

TECHNICAL AND CONSTRUCTION STUDY ON THE ACCESSIBILITY OF CENTRES FOR DEVELOPMENT OF INCLUSIVE PRACTICE IN THE UNA- SANA CANTON

– CITY OF BIHAĆ – Satellite school of the
Harmani II Elementary School, Žegar

– MUNICIPALITY OF CAZIN –Cazin II Elementary
School

1. INTRODUCTION

1.1. ABOUT ACCESSIBILITY

Accessibility implies all those elements enabling that children with disabilities and disabled persons live independently and equally participate in all aspects of life. The notion of physical accessibility is closely related to the notion of a spatial barrier. Physical barriers hinder and/or prevent unhindered access, movement, stay, work and education. They occur when spaces and areas for movement become too tight to walk, stay, manoeuvre, or do not exist at all. Physical accessibility greatly affects the academic and social life of children with disabilities, in other words, physical obstacles prevent the full inclusion in everyday life events.

We are often faced with the fact that during space adaptation activities, attention is paid only to children with motor disorders, while disregarding children with impaired hearing and vision. This is supported by the fact that some adjustments for people with hearing and vision impairments are not standardized. This study, in the section on physical accessibility, includes considerations on all categories of children with disabilities and their needs, with the aim of raising awareness, improving accessibility and using design for all.

Design for All is an indispensable element of this topic. It represents an interdisciplinary concept of design with extremely high aesthetic requirements that comprises a large number of social categories including all their needs.

Although there are no universal accessibility designs in the world when we talk about all children with disabilities following the principles of Design for All, recommendations for standardisation issued by the international organization *Rehabilitation International*¹ will be used for the purpose of accessibility of the Centres for Development of Inclusive Practice in the Una-Sana Canton. These standards and recommendations for the development of standards have been used in all countries that have drafted laws, regulations and protocols for the introduction of accessibility.

1.2. DEFINITION OF ACCESSIBILITY

Accessibility is the result of the implementation of technical solutions in the design and construction of buildings ensuring that the access, movement, stay and work in these buildings for children with disabilities and disabled persons and persons with impaired mobility is as unhindered as for all other people. Therefore, an accessible building is the building, part of the building or equipment that ensures the fulfilment of the required accessibility elements².

Mandatory accessibility elements are design and construction elements that determine the size, properties, installations, devices and other building equipment in a way that ensures

¹ www.riglobal.org

² Rulebook on ensuring the accessibility of structures for persons with disabilities and impaired mobility, OG, 151/05

access, movement, stay and work of children with disabilities, disabled persons and persons with impaired mobility on equal terms with all others. They are implemented by selecting the most favourable solution with respect to the purpose and other properties of the building, and can be divided as follows:

- Accessibility elements to struggle with differences in height,
- Accessibility elements of independent living and
- Accessibility elements of public transportation.

This study focuses on the elements of accessibility relating to differences in height and elements of accessibility of independent living within the Centres for Development of Inclusive Practice in the Una-Sana Canton.

To overcome differences in height in the areas used by children with disabilities and disabled persons and persons with impaired mobility, the following accessibility elements can be used: ramp, staircase, elevator, vertical platform lift and inclined platform lift.

In order to enable independent living, children with disabilities and persons with impaired mobility use the following accessibility elements within the Centres for Development of Inclusive Practice: entrance area, communications, toilet, divisions, electrical wirings, door handles, notice board and orientation map.

Accessibility signs are signs that indicate the applied mandatory accessibility elements. The size and colour of each accessibility sign and the type of material that will be used to produce the sign are subject to the background on which the sign will be posted, the appearance of the interior and exterior space, and the distance from which children with disabilities and persons with impaired mobility should be able to spot the sign.

1.3. ABOUT DESIGN FOR ALL

The accessibility of Centres for Development of Inclusive Practice in the Una-Sana Canton is based on the principles of „Design for All“. Design for All means designing products, environments, programs and services in a way that all people can use them to the maximum extent, without the need for customization or special design³. The notion of Design for All and related concepts of „inclusive design“ and „design for all“ were developed simultaneously in different parts of the world: Scandinavia, the United States, Great Britain, etc. These efforts are summarized in the Stockholm Declaration adopted at the 2004 European Institute for Design and Disability (EIDD) meeting. The Stockholm Declaration describes the Design for All as „design for human diversity, social inclusion and equality“, „a holistic and innovative approach represents a creative and ethical challenge for all architects, designers, entrepreneurs, administrators and political leaders“⁴.

Design for All aims to enable all people to have equal opportunities to participate in every aspect of society. Design for All designs environments and services with the objective that

³ Convention on the Rights of Persons with Disabilities, 2006

⁴ <http://www.designforalleurope.org/Design-for-All/EIDDDocuments/Stockholm-Declaration/>

everyone - including future generations, regardless of age, gender, ability or origin – can participate in the creation of society and has equal opportunity to participate in economic, social and cultural activities, recreation and leisure, as independent as possible⁵. To achieve this, the built environment, everyday objects, services, culture and information - in short, everything that is designed and made by people to be used by people – must be accessible, convenient for everyone in society to use and responsive to evolving human diversity. Design for All makes conscious use of the analysis of human needs and aspirations and requires the involvement of end users at every stage in the design process.

At the same time, it does not exclude ancillary devices or aids for certain groups of children with disabilities in those cases where necessary⁶. The principles of Design for All have emerged as a result of the collaboration of planners, industrial designers, engineers and researchers in the area of spatial design, and should serve as a guide when designing space, products and means of communication. They can also be used for the assessment of the existing design, in design process management and in education of both the designers as well as consumers about the properties of services and space that make them easier to use.

Design for All is based on seven basic principles:

- 1) Equitable use, regardless of the individual's abilities,
- 2) Flexibility in use through accommodating a wide range of individual preferences and abilities,
- 3) Simple and intuitive use through design easy to understand regardless of the user's experience, knowledge, skills or current concentration level,
- 4) Perceptible information communicated effectively to the user regardless of the user's sensory abilities,
- 5) Tolerance for error through design that minimizes hazards and the adverse consequences of accidental or unintended actions,
- 6) Low physical effort for efficient and comfortable use of design,
- 7) Size and space for approach and use through the appropriate size and space for reach and manipulation, regardless of the user's body size, position or mobility.

Accessible objects, buildings and spaces accessible to all and easy to use improve the quality of life for all people rather than only to children with disabilities and disabled persons. Design for All can be said to represent overcoming of all created barriers, both in space and in attitudes of the members of the society. Accessibility based on Design for All facilitates not only the attendance of children with disabilities in the Centres, but also sensitisation of members of society by providing an example of good practice for genuine respect for diversity.

⁵ Design for All Foundation, 2006

⁶ Convention on the Rights of Persons with Disabilities, 2006

1.4. LEGAL FOUNDATION FOR THE DEVELOPMENT OF THE STUDY ON ACCESSIBILITY OF CENTRES FOR DEVELOPMENT OF INCLUSIVE PRACTICE IN THE UNA-SANA CANTON

The United Nations Universal Declaration of Human Rights (1948) is a recognition of the inherent dignity and of the equal and inalienable rights of all members of the human family. This principle represents the foundation of international and national documents protecting all categories of human rights.

The United Nations Convention on the Rights of Persons with Disabilities (2006) is an international treaty that protects the rights of people with disabilities, while respecting the fundamental principles of the Universal Declaration of Human Rights (respect for inherent dignity, freedom of choice and independence of persons, non-discrimination, gender equality). Therefore the general principles list the following obligations: full and effective participation and inclusion in society, respect for difference and acceptance of children with disabilities as part of human diversity and humanity, equality of opportunity and respect for the evolving capacities of children with disabilities and persons with disabilities⁷.

