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ZTV-W

Additional technical terms of contract – hydraulic engineering

for

the corrosion protection of hydraulic steel structures Performance category 218

March 2025 edition

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ZTV-W

Additional technical terms of contract – hydraulic engineering

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Preliminary remark

The numbers in brackets after the section headings refer to the ‘General technical specifications in construction contracts (ATV) – Corrosion protection of steel structures – DIN 18364’.

Products and goods originating from other Member States of the European Union or Turkey, or an EFTA state which is a Contracting Party to the EEA Agreement, which do not meet these technical specifications shall be treated as equivalent, including the testing and inspections performed in the manufacturing country, if the required level of protection - safety, health and suitability for use – is equally and permanently achieved.

1 Scope (re point 1)

(1) The Additional technical terms of contract – hydraulic engineering (ZTV-W) for the corrosion protection of hydraulic steel structures (performance category LB 218), citation format ZTV-W LB 218, apply to all fixed and moving parts of hydraulic steel structures and metal equipment in hydraulic structures in new structures and maintenance, both in the factory and on the construction site. They can also be applied mutatis mutandis to the corrosion protection of ships, floating equipment, shipping signs and sheet piling on waterworks. MKWAS (BAW Code of Practice: Corrosion Protection for Watercrafts and Navigation Signs at the German Federal Waterways Administration) also applies to watercraft and floating navigation signs in the Waterways and Shipping Administration (WSV). ZTV-W LB 218 do not apply to offshore structures. The VGBe/BAW standard for corrosion protection of offshore structures for the use of wind energy applies to the German exclusive economic zone.

(2) ZTV-W LB 220 and MKKS (BAW Code of Practice: Cathodic Corrosion Protection in Hydraulic Steel Engineering) apply to cathodic corrosion protection systems.

(3) ZTV-ING, Part 4, Section 3 and TL/TP-ING, Part 4, Section 3 apply to corrosion protection of road and railway bridges and other civil engineering structures on roads, railways and waterways exposed to corrosion by the atmosphere.

(4) DIN EN ISO 12944 applies. The provisions of ZTV-W LB 218 apply with priority.

(5) The Guidelines for Control Inspections (Annex E to ZTV-ING, Part 4, Section 3) apply to the inspection of corrosion protection work.

(6) MeKS (BAW Code of Practice: Control Inspections at Hydraulic Steel Structures) applies to execution monitoring of coating work.

2 Coating systems (re point 2)

(see DIN EN ISO 12944, Parts 5 and 6)

(7) The nature and scope of the basic and suitability tests as well as the requirements for coating materials for hydraulic steel structures are defined in the RPB (Guidelines for the Testing of Coating Systems).

(8) For coating systems of corrosivity categories Im1, Im2 and Im3, only substances that have been tested and approved in accordance with the RPB may be used. The testing is conducted by the Federal Institute for Hydraulic Engineering (BAW) or by another testing body recognised by the client (testing body as per TL/TP-ING, conformity assessment body accredited according to ZTV-ING, or a testing laboratory accredited according to ISO/IEC 17025). The substances, both for initial coating and for revision of existing coatings, are included in the ‘List of approved systems’. The list will be updated as necessary and published by the BAW.

(9) The use of cathodic corrosion protection (CCP), i.e. galvanic anodes (sacrificial anodes) or impressed-current systems as per DIN EN 12954, subjects coating systems to cathodic stress

as a result of potential reduction. If a coating is used in combination with PPS, only coating materials for which the proof of suitability for PPS has been provided in accordance with RPB may be used. If a combination of coating and PPS is planned at a later date, a coating system suitable for PPS must also be selected.

(10) For the combined use of (unalloyed or galvanized) structural steels that are connected in an electrically conductive manner together with stainless (CrNi) steels or copper, copper alloys and steel in concrete, proof of suitability as per (8) shall also be provided for the coating material.

(11) In the case of substances not mentioned in the 'List of approved systems' under the RPB, the suitability for the intended use in accordance with DIN EN ISO 12944, Part 6 and supplementary substance tests shall be demonstrated by the BAW or a recognised testing body (testing body as per TL/TP-ING, a conformity assessment body accredited in accordance with ZTV-ING or a testing laboratory accredited in accordance with ISO/IEC 17025) in consultation with the client before the commencement of execution.

(12) Production coatings (see DIN EN ISO 12944, Part 5, Annex F) shall be removed before the overall protection system is applied.

