

Shortest path search for **real** road networks



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Real road networks

How do they look like?

Like **this**...





...or like **this**...

...or sometimes like **this**.



They have some **features**:



traffic lights



signs



road marking

How **pgRouting** can help here?



source

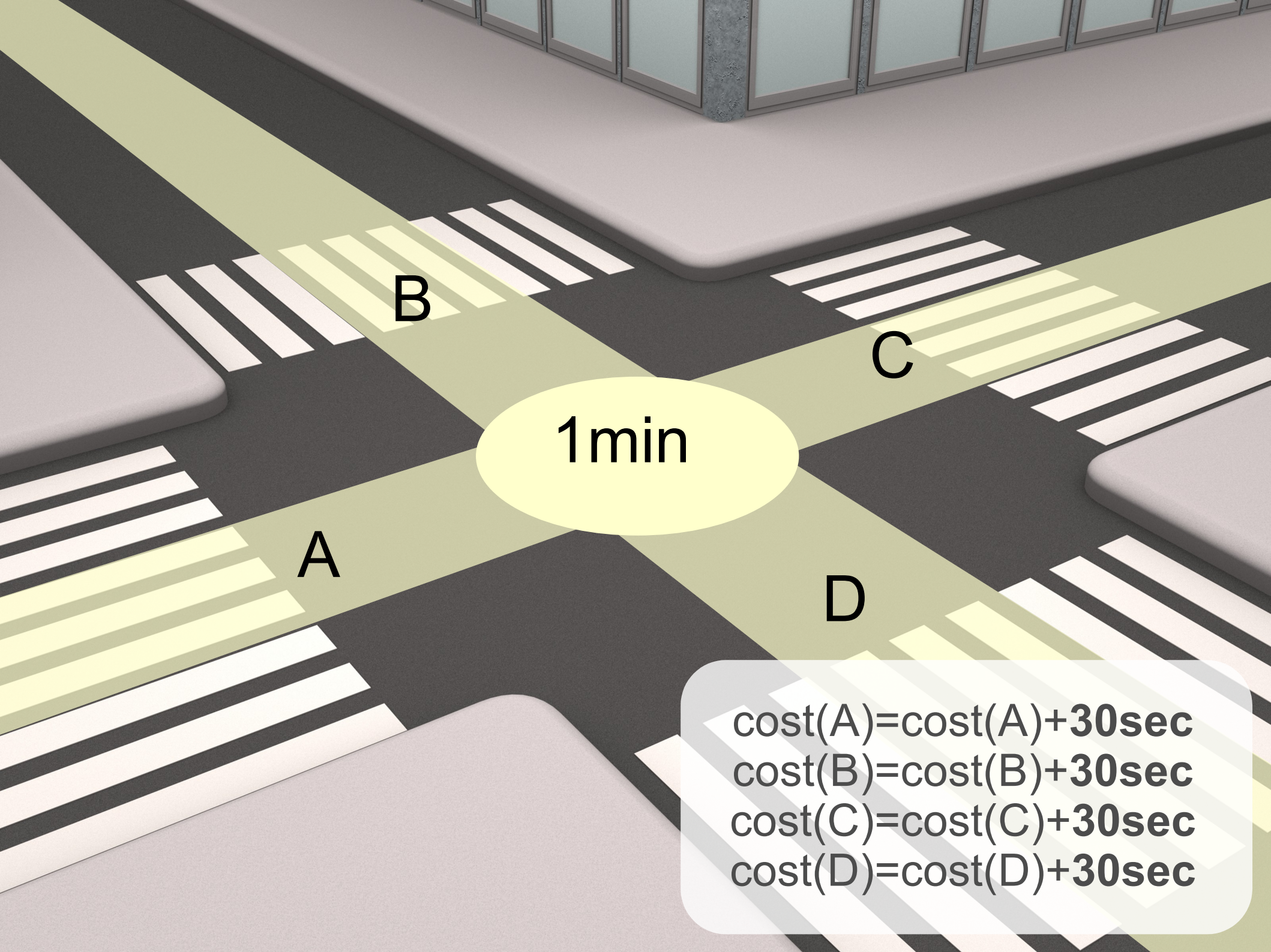
target

gid,
source,
target,
cost,
reverse_cost,
x1, y1,
x2, y2,
rule,
to_cost

Traffic lights make you slower.



