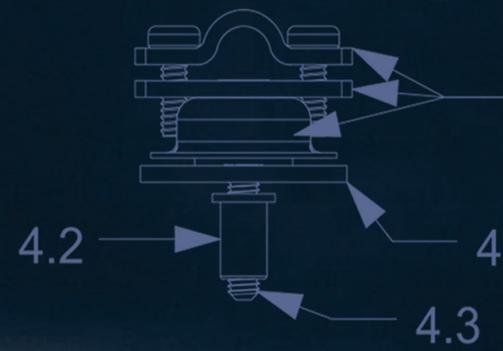


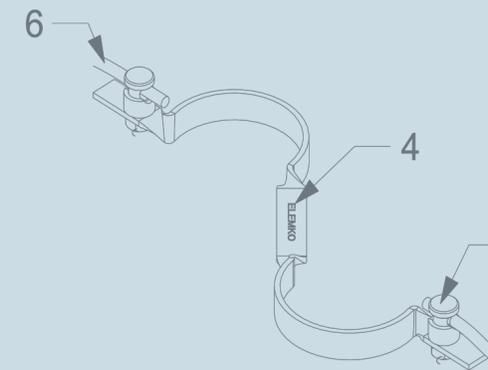
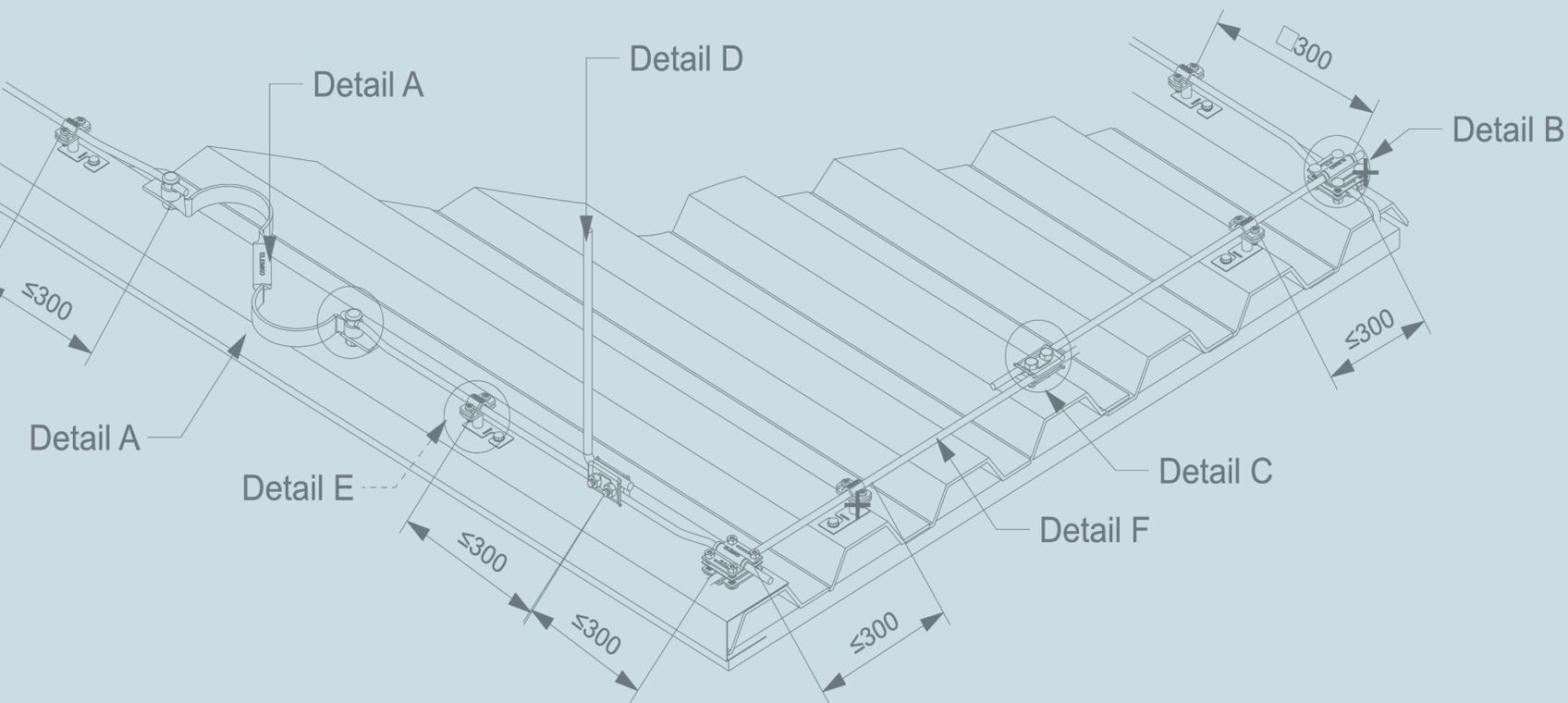
LIGHTNING PROTECTION INSTALLATION MANUAL



Detail A

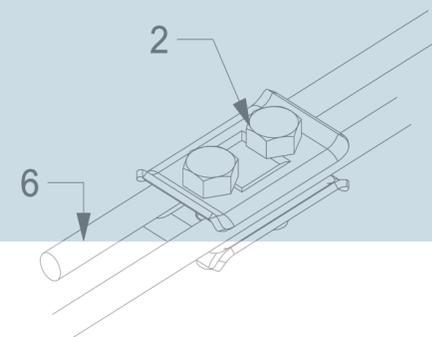
"T" connection clamp (1)
with round conductor (2)





Detail A

Expansion component (4) with single bonding clamp (7) and round conductor (6)



Detail C

Parallel clamp (2) with round conductor (6)

LIGHTNING PROTECTION INSTALLATION MANUAL



Detail E

Conductor fastener on eternite or corrugated metal roof (5) with round conductor (6)



Detail F

Round conductor (6)

Meet **ELEMKO**

HISTORY

Year of 1973 was the start of a successful route for our company with main object the:

Global Solutions of Lightning Protection Covering:

- Protection of structures and buildings against direct lightning strike
- Surge Overvoltage Protection of electrical & systems
- Earthing Systems



Over the years, ELEMKO has acquired fundamental know-how, experience and specialisation in the protection of people, structures and equipment with high specifications and demands against the catastrophic consequences of lightning. All the above strong arms are coupled with strong financial fundamental, the sensitivity and insistence on quality, the passion and love of the people who staffed, the continuous update on all developments that concern our matters, the constant training of personnel, the transfer of knowledge and experiences to the world through technical seminars and technical books, leading developments and creating lasting relationships of trust.

The company's share capital amounts to 2.930.000€, making ELEMKO among the most financially powerful companies in Europe in our field.

ELEMKO's premises of 3.600 sqm in which houses all the services and activities are 24.067 sqm private



land. Specifically, the company is headquartered in Metamorphosis, in Attica, while in Thiva is the "Research Center for tests and Developments", which is the largest ELEMKO's investment carried out exclusively by Elemko's funds. Research Center for tests and Developments of our company is one of the four in all Europe and has been accredited according to standards EN - ISO/ IEC 17025. In Thessaloniki takes place a branch of the company, to serve the needs of our customers in Northern Greece more directly.

GUARANTEE

- ELEMKO's experience for more than 45 years
- The scientific and technical knowledge of ELEMKO's staff that have been acquired through continuous training.
- The results of the research we carry out at ELEMKO's Testing and Certification Research Center
- ELEMKO's long lasting cooperation with university and private research centers in Greece, France, Belgium, Switzerland, the USA and the UK.
- The adoption and strict implementation of European and International Standards on Lightning Protection Components, Surge protection Devices, Earthing
- The adherence to the procedures of the ISO 9001
- The accreditation of ELEMKO's laboratory according to Standard EN-ISO/IEC 17025



DESIGNS & STUDIES

ELEMKO designs and studies comply strictly with the current European and International Standards. Frequently heralded as pioneering, with a number of them having been presented at International scientific conferences, they include:

- Protection of common and special structures from lightning such as Wind Farms and Photovoltaic installations
- Surge overvoltage Protection of electrical and electronic systems.
- Surge Overvoltage Protection of telecommunications and telemetry systems.
- Earthing Systems of common and special structures such as Wind Farms and Photovoltaic installations.
- Earthing Systems of Substations according to Standards IEEE std 80 and IEEE std 81.
- Financial / technical studies of interrelated projects.
- The drawing up of technical specification of offers.

The above mentioned Elemko's services are ensured by the Quality Management System ISO 9001



TECHNICAL SUPPORT

ELEMKO's engineers are always available to help you choose the most appropriate technical and financial solution:

- Behind every telephone call you make.
- At your worksite.
- At your facilities.
- In your building.

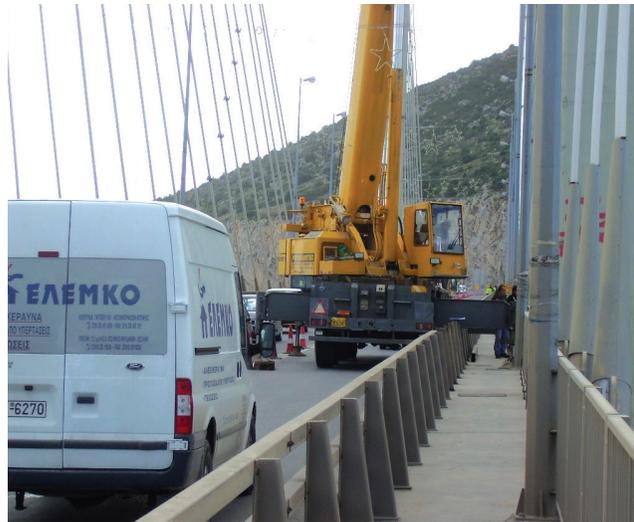
Everybody is here to help you.

■ INSPECTION

Applied European and International Standards require the regular inspection of installed Lightning Protection Systems (internal and external) and Surge Protection Systems, depending on the required level of protection for the structure, to guarantee their readiness and reliability.

The inspection involve checking:

- That the system satisfies applied Standards.
- That the system components are in good condition and adhere to existing Standards.
- That any new parts of the building are covered by the existing system.
- That surge overvoltage protection equipment is in good condition.
- That new machinery which has been installed is protected against surge overvoltage.



Inspections are carried out by ELEMKO's highly trained engineers and technicians, who have a complete knowledge of the applied Standards for Lightning Protection Systems and many years of experience in designing and installing them. They use highly accurate measuring instruments and devices that are regularly calibrated at special laboratories.

■ MANUFACTURING

All our products are of high and stable quality, thanks to the most advanced and modern equipment that the manufacturing department is equipped with.

Production quality inspections are performed in every production phase, to ensure reliability and long life to the final product.

Additional laboratory tests ensures the products' compliance to the latest international (IEC) and European (EN) standards.

The tests are performed in our laboratory, accredited according to standard ISO 17025 by the American Association for Laboratories Accreditation (A2LA).

The quality, reliability and long life of all of our components, is validated by all the above mentioned checks and tests in order to reassure that the external and internal lightning protection system that uses these products and constructed according to the International and European standards is safe and trusted.



■ TRAINING

One of ELEMKO's most important priority, is the training of engineers and technicians in the earthing and lightning protection fields in order to keep them updated.

Our seminars are conducted in our laboratory, in our headquarters or online via custom made webinars and they are especially designed to transfer our knowledge and experience, combining effectively theory and practice.

Additionally we provide educational and informative material (equipment, books, exhibits) to numerous educational institutes (universities, technical schools etc) thus to provide as much as possible information to the future engineers and technicians.



Scope and purpose of the Lightning Protection System Installation Manual

The Lightning Protection Installation Manual is a comprehensive, application-oriented reference that presents complete lightning protection solutions through high-quality technical drawings, and real-world installation examples.

The manual is designed to bridge the gap between engineering standards and practical implementation, supporting both system design and on-site installation. It covers all key components of a lightning protection system, including the Air Termination System, the Down Conductor System, and the Earth Termination System, in full compliance with the requirements of IEC 62305-3.

By focusing on best installation practices and correct component integration, the manual highlights system performance, safety, and long-term reliability. It serves as a valuable visual reference for engineers during design and specification, while also providing installers with clear guidance on proven application methods.

At the same time, the Lightning Protection Applications Manual functions as an effective marketing and communication tool, enabling companies to clearly present their technical expertise, product range, and complete system solutions to clients and partners. Its clear structure and visual, application-focused approach make complex technical concepts easy to understand and communicate.

Introduction to Lightning Protection System (LPS) according to IEC 62305 series of standards

The main purpose of a Lightning Protection System (LPS) is to limit life hazards and to reduce physical damage to structures, caused by direct or indirect lightning strikes and shall be designed by following the recent publication of IEC 62305 series (edition 3).

IEC 62305 – 1 explains the main principles on how the designer/installer may use IEC 62305 series of standards and also includes the main parameters of lightning, as physics, as well as calculations for lightning current distribution between different conductive paths.

IEC 62305 – 2 describes the risk management procedure in order to evaluate the required Lightning Protection Level (LPL – I, II, III or IV) for reducing the risk of,

- Loss of human life or injury
- Loss due to physical damage or fire
- Frequency of losses due to overvoltages to internal systems

IEC 62305-3 defines the selection of components, the design and the maintenance requirements of the external lightning protection system, which includes:

- Air-termination systems (intercept between lightning and structure)
- Down-conductor systems (safely conduct the lightning current to earth termination system)
- Earth-termination systems (dissipate lightning current into the earth)
- Main Equipotential Bonding (prevent dangerous voltage differences between metal parts)

Also, **IEC 62305-4** defines how to design an effective surge protection for all electrical and electronic equipment using Surge Protective Devices and internal equipotential bonding.

External lightning protection system design

In a bit more detail, IEC 62305-3 is applicable to all types of structures such as residential, industrial, commercial including special installations such as photovoltaic installations, telecom towers and it provides guidance on:

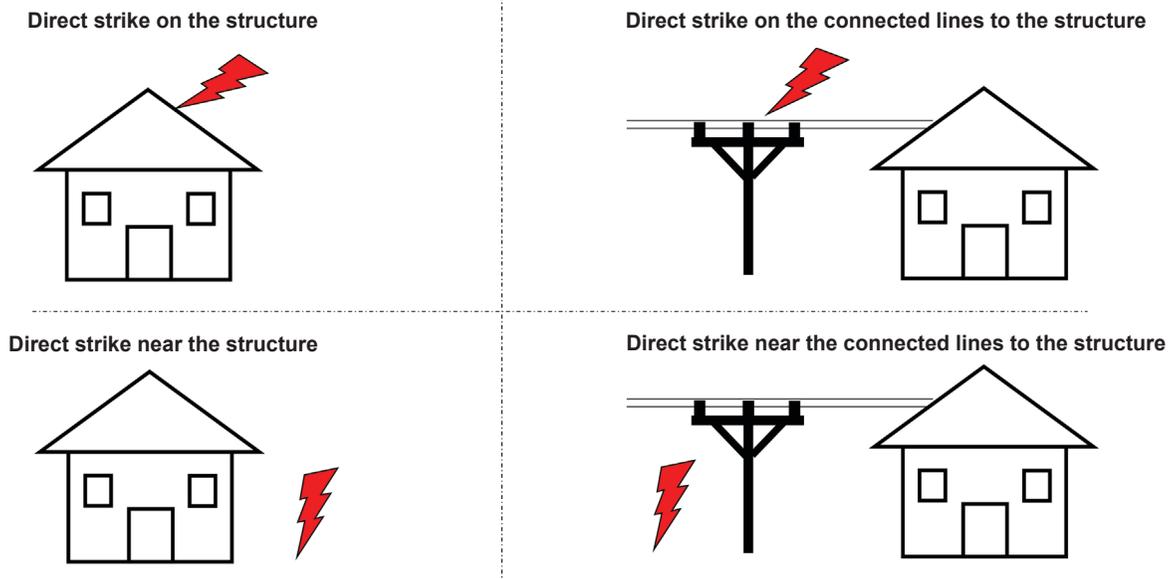


Figure 1: Calculated LPS Class according to the risk management procedure as per IEC 62305

- Applying the required LPS Class (Class I, II, III or IV) according to the related LPL (I, II, III or IV), which was resulted from the previously performed risk assessment.
- Selecting the positioning and sizing of air termination elements such as rods and wire mesh, for protecting the roof, protrusions and any other equipment located on the roof (i.e. AC units, PV systems).
- Locating the required number of down conductors along the perimeter of the structure
- Defining the earth electrode type (i.e. earth rod, plate, ring conductor, foundation earthing) and the minimum length according to the soil resistivity
- Selecting the size, material (copper, aluminum, galvanized, copper coated or stainless steel) as well as the material and style for the connection and fastening components.
- Separation distance: Required to avoid dangerous sparks between the LPS and internal conductive parts.
- Equipotential bonding: Ensures that all conductive systems (metal parts, electrical installations, pipes) remain at uniform potential during a lightning strike.

Air termination system

The air termination system design according to IEC 62305 – 3 defines the protected volume using one or a combination of the below three methods.

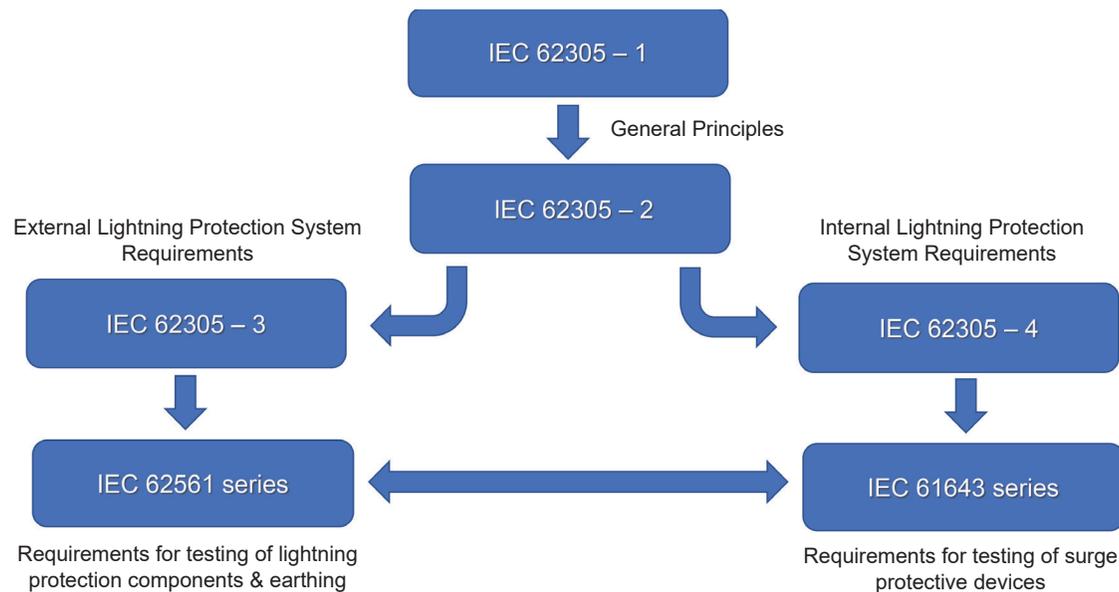


Figure 2 : Family of design and product standards in lightning protection

General Requirements

- Direct and Short Path: Must follow the most direct, straight route from roof level to earth.
- Minimum: 2 except for isolated masts.
- Ideally spaced evenly around the structure (approx. every 10–20 m depending on class of LPS)
- Symmetrical Layout: Improves current distribution and reduces risk of side-flash.
- Mechanical Strength: Must withstand lightning's thermal and electrodynamic forces.
- Low Impedance: Minimize bends; if bends are needed, radius ≥ 20 cm and angle $\geq 90^\circ$.
- Separation Distance: Maintain required separation from electrical wiring, metal objects, and internal systems to avoid dangerous sparking.

Installation Considerations

- External mounting obligatory if structure already exists, must be visible and thus easily maintained.
- Down conductor protection in areas subject to impact or vandalism.
- Bonding of metal parts of the structure to prevent potential rise that may cause arcing.
- Embed in concrete columns (connected to rebars) best down conductor placement, such way the whole concrete framework acquires equal potential in a lightning strike.

Earthing termination system

Earthing in a Lightning Protection System (LPS) ensures safe dissipation of lightning current into the soil. The earthing arrangement normally falls into two standard configurations:

Type A Earthing Arrangement

- Consists of individual earth electrodes connected to down conductors.
- Electrodes are typically vertical rods or horizontal round or tape conductor.
- Each down conductor has its own earth electrode.

Type B Earthing Arrangement (Ring Earth Conductor)

- A closed loop conductor (ring electrode) buried around the building footprint in soil or building foundations inside concrete (Foundation Earthing).
- Forms a complete ring connected to all down conductors.

Foundation Earthing is the most effective and long-lasting type, naturally protected from corrosion but it applies only

Rolling Sphere Method (RSM)

- Most accurate method applicable to any type of structure
- Uses a “sphere radius” depending on LPS class:
 - Class I: 20 m
 - Class II: 30 m
 - Class III: 45 m
 - Class IV: 60 m
- Any point touched by the sphere is not protected → add air rod/conductor.

Protective Angle Method

- Applied for protecting protrusions and equipment on roof tops as well as in open spaces.
- Angle decreases as air rod height increases.
- Has some restrictions to height

Mesh Method (Grid)

- Widely applied to structures with flat or incline roofs.
- Mesh size (a) per LPS class:
 - Class I: 5 × 5 m
 - Class II: 10 × 10 m
 - Class III: 15 × 15 m
 - Class IV: 20 × 20 m

Mesh Method is used in most cases since it applies to most types of structures to be protected, Protective Angle Method is mostly for air terminals used to protect very small structures, protrusions to the top of buildings or open areas using high masts. Rolling Sphere Method applies only to geometrically complicated structures (bridges, large substations, telecom towers etc.)

In the Mesh Method a bare round conductor or sometimes tape supported with the proper fixations (depending upon the type of surface of the roof) every 0.5-1 meter is forming a grid. Various other components are used to perform connections of the parts of the conductor, between conductor and metallic parts of the structure and finally to the down conductors.

Down conductors system

Down conductors are a key component of any LPS. Their main function is to safely drive the lightning current from the air termination system, down to the earth termination system.

Purpose

- Provide a low-impedance path for lightning current.
- Prevent dangerous side-flashing by controlling potential differences.
- Safely dissipate lightning energy into the ground.

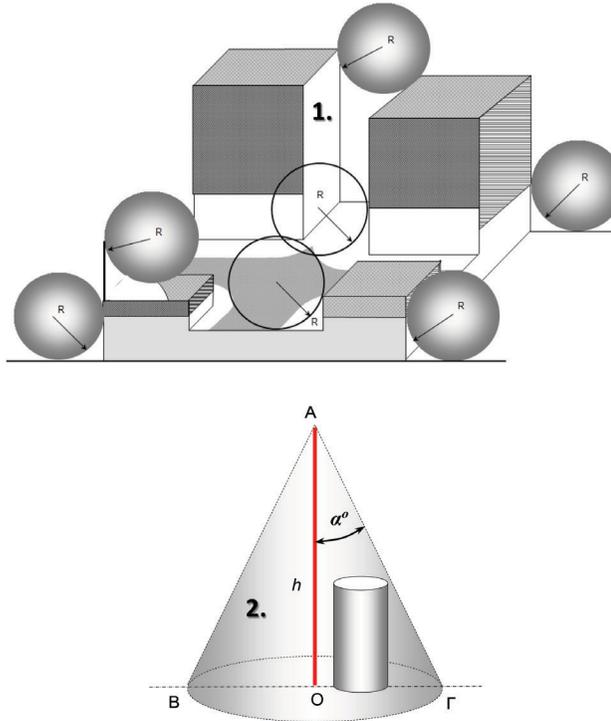
to new constructions. Uses a conductor interconnected to the reinforcement steel (rebar) in the foundation as an earthing electrode.

General Requirements

- From the view point of lightning protection LPS earth termination system shall be interconnected with all other earthing systems of the structure (i.e. electrical, telecom etc)
- A low impedance earthing of 10Ohms if possible is recommended
- A minimum earth electrode length according to LPS Class and soil resistivity is needed
- All incoming conductive parts of the structure shall be bonded to the LPS earth termination system either directly or via specific surge protective devices (i.e. Isolating spark gaps or equivalent).

Separation distance

The separation distance is needed in order to reduce the risk of flashover and lightning current flow between the external LPS and conductive elements entering the structure.



1. Rolling sphere method
2. Protection angle method
3. Mesh method

The mesh and protection angle methods are the most common and simple in order to apply them to structures with ordinary geometry, while the rolling sphere method is commonly applied to structures with special architectural geometries. However, all three methods can be applied as a combination as well to any structure.

Figure 3: Air termination system main design methods as per IEC 62305 - 3

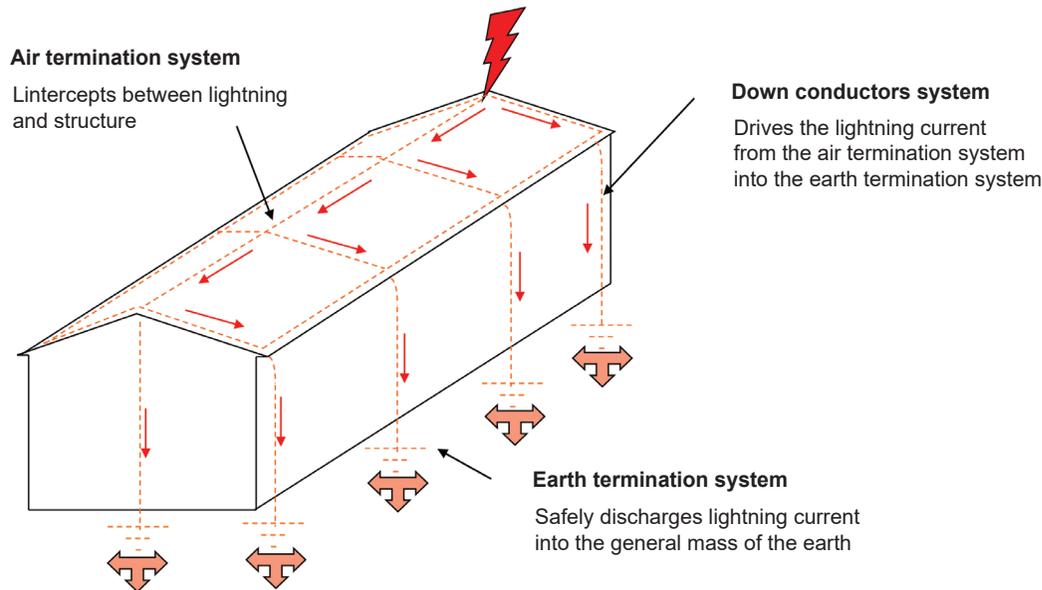


Figure 4: Lightning protection system main parts as per IEC 62305 - 3

To achieve the required separation distance two methods may be applied.

Isolated Lightning Protection System - LPS

In an Isolated Lightning Protection System, the LPS is completely isolated from the protected structure. Common method includes tall masts installed near but not on the structure, therefore there is no lightning current flow on the structure to be protected.

Electrically insulated LPS

In an electrically insulated LPS, all components that intercept lightning are electrically insulated from the structure being protected (i.e. keep a safe insulated distance by using insulated stand offs or special insulated cables). This prevents lightning current from entering the building, equipment, or sensitive installations.

In an electrically isolated LPS, the lightning down-conductors and air terminals may be physically attached to the structure but are electrically isolated by using appropriate insulating means. However, at the inception point and along their length shall maintain a safe distance or electrical insulation so that

lightning current flows only through the protection system, not through the building. This distance is defined as the separation distance (s).

In the case where the separation distance (s) cannot be achieved by a physical distance, a special Lightning Current Control Cable LCCC may be used. It is a specially designed cable used to safely carry lightning current from the air-termination system (e.g., lightning rod) down to the earth termination system while preventing dangerous flashovers to nearby conductive or combustible structures.

When Is an Isolated System Used?

An isolated or electrically insulated LPS is preferred when:

- The structure contains sensitive electronics (telecom towers, data centers).
- The building has explosive or flammable materials (fuel depots, chemical plants).
- A conventional lightning protection system cannot maintain safe separation from internal wiring.
- Metal parts of the building must not be bonded to the lightning system.

Advantages of an ILPS

- No lightning current flows into the structure.
- Reduced risk of:
 - Side-flashes
 - Fire
 - Damage to electronic systems

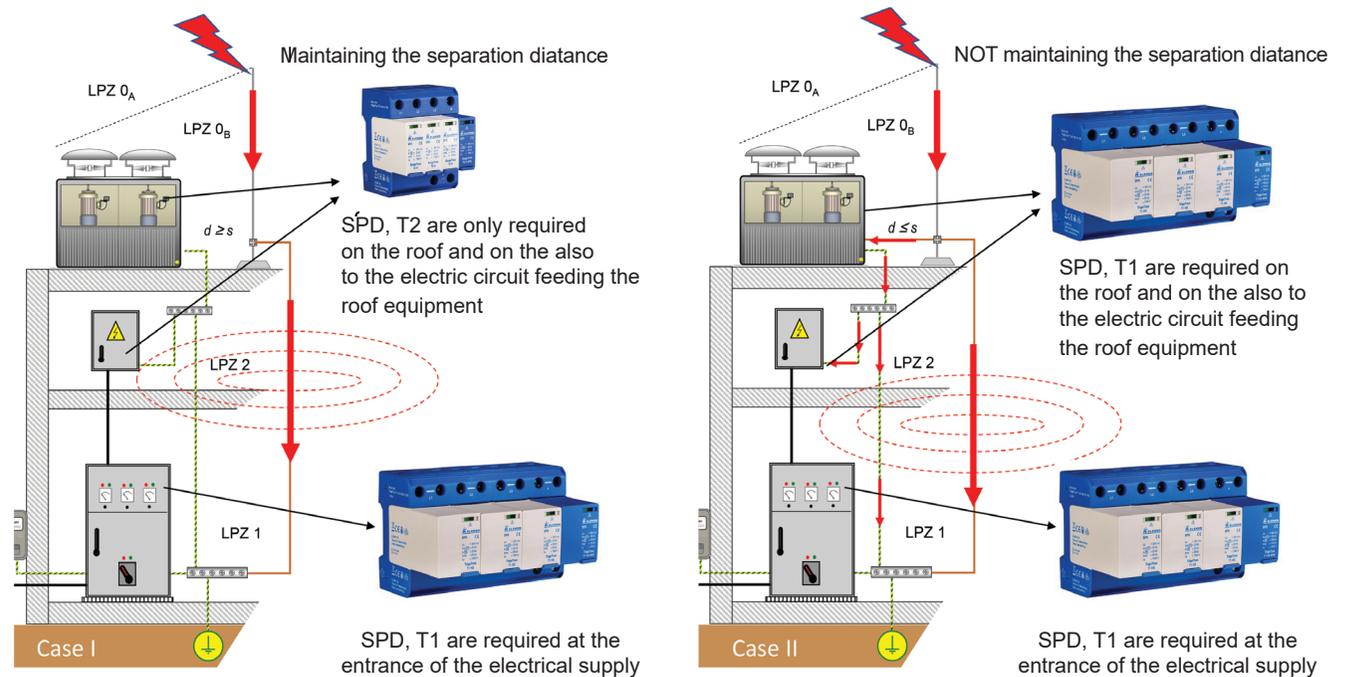
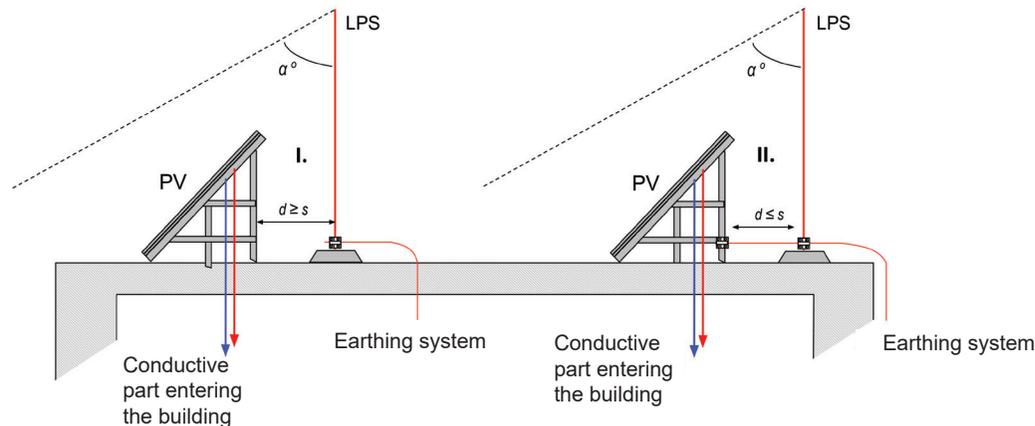


Figure 5 : SPD selection based on the separation distance requirements



Case I : Separation distance between PV and LPS is maintained either by physical distance or by using electrically insulated LPS components
- protection against induced currents (8/20 μ s) entering the internal systems is only required -

Case II : Separation distance is NOT maintained and direct equipotential bonding is applied between LPS and PV
- protection against partial lightning current (10/350 μ s) entering the internal systems is mandate -

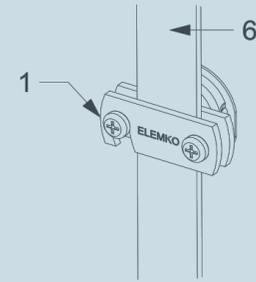
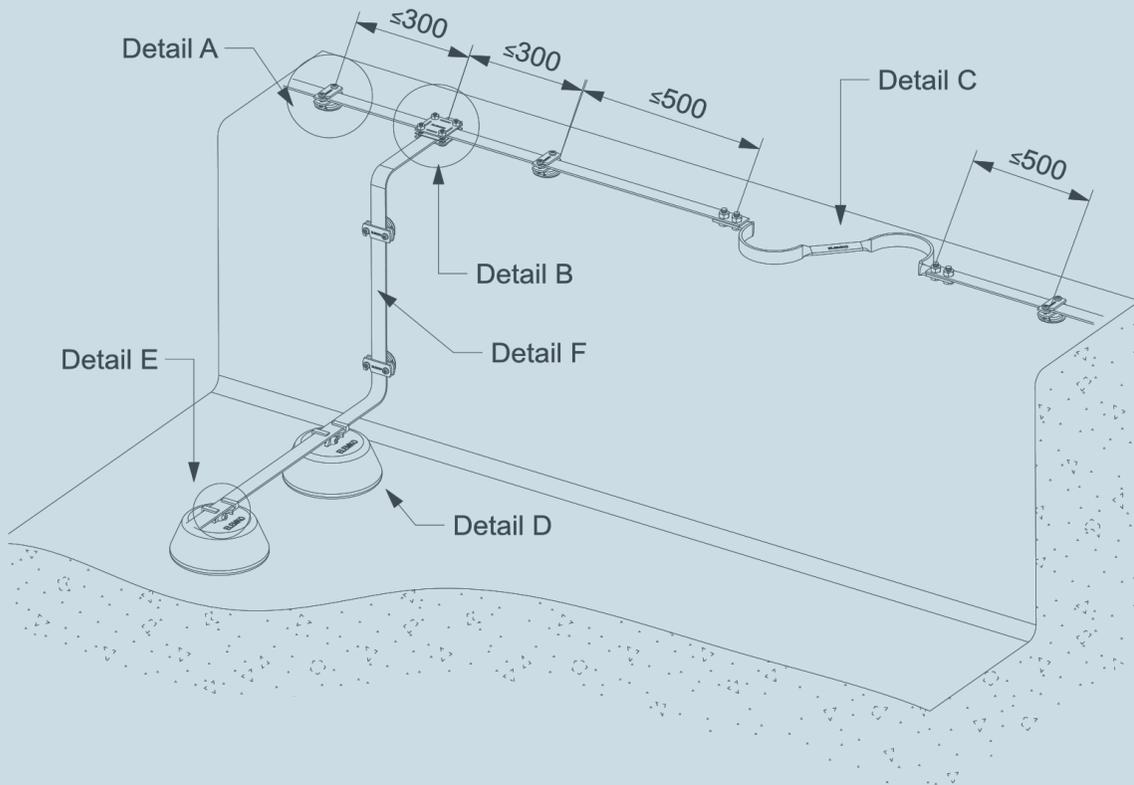
Figure 6 : Separation distance basic requirements as per IEC 62305 – 3 and IEC 62305 – 4

LPS Materials

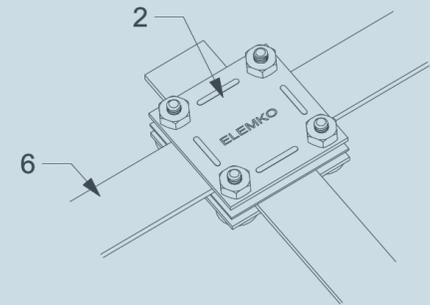
LPS components (air rods, conductors, connectors, earth electrodes etc.) must be highly conductive, corrosion-resistant, and mechanically strong.

Generally, in relatively corrosive atmospheres or soils it is preferable to use copper and if chloride is present stainless steel. Also in projects which are still in the study level where usually earthing and down conductors will be embedded in the concrete structure of the building galvanized steel is the most cost-effective material to go.

