Guideline for environmentally friendly construction site management
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Guideline for environmentally friendly construction site management for the areas of transport, construction and environmental supervision of construction work on construction sites to minimise air pollutant emissions and noise and also optimise waste management measures

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Introduction and problem

Construction sites in the urban area are major emission sources which, with emissions of air pollutants such as particulate matter and nitric oxides and also noise, contribute to causing considerable damage to the environment. The building industry’s total emissions of particulate matter correspond with around 30% of the entire man-made particulate matter emissions in Vienna\(^1\), 20% are diffuse emissions and around 10% of particulate matter emissions are caused by construction traffic. Two thirds of the tonnage of inner-city goods transports are solely for transporting building materials.\(^2\) A two-axle HGV (18 t) harms the roads 17,000 times more than a car, and a four-axle HGV (32 t) 30,000 times more. The construction of a flat requires up to 60 HGV trips covering approx. 2,500 to 3,000 kilometres in total. Building 15 flats is currently therefore like travelling once around the globe. A whole 13% of Vienna’s people are disturbed by noise from construction. 75% of the waste output in Vienna is for residual building waste. With a corresponding environmental management strategy and smart construction logistics, there is great potential here for relieving the burden on inner-city environments.

There are already many concepts and pilot projects to minimise damage to the environment caused by construction work in the urban centre. For example, there is a guide available from the project RUMBA (Guidelines for sustainable construction site management) and there is also a working paper from the project ULI (Vienna Urban Air Initiative) with corresponding measures. With regard to the latter, there was also a construction site dialogue with representatives of the economy with the aim of introducing environmentally friendly construction site logistics management on a voluntary basis. But if the same situation does not exist for all providers and also developers by having compulsory measures or clear tender terms, the implementation of measures on a voluntary basis will remain the exception rather than the rule. A positive example here is Switzerland, which, with the legally enshrined Swiss Construction Guideline (\textit{Baurichtlinie}, in German), has already achieved a considerable reduction in environmentally relevant emissions on construction sites.

\(^1\) “Work report of the “Construction” project group of the Vienna Urban Air Initiative” (“\textit{Arbeitsbericht der Projektgruppe "Bauen" der Urbanen Luftinitiative Wien}”, only available in German), 2005; Emikat 2010

\(^2\) “Technical final report” (“\textit{Technischer Abschlussbericht}”, only available in German) project acronym: RUMBA; LIFE00 ENV/A/00239; 2004
As part of the programme “ÖkoKauf Wien”, this guideline for sustainable construction site logistics has been created which aims to ensure environmentally friendly construction site planning and construction site management. The guideline contains measures to minimise air pollutant emissions and noise and also optimise waste management measures on construction sites.

This guideline must therefore be taken into consideration not only when construction projects are being awarded by the City of Vienna, it should also become a useful tool for stakeholders outside the Vienna City Administration for the planning, tendering and implementation of construction projects. Not least because its consistent implementation can really minimise air pollutant emissions, dust and noise on large construction sites and also because savings in resources will therefore become possible which, in turn, will lead to higher economic efficiency and less damage to the environment.

This “ÖkoKauf Wien” guideline was created at the same time as large-scale urban projects in Vienna, such as Sonnwendviertel, the Central Railway Station, and Seestadt Aspern (aspern Vienna’s Lakeside District). Experiences and results from these projects could therefore already be incorporated in the guideline. The feasibility and practical relevance of various measures are based on practical experiences and examples of best practice from these projects, and also from the RUMBA pilot projects Thürlhof in Simmering and Orasteig in Floridsdorf.

**Objectives of the guideline**

The objective of the guideline is to support the contracting authorities when tendering construction work. It provides a basis for tender texts in the form of standardised, ecological contract provisions and service items. As an aid, Annex II contains corresponding text elements for tenders of construction work. The guideline can also be used by authorities as support for administrative law matters, in particular with Environmental Impact Assessment procedures and the handling of developers’ competitions. For project promoters and project engineers it should be used as a checklist for planning the construction phase of projects according to the specifications contained in the guideline. The guideline is also a basis for the requirements of specialist environmental construction supervision.

Already in the planning phase and in the subsequent tenders, the measures needed for the construction need to be taken into consideration and presented in an environmental construction plan. Subsequently it must be ensured that these measures are carried out with accompanying monitoring.

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3 In total 900 flats were built at Simmeringer Thürnlhof as RUMBA demonstration projects between 2005 and 2008; another 169 flats were constructed at Orasteig in Vienna Floridsdorf as a pilot building site for low particulate matter levels.
Advantages and benefits

The benefits of using the excavation or demolition material for construction purposes in the construction project for landscaping, road foundation or cast-in-place concrete production can be proven ecologically and economically. Environmentally friendly construction site management, which must have already been taken into consideration in the project planning and is implemented and monitored during the construction site management, is advantageous both for the general public and also for contracting authorities, neighbours and for authorities.

The pollutant reduction potential for the urban centre is, according to the current and planned major construction projects in the future in Vienna, large. If we consider the annual total volume of large-volume housing in Vienna of currently 7,000 residential units, theoretical potential savings of approx. 12,000 t CO₂ (carbon dioxide) a year can be calculated solely for measures in construction traffic. This would correspond with around 10% of the HGV emissions in Vienna⁴. Realistically, at least a third of these potential savings can be realised in Vienna by using environmentally friendly construction site management⁵.

There are also big advantages from a business perspective by using the existing potential for savings and for optimisation and also economically positive effects by preventing damage to the environment and adverse health effects.

In the pilot project Thürnlhof with around 900 flats, it was possible to save on two thirds of the kilometres driven and a third of the entire number of all trips made by taking environmentally friendly construction site measures into account. In the Central Railway Station area in Sonnwendviertel more than 1,000 flats have already been built since 2010 with a concept of overlapping construction sites, and this concept is largely in accordance with the “ÖkoKauf Wien” guideline “Environmentally friendly construction site management” (“Umweltorientierte Bauabwicklung”, only available in German). The decisive advance is the concept of a mass balance with overlapping construction sites, in view of several parallel construction projects in the approx. 80 ha area – e.g. traffic construction, road construction and the 7.5 ha park area. This means that approx. 150,000 m³ of utilisable excavation material in the construction section, instead of being transported and deposited, was able to be used for construction purposes: the mass balance of the housing construction alone saves approx. 2,000 t CO₂ here by preventing traffic.

⁴ Austrian Institute for Spatial Planning on behalf of the Vienna Chamber of Labour, “Anteil des LKW-Quell-Ziel-Verkehrs sowie dessen Emissionen am gesamten Straßengüterverkehr in Wien” (“Share of originating/terminating HGV traffic and its emissions in the entire road transport in Vienna”, only available in German), Vienna 2006
⁵ Projection of the results of the demonstration project Thürnlhof
Seestadt Aspern (asperm Vienna’s Lakeside District) is, at 240 ha, one of the biggest urban development projects in Europe. At the former airfield there will be 20,000 jobs created and also, in particular, an attractive residential area for 20,000 people. With the beginning of the housing construction, more than 1 million tons of material was obtained there from the project’s own construction activity. Clever logistics between the construction sites ensured that nearly all of the excavated soil was able to be used directly. The cast-in-place concrete system processes gravel excavated from the lake and excavation pits into concrete and therefore covers 100% of the required concrete. Civil engineers use local sand gravel from advance excavations for road embankments. The extraction of material reduces the construction time at the same time. A rail track into the new construction logistics centre has been laid specifically for the delivery of cement.

With this environmentally friendly construction site management, the construction of the first housing and a school in Aspern is already saving more than 100,000 trips of heavy-duty HGVs in the urban area.

