**Аnnex 7.3.**

**GUIDELINES FOR IMPROVEMENT OF ENVIROMENTAL PROTECTION DURING WORKS ON PUBLIC FACILITIES**

During the screening of works for public facilities, a need arises for improvement of the process in terms of greater commitment to environmental protection. In this regard, certain steps and methods of processing and monitoring of waste from the site during the execution of works are introduced.

First step is description of works ant their connection with material category (Annex 7.1) for subject public facility.This step have purpose to achive better awerness for environmental issues to the municipalities, designers and local people in terms of general contribution to better and more quality preparation of documentation and uprise the environemntal protection in general. Study need to contain description of works and their connection with material categories (Annex 7.1) and Catalogue of waste (Annex 7.2) for subject facility. Study need to include the List of waste material with quantities according material categories with description and quantities. Study ned to show treatment managament with standard construction and demolition waste in sence of decreasing hazardous impacts on surroundings. Study need to highlight any suspicious in existing of dangerous waste and determine guideliness for further screening and analisys. Purpose of study is to overlook and prepare input data for further work regarding environmental issues.

Second step in procedure is development of “Environmental Management Plans” (EMP) in accordance with valid Serbian legislative. EMP need to contain list of waste with index number according to the Catalogue of waste, unit of measure, quantity and description according Table 1. This List does not include category 3 according Annex 6.1. EMP need to elaborate also the management procedure with standard construction and demolition waste on site, in terms of decreasing on environmental impacts, and necessity of material sorting and storing during site works, which will effect on increasing of potential raw materials for recycling.

EMP gives overview on materials which can be used for re-use, recycling and can be classified as dangerous waste. **All items in Bill of Quantity (BoQ) given in design must highlight way of management (handling and treatment) and handing over of material according EMP**, **which will result in improvement of environmental issues, quality design and precision** **of** **offer.**

Table 1.

|  |  |  |  |
| --- | --- | --- | --- |
| Index № | Unit of measure | Quantity | Description |
| 17 01 02 | m3 | 4 | Bricks leftovers after wall demolition. |
| 17 04 05 | kg | 2565 | Steel pipes, parts from installed pipe heating network. |
| 17 02 01 | m3 | 52 | Wooden flooring – parquet, stacked on pallets. |
| 17 02 01 | kg | 4500 | Wooden flooring – parquet, and secondary construction, transported to site landfill. |
|  |  |  | …. |

Scope that list of material has referred to is in domain of waste which is being produced during site works on rehabilitation, adaptation, reconstruction of facilities and not on medical waste and equipment, except those that are established for dismantling. Under the term of equipment which is included in design for dismantling can be considered as existing boilers and following equipment of boiler rooms, tanks, air conditioning units, surveillance cameras and other equipment which is necessary to dismantle in order to execute planned works on site.

When developing the EMP, and also during monitoring of works should be paid attention that activities being done should be in order of safety standards and procedures and with less impact on environment. In Table 2 is given the overview of some possible activities during works on site.

According to current practice, we highlight some specific activities on which should be dedicated more attention.

Example 1: Washing of tools and packaging after being used.

Common practice is that tools and packaging are being unregularly washed without control, that is being washed over green surface area or above the ground. In terms of biodegradable and hazardous materials, rather than sloppy, damage is not being done. Nevertheless, in other cases the damage is caused, especially regarding packaging with chemically aggressive substances and toxic materia.

Example 2: Waste disposal, disposal of built in materials

During waste disposal the containers are not used for that purpose, rather waste without any control and disorderly is being stored on site location. Often those waste is not properly secured and represent the danger for workers and users of facility. Storage of built in material is one of the issues which could be a raised in terms of improper security, placed on communication corridor, and not secured from external and atmospheric impacts.

Example 3: Waste transport and treatment on construction site

When on site works are being done, large amount of construction and demolition (C&D) waste is being produced which need to be placed from one place to another. Occasionally that waste is being thrown from higher stories on the ground outside of building without any control. In this way workers and users are being exposed to dangerous situations and the construction dust is being produced. In these cases, it is necessary to use pipe transporters for C&D waste.

Example 4: Removal and facade works

During works on façade or mortar removal it necessary to use debris safety netting and to form solid pad on which demolished mortar or debris for façade works will fall off, in order to avoid pollution of environment.

Example 5: Possession and use of H&S workwear and equipment

In some cases, the form of possession of H&S equipment is respected, but in general the essence and use of those are not fulfilled. Common practice is that workers have protective workwear earmuffs, but they wear them around neck while they are drilling, grinding, cutting concrete… The same is with safety eye glasses.

Example 6: Everything is waste from the building site:

The following cases have been noticed, that all waste is gathered and manipulated with machinery and being loaded into vehicles in order to be transported on landfill. In subject waste are spotted mixture of parts from mortar, concrete, bricks, and parts of steel gutter, glass pieces and wooden window frames. This is example of improper practice. It is required to be marked on site temporary landfills for diverse debris and material should be selectively separated and stored for later re-use and recycle.

