

EN

Comprehensive documentation and technical specifications of The Good Bunkers

Composite underground bunkers, for concreting

Before beginning installation, carefully read this manual and follow the instructions!
Failure to adhere to the installation manual will void the warranty.

Material: Food-grade polypropylene

Model: T1,T2, Modular

Issue Date: 01.04.2025



THE GOOD BUNKER

Kolomaki

www.thegoodbunker.com

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6.1 Manufacturer Responsibility

Manufacturer:

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1. General Information

The Good Bunkers are watertight underground bunkers made of composite materials, manufactured for fast installation in different conditions. They are designed as secure spaces for people and for storage of equipment in an enclosed space below ground level, with easily adjustable temperature and humidity conditions.

The Good Bunker offers two basic variants with an unlimited number of customizable modular options:

Type 1

A basic structure, with 8,8 m² of usable space, the SAFE 360 ventilation and reinforced blast doors. Equipped with one entrance.

Type 2

A structure, with 8,8 m² of usable space, with two blast doors: a main entrance and an emergency exit. Equipped with the SAFE 360 ventilation.

Modular type

A bunker of virtually any size, adjustable for any use and need. Available with modules of varied size with availability to install many entrances, escape shafts, utility rooms and any safety equipment.

Advantages of The Good Bunker:

- **Adaptability:** Flexible design for installation in diverse terrain conditions.
- **Customizable Entry Points:** Entry points adapted to specific installation locations.
- **Unlimited Dimensions:** Customizable sizes to meet customer needs.
- **Optional Features:** The bunkers can be equipped according to individual requirements.
- **19-Year Warranty:** Long-term reliability and assurance of quality.
- **Waterproofing:** Protection against moisture and external influences.
- **Eco-Friendly and Chemically Neutral Material:** Safe for habitation and storage of food and liquids.
- **Certified:** The Good Bunker comes with certified equipment and is manufactured in a EW certified factory.

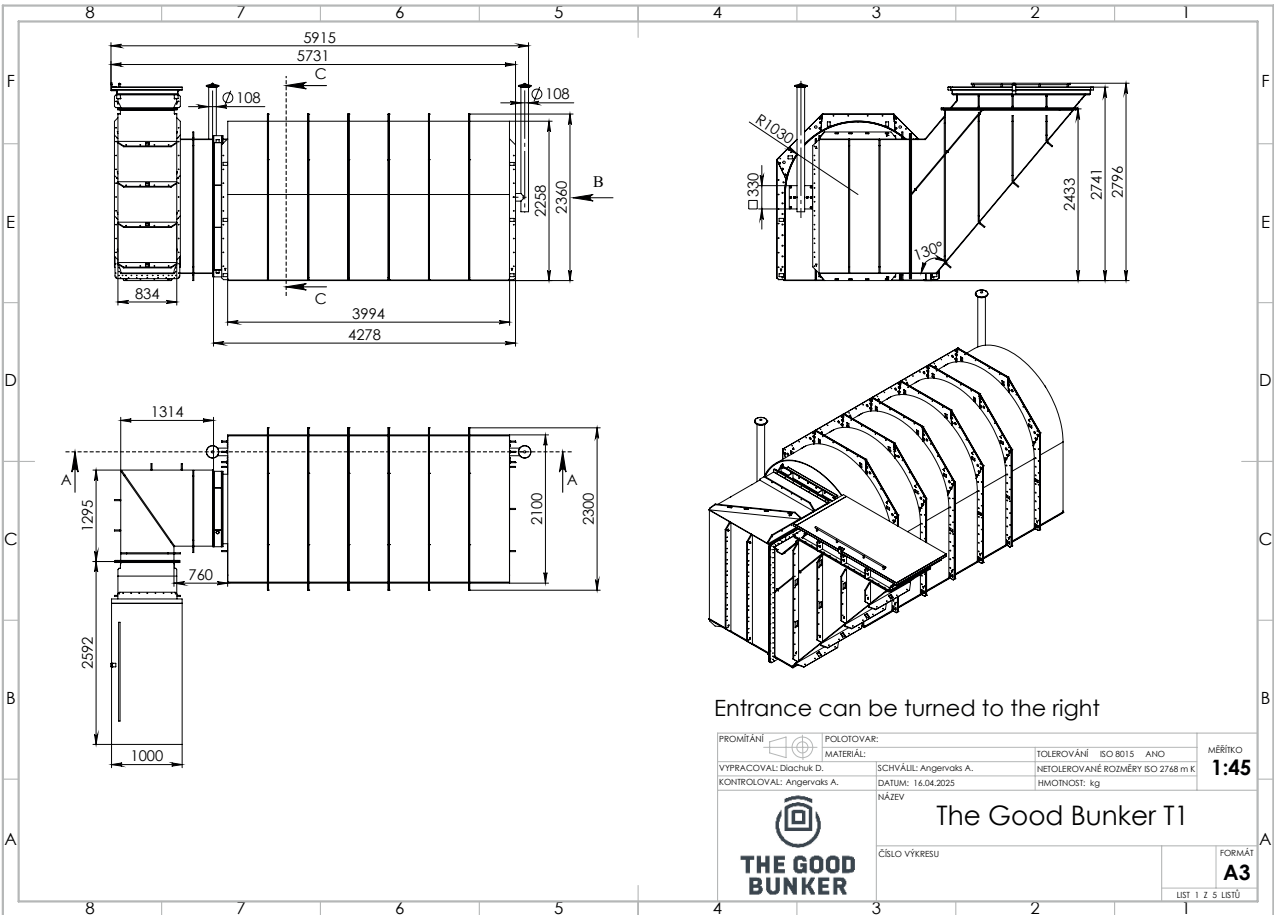
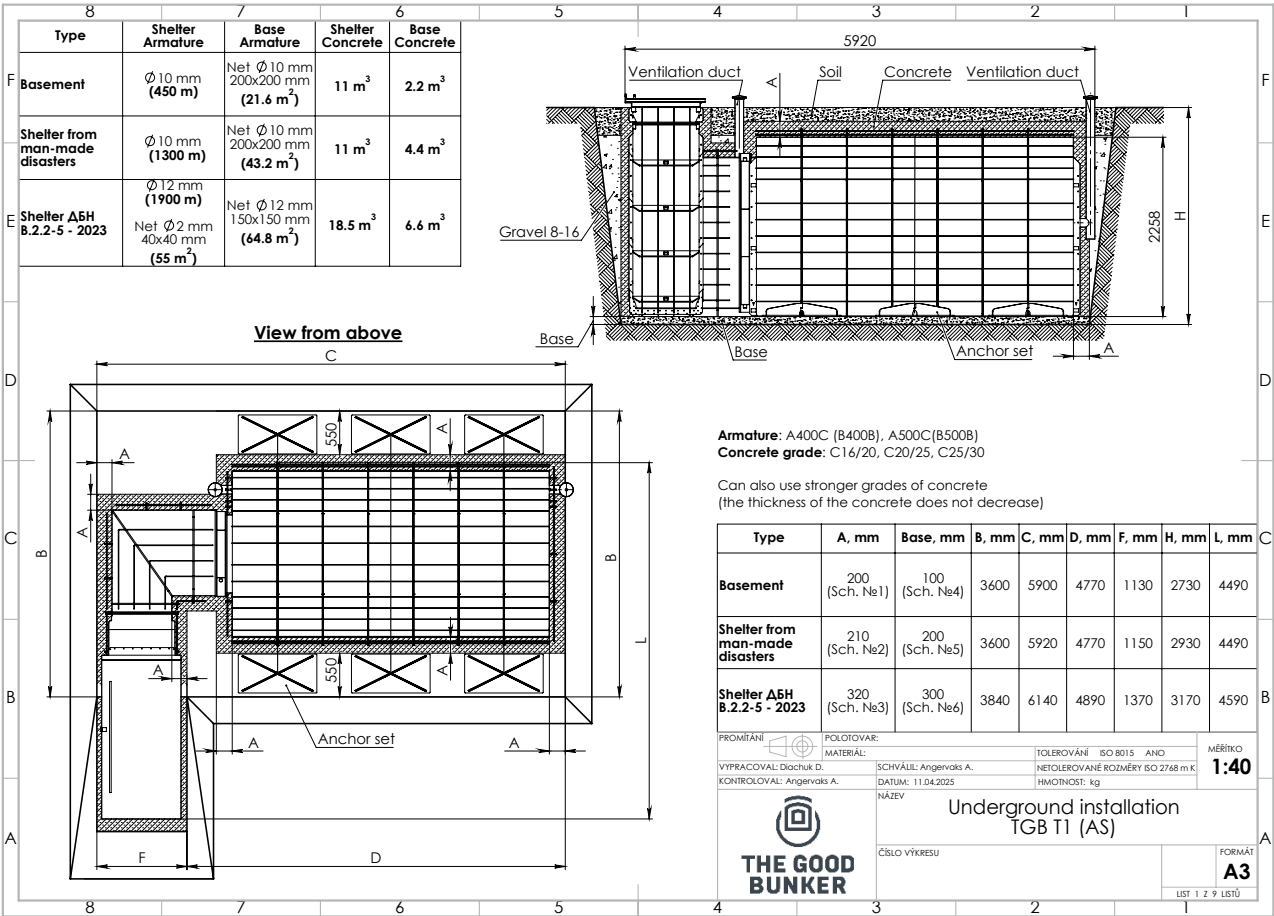
Construction Details:

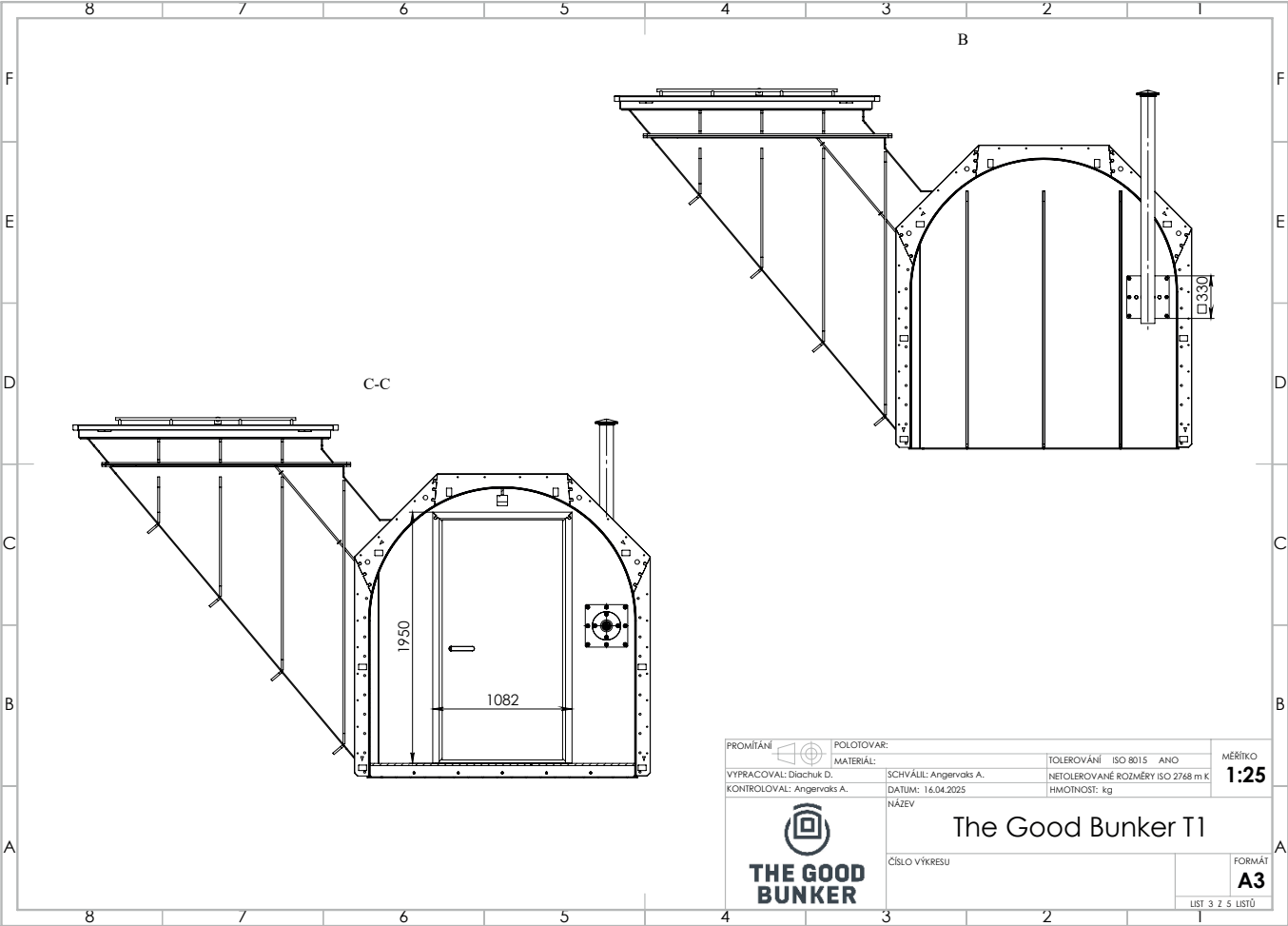
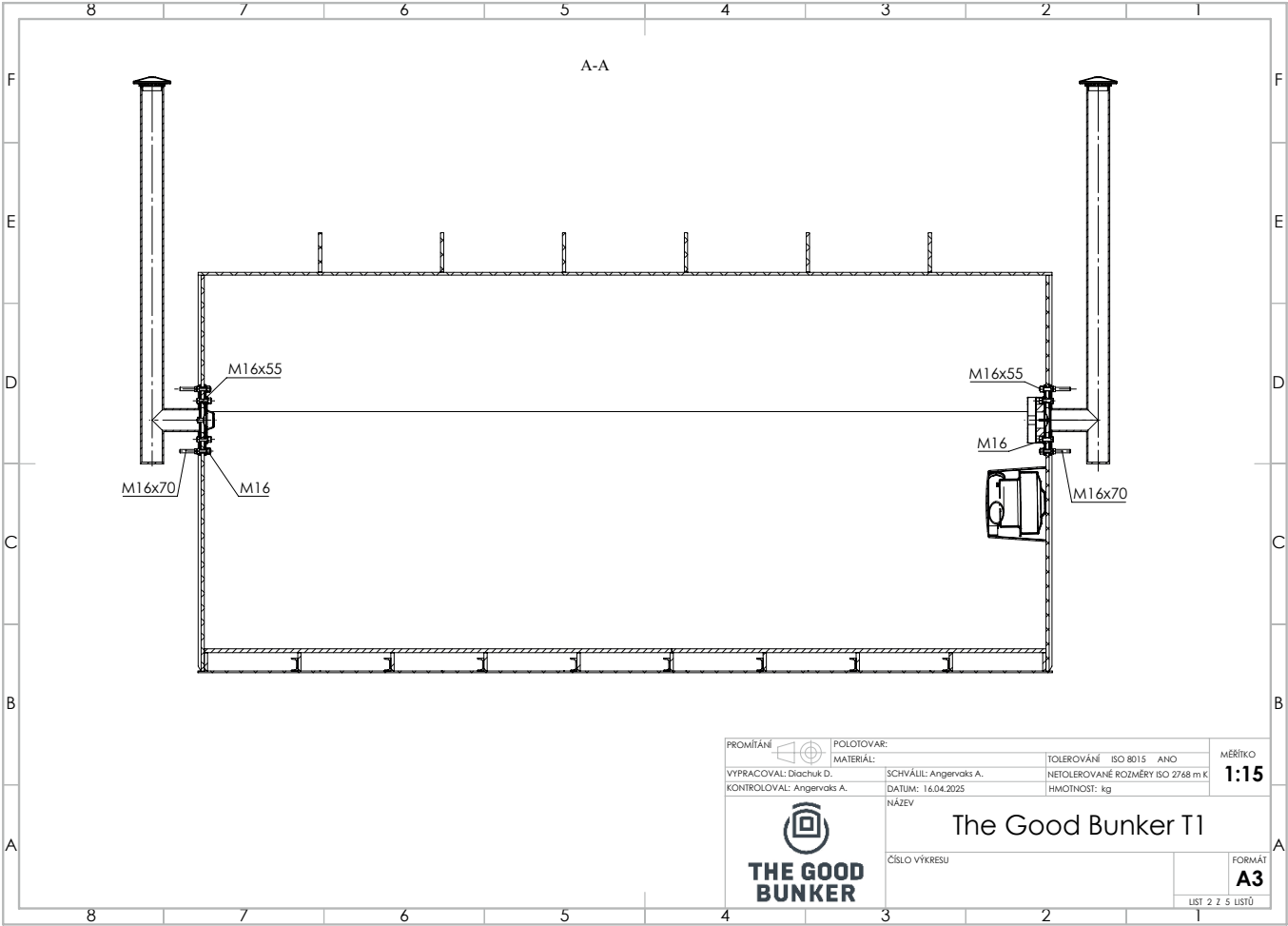
The structure is made of welded polypropylene sheets with a thickness ranging from 5 mm (vaulted structure) to 15 mm (other components). All modules are reinforced with ribs for added strength, easier installation and transport. The interior equipment may include:

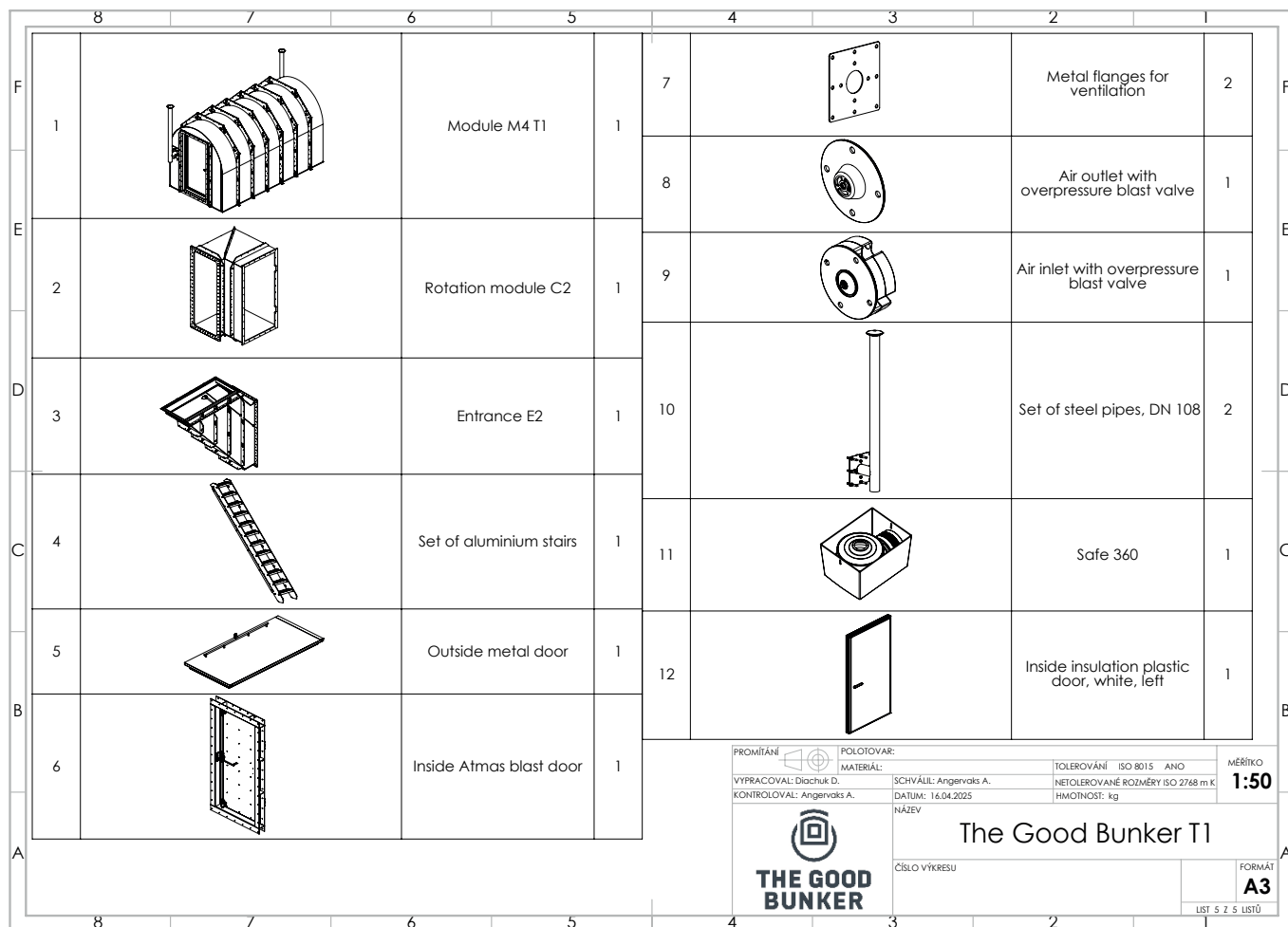
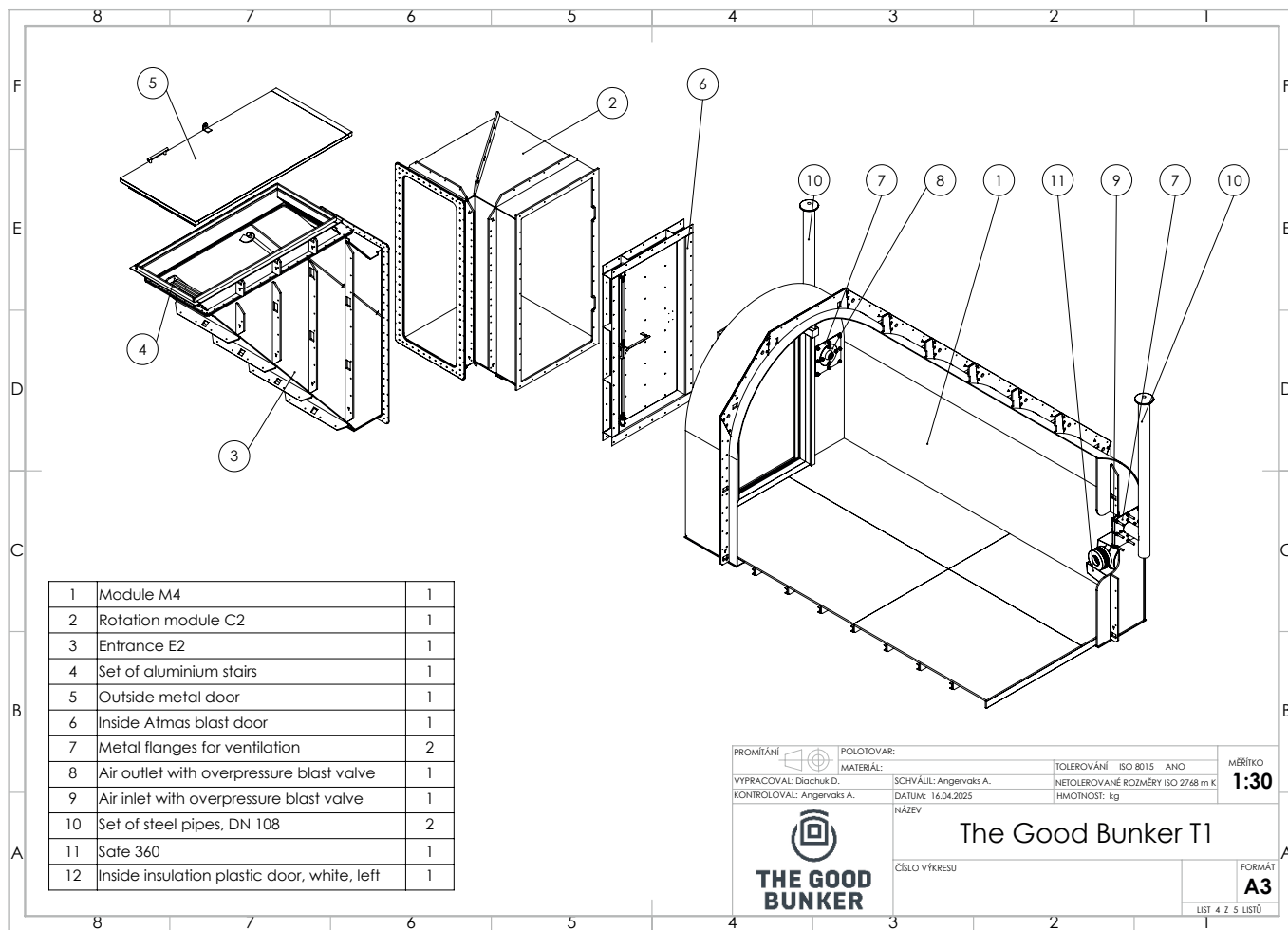
- Blast resistant doors and hatches
- Ventilation units
- Air filtration units
- Decontamination chambers
- Shelves
- Beds
- Technical equipment
- Other...

