

Ensuring safe and comfortable mobility for people with locomotor disabilities

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ABSTRACT

Following paper details some of the aspects regarding the social integration of people with disabilities in the Romanian society and highlights the difficulties wheelchair bound people encounter in public spaces when performing day to day activities. For a thorough examination of the problem we studied the challenges facing a wheelchair bound student who takes part in all the normal activities for a person of their age.

Key words: wheelchair bound people, mobility, traffic safety

1.Preface

In Romania there are 690,469 persons with disabilities registered in 2011, out of whom 10% are children. The vast majority of 673,359 are non-institutionalized [1]. These people, according to the regulations in force, benefit from the same rights as the rest of the population. Although the social system in Romania has really started to adapt to European standards, a large number of disabled people remain neglected.

In the Government decision of 1175/2005 were established the following, as "general and specific objectives: promoting social integration of disabled people as active citizens able to control their lives; the growth of institutional and administrative capacity, the active participation and access to social services; strengthening the public-private partnership; promoting the provision of quality services that meet the individual needs of the disabled person, the accessibility of the physical and informational environment, as well as transport and housing; the correlation of the protection system of the disabled child with that of the disabled adult

However, up to now, access to education, medical assistance, employment, public transport, living conditions and of movement in the physical environment have been insufficiently

resolved by the local public authorities. In order to be able to support people with disabilities, it is necessary to identify the difficulties these people encounter in their daily activities held in public space. The provision of mobility for these persons remains their only possibility of continuous adjustment to the environment.

2. Types of impairments

The "General Directorate for the Protection of Persons with Disabilities" presents several types of deficiencies : physical, somatic, auditory, visual, mental, psychic, associated, HIV/AIDS, rare diseases, deaf blindness, with different degrees of manifestation: severe, increased, medium or mild.

The legislation in force imposes some specific norms for the adaptation of civil buildings and the urban spaces related to the requirements of people with disabilities through the norm NP051/2001, for the following deficiencies: deficiency of the limbs, visual and auditory. Motor impairments of the limbs include persons with difficulties in walking, wheelchair users and with difficulty moving the limbs. Minimum measures provided in the rules are presented in the table below [3]:

Table 1

General measures regarding the categories of disabled persons		Housing		Public buildings					Urban space			
		individual	collective	sports	tourism	schools	entertainment	shops	Pedestrian traffic	Road traffic	Urban stops	Urban furniture
people with motor disabilities of the limbs	With walking difficulties	Access, stairs, ramps, railing, handrails, doorsteps, bumps, maneuvering spaces, windows, balconies, toilets, commands, signals, size and equipment		Access in building, maneuvering spaces,, bumps, horizontal and vertical movement, doorsteps, accessories, handrails, signals, ramps, size and equipment					Refuges, ramps, maneuvering spaces, crossings, road signs, parkings, subways, urban furniture			
	Wheelchairs users	Access, stairs, ramps, railing, handrails, doorsteps, bumps, maneuvering spaces, windows, balconies, toilets, commands, signals, size and equipment		Access in building, maneuvering spaces,, bumps, horizontal and vertical movement, doorsteps, accessories, handrails, signals, ramps, size and equipment					Refuges, ramps, maneuvering spaces, crossings, road signs, parkings, subways, urban furniture			
	With difficulties moving their arms	Commands (accessories, rails) Refuge areas in case of fires Equipment and furniture positioning Parapets		Commands (accessories, rails) Refuge areas in case of fires Parapets Equipment and furniture positioning					Handrails Parapets Ramp slopes			

3. Road traffic

The three components of traffic, the human, the vehicle and the path, exhibit a biunivocal relationship between them. In this system man has a major involvement through the roles he plays – he is an independent component of the system but also a factor in creating and influencing the other two components. Every human being is also the most vulnerable link of the system, that is why road traffic must be carried out in the highest safety conditions.

