



INSTITUTE OF BLAST & IMPACT PROOF CONCRETE

CRITICAL INFRASTRUCTURE

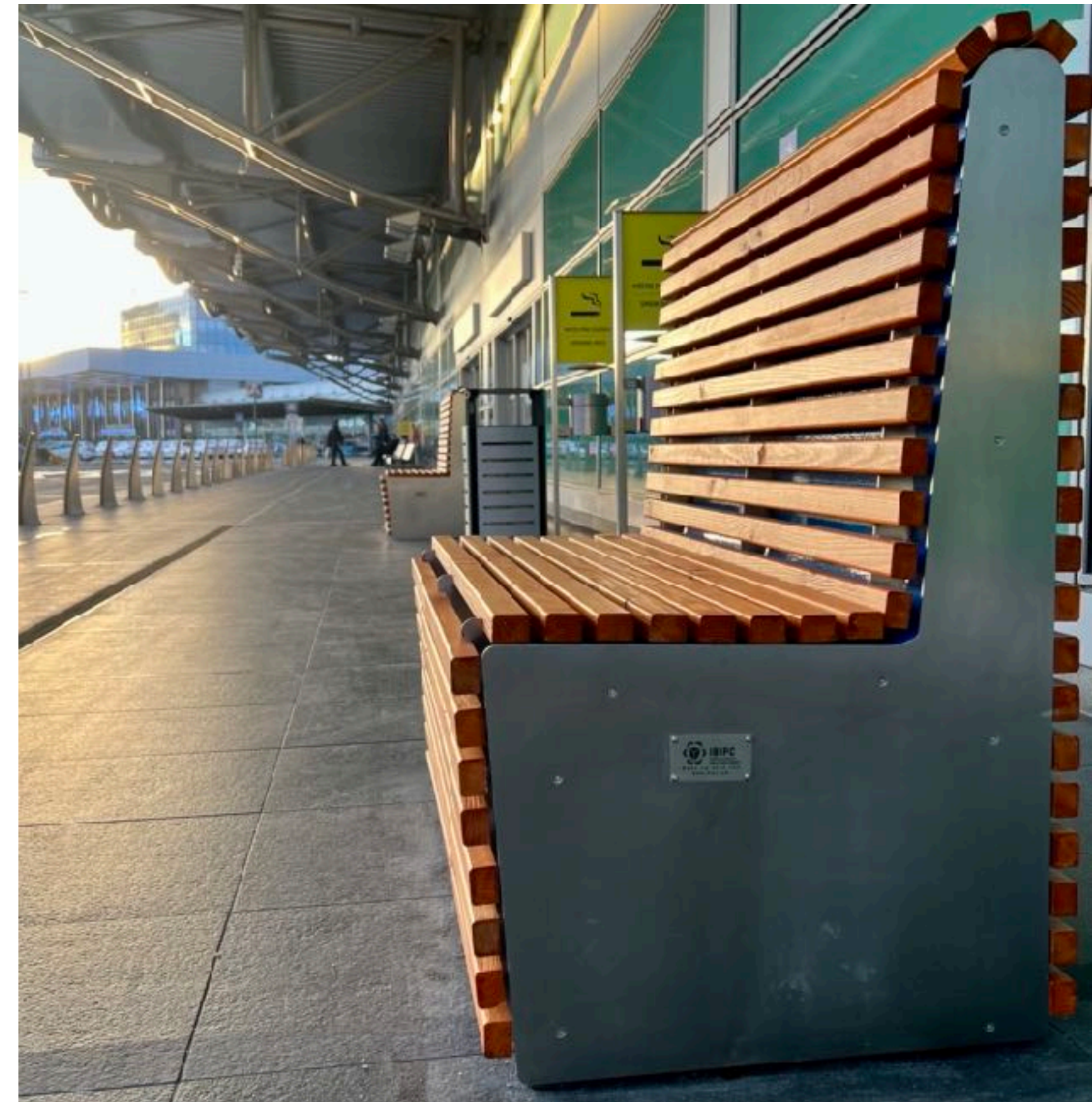
Made to save you



ABOUT US



- Development of specific protective elements.
- Including test **protocols and certifications** by the Military Research Institute (MRI) of the Czech Republic.
- State Testing Laboratory of the Czech Technical University in Prague.
- Our elements are made from patented Ultra High Performance Fiber Reinforced Concrete - **UHPFRC**.
- They provide protection for **Defence Industry, Critical Infrastructure and Civil Defence**.
- Potential to use unique **know-how and hi-tech products** through licence - **FRANCHISE**.



SUMMARY OF THE EU COUNCIL DIRECTIVE



EUROPEAN PARLIAMENT AND COUNCIL DIRECTIVE (EU) 2022/2557

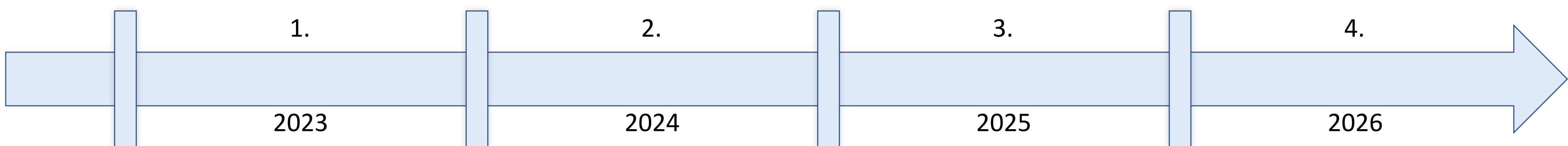
- Addresses providers of **critical services**.
- Defines resistance/resilience of critical assets to all types of threats (uniform rules across the EU).
- Critical entities will be monitored on their compliance with a **Resilience Plan** based on a **risk assessment** that is updated periodically or as required.
- **Critical entities** will strengthen their capabilities to prevent, **protect themselves**, respond to and withstand incidents, **mitigate, absorb, adapt and recover** from the consequences.
- Possible support from the State or the EU.

- | | | |
|------|----|---|
| 2023 | 1. | Preparation for the implementation of the Directive. |
| 2024 | 2. | Acceptance of the measures of the Directive. |
| 2025 | 3. | Strategy to strengthen the resilience of critical infrastructure. |
| 2026 | 4. | Submission of a report to the European Parliament. |

INSTITUTE OF BLAST & IMPACT PROOF CONCRETE

- A. Prepared an analysis on the implementation of the Directive.
- B. Has a capacity of scientists, experts and specialists.
- C. Has developed unique security features to protect CI.
- D. It is ready to participate in the CI solutions of European countries.