It means we should **increase costs**.



1min

B

C

A

D

$\text{cost}(A) = \text{cost}(A) + 30\text{sec}$

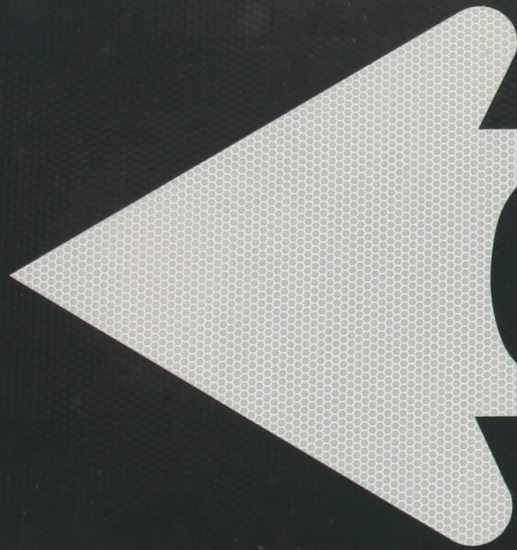
$\text{cost}(B) = \text{cost}(B) + 30\text{sec}$

$\text{cost}(C) = \text{cost}(C) + 30\text{sec}$

$\text{cost}(D) = \text{cost}(D) + 30\text{sec}$

Signs tell you about
restrictions and
road types.





ONE WAY



$\text{cost}(A) = \text{length}(A)$
 $\text{reverse_cost}(A) = \infty$

A photograph of a narrow city street with a yellow path labeled 'A'. The path starts at the bottom center and extends towards the right, then turns left and continues down the street. The street is flanked by multi-story buildings with windows and fire escapes. A street lamp is visible on the right side. The sky is bright and clear.

