TRANSPORT DOCUMENTATION IN THE TRAFIC IN CROATIA

Živković, Ante

VELEUČILIŠTE U ŠIBENIKU

ODJEL PROMET

STRUČNI STUDIJ PROMET

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Završni rad

Šibenik, 2017.

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Završni rad

Kolegij: Engleski jezik IV

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TEMELJNA DOKUMENTACIJSKA KARTICA

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TRANSPORT DOCUMENTATION IN THE TRAFIC IN CROATIA

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Prijevozna dokumentacija je skup dokumenata koji prate vozača vozilo i teret u svim prijevoznim fazama. Dokumenti koji prate vozilo osiguravaju informacije o ispravnosti transportnih vozila kako bi se vozilo moglo sa sigurnošću uputit na prijevozni proces, a podatke koji se upisuju u dokumente vozila vrši nadležna služba u periodičnim procesima. Dokumenti vozača ukazuju na sposobnost vozača da izvrši prijevozni proces kao i pojedine osobne podatke o vozaču kako bi nadležne službe mogle izvršiti kontrolu sa sigurnošću da dokumenti nisu nevažeći. Dokumenti tereta ukazuju na pojedine informacije koje su potrebne da se prijevozni proces izvrši što brže i što točnije bez ikakvog nerazumijevanja između transportnih radnika, a očituje se kroz dokumente koji prate teret prilikom dogovora o prijevozu(otpreme), procesu ukrcaja, prijevoznom procesu te procesu iskrcaja, dopreme i naplate prijevoza. Također postoji dokumentacija koja i objedinjuje više vrsta prijevozne dokumentacije radi lakše kontrole i praćenje prijevoznog procesa od strane nadležnih tijela, a očituje se kroz zapis tahografskog uređaja. Tahografski uređaj prikuplja podatke o vozilu kao i o radu vozača. Dokumentacija koja se koristi tijekom cijelog prijevoznog procesa, a grupira sve vrste transportne dokumentacije ogleda se kroz dokumente kao što je putni radni nalog sa obračunom troškova prijevoza, a glavna svrha mu je informirati o svim bitnim čimbenicima u prijevoznom procesu kao i zaključak prijevoznog procesa kroz troškove prijevoza i prijeđeni put.

(32 stranica / 20 slika / 0 tablica / 17 literaturnih navoda / jezik izvornika: engleski)
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TRANSPORT DOCUMENTATION IN TRAFIC IN CROATIA

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Transport documentation is a collection of documents that goes with a driver and cargo in all transportation phases. Vehicle documentation contains information on vehicle technical correctness which proves that vehicle is safe for transportation tasks. Authorities can check these documents periodically. Driver's documentation proves that driver can perform required tasks within transportation system and it contains driver personal info, so authorities can easily determine its correctness. Cargo documentation contains all necessary information so the transported goods can reach their destination safety without any damages or delays. Cargo documentation contains info on shipping destination, boarding procedures, transportation mode, as well as disembarkation and payment procedures. There is also documentation that unites several types of transport documentation, which simplifies control of transportation process performed by authorities. One such example is tachograph. Finally, travel warrant (together with travel reimbursement info) is type of document that contains all necessary information related to travel costs and mileage.

(32 pages / 20 figures / 0 tables / 17 references / original in English language)
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CONTENTS

1 INTRODUCTION

This thesis deals with documentation used within road transportation of goods.

The aim of the thesis was to explain the purpose of specific transportation document types so we can become aware of their inevitable role in simplification and quality assurance of transportation of goods within a specific country (or internationally).

The thesis is divided in five parts, each of which explains in more detail the overall transportation documentation.

The introduction provides the short description of this thesis and explains its purpose and describes its layout.

The second chapter explains the documentation class divisions that are standardized within transportation system. Also, the documentation is classified with respect to driver's perspective and its informative role towards authorities (that control the documentation correctness).

The third part covers documentation that goes with vehicle during its transportation process and it guarantees that vehicle is technically correct and suitable to perform required transportation task (depending on cargo type).

The fourth part explains documentation that goes with cargo during its transportation process, starting from initial transportation phase and ending with safe cargo delivery to its destination. These documents ensure correct cargo manipulation and safe delivery (depending on cargo properties that are described within these documents).

The fifth part explains the overlapping of driver and vehicle documentations which clearly indicates that driver and vehicle are indivisible parts of transportation process. The standard representative of this documentation is tachograph which is used to control a driver's behavior during transportation process. Through this document the authorities can control drivers, which results in safer and error improved transportation, since it can inform driver on one`s possible improper behavior.

The six part explains the document that unites all three transport documents in one classification.

The final remarks on transportation documentation and short explanation of its purpose is given in the conclusion.

2 TRANSPORT DOCUMENTATION

Transport Documentation is a set of documents that merge the particular information for which the document is intended. Transport documentation is provided and tracked through all three phases of the transport process so that it can be customary. Transport documentation has also an informative role of the individual competent bodies, certain manipulation workers, customers within cargo transport, starting and ending principals and many other people who are associated with the transport process. In cargo transport we find documentation such as loading order, transit or cargo ticket, travel or work order ticket of goods in transport, documentation in international transport, bill or invoice. In addition, documents relating to driver, vehicle and cargo are required, so-called A, B, C documents.

Classification A includes documents such as driver's driving license (Croatian and international), passport, a driver must have various certificates to transport special and dangerous goods and other documents that the driver must have which are depending on means of transportation.

Classification B are encompasses vehicle documents such as driving license, permit for transportation by foreign countries, certificates of competency vehicles for various types of transport and other documents which report periodically, depending on the type of transportation.

C classification encompasses documents such as cargo carrier, delivery note, invoicing, list of items, an indication of the origin of goods, export, import and transport licenses for cargo and other documents that can occur depending on the type of cargo.

There is also a combination of classifications such as the AB classification that combines vehicle documents and driver's document (called a tachograph), AC classification combines driver's documents and cargo documents (record of fracture or shortage of cargo), BC classification combines vehicle documents and cargo document (carnet TIR and CMR international cargo ticket), classification ABC incorporates driver, vehicle and cargo documents (such as cargo and travel order, international travel order, freight order, invoicing, cargo and bill, and bill for completed carriage). [1]

The driver documents that we have already mentioned in the foregoing text have the role of demonstrating the driver's ability to manage a certain type of vehicle and knowing how to

[1] Golac B., Organizacija i tehnika prijevoza tereta u cestovnom prometu, Škola za cestovni promet Zagreb, 2007., str. 100-101

manipulate different types of cargo in the transport process. The purpose of the driver's ability to prove is controlled by the competent authorities for traffic safety.

2.1 Driving license

A driver's license (Figure1) is a public document issued by the competent state body and demonstrates the right to manage certain categories of vehicle. We categorize vehicle categories according to categories entered in the driver's license, namely[2]:

- AM-mopeds, light tricycles and light quads;
- A1-Motorcycles up to 125 cm3 and engine power up to 11 kW, whose motor power and mass ratio is not greater than 0.1 kW/kg and heavy-duty tricycles up to 15 kW;
- A2-Motorcycles with a motor power not exceeding 35 kW and having a motor-mass ratio of not more than 0,2 kW/kg;
- A-Motorcycles and Heavy Tricycles whose engine power exceeds 35 kW;
- B1-Heavy Fours;
- B-Motor vehicles, other than vehicles of category A, A1, A2, AM, F and M, of which the permissible mass does not exceed 3500 kg and which do not have more than eight seats not counting the driver's seat;
- BE-Vehicles of which the towing vehicle belongs to Category B, the maximum permissible mass of the trailer is greater than 750 kg and not more than 3500 kg;
- C1-Motor vehicles, except vehicles of categories A, A1, A2, AM, F, M, B, D and D1, having a maximum permissible mass of more than 3500 kg and not more than 7500 kg;
- C1E-A group of vehicles of which the towing vehicle is in category C1 and the maximum permissible weight of the vehicle exceeds 750 kg and the maximum permissible mass of the vehicle does not exceed 12000 kg and the set of vehicles the vehicle of which is in category B and the maximum permissible mass of the trailer exceeds 3500 kg and the maximum permissible mass of the vehicle set does not exceed 12000 kg;
- C-Motor vehicles other than Category A, A1, A2, AM, F, M, B, D and D1, the maximum permissible mass of which exceeds 3500 kg;

[2] http://www.hak.hr/vozacki-ispiti/kategorije-vozila/, 02.09.2017

- CE-Vehicles of which the towing vehicle belongs to category C and the maximum permissible weight of the vehicle is greater than 750 kg;
- D1-Motor vehicles for the carriage of persons, other than the driver's seat, having more than eight and a maximum of 16 seats, the maximum length of which is not more than eight meters;
- D-Motor vehicles for the carriage of persons, other than driver's seats, having more than eight seats;
- DE-Vehicles of which the towing vehicle belongs to category D and the maximum permissible weight of the vehicle is greater than 750 kg;
- F-Tractors with or without connecting vehicles and working machines;
- G-working machines;
- H-trams.