It should be noted that the States Parties⁸ to this Convention undertake to ensure the full realization of all human rights and fundamental freedoms for all children and persons with disabilities without discrimination of any kind on the basis of disability. To this end, they undertake to adjust their legislation and take all appropriate measures for the implementation of the rights recognised in the present Convention. In this way, with its provisions the Convention on the Rights of Persons with Disabilities (2006), on the one hand, guarantees and on the other hand, obliges the States Parties to the practical implementation of fundamental human rights, as well as their elaboration for full enjoyment also by children with disabilities and persons with disabilities.

The Convention on the Rights of Persons with Disabilities (2006) attached great importance to the implementation of appropriate measures to ensure accessibility for children and persons with disabilities, as it aims to ensure that children and persons with disabilities are independent from assistance of other persons and can fully participate in all areas of life. Without accessibility there can be no equality of opportunity. States therefore undertake to take appropriate measures in terms of⁹:

- a) implementation of minimum standards and guidelines for the accessibility of facilities and services provided to the public,
- b) ensuring that private entities that offer services and facilities for the public take into account all aspects of accessibility,
- c) providing training to stakeholders on accessibility issues facing children and persons with disabilities,
- d) providing in facilities open to the public signage in Braille in forms easy to read and understandable to children and persons with visual impairments,

⁷ Convention on the Rights of Persons with Disabilities, 2006

⁸ Bosnia and Herzegovina is a signatory to the Convention

⁹ Convention on the Rights of Persons with Disabilities, 2006

- e) providing forms of live assistance and intermediaries to facilitate accessibility to buildings and other facilities open to the public,
- f) promoting other appropriate forms of assistance and support to children and persons with disabilities to ensure their access to information,
- g) promoting access to new technologies,
- h) promoting accessibility of information and communication technologies and systems at an early stage, so that these technologies and systems become accessible at minimum cost.

Evidently, the legislation clearly indicates the commitment of each State Party to the Convention to implement an active policy of adapting society and the environment to children and persons with disabilities. Apart from the legislation, it is important to emphasize the viability of the Study on Accessibility pertaining to the human rights model that obliges every social community to respect individual diversity regardless of their origin and to enable each member of society to participate in social events and the life of a local community. The accessibility of the Centres for Development of Inclusive Practice will enable the use of services of the Centres for all children with disabilities, regardless of their different interests, needs and abilities, and to all parents of children with disabilities to actively participate in fostering the development of their child. Centres for Development of Inclusive Practice represent the core of support for children with disabilities fostering early intervention for the purpose of smooth inclusion in the educational system and the society as a whole. The activities of the Centre will contribute to improving the quality of inclusion in the Una-Sana Canton, while the accessibility of the Centres will enable all children to use their services.

1.5. STANDARDS OF ACCESSIBILITY

As noted earlier, there are no uniform global accessibility standards, and this study indicates the standards recommended by the international organization *Rehabilitation International*. The following table summarizes the standard of accessibility of facilities that will in addressing the accessibility of Centres for Development of Inclusive Practices.

Table 1. Standards of accessibility by area

AREA OF ACCESSIBILITY	STANDARD OF ACCESSIBILITY
Information accessibility	<ul style="list-style-type: none"> – tactile surface up to the height of 5,00 mm, – sound signals, – notice board should be positioned so that the posted content is visible to persons in wheelchairs, that is, the bottom edge at the height ranging from 120 to 160 cm – orientation map provided in raised relief, horizontally posted at maximum 90,00 cm next to the entrance to the building, – information in Braille signage, – from entrance door to the map, a tactile surface guiding the direction, 40,00 cm wide.
Physical accessibility	<u>ENTRANCE AREA</u>

- at least 100 cm wide for smooth passage through at least 20% of the usable space

MOVEMENT AREA

- at least 120 cm wide, ideally 150 cm

MANEUVRE AREA

- at least an area of a 150 cm diameter circle

ACCESS RAMP

- slope up to 5,00 %,
- width 120,00 cm outside/ 90,00 cm inside,
- resting area 150,00 cm long at every 6,00 m of ramp length,
- handrail with a radius of 4,00 cm at the height of 60,00 cm and 90,00 cm, extended 30,00 cm at ramp start and end and rounded,
- slip-resistant hard surface,
- marked with accessibility signage.

STAIRCASE

- height up to 15,00 cm,
- the width of a step at least 33,00 cm,
- the length of a step at least 110,00/120,00 cm,
- noses of steps 2,00 cm slip-resistant and in contrasting colours,
- tactile warning sign at the top and bottom of staircase 40,00 cm along the entire length of stairs, grooves vertical to the walking direction,
- inclined staircase platform.

DOOR

- entrance one-wing door, slide door or opening outwards 110 cm/ 210 cm,
- double-wing entrance door 90,00/210,00 cm x 2,
- internal door with doorway width of at least 80 cm.

THRESHOLD

- must not be higher than 2 cm, otherwise it prevents independent movement of persons in wheelchairs

LIGHTING

- 100 lux for movement,
- 200 lux for entrance area.

INSTALLATIONS

- All protruding more than 10,00 cm should be built into the wall.

TOILETS

- entrance 90,00 cm,
- outward opening mechanism in case of emergency,
- toilet seat at the height of 45,00-50,00 cm,
- 2 rails (1 bendable) for arms with the length of 90,00 cm at the height of 80,00 – 90,00 cm,

	<ul style="list-style-type: none"> - Toilet seat at a distance from wall of at least 65,00 cm, - Flushing mechanism at 70,00 cm above the floor or a sensor, - Washbasin at least 50,00 cm wide at a height of 80,00 cm, - Twist action tap or sensor tap, - Space width in front of the toilet seat and washbasin at least 90,00 cm, - Free space for wheelchair spinning – a 150,00 cm diameter circle, - Inclined twist mirror with lower edge at 100,00 cm, - Towel holder at 120,00 cm, - Alarm device with panic cord or switch at a height of 60,00 cm, - Tactile surface to the toilet with kerbs in the direction of walking and width of 40,00 cm.
Electrical wirings	<ul style="list-style-type: none"> - Switches at a height of 90,00 – 120,00 cm, - Yellow lighting with potentiometer, - Indirect/diffused lighting on lateral walls.
Environmental accessibility	<ul style="list-style-type: none"> - Outdoor playground and equipment on rubber mats, - Trees with lowest branches at 200,00 cm from the ground, - Passable main corridors, - Tactile surface with kerbs in the direction of walking of 40,00 cm width, - Tactile surface in direction changing spots with different texture (kerbs opposite to the direction of walking).

2. PHYSICAL BARRIERS – ADJUSTMENTS AND SOLUTIONS

2.1. PHYSICAL BARRIERS

This section of the Study needs to take into consideration general barriers faced by children with disabilities and disabled persons and how to overcome them according to the recommendations on good quality construction. It is necessary to create facilities for all persons and enable realization of their needs, that is, timely identification of barriers that can be **vertical, horizontal, ergonomic, anthropometric and sensory**.

Vertical barriers for children with motor disorders are the biggest problem. Barriers, or differences in height, should not exceed 2,00 cm so that even children in wheelchairs can successfully overcome them. Alternatively, accessibility elements to overcome differences in height are being constructed (access ramps, inclined platforms, etc.).

Horizontal barriers prevent entry and safe movement in facilities and spaces. Too narrow entrance areas and too narrow corridors prevent the unobstructed movement of two children in wheelchairs or children using mobile moving aids. The door and corridor of a minimum width of 90,00 cm allow for safe passage to all children. The door as well as entrance to elevators should be at least 90,00 cm wide. Access paths to buildings and corridors inside the buildings should be at least 150.00 cm wide so that a child does not change the direction of movement if another child comes from the opposite direction. It is even better if the width of interior corridors is 180.00 cm so that two children in wheelchairs or with the help of other aids could easily pass each other. When it comes to internal corridors, the width (with the exception of

the entrance area) of 120,00 cm is sufficient. It is proposed that the entrance corridors should be at least 150.00 cm wide because they should accommodate additional space for other activities or functions.

