



Project co-financed by the European
Regional Development Fund

Evaluation of pilot signalization of EuroVelo routes

Introduction

Title:	<i>EuroVelo Signalization – Region of Western Greece</i>
Partner:	<i>PP8 – Region of Western Greece</i>
Overview	
Country:	<i>Greece</i>
Region:	<i>Region of Western Greece</i>
Objectives	<ul style="list-style-type: none"> • <i>Provide clear route directions to cyclists</i> • <i>Highlight points of interest along the route</i>
Short description:	<p><i>For the purposes of the Project, EuroVelo a pilot route (total distance of 65.69 km) was signposted, from Vonitsa to Astakos via Palairos and Mytikas at the prefecture of Aitolokarnania. 38 signs and 3 Info kiosks were designed, produced and installed. Information panels installed in order to confirm direction of Route 8. Info kiosks inform cyclists of the distances, destinations, road, main touristic info (public sector, hospital, police etc.). Signs were attached to existing signing posts. Information boards (info kiosks) installed in Vonitsa, Palairos and Astakos which are the towns across this route. In Annex I pictures of signposting with new signs attached are provided.</i></p>
Target groups	<p><i>Target group: tourists – cyclists – locals</i></p> <p><i>Geographic area: Region of Western Greece (From Vonitsa to Astakos)</i></p> <p><i>Main characteristics: Middle-class European civilians</i></p>
Developer, maintenance	<p><i>Developer: Region of Western Greece</i></p> <p><i>Maintenance: Region of Western Greece</i></p>

The developed services should be evaluated in comparison with existing solutions / competing products and from 2 main perspectives:

1. Competitiveness
2. Sustainability



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1. Evaluation of the competitiveness

Directness (time)	<i>Signed cycle route will decrease the time needed for cyclists to travel along. Signing ensures that there is a clear and easy message for the destination and the direction cyclists have to do. The absence of relevant existing cycle signing solutions make the new signing providing a clear message to users in order to be faster and more efficient the way of cyclists can be informed in order the trip to be more fast avoiding delays from wrong destination traveling or not useful deviations.</i>
Coherence	<p><i>The signed route contains a middle coherent signalization considering that the route is interurban with not dense signalization network.</i></p> <p><i>EuroVelo Signalization installed, is considered to be coherent and clear by containing the necessary information, with clear messages placed on existing signs. Commuters and tourists can reach the same destination by following the singing instructions faster, avoiding unnecessary detours, junctions, changing types of infrastructure.</i></p> <p><i>Signing can ensures a safe cycle-friendly route infrastructure to cyclists in a common and cohesive way of traveling. Signalization contains the necessary information, avoiding any misunderstandings in order coherence to be improved as well.</i></p>
Comfort	<i>The route between Vonitsa and Mitikas is characterized mainly by straight line road. The route between Mitikas – Astakos is all along the coastal area and is considered highly attractive. Along the route between Vonitsa and Mitikas, drivers and cyclists can have access to various and high quality services such as hotels, rooms for rent , café, restaurants, super markets, pharmacies and easy swimming beaches. Between Mitikas – Astakos, there is a lack of services in-between the start and end points of the Section.</i>
Safety	<p><i>The existing route infrastructure is everywhere on asphalted pavement public roads and globally in a good condition (well rideable, high quality watertight, of sufficient width). According to the survey, there are no dangerous crossings or very dangerous crossings. The condition of the road is well rideable for all of the 68 km corresponding at the 100% of the route (S140 - 36 km, S141 - 32 km).</i></p> <p><i>The route meets the essential and the important criteria and a small part meet some additional criteria according to the European Certification Standard. There are not any parts not fulfilling the minimum requirements.</i></p> <p><i>From Vonitsa to Mitikas traffic can be estimated as moderate at 91% with this value concerning the worst-case senario of peak traffic during the summer months. From Mitikas to Astakos traffic can be estimated as moderate at 90% with this value concerning, as above, the worst-case senario of peak traffic during the summer months.</i></p>



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	<p><i>Safety of cyclists comprise priority of every tourist experience. Cycling tourists safety depends on the speed limit of the route. On a cyclist route the traffic limit is expected to be as low as possible in order to mitigate risk factors. Moreover the EuroVelo signing gives the information to vehicle drivers that cyclists could be traveling along Astakos - Vonitsa road. That could increase the drivers' attention to cyclists.</i></p> <p><i>The high touristic summer traffic volume, the bi-directional traffic (without middle protection barriers) and the given limited road width, are considered to significantly affect the level of cyclists' safety in the area. Moreover, the existing signs seems to be old and in some cases with low visibility.</i></p>
Attractiveness	<p><i>The signed route and EuroVelo Signalization provides attractiveness because of the high touristic meaning of the route. During the summer, the route has significant attractiveness due to the facilities and the coastal view from Mitikas to Astakos. The scenery is picturesque and the area is really vibrant.</i></p> <p><i>The biggest part of the route is considered particularly attractive (natural landscapes, cultural points of interest). Attractions exist at the 24 km (35%) of the route (S140 – 17 km, S141 – 7 km). Highly attractive areas exist at the 45 km (66%) of the route (S140 – 18 km, S141 – 27 km). Noise, dust and smell does not exist along the route. Crime and wild dogs exist at 1 km (1,4% of the route). Monotonous are the 14 km (20% of the route).</i></p>

2. Evaluation of the sustainability

Environmental
and social
sustainability

The main aspects in CO₂ emissions and Health benefits for the use of cycle route Vonitsa – Astakos in comparison with car use and walking, can be evaluated by WHO HEAT tool (<https://www.heatwalkingcycling.org/>). Using HEAT tool can be estimated the change in walking/cycling levels that the intervention will bring about as an increase in the number of cyclists/walkers. The table below provides an overview of the default values used for assessment, estimated for Vonitsa – Astakos road trip based in a 10 years analysis.

Parameter description	Default value	Editable value	Unit	Parameter name
Default carbon value by country and year (value for Greece in 2019)	49.83	49.83	USD2014/tCO ₂ e	carbon_value_usd_2019
Default carbon value by country and year (value for Greece in 2028)	63.06	63.06	USD2014/tCO ₂ e	carbon_value_usd_2028
Discount rate	5	5	%	discrate
Average walking speed	5.3	5.3	km/h	speed_walk
Average cycling speed	14	14	km/h	speed_bike
Average car speed	42	42	km/h	speed_car
Value of statistical life in euro by country (value for Greece in 2015)	1846202.4283	1846202.4283	euro/death	vsl
All cause mortality rate in reference case (value for Greece and age group 20-74)	354.9922	354.9922	deaths/inhab	mortality_rates_walk_ref
All cause mortality rate in reference case (value for Greece and age group 20-64)	227.5921	227.5921	deaths/inhab	mortality_rates_bike_ref

The table below shows the background values that the tool used for assessment.