Figure 1 Driving license

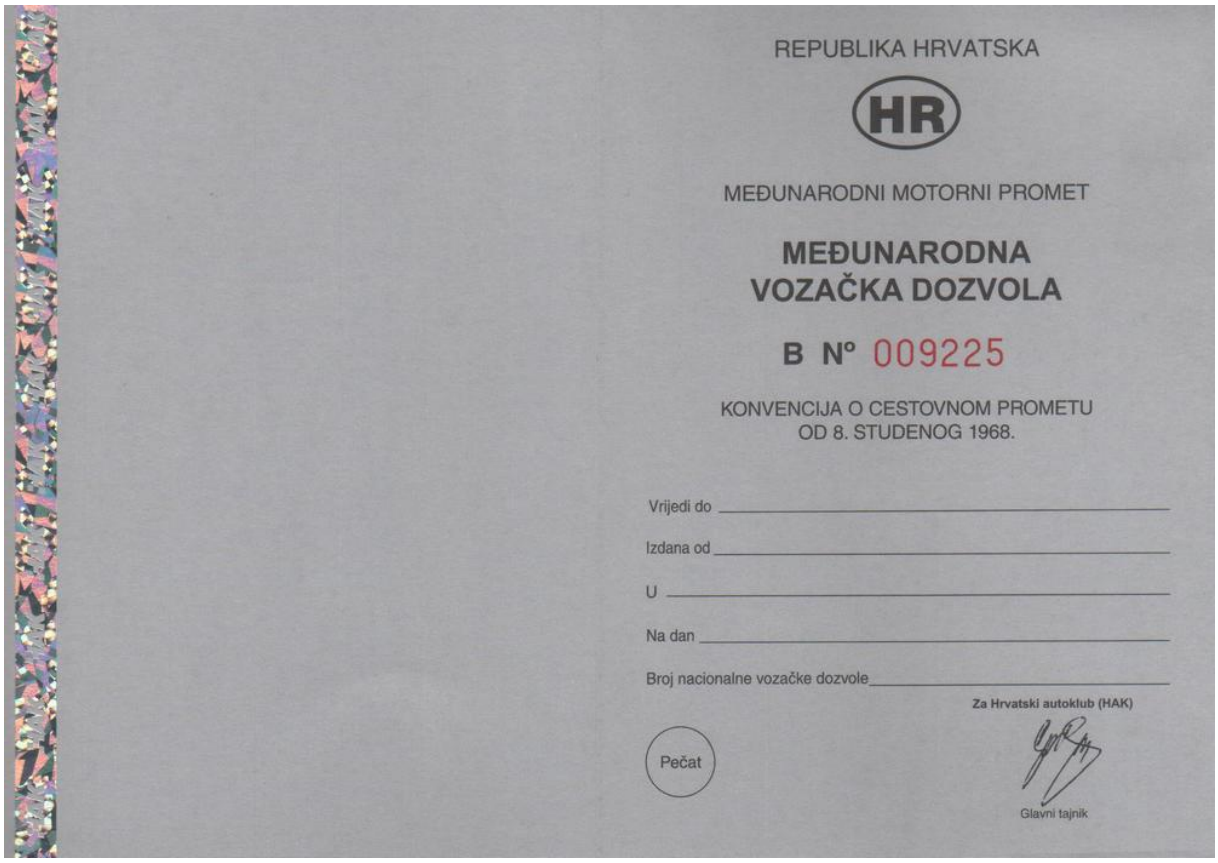
Source: http://www.icm-sisak.info/wp-content/uploads/2013/06/nove-vozacke.jpg, 02.09.2017.

2.2 International driving license

An International Driving License(Figure 2 and 3) is an instrument whereby a driver demonstrates the right to drive a vehicle when he is driving a vehicle abroad. The possession of an international driving license is mandatory in all European and European countries

except Slovenia, Austria, Bosnia and Herzegovina, Serbia, Montenegro, Macedonia, Hungary, Czech Republic, Slovakia, Poland, Germany, Italy, France and Switzerland. However, in these countries, the possession of an international driving license is compulsory if a vehicle is rented or operated by a vehicle bearing the registration plates of the country concerned. The main purpose of the international driving license is to facilitate the communication between drivers and bodies responsible for traffic control, whenever a driver is driving a vehicle abroad (when regular police checks, document control on accidents or accident accidents).[3]

Figure 2 International driving license front side

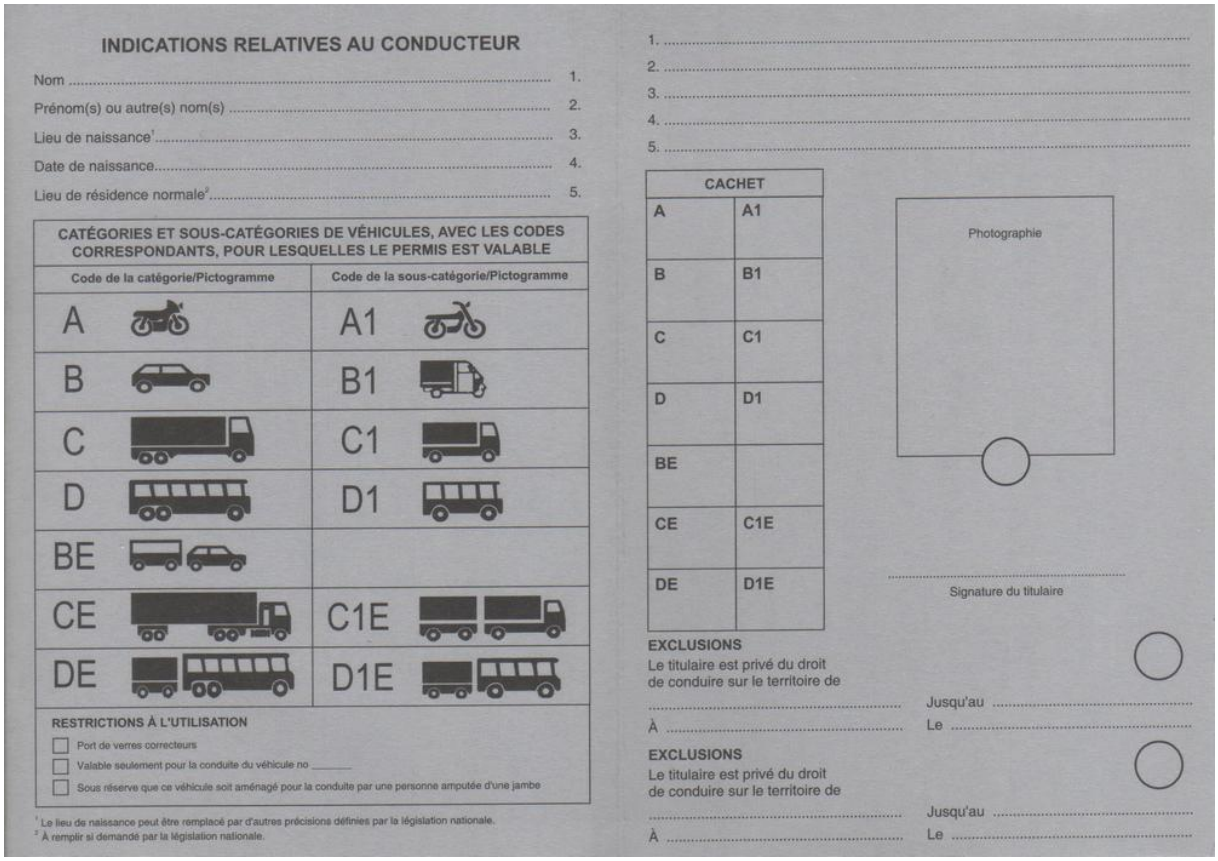


Source: https://automobili.hr/wp/wp-content/uploads/2015/01/AMK-MVD1_mala.jpeg, 02.09.2017.