Ergonomic barriers prevent or impede smooth and free use of equipment and items during a stay in the Centre. Ergonomics takes into account the child, his possibilities, abilities and limitations allowing for an assignment to be given to a child. This approach enables the proper use of child's energy in an environment in which it can achieve maximum impact without unnecessary exposure to the risk of injury or illness. Ergonomic design is the design of objects to be used by a child and takes into account child's abilities and limitations.

Anthropometric barriers occur whenever construction planning does not take into account a child as the benchmark. A child that comes into direct contact with the inventory becomes part of the anthropotechnical system that consists of a movable part (human body) and a fixed part (technical object)¹⁰. Whenever there are planning or improvement efforts, the starting point should always be anthropometric information about the child. It is proposed that the equipment be set up and arranged so that it can be easily used by as many children as possible.

Sensory barriers occur when during the planning and adaptation of accessibility of facilities, no consideration is given to the requirements and needs of children with visual impairments and children with hearing impairment. For orientation, children with vision impairments use touching and/or sound, and children with hearing impairment use vision. Therefore, all information should be available by using at least two senses: vision, hearing or touching. Availability, timeliness, comprehension and clarity of information need to be ensured. It is also important to take care about simple reading and writing in accurate letters of appropriate size and good contrasts. Lighting should be properly managed, it must not burden the eyes, and directions on hazards should be timely indicated.

2.2. PHYSICAL ADJUSTMENTS AND PROPOSED SOLUTIONS

After an indication of the general Physical barriers that need to be taken into account for adaptation of accessibility of the Centres for Development of Inclusive Practice, this section of the Study will propose general recommendations and possible solutions concerning the basic elements of accessibility of facilities.

2.2.1. ACCESS AREA

Access and transit areas include all access points to the Centre, entrance areas, staircases, elevators and corridors. Proper planning of access areas, passages, entrances, corridors and the like enables unhindered movement and use of these facilities. The access area should be sufficiently wide to enable easy access. Facilities should enable the smooth movement of children with motor disabilities as well as children with vision impairments who are assisted by

¹⁰ Smardzewski, 2009

guide dogs or sighted guide (persons). The width of the access area should not be less than 190,00 cm.

2.2.2. STAIRCASE

The folding inclined platform lift should have a landing platform size of at least 90 × 100 cm. The side protection flap should be at a height of 20 cm and have a foldable safety hand-rail. The accessible folding inclined platform lift should be marked with accessibility signage.

2.2.3. ENTRANCE AREA

The entrance area to the Centre is the entrance approached directly from the public pedestrian area or with the help of accessibility elements to overcome differences in height. Accessible entrance area should be marked with accessibility signage. Entrance planning and adaption require special attention; the entrance should be positioned so that it can be reached at any time without difficulty. The entrance should include protection against extreme weather and rainfall, it should be well lit and enable unobstructed movement and use for all. The entrance area should have lighting of at least 200 lux, and the width of the entrance door should be 110/210cm. The entrance door should be revolving or slide door. It is recommended to avoid revolving door as they make the movement of children in wheelchairs more difficult and represent an increased risk for children with visual impairment. The entrance door should have a sign showing the direction of door opening.

2.2.4. INVENTORY

Accessibility of inventory greatly affects the accessibility of facilities for children with disabilities. When it comes to layout of inventory, consideration should be taken about the size allowing manoeuvre space. Equipment that is reachable by children in wheelchairs and does not obstruct the movement, needs to be affixed to the wall and should have contrasts in relation to the floor and walls. When purchasing the inventory, consideration needs to be given to the active reach by children in wheelchairs. The size of the tables should be such that the upper surface is at a height of not more than 85 cm and no less than 70 cm above the floor with knee clearance of at least 50 cm. The size of the chair should meet the following criteria: a seat at a height of 45 cm, a seat size of 40×40 cm and a back rest height of 50 cm, although the chairs and tables adjustment cannot be determined in advance since there will be children who will need special adjustments, depending on their specific functionalities. Some children will require specially designed and constructed stools with support in the lumbar, thoracic or cervical part. For children with the mentioned special adjustment needs, tailor-made inventory will need to be subsequently provided. This fact must not be ignored since non-adjusted chair or wheelchair may result in the development of secondary deformities that are caused by inadequate treatment rather than the nature of child's disability.

2.2.5. EVACUATION SYSTEM

Bosnia and Herzegovina does not have regulations on evacuation procedures concerning children with disabilities. There are many reasons for differentiated regulations concerning the

system of evacuation of children with disabilities. The fact is that the evacuation of children with disabilities is an exceptional and rare situation and most people do not even wonder what to do and how to proceed in the event of evacuation in general, let alone how to proceed when children with disabilities are faced with such a situation. Since there is no legislation requiring evacuation plans, it is not clear who has the responsibility to develop evacuation plans and evacuation systems for children with disabilities. The sections below will present advice on how to treat children with disabilities in emergency situations.

The best way to help children with disabilities is to approach them individually and identify the needs relative to the evacuation situation. Many people who support children with disabilities do not recognize the need for assistance in situations requiring evacuation, so that by informing and pointing to the gravity of the situation, the awareness about the necessity and needs of children with disabilities will be brought to light. At the same time, children need to be aware of the importance of being actively engaged in accordance with their functional abilities. Since each of the two Centres operates in a standalone building, each of them should have its own evacuation plan. It is important to have individualised approach to children with disabilities. It is suggested to enable accessible emergency exits for all children with disabilities. If the emergency routes and exits are at different altitudes, it is necessary to ensure that the accessible exit also becomes part of the evacuation plan tested by children with disabilities. Apart from the standard elements to overcome differences in height (ramp, elevator, vertical platform lift and inclined platform lift), it is also possible to use some other, like evacuation chair. Children with hearing and vision impairments can be more independent in the event of an emergency situation if the evacuation plan is well elaborated and if the children are familiar with it. For children with vision impairments, it is necessary to use a warning sound signal, while for children with hearing impairments, warning light signals are rather useful. Evacuation exits should have tactile marking.

An accessible evacuation route should be clearly marked if there are multiple routes and exits in case of emergency, and inaccessible routes should contain signs pointing to accessible routes. Accessibility signs must be visible and printed in Braille to enable information to children with visual impairments and in black print.

2.2.6. TACTILE WALKING STRIP / TACTILE WARNING STRIP

Children with visual impairments orient with the help of touch and/or sound, while children with hearing impairments orient with the help of vision. To this end, the availability, timeliness and clarity of the information should be made possible. Tactile walking and warning strips enable orientation for children with visual impairments. It is suggested to ensure tactile walking surfaces that will lead to the entrance to the Centre and from the entrance to every room for easier orientation of children with visual impairments. The tactile walking strip should have the standard width of 40 cm and be installed with grooves in the walking direction. At each point of possible direction change as well as at the entrance to each room, at the bottom and at the top of the stairs, a tactile warning strip with grooves of different texture or groove placed opposite the direction of walking should be placed. In this way, based on a tactile surface, the child can decide on the further direction of movement, or enter a room or climb/descend the staircase. At the bottom and at the top of the staircase, and in front of each room, the tactile walking strip should have the width of the whole step or doorway.

2.2.7. DOORS AND DOOR HANDLES

According to the standards, it is recommended that all doors in both Centres are slide doors or outward opening doors. The handle should not be a knob but a classic, rounded lever to facilitate the use for children with motor disabilities and visually impaired children. The handle should be adequately designed, contrasting with a door lining and positioned at a height of 90 cm.