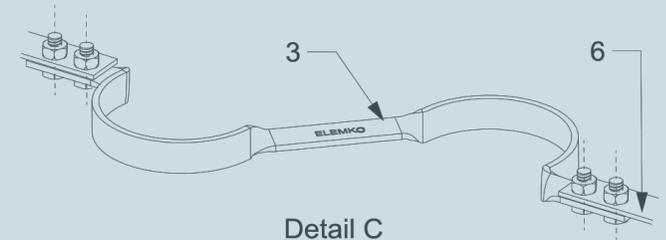
All materials used in an LPS should be galvanically compatible or use bi-metallic joints (not in soil) for copper-aluminum or copper-galvanized steel connections.



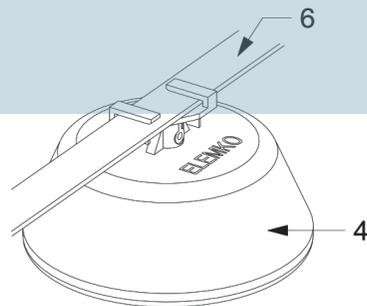
Detail A
Tape fastener on a concrete or brick wall (1)
with tape conductor (6)



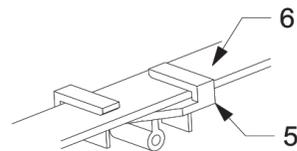
Detail B
"T" connection clamp (2) with
tape conductor (6)



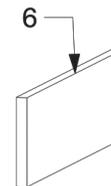
Detail C
Contraction - expansion absorbing component (3)
with tape conductor (6)



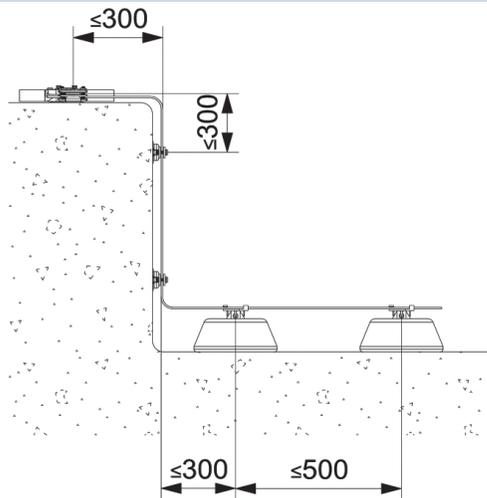
Detail D
Conductor fastener on brick or concrete wall (4)
with tape conductor (6)



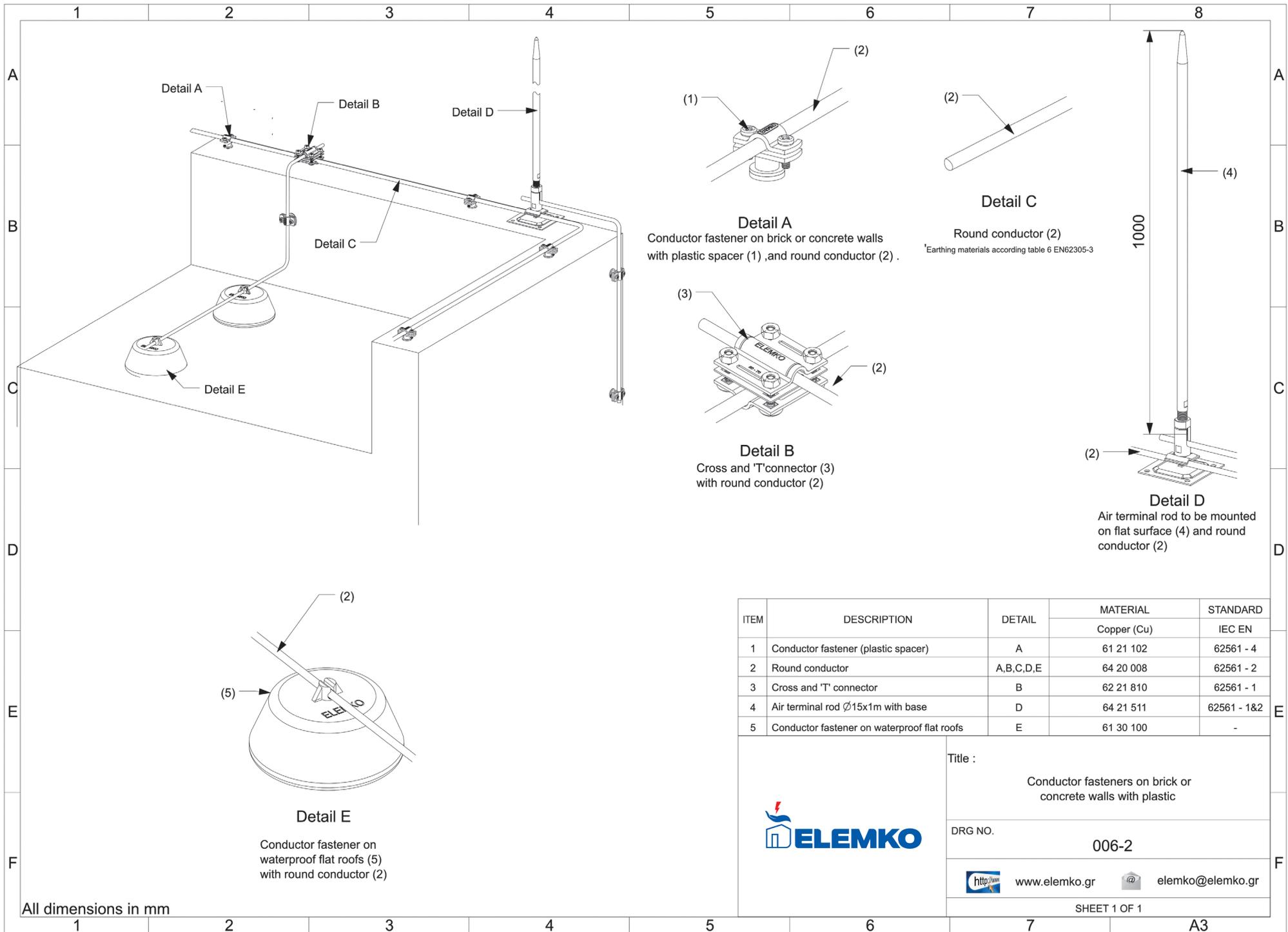
Detail E
Adaptor fastener (5)
with tape conductor (6)



Detail F
Tape conductor (6)



AIR TERMINATION SYSTEMS



Detail A
 Conductor fastener on brick or concrete walls with plastic spacer (1) ,and round conductor (2) .

Detail C
 Round conductor (2)
 *Earthing materials according table 6 EN62305-3

Detail B
 Cross and 'T' connector (3) with round conductor (2)

Detail D
 Air terminal rod to be mounted on flat surface (4) and round conductor (2)

Detail E
 Conductor fastener on waterproof flat roofs (5) with round conductor (2)

ITEM	DESCRIPTION	DETAIL	MATERIAL	STANDARD
			Copper (Cu)	IEC EN
1	Conductor fastener (plastic spacer)	A	61 21 102	62561 - 4
2	Round conductor	A,B,C,D,E	64 20 008	62561 - 2
3	Cross and 'T' connector	B	62 21 810	62561 - 1
4	Air terminal rod $\varnothing 15 \times 1 \text{m}$ with base	D	64 21 511	62561 - 1&2
5	Conductor fastener on waterproof flat roofs	E	61 30 100	-



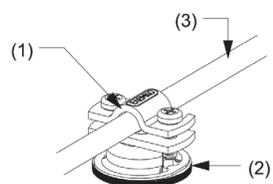
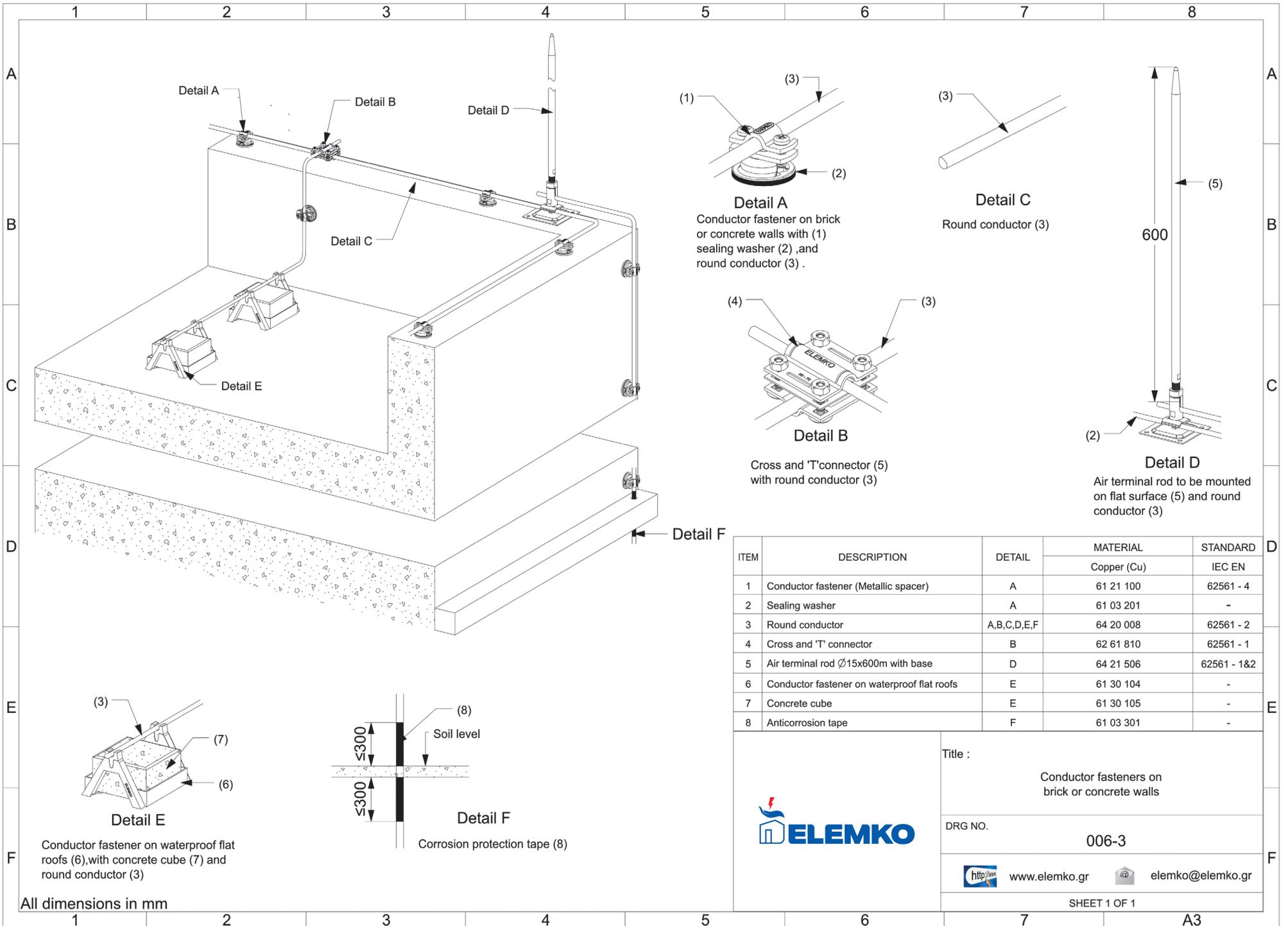
Title :
 Conductor fasteners on brick or concrete walls with plastic

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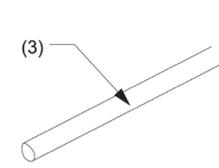
<http://www.elemko.gr> elemko@elemko.gr

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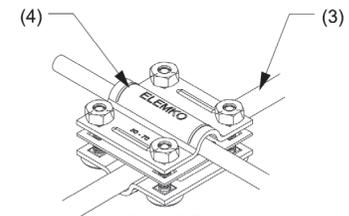
All dimensions in mm



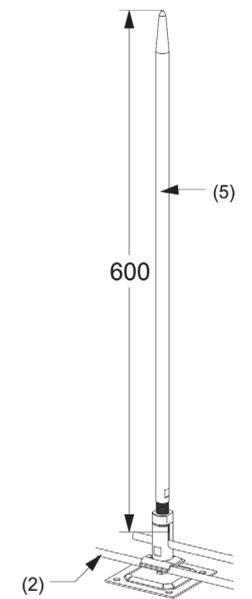
Detail A
 Conductor fastener on brick or concrete walls with (1) sealing washer (2) ,and round conductor (3) .



Detail C
 Round conductor (3)

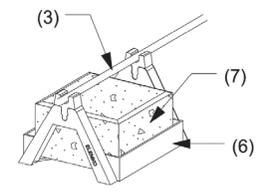


Detail B
 Cross and 'T'connector (5) with round conductor (3)

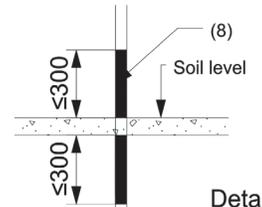


Detail D
 Air terminal rod to be mounted on flat surface (5) and round conductor (3)

ITEM	DESCRIPTION	DETAIL	MATERIAL	STANDARD
			Copper (Cu)	IEC EN
1	Conductor fastener (Metallic spacer)	A	61 21 100	62561 - 4
2	Sealing washer	A	61 03 201	-
3	Round conductor	A,B,C,D,E,F	64 20 008	62561 - 2
4	Cross and 'T' connector	B	62 61 810	62561 - 1
5	Air terminal rod $\varnothing 15 \times 600$ m with base	D	64 21 506	62561 - 1&2
6	Conductor fastener on waterproof flat roofs	E	61 30 104	-
7	Concrete cube	E	61 30 105	-
8	Anticorrosion tape	F	61 03 301	-



Detail E
 Conductor fastener on waterproof flat roofs (6), with concrete cube (7) and round conductor (3)



Detail F
 Corrosion protection tape (8)

All dimensions in mm

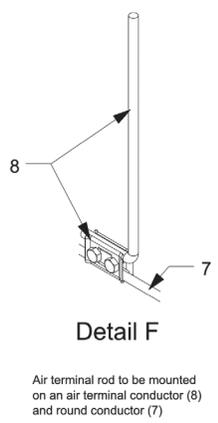
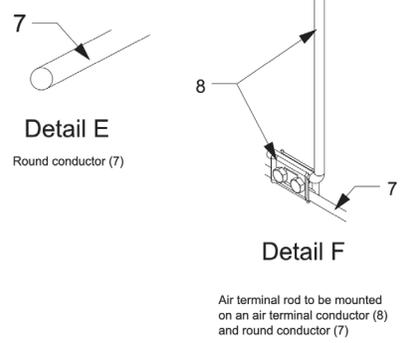
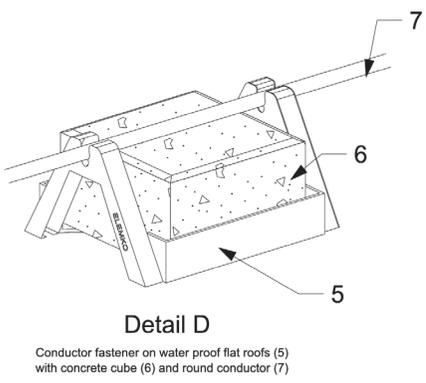
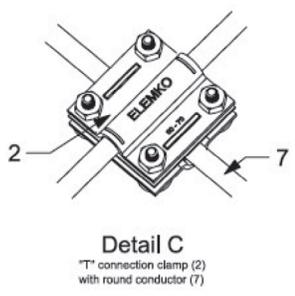
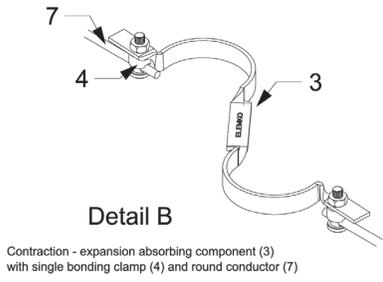
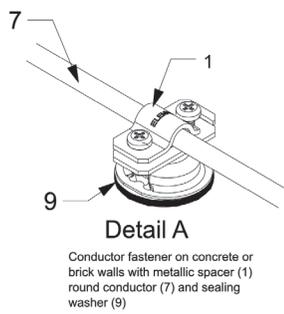
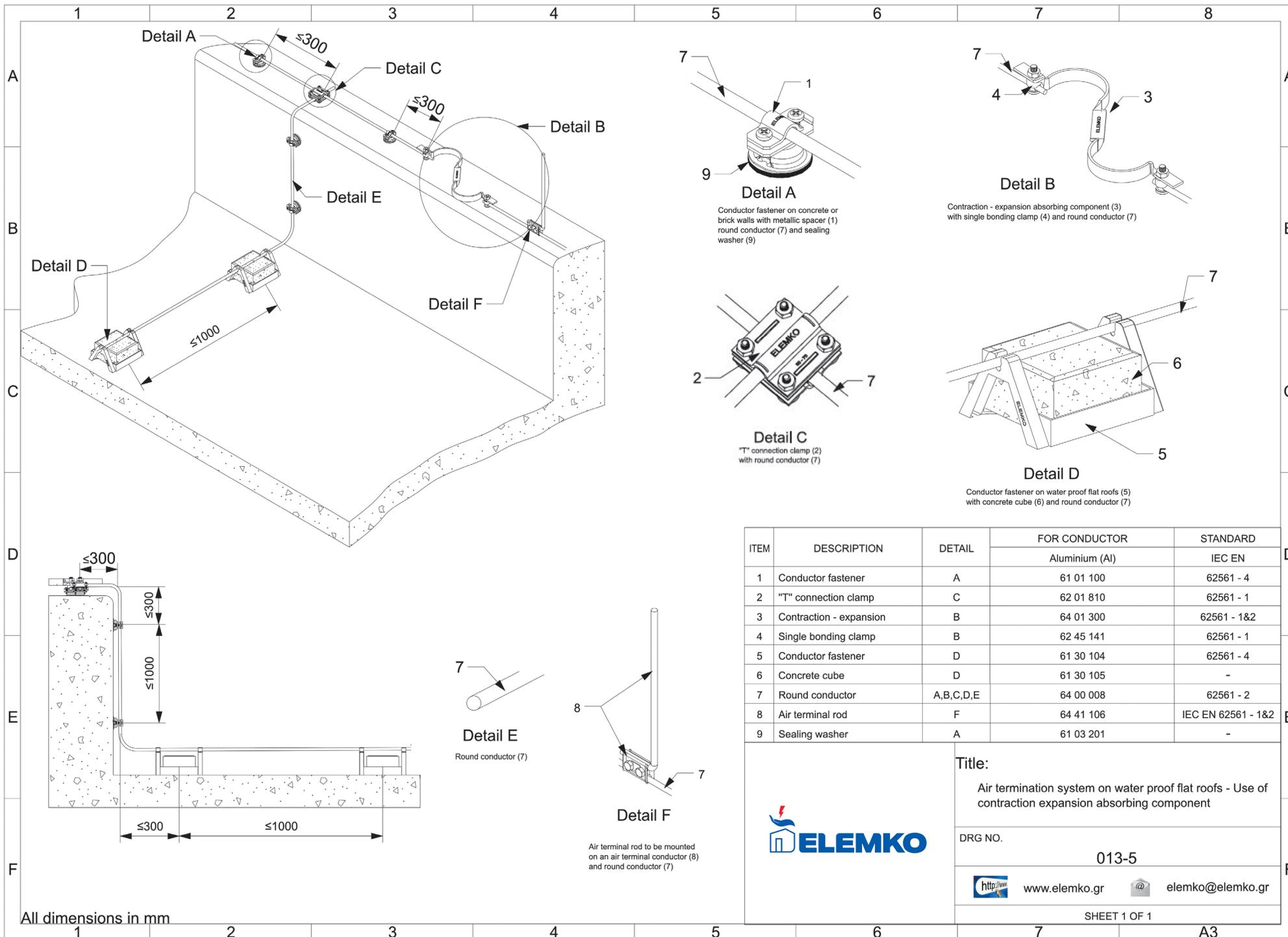


Title :
 Conductor fasteners on brick or concrete walls

DRG NO. 006-3

<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1



ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR	
			Aluminium (Al)	STANDARD
1	Conductor fastener	A	61 01 100	62561 - 4
2	"T" connection clamp	C	62 01 810	62561 - 1
3	Contraction - expansion	B	64 01 300	62561 - 1&2
4	Single bonding clamp	B	62 45 141	62561 - 1
5	Conductor fastener	D	61 30 104	62561 - 4
6	Concrete cube	D	61 30 105	-
7	Round conductor	A,B,C,D,E	64 00 008	62561 - 2
8	Air terminal rod	F	64 41 106	IEC EN 62561 - 1&2
9	Sealing washer	A	61 03 201	-



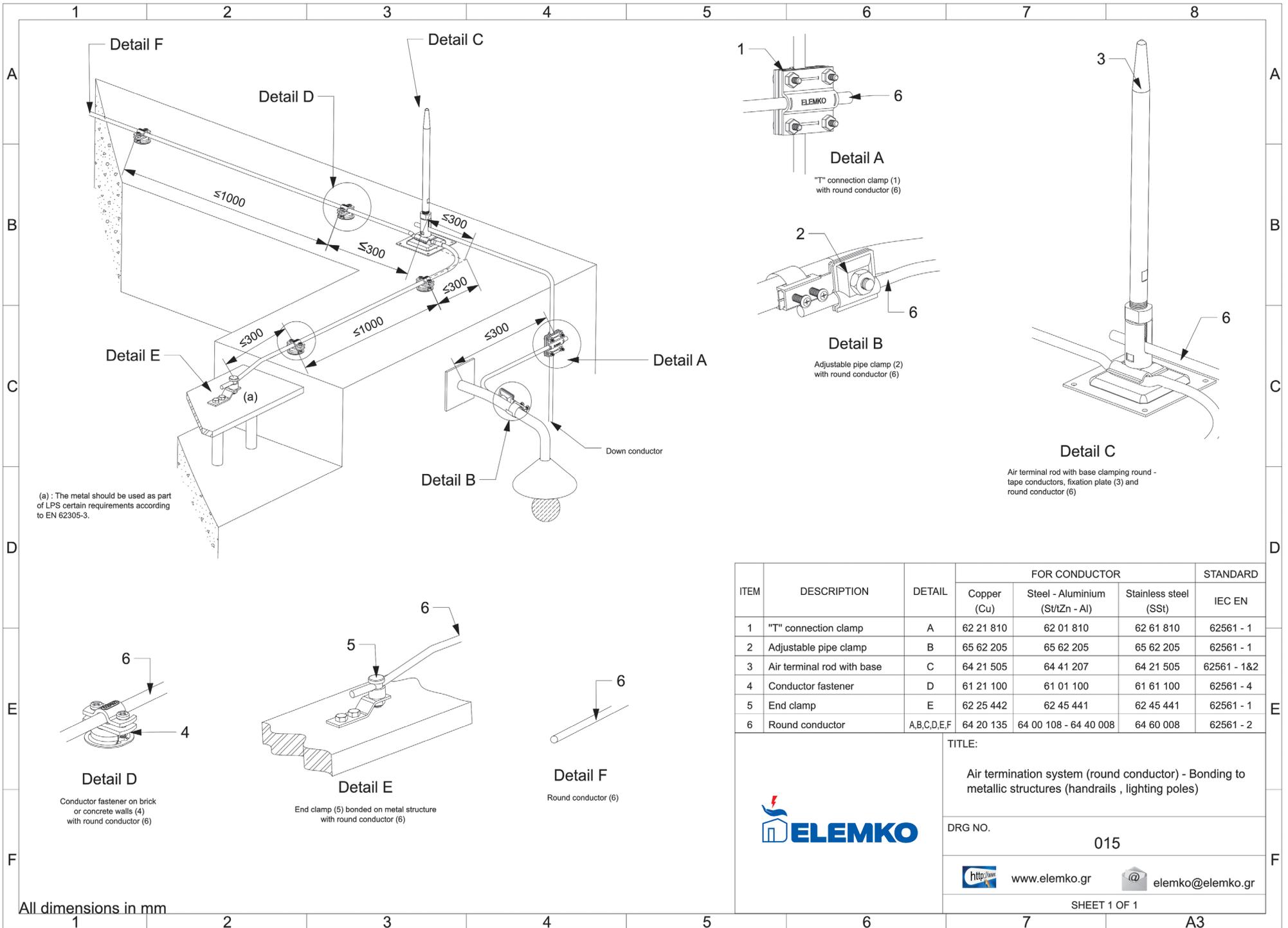
Title:
Air termination system on water proof flat roofs - Use of contraction expansion absorbing component

DRG NO. 013-5

<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

All dimensions in mm



ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD IEC EN
			Copper (Cu)	Steel - Aluminium (St/Zn - Al)	Stainless steel (SS)	
1	"T" connection clamp	A	62 21 810	62 01 810	62 61 810	62561 - 1
2	Adjustable pipe clamp	B	65 62 205	65 62 205	65 62 205	62561 - 1
3	Air terminal rod with base	C	64 21 505	64 41 207	64 21 505	62561 - 1&2
4	Conductor fastener	D	61 21 100	61 01 100	61 61 100	62561 - 4
5	End clamp	E	62 25 442	62 45 441	62 45 441	62561 - 1
6	Round conductor	A,B,C,D,E,F	64 20 135	64 00 108 - 64 40 008	64 60 008	62561 - 2



TITLE:

Air termination system (round conductor) - Bonding to metallic structures (handrails, lighting poles)

DRG NO.

015

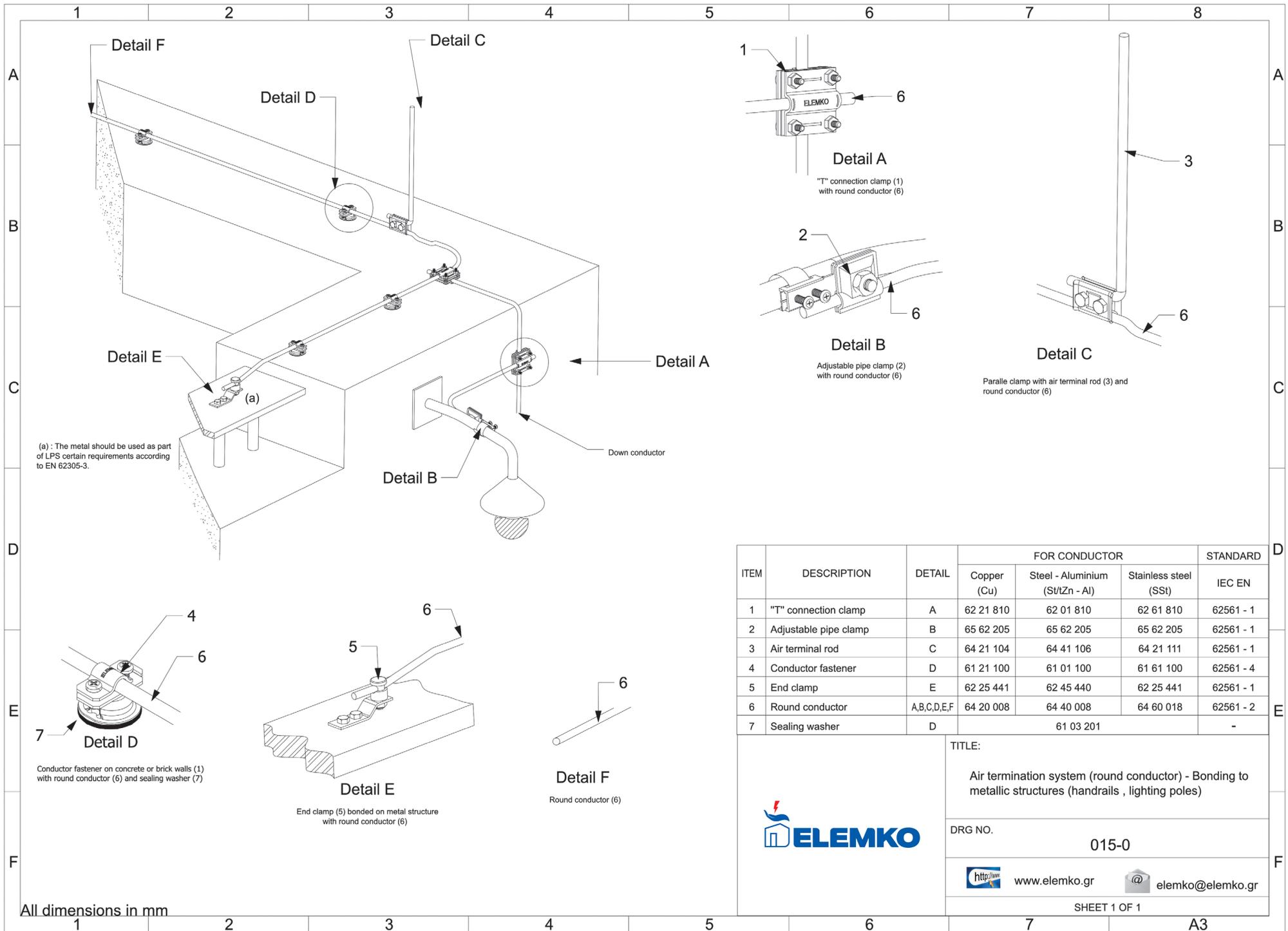


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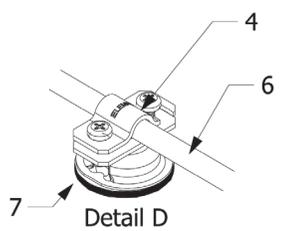


elemko@elemko.gr

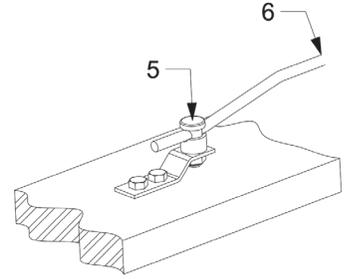
SHEET 1 OF 1



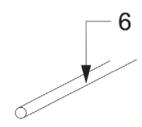
(a) : The metal should be used as part of LPS certain requirements according to EN 62305-3.



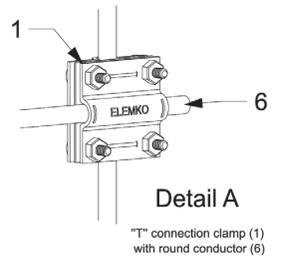
Conductor fastener on concrete or brick walls (1) with round conductor (6) and sealing washer (7)



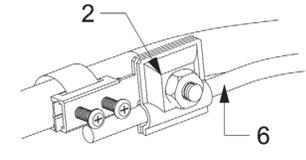
End clamp (5) bonded on metal structure with round conductor (6)



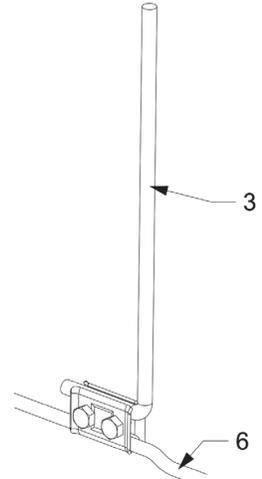
Detail F
Round conductor (6)



Detail A
"T" connection clamp (1) with round conductor (6)



Detail B
Adjustable pipe clamp (2) with round conductor (6)



Detail C
Parallel clamp with air terminal rod (3) and round conductor (6)

ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD
			Copper (Cu)	Steel - Aluminium (St/tZn - Al)	Stainless steel (SSt)	IEC EN
1	"T" connection clamp	A	62 21 810	62 01 810	62 61 810	62561 - 1
2	Adjustable pipe clamp	B	65 62 205	65 62 205	65 62 205	62561 - 1
3	Air terminal rod	C	64 21 104	64 41 106	64 21 111	62561 - 1
4	Conductor fastener	D	61 21 100	61 01 100	61 61 100	62561 - 4
5	End clamp	E	62 25 441	62 45 440	62 25 441	62561 - 1
6	Round conductor	A,B,C,D,E,F	64 20 008	64 40 008	64 60 018	62561 - 2
7	Sealing washer	D	61 03 201			-



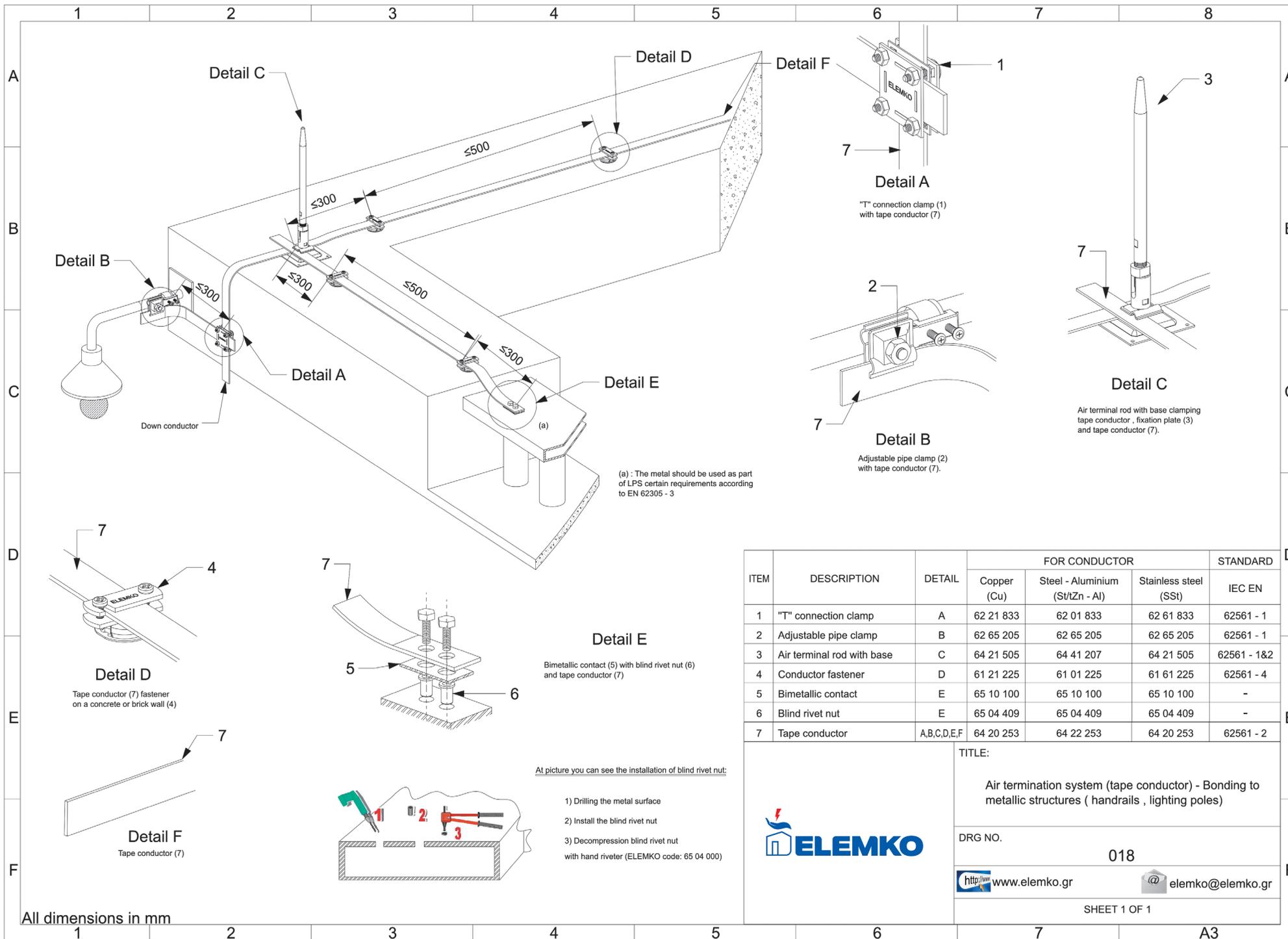
TITLE:
Air termination system (round conductor) - Bonding to metallic structures (handrails , lighting poles)

DRG NO. 015-0

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SHEET 1 OF 1

All dimensions in mm



ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD IEC EN
			Copper (Cu)	Steel - Aluminium (St/Zn - Al)	Stainless steel (SS)	
1	"T" connection clamp	A	62 21 833	62 01 833	62 61 833	62561 - 1
2	Adjustable pipe clamp	B	62 65 205	62 65 205	62 65 205	62561 - 1
3	Air terminal rod with base	C	64 21 505	64 41 207	64 21 505	62561 - 1&2
4	Conductor fastener	D	61 21 225	61 01 225	61 61 225	62561 - 4
5	Bimetallic contact	E	65 10 100	65 10 100	65 10 100	-
6	Blind rivet nut	E	65 04 409	65 04 409	65 04 409	-
7	Tape conductor	A,B,C,D,E,F	64 20 253	64 22 253	64 20 253	62561 - 2