[3] http://www.amk-maksimir.hr/kome-treba-medunarodna-vozacka-dozvola/, 02.09.2017.

The International Driving License is printed in the language of the country in which it was issued and in the official languages of the United Nations (English, German, Spanish, Russian, Arabic, Chinese and French), which is annexed to the original text. For the sake of easier communication, it is recommended to own a IDL and where it is not mandatory. An international driving license is issued at the request of a driver who holds a valid driver's license issued in the Republic of Croatia for the category (s) of the vehicle for which he has passed the driving test. The validity period of the international driving license is three years from the date of issue, i.e. until the date of validity of the national driving license, if its validity expires less than three years. The IDL can not replace the national driver's license. Therefore, a citizen of the Republic of Croatia can not obtain a national driver's license from that country on the basis of IDL issued in Croatia. Likewise, the IDL issued in the Republic of Croatia can not be used to drive vehicles in the territory of the Republic of Croatia.[4]

Figure 3 International driving license rear side



Source: https://automobili.hr/wp/wp-content/uploads/2015/01/AMK-MVD2_mala.jpeg, 02.09.2017.

[4] http://www.amk-maksimir.hr/kome-treba-medunarodna-vozacka-dozvola/, 02.09.2017.

2.3 Travel documents, certificates in special cargo transport and other documentation

A travel document is a document accompanying a border crossing or at the request of the competent body for proof of identity of a person, such as documents in the form of ID cards, passports, etc. Special Cargo Certificates include specific documents such as ADR licenses and dispatches for certain types of special cargo.[5]

2.3.1 ADR license

Dangerous substances are considered to be substances that can endanger human health, cause environmental pollution, or cause material damage, which have dangerous properties for human health and the environment, as defined by laws, other regulations and international treaties which, by virtue of their nature or properties And in conditions of transport may be dangerous to public safety or order or have proven toxic, corrosive, irritant, flammable, explosive or radioactive effects, i.e. hazardous substances are also considered as raw materials from which dangerous goods and wastes are produced if they have (ADR) was drawn up in Geneva on 30 September 1957 at the United Nations Economic Commission for Europe and entered into force on 29 January 1968. The European Agreement on the International Carriage of Dangerous Goods by Road (ADR) Provisions A and B are an integral part of the 1969 Agreement. Annex A contains dangerous substances whose transport is prohibited while transport of other dangerous substances is permitted if they are met.

The conditions laid down in Annex A for the packaging and labeling of dangerous substances and the conditions set out in Appendix B for the construction, manufacture, equipping and operation of vehicles carrying certain dangerous substances.

A driver carrying dangerous goods should have a driver's certificate of education for a vehicle intended for the carriage of dangerous goods. The certificate is valid for five years.[6]

[5] Golac B., Organizacija I tehnika prijevoza tereta u cestovnom prometu, Škola za cestovni promet Zagreb, 2007., str. 99

[6] http://www.akd.hr/akd/49, 02.09.2017.

3 VEHICLE DOCUMENTS (B CLASSIFICATION)

Vehicle documents include the above-mentioned documents, which include a vehicle carrying vehicle and trailer transport vehicles towed by the vehicle, and their role is to prove the correctness of the vehicle (drive and coupling) and its ability to carry out the necessary transport as well as specific vehicle specifications.[7]

3.1 Traffic permit

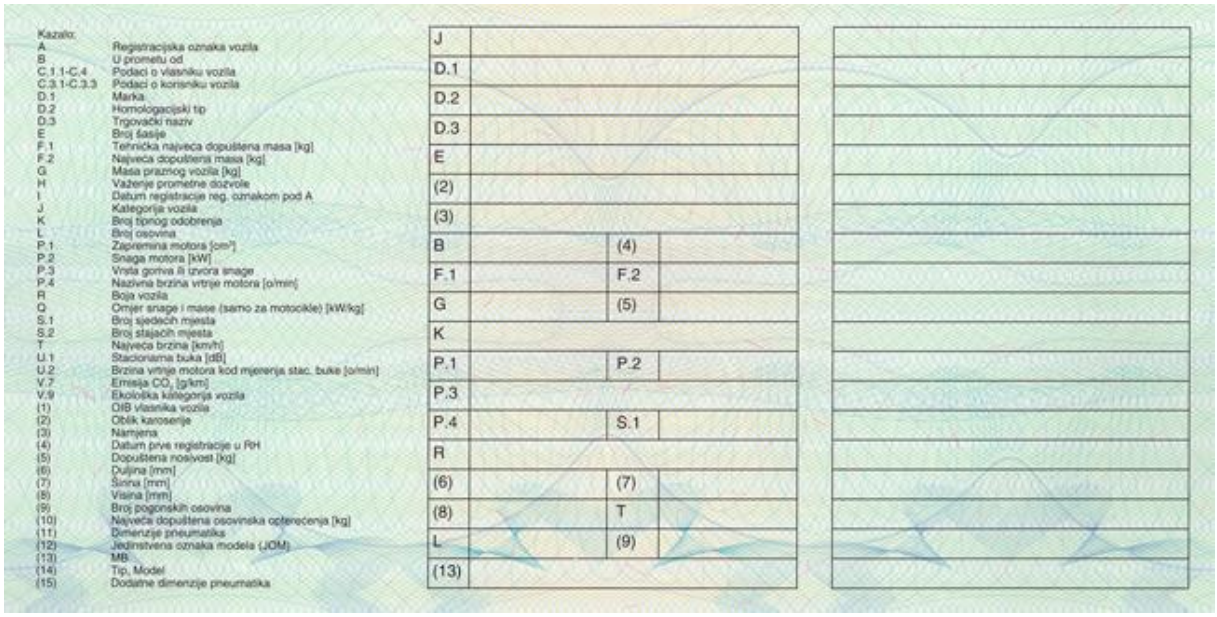
The traffic permit(Figure 4 and 5) is a public document issued by the competent authority and attesting to the ownership of the vehicle, the right to mark the vehicle as determined by the registration plates and the ownership of the tile, technical and other characteristics and characteristics of the vehicle and the right to participate in the traffic. Also on the front of the traffic license are the data such as the vehicle registration number assigned at the first vehicle registration, the date of the first vehicle registration, the vehicle owner's data and the vehicle user's information, the mark, the vehicle type approval, the vehicle's trade name, Chassis (VIN), technically permissible mass of vehicle, maximum permissible mass, mass of blank vehicle, validity of the traffic permit.[8]

Figure 4 Traffic permit front side

[7] Golac B., Organizacija I tehnika prijevoza tereta u cestovnom prometu, Škola za cestovni promet Zagreb, 2007., str. 99
[8] http://www.akd.hr/akd/28, 02.09.2017.

Source: https://www.mup.hr/UserDocsImages/Dokumenti/prometna/prometna01.jpg, 02.09.2017.

Figure 5 Traffic permit rear side



Source: https://www.mup.hr/UserDocsImages/Dokumenti/prometna/prometna02.jpg, 02.09.2017.

3.2 Prepared vehicle review card

An integral part of the traffic permit for all vehicles subject to the obligation of preventive technical examinations and must always be in the vehicle to which it is assigned. The card contains information on the validity of a periodic inspection of a motor vehicle and the inspection of the brakes. The review period is calculated from the last regular technical

inspection, depending on the age and type of vehicle every 12, 6, 3 or 2 months. Brake inspection is performed every 12 months, but not more than 30 days before the regular technical inspection.[9]

3.3 Card of technical characteristics of the lightweight trailers

Lightweight trailers are not registered, but can participate in traffic if they are technically correct and marked with the registration plate. The proof of technical validity is the Carton technical validity of the trailer(Figure 6 and 7).[10]

Figure 6 Card of technical characteristics of the lightweight trailers front side

Source: https://www.cvh.hr/media/1026/3.jpg?width=500&height=353, 02.09.2017.