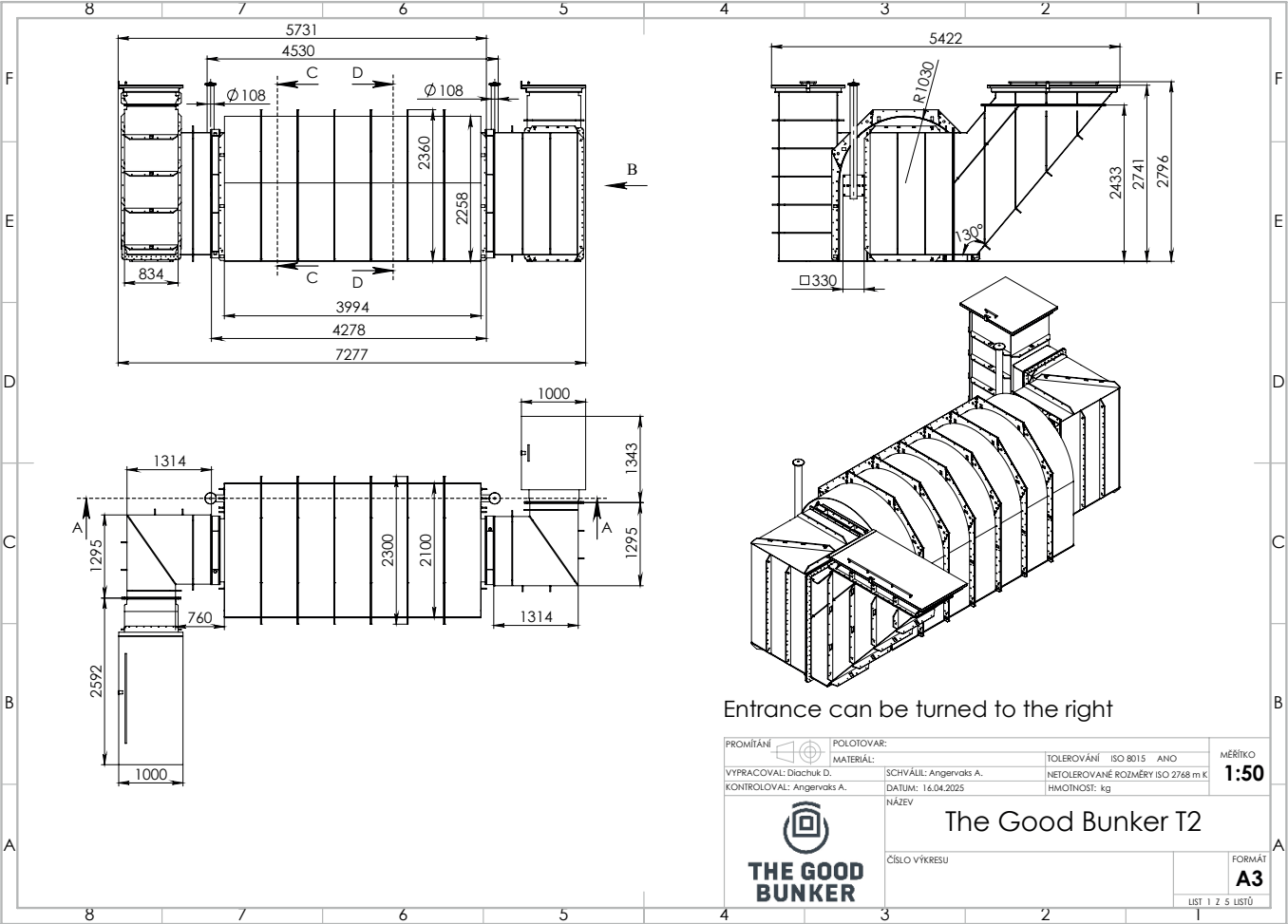
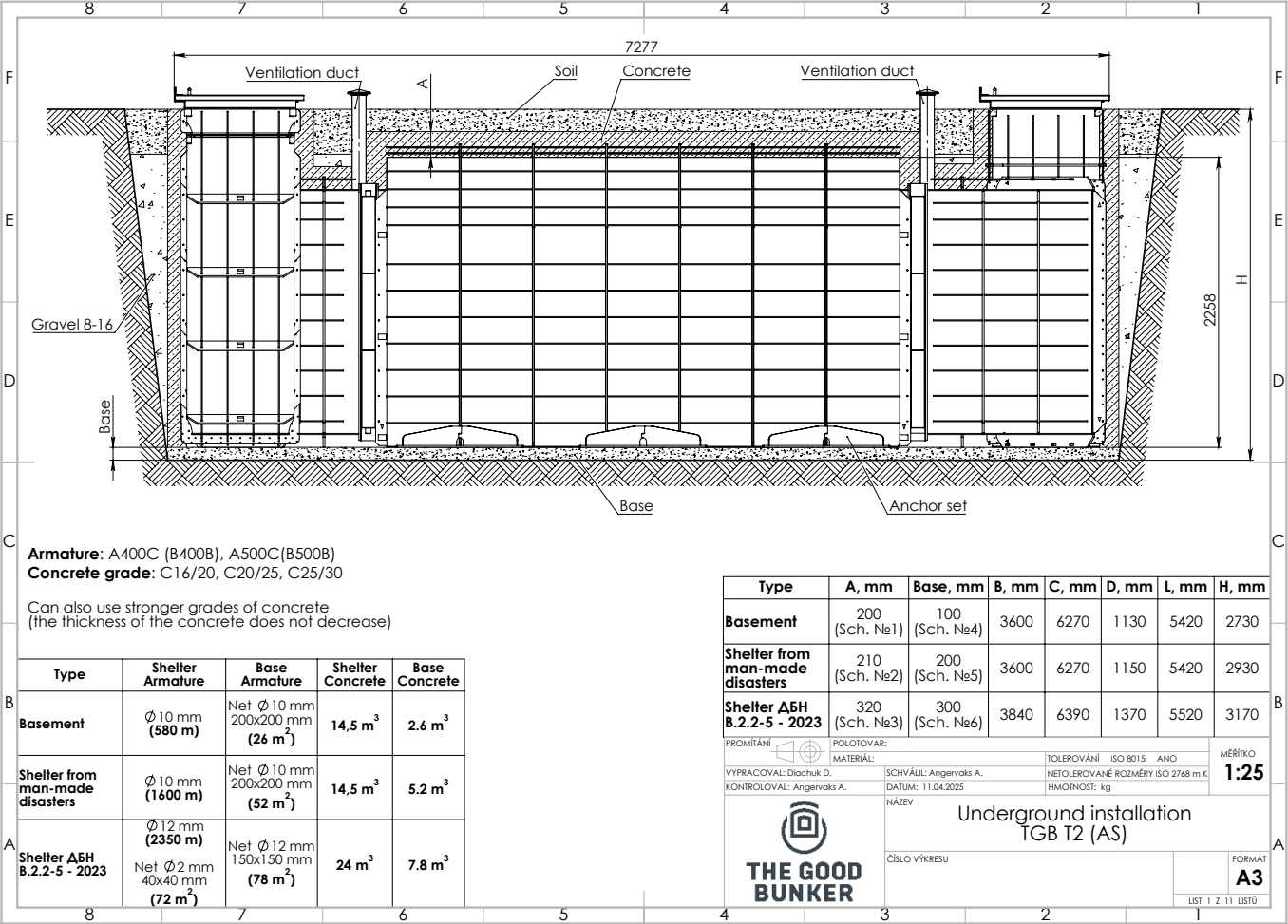
2. Specifications

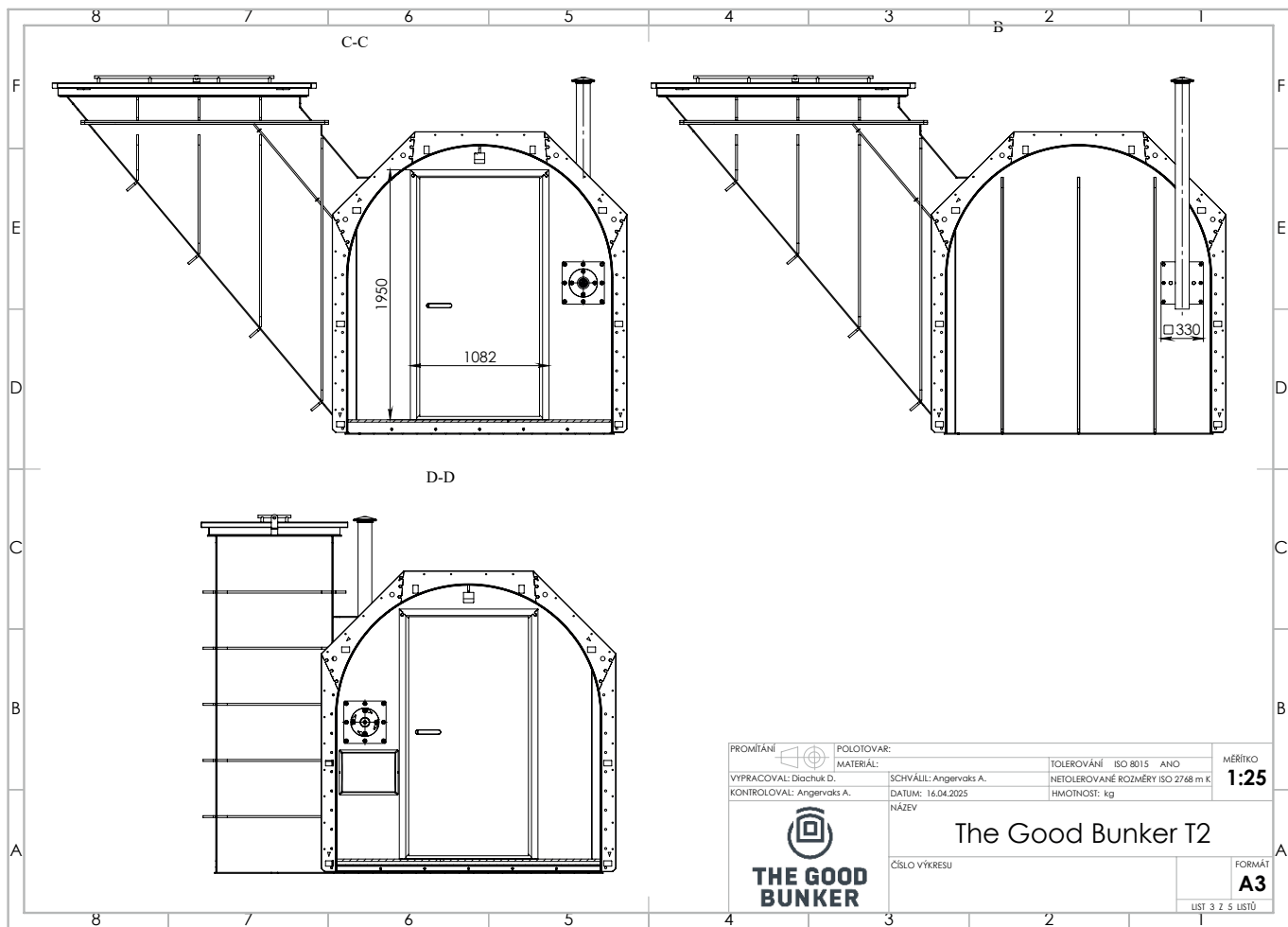
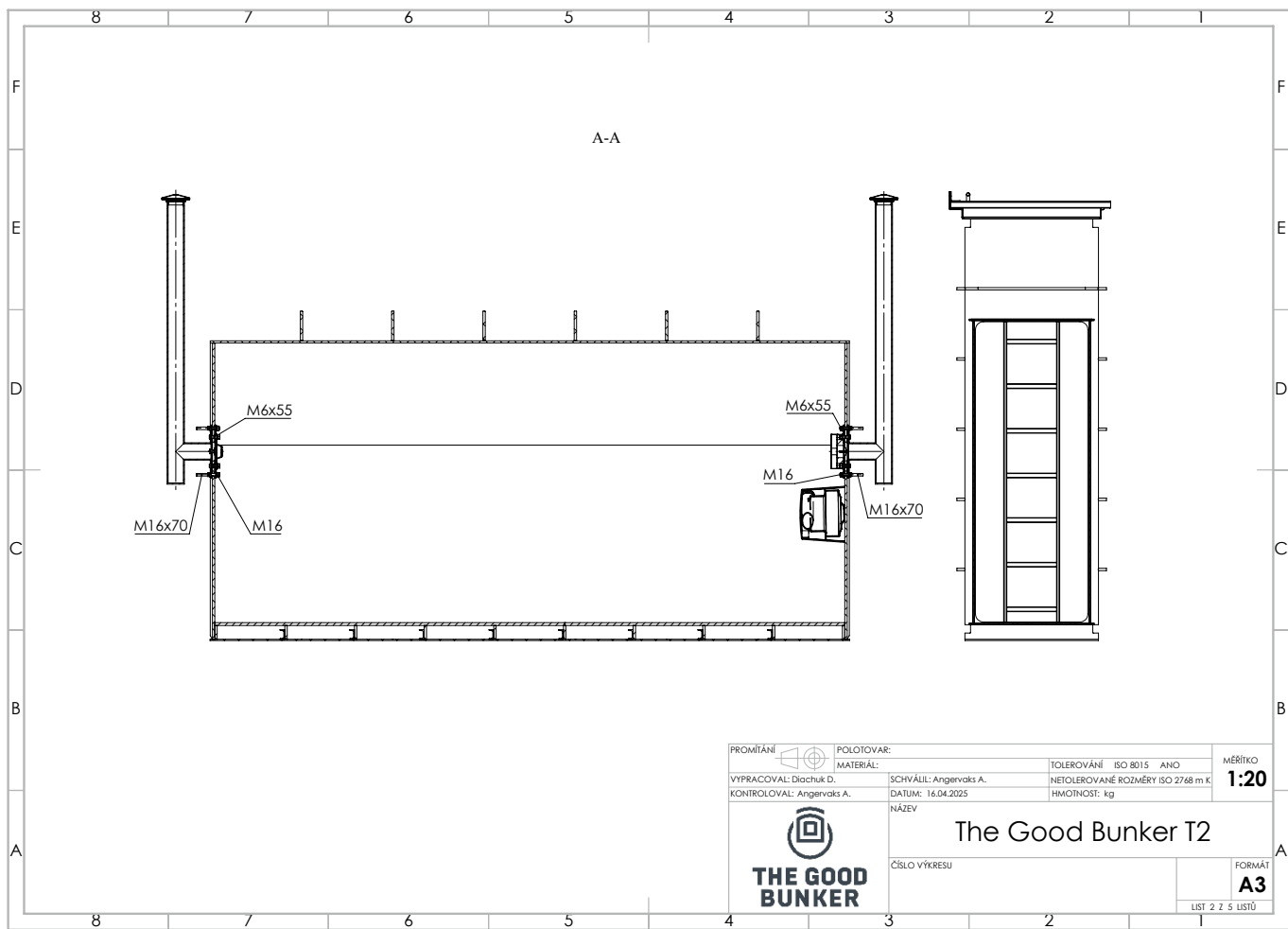
2.1. TGB T1

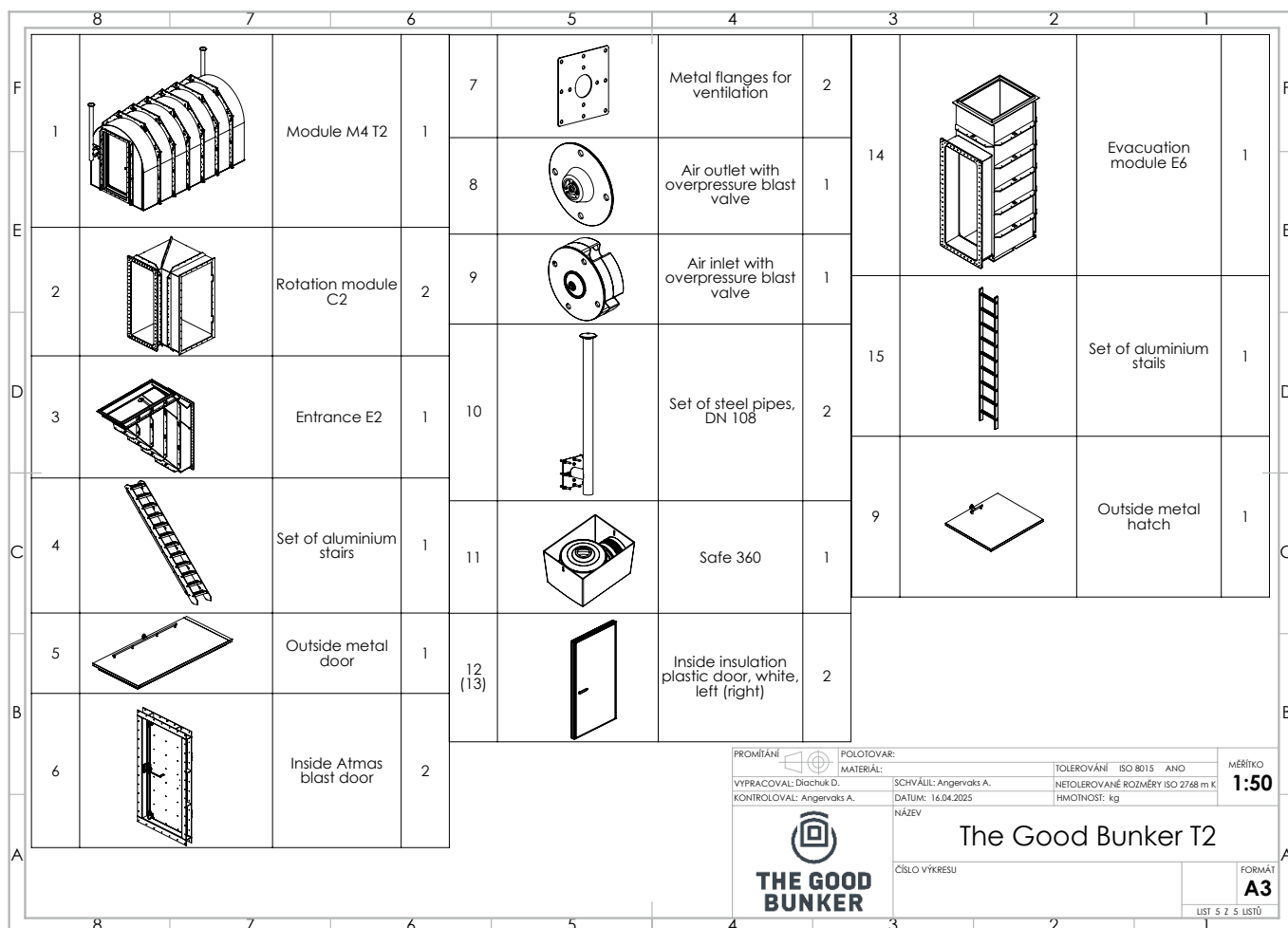
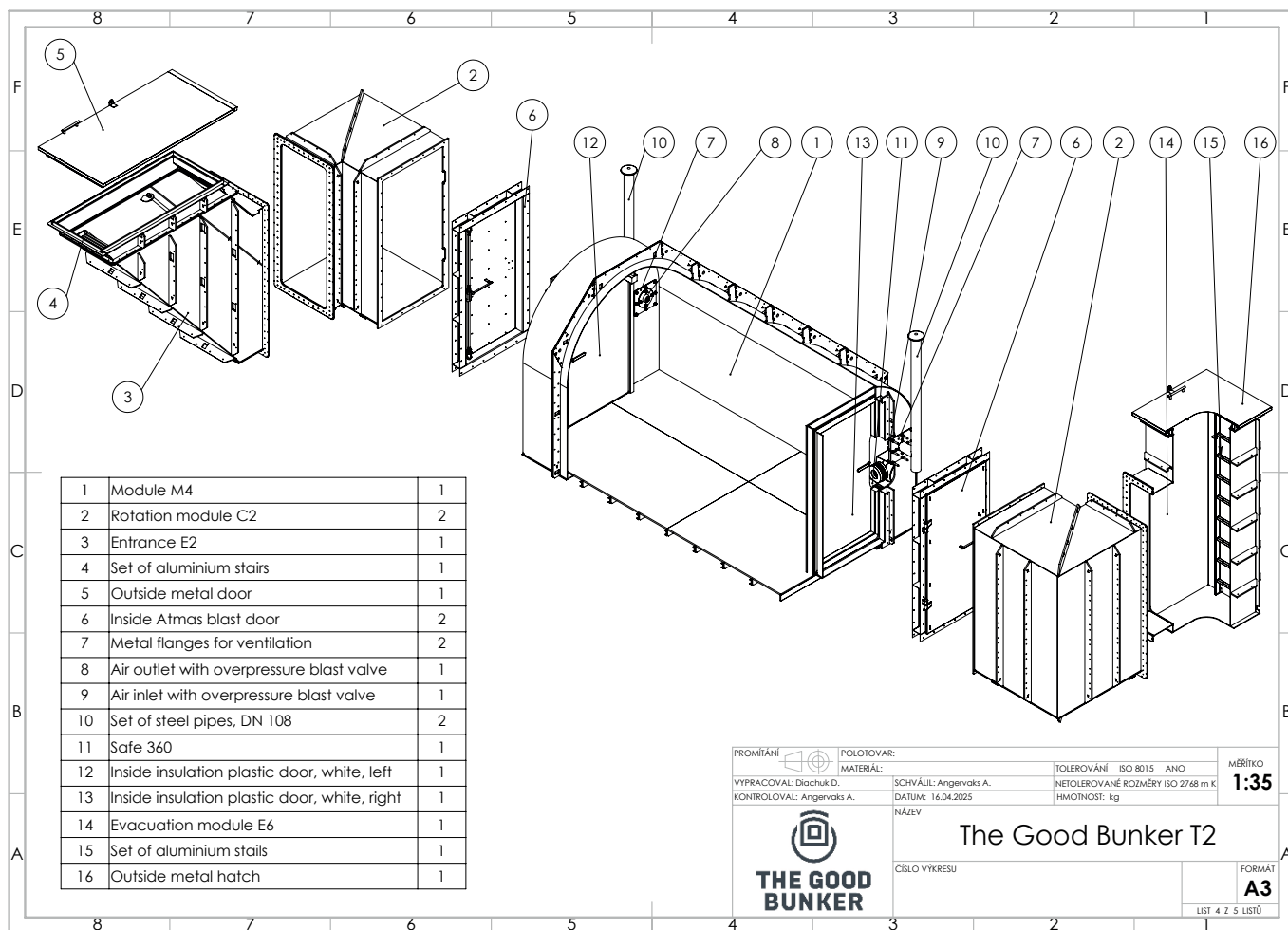