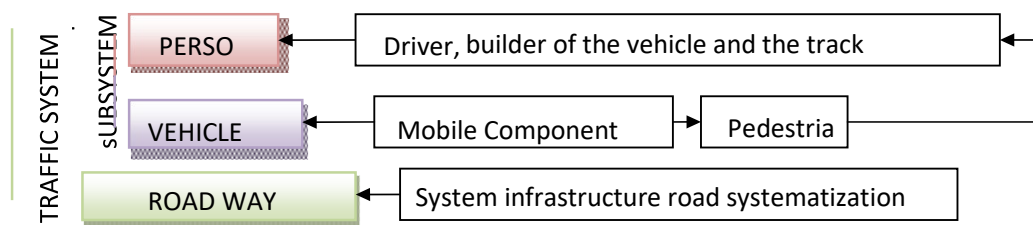


Fig.1 road traffic

Road traffic combines vehicular traffic and pedestrian traffic and can be active or passive. Man, as the decision-making factor of the system, must understand the way to traffic/stationary and the difficulties encountered by all road users, be they drivers (individuals, employees, employers, businessmen, police officers in mission, firefighters, etc.), cyclists, pedestrians or people with disabilities.

4. Mobility of wheelchair users

Traffic Police statistics do not show references to the accidents in which disabled people are involved. In the Traffic Code there is the specification that "The person with a physical disability physically can take the exam to obtain the driver's license for the categories A /or B if the vehicle used for the examination is adapted to her disability" [4]. Cars can be adapted to the needs of the disabled person, according to the regulations of Romanian Car Registry.

Everyone's mobility needs are the same, regardless of everyone's physical condition. In order to help wheelchair users, it is important to be aware of the difficulties they encounter in their daily activities which involve moving into the public space but also to get actively involved in solving them.

We specify that this segment of the population has the possibility to move individually, using the wheelchair, manually or electrically operated, with which they can secure their access to public transport, in their own vehicle, or on an electric scooter.



Fig 2 – Manually operated wheelchair, electrically operated and electric scooter

5. Case study

To understand the way of movement and the possible obstacles encountered by disabled people, we considered the following situation. A Faculty of Constructions student (CFDP specialization), carries out his school activity in the building in proximity to the campus, where he benefits from a place to stay in Dormitory II, he buys the necessary goods from the nearby shopping center and attends treatment sessions in the nearby Recovery Hospital.

In the image below, you can see the locations the student needs to get to on a typical day. We will discuss the routes: Student dormitory - Faculty - Canteen; Student dormitory – Hospital; Student dormitory – Shop and we will present the possibilities of going through them.

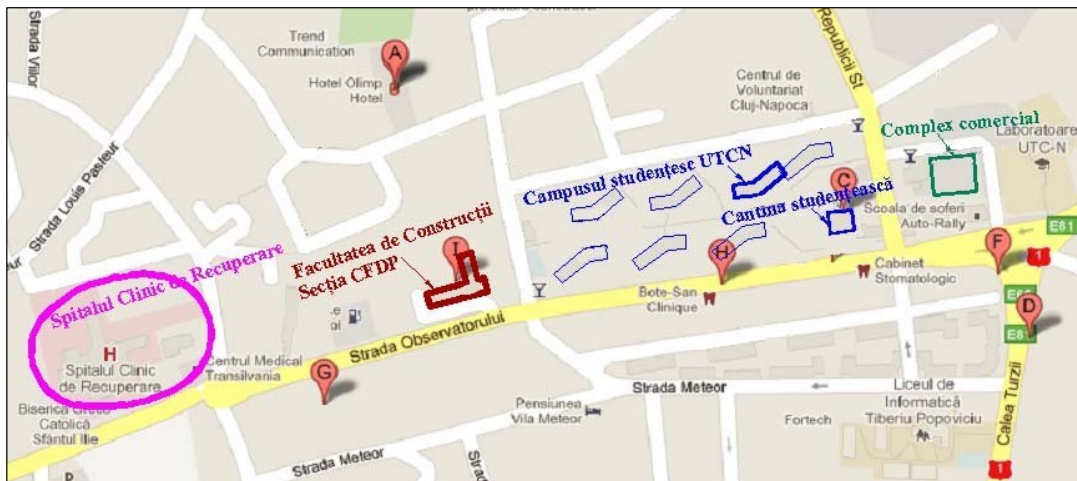


Fig.3 – Case study

🦽 Mobility with a manually operated wheelchair is possible on all of the three routes, but it is difficult on the route to the Hospital, due to some elements of the driveway. It is not recommended to walk on the road side because the cars usually record irresponsibly high speeds on this road section. The student will have to drive on the sidewalk.

