

= A1 (Croatia) =

The A1 motorway (Croatian : Autocesta A1) is the longest motorway in Croatia , spanning 478 @. @ 9 kilometers (297 @. @ 6 mi) . As it connects Zagreb , the nation 's capital , to Split , the second largest city in the country and the largest city in Dalmatia , the motorway represents a major north ? south transportation corridor in Croatia and a significant part of the Adriatic ? Ionian motorway . Apart from Zagreb and Split , the A1 motorway runs near a number of major Croatian cities , provides access to several national parks or nature parks , world heritage sites , and numerous resorts , especially along the Adriatic Coast . National significance of the motorway is reflected through its positive economic impact on the cities and towns it connects as well as its importance to tourism in Croatia .

The motorway consists of two traffic lanes and an emergency lane in each driving direction separated by a central reservation . All intersections of the A1 motorway are grade separated . As the route traverses rugged mountainous and coastal terrain the route , completed as of 2014 , required 376 bridges , viaducts , tunnels and other similar structures , including the two longest tunnels in Croatia and two bridges comprising spans of 200 meters (660 ft) or more . There are 33 exits and 26 rest areas operating along the route . As the motorway is tolled using a ticket system and vehicle classification in Croatia , each exit includes a toll plaza .

A motorway connecting Zagreb and Split was designed in the early 1970s , and a public loan was started in order to collect sufficient funds for its construction . However , due to political upheavals in Croatia and Yugoslavia , construction of the motorway was labeled a " nationalist project " and cancelled in 1971 . After Croatian independence and conclusion of the Croatian War of Independence , efforts to build the motorway were renewed and construction started in 2000 . The Zagreb ? Split section of the route was completed by 2005 , while the first sections between Split and Dubrovnik opened in 2007 and 2008 . Construction costs incurred so far amount to 3 billion euro . The figure includes funds approved for construction work scheduled to be completed by 2013 . On the other hand , the amount does not include construction cost related to Lu?ko ? Bosiljevo 2 section since that section was funded as a part of Rijeka ? Zagreb motorway construction project through Autocesta Rijeka ? Zagreb , current operator of that sector . The remainder of the A1 motorway , i.e. , the sections south of the Bosiljevo 2 interchange are operated by Hrvatske autoceste .

= = Route description = =

The A1 motorway (Croatian : Autocesta A1) is a major north ? south motorway in Croatia connecting the capital of the country , Zagreb , to the Dalmatia region , where the motorway follows a route parallel to the Adriatic coast . As a part of the road network of Croatia , it is a part of two major European routes : E65 Prague ? Bratislava ? Zagreb ? Rijeka ? Split ? Dubrovnik and E71 Budapest ? Zagreb ? Karlovac ? Biha? ? Knin ? Split . The motorway is of major importance to Croatia in terms of development of the economy ; especially tourism and as a transit transport route . This has been reflected by an accelerated development of regions connected by the A1 motorway . A part of the motorway is considered to be a segment of the Adriatic ? Ionian motorway . Once the latter motorway 's connecting sections are completed , those currently spanned just by the Adriatic Highway as well as two @-@ lane roads in Slovenia and Albania , the A1 will achieve genuine importance as a transit route .

The motorway spans 478 @. @ 9 kilometers (297 @. @ 6 mi) between Zagreb (Lu?ko interchange) and Plo?e via Split . The route serves Karlovac via D1 , Gospi? via D534 , Zadar via D8 and D424 and ?ibenik via D533 . The A1 motorway consists of two traffic lanes and an emergency lane in each driving direction along its entire length . The sole exception is Dre?nik Viaduct where there are no emergency lanes . Almost all of the existing interchanges are trumpet interchanges , except for Lu?ko which is a stack . There are numerous rest areas along the motorway , providing various types of services ranging from simple parking spaces and restrooms to petrol stations , restaurants and hotels . As of June 2011 , the motorway has 33 interchanges , providing access to numerous

towns and cities and the Croatian state road network . The ultimate southern terminus of the motorway has been established to be near Dubrovnik .

Between the Lučko and Bosiljevo 2 interchanges , the motorway follows Pan-European corridor Vb , and is concurrent with the Zagreb – Rijeka motorway . The Bosiljevo 2 interchange distributes southbound A1 traffic flowing to Rijeka (via the A6 motorway) and to Split . That 67-kilometer (42 mi) segment of the motorway is operated by Autocesta Rijeka – Zagreb , while the remainder of the motorway is operated by Hrvatske autoceste .