Parameter description	Background value	Unit	Parameter name
Average road traffic speed for European average standards in rural areas for walk	60.00	km/h	speed_road_4_walk
Average road traffic speed for European average standards in rural areas for bike	60.00	km/h	speed_road_4_bike
Time needed to obtain full health impacts in single case assessment	0.00	years	builduptime_onecase
Relative risk for cycling	0.90	ratio	RR_bike
Relative risk for walking	0.89	ratio	RR_walk

The summary of aspects in CO₂ emissions and Health benefits for Vonitsa – Astakos cycle route use, are mentioned below:

	<ul style="list-style-type: none"> As a result, 0.0200 premature deaths are prevented per year. Over the full assessment period of 10 years, 0.200 premature deaths are prevented. Carbon emissions are reduced by 5.00 tons of CO₂ equivalents per year. Over the full assessment period of 10 years, carbon emissions are reduced by 48 tons of CO₂ equivalents. Mortality is monetized using value of statistical life (VSL) of EUR 1 850 000 per premature death. Carbon emissions are monetized using social costs of carbon (SCC) of EUR 47.5 per ton of CO₂ equivalent. This corresponds to an economic value of EUR 29 100 per year. Over the full assessment period of 10 years, the total economic impact is EUR 291 000. Discounted to 2019 value at an annual discount rate of 5%, the total economic impact is EUR 236 000. 										
Financial sustainability	<p>Return of investment can be calculated taking into account the limited resources of the consortia. We have to reduce it on comparing the yearly incomes – cost and compare them with investment.</p> <ul style="list-style-type: none"> Investments in €. Below are all the costs from the preparation until the realization of the services. <table border="1"> <tr> <td>Consulting and Dissemination Services</td><td>1,500.00€</td></tr> <tr> <td>Human Resources (RWG)</td><td>3,000.00€</td></tr> <tr> <td>Signposts Design</td><td>500.00€</td></tr> <tr> <td>Signposts Production & Set-Up (including info-points)</td><td>10,974.00 €</td></tr> <tr> <td>Total:</td><td>19,974.00 €</td></tr> </table> <ul style="list-style-type: none"> Costs in €. Below can be presented all relevant operational costs including the depreciation of the technical tools, rental costs, fuel, human resources, administration, and marketing. <p>The Department of Works of the Region of Western Greece is responsible for the maintenance plan of the road surface and signing. For the necessary maintenance of this road estimate an amount of approximately 400,000 € / year.</p> <ul style="list-style-type: none"> Incomes in €. Below can be estimated the yearly indirect incomes (generated 	Consulting and Dissemination Services	1,500.00€	Human Resources (RWG)	3,000.00€	Signposts Design	500.00€	Signposts Production & Set-Up (including info-points)	10,974.00 €	Total:	19,974.00 €
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	<p><i>mainly by the new cycling tourists).</i></p> <table border="1"> <tr> <td>Estimated indirect incomes (generated mainly by the new cycling tourists)</td><td>130,000.00€/year</td></tr> </table>	Estimated indirect incomes (generated mainly by the new cycling tourists)	130,000.00€/year
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Organisational sustainability	<p><i>Organizational sustainability is essential for the implementation and operation of the signs. Organisations are divided in those which are ready to invest and other which need to be convinced to invest:</i></p> <ol style="list-style-type: none"> <i>1. Convinced, ready to invest, develop and operate:</i> <ul style="list-style-type: none"> <i>• Region of Western Greece (Regional Units of Aitolokarnania & Achaia)</i> <i>• Regional Development Fund of the Region of Western Greece</i> <i>• Department of technical Infrastructures of the Regional Unit of Aetolia – Acarnania</i> <i>2. The relevant stakeholders (or one of them) which need to be convinced:</i> <ul style="list-style-type: none"> <i>• Municipality of Aktio – Vonitsa</i> <i>• Chamber of Aetolia – Acarnania</i> <i>• Association of Tourist Offices of Western Greece</i> <i>• Cycling club of Patras</i> <i>• Local NGOs Convinced, ready to invest, develop and operate parts</i> <i>• Local Bicycle Companies (VelocityBikes, Botargo Company)</i> 		

3. Overall evaluation

Did the pilot meet the original objectives (see page	<p><i>Pilot implementation meets all the original objectives defined.</i></p> <ol style="list-style-type: none"> <i>1. Installed signing, provides clear route directions to cyclists (as presented below in Annex I) and considered to be coherent and clear by containing the necessary information, with clear messages. Commuters and tourists can</i>
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1)?	<p><i>reach the same destination by following the singing instructions faster, avoiding unnecessary detours, junctions, and changing types of infrastructure.</i></p> <p>2. <i>Installed Info kiosks highlight points of interest along the route (as presented below in Annex I), can ensure that cyclists have the minimum necessary information for point of interest like Monuments, Archaeological Sites, etc.</i></p> <p>3. <i>Installed signing provides clear route signing to cyclists (as presented below in Annex I).</i></p>
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Taking the pilot as a basis for future developments, please complete the following table to indicate what you would approach a similar development next time.

Do more (what would you repeat or do more of from the current pilot?)	<p><i>More stakeholders could be involved in this mechanism such as touristic sector companies (vehicle rentals, hotels etc.) public bus organizations (KTEL), public opinion influencers and bloggers etc. Current pilot could have more actions for example:</i></p> <ul style="list-style-type: none"> <i>• Brochure design and production - printing for both project promotion (Promotional and Project Brochures)</i> <i>• Strategies for project promoting actions by press releases and social media (Press work and Social Media Campaign)</i> <i>• Organization of events to promote Project objectives and activities (Organization of Promotional Events)</i> <i>• Organization of study tours for journalists and bloggers/influencers etc. in the project area (Organization of study tours)</i> <i>• Contribution to the Design and distribution of a Charter for Sustainable and Responsible Cycling Tourism in the Mediterranean Region by the Lead Partner</i> <i>• Organization of knowledge transfer seminars for professionals who are or may be active in cycling tourism.</i> <i>• Participation in international and national events on cycling tourism in the Mediterranean region.</i> <i>• Organization of one-day workshops with the aim of ensuring and more targeted involvement of project partners and their national representatives. (Organization of workshops with decision)</i>
Do less (what would you do differently)	<i>All actions were necessary for the objectives achievement.</i>



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from the current pilot?)	
Stop doing (what would you avoid repeating from the current pilot?)	<i>All actions were necessary for the objectives achievement.</i>
Start doing (what new aspect would you introduce?)	<i>The better involvement of regional education community (schools, teachers, parents) could improve the influence of the pilot to locals.</i>



4. Attachments

- i. Pictures of new signposting
- ii. Detailed technical description (incl. drawing) how the signs look like according the national standards.



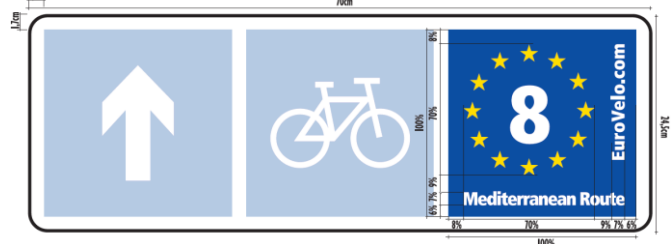
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ANNEX I

The photos for every position with the relevant installed sign design are presented below:



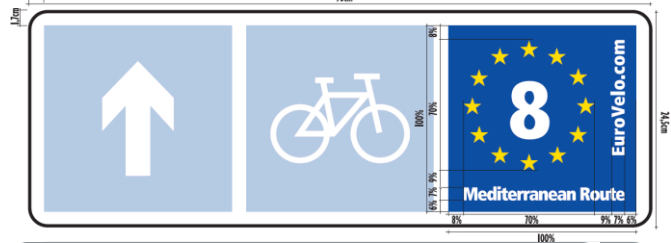
Position ID: 1



Type I: Dimensions 70 cm x 24,5cm



Position ID: 2



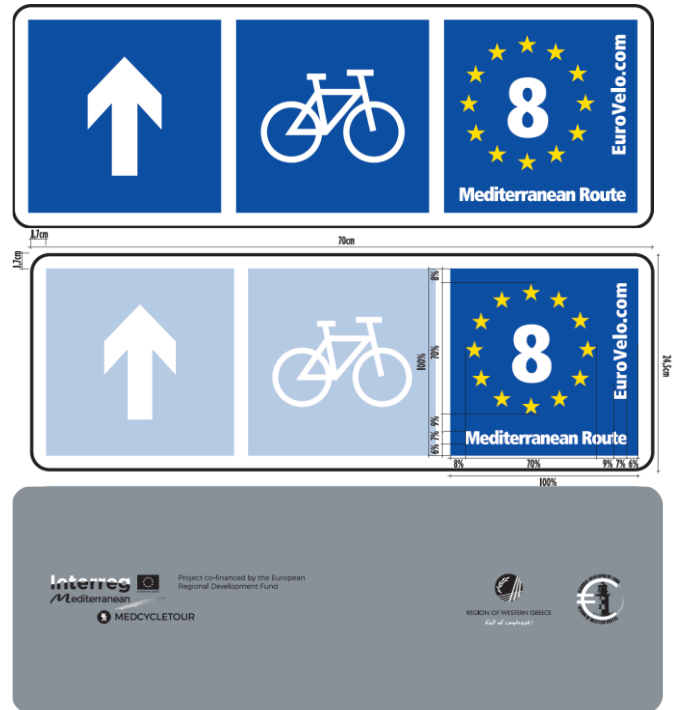
Type I: Dimensions 70 cm x 24,5cm



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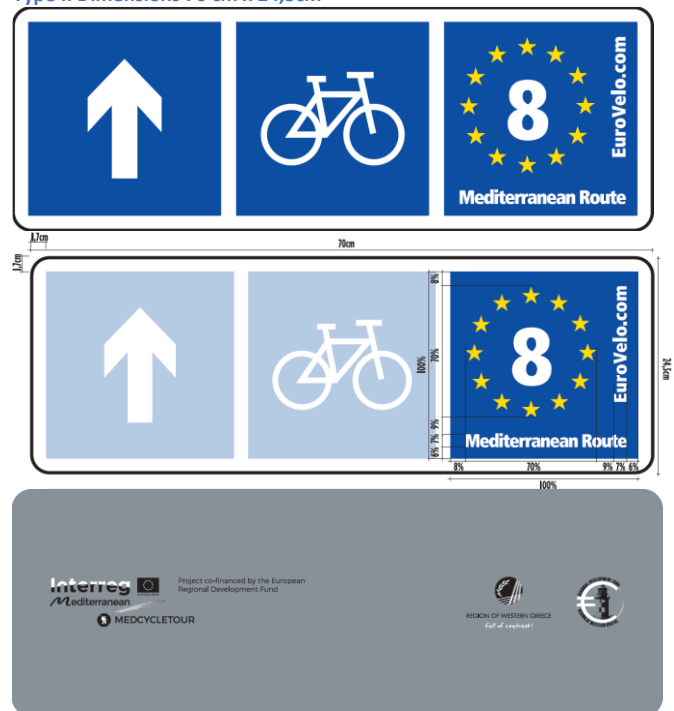
Position ID: 3



Type I: Dimensions 70 cm x 24,5cm



Position ID: 4



Type I: Dimensions 70 cm x 24,5cm



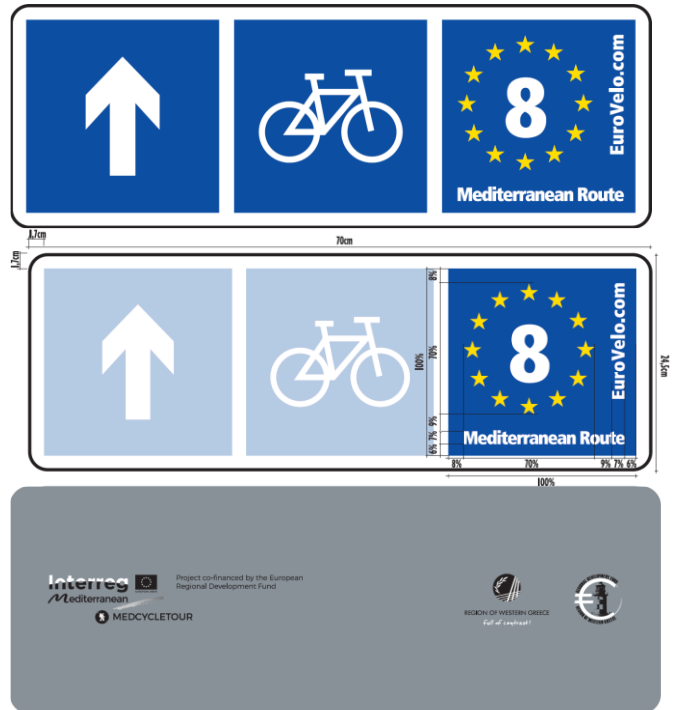
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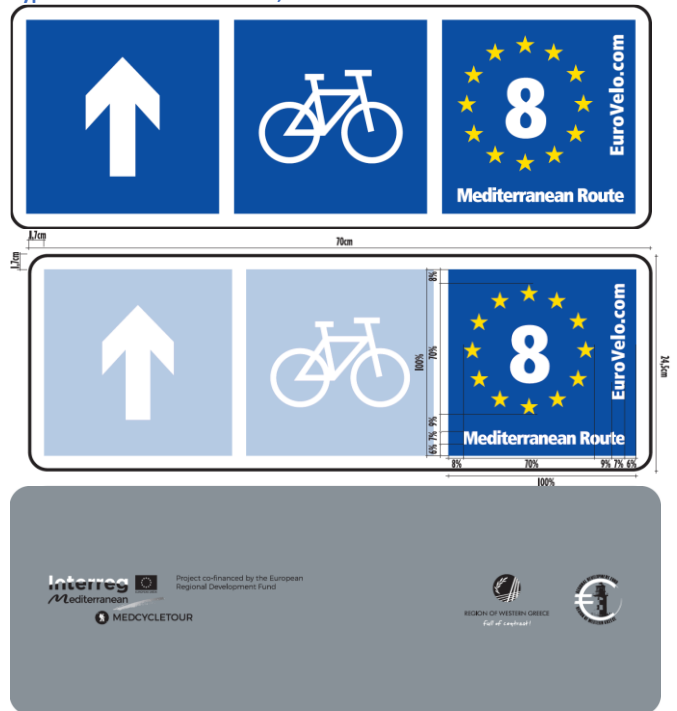
Position ID: 4'