Figure 7 Card of technical characteristics of the lightweight trailers rear side

[9] https://www.cvh.hr/registracija/dokumenti/, 02.09.2017.
[10] https://www.cvh.hr/registracija/dokumenti/, 02.09.2017.

PODACI O VLASNIKU LAKE PRIKOLICE

Ime i prezime - naziv:

JMBG - MB:

Prebivalište - sjedište i adresa:

TRG BANA JELAČIĆA 100

ZAGREB

Vlasnik od: 25.07.2001

PREGLED TEHNIČKI VOZILA H-162

TEHNIČKI PODACI LAKE PRIKOLICE

1. Marka: TEHNIKA
2. Tip: ATP
3. Model: 560
4. Oblik karoserije: P-OTVORENA
5. Boja: ZELENA
6. Broj šasije: 25476K012548
7. Proizvođač: TEHNIKA
8. Država proizvodnje: HRVATSKA
9. Godina prvog označavanja registracijskom pločicom: 2000
10. Masa (kg): 130
11. Nosivost (kg): 430
12. Najveća dopuštena masa (kg): 560
13. Duljina/širina/visina (mm): 2830/1420/750
14. Broj kotača: 2
15. Dimenzije guma: 145X13
16. Napomena:

Source: https://www.cvh.hr/media/1832/unutarnja-strana-karton-lp_496x350.jpg?width=496&height=350, 02.09.2017.

4 CARGO DOCUMENTS (C-CLASSIFICATION)

Cargo Documents consist of all types of documents that follow a certain cargo from the transportation contracting process until the final delivery of the cargo to a particular ordering party. Prior to the commencement of the carriage, it is necessary to issue an order informing about the necessity of carriage of a certain cargo, when loading the cargo, the driver should have a specific document confirming the type of cargo, its specification, the location of the carriage and the certificate of carriage, In the transport process if necessary, and for the ultimate transport process a certificate of execution of the carriage and reimbursement for the completed transport.[11]

4.1 Cargo sheet

A cargo sheet(Figure 8) is a stamp on which a transport contract is concluded between the carrier and the transport user, which then becomes a transport document. The cargo ticket shall contain: date and place of manufacture, name (company name, name) and address of consignor and carrier, vehicle registration number, type, quantity and package of the consignment, The list of documents accompanying the cargo sheet, the date and place of loading, the name (company, name) and the address of the consignee, the place of destination and the place of unloading, the amount of the transport charge or note that the fee was paid in advance, the cost of transport, The shipment is loaded, the signatures of both sides. The cargo sheet may also contain other information that is agreed upon by the parties. The cargo sheet is filled in three copies, one for the consignee, the other for the carrier accompanying the consignment, the third for the consignor. The cargo list may contain a 'order' or a declaration to the consignee, in which case the consignor must indicate that it is a portable cargo list, and on other specimens that it is issued a portable cargo sheet.[12]

[11] Golac B., Organizacija I tehnika prijevoza tereta u cestovnom prometu, Škola za cestovni promet Zagreb, 2007., str.99
[12] https://hrcak.srce.hr/file/65761, 02.09.2017

Figure 8 Cargo sheet

1. PRIMATELJU

POŠILJATELJ (ime i prezime ili naziv)

ADRESA

MB/MBG/OIB

PRIJEVOZNIK (ime i prezime ili naziv)

ADRESA

MB/MBG/OIB

TERETNI LIST br.

1. Datum i mjesto izdavanja
2. Datum i mjesto utovara tereta
3. Registarski broj vozila
4. PRIMATELJ (ime i prezime ili naziv)

ADRESA

MB/MBG/OIB

5. MJESTO ISTOVARA I DOSTAVNI ROK
6. KOLIČINA, VRSTA I MASA TERETA
7. POPIS ISPRAVA UZ TERETNI LIST
8. PRIJEVOZNI I DRUGI TROŠKOVI

POŠILJATELJ (pečat i potpis)

PRIJEVOZNIK pečat i potpis ovlaštene osobe te ime i prezime vozača i MBG ili OIB

PRIMATELJ pečat i potpis te ime i prezime osobe koja je preuzela dobra MBG ili OIB i datum

Optima Oznaka za narudžbu: EC-VI-56/NCR

Proizvod: **EC-VI-56/NCR Teretni list** • Tip i dimenzija: **Set A4** • Opseg: **3 lista** • Vrsta papira: NCR
ZEMLJA PODRIJETLA - HRVATSKA • Distributer: EUROCOM d.o.o., Pod bregom 8, Donji Stupnik, Zagreb • www.eurocom.hr

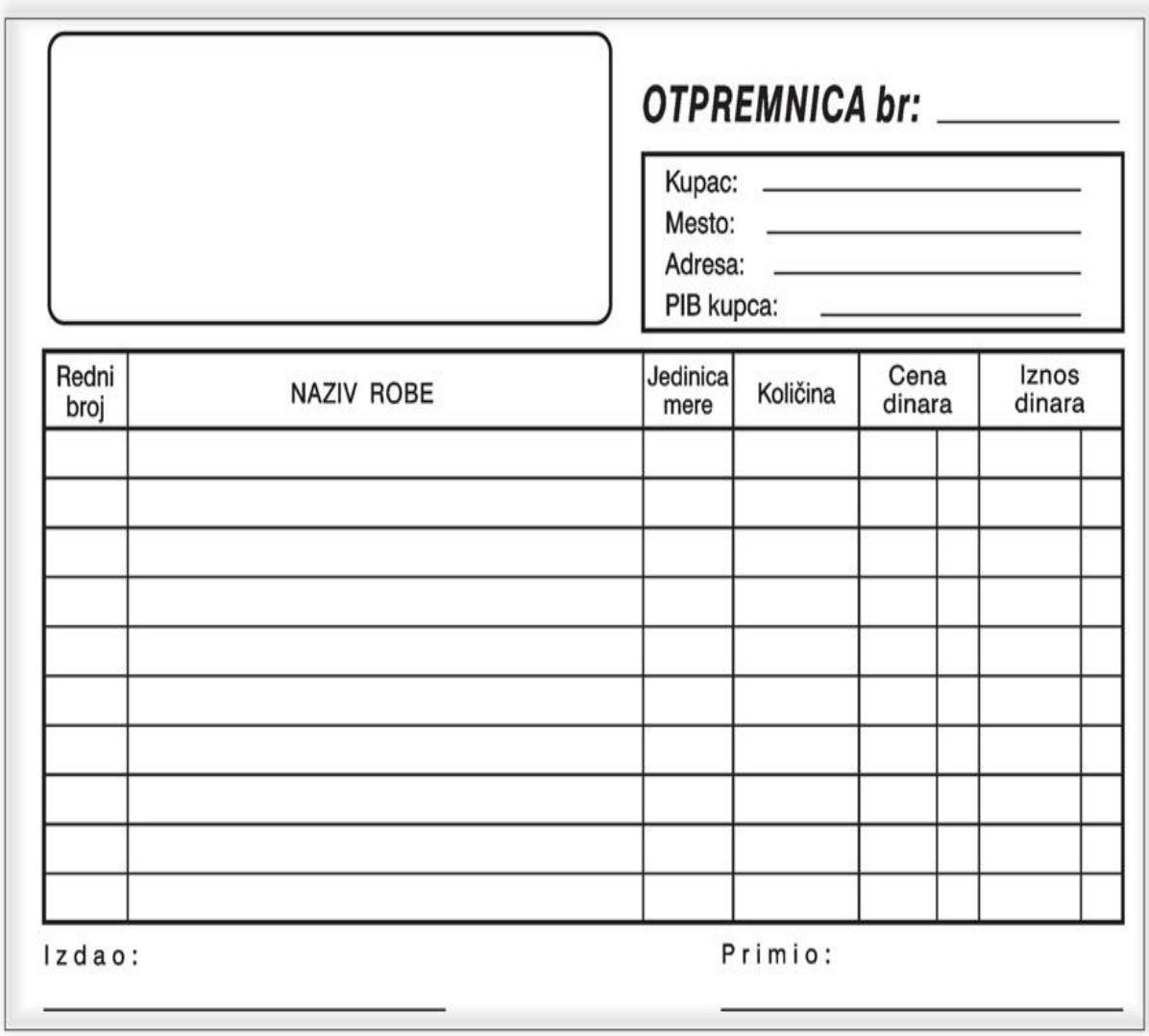
3 850289 088070

Source: http://www.eurocom.hr/storage/proizvodi/220193.jpg, 02.09.2017.