An automatic traffic monitoring and guidance system is in place along the motorway . It consists of measuring , control and signaling devices , located in zones where driving conditions may vary – at interchanges , near viaducts , bridges , tunnels , and in zones where fog and strong wind are known to occur . The system comprises variable traffic signs used to communicate changing driving conditions , possible restrictions and other information to motorway users .

The motorway route offers a scenic ride through rolling hills in the north , mountains in its central section , and along the Dalmatian coast in the south . It serves , either directly or via connecting roads , a large number of tourist destinations such as Bjelolasica in Gorski Kotar , a large number of Adriatic Sea resorts and several national parks and nature parks . In Lika region those are Plitvice Lakes National Park , Sjeverni Velebit National Park and Velebit Nature Park , while in Dalmatia the motorway serves Paklenica National Park , Telašćica Nature Park , Kornati National Park , Lake Vrana Nature Park , Krka National Park and Biokovo Nature Park . The route also provides links to a number of UNESCO World Heritage Sites such as Plitvice Lakes , Cathedral of St. James in Trogir , Palace of Diocletian in Split and the Historic City of Trogir .

== Toll ==

The A1 is a tolled motorway based on the vehicle classification in Croatia using a closed toll system integrated with the A6 motorway as the two connect in the Bosiljevo 2 interchange forming a unified toll system . Since the two motorways are operated by Autocesta Rijeka – Zagreb and Hrvatske autoceste , the toll collection system is operated jointly by the two operators . The toll is payable in Croatian kuna , euro , major credit and debit cards and using a number of prepaid toll collection systems including various types of smart cards issued by the motorway operators and ENC – an electronic toll collection (ETC) which is shared at all motorways in Croatia (except the A2 motorway) and provides drivers use of dedicated lanes at toll plazas and a discounted toll rates .

The A1 north of the Bosiljevo 2 interchange is operated by Autocesta Rijeka – Zagreb and the rest is operated by Hrvatske autoceste , both of which do not report company toll income separately for individual sections of various motorways . Total toll income reported by Hrvatske autoceste in the first half of 2011 was 508 million kuna (68 million euro) . This figure pertains to the A1 south of the Bosiljevo 2 interchange as well as all other motorways operated by Hrvatske autoceste , however the A1 represents the longest and the busiest tolled motorway operated by Hrvatske autoceste . Toll income reported by Autocesta Rijeka – Zagreb for the first half of 2011 is 191 million kuna (25 million euro) . This sum includes company toll income generated elsewhere , however the A1 section represents the busiest section of the motorway network operated by Autocesta Rijeka – Zagreb . Hrvatske autoceste and Autocesta Rijeka – Zagreb reported increase of the toll income compared to the same period of 2010 of 2 % and 5 % respectively .

Summertime and holiday queues at Lučko mainline toll plaza can be considerable , a problem exacerbated during the usual weekend to weekend tourist stays at Croatia's coastal resorts . In 2009 , in an effort to address the problem , the Lučko mainline toll plaza was expanded to 15 lanes , and a single additional 10-lane toll plaza was built for fast cashless toll collection in Demerje . The Demerje toll plaza is available via a motorway fork accessible to the A1 northbound traffic only . Vehicles using the Demerje toll plaza default to the original motorway route immediately past the Lučko mainline toll plaza , between the plaza and the Lučko interchange . The faster cashless system has raised the nominal capacity of the road from 2,325 to 11,150 vehicles per hour . As of September 2010 northbound traffic leaving the A1 must exit the tolled

motorway network , since the existing Zagreb bypass is not tolled , and then re @-@ enter another tolled motorway . There are plans for the outer Zagreb bypass to be integrated into the tolled motorway network , as the ultimate solution for congestion at the Lučko toll plaza . That will require construction of a Horvati interchange south of the Lučko toll plaza .

= = Notable structures = =

A total of 361 structures ? bridges , viaducts , flyovers , underpasses , passages , wildlife crossings , and tunnels ? have been completed on the motorway between Zagreb and Vrgorac , and calculations indicate that 18 @. @ 6 percent of the route between Zagreb and Split is located on those structures , which is a quite considerable percentage for a motorway of this length . By June 2011 , Rav?a @-@ Vrgorac section was completed , including 5 viaducts , 4 flyovers and a tunnel . An additional 15 structures were built on the section between Vrgorac and Ploče , plus on the connection towards the city of Ploče .