Position ID: 5



Type I: Dimensions 70 cm x 24,5cm



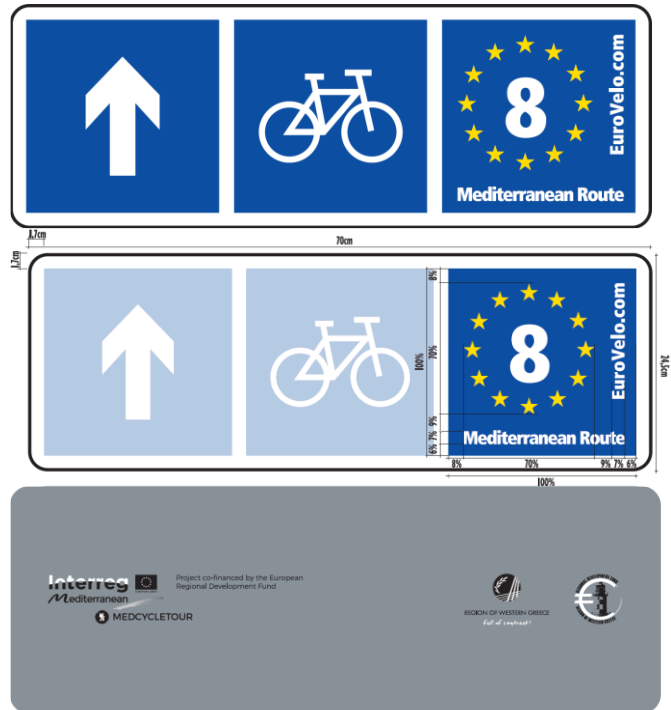
Type I: Dimensions 70 cm x 24,5cm



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Position ID: 5'



Type I: Dimensions 70 cm x 24,5cm



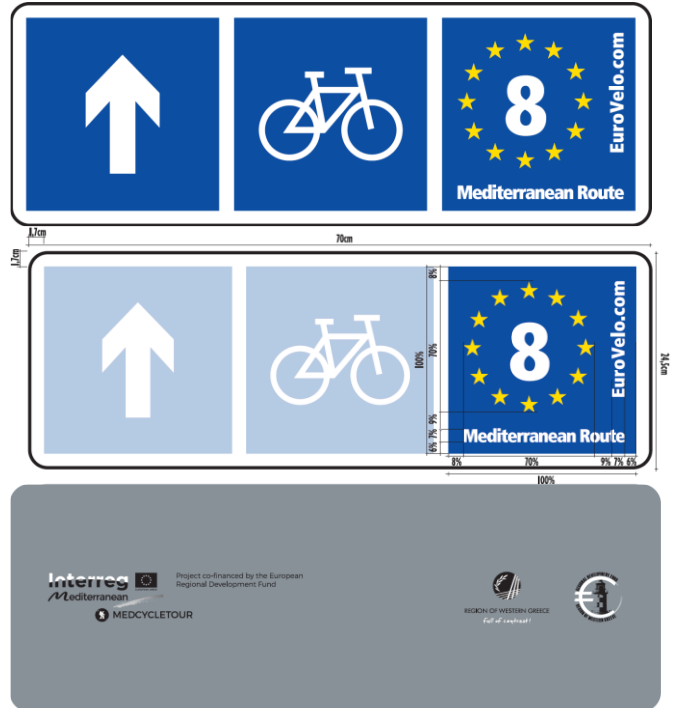
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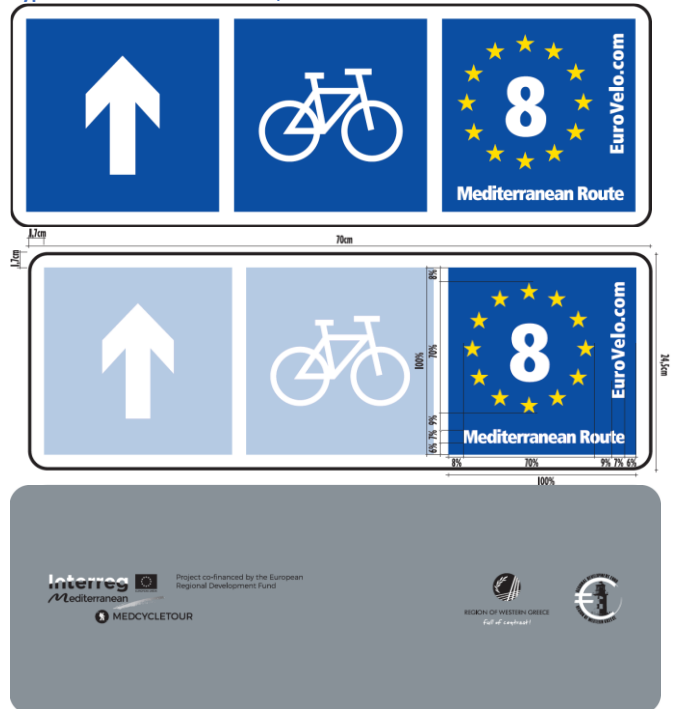
Position ID: 6



Position ID: 6'



Type I: Dimensions 70 cm x 24,5cm



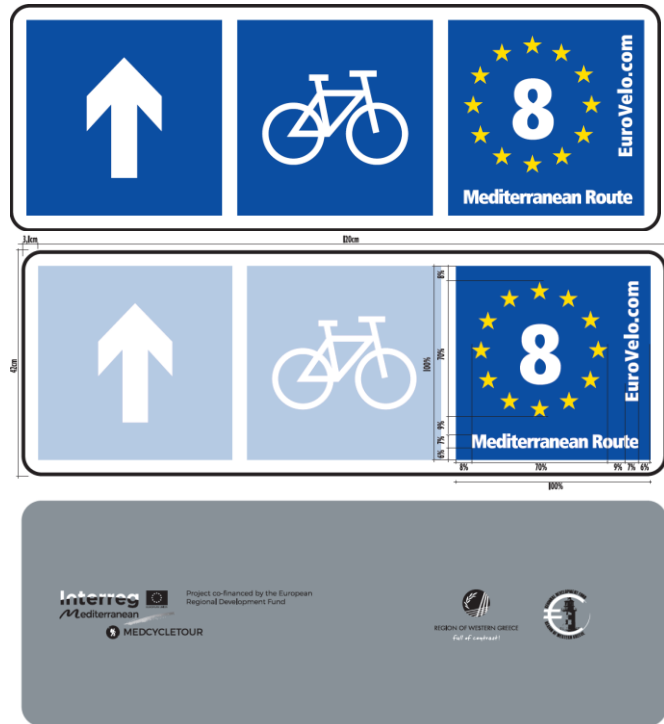
Type I: Dimensions 70 cm x 24,5cm



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Position ID: 7



Position ID: 7'