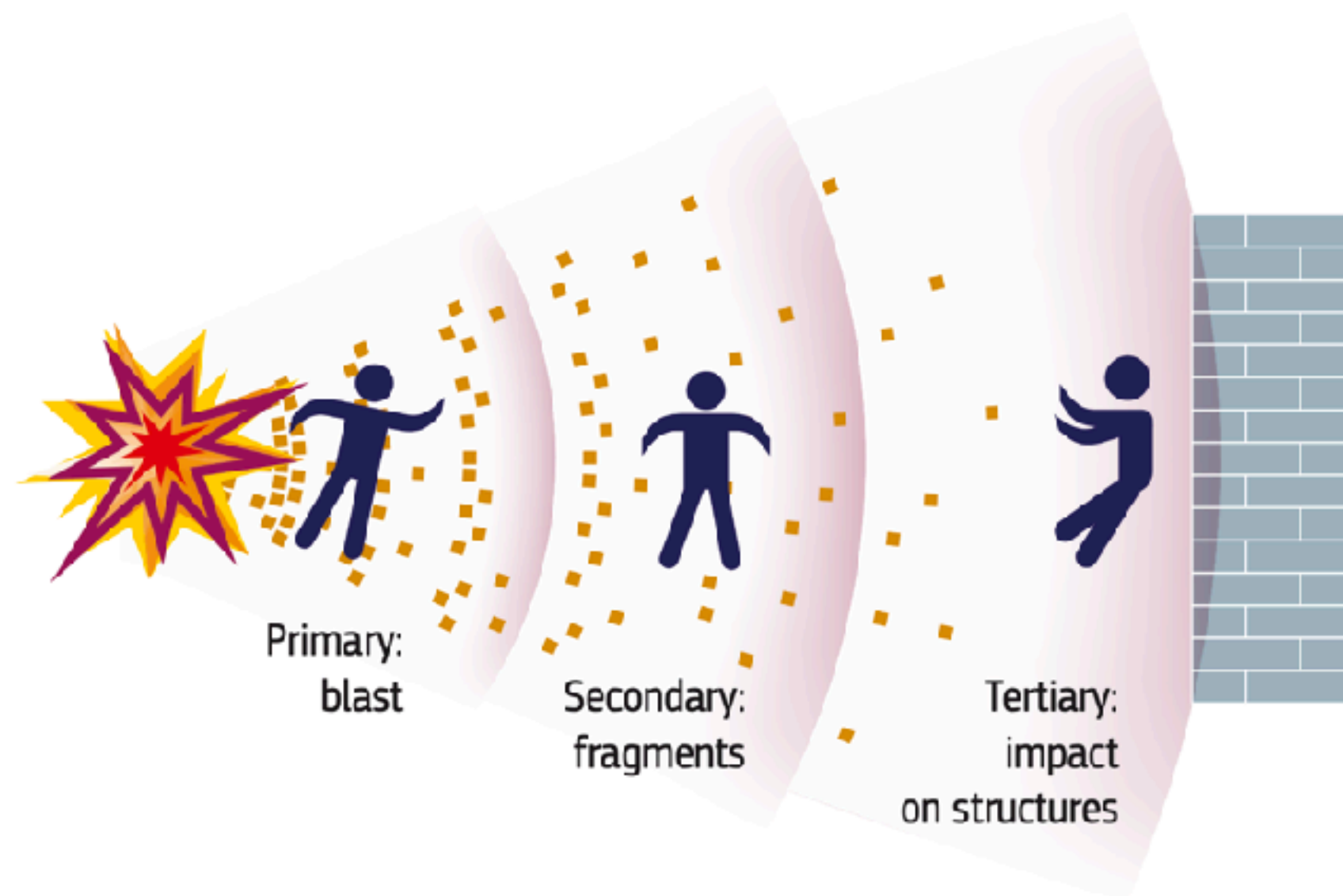
Implementation plan for the new directive



SECURITY BY DESIGN



Our elements are developed in accordance with the guidelines of the European Commission's Joint Research Centre for Scientists, Experts and Academics "Security by Design: Protecting Public Spaces from Terrorist Attacks", which introduces the concept and practical implementation of building security in the design.



NATO STANAG STANDARD



By NATO standard

- Composite safety features at a high level of durability.
- Made of patented salinity-resistant UHPFRC.
- According to the military standard NATO STANAG 2280, used for all protective structures built during military missions.



Ballistic resistance A5
Shrapnel resistance C4
Blast resistance D6

| | | A | B | C | D | E |
|---|---|----------------------------------|--|--|----------------------------|------------------------------|
| | | Projectiles ¹ | Direct Fire Warheads ³ | Indirect Fire Munitions ^{3,4} | High Explosives (TNT Eqvt) | Moving Vehicles ⁵ |
| Severity of Effect (level) ⁷ | 9 | | | | ≤ 5,000kg | |
| | 8 | 120/125mm SABOT Anti tank | Anti-tank 120/125mm HESH / HEAT | Scud | ≤ 1,000kg | |
| | 7 | Automatic cannon 40mm APDS | | 333mm Rocket | ≤ 250kg | |
| | 6 | Automatic cannon 30mm APDS | Advanced ASM Anti Structure Munitions | 240mm Rocket | ≤ 50kg | Tracked Vehicle |
| | 5 | HMG 14.5mm (0.57) | Tandem ASM | 155mm Artillery 122mm Rocket | ≤ 10kg | Large Truck ≤ 32,000kg |
| | 4 | HMG 12.7mm (0.50) | Anti-personnel Thermobaric or conventional charge <2.5kg | 120mm Mortar 107mm Rocket | ≤ 2kg | Truck ≤ 7,500kg |
| | 3 | Assault /Sniper Rifle 7.62mm AP | Anti-tank Shaped charge | 82mm Mortar | ≤ 1kg | Small Truck ≤ 2,500kg |
| | 2 | Assault Rifle 5.56 - 7.62mm Ball | 40mm Rifle grenade shaped charge | 60mm Mortar | ≤ 0.5kg | Passenger Car ≤ 1,500kg |
| | 1 | Pistol | (reserved) | Hand grenade | ≤ 0.1kg | Motorcycle |

PROTOCOLS AND CERTIFICATIONS



By NATO standard

Ballistic resistance

Shrapnel resistance

Blast resistance

A5

C4

D6

- Fulfillment of the principle of legitimate expectations.
- Ballistic, blast and shrapnel resistance.
- Tested and certificated by the Military Research Institute s.e.