As of September 2010 , there are seven tunnels longer than 1 @, @ 000 meters (3 @, @ 300 ft) on the A1 motorway . The most notable among them are : the 5 @, @ 821 @-@ meter (19 @, @ 098 ft) long Mala Kapela Tunnel between Ogulin and Brinje interchanges and the 5 @, @ 768 @-@ meter (18 @, @ 924 ft) long Sveti Rok Tunnel between Sveti Rok and Maslenica interchanges . The Mala Kapela and Sveti Rok tunnels are not only the largest individual structures on the motorway but they are also the longest tunnels in Croatia . The tunnels separate three distinct climate zones . The Mala Kapela Tunnel spans between the continental climate of the central Croatia and the mountain climate of Lika , while the Sveti Rok Tunnel provides a link between Lika and its mountain climate and the Mediterranean climate of Dalmatia . Both of the Mala Kapela and Sveti Rok tunnels were originally operated as single tubes when they were opened for traffic in June 2005 until 30 May 2009 , when the second tubes of the tunnels were also opened for traffic . The other major tunnels on the A1 motorway are the 2 @, @ 300 @-@ meter (7 @, @ 500 ft) long Plasina Tunnel situated between Otočac and Perućica interchanges and the Grič , Brinje and Konjsko tunnels . Lengths of the latter three range between 1 @, @ 122 meters (3 @, @ 681 ft) and 1 @, @ 542 meters (5 @, @ 059 ft) .

The longest bridge on the A1 motorway is the 546 @-@ meter (1 @, @ 791 ft) long Dobra Bridge spanning Dobra River near Karlovac . Other major bridges on the route are the Gacka , Miljanica and Dabar bridges ? all of them longer than 350 meters (1 @, @ 150 ft) . Also , the A1 motorway comprises the 391 @-@ meter (1 @, @ 283 ft) long Krka Bridge spanning Krka River and the 378 @-@ meter (1 @, @ 240 ft) long Maslenica Bridge spanning Novsko ?drilo strait . The Maslenica and Krka bridges are particularly significant as their respective main spans are 200 m (660 ft) long .

The A1 motorway also comprises the longest viaduct in Croatia ? the 2 @, @ 485 @-@ meter (8 @, @ 153 ft) long Drežnik Viaduct situated between the Karlovac and Bosiljevo 1 interchanges . As of 2011 , there are six other major viaducts completed on the route ? ? the Kotezi Viaduct , Modruć 1 , Mokro Polje , Jezerane , Srijane and Ražane viaducts . All of them are longer than 500 meters (1 @, @ 600 ft) . The latest significant viaduct completed as a part of the Rav?a ? Vrgorac section is the Kotezi Viaduct at 1 @, @ 214 meters (3 @, @ 983 ft) , surpassing all other viaducts on the route except for Drežnik Viaduct . A dispute concerning naming of the Viaduct arose one month prior to opening of the motorway section containing the viaduct , and the structure was even signposted as the Bunina Viaduct for several days in June 2011 , only to revert the name to the Kotezi Viaduct days prior to the opening ceremony itself . The section also comprises the 402 @-@ meter (1 @, @ 319 ft) long ?are Viaduct .

= = History = =

The A1 motorway was originally designed in the early 1970s , albeit along a different route than the present Zagreb ? Split motorway route . After suppression of the Croatian Spring and removal of the Croatian leadership that proposed and adopted the construction plan in 1971 , all the work related to the Zagreb ? Split motorway was cancelled . The plans were revived in the 1990s and new designs

were developed to include a motorway section built between Zagreb and Karlovac into the design so that the section could be shared between Zagreb ? Split and Zagreb ? Rijeka motorways . Construction work started in 2000 and the motorway reached Split by 2005 and was extended towards Dubrovnik later on . Both in the 1970s and in the 2000s , construction of the Zagreb ? Split motorway was perceived to symbolize rebuilding of national unity .

= = = King Tomislav Motorway = = =

The Zagreb ? Split motorway , now the A1 motorway , was one of three routes defined by the Parliament of the Socialist Republic of Croatia on 5 March 1971 , as priority transport routes of Croatia that were to be developed as motorways . Originally the motorway was designed to follow a route from Zagreb to Biha? (Bosnia and Herzegovina) and then to Split via Knin . The government of Bosnia and Herzegovina issued its approval for the route in Biha? region in the same year . Construction of the motorway was initiated by a fundraising effort ? a public loan . The funds gathered initially through the public loan were sufficient for construction of 20 kilometers (12 mi) of the motorway .