The width of the doorway of the entrance door of the Centre should be 110/210 cm for single-wing or 2 x 90/210 cm for double-wing door, while the width of the interior entrance door should be at least 90 cm. These standard passage widths enable unobstructed passage to children in wheelchairs. Doors with sensors represent the highest accessibility standard. If there are glass panes on the door, they should be marked with contrast colour stickers so that the glass panes are easily visible to every child.

2.2.8. ELECTRICAL WIRINGS

Electrical wirings should be accessible and marked with a warning light. All electrical wirings should be marked with contrasted colours in relation to the wall to be visible to people with visual impairments (e.g. red switches and sockets on a white wall background). Electrical wirings should be done with a potentiometer in order to manage the intensity of lighting in a room, and the lighting should be yellow. In addition to ceiling lighting, each room should have diffuse lighting fixtures on side walls that provide indirect lighting. LED or halogen lighting can cause fatigue in children with visual impairment and additionally disrupt the functioning of a child with disabilities with sensory integration, especially children with multiple disabilities and children with autism spectrum disorders.

Electrical wirings are accessible if the light, bell and socket outlets are placed at a height of 90 to 120 cm and if there is a phone plate set at a height of 120 cm with a light sign. Wirings and other equipment wider than 10 cm should be installed and/or placed in wall niches.

2.2.9. SANITARY BLOCK

The accessible toilet should have a door with a sufficient width of a doorway (minimum 90 cm) to enable passage for a child in wheelchairs, opening outwards or sliding door (higher standard), an accessible door handle (rounded, not a knob) and electrical wirings and, if possible, an outward opening mechanism in case of an emergency or cry for help. A toilet for persons with disabilities should be at a height of 45 to 50 cm (together with a toilet seat) and the distance of the front edge of the seat from the wall should be at least 65 cm. There should be two 90 cm long hand-rails, affixed to the wall at the height ranging from 80 to 90 cm above the ground. At least one hand-rail should be foldable, notably the one on the accessible side of the toilet, while another should be affixed to the wall. The water flushing latch should be positioned at a height of 70 cm or activated by a sensor. There should be manoeuvring space in front of the toilet at least 90 cm wide. The toilet room should also have a washbasin at least 50 cm wide at a height of 80 cm. It should be a console-type wash basin with plumbing fittings placed in or against the wall. The tap should be twist action tap or sensor tap. In front of the washbasin there should be at least 90 cm wide clearance space. The mirror should be inclined and positioned within the active reach of a child in wheelchairs. Sufficient clearance space should be in front of the toilet seat and washbasin. The room should provide unobstructed

manoeuvring space of at least 150x150 cm. The toilet room should also have an alarm device with a pressure switch or panic cord. All other equipment, such as clothes hooks, should be within the active reach of children in wheelchairs and should not hinder movement.

The exact size and position height of toilet fixtures are indicated in **Table 1**.

3. ACCESSIBILITY OF THE CENTRES FOR DEVELOPMENT OF INCLUSIVE PRACTICE IN THE UNA-SANA CANTON

This section of the Study will describe in detail the initial situation of both facilities planned for the establishment of the Centres for Development of Inclusive Practice:

- 1) Satellite school of the *Harmani II Elementary School, Žegar*
- 2) Part of the facility of the *Cazin II Elementary School*

3.1. ACCESSIBILITY OF THE SATELLITE SCHOOL OF THE *HARMANI II ELEMENTARY SCHOOL, ŽEGAR*

The satellite school of the Harmani II Elementary School, Žegar, is located in the City of Bihać. The ground floor of the building is planned for the establishment of the Centre for Development of Inclusive Practice in order to provide support and foster development of children with disabilities. The following types of support are planned within the Centre:

- ✓ Speech therapy division,
- ✓ Occupational therapy,
- ✓ Physiotherapy,
- ✓ Sensory therapy division,
- ✓ Psycho-social support to children and family,
- ✓ Knowledge centre for development of inclusive practice,
- ✓ Mobile expert teams.

In order to provide quality services tailored to the needs, interests and abilities of each child and the needs of their family members, it is necessary to furnish the facility in line with already described principles of universal design and make it accessible to all beneficiaries.

3.1.1. INITIAL CONDITION OF THE FACILITY

Based on the conducted field survey concerning the condition of the facility and the assessment of the accessibility, the following initial situation has been observed.

The access to the facility is not accessible considering that the access path from the gate to the courtyard towards the main entrance to the building is not at the same level compared to the level of the sidewalk in front of the yard and is not complete. Moreover, the access to the entrance door of the building is not accessible due to architectural barriers in the form of a difference in height that has been solved by a staircase without the access ramp or an adequate hand-rail. Entrance doors to the building are not suitable. The fence enclosing the courtyard of the building is not complete, and there is no access to the part of the courtyard where external playground equipment is planned. The courtyard includes trees with a canopy lower than 200 cm from the ground and potentially dangerous plants for children with disabilities. The interior of the building (ground floor) where the establishment of the Centre is planned requires adaptation in order to remove architectural and sensory barriers. Sanitary blocks are also not suitable for children with disabilities.

The ground floor of the building comprises the following facilities and premises:

- lobby (53.13 m²),
- corridor (30.86 m²),
- corridor (26.67 m²),
- library (28.98 m²),
- gym (80.64 m²),
- classroom (32.25 m²),
- classroom (41.32 m²),
- classroom (45.58 m²),
- workshop (47.18 m²),
- tea room (9.77 m²),
- toilet (14.88 m²),
- toilet (15.34 m²).

Total surface area of the ground floor is 431.15 m².

3.1.2. INTERVENTIONS TO ENSURE ACCESSIBILITY OF SURROUNDING AREA OF THE FACILITY

In order to ensure accessibility of the environment/surroundings of the facility, the following interventions should be conducted:

- 1) Signpost directing to the Centre should be posted at the beginning of the street; the signpost should have the printed title of the Centre in a colour contrasting the background and a graphic-style illustration of the Centre.
- 2) The name of the Centre should be printed on the sign with letters in colours contrasting the background and in Braille.
- 3) The entrance door to the yard (leading to the main entrance to the building) should be slide door a rounded latch at a maximum height of 90 cm from the ground in a color contrasting the colour of the door. The width of the entrance door should be 110/210 cm.

- 4) The entrance door to the yard (leading to the outer part where outdoor playground equipment is planned) should be repaired, and the asphalt-paved space in front of the lateral access ramp should be converted into at least 3 parking spaces suitable for disabled persons to transport/collect children from a passable access to the lateral access ramp.
- 5) The access pathway from the sidewalk in front of the building to the stairway in front of the entrance to the building should be levelled to be at the same height as the existing sidewalk and reconstructed so that it is complete. The width of the access pathway should be at least 120 cm.
- 6) The central part of the stairway in front of the main entrance door to the building should be converted into at least 120 cm wide access ramp, with a slope of not more than 5% and a hand-rail at the height of 60 and 90 cm. The hand-rail should be rounded and 30 cm longer at both ends in relation to the length of the access ramp. At the bottom of the existing stairway, there should be a lateral access ramp on the left side of the slope of not more than 5% that should be connected with a pathway leading to the existing paved road to open access to the grassy part of the courtyard where outdoor playground equipment is planned. A lateral access ramp should have a hand-rail of 4 cm diameter at a height of 60 and 90 cm, which should be 30 cm longer than the length of the access ramp and rounded at the ends. The ramp landing should be slip-resistant and solid.
- 7) Along the entire length of the access pathway from the sidewalks in front of the yard of the building to the entrance to the building, there should be a 5 mm high, 40 cm wide tactile strip with grooves in the direction of walking (from the yard door to the entrance door to the building). A 5 mm high and 40 cm wide tactile strip with grooves facing the opposite walking direction should be placed at the point of direction change towards the lateral access ramp to the left. Along the entire length of the side access ramp, pathway towards the existing asphalt and asphalt-paved path to the outdoor grassy part of the yard there should be a 5 mm high, 40 cm wide tactile strip with grooves in the direction of walking.
- 8) The main entrance door to the building should be slide door or outward opening door with a rounded handle at a height of 90 cm in a colour contrasting the colour of the door. It is recommended to install sensor door at the main entrance. The width of the door should be 110/210 cm (single-wing) or 2 x 90/210 cm (double-wing). The threshold at the entrance door must not be higher than 2 cm, while no threshold door is recommended.
- 9) All trees in the courtyard should be trimmed so that the lowest branches are at a height above 200 cm from the ground. All plants with thorns should be removed. The planting of pampas grass in the area around the building is preferred, as it will enable sensory activities and orientation activities during the child's stay in the yard of the building.
- 10) The bottom part of the building facade should be covered by a painting medium.
- 11) Damaged parts of the fence should be repaired and the entire fence painted.
- 12) The gutters on the building should be mended with the plastic ends (pipes) that descend to the ground level.