ČESKÉ VYSOKÉ UČENÍ TECHNICKÉ • PRAHA
FAKULTA STAVEBNÍ - ZKUŠEBNÍ LABORATOŘ
zkušební laboratoř č. 1048 akreditovaná ČIA
podle ČSN EN ISO/IEC 17025:2018
Třáskurova 7, Praha 6, 166 29

ODBORNÁ LABORATOŘ OL 133
telefon: 224 354 627
email: josef.fladr@fsv.cvut.cz

Počet výtisků: 5
Výtisk č.: 1
Počet listů: 3
List číslo: 1
Počet příloh: 0
Počet listů příloh: 0

Zakázkové číslo: 8602152A000

PROTOKOL číslo: 133 003/2021

o zkoušce:
STANOVENÍ PEVNOSTI BETONU V TLAKU 133/3

Jméno a adresa zákazníka: JEAN-PAUL WHITECASTLE, spol. s r.o.
Kaprova 42/14
110 00 Praha 1
IČ: 48041866

Datum vystavení protokolu: 17. 12. 2021

Schválí: doc. Ing. Josef Fládr, Ph.D., technický vedoucí OL 133

podpis

Počet stran / Number of pages: 10
Datum vydání / Date of issue: 31. 5. 2022

PROTOKOL O ZKOUŠCE BALISTICKÉ ODOLNOSTI
TEST REPORT BALISTIC RESISTANCE
VVÚ – SMI-22-101

| | |
|---|--|
| Zadavatel Contractor | JEAN PAUL WHITECASTLE, spol. s r.o. Kaprova 42/14 110 00 Praha 1 – Staré Město |
| Výrobce Manufacturer | INSTITUT BLAST & IMPACT PROOF CONCRETE, s. r. o. (IBIPC) Jihlavská 2512/34, 591 01 Žďár nad Sázavou |
| Předmět zkoušky Test specimen | UHPFRC vzorky 01 a 02 UHPFRC samples 01 and 02 |
| Datum a místo zkoušky Date and place of the test | 10. 5. 2022 Prototypa-ZM, s. r. o., Brno |
| Metoda zkoušení Test method | STANAG 2280, Edition 1 |
| Zkoušku provedl Test staff | Petr Pěchouček |
| Odpovědný pracovník Leader of the test | Petr Pěchouček |
| Účastníci zkoušky Participants | Pavel Čalkovský Tomáš Holík Pavel Bělehradský |

VVÚ, s. p.
VVÚ, s. p.
CEO IPW GROUP

Protokol o zkoušce nesmí být bez písemného souhlasu zkušební reprodukován jinak než celý.
The test report shall not be reproduced except in full, without written approval of the test Laboratory.

Protokol vyhotovili: Pavel Čalkovský
The test report was written by Pavel Čalkovský

Vojenský výzkumný ústav, s. p.
Veselská 230, 63700 Brno, Česká republika

CERTIFIKÁT
č. VVÚ 2280-001-2022

Objednatel: JEAN PAUL WHITECASTLE, spol. s r.o.
Kaprova 42/14
110 00 Praha 1 – Staré Město

Výrobce: INSTITUT BLAST & IMPACT PROOF
CONCRETE, s. r. o. (IBIPC)
Jihlavská 2512/34,
591 01 Žďár nad Sázavou

Výrobek: UHPFRC
Materiálové složení vzorků je v souladu Patentem
ČVUT v Praze – fakulta stavební č. 304 478 a
s Evropským Patentem ČVUT v Praze č. EP 3 351 518
A1.

Zkušební sestava: 1 ks vzorku (500 x 500 x 200 mm)
1 ks základní díl bunkru (2400 x 2400 x 200 mm)

Úroveň ochrany: A4, C4 a D5 dle STANAG 2280 ed.2 / ATP-3.12.1.8,
vydání 1., verze 1

Platnost certifikátu souvisí se Zkušebními protokoly z testů vzorků UHPFRC
č. VVU-SMI-22-101, VVU-SMI-22-102 a VVU-SMI-22-103, kde jsou
specifikovány testované vzorky UHPFRC.

Zkušební sestava vyhověla požadavkům pro zařazení do úrovně ochrany
A4, C4 a D5 dle STANAG 2280 ed.2 / ATP-3.12.1.8, vydání 1., verze 1.