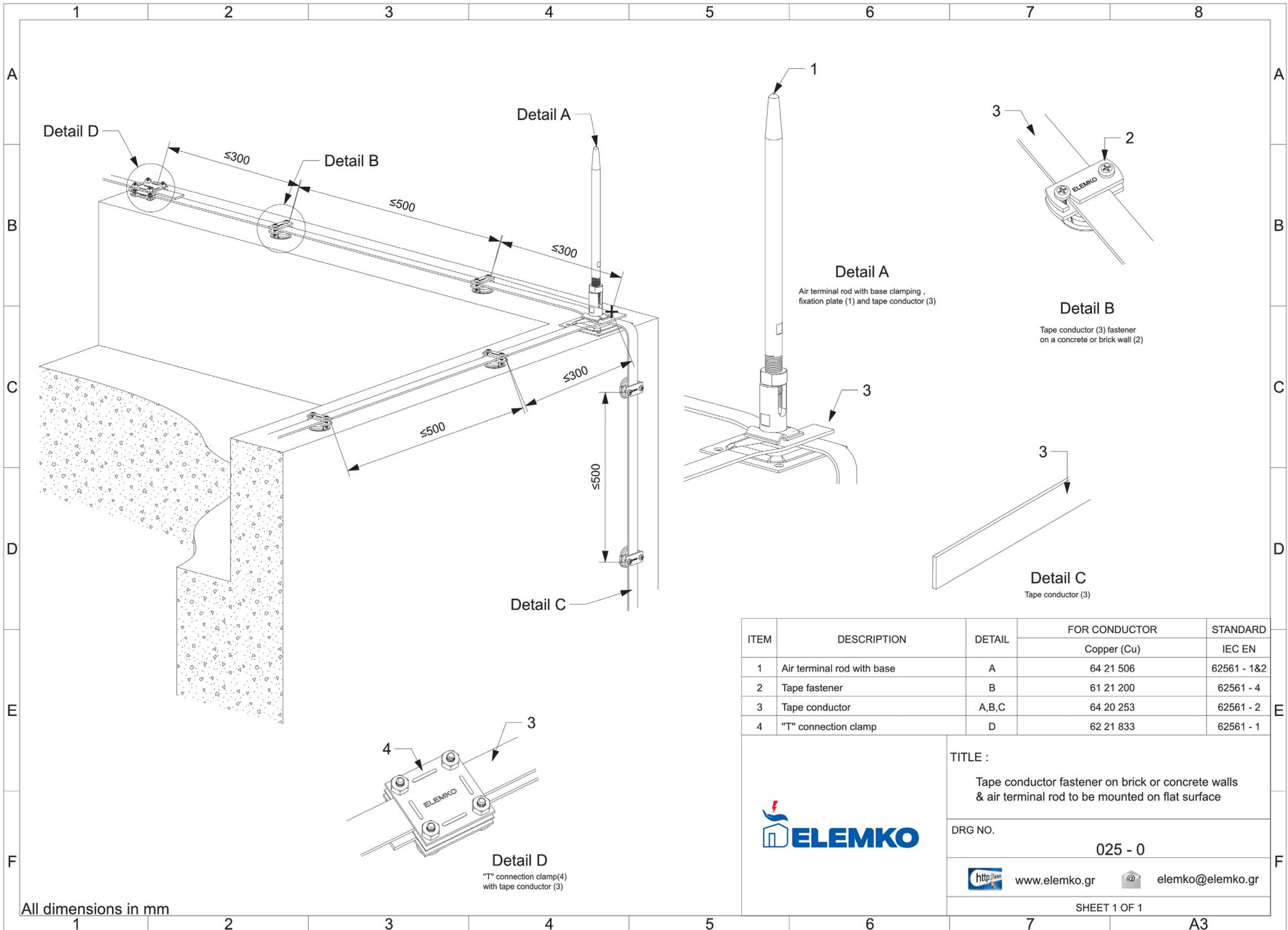
TITLE:
Air termination system (tape conductor) - Bonding to metallic structures (handrails , lighting poles)

DRG NO. 018

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SHEET 1 OF 1





ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR	STANDARD
			Copper (Cu)	IEC EN
1	Air terminal rod with base	A	64 21 506	62561 - 1&2
2	Tape fastener	B	61 21 200	62561 - 4
3	Tape conductor	A,B,C	64 20 253	62561 - 2
4	"T" connection clamp	D	62 21 833	62561 - 1



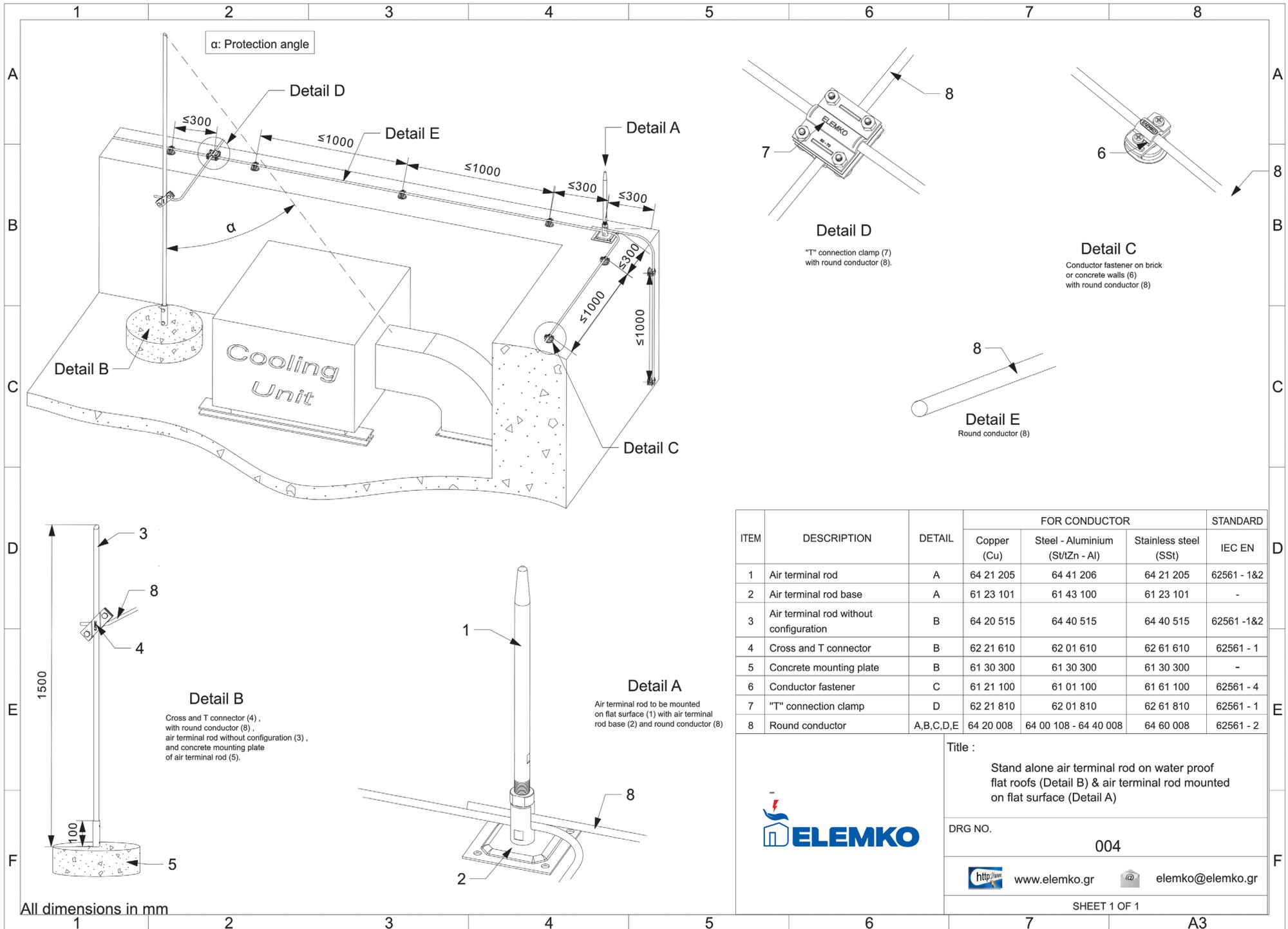
TITLE :
Tape conductor fastener on brick or concrete walls & air terminal rod to be mounted on flat surface

DRG NO. 025 - 0

<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

All dimensions in mm



ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD
			Copper (Cu)	Steel - Aluminium (St/Al - Zn - Al)	Stainless steel (SSt)	
1	Air terminal rod	A	64 21 205	64 41 206	64 21 205	62561 - 1&2
2	Air terminal rod base	A	61 23 101	61 43 100	61 23 101	-
3	Air terminal rod without configuration	B	64 20 515	64 40 515	64 40 515	62561 - 1&2
4	Cross and T connector	B	62 21 610	62 01 610	62 61 610	62561 - 1
5	Concrete mounting plate	B	61 30 300	61 30 300	61 30 300	-
6	Conductor fastener	C	61 21 100	61 01 100	61 61 100	62561 - 4
7	"T" connection clamp	D	62 21 810	62 01 810	62 61 810	62561 - 1
8	Round conductor	A,B,C,D,E	64 20 008	64 00 108 - 64 40 008	64 60 008	62561 - 2

ELEMKO

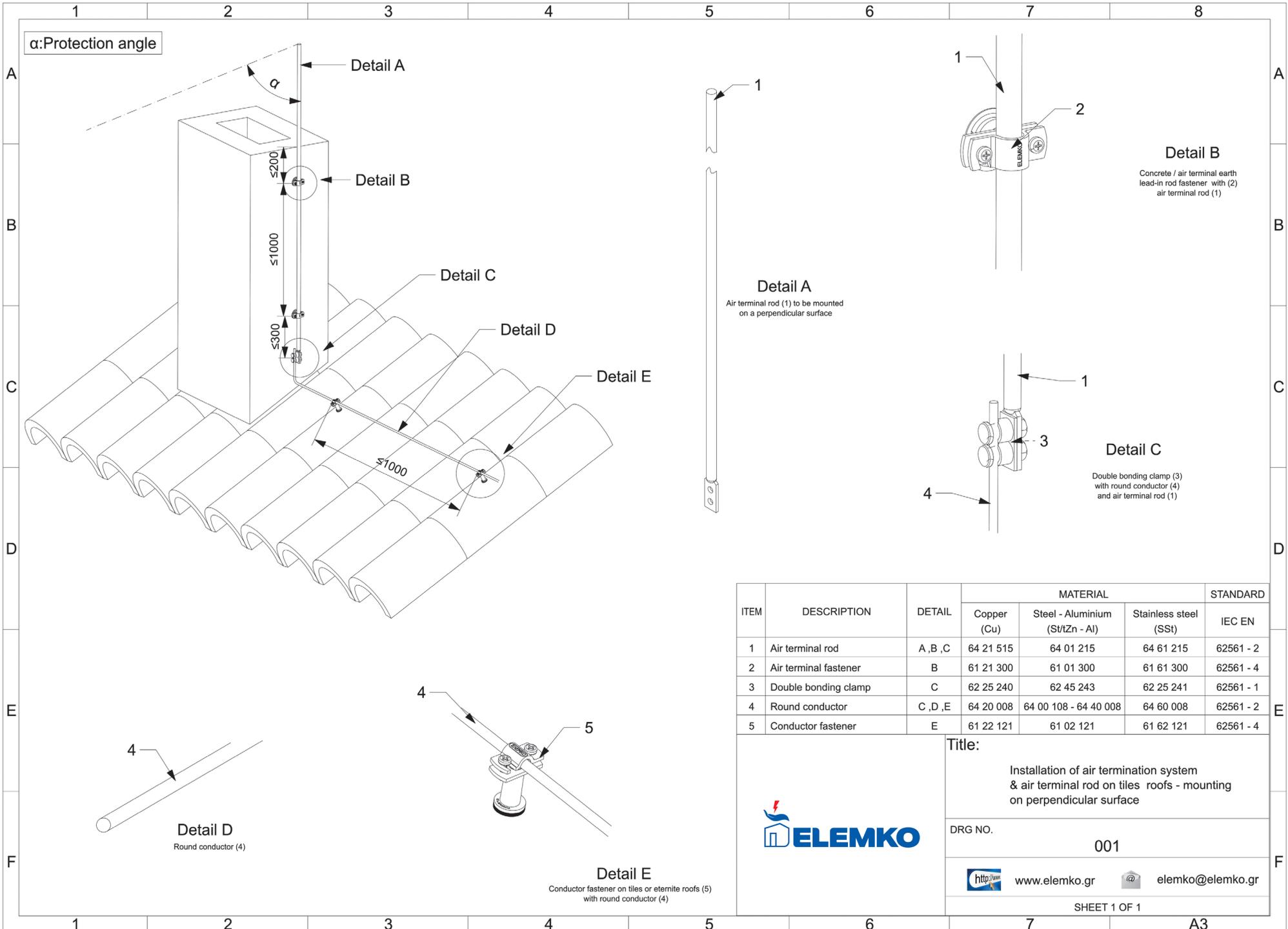
Title :
Stand alone air terminal rod on water proof flat roofs (Detail B) & air terminal rod mounted on flat surface (Detail A)

DRG NO. 004

<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

All dimensions in mm



ITEM	DESCRIPTION	DETAIL	MATERIAL			STANDARD
			Copper (Cu)	Steel - Aluminium (St/Al - Zn - Al)	Stainless steel (SS)	
1	Air terminal rod	A, B, C	64 21 515	64 01 215	64 61 215	62561 - 2
2	Air terminal fastener	B	61 21 300	61 01 300	61 61 300	62561 - 4
3	Double bonding clamp	C	62 25 240	62 45 243	62 25 241	62561 - 1
4	Round conductor	C, D, E	64 20 008	64 00 108 - 64 40 008	64 60 008	62561 - 2
5	Conductor fastener	E	61 22 121	61 02 121	61 62 121	62561 - 4

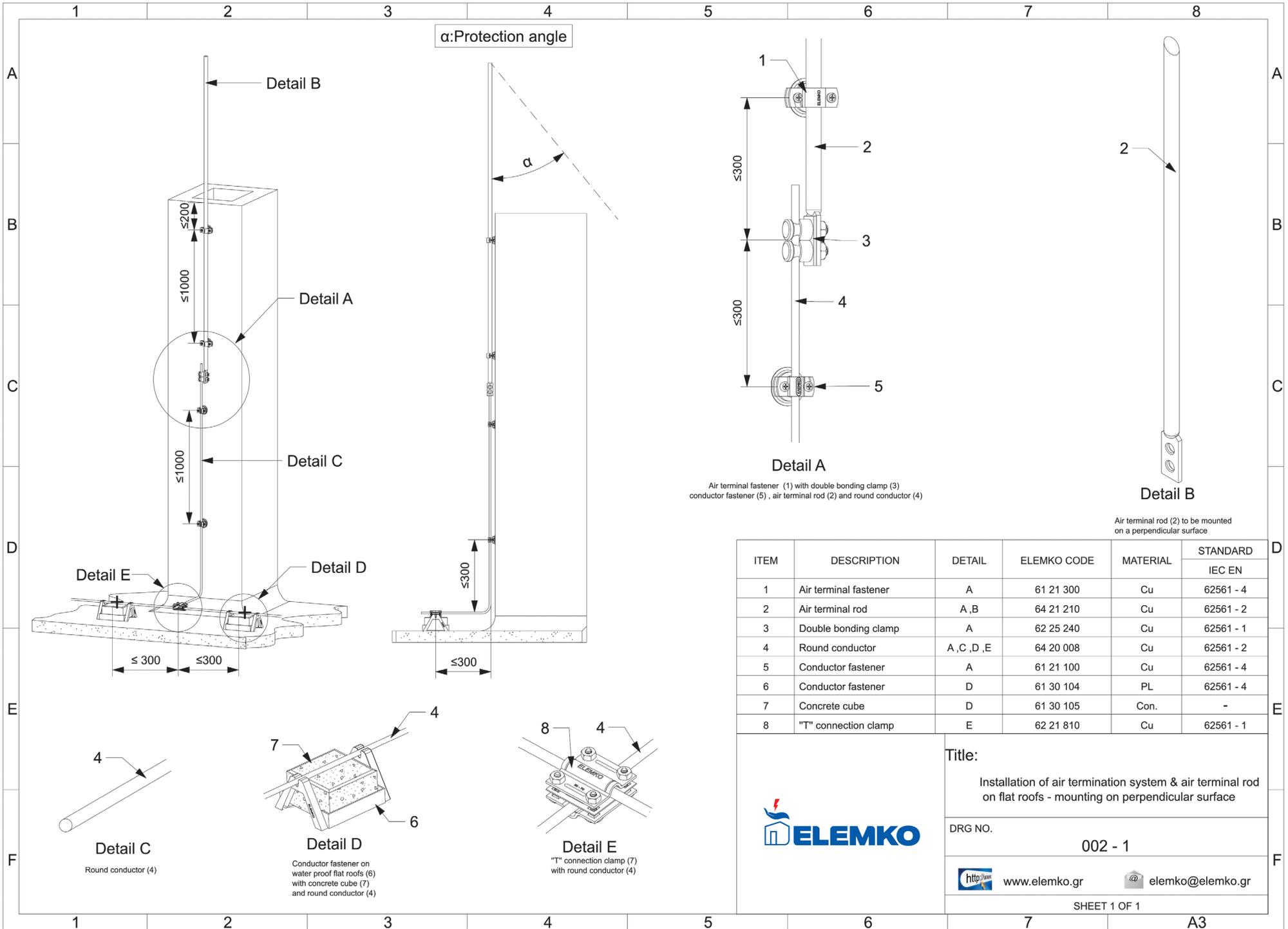


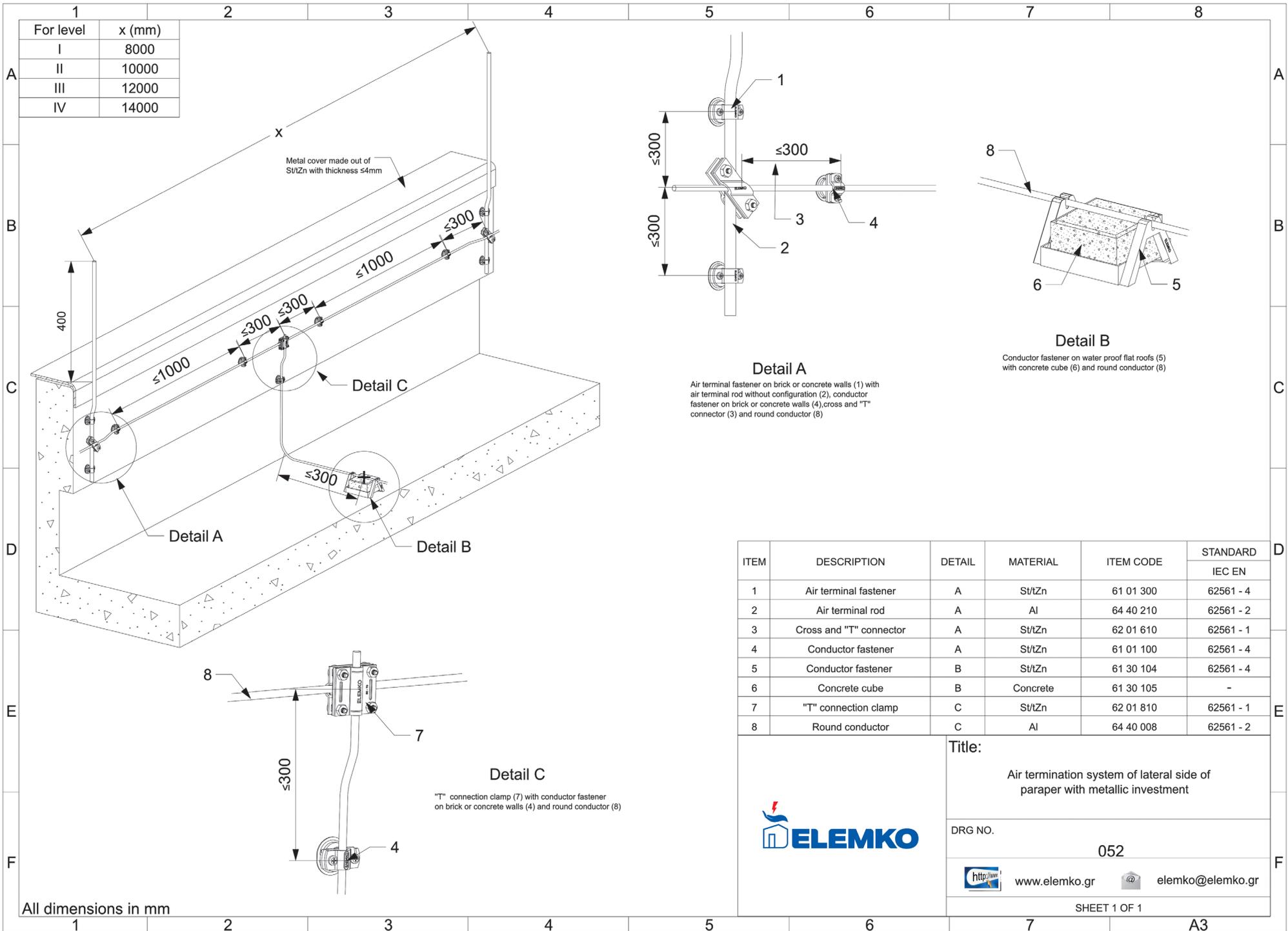
Title:
Installation of air termination system & air terminal rod on tiles roofs - mounting on perpendicular surface

DRG NO. 001

<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1





For level	x (mm)
I	8000
II	10000
III	12000
IV	14000

Metal cover made out of St/tZn with thickness 4mm

400

≤1000

≤300

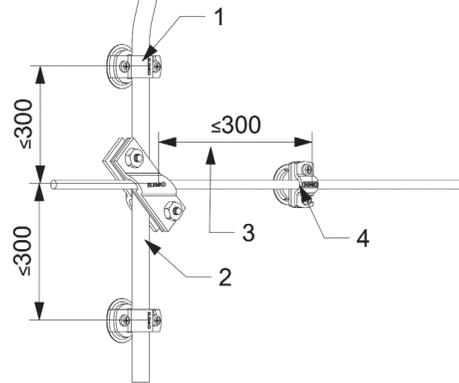
≤300

≤300

≤300

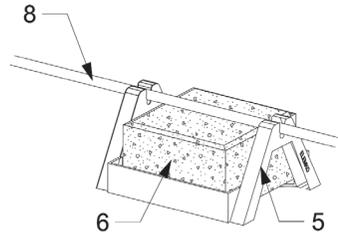
≤300

≤300



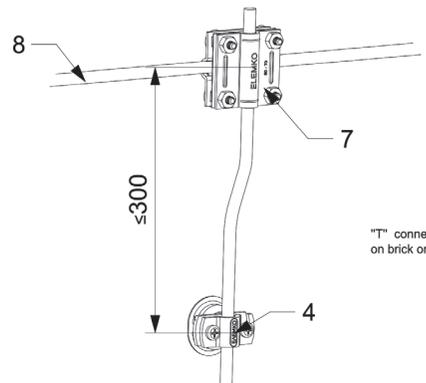
Detail A

Air terminal fastener on brick or concrete walls (1) with air terminal rod without configuration (2), conductor fastener on brick or concrete walls (4), cross and "T" connector (3) and round conductor (8)



Detail B

Conductor fastener on waterproof flat roofs (5) with concrete cube (6) and round conductor (8)



Detail C

"T" connection clamp (7) with conductor fastener on brick or concrete walls (4) and round conductor (8)

ITEM	DESCRIPTION	DETAIL	MATERIAL	ITEM CODE	STANDARD
					IEC EN
1	Air terminal fastener	A	St/tZn	61 01 300	62561 - 4
2	Air terminal rod	A	Al	64 40 210	62561 - 2
3	Cross and "T" connector	A	St/tZn	62 01 610	62561 - 1
4	Conductor fastener	A	St/tZn	61 01 100	62561 - 4
5	Conductor fastener	B	St/tZn	61 30 104	62561 - 4
6	Concrete cube	B	Concrete	61 30 105	-
7	"T" connection clamp	C	St/tZn	62 01 810	62561 - 1
8	Round conductor	C	Al	64 40 008	62561 - 2



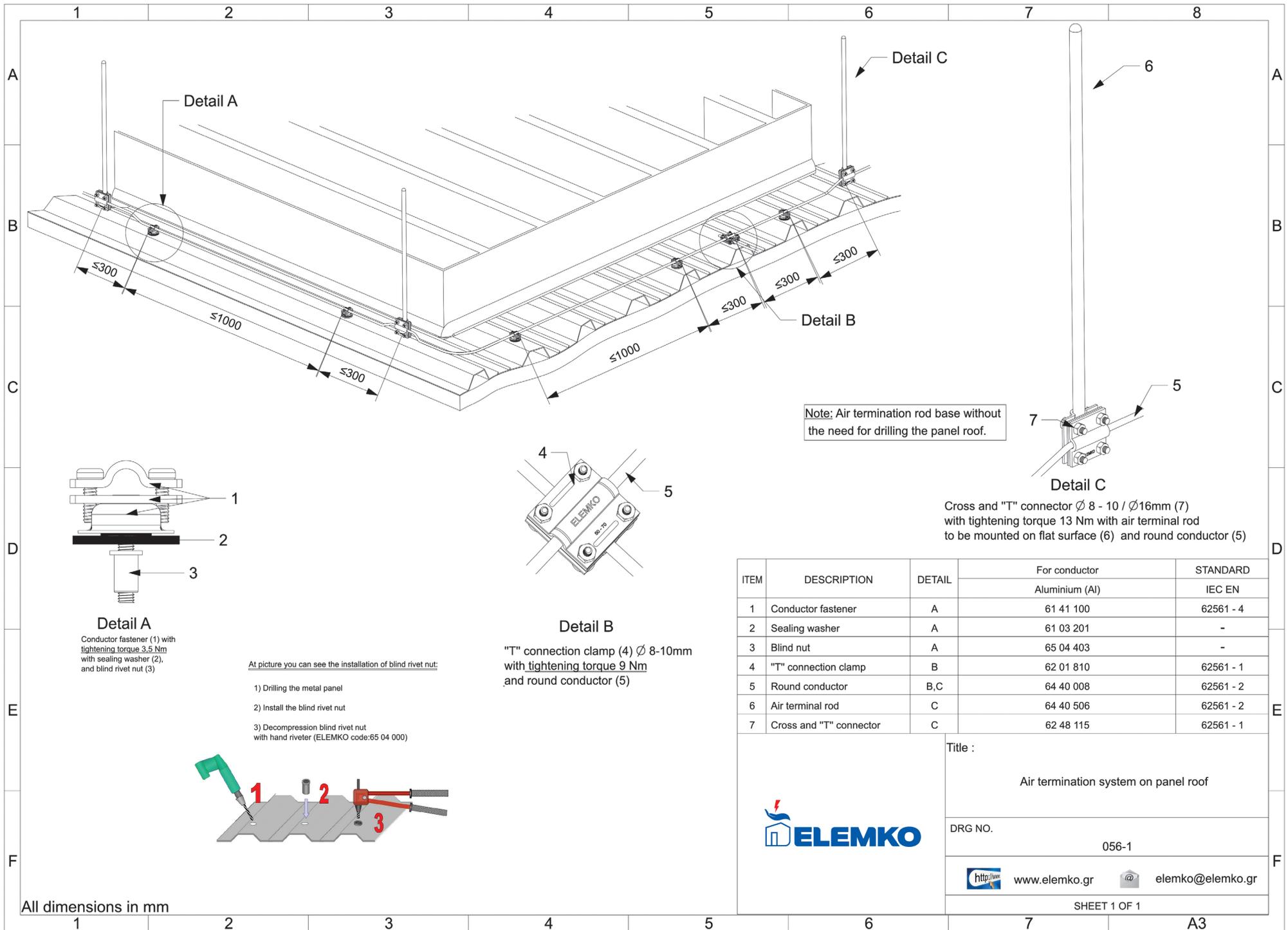
Title:
Air termination system of lateral side of parapet with metallic investment

DRG NO.
052

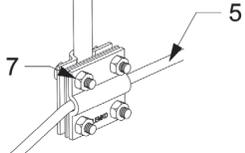
<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

All dimensions in mm

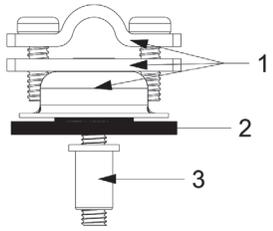


Note: Air termination rod base without the need for drilling the panel roof.



Detail C

Cross and "T" connector $\varnothing 8 - 10 / \varnothing 16\text{mm}$ (7) with tightening torque 13 Nm with air terminal rod to be mounted on flat surface (6) and round conductor (5)

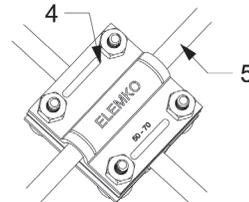
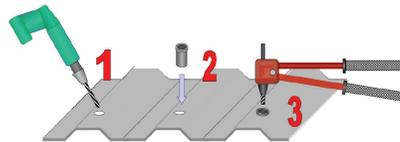


Detail A

Conductor fastener (1) with tightening torque 3.5 Nm with sealing washer (2), and blind rivet nut (3)

At picture you can see the installation of blind rivet nut:

- 1) Drilling the metal panel
- 2) Install the blind rivet nut
- 3) Decompression blind rivet nut with hand riveter (ELEMKO code:65 04 000)



Detail B

"T" connection clamp (4) $\varnothing 8-10\text{mm}$ with tightening torque 9 Nm and round conductor (5)

ITEM	DESCRIPTION	DETAIL	For conductor	STANDARD
			Aluminium (Al)	IEC EN
1	Conductor fastener	A	61 41 100	62561 - 4
2	Sealing washer	A	61 03 201	-
3	Blind nut	A	65 04 403	-
4	"T" connection clamp	B	62 01 810	62561 - 1
5	Round conductor	B,C	64 40 008	62561 - 2
6	Air terminal rod	C	64 40 506	62561 - 2
7	Cross and "T" connector	C	62 48 115	62561 - 1



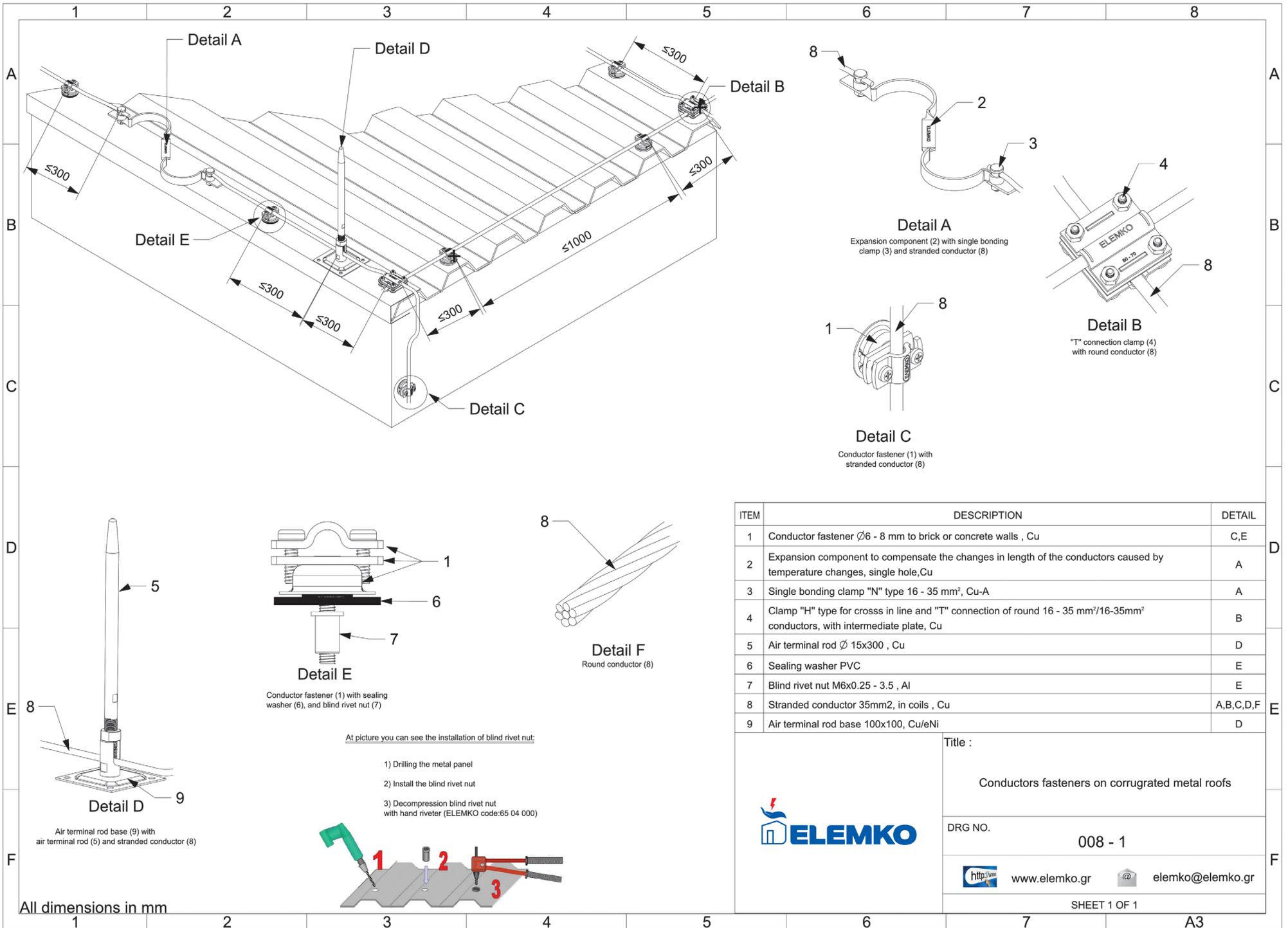
Title :
Air termination system on panel roof

DRG NO.
056-1

<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

All dimensions in mm



ITEM	DESCRIPTION	DETAIL
1	Conductor fastener $\varnothing 6 - 8$ mm to brick or concrete walls , Cu	C,E
2	Expansion component to compensate the changes in length of the conductors caused by temperature changes, single hole,Cu	A
3	Single bonding clamp "N" type 16 - 35 mm ² , Cu-A	A
4	Clamp "H" type for cross in line and "T" connection of round 16 - 35 mm ² /16-35mm ² conductors, with intermediate plate, Cu	B
5	Air terminal rod $\varnothing 15 \times 300$, Cu	D
6	Sealing washer PVC	E
7	Blind rivet nut M6x0.25 - 3.5 , Al	E
8	Stranded conductor 35mm ² , in coils , Cu	A,B,C,D,F
9	Air terminal rod base 100x100, Cu/eNi	D



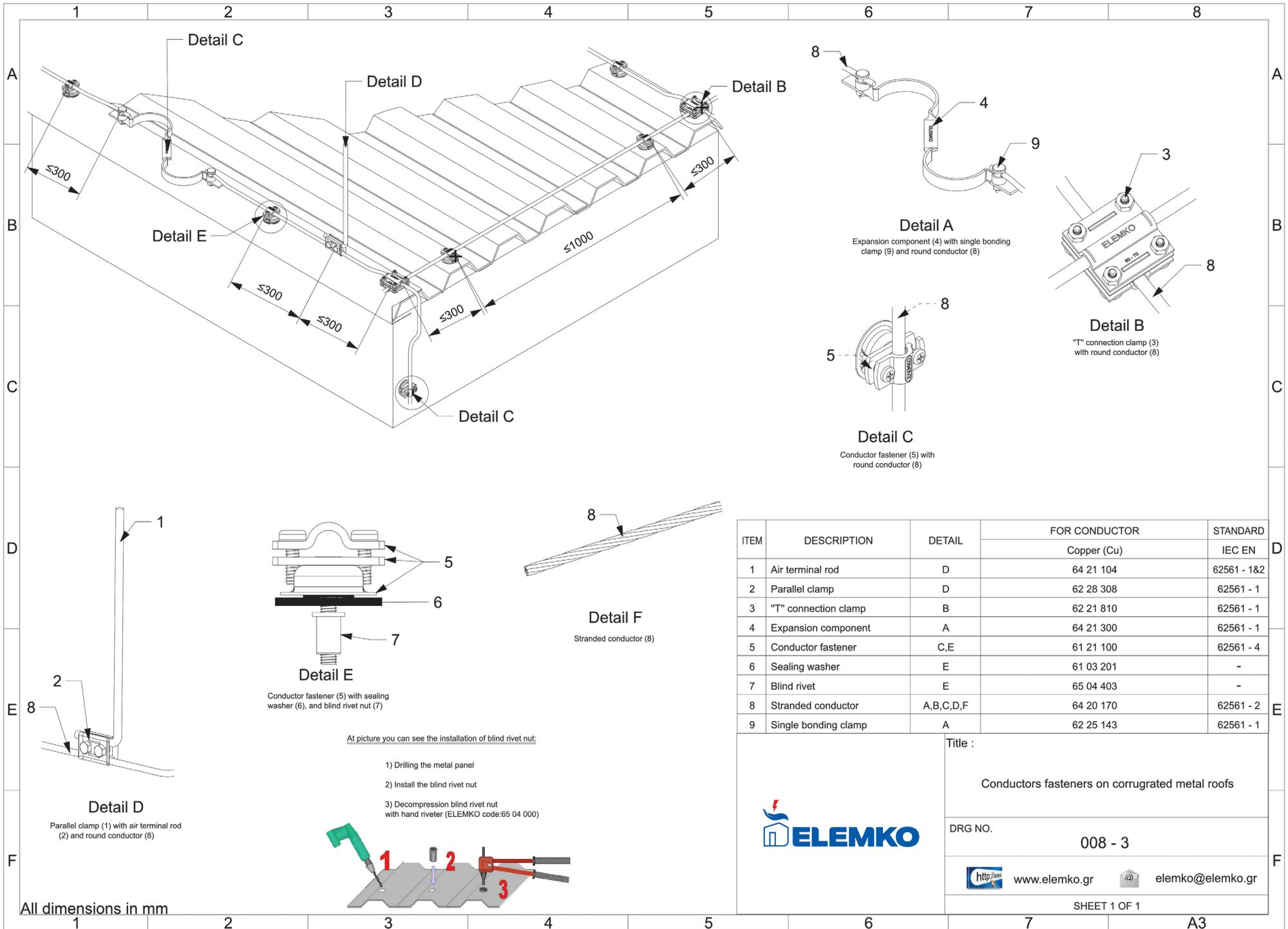
Title :

