Imports and stuff

In [13]:
```
import os
os.environ['CUDA_VISIBLE_DEVICES'] = '0'
```

In [1]:
```
from data_augmentation import *
```

In [2]:
```
import torch
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import einops
import cv2
import random
```

In [3]:
```
device = torch.device('cuda' if torch.cuda.is_available() else 'cpu
print(device.type)
```

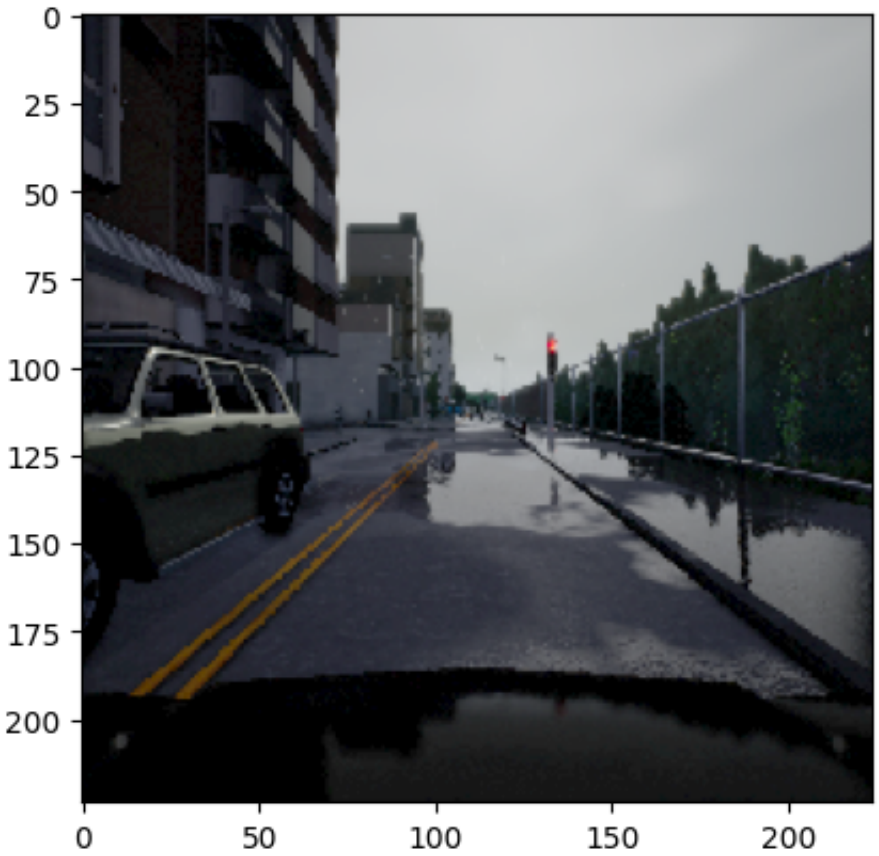
```
cuda
```

In [4]:
```
def tensor_to_uint8_numpy(tensor_img:torch.Tensor):
    if tensor_img.ndim == 4:
        tensor_img = einops.rearrange(tensor_img, '1 c h w -> h w c
    else:
        tensor_img = einops.rearrange(tensor_img, 'c h w -> h w c')
    tensor_img = tensor_img.cpu().numpy()
    tensor_img = (tensor_img * 255).astype(np.uint8)
    return tensor_img
```