3 Execution of corrosion protection work (re point 3)

(see DIN EN ISO 12944, Part 7)

3.1 Qualification of the contractor

(13) Corrosion protection work may only be carried out and monitored by qualified personnel. Evidence in accordance with the performance specifications shall be provided before the start of the work.

(14) For corrosion protection work on steel structures as per DIN EN 1090, the crew leader shall have demonstrably passed an examination. The qualifications

- in the case of domestic bidders shall be documented by a certificate issued by the training advisory board of the Bundesverband Korrosionsschutz e. V. (KOR certificate)
- in the case of foreign bidders shall be documented by an equivalent proof of qualification.

At intervals of no more than five years, retraining shall be carried out in accordance with the requirements of the training advisory board.

(15) The crew leader shall be present in the factory or on the construction site at all times during the execution of the work.

3.2 Surface preparation

(see DIN EN ISO 12944, Part 4)

3.2.1 Requirements for surfaces and preparation procedures

(16) The surface preparation procedures and the measures to be taken shall be adapted to the respective need for protection of the surroundings (environmental and occupational safety) and any existing old coating.

(17) The preparation grade in the case of surface preparation by blasting must not be less than Sa 2 ½ and not less than P Sa 2 ½ for partial blasting (see DIN EN ISO 12944-4 or DIN EN ISO 8501-1 and -2).

(18) The roughness grade of surfaces prepared by blast-cleaning shall be at least medium (G) in accordance with DIN EN ISO 8503-1.

(19) Surface preparation by blast-cleaning shall be carried out with a blasting agent in accordance with DIN EN ISO 11124 or DIN EN ISO 11126.

(20) When sweep blasting hot-dip galvanised surfaces, no more than 15 µm may be removed. The roughness shall be determined depending on the type of coating.

(21) In the case of mechanical surface preparation, the degree of preparation shall be at least St 3 or P St 3 (DIN EN ISO 8501-1 and -2).

(22) Mechanical surface preparation using manual or machine-driven tools is only permitted with the prior consent of the client in text form if other preparation methods are not possible.

(23) If dry blasting using mineral abrasives is not possible when repairing defects, surface preparation grade P Ma (DIN EN ISO 12944-4 or DIN EN ISO 8501-2) shall be achieved by machine grinding.

(24) Unless specified in the performance specifications, dust-binding blasting (e.g. vapour blasting, wet blasting) requires the client's prior consent in text form. The surfaces shall be treated in a manner that achieves the agreed surface preparation grade and roughness. The same applies to ultra-high pressure water washing, pickling and induction heating.

(25) The contractor shall test the dust load of the surface to be coated with 2 dust tests per 100 m² of coating area in accordance with DIN EN ISO 8502-3. The tests shall be recorded. The amount of dust and particle size must not exceed the values of Class 2.

(26) The overall salt contamination of the surface must not exceed 50 mg/m² in accordance with DIN EN ISO 8502-9 before the coating is applied. If this limit value is exceeded, the surfaces in question shall be prepared by cleaning using a low-pressure wash (DIN EN ISO 8501-4) with drinking water or deionised water at a pressure of at least 150 bar and with water at a temperature of at least 50 °C.

(27) If there is vegetation growth or similar on the surface of old coatings, it shall be removed during surface preparation by means of cleaning or washing with water (DIN EN ISO 8501-4).

(28) The contractor shall immediately notify the client in text form of any visible damage to the steel structures, such as weld cracks, loose fasteners, cross-sectional weakening, etc., as well as old components that are no longer required, which are discovered before and during surface preparation.

3.2.2 Interim cleaning

(29) Before applying subsequent coats, it shall be ensured that the surface is free of contamination and any salt deposits from atmospheric, industrial and agricultural exposure, winter road maintenance (de-icing agents) or water load.

(30) The contractor shall check the extent to which cleaning is required, particularly after interim periods (e.g. due to weather conditions, installation time). The result of the testing shall be reported to the client in text form. The type of cleaning depending on the result of the testing requires the client's consent in text form.

3.3 Execution of coating work

3.3.1 Execution instructions

(31) The basis for execution is the corrosion protection plan with a graphic depiction of the component. This shall be drawn up by the contractor on the basis of the client's specifications and submitted to the client for approval in good time before the work is executed. This also includes the execution instructions for bolted joints.

(32) The material manufacturer's technical data sheets and processing guidelines as well as the EU safety data sheets for all substances used shall be on hand at the construction site and shall be observed. The documents shall be enclosed with the execution documentation.