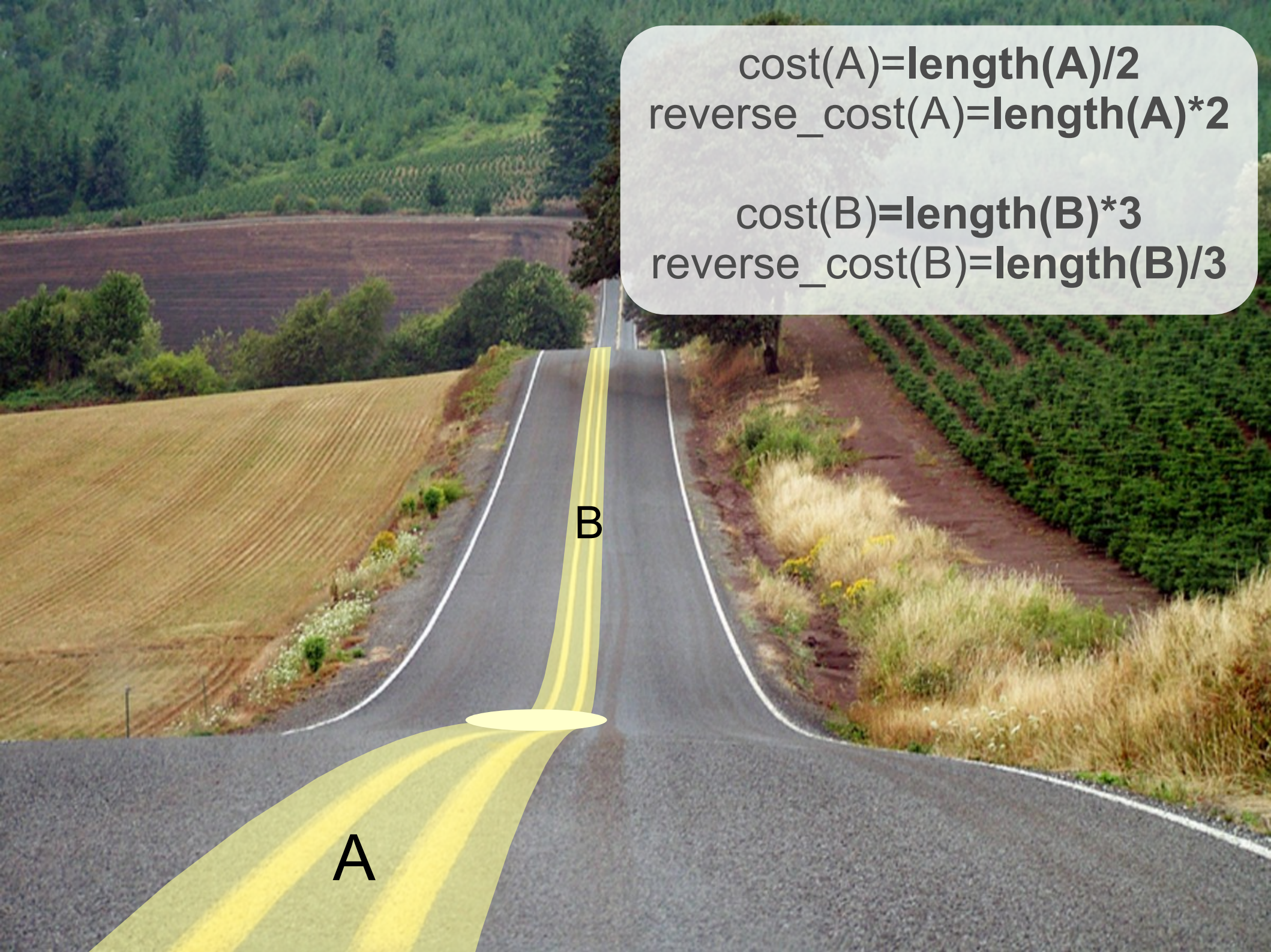
A



Sometimes
those costs
have **different**
meaning.

$\text{cost}(A) = \text{length}(A) / 2$
 $\text{reverse_cost}(A) = \text{length}(A) * 2$

$\text{cost}(B) = \text{length}(B) * 3$
 $\text{reverse_cost}(B) = \text{length}(B) / 3$

