Print date: 9. 10. 2020

Scope of validity:
UNIPETROL RPA, s.r.o. (without branches and without the Kralupy Refinery Unit)

DESIGNING, IMPLEMENTATION AND REPAIRS OF OUTSIDE WATER AND SEWER LINES

Approved by:	Company executive
Valid from:	16 July 2019
Document administrator:	UNIPETROL RPA, s.r.o. – Department of Management Systems
Prepared by:	UNIPETROL RPA, s.r.o. – JEKO, Water management department – Jiří Sapoušek

For internal use only

List of changes

Change number	Page number		Subject of the change	Valid from	Approved by (position, signature)
	removed	inserted			
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Notice: Change proceedings take place pursuant to Directive 821.

Content

1 Purpose

This directive introduces a unified system of designing, implementing and repairs of outside water and sewer lines in UNIPETROL RPA, s.r.o. (without branches and without the Kralupy Refinery Unit)

2 Scope of validity

The document is valid for the following designated companies / divisions:

☑ UNIPETROL RPA, s.r.o. ☐ BENZINA, odštěpný

☐ POLYMER INSTITUTE BRNO, odštěpný závod

The document is not valid for the Kralupy Refinery Unit.

The directive is available online (http://www.unipetrolrpa.cz/CS/sluzby-areal/chempark-zaluzi/Stranky/zavazne-normy-a-informace.aspx) and is intended for all legal and natural entities (hereinafter contractor/lessee) who:

- perform any work activities in Chempark Záluží on the basis of the relevant agreement or a one-time order,
- carry out any tangible asset investment in Chempark Záluží,
- lease any building (workplace) for its activities in Chempark Záluží on the basis of the corresponding contract.

Directive 444/2 is valid for designing, implementing and repairs of outside water and sewer lines in UNIPETROL RPA, s.r.o. (without branches and without the Kralupy Refinery Unit), unless a binding controlled internal document issued by the operator or maintainer specifies other conditions for designing, implementing and repairs of outside water and sewer lines (material, construction, etc.)

This document replaces: Directive 444/2 “Designing, implementing and repairs of outside water and sewer lines”, 4th issue of 16 October 2018.

3 Terms, definitions and abbreviations

BSK_5	- five-day biochemical consumption of oxygen - the amount of dissolved oxygen consumed under specified conditions by biological oxidation of organic or inorganic substances in water.
Business owner	- owner of the project
ČSN	- - Czech technical standard
EN	- European technical standard
Dilatation	- change of object dimensions due to its temperature change
DN	- nominal diameter of pipes
EO	- equivalent inhabitant - organic biologically degradable load with a five-day biochemical oxygen consumption (BSK5) of 60g of oxygen/day determined for 1 person
HZSP	- Fire rescue services of the company
ISÚ	- Information system about the area
JEKO	- EKO unit
JPET	- Petrochemical unit
M+R	- Measuring and regulation
NTS	- Low temperature warehouses
Operating floor	- flooring in the shaft intended for the safe handling by staff via an armature or gauge
OPRM	- Project management department from the facility management section
OZIP	- Environment protection department, JEKO
PE pipes	- polyethylene pipes
PCH	- Petrochemistry
PN	- nominal pressure
Trenchless pipelining	- technology for laying piping under roads or buildings without digging
Operator	- a person who owns devices and uses these for their activities
SČVK	- Severočeské vodovody a kanalizace (*a water and sewage company*)
Company	- UNIPETROL RPA, s.r.o. (without branches and without the Kralupy Refinery Unit)
SVRK	- Water mains and sewage section (ÚVHO)
Armature shaft	- building designed for accessing underground armatures
Sewage shaft	- building designed for accessing the sewage pipes for cleaning, on the axial breaks of the sewage system
TP	- technical conditions
TZA, UIA	- type of ferroconcrete piping
Care taker	- person responsible for the technical condition of the equipment and its maintenance

ÚVHO	-	Water management division (JEKO)
Water management mains	-	piping mains for water and sewage piping including armature, measurement and sewage shafts
Air valve	-	a device used to bring air into the pipes
Client	-	a) the project leader within the scope of investments b) an employee responsible for maintaining water and sewage piping c) external companies governed by directive 444/2
ZMZ	-	basic map of the plant
Premises of the old plant	-	This is part of the Chempark Záluží plant that was built in the forties of the last century, to the east of the PCH premises
BO	-	business owner
PVH	-	hydrant fire-fighting water
PVS	-	sprinkler fire-fighting water

4 Designing, implementation and repairs of outside water and sewer lines

4.1 The client or their designated representative

The client or another designated representation is responsible for the handover of comments received from the design and implementation phase as per this directive to the contractor and also for supervision over their handling.

The client or their designated representative will ensure that:

- Documentation was discussed during its processing (as per directive 704 “Use of the company’s premises”) with individual company bodies, and each project integrally includes an entry demonstrating the approval of this project by responsible employees of ÚVHO, the RPA maintenance department and OPRM Facility Management. This entry will be attached to the project’s technical report. This entry is a precondition for the approval of the project by ÚVHO, the RPA maintenance department and OPRM Facility Management.
- Water mains projects (including buildings) were discussed as a comprehensive unit at each project organization; the organization will design the project so as to prevent the division of complete water and sewage systems into several construction parts. In other words, the aim is to ensure that a single company handles all project documentation regarding water and sewage mains. The concept and securing of these requirements is the responsibility of the operator / BO of the facility.
- Water mains projects were designed as comprehensive units, i.e., if possible as a single project bundle that includes all technological, budgetary, structural and other essentials (i.e., including hydro-technical calculations, the overall balance and composition of waste water including qualitative and quantitative indicators). In other words, everything will be part of a single project documentation.