4.2 Freight note

The freight note(Figure 9) is a document on the goods that the buyer is delivering to the buyer. The delivery note is delivered to the commercial department of the supplier as a performance report, the bookkeeping department of the supplier as a stock status report, the factoring department of the supplier as the basis for sending the invoice.[13]

Figure 9 Freight note



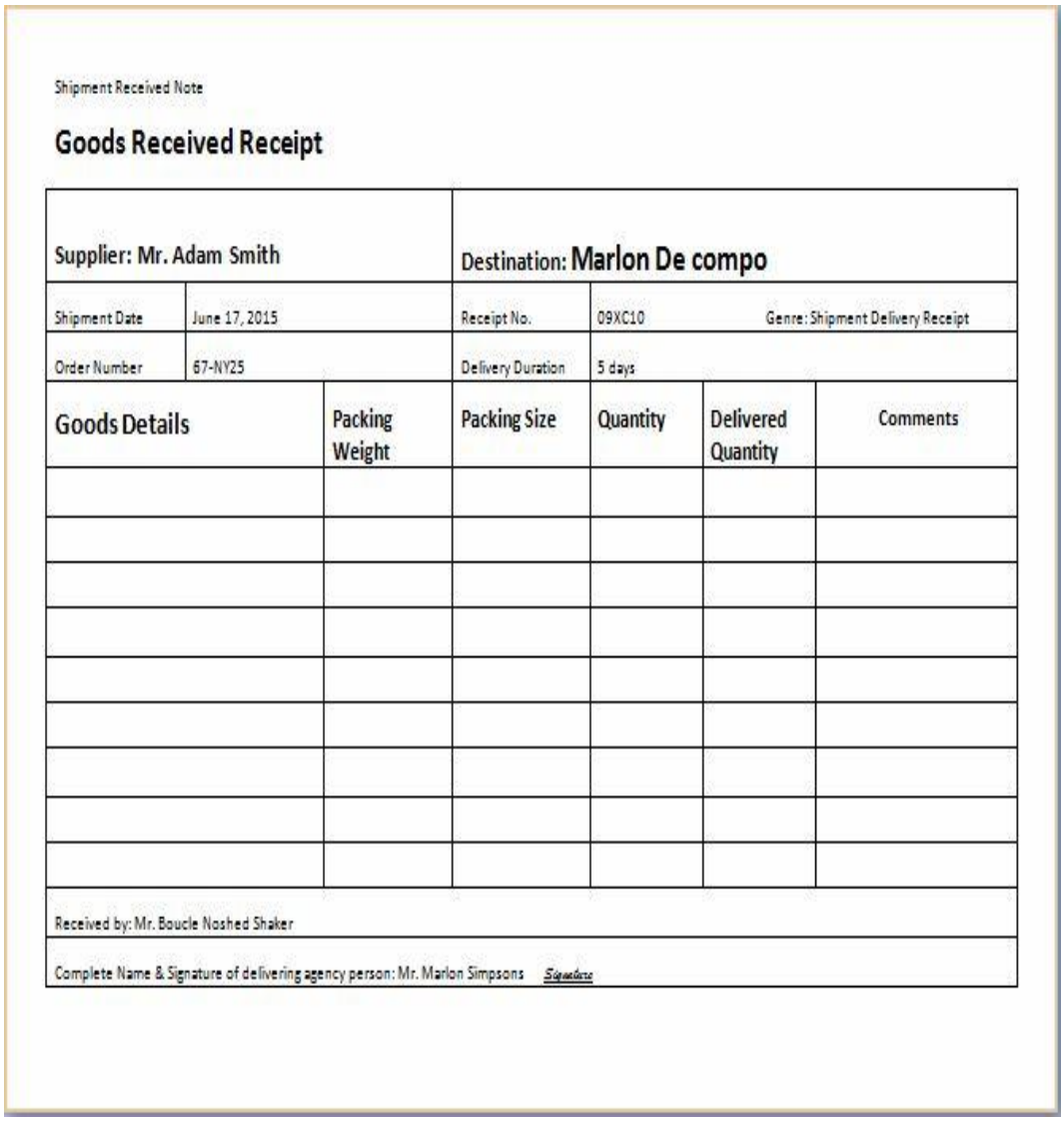
Source: http://stamparijapapirgraf.rs/files/stampa-otpremnica-a4-stamparija-papirgraf-2.jpg, 02.09.2017.

4.3 Receipt of the delivered delivery

[13] http://www.pupilla.hr/wp-content/themes/Synesis/details.php?id=ItemOutput, 02.09.2017.

The receipt of the delivered delivery (invoice) is signed by the recipient, who will write the receipt on it(Figure 10). If the delivery is done to the state body, legal entity or natural persons carrying out the registered activity, the recipient shall stamp the stamp or stamp of that body or person with the signature.[14]

Figure 10 Goods received receipt



Shipment Received Note

Goods Received Receipt

Supplier: Mr. Adam Smith		Destination: Marlon De compo			
Shipment Date	June 17, 2015	Receipt No.	09XC10	Genre: Shipment Delivery Receipt	
Order Number	67-NY25	Delivery Duration	5 days		
Goods Details	Packing Weight	Packing Size	Quantity	Delivered Quantity	Comments
Received by: Mr. Boucle Noshed Shaker					
Complete Name & Signature of delivering agency person: Mr. Marlon Simpsons Signature					

Source: http://www.receipts-templates.com/wp-content/uploads/2014/11/shipment-delivery-receipt.jpg, 02.09.2017.

[14] http://www.in-time.hr/tnt-medunarodna-dostava/opci-uvjeti/, 02.09.2017.

5 TACHOGRAPH (CLASSIFICATION AB)

Tachograph is a measuring device designed to monitor the operation of the vehicle and the driver. It is factory-installed within the speedometer, and measures and records the running time, travel time, and speed achieved. The data can be seen on the control panel and the list on which the machine is printed. The use of these devices is mandatory for all cargo vehicles with a capacity of over 3.5 t, for vehicles with permissible masses with a connecting vehicle larger than 3.5 t and buses with over 8 + 1 passenger seats.[15]

For the first time, tachographs are introduced in the German Traffic Safety Act of 1952 for all commercial vehicles over 7.5 t load capacity. Agreement of the European Economic Community of 20.12.1985. The tachographs became mandatory as of 29.09.1986. The rules are standardized in the Republic of Croatia and are taken from the EU legal regulations and the rules defining the agreement on the work of the crew on vehicles carrying out international road transport (AETR).[16]

There are two types of tachographs[17]:

- An analog tachograph, which records on so-called "Teddy bear" - patterns of circular shape that drivers insert into the tachograph in the vehicle;
- Digital tachographs that store data on digital cards - every driver in this authorized institution can buy their identification digital card and use it when driving vehicles with digital tachographs.

Since 2009, there has been a requirement in the Republic of Croatia to install digital tachographs in all newly-registered vehicles. However, given the state of the car fleet of Croatian car dealers, the share of analogue tachographs in the total number is still very high.

The tachograph consists of[17]:

1. demonstrative parts of the device showing the length of the road travel, vehicle speed and time;
2. Parts of a device that record the length of the vehicle travel path, vehicle speed and time;
3. devices recorded on the record sheets separately for each case in which the logbook (sheets) is inserted, and the electronic tachograph disrupts the tacho generator voltage for more than 100 ms (except for illumination) at the latest until the power supply is

[15] Pravilnik o tahografima i ograničivaću brzine (NN 89/08), http://narodne-novine.nn.hr/clanci/sluzbeni/2008_07_89_2838.html, 02.09.2017.
[16] http://www.mppi.hr/UserDocsImages/9%20UREDBA%203821-85%2029-11_13.pdf, 02.09.2017.
[17] http://tahograf.com.hr/tahograf/, 02.09.2017.

switched off again and any voltage interruptions The distance traveled and speeds longer than 100 ms, and any interruption of the signal transducer from the distance traveled and the speed to the tachograph.