(33) Coating materials shall be properly homogenised before and, if necessary, during processing. The processor must not make any unauthorised changes, e.g. by adding additives. Necessary viscosity adjustments are only permissible within the benchmark values of the technical data sheet and the processing guidelines of the material manufacturer. Information on the type and quantity of the diluent or other additives shall be provided in the corrosion protection plan and in the execution documentation (heating the container is preferable where applicable).

(34) Each layer may only be applied if the surface has been approved by the client or by third parties commissioned by the client. Deviations from this require the client's prior consent in text form.

(35) For improved control the individual coats shall be clearly distinguished from one another by their colours. The base coat shall be coloured in contrast to the steel surface.

(36) Prepared steel surfaces shall be immediately coated with the base coat. Hardened base coats shall be immediately provided with intermediate and/or top coats in order to avoid the formation of adhesion-reducing weathering products. Otherwise, cleaning will have to be carried out.
The information contained in the technical data sheet and the processing guidelines of the material manufacturer regarding the minimum and maximum duration of the intermediate service life before covering with the next layer shall be observed.

(37) Rolling is not allowed for the application of base coats. Rolling as an application procedure for intermediate and top coats require the client's consent. The prerequisite for the use of this method is that the coating material is suitable for this and has the good levelling properties required. Details on this can be found in the technical data sheet and the material manufacturer's processing guidelines.

(38) Damage to the corrosion protection shall be prevented during transport from the factory to the construction site and during installation.

- In the event of damage, the damaged areas shall be roughened 2 cm above their edge.
- From a damage area of 25 cm^2, the zinc dust base coat shall be reapplied after sweep blasting or similar procedures. Zinc dust coverings in the edge areas of the existing coating are not permitted.
- In the event of damage to the steel surface of < 25 cm^2, the system shall be constructed without zinc dust base coat, after roughening, with a nominal film thickness increased by 100 µm. If the intermediate or top coats are damaged, only these must be replaced after roughening.

(39) Each individual value of the dry film thickness shall reach at least 80 % of the nominal film thickness during execution. At the same time, no more than 20 % of the measured values may be below the nominal film thickness. The average of all measurement results shall be greater than or equal to than the nominal film thickness.

(40) Contrary to DIN EN ISO 12944, Part 5, the film thickness shall not exceed two times the nominal film thickness. Product-specific maximum film thicknesses (e.g. for zinc dust, 1-component PUR materials) shall be observed; the values can be found in the relevant documents (see technical data sheets and processing guidelines of the material manufacturer). For zinc dust primers, a maximum dry film thickness of 125 µm, or plus roughness depth 150 µm, is permitted, as long as the manufacturer does not specify a lower value.

(41) In the case of magnetically inductive film thickness determination (e.g. as per ISO 19840), the roughness depth is included in the measured value. A measured value of 25 µm shall be assumed on non-alloy steel at an average roughness depth as per DIN EN ISO 12944, Part 4. A measured value of 150 µm thus corresponds to a dry film thickness of 125 µm.

3.3.2 Processing and storage conditions

(42) A temperature difference of at least 3 K shall be maintained between the object temperature and the dew point temperature of the surrounding air throughout the entire the overall surface preparation and coating process.

(43) Test panels (200 mm x 300 mm x 4 mm) for laboratory testing of the quality of the coating (in the company carrying out the work or on the construction site) shall also be coated and handed over to the client or authorised institution thereof in order to verify the processing conditions and suitability of the material. The number of test panels is specified in the performance specifications. The client uses these test panels in the control inspection and in case of warranty defects.

(44) The coated components must not be exposed to outdoor weathering until drying level 6 (DIN EN ISO 9117-5) of the last surface layer is reached.

(45) The manufacturer’s technical data sheet applies to the storage conditions of the coating materials. The contractor shall take corresponding precautions and keep the necessary tools and equipment on hand to comply with the conditions described in the data sheet.

3.3.3 Construction site welding joints and connections

(46) When coating components at the executing company’s premises, the area of the construction site welding joints shall be treated as follows:

- Weld seam areas shall be masked off at a width of 250 mm from the weld seam edge.
- The base coat shall be continued up to the edge of the masking retaining the nominal film thickness (leave masking around the weld seam).
- Further layers shall be offset by 50 mm from the edge of the previous layer (see Annex 2, Fig. A 1).