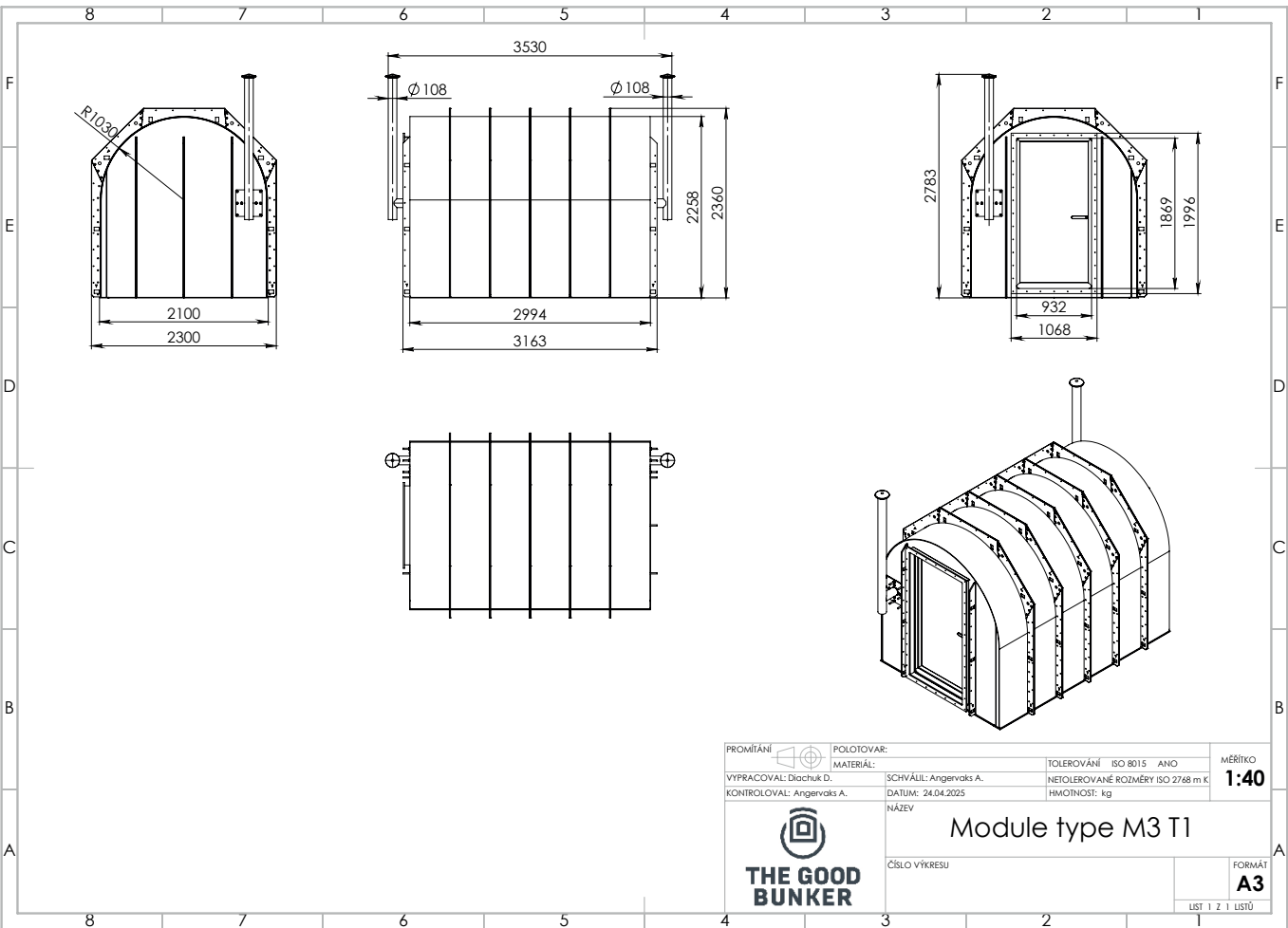
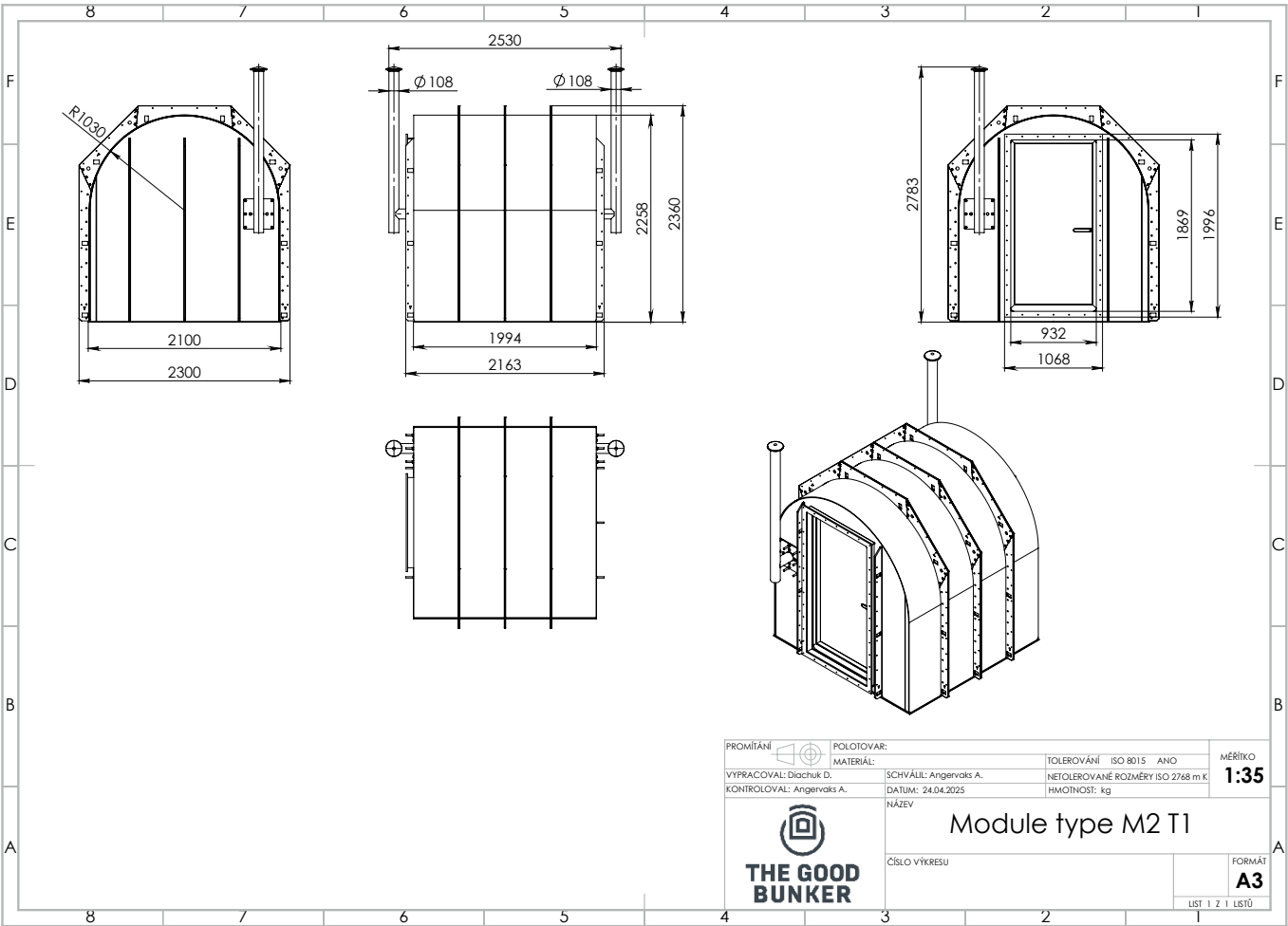


2.3. SAFE 360

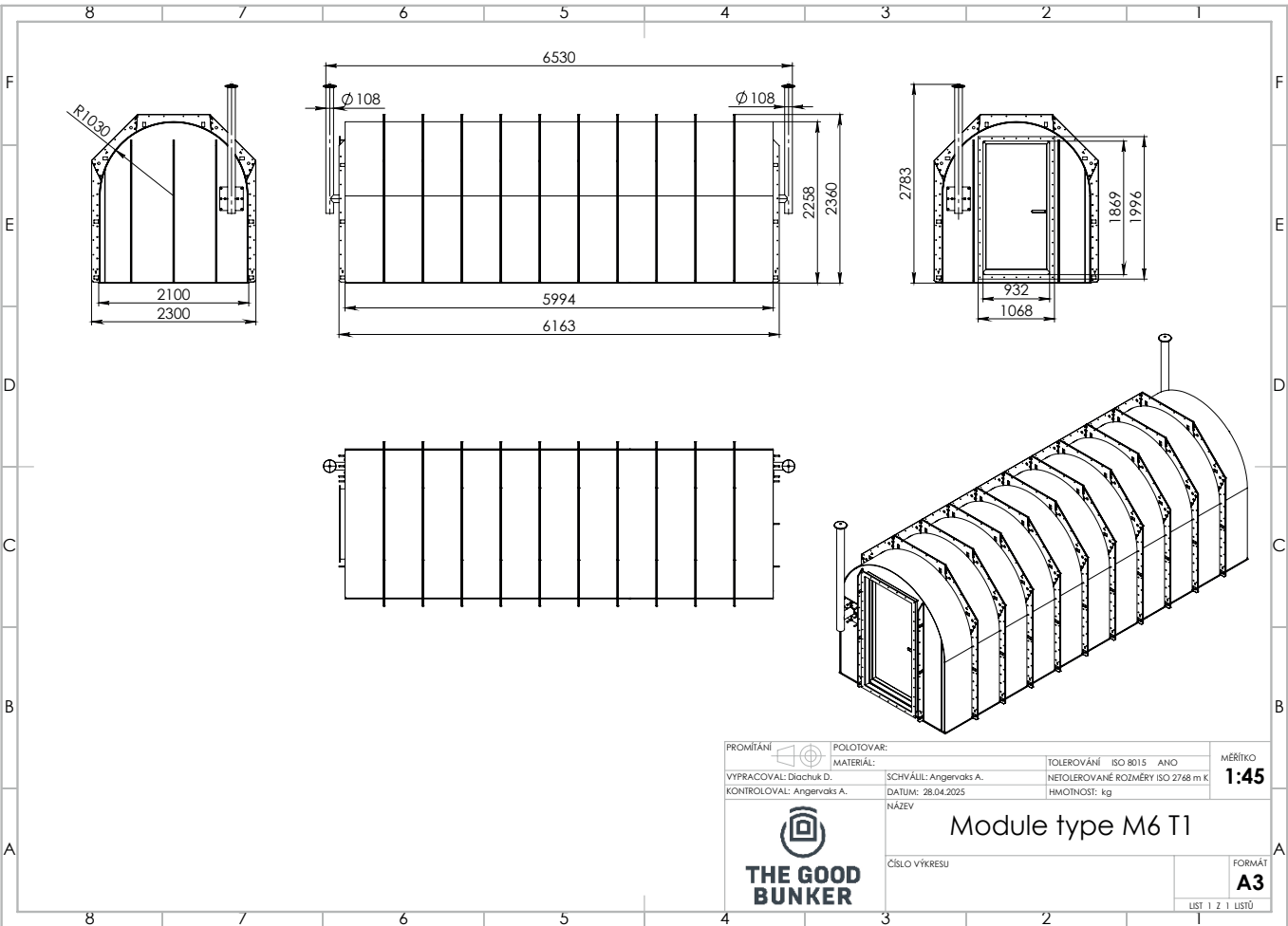
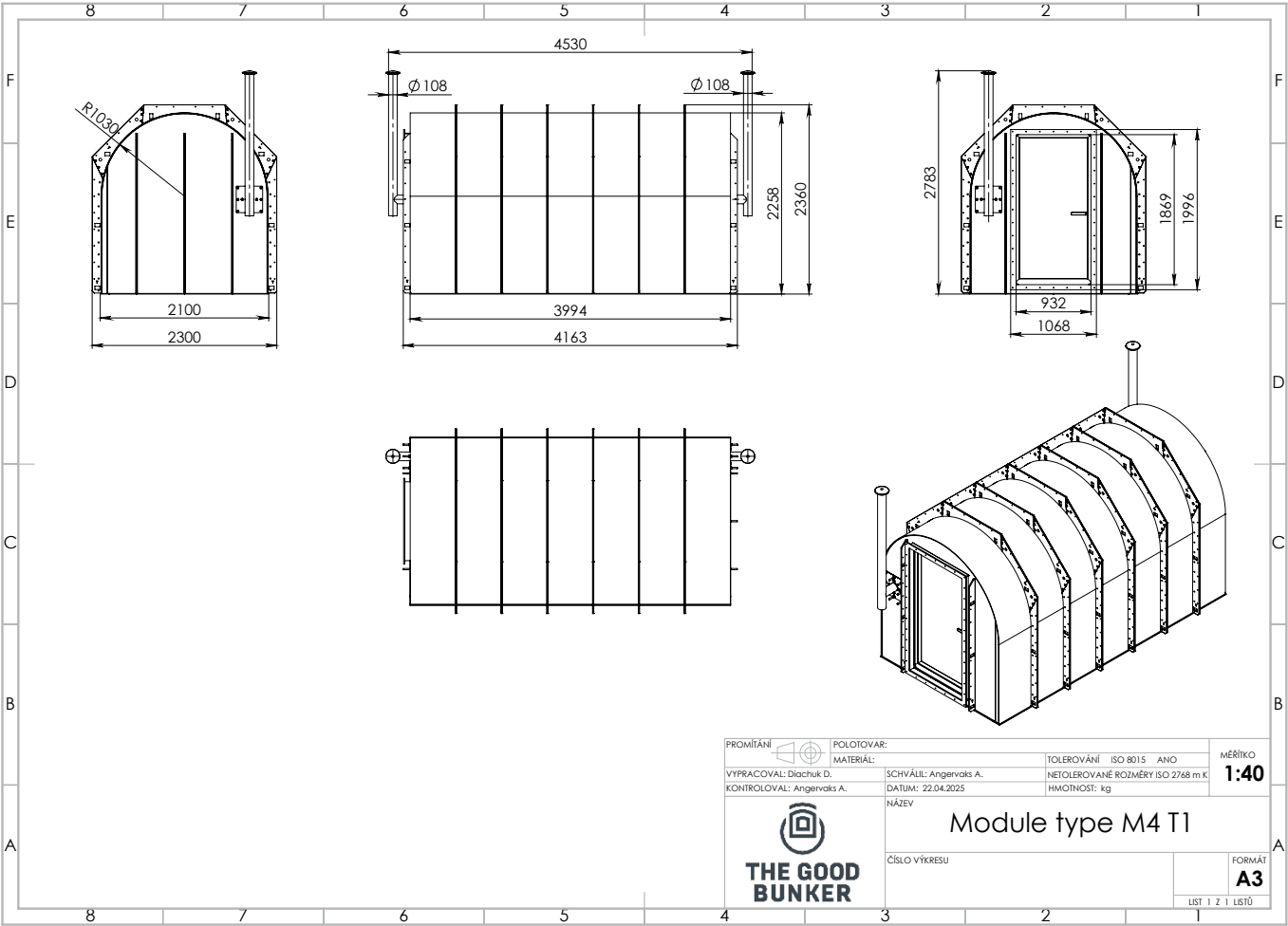
Detailed information about the SAFE 360 ventilation unit and it's components can find in the Technical Manual Safe 360.

2.4. Individual modules

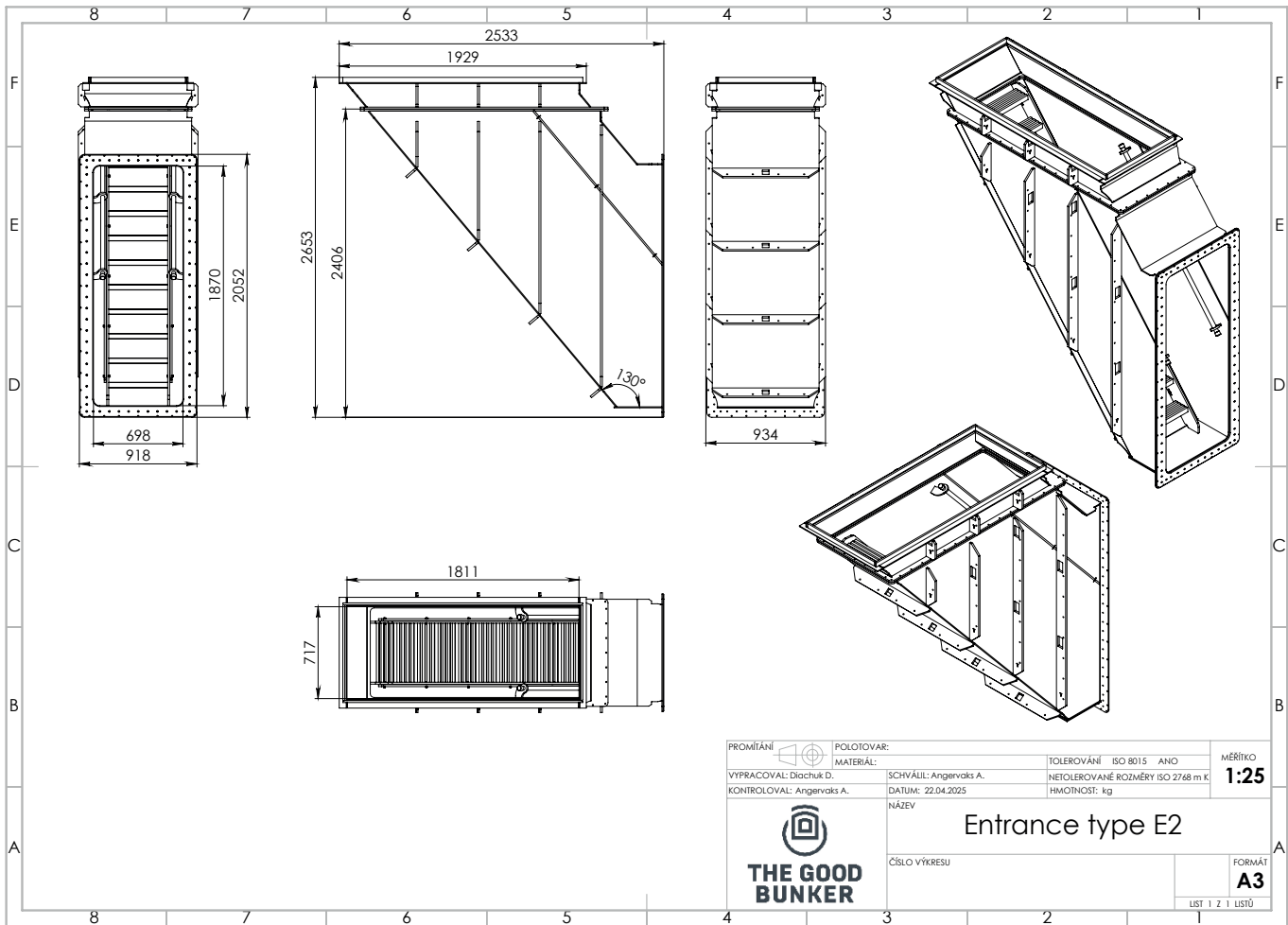
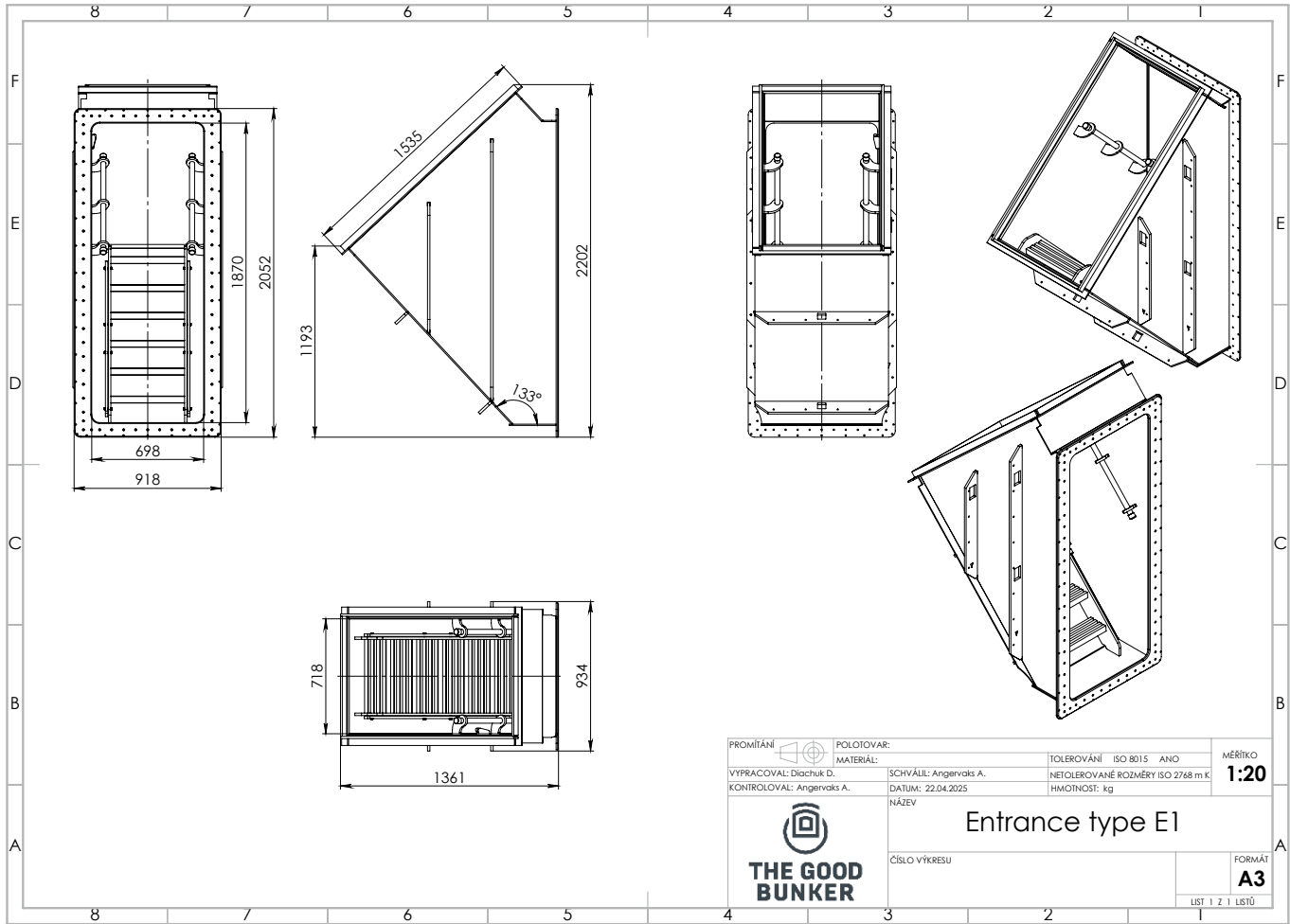
2.4.1. Main modules M2, M3