The 39 @. @ 3 @- @ kilometer (24 @. @ 4 mi) long Zagreb ? Karlovac section of the Zagreb ? Rijeka motorway , now part of the A1 motorway , was completed in 1972 . Further construction of motorways from Zagreb to Rijeka and Split was suspended for the next 28 years following a political decision of the Croatian leadership , newly installed during Yugoslav suppression of the Croatian Spring , to " stop megalomaniac projects " . It is considered that the true reason for the cancellation of the works was that the motorway was considered to be a " nationalist " project . The conclusion is supported by the fact the road was spontaneously nicknamed King Tomislav Motorway (Croatian : Autocesta kralja Tomislava) by citizens investing their money through the public loan after the first king of medieval Croatia , who united Croatia as a single kingdom in 925 . The funds raised through the public loan were left unused for several months , then spent for construction of a road between Vrlika and Strmica via Knin , now a part of the D1 and D30 state roads . However , the United Nations Economic Commission for Europe recognized the route as the southernmost part of the Pyhrn route , giving it the designation E59 in 1975 . Subsequent reorganizations of the E @- @ road network , including the latest one in 2008 , transferred the route south of Zagreb to the E71 .

= = = Dalmatina = = =

In the beginning of the 1990s , construction of the motorway was further postponed because of onset of the Croatian War of Independence . The decade saw renewed discussion regarding construction of the motorway , including renewed considerations of its route . Soon , the originally devised route running through Biha? was set aside and two new routes were considered : One of them was a modified version of the original route , bypassing Biha? and running through the Plitvice Lakes region while the other was a completely new route further to the west via Gospi? and Zadar , which was eventually accepted for construction . Both of the alternative routes proposed that the Zagreb ? Karlovac motorway already completed in 1972 were to be used as the northernmost section of the Zagreb ? Split and Zagreb ? Rijeka motorways .

The A1 was a showpiece project of the Croatian government and a symbol of uniting the country . The first attempt to revive the project in earnest occurred in the 1993 , when the excavation of Sveti Rok Tunnel began . More comprehensive construction work started in 2000 and Karlovac ? Vukova Gorica section opened in 2001 . In 2003 , the first sections not shared with the Zagreb ? Rijeka Motorway were completed : Vukova Gorica ? Mala Kapela Tunnel and Gornja Plo?a ? Zadar 2 . Mala Kapela Tunnel ? Gornja Plo?a , Zadar 2 ? Pirovac and Vrpolje ? Dugopolje sections opened in 2004 and Mala Kapela Tunnel itself and Pirovac ? Vrpolje section opened in 2005 marking completion of the Zagreb ? Split Motorway , culminating with the grand opening of Karlovac ? Split section on 26 June 2005 .

Construction of the motorway along its Split ? Dubrovnik sector started once the motorway sectors north of Split were complete , and the section between Split (Dugopolje interchange) and

Žestanovac interchange opened on 27 June 2007 . The last sections to be completed to date are Žestanovac – Ravno , opened on 22 December 2008 , Ravno – Vrgorac section opened on 30 June 2011 , and the Vrgorac – Ploče section opened on 20 December 2013 . In the 2000s , as the motorway construction works were gradually progressing further south , the motorway earned its unofficial , yet widely used name – Dalmatina in Croatian press because it connected Zagreb to Dalmatia . In 2010 , Donja Ždenica interchange was opened between Lučko and Jastrebarsko interchanges , and in June 2012 , Novigrad interchange opened bringing number of motorway exits to 33 .

== Construction cost ==

The construction cost for the Bosiljevo 2 – Split (Dugopolje interchange) sector of the motorway was originally estimated by the government in 2001 and presented as " 3 x 3 x 3 " – that is , the 300 kilometers (190 mi) of the motorway was to be completed in 3 years at a cost of 3 billion marks (approximately 12 @. 65 billion kuna at the time , or approximately 1 @. 533 billion euros) . In 2010 , Hrvatske autoceste reported that the average cost of one kilometer of Bosiljevo – Split motorway was 7 @. 1 million euro , which would mean that the total construction cost was 2 @. 21 billion euro for that 311 @. 4 kilometers (193 @. 5 mi) long segment .

Construction cost incurred on the Dugopolje – Ploče sector of the motorway between 2005 and 2008 was reported at 4 @. 1 billion kuna and additional 1 @. 8 billion kuna of construction expenses are planned until the end of 2012 (representing approximately 560 and 245 million euro , respectively) . The latter figure includes construction of the D425 state road but it does not include full completion of the Vrgorac – Ploče section .

== Further construction ==

The ultimate southern terminus of the motorway has been established by applicable legislation to be near Dubrovnik .

Hrvatske autoceste , operator of the southern portion of the A1 motorway , ordered the execution of design documents , feasibility and environmental impact studies for the Doli – Osojnik section of the motorway that is to be constructed near Dubrovnik . Commencement of construction on this section was originally scheduled for 2009 . Despite an official ceremony to mark commencement of construction works on the section , no works beyond design and study development has been carried out there .