- For new water and sewage connections, the offtake of water from the water network and release of waste water into sewage was discussed between operations and ÚVHO already in the project preparation phase. Based on the proposed balance, the ÚVHO representative will determine whether it will be necessary to provide a capacity calculation for the water and sewage network so that the costs can be included in the total budgets to be approved. The capacity calculations for water and sewage systems are carried out by the designer in collaboration with ÚVHO and individual production sites.
- When creating the investment project (investment action, IA), he/she provided the operator/BO of the piping a list of pipes that will be affected by the IA and where information about their depths will be required. The operator/BO of the pipes in collaboration with OPRM Facility will provide information on the storage of the water piping. If the operator/BO of the piping does not know the depth at which the pipes are located, the IA client or their representative will determine the pipe depths by a probe dig at the costs of the investment action. If the operator/BO of the piping does not make a request to determine the placement of the pipes during the preparatory process, they will be obliged to cover the costs for determining the depth of the pipes.
- OPRM Facility Management inspected all situation documents that company bodies provide to organizations involved in the project.
- The whole discussion of the project documentation will be carried out with the presence of representatives of OPRM Facility Management, ÚVHO, and current or future maintainers of the equipment.
- The implementation documentation was handed over to ÚVHO, the RPA maintenance department and OPRM Facility Management for records and monitoring during implementation, including technological parts for those buildings where any waste water is created and external above-ground mains will transfer waste water for further cleaning at the JEKO device.
- After completing the work, the contractor will transfer the complete documentation of actual performance and PIDs of the placed mains including an exact measurement of the routes and appropriate armatures both in terms of their layout and their altitude as per directive 751 “Information system for Facility Management”, specifically with 1 copy sent to ÚVHO, to the RPA maintenance department and to OPRM Facility Management each. The preparation of these measurements can be ordered directly from OPRM Facility Management.
- OPRM Facility Management was familiarized with the facts and circumstances which will allow the measurement of the constructed underground mains or their parts in order to complete the appropriate records in ZMZ and ISU.

4.2 Binding instructions for the design, implementation and repairs of water mains

4.2.1 **Types of waters:**

4.2.1.1 The company has the following independent water circuits:

In the old plant:

- Cooling - with cooling (circulating) water used primarily to cool processes in production, with a temperature of up to 28°C. The pressure of cooling water lies within the 300-400 kPa range, measured on the foot of water plant 02 (building 0425), 231 (3333), 731 (4812).

- Fresh - containing fresh (filtered) water used primarily to refill the cooling water circuits, feed the DEMIstation in block 11 and 14, with a temperature of up to 28°C. The pressure of fresh water lies within the 280-450 kPa range, measured on the foot of water plant 230 (building 4804).
- Return - containing warm cooling (circulating) water. This gravitationally-based main is designed to remove warm cooling water from technologies to the cooling water in water plants. The water temperature cannot exceed 40°C.
- Utility - water used for restrooms and social purposes, with the exception of drinking and cooking. The pressure of utility water lies within the 160-200 kPa range, measured on the foot of water plant 1719.
- Drinking - water intended for drinking and cooking of meals and for certain air conditioning equipment. The pressure of fresh water lies within the 160-300 kPa range, measured in regulatory shaft in block 17 on street C.

On PCH and NTS (JPET site):

- Cooling - with cooling (circulating) water used primarily to cool processes in production, with a temperature of up to 30°C. The pressure of cooling water lies within the 400-530 kPa range, measured on the foot of the PCH water plant (buildings 9602 and 9522).
- Fresh - containing fresh (filtered) water used primarily to refill the cooling water circuits, feed the DEMIstation in block 87, with a temperature of up to 28°C. The pressure of fresh water lies within the 280-450 kPa range, measured on the foot of water plant 230 (building 4804).
- Return - containing warm cooling (circulating) water. This gravitationally-based main is designed to remove warm cooling water from technologies to the cooling water in water plants. The water temperature in the JPET premises cannot exceed 40°C.
- Drinking - with water intended for drinking and cooking and for social purposes. The pressure of fresh water lies within the 160-330 kPa range, measured on the foot of water plant 14/15.
- Fire safety water – only at PCH and NTS
  - Hydrant (PVH) – containing cooling (circulating) water with a temperature of up to 30°C and an operating pressure of at least 800 kPa, intended for supplying the fire hydrants located in the JPET premises (PCH, NTS and block 06 - northern slope). After the decision of the ÚVHO director or the head of ZV on the possibility of switching to a lower pressure, the pressure in the PVH network is bounded by the pressure of fresh water, i.e., 250–350 kPa.
  - Sprinkler (PVS) – containing cooling (circulating) water with a temperature of up to 30°C and an operating pressure of at least 800 kPa, used for stable firefighting equipment and water barriers in case of a fire of JPET equipment (PCH and NTS).
  - The pressure of firefighting water lies within the 800-950 kPa range, measured on the foot of the PCH water plant (buildings 9602 and 9522).

Note: The pressure of all water systems is measured at 242 meters above sea level and are listed in overpressure units.

4.2.1.2 In the old Chempark Záluží plant, there are above-ground firefighting hydrants (in red and blue color) connected to cooling and fresh water pipes. There is no separate hydrant network in the old Chempark Záluží plant.

4.2.1.3 The utility and drinking water systems in the old Chempark Záluží plant are connected to above-ground hydrants that are not intended for firefighting (green color, intended for the release of air from the piping).

4.2.2 **Water mains**

4.2.2.1 For fresh, cooling, outflow, hydrant and sprinkler water it is necessary to use (also during repairs) steel pipes in class 11, 12 with external PE insulation and reinforced pipe width, i.e., the pipe widths will correspond to those of pipes that are one PN class above. Other materials used for piping must be discussed with and also approved by ÚVHO in writing.

4.2.2.2 It is not permissible to design or use non-insulated piping with additionally installed insulation (not even during repairs). Piping must be insulated already from its initial production. It is only permissible to apply additional insulation at the weld points.

4.2.2.3 For drinking and utility water pipes, use (also during repairs) steel pipes of class 14, 15 (stainless pipes). Other materials used for piping must be discussed with and also approved by ÚVHO in writing.

4.2.2.4 Water mains are to be designed in pressure class PN 10 and/or PN 16 based the operating pressure

4.2.2.5 Water mains are to use pipes with exclusively the following nominal internal diameters: DN 50, 80, 100, 150, 200, 250, 300, 400, 600, 800, 900, 1000, 1200, 1400 and 1600. Pipes below DN 50 cannot be used.

4.2.2.6 Steel pipes may only use welded connections. If piping in the ground required dilatation, this must be resolved via an assembly insert or bellows. Welds in weld connections will be treated with an asphalt coating and a double PE insulation layer.

4.2.3 **Fittings (armatures)**

4.2.3.1 Use sliders for all types of water mains (including repairs). Other fittings used for piping must be discussed with and also approved by ÚVHO in writing.

4.2.3.2 The used sliders are to be metal-sealed, with a lid (also applies to repairs).

4.2.3.3 The used fittings will belong to pressure class PN 10 and/or PN 16 based the operating pressure (also applies to repairs).

4.2.3.4 Used fittings must have one of the following internal diameters (also applies to repairs): DN 50, 80, 100, 150, 200, 250, 300, 400, 600, 800, 900, 1000, 1200, 1400 and 1600. Fittings below DN 50 cannot be used.