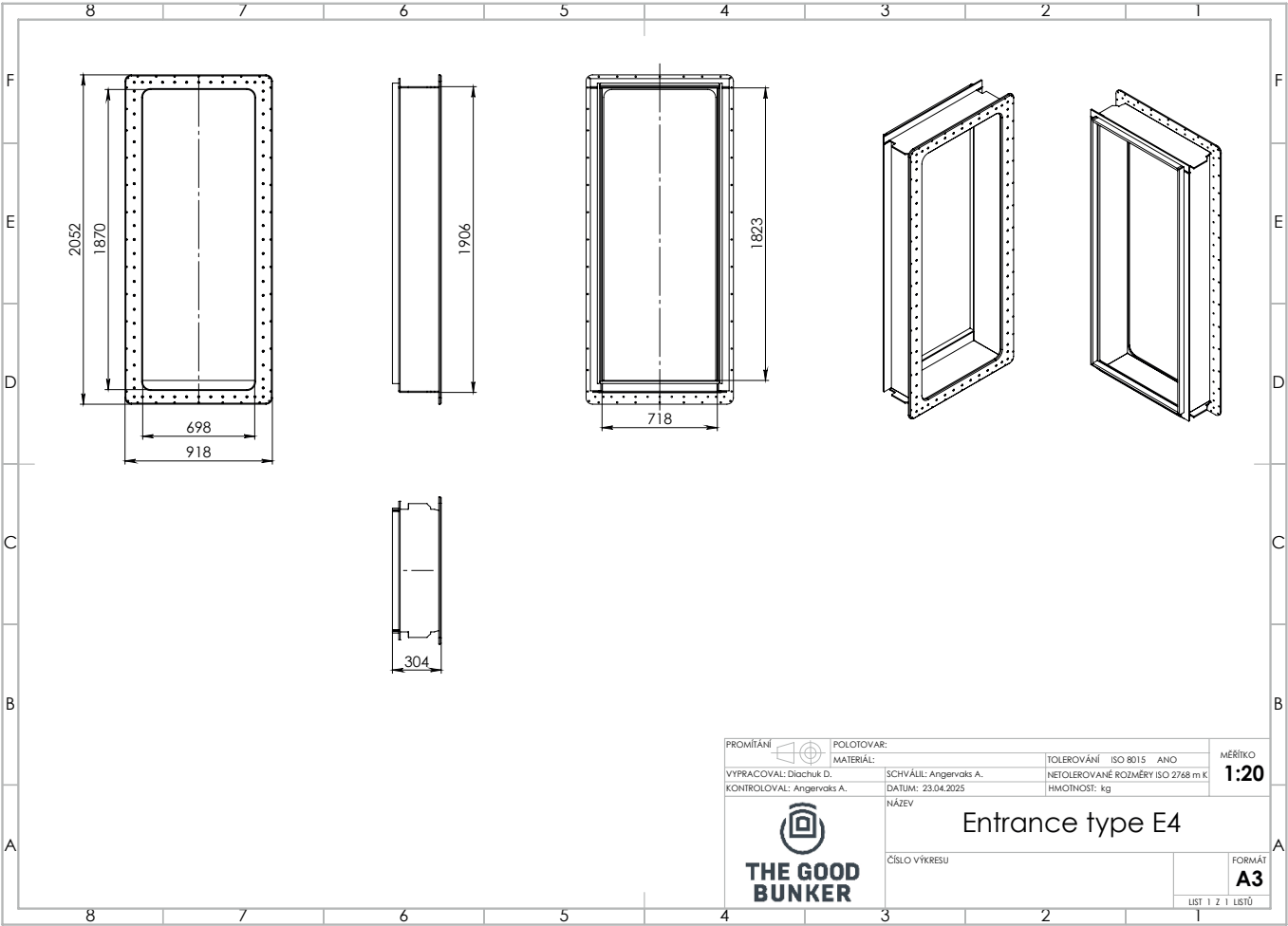
2.4.1. Main modules M4, M6

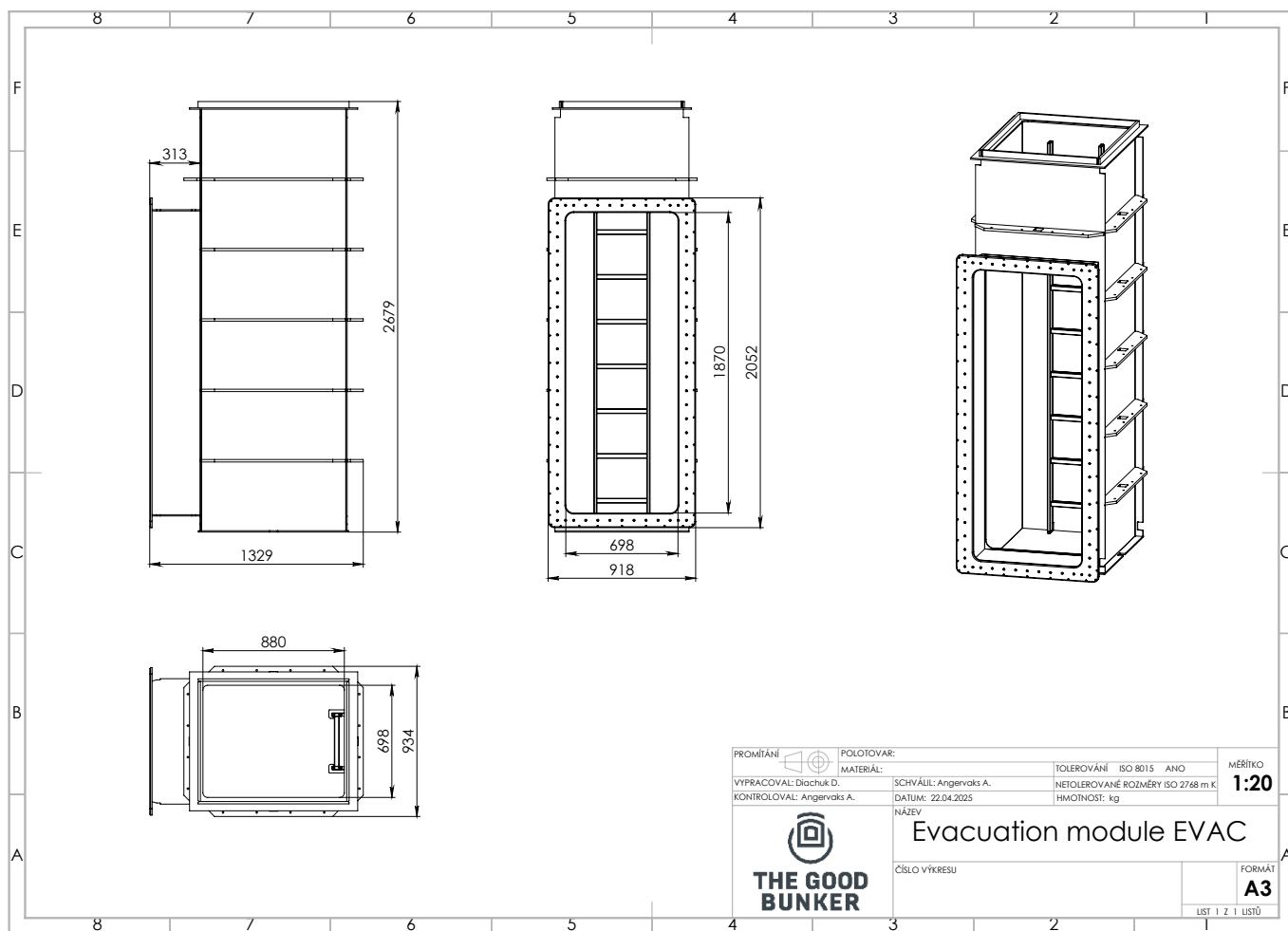


2.4.2. Entrance modules E1, E2

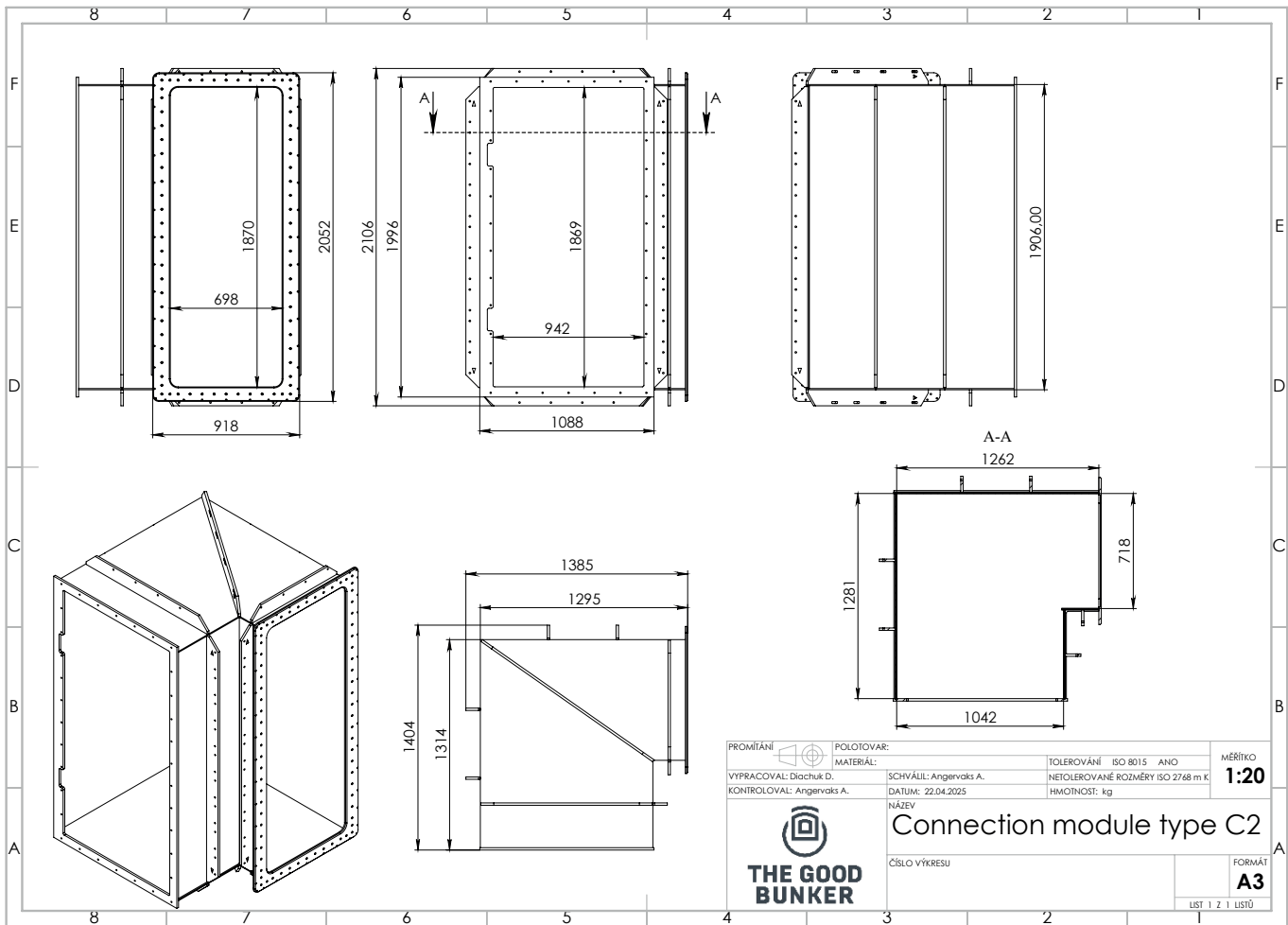
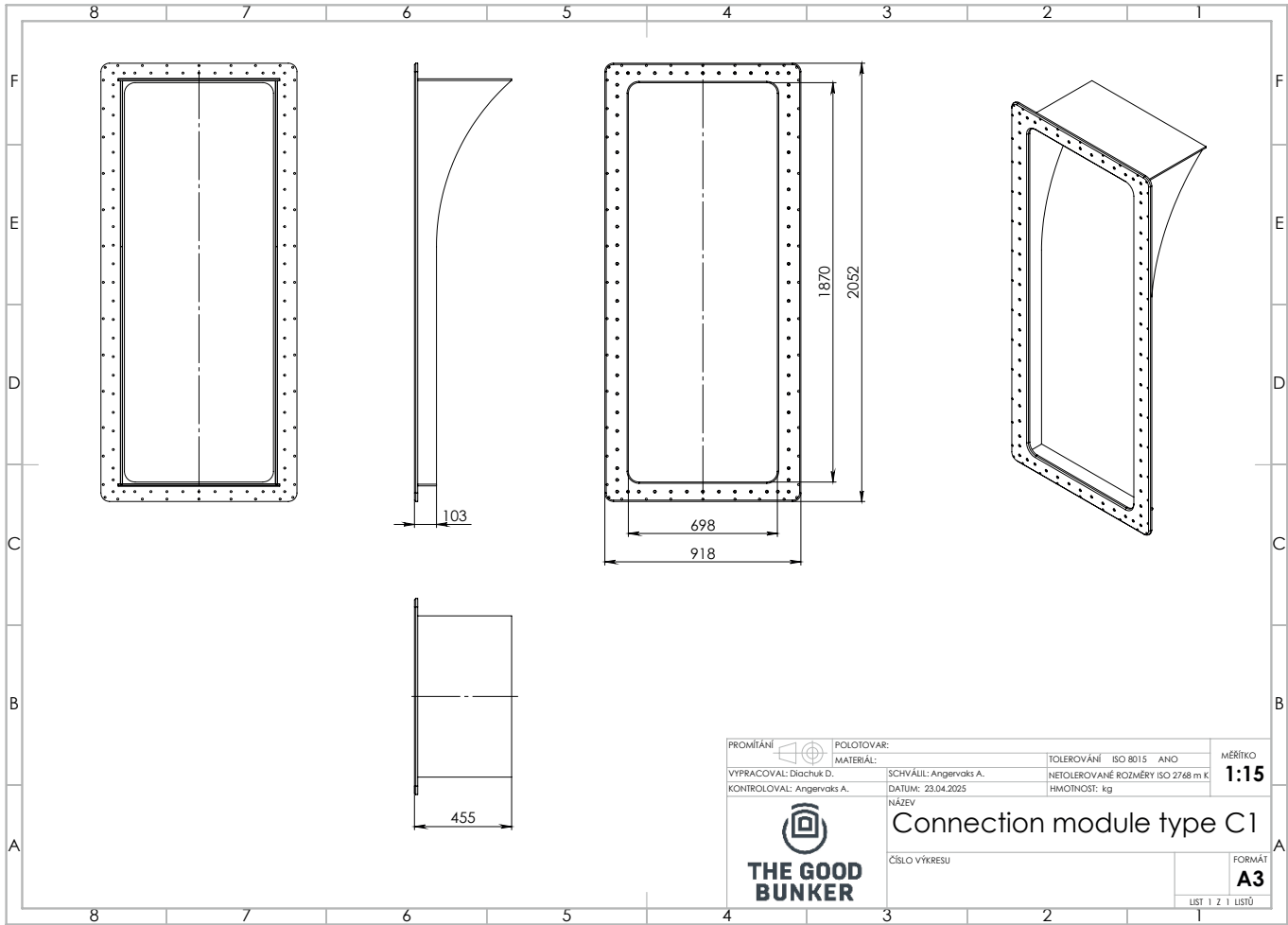


2.4.2. Entrance modules E4, E5, E6



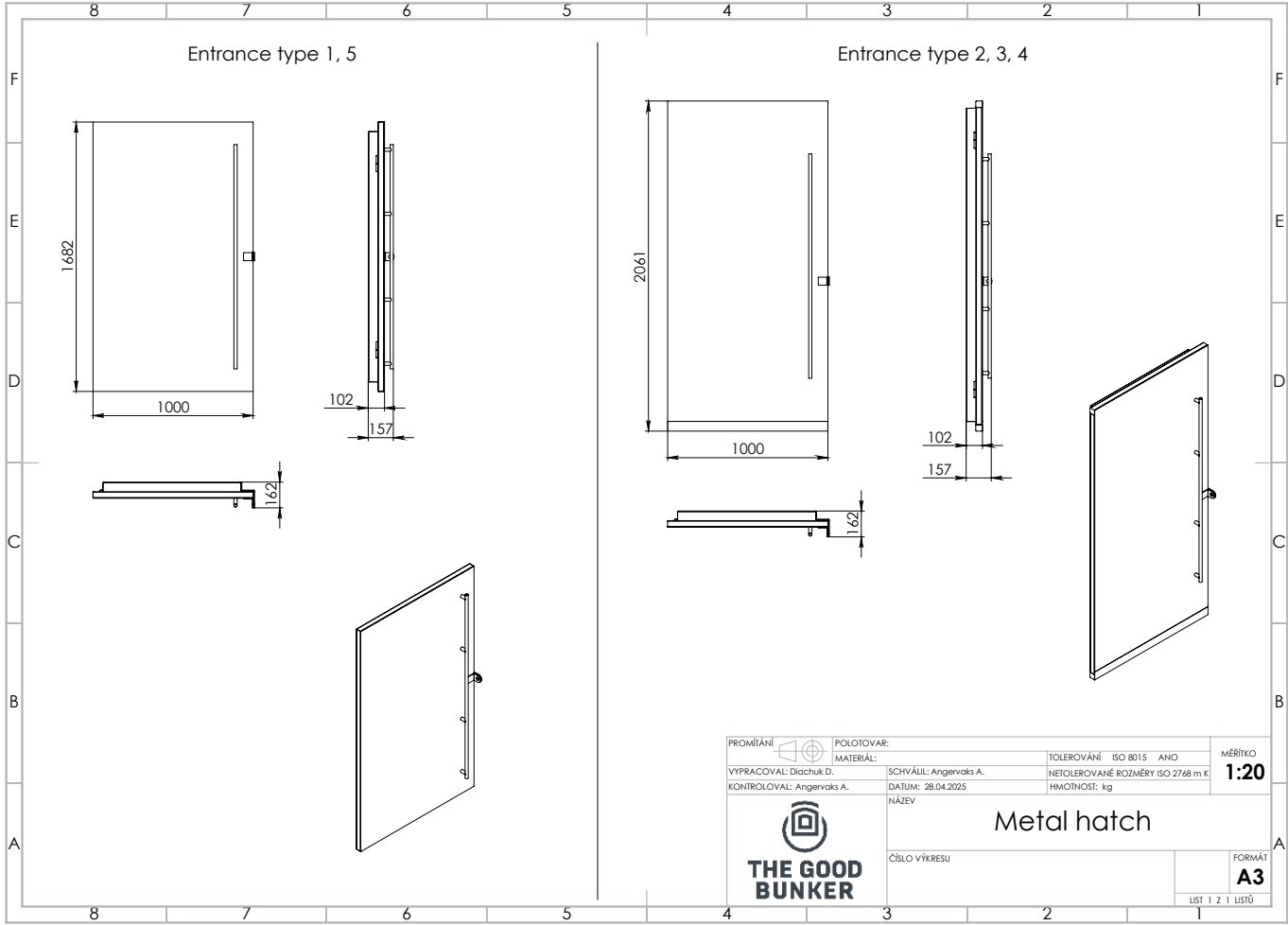


2.4.3. Connection modules C1, C2



2.4.4. Additional equipment

Metal hatch



3. Transport and Unloading

The Good Bunker can be transported using various methods: the client's own transport, vehicles provided by Kolomaki, or via a transport company by ship or truck. For transportation, we recommend using a trailer or a truck or a shipping container. 20ft, 40ft and 40ft high cube containers are suitable for transportation (see individual module dimensions).

Unloading at the Installation Site

During unloading, appropriate equipment must be prepared. We recommend using equipment such as an excavator, crane, or forklift. Additionally, ensure there are enough personnel to safely complete all operations. The bunker has appropriate holds for mounting and handling.

Safety Instructions

- **Careful Handling:**
Handling during transportation, loading, and unloading must be carried out with the utmost care to prevent damage to the product.
- **Avoid Rough Handling:**
Ensure no impacts or collisions occur that might damage the bunker structure.
- **Proper Securing During Transport:**
The bunker must be securely fastened during transport. Ensure that the securing mechanisms do not exert excessive pressure, which could deform the product.
- **Caution in Low Temperatures:**
Exercise extra caution at temperatures below 5°C. In such conditions, polypropylene becomes brittle and more susceptible to damage from impacts.

4. Installation

4.1. Placement Conditions

Before installing the bunker, it is essential to carefully select a suitable excavation site:

- **Distance from Structures:**

The bunker must be placed at least 1 meter away from any structure. Proximity to buildings can cause loads that may lead to deformation of the bunker. The bunker must not be built over or subjected to additional loads from other structures without approval from a qualified structural engineer or designer.

- **Protection from Potential Hazards:**

The excavation should be located away from tree roots and other obstacles that could damage the bunker walls.

- **Installation on a Slope:**

If the bunker is installed on a slope, a terrain assessment must be conducted to prevent landslides or other complications. A qualified structural engineer or

designer should perform static calculations and assess the stability of the soil or slope.

- **Excavation Dimensions:**

The excavation must be large enough to provide sufficient working space. The excavation dimensions are detailed in section 4.2. Standard Installation.