3.1.3. ENSURING ACCESSIBILITY OF THE INTERIOR OF THE BUILDING

In order to ensure accessibility of the interior of the building, the following interventions should be carried out:

- 1) Starting from the main entrance door, place the 5 mm high, 40 cm wide tactile walking strips with grooves in the direction of walking along the middle of the corridor towards all rooms on the ground floor. At each direction change leading to a room, the 5 mm high, 40 cm wide tactile walking strip with grooves facing the opposite direction should be installed. In front of every entrance to a room, the 5 mm high, 40 cm wide tactile walking strip with grooves facing the opposite direction should be installed.
- 2) Post the orientation map provided in relief and signs in Braille next to the main entrance door, horizontally posted at the maximum height with the bottom edge at 90 cm from the ground.
- 3) All floors should be levelled or left with up to 2 cm high thresholds.
- 4) All „blurred“ and/or broken windows should be replaced with double glazing.
- 5) Replace the doors in all rooms with slide doors with a rounded handle at a height of 90 cm and a colour contrasting the colour of the door. The passage width should be 90 cm. It is recommended to install sensor slide doors.
- 6) On all doors, affix the name of the division in the colour contrasting the colour of the door and in Braille and put up a sign with graphic-style illustration of the division.
- 7) All electrical switches in the lobby, corridors and all rooms should be affixed at the height of 90 cm from the ground. All switches should be in colours contrasting the colour of the walls and should have a light signal.
- 8) The lighting in the corridors must be 100 lux and 200 lux in the lobby.
- 9) Lighting with potentiometer should be installed in all rooms to enable light regulation.
- 10) All rooms should have yellow ceiling light (not neon or LED).
- 11) In all rooms, at least 2 side walls should be fitted with a diffuse light with a potentiometer to ensure indirect lighting as required.
- 12) In the room marked as Knowledge Centre:
 - Make preparation for setting up of „smart board“ on a full wall,
 - Arrange shelves for the library on the wall with a door,
 - Repair construction defects on the walls/floor,
 - Paint the walls in a plain pastel colour (reduced intensity colour).
- 13) In the premises marked as „Occupational therapy“ and „Physiotherapy“:
 - Arrange shelves at the height outside of the reach of children on the wall with a door,
 - Repair construction defects on the walls/floor,
 - Paint the walls in a plain pastel colour (reduced intensity colour).
- 14) In the room marked as „Speech therapy division“:
 - Arrange shelves outside of the reach of children on the left wall,
 - Arrange 4 cascade shelves from the height of 80 cm to 120 cm on the right wall,

- Repair construction defects on the walls/floor,
- Paint the walls in a plain pastel colour (reduced intensity colour).

15) In the room marked as „Sensory room“:

- Repair the floor and place an anti-stress mat,
- Repair construction defects on the walls,
- Remove basketball backboards,
- Arrange 5 cascade shelves from the height of 80 cm to 160 cm on the right wall,
- Paint the walls in a plain pastel colour (reduced intensity colour),
- Remove the wall bars.

16) In the room marked as „Psychosocial support“:

- Repair construction defects on the walls/floor,
- Paint the walls in a plain pastel colour (reduced intensity colour),
- Arrange 2 shelves at the height of 100 cm and 130 cm on the left wall.

17) In the room marked as „MET“:

- Repair construction defects on the walls/floor,
- Arrange shelves at the height of 120 cm and 150 cm on the left wall,
- Paint the walls in a plain pastel colour (reduced intensity colour).

18) In the room marked as „adapted toilet“:

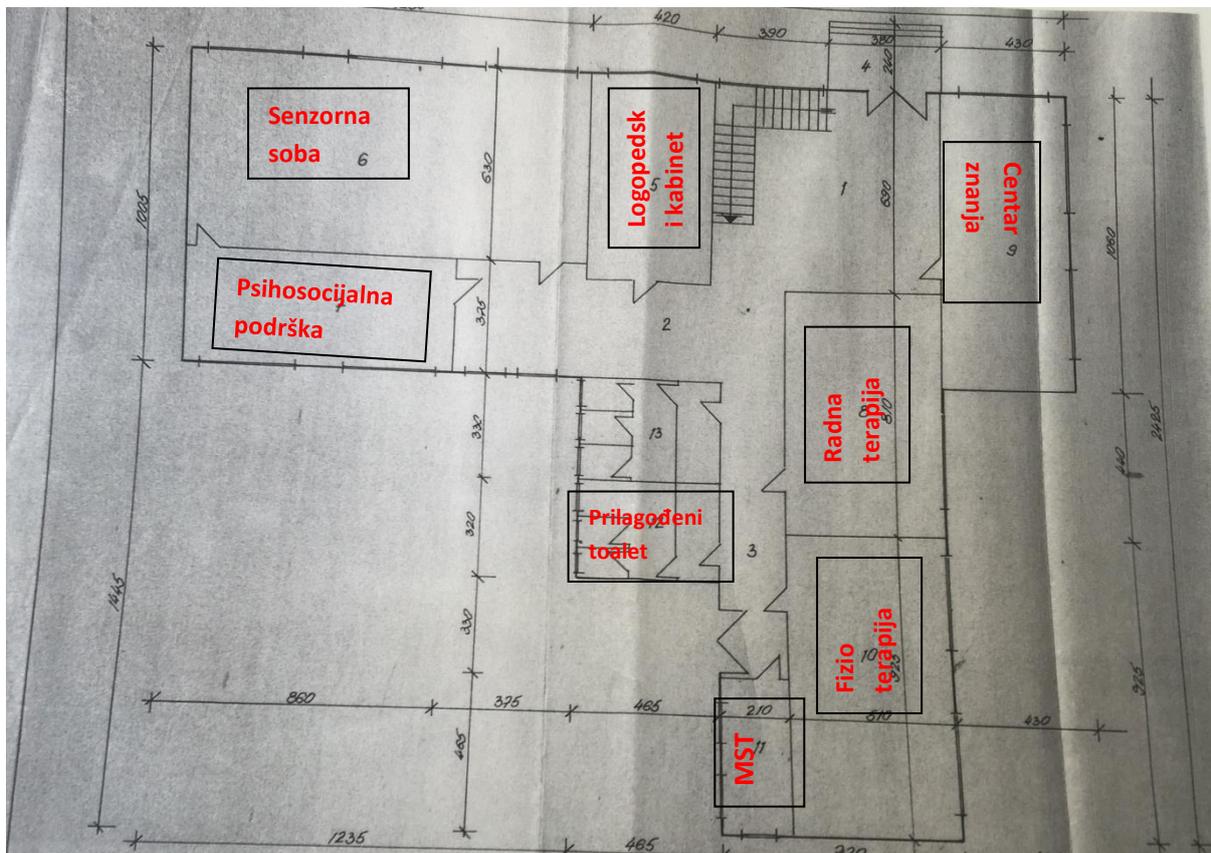
- Repair construction defects on the walls/floor,
- Leave a 150 cm diameter space for manoeuvring,
- Fix the adapted toilet with seat of the total height of 45-50 cm,
- On each side of the adapted toilet seat, affix a 90 cm long hand-rail at the height of 80-90 cm. The hand-rail closer to the entrance door should be foldable, and the other one can be fixed.
- Leave at least 65 cm distance, and more if possible, from the toilet seat to the wall,
- Toilet flush system should be set at the height of 70 cm from the ground or use sensor system (recommended),
- Set up a wash basin with a tap of at least 50 cm at the height of 80 cm (twist action or sensor tap – recommended),
- Leave at least 90 cm space in front of the toilet seat and wash basin,
- Affix the inclined rotating mirror with the lower edge at 100 cm from the ground,
- Affix the towel holder at the height of 120 cm from the ground,
- Set the panic cord alarm or switch alarm in the colour contrasting the colour of the wall at the height of 60 cm from the ground,