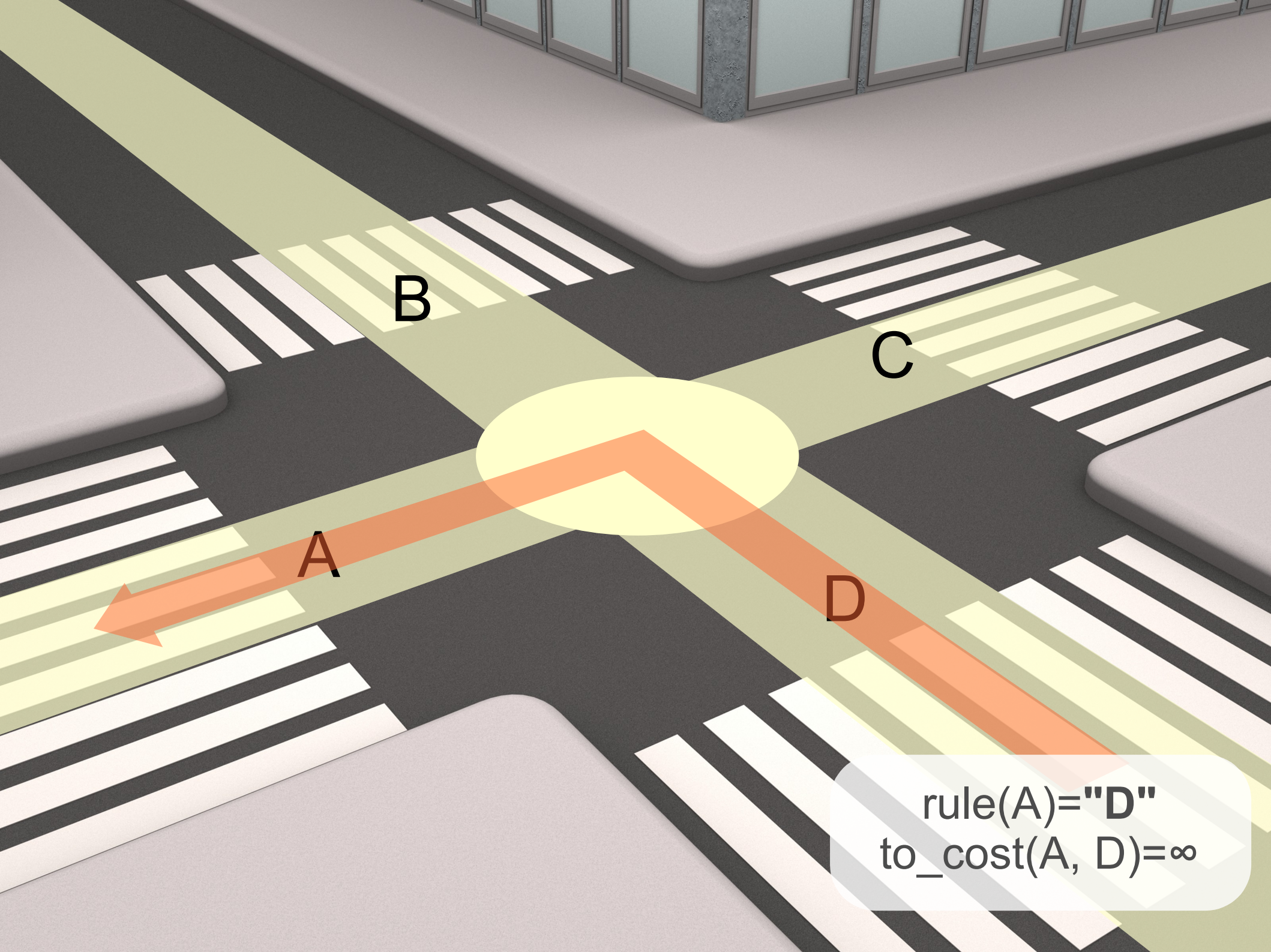


A

B

Turn restrictions
obviously restrict
turns.





B

C

A

D

rule(A)="D"
to_cost(A, D)=∞

Road types
can be used
for **cost**
calculation.



Not only **types**, but
also **conditions**.



What about
road marking?