- **Firm and Permeable Base:**

The base must be firm enough to secure the bunker properly. The soil surrounding the bunker should allow water permeability. A hydrological assessment of soil permeability is often part of the building permit requirements.

- **Presence of Groundwater:**

It is recommended to choose a location without groundwater. If groundwater is present, installation during summer or winter months is advisable. To reduce the risk of deformation under these conditions, the variant of the bunker for concreting is recommended.

4.2. Standard Installation

For installing the bunker under normal foundation conditions (with groundwater level below the foundation base), follow these steps:

Base Preparation

Excavate a pit (reinforced with shoring if necessary) according to the installation diagram, but at least 350 mm wider than the bunker itself.

- **Shelter from a natural disaster (e.i. bushfire shelter)**
Create a compacted gravel or concrete slab at the bottom of the pit, with a minimum thickness of 100 mm, reinforced with a 1 layer of 100x100x8 mm welded steel mesh.. Ensure it is perfectly level and clear of debris. Let concrete set.
- **Shelter from a man-made disaster**
Create a compacted concrete slab at the bottom of the pit, with a minimum thickness of 200 mm, reinforced with a 2 layers of 100x100x10 mm welded steel mesh. Ensure it is perfectly level and clear of debris. Let it set.
- **Blast resistant shelter (DBN B.2.2-5:2023)**
Create a compacted concrete slab at the bottom of the pit, with a minimum thickness of 300 mm, reinforced with a 3 layers of 150x150x12 mm welded steel mesh. Ensure it is perfectly level and clear of debris. Let it set.

Installing the Bunker in the Excavation

Place the bunker onto the prepared slab using suitable equipment (e.g., an excavator or crane). Ensure the slab remains clean, free of stones, and level.

Recommended Drainage

Refer to the installation diagram.

- After placing the bunker, install drainage. Lay drainage pipes (perforated and wrapped with geotextile) on the concrete slab with a proper slope.
- Connect the pipes to a soak away device, retention tank, drainage system, or a DN 400 drainage chamber with openings and geotextile, which can house a sump pump.

Inserting Reinforcement Steel

Insert reinforcement steel into the prepared openings in the product's supports.

- **Shelter from a natural disaster (e.i. bushfire shelter)**

Insert one layer of 10 mm thick reinforcement steel, into prepared openings in the ribs at an interval of 200 mm. (100 mm - 100 mm)

- **Shelter from a man-made disaster**

Insert two layers of 10 mm thick reinforcement steel, into prepared openings in the ribs and the rebar bracket at an interval of 200 mm. (30 mm - 140 mm - 30 mm)

- **Blast resistant shelter (DBN B.2.2-5:2023)**

Insert three layers of 12 mm thick reinforcement steel, into prepared openings in the ribs and the rebar bracket at an interval of 150 mm. With the middle layer at a 50% offset. (50 mm - 110 mm - 110 mm - 50 mm)
On the first layer of reinforcement steel, hang a 40x40x2 mm steel mesh

Bind the reinforcement steel with wire into a vertical mesh around the entire body of the bunker and the entry section.

Concreting the Bunker

Shelter from a natural or a man-made disaster

After placing the bunker and connecting ventilation (and drainage, if applicable), enclose the bunker with formwork at a distance of 200 mm from its walls.

Blast resistant shelter (DBN B.2.2-5:2023)

After placing the bunker and connecting ventilation (and drainage, if applicable), enclose the bunker with formwork at a distance of 320 mm from its walls. Fill the space between the formwork and the bunker with C16/20, C20/25 or C25/30 grade concrete according to the installation diagram.

Concrete gradually, ensuring that no layer exceeds 750 mm in height in a single day.

Removing Support Structures

Remove supports, reinforcements, and (if needed) any formwork no earlier than 10 days after concreting, when the concrete has sufficiently cured.

Backfilling the Bunker

After completing the concreting, fill the space between the concrete and the soil with gravel. Use aggregate with a fraction size of 8/16 mm for this purpose.

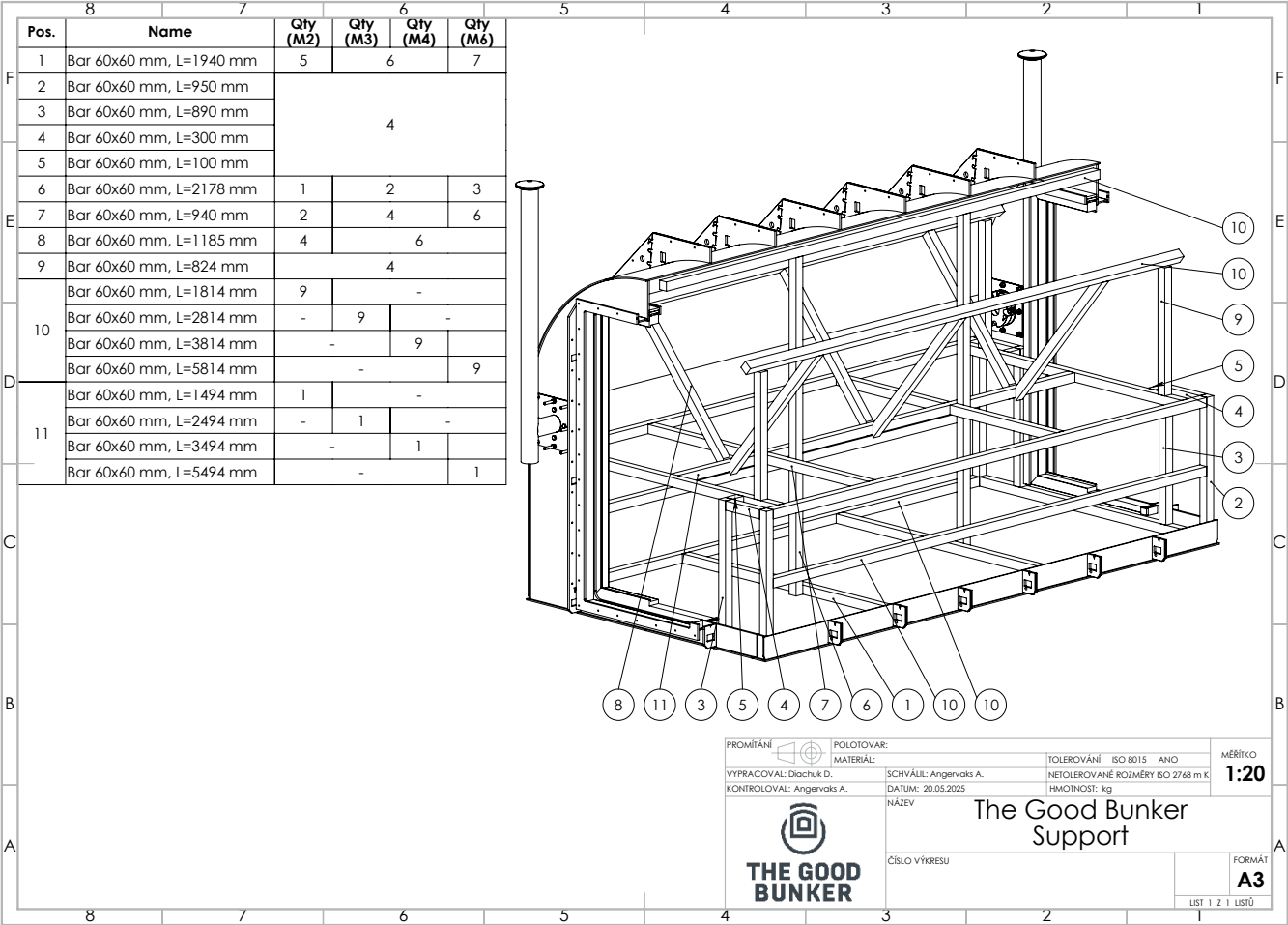
Completing the Installation

After backfilling, cover the bunker with soil from the excavation. This ensures the integration of the bunker into the surrounding terrain.

Reinforcing and Preparing Walls for Concreting

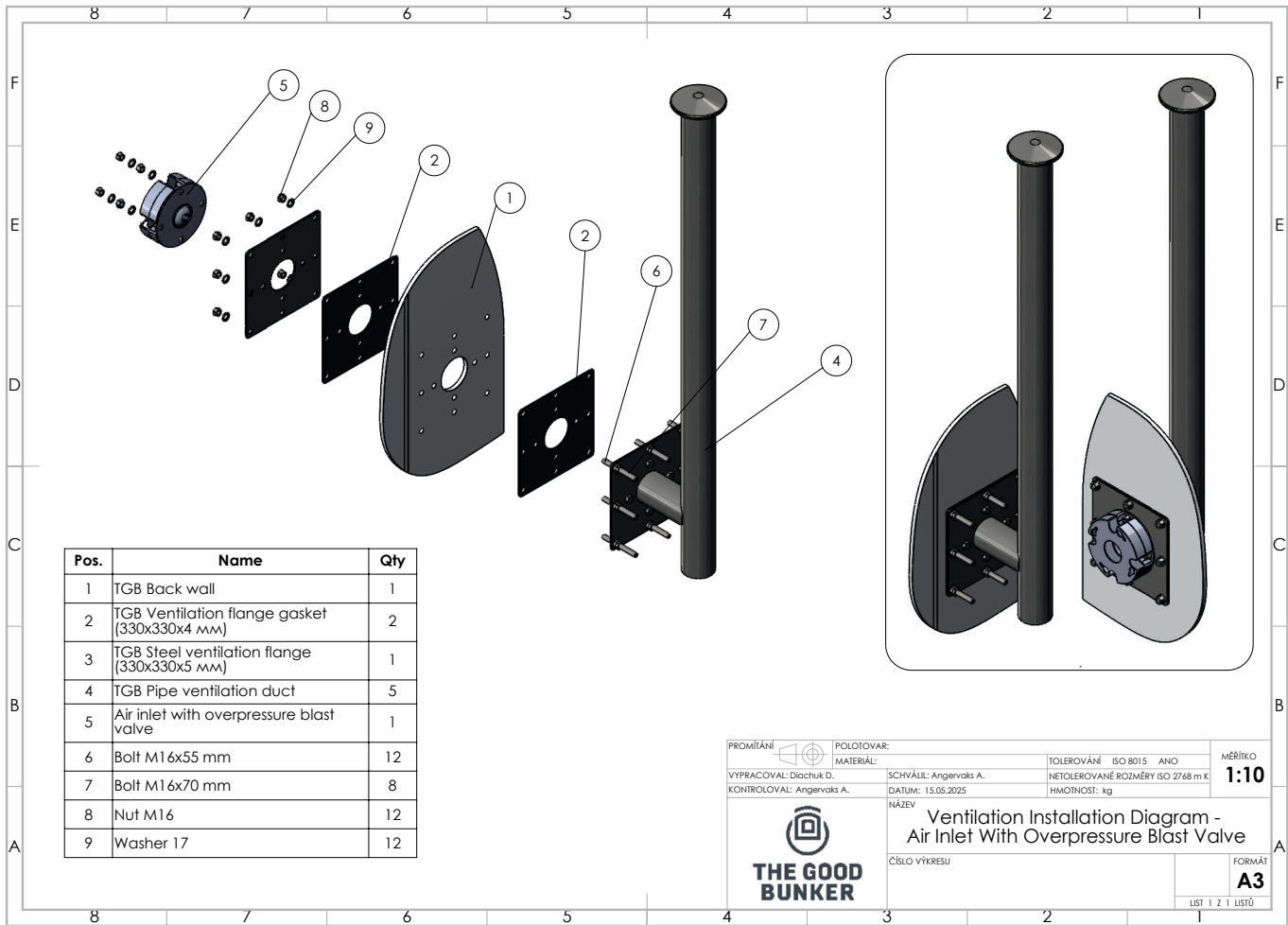
For this step, we recommend using our pre-prepared The Good Bunker Support wooden reinforcements. In other cases follow the steps and the schematic below:

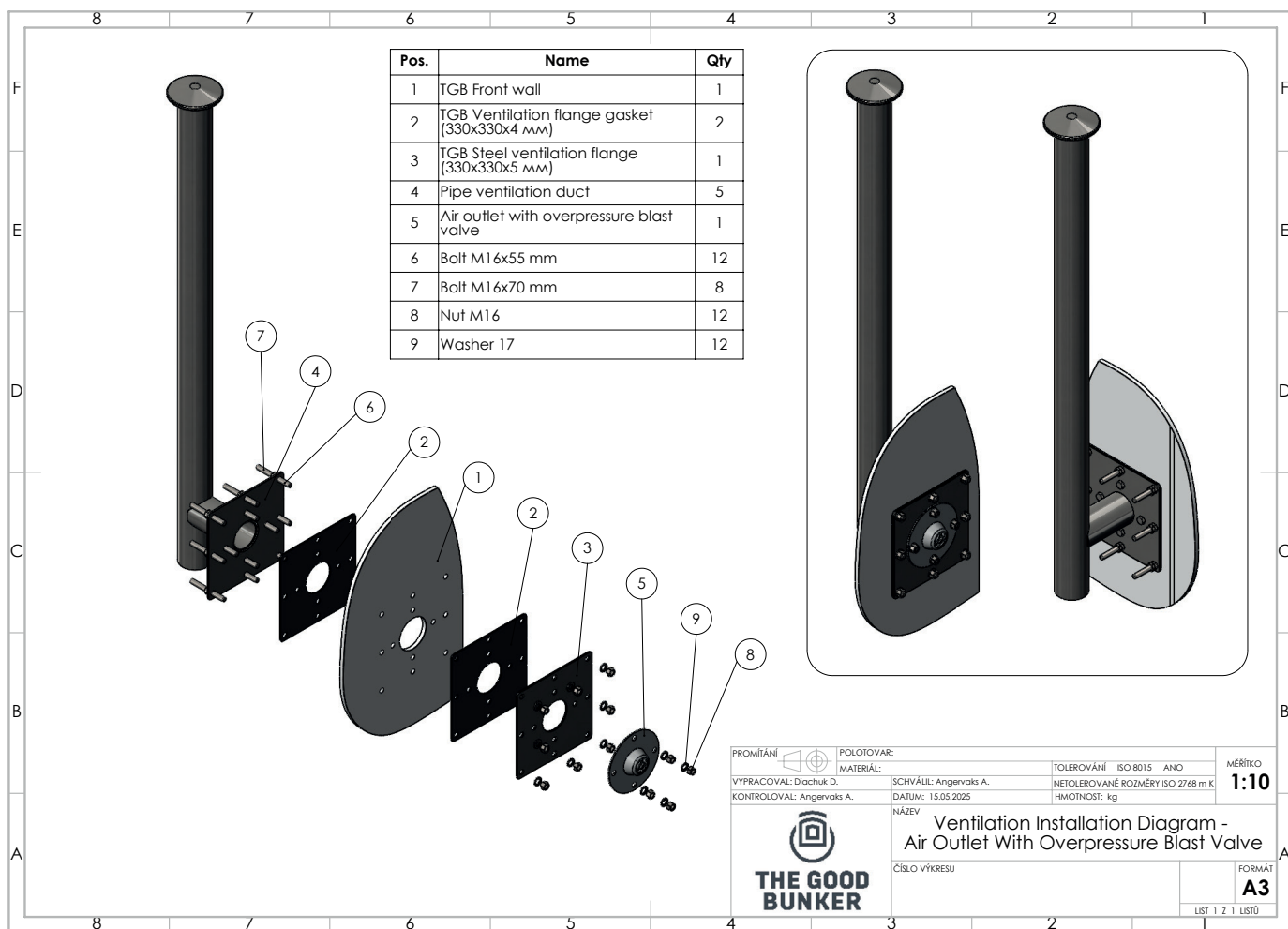
- Support the ceiling with posts every meter and place one distributing wooden beam in the center of the ceiling.
- Reinforce the bunker walls with three longitudinal wooden beams (80x80 mm) at heights of 0, 500, and 1000 mm. Secure these beams with horizontal wooden braces (80x80 mm) at approximately quarter-length intervals.



