Interreg North-West Europe CHIPS

European Regional Development Fund

EUROPEAN UNION

BIKEVALLEY

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Flanders' Bike Vallley

CHIPS

Cycle Highway Assessment v4.0

What are cycle highways?

European definition

"A Cycle Highway is a mobility product that provides a high quality functional cycling connection. As backbone of a cycle network, it connects cities and or suburbs, residential areas and major (work)places and it satisfies its (potential) users."

ASSESSMENT van CYCLE HIGHWAYS on 22 CRITERIA

f.e comfort, directness, gamification, coherence (park&bike hubs), safety, self-explaining readability, sheltered…

ALL CRITERIA have 4 LEVELS (highest LEVEL = European Benchmark)

Goal of the CH Assessment?

- Assess AS IS CHs and future CHs
- Benchmark CH in other regions
- Compare and creation improvement plans based on CH Assessment
- CH Assessment = develop common language for CH Experts and CH Alumni
- CH Assessment contains FUTURE VISION >2020 (in LEVEL 3 & 4)
- Inspire & stimulate innovation

• Basics of the TOOL

- Excell TOOL
- Version 3.0 (1.0 at first CH Academy in Arnhem)
- CHANGES: now with SECTION APPROACH and VOCABULARY
- Low-barrier tool: only video-source is enough to use tool (PREDICTOR)
- For Detailed analysis - ECHO can be used

CYCLING HIGHWAY ASSESSMENT TOOL													**Tool Version**			**3.0**
													© Created by Bert Celis, Flanders' Bike Valley			
ASSESSORS:	*people doing the joint assessment; Full Name (Organisation),*															
DATE																
BASIC INFO																
CYCLE HIGHWAY (CH) NAME / IDENTIFICATION:							FROM:					TO:				
ASSESSED SITUATION**	*as is*	*to be*	*DATE (only for future CH)*													
TOTAL CH DISTANCE:		km														
COUNTRY:																
ROUTE-MAP*:	*link to picture or route on internet or to central CH site?*						*please print out on detailed A3 to do assessment !*									
VIDEO-SOURCE*:	*footage of CH e.g. on CH youtube channel, made by GoPro or Drone, or UPLOADED to KINOMAP*															
VR-SOURCE:	*Virtual Reality (open) source, e.g. on HTC Vive, Oculus Rift,…*															
** required for this high-level assessment*			***also future highways can be assessed*													

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- How it works?

(1) Read Criterium (2) Read Vocabulary (3) Assess

CRITERIUM		SCORE		LEVELING
1)	**AWARENESS**	3	1	You have a Cycle Highway with no name and no identity
			2	The route has a identity (name /signs are used locally on parts of the CH)
	from the perspective of non CH users or potential users		3	The CH has a Regional Identity, brand name, with regional scale factors
	branding & identity (e.g. by signs, all brand touch points)		4	The CH uses a unified branding the National or preferably European Identity and brand with scale factors, website
2)	**READABILITY in INFRASTRUCTURE**	3	1	There are some readability elements and you can find the road (but some stops are needed for new users to look for the road)
	readability elements: surface colors, landscape markers, road sig		2	There are readability elements and new users can find the way without stopping
			3	Level 2 + advanced information on direction is given before crossings / decision points
			4	The CH has at least 2 continuously recognisable readability elements
3)	**COHERENCE - CONNECTIONS**	2	1	CH connects 2 cities (or a city with a suburb, major workplace, etc.) at the start and end of the route
	connections by HUBs to road, train, bus, other bicycle networks		2	CH starts and end at pivotal points in the connected area and has no more than 50% missing links
			3	CH starts and end at pivotal points in the connected area and has no more than 25% missing links
			4	CH starts and ends at pivotal points in the connected area and has no more than 10% missing links and contains state-of-the-art **PARK&BIKE HUBS** for Modal changes

Related to Criteriumnr	VOCABULARY CYCLE HIGHWAY	Explanation
0	Sections/Segments	A logical part of the cycle path to be assessed separately,preferably around 5km and the start is in a logical place
1	Awareness	Branding & identity (e.g. by signs, brand touch points), brand awareness of the CH, from the perspective of non or potential users
2	Readability	Readability in infrastructure (by signs and road color) but also readabiltiy in awareness (knowing that it's there, brand recognition)
2	Readability elements	Like surface colors, landscape markers, road signs, lamp design, horizontal marking…
2	Landscape markers	Railways, Canals, Rivers, Motorway,gas pipeline, coast (that are followed by the CH)
3	Pivotal point	Start point or end point of the CH
3	Missing links	Missing links; connections to public transport (train station, bus) and car parking, to the local cycle network
3	Missing links	Count the missing links as; two public transport links at start and two public transport links at the end , each village within 3km range: at least one link by bike
3	Public transport	bus station, train station, metro, ferry (excluded: airport)
3	Park&Bike HUB	Location where you change your transport modus, but focuses on Modal change for Bikers (f.e. contains bike sharing hub,…)

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- How it works?

New: SECTION APPROACH !

	yellow = automated				SECTIONS				
	do not fill in yellow zones				1	2	3	4	5
	SECTION DISTANCE (km)			25	5	5	5	5	5
NR	CRITERIUM	**WHAT TO COUNT ?**	LEVEL	WEIGHTED AVERAGE SCORE					
5	DIRECTNESS in TRAVEL TIME	NUMBER of sharp curves or design speed problems per section	3	2,40	1	5	0	0	0
6	DIRECTNESS in INTERRUPTIONS	NUMBER of interruptions per section	3	2,00	0	4	1	0	0
7	ROAD SAFETY INTERSECTIONS	NUMBER of dangerous intersections per section	3	0,40	0	1	0	0	0
8	ROAD SAFETY - WIDTH	KMs of good width per section	3	38%	1	2,4	2	2	2
9	ROAD SAFETY - SEP. from PARALLEL TRAFFIC	KMs of safe separated section in km per section	0	36%	1	2	2	2	2
10	ROAD SAFETY - OBSTACLES	NUMBER of obstacles (but always clearance >0,9m !)	4	0,8	1	0	1	0	0

THREE STEPS:

1) DIVIDE CYCLE HIGHWAY IN LOGICAL SECTIONS
2) COUNT FOR EVERY SECTION (See WHAT to COUNT ?)
3) WEIGHTED AVERAGE AND LEVEL IS AUTOMATICALLY CALCULATED

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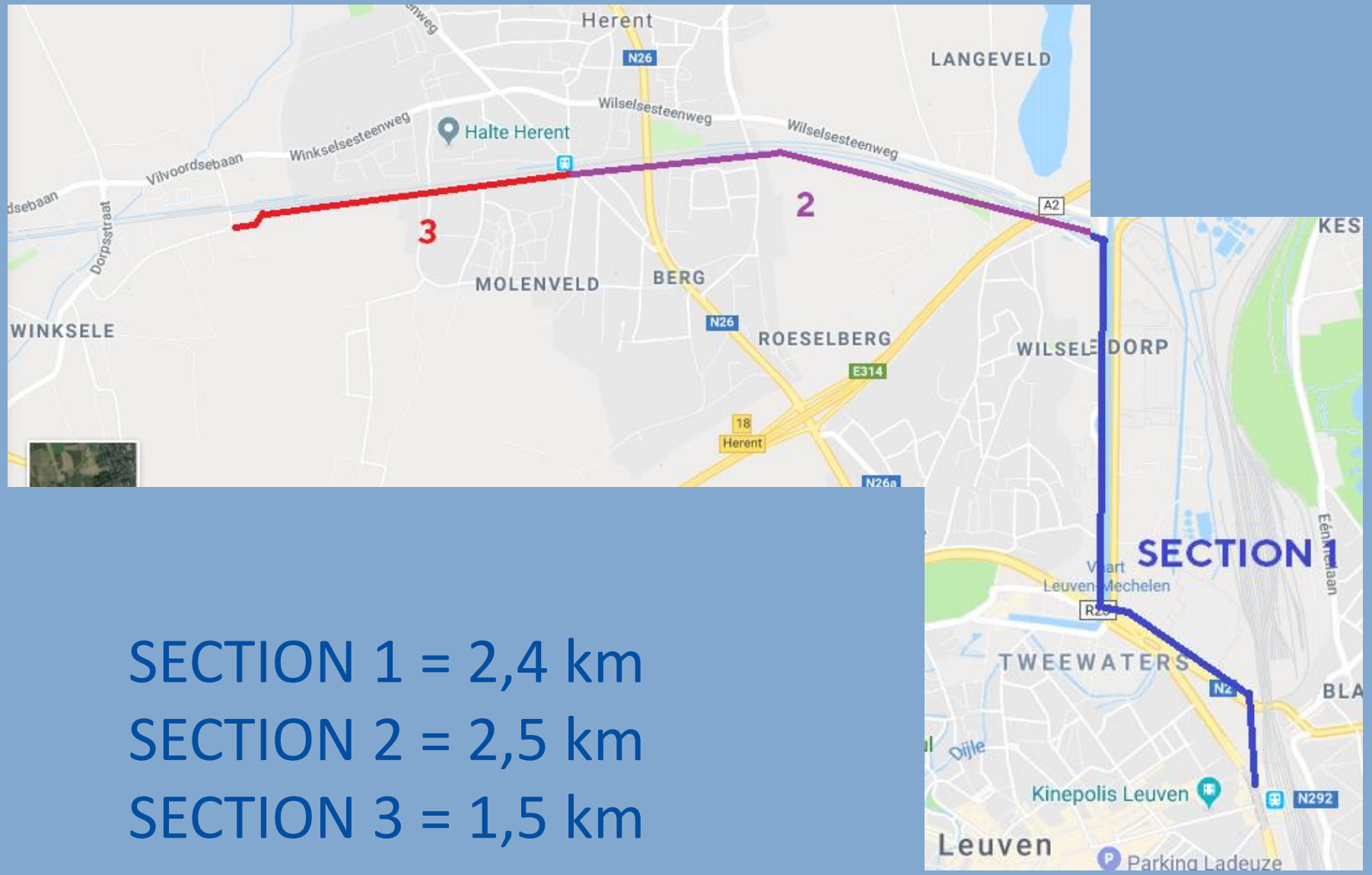
GOAL of the EXERCISE in the EXCURSION

TESTING THE SECTION APPROACH;

- Understanding what to count
- See if and how this works in the field

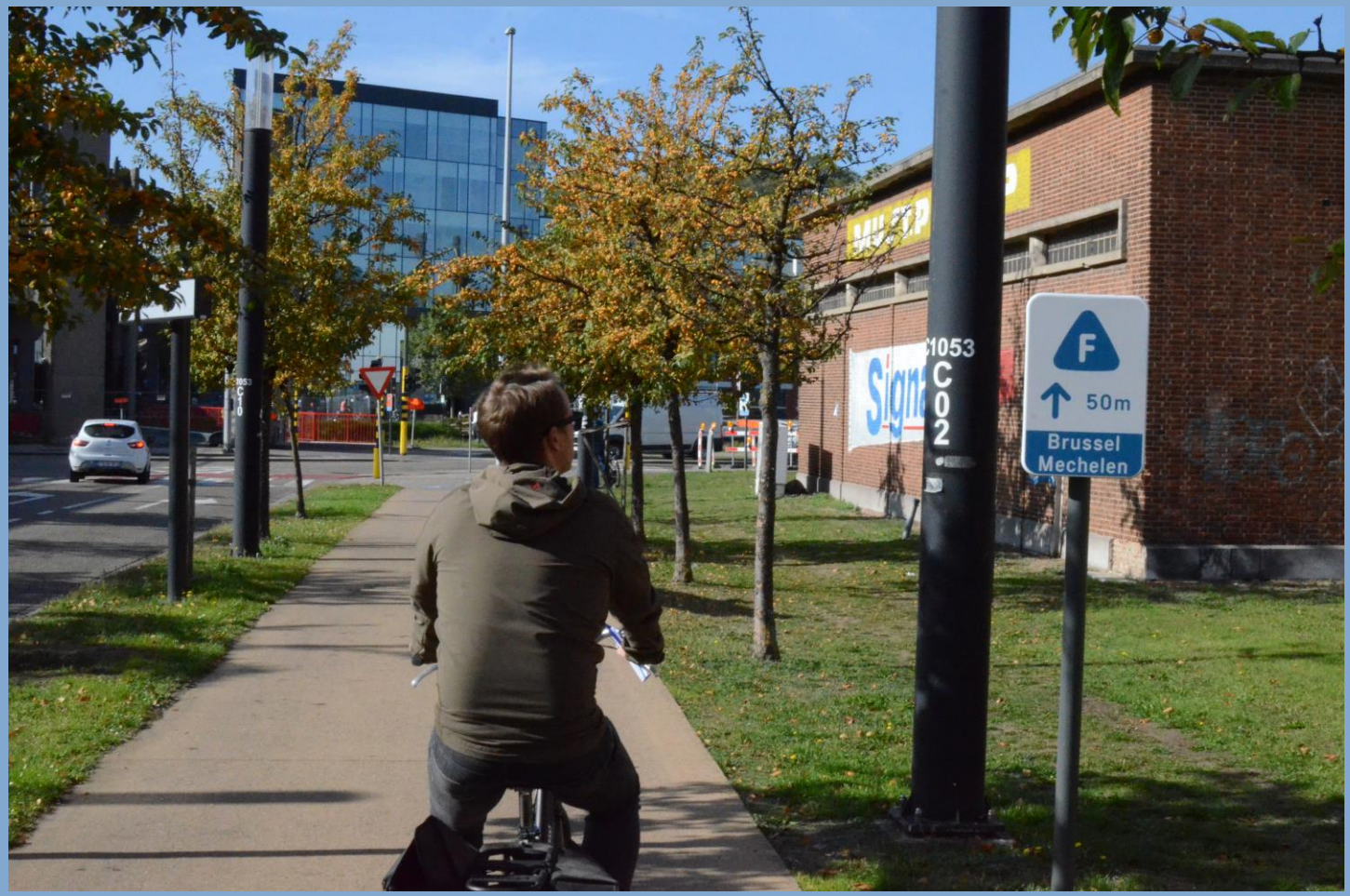
SECTIONS



SECTION 1 = 2,4 km
SECTION 2 = 2,5 km
SECTION 3 = 1,5 km

Starting point SECTION 1

Attractive Cycling in Section1



The End of Section 1

End of section 2
(after Station Herent)

End of Section 3

4)	**DIRECTNESS in DISTANCE**	4	1	The CH is not following the shortest route at all but takes a lot of deviations
			2	The CH follows the shortest route and is in fact less than 20% different as the crow flies (vogelvluchtafstand)
			3	The CH follows the shortest route and is in fact less than 15% different as the crow flies (vogelvluchtafstand)
			4	The CH follows the shortest route and is in fact less than 10% different as the crow flies (vogelvluchtafstand)
5)	**DIRECTNESS in TRAVEL TIME**	3	1	The CH has less than 20 sharp curves per 10 km (=total distance vs total amount of stops)
	Count the number of design speed problems (excl interruptions)		2	The CH has between 5 - 10 design speed (fe sharp curves) problems per 10km
			3	The CH has between 1-5 design speed problems (sharp curves) per 10km
			4	The CH is an example of high design speed and has on average less than 1 sharp curve per 10km
6)	**DIRECTNESS in INTERRUPTIONS**	3	1	The CH has less than 20 stops/interruptions per 10 km (=total distance vs total amount of stops)
	potential full stops		2	The CH has between 5 - 10 stops per 10km
			3	The CH has between 1-5 stops per 10km
			4	The CH is an example of giving priority to cyclists and has on average less than 1 stop per 10km
7)	**ROAD SAFETY - INTERSECTIONS**	3	1	There are between 5 and 10 dangerous intersections per 10km
	Dangerous intersection = no traffic lights or bicycle warning syste		2	There are more than 2 and up to 5 dangerous intersections per 10 km
	Be critical for your own intersections		3	There are less than 2 dangerous intersections per 10 km
	traffic (non parallel)		4	There are no dangerous intersections
8)	**ROAD SAFETY - WIDTH**	3	1	The width is at least 2 meters everywhere (minimum condition) and 1,5m for one direction
	Judge each section and fill in km of good section		2	The width is for more than 50% judged as a good section but less than 95% OK (the average troughput but througput is OK)
	a good section; where you have at least 3m space (bidirectional p		3	The width has been optimized regarding the througput and generally the CH is large enough (>95% of its length)
			4	The Cycle highway has multiple lanes (2x2) and separates fast (>25km/h) from slow moving traffic (<25km/h)
9)	**ROAD SAFETY - Separation & parallel traffic**	0	1	The CH has more than 80% safe sections
	safe section = where you have separeted cycle path or mixed tra		2	The CH has more than 90% safe sections but less than 95% safe sections
	Fill in the safe separated section in km per section		3	The CH has more than 95% safe sections but less than 100% safe sections
			4	The CH is separeted from the main road and has at least 2 lanes in 2 directions and 100% safe sections
10)	**ROAD SAFETY - Obstacles**	4	1	There are more than 10 obstacles per 10km on the CH but all obstacles have a minimum clearance of 0.9m/direction
	Obstacles: poles, fences, cattle grids, parked cars etc		2	There are obstacles (all with minimum clearance and marked/visible) but the amount of obstacles is less than 10 per 10km
	Count the obstacles per section		3	There are obstacles (all with minimum clearance and marked/visible) but the amount of obstacles is less than 5 per 10km
			4	There are obstacles (all with minimum clearance and marked/visible) but the amount of obstacles is less than 1 per 10km

Cycle Highway Assessment
Criterium 1
DIRECTNESS in DISTANCE

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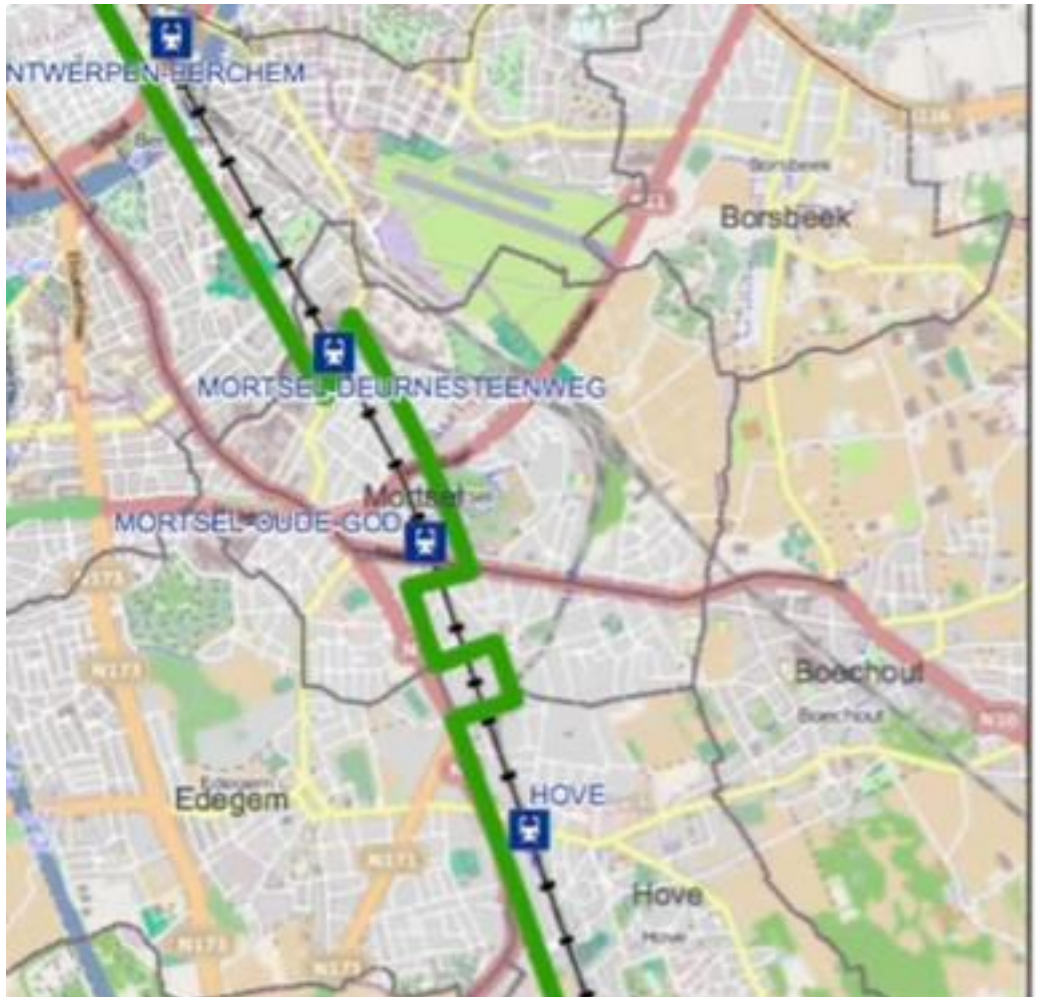
Assessment by google maps or routemap vs bird flight distance



Cycle Highway Assessment
Criterium 2
DIRECTNESS in TRAVEL TIME

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European Regional Development Fund

Assessment by counting sharp curves; can you really cycle >30km/u?

DESIGN SPEED < 20 km/u

Cycle Highway Assessment
Criterium 3
DIRECTNESS in INTERRUPTIONS

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European Regional Development Fund

Assessed by the amount of stops or per 10km
=> Count the stops or potential stops per section

https://www.nederweert24.nl/2015/04/10/extra-stoplicht-voor-voetgangers-op-ringbaan-oost/

Cycle Highway Assessment
Criterium 4
ROAD SAFETY - intersections

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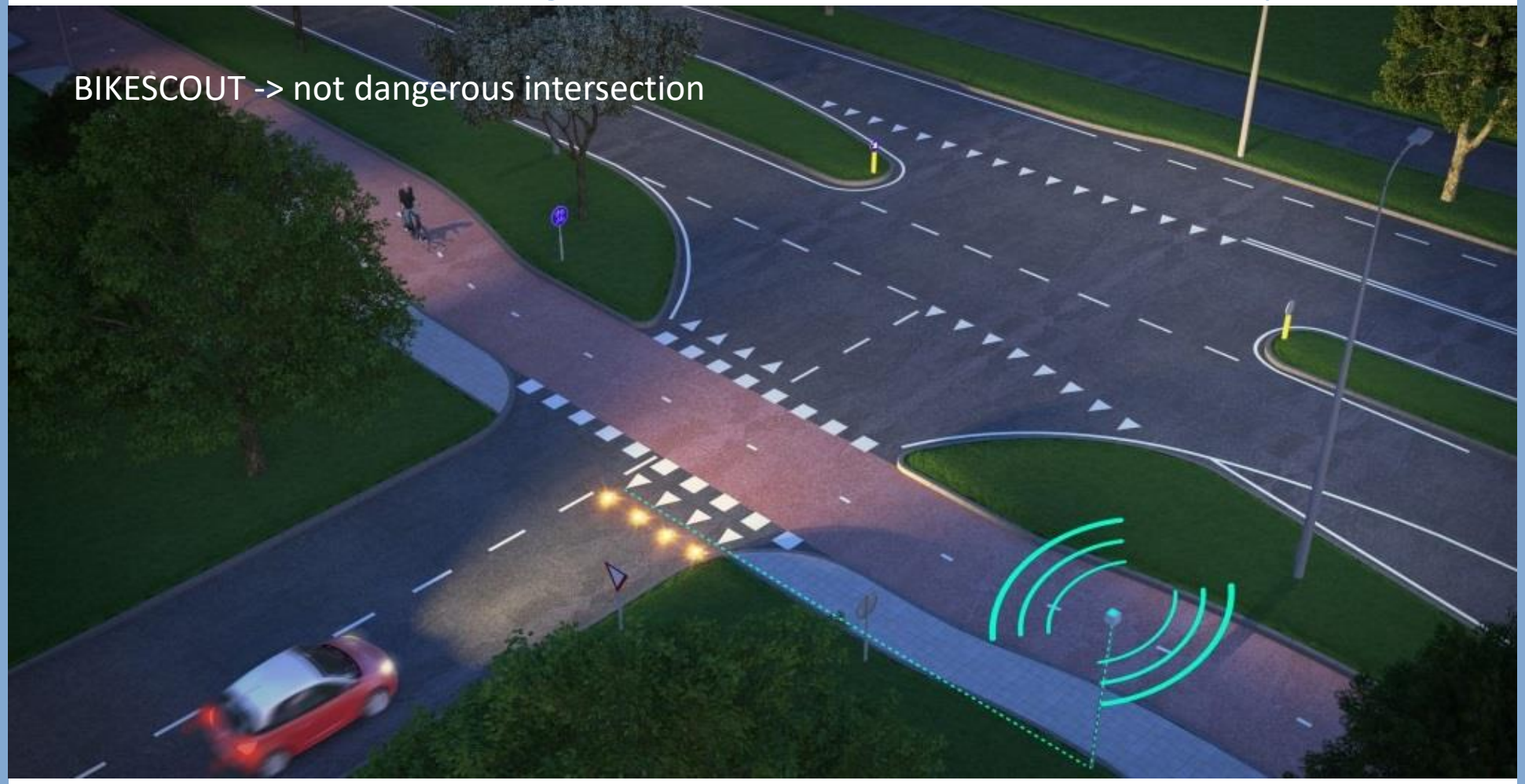
Count the number of dangerous intersections (see vocabulary)



Cycle Highway Assessment
Criterium 5
ROAD SAFETY - width

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Made simple => >3 meters – bidirectional and 2x2m for separate lanes

http://www.fietsroute.org/fietssnelwegen

Cycle Highway Assessment
Criterium 6
ROAD SAFETY – separation & parallel traffic

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http://deredactie.be/cm/vrtnieuws/binnenland/1.1991603

Cycle Highway Assessment
Criterium 7
ROAD SAFETY - obstacles

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European Regional Development Fund

Bike lane Borgerhout, Belgium

http://www.hln.be/regio/nieuws-uit-borgerhout/elektriciteitscabine-staat-plots-midden-op-fietspad-a3160626/

Cycle Highway Assessment
Criterium 7
ROAD SAFETY - obstacles

Bike lane Asse, Belgium

http://deredactie.be/cm/vrtnieuws/binnenland/1.1991603

Cycle Highway Assessment
Criterium 8
ROAD SAFETY – lighting and reflection and visibility

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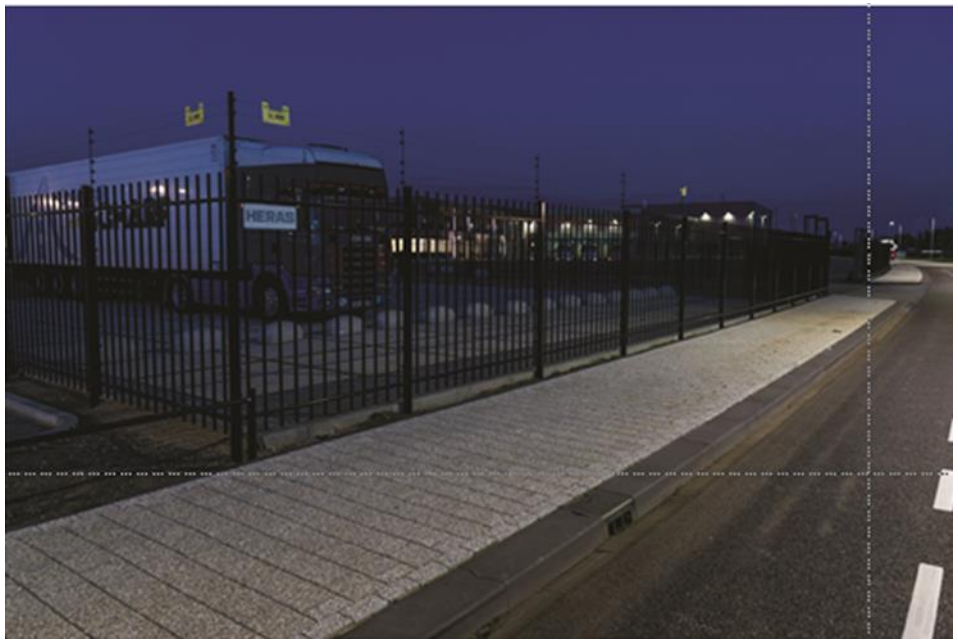

E.g. RETROFLEX light reflecting surface
by Stradus Infra

Cycle Highway Assessment
Criterium 9
COMFORT – surface rideability

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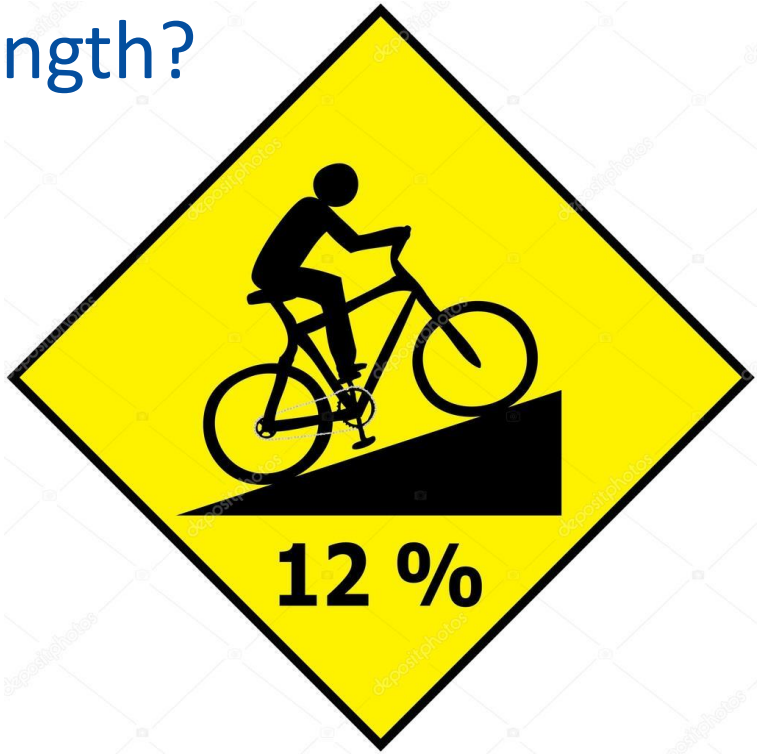
Oude Kwaremont

http://www.podiumcafe.com/2017/4/5/15188154/wednesday-update-and-an-ode-to-the-oude

Cycle Highway Assessment
Criterium 10
COMFORT – SLOPES COUNT

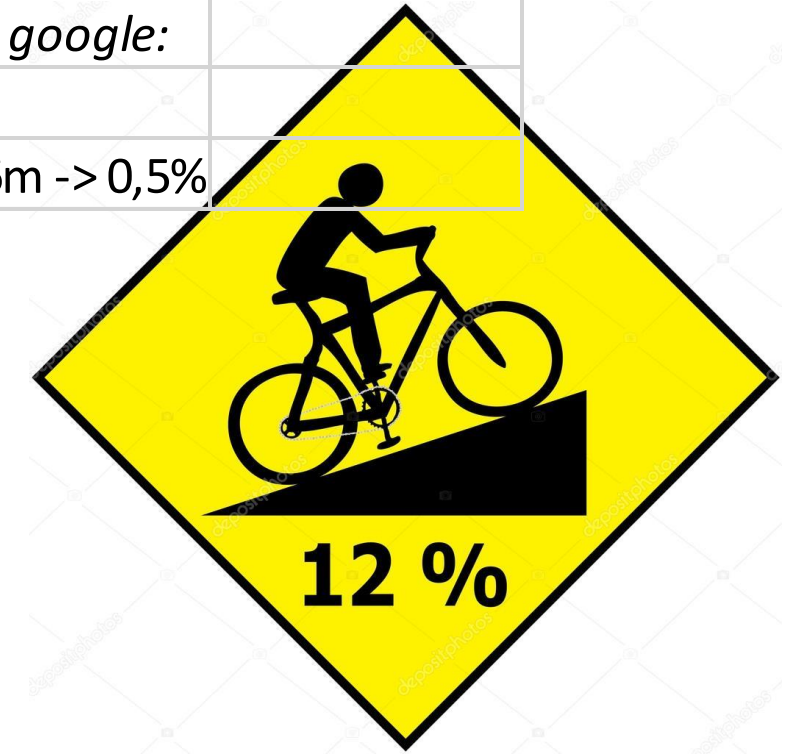
>5% >20m length?



https://nl.depositphotos.com/49186947/stock-illustration-bicycle-traffic-sign-show-uphill.html

Cycle Highway Assessment
Criterium 11
COMFORT - gradient

average elevation by height meters from google:			
	sum descending + ascending:		
	Zaventem-Leuven (21km): 106m -> 0,5%		



https://nl.depositphotos.com/49186947/stock-illustration-bicycle-traffic-sign-show-uphill.html

Cycle Highway Assessment
Criterium 12
COMFORT - sheltering

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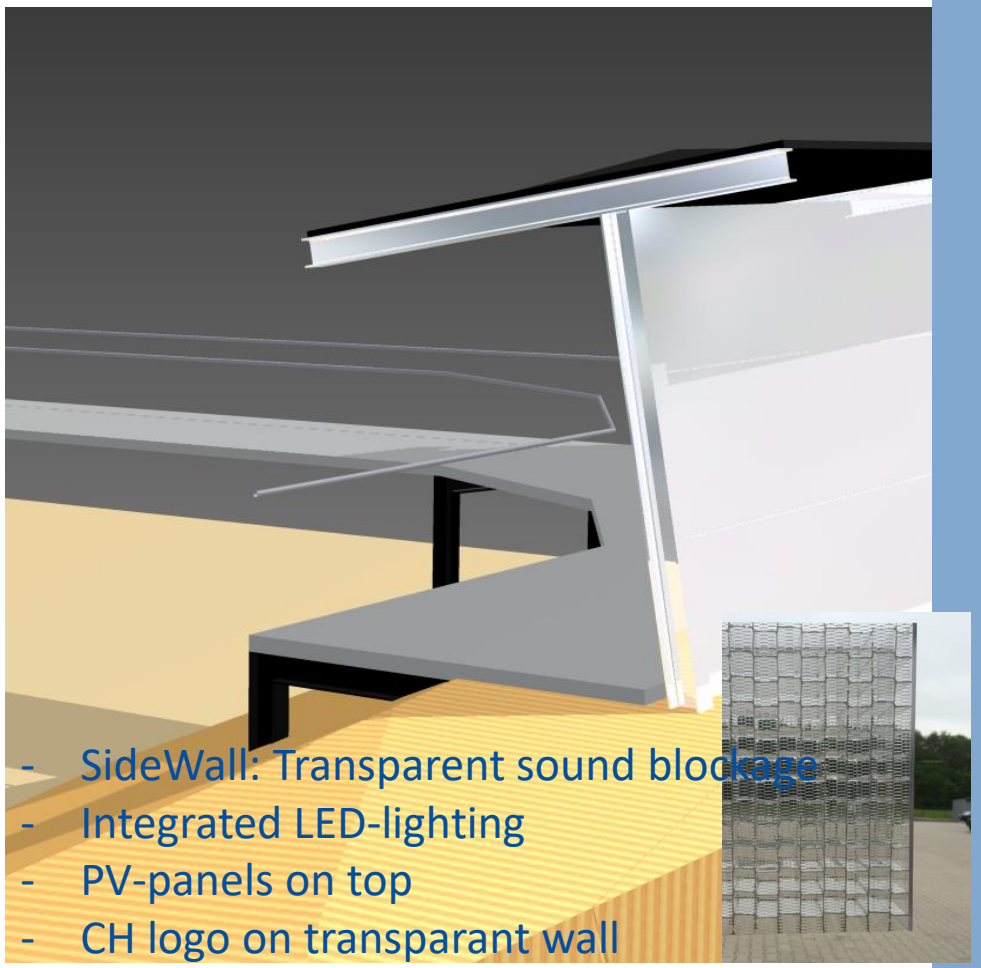
f.e. sheltering by PV-panels & sound barriers – joining Business Cases

CURRENT SOLAR PARK INVESTMENTS

PPS-construction for PV-panels &
cycle roads in backyards?



Cycle Highway Assessment
Criterium 12
COMFORT - sheltering

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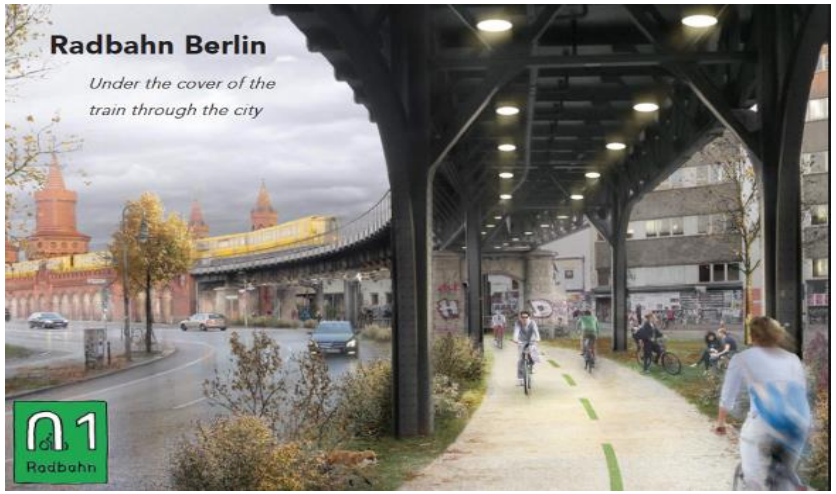
Examples: South Korea – 28kms; city connection Daejeon - Sejong



I am conflicted. I love the idea of inter-city bike infrastructure being provided, the shading and protection from the solar canopy is a big help, and of course the bonus of the clean solar power. But it seems like a terrible place to ride a bike. What do you think?

Thank you for voting!

YES! solar power, bike lane, shade, what's not to love?	46.06%
No, what a terrible smelly loud place to put a bike lane.	17.63%
Maybe, it is a little bit of both.	35.01%
Other (in comments)	1.3%

Cycle Highway Assessment
Criterium 13
COMFORT - services

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Toilet, pub, reparation, logistic services, bike sharing, emergency service, etc.

Cycle Highway Assessment
Criterium 14
ATTRACTIVENESS in spatial context/environment

Cycling along Winchester's landmarks, UK

http://www.telegraph.co.uk/travel/destinations/europe/united-kingdom/england/articles/Cycling-the-backroads-of-southern-England/

Cycle Highway Assessment
Criterium 15
ATTRACTIVENESS in monotonity

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Cycle Highway Assessment
Criterium 16
ATTRACTIVENESS – social safety

Cycle Highway Assessment Criterium 17 ATTRACTIVENESS – health, pollution & hinderance

A cyclist looks for traffic as he enters the bike lane on Queen Kaahumanu Hwy on Thursday. Laura Shimabuku/West Hawaii Today

Cycle Highway Assessment Criterium 18 ATTRACTIVENESS – activation & stimulation

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APPS: Strava, cyclemaps, map my ride,…

route you
www.routeyou.com

Ambassify
COMMUNITY-DRIVEN GROWTH

MapMyRIDE

VR

Cycle Highway Assessment
Criterium 19
ACCESSIBILITY 24/7 12/12

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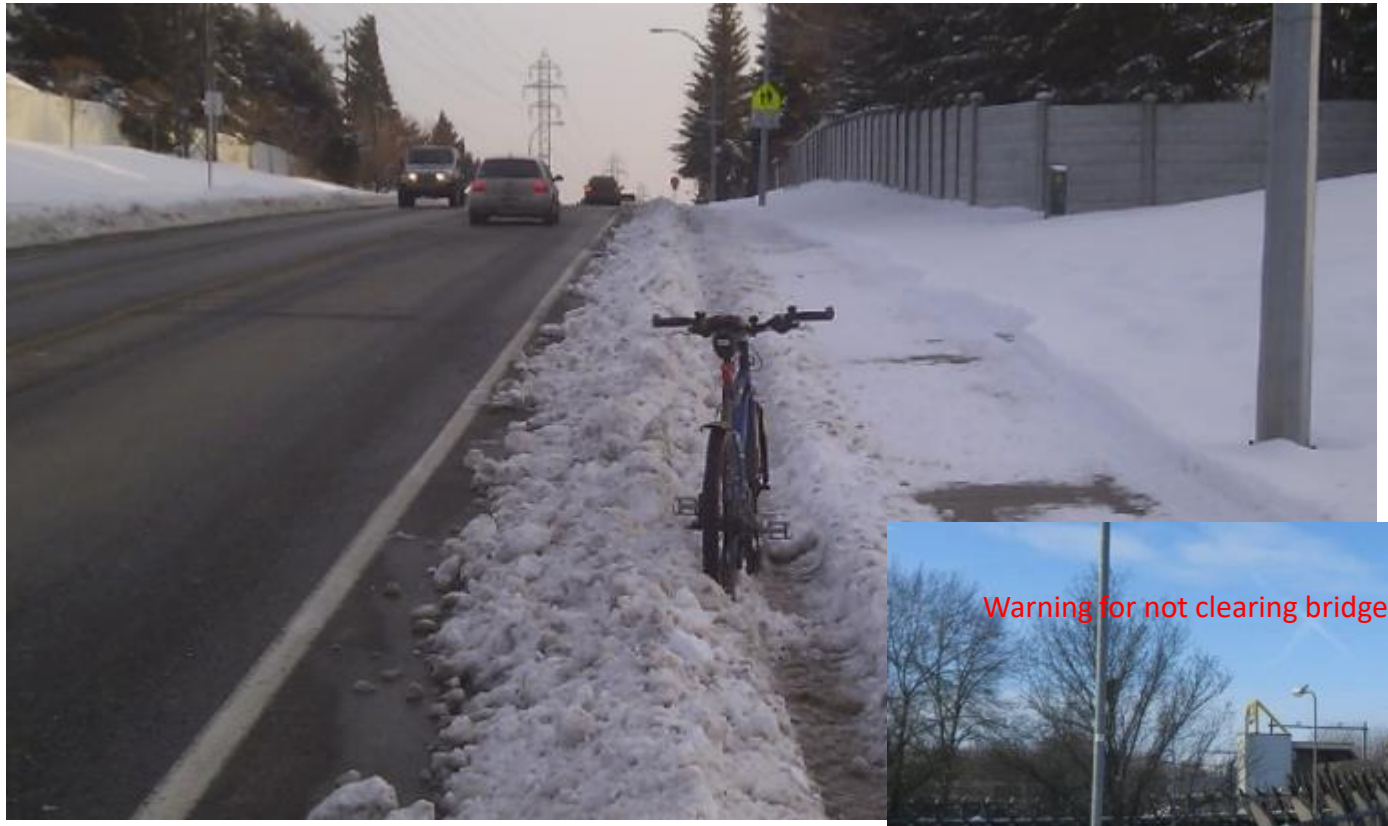

Cycle Highway Assessment
Criterium 20
AWARENESS

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Eén logo, één identiteit

f.e. F5 = Antwerpen - Hasselt

Als je dit logo ziet, dan weet je dat je op een fietssnelweg - of fietsostrade - bent. Of in de buurt ervan. Het is meer dan louter signalisatie. Het logo geeft de fietssnelwegen een eigen identiteit. Met uitgekiende bouwstenen in dezelfde huisstijl kunnen wegbeheerders aan de slag om fietssnelwegen heel herkenbaar te maken, met meer veiligheid en meer comfort. Zo kan de fietser de route intuïtief volgen, begrijpen en gebruiken. Zoals een autosnelweg.

Het logo is een initiatief van de vijf Vlaamse provincies en is een ontwerp van designer Stefan Schöning.

Cycle Highway Assessment
Criterium 20
AWARENESS

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Fietssnelwegen.be

f.e. F5 = Antwerpen - Hasselt

Cycle Highway Assessment
Criterium 20
AWARENESS

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Cycle Highway Assessment
Criterium 20
AWARENESS
(also awareness for other vehicles)

Cycle Highway Assessment
Criterium 21
COHERENCE – INFRASTRUCTURE READABILITY

(Consider horizontal markings / vertical markings / landscape markings)

Cycle Highway Assessment
Criterium 22
COHERENCE – CONNECTIONS
e.g. Park&Bike HUB, Mobility HUB

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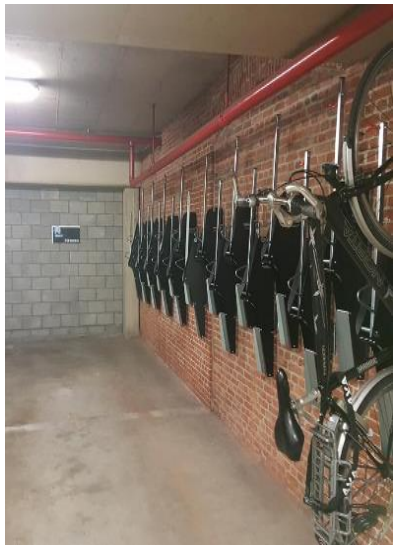
Connections to road, train, bus and bicycle network
Count missing links at pivotal points

Cycle Highway Assessment
Criterium 22
COHERENCE – CONNECTIONS
e.g. Park&Bike HUBS: smart storage

Gridbox

Veloboxx , also in e-Veloboxx



VeloWup

Cycle Highway Assessment
Deleted criterium = SUSTAINABILITY

F.E. SKELLET – FULLY RE-USABLE COMPONENTS (CIRCULAR-infrastructure)

EXERCISE

- EVALUATE LEVELS – setting of European level

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Thank you!