Opening an image and label to check

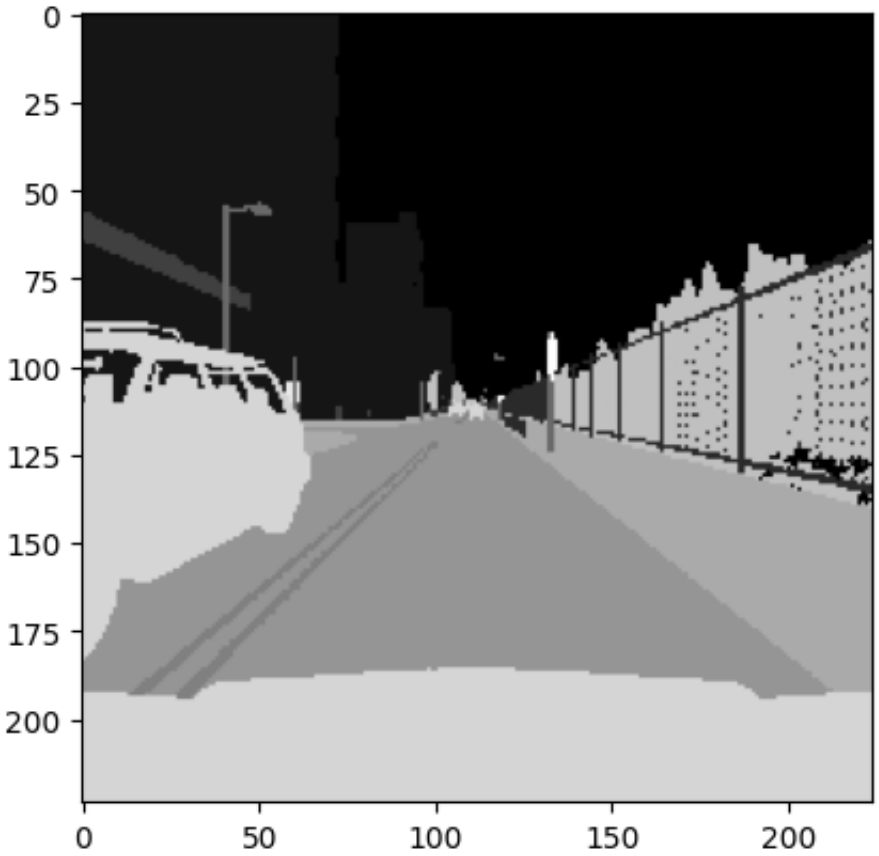
In [5]:
```
img = cv2.imread(TRAIN_IMAGES + "02_00_000.png", cv2.IMREAD_COLOR_R
plt.imshow(img)
```

Out[5]:
```
<matplotlib.image.AxesImage at 0x7fe972070af0>
```



In [6]:
```
label = cv2.imread(TRAIN_LABELS + "02_00_000.png", cv2.IMREAD_COLOR
label = label[:, :, 0]
plt.imshow(label, cmap='gray')
```