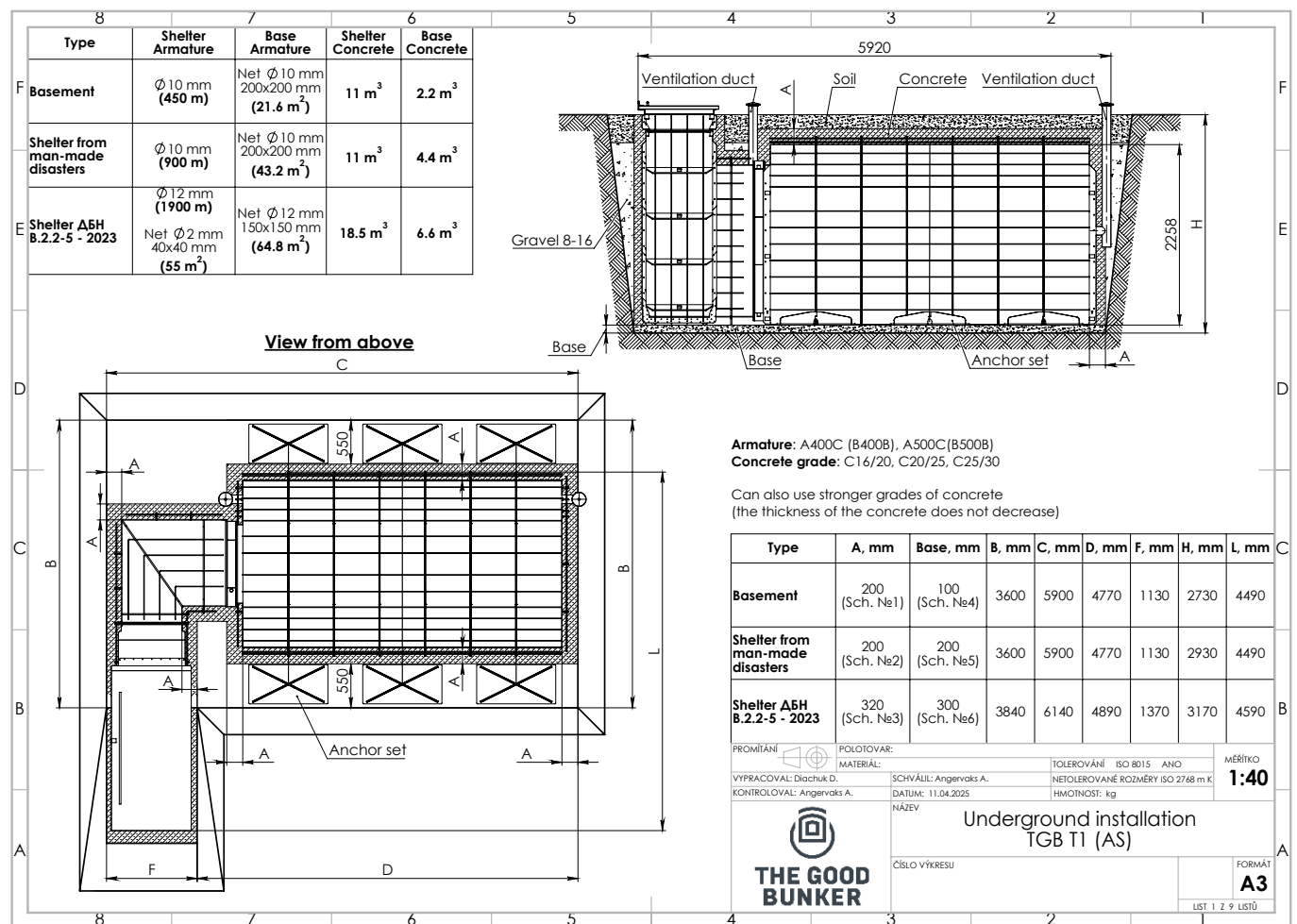
Safe 360 Ventilation Connection

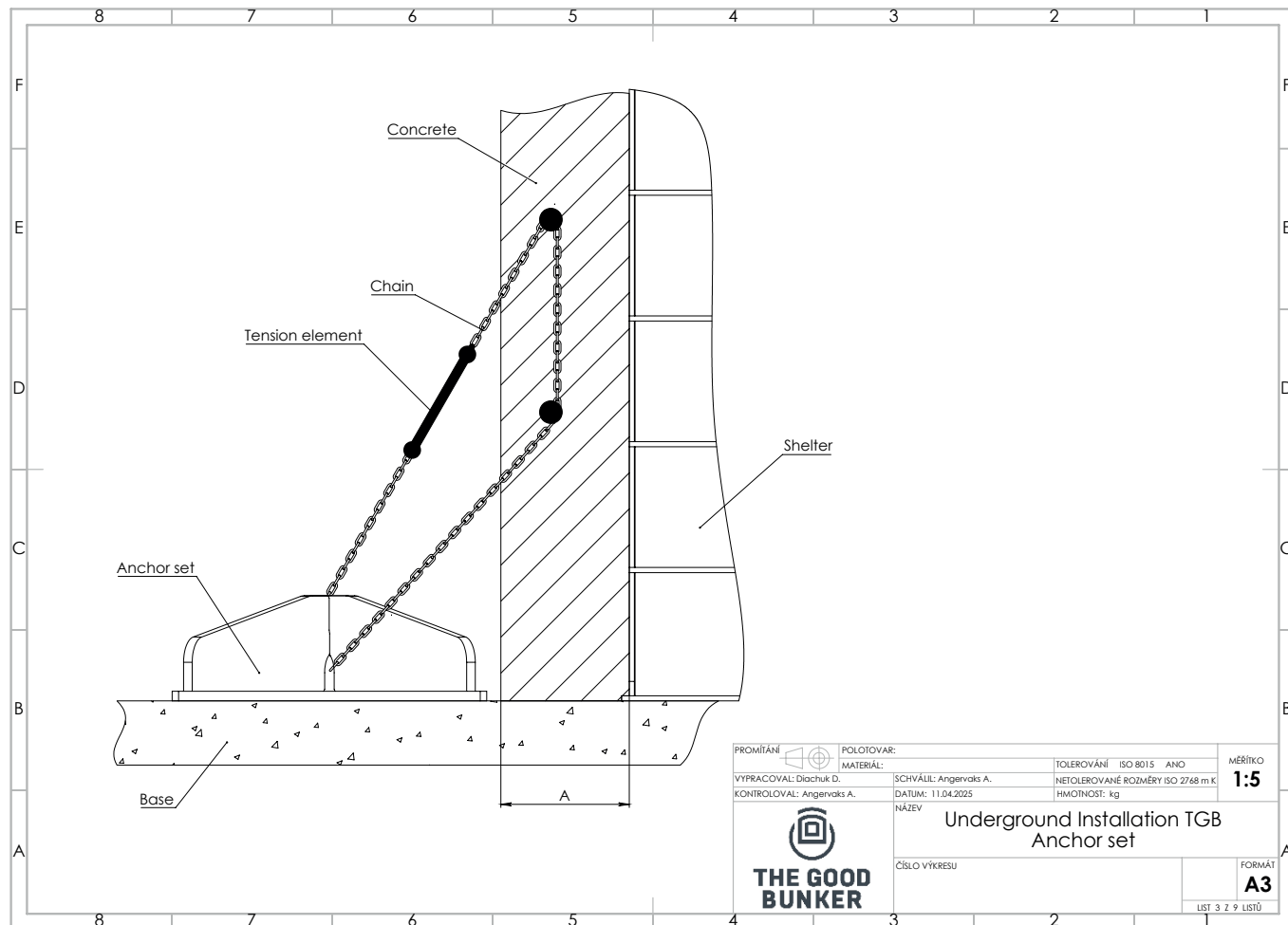
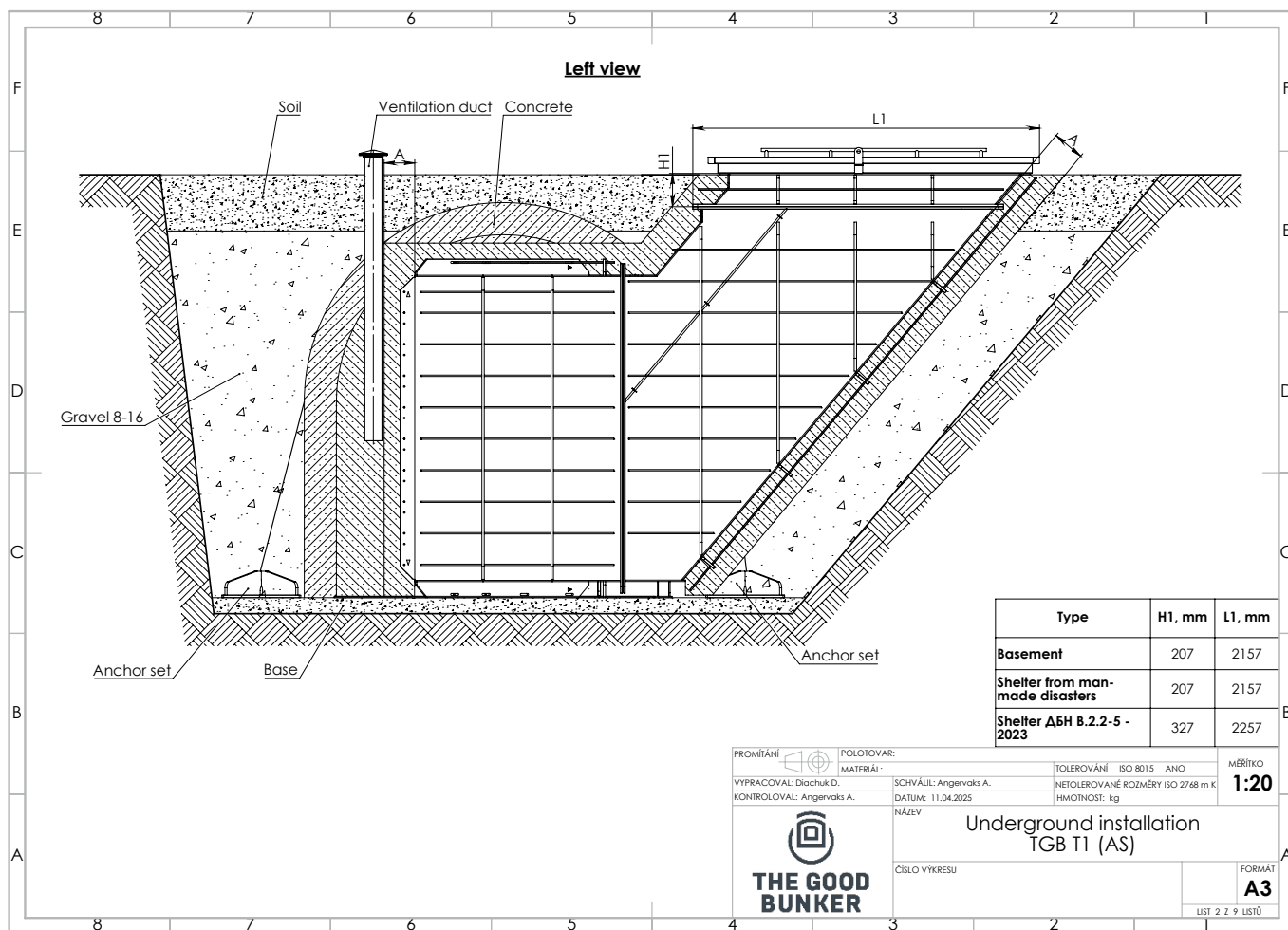
- Ventilation consists of a set of steel pipes, DN 110, metal flanges for connection and the Safe 360 system.
- Connect the pipes to pre-prepared openings on the front and rear parts of the bunker. Ventilation pipes should be installed for every main module of the bunker. The location and dimensions of the openings can be customized as per the customer's request.
- For connection follow schematic below.

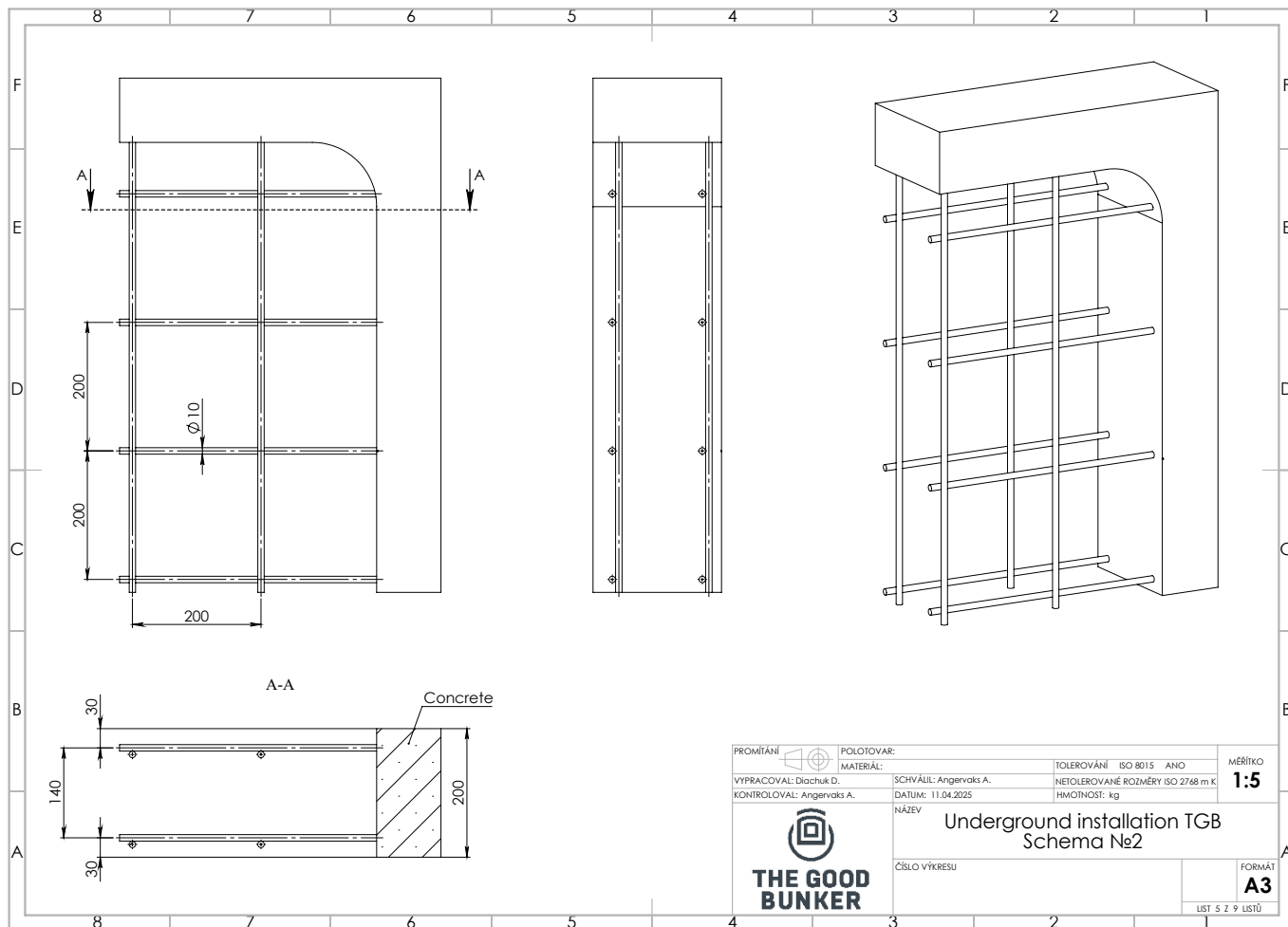
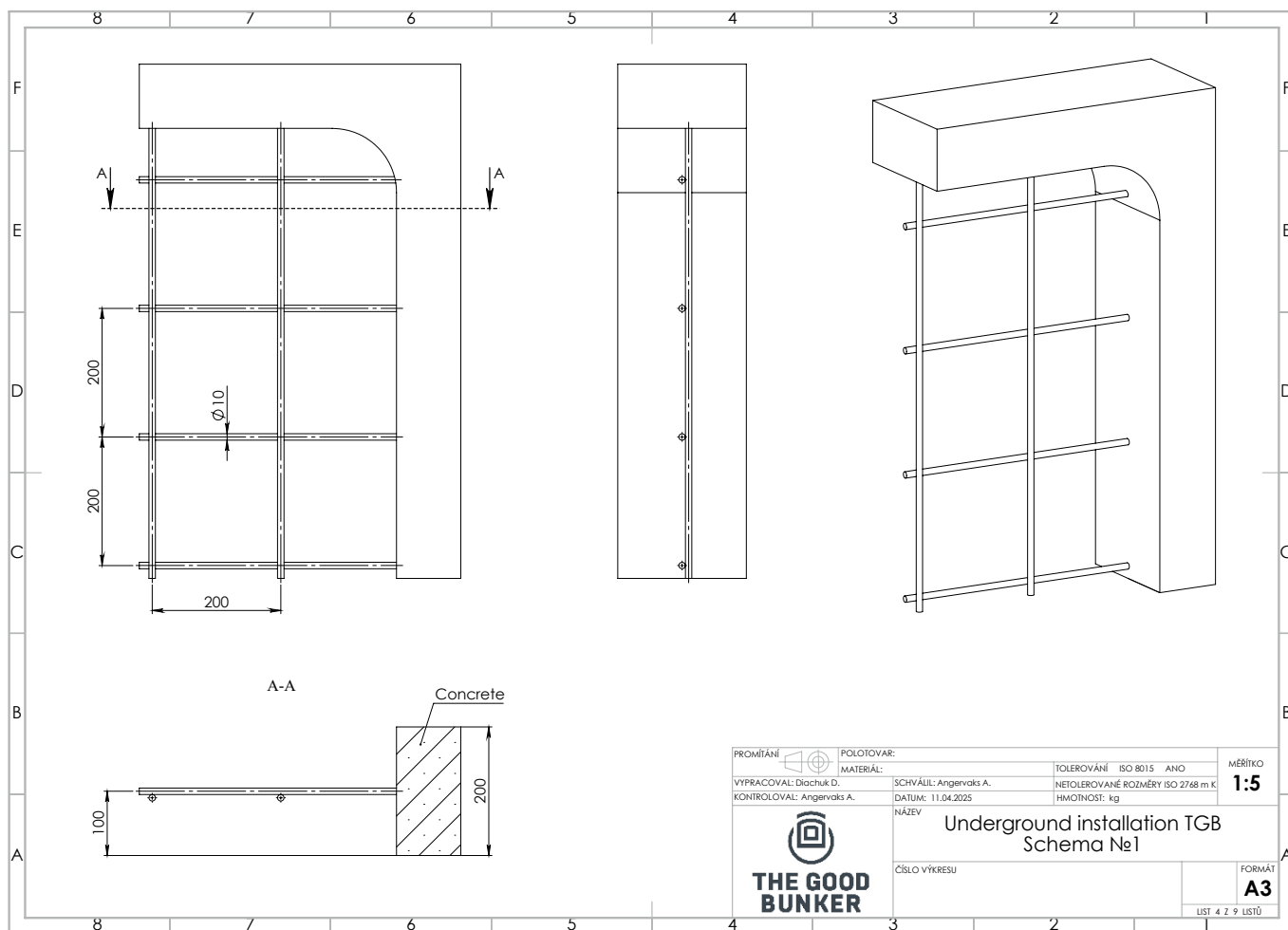


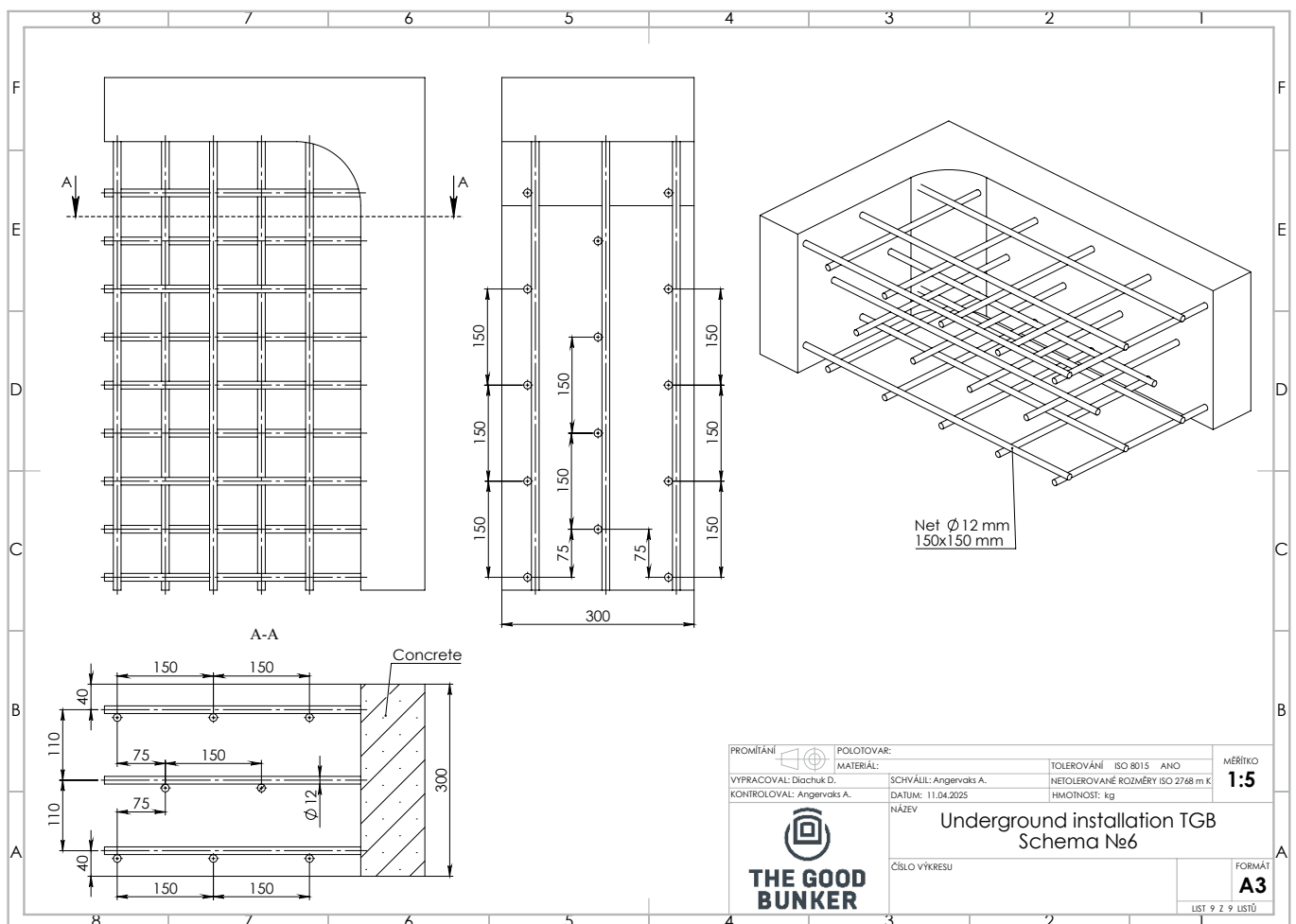
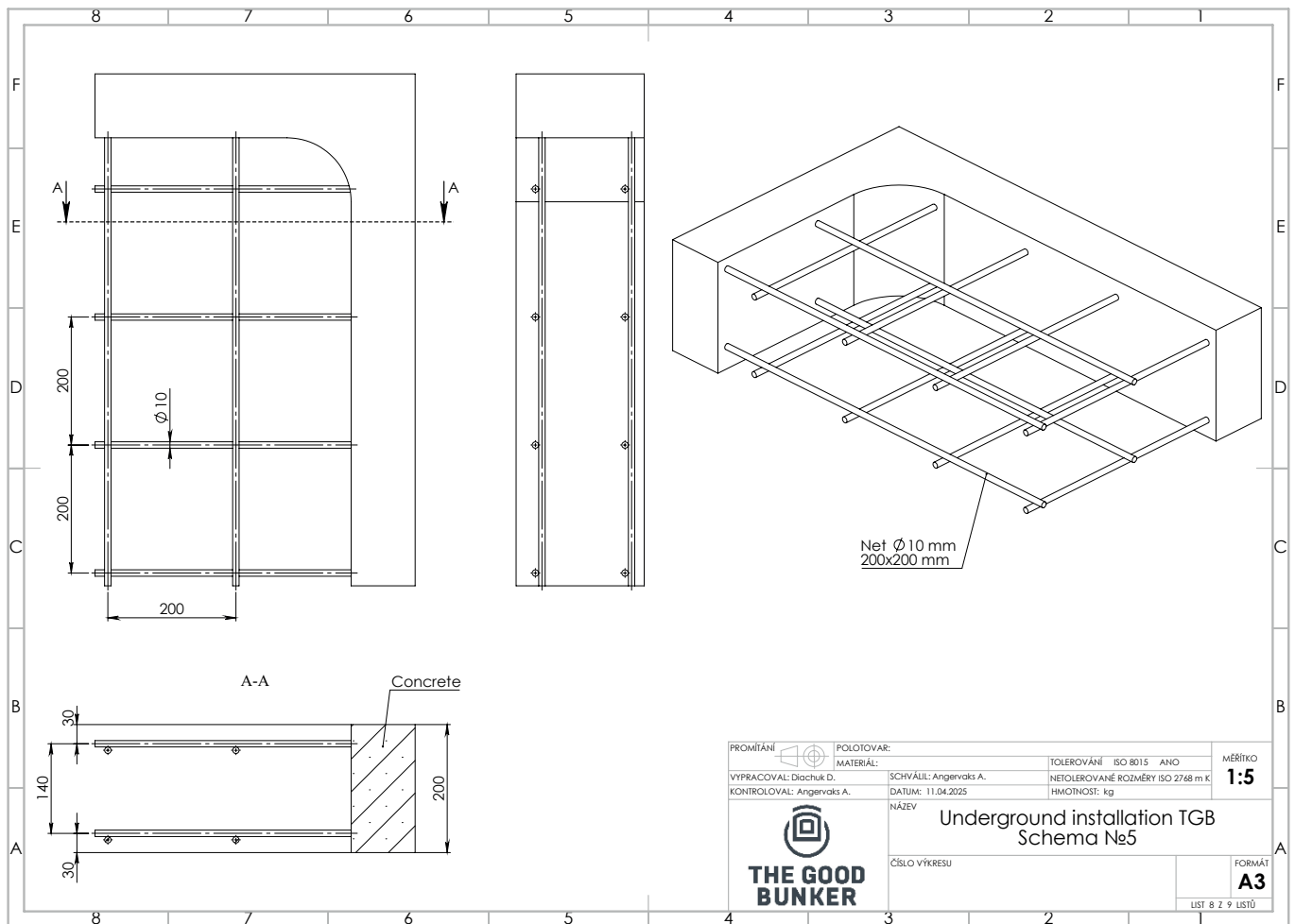