4.2.3.5 Metal controls for fittings. Fittings are to end about 15 cm below terrain level or at the ceiling of a fitting shaft. The dimensions of the rhomboid (the “nut”) used to control the spindle extension are to be unified - 28 x 28 mm, slant of 1:10. The rhomboids and nuts on extension rods must be made of steel (e.g., class 10 or 11), drilled through and secured against ejection via a stainless wire with a min. diameter of 4 mm. Extension of the spindle controls must be made of full round material (with the diameter to be specified by the operator based on the DN of the fitting), the controls must be protected by a steel cover as to protect the moving parts of the fitting and must end in a brick “chimney” structure under the cast cover of the lid.

4.2.4 Fitting and water-measurement shafts

4.2.4.1 For fitting and water-measurement shafts (chambers) it is required, aside from the water-tightness of the shaft walls and piping connections, to also prevent the flow-in of surface water into the shaft either by having its ceiling be located 20-30 cm above terrain level or via an adequate design of the ceiling inlets that will allow the covers to be removed without damage.

4.2.4.2 For fitting and water measurement shafts, it is required to create a sufficient and safe space for operation and to ensure a suitable layout of the ceiling structure and inlets that will allow to move the required pieces of fittings into the shaft (or out of it), and to ensure sufficient air ventilation within the shaft. Fitting controls in the shaft must always be installed from the ceiling desk of the shaft by moving the spindle and key rhomboid into the appropriate slot in the ceiling desk. If operators need to be inside the shaft, install a safe operating flooring. In order to ensure suitable ventilation in the shaft, it is necessary to install two air vents with chimneys that will prevent water from entering the shaft.

4.2.5 Fire hydrants

4.2.5.1 Only design, build and use above-ground hydrants.

4.2.5.2 The following hydrants should be installed on the piping:

- for pipes up to DN 300 – hydrant DN 100 with an 2xB outlet (75)
- for pipes above DN 300 – hydrant DN 150 with an 2xB (75) and 1x DN 150 outlet

The latter outlet is not the same as outlet “A”.

4.2.5.3 Each above-ground hydrant must have its own valve installed at a distance of at least 1 m from the hydrant.

4.2.5.4 The water drainage for the hydrant, located in the underground part of the hydrant, is to be placed on a gravel foundation.

4.2.5.5 The hydrant must be marked with a serial number matching the hydrant plan. The number will be provided by the future owner of the hydrant, while the marking will be secured by the contractor. The distance and direction of the closing fitting (armature) must be marked on the hydrant.

4.2.5.6 The installation of hydrants must be consulted with HZSP and the Safety Department - the appropriate specialist responsible for fire prevention.

4.2.6 **Offtake measurements**

4.2.6.1 All new consolidated water offtakes (for construction work, technology, main switches) need to be measured, specifically via:

- an induction flow meter with remote transfer and with the possibility of remote reading, for all types of waters
- a vane flow meter with remote transfer and with the possibility of remote reading for pipes up to DN 100 carrying drinking and utility water.

  The type of the flow meter and its suitability need to be discussed with ÚVHO and the future operator/maintainer of the flow meter.

Each flow measurement will be provided via a working or designated gauge, with the appropriate documentation:

- for SM: an original copy of the **Verification Sheet** or a **Confirmation on the Verification of the Specified Gauge** (last valid + at least one previous), as per valid legislature
- for PM: an original copy of the **Calibration Sheet** (last valid + at least one previous).

When designing, implementing and repairing a flow gauge, adhere to the prescribed lead-in lengths for the pipes. Gauges, i.e., the flow meters, must always (unless it is placed above the surface) be placed in brick and water-free shafts, with lighting and a cable route if an evaluation unit needs to be placed outside of the measurement gauge. The measurement sequence must have fittings installed before and after the flow meter, and furthermore for vane flow meters it is necessary to install a mechanical particle filter in front of the flow meter. When requiring the continuous delivery of water, it is necessary to install a bypass for the measurement sequence.

4.2.7 **Installation of water pipes**

4.2.7.1 When installing water pipes, it is necessary to adhere to valid CSN standard as per section 6.

4.2.7.2 Installation of water pipes:

- Always up to 10 cm in case of a sand foundation
- Always surrounded/covered by 20 cm of sand
- The piping must always be placed on continuous reinforced foundations, the installation sequence needs to be adhered to - in the old plant this is: drinking, utility, fresh, cooling, return. For PCH and NTS: drinking, fresh, sprinkler, hydrant, cooling and return.
- Piping must be installed in a non-freezing depth as per CSN 755411.
- Fittings up to and including DN 200 need to be installed on a concrete foundation - this applies for the fitting shaft as well as when installing underground, where it is necessary to use a solidified surface as a foundation. In areas where a concrete foundation cannot be used below the fittings, it is necessary to install concrete foundations below the pipes in both directions from the fitting at a minimum possible distance from the fitting. The size of the concrete foundation will be determined by the designer in view of the DN of the pipes.
- Fittings up to and including DN 300 are to be installed in fitting shafts. Other placements for fittings used in piping must be discussed with and also approved by ÚVHO in writing.
- For fittings starting at and including DN 400 it is required to always incorporate and install a bypass. Bypass for fittings with a min. diameter of DN 100.
- For fittings starting at and including DN 200 it is required to always incorporate and install an assembly insert or bellows.
- For water connections it is necessary to install assembly inserts, bellows, dilatation always behind the closing fitting in the flow direction. In each separate section which can be separated by fittings, an air vent needs to be installed at the highest point of the piping. The air vent must have a sufficient capacity in view of the capacity of the piping, min. DN 100. Each air vent must have its own closure and the vent piping must lead above terrain level and end with a fire safety connection.
- In each separate section which can be separated by fittings, a decanting discharge needs to be installed at the lowest point of the piping. The decanting discharge pipes must have a diameter of at least DN 100. For pipes below DN 100, the discharge pipes have a DN which matches the DN of the piping.
- Piping sections are to be placed at a slant of at least 2 ‰.
- Ensure access to the air vents, i.e., create protecting pots or shafts.
- Protecting pots and shafts must be made of sheet metal with a diameter of 1000 mm and with a safe and easy-to-open lid located at least 600 mm above the level of surrounding terrain. The cover must be marked with yellow-and-black paint on the outside and white paint in the inside and must not be located in busy areas (not on roads etc.).

- For areas under roads, design the air shafts so that the occasional load coming from the road does not directly put pressure on the vented main piping.
- It is possible to concentrate several air vents in a single shaft if the local conditions allow it; the water drainage for pressurized pipes is to be designed to prioritize leading to return water and to allow for visual inspection of the flow. Only if this is not technically possible and only after approval by ÚVHO is it admissible to have the drainage lead to the sewage system; here, too, it is necessary to allow visual inspection.
- The water drainage for pressurized pipes needs to be designed primarily to lead to the return system and in a manner allow for a visual inspection of the flow. Only if this is not technically possible and only after approval by ÚVHO is it admissible to have the drainage lead to the sewage system; here, too, it is necessary to allow visual inspection.