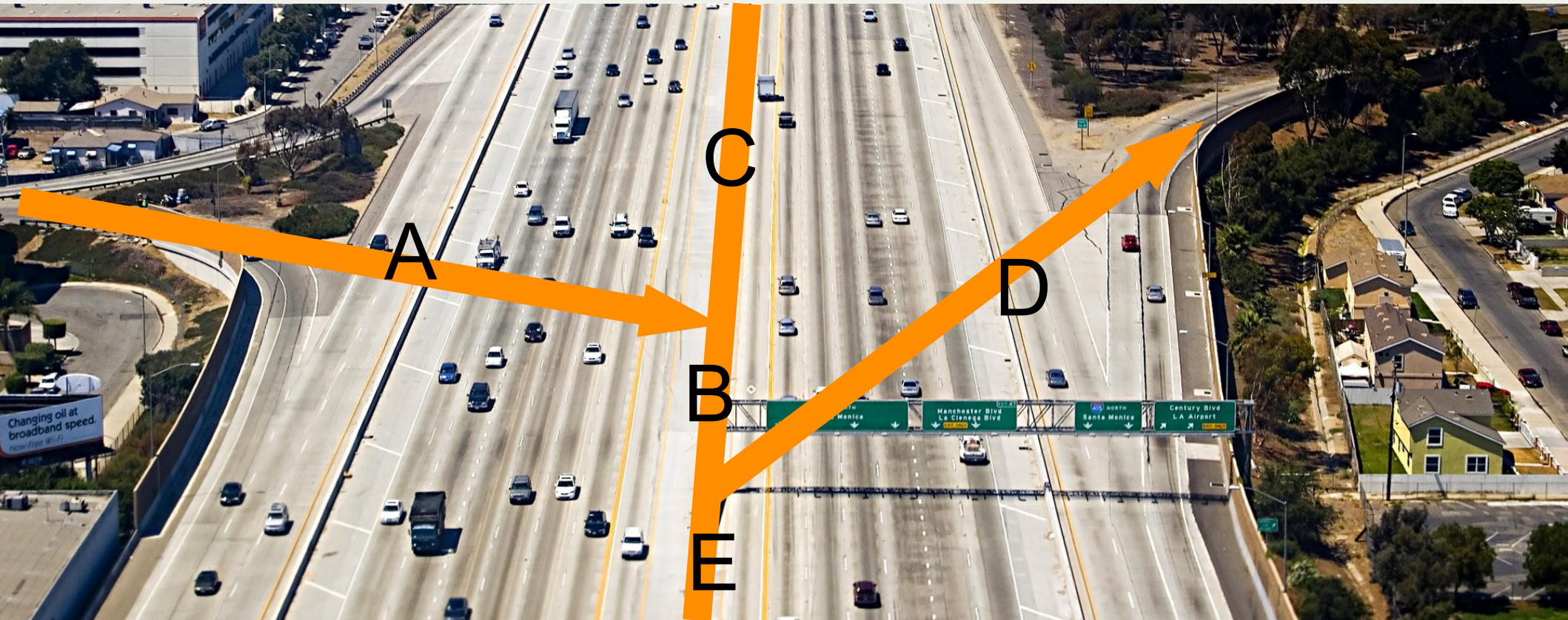
It also tells
you about
direction,



...road type...



... and restrictions.



rule(D)="A, B"
to_cost(D)= ∞

And not only that!

pgRouting cares about **dynamic cost**.

Which is opposite to **pre-calculated**.

If the road is closed, ...

**ROAD
AHEAD
CLOSED**



... there is an accident, ...



... a sign with
restriction **limited**
in time, ...





... bad weather conditions, ...

... or an obstacle, ...





You don't need to **reload** or **rebuild** your network...



... and wait forever.

You only need to **adjust** the **cost**
for **affected roads**.

And next search will go another way.



Cost can be virtually
anything.

- Utilisateur anonyme
- wagner51
- Gand'
- STA
- lapinos03
- mat
- Charlie Echo
- andrewpmk
- nin2jardin
- Marcussacapuces91
- Perthmd
- khris78
- Mieg Tenk
- eino
- ...393 others



It is possible to use **pgRouting** with **OSM data**.


```
SELECT query  
SELECT query  
SELECT query
```

There is tool named
osm2pgrouting.

Sorry, still no **turn**
restriction support.



pgRouting can be used for
other kinds of **networks**.