5.1 Analog tachograph device

Analog tachograph devices are divided into[18]:

- mechanical tachograph (Figure 11);
- electronic tachograph (Figure 12).

Figure 11 Mechanical tachograph

Source: http://digitalni-tahograf.hr/wp-content/uploads/2014/10/analognitaho1.jpg,02.09.2017.

Figure 12 Electronic tachograph

[18] http://tahograf.com.hr/tahograf/tahograf/analogni-tahograf/, 02.09.2017.

Source: http://www.adnanelektronik.com/wp-content/uploads/2015/05/1324-analog-takograf.jpg, 02.09.2017.

Analog tachographs are made in versions for all types of vehicles, for one or two drivers, with a speed counter. A special version of the tachograph is made for vehicles carrying dangerous goods. Such a tachograph is marked with an orange square (official STB mark) below the clock. Such a type of tachograph can not be replaced by other types of tachographs. In case of replacement, tachograph damage and tachograph electrical installation may be affected. An electronic tachograph requires a 12V or 24V power source from the vehicle battery, and the device has an optical output to the data storage systems. It is mounted in the vehicle as part of the instrument panel. There are no openings but the sheets are placed in special slots on the lower part of the tachograph. By design this tachograph can be intended for one or two drivers. Analog tachograph is dependent on a tachograph sheet where it stores time and resting information of a driver by printing a very fine line of lines on a special paper coated with paraffin. [19]

5.2 Digital tachograph device

[19] http://tahograf.com.hr/tahograf/tahograf/analogni-tahograf/, 02.09.2017.

The digital tachograph (Figure 13) is a monitoring device which ensures the entry time of the crew members, time spent in carrying out professional activities that are not in the vehicle's management, vacation time, vehicle speed and distance traveled. The law also introduces the obligation to use digital tachographs from 1 January 2009 in new freight vehicles over 3.5 tons of total permissible masses and buses.

Figure 13 Digital tachograph

Source: http://www.glasgacke.hr/edit/objekti/novosti/8237_1448628800.jpg, 02.09.2017.

The use of a digital tachograph is based on EU software and personalized smart cards that keep all the relevant data required for time records. The working memory capacity is such that it can store data for at least 365 days. The same data except the smart card chip they also write in the working memory of the digital tachograph located in the vehicle. It also has a built-in printer with the purpose of printing data on the driver's working time.[20]

5.3 Analogue tachograph sheet

Each tachograph must record on a list of three data[21]:

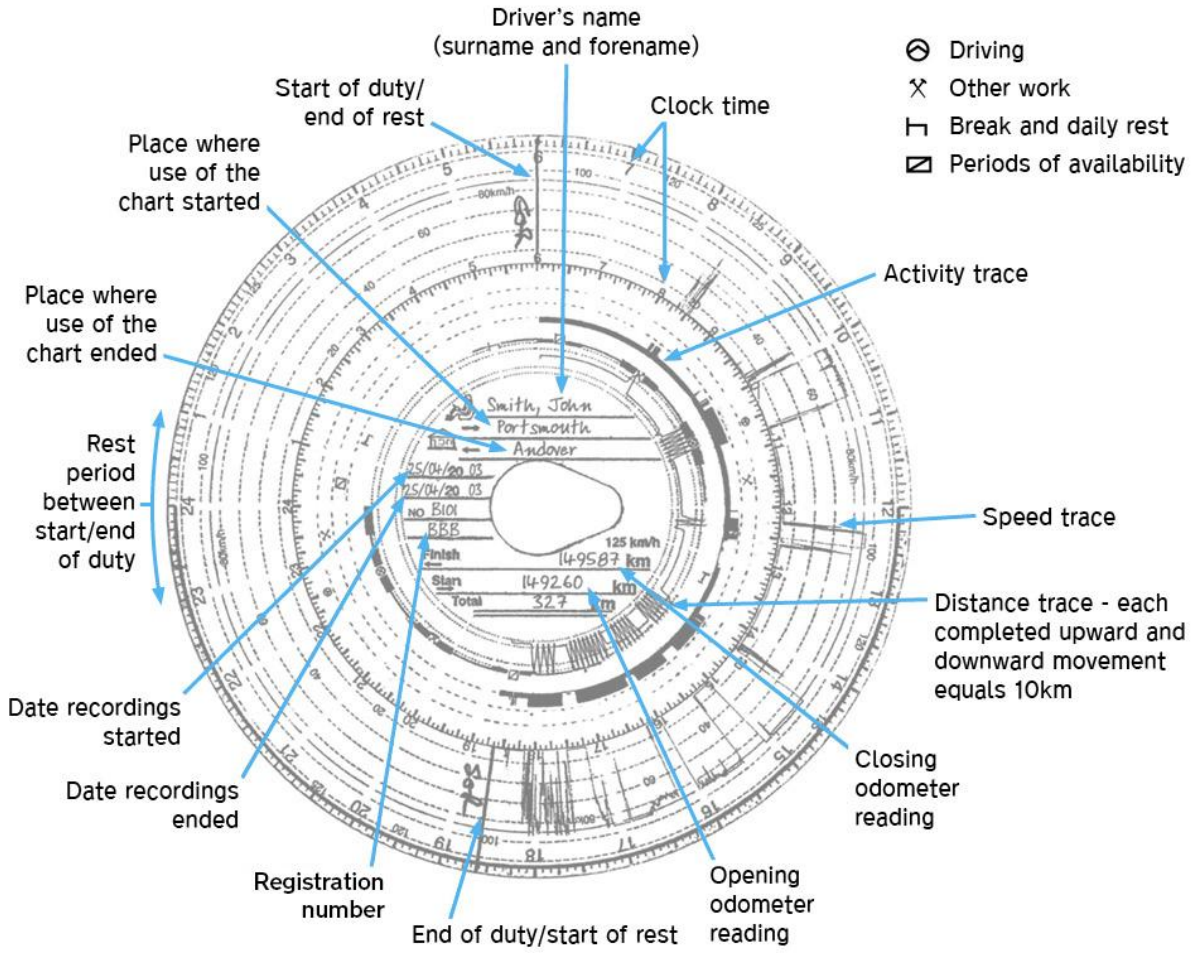
- the speed of movement of the vehicle;
- Working or resting time of the driver;

[20] http://tahograf.com.hr/tahograf/tahograf/digitalni-tahograf/, 02.09.2017.
[21] http://tahograf.com.hr/tahograf/tahograf/analogni-tahograf/

- The traveled time of the vehicle.

The tachograph records the mechanical pressure of the top of the printer on a tachograph sheet. It has a special layer of material (paraffin) on which pressure is achieved with a durable visible trace. Two time scales were printed on tachograph sheets, with 5-minute sub-scenes and specially marked full hours. Between these two scales is a record of the speed of the vehicle(Figure 14).

Figure 14 Analog tachograph sheet



Source: http://www.glasgacke.hr/edit/objekti/novosti/8237_1448628800.jpg, 02.09.2017.

The space between the lower timeline and the start of the track on the traveled route is foreseen for a record of working hours or driver rest. This record can have two different shapes - standard and automatic.

In the "standard" record, the record of each time group is in its circle. The "Standard" tachograph records the timing group according to the position of the switch regardless of

whether the vehicle is moving or idle. Time group readings are thus difficult because you have to pay attention to the speed record to accurately determine driving time.

The tachograph "automatic" of the time group records on a single circle with different thickness of the line. "Automatic" tachograph writes an automatic timing group that symbolizes driving when the vehicle is moving. If the tachograph is designed for the acceptance of two tachographs (driver and front passenger) the speed is automatically recorded on the tachograph driver's list (position 1). Therefore, in the "autopilot" tachograph switch to select a timer or driver rest (position 1 when a tachograph for 2 slides), there is no choice of driving time.[22]

Time groups for activity description[23]:

- driving time (only "standard" type of tachograph);
- the availability period, the time of the passenger or the start of the journey;
- period of break, rest;
- the period when you are doing anything other than driving.