Conductors fasteners on corrugated metal roofs

DRG NO. 008 - 1

<http://www.elemko.gr>
elemko@elemko.gr

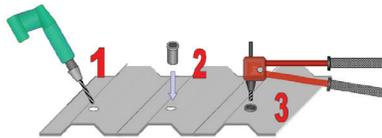
SHEET 1 OF 1



ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR	
			Copper (Cu)	STANDARD
1	Air terminal rod	D	64 21 104	62561 - 1&2
2	Parallel clamp	D	62 28 308	62561 - 1
3	"T" connection clamp	B	62 21 810	62561 - 1
4	Expansion component	A	64 21 300	62561 - 1
5	Conductor fastener	C,E	61 21 100	62561 - 4
6	Sealing washer	E	61 03 201	-
7	Blind rivet	E	65 04 403	-
8	Stranded conductor	A,B,C,D,F	64 20 170	62561 - 2
9	Single bonding clamp	A	62 25 143	62561 - 1

At picture you can see the installation of blind rivet nut:

- 1) Drilling the metal panel
- 2) Install the blind rivet nut
- 3) Decompression blind rivet nut with hand riveter (ELEMKO code:65 04 000)



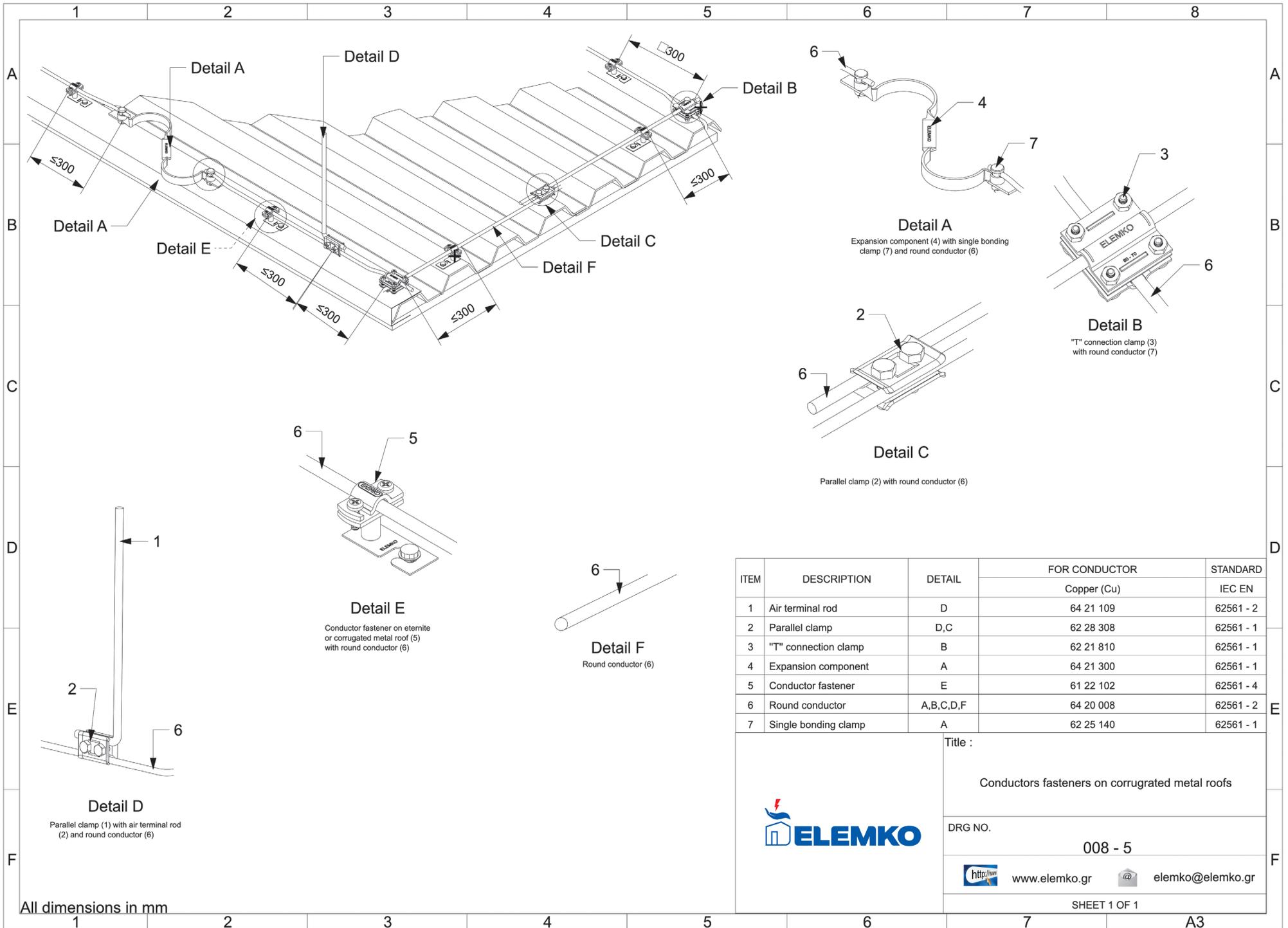
All dimensions in mm

Title :
Conductors fasteners on corrugated metal roofs

DRG NO. 008 - 3

<http://www.elemko.gr>
 elemko@elemko.gr

SHEET 1 OF 1



ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR	
			Copper (Cu)	STANDARD
1	Air terminal rod	D	64 21 109	62561 - 2
2	Parallel clamp	D,C	62 28 308	62561 - 1
3	"T" connection clamp	B	62 21 810	62561 - 1
4	Expansion component	A	64 21 300	62561 - 1
5	Conductor fastener	E	61 22 102	62561 - 4
6	Round conductor	A,B,C,D,F	64 20 008	62561 - 2
7	Single bonding clamp	A	62 25 140	62561 - 1

ELEMKO

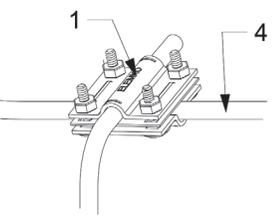
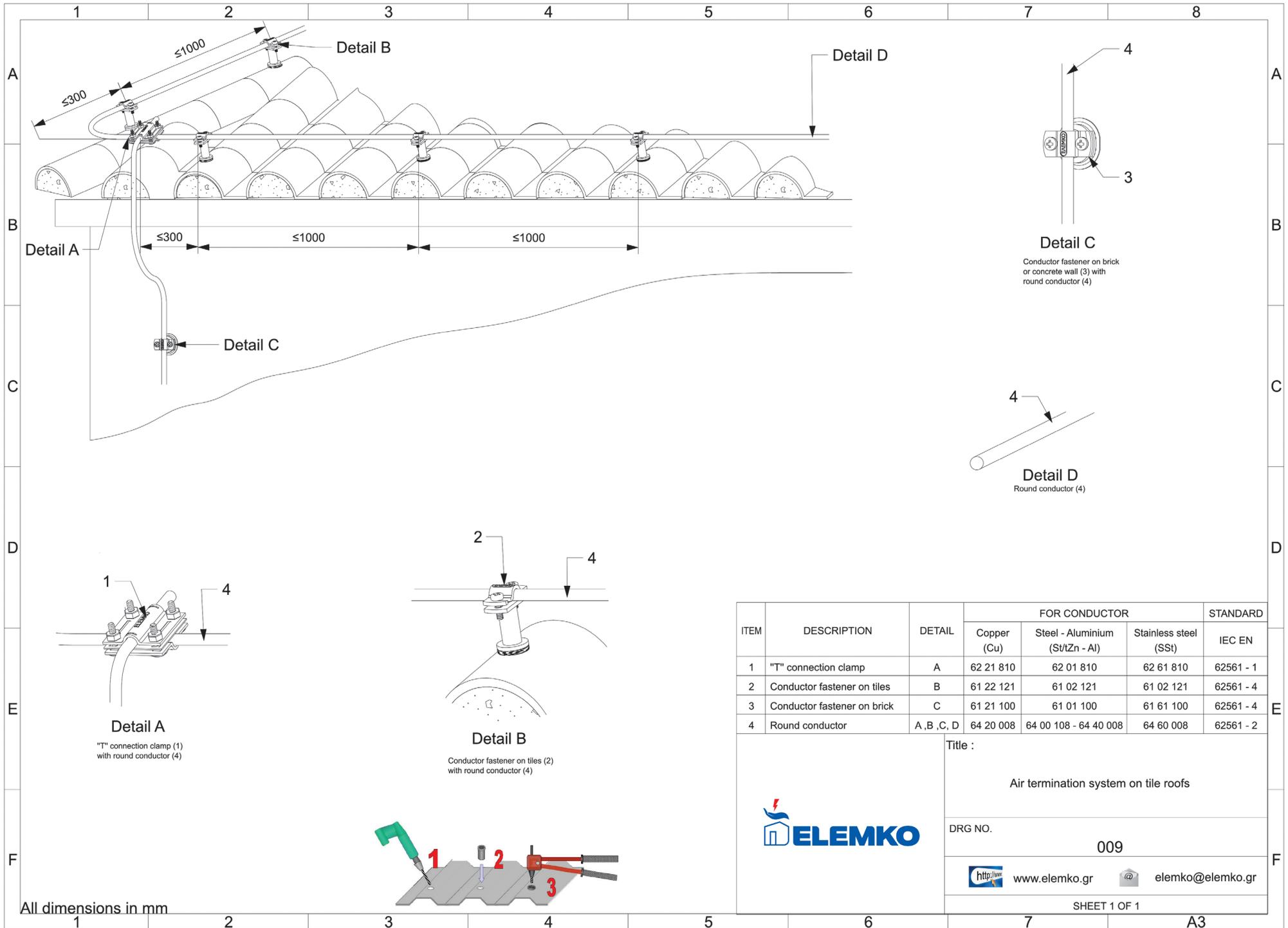
Title :
Conductors fasteners on corrugated metal roofs

DRG NO.
008 - 5

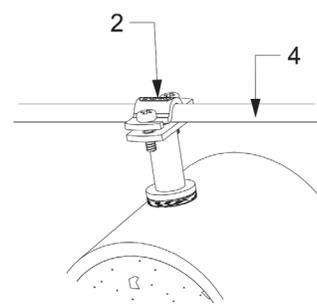
<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

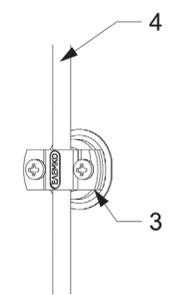
All dimensions in mm



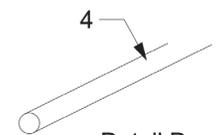
Detail A
"T" connection clamp (1)
with round conductor (4)



Detail B
Conductor fastener on tiles (2)
with round conductor (4)



Detail C
Conductor fastener on brick
or concrete wall (3) with
round conductor (4)



Detail D
Round conductor (4)

ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD
			Copper (Cu)	Steel - Aluminium (St/AlZn - Al)	Stainless steel (SS)	
1	"T" connection clamp	A	62 21 810	62 01 810	62 61 810	62561 - 1
2	Conductor fastener on tiles	B	61 22 121	61 02 121	61 02 121	62561 - 4
3	Conductor fastener on brick	C	61 21 100	61 01 100	61 61 100	62561 - 4
4	Round conductor	A, B, C, D	64 20 008	64 00 108 - 64 40 008	64 60 008	62561 - 2



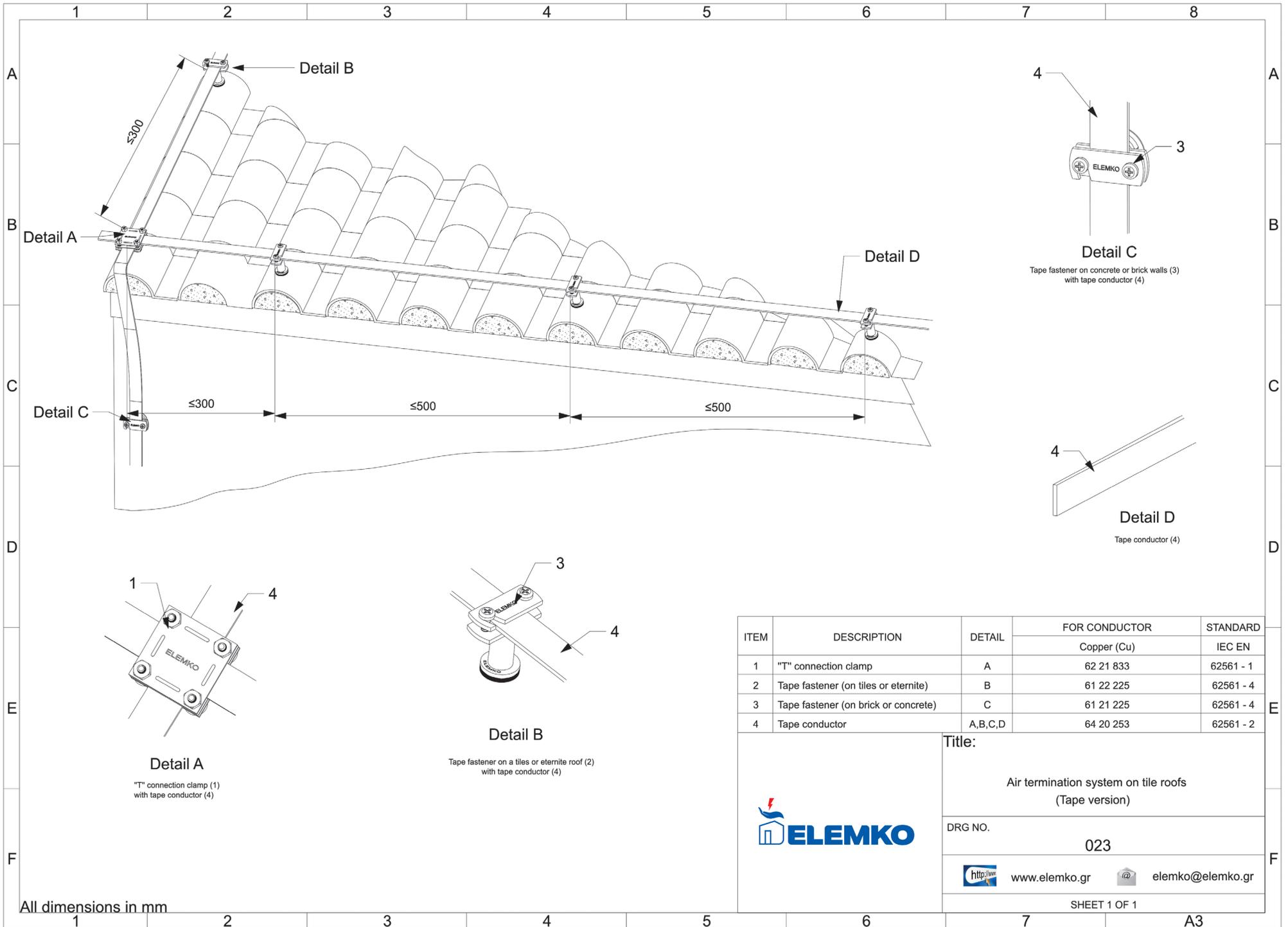
Title :
Air termination system on tile roofs

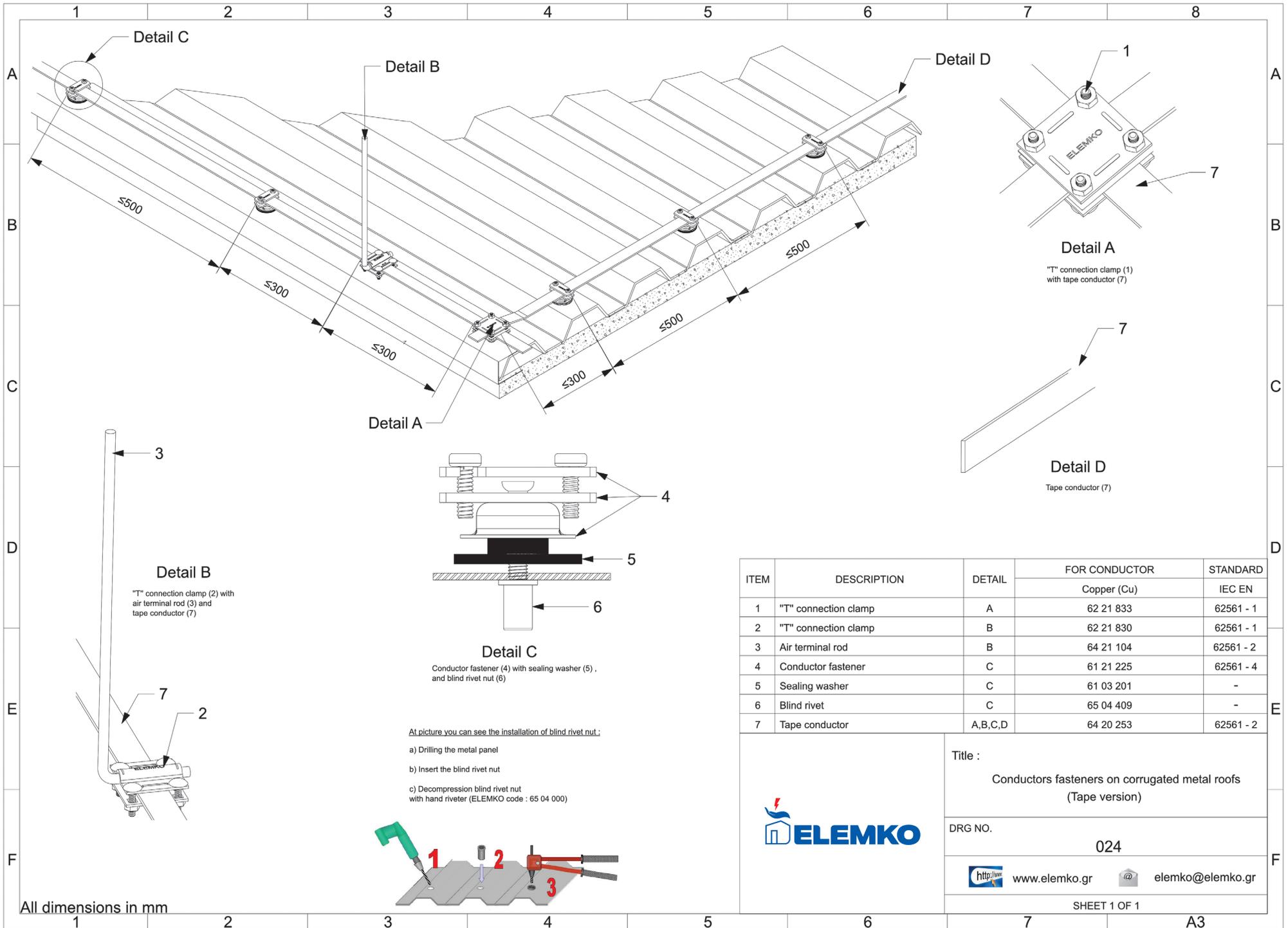
DRG NO.
009

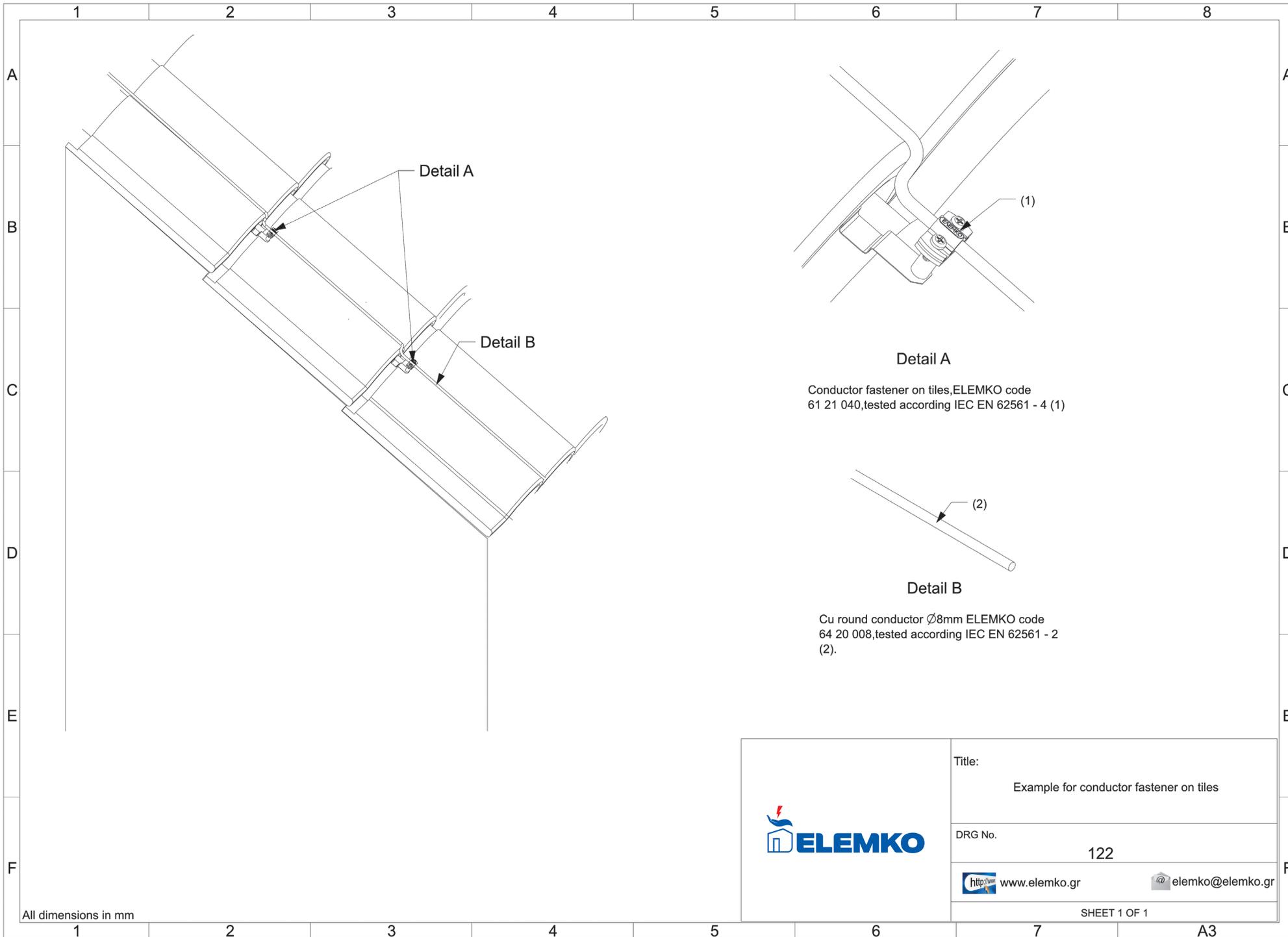
<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

All dimensions in mm

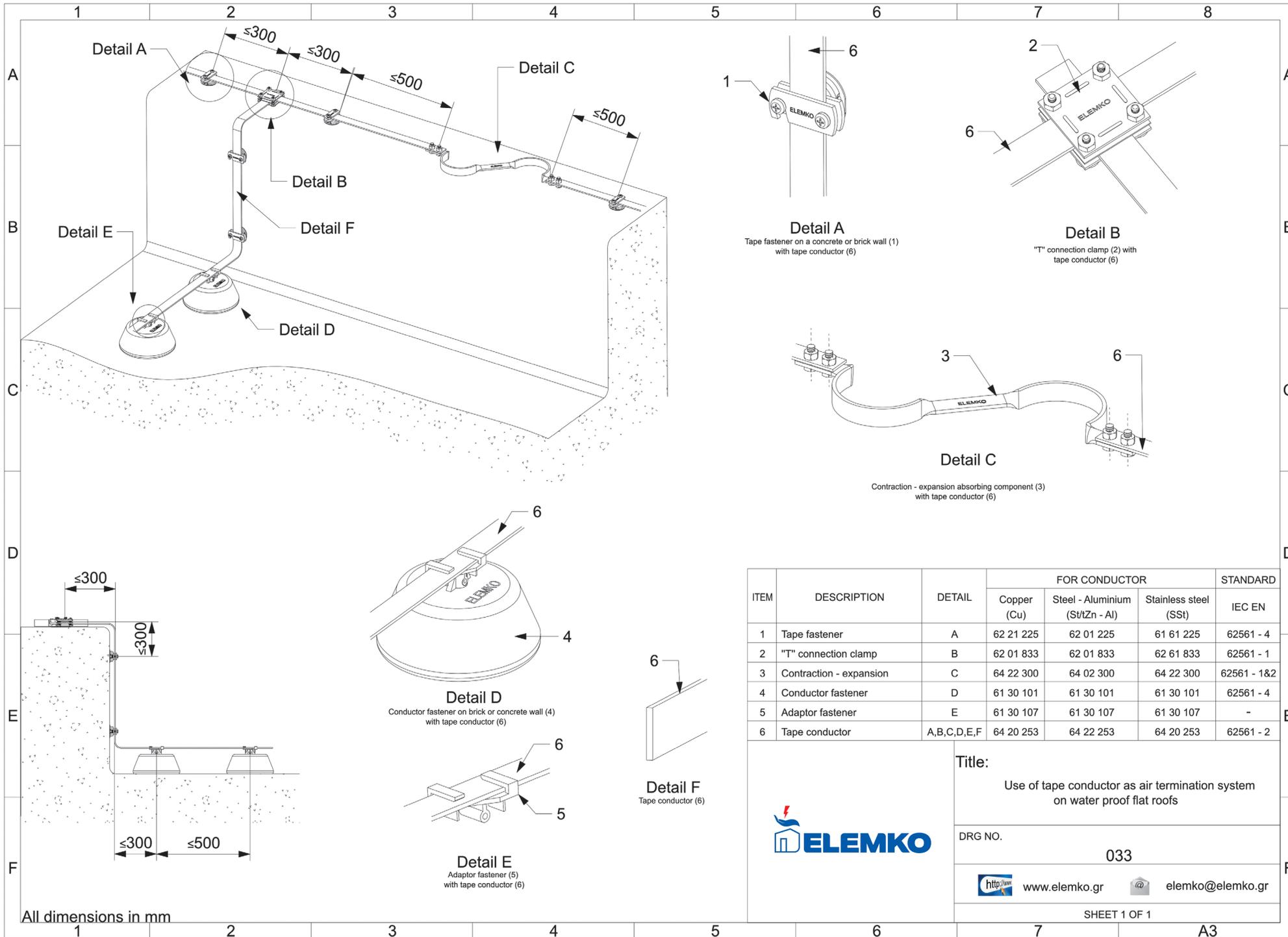






All dimensions in mm

	Title:	Example for conductor fastener on tiles
	DRG No.	122
	http://www.elemko.gr	elemko@elemko.gr
	SHEET 1 OF 1	



ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD IEC EN
			Copper (Cu)	Steel - Aluminium (St/tZn - Al)	Stainless steel (SSt)	
1	Tape fastener	A	62 21 225	62 01 225	61 61 225	62561 - 4
2	"T" connection clamp	B	62 01 833	62 01 833	62 61 833	62561 - 1
3	Contraction - expansion	C	64 22 300	64 02 300	64 22 300	62561 - 1&2
4	Conductor fastener	D	61 30 101	61 30 101	61 30 101	62561 - 4
5	Adaptor fastener	E	61 30 107	61 30 107	61 30 107	-
6	Tape conductor	A,B,C,D,E,F	64 20 253	64 22 253	64 20 253	62561 - 2

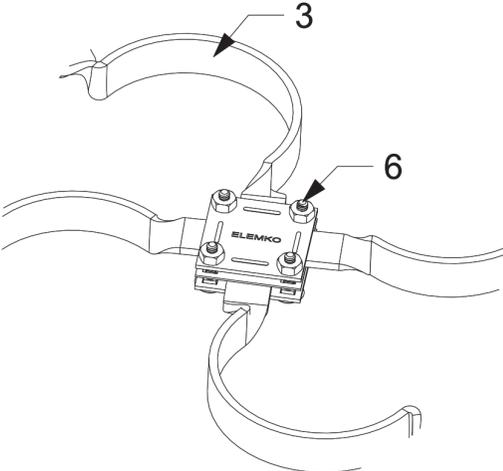
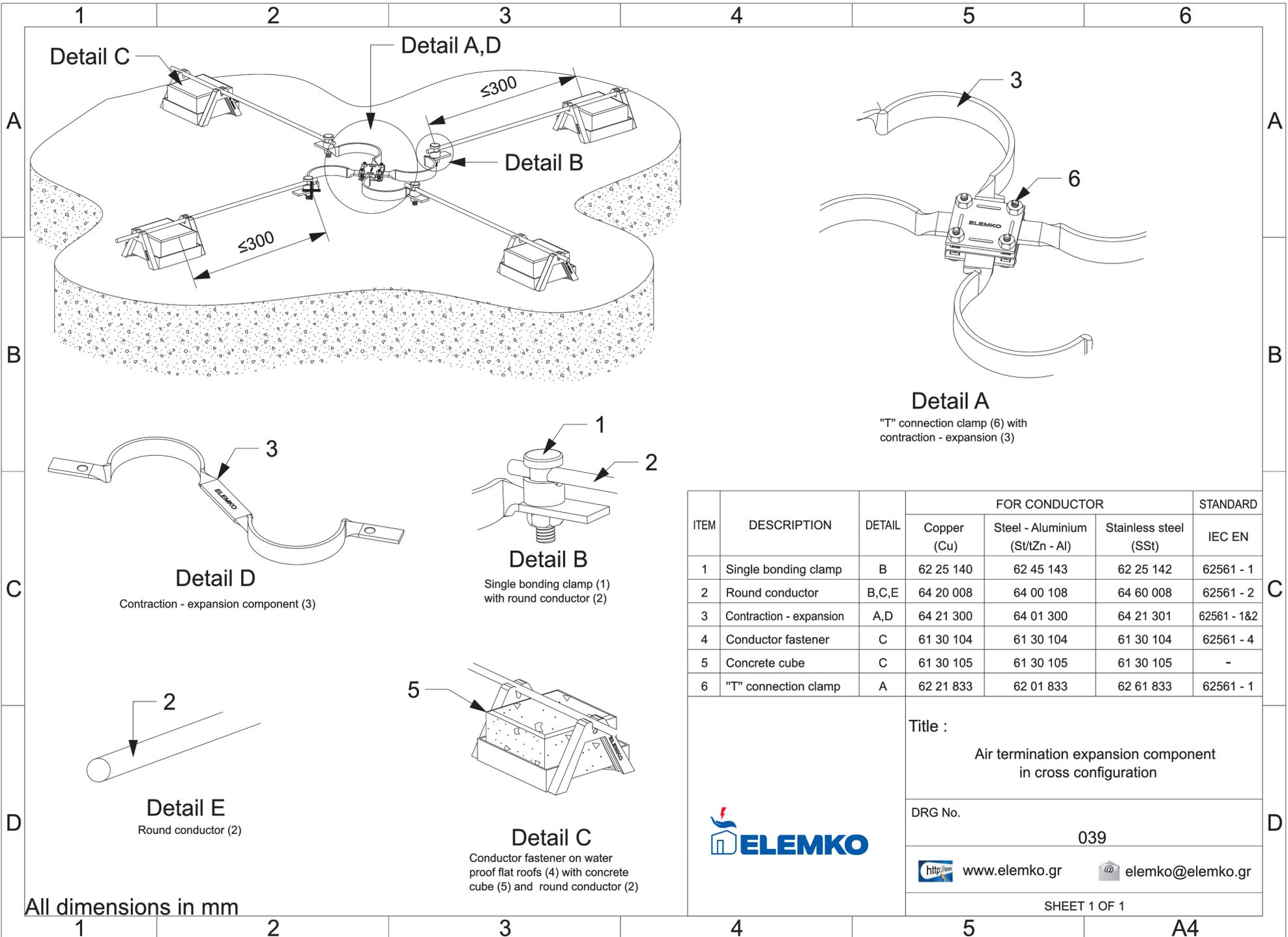
Title:
Use of tape conductor as air termination system on water proof flat roofs

DRG NO.
033

<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

All dimensions in mm



Detail A

"T" connection clamp (6) with contraction - expansion (3)

ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD IEC EN
			Copper (Cu)	Steel - Aluminium (St/tZn - Al)	Stainless steel (SSt)	
1	Single bonding clamp	B	62 25 140	62 45 143	62 25 142	62561 - 1
2	Round conductor	B,C,E	64 20 008	64 00 108	64 60 008	62561 - 2
3	Contraction - expansion	A,D	64 21 300	64 01 300	64 21 301	62561 - 1&2
4	Conductor fastener	C	61 30 104	61 30 104	61 30 104	62561 - 4
5	Concrete cube	C	61 30 105	61 30 105	61 30 105	-
6	"T" connection clamp	A	62 21 833	62 01 833	62 61 833	62561 - 1

Title :
Air termination expansion component
in cross configuration

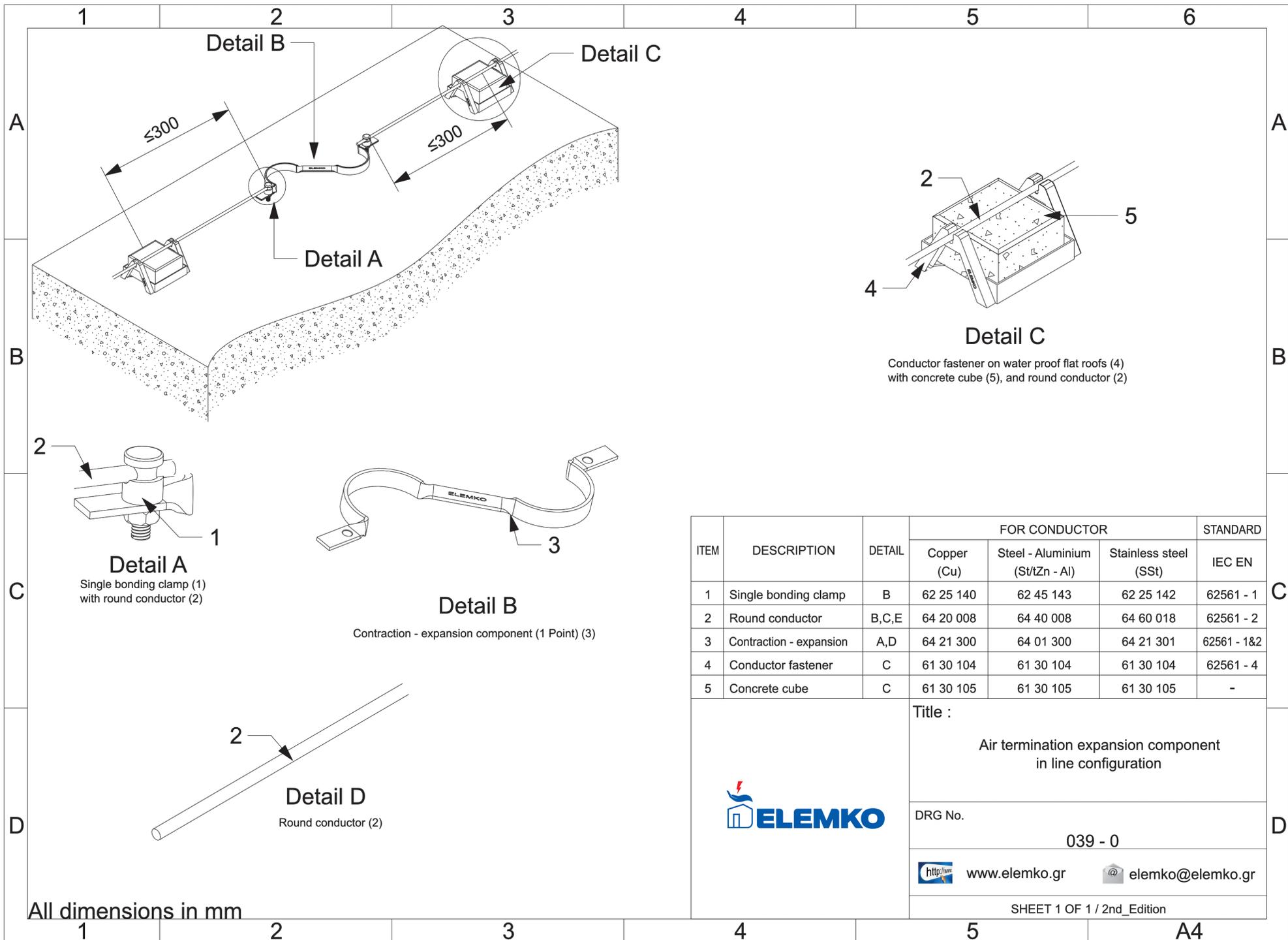
DRG No. 039



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SHEET 1 OF 1

All dimensions in mm



ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD IEC EN
			Copper (Cu)	Steel - Aluminium (St/tZn - Al)	Stainless steel (SSt)	
1	Single bonding clamp	B	62 25 140	62 45 143	62 25 142	62561 - 1
2	Round conductor	B,C,E	64 20 008	64 40 008	64 60 018	62561 - 2
3	Contraction - expansion	A,D	64 21 300	64 01 300	64 21 301	62561 - 1&2
4	Conductor fastener	C	61 30 104	61 30 104	61 30 104	62561 - 4
5	Concrete cube	C	61 30 105	61 30 105	61 30 105	-