4.2.7.3 If two pipe lines cross each other, it is necessary to ensure that there is a distance of at least 0.5 m between the walls of the pipes. For parallel pipelines, it is also necessary to ensure that there is a distance of at least 0.5 m between the walls of the pipes. If water and sewage pipelines cross each other, this distance is measured from the wall of the water pipe and the concrete casing around the sewage pipes. In case of crossing and/or parallel placement with other underground networks (cables etc.), it is necessary to adhere to the safety distances that apply for the appropriate network, but in any case at least 0.5 m. It is always necessary to adhere to the minimum distances and potentially propose other measures (e.g., cable bridges) to meet the prescribed requirements. The proposed adjustments need to be discussed with the appropriate administrator of the affected network.

4.2.7.4 When installing under roads (including not only roads used by cars but also pavement, parking areas, handling areas etc.), it is necessary to assess the potential risks arising from the use of the piping and to use the analysis and justifications within the project to create, based on the given conditions:

- A safety canal that may, for piping above DN 400 and under important roads, be traversable
- Design the traversable canal so that when replacing the piping it is not necessary to disassemble or demolish the structures. Since this is a costly investment, design the traversable canal so that it can house a larger number of pipes.
- Safety ovens (protectors) with a diameter area of at least twice the protected oven. Protectors are to be only used if there is sufficient space next to the underpass, so that the protected pipe can be removed from the protector. Protectors are required to be accompanied with a demonstration of their rigidity by providing a statics calculation for the pipe's load. It is necessary to avoid any flange or socket connections in protectors, underpasses etc. Weld connections are to be restricted to the bare minimum.
- Trenchless pipelining is also only to be used when there is sufficient handling space next to the road **and the surrounding networks are not an obstacle.**
- In technically justifiable cases where it is not possible to ensure the placement of underground piping in a sand or other type of prescribed foundation, ensure that the piping is protected by other suitable means (e.g., by separating it via geotextile) so that the actual piping is not directly cast in concrete.

- In case of a newly installed piping (investment project or technological change), the designer must have the conditions approved by ÚVHO and the future operator/maintainer and then must list these in the implementation documentation.
- In case of maintenance of existing equipment, the appropriate maintainer is responsible for the implementation method.

4.2.7.5 When installing piping in humid layers, it is necessary to ensure the proper drainage of the piping foundations (drainage, gravel foundations etc.) as per CSN 75 5401. If necessary, the drainage function is to also be ensured after the installation of the piping.

4.2.7.6 Individual parts of the installation of the piping (sand foundations, actual installation of the piping, covering in sand, filling the dig with earth, landscaping adjustments) must always be approved by representatives of ÚVHO or their authorized representative. If the piping will not be managed by ÚVHO then individual parts of the implementation will be approved by the operator/maintainer of the piping.

4.2.7.7 The contractor is obliged to create photographic documentation during the installation of the piping. Photos need to be taken after each step of the implementation (sand foundations, actual installation of the piping, covering in sand, filling the dig with earth, landscaping adjustments).

4.2.7.8 The safety zone for water mains is 5 m from the axis of the piping. Within the safe zone, foundations for new buildings must be placed at the same depth as the lowest water pipe in the safety zone while also adhering to the minimum distances specified under point 4.2.7.3.

4.2.8 **Further provisions**

4.2.8.1 For new mains that are to be connected mains, determine whether the given section can be shut off (only possible during a production stoppage, requires planning in advance etc.). In case of connections to the return water system, it is necessary to use solutions that will allow the connection to be carried out under operation. This solution must form an integral part of the project and must be demonstrated within the appropriate documentation. The connections of return water from individual plants to the main systems need to go over degassing tanks and the water outflow needs to be demonstrated via a calculation.

4.2.8.2 For water mains it is (at the request of ÚVHO) necessary to have the project include a set of handling rules or at least work procedures and conditions for operation (these are prepared by the designer in collaboration with ÚVHO).

4.2.8.3 Any installation of new water mains into a road object that will be parallel to its axis must be accompanied with the appropriate rigidity calculation, which must form the foundation for any adjustments made by the designer to increase the carrying capacity of ovens or reduce the impact of the load. It is also necessary to take into account unfavorable impacts of external and internal corrosion.

4.2.8.4 Drinking and utility water mains cannot be connected to other types of water mains.

4.2.8.5 Each project includes, as an integral part, a solution for the delivery of water for important production facilities under potential defects of primary water mains or connections (via internal circuits or other measures). This solution will be prepared by the designer in collaboration with ÚVHO.

4.2.8.6 For buildings where social facilities will be located on above-ground levels or which will be intended for a larger number of employees, it is necessary to assess - in collaboration with - whether it is necessary to incorporate a built-in reinforcement station with a water container.

4.2.8.7 Lids of warm cooling water must be marked with a blue color.

4.2.9 **Firefighting water mains - RPV and PVS (hydrant and sprinkler water)**

Projects which will affect firefighting water mains must be consulted with HZSP and the Safety Department - the appropriate specialist responsible for fire prevention.

4.2.9.1 Based on Act 183/2006 Coll., the Construction Act, § 156 - Requirements on construction work - products for construction work which have a decisive impact on the final quality of the building or construction project and which represent an elevated threat to authorized interests are determined and assessed based on special legal regulations (notably Ministry of Interior decree 268/2009 Coll., Act 22/1997 Coll., and government directive 163/2002 Coll.).

PVH and PVS mains as well as all of their components (hydrants, flanges, pumps, piping etc.) must meet the requirements arising from Ministry of Interior decree 268/2009 Coll., on technical requirements for construction, which implements Act 183/2006 Coll., the Construction Act.

§ 3 par. k) of Ministry of Interior decree 268/2009 Coll. states that meeting the requirements of the specific provisions of this decree refers to adhering to the appropriate normative values - specific technical requirements such as limit values, design methods, nationally determined parameters, technical properties of structures and technical equipment as per the appropriate Czech technical standards.
The appropriate technical standard here is Act 22/1997 Coll., on technical requirements on products, as amended.

As per § 8 of Ministry of Interior decree 268/2009 Coll., the basic requirements that must be met by construction projects are:

a) mechanical rigidity and stability,

b) fire safety,

c) protection of health for persons and animals, protection of safe living conditions and the environment,

d) protection against noise,

e) safety of use,

f) energy savings and heat protection.

Based on § 12 and § 13 of Act 22/1997, it is necessary to assess compliance for the designated products. The government defined groups of individual specified products that also include products which represent a greater threat to justified interests and for which it is hence also necessary to assess compliance.

For the PVH and PVS mains and all of their parts, the relevant regulation is government directive 163/2002 Coll. - on specifying the technical requirements on selected construction products, as amended. For products used in PVH and PVS mains and all of their components, it is necessary to create a Compliance Assessment as per § 5a - Certification without tests during supervision, specifically due to their included in product group 7 as per Annex 2 to national decree 163/2002 Coll. Construction products for sewage systems and liquid and gas mains, serial number 8b. Pipe systems, pipes, tanks, emergency systems for leaking and equipment preventing overflow, fittings, adhesives, connections, sealing for connections and sealing inserts, piping and safety mains, load-bearing structures for pipes and piping, safety accessories - in installations for transport/distribution/storage of water not intended for human consumption, governed by the requirements on fire reaction with a prescribed level - $A1^1$, $A2^1$, B^1, C^1 and as such they are required to have components for PVH and PVS and all their parts must be certified in compliance with § 5a of government directive 163/2002 Coll.

Manufacturers, importers and distributors in the Czech Republic are obliged to issue an EC declaration of conformity as per §13 par. 3 of Act 22/1997 Coll.

4.2.9.2 Conformity is assessed by a legal (authorized) entity entrusted by the Office to perform activities in the scope of assessing compliance of products, including also the assessment of activities related to the production or repeated use of such products. If such an authorized entity (entrusted as per § 11 of Act 22/1997, on technical requirements on products and on amendments to certain laws, as amended, to perform activities associated with the assessment of conformity as per the government directive implementing the respective law of the European Commission) is reported by the Office to

the respective bodies of the European Commission and the appropriate bodies in the member states of the EU, it becomes a notified person that is authorized to provide its services through the EU in the same scope as notified persons in other EU member states. A list of authorized and notified persons is provided at: http://www.unmz.cz/urad/ao-aktualni-seznam (for instance: Technický a zkušební ústav stavební Praha, s.p. (TZUS), PAVUS, a.s., Technický ústav požární ochrany (TUPO) Modřany).

4.2.9.3 PVH and PVS and all of their components must, as per § 5 and §10 of Ministry of Interior decree 246/2001 Coll., be carried out in accordance with the conditions stipulated in legal regulations and normative requirements. For PVH and PVS and all of their components incl. hydrants, these are ČSN 73 0873 and also for instance – ČSN 73 0804 – *Fire safety of construction sites – Production facilities*, ČSN 73 0875 – *Fire safety of construction sites – Design of electric fire signaling* and others.

Pump stations for firefighting water (if present within PVH and PVS and all of their components) are governed by the requirements of ČSN 73 0873 point 7, and if there is stable firefighting equipment (SHZ) connected to PVH and PVS and all of their components then these are governed by ČSN EN 12845 – *Stable firefighting equipment – Sprinklers – Design, installation and maintenance.*

Project documentation may only be prepared by a qualified designer - a legal or natural person that has the right (authorization) - as per valid legal regulations and notably Act 360/1992 Coll., on authorized architects and authorized engineers and technicians in construction work, as implemented by Act 164/1993 coll., Act 275/1994 Coll., and decree 276/1994 Coll. - to perform design activities for this type of construction work (authorized engineer - technical equipment or authorized technician - medical technology). The designer is obliged to demonstrate this authorization via an authorization of the project documentation. A list of authorized engineers and technicians is provided on the website of the Czech chamber of authorized engineers and technicians – www.ckait.cz.

The person who prepared the project documentation is responsible for the quality of the performed activities and will confirm that the conditions stipulated under §10 of Ministry of Interior decree 246/2001 Coll., in paragraph 1 are met.

4.2.9.4 Above-ground hydrants as per CSN 73 0873 are primarily used for firefighting. Exceptional use of above-ground hydrants must be approved by the user in advance as per directive 428 “Reserved fire protection devices and reserved fire safety equipment”.

4.2.9.5 The values of the smallest nominal diameter (DN), the smallest recommended collection for calculating the network piping and the smallest collection from a hydrant for mobile firefighting technology are provided in the table.

Item number	Type of building and its limit area for fire section S [m²]	DN of piping [mm]	Collection Q [l.s^{-1}] for v=0.8 m.s^{-1} (recommended speed)	Collection Q [l.s^{-1}] for v=1.5 m.s^{-1} (with a fire pump)
1	Non-production buildings with an area of 120 < S ≤ 1500; production buildings and warehouses up to an area of S ≤ 500	100	4	7,5
2	Non-production buildings with an area of S > 1500; production buildings and warehouses up to an area of 500 > S ≤ 1500; open technological facilities up to an area of S ≤ 1500	125	9.5	18
3	Production buildings, warehouses and open technological facilities with an area of S > 1500	150	14	25
4	Production buildings and warehouses with a high fire load and also with an area of S > 2500	200	25	72

4.2.9.6 Lowest admissible static overpressure of an above-ground hydrant must be 0.2 MPa. The minimum flow for a hydrant is defined by the fire safety system of the building.

4.2.9.7 The minimum collection from a fire outflow stand must be 35 l.s^{-1}, while for filling slots this is 60 l.s^{-1}.

4.2.9.8 The placement of fire outflow stands, filling slots and above-ground hydrants requires consent from the responsible employee of ÚVHO.

4.2.9.9 Before entering a new pipeline into operation, it is necessary to:

- Test the collection points for firefighting water connected to the water mains with other piping and fittings as per CSN 75 5411
- Perform pressure tests for piping as per ČSN 75 5409 (replacing ČSN 73 6660) and ČSN EN 805 (Water engineering – requirements on external networks and their parts) or as per ČSN 75 5911 – Pressure tests for water and irrigation piping. The pressure test must be carried out with a test overpressure of 1.2 MPa or 1.5 times the operating overpressure - MOP (as per ČSN 75 5409 and ČSN EN 806-4), depending on which value is greater. The pressure test must be documented by an entry.

- As per point C.1.3 of ČSN 73 0873, before PVH and PVS and all of their components enter into operation it is necessary to notably verify:
  - whether the installation of the collection points for firefighting water and/or fire piping and its placement matches the project,
  - function of outflow fittings and closures,
  - correct and visible marking of the appropriate fittings for firefighting water collection points and other related devices,
  - availability of pumping equipment for the delivery of firefighting water to collection points:
    - connection to the power network as per point 7.1 of ČSN 73 0873,
    - time of entry into operation,
    - required performance parameters (pressure, flow),
  - operating parameters at firefighting water collection points:
    - flow and pressure parameters of underground and above-ground hydrants (for $v = 0.8\ m.s^{-1}$) - for the hydraulically least favorable locations (it is not necessary to verify the flow values for connected firefighting technology),
    - output of outflow stands - for the hydraulically least favorable locations (can be verified also when firefighting technology is connected),
    - output of filling stations (for each outflow),
    - output of natural or artificial water sources,
    - filling the water tank with the amount of water required for extinguishing,
    - flow and pressure parameters for hose systems - for the hydraulically least favorable locations,
  - functionality of all types of protections for equipment used to supply with firefighting water (especially heat protection, anti-corrosive protection, protection against the effects of noise and vibrations),
  - equipment of hose systems via the prescribed items,
  - condition of the basic equipment for firefighting water pipelines,
- Before commissioning the pump station is also tested as per ČSN EN 12845 articles 19.1.2 and 19.1.3, i.e., tests are carried out in he scope of weekly checks as per point 20.2.2 and monthly checks as per point 20.3.2, furthermore accompanied with a water supply test as per point 8.6.
- The initial check of fire safety equipment is documented by a report as per § 7 par. 8 of Ministry of Interior decree 246/2001, as per the provisions of ČSN 73 0873, annex C, point C.1.3 and article 19.2 of ČSN EN 12845.
- Only equipment where no defects were discovered during the handover protocol can be entered into operation.

4.2.10 **Tests and handover into use**

4.2.10.1 For each new pipe, it is necessary to perform a pressure test demonstrated by a pressure test protocol. The test must be carried out with the attendance of a representative of the future operator / maintainer or their entrusted representative.

a) The pressure test is carried out via water, the piping must be completely deaerated.

b) The pressure test is carried out for 1.5 times the operating pressure, but at least at 1 MPa

c) The minimum duration of the pressure test is one hour

d) It is necessary to perform X-ray measurements for welds at the location of the connection to existing piping

e) During the pressure test it is necessary to disconnect pressure equipment from the inspected pipeline

4.2.10.2 For each new pipe, it is necessary to perform a spark test demonstrated by a spark test protocol. The test must be carried out with the attendance of a representative of the future operator / maintainer or their entrusted representative.

a) The spark test is carried out for piping which is already at the desired location and will not be subject to further handling that could damage the insulation

b) The spark test is also carried out for pipelines which have their insulation intact from manufacture

c) Insulation must be completely glued to the piping, and there must be no free space between the insulation and the piping

4.2.10.3 For piping carrying drinking and utility water it is necessary to disinfect the piping before entry into operation, and it is also necessary to provide a laboratory report demonstrating that the piping is medically safe.

4.3 Binding instructions for the design, implementation and repairs of sewage mains

4.3.1 **The company has the following sewage mains:**

- Waste water - only used to remove waste water from restrooms. For new buildings, connections are made exclusively to waste water sewage. An intended release of water into this sewage system must be approved by ÚVHO and OZIP. Drains on roads are usually located along the sidewalk.
- Unified (rainwater) - is used exclusively to remove non-contaminated rainwater. An intended release of water into this sewage system must be consulted with ÚVHO and OZIP. Drains on roads are usually located on the road itself, in the axis of the given road.

- Industrial - used to remove industrial waste water as well as potential contaminants (chemical and oil-contaminated sewage). The responsible designer must specify the necessary criteria for connecting a new source (a type of piping, type of filler, type of shaft, ventilation, temperature and composition of industrial waste water including balance, technological and analytical data) and at least one sampling location must be present on the route. The necessary material criteria and the intent of releasing/pumping water into this sewage system must be consulted and approved in advance with the industrial sewage maintenance technician, ÚVHO and OZIP.
- Drainage sewage system - used to remove water from company surfaces. If this is designed as a centralized system covering the whole premises, it will lead to a single location - a drainage well - and the captured water will be drained to the industrial water sewage system. Drainage water can only be transferred to the unified (rainwater) sewage system after demonstrating that the drainage waters have the appropriate parameters and after approval by ÚVHO and OZIP.

If drainage is used only under construction sites, the specific drainage system used will be discussed with ÚVHO and OZIP.

Drainage sewage must not be directly connected to industrial sewage.

4.3.2 Sewage piping - unified and waste water sewage

4.3.2.1 For unified and waste water sewage, it is necessary to use earthenware piping (also during repairs).

4.3.2.2 Other materials used for piping must be discussed with and also approved by ÚVHO in writing.

When using a material different from earthenware, it is necessary to demonstrate:

- Resistance to carbohydrates
- Resistance to stress on the rigidity of the piping - suitability of concrete encasement
- Resistance to corrosion
- Resistance to abrasion
- Guarantee for a minimum service life of 30 years

4.3.2.3 The primary street sewage mains must have a DN of at least 200.

4.3.2.4 Connections to primary sewage mains must have a DN of at least 150.

4.3.2.5 The sealing of the sewage connections must be resistant to carbohydrates. The most suitable type of connection and sealing is always determined by the responsible designer and must be discussed in advance and then approved in writing by ÚVHO representatives.

4.3.2.6 It is not allowed to connect water that may contain flammable substances to the unified and waste water sewage systems.

4.3.3 **Sewage piping - industrial sewage**

4.3.3.1 When building new industrial sewage routes or repairing existing ones, it is necessary to have the connections as well as the main branches consist of sewage earthenware pipes with a min. DN of 200, internally (and possibly also externally) glazed, with a rigidity class of at least H160 / FN 40 kN / m. It is necessary to use connecting system C with connection type S and with sealing made of EPDM material for piping. Other material or piping technology on industrial sewage must be discussed and subsequently approved in writing by ÚVHO, the operator of the piping and the maintenance technician for industrial sewage.

4.3.3.2 In cases where it will not be possible to repair the piping for industrial sewage via standard dig works, it is necessary to attempt to find a technically and technologically suitable and implementable method for dig-free repair of the piping during which it will be necessary to use suitable materials that are mechanically, chemically and thermally resistant and that can resist the long-term effects of the demanding chemical and technological environment of the company. The type and method of dig-free repairs of sewage systems must always be consulted in advance and approved by ÚVHO, the sewage operator and the industrial sewage maintenance technician.

4.3.4 **Sewage shafts and drains**

4.3.4.1 The unified, waste water and industrial sewage systems are equipped with sewage shafts and drains.

4.3.4.2 The distance between sewage shafts must be at most 30 m. The designer is obliged to use a smallest distance for cases specifically noted by the client or a representative of ÚVHO or the industrial sewage technician.

4.3.4.3 Use sewage shafts (including for repairs) made of prefabricated pieces with DN 1000, with a cone of DN 1000/700 and a cast lid of ∅ 600.

4.3.4.4 For sewage lids, it is necessary to use (also during repairs) lids with a hinged connection and to ensure that the lid has a corresponding load-bearing class based on the location of the lid.

4.3.4.5 Sewage drains on roads used for sewage connections must also be prefabricated. Sewage drains on roads must be equipped with a cleaning basket to capture any impurities.

4.3.4.6 Shafts located outside of roads, pavement and operating areas need to be raised 20 cm above terrain level.

4.3.4.7 The connections to existing shafts need to lead to the bottom of the given shaft (including for repairs; the outer edge of the pipes must be located 3 cm above the bottom of the shaft so that it is possible to apply a multi-component hydro-insulating inner paint/palette in the area between the bottom and the pipes). However, always outside of the creeps in the shaft. If the connection does not lead to the bottom of the shaft, it is necessary to install a reinforced run-off for the piping. A cleaning piece is to be installed on the reinforced run-off.

4.3.4.8 The road drains of industrial sewage must always be of a shorter base variant to allow for future cleaning, sealing tests and video examinations of the piping leading from the road drain.

4.3.4.9 Perpendicular walls, transitional centering and creepers must be fitted directly into the axis of the piping (neither above the main nor above the connecting pipeline). The outside of the input shafts must be covered in concrete up to the ferroconcrete ring and equipped with a multi-component hydro-insulating internal coating/spattle, with 2 to 3 layers.

4.3.4.10 The manner and location of the shaft and road drain must be approved in advance and consulted with a representative of ÚVHO, the operator and the industrial sewage maintenance technician. For industrial sewage located on newly built and repaired shafts, it is necessary to ensure that the type of multi-component internal hydro-insulating coating and other used sanitizing material is discussed and subsequently approved in writing by the industrial sewage maintenance technician, in advance.

4.3.4.11 For shafts for industrial sewage, it is necessary to use (also during repairs) either KASI or REXESS lids. A suitable lid needs to be chosen based on the location and manner of use and the correct load class, notably after consulting with a representative of the operator and the industrial sewage maintenance technician.

4.3.5 **Installation of sewage piping**

4.3.5.1 Sewage piping must always be installed in a 10 cm wide concrete casing.

4.3.5.2 The sewage piping must always be encased in a 10 cm layer of plain concrete.

4.3.5.3 If two sewage lines cross each other, it is necessary to ensure that there is a distance of at least 0.5 m between the concrete encasing the pipes. For parallel pipelines, it is also necessary to ensure that there is a distance of at least 0.5 m between the concrete encasing the pipes. If water and sewage pipelines cross each other, this distance is measured from the wall of the water pipe and the concrete casing around the sewage pipes. In case of crossing and/or parallel placement with other underground networks (cables etc.), it is necessary to adhere to the safety distances that apply for the appropriate network, but in any case at least 0.5 m. It is always necessary to adhere to the minimum distances and potentially propose other measures (e.g., cable bridges) to meet the prescribed requirements. The proposed adjustments need to be discussed with the appropriate administrator of the affected network.

4.3.5.4 Sewage pipes between shafts must be straight and it is not permissible to use gravitational or directional turns.

4.3.5.5 It is necessary to install an entry shaft at connection pieces or turns (with changes of the altitude or direction) or profile changes.

4.3.5.6 When avoiding obstacles, it is required to design siphons with the use of sewage shafts.

4.3.5.7 Sewage shafts with a settling area (lower bottom) are used in places where staining via mechanical sediments are expected, most frequently in the shaft leading up to the road collector. Siphon shafts are to be designed with a lower bottom and the siphon itself needs to have a one-sided gravitational fall, facilitating the draining of sediments and cleaning of the siphon piping.

4.3.5.8 The sink-in of the piping to the sewage shaft can never exceed 5 cm.

4.3.5.9 The slant of the piping should ensure that the maximum (and minimum) permissible speeds are never violated - see ČSN 75 6101:

earthenware	max.	v 10 $m.s^{-1}$
concrete and ferroconcrete	max.	5 $m.s^{-1}$

Piping sections for unified and waste water sewage are to be installed with a slant of at least 2 ‰, for industrial sewage 2%.

4.3.5.10 If the slant ratios lead to a high speed of waste water, it is necessary to incorporate an overrun or reinforced run-off.

4.3.5.11 The overrun must be a monolithic structure which is to be insulated using a chemically resistant material. The parabolic bottom must be doubled, with facings anchored into pockets. The inner walls of the structure are to have reinforced casing up to a height of 50 cm above the flow-in piping, whereas the remaining (upper) surfaces of walls can have a thinner casing (with a width of about 3 cm). The piping sections for the main industrial sewage lines are to be installed with a slant of at least 1% and the pipe sections for connection with a slant of at least 2%. If it is not technically possible to ensure these slants for installed industrial sewage piping, the actual slant needs to be discussed and approved in writing by the industrial sewage maintenance technician, in advance.

4.3.5.12 The safety zone for sewage mains is 5 m from the axis of the piping. Within the safe zone, foundations for new buildings must be placed at the same depth as the lowest sewage pipe in the safety zone while also adhering to the minimum distances specified under point 4.3.5.3.

4.3.5.13 Information about the exact placement of the piping is provided to the designer by a representative of OPRM Facility management. If this information is not available, then the client shall secure this information on their own via a probe dig.

4.3.6 Specific measures

4.3.6.1 Before connecting these to the main unified (rainwater) sewage system, it is necessary to equip unified (rainwater) sewage systems used to remove water from the reinforced areas of production units with a waste water separator. The designer must always have a suitable type of separator discussed and subsequently approved by representatives of ÚVHO and OZIP.

4.3.6.2 Install a separator for the outflowing water on the drainage sewage system before connecting it into the unified (rainwater) sewage. The designer must always have a suitable type of separator discussed and subsequently approved by representatives of ÚVHO and OZIP.

4.3.6.3 It is necessary to install fat separators on the exits from all mess halls, kitchens and food shops. Fat separators must include a revision inlet that will be used to inspect the outflowing water. The inspection and maintenance of the fat separator will be governed by a set of operating rules, which will be presented to ÚVHO and OZIP for approval.

4.3.7 Tests and handover into use

4.3.7.1 For each new pipeline and shaft, it is necessary to perform sealing tests as per ČSN 756909 and ČSN EN 1610 and these must be demonstrated by a sealing test protocol. The test must be carried out with the attendance of a representative of the future operator / maintainer or their entrusted representative. The pipe and shaft sealing test is also carried out after repairs of the piping and shaft as per ČSN 756909 and ČSN EN 1610.

a) The sealing test for sewage shafts is carried out by water (the W method),

b) The sealing test for sewage pipes is carried out by air (the L method),

c) The sealing test is carried out separately for each shaft,

d) The pipe sealing test is always carried out separately, specifically on each section between two shafts or on the section between the shaft and the drain,

e) The sealing test is carried out before the shaft is encased in concrete,

f) The sealing test for piping is carried out if the piping is placed on a concrete foundation and only has its neck connections covered in concrete,

g) The sealing tests are always carried out in compliance with ČSN 75 6909 and ČSN EN 1610, in the manner and method chosen by the maintenance technician for the appropriate sewage

system. The method must prevent any interference into the test run by the operators of the measurement device. The test protocol must include automatic records made directly into the protocol (via a graph depicting the test run) and will features clear, monitorable and checkable values with a clear final result,

h) After completing a new sewage line or repairing an existing one, after encasement in concrete it is necessary to perform a camera inspection of the piping including video recording and an automatic protocol made from the inspection; this will be provided to the future operator/maintainer of the pipeline via Dropbox,

i) It is necessary to prepare a test protocol for each sealing and camera test; such a protocol must also be issued for failed tests/examinations,

j) Water tightness tests are not carried out when the outside air temperature drops below +5°C.

4.3.7.2 Individual parts of the installation of the piping (concrete foundations, actual installation of the piping, encasement in concrete, filling the dig, landscaping adjustments) must always be approved by representatives of ÚVHO or their authorized representative.

4.3.7.3 The contractor is obliged to create photographic documentation during the installation of the piping. Photos need to be taken after each step of the implementation (concrete foundations, actual installation of the piping, encasement in concrete, filling the dig, landscaping adjustments).

4.3.8 Further provisions

4.3.8.1 It is not allowed to drain water with a temperature exceeding 40°C into the waste water, unified and industrial sewage systems. Warmer water needs to be cooled first.

4.3.8.2 Project documentation must be supplemented with a PID diagram and a drawing of the shaft which lists the type of lid, type of internal coating and cast metal creepers.

4.3.8.3 It is forbidden to have a branch-off connection to the sewage system (outside of the shaft). The connection must be made via the sewage shaft.

4.3.8.4 It is not allowed to have any structures located directly above the sewage piping. When this is unavoidable, it is necessary to design and incorporate appropriate structural adjustments (safety channel, transmission inlet etc.).

4.3.8.5 For sewage mains or cleaning facilities it is (at the request of ÚVHO) necessary to have the project include a set of handling rules or at least work procedures and conditions for operation (these are prepared by the designer in collaboration with ÚVHO/operator).

4.3.8.6 Each project documentation must include a diagram of the sources, data on the amount of water per year, hourly maxima, averages and minima and a specification of the level of water pollution.

4.3.8.7 When repairing sewage systems during which sewage piping will not be repaired via standard dig works, it is necessary to use a suitable dig-free piping repair method. Such repairs must be made using materials which meet the requirements on the appropriate type of sewage and waste water. The type and method of dig-free repair of sewage pipes must be discussed with and subsequently

approved by ÚVHO in writing. If the piping is not managed by ÚVHO then this type of repair must be approved by the future operator/maintainer of the piping.

4.3.8.8 The lids and drains for the unified sewage system must be marked with red paint.

5 Responsibility

Activity	Client	ÚVHO	OZIP	Article number
Adherence to general principles	R,A	I		4.1
Adherence to the principles for designing water pipelines	R,A	C	I, C	4.2
Adherence to the principles for designing sewage pipelines	R,A	C	I, C	4.3

Legend:
R - RESPONSIBLE (the executing/implementing person)
A - ACCOUNTABLE (is fully accountable in case of non-performance)
C - CONSULT (included in the process)
I - INFORM (is informed)

RACI matrix with commentary (as per the policy "Increasing the efficiency of processes and their optimization")

6 List of related documents

Directive 428	Reserved material resources for fire safety and reserved firefighting equipment
Directive 444	Rules for the protection of water and soil.
Directive 704	Use of corporate premises
Directive 751	Facility management information system
ČSN 01 3462	Drawings of engineering buildings - drawings of water mains
ČSN 01 3463	Drawings of engineering buildings - drawings of sewage mains
ČSN 332000-5-52 ed.2	Low-voltage electrical installations - Part 5-52: Selection and construction of electric equipment - Electric mains
ČSN 72 1006	Inspection of filling soil, sand and loose materials
ČSN 73 0039	Design of buildings on undermined areas
ČSN 73 6005	Spatial layout of technical networks
ČSN 73 0804	Fire safety of buildings - Production buildings
ČSN 73 0875	Fire safety of buildings - determined the conditions for the design of electrical fire signaling within the fire safety solution

ČSN 73 0873	Fire safety of buildings - Firefighting water supply
ČSN 73 6133	Design and implementation of ground components for roads
ČSN 75 5411	Water connections
ČSN 75 5911	Pressure tests for water and irrigation pipelines
ČSN 75 6101	Drainage networks and sewage connections
ČSN 75 0905	Water tightness tests for water and sewage tanks
ČSN 75 6909	Water tightness tests for sewers and sewage connections
ČSN 75 6402	Water treatment plants up to 500 equivalent inhabitants
ČSN 75 5401	Installation of water pipes
ČSN 75 5409	Internal water mains
ČSN 75 5411	Water connections
ČSN EN 806-4	Internal water mains carrying water for human consumption - Part 4: Assembly
ČSN EN 12 613	Warning sheets from plastics for underground cables and piping
ČSN EN 13 331-1	Sodding systems for digs, part 1: requirements on products
ČSN EN 1610	Construction of sewers and sewage connections and their testing
ČSN EN 12845	Stable firefighting equipment - Sprinklers - Design, installation and maintenance
TP 76 A,B	Geotechnical survey for PK - (roads)
TP 83	Draining of roads

Ministry of Interior decree 246/2001 Coll., determining the conditions for fire safety and on state fire inspections

Directive 268/2009 Coll., on technical requirements on construction

Directive 499/2006 Coll., as amended - on construction documentation

Directive 146/2008 Coll., as amended - on the scope of project documentation for traffic construction

Government directive 101/2005 Coll., as amended - on detailed requirements for worksites and working environments

Government directive 163/2002 Coll., which determines technical requirements for selected construction products

Government directive 406/2004 Coll., as amended - on detailed requirements on ensuring OHS in areas at risk of explosion

Government directive 591/2006 Coll., as amended - on detailed minimal requirements on OHS when working on construction sites

Act 183/2006 Coll., on land planning and construction rules (the Construction Act)

Act 22/1997 Coll., on technical product requirements and on changing and amending certain acts

Act 254/2001 Coll., as amended - the Water Act

Act 274/2001 Coll., as amended -on water and sewage mains

Act 309/2006 Coll., as amended - on further OHS conditions

CNR Act 360/1992 Coll., as amended - on authorized architects and authorized engineers and technicians in construction work