(47) The masking shall be completely removed before drying the coating. The areas previously masked shall be cleaned after welding. In the case of longer intermediate service life, the exposed steel surface shall be temporarily protected with a suitable base coat in order to avoid rust streaks during the construction period.
Before the final coating is applied, the agreed surface preparation grade shall be provided in the previously recessed area.

(48) If it is necessary to preheat the weld seam areas with a heat-affected zone > 250 mm, e.g. in case of thick sheets, a larger width of the area to be kept free of the intermediate and top coating and to be blasted before the final coating may also be required. The width of the masking shall be adjusted accordingly.

(49) If the base coat of the corrosion protection system consists of zinc dust coating materials, the zinc dust base coat for the recessed area shall be repaired so that the layer thickness does not exceed 125 µm (see (41) for measuring tolerance) and the adjacent top coat is not over-applied.

(50) Fasteners shall be protected at least as effectively as the surfaces of the steel components (bolts, rivets).

(51) If the connection is made in the factory, the coating system shall be applied in accordance with the coating structure of the supporting structure. Fasteners according to DIN EN 1993-1-8 of category A, D and E are given the same coating structure as the component itself. The visible parts of the fasteners (bolt head, washers, nuts) shall be cleaned of dirt (e.g. grease) after routine tightening. Surface preparation is carried out by means of sweep blasting.

(52) When making prestressed connections (HV or HVP) on the construction site in accordance with DIN EN 1993-1-8 of category A, D and E, which are maintained according to plan and are also accessible and interchangeable within this framework, the preparation and coating may be carried out in accordance with the following description:

After the planned tightening, the still visible parts of the fasteners shall be cleaned of fouling (including grease). The cleaned surfaces shall be carefully sanded with plastic abrasive fleece.

An appropriate adhesion promoter suitable for the selected coating system shall be used on hot-dip galvanised bolts.

When producing the planned joint during assembly on the construction site, the coating structure may be reduced to the basic coating, an intermediate coating and a top coat.

(53) In the case of bolted joints (e.g. pre-stressed bolted joints), the mechanical loads of the coating on the contact surfaces shall be observed:

- The corrosion protection plan shall explicitly specify the coating of these areas.
- The contact surfaces shall be covered with a base coat as a general rule.
- After screwing, the connectors shall be treated in accordance with the corrosion protection plan.

3.3.4 Requirements for equipment technology

(54) The use of reusable blasting media requires a system in which the blasting media to be reused is separated from coating material, rust and dirt particles and any pollutant fractions.

(55) Airless devices shall be used for wet painting processes. Compressed air spraying is permitted only with the client’s consent in text form.

3.3.5 Control surfaces

(see DIN EN ISO 12944, Part 7)

(56) The type, size and location of control surfaces shall be specified in the corrosion protection plan before the commencement of execution and listed in the quality assurance documentation to be submitted to the client.

(57) The contractor shall inform its contractual partners of the date the control surfaces were established at least seven calendar days prior to execution.

4 Occupational safety and environmental protection

(see also DIN EN ISO 12944, Part 1, Section 6 and Part 4)

4.1 General

(58) Protective measures shall be taken for stripping and coating work to avoid putting persons in danger and harming or contaminating the environment, traffic systems, third-party facilities, etc. In the case of old coatings containing harmful substances on (hydraulic) steel structures, the work shall be based on the current versions of the applicable Technical Rules for Hazardous Substances (TRGS), depending on the potential for harmful substances.

(59) Enclosures shall be constructed so as to ensure that emissions of foreign substances and pollutants into the environment are reliably prevented. The contractor shall provide proof of the effectiveness of the enclosure before commencing stripping and/or coating work.
Furthermore, when removing old coatings containing pollutants, the negative pressure capability of the enclosure shall be verified in accordance with the applicable regulations (GefStoffV (Hazardous Substances Ordinance), TRGS etc.).

(60) The protective measures shall be described in detail, depicted in drawings and submitted to the client prior to execution.

4.2 Protective measures for stripping, surface preparation and application

4.2.1 Scaffolding and enclosure requirements

(61) Supporting and protective scaffolding must not impair the stability of the structure or parts of the structure (e.g. closure, inspection cover) and must not damage the structure.

(62) Enclosures shall always be designed to be tight and weatherproof.

4.2.2 Protective measures during application

(63) Protective measures are based on the type of application procedure. Painting and rolling require covers to provide protection from dripping coating materials. In the case of spraying techniques (e.g. airless), additional precautions shall be taken to prevent the spread of spray mist or overspray.