5.4 Digital card

Keeping a record of driver's work, especially if it is up to the maximum allowed driving time and minimum rest time, has become more and more difficult due to frequent manipulations with a tachograph entry and impractical reading. With the idea of applying modern technology to solving the problems of the EU country's tachograph, they have prescribed the application of a digital tachograph that will simply be processed digitally. Because of the digital record, such a tachograph has been named digital. The biggest difference between the analog and digital tachograph is the use of "smart tachograph cards" instead of the tachographs so far, as well as the data on driving time, speed and distance traveled both on the tachograph itself and on the card. The records from the records shall be kept at the headquarters of the carrier for at least two years from the date of expiry of the period to which they relate. The employer keeps the records so that he can submit the records on inspection, print out data from the records or transfer data from the records to another medium at the request of the competent supervisory authority.

[22] Pravilnik o tahografima i ograničivaću brzine (NN 89/08), http://narodne-novine.nn.hr/clanci/sluzbeni/2008_07_89_2838.html, 02.09.2017.

[23] Golac B., Organizacija I tehnika prijevoza tereta u cestovnom prometu, Škola za cestovni promet Zagreb, 2007., str. 194

After the completion of the driver card issuing system in Croatia, drivers are required to print the driver's digital tachograph daily on completion of the work and print the data on their identity (personal name, driver's license number) and sign it(Figure 15). If a driver works with more than one employer, he receives information on the hours worked and is obliged to submit it in writing to other employers. The first data transfer from the driver card and the digital tachograph to the carrier database is done no later than 21 days after the first use of the driver card and the digital tachograph. The time between the two transfers of the electronic data from the card of the same driver to the database shall not be longer than 21 days and the period between the two transmissions of the electronic data from the digital tachograph memory for the same vehicle shall not exceed 90 days.[24]

Figure 15 Digital tachograph sheet

Source: http://www.glasgacke.hr/edit/objekti/novosti/8237_1448628800.jpg, 02.09.2017.

Each data transfer to the database refers to the data recorded in the period from the previous transmission. The employer must ensure continuous and complete data transmission.

Cards in the Republic of Croatia are issued by AKD. The driver card memorizes all the driver's activities and also controls the driver's compliance with the law on working hours.

[24] Pravilnik o tahografima i ograničivaću brzine (NN 89/08), http://narodne-novine.nn.hr/clanci/sluzbeni/2008_07_89_2838.html, 02.09.2017.

Particular care should be taken when handling a digital tachograph since all the activities remain memorized in the tachograph and card, especially the violations that have been memorized for 365 days.

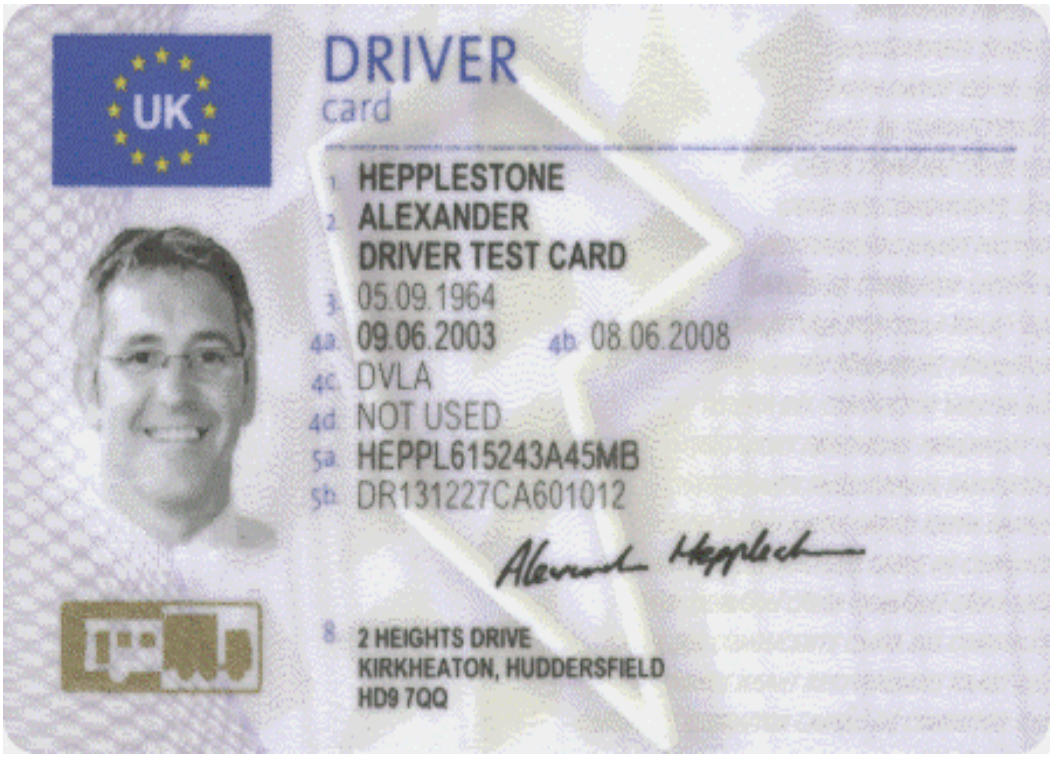
In addition to the driver card, there are three more types of cards: carriers cards, supervisory card cards, and workshop cards. There are a number of protective elements on the body of the card to prevent counterfeiting. The data inside the chip is encrypted to preserve the integrity of the recorded data on the card and in the digital tachograph. For this purpose, all the countries implementing the digital tachograph system are connected to a single computer network (TACHONET) to speed up the verification of applications submitted for cards and issued cards. Digital tachograph memory cards are standard dimensions as well as common credit cards. The system of a digital tachograph implies recording a driver information in the chip smart cards as well as inside their work memory. Each time a vehicle is operated, a mobile worker is required to use his driver card. Carriers holding their carrier card must periodically download and collect information from the vehicle devices but also from the card in order to confirm their compliance.

The role of NSAs is to verify the conformity of data in a digital tachograph system. Certified supervisors use special cards that allow them to read the digital tachograph directly.

The driver card(Figure 16) is issued for the driver who has a valid driver's license of the appropriate category. The card has a storage capacity of at least 28 business days for the driver. The driver may only be used by the driver card that reads on his name; Misuse of the card is subject to criminal liability.[25]

Figure 16 Driver card

[25] http://digitalni-tahograf.akd.hr/kartice.html, 02.09.2017.

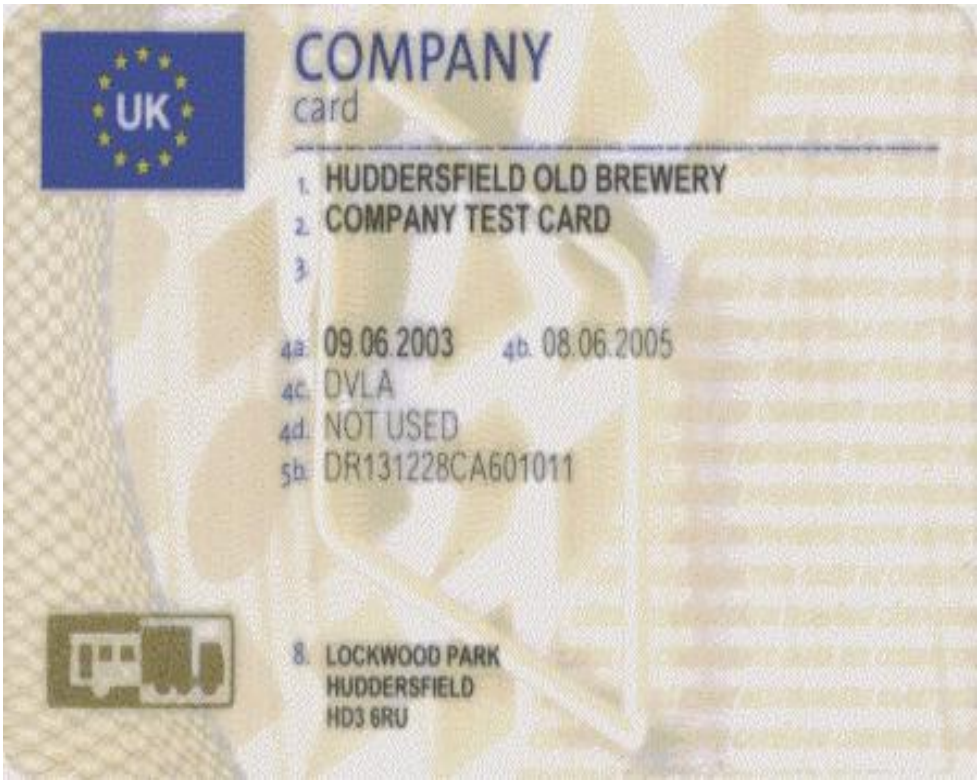


Source: http://www.rs-roadsoft.com/uploads/images/Digital%20Tachograph%20Driver%20Card%20Front.gif, 02.09.2017

The company card(Figure 17) shall be issued on behalf of the authorized person of the company employed by the company authorized for the transport activity in the Republic of Croatia at the request of the company legal representative. The purpose of this card is to protect the information contained in the digital tachograph and refer to the carrier company. It is issued for a period of 5 years.