- Place the 5 mm, 40 cm wide tactile walking strip from the toilet with grooves in the direction of walking,
- If possible set the door safety system for emergency unlocking from the outside.

19) In the toilet room:

- Repair construction defects on the walls/floor,
- Set the toilet and wash basin adapted to shorter children,
- Affix the holder at the height adapted to shorter children,
- Install a sensor tap,
- Install a sensor toilet flush system,
- Install a panic alarm cord or switch alarm in a colour contrasting the colour of the walls at a height adapted to shorter children,
- Place the 5 mm, 40 cm wide tactile walking strip from the toilet with grooves in the direction of walking,
- If possible set the door safety system for emergency unlocking from the outside.

20) Since the facility does not have an adequate heating system, it is necessary to install central pellet heating or electric heating by using electric radiators.



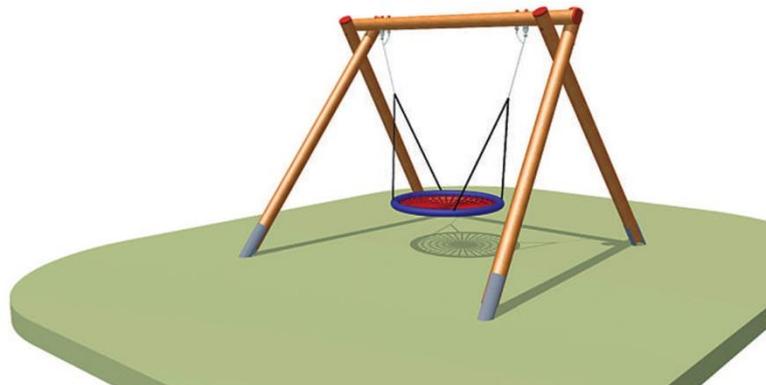
3.1.4. PREPARATION OF THE OUTDOOR AREA TO INSTALL PLAYGROUND EQUIPMENT

In the courtyard of the facility, on the grassy area in front of the room marked as „Knowledge Centre“, it is planned to install outdoor playground equipment to foster sensory skills of children with disabilities. In order to prepare the area for installation of the equipment it is necessary to carry out the following activities:

- 1) Preparatory works: earth excavation of the layer of 35 cm at the planned equipment sites. Drum rolling and compacting surface, covering with crushed rock of 0-64 mm composition, compacting with vibration roller up to the desired strength.
- 2) Install anti-trauma recycled rubber flooring, green colour, size 50x50 x5 cm, on the previously constructed layer.

The following equipment is recommended to be placed on the prepared surface:

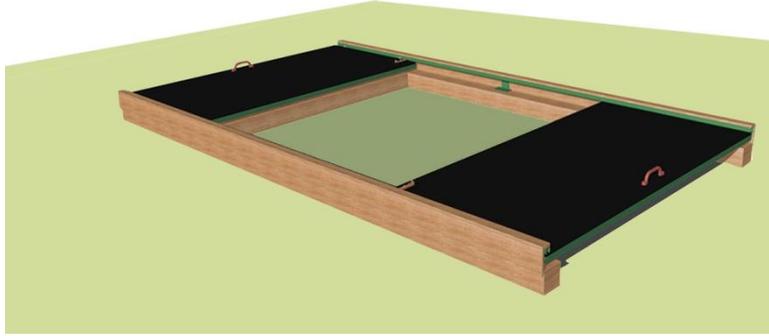
- 1) A round swing net that can be used simultaneously by 3 or 4 children. The device stimulates the vestibular sensory system due to swinging as well as proprioceptive system because the children grab the net surface and contract the muscles and thus develop the sensation of the body in space or body pattern. Children can face a person opposite to them sitting in a swing as well. There is a possibility of children moving around the net (support) while swinging.



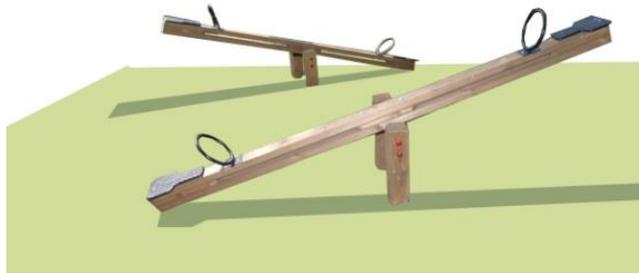
- 2) A classic „merry-go-round“ spin that stimulates the vestibular system and proprioceptive sensory system by spinning the „merry-go-round“ and holding the iron safety grip.



- 3) A sand pit in the form of a square pool where children can gather and use various child tools and implement their design ideas. Sand is a material that enhances the body position in space if the child is walking or running because of the feeling of sinking. The child stimulates the senses of proprioception, vestibular and tactile senses, and thus creates an image of oneself.



- 4) A seesaw that stimulates the vestibular system and fosters the development of normotonus through a feeling of weightlessness while changing the direction of body movement. It is used primarily for children with spatial orientation disabilities and for children with impaired muscular tone in order to normalize it.



- 5) In addition to the above equipment, spice and aromatic herbs will be planted to stimulate the development of olfactory senses and to improve the spatial orientation in children with visual impairment. In this way, the development of sensory integration is stimulated by combining multiple sensory channels (visual, olfactory, tactile).

3.2. ACCESSIBILITY OF THE FACILITY OF THE CAZIN II ELEMENTARY SCHOOL

The building of the *Cazin II Elementary School* is located in the municipality of Cazin. In one part of the building, it is planned to establish the Centre for Development of Inclusive Practice in order to provide support and foster development of children with disabilities. The following types of support are planned within the Centre:

- ✓ Speech therapy division,
- ✓ Occupational therapy,
- ✓ Physiotherapy,
- ✓ Sensory therapy division,
- ✓ Psycho-social support to children and family,
- ✓ Knowledge centre for development of inclusive practice,
- ✓ Mobile expert teams.

In order to provide quality services tailored to the needs, interests and abilities of each child and the needs of their family members, it is necessary to furnish the facility in line with already described principles of universal design and make it accessible to all beneficiaries.

3.2.1. INITIAL CONDITION OF THE FACILITY

Based on the conducted field survey concerning the condition of the facility and the assessment of the accessibility, the following initial situation has been observed.

Due to its position (terrain configuration) and construction, the facility is extremely challenging because numerous architectural barriers are observed, which primarily concern differences in height, followed by sensory barriers, of course.

The entrance to the building is not accessible since the access to the main entrance is blocked by a drainage channel; in front of the main entrance to the building there is a staircase with an inadequate access ramp with too inclined slope, which is too narrow and has no safety hand-rail. Entrance door to the building is not adapted. The interior of the building where the Centre is planned needs to be adapted so that architectural and sensory barriers are removed. Immediately after entrance to the building, there is a staircase that is not accessible since there is no elevator or platform or access ramp (it is not even possible to construct it considering the difference in height and the available space). Sanitary blocks are also not suitable for children with disabilities.