(64) When processing components in sections, blasting agent waste and other fouling shall be completely removed from the work area.

4.3 Disposal of blasting agent waste

4.3.1 General

(65) For protective measures and disposal of blasting agent waste during corrosion protection of hydraulic steel structures, Annex D of ZTV-ING, Part 4, Section 3 or the ‘Guidelines for the stripping of (hydraulic) steel structures and other structures coated with old coatings containing harmful substances of the Federal Waterways and Shipping Administration’ shall be observed.

(66) Blasting agent residues arising from corrosion protection measures constitute waste. Waste for recovery is waste that is recovered; waste that is not recovered is waste for disposal.

(67) The proper disposal and recovery of the waste is regulated in the German Circular Economy Act (KrWG), in LAGA Communication 23 and in the regulations and administrative provisions adopted thereunder.

(68) Blasting agent waste shall be picked up at appropriate intervals, collected and provided for disposal depending on the spatial environmental conditions or processing areas (operating conditions, weather, wind conditions, load capacity of the scaffolding).

(69) Blasting agent waste shall be provided for disposal in suitable, securely sealable and labelled containers or areas for collection so that there is no danger to people or the environment.

(70) Collection points for blasting agent waste shall be set up so that no hazards arise from construction site or general traffic or from flooding.

(71) Blasting agent waste from mineral and metal disposable or reusable abrasives shall be assigned to waste codes 12 01 16 or 12 01 17 depending on their pollutant content in accordance with the German Waste Catalogue Ordinance (AVV). According to § 3 KrWG, blasting agent waste with the waste code 12 01 16 is ‘hazardous waste’ within the meaning of § 48 KrWG and blasting agent waste with the waste code 12 01 17 is ‘non-hazardous’.

(72) It is not permitted to mix blasting agent waste of different origins (type of blasting agent, type of coating and structure, if applicable) with each other or with other waste prior to disposal. Furthermore, contaminated blasting agents from stripping processes shall be separated by type from uncontaminated blasting agents from pre-treatment processes (preparation of coating-free steel substrates to surface preparation level Sa 2 ½ in accordance with DIN EN ISO 12944) and disposed of. The blasting agent can only be declared to be uncontaminated when blasting on surfaces previously prepared to surface preparation level Sa 2 ½.

4.3.2 Course of action

(73) At the beginning of the stripping work, a representative reserve sample of the blasting agent residues shall be taken and, in the event of ambiguities, subjected to a comparative analysis as part of the contractor’s declaration. If coatings with a different hazardous material potential are processed at a later date, further sampling may be necessary. In the process, a distinction shall be made between the type of blasting agent residue and the stripping process. Mixed samples may only be produced from waste of the same type and origin. The nature and scope of the tests for the declaration analysis are determined in consultation with the specialised waste management company and the client, if the latter is the producer of the blasting agent waste. The declaration analysis shall include the waste code number classification.

4.3.3 Procedures for evidence

(74) For the disposal of blasting agent waste with hazardous impurities, proof of disposal shall be provided in accordance with § 3 of the German Waste Disposal and Evidence Ordinance (NachwV).

(75) If the client is a producer of non-hazardous blasting agent waste and disposal is transferred to the contractor in accordance with § 16(1) KrWG, the contractor shall provide the client with evidence of the suitability of the disposal company by means of suitable documents (e.g. plant licence, information from the responsible supervisory or waste authorities) and proper disposal via the electronic verification procedure and, in the event of an order in accordance with § 51 KrWG, shall provide the client with the original documents required for verification in accordance with NachwV.
If the record-keeping procedure is carried out in electronic form, the contractor shall take the necessary measures to allow the client to provide electronic records.

(76) Prior to the start of transport for the disposal of blasting agent waste, a permit shall be presented to the client in accordance with § 54(1) KrWG. Under the given conditions, records in accordance with § 54(3) KrWG are also possible.

5 Quality monitoring and certificate of conformity/acceptance test certificate

(see DIN EN ISO 12944, Parts 1 to 8 and RPB)

5.1 Acceptance test certificate for coating materials in accordance with DIN EN 10204

(77) Confirmation of conformity with the results of the test certificates of the basic tests in accordance with RPB shall be provided for each batch of coating work with an acceptance test certificate 3.1 in accordance with DIN EN 10204.

(78) For coating materials intended for buildings, components or surfaces specifically designated in the construction contract, an acceptance test certificate 3.2 in accordance with DIN EN 10204 shall be provided.