The longitudinal slope on this section requires a considerable physical effort, crossing adjacent streets is not regulated/materialized and access to/from the sidewalk is made difficult by the poor condition or lack of ramps access in the direction of travel.

In some places, recent pavement interventions can be seen, but without adapting the curbs to the needs of movement of disabled people. Furthermore, drivers are not aware of the possibility of some vehicles moving on the sidewalk (wheelchairs, strollers, bicycles, etc.) and park in front of or on these ramps.



Figure 4 – Situation of access ramps on the sidewalk

Getting around in a manual wheelchair is arduous, speed and maneuverability are reduced and involves overcoming many obstacles, a situation for which our student travels in reduced safety and comfort conditions.



Figure 5 – Obstacles on the sidewalks

On this route, the student also has the opportunity to travel by bus, which is properly equipped for easy boarding/disembarking. In addition, bus drivers carefully choose where they park when they notice a wheelchair user.

♿ Getting around in the power wheelchair takes a while shorter because it allows reaching a speed of up to 6 km/h. In this case, the routes can also be traveled on the road surface, in the first lane, but choosing streets without heavy traffic is required, even if takes longer. It is very important to have the vehicle properly equipped so as to increase visibility on the road to alert other traffic participants, but it is also vital to know the traffic rules.

The electric wheelchair offers an easy handling, accessibility and increased comfort. In terms of cost, the electric wheelchair can be compared to the scooter type. In case the physical condition of our student allows the use of the scooter, he will have multiple advantages.

♿ Getting around in an electric scooter wheelchair would be an excellent possibility for our student, a solution that overcomes the mobility barriers of people with disabilities in the opinion

of Romanian society. If using the scooter-type vehicle, the student must know the traffic rules and apply them correctly, make sure that it is visible to other road users and that the electrical installation for signaling works. Travel is done at a speed of 8 km/h, in optimal conditions accessibility, safety and comfort and easy handling.

♿ It would be possible for the student to travel in his own vehicle, the parking being provided by subscription in the premises of the campus and in the parking lot at the Faculty, located less than 40 m from buildings. We specify that, in these parking lots, there are not any regulated places for disabled people, although at least 2 places should be attributed to them. I believe that in case of a request of this type, the campus personnel would mobilize and make the right changes.

After completing the routes, it can be added that the access of wheelchair users in the premises of the Faculty, Dormitory II, the Hospital and the Shopping Centre is possible. Problems were registered with the access to the Canteen, with the pedestrian crossing traffic lights near it and at the crossroads with several adjacent streets, where the difference in level of the curbs from the roadway only allows access to/from the pavement with the help of a person to operate the wheelchair.

Conclusions

Following the study, we notice that people with disabilities are not perceived as active participants in road traffic and that society does not show concerns for their integration into the usual activities of everyday life. On the other hand, according to statistics of the National Authority for Persons with Disabilities, up to 20% of all public buildings are adapted to the needs of disabled people, which determines a very poor participation of them in the life of the society in which they live [1].

Moreover, the way in which people presenting a disability to society could be dramatically improved if we consider the fact that most of them are fit for certain types of work and the only thing that prevents them would be a detail of the degree of access to that space, for example. At the same time, unemployment for this category could stop being paid, being invested for lasting actions that would help facilitate access to public space [5]

Information about wheelchair users could be submitted to public events, for example at the action of the Road Brigade, which on September 30, 2011, dedicated one day to Crime Prevention Week, Road Safety, in schools and at the theoretical courses of the driving school. You can follow the campaigns undertaken by the aid associations that are posted on the Internet [6], and that gave the chance to ordinary people to spend a minute in a wheelchair.

Getting around in electric scooter wheelchairs is carried out according to the legislation in force, on the right side of the public road, in the direction of traffic, as close as possible to the edge of the driveway, respecting the meaning of road signs and the traffic rules. If a road is provided with a special track intended for traffic bicycles, they, as well as mopeds, will be driven only on that track [4].

On pedestrian walkways on the campus the student must give the right of way to pedestrians, pay attention to cyclists and when vehicles appear. When leaving the road, he must make sure that he can enter the flow of traffic, pay attention to possible obstacles on the road - manholes, stationary cars starting suddenly, etc. – or defects of the road surface. It is mandatory to know and apply the traffic rules and to ensure that he is visible to other road users.

<http://users.utcluj.ro/~boitor/docs/asigurareaMobilitatii.pdf>