Brno, 30. května 2022

Ing. Pavel ČUDA, Ph.D.
ředitel



By NATO standard

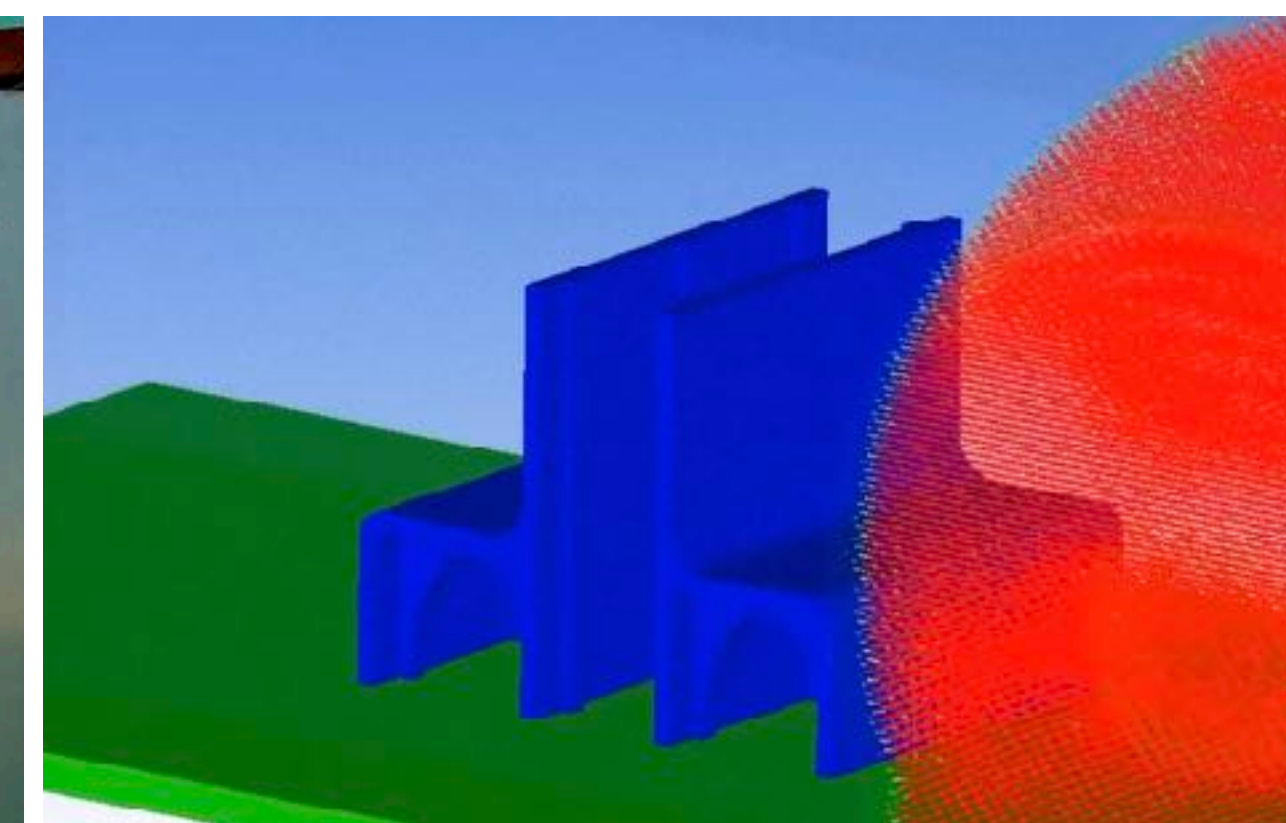
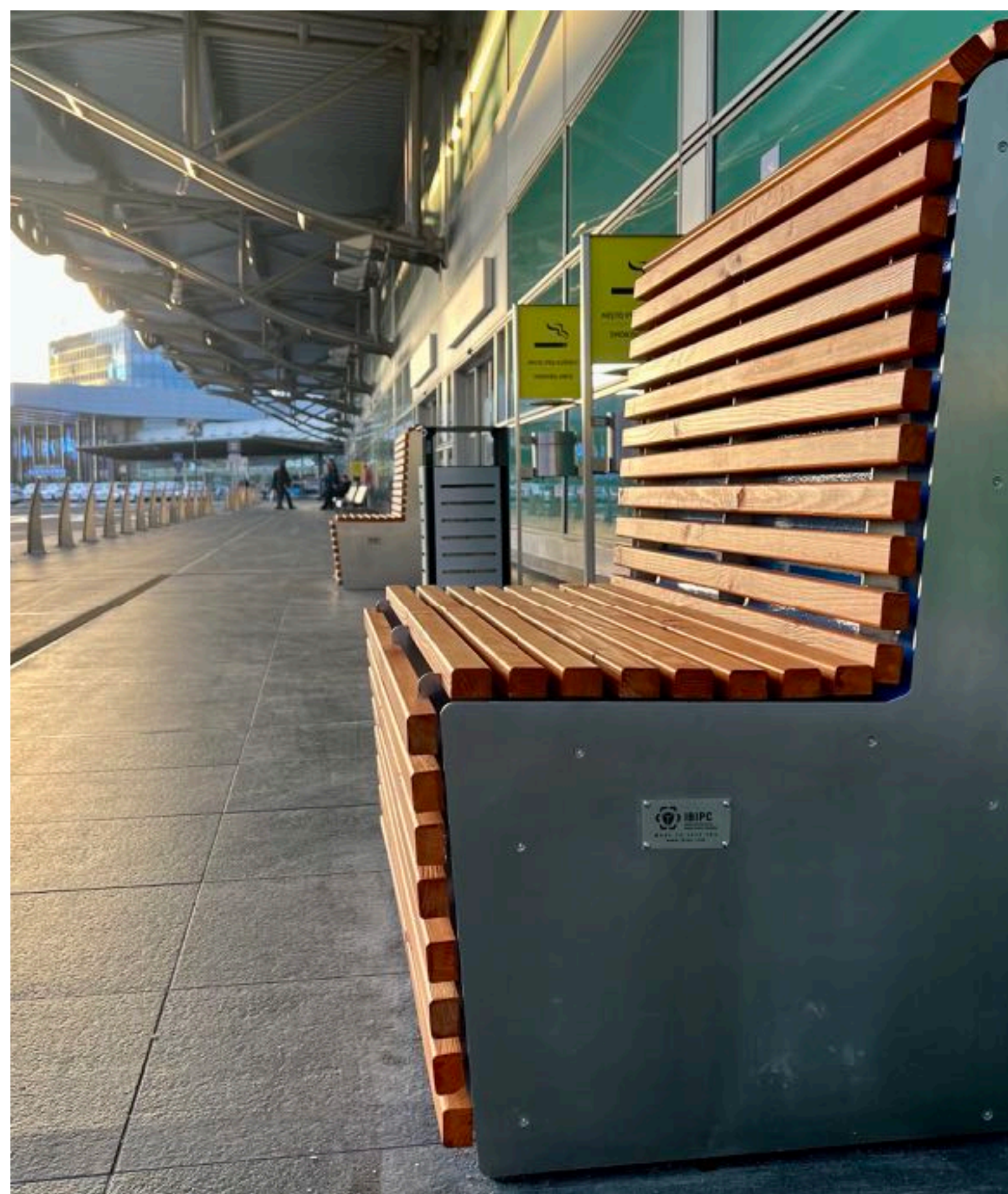
1. SAFETY BENCH

DISTRIBUTION • LIGHT
• HEAVY

- Designed to be placed in outdoor and indoor public spaces.
- It serves to **protect people**, cover from flying shrapnel, projectiles and explosions of charges.
- Custom bench cladding.
- Anchored into the ground can **stop a regular car**.