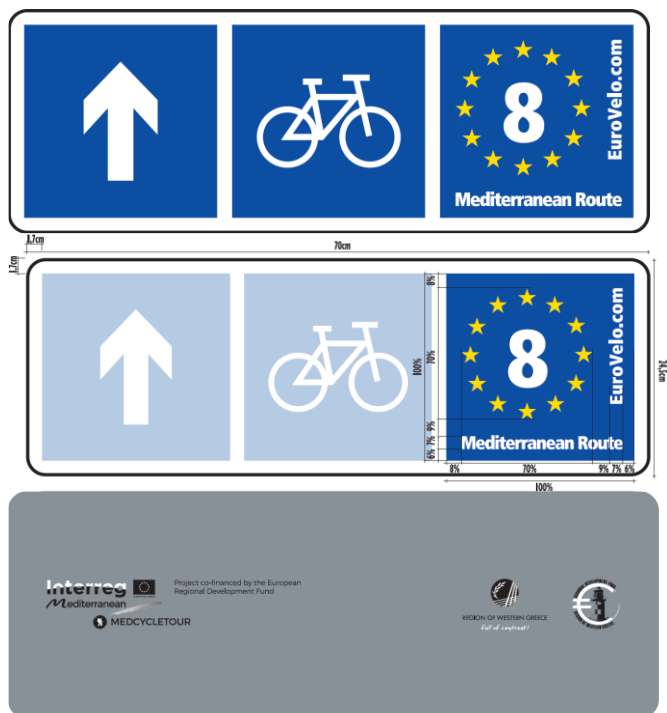
Type II: Dimensions 120 cm x 42 cm



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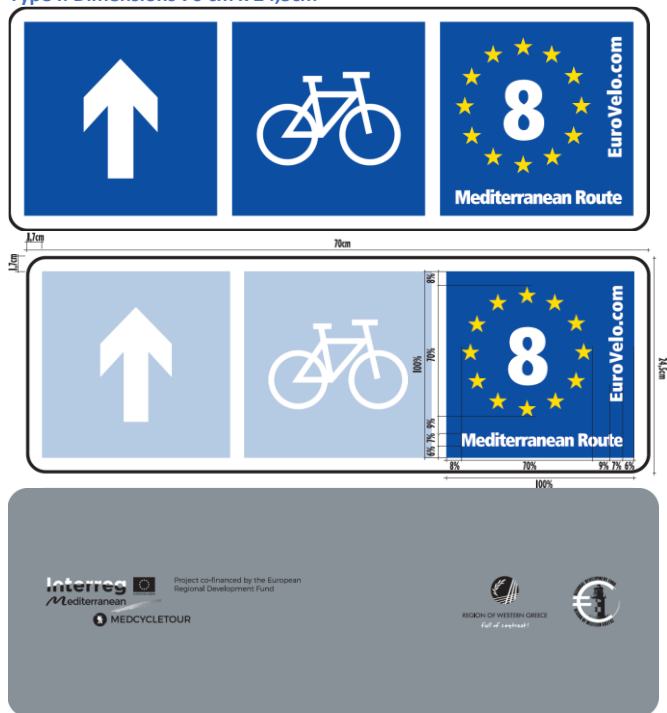
Position ID: 8



Type I: Dimensions 70 cm x 24,5cm



Position ID: 9



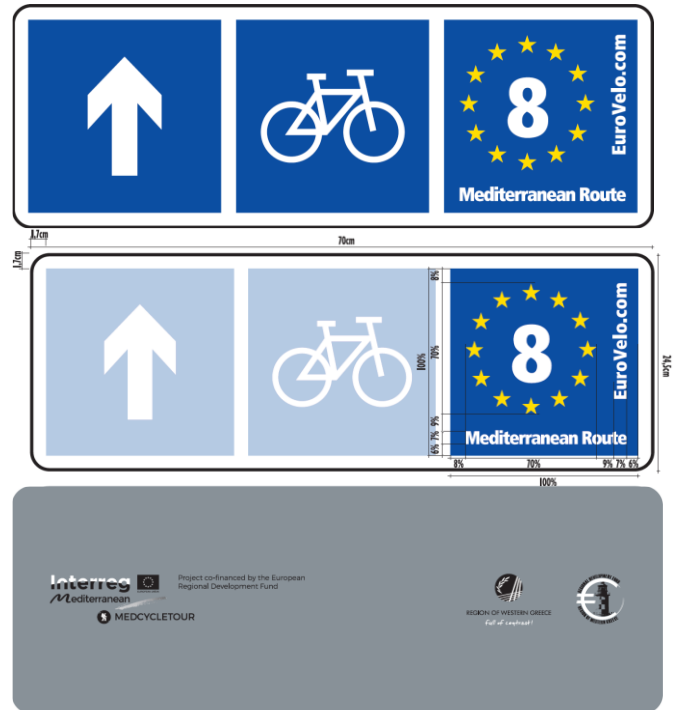
Type I: Dimensions 70 cm x 24,5cm



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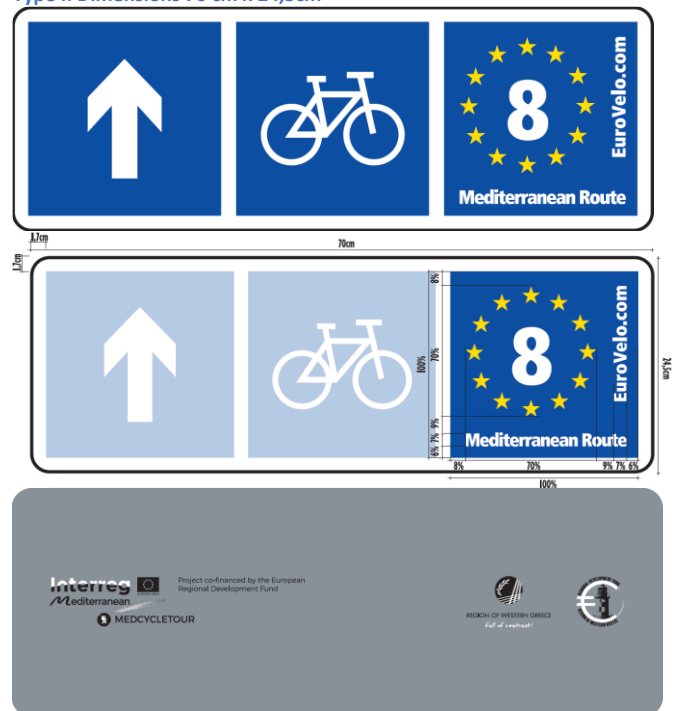
Position ID: 10