Using the card of the company, data from the digital tachograph stores information about the driver's activities and displays, prints, and transmits data from the digital tachograph's memory.

Figure 17 Company card



Source: http://www.rs-roadsoft.com/uploads/images/Digital%20Tachograph%20Company%20Card%20Front.gif, 02.09.2017.

The supervisory control card(Figure 18) is issued for the name of the supervising official. The card user has the option of accessing the entire digital tachograph memory as well as transferring data to another medium. The card also stores all the activities the supervising official has undertaken by entering the date and time of each action taken. The card of the supervisory body is issued for a period of 2 years from the date of issue. The Ministry of the Sea, Transport and Infrastructure shall supervise the work of authorized supervisory officers.

Figure 18 Control card

Source: http://www.rs-roadsoft.com/uploads/images/Digital%20Tachograph%20Control%20Card%20Front.gif, 02.09.2017.

Workshop card is issued on behalf of a technician employed in a licensed workshop that carries out the workshop with the permission of the Ministry of the Sea, Transport and Infrastructure.

Workshop card(Figure 19) is issued for a period of one year from the date of issue. The card must have a security PIN, which is delivered to the technician at the address separate from the card, ie the issuance of a workshop card issue.[26]

Figure 19 Workshop card

[26] http://digitalni-tahograf.akd.hr/kartice.html, 02.09.2017.

Source: http://www.rs-roadsoft.com/uploads/images/Digital%20Tachograph%20Workshop%20Card%20Front.gif, 02.09.2017.

The complete data tracking and processing system consists of[27]:

- tachograph;
- visual inspection equipment and detailed recording of tachograph foils;
- electronic equipment for processing and recording data extracted from tachograph foils;
- an electronic computer for further processing of data with appropriate programs.

Card records are organized in files or files. The standard prescribes that there must be a root file on each card that contains a number of dedicated and elemental files. Since driver cards are derived in accordance with ISO / IEC 7816, stored data can be read using smart card readers and can be downloaded and stored on a computer in the form of .ddd files (Download Digital Data). Standard .ddd files are actually a copy of the memory contents of the driver's digital card and are therefore unreadable[28].

[27] Golac B.; Organizacija I tehnika prijevoza tereta u cestovnom prometu, Škola za cestovni promet Zagreb, 2007., str. 193
[28] Županović I.: Tehnologija cestovnog prijevoza, FPZ, Zagreb, 2002., str. 375-379

Therefore, it was necessary to develop a software solution that will adjust this "raw" data to the standard and display it in a form that will satisfy all users. In addition to the tabular presentation, there is also a graphical view of day-to-day work activities, which is particularly useful for experienced users in performing quick-time surveys for longer periods of time.

5.5 Legislation on recording and storing a tachograph

The current legislation in the Republic of Croatia is largely based on the rules defined in the EU and the signatories of the AETR Agreement (European Agreement on the Work of Crews on Vehicles Performing International Road Transport).

5.6 Analysis of the tachograph sheets

In the past, the data were processed manually using the appropriate forms. Only 1949 saw the first office machinery for mechanical processing and data recording from tachograph inserts, and today it is unimaginable to process data from a tachograph without the use of a computer. Also, in the past, the analysis was carried out by visual inspection of a tachograph (Photo 12), such as analysis of speed, driving time, standstill time, travel time, driver change and driving economy.

The main rule that carriers are obliged to keep records of work activities is the Law on Working Time, Obligatory Vacations of Mobile Workers and Road Signaling Devices, and the Rulebook on Transmission of Mobile Time Employee Data and Record Keeping.

The law specifically elaborates the system of using digital tachographs, monitoring and issuing cards to drivers and employers, and on the other hand, the Rulebook sets out the minimum conditions that employers must satisfy in relation to maintaining records of work activities and monitoring of mobile workers, defining the required form of work reports, Production of special AETR certificates for days when drivers do not carry out activities etc.

An essential prerequisite for meeting the prescribed standards is the ability to process and analyze data on driver activities. In order to achieve this, the transmission and basic data processing of the tachograph should be ensured.[29]

[29] Županović I.: Tehnologija cestovnog prijevoza, FPZ, Zagreb, 2002., str. 375-379

6 TRAVEL WARRANT (CLASSIFICATION ABC)

Travel warrant (Figure 20) is a basic document for calculation and posting of business trip costs that an employee has done under the employer's order. Since this is a document that is used to supervise the traveling costs (altogether with other valid documentation, such are receipts), it justifies the charges that were made during a travel. It is also necessary to pay attention that travel warrant contains all prescribed elements. Also, travel warrants are used by employers to prove that they have sent an employee to the business trip (together with eventual advance payment of travel costs). On the other hand, the employee can use travel warrant as a base for travel costs reimbursements. Travel warrant is a document that unifies the basic driver, vehicle and cargo information and it is issued by warrantee or other official person.[30]

Figure 20 Travel warrant

Source: https://dasdb9h4gaafx.cloudfront.net/677763/630/4ccaa39b1a4a0769357a2ccdef3ff8cc.jpg, 02.09.2017.

[30] http://iaudit.hr/najcesci-propusti-kod-izrade-putnih-naloga/, 02.09.2017.

Travel warrant is composed of two parts[31]:

- general data on travel task;
- general travel info

Before the travel warrant is issued , it has to be filled correctly with the info on travel task:

- name of the firm or vehicle owner;
- place and date of warrant issue;
- type of transport;
- name of driving personnel (vehicle crew);
- travel route;
- authorized person's signature;
- signature of the responsible person that guarantees technical correctness or used vehicle (together with other relevant vehicle info).

When travel warrant is taken, driver confirms (with his signature) that he has understood and accepted the task. After the warrant has been accepted, the driver is further responsible for filling the info on completed task. The driver is responsible to fill the following info:

- time of departure/arrival;
- gas, oil and grease refilling;
- signature of travel warrant.

The accompanying service should fill following info:

- traveled mileage (in km);
- info of vehicle usage

[31] Golac B.; Organizacija I tehnika prijevoza tereta u cestovnom prometu, Škola za cestovni promet Zagreb, 2007., str. 102

7 CONCLUSION

Documents that are used within three basic transport types can be regarded as a crucial part of transport information network since they facilitate organization and transfer of goods within certain country (if that country has accepted directives within those documents).

This thesis explains the documentation that goes with cargo, vehicle and driver, as well as documentation that consolidates transportation categories. These documents are used to inform transportation system participants and, thus, they make cargo handling easier, help to control driver's preparation as well as technical correctness of vehicles, which should result in safer and more efficient transportation process.

Driver documentation is used to ensure that driver is capable and fully qualified for required transportation tasks.

Vehicle documentation confirms that vehicle is technically correct and that certain vehicle is fully suitable for specific transportation task.

Cargo documentation goes with certain cargo all along transportation routes and is used to inform transport participants on necessary transport conditions that should be provided for that type of cargo. It also contains destination specifications as well as cargo properties which should prevent possible damages and prevents cargo loses.

Every document within transportation system should be legitimate so it can ensure safe transport flow. Contrary, authorities can prevent the transportation and specific measures can be performed which will result in removal of detected incorrectness.

8 LITERATURE

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