The A1 motorway route between Ploče and Doli has not been fixed yet , as several options exist , all of which require the route to cross either an embayment of the Adriatic Sea or a part of the territory of Bosnia and Herzegovina , the former being associated with construction of the 2 @. 404 @. metre (7 @. 887 ft) Pelješki Bridge spanning the coast south of Ploče and the Pelješki peninsula . Construction of the bridge began in May 2008 , after a contract to build it was signed in 2007 . The bridge was originally scheduled to be completed by May 2012 . Pelješki Bridge construction contract worth 1 @. 94 billion Kuna (c . 259 million Euro) was cancelled due to lack of funds on 17 May 2012 . Construction of the bridge was significantly delayed and effectively suspended since 2010 for the same reason .

In April 2012 , government of Bosnia – Herzegovina proposed a route in Neum area to connect Ploče and Dubrovnik while serving Neum . That entails branching of the A1 motorway 7 to 8 kilometres (4 @. 3 to 5 @. 0 miles) west of Neum , one branch serving Neum and the other Dubrovnik . As of July 2012 no decision was reached on the section of the A1 route .

A planned modification of the existing route encompasses construction of a directional T interchange to replace the existing trumpet interchange built at Žuta Lokva . The new interchange is only planned to be built once the A7 motorway is completed between the Rijeka bypass and Žuta Lokva . It shall not feature any weaving , similar to the Bosiljevo 2 interchange of the A1 and A6 motorways .

= = Traffic volume = =

Traffic is regularly counted by means of traffic census at toll stations and reported by Autocesta Rijeka – Zagreb and Hrvatske autoceste – the operators of the northern and the southern portions of the motorway respectively . The reported traffic volume gradually decreases as the motorway chainage increases and as it passes by various major destinations and the interchanges that serve them . Thus the greatest volume of traffic is registered between Jastrebarsko and Lučko interchanges – with 31 @, @ 432 vehicle annual average daily traffic (AADT) , and 53 @, @ 216 vehicle average summer daily traffic (ASDT) figures as that is the section closest to Zagreb . South of the Bosiljevo 2 interchange the first major drop of traffic volume is recorded on the A1 motorway , due to traffic transferring to the A6 motorway towards Rijeka . Other similar changes of the traffic volume are registered near Zadar (served by Zadar 1 and Zadar 2 interchanges) and Split served by Dugopolje interchange . Substantial variations observed between AADT and ASDT are normally attributed to the fact that the motorway carries significant tourist traffic . The seasonal increase traffic volume variations ranges 69 % on the busiest , Lučko – Jastrebarsko section to 160 % as measured on Sveti Rok – Maslenica section . The summer season traffic volume increase on the motorway is 120 % .

= = Rest areas = =

As of September 2010 , there are 26 rest areas operating along the A1 motorway , and additional rest areas are planned along the existing sections of the route and those sections under construction . Legislation provides for four types of rest areas designated as types A through D – A @-@ type rest areas comprise a full range of amenities including a filling station , a restaurant and a hotel or a motel ; B @-@ type rest areas have no lodging ; C @-@ type rest areas are very common and include a filling station and a café , but no restaurants or accommodation ; D @-@ type rest areas offer parking spaces only , possibly some picnicking tables and benches and restrooms . Even though the rest areas found along the A1 motorway generally follow this ranking system , there are considerable variations as some of them offer extra services . The most notable example is Krka rest area – even though it has no filling station , there is , for instance , a restaurant available . The filling stations regularly have small convenience stores and some of them offer LPG fuel . EuroTest , an international association of 18 European automobile clubs spearheaded by German automobile club ADAC , surveyed three of the A1 motorway rest areas in 2009 : Krka , Lički Osik and Modruš (in case of the latter , both eastbound and westbound) . All of the rest areas were rated as very good , especially in terms of facilities offered .

The primary motorway operators Hrvatske autoceste (HAC) and Autocesta Rijeka – Zagreb lease the A , B and C type rest areas to various operators through public tenders . As of September 2010 , there are five such rest area operators on the A1 motorway : INA , OMV , Tifon , Petrol and Crobenz . The rest area operators are not permitted to sub @-@ lease the fuel operations ; Tifon and Petrol operated rest areas have restaurants or hotels operated by Marché , a Mövenpick Hotels & Resorts subsidiary . All of the A1 motorway rest areas , except Stupnik and Jezerane , are accessible to both directions of the motorway traffic . The rest areas normally operate 24 hours a day , 7 days a week .

= = Exit list = =