(79) For the acceptance test certificate 3.2, the contractor shall commission a conformity assessment body recognised by the client in accordance with the CAB list of the German Federal Highway Research Institute in good time to carry out the tests on the coating materials of the batches from which the delivery is made. If multiple batches are manufactured for the intended purpose, the tests shall be carried out on samples from each batch. Details can be found in the RPB.

5.2 Monitoring execution and reviewing performance

5.2.1 General

(80) Compliance with the specified execution and performance requirements shall be monitored in accordance with MeKS.

(81) The monitoring of the contractor is part of the execution monitoring.

(82) The contractor shall notify the client or the monitoring body commissioned by the client of the execution times one week before the start of the execution.

5.2.2 Monitoring by the contractor (in-house monitoring)

(83) In addition to the corrosion protection plan, the contractor shall draw up the information on a specification for the execution and in-house monitoring of coating work in accordance with DIN EN ISO 12944, Part 8, Table 4. The documents shall be submitted to the client for approval in good time before the anti-corrosion work is carried out.

(84) The contractor shall designate a qualified and experienced person for the monitoring. Before commencing construction work, the contractor shall instruct the specialised personnel executing the work.

(85) The monitoring tests shall be documented in writing during the execution of the corrosion protection work. This applies to execution on the construction site and in the executing company.
The results shall be kept by the contractor at least until the expiry of the limitation period for claims for defects.
The documentation with records shall be submitted to the client for inspection and handed over on completion of the work (delivery of the components).

(86) Records shall include daily reports, inspection reports and monitoring reports. Annexes H and I to DIN EN ISO 12944-8:2018-04 shall be used for test protocols of surface preparation and application. The measuring instruments used shall be indicated.

(87) The records shall at least contain the following information and documents:

- acceptance test certificate;
- supplier and delivery notes;
- designation of the coating materials;
- batch numbers and allocation to the installation area, date of substance manufacture and expiry date or permitted storage time;
- time periods of the individual execution operations;
- processing and curing conditions (climate data, etc.);
- particular incidents;
- type and date of tests;
- results of tests and comparison with requirements;
- name and signature of the person responsible for monitoring.

(88) Repair and partial refurbishment measures shall be documented the same way.

(89) Destructive measurements require the prior consent of the client. The destroyed coating shall be reinstated.

(90) The roughness is tested by visual and tactile comparison with ISO roughness comparison samples in accordance with DIN EN ISO 8503-2 or, after approval by the client, by means of an impression method in accordance with DIN EN ISO 8503-5.

(91) The measurements to determine the dew point temperature and the object temperature shall be carried out and recorded with calibrated digital measuring devices to the extent required locally, but at least twice a day and promptly before the coating work. The component temperature shall be measured using a contact probe on the surface of the component. The environmental conditions shall also be recorded during curing.

(92) For the measurement of dry film thicknesses, equipment using electromagnetic and/or suitable methods for the material shall be used. The results shall be stored in a digital format and be readable. The equipment shall be calibrated before each measurement application in accordance with the information provided by the equipment manufacturer. The measurement probes shall be adapted to the base material (ferritic, non-ferritic).

(93) The film thicknesses of all partial coatings and the total system shall be recorded according to MeKS.

5.2.3 Monitoring by the client (control inspections)

(94) The client may delegate the control inspection of the entire service and or partial services to third parties (e.g. testing bodies or monitoring bodies).

(95) Control inspections are carried out to determine whether the service meets the contractual requirements. The results of the control inspections are not considered as acceptance as defined by § 12 VOB/B (German Construction Contract Procedures Part B).

(96) Tests, including sampling carried out at the executing company's premises or at the construction site, shall be performed in the presence of the contractor's responsible person designated in accordance with (84). They shall also be performed in the absence of the contractor if it does not meet the date announced in due time.

(97) The client has the right to take a reserve sample of the coating material during the coating work.

(98) The contractor shall make the components to be inspected accessible to the client or its authorised third parties so that they can carry out the intended inspections and measurements without hindrance.

(99) The minimum scope of the control inspections can be found in MeKS.

5.3 Monitoring and access rights

(100) The contractor shall ensure that the monitoring and access rights granted to the client pursuant to § 4(1)(2) VOB/B also extend to workstations, workshops and storage areas of the subcontractors.

(101) The contractor shall ensure that the right of the client to inspect documents pursuant to § 4(1)(2) VOB/B also covers subcontractors.