Underground installation TGB T1

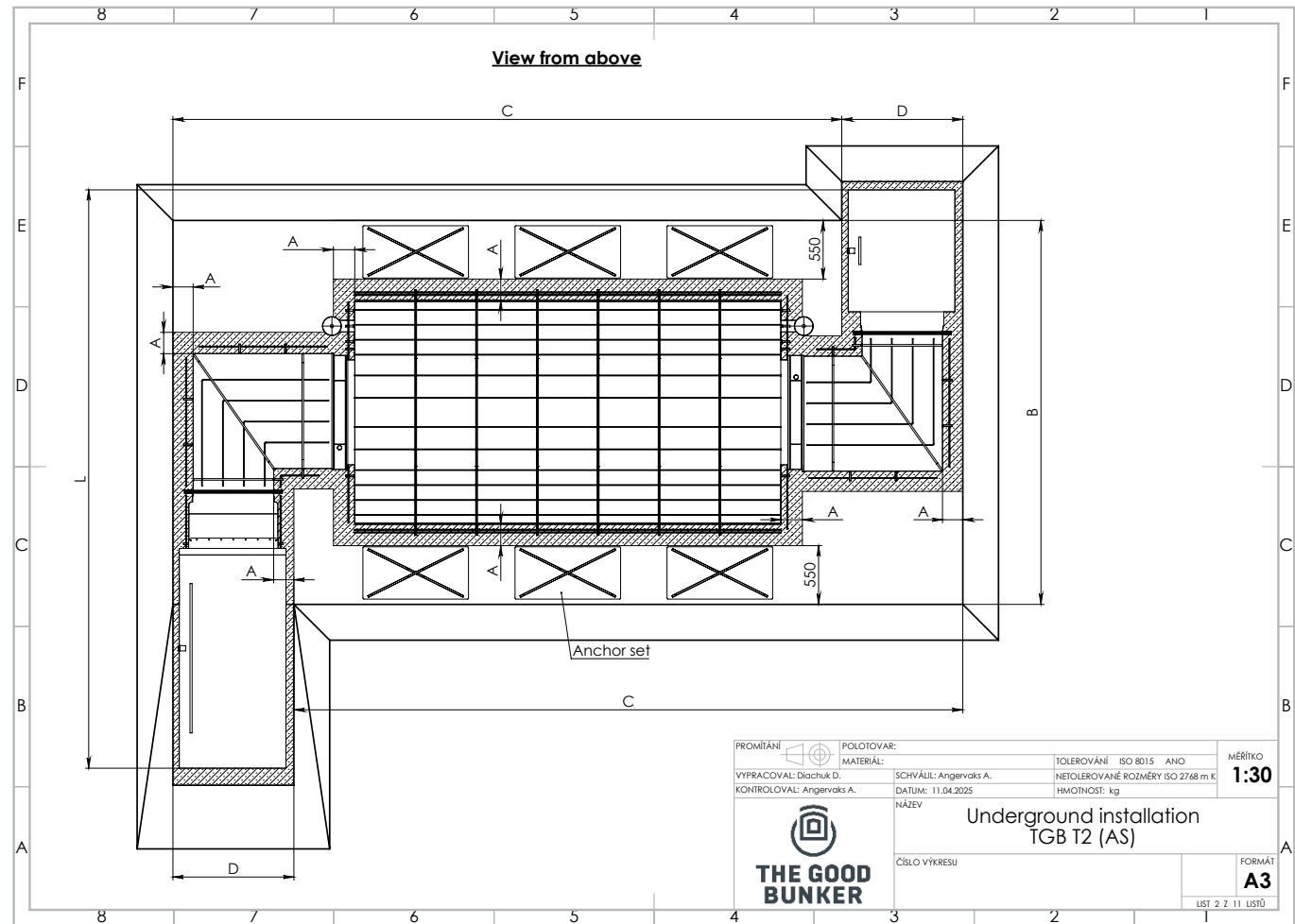
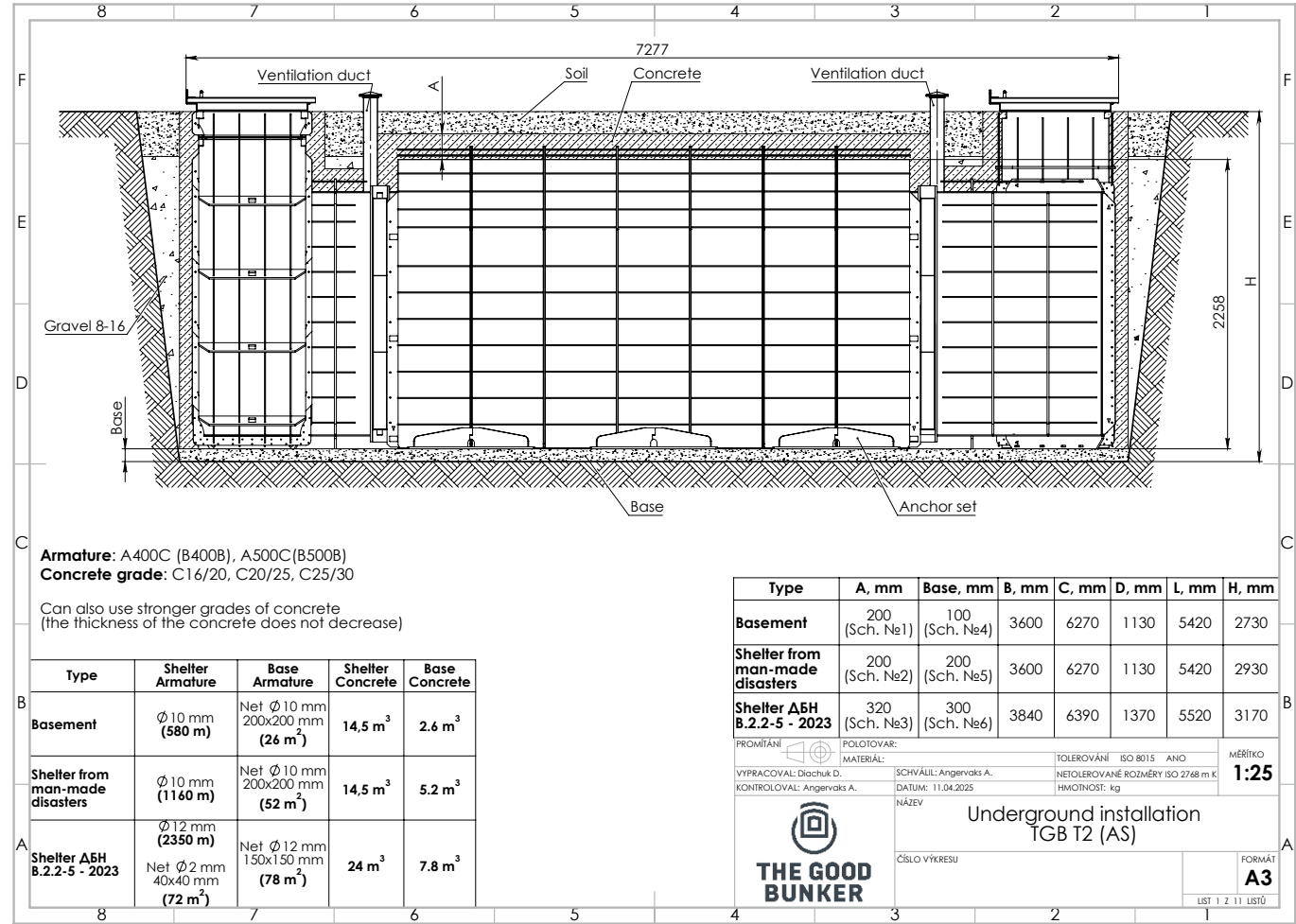


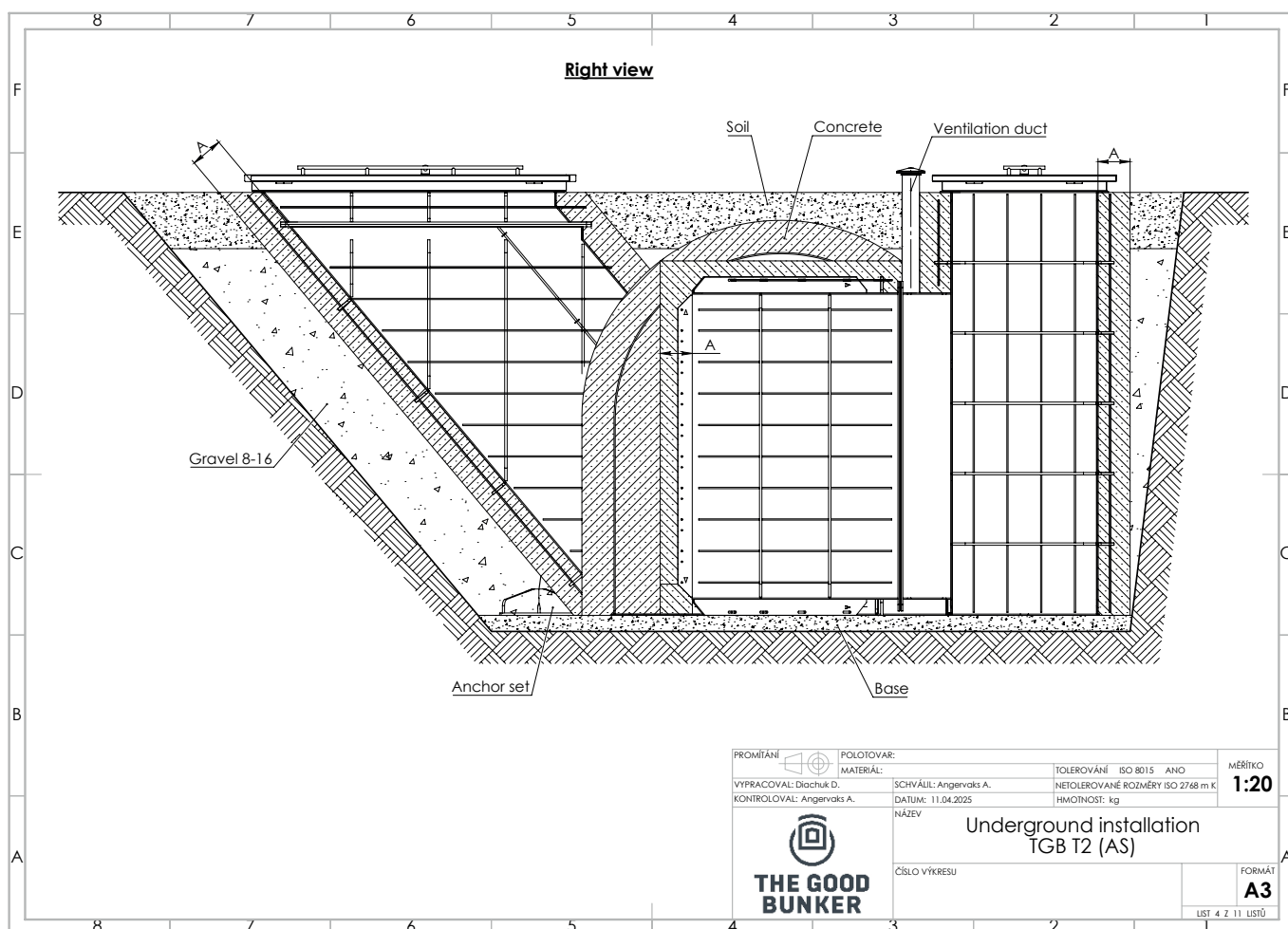
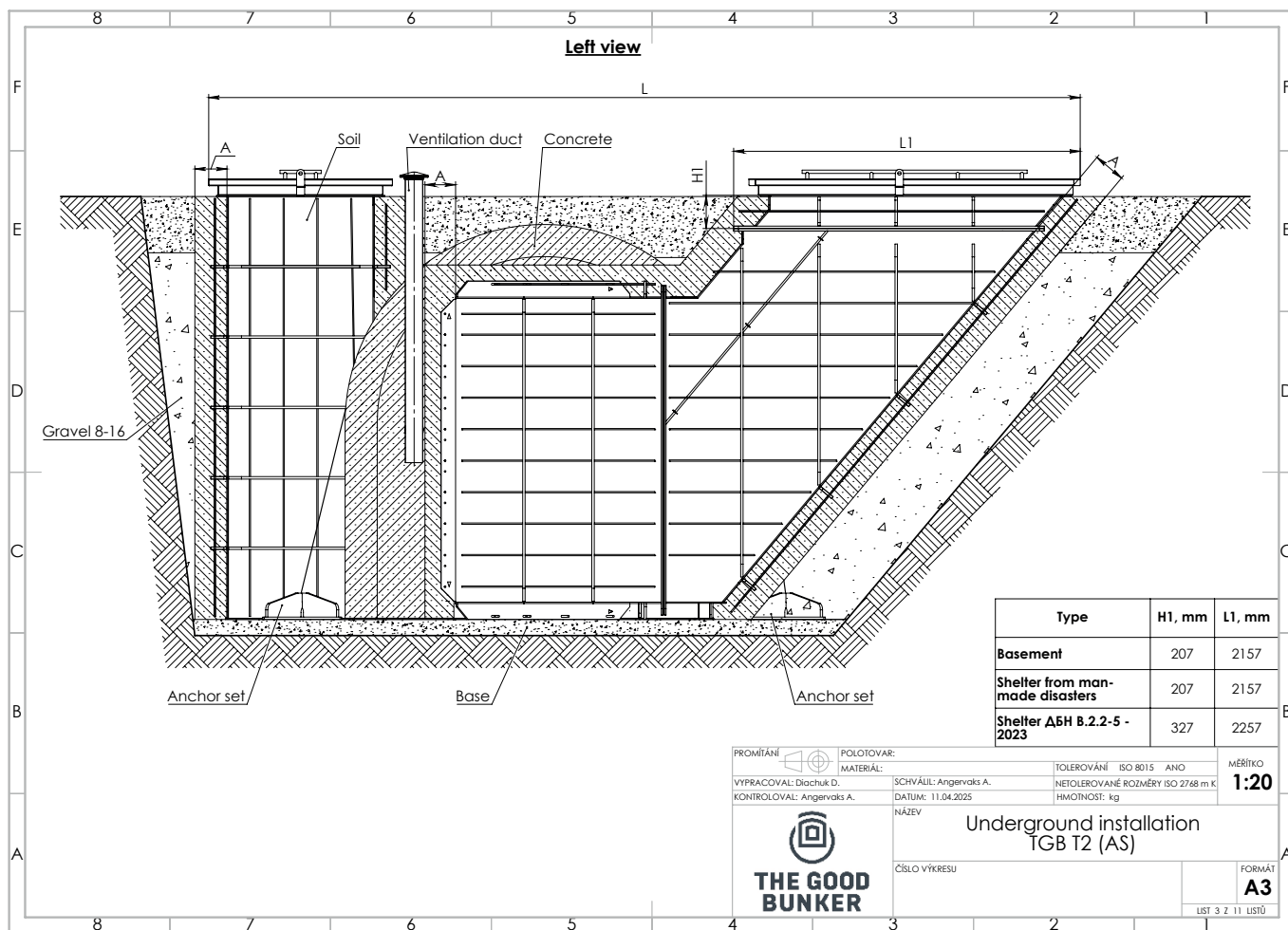


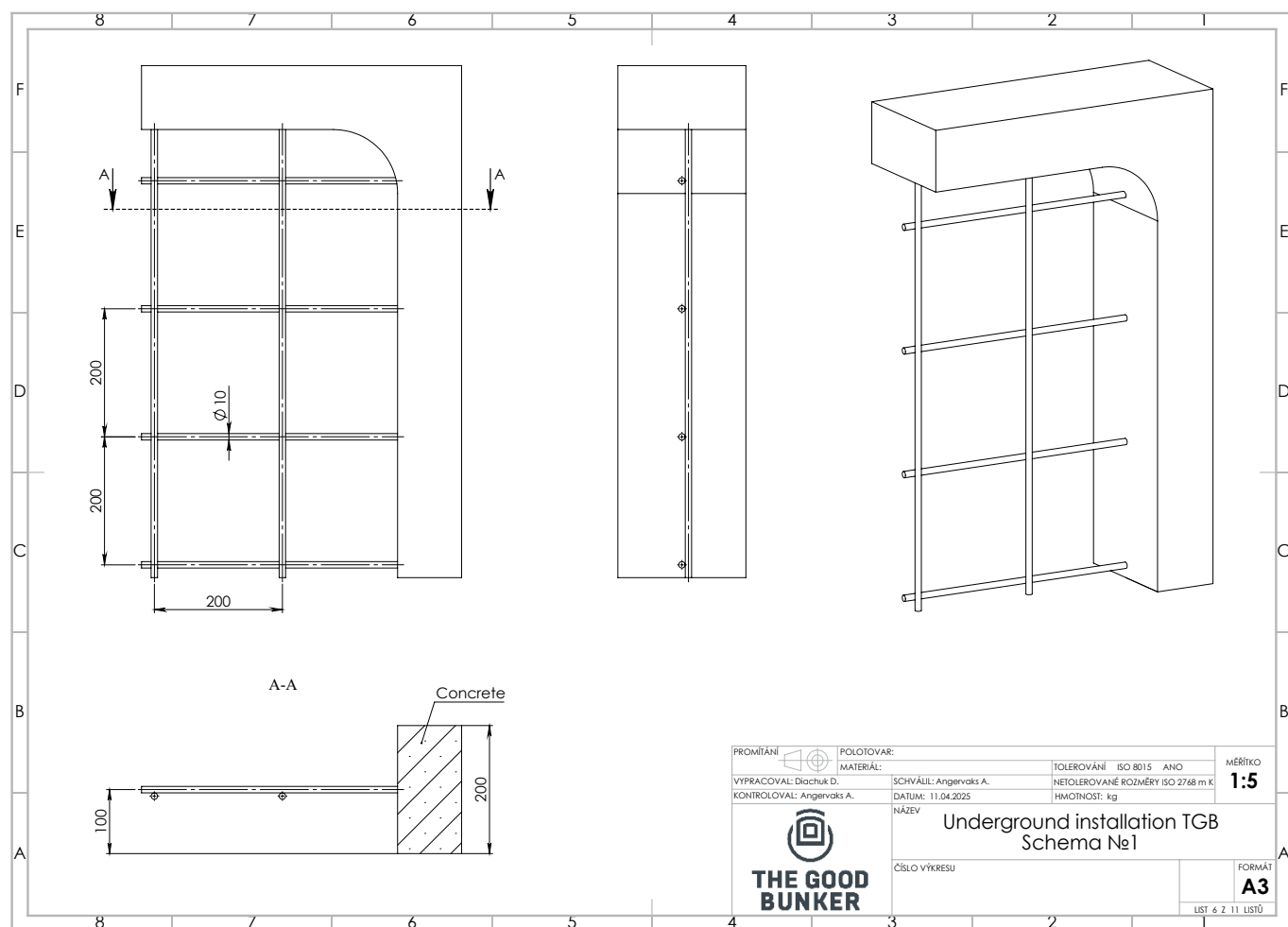
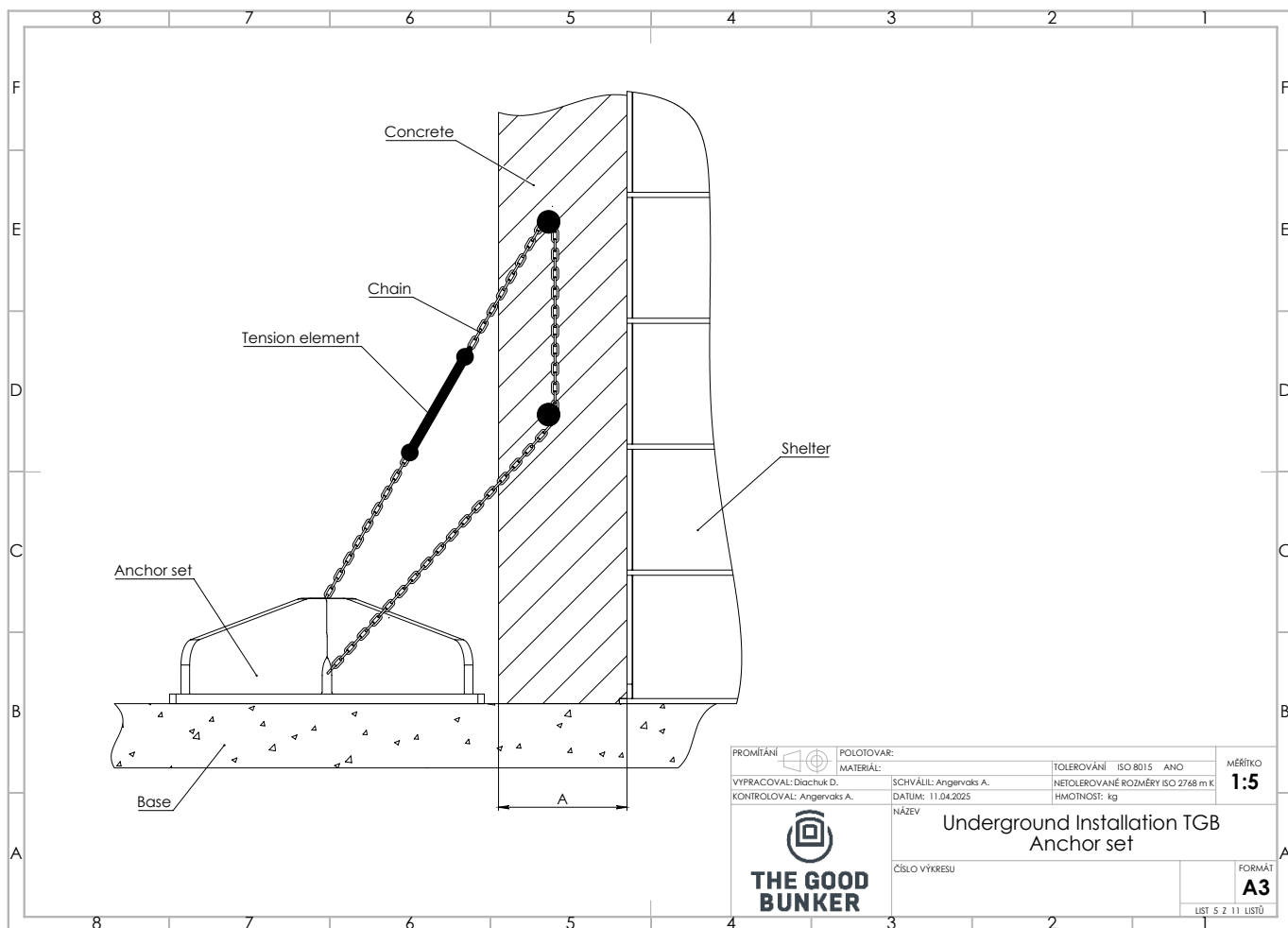