Type I: Dimensions 70 cm x 24,5cm



Position ID: 11



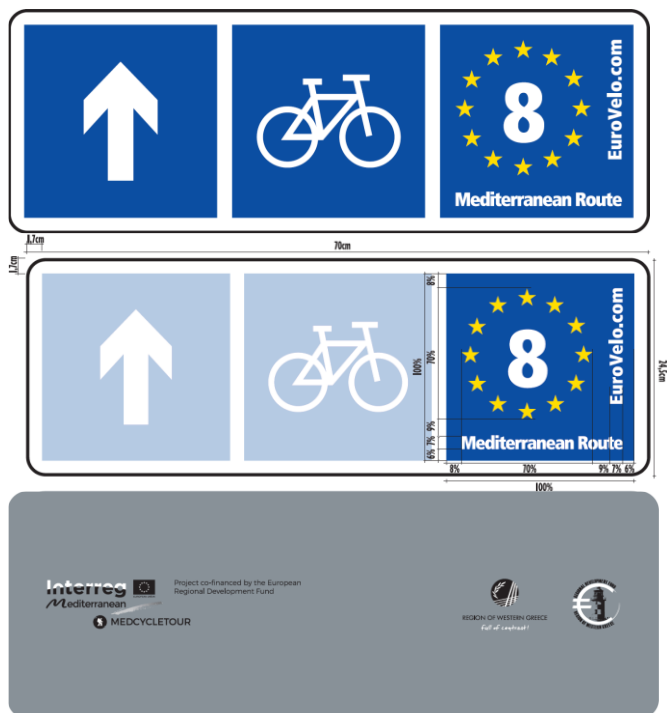
Type I: Dimensions 70 cm x 24,5cm



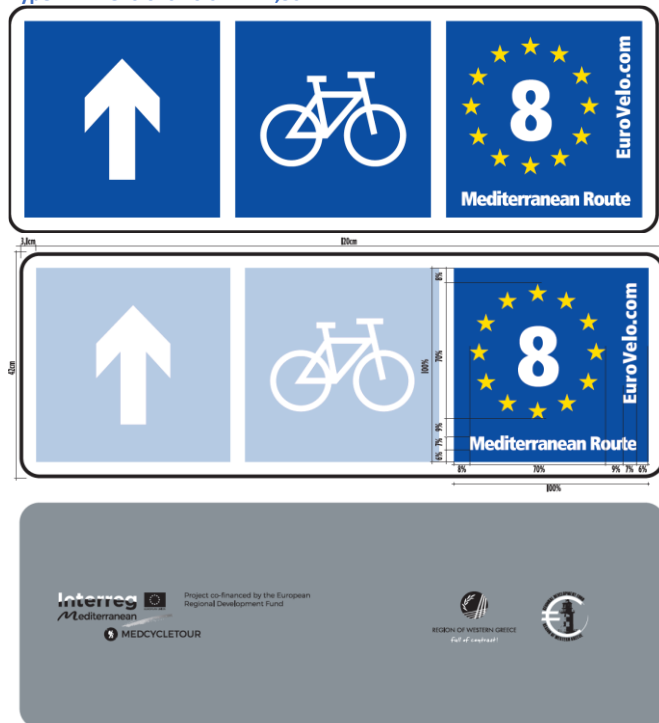
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Position ID: 12



Type I: Dimensions 70 cm x 24,5cm



Type II: Dimensions 120 cm x 42 cm



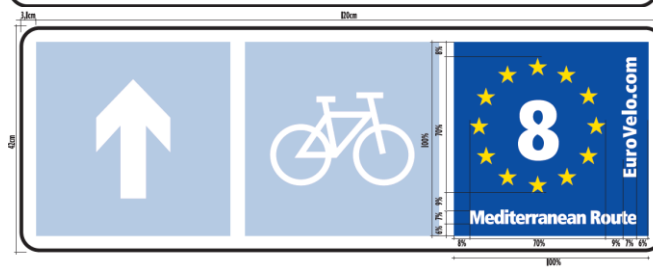
Position ID: 13



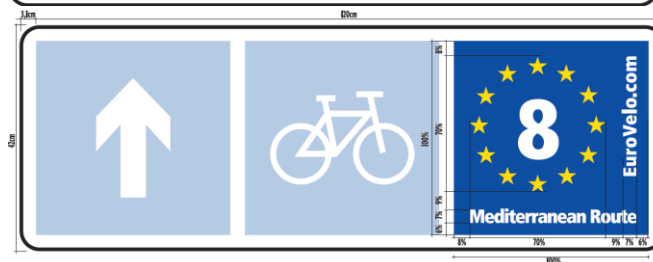
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Position ID: 14



Type II: Dimensions 120 cm x 42 cm



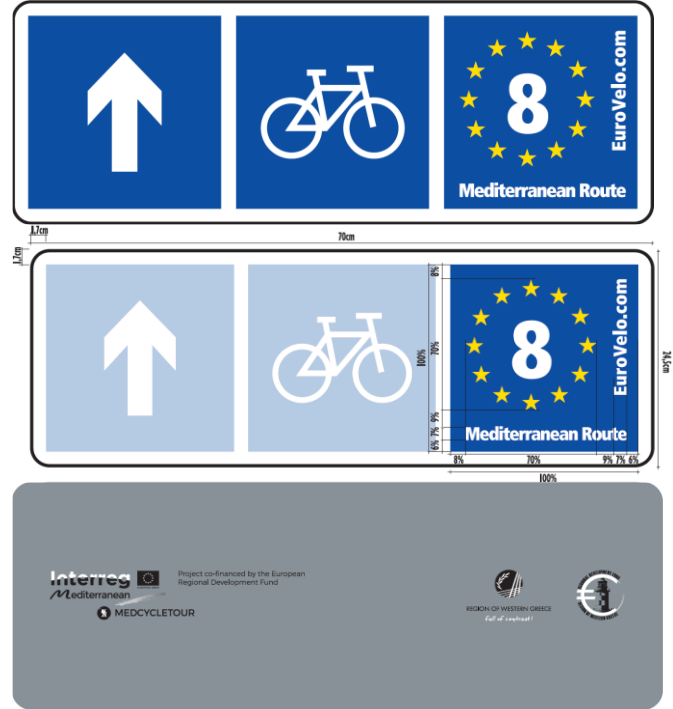


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Position ID: 15



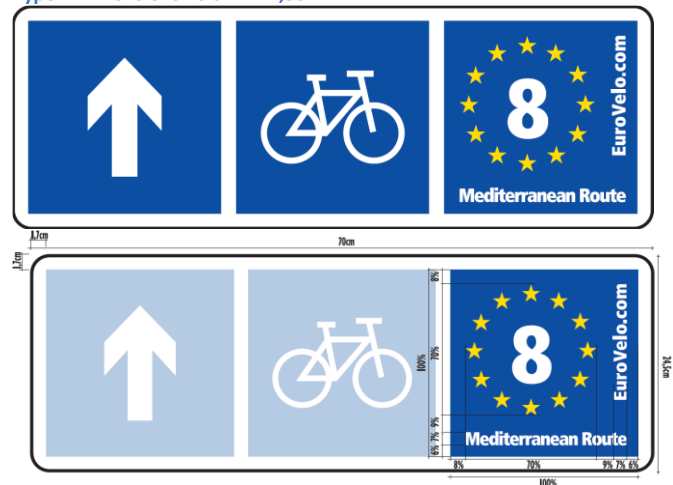
Type II: Dimensions 120 cm x 42 cm



Position ID: 16



Type I: Dimensions 70 cm x 24,5cm





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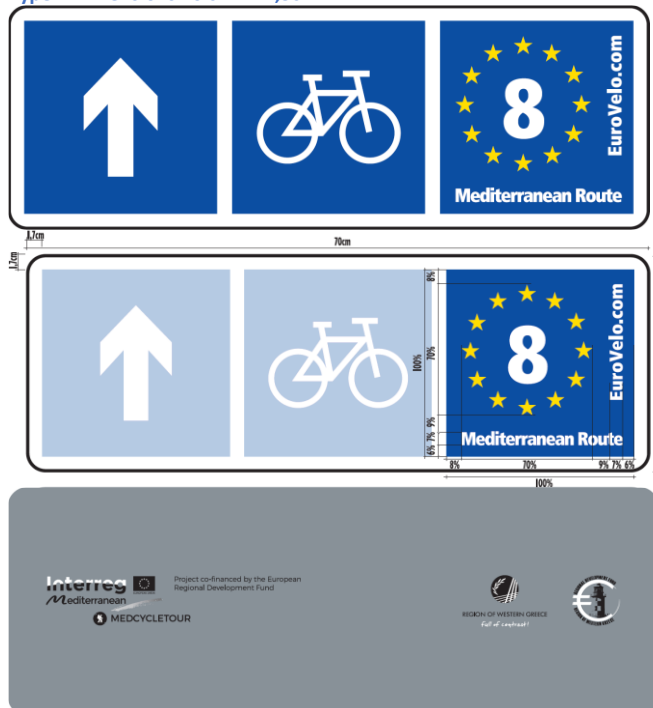
Position ID: 17