Example 7: Debris storage and transport

Practice is that during site works debris is not enclosed by fence and not enough moisturized, and dust is made under wind flow, and also during transport vehicles with waste are not being covered and in that case, they are making dust. The vehicle tires are not washed during entrance and exit from construction site, also in this way causing dust.

By above mentioned examples there are other different numerous situation which could be spotted during development of design and monitoring on site through site supervision and could be remediated.

Тable 2.

|  |  |  |  |
| --- | --- | --- | --- |
| **POTENTIAL IMPACT CONTROL** | | | |
| 1. **Impact of activities on environment on construction site:** | | YES | NO | |
| 1.1. | Increased volume of heavy traffic |  |  | |
| 1.2. | Increased noise and dust around the site |  |  | |
| 1.3. | Appearance of waste from the site, all types |  |  | |
| 1.4. | Need for enhanced security control |  |  | |
| 1.5. | Use of hazardous and / or toxic materials |  |  | |
| 1.6. | The appearance of wastewater that is not standard for this type of facility |  |  | |
| 1.7. | Impact on protected areas (water, forests, buildings) |  |  | |
| 1.8. | The appearance of radioactive waste |  |  | |
| 1.9 | Medical waste at the site |  |  | |
| 1.10. | Impact of traffic and pedestrian traffic (safety, redirecting ...) |  |  | |
| 1.11. | The use of machine oil and lubricants |  |  | |
| 1.12. | Need for relocation of users and use of other plots |  |  | |
| 1.13. | … |  |  | |

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| --- | --- | --- | --- |
| **POTENTIAL IMPACT CONTROL** | | | |
| **1.1 Increased volume of heavy traffic** | | YES | NO | |
| 1.1.1. | Vehicle for transport of materials and waste |  |  | |
| 1.1.2. | Construction machinery |  |  | |
| 1.1.3. | Containing overload cargo |  |  | |
| 1.1.4. | Delivery of equipment |  |  | |
| 1.1.5. | … |  |  | |

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| --- | --- | --- | --- |
| **POTENTIAL IMPACT CONTROL** | | | |
| **1.2 Increased noise and dust around the site** | | YES | NO | |
| 1.2.1. | Noise from construction machines and vehicles |  |  | |
| 1.2.2. | Noise and dust due to works on demolition and dismantling |  |  | |
| 1.2.3. | Protective knitting for facades and equipment for transporting debris from the height |  |  | |
| 1.2.4. | Moisturizing the material before and after demolition |  |  | |
| 1.2.5. | … |  |  | |

|  |  |  |  |
| --- | --- | --- | --- |
| **POTENTIAL IMPACT CONTROL** | | | |
| **1.3 Appearance of waste from the site, all types** | | YES | NO | |
| 1.3.1. | Standard waste from the site (debris) |  |  | |
| 1.3.2. | Reusable material |  |  | |
| 1.3.3. | Recycling material |  |  | |
| 1.3.4. | Hazardous waste |  |  | |
| 1.3.5. | Containers for hazardous waste |  |  | |
| 1.3.6 | Temporary construction landfills (containers for sorting materials) |  |  | |
| 1.3.7. | … |  |  | |

|  |  |  |  |
| --- | --- | --- | --- |
| **POTENTIAL IMPACT CONTROL** | | | |
| **1.4 Need for enhanced security control** | | YES | NO | |
| 1.4.1. | User safety at the entrances of the facilities |  |  | |
| 1.4.2. | Need for the formation of safe corridors for communication |  |  | |
| 1.4.3. | Protective fences, straps ... |  |  | |
| 1.4.4. | Protective caps for reinforcement |  |  | |
| 1.4.5. | Use of protective workwear and equipment |  |  | |
| 1.4.6. | … |  |  | |

|  |  |  |  |
| --- | --- | --- | --- |
| **POTENTIAL IMPACT CONTROL** | | | |
| **1.5 Use of hazardous and / or toxic materials** | | YES | NO | |
| 1.5.1. |  |  |  | |
| 1.5.2. |  |  |  | |
| 1.5.3. |  |  |  | |
| 1.5.4. |  |  |  | |
| 1.5.5. |  |  |  | |
| 1.5.6 |  |  |  | |
| 1.5.7. | … |  |  | |

NOTE: Other tables are formed in the same manner as tables shown and should be formed and fulfilled as requested part of EMF documentation..

Monitoring

For all observed if something more found act according valid legislative for environmental protection and guidelines given in previous documents inside Environmental Management Framework (EMF).

Monitoring for class 1 and 2 conducts Site supervisor, monitoring for class 3 conducts Site supervisor and Authorized Inspection service.

In course of commissioning of the Works the Contractor, with all other documents deliver 3 copies of Study with all taken photographs of dismantling or demolishing of built-in materials, sorting and storing with all check lists, and handing over to authorized legal entities for dangerous waste management and all check lists according list of materials from the beginning of document. Those documents are signed by Contractor, Site supervisor, Investor. Signed copy of this document is delivered to PIMO to be archived.