Part of the building intended for the Centre for Development of Inclusive Practice consists of the following rooms and premises:

- ✓ lobby,
- ✓ corridor,
- ✓ 4 rooms,
- ✓ toilet.

3.2.2. INTERVENTIONS TO ENSURE ACCESSIBILITY OF SURROUNDING AREA OF THE FACILITY

In order to ensure accessibility of the environment/surroundings of the facility, the following interventions should be conducted:

- 1) Signpost directing to the Centre should be posted at the beginning of the street; the signpost should have the printed title of the Centre in a colour contrasting the background and a graphic-style illustration of the Centre.
- 2) The name of the Centre should be printed on the sign at the main entrance to the building with letters in colours contrasting the background and in Braille.
- 3) The drainage channel should be covered in the width of 120 cm.
- 4) At the end of the paved part of the yard (to the right side of the main entrance door to the building) make at least 3 parking places adapted for people with disabilities to transport/collect children from a passable access to the access ramp at the staircase in front of the main entrance to the building. Put up a sign of maximum 25 minutes parking time for the sake of security of students of the Cazin II Elementary School.
- 5) Build an access ramp that will bridge the staircase in front of the main entrance to the building. The width of the ramp should be at least 120 cm, slope up to 5% with a hand-rail at the height of 60 and 90 cm. The hand-rail should be 30 cm longer than the length of the access ramp and rounded at the ends. The ramp landing should be slip-resistant and solid.
- 6) Along the entire length of the access pathway to the main entrance to the building, there should be a 5 mm high, 40 cm wide tactile strip with grooves in the direction of walking. A 5 mm high and 40 cm wide tactile strip with grooves facing the opposite walking direction should be placed in front of the entrance door.
- 7) The main entrance door to the building should be slide door or outward opening door with a rounded handle at a height of 90 cm in a colour contrasting the colour of the door. It is recommended to install sensor door at the main entrance. The width of the door should be 110/210 cm (single-wing) or 2 x 90/210 cm (double-wing). The threshold at the entrance door must not be higher than 2 cm, while no threshold door is recommended.

3.2.3. ENSURING ACCESSIBILITY OF THE INTERIOR OF THE BUILDING

In order to ensure accessibility of the interior of the building, the following interventions should be carried out:

- 1) Post the orientation map provided in relief and signs in Braille next to the main entrance door, horizontally posted at the maximum height with the bottom edge at 90 cm from the ground.
- 2) Starting from the main entrance door, place the 5 mm high, 40 cm wide tactile walking strips with grooves in the direction of walking along the middle of the corridor towards the staircase and towards all rooms on the ground floor. At each direction change leading to a room, the 5 mm high, 40 cm wide tactile walking strip with grooves facing

the opposite direction should be installed. In front of every entrance to a room, the 5 mm high, 40 cm wide tactile walking strip with grooves facing the opposite direction should be installed. At the bottom of the staircase and at the top of the staircase, the 5 mm high and 40 cm wide tactile walking strip with grooves facing the opposite direction should be installed.

- 3) On the staircase, install the foldable inclined platform lift on lateral staircase walls or staircase rail. The platform will run along the entire staircase, and must have a landing platform of size of at least 90 × 100 cm, a lateral foldable protection of height of 20 cm and a foldable safety hand-rail. Technical features of the inclined foldable platform: load capacity 230 kg; speed: 5 m/min (V64), 8 m/min (V65); ascending angle: 0 - 50°; power of the electric motor: 0.75 kW (V64), 1 kW (V65). Platform size: 830x700, 1050x770, 1250x800, 1050x900 mm. Minimum staircase width: 970 mm (type: VIMEC V64 - straight staircase); 1130 mm (type: VIMEC V65 – curving staircase).
- 4) All floors should be levelled or left with up to 2 cm high thresholds.
- 5) Replace the doors in all rooms with slide doors with a rounded handle at a height of 90 cm and a colour contrasting the colour of the door. The passage width should be 90 cm. It is recommended to install sensor slide doors.
- 6) On all doors, affix the name of the division in the colour contrasting the colour of the door and in Braille and put up a sign with graphic-style illustration of the division.
- 7) All electrical switches in the lobby, corridors and all rooms should be affixed at the height of 90 cm from the ground. All switches should be in colours contrasting the colour of the walls and should have a light signal.
- 8) The lighting in the corridors must be 100 lux and 200 lux in the lobby.
- 9) Lighting with potentiometer should be installed in all rooms to enable light regulation.
- 10) All rooms should have yellow ceiling light (not neon or LED).
- 11) In all rooms, at least 2 side walls should be fitted with a diffuse light with a potentiometer to ensure indirect lighting as required.
- 12) In the room marked as Knowledge Centre, MET, Psychosocial support:
 - Make preparation for setting up of „smart board“ on a full wall,
 - Arrange shelves for the library on the left wall and arrange two shelves at a height of 100 cm and 130 cm,
 - Repair construction defects on the walls/floor,
 - Paint the walls in a plain pastel colour (reduced intensity colour).
- 13) In the room marked as „Physiotherapy“:
 - Close the passage towards the „Occupational therapy‘ room and expand the room towards the door exiting into the lobby,
 - Arrange shelves outside of the reach of children on the left and right wall,
 - Make acoustic insulation on the wall facing the „Occupational therapy“ room
 - Close the central heating pipes into the „box“,
 - Repair construction defects on the walls/floor,

- Paint the walls in a plain pastel colour (reduced intensity colour).

14) In the room marked as „Occupational therapy“:

- Open the door towards the lobby,
- Arrange shelves outside of the reach of children on the left and right wall,
- Make acoustic insulation on the wall facing the „Physio-therapy“ room“,
- Close the central heating pipes into the „box“,
- Repair construction defects on the walls/floor,
- Paint the walls in a plain pastel colour (reduced intensity colour).

15) In the room marked as „Speech therapy“:

- Arrange shelves outside of the reach of children on the left wall,
- Arrange 4 cascade shelves at the height of 80 cm to 120 cm on the right wall,
- Repair construction defects on the walls/floor,
- Paint the walls in a plain pastel colour (reduced intensity colour).