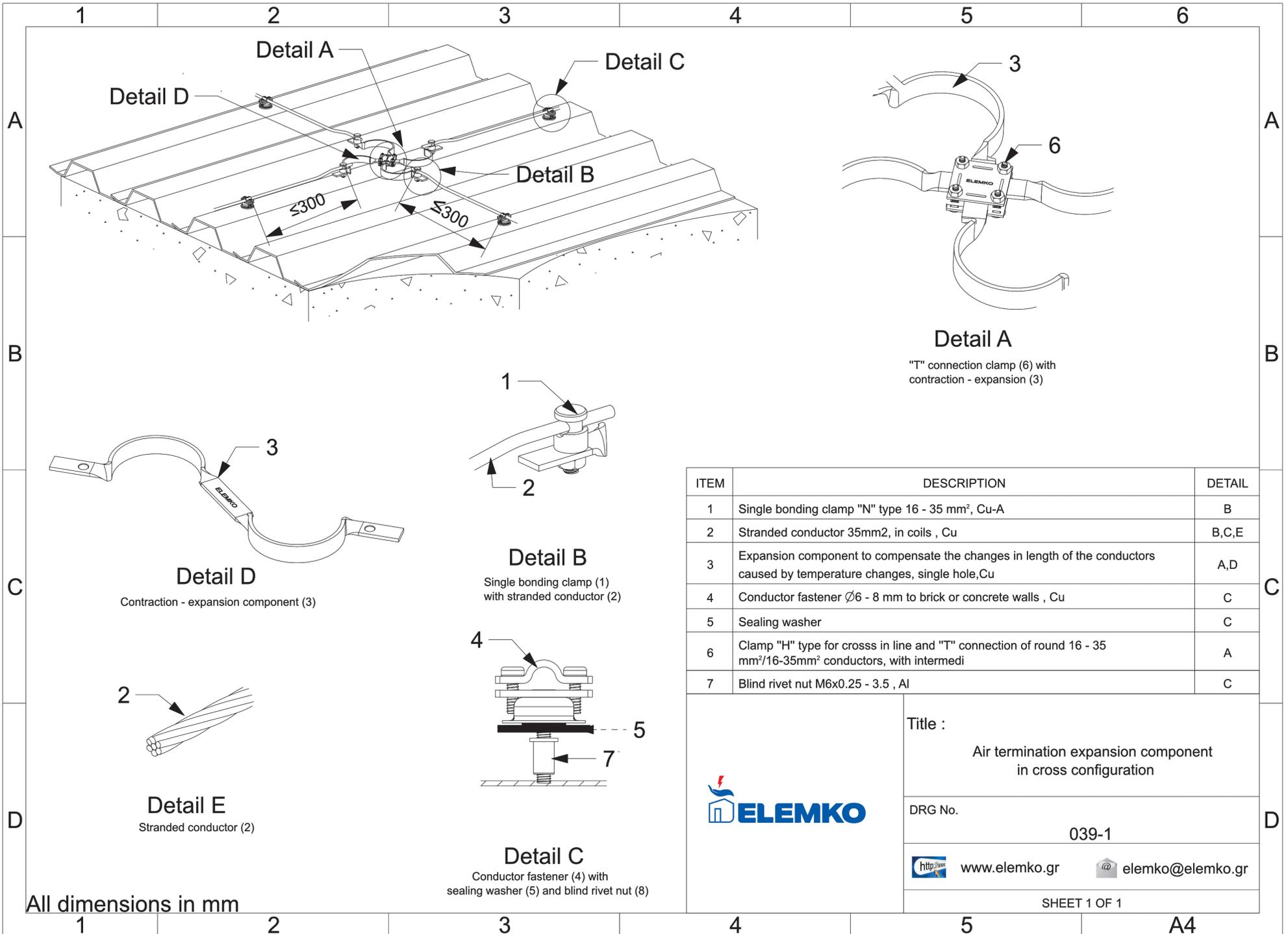
Title :
Air termination expansion component in line configuration

DRG No.
039 - 0

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SHEET 1 OF 1 / 2nd_Edition





ITEM	DESCRIPTION	DETAIL
1	Single bonding clamp "N" type 16 - 35 mm ² , Cu-A	B
2	Stranded conductor 35mm ² , in coils , Cu	B,C,E
3	Expansion component to compensate the changes in length of the conductors caused by temperature changes, single hole,Cu	A,D
4	Conductor fastener Ø6 - 8 mm to brick or concrete walls , Cu	C
5	Sealing washer	C
6	Clamp "H" type for crosses in line and "T" connection of round 16 - 35 mm ² /16-35mm ² conductors, with intermedi	A
7	Blind rivet nut M6x0.25 - 3.5 , Al	C

ELEMKO

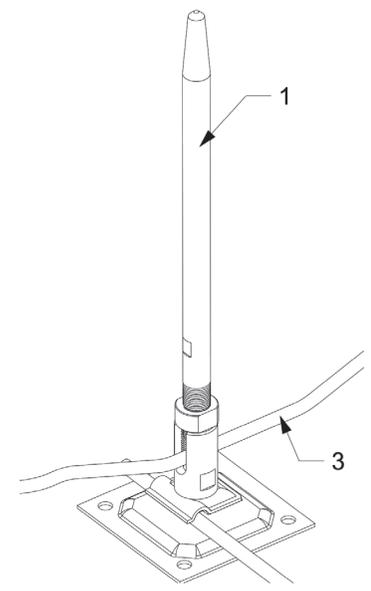
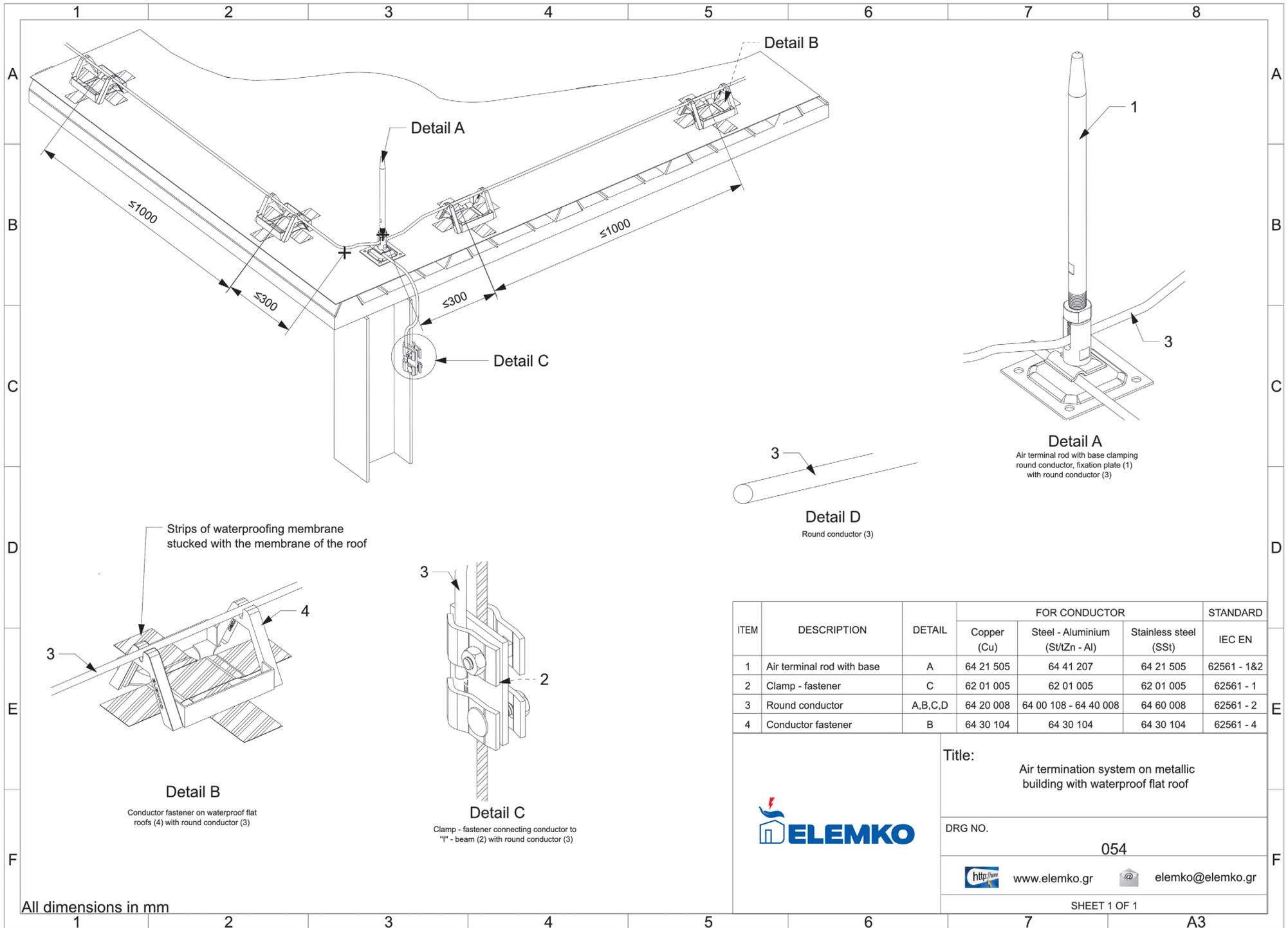
Title :
Air termination expansion component
in cross configuration

DRG No.
039-1

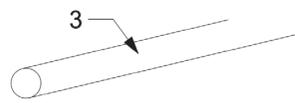
<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

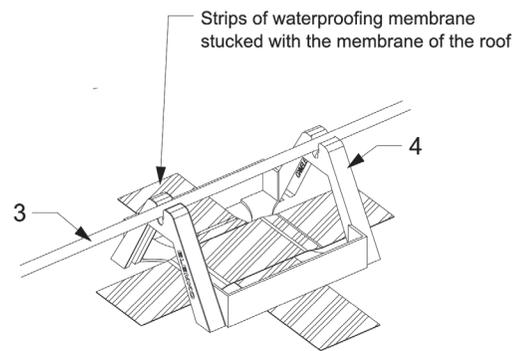
All dimensions in mm



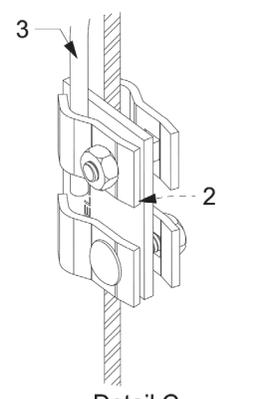
Detail A
Air terminal rod with base clamping round conductor, fixation plate (1) with round conductor (3)



Detail D
Round conductor (3)



Detail B
Conductor fastener on waterproof flat roofs (4) with round conductor (3)



Detail C
Clamp - fastener connecting conductor to "I" - beam (2) with round conductor (3)

ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD IEC EN
			Copper (Cu)	Steel - Aluminium (St/Zn - Al)	Stainless steel (SSt)	
1	Air terminal rod with base	A	64 21 505	64 41 207	64 21 505	62561 - 1&2
2	Clamp - fastener	C	62 01 005	62 01 005	62 01 005	62561 - 1
3	Round conductor	A,B,C,D	64 20 008	64 00 108 - 64 40 008	64 60 008	62561 - 2
4	Conductor fastener	B	64 30 104	64 30 104	64 30 104	62561 - 4



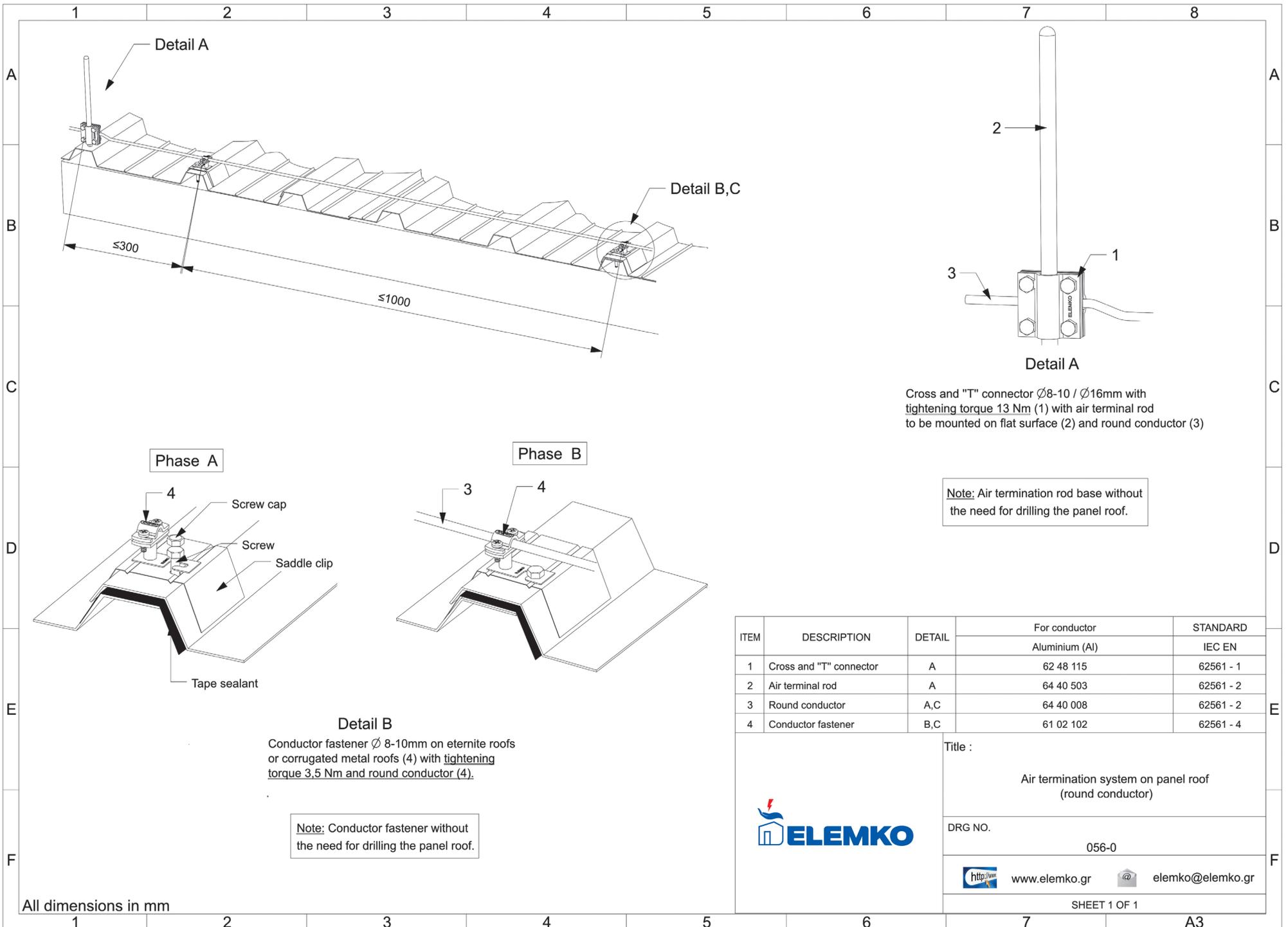
Title:
Air termination system on metallic building with waterproof flat roof

DRG NO.
054

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SHEET 1 OF 1

All dimensions in mm



Detail A
 Cross and "T" connector $\varnothing 8-10 / \varnothing 16\text{mm}$ with tightening torque 13 Nm (1) with air terminal rod to be mounted on flat surface (2) and round conductor (3)

Note: Air termination rod base without the need for drilling the panel roof.

Detail B
 Conductor fastener $\varnothing 8-10\text{mm}$ on eternite roofs or corrugated metal roofs (4) with tightening torque 3,5 Nm and round conductor (4).

Note: Conductor fastener without the need for drilling the panel roof.

ITEM	DESCRIPTION	DETAIL	For conductor	STANDARD
			Aluminium (Al)	IEC EN
1	Cross and "T" connector	A	62 48 115	62561 - 1
2	Air terminal rod	A	64 40 503	62561 - 2
3	Round conductor	A,C	64 40 008	62561 - 2
4	Conductor fastener	B,C	61 02 102	62561 - 4



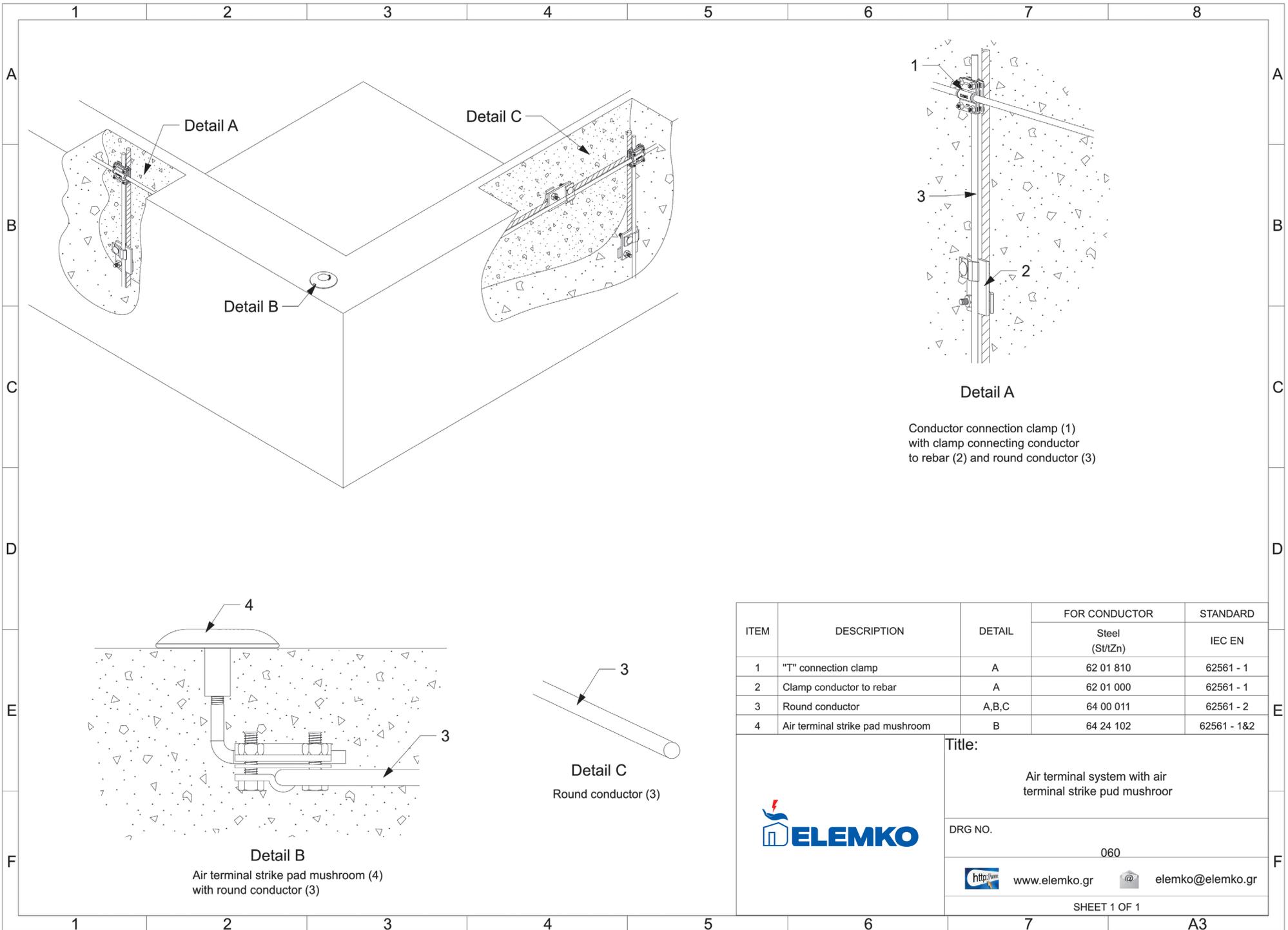
Title :
 Air termination system on panel roof (round conductor)

DRG NO.
 056-0

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SHEET 1 OF 1

All dimensions in mm



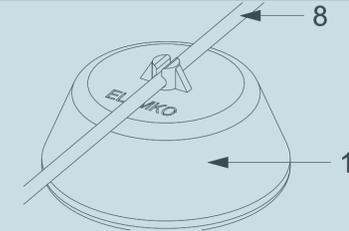
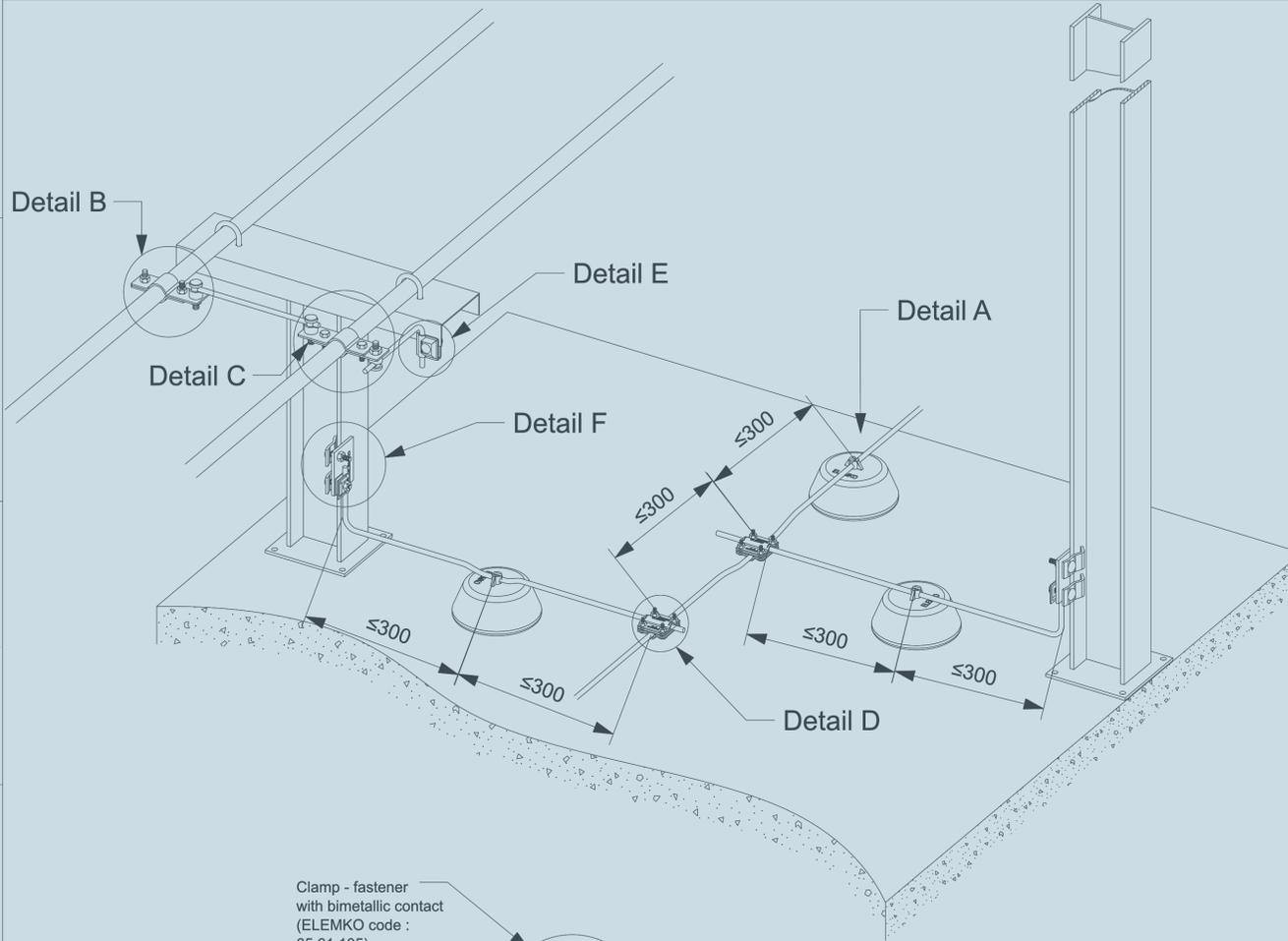
Detail A
 Conductor connection clamp (1)
 with clamp connecting conductor
 to rebar (2) and round conductor (3)

Detail B
 Air terminal strike pad mushroom (4)
 with round conductor (3)

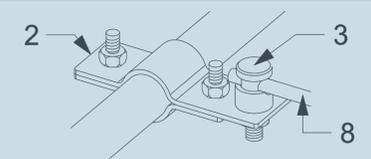
Detail C
 Round conductor (3)

ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR	STANDARD
			Steel (St/Zn)	IEC EN
1	"T" connection clamp	A	62 01 810	62561 - 1
2	Clamp conductor to rebar	A	62 01 000	62561 - 1
3	Round conductor	A,B,C	64 00 011	62561 - 2
4	Air terminal strike pad mushroom	B	64 24 102	62561 - 1&2

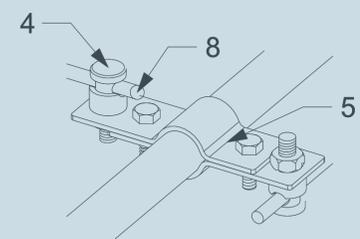
	Title:	
	Air terminal system with air terminal strike pad mushroom	
	DRG NO.	
	060	
http://www.elemko.gr		 elemko@elemko.gr
SHEET 1 OF 1		



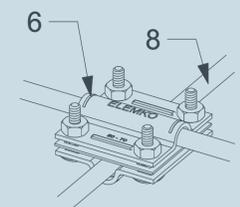
Detail A
Conductor fastener on water proof flat roofs (1)
with round conductor (8)



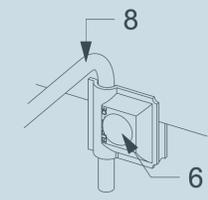
Detail B
Pipe clamp one point connection (2)
with single bonding clamp (3) and
round conductor (8)



Detail C
Pipe clamp two points connection (4)
with single bonding clamp (3) and
round conductor (8)

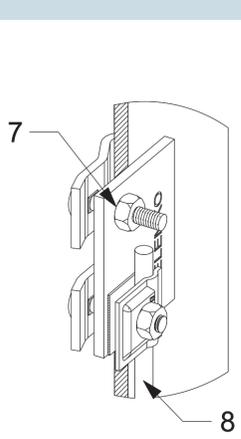


Detail D
'T' connection clamp (5) with
round conductor (8)

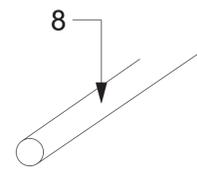
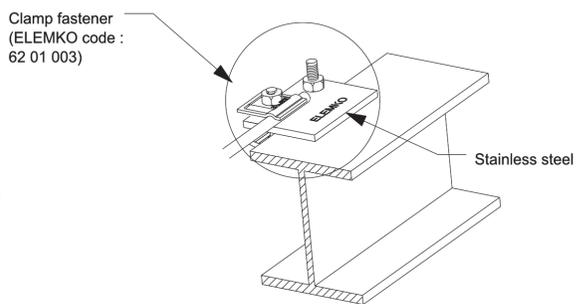
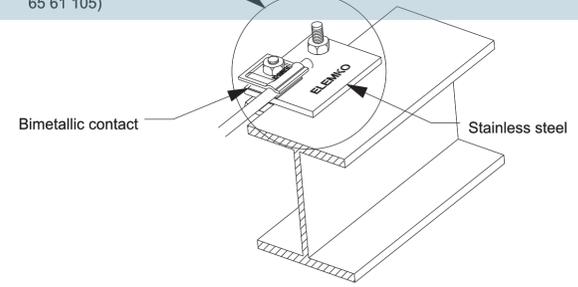


Detail E
Universal connector - clamp (6)
with round conductor (8)

Clamp - fastener
with bimetallic contact
(ELEMKO code :
65 61 105)



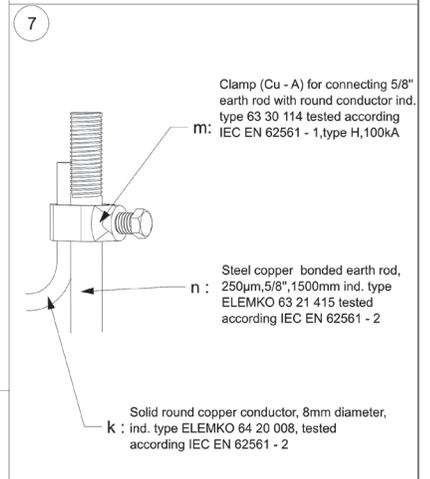
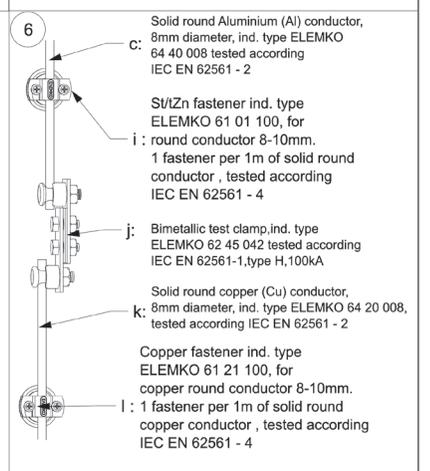
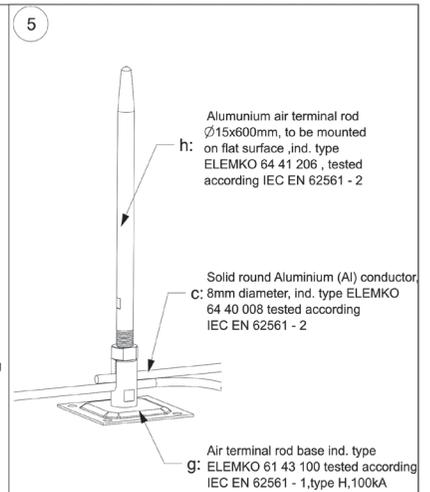
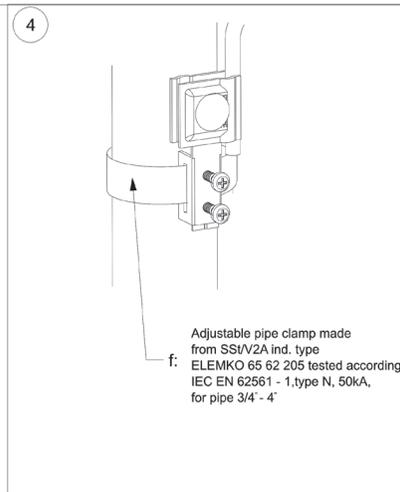
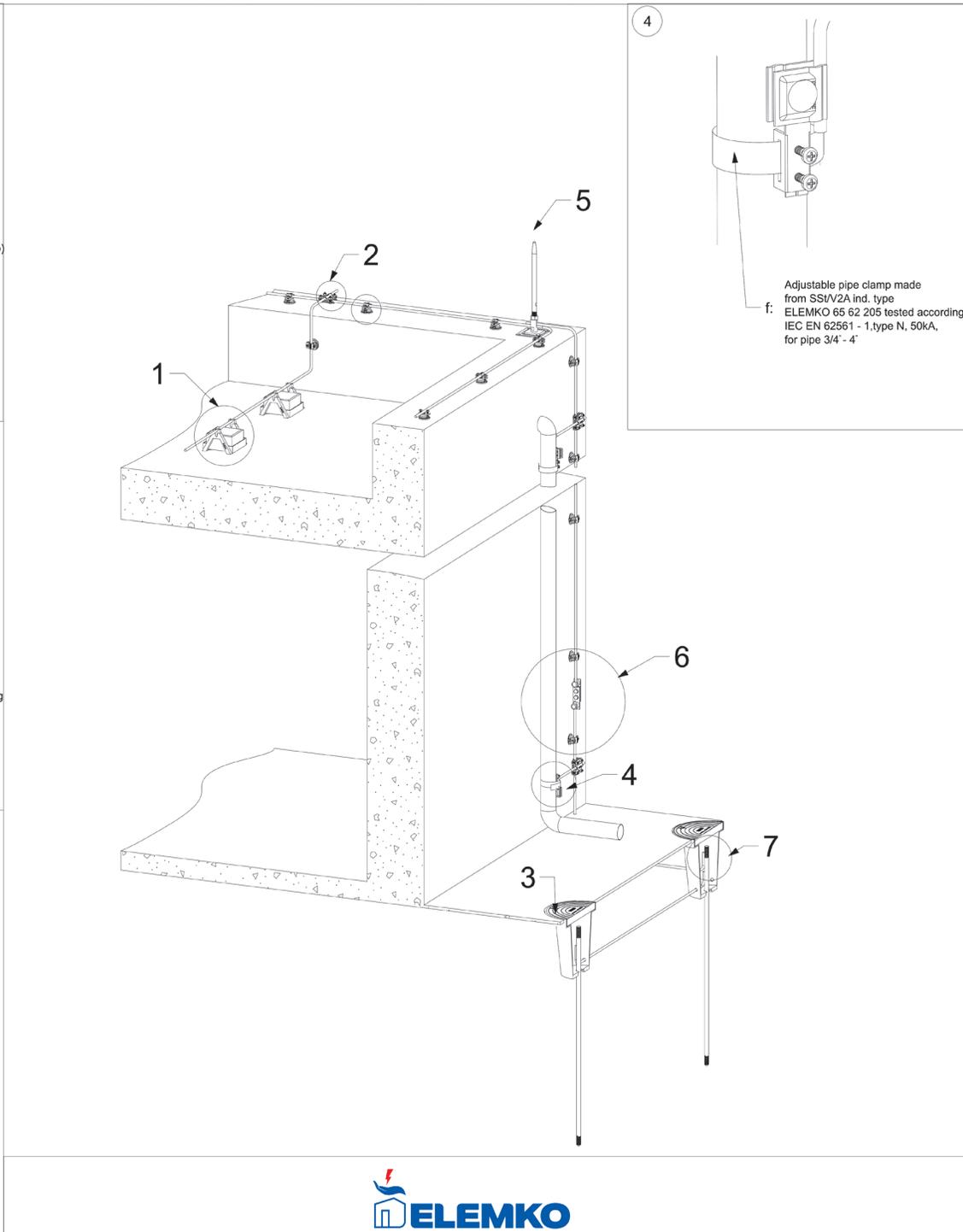
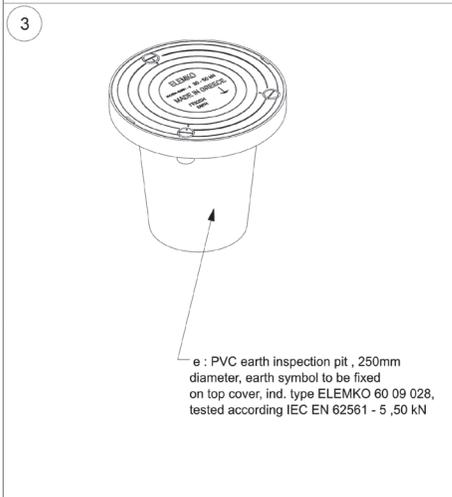
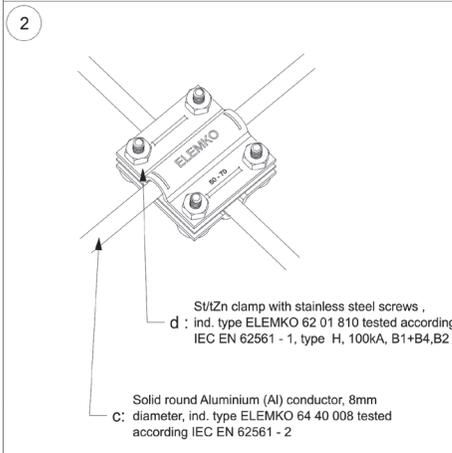
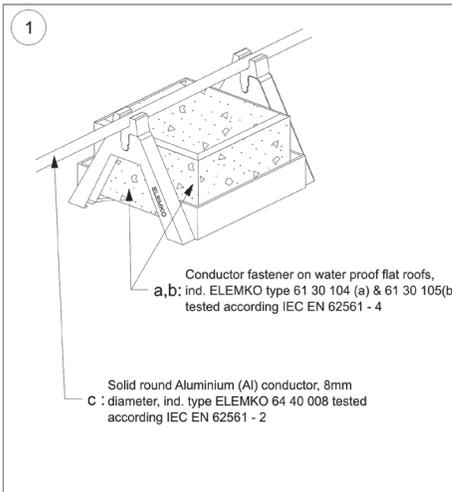
Detail F
Bimetallic - clamp (7) connecting
round conductor to "I" - beam (8)