Position ID: 18



Type I: Dimensions 70 cm x 24,5cm



Type I: Dimensions 70 cm x 24,5cm



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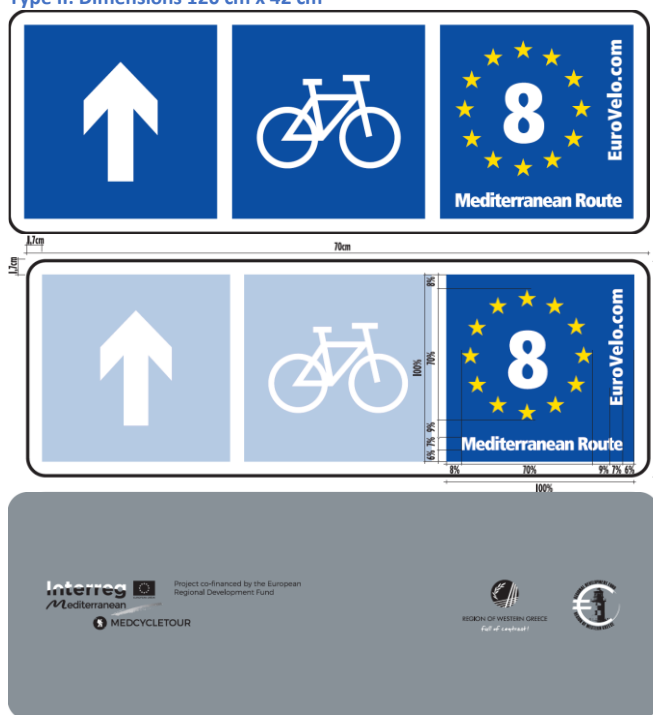
Position ID: 19



Type II: Dimensions 120 cm x 42 cm



Position ID: 20



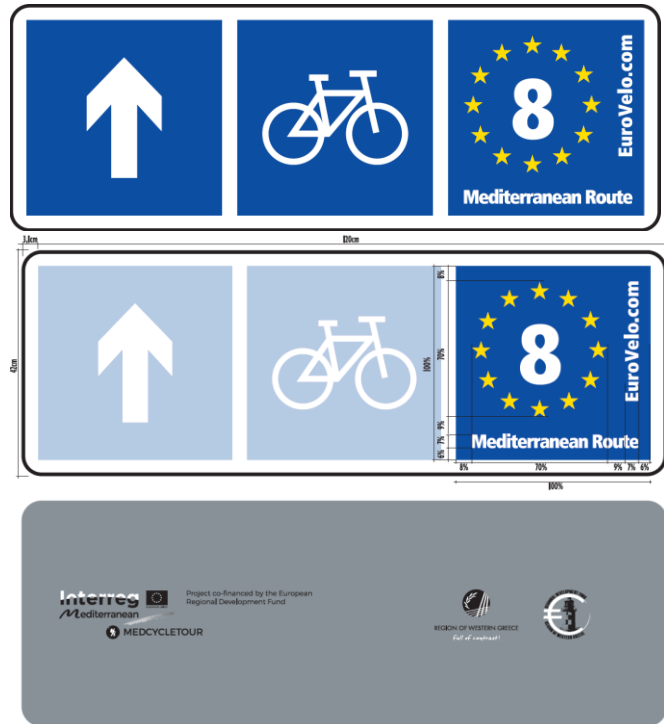
Type I: Dimensions 70 cm x 24,5cm



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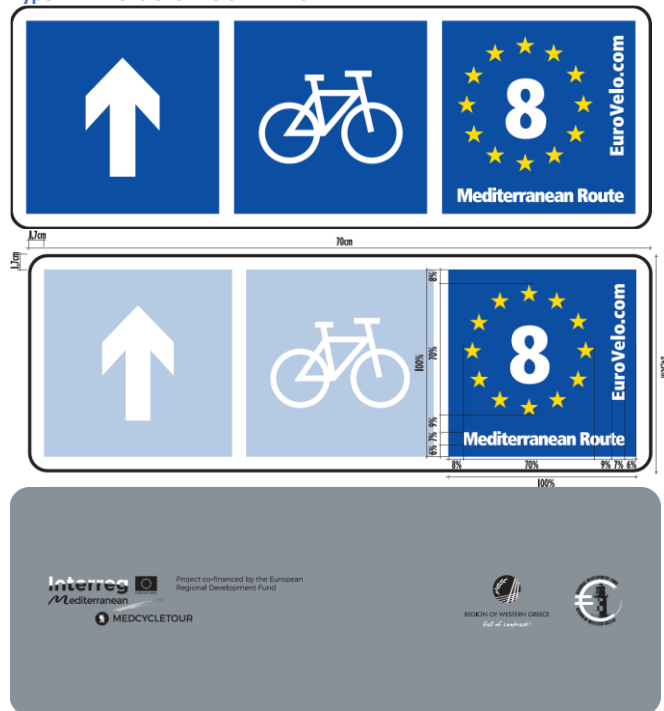
Position ID: 21



Type II: Dimensions 120 cm x 42 cm



Position ID: 22



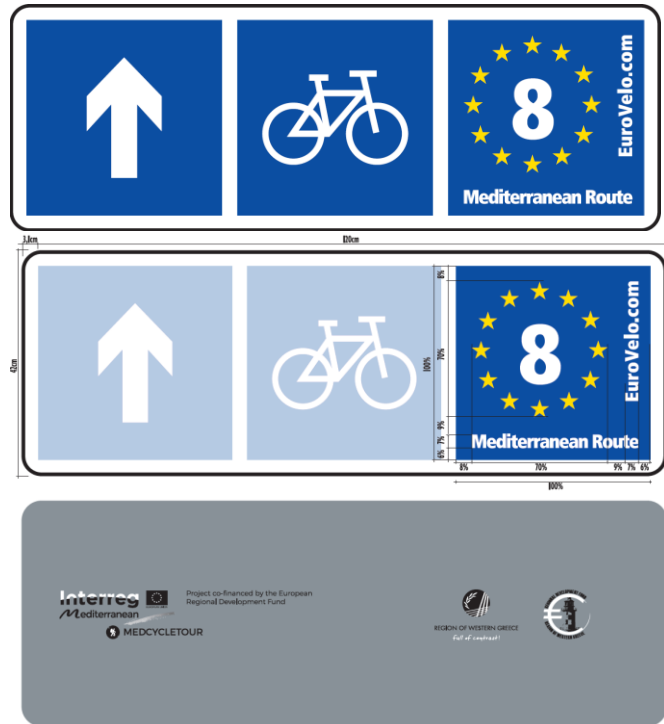
Type I: Dimensions 70 cm x 24,5cm



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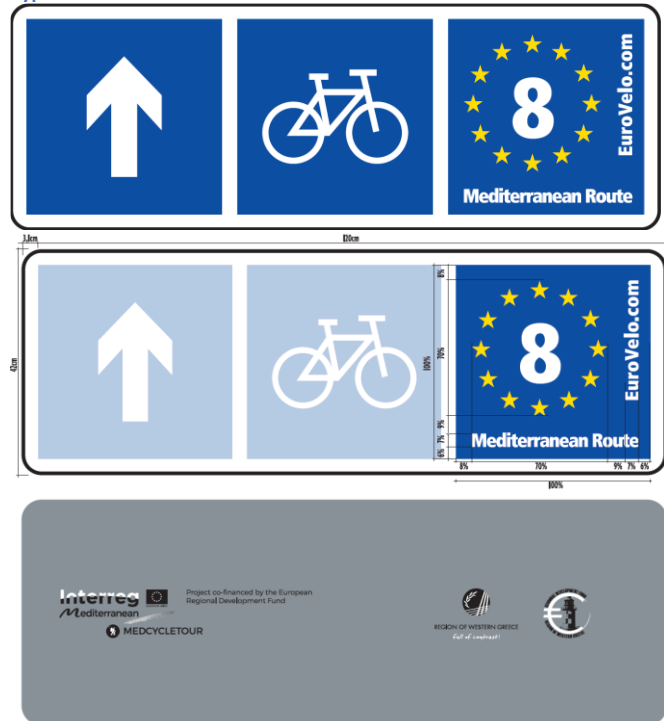
Position ID: 23



