

## 2.2 Preliminary Survey

### Visible Utility Apparatus





# 2.2 Preliminary Survey

## Visible Ground Furniture





## 2.2 Preliminary Survey

### Overall View Of Type Of Utility

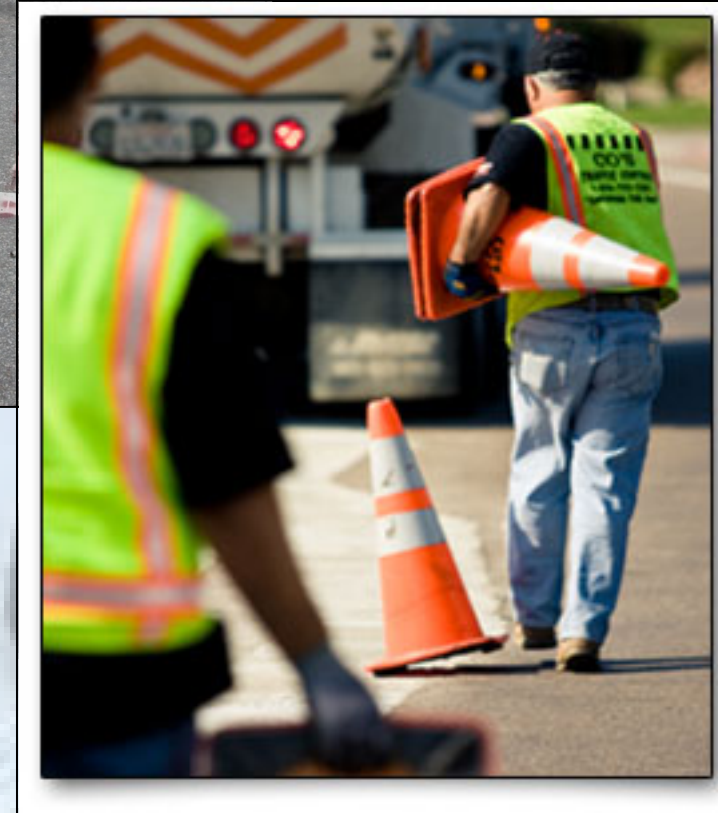




# 2.3 Traffic Management

## Traffic Management

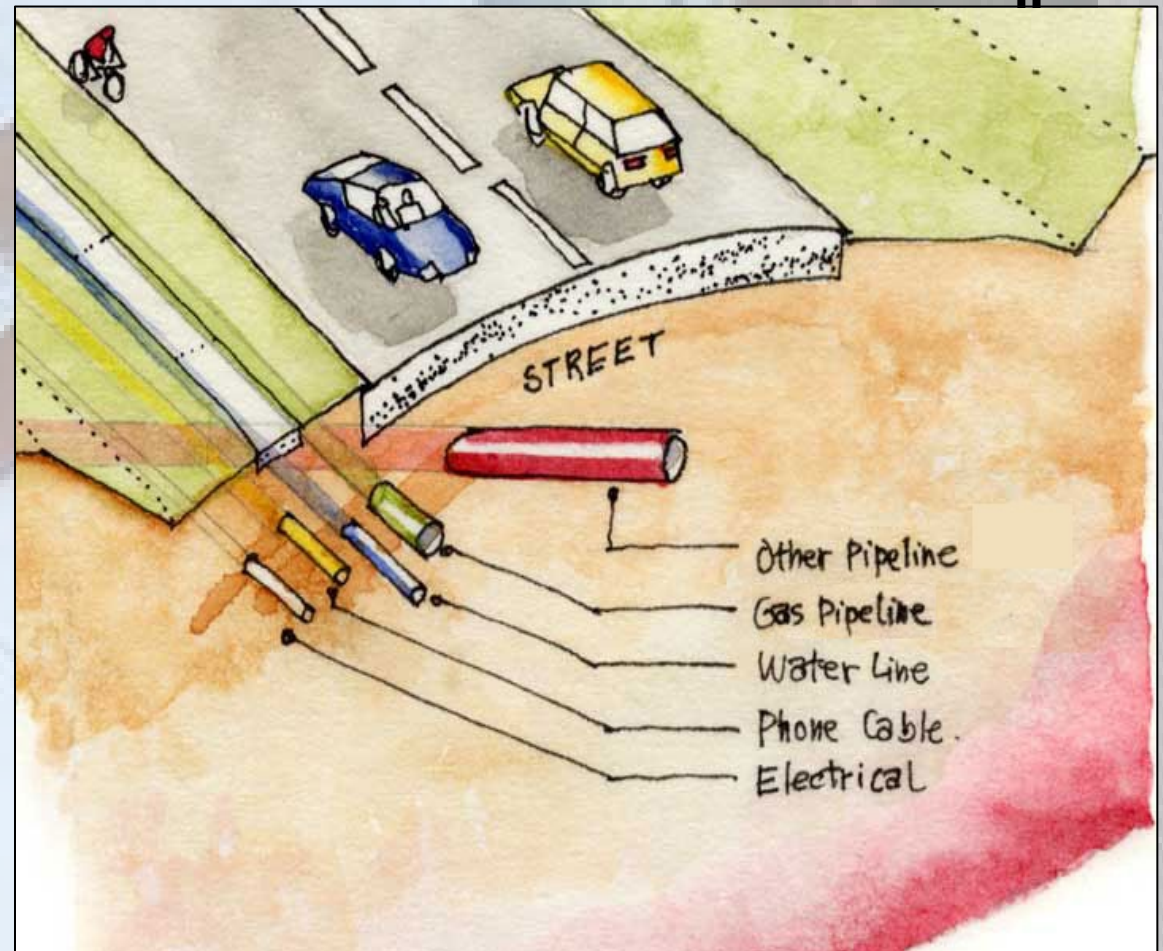
- Detection tasks from midnight till dawn?
- Proper lane closure/diversion
- To deploy proper traffic control equipments
- Adequate lighting or illumination



# 2.4 Typical Depth

| Depth Range (m) | Utility Type   |
|-----------------|----------------|
| 0.4 - 0.7       | Fibre Optic    |
| 0.5 – 3.0       | Common Utility |
| 3.0 – 6.0       | Sewerage       |
| > 6.0           | Misc           |

## Depth Range vs Utility





# 2.5.1 Measuring Equipment

- Electromagnetic Locator
- Ground Penetrating Radar
- Total Station
- GNSS
- Sondes
- Flexi-trace
- Gyroscope
- Recording CCTV Reel
- Vacuum Excavator





## 2.5.2 Safety Equipment

- Personnel safety equipments
- Public safety equipments



**Life & Property  
preserved**





# 2.5.2 Safety Equipment

Essentially important

Reflective Vest

Road Cones

Road Barrier

Safety Light

Manhole Opener





## 2.6.1 Survey & Detection Techniques

### Land Surveying

- To set up control points
- To connect/tie to National Grid (NDCDB)
- To survey topographic features
- To survey surface utilities
- To measure (pick) ground markings of utility detected