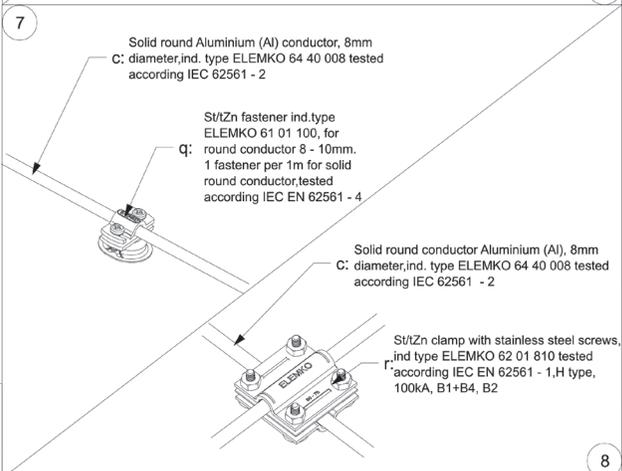
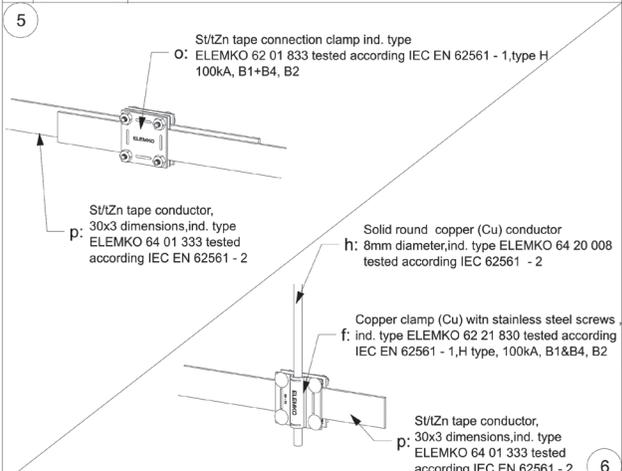
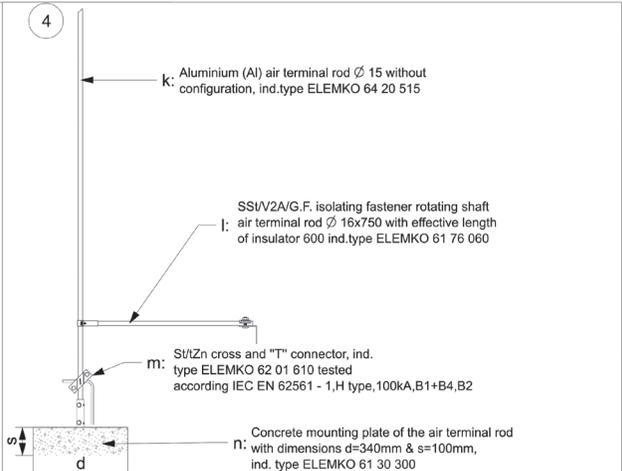
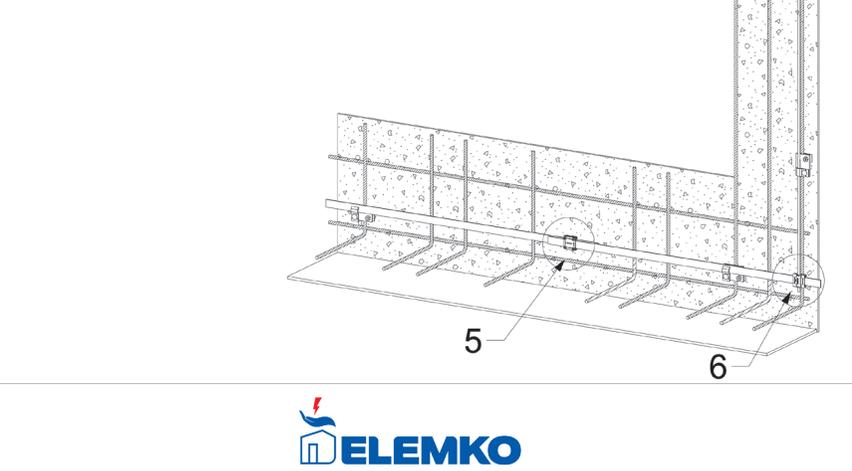
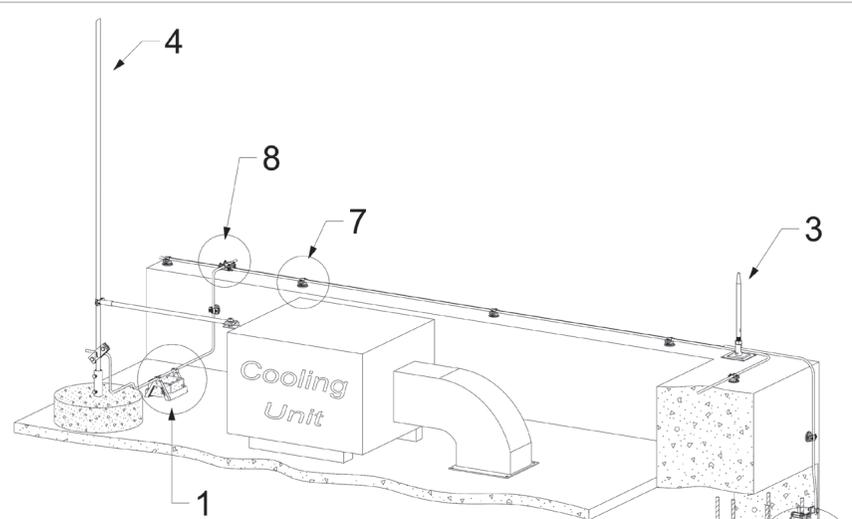
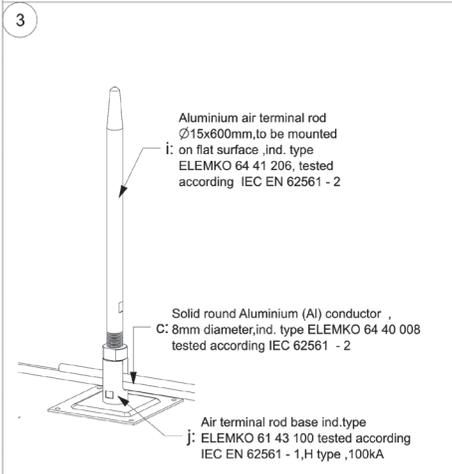
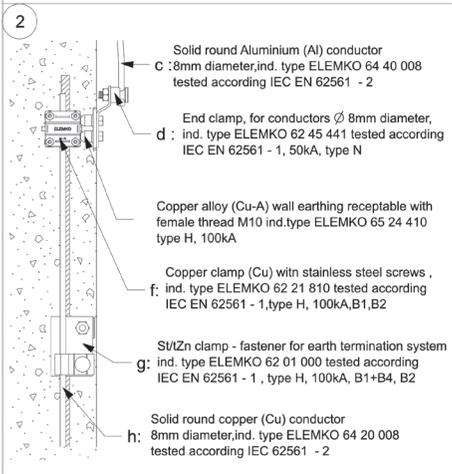
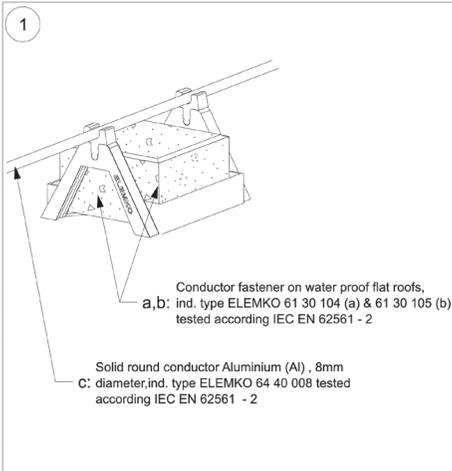


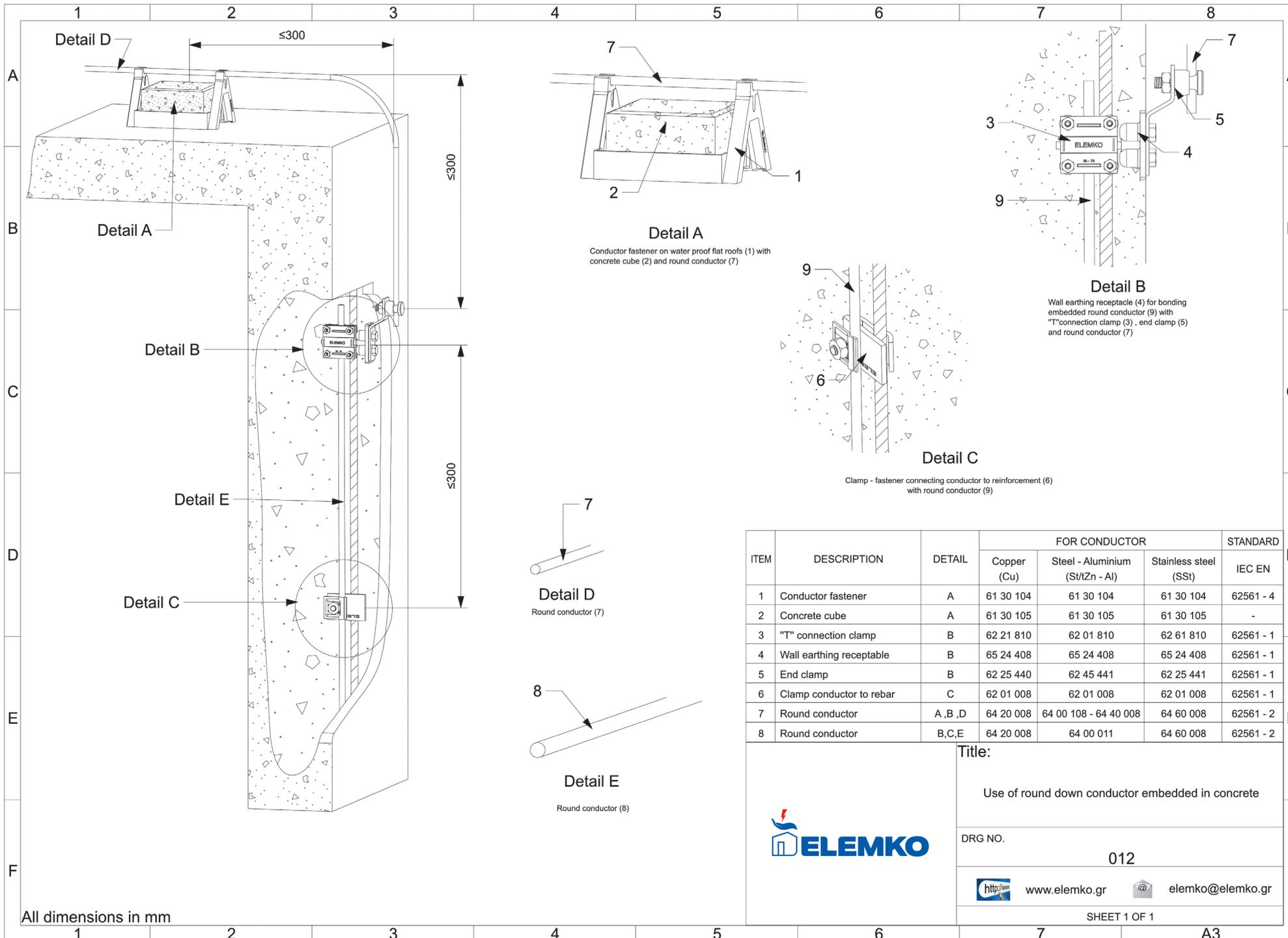
Detail G
Round conductor (8)

DOWN CONDUCTORS









Detail A
 Conductor fastener on water proof flat roofs (1) with concrete cube (2) and round conductor (7)

Detail B
 Wall earthing receptacle (4) for bonding embedded round conductor (9) with "T" connection clamp (3), end clamp (5) and round conductor (7)

Detail C
 Clamp - fastener connecting conductor to reinforcement (6) with round conductor (9)

Detail D
 Round conductor (7)

Detail E
 Round conductor (8)

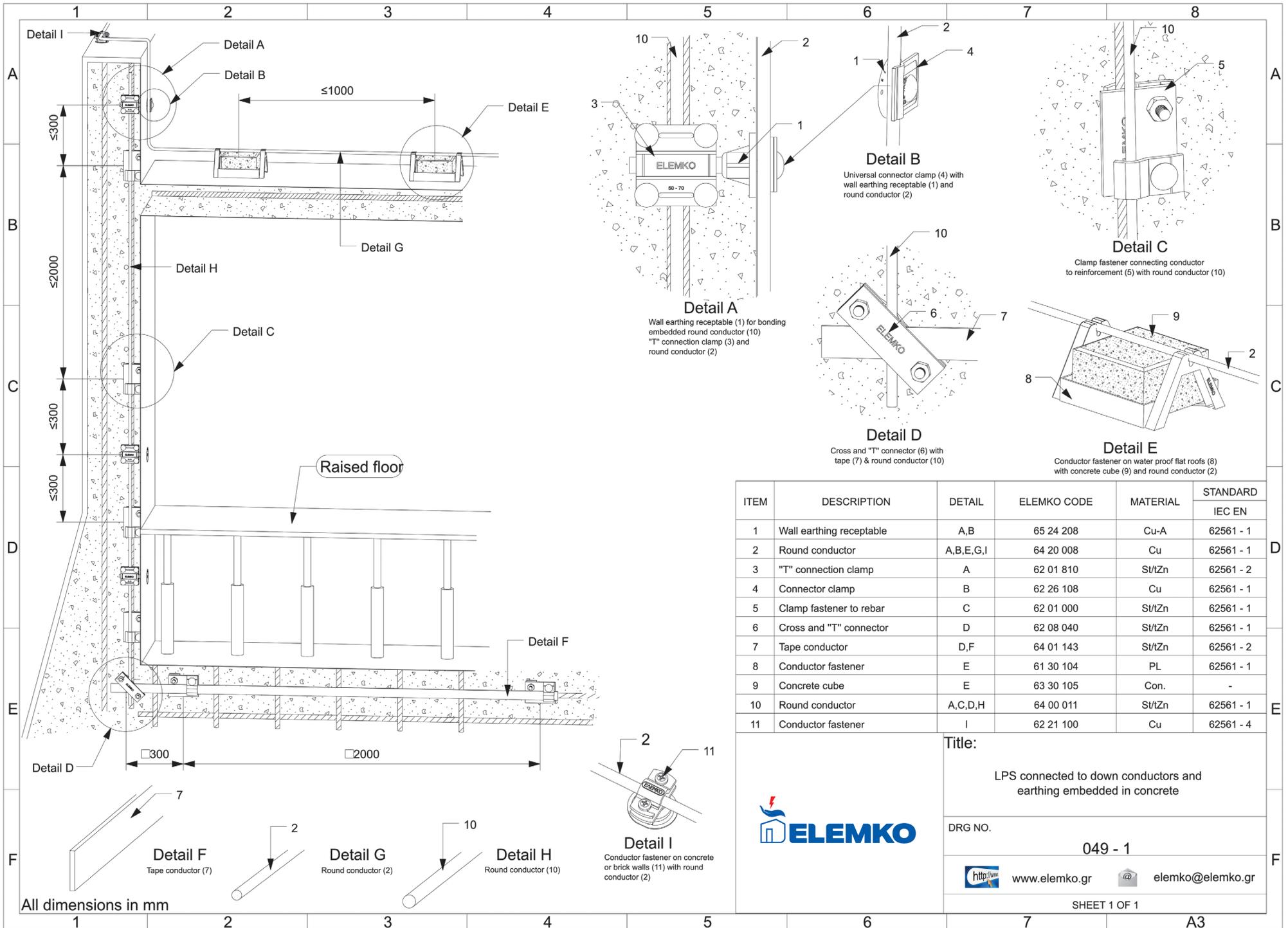
ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD IEC EN
			Copper (Cu)	Steel - Aluminium (St/tZn - Al)	Stainless steel (SSt)	
1	Conductor fastener	A	61 30 104	61 30 104	61 30 104	62561 - 4
2	Concrete cube	A	61 30 105	61 30 105	61 30 105	-
3	"T" connection clamp	B	62 21 810	62 01 810	62 61 810	62561 - 1
4	Wall earthing receptable	B	65 24 408	65 24 408	65 24 408	62561 - 1
5	End clamp	B	62 25 440	62 45 441	62 25 441	62561 - 1
6	Clamp conductor to rebar	C	62 01 008	62 01 008	62 01 008	62561 - 1
7	Round conductor	A, B, D	64 20 008	64 00 108 - 64 40 008	64 60 008	62561 - 2
8	Round conductor	B, C, E	64 20 008	64 00 011	64 60 008	62561 - 2

Title:
 Use of round down conductor embedded in concrete



DRG NO. 012
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All dimensions in mm



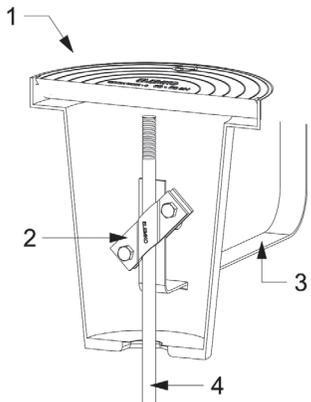
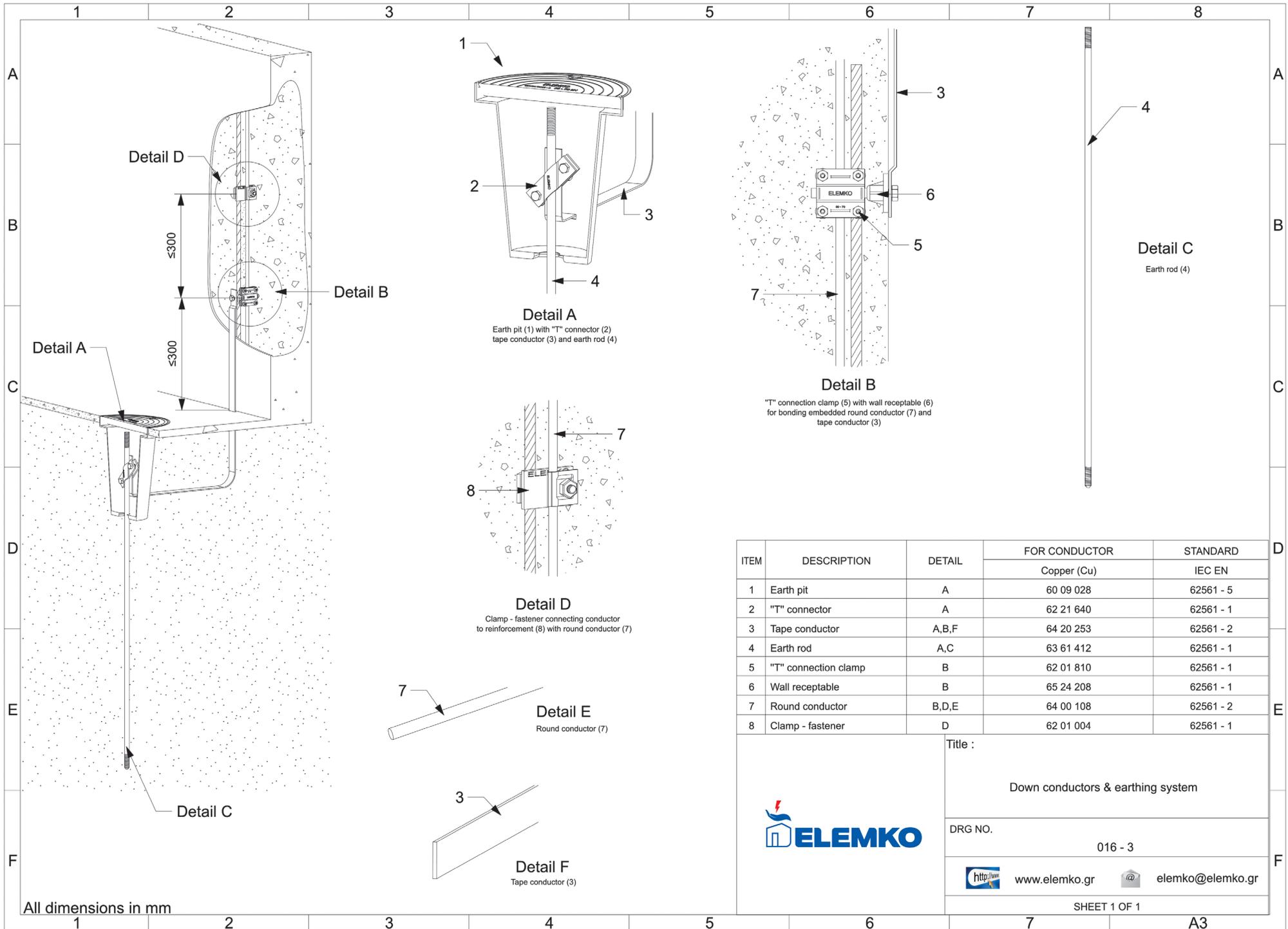
ITEM	DESCRIPTION	DETAIL	ELEMKO CODE	MATERIAL	STANDARD
					IEC EN
1	Wall earthing receptable	A,B	65 24 208	Cu-A	62561 - 1
2	Round conductor	A,B,E,G,I	64 20 008	Cu	62561 - 1
3	"T" connection clamp	A	62 01 810	St/tZn	62561 - 2
4	Connector clamp	B	62 26 108	Cu	62561 - 1
5	Clamp fastener to rebar	C	62 01 000	St/tZn	62561 - 1
6	Cross and "T" connector	D	62 08 040	St/tZn	62561 - 1
7	Tape conductor	D,F	64 01 143	St/tZn	62561 - 2
8	Conductor fastener	E	61 30 104	PL	62561 - 1
9	Concrete cube	E	63 30 105	Con.	-
10	Round conductor	A,C,D,H	64 00 011	St/tZn	62561 - 1
11	Conductor fastener	I	62 21 100	Cu	62561 - 4

Title:
LPS connected to down conductors and earthing embedded in concrete

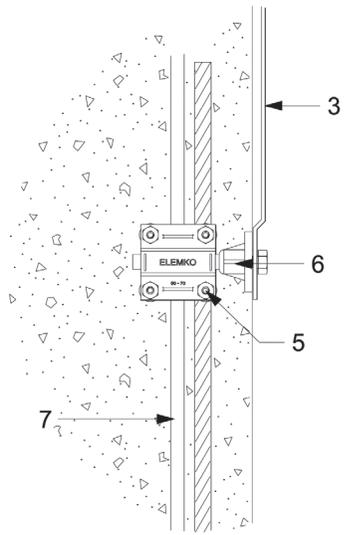
DRG NO.
049 - 1

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SHEET 1 OF 1



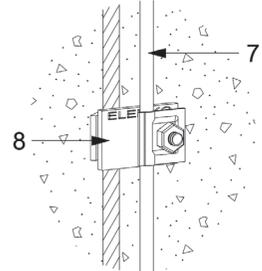
Detail A
Earth pit (1) with "T" connector (2)
tape conductor (3) and earth rod (4)



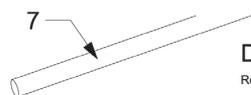
Detail B
"T" connection clamp (5) with wall receptable (6)
for bonding embedded round conductor (7) and
tape conductor (3)



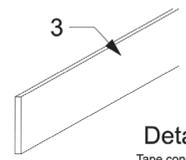
Detail C
Earth rod (4)



Detail D
Clamp - fastener connecting conductor
to reinforcement (8) with round conductor (7)



Detail E
Round conductor (7)



Detail F
Tape conductor (3)

ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR	STANDARD
			Copper (Cu)	IEC EN
1	Earth pit	A	60 09 028	62561 - 5
2	"T" connector	A	62 21 640	62561 - 1
3	Tape conductor	A,B,F	64 20 253	62561 - 2
4	Earth rod	A,C	63 61 412	62561 - 1
5	"T" connection clamp	B	62 01 810	62561 - 1
6	Wall receptable	B	65 24 208	62561 - 1
7	Round conductor	B,D,E	64 00 108	62561 - 2
8	Clamp - fastener	D	62 01 004	62561 - 1



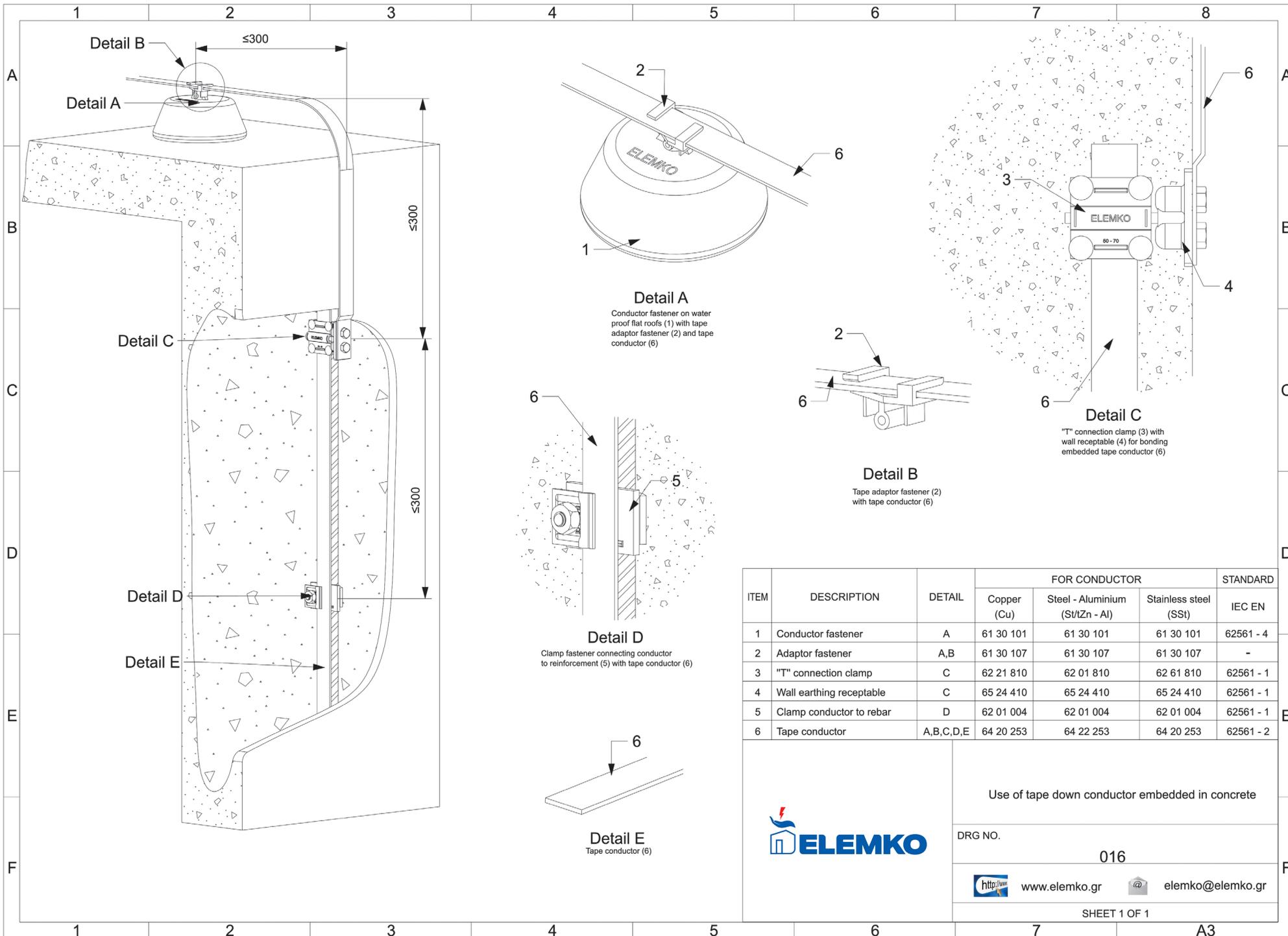
Title :
Down conductors & earthing system

DRG NO.
016 - 3

<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

All dimensions in mm



Detail A
 Conductor fastener on water proof flat roofs (1) with tape adaptor fastener (2) and tape conductor (6)

Detail B
 Tape adaptor fastener (2) with tape conductor (6)

Detail C
 "T" connection clamp (3) with wall receptable (4) for bonding embedded tape conductor (6)

Detail D
 Clamp fastener connecting conductor to reinforcement (5) with tape conductor (6)

Detail E
 Tape conductor (6)

ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD IEC EN
			Copper (Cu)	Steel - Aluminium (St/Zn - Al)	Stainless steel (SS)	
1	Conductor fastener	A	61 30 101	61 30 101	61 30 101	62561 - 4
2	Adaptor fastener	A,B	61 30 107	61 30 107	61 30 107	-
3	"T" connection clamp	C	62 21 810	62 01 810	62 61 810	62561 - 1
4	Wall earthing receptable	C	65 24 410	65 24 410	65 24 410	62561 - 1
5	Clamp conductor to rebar	D	62 01 004	62 01 004	62 01 004	62561 - 1
6	Tape conductor	A,B,C,D,E	64 20 253	64 22 253	64 20 253	62561 - 2



Use of tape down conductor embedded in concrete

DRG NO.

016

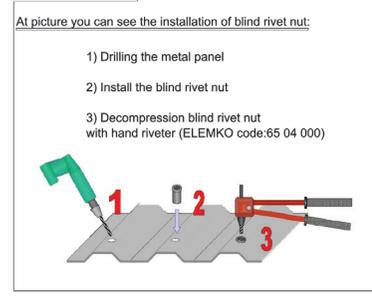
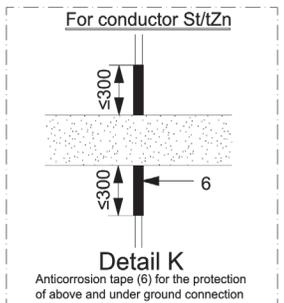
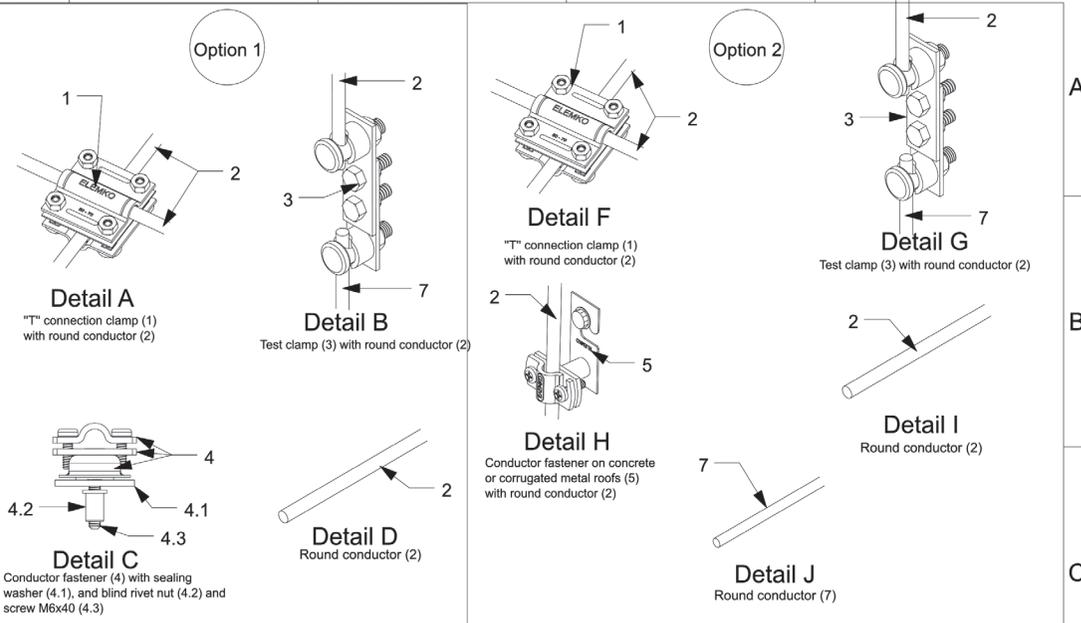
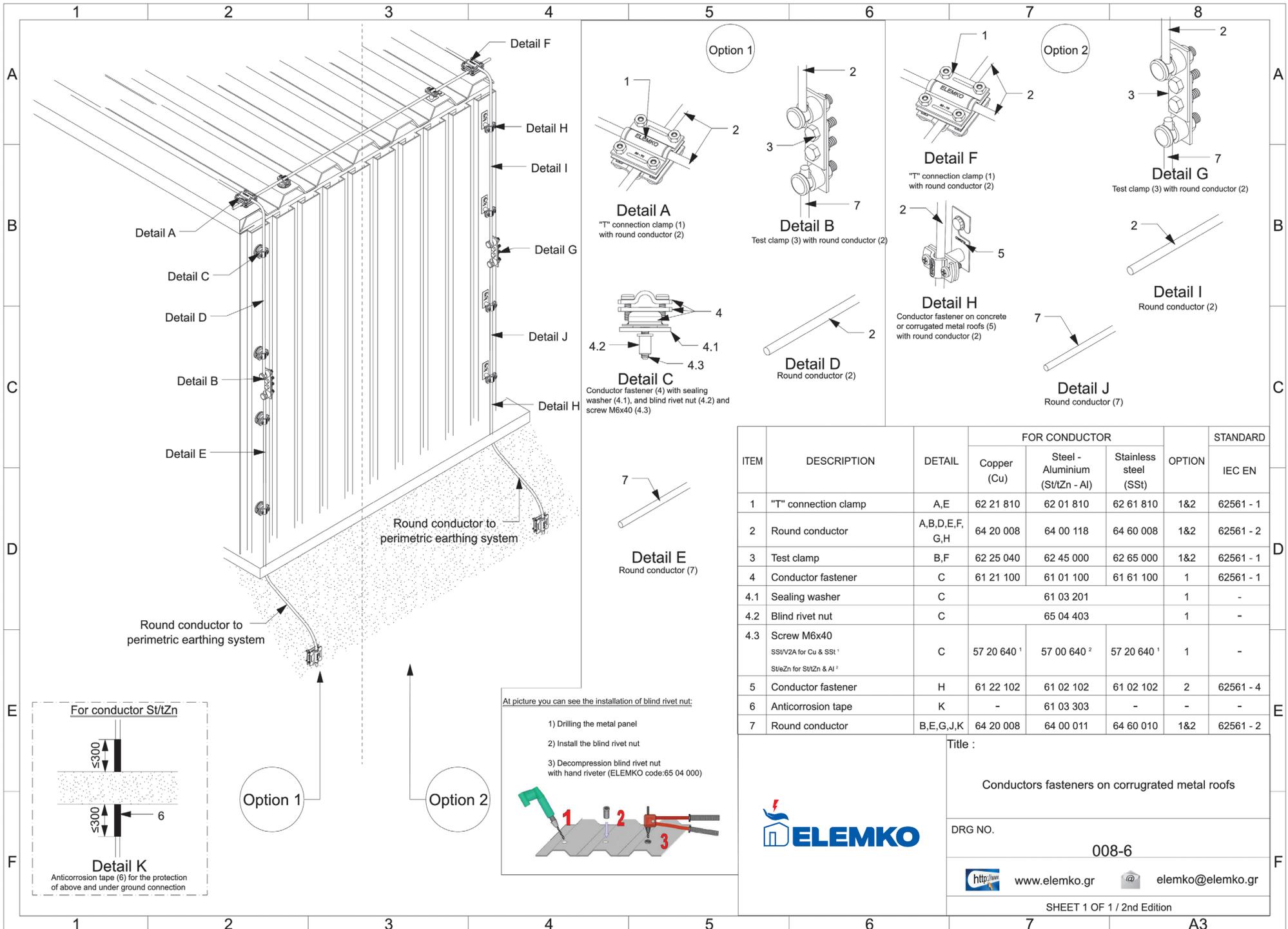


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SHEET 1 OF 1



ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			OPTION	STANDARD IEC EN
			Copper (Cu)	Steel - Aluminium (St/tZn - Al)	Stainless steel (SSt)		
1	"T" connection clamp	A,E	62 21 810	62 01 810	62 61 810	1&2	62561 - 1
2	Round conductor	A,B,D,E,F,G,H	64 20 008	64 00 118	64 60 008	1&2	62561 - 2
3	Test clamp	B,F	62 25 040	62 45 000	62 65 000	1&2	62561 - 1
4	Conductor fastener	C	61 21 100	61 01 100	61 61 100	1	62561 - 1
4.1	Sealing washer	C		61 03 201		1	-
4.2	Blind rivet nut	C		65 04 403		1	-
4.3	Screw M6x40 SSUV2A for Cu & SSt ¹ SttZn for SttZn & Al ²	C	57 20 640 ¹	57 00 640 ²	57 20 640 ¹	1	-
5	Conductor fastener	H	61 22 102	61 02 102	61 02 102	2	62561 - 4
6	Anticorrosion tape	K	-	61 03 303	-	-	-
7	Round conductor	B,E,G,J,K	64 20 008	64 00 011	64 60 010	1&2	62561 - 2