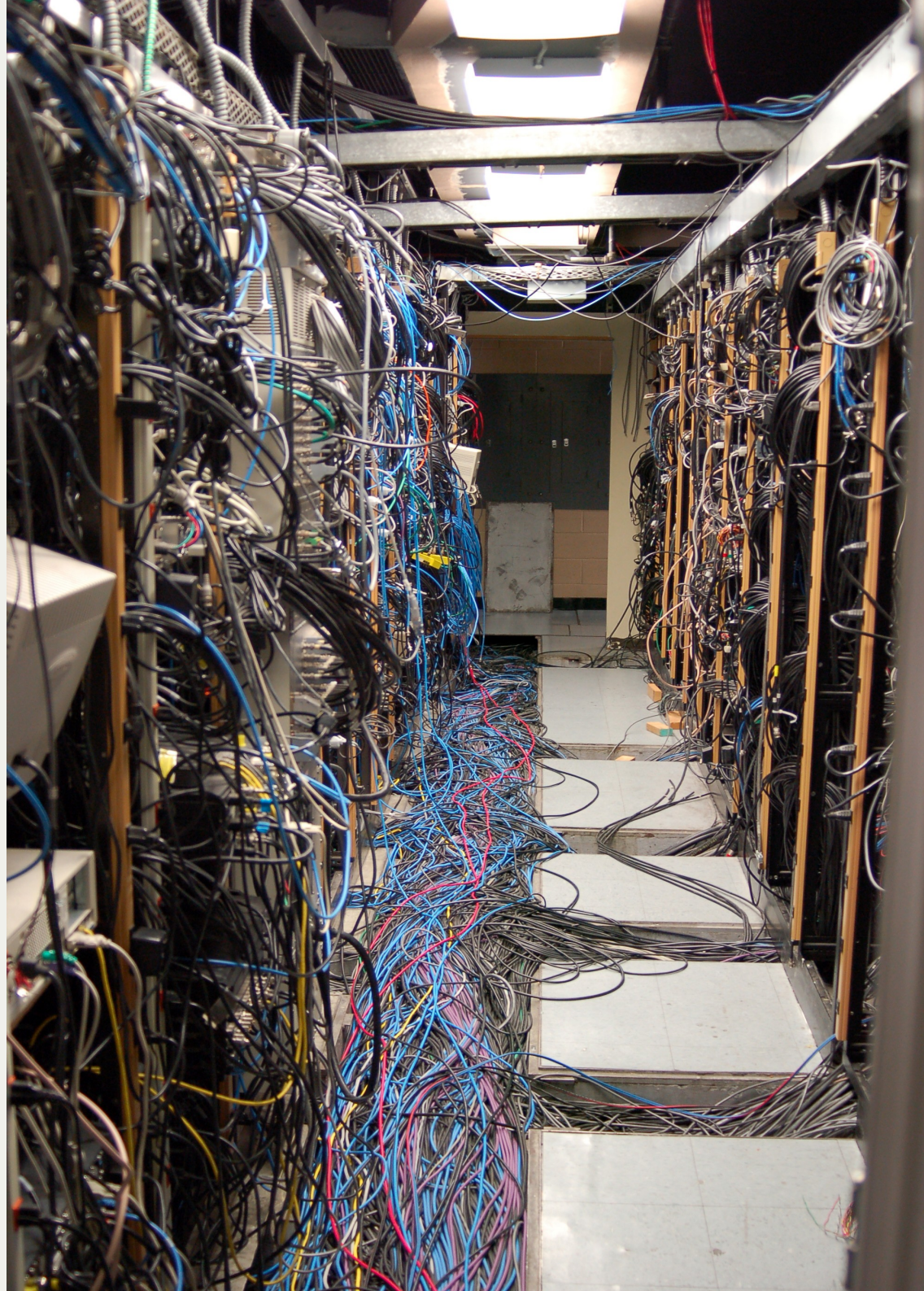
Canal or **river**
networks, ...



... **hiking trail**
networks, ...



... or any other kind of network.



Now it's **showtime!**

pgRouting was started by



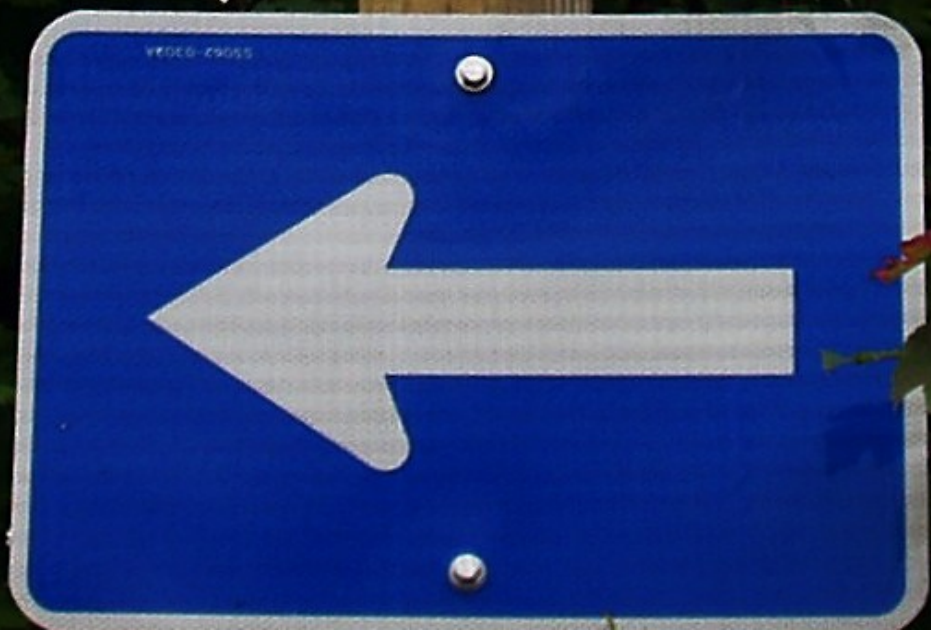
and continued by

Orkney

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Just want you to remember
pgrouting.postlbs.org



THANK YOU