Ballistic resistance
Shrapnel resistance
Blast resistance

A5
C4
D6



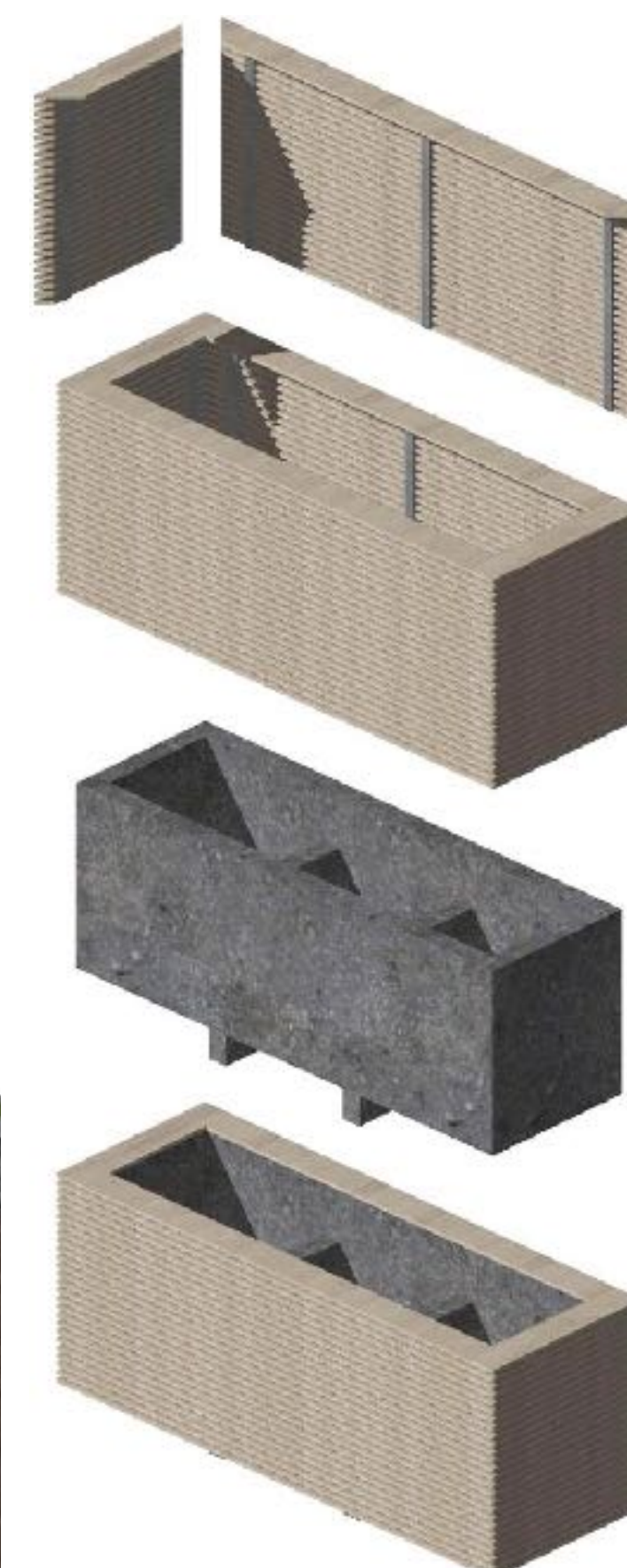
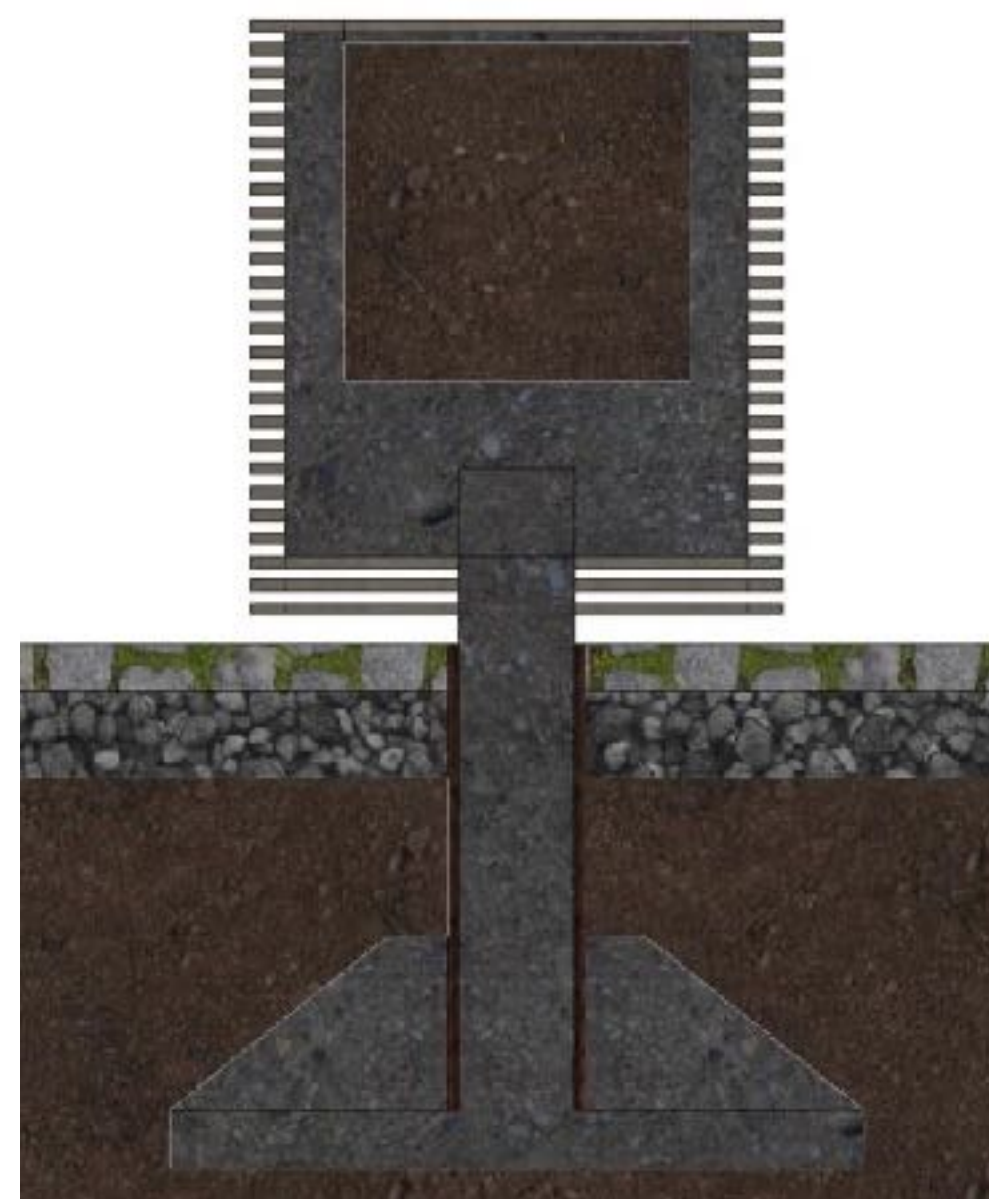


By NATO standard

2. FLOWER BOX

DISTRIBUTION • LIGHT
• HEAVY

- Stops a moving truck, catches shrapnel from the explosion and projectiles from small arms.
- Protective element and mobile barrier for short-term and permanent installation.
- High ability to absorb kinetic energy caused by impact or explosion.
- Cover for intervening troops to reload and return fire.



Ballistic resistance
Shrapnel resistance
Blast resistance

A5
C4
D6





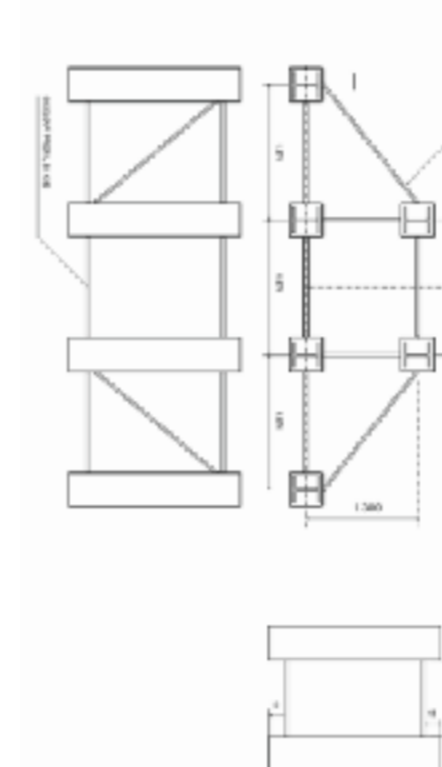
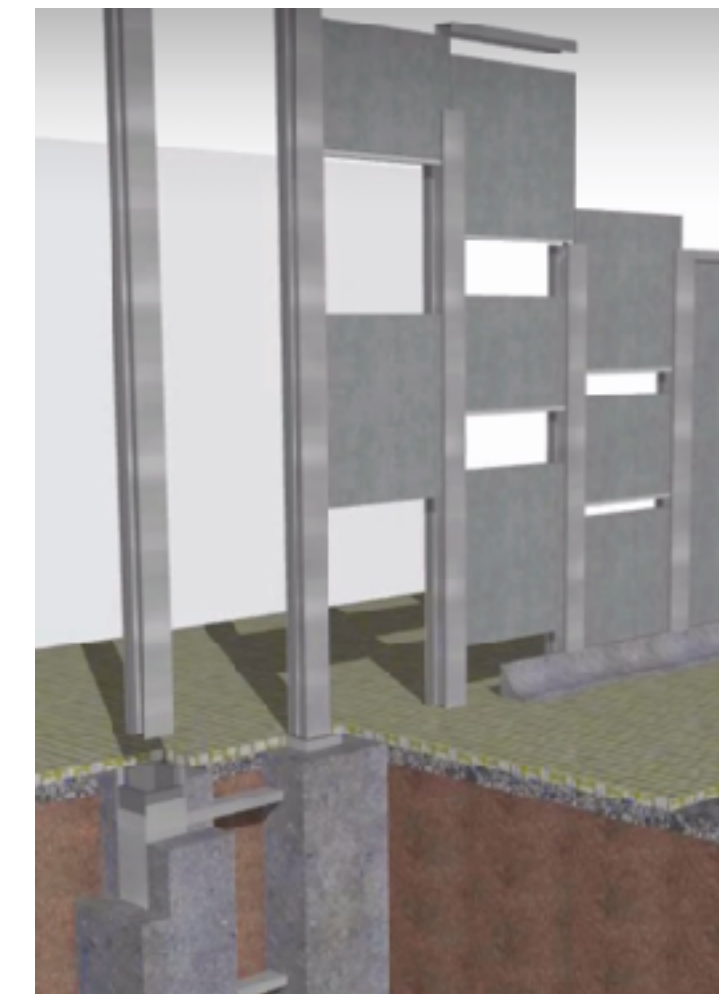
By NATO standard