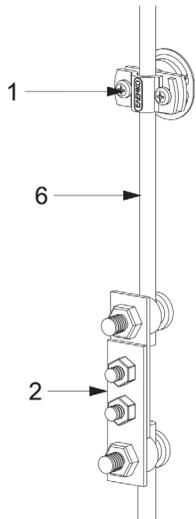
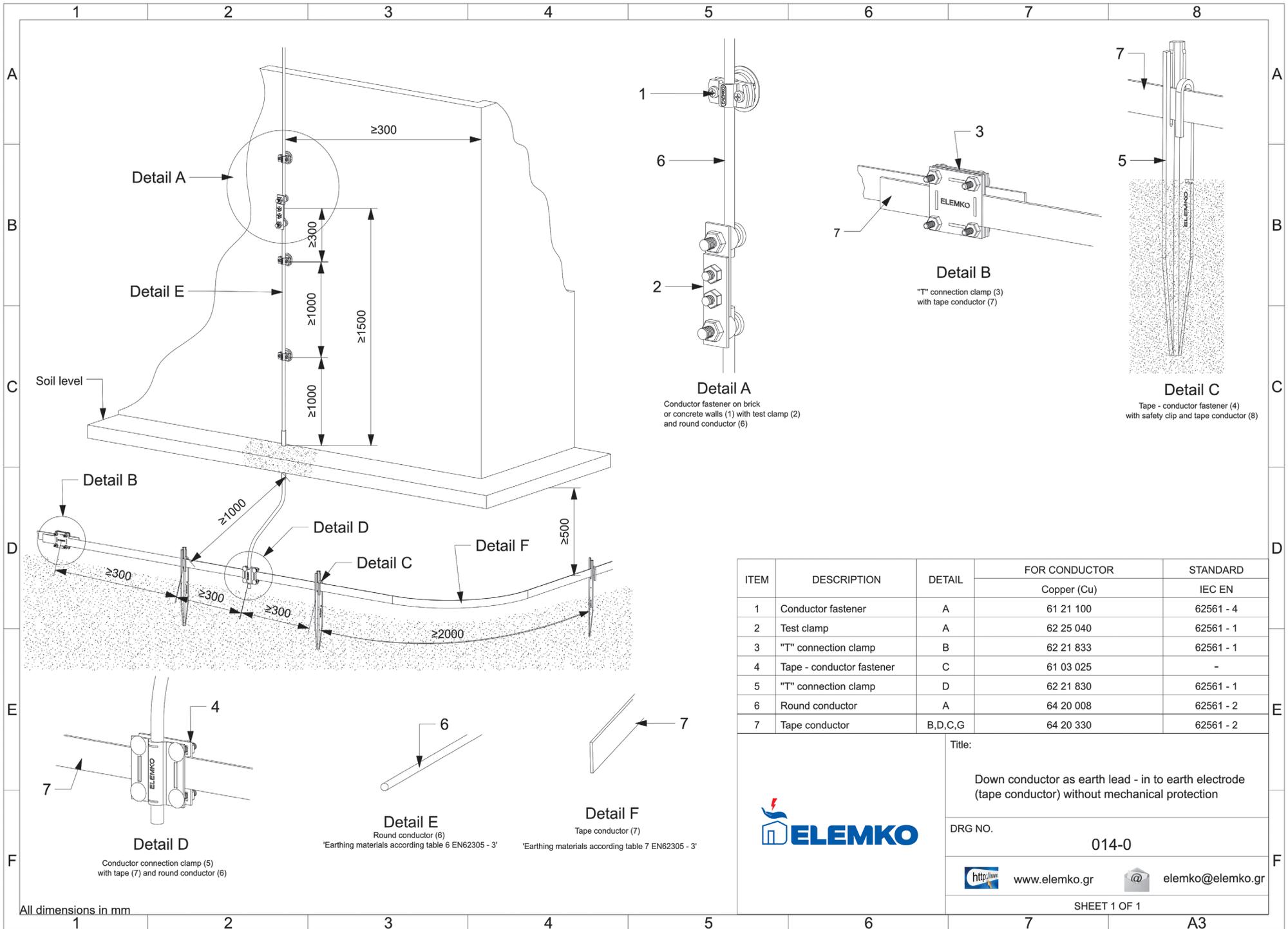


Title :
Conductors fasteners on corrugated metal roofs

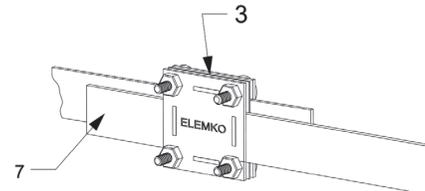
DRG NO.
008-6

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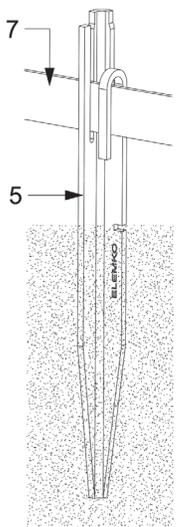
SHEET 1 OF 1 / 2nd Edition



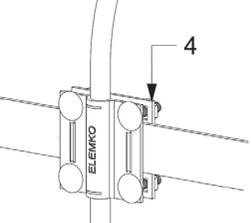
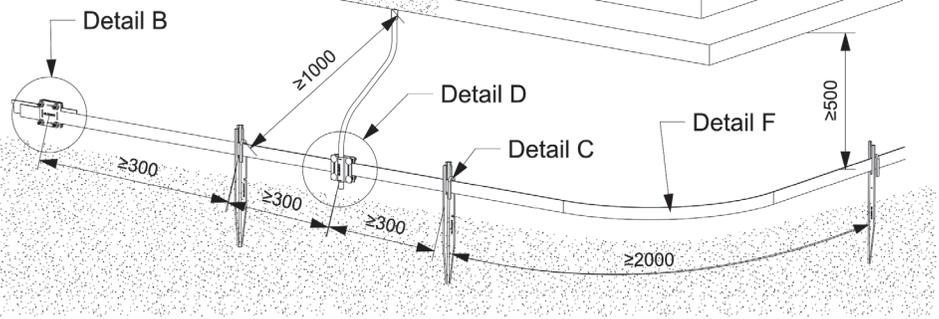
Detail A
Conductor fastener on brick or concrete walls (1) with test clamp (2) and round conductor (6)



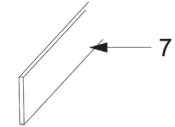
Detail B
"T" connection clamp (3) with tape conductor (7)



Detail C
Tape - conductor fastener (4) with safety clip and tape conductor (8)



Detail E
Round conductor (6)
'Earthing materials according table 6 EN62305 - 3'



Detail F
Tape conductor (7)
'Earthing materials according table 7 EN62305 - 3'

ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR	STANDARD
			Copper (Cu)	IEC EN
1	Conductor fastener	A	61 21 100	62561 - 4
2	Test clamp	A	62 25 040	62561 - 1
3	"T" connection clamp	B	62 21 833	62561 - 1
4	Tape - conductor fastener	C	61 03 025	-
5	"T" connection clamp	D	62 21 830	62561 - 1
6	Round conductor	A	64 20 008	62561 - 2
7	Tape conductor	B,D,C,G	64 20 330	62561 - 2



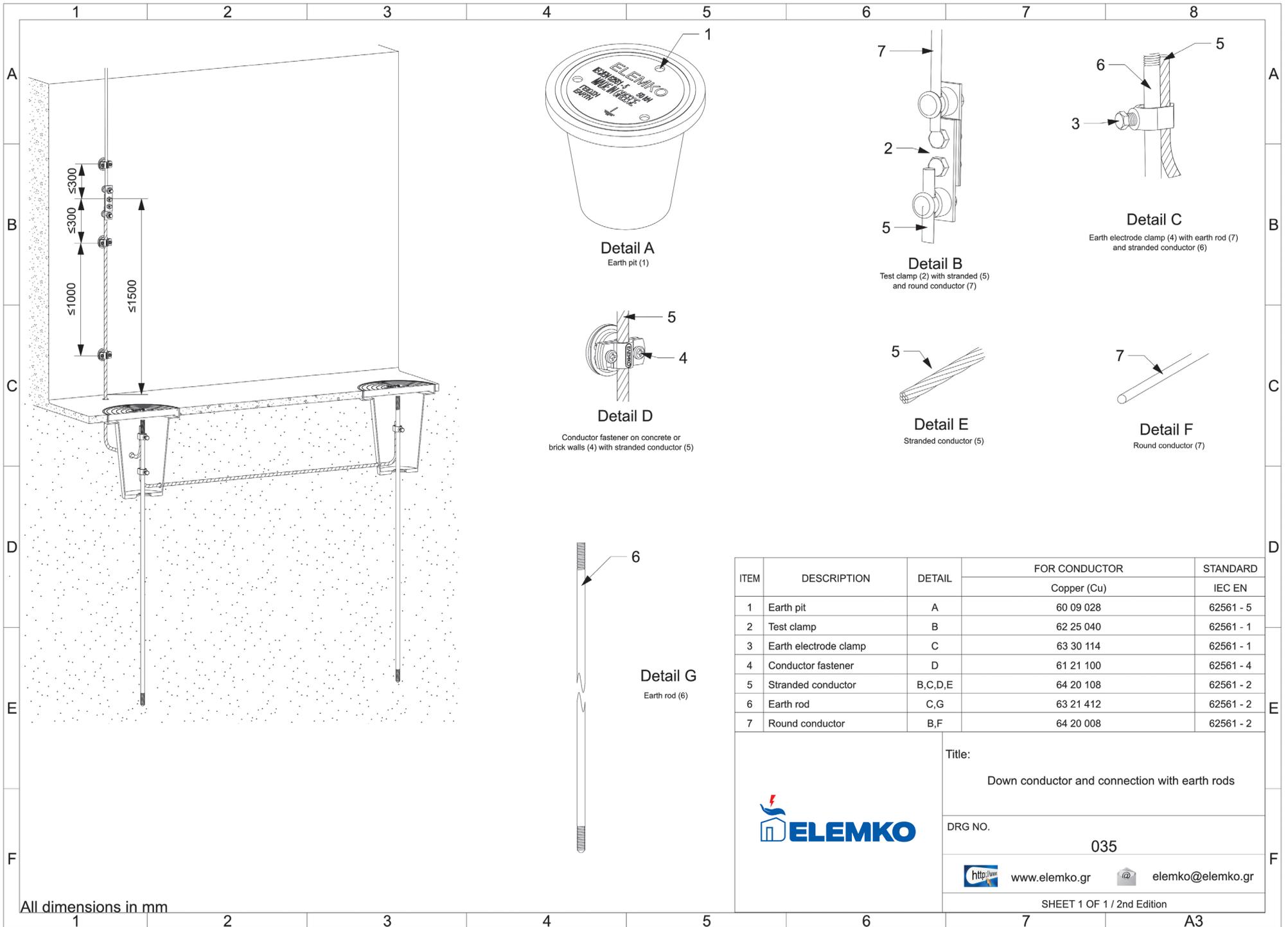
Title:
Down conductor as earth lead - in to earth electrode (tape conductor) without mechanical protection

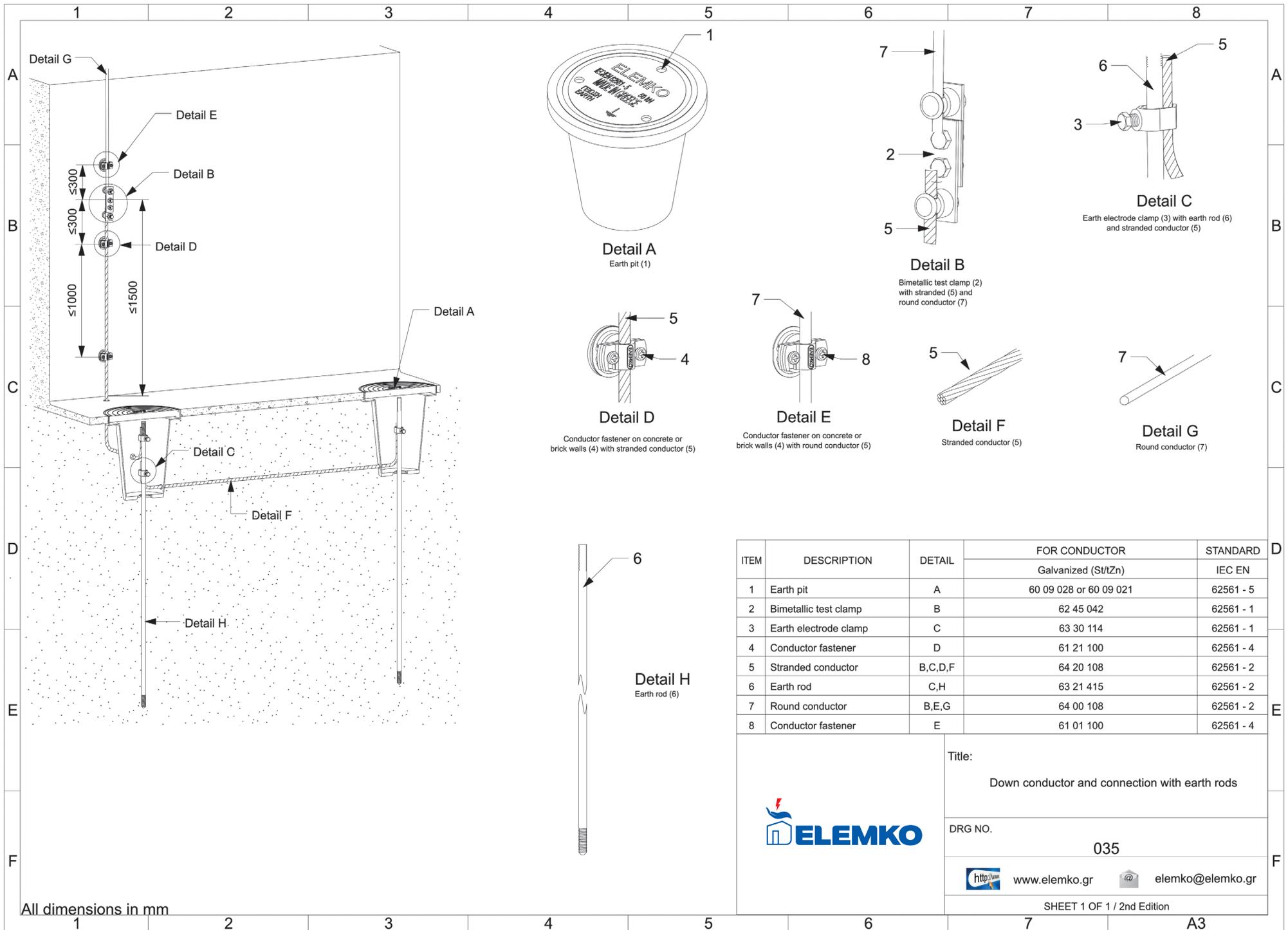
DRG NO. 014-0

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SHEET 1 OF 1

All dimensions in mm





All dimensions in mm

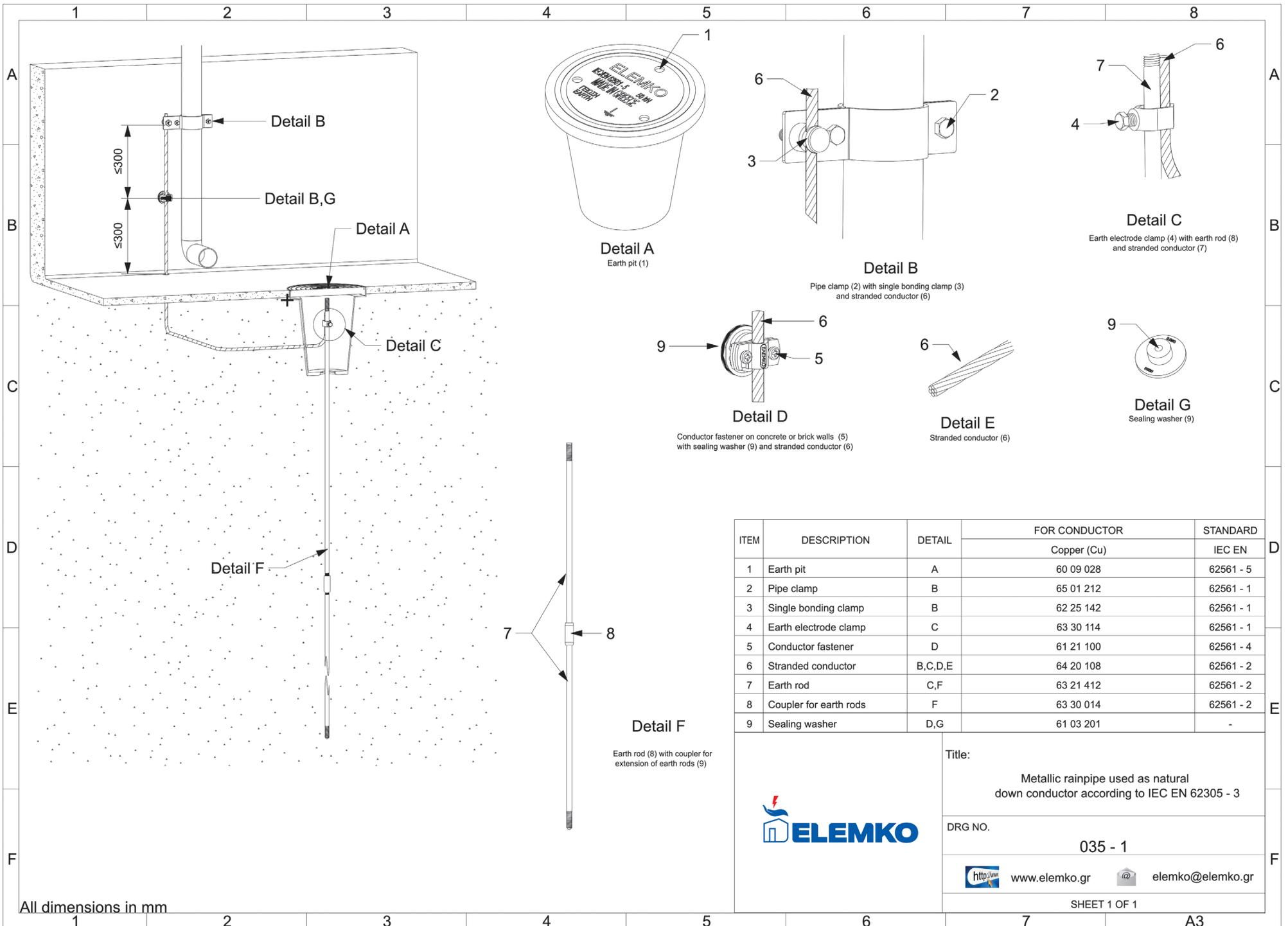
Title:
Down conductor and connection with earth rods

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SHEET 1 OF 1 / 2nd Edition





ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR	
			Copper (Cu)	STANDARD
1	Earth pit	A	60 09 028	IEC EN 62561 - 5
2	Pipe clamp	B	65 01 212	62561 - 1
3	Single bonding clamp	B	62 25 142	62561 - 1
4	Earth electrode clamp	C	63 30 114	62561 - 1
5	Conductor fastener	D	61 21 100	62561 - 4
6	Stranded conductor	B,C,D,E	64 20 108	62561 - 2
7	Earth rod	C,F	63 21 412	62561 - 2
8	Coupler for earth rods	F	63 30 014	62561 - 2
9	Sealing washer	D,G	61 03 201	-

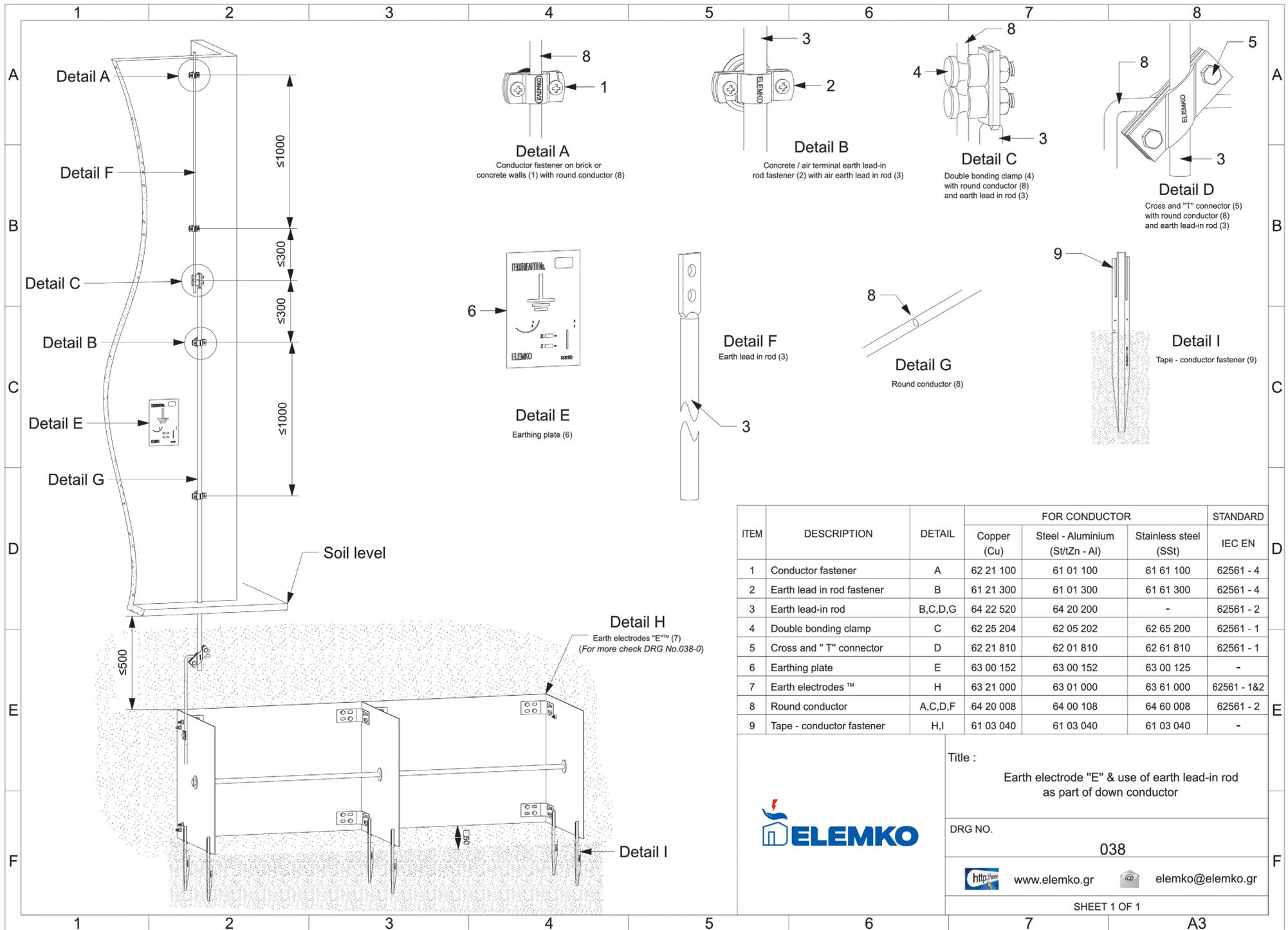
Title:
Metallic rainpipe used as natural down conductor according to IEC EN 62305 - 3

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SHEET 1 OF 1

All dimensions in mm



ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD IEC EN
			Copper (Cu)	Steel - Aluminium (St/tZn - Al)	Stainless steel (SSt)	
1	Conductor fastener	A	62 21 100	61 01 100	61 61 100	62561 - 4
2	Earth lead in rod fastener	B	61 21 300	61 01 300	61 61 300	62561 - 4
3	Earth lead-in rod	B,C,D,G	64 22 520	64 20 200	-	62561 - 2
4	Double bonding clamp	C	62 25 204	62 05 202	62 65 200	62561 - 1
5	Cross and " T" connector	D	62 21 810	62 01 810	62 61 810	62561 - 1
6	Earthing plate	E	63 00 152	63 00 152	63 00 125	-
7	Earth electrodes TM	H	63 21 000	63 01 000	63 61 000	62561 - 1&2
8	Round conductor	A,C,D,F	64 20 008	64 00 108	64 60 008	62561 - 2
9	Tape - conductor fastener	H,I	61 03 040	61 03 040	61 03 040	-

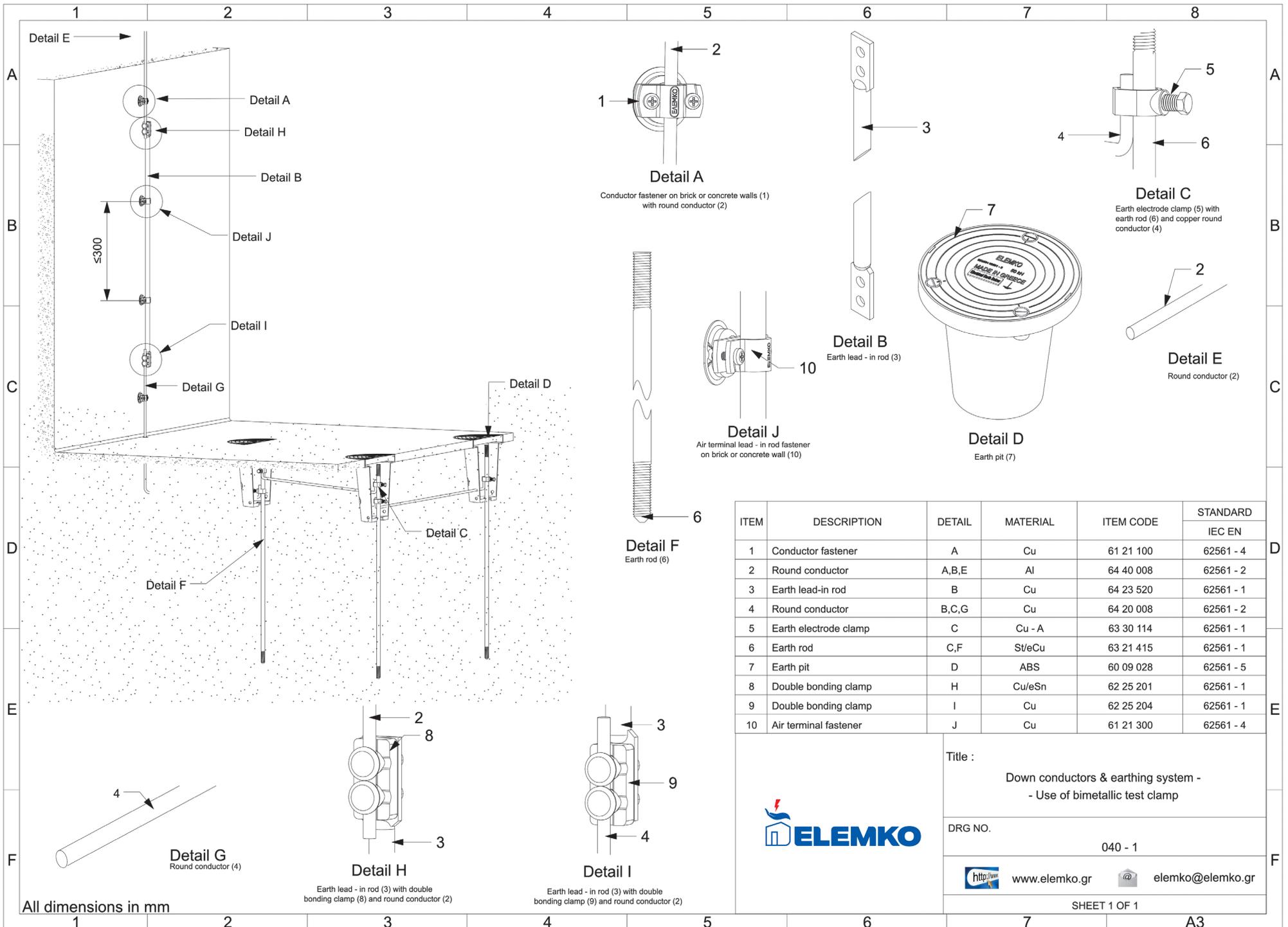
Title :
Earth electrode "E" & use of earth lead-in rod as part of down conductor

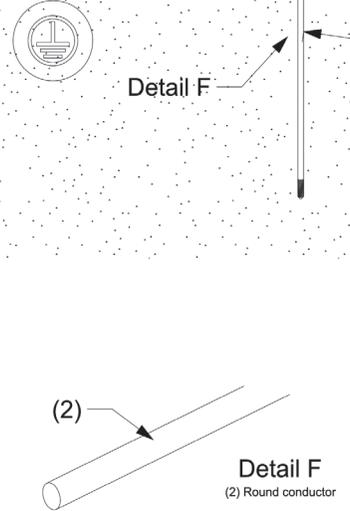
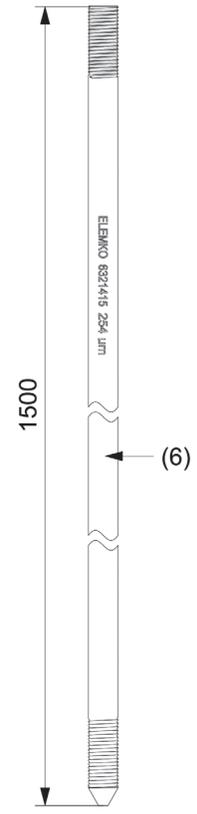
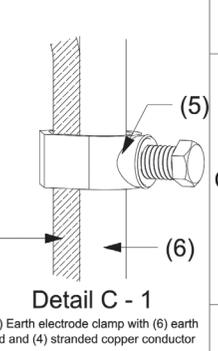
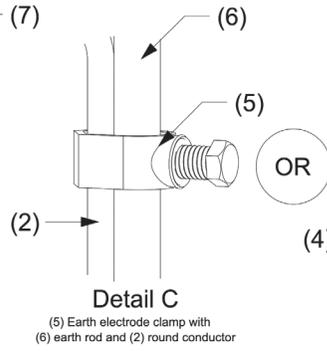
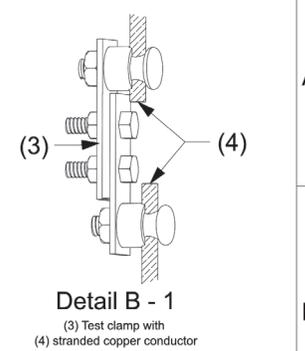
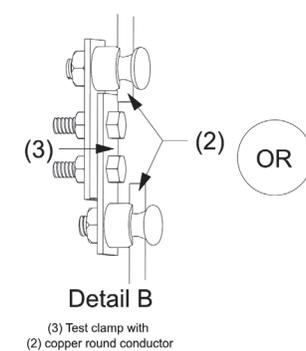
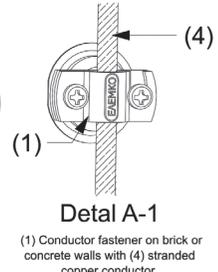
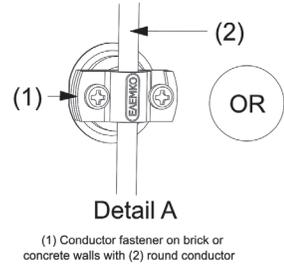
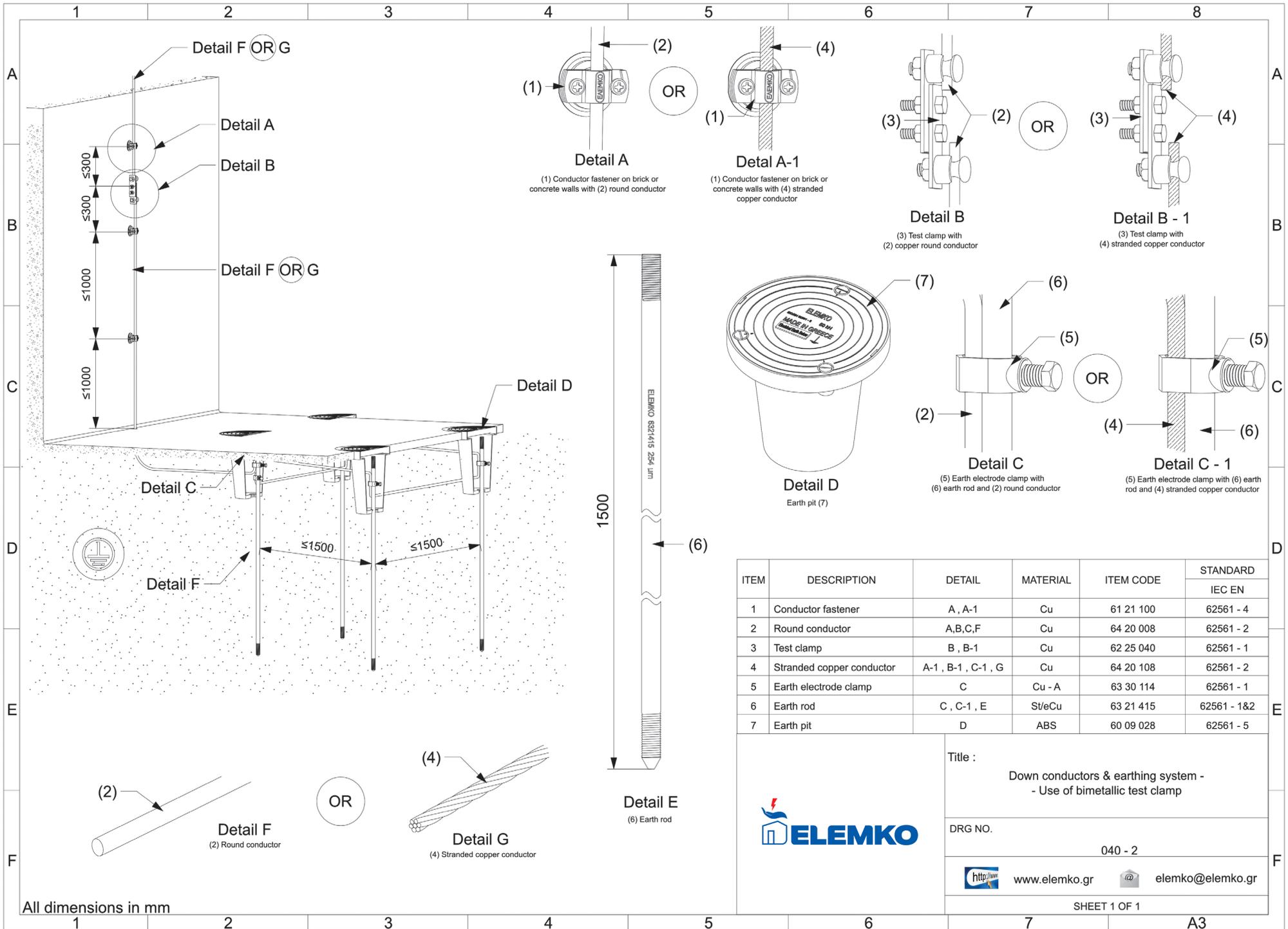
DRG NO.
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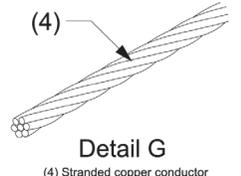
SHEET 1 OF 1







OR



ITEM	DESCRIPTION	DETAIL	MATERIAL	ITEM CODE	STANDARD
					IEC EN
1	Conductor fastener	A, A-1	Cu	61 21 100	62561 - 4
2	Round conductor	A,B,C,F	Cu	64 20 008	62561 - 2
3	Test clamp	B, B-1	Cu	62 25 040	62561 - 1
4	Stranded copper conductor	A-1, B-1, C-1, G	Cu	64 20 108	62561 - 2
5	Earth electrode clamp	C	Cu - A	63 30 114	62561 - 1
6	Earth rod	C, C-1, E	St/eCu	63 21 415	62561 - 1&2
7	Earth pit	D	ABS	60 09 028	62561 - 5

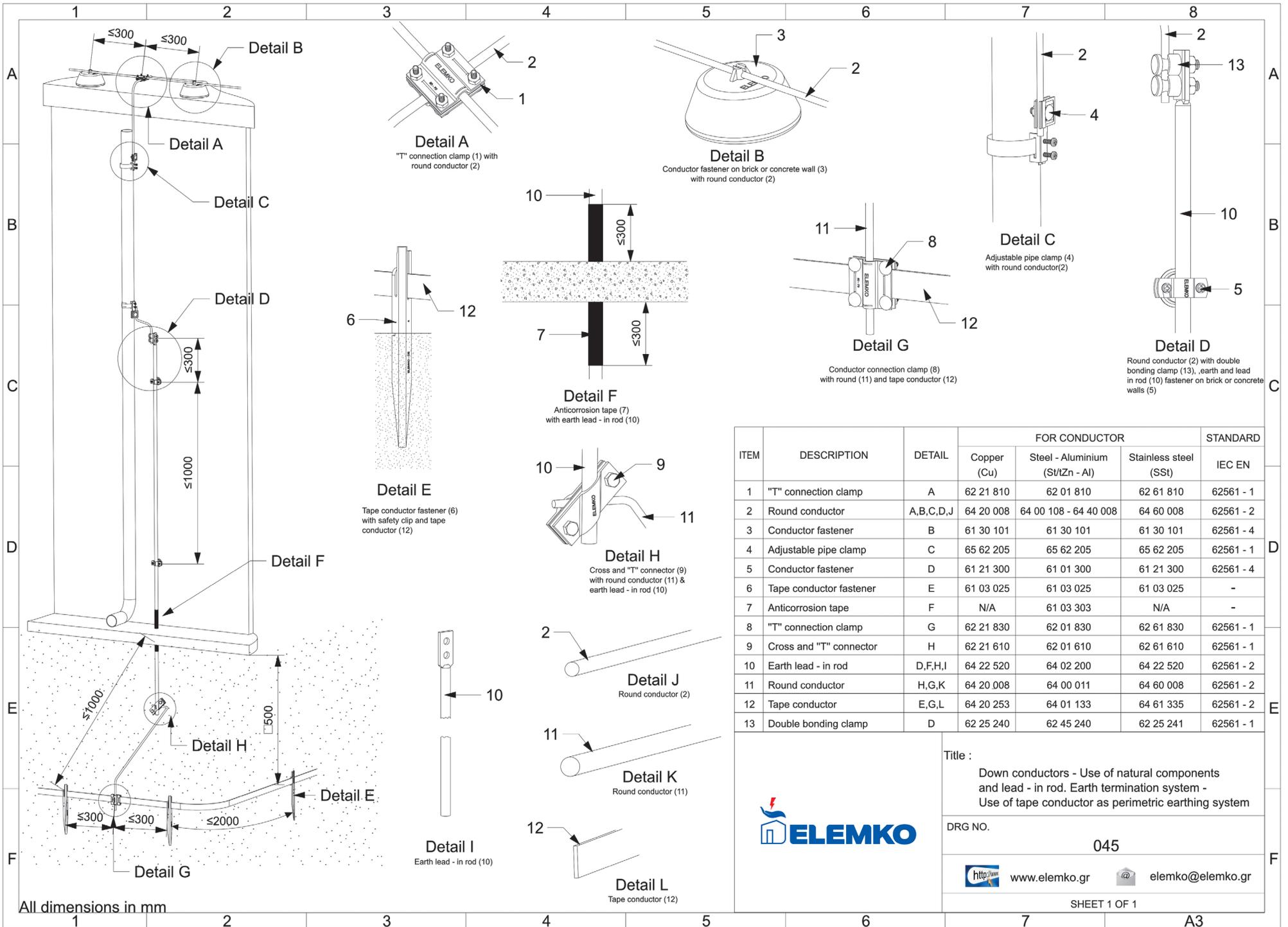
Title :
Down conductors & earthing system -
- Use of bimetallic test clamp