6 Additional services and special services (re point 4)

6.1 Additional services

The following services are additional services:

(102) Services of the contractor for monitoring by the client.

(103) Work interruptions, including equipment downtimes and retention periods during control inspections by the client (see Section 5.2.3).

(104) For the determination of completed partial services and for acceptance, the accessibility of the individual components shall be ensured by the contractor.

6.2 Special services

In addition to Section 4.2 of VOB/C ATV DIN 18364, the following services constitute special services:

(105) The provision of a reserve sample from the coating company to the client (see 97).

(106) The manufacture of test panels (see (43)).

(107) The issue of the acceptance test certificate 3.2 (see (78)).

(108) Complete documentation of all documents required under ZTV-W LB 218 (see Section 5.2.2), including the corrosion protection plan for new construction, repair and refurbishment and handing over of the documents to the client in full form and in the format specified by the client.

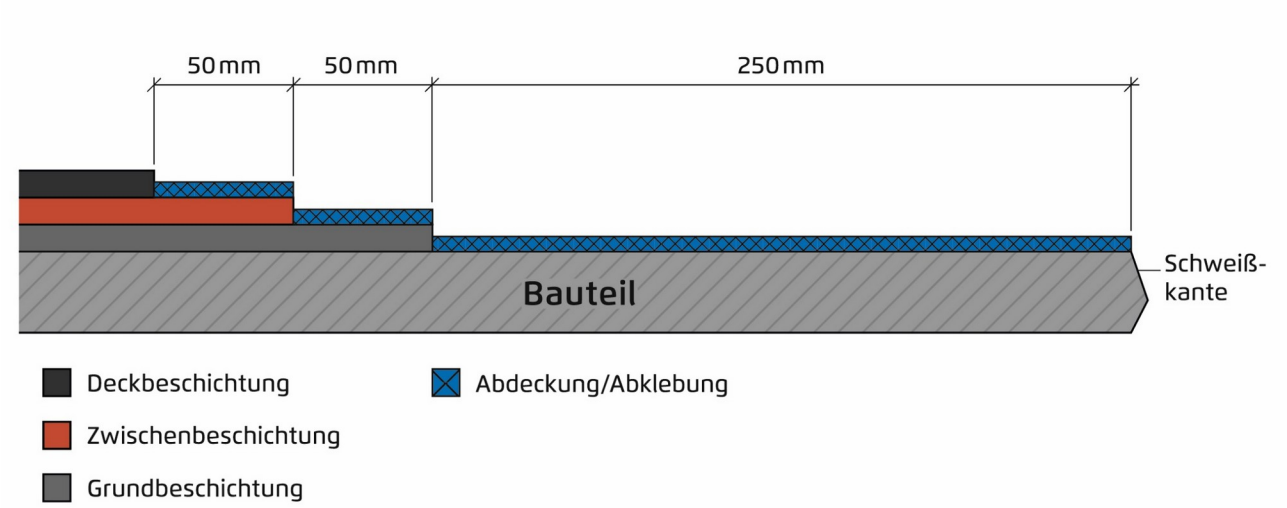
Annex 1: List of cited standards, terms of delivery and terms of contract, guidelines and recommendations