3. SAFETY WALL

DISTRIBUTION • ONE LINE
• TWO LINE

- Primarily designed to **protect objects** of critical infrastructure or high priority in case of possible attack.
- In the event of damage, it is **easily repairable** using standardized and interchangeable components.
- The steel casings are connected together by a spacer element and anchored together in concrete footings to a depth of 2.5m or **mobile** anchored in a **steel structure** for relocation.
- The space between the steel column and the casing is filled with permanently flexible rubber granulate.

| | |
|----------------------|----|
| Ballistic resistance | A5 |
| Shrapnel resistance | C4 |
| Blast resistance | D6 |





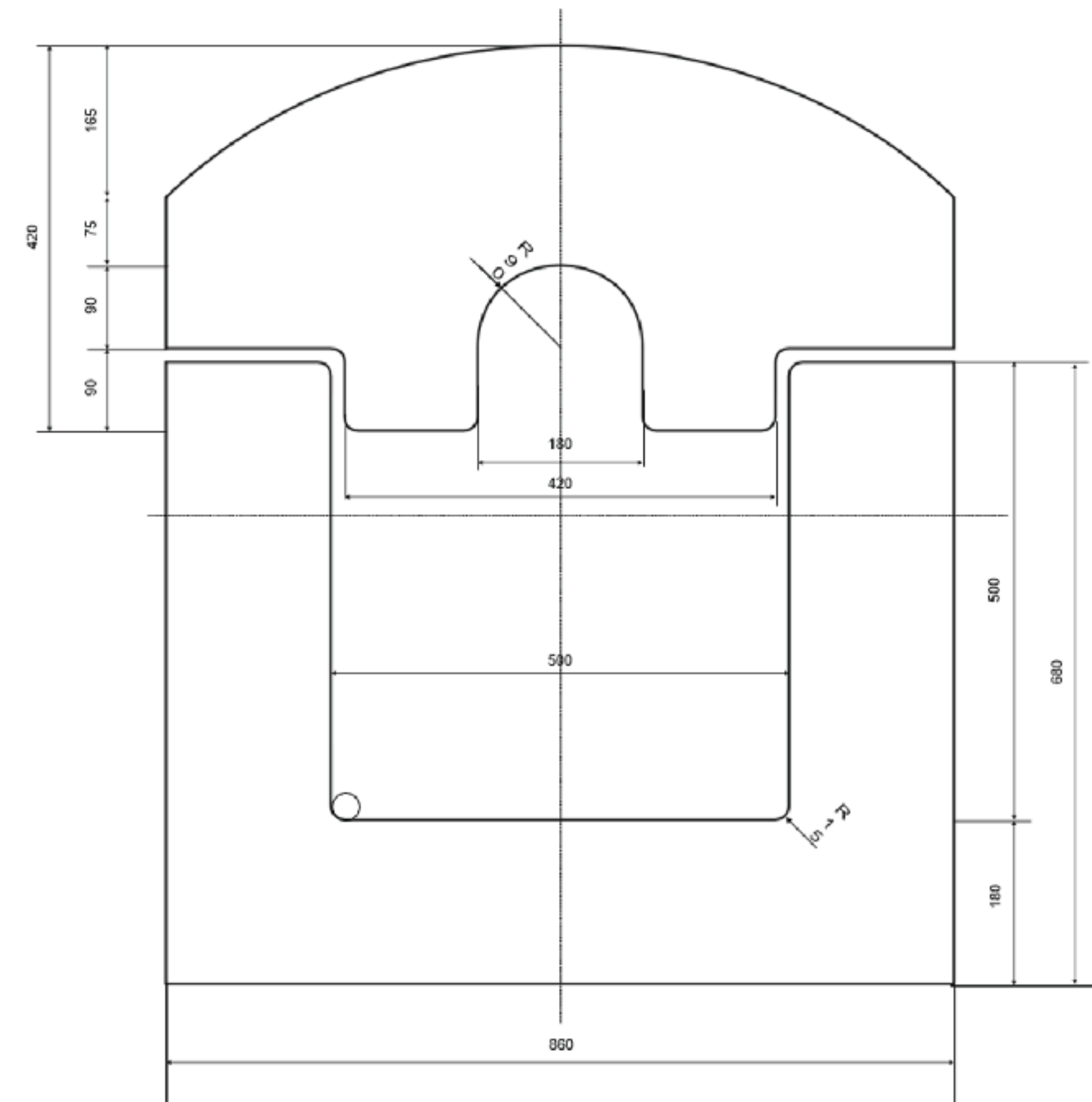
By NATO standard

4. WIRING TUNNEL

DISTRIBUTION • LIGHT
• HEAVY

- UHPFRC tunnel used to protect high priority cables and IOT technology systems.
- The board is fitted with an internal tongue fitting into the groove to secure the position of the board.
- It folds behind itself usually below the surface.
- The connection of the elements is provided by a tongue at one end and a groove at the opposite end.

| | |
|----------------------|----|
| Ballistic resistance | A5 |
| Shrapnel resistance | C4 |
| Blast resistance | D6 |