Type II: Dimensions 120 cm x 42 cm



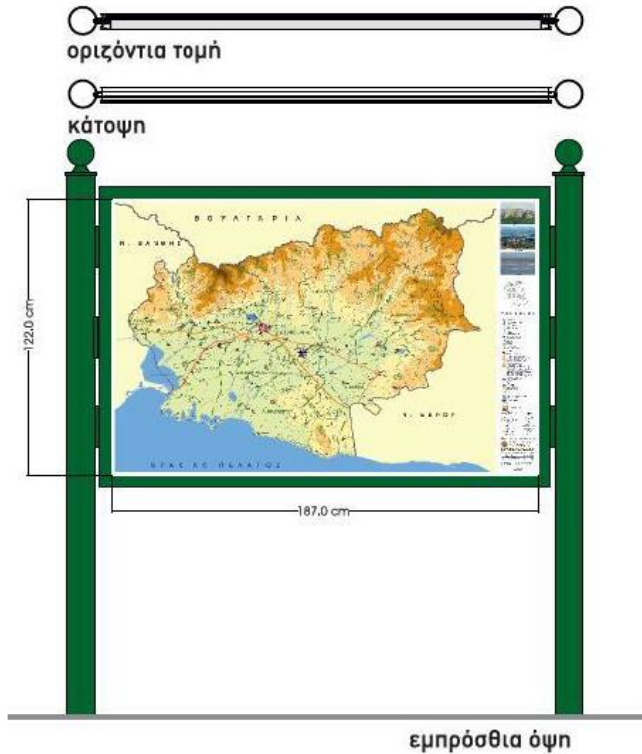
Position ID: 24



Type II: Dimensions 120 cm x 42 cm



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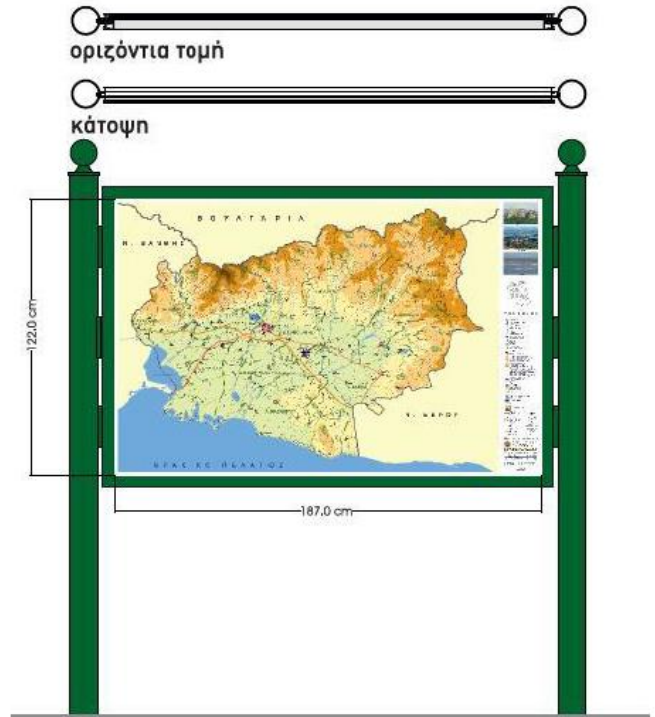
Position ID: INFO KIOSK ASTAKOS



Info Kiosk: Panel dimensions 200 cm x 100 cm



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Position ID: INFO KIOSK MYTIKAS

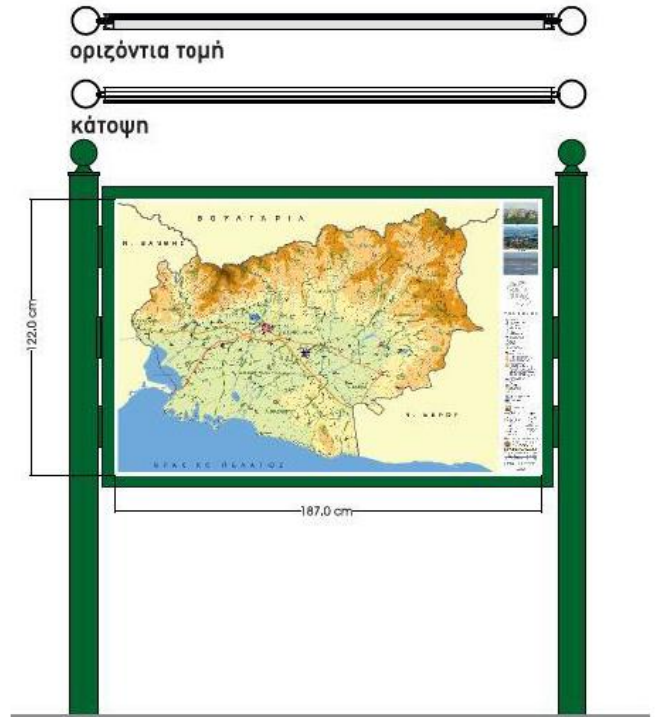
εμπρόσθια όψη



Info Kiosk: Panel dimensions 200 cm x 100 cm



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Position ID: INFO KIOSK VONITSA



Info Kiosk: Panel dimensions 200 cm x 100 cm



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ANNEX II

II.1 Signs

Material: boxed aluminium 3mm

Dimensions: 70 cm x 24,5cm & 120 cm x 42 cm

Film: class II reflective film 0,08 mm thin according Σ310 & Σ311 and European standard ΕΛΟΤ EN 12899-1 and antipollution covering.

Support: The plate mounting fittings shall be steel or aluminum alloy. Steel fittings, bolts, nuts and washers shall be galvanized according to EN ISO 1461 and ΕΤΕΠ 05-04-06-00.

II.2 Info kiosks

Material: 3mm thick AlMg2 alloy flat sheet, both sides of which will be fully covered by a special type I high reflectivity membrane, with digitally printed map overlay will fully meet the Greek Σ-310 and Σ-311 and European specifications.

Dimensions: 200 cm x 100cm

Film: class II reflective film 0,08 mm thin according Σ310 & Σ311 and European standard ΕΛΟΤ EN 12899-1 and antipollution covering.

Support: Special connecting fittings (bolts, etc.), steel or aluminum alloy. Steel fittings will be galvanized according to EN ISO 1461.

Brackets: Ø88 galvanized metal posts with holes for info panel mounting.