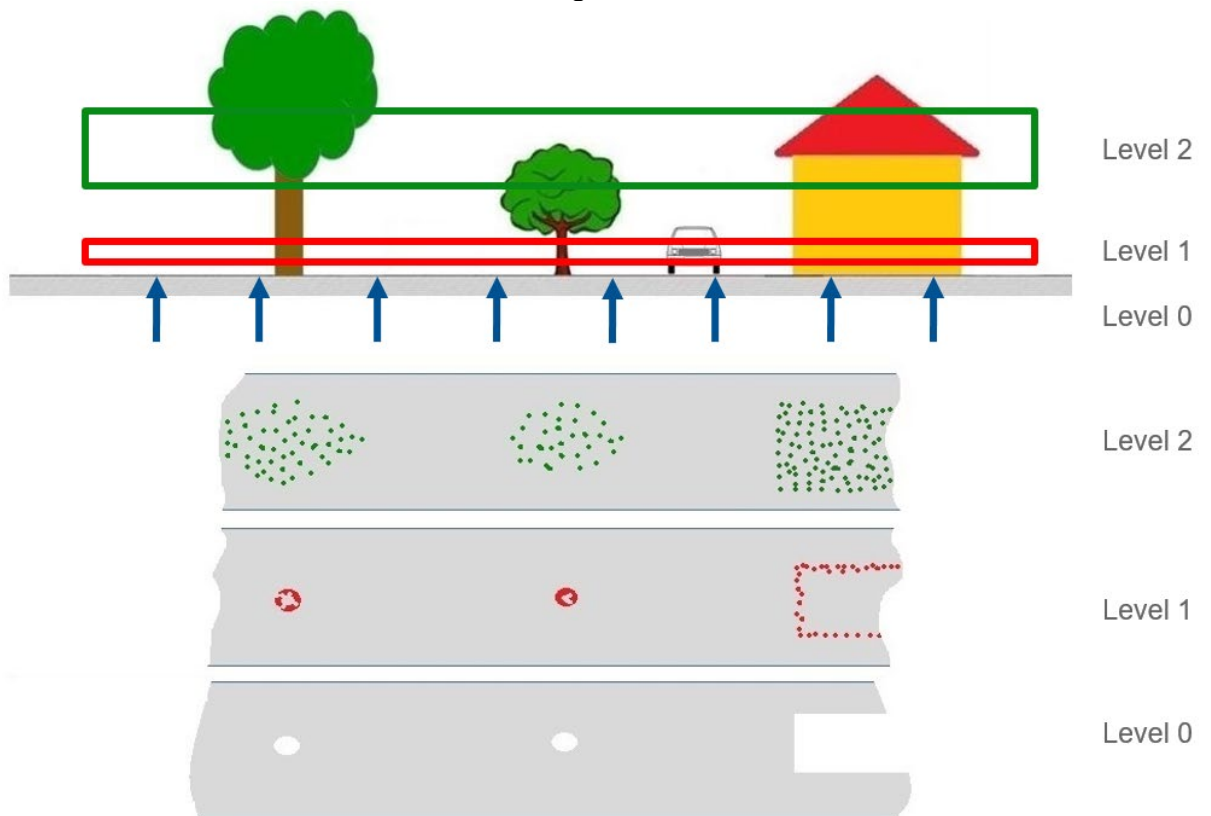


Figure 2: Height levels

## 3. Web Map Services

### 3.1 TMS

The fastest way street ortho data is distributed is via a [Tile Map Service \(TMS\)](#). This means we have pre-rendered and stored all imagery as tiles in a pyramid grid format. Each tile is 256 x 256 pixels in size.

Two pyramids are supported.

For Dutch Street Ortho we use the geonovum standard which is based on the 'Rijksdriehoekstelsel' coordinate system (EPSG 28992).

The pyramid is defined like this:

#### Geonovum

Area on a tile	Zoom level	Pixel size (m)	Tile Size	Scale	# Tiles in the Netherlands
	0	3440,640	880 x 880 km	1:12.288.000	1
	1	1720,320	440 x 440 km	1:6.144.000	1
Netherlands	2	860,160	220 x 220 km	1:3.072.000	2
	3	430,080	110 x 110 km	1:1.536.000	6
Province	4	215,040	55 x 55 km	1: 768.000	24
	5	107,520	28 x 28 km	1: 384.000	90
Municipality	6	53,760	14 x 14 km	1: 192.000	350
	7	26,880	6,8 x 6,8 km	1: 96.000	1.400
	8	13,440	3,4 x 3,4 km	1: 48.000	5.500
	9	6,720	1,7 x 1,7 km	1: 24.000	22.000
	10	3,360	860 x 860 m	1: 12.000	88.000
Street	11	1,680	430 x 430 m	1: 6.000	350.000
	12	0,840	215 x 215 m	1: 3.000	1.400.000
	13	0,420	108 x 108 m	1: 1.500	5.600.000
	14	0,210	54 x 54 m	1: 750	22.500.000
House	15	0,105	26 x 26 m	1: 375	90.000.000

Street Ortho in all other countries is provided in the Google Web Mercator standard which is based on coordinate system Web Mercator (EPSG: 3857).

The pyramid is described like this.

#### Google Web Mercator

Area on a tile	Zoom level	Pixel size (m)	Tile Size	Scale	# Tiles world wide
World	0	156.543,033	40.000 x 40.000 km	1:591.657.528	1
	1	78.271,516	20.000 x 20.000 km	1:295.828.764	4
	2	39.135,758	10.000 x 10.000 km	1:147.914.382	16
	3	19.567,879	5.000 x 5.000 km	1:73.957.191	64
	4	9.783,939	2.500 x 2.500 km	1:36.978.595	250
	5	4.891,969	1.200 x 1.200 km	1:18.489.298	1.000
Netherlands	6	2.445,984	600 x 600 km	1:9.244.649	4.000
	7	1.222,992	300 x 300 km	1:4.622.324	16.000
	8	611,496	150 x 150 km	1:2.311.162	65.000
Province	9	305,748	80 x 80 km	1:1.155.581	250.000
	10	152,874	40 x 40 km	1:577.791	1 million



	11	76,437	20 x 20 km	1:288.895	4 million
Municipality	12	38,218	9,8 x 9,8 km	1:144.448	17 million
	13	19,109	4,8 x 4,8 km	1:72.224	67 million
	14	9,554	2,4 x 2,4 km	1:36.112	270 million
Street	15	4,777	1,2 x 1,2 km	1:18.056	1 billion
	16	2,388	611 x 611 m	1:9.028	4 billion
	17	1,194	305 x 305 m	1:4.514	17 billion
	18	0,597	153 x 153 m	1:2.257	68 billion
	19	0,298	76 x 76 m	1:1.128	275 billion
	20	0,149	38 x 38 m	1:564	1 trillion
House	21	0,074	19 x 19 m	1:282	4 trillion

### 3.1.1 TMS End point

The end point can be created using the following rule.

<BaseURL>/<layer name>/tiles/tile/pwecmstreetorthotiles/<pyramidname>/h<basevalue>/f<heightvalue>/###z###/##x###/##y###.png where

<BaseURL> = <https://atlasapi.cyclomedia.com/api/image/tms/layer>

<Layer name> = name of the layer containing base and height parameter (see chapter 2)

<pyramidname> = geonovum or googlewebmercator

<basevalue> = value for base

<heightvalue> = refers to height value but slightly different

Height	f-value
0	0
1	2
2	3

Z = zoom level of pyramid

X = row of the grid

Y = column of the grid

.png = file extension of the image

Example :

[https://atlasapi.cyclomedia.com/api/image/tms/layer/straat\\_ortho\\_base\\_1\\_height\\_0/tiles/tile/pwecmstreetorthotiles/geonovum/h1/f0/16/28499/34724.png](https://atlasapi.cyclomedia.com/api/image/tms/layer/straat_ortho_base_1_height_0/tiles/tile/pwecmstreetorthotiles/geonovum/h1/f0/16/28499/34724.png)

the following layer names are available:

geonovum layers :

layer name	base layer	height layer
straat_ortho_base_0_height_0	0	0
straat_ortho_base_0_height_1	0	1
straat_ortho_base_0_height_2	0	2
straat_ortho_base_1_height_0	1	0
straat_ortho_base_1_height_1	1	1
straat_ortho_base_1_height_2	1	2

straat_ortho_base_2_height_0	2	0
straat_ortho_base_2_height_1	2	1
straat_ortho_base_2_height_2	2	2
straat_ortho_base_3_height_0	3	0
straat_ortho_base_3_height_1	3	1
straat_ortho_base_3_height_2	3	2

Googlewebmercator layers:

layer name	base layer	height layer
street_ortho_base_0_height_0	0	0
street_ortho_base_0_height_1	0	1
street_ortho_base_0_height_2	0	2
street_ortho_base_1_height_0	1	0
street_ortho_base_1_height_1	1	1
street_ortho_base_1_height_2	1	2
street_ortho_base_2_height_0	2	0
street_ortho_base_2_height_1	2	1
street_ortho_base_2_height_2	2	2

## 3.2 WMS

Another way to connect to the street ortho data is via a [Web Map Service \(WMS\)](#). Version 1.1.0 and 1.3.0 are supported.

### 3.2.1 WMS Endpoint

The WMS URL is <https://atlasapi.cyclomedia.com/geodata/api/wms-sol>

Available layer names

layer name	base layer	height layer
street_ortho_base_0_height_0	0	0
street_ortho_base_0_height_1	0	1
street_ortho_base_0_height_2	0	2
street_ortho_base_1_height_0	1	0
street_ortho_base_1_height_1	1	1
street_ortho_base_1_height_2	1	2
street_ortho_base_2_height_0	2	0
street_ortho_base_2_height_1	2	1
street_ortho_base_2_height_2	2	2

## 4. Security





The service is secured with a username and password using basic authentication. Customers can obtain such a password from Cyclomedia. You need to add basic authentication headers to each request.



**Visualize a  
better world**