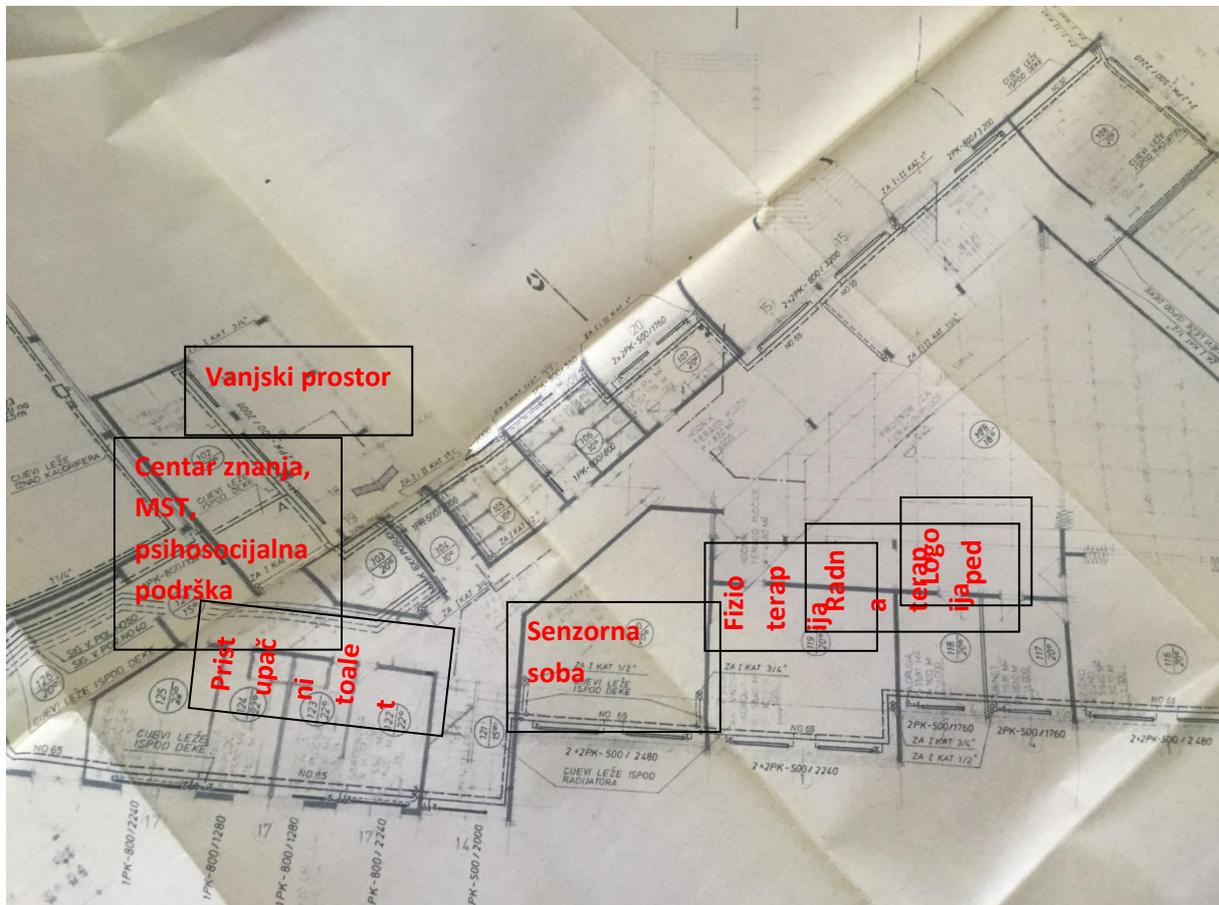
16) In the room marked as „Sensory room“:

- Close the central heating pipes into the „box“,
- Repair construction defects on the walls,
- Arrange 5 cascade shelves at the height of 80 cm to 160 cm on the right wall,
- Paint the walls in a plain pastel colour (reduced intensity colour).

17) In the room marked as „adapted toilet“:

- Repair construction defects on the walls/floor,
- Leave a manoeuvring space of 150 cm diameter circle,
- Install an adapted toilet seat with a total height of 45-50 cm,
- On each side of the adapted toilet seat, affix a 90 cm long hand-rail at the height of 80-90 cm. The hand-rail closer to the entrance door should be foldable, and the other one can be fixed.
- Leave at least 65 cm distance, and more if possible, from the toilet seat to the wall,
- Toilet flush system should be set at the height of 70 cm from the ground or use sensor system (recommended),
- Set up a wash basin with a tap of at least 50 cm at the height of 80 cm (twist action or sensor tap – recommended),
- Leave at least 90 cm space in front of the toilet seat and wash basin,
- Affix the inclined rotating mirror with the lower edge at 100 cm from the ground,
- Affix the towel holder at the height of 120 cm from the ground,
- Install a panic alarm cord or switch alarm in a colour contrasting the colour of the walls at a height 60 cm from the ground,

- Place the 5 mm, 40 cm wide tactile walking strip from the toilet with grooves in the direction of walking,
- If possible set the door safety system for emergency unlocking from the outside.



3.2.4. PREPARATION OF THE OUTDOOR AREA TO INSTALL PLAYGROUND EQUIPMENT

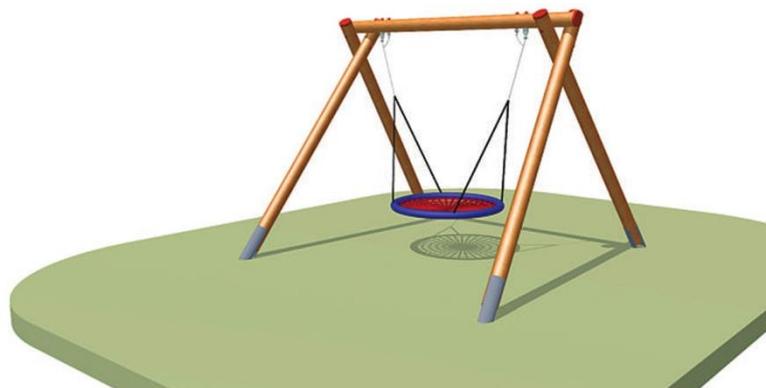
In the outdoor area of the facility, on the concrete surface next to the room marked as „Knowledge Centre, MET, Psycho-social support“, it is planned to install outdoor playground equipment to foster sensory skills of children with disabilities. In order to prepare the area for installation of the equipment it is necessary to carry out the following activities:

- 1) Entire surface needs to be levelled with the entrance door and protected with a fence,
- 2) The lateral wall up to the window height needs to be covered with a soft wall coating,
- 3) Install anti-trauma recycled rubber flooring, green colour, size 50x50 x5 cm.

The following equipment is recommended to be placed on the prepared surface:

- 1) A round swing net that can be used simultaneously by 3 or 4 children. The device stimulates the vestibular sensory system due to swinging as well as proprioceptive

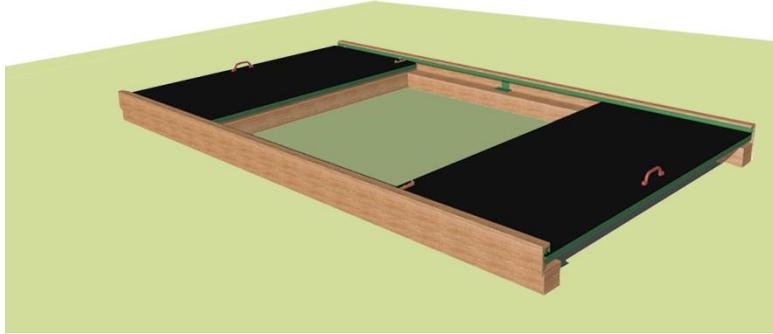
system because the children grab the net surface and contract the muscles and thus develop the sensation of the body in space or body pattern. Children can face a person opposite to them sitting in a swing as well. There is a possibility of children moving around the net (support) while swinging.



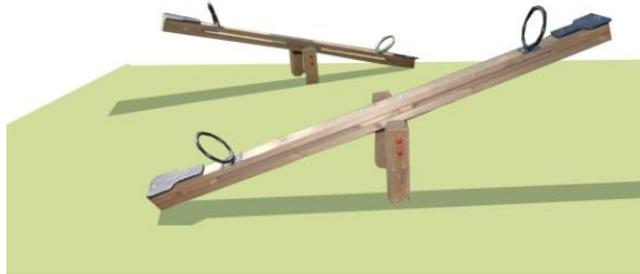
- 2) A classic „merry-go-round“ spin that stimulates the vestibular system and proprioceptive sensory system by spinning the „merry-go-round“ and holding the iron safety grip.



- 3) A sand pit in the form of a square pool where children can gather and use various child tools and implement their design ideas. Sand is a material that enhances the body position in space if the child is walking or running because of the feeling of sinking. The child stimulates the senses of proprioception, vestibular and tactile senses, and thus creates an image of oneself.



- 4) A seesaw that stimulates the vestibular system and fosters the development of normotonus through a feeling of weightlessness while changing the direction of body movement. It is used primarily for children with spatial orientation disabilities and for children with impaired muscular tone in order to normalize it.



Depending on the size of the space, a selection of outdoor playground equipment can be made.