Out[6]: <matplotlib.image.AxesImage at 0x7fe9600a22b0>

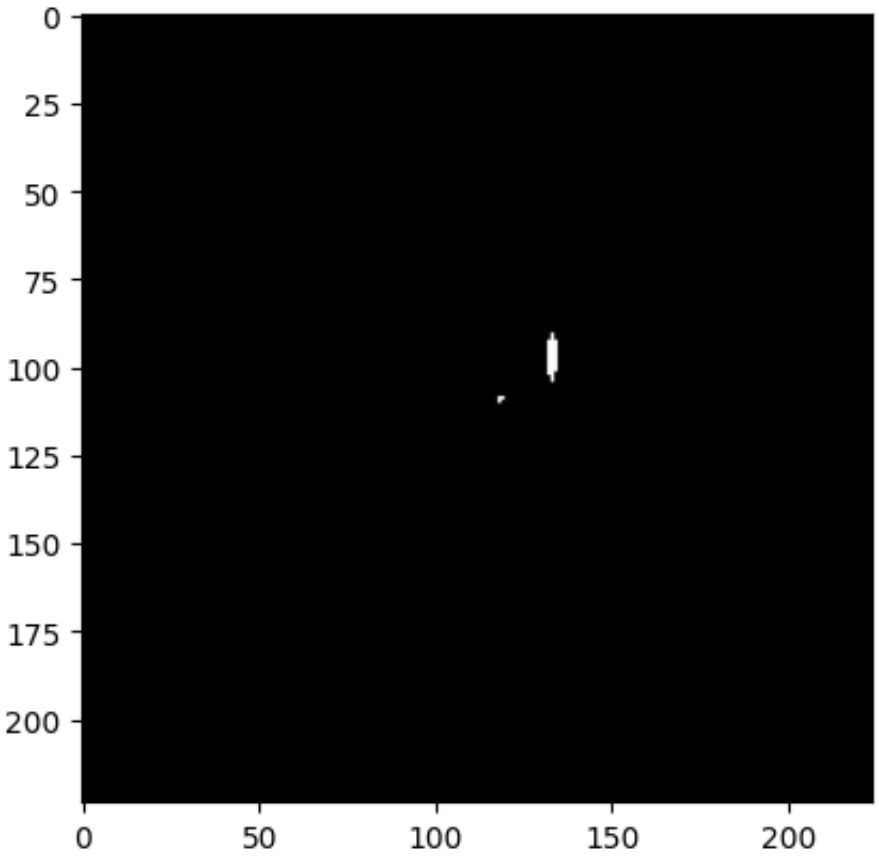


In [7]:
```
np.unique(label)
```

Out[7]:
```
array([ 0,  1,  2,  3,  5,  6,  7,  8,  9, 10, 11, 12], dtype=uint
8)
```

In [8]:
```
plt.imshow(label == 12, cmap='gray')
```

Out[8]:
```
<matplotlib.image.AxesImage at 0x7fe96000bb20>
```



Visualizing the dataset

In [9]:
```
batch_sizes = [32, 32, 32]
train_loader, val_loader, test_loader, train_dataset, val_dataset,
```

In [10]:
```
num_train_ims, num_val_ims, num_test_ims = len(train_dataset), len(
num_train_ims, num_val_ims, num_test_ims
```