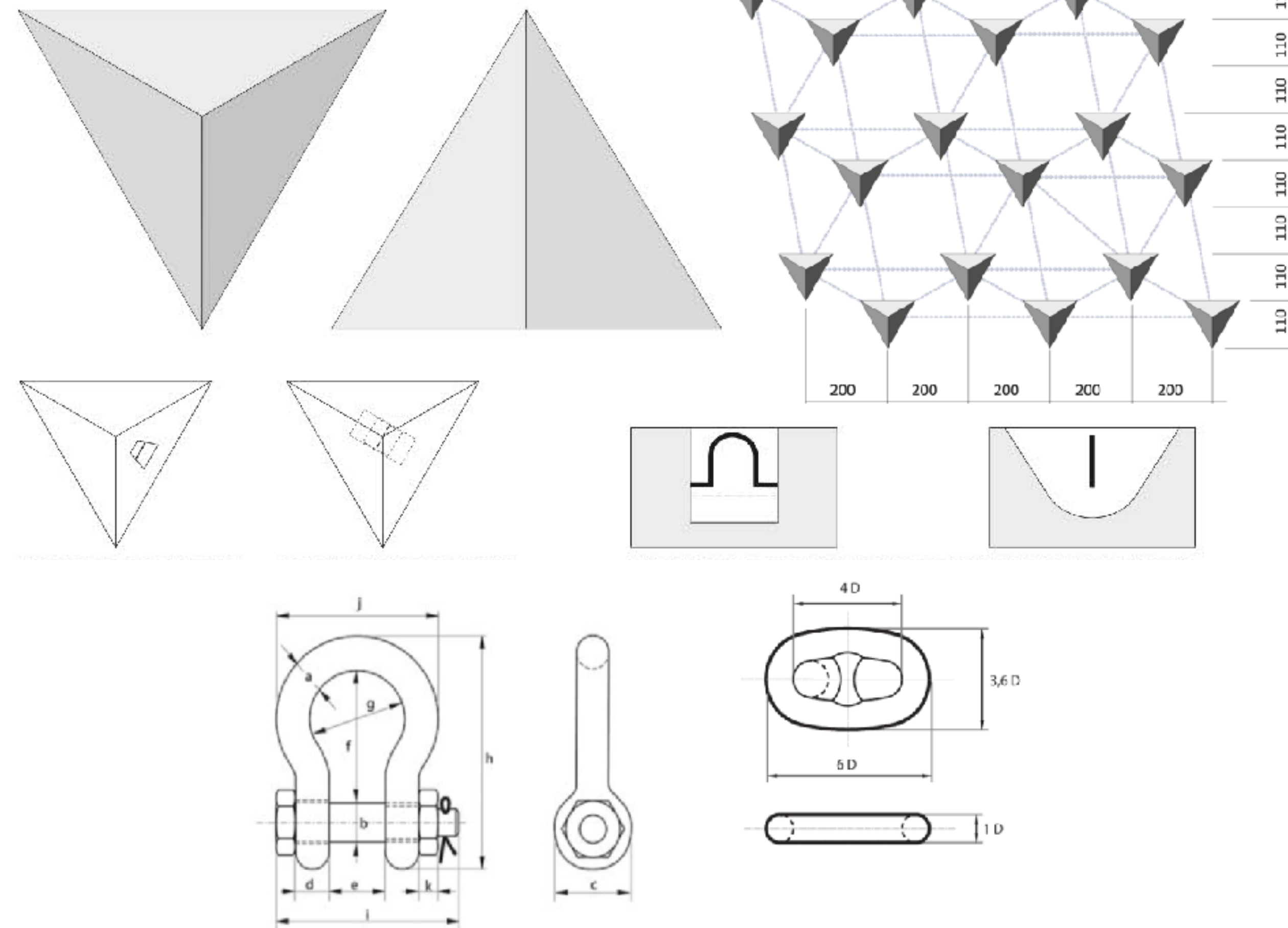
By NATO standard

5. MOBILE ROADBLOCK

DISTRIBUTION • LIGHT - 0.6m
• MEDIUM - 1.0m
• HEAVY - 1.35m

- Connected by **marine chains** to make difficult passage and removing individual elements.
- Used for operational positioning in multiple lines in the direction of the enemy's expected approach and **to stop** tracked or wheeled combat **vehicles**.
- Known as “**DRAGON TEETH**”.

Ballistic resistance A5
Shrapnel resistance C4
Blast resistance D6





By NATO standard

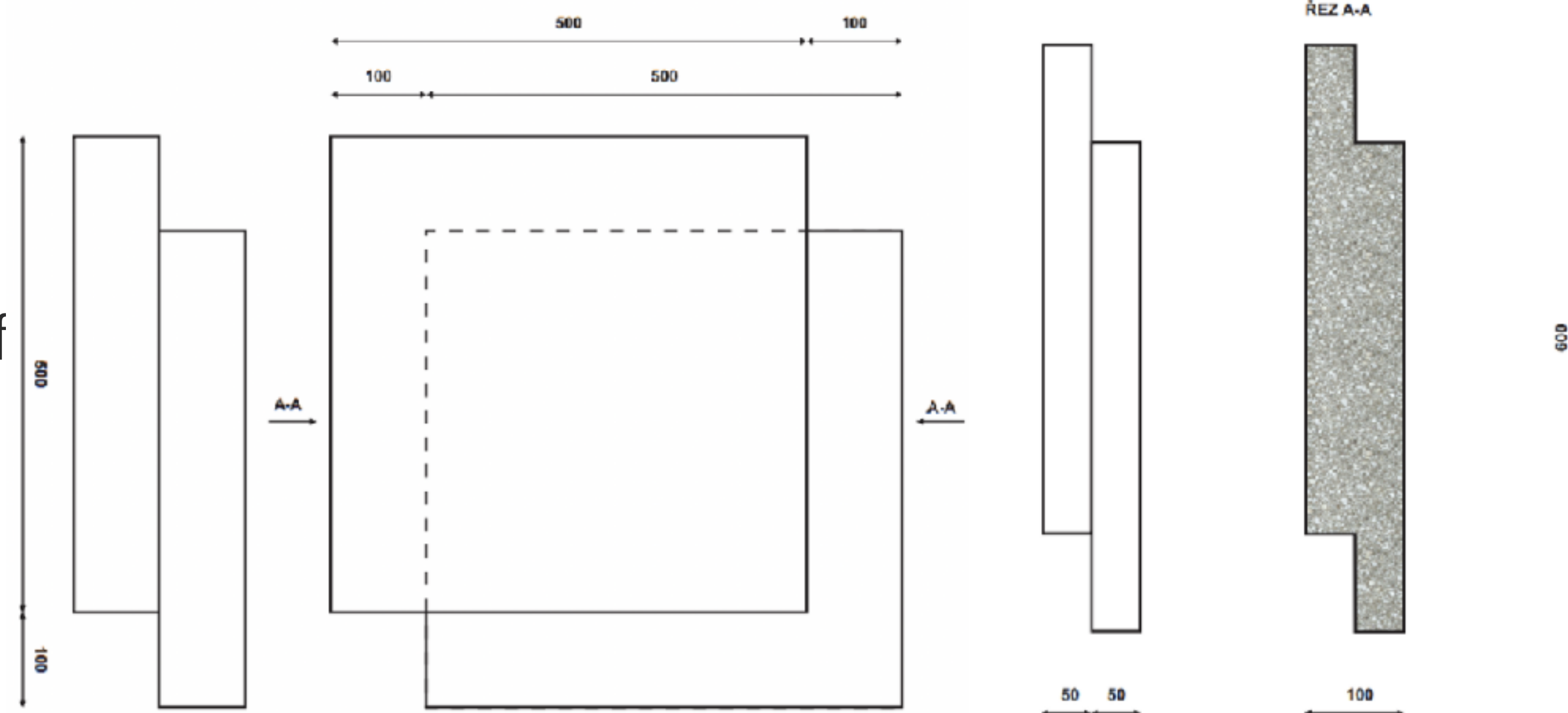
6. COMPOSITE SHIELDS

DISTRIBUTION • LIGHT
• HEAVY

Ballistic resistance
Shrapnel resistance
Blast resistance

A5
C4
D6

- Shields to protect buildings and objects.
- Designed for buildings that are important from a political, military or economic point of view for ensuring the protection for basic functions of the state and the security of the armed forces.