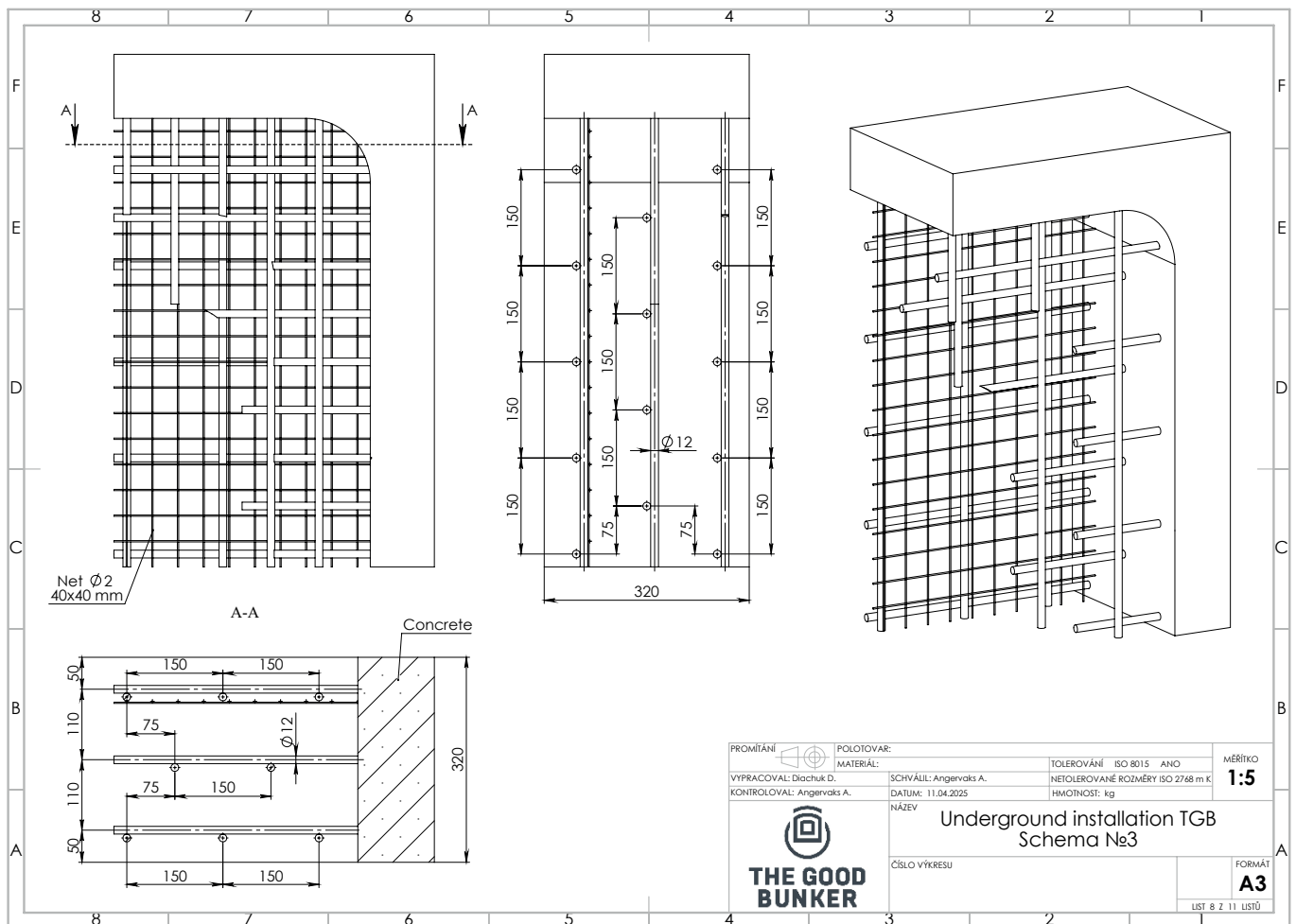
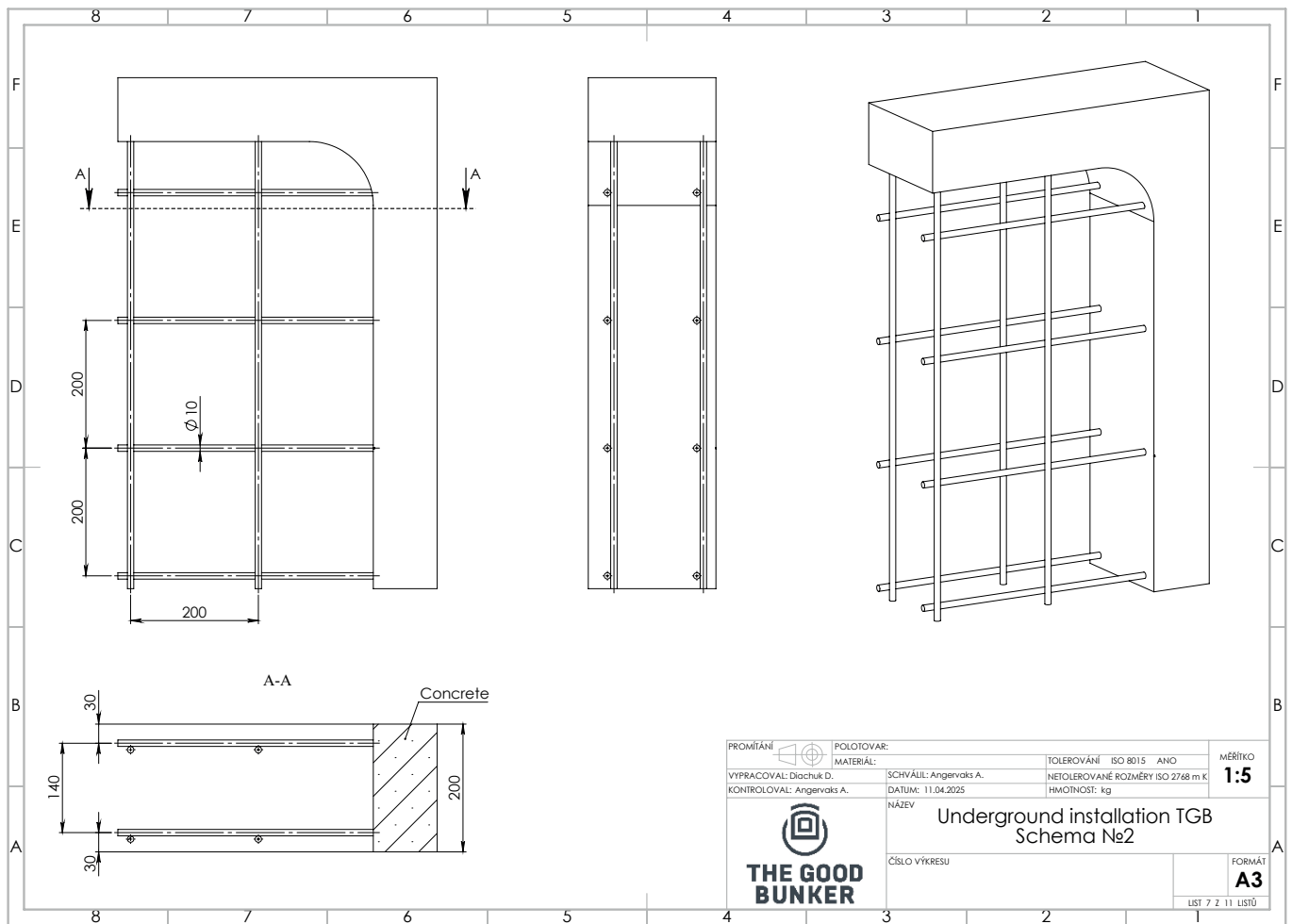


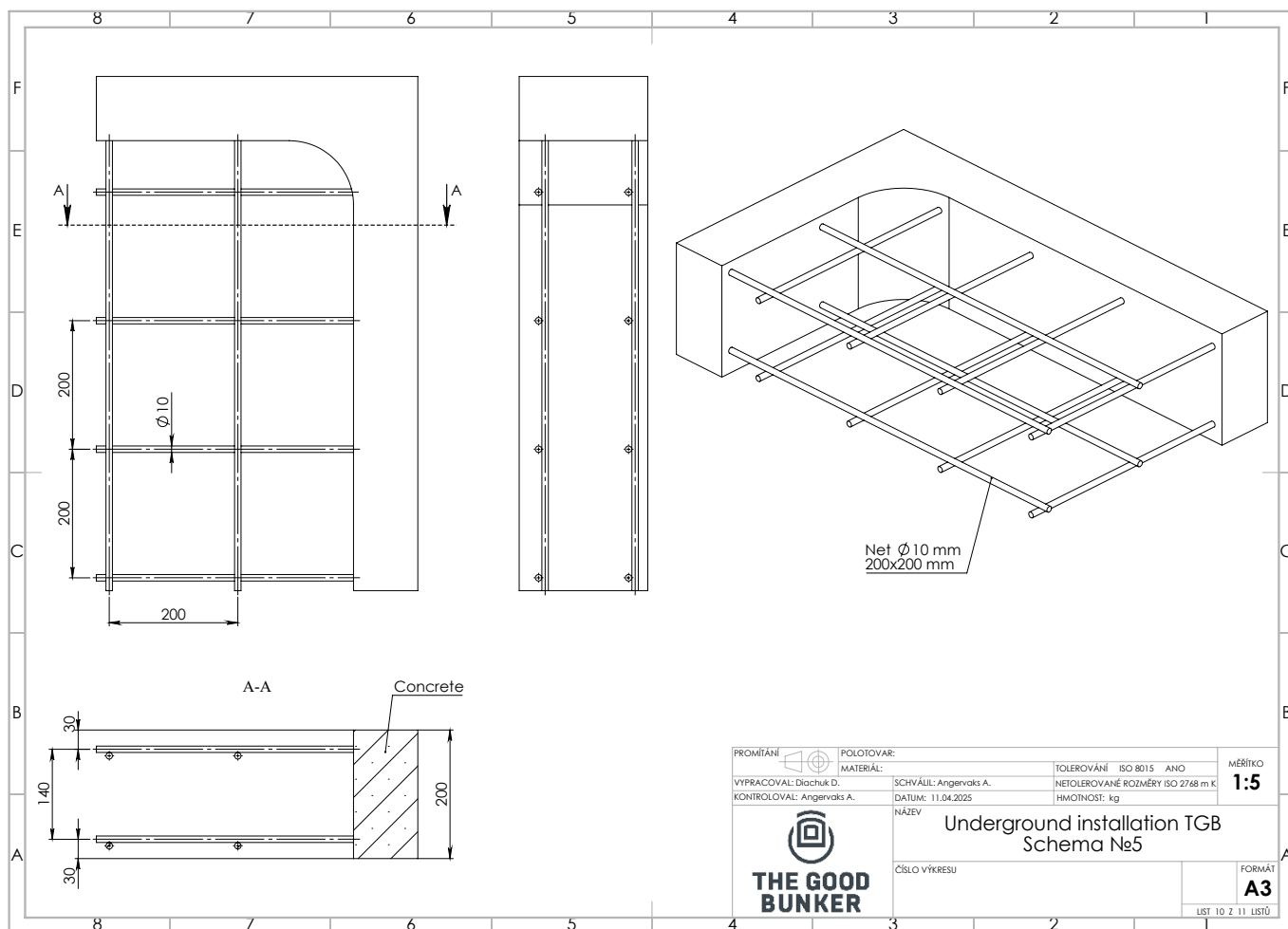
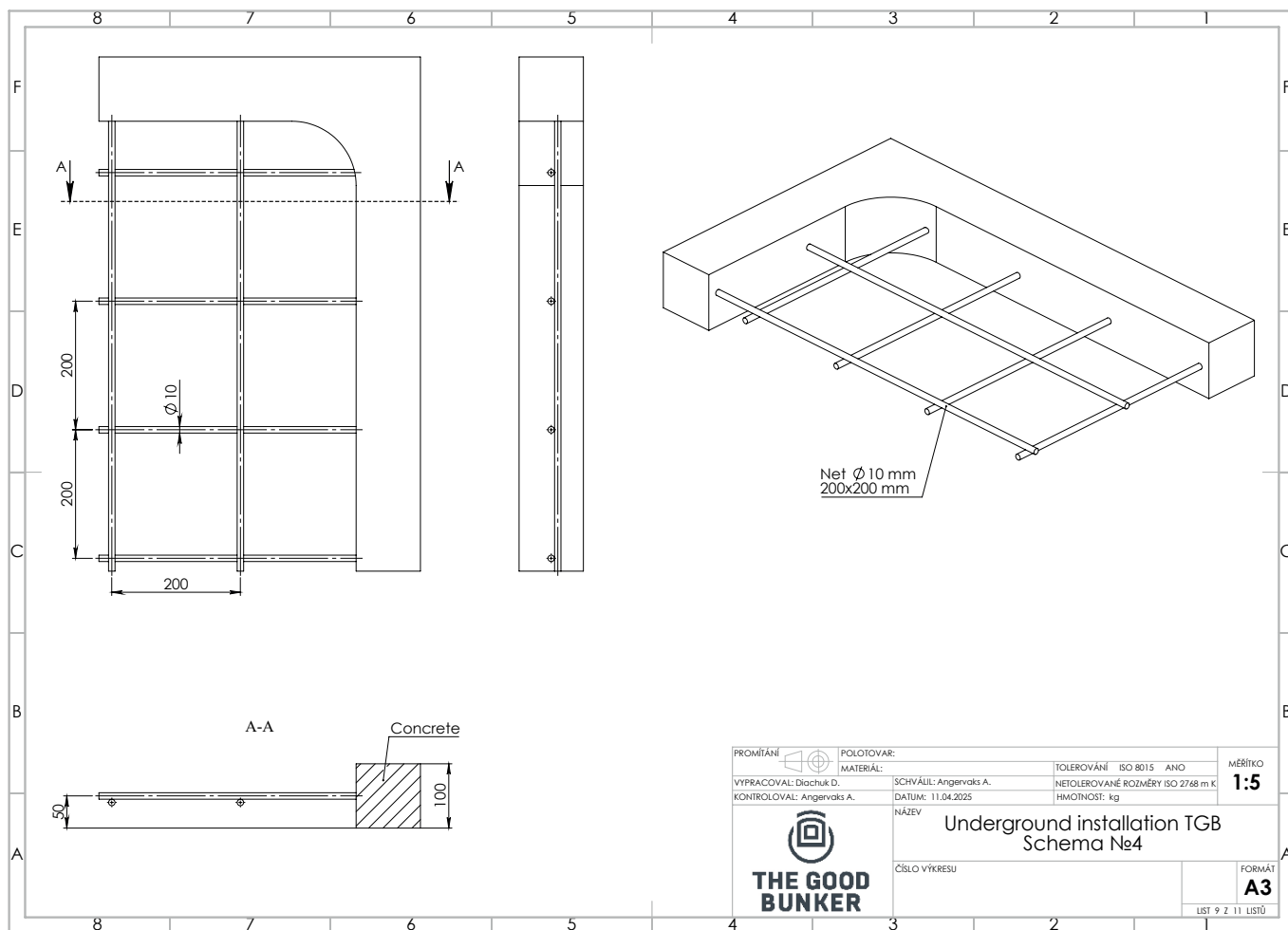
Underground installation TGB T2

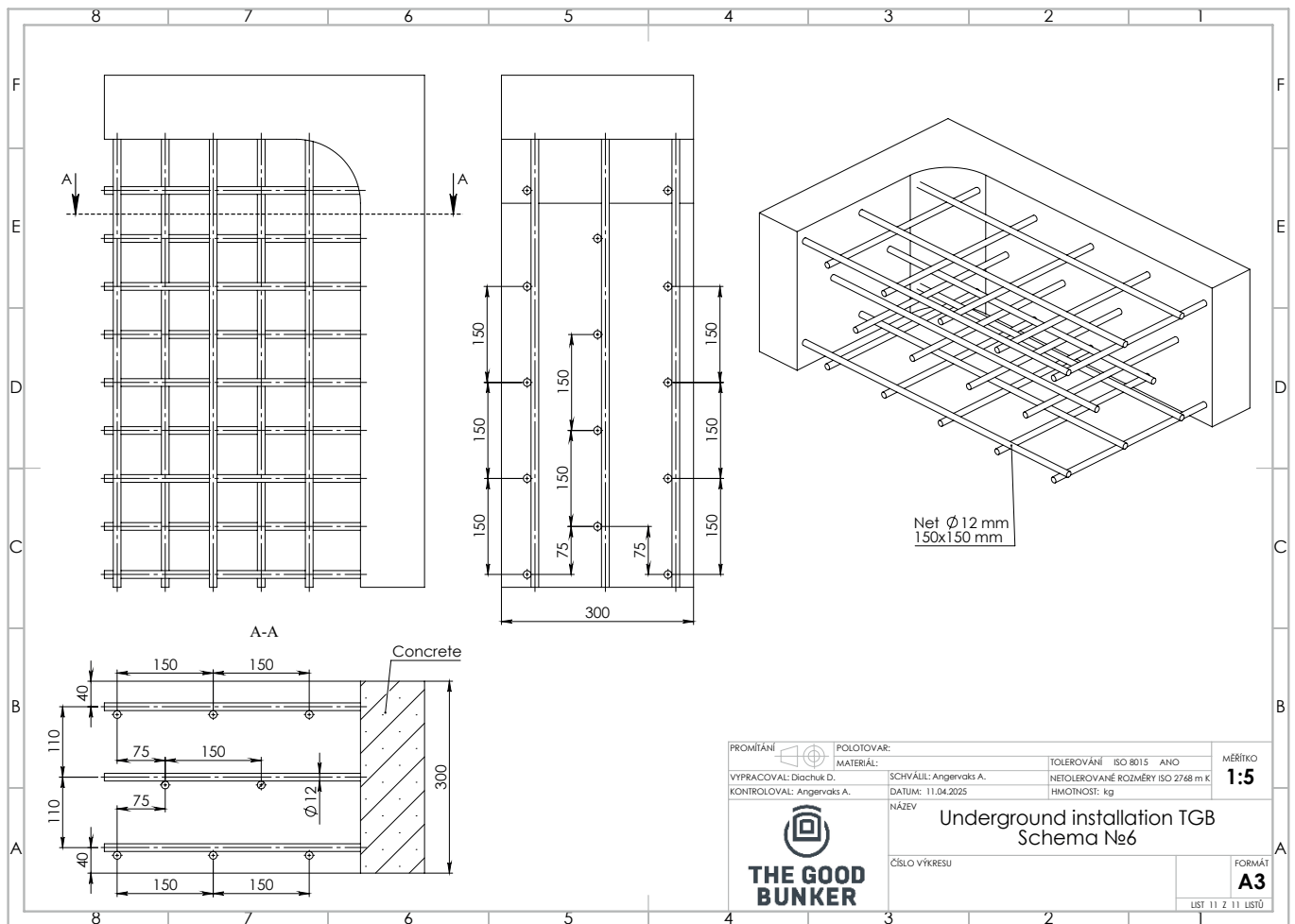












4.3. Non-Standard Installation Scenarios

All non-standard installation scenarios must be assessed by a structural engineer or project designer to eliminate potential damage or hazards. Based on the project, an additional structural assessment must be carried out by a qualified and certified professional.

4.3.1. Installation in Areas with Elevated Groundwater Levels

Note: Excessively high groundwater pressure can lead to deformation and damage to the bunker's structure. Minor deformations, such as slight bending, are not critical. However, significant deformations and bending can cause severe damage. Therefore, we recommend:

- Avoid installing in areas with high groundwater presence.
- Carefully select an installation site, ideally free of groundwater.
- Ensure proper drainage via a drainage system.

Follow these guidelines to minimize risks associated with groundwater pressure and ensure the long-term stability of the structure.”

If groundwater is present, the bunker must be reinforced with the TGB Reinforced bottom or the bunker floor must be concreted.

For floor concreting:

- Create a compacted concrete slab with a minimum thickness of 100 mm, reinforced with an 8x10 welded steel mesh, before concreting the floor.
- After reinforcing the floor, continue following the steps described in section 4.2. Standard Installation.

To reduce the risk of bunker damage from groundwater pressure, we recommend installing drainage.

Additionally, to prevent floating of the structure due to groundwater, the TGB Anchoring System must be used. This set includes two plastic anchors, a stainless steel steel chain with two stainless steel turnbuckle forks for tightening. Before concreting the first layer, place the anchoring set, connect the chain to the bunker and tighten the chain as shown on the installation schematic.

4.3.2. Installation Above Ground or on a Slope

For installing The Good Bunker above ground or on a slope, follow the instructions in section 4.2. Standard Installation, with the following modification:

Backfilling Gaps with Soil:

Fill gaps between the concrete and retaining wall or excavation walls with soil. Perform backfilling carefully to prevent shifting of structures and ensure bunker stability

4.3.3. Installation of Modular Bunker

The installation process for the modular The Good Bunkers is almost identical to the standard bunker installation process. To facilitate the handling of multiple modules simultaneously and allow better access to modular connections during installation, it is recommended to prepare the excavation to be 100 mm wider.

Base Preparation:

Gradually place each module onto the prepared concrete slab. The slab must be level under the entire bunker surface to avoid gaps between modules and the base.

Preparing Seals:

- Attach double-sided adhesive tape to one side of the connecting module.
- Fix the sealing strip onto the adhesive tape, aligning it with pre-prepared holes on the seal and the modular connection.
- Sealing is essential for modular connections to prevent water infiltration into the bunker.

Connecting the Modules:

- Use appropriate equipment to precisely position the second module next to the first one.
- To ensure accuracy and ease of work, the ground

under the modules must be level.

Bolting the Connections:

- Align the two modules and secure them by fastening the pre-prepared holes with bolts and nuts.
- A total of 115 bolts with nuts is required for each connection.
- For this task, the use of an impact wrench is recommended.

Welding the Connections:

- If possible, weld the connections both externally and internally, or at least internally, using an extruder.
- When welding in the excavation, only three accessible sides of the modular connection can be welded.
- This additional work strengthens the bunker connections and increases the overall durability of the structure.

Connecting Modules Outside the Excavation:

If equipment with sufficient load capacity is available to lift the entire assembled modular bunker, the modules can be connected outside the excavation. This process simplifies the work and enhances installation efficiency.

Complete the installation by following the instructions in section 4.2. Standard Installation, or section 4.3.1. Installation in Areas with Elevated Groundwater Levels.

5. Installation

5.1. Technical Recommendations

The Good Bunkers do not require regular maintenance. However, it is recommended to keep the bunker clean and avoid leaving it in a polluted state. Maintenance of

ventilation can be found in the Technical Manual Safe 360.

5.2. Service

Kolomaki s.r.o. does not handle the installation of products. Installation work is carried out by professional organizations or customers themselves, who bear responsibility for proper installation. Kolomaki offers additional services, such as bunker repair or modernization, based on prior agreement. In the case of warranty repairs, the manufacturer covers the costs of the work. Transportation costs and other related

expenses under warranty service are covered by the seller who supplied the bunker to the customer.

For non-warranty service work, the costs are borne by the client or the installation organization. The price for these services, including labor, materials, transportation, and possible accommodation for remote or international locations, is determined individually.

5.3. Other Information

- The product manufacturing time is 1 month
- Transportation or pick-up is arranged individually after ordering.

5.4. Warranty Sheet

Serial Number of the Product		Manufactured	
		date:	
Delivered to Customer			
date:	carrier:		
Installed			
date:	installer:		
Serviced			
date / service provider / brief description of faults and repairs			

The warranty for shelters The Good Bunker is provided for a period of 2 years, with an extended warranty of 19 years for the basic polypropylene structure. The electrical equipment is covered by a 6-month warranty.



6. Manufacturer

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registered at Komenského 576, 273 71 Zlonice
Company ID (IČ): 06142974

issues the following

DECLARATION OF CONFORMITY

in accordance with Act No. 22/1997 Coll. on Technical Requirements for Products
and on Amendments to Certain Acts, as amended, and Government Regulation No.
163/2002 Coll., as amended, for the product:

**Polypropylene underground bunkers of the model series The Good Bunker
(product number according to the nameplate on each product)**

Manufacturer:
Kolomaki s.r.o., Komenského 576, 273 71 Zlonice, Company ID: 06142974

Intended use:
**They are designed as secure spaces for people and for the storage of equipment in
an enclosed area below ground level, equipped with various fittings and offering
modular construction options.**

By this declaration, I confirm that the above-mentioned product meets the
technical requirements specified in the technical documentation and, when
installed according to the installation manual and used under the specified
conditions in a construction, is safe. The material used is also suitable for rainwater
accumulation due to its passive chemical properties and high resistance to
environmental influences. The collected rainwater is intended for technical or
other subsequent uses.

I declare that I have taken measures to ensure the conformity of all products
placed on the market with the technical documentation and technical
requirements, and that the product complies with the technical specification.

The conformity assessment was carried out in accordance with § 5 of Government
Regulation No. 163/2002 Coll., as amended by Government Regulation No. 312/2005
Coll.

In Zlonice on 01 April 2025
Anton Angervaks
Managing Director of the Company

6.1. Manufacturer Responsibility

The manufacturer is responsible for:

- The overall quality of the product and adherence to all production standards.
- Execution of production, weld quality, and control of manufacturing processes.
- Inspecting all incoming materials from suppliers.
- Ensuring each product has a unique serial number and label for potential verification.
- Certification of production through TZUS Prague.

The manufacturer is not responsible for:

- Installation organization.
- Incorrect unloading.
- Faulty installation.
- Unsuitable selection of the bunker's location.
- Incorrect installation in cases of groundwater presence.
- Use of the bunker for purposes other than those specified.
- Improper transportation methods.

Important Notice

This manual cannot cover all possible situations that may arise during installation. Therefore, we recommend paying increased attention to circumstances that could lead to product damage. Before starting the installation, carefully consider all factors that could affect proper installation and the long-term functionality of the product. Adhering to the provided guidelines and thorough preparation will help minimise the risk of product damage during installation.



THE GOOD BUNKER

Kolomaki[®]

www.thegoodbunker.com