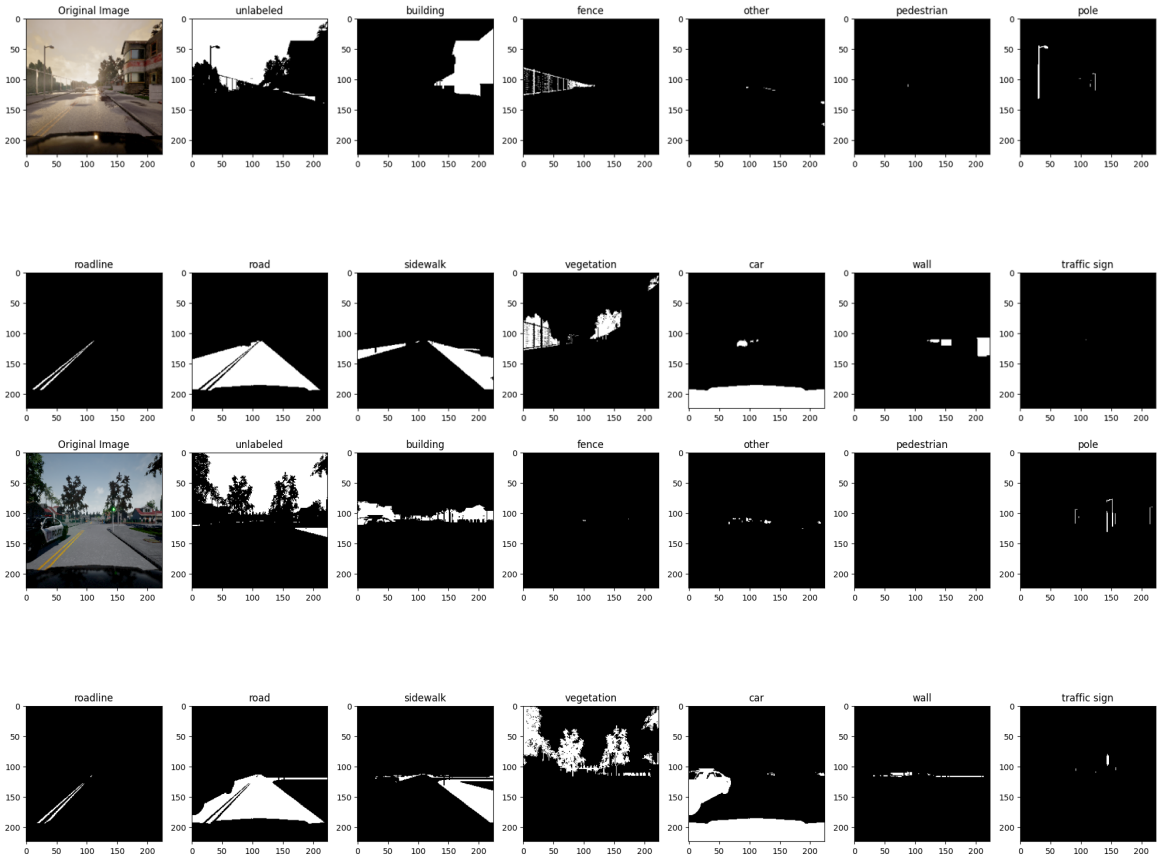
Out[10]:
```
(1600, 400, 500)
```

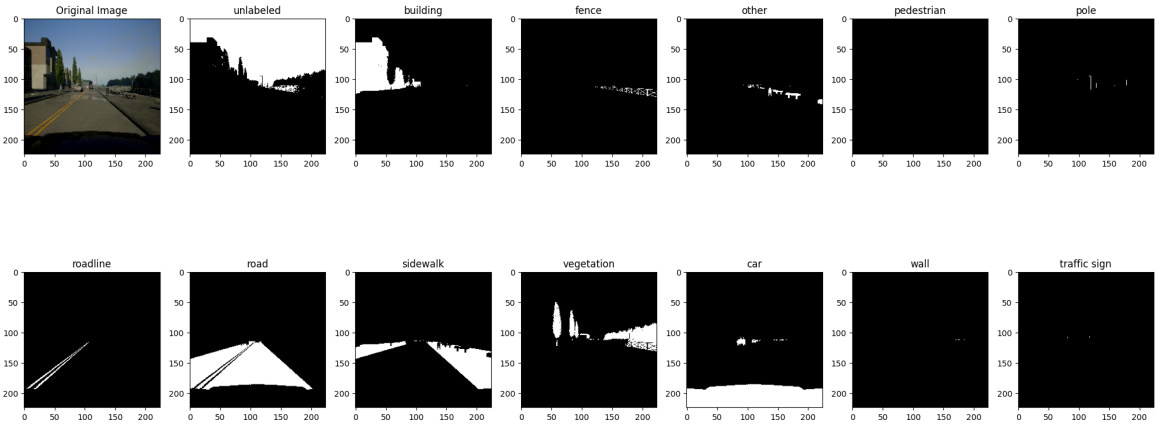
Picking a random index from train set to visualize

In [15]:
```
def visualize_mask(dataset: SegmentationDataset, idx = None):
    if idx is None:
        idx = random.randint(0, len(dataset))

    im_tensor, label_tensor, img_path = dataset[idx]

    image = tensor_to_uint8_numpy(im_tensor)
```

```
    label = tensor_to_uint8_numpy(label_tensor)

    fig, axs = plt.subplots(2, 7, figsize=(20, 10))

    axs[0, 0].imshow(image)
    axs[0, 0].set_title("Original Image")

    subplot_idx = 1
    for i in range(13):
        row, col = subplot_idx // 7, subplot_idx % 7
        mask = label == i
        axs[row, col].imshow(mask, cmap='gray')
        axs[row, col].set_title(f"{dataset.idx_to_class[i]}")
        subplot_idx += 1

    plt.tight_layout()
    plt.savefig(f"dataviz/mask_visualization_{idx}.png")
    plt.show()
```

In [16]:
```
for i in range(3):
    visualize_mask(train_dataset)
```




Original Image
unlabeled
building
fence
other
pedestrian
pole
roadline
road
sidewalk
vegetation
car
wall
traffic sign

In [ ]: