Bert Celis
Flanders' Bike Vallley

CHIPS

Cycle Highway Assessment v3.0

BIKEVALLEY

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,…)

How it works?

New: SECTION APPROACH !

						SECTIONS				
	yellow = automated						1	2	3	4	5
	do not fill in yellow zones										
	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

BIKEVALLEY

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GOAL of the EXERCISE in the EXCURSION
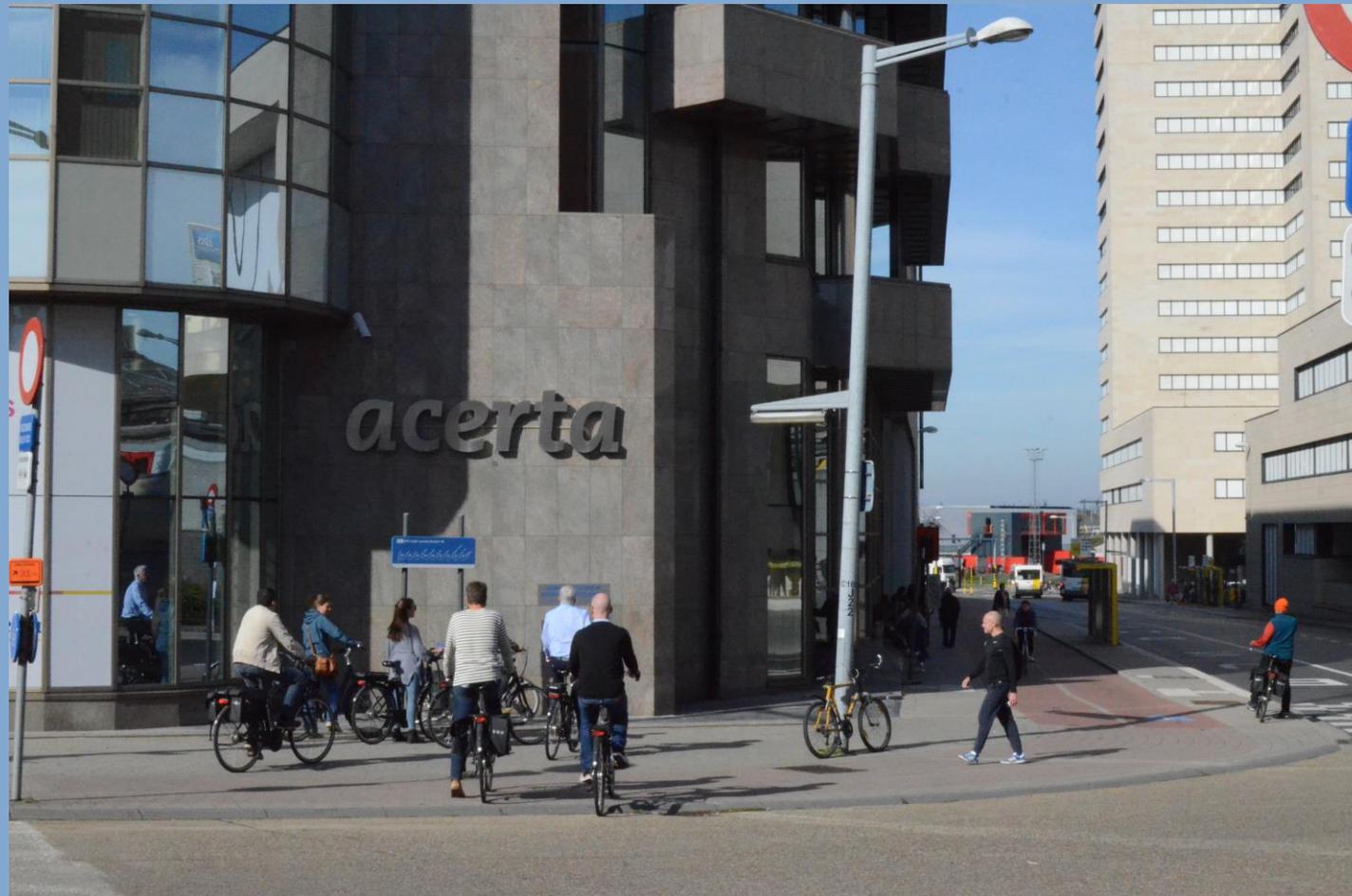
TESTING THE SECTION APPROACH;

- 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
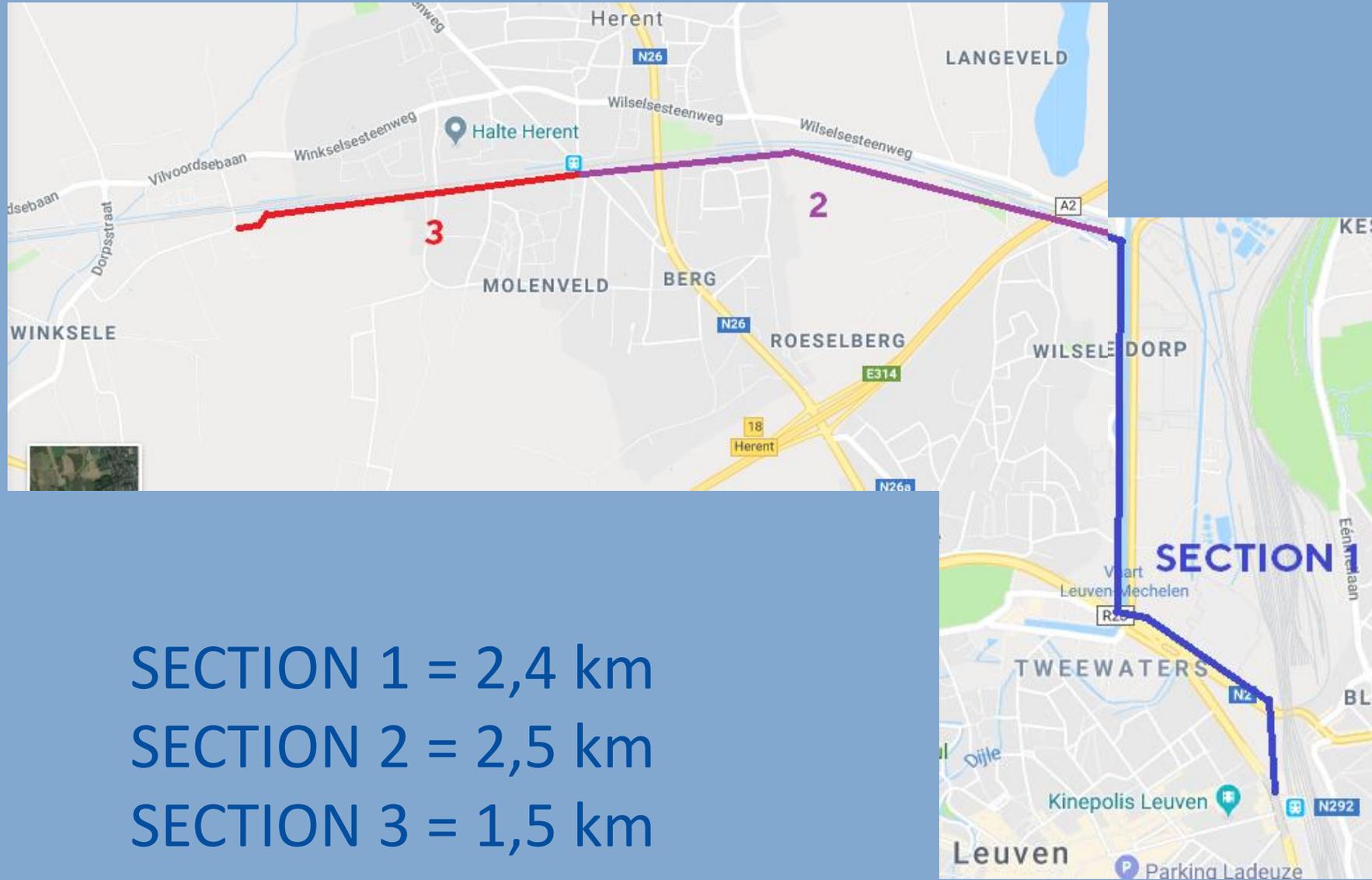
Starting point SECTION 1

Attractive Cycling in Section1

The End of Section 1

End of section 2
(after Station Herent)

End of Section 3

Cycle Highway Assessment
Criterium 1
AWARENESS

f.e. F5 = Antwerpen - Hasselt

Eén logo, één identiteit

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.

De letter F van fietssnelweg of fietsostrade. Na de F kan de unieke code van een fietssnelweg worden vermeld. De combinatie van een letter met een getal laat de mogelijkheid open om in een ander land of taalgebied een andere letter te gebruiken. De C van cycle, bijvoorbeeld.

De driehoek symboliseert een fietszadel. Een handige vorm die ook kan dienen om een richting aan te geven.

Een unieke code van 1, 2 of 3 cijfers. Iedere Vlaamse fietssnelweg kreeg een eigen nummer. Een nummer maakt communiceren over een route gemakkelijk. Ook voor routeplanners zijn codes erg handig.

Het logo heeft een hemelsblauwe kleur. Lichter dan de standaard blauwe kleur uit de wegcode om duidelijk het verschil te maken. Maar ook een logische variant: lichter in het verkeer, dus sneller en vlotter, onder de blote hemel.
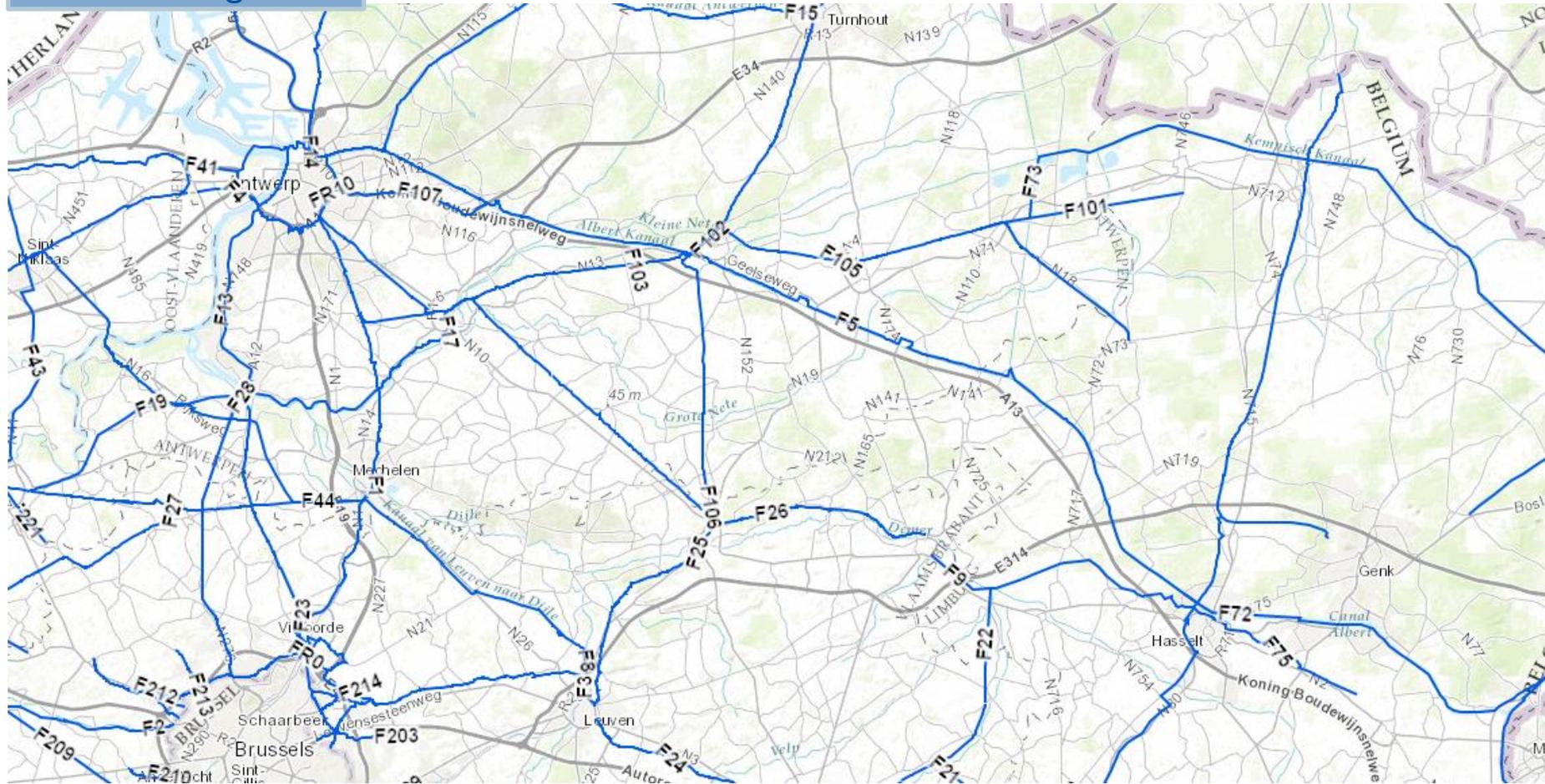
F 123

Cycle Highway Assessment
Criterium 1
AWARENESS

Interreg
North-West Europe
CHIPS
European Regional Development Fund

f.e. F5 = Antwerpen - Hasselt

Fietssnelwegen.be

Cycle Highway Assessment
Criterium 1
AWARENESS

Cycle Highway Assessment
Criterium 1
AWARENESS
(also awareness for other vehicles)

Cycle Highway Assessment
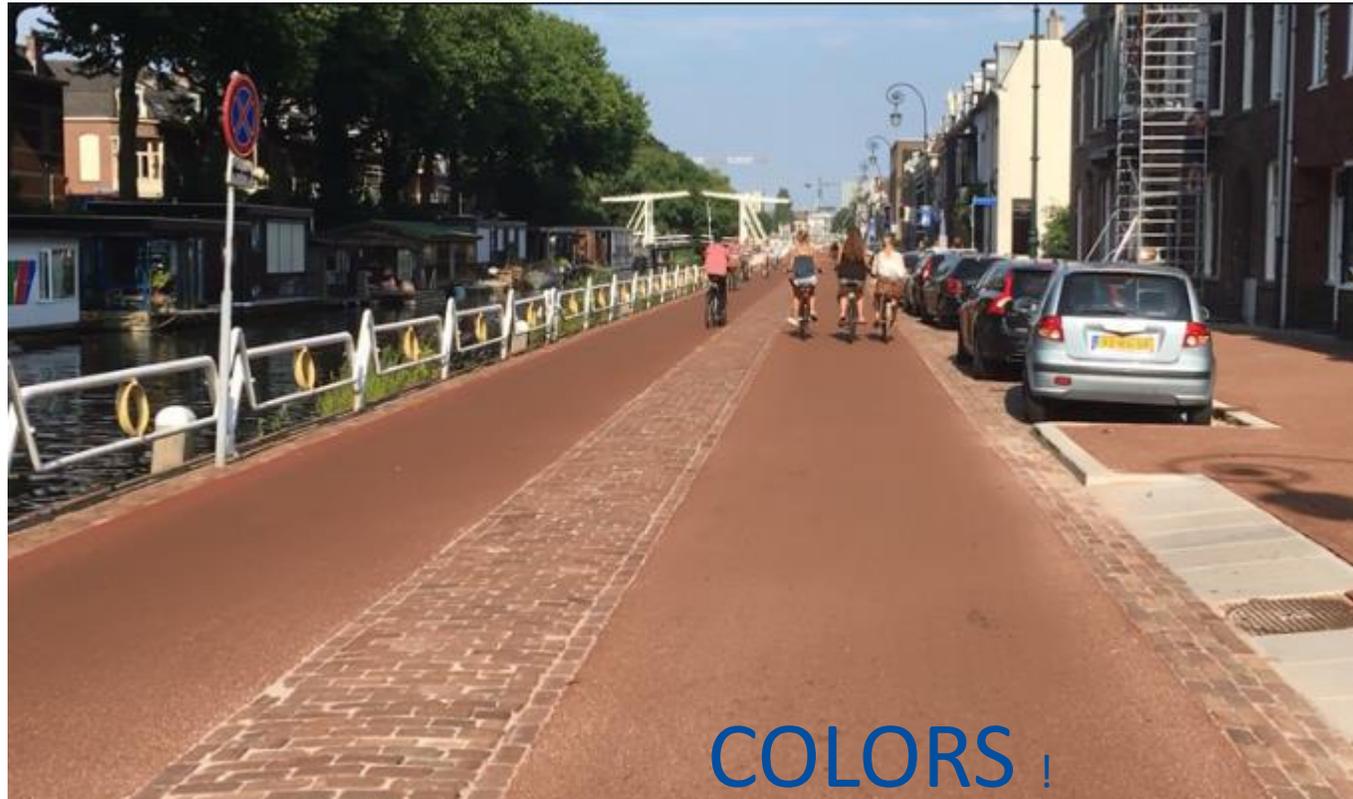## Criterium 2
COHERENCE – INFRASTRUCTURE READABILITY (no signs)

COLORS !

Cycle Highway Assessment Criterium 3
COHERENCE – CONNECTIONS
e.g. Park&Bike HUB, Mobility HUB

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

Cycle Highway Assessment
Criterium 3
COHERENCE – CONNECTIONS
e.g. Park&Bike HUBS: smart storage

Interreg
North-West Europe
CHIPS
European Regional Development Fund

Gridbox

Veloboxx , also in e-Veloboxx

VeloWup

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 syster		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 throughput 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 4
DIRECTNESS in DISTANCE

Assessment by google maps or routemap vs bird flight distance
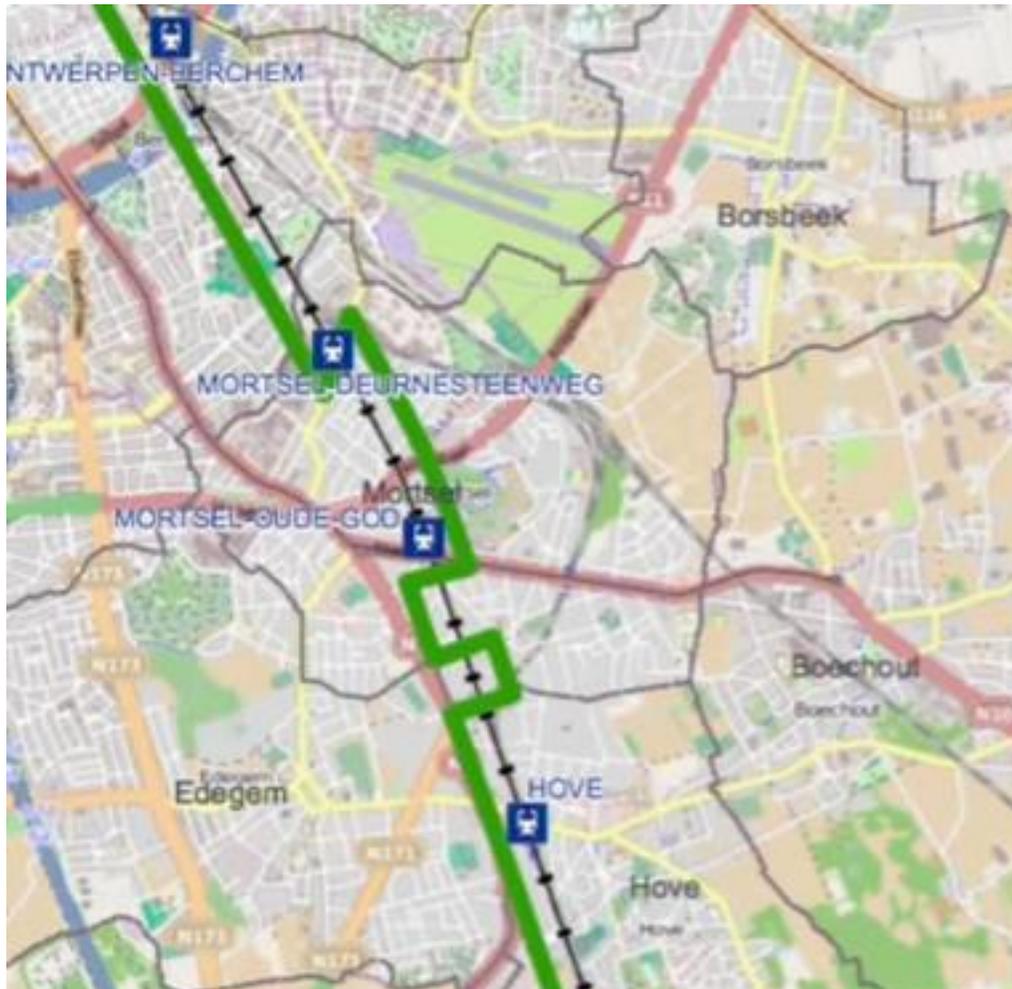
Cycle Highway Assessment
Criterium 5
DIRECTNESS in TRAVEL TIME

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

DESIGN SPEED < 20 km/u

Cycle Highway Assessment
Criterium 6
DIRECTNESS in INTERRUPTIONS

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 8
ROAD SAFETY - width

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

http://www.fietsroute.org/fietssnelwegen

Cycle Highway Assessment
Criterium 9
ROAD SAFETY – separation & parallel traffic

Cycle Highway Assessment
Criterium 10
ROAD SAFETY - obstacles

Bike lane Borgerhout, Belgium

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

Cycle Highway Assessment
Criterium 10
ROAD SAFETY - obstacles

Bike lane Asse, Belgium

Cycle Highway Assessment Criterium 11
ROAD SAFETY – lighting and reflection and visibility

E.g. RETROFLEX light reflecting surface
by Stradus Infra

Cycle Highway Assessment
Criterium 12
COMFORT – surface rideability

Oude Kwaremont

Cycle Highway Assessment
Criterium 13
COMFORT – SLOPES COUNT

>5% >20m length?

12 %
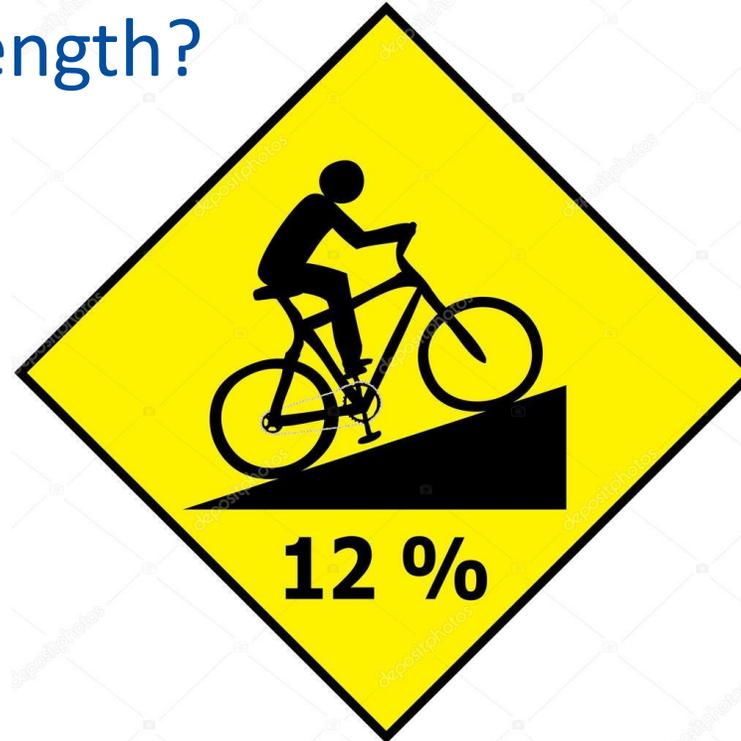
average elevation by height meters from google:		
	sum descending + ascending:	
	Zaventem-Leuven (21km): 106m -> 0,5%	
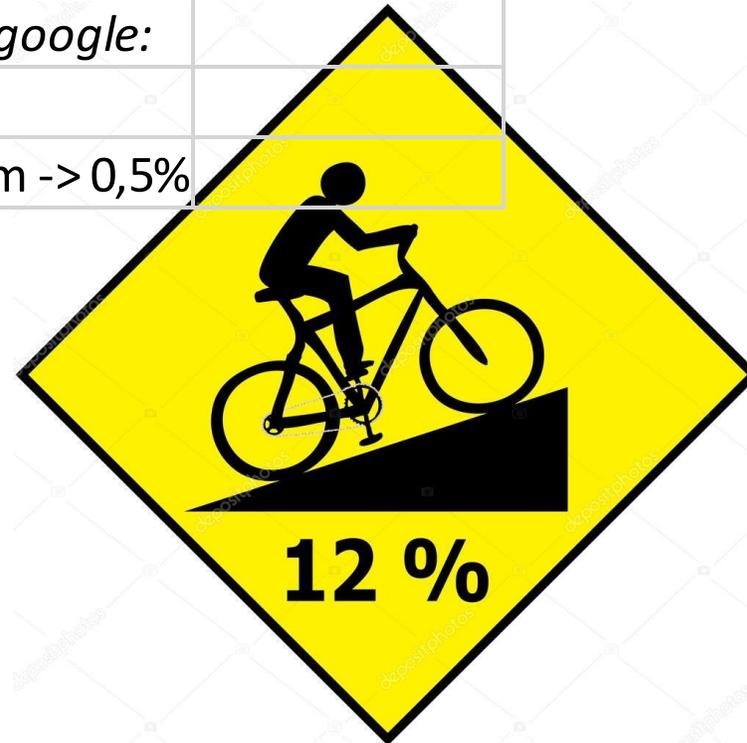
Cycle Highway Assessment
Criterium 15
COMFORT - sheltering

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

CURRENT SOLAR PARK INVESTMENTS

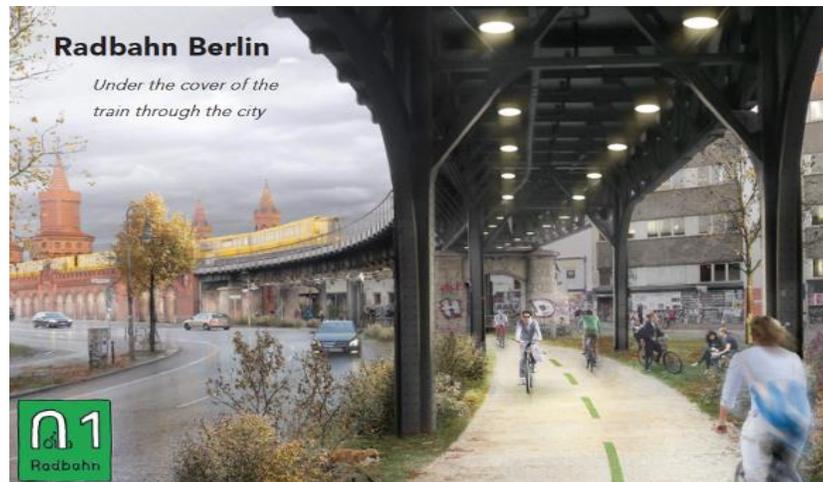PPS-construction for PV-panels &
cycle roads in backyards?
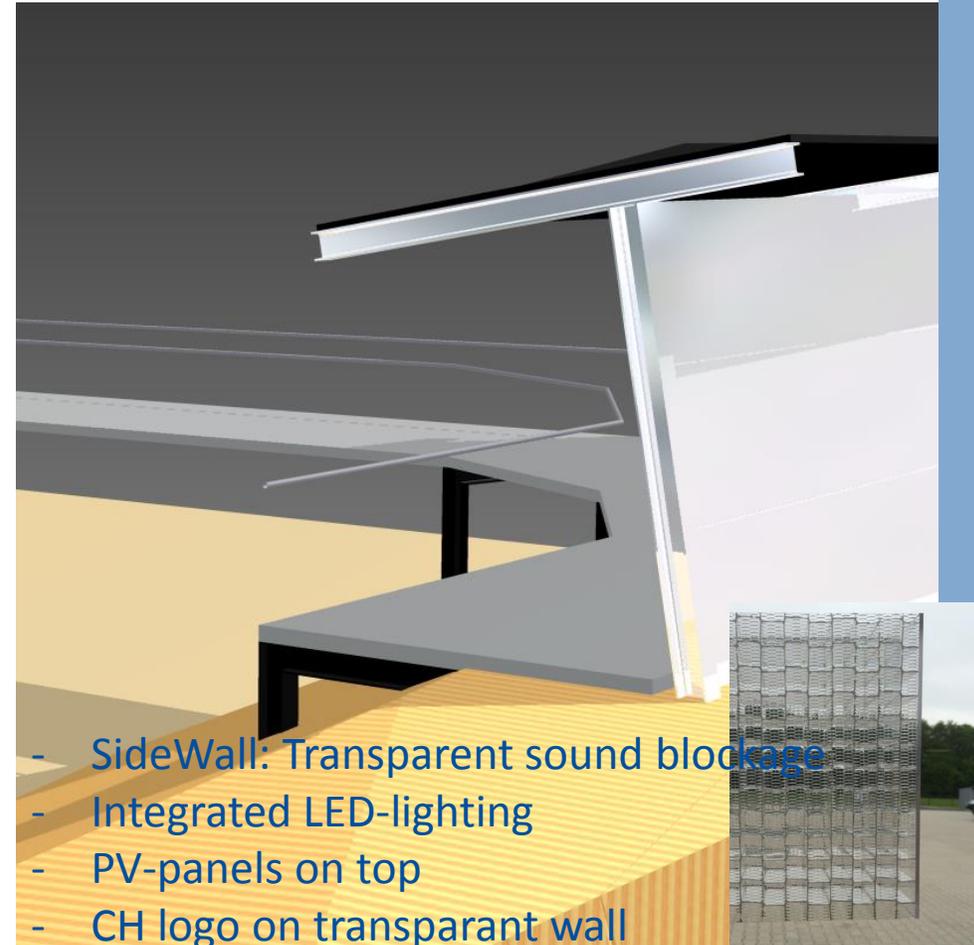
- SideWall: Transparent sound blockage
- Integrated LED-lighting
- PV-panels on top
- CH logo on transparant wall
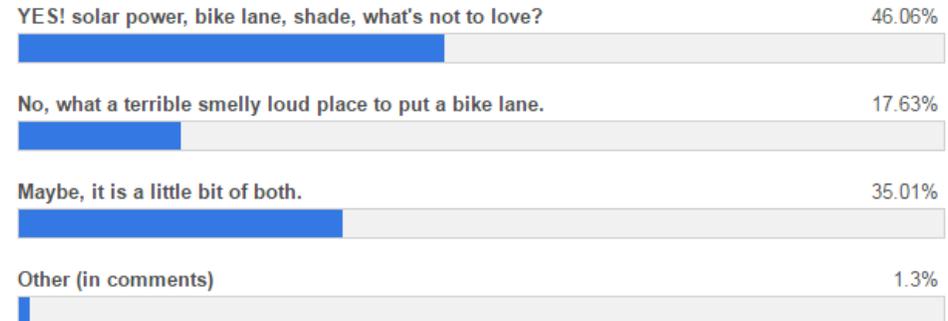
Cycle Highway Assessment
Criterium 15
COMFORT - sheltering

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%

Radbahn Berlin

Under the cover of the train through the city

Cycle Highway Assessment
Criterium 16
COMFORT - services

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

Cycle Highway Assessment Criterium 17
ATTRACTIVENESS in spatial context/environment

Cycling along Winchester's landmarks, UK

Cycle Highway Assessment
Criterium 18
ATTRACTIVENESS in monotonity
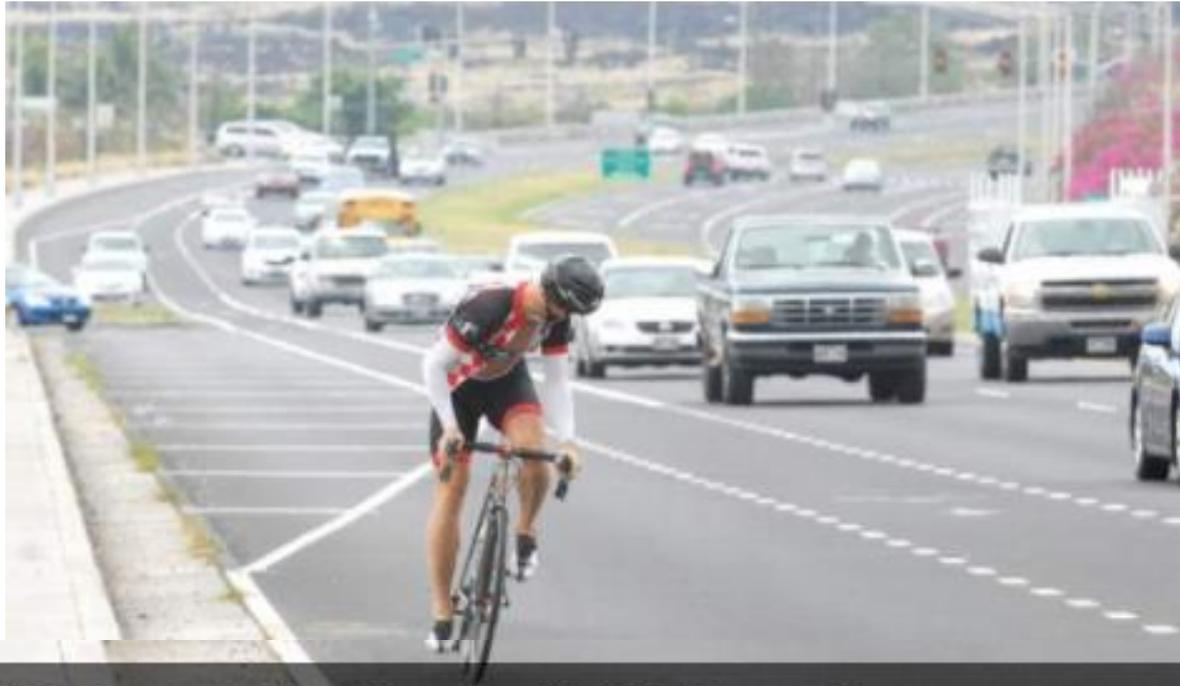
Cycle Highway Assessment
Criterium 19
ATTRACTIVENESS – social safety

Cycle Highway Assessment
Criterium 20
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 21
ATTRACTIVENESS – activation & stimulation
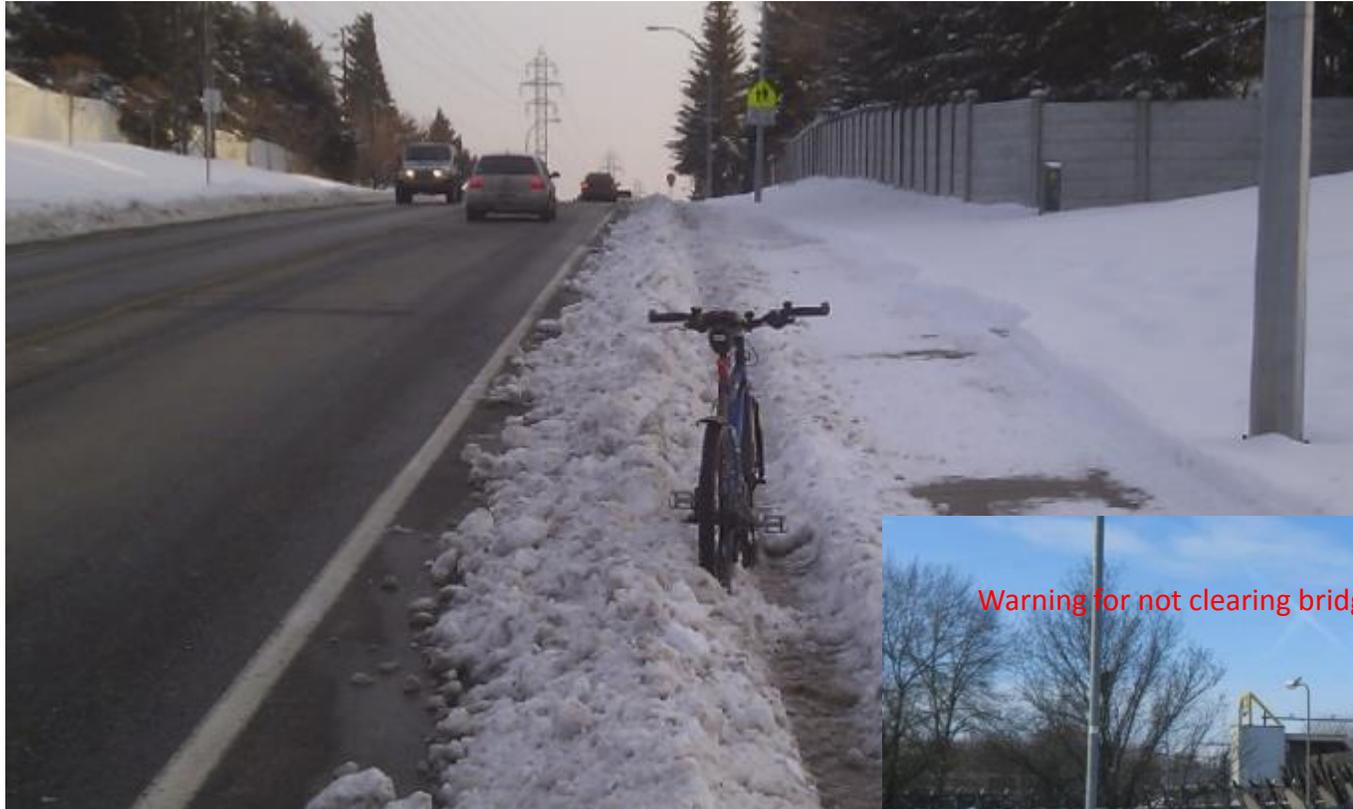
APPS: Strava, cyclemaps, map my ride,…

VR

Cycle Highway Assessment Criterium 22
ACCESSIBILITY 24/7 12/12

Warning for not clearing bridge

Cycle Highway Assessment
Deleted criterium = SUSTAINABILITY

F.E. SKELLET – FULLY RE-USABLE COMPONENTS

EXERCISE on EXCURSION

- SPLIT UP IN 5 GROUPS:
  - USE SECTION APPROACH
  - EVERY GROUP HAS 2-3 CRITERIA
  - GUIDE WILL STOP AT END OF EACH SECTION
- DISCUSSION is more important than exact score

Thank you!