The application of this guideline is therefore worthwhile from an economic perspective and must also be seen as an important contribution to the reduction of CO₂ emissions in Vienna, according to the goals of the Vienna Climate Protection Programme, the nitrogen dioxide (NO₂) and particulate matter action plans according to the Immission Protection Act - Air and also the Vienna Air Strategy 2015. Other advantages are increased legal security and fewer conflict situations with neighbours, which means that fewer construction delays can be expected too.

The advantages in detail:

- Contribution to the emission reduction of air pollutants such as nitrogen oxides (NOₓ), particulate matter (PM₁₀), and also to climate protection by reducing the CO₂ in construction site operation
- Reduction of dust nuisance and noise pollution for employees on the construction site and neighbours in the area surrounding the construction site
- Support for the implementation of environmental legal regulations for construction sites
- Prevention, reduction and shortening of transport trips by road by regulating transport kilometres (up to 35%)[^6]
- Reduction of the entire traffic burden and prevention of congestion in the adjacent road network by reducing empty trips and shifting transports to the railway
- Better cost estimation for demolition work by carefully determining pollutants and preventing unexpected additional costs

[^6]: MA 50, “Housing research; project documentation final report; monitoring for the demonstration project RUMBA” (”, only available in German Wohnbauforschung; Projektdokumentation Endbericht; Monitoring zum Demonstrationsprojekt RUMBA); 2009
• Increase in multiple use, reduction of waste output and reduction of transport trips by efficiently reusing and processing excavation and demolition material already at the construction site if possible
• Reduction of the amount of mixed construction site waste by separating this at the construction site (reduction of the mixed waste from the conventional figure of 75% to 50%) and increase in the utilisation rates and therefore also saving on the entire disposal costs by having efficient waste separation
• Reduction of conflicts with neighbours by having targeted preventative communication

**Classification of construction sites**

In Part 2 of the RUMBA-Guide there was a classification of construction sites into nine construction site categories depending on their construction tasks and the size of the construction sites. The sphere of action of the proposed measures was then allocated to the corresponding construction site categories.

In the Swiss “Construction Guideline – Air” (“Baurichtlinie Luft”, in German), however, two categories of measures (A, B) were defined which consist of a package of measures in each case. Category A contains the basic measures which must be applied as “good construction site practice” for all construction sites and Category B contains measures which go beyond these basic measures. On account of the duration, type and size, construction sites are divided into large and small construction sites, and are also differentiated on account of the location of the construction site (rural areas with low building density, urban centres) and are therefore allocated to one of the two categories of measures. The Styrian construction site guidelines also follow this classification.

For this guideline a procedure was selected which is geared towards the inner-city construction site situation and has to be applied as simply as possible and with relation to practice.

There is differentiation between three construction site types to which the many different construction projects can be easily allocated:

• **Pipe-laying and road construction**
• **Building construction**
• **General civil engineering** (e.g. underground car parks, bridges, underground railway station construction, tunnel construction, other foundation work)

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<sup>www.rumba-info.at/download.htm</sup>
All construction site types comprise new constructions and large renovation projects in particular. The measures are allocated in such a way that measures are scheduled which must be applied for all construction sites that go below certain thresholds (see Annex, column: “All construction sites”). If these threshold values are exceeded, additional measures are necessary, depending on the type of construction site.

An essential criterion here is the space or area factor:

- As a threshold value here for the construction site type “building construction”, a gross volume of more than 100,000 m³ applies, which corresponds with a volume of 300 residential units. With construction sites which are bigger than this, experience shows that much more extensive and complex construction site logistics and a larger volume of traffic from transport trips can be expected. The utilisation of the area available in public space for construction measures requires additional measures to ensure unproblematic construction site management.

- The threshold value for the construction site type “pipe-laying and road construction” as a linear construction project is specified here as a longitudinal stretch with a project length of more than 1,000 m.

- These threshold values of more than 1,000 m or more than 100,000 m³ of rebuilt space can also be applied for the construction site type “general civil engineering”, depending on whether it is a tunnel construction project (longitudinal stretch) or a separate area construction project (underground car park).

These classifications must be seen as an aid for making decisions. Which measures are now actually necessary will also be determined by the specific location (proximity to neighbours, densely developed area, commercial zone, etc.), duration and size of the construction site and also the expected impairments caused by this construction site.
5. Measures

The guideline differentiates between the **planning and preparation phase** and the **tender and construction management phase** for which the contracting authority can determine suitable measures.

These measures can be used as a checklist for drawing up an environmental construction plan, for tenders and as requirements as part of construction projects requiring an Environmental Impact Assessment.

In Annex I (list of measures) the measures described in the following are presented in clear form in a table and it is indicated how the individual measures need to be implemented in the tenders.

5.1 Planning and preparation phase

In the planning and preparation phase, corresponding decisions have to be made and basic principles developed which must be ensured during the construction phase by having contractual arrangements with the contractor. Many of these measures must already be taken into consideration on the basis of legal requirements and must be included in the planning.

The following measures need to be taken into consideration during the planning phase:

- Development of a weight assessment for a waste and logistics concept, based on the soil chemistry and soil engineering investigations
- Prevention of transports of bulk goods with a planning concept for reinstallation with or without processing or interim storage on site
- Analysis of the raw material used for producing cast-in-place concrete and of the required concrete
- Stakeholder analysis for cutting back on transports with mass balance
- If there are railway sidings in the project area, checking the possibility of shifting as much as possible of the material transport to the railway
- Optimisation of the positioning of construction site entrances and exits, time slot management of the transports (to prevent waiting periods and congestion)
- Use of construction roads as a compact foundation for future paths and roads
• Space management for cutting back on transports using large waste containers (e.g. setting up a central waste collection point)
• Take noise abatement measures, in particular on large construction sites, such as setting the boundaries of the construction site by provisionally raising earth walls (e.g. with the excavation material arising on site) or setting up noise abatement equipment
• Investigation of hazardous substances before demolition under the aspect of utilisation
• Creation of a dismantling concept with local utilisation

With larger construction projects, in particular with projects which require an Environmental Impact Assessment, all of these measures – which must already be taken into consideration in the planning phase – must be presented and described in a comprehensive concept, the so-called environmental construction plan:

5.1.1 The environmental construction plan

The environmental construction plan is a list of concepts in text form for planning purposes which is used as an annex to a tender and a contract component and contains the following concepts:

• Waste concept for construction sites (plan of qualities according to the sizing from waste law-related and geotechnical use, investigation of hazardous substances, dismantling concept)
• Logistics concept (planning of mass balance, space management for processing, interim storage and for the construction traffic)
• Construction site equipment plan

Further measures which lead to a further reduction of the environmental impact of the planned construction can also be added.