Guideline on Asbestos/PAK/PCB/Lead	Guidelines for the stripping of (hydraulic) steel structures and other structures coated with old coatings containing harmful substances of the Federal Waterways and Shipping Administration, Federal Ministry of Transport and Digital Infrastructure
ATV DIN 18364	VOB Construction Tendering and Contract Regulations – Part C: General Technical terms of delivery for Building Works (ATV) – Corrosion protection of steel structures
AVV	Ordinance on the European Waste Catalogue (Waste Catalogue Ordinance – AVV)
DIN EN 1090	Execution of steel structures and aluminium structures
DIN EN ISO 8501	Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings Part 2: Method of testing the roughness of blasted steel – Comparative pattern method Part 4: Initial conditions, preparation levels and rust levels in connection with water washing
DIN EN ISO 8502	Preparation of steel substrates before application of paints and related products – Tests for assessment of surface cleanliness Part 3: Assessment of dust on steel surfaces prepared for painting (pressure-sensitive tape method) Part 6: Extraction of water soluble contaminants for analysis (Bresle method) Part 9: Field method for the conductometric determination of water-soluble salts
DIN EN ISO 8503	Preparation of steel substrates before application of paints and related products – Surface roughness characteristics of blast-cleaned steel substrates
DIN EN ISO 9117-5	Paints and varnishes – Drying tests – Part 5: Modified Bandow-Wolff test
DIN EN 10204	Metallic products – Types of inspection documents
DIN EN ISO 11124	Preparation of steel surfaces before the application of coating materials – Requirements for metallic abrasives
DIN EN ISO 11126	Preparation of steel surfaces before the application of coating materials – Requirements for non-metallic abrasives
DIN EN ISO 12944	Paints and varnishes – Corrosion protection of steel structures by protective paint systems Part 1: General introduction Part 2: Classification of environments Part 3: Basic rules for design Part 4: Types of surface and surface preparation Part 5: Coating systems Part 6: Tests Part 7: Execution and monitoring of the coating work Part 8: Preparation of specifications for initial protection and repairs
DIN EN 12954	General principles of cathodic protection of buried or immersed metal structures
ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories
ISO 19840	Paints and varnishes – Corrosion protection of steel structures by protective paint systems – Measurement of, and acceptance criteria for, the thickness of dry films on rough surfaces
CAB list	BASt compilation of the conformity assessment bodies (CABs) for the area of TL KOR steel structures; https://www.bast.de/DE/Ingenieurbau/Qualitaetsbewertung/Anerkennung/pdf/puez-stellen.html
KOR certificate	Qualification for managers on corrosion protection construction sites, https://www.bundesverband-korrosionsschutz.de/kor-schein/informationen-zum-kor-schein
KrWG	German Circular Economy Act
LAGA Communication 23	Communication from the Federal Government/States Working Group on Waste (LAGA) 23:

	Guideline for the disposal of waste containing asbestos
MeKS	Code of Practice: Control Inspections at Hydraulic Steel Structures (MeKS), Federal Ministry of Transport and Digital Infrastructure
MKKS	Code of Practice: Cathodic Corrosion Protection in Hydraulic Steel Engineering, Federal Institute for Hydraulic Engineering, Karlsruhe
MKWAS	Code of Practice: Corrosion Protection for Watercrafts and Navigation Signs at the German Federal Waterways Administration, Federal Institute for Hydraulic Engineering, Karlsruhe
NachwV	German Waste Disposal and Evidence Ordinance (Nachweisverordnung – NachwV)
Guidelines for Control Inspections	Guidelines for Control Inspections, Annex E of the ZTV-ING – Part 4 Steel Structures, Steel Composite Structures – Section 3 Corrosion Protection of Steel Structures, Federal Ministry for Digital and Transport
RPB	Guidelines for the Testing of Coating Systems for the Corrosion Protection of Hydraulic Steel Structures, Federal Institute for Hydraulic Engineering, Karlsruhe
TL/TP-ING	Technical delivery conditions and technical test requirements for civil engineering works, Part 4 Section 3, Technical delivery conditions for coating materials for the corrosion protection of steel structures (TL KOR-Stahlbauten), Technical test requirements for coating materials for the corrosion protection of steel structures (TP KOR-Stahlbauten), Federal Ministry for Digital and Transport
VGBe/BAW Standard	VGBe/BAW Standard Corrosion protection of offshore structures for the use of wind energy, 4th edition 2023, vgbe energy e.V. Part 1: General, VGBE-S-021-01-2023-05 Part 2: Requirements for corrosion protection systems, VGBE-S-021-02-2023-05-DE Part 3: Application of coating systems, VGB-S-021-03-2023-05-DE
VOB/B	General conditions for awarding public work contracts, Part B
ZTV-ING 4/3	Additional technical terms of contract and guidelines for civil engineering works, Part 4 Steel construction, composite steel construction, Section 3 Corrosion protection of steel structures, Federal Ministry for Digital and Transport
ZTV-W LB 220	Additional technical terms of contract – hydraulic engineering (ZTV-W) for cathodic corrosion protection in hydraulic steel structures (performance category 220), Federal Ministry of Transport, Building and Urban Affairs
Approved systems	List of approved systems, https://www.baw.de/de/publikationen/qualitaetsbewertung/qualitaetsbewertung.html

Annex 2: Schematic illustration of execution of corrosion protection layer in the region of site weld joints in heat-affected zones

Figure A 1: Schematic depiction of the execution of the corrosion protection coating in the area of site weld joints in heat-affected zones according to (46)



Schweiß-kante	Weld edge
Bauteil	**Component**
Deckbeschichtung	Top coat
Zwischenbeschichtung	Intermediate coating
Grundbeschichtung	Primer coat