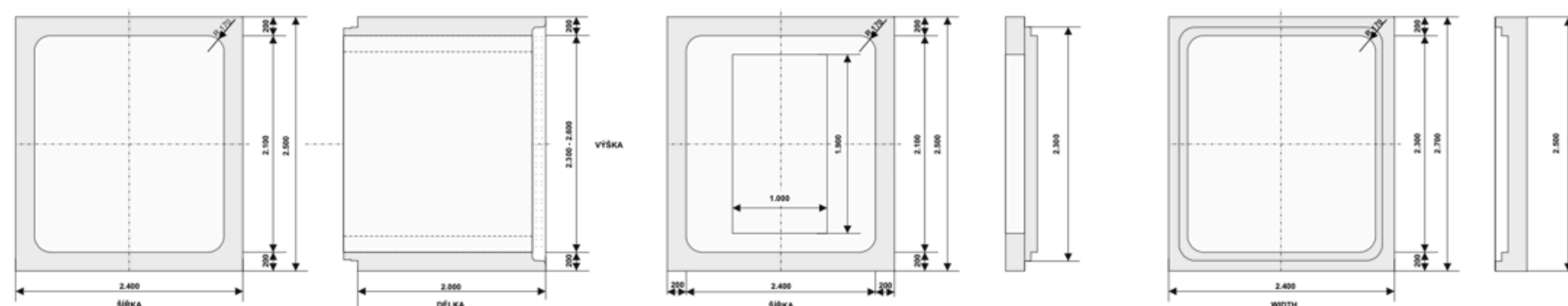
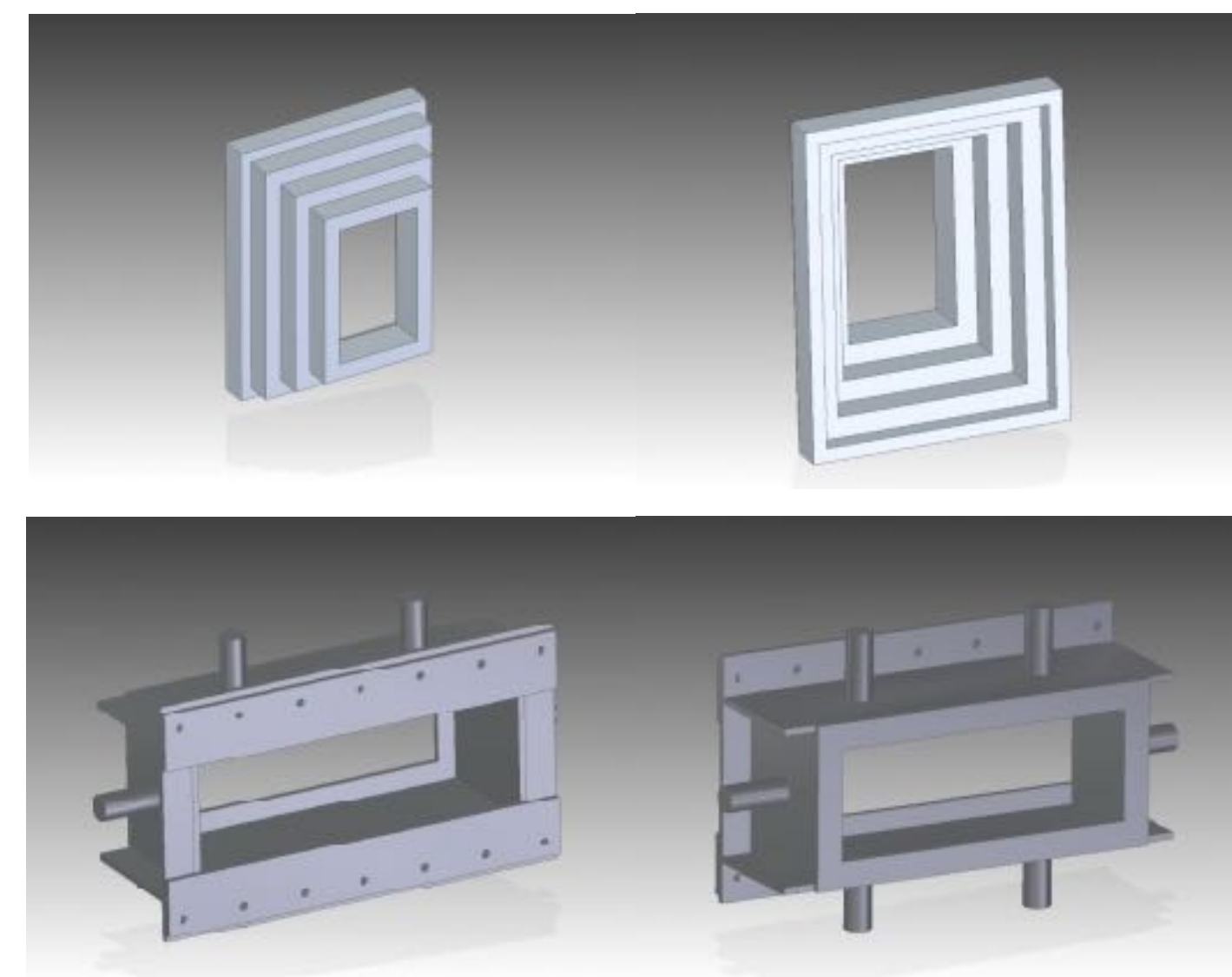
By NATO standard

7. CHECKPOINT

Ballistic resistance
Shrapnel resistance
Blast resistance

A5
C4
D6

- Used to control the interest perimeter.
- The base structure can be equipped according to the **client's requirements** (beds, benches, chemical toilet, cartridge traps, ammunition and food storage boxes, fitting with guns or cabling).
- Ability to react quickly to defined threats in case of national emergency and **war**.





By NATO standard

8. RUNWAY REPAIR

- Emergency team ready to go within 24 hours up to 1.000km with a ready mixture of UHPFRC.
- Designed to quickly repair a damaged runway or motorway.
- For military and civilian airports requiring the highest residual strength class A.
- Advantage of **high quality** and fast hardening compound for the required load.

Ballistic resistance
Shrapnel resistance
Blast resistance

A5
C4
D6





INSTITUTE OF BLAST & IMPACT PROOF CONCRETE

Made to save you

Mgr. Pavel Belohradsky

CEO

pavel.belohradsky@ibipc.com

www.ibipc.com