In detail the environmental construction plan contains the following points with regard to environmentally friendly construction site management:

a) Waste concept according to Vienna Waste Management Act\(^8\) (\textit{Wiener Abfallwirtschaftsgesetz}, available in German, focused on the excavation logistics)

\(^8\) \url{www.umweltschutz.wien.at/abfall/rtf/baustellen-konzept.rtf}
• Project description, technical report (construction engineering-related presentation according to Waste Management Law)
• Waste management report for demolition and excavation (waste-related presentation according to Waste Management Law)
• Organisational arrangements to ensure compliance with legal provisions related to waste management

Supplemented by:
• Report on the geotechnical and soil chemistry assessment
• Overview site plan – chemical sampling with quantity estimate
• Overview site plan – area concept with list of masses
• Weight assessment in table form
• Summarising report

b) Logistics concept
• Estimation of the transport volume according to weight assessment
• Concepts for cutting back on transports (e.g. processing, landscaping)
• Distance limitation for transports of bulk goods
• Coordination of a mass balance with overlapping construction sites
• Recommended routes for transports of bulk goods
• Contractual penalties with derelictions of duty regarding an advice note, removal and emission class
• Operation of the logistics centres according to construction site equipment (e.g. collection of waste)
• Concepts for multimodal logistics
• Ascertainment and concept for boosting the infrastructure at the building site (e.g. operating permits for railway tracks)
• Determination of target values for the total distance driven
• Measures to minimise the burden for neighbours caused by construction traffic

c) Construction site equipment plan
• Depiction of handling, manipulation and (interim) storage according to the sequence of the construction phases
• Construction site entrance with access control and documentation to restrict transport routes
• Speed limit for construction traffic with walking pace on non-asphalted construction roads, 30 km/h on asphalted construction roads
• Stopping and waiting areas for construction site delivery vehicles
• Depiction of the building roads which can be reused as a road foundation
• Central waste collection points near to cranes
• Depiction of the (planned) installations
• Depiction of the area concepts for handling, reprocessing and storage quantities
• Proof of the path and area concepts according to the stock of trees which are worth preserving
• Dust prevention (paved construction roads on foundation of later paths, water connections for wetting, tyre and exit cleaning, consideration of the prevailing wind direction, speed limits on construction and access roads)
• Restrictions of the emissions of construction vehicles, machines, equipment and construction processes
• Depiction of the lighting and safety concept (light pollution)

For its implementation, the environmental construction plan may require specialist environmental construction supervision\(^1\) covering as many construction sites as possible. In addition to monitoring and implementing the environmental plan, the requirements of the specialist environmental construction supervision will, depending on need, also comprise the following partial activity. The commissioning is the responsibility of the constructor:

5.1.2 Tasks of specialist environmental construction supervision

• Coordination of the environmental plan with the construction schedule
• Consideration of the environmental homogeneity of measures
• Pooling together of all existing legal regulations and standards in the area of the environment which have to be applied for the planned construction project (in particular the Environmental Impact Assessment) and monitoring of the collection of decisions
• Implementation and monitoring of the measures for ensuring compliance with the effective and applicable legal and standardisation regulations in the area of the environment which have to be applied for the planned construction project

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\(^1\) The Rules and Regulations for the Road Sector 04.05.11 "Environmental supervision of construction work" ("Umweltbaubegleitung 04.05.11", only available in German) have been compulsory since 2006 for construction measures on federal roads and railway systems. The RVS are validated by a decree of the Ministry (Federal Ministry for Transport, Innovation and Technology BMVIT).
• List of all the work envisaged for the construction site (e.g. earthwork, demolition work, construction work in the narrower sense) with consideration of their timing

• List of all the measures corresponding with the timing of the necessary work and the construction progress and also construction site-specific regulations, in particular those which concern the aspects of waste management, construction traffic and damage to the environment in the area surrounding the construction site

• Required coordination measures, protective measures and equipment for environmentally friendly construction site management which may be necessary on account of working together and after one another

• Protective devices and other equipment planned or provided for joint use on the construction site

• Measures which are connected with particular dangers for the environment

• Determination of who is responsible for implementing the individual measures and regulations

• Neighbour and complaint management

• Announcement and clarification of the construction processes (slurry wall foundations, demolition work, etc.) Documentation of the processes after an insurance claim by the construction site management - aim: to speed up remedial action and make it transparent

• Employee mobility management

• Information and training measures of the construction site staff

5.2 Tender and construction management phase

The guideline differentiates between the following three areas here:

A) Transport

B) Construction

C) Environmental supervision of construction work

Typical activities are listed for each of these areas. Each of these activities is assigned those possible measures which can be taken as part of environmentally friendly construction site management.

The measures are used as a basis for the specification as part of tenders.

A) Transport
Transport of materials from and to the construction site

Measures:
- Space management for cutting back on transports (e.g. using large waste containers of a central waste collection point)
- Construction site entrance with access control and documentation to restrict transport routes for transports of bulk goods (payment system for removal)
- Covering the load to prevent dust emissions when transporting materials
- Regular wet sweeping of the public access and exit paths and also speed limits on public construction site access roads and exit roads
- Delivery and storage of building materials in containers

Transport of materials in traffic zones of the construction site

Measures:
- Prevention of HGV trips on unpaved surfaces (excavation pit)
- Sealing the construction road to prevent dust
- Wetting the construction road to bind dust
- Regular use of sweepers (wet sweeping) to reduce dust
- Speed limit on construction roads and access roads to the construction site (walking pace)

Transportation vehicles

Measures:
- Limitation of the engine class to an emission standard defined by EURO toll groups A to C, at least EURO class IV (as of 2013).

B. Construction

Construction site equipment

Measures:
- Creation of a construction site equipment plan in comparison with the logistics and waste concept before the start of construction and keeping record on the construction site during the construction phase
- Enclosure of the construction sites with dense construction site fences or walls to prevent transport of dust

10 www.go-maut.at
Use of effective dirt traps such as rolling zones and tyre washing units before the exit from the construction site area to the public road network

Material storage, material processing and handling Measures:
- Securing of loose bulk goods and excavation material to prevent exposure to wind by sufficiently wetting or by covering
- Storage of dust-producing building materials in closed containers, e.g. big bags for bulk goods.
- Encapsulation of filling and extraction devices in silos and removal of the dust from any displaced air
- Dust binding measures with excavation and handling work
- Dust removal devices with pulverisation units, dust collection and dust separation, enclosure of the system or of system parts for on-site recycling with mobile systems

Dismantling measures/demolition work:
Measures:
- Dust binding during the demolition work with suitable spray units
- Enclosure of the system and implementation of noise abatement measures with crushing units

Waste prevention and waste management
Measures:
- Reuse of excavation material
- Separate collection of mineral residual building waste, secondary materials and mixed construction site waste
- Installation of a central waste collection point

Construction machines
Measures:
- Uses of construction machines with diesel particulate filters from 18 kW in improvement zones\(^\text{11}\) (see also text elements for tenders, Annex II, item 1.2).
- Regular maintenance of construction machines (e.g. MOT test for construction machines)
- Electrical connection of a power supply company instead of diesel generators
- Dust collectors with mechanical processing of building materials

\(^{11}\) Prescribed by law for type-approved machines from 37 to <75 kW from 1.10.2014, for all others already compulsory since 1.10.2013. (See Federal Law Gazette II, No.76, 20.03.2013) in the period between 1 October and 31 March (MOT-V)
C. Environmental supervision of construction work

Measures:

- Monitoring and control of the arranged measures
- Soil chemistry and soil mechanics quality control
- Establishment of a central contact point for authorities, citizens’ service offices and neighbours in all environmental protection matters (construction site ombudsperson)
- Contact (on the side of the employer) for the citizens’ service offices of the City of Vienna and neighbours if no ombudsperson is appointed
- Open and transparent information to the outside about particular pollution/burdens, their duration and reasons
6. Legal specifications

(relevant regulations of the EU, the Federal Government, and of the laws and ordinances applicable in Vienna)


Federal Waste Management Act (Bundesabfallwirtschaftsgesetz), Federal Law Gazette BGBl. I No. 102/2002

The main provisions of this Act regulate the management of waste, the separation, use, recycling, deposit, transport and possession of waste. Hence special attention must be paid to these provisions when managing waste on the construction site.

Vienna Waste Management Act (Wiener Abfallwirtschaftsgesetz)

Section 10a of the Vienna Waste Management Act

Waste prevention and utilisation of waste on construction sites

Section 10a (1) The constructor is obliged to draw up a waste concept for construction sites for the following construction projects:

- installation or demolition of constructions with a gross volume of more than 5,000 m³;
- annexes with a gross volume of more than 5,000 m³ and constructional changes or partial demolitions of constructions if the affected parts of the building or construction have an overall gross volume of more than 5,000 m³;
- new construction, expansion, essential changes (such as changes to the route), demolition measures or general refurbishment measures for roads or railway tracks on a length of more than 1,000 m.

(2) The waste concept for construction sites shall be submitted before the start of any demolition or construction work pursuant to section 1. If, contrary to original assumptions, it turns out after the beginning of construction work that a construction project is a project pursuant to section 1, the waste concept for construction sites needs to be drawn up immediately.
(3) The waste concept for construction sites shall include the following information by all means:

1. the presentation of the construction project in terms of construction engineering;
2. a waste-related presentation of the construction project including measures of waste prevention, recycling, separate collection and treatment of the waste as well as
3. organisational arrangements to ensure compliance with legal provisions related to waste management.

The waste concept for construction sites shall be adjusted if and when any major waste-related changes occur after the beginning of construction work.

(4) The provincial government can define, by way of ordinances, specifications concerning the form and – taking into account public interest pursuant to section 1 (3) – the contents of the waste concept for construction sites.

(5) The waste concept for construction sites shall be submitted to the public authority upon request. The public authority shall ask the constructor to improve the waste concept for construction sites within an appropriate period of time if it is incomplete or incorrect. Should the constructor not comply with this request within the mentioned period of time, the public authority shall order by way of a decree that the waste concept for construction sites be improved.

Federal Act on the protection against immissions caused by air pollutants (Immission Protection Act – Air, Immissionsschutzgesetz, IG-L) as last revised on 31 August 2015


Ordinance of the Provincial Governor of Vienna with which measures are taken to reduce immissions caused by the air pollutants PM$_{10}$ and NO$_2$ pursuant to the Immission Protection Act – Air (Verordnung des Landeshauptmannes von Wien, mit der Maßnahmen zur Verringerung der Immissionen der Luftschadstoffe PM$_{10}$ und NO$_2$ nach dem Immissionsschutzgesetz-Luft getroffen werden)

This Ordinance defines Vienna as an improvement zone pursuant to section 2(8) of the IG-L. The obligation to install particle filters in machinery and devices and other non-road mobile facilities in improvement zones is specified in the IG-L Offroad-VO based on their performance (see also section 13(2) item 3 of the IG-L).

Ordinance of the Federal Minister of Agriculture and Forestry, Environment and Water Management on the use and operation of non-road mobile technical

The main provisions of this Ordinance regulate the restriction of the use of non-road mobile technical facilities and machinery including engine performance-related, time-related transition periods and exceptions.


Building Code for Vienna (Bauordnung für Wien), Provincial Law Gazette BGBl. 1930/11 in the applicable version

SECTION XII

Regulations concerning the realisation, use and maintenance of buildings

General regulations

Section 123. (1) In construction work it is necessary to prevent any danger as well as any unnecessary inconvenience due to noise, offensive smells, and the formation of dust. If necessary, protective roofs, protective mats, construction planks, coverings or barriers, large containers for construction waste (skips), etc. need to be provided. During the hours of darkness, any hazardous areas shall be lit.

See Moritz: BauO für Wien (2001), notes on section 123(1):

“… Responsibility shall be borne by everyone who contravenes the law, not just the foreman (…). Incidentally, the use of public traffic areas is permissible only in accordance with the Federal Road Traffic Act (STVO). An inconvenience is considered unnecessary where it is avoidable (by using technically faultless machinery, taking relevant precautions, not working during night time – according to the Official Collection of Judgements and Decisions of the Administrative Court new issue 5816 A [VwSbgNF 5816 A])."
Construction Noise Act (Baulärmgesetz), Provincial Law Gazette BGBl. 1973/16 in the applicable version – Vienna

Section 2.(3) If a connection to the electricity grid is available on the construction site or can be set up there without any considerable financial expenses, electric power rather than combustion engines shall be used for operating construction machinery which, according to the state of the art, can be operated electrically and is commercially available in this design. This obligation shall definitely apply to construction lifts, conveying devices, non-self-propelled mixing machines, circular saws, drills and pumps. The provincial government shall be entitled to issue ordinances in order to include other construction machinery to which the mentioned requirements apply.

Ordinance of the Vienna City Administration concerning measures to prevent unnecessary formation of dust (Verordnung des Magistrates der Stadt Wien betreffend Maßnahmen zur Vermeidung unnötiger Staubentwicklung, StaubV; pursuant to section 76 of the Municipal Constitution (Stadtverfassung, StV.) of the Official Gazette of the Vienna City Administration 1987/52)

Section 1. (1) Any and all stored loose materials, such as sand, gravel, soil, construction waste, garbage, sweepings and similar, which are capable of endangering or annoying people or polluting the environment due to the formation of dust, shall be protected efficiently against the formation of dust (such as by covering them).

(2) This obligation shall apply to any and all stored materials on premises that are part of the public good or are private property, independent of whether the materials are stored in containers (such as skips) or without such containers.

Section 7. 1) The obligations according to this ordinance shall not apply to any acts or omissions regulated by laws and ordinances of the Federal Government and of the Vienna City Administration.

(2) This ordinance shall not affect any acts or omissions which are prohibited pursuant to the Ordinance of the Vienna City Administration of 13 May 1982 concerning pollution-free premises and buildings (Reinhalteverordnung 1982 – MA 62 – I/12/82), as announced in the Official Gazette of the Vienna City Administration, No. 21/1982.

Ordinance of the Vienna City Administration concerning pollution-free premises and buildings (Verordnung des Magistrates der Stadt Wien betreffend die Reinhaltung von Grundstücken und Baulichkeiten, Reinhalteverordnung 1982)

Section 1. (1) It shall be prohibited to pollute any premises that are part of the public good, particularly roads and squares, footpaths, underpasses, bridges, road embankments, ditches
and riverbanks as well as any facilities owned by the public, with rubble, soil and excavated material, household sweepings and other waste of any kind, by pouring out liquids, …

**Federal Road Traffic Act (Straßenverkehrsordnung, STVO)**

Section 61 (3) Any and all loads which can annoy people or pollute or freeze over roads due to the formation of dust or odours or by dropping, leaking or squirting shall be transported in sealed and impermeable vehicles or in sealed and impermeable containers. Loads that can be blown away shall be covered with tarpaulin or something similar; …

Section 92 (1) Any pollution of roads with solid or liquid substances, particularly with debris, sweepings, waste and refuse of all kinds which is either grossly negligent or endangers the safety of road users as well as the pouring out of liquids where there is the danger of black ice formation shall be prohibited. If larger amounts of soil stick to a vehicle, particularly to its wheels, the driver shall be obliged to remove them before driving onto a dust-free road.


Pursuant to section 19 (5) of the Federal Public Procurement Act, attention needs to be paid to ensure services in procurement procedures are environmentally compatible. This shall either be done by taking environmental aspects into consideration in the performance specification or by defining certain award criteria.


Section 6. (1) The environmental impact statement shall contain the following information:

A description of the project comprising information on the site, design and size of the project and in particular:

- a) a description of the physical characteristics of the whole project, including the land-use requirements during the construction and operational phases;
- b) a description of the main characteristics of the production or processing procedures, in particular with regard to the nature and quantity of the materials used;
- c) data, by type and quantity, of residues and emissions to be expected (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the implementation and operation of the project;
- d) the increase in the concentration of pollutants in the ambient environment resulting from the project;
Federal Railway Act (Eisenbahngesetz), Federal Law Gazette BGBl. 60/1957

Obligations of the railway company

Section 19(2) The railway company shall take precautions to prevent damage being caused to any public or private property due to the construction, presence or operation of the railway. It shall be liable, irrespective of any liability based on other legal regulations, for any and all damage caused to adjacent properties due to the construction or presence of the railway.
Standards, rules and guidelines

Guidelines for sustainable construction site management (Leitfaden für eine umweltfreundliche Baustellenabwicklung) – RUMBA

The guidelines set up as part of the EU Life research project RUMBA comprise the following parts:
RUMBA-Guide Part 2 - Measures and Activities for Building Site Types
(www.rumba-info.at)

Reduction of air pollutants at construction sites - Basis of specifications for public construction tenders - Environment Agency Austria (Luftschadstoffreduktion bei Baustellen – Grundlage für Anforderungen an öffentliche Bauausschreibungen – Umweltbundesamt)
As well as a comprehensive assessment of the major RUMBA measures from the perspective of public procurement, this study also contains suggestions for text modules to be used in "ecological construction tenders".
(www.umweltbundesamt.at/fileadmin/site/publikationen/REP0243.pdf)

Concisely formulated text of general environmental criteria in public procurement.
(www.salzburg.gv.at/grueneseiten.pdf)

Austrian Environment and Technology Society (ÖGUT) – March 2011; commissioned by the Municipal Department for Environmental Protection (MA 22) of the Vienna City Administration
This report provides insights into the status quo of the implementation of ecological construction site management in the neighbouring German-speaking countries Switzerland and Germany.
ONR 22251 – Standard texts for service specifications in the field of building construction in conformity with ecological requirements (2009)

Many of the measures described in this rule can be assigned to the collection of standard texts for service specifications in the field of building construction in conformity with ecological requirements in ONR 22251. The templates of this ONR have been created to be used both for standardised service specifications (according to Austrian Standard A 2063 and ONR 12010) within the meaning of the Federal Public Procurement Act 2006 and Austrian Standard A 2050 as well as for freely formulated service specifications. ONR 22251 covers the following service categories:

- A.0 Category 0: GENERAL PRELIMINARY REMARKS
- A.1 Category 1: DEMOLITION
- A.2 Category 2: EXCAVATION
- A.3 Category 3: RE-INSTALLATION
- A.4 Category 4: PROCESSING/RECYCLING
- A.5 Category 5: EXPLOITING/DEPOSITING
- A.6 Category 6: DISPOSAL
- A.7 Category 7: DELIVERING RECYCLING MATERIALS
- A.8 Category 8: INTERIM STORAGE
- A.9 Category 9: TRANSPORT
- A.10 Category: 10 CONSTRUCTION SITE EQUIPMENT

Criteria list for railway transport (Kriterienkatalog Bahntransport, expansion of ONR 22251)

Railway transport, including handling and interim storage (Bahntransport, inklusive Umschlag und Zwischenlager)

(www.oekokauf.wien.at/pdf/bahntransport.pdf)

Criteria list for ship transport (Kriterienkatalog Schiffstransport, expansion of ONR 22251)
Ship transport, including handling and interim storage for the construction sector (Schiffstransport, inklusive Umschlag und Zwischenlagerung für den Baubereich)

(www.oekokauf.wien.at/pdf/schifftransport.pdf)


Rules and Regulations for the Road Sector 04.05.11 Environmental supervision of construction work (Richtlinien und Vorschriften für das Straßenwesen, RVS 04.05.11 Umweltbaubegleitung)

By decree of the Federal Ministry for Transport, Innovation and Technology (BMVIT), RVS 04.05.11 shall be applied with binding effect to the new construction, reconstruction, expansion and dismantling of the federal roads A and S as well as railway systems where, as part of an environmental impact assessment or similar procedures, a body is foreseen to carry out the environmental supervision of construction work. This rule differentiates between ecological and water legislation-based construction supervision. It specifies tasks, qualifications, appointment and activities.

Abbreviations

<table>
<thead>
<tr>
<th>German abbreviation</th>
<th>German</th>
<th>English</th>
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<tbody>
<tr>
<td>BGBl.</td>
<td>Bundesgesetzblatt</td>
<td>Federal Law Gazette</td>
</tr>
<tr>
<td>BMLFUW</td>
<td>Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft</td>
<td>Federal Ministry for Agriculture and Forestry, Environment and Water Management</td>
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<td>EURO IV</td>
<td></td>
<td>Emission standard for motor vehicles currently in force in the EU</td>
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<tr>
<td>HGV</td>
<td></td>
<td>Heavy goods vehicle</td>
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<tr>
<td>JIT</td>
<td></td>
<td>Just in time</td>
</tr>
<tr>
<td>LBHB</td>
<td>Leistungsbeschreibung Hochbau</td>
<td>Performance specification for building construction</td>
</tr>
<tr>
<td>MA</td>
<td>Magistratsabteilung</td>
<td>Municipal department</td>
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<td>ÖBB</td>
<td>Österreichische Bundesbahnen</td>
<td>Austrian Federal Railways</td>
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<tr>
<td>ONR</td>
<td></td>
<td>Technical rule</td>
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<tr>
<td>PM</td>
<td></td>
<td>Particulate matter</td>
</tr>
<tr>
<td>PPP</td>
<td></td>
<td>Public private partnership</td>
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<td>RUMBA</td>
<td>Richtlinien für umweltfreundliche Baustellenabwicklung</td>
<td>Guidelines for sustainable construction site management</td>
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<tr>
<td>RVS</td>
<td>Richtlinien und Vorschriften für das Straßenwesen</td>
<td>Rules and regulations for the road sector</td>
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<td>Acronym</td>
<td>German Name</td>
<td>English Name</td>
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<tr>
<td>StVO</td>
<td>Straßenverkehrsordnung</td>
<td>Federal Road Traffic Act</td>
</tr>
<tr>
<td>UBA</td>
<td>Umweltbundesamt</td>
<td>Environment Agency Austria</td>
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<tr>
<td>ULI</td>
<td>Urbane Luft-Initiative Wien</td>
<td>Urban Air Initiative Vienna</td>
</tr>
<tr>
<td>UVE</td>
<td>Umweltverträglichkeits-erklärung</td>
<td>Environmental impact statement</td>
</tr>
<tr>
<td>UVP</td>
<td>Umweltverträglichkeits-prüfung</td>
<td>Environmental impact assessment</td>
</tr>
<tr>
<td>WBSF</td>
<td>Wiener Bodenbereitstellungs- und Stadterneuerungsfonds</td>
<td>Vienna Property Acquisition and Urban Development Fund</td>
</tr>
</tbody>
</table>
ANNEX I: List of measures

In the form of a checklist, the measures are assigned to the respective construction site types. The listed measures can be formulated in concrete terms for the tenders of construction work by the City of Vienna and can be included in the tender specifications (e.g. section – Special provisions, Specifications for building construction LBHB).

The column Implementation of measures indicates the form in which these measures need to be taken into account as part of tenders.

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEASURES</th>
<th>ALL CONSTRUCTION SITES (which go below threshold values)</th>
<th>ROAD CONSTRUCTION AND PIPE-LAYING</th>
<th>BUILDING CONSTRUCTION</th>
<th>CIVIL ENGINEERING</th>
<th>IMPLEMENTATION OF MEASURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport of materials from and to the construction site</td>
<td>Creation of a weight assessment, a logistics and waste concept</td>
<td>Minimum requirements for all construction sites which go below the minimum threshold (except temporary construction sites)</td>
<td>Threshold value from 1,000 m longitudinal stretch</td>
<td>Threshold value from gross volume of more than 20,000 m³</td>
<td>Threshold value from gross volume of more than 20,000 m³ or from 1,000 m longitudinal stretch</td>
<td>Form of implementation of measures as part of tenders</td>
</tr>
<tr>
<td>21</td>
<td>Cutting back on transports by reassembling with or without interim storage on site</td>
<td></td>
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</tbody>
</table>

TRANSPORT

<table>
<thead>
<tr>
<th></th>
<th>Planning and preparation phase (e.g. in environmental construction plan)</th>
<th>Planning and preparation phase (e.g. in environmental construction plan);</th>
<th>Planning and preparation phase (e.g. in environmental construction plan);</th>
<th>Planning and preparation phase (e.g. in environmental construction plan);</th>
<th>Planning and preparation phase (e.g. in environmental construction plan);</th>
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<tr>
<td><strong>Transport</strong></td>
<td><strong>Planning and preparation phase (e.g. in environmental construction plan)</strong></td>
<td><strong>Planning and preparation phase (e.g. in environmental construction plan);</strong></td>
<td><strong>Planning and preparation phase (e.g. in environmental construction plan);</strong></td>
<td><strong>Planning and preparation phase (e.g. in environmental construction plan);</strong></td>
<td><strong>Planning and preparation phase (e.g. in environmental construction plan);</strong></td>
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<tr>
<td></td>
<td>Covering the load to prevent dust emissions when transporting materials</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>ACTIVITIES</td>
<td>MEASURES</td>
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<td>TRANSPORT</td>
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<tr>
<td>4</td>
<td>Switch to the railway, use of railway sidings in the project area</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>5</td>
<td>Optimisation of the positioning of construction site entrances and exits, time slot management of the transports (to prevent congestion and waiting periods)</td>
<td>X</td>
<td>X</td>
<td></td>
<td>Planning and preparation phase (e.g. in environmental construction plan); tender (see Annex II, item 1.1 and item 2.1)</td>
</tr>
<tr>
<td>6</td>
<td>Reutilisation of construction roads as a compact foundation for paths</td>
<td>X</td>
<td>X</td>
<td></td>
<td>Planning and preparation phase (e.g. in environmental construction plan); tender (see Annex II, item 3.13)</td>
</tr>
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<td>7</td>
<td>Space management for cutting back on transports using large waste containers (central waste collection point)</td>
<td>X</td>
<td>X</td>
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<td>Planning and preparation phase (e.g. in environmental construction plan)</td>
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<td>8</td>
<td>Construction site entrance with access control and documentation on the restriction of transport routes for transports of bulk goods</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
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<tr>
<td></td>
<td>ACTIVITIES</td>
<td>MEASURES</td>
<td>ALL CONSTRUCTION SITES (which go below threshold values)</td>
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<td>9</td>
<td>Transport of materials from and to the construction site</td>
<td>Covering the load to prevent dust emissions when transporting materials</td>
<td>X</td>
<td>X</td>
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<td>10</td>
<td>Transport of materials from and to the construction site</td>
<td>Regular wet sweeping of the public access and exit paths and also speed limit on public construction site access roads and exit roads to minimise dust</td>
<td>X</td>
<td>X</td>
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<td>11</td>
<td></td>
<td>Delivery and storage of dust-producing building materials (bulk goods) in containers</td>
<td>X</td>
<td>X</td>
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<td>ACTIVITIES</td>
<td>MEASURES</td>
<td>ALL CONSTRUCTION SITES (which go below threshold values)</td>
<td>ROAD CONSTRUCTION AND PIPE-LAYING</td>
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<td>CIVIL ENGINEERING</td>
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<tr>
<td>12</td>
<td>Transport of materials in traffic zones of the construction sites</td>
<td>Prevention of HGV trips on unpaved surfaces (excavation pit visit)</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>13</td>
<td></td>
<td>Sealing the construction roads to prevent dust</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>14</td>
<td>Transport of materials in traffic zones of the construction sites</td>
<td>Wetting the construction roads to bind dust</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>15</td>
<td></td>
<td>Regular use of sweepers (wet sweeping) in the earthworks phase</td>
<td>X</td>
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<td>16</td>
<td></td>
<td>Speed limit on construction roads and access roads to the construction site</td>
<td>X</td>
<td>X</td>
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<td>17</td>
<td>Transportation vehicles</td>
<td>Restriction of engine classes to at least EURO IV</td>
<td>X</td>
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<td>ACTIVITIES</td>
<td>MEASURES</td>
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<td>ROAD CONSTRUCTION AND PIPE-LAYING</td>
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<tr>
<td>18</td>
<td>Construction site installation</td>
<td>Take noise abatement measures, in particular on large construction sites, such as setting the boundaries of the construction site by provisionally raising earth walls or setting up noise abatement equipment</td>
<td></td>
<td></td>
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<tr>
<td>19</td>
<td></td>
<td>Creation of a construction site installation plan in comparison with the logistics and waste concept before the start of construction and keeping record on the construction site</td>
<td></td>
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<td>20</td>
<td></td>
<td>Enclosure of the construction sites with dense construction site fences or walls to prevent transport of dust</td>
<td></td>
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<td>21</td>
<td></td>
<td>Dirt traps such as rolling</td>
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<td>Zones and tyre washing units before the exit to the public road network</td>
<td>(see Annex II, items 3.15, 3.16, 3.17) Environmental Impact Assessment requirement</td>
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<td>(which go below threshold values)</td>
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<tr>
<td>22</td>
<td>Material storage, material processing and handling</td>
<td>Securing of loose bulk goods and excavation material to prevent exposure to wind by sufficiently wetting and by covering</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>23</td>
<td>Material storage, material processing and handling</td>
<td>Storage of loose bulk goods and excavation material in closed containers, e.g. big bags for bulk goods (not in pipe-laying and road construction zones)</td>
<td>X</td>
<td>X</td>
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<td>24</td>
<td>Encapsulation of the filling and extraction devices with storage of dusty and fine-grained materials in silos and removal of the dust from the displaced air</td>
<td>X</td>
<td>X</td>
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<td>25</td>
<td>Dust binding measures with excavation and handling work</td>
<td>X</td>
<td>X</td>
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<td>ACTIVITIES</td>
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<tr>
<td>26 Material storage, material processing and handling</td>
<td>Dust removal devices with pulverisation units, dust collection and dust separation, enclosure of the system or of system parts for on-site recycling with mobile systems</td>
<td>X</td>
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<td>27 Dismantling measures and demolition work</td>
<td>Investigation of hazardous substances before the demolition</td>
<td>X</td>
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<td>28 Dismantling measures and demolition work</td>
<td>Creation of a dismantling concept</td>
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<td>29 Dismantling measures and demolition work</td>
<td>Enclosure of the system and implementation of noise abatement measures with crushing units</td>
<td>X</td>
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<td>No.</td>
<td>Description</td>
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<td>30</td>
<td>Measures to bind dust during the demolition work with suitable spray units</td>
<td>X</td>
<td>X</td>
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<td>ACTIVITIES</td>
<td>MEASURES</td>
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<td>31</td>
<td>Waste prevention and waste management</td>
<td>Waste concept for construction sites</td>
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<tr>
<td>32</td>
<td>Waste prevention and waste management</td>
<td>Extensive reuse of excavation material</td>
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<tr>
<td>33</td>
<td>Waste prevention and waste management</td>
<td>Separate collection of residual building waste and construction site waste</td>
<td>X</td>
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<td>34</td>
<td>Waste prevention and waste management</td>
<td>Installation of a central waste collection point</td>
<td>X</td>
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<tr>
<td>35</td>
<td>Construction machines</td>
<td>Diesel particulate filter for construction machines and mobile equipment from 18 kW</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>36</td>
<td>Construction machines</td>
<td>Regular maintenance of construction machines (MOT test for construction machines)</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>37</td>
<td>Construction machines</td>
<td>Electrical connection of a power supply company instead of diesel generators</td>
<td>X</td>
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<td>X</td>
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<td>38</td>
<td>Dust collectors with mechanical processing of building materials</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>ACTIVITIES</td>
<td>MEASURES</td>
<td>ALL CONSTRUCTION SITES (which go below threshold values)</td>
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<tr>
<td>39</td>
<td>Elaboration of a concept for environmentally friendly construction site management</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Planning and preparation phase (e.g. creation of an environmental construction plan)</td>
</tr>
<tr>
<td>40</td>
<td>Monitoring and control of the arranged measures</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>To be commissioned by the employer as part of the construction site management</td>
</tr>
<tr>
<td>41</td>
<td>Soil chemistry and soil mechanics quality control</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>To be commissioned by the employer as part of the construction site management</td>
</tr>
<tr>
<td>42</td>
<td>Establishment of a central construction site ombuds office for authorities, citizens’ service offices, neighbours in all environmental protection matters</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>To be commissioned by the employer as part of the construction site management</td>
</tr>
<tr>
<td>43</td>
<td>Contact (on the side of the employer) for the citizens’ service offices of the City of Vienna and neighbours (if no ombudsperson is appointed)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>To be commissioned by the employer as part of the construction site management</td>
</tr>
<tr>
<td>44</td>
<td>Open and transparent information to the outside about particular pollution/burdens, their duration and reasons</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>To be commissioned by the employer as part of the construction site management</td>
</tr>
</tbody>
</table>
ANNEX II:

Text elements for TENDERS of measures for environmentally friendly construction site management

1. Environmentally friendly construction site management

1.1. Construction site transports

The employee has to record accesses and time slots for construction site transports and document these for the employer.

The use of vehicles with low-emission engine classes from EURO IV is obligatory for all HGV transports from and to and also on the construction site. Failure to comply with this provision means a contractual penalty of € 1,000 per usage day for each HGV for which EURO IV cannot be proven.

1.2. Construction machines and equipment

If diesel-powered construction machines and construction equipment are used, since 1.1.2014, with an output of ≥ 18 kW < 37 kW, these have had to comply with the particulate limits of Stage III A of Directive 97/68/EC, either as a new vehicle or by retrofitting with a closed/controlled particulate matter reduction system. Since 1.1.2014, construction machines and construction equipment with an output ≥ 37 kW have had to comply with the particulate limits of Stage III B of Directive 97/68/EC, either as a new vehicle or by retrofitting with a closed/controlled particulate matter reduction system.

Particulate matter reduction systems used for retrofitting have to correspond with the criteria of section 4 and Annexes 1 and 2 of the Immission Protection Act – Air, Off-road Ordinance (IG-L-Offroad-VO), Federal Law Gazette BGBl. II 76/2013 as amended.

For spark ignition engines up to 19 kW which fall within the scope of application of Directive 97/68/EC, emissions have to comply with Stage II for the respective classes SH and SN. In the case of engines which are not covered by Directive 97/68/EC, two-stroke engines are prohibited.

Proof of regular maintenance of these machines and equipment operated on the construction site must be kept on the construction site.

Use of diesel-powered construction machines and construction equipment which do not correspond with these requirements shall lead to a contractual penalty of € 1,000 per usage day.
Basically the power has to be supplied with mains current. To bridge the time gap until the mains supply is connected, the use of power generators is allowed for a maximum of 2 days/48 hours.

1.3. Supporting documents and supervision

The employer is entitled to demand proof in the form of supporting documents on equipment, vehicles or travel routes. The employee is obliged to impose all measures for environmentally friendly construction site management on the subcontractor.

2. Cutting back on transports:

2.1. Transport concept

Within 10 days of the order being placed, a transport concept for carrying out the work has to be presented on the request of the employer. The work must not be begun until the concept has been approved by the employer.

By way of example, there is indication of difficulties such as activities of various other municipal departments (MA) and network utility operators (e.g. Fernwärme and MA 28, MA 30 and MA 31 of the Vienna City Administration) in the transport routes.

The employee has to coordinate the transport routes for service provision with all employees active in the project area, with the employees of third parties and with the municipal departments.

2.2. Waste disposal concept

The employer has to be presented with a concept for approval which contains the waste disposal and utilisation logistics of materials that cannot be reused in the construction zone. This concept also needs to include the likes of the subcontractors employed for this purpose. Materials which cannot be reused in the construction zone are materials which, according to the soil chemistry classification or in terms of building physics, are not suitable for possible reuse as part of the tendered construction project. The concept also has to be coordinated with the employer, the project engineer and the specialist institute or specialist advising in questions of waste chemistry in order to find economically and ecologically appropriate solutions in terms of sustainable handling of resources according to the Waste Management Act (Abfallwirtschaftsgesetz or AWG). The waste disposal concept has to include the names of the disposal companies or waste handlers and also legally valid rulings regarding the criteria for acceptance in terms of waste chemistry such as landfill classes and code numbers.

The unit prices of these items have to include all costs for the services necessary in this regard (discussions, concept creation, etc.).
3. Dust prevention

3.1 Dust prevention

It must be ensured that dust cannot form on the construction roads by signposting and monitoring to see that the stipulated speed limit is observed. The public traffic zones connected to the construction road have to be wet swept in particular to ensure dust-free cleaning. Otherwise the employer will commission a third party to do this and the employee will be charged for the work.

The formation of dust has to be minimised during handling work (e.g. excavation), manipulation (e.g. landscaping) and storage (e.g. interim storage of bulk goods or excavation for backfilling). Appropriate measures have to be taken to reduce emissions in processes of these categories by covering skips and HGVs and also by covering and wetting. The excavation pit has to be covered or constructionally secured according to the ground conditions to sufficiently prevent the formation of dust.

3.2 Storage and transport

To prevent dust forming, storage containers and transport skips need to be kept sealed or covered with nets or plastic sheets. It is not permitted to transport demolition material and bulk goods of all kinds in non-covered containers and skips outside of the construction site. When carrying out the tendered services, dust exposure must be prevented, for example, by binding, suction cleaning or protecting against wind.

If it is noticed that the employee has taken insufficient measures to prevent the formation of dust, the employer will ensure that suitable measures are taken. The costs arising here shall be borne by the employee.

Additional construction-related measures which go beyond the usual extent and have to be carried out by order of the employer must be provided in the service items of the corresponding service groups and are paid separately. Special provided systems (e.g. washing systems, grids for trays) remain the property of the employee after completion of the construction work.

3.3 Big bags for bulk goods

Bulk goods such as sand, gravel, etc. must be delivered solely in containers made of tear-resistant, reinforced plastic film (“big bags”) or similar, half-closed containers and secured and stored protected from the wind before installation on the construction site.
3.4 Material separation on the construction site

Demolition material and waste on the construction site must be separated according to fraction and collected in skips or corresponding containers. The skips need to be separated for sorting according to the expected accumulation of material, covered during night time and on work-free days and protected against wind transport.

3.5 Particular dust binding measures

Particular measures for dust binding: The costs for particular measures for dust binding must be included in the unit prices of the service items and are not paid separately. This is the case in particular for measures during transport, handling or storage, such as the wetting of dust-producing goods and also the encapsulation of the filling and extraction devices with storage of dusty and fine-grained material in silos and removal of the dust from the displaced air.

3.6 Use of a fire hose

Spraying the demolition area with a fire hose ("C-size hose") with turbo jet nozzle: limitation of the wetting height to 10-12 m depending on the water pressure.

3.7 Spray nozzles on demolition equipment

Fitting and operation of heavy demolition equipment (> 37 kW) with spray nozzles: the water mist is sprayed directly on the tool. Spray capacity 3-10 bar depending on water pressure. The demolition material has to be wetted in addition.

3.8 Spray canons

Use of water misting devices with compressed air with addition of biodegradable tensides, in particular for dust binding as a consequence of falling demolition material

Comment:

To be tendered for demolition work in sensitive inner city environment and for large-scale demolition > 2,000 m³. Tensides are surface-active agents that reduce surface tension in water for increasing efficiency and lowering water consumption.

3.9 Sprinkling water on traffic zones

To keep traffic zones free from dust on and around the construction site, in dry weather conditions – except when there is the risk of frost – effective spraying must be carried out at hourly intervals at the longest to ensure there is a dust-free environment. If this contractual requirement is not fulfilled, there shall be a contractual penalty of ......
3.10 Dust removal
With cutting, grinding and separating activities which produce dust, suction devices or enclosures have to be used to prevent the formation of dust.

3.11 Dust prevention when cleaning the construction site
When cleaning the construction site, all necessary measures to prevent dust (particulate matter) must be taken. When carrying out the commissioned services, dust exposure must be prevented, for example, by binding or suction cleaning.

3.12 Dust prevention during on-site recycling
For the reusability of material processed on site, a mobile processing unit is preferable to removal. When processing materials which can be reused on site, suitable measures need to be taken to prevent dust nuisance and noise pollution. The devices need to be equipped with particulate filters in accordance with Federal Law Gazette BGBl. II, No. 76, 20 March 2013 and, if necessary, temporarily enclosed.

3.13 Paved construction road during construction period (with later reuse)
The construction road must be created as a paved construction road with the obligation to establish the required height. The paved construction road must be created with a width of at least 6.5 m from 10-15 cm asphalt recycling. It has to be created so that it is ensured it remains a foundation. Otherwise the employee has to ensure that there is a demolition, the material has to be taken for removal so it can be reused and the costs for demolition and disposal have to be borne. The accesses to the construction road have to be created section by section at the crossover to the public traffic zone with a length of at least 15 m with an asphalt surface as a rolling zone. The asphalt-paved rolling zones at the crossover to public traffic zones have to be dismantled with low dust formation and disposed of at the expense of the employee.

A Creating construction road  m²

B Cleaning and temporarily providing construction road  AU

Temporary provision: Billed in accounting units (AU = area x weeks)

C Dismantling construction road  m³
3.14 Paved construction road during construction period (if there will be no later reuse)

Creation, temporary provision and cleaning and also dismantling of a construction road:
Construction method according to the choice of the employee consisting of gravel layer, base and mastic asphalt; load carrying capacity and resilience according to requirements of the construction management (according to highest permissible total weight of the construction vehicles).

Recycling materials must be used as basic building materials.

After the end of the construction work, the construction road must be dismantled and the material taken for removal so it can be used. Costs for ramps, embankments, etc. are included in the unit prices. The actually installed area or the volume when installed is billed.

The following are offered:

Foundation: . . .

Base: . . .

Surface layer: . . .

A Creating construction road $m^2$

B Cleaning and temporarily providing construction road $AU$

Temporary provision: Billed in accounting units (AU = area x weeks)

C Dismantling construction road $m^3$

Comment:

Already needs to be included in the construction site’s health and safety plan, tender for construction sites with overall length of the transport route $> 30$ m and a construction period of more than 20 weeks. Advantage over the rolling zone is that it is easier to clean by machine.

3.15 Rolling zone recycling material during construction period

Creation, temporary provision and cleaning and also dismantling of a rolling zone for exiting HGVs made of recycled granules of asphalt, bitumen materials or residual building waste according to the choice and requirement of the employee. After the end of the construction work, the material must be taken for removal so it can be used. Costs for ramps, embankments, etc. and for disposal or
utilisation are included in the unit prices. The actually installed area or the volume when installed is billed.

The following are offered: ..... 

A **Creating rolling zone** \( m^2 \)

B **Cleaning and temporarily providing rolling zone** \( AU \)

Temporary provision: Billed in accounting units \((AU = area \times weeks)\)

C **Dismantling rolling zone** \( m^3 \)

Comment:

*To be tendered depending on the situation for construction sites with a transport route > 30 m and a construction period of more than 20 weeks. The effectiveness depends on the length of development. Advantage over the construction road: even less dust formation; disadvantage: higher maintenance costs (accumulation of mud).*

### 3.16 Providing tyre cleaning grid during construction period

Providing tyre cleaning grid during construction period: creating, installing, cleaning and temporarily providing and also dismantling

Minimum width 275 cm, minimum length 350 cm (a full turn of the wheel)

The costs for incorporating the construction in the foundation or in the profile of the construction road need to be included in the unit price.

A **Creating tyre cleaning grid** Flat rate

B **Implementing tyre cleaning grid** Flat rate

C **Cleaning, temporarily providing tyre cleaning grid** \( AU \)

Temporary provision: Billed in accounting units \((AU = weeks)\)

Comment:

*To be tendered depending on the situation for construction sites with a transport route > 60 m and a construction period of more than 20 weeks, possibly as an alternative to the rolling zone. The*
effectiveness depends on the length of development. Lower expenditure compared to a tyre washing unit (use in winter, water circulation, maintenance)

3.17 Providing mobile tyre washing unit during construction period:

Providing mobile tyre washing unit (mob. TWU) with grill for construction sites according to the choice of the employee for the duration of construction, with or without spray system (spr.), delivery, installation, operation, cleaning and temporary provision, disassembly and removal

Minimum length of the washing area 350 cm (a full turn of the wheel) with integrated water recycling and flake dosing system, track width at least 275 cm, installed power at least 5.5 kW, suitability for cleaning tyres up to medium degree of contamination. The costs for incorporating the construction in the foundation or in the profile of the construction road, all installations and the connection and running costs need to be included in the unit prices.

The following are offered: ....

A Creating mob. TWU with grill Flat rate

C Temporarily providing mob. TWU with grill AU

Temporary provision: Billed in accounting units (AU = weeks)

D Creating mob. TWU with grill and spr. Flat rate

E Temporarily providing mob. TWU with grill and spr. AU

Temporary provision: Billed in accounting units (AU = weeks)

Comment:

To be tendered depending on the situation for large construction sites with logistics concept and measures accompanying construction. The operation of the unit might require approval. In any case, the planning already has to be taken into consideration when preparing the construction work with the involvement of specialists.

Note:

Tyre washing units have the disadvantage that the wet exit zone is also still usually contaminated with soil during dry weather and ultimately leads to dust emissions again.

The loosely formulated item text above has been kept very functional and needs to be checked before use with regard to the particular requirements or framework conditions of the construction
site. With the plant systems found on the market, considerable differences were determined in terms of performance and cost, which in some cases also go beyond a requirement profile of construction sites.

3.18 Groundwater well for wetting the excavation pit and construction road:

The creation and operation of a groundwater well for wetting the excavation pit and construction road to prevent the formation of dust and for later use as service water for watering gardens is included in the price. The required pipes for wetting the construction site need to be provided temporarily on the surface as hoses. Corresponding approvals must be obtained in accordance with the Water Rights Act (Wasserrechtsgesetz).