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040 - 2

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SHEET 1 OF 1

All dimensions in mm

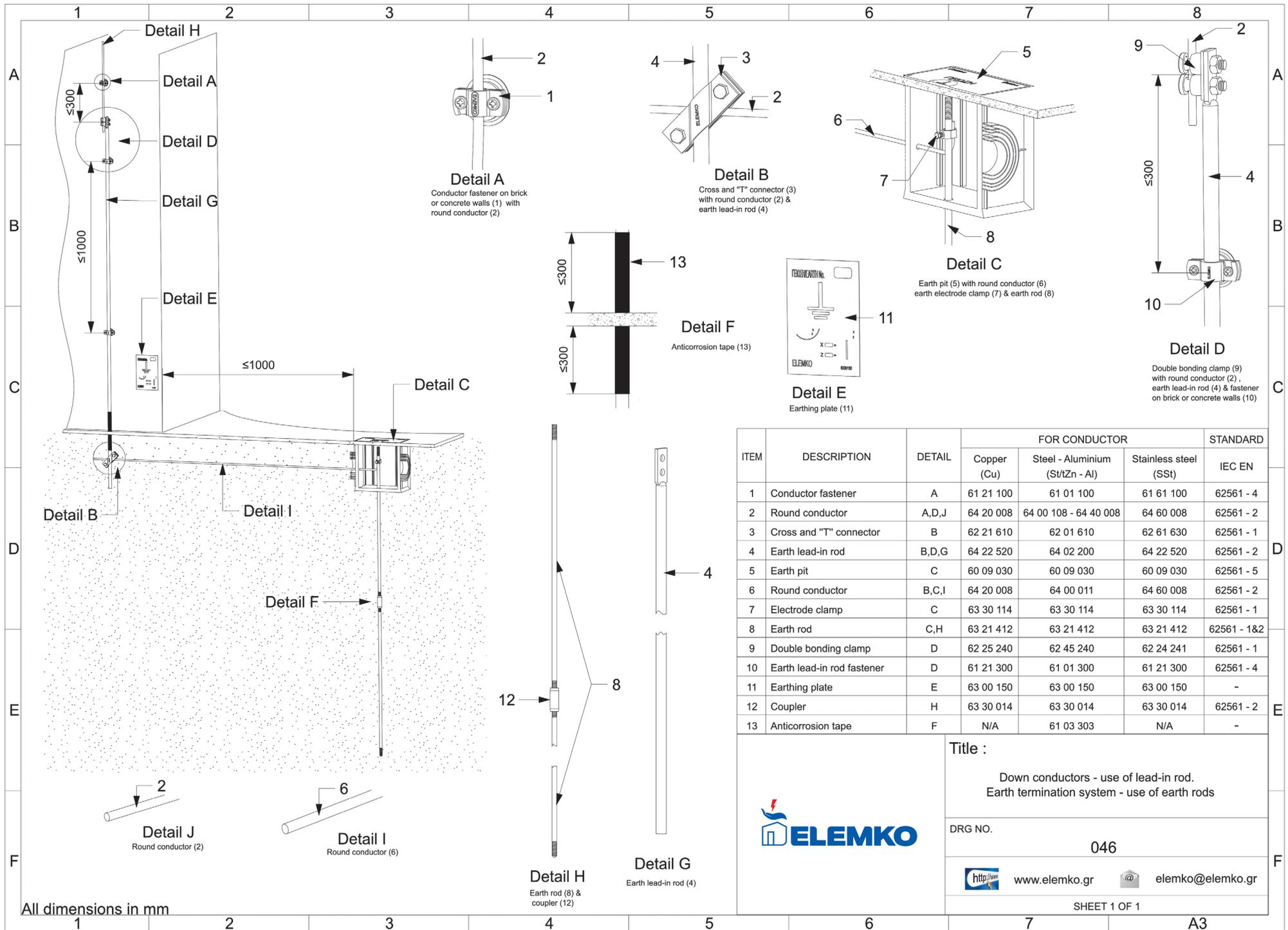


ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD
			Copper (Cu)	Steel - Aluminium (St/AlZn - Al)	Stainless steel (SSt)	
1	"T" connection clamp	A	62 21 810	62 01 810	62 61 810	62561 - 1
2	Round conductor	A,B,C,D,J	64 20 008	64 00 108 - 64 40 008	64 60 008	62561 - 2
3	Conductor fastener	B	61 30 101	61 30 101	61 30 101	62561 - 4
4	Adjustable pipe clamp	C	65 62 205	65 62 205	65 62 205	62561 - 1
5	Conductor fastener	D	61 21 300	61 01 300	61 21 300	62561 - 4
6	Tape conductor fastener	E	61 03 025	61 03 025	61 03 025	-
7	Anticorrosion tape	F	N/A	61 03 303	N/A	-
8	"T" connection clamp	G	62 21 830	62 01 830	62 61 830	62561 - 1
9	Cross and "T" connector	H	62 21 610	62 01 610	62 61 610	62561 - 1
10	Earth lead - in rod	D,F,H,I	64 22 520	64 02 200	64 22 520	62561 - 2
11	Round conductor	H,G,K	64 20 008	64 00 011	64 60 008	62561 - 2
12	Tape conductor	E,G,L	64 20 253	64 01 133	64 61 335	62561 - 2
13	Double bonding clamp	D	62 25 240	62 45 240	62 25 241	62561 - 1



Title :
Down conductors - Use of natural components and lead - in rod. Earth termination system - Use of tape conductor as perimetric earthing system

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Detail A
Conductor fastener on brick or concrete walls (1) with round conductor (2)

Detail B
Cross and "T" connector (3) with round conductor (2) & earth lead-in rod (4)

Detail C
Earth pit (5) with round conductor (6) earth electrode clamp (7) & earth rod (8)

Detail D
Double bonding clamp (9) with round conductor (2), earth lead-in rod (4) & fastener on brick or concrete walls (10)

Detail F
Anticorrosion tape (13)

Detail E
Earthing plate (11)

ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD IEC EN
			Copper (Cu)	Steel - Aluminium (St/Zn - Al)	Stainless steel (SSt)	
1	Conductor fastener	A	61 21 100	61 01 100	61 61 100	62561 - 4
2	Round conductor	A,D,J	64 20 008	64 00 108 - 64 40 008	64 60 008	62561 - 2
3	Cross and "T" connector	B	62 21 610	62 01 610	62 61 630	62561 - 1
4	Earth lead-in rod	B,D,G	64 22 520	64 02 200	64 22 520	62561 - 2
5	Earth pit	C	60 09 030	60 09 030	60 09 030	62561 - 5
6	Round conductor	B,C,I	64 20 008	64 00 011	64 60 008	62561 - 2
7	Electrode clamp	C	63 30 114	63 30 114	63 30 114	62561 - 1
8	Earth rod	C,H	63 21 412	63 21 412	63 21 412	62561 - 1&2
9	Double bonding clamp	D	62 25 240	62 45 240	62 24 241	62561 - 1
10	Earth lead-in rod fastener	D	61 21 300	61 01 300	61 21 300	62561 - 4
11	Earthing plate	E	63 00 150	63 00 150	63 00 150	-
12	Coupler	H	63 30 014	63 30 014	63 30 014	62561 - 2
13	Anticorrosion tape	F	N/A	61 03 303	N/A	-

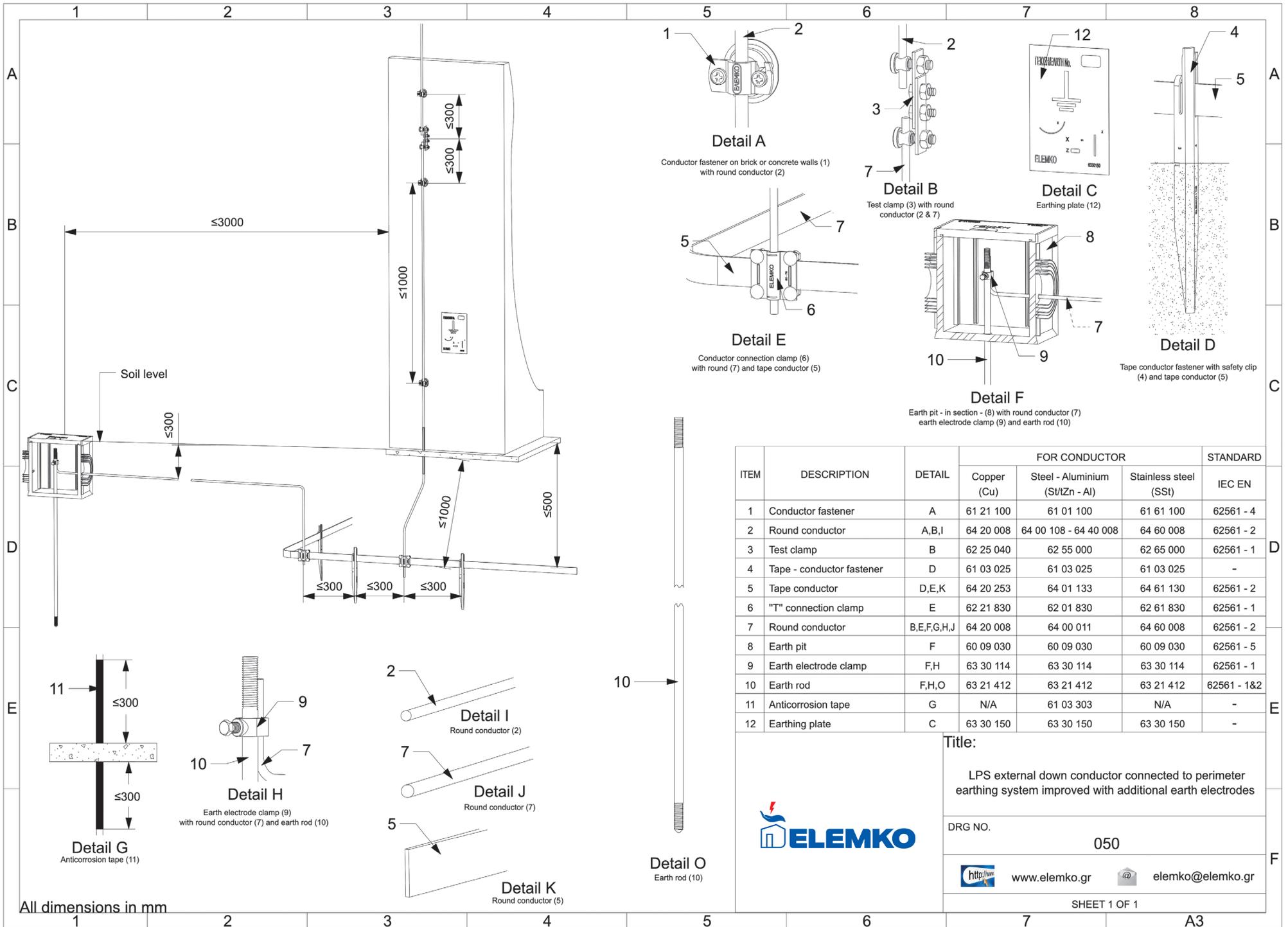
Title :
Down conductors - use of lead-in rod.
Earth termination system - use of earth rods



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SHEET 1 OF 1

All dimensions in mm



Detail A
Conductor fastener on brick or concrete walls (1) with round conductor (2)

Detail B
Test clamp (3) with round conductor (2 & 7)

Detail C
Earthing plate (12)

Detail E
Conductor connection clamp (6) with round (7) and tape conductor (5)

Detail F
Earth pit - in section - (8) with round conductor (7) earth electrode clamp (9) and earth rod (10)

Detail D
Tape conductor fastener with safety clip (4) and tape conductor (5)

ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD
			Copper (Cu)	Steel - Aluminium (St/AlZn - Al)	Stainless steel (SSt)	
1	Conductor fastener	A	61 21 100	61 01 100	61 61 100	62561 - 4
2	Round conductor	A,B,I	64 20 008	64 00 108 - 64 40 008	64 60 008	62561 - 2
3	Test clamp	B	62 25 040	62 55 000	62 65 000	62561 - 1
4	Tape - conductor fastener	D	61 03 025	61 03 025	61 03 025	-
5	Tape conductor	D,E,K	64 20 253	64 01 133	64 61 130	62561 - 2
6	"T" connection clamp	E	62 21 830	62 01 830	62 61 830	62561 - 1
7	Round conductor	B,E,F,G,H,J	64 20 008	64 00 011	64 60 008	62561 - 2
8	Earth pit	F	60 09 030	60 09 030	60 09 030	62561 - 5
9	Earth electrode clamp	F,H	63 30 114	63 30 114	63 30 114	62561 - 1
10	Earth rod	F,H,O	63 21 412	63 21 412	63 21 412	62561 - 1&2
11	Anticorrosion tape	G	N/A	61 03 303	N/A	-
12	Earthing plate	C	63 30 150	63 30 150	63 30 150	-



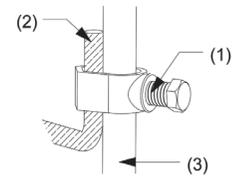
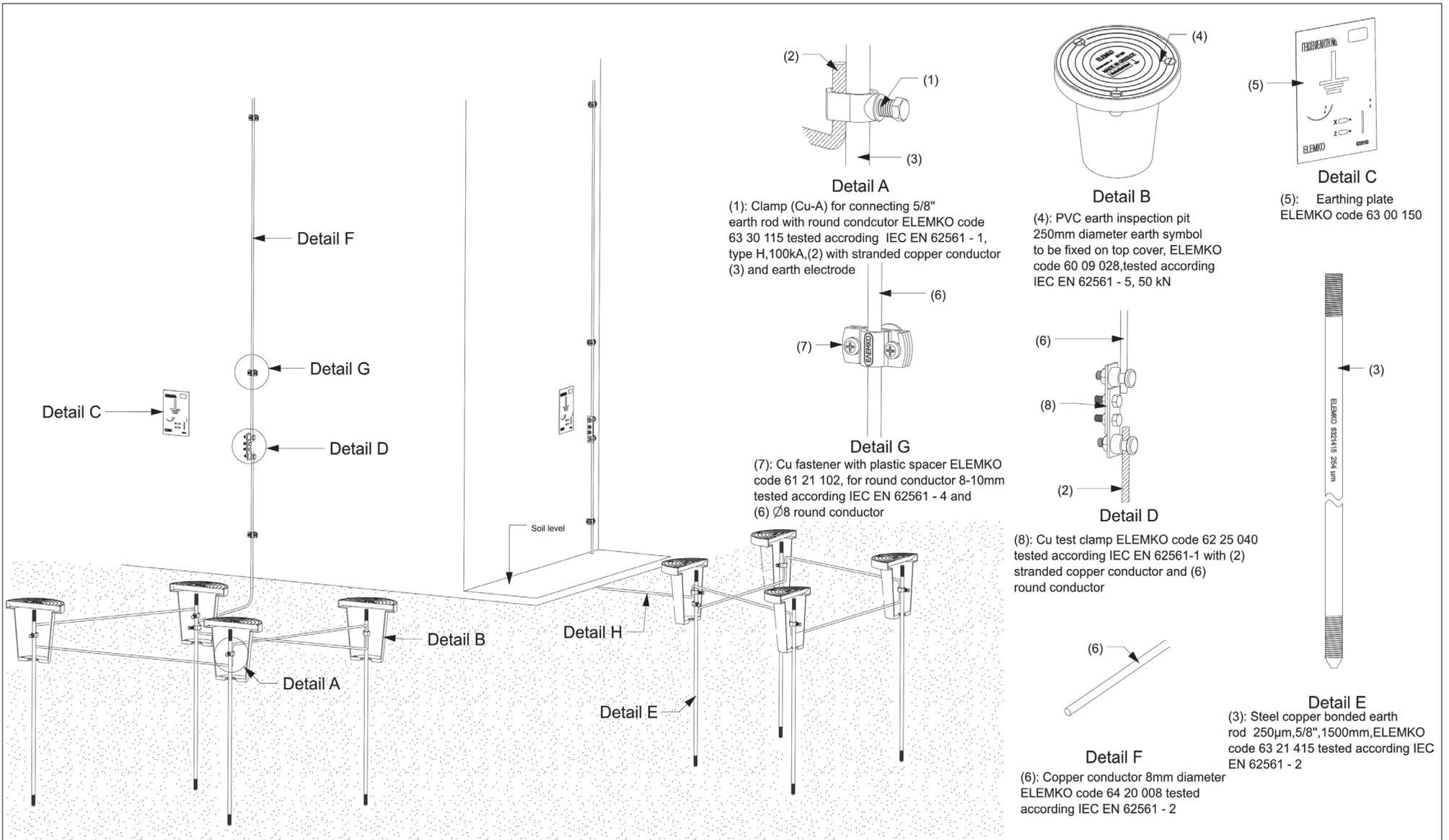
Title:
LPS external down conductor connected to perimeter earthing system improved with additional earth electrodes

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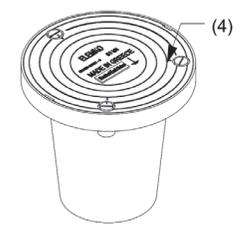
SHEET 1 OF 1

All dimensions in mm



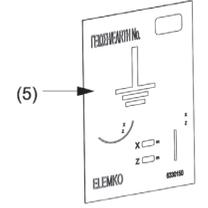
Detail A

(1): Clamp (Cu-A) for connecting 5/8" earth rod with round conductor ELEMKO code 63 30 115 tested according IEC EN 62561 - 1, type H, 100kA, (2) with stranded copper conductor (3) and earth electrode



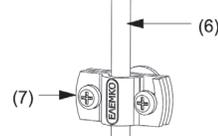
Detail B

(4): PVC earth inspection pit 250mm diameter earth symbol to be fixed on top cover, ELEMKO code 60 09 028, tested according IEC EN 62561 - 5, 50 kN



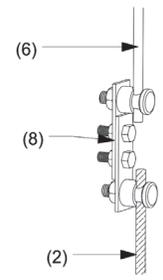
Detail C

(5): Earthing plate ELEMKO code 63 00 150



Detail G

(7): Cu fastener with plastic spacer ELEMKO code 61 21 102, for round conductor 8-10mm tested according IEC EN 62561 - 4 and (6) Ø8 round conductor



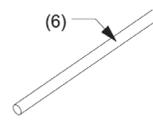
Detail D

(8): Cu test clamp ELEMKO code 62 25 040 tested according IEC EN 62561-1 with (2) stranded copper conductor and (6) round conductor



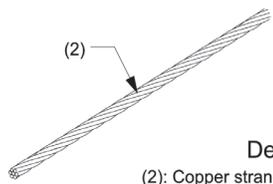
Detail E

(3): Steel copper bonded earth rod 250µm, 5/8", 1500mm, ELEMKO code 63 21 415 tested according IEC EN 62561 - 2



Detail F

(6): Copper conductor 8mm diameter ELEMKO code 64 20 008 tested according IEC EN 62561 - 2

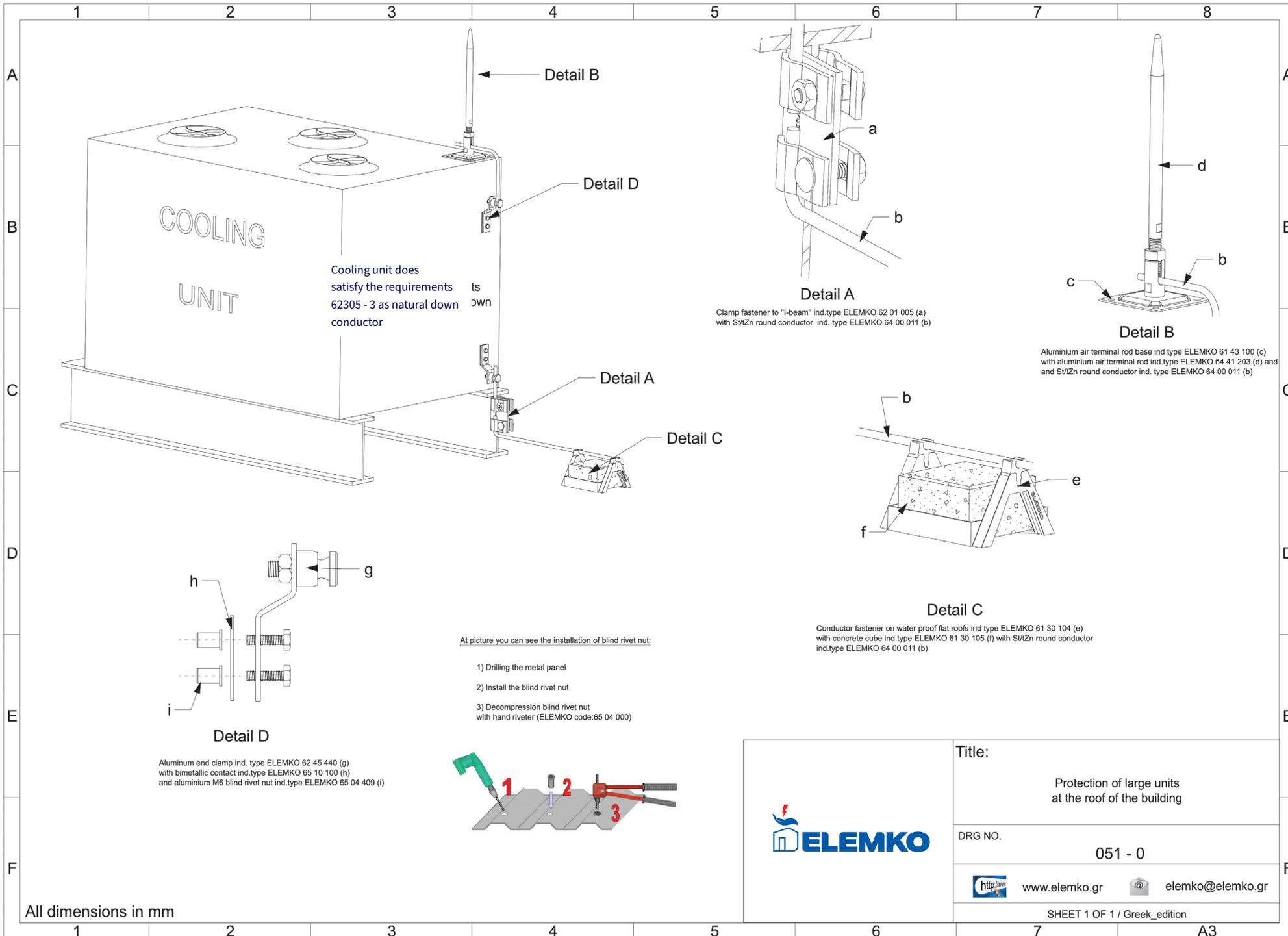


Detail H

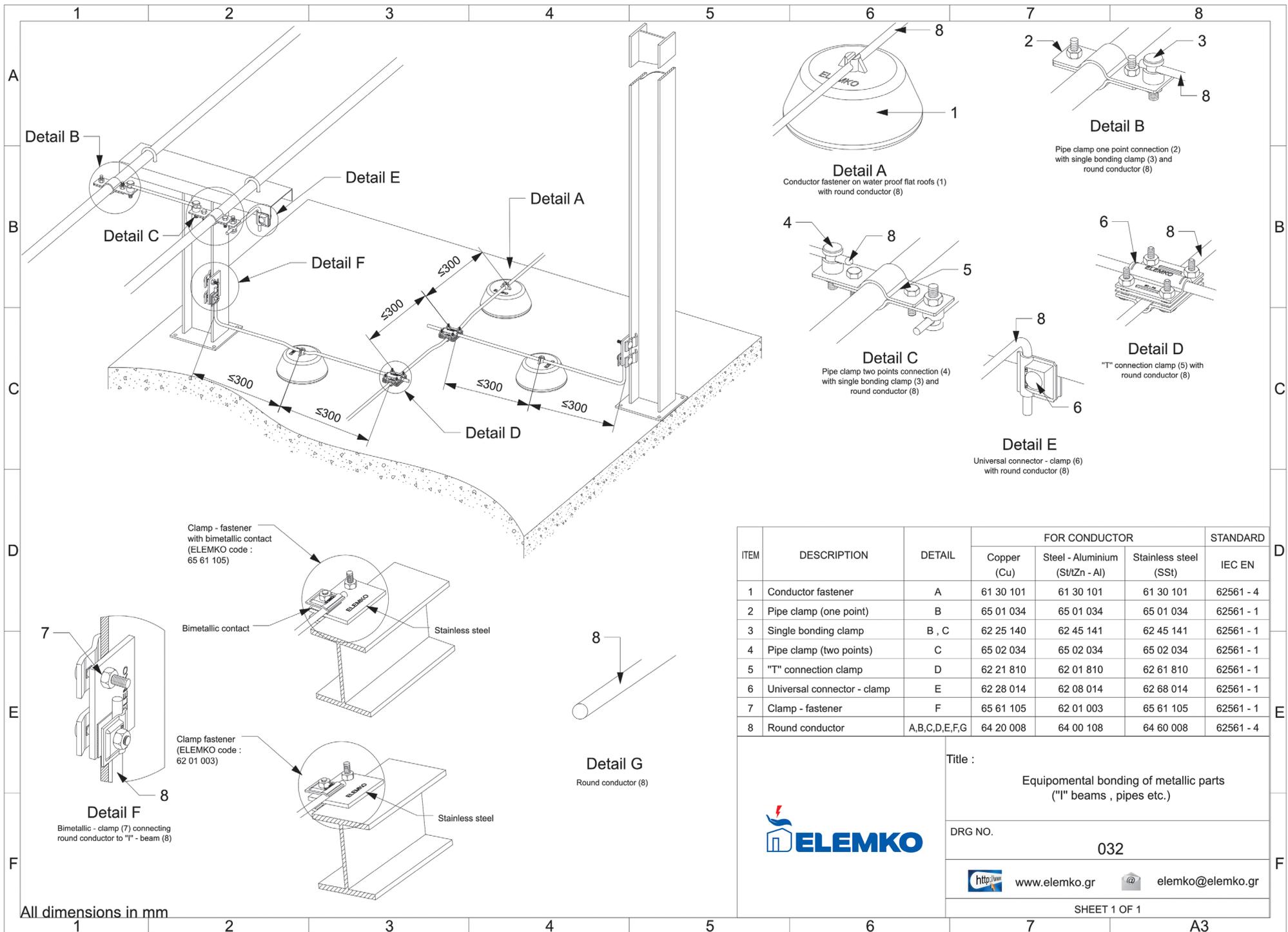
(2): Copper stranded conductor 50mm² ELEMKO code 64 20 108 tested according IEC EN 62561 - 2

All dimensions in mm

	Title:	Down conductor and earthing system
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	SHEET 1 OF 1	



	Title:	Protection of large units at the roof of the building
	DRG NO.	051 - 0
	http://www.elemko.gr	elemko@elemko.gr
	SHEET 1 OF 1 / Greek_edition	



ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD IEC EN
			Copper (Cu)	Steel - Aluminium (St/Zn - Al)	Stainless steel (SSt)	
1	Conductor fastener	A	61 30 101	61 30 101	61 30 101	62561 - 4
2	Pipe clamp (one point)	B	65 01 034	65 01 034	65 01 034	62561 - 1
3	Single bonding clamp	B , C	62 25 140	62 45 141	62 45 141	62561 - 1
4	Pipe clamp (two points)	C	65 02 034	65 02 034	65 02 034	62561 - 1
5	"T" connection clamp	D	62 21 810	62 01 810	62 61 810	62561 - 1
6	Universal connector - clamp	E	62 28 014	62 08 014	62 68 014	62561 - 1
7	Clamp - fastener	F	65 61 105	62 01 003	65 61 105	62561 - 1
8	Round conductor	A,B,C,D,E,F,G	64 20 008	64 00 108	64 60 008	62561 - 4



Title :
Equipemental bonding of metallic parts
("I" beams , pipes etc.)

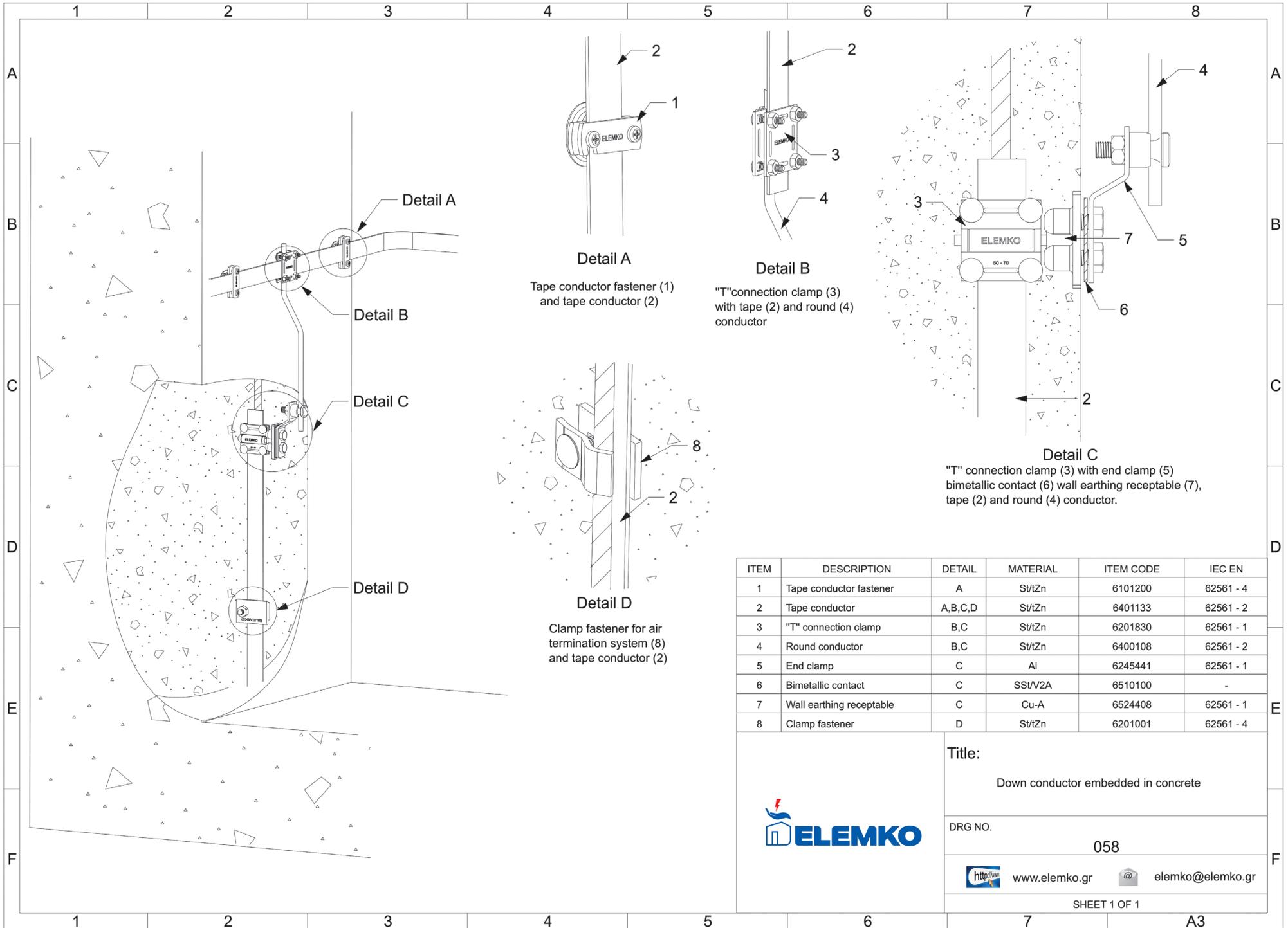
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SHEET 1 OF 1

All dimensions in mm



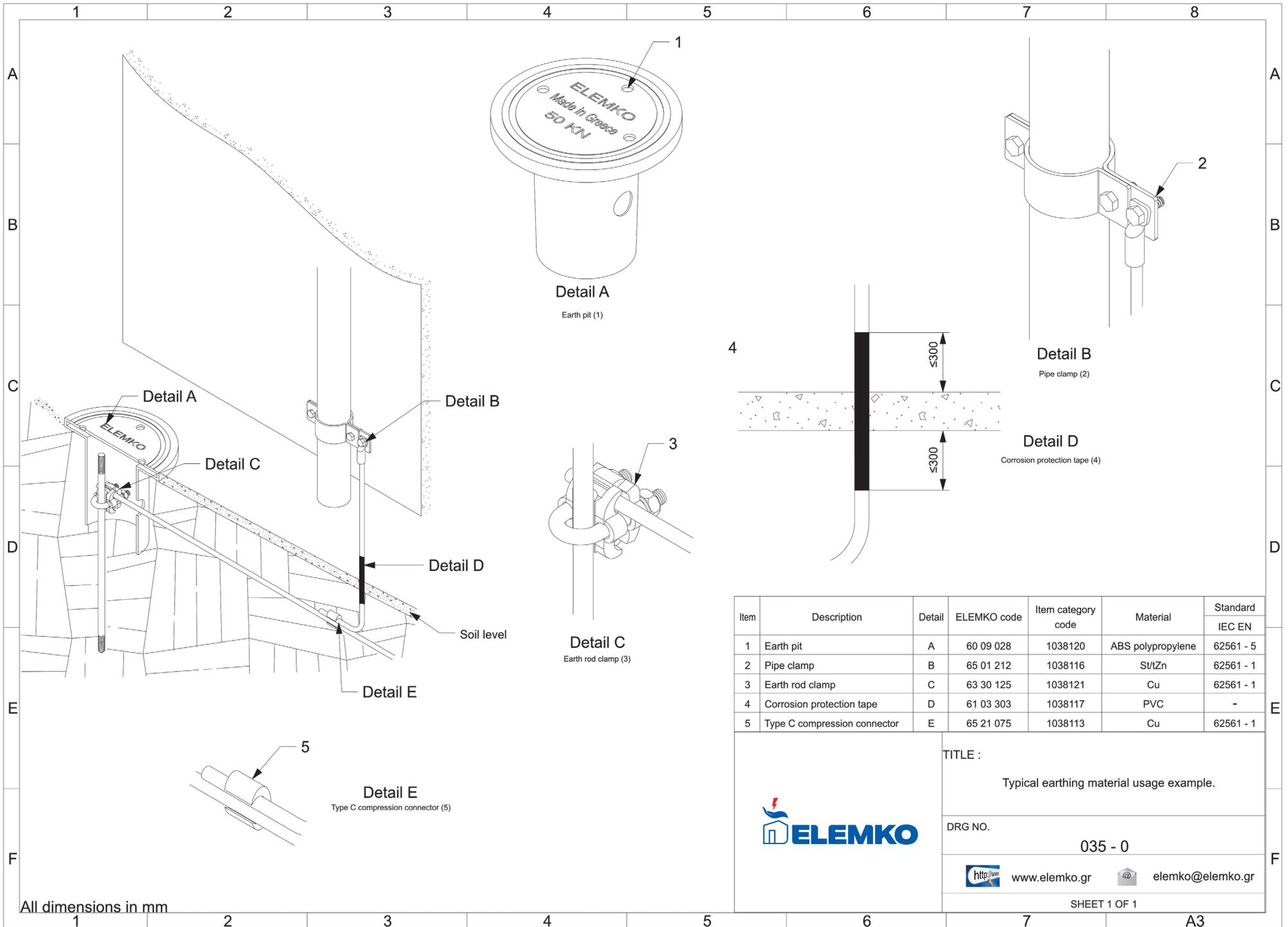
ITEM	DESCRIPTION	DETAIL	MATERIAL	ITEM CODE	IEC EN
1	Tape conductor fastener	A	St/Zn	6101200	62561 - 4
2	Tape conductor	A,B,C,D	St/Zn	6401133	62561 - 2
3	"T" connection clamp	B,C	St/Zn	6201830	62561 - 1
4	Round conductor	B,C	St/Zn	6400108	62561 - 2
5	End clamp	C	Al	6245441	62561 - 1
6	Bimetallic contact	C	SS1/V2A	6510100	-
7	Wall earthing receptable	C	Cu-A	6524408	62561 - 1
8	Clamp fastener	D	St/Zn	6201001	62561 - 4

Title:
Down conductor embedded in concrete

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058

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SHEET 1 OF 1



Item	Description	Detail	ELEMKO code	Item category code	Material	Standard
						IEC EN
1	Earth pit	A	60 09 028	1038120	ABS polypropylene	62561 - 5
2	Pipe clamp	B	65 01 212	1038116	St/Zn	62561 - 1
3	Earth rod clamp	C	63 30 125	1038121	Cu	62561 - 1
4	Corrosion protection tape	D	61 03 303	1038117	PVC	-
5	Type C compression connector	E	65 21 075	1038113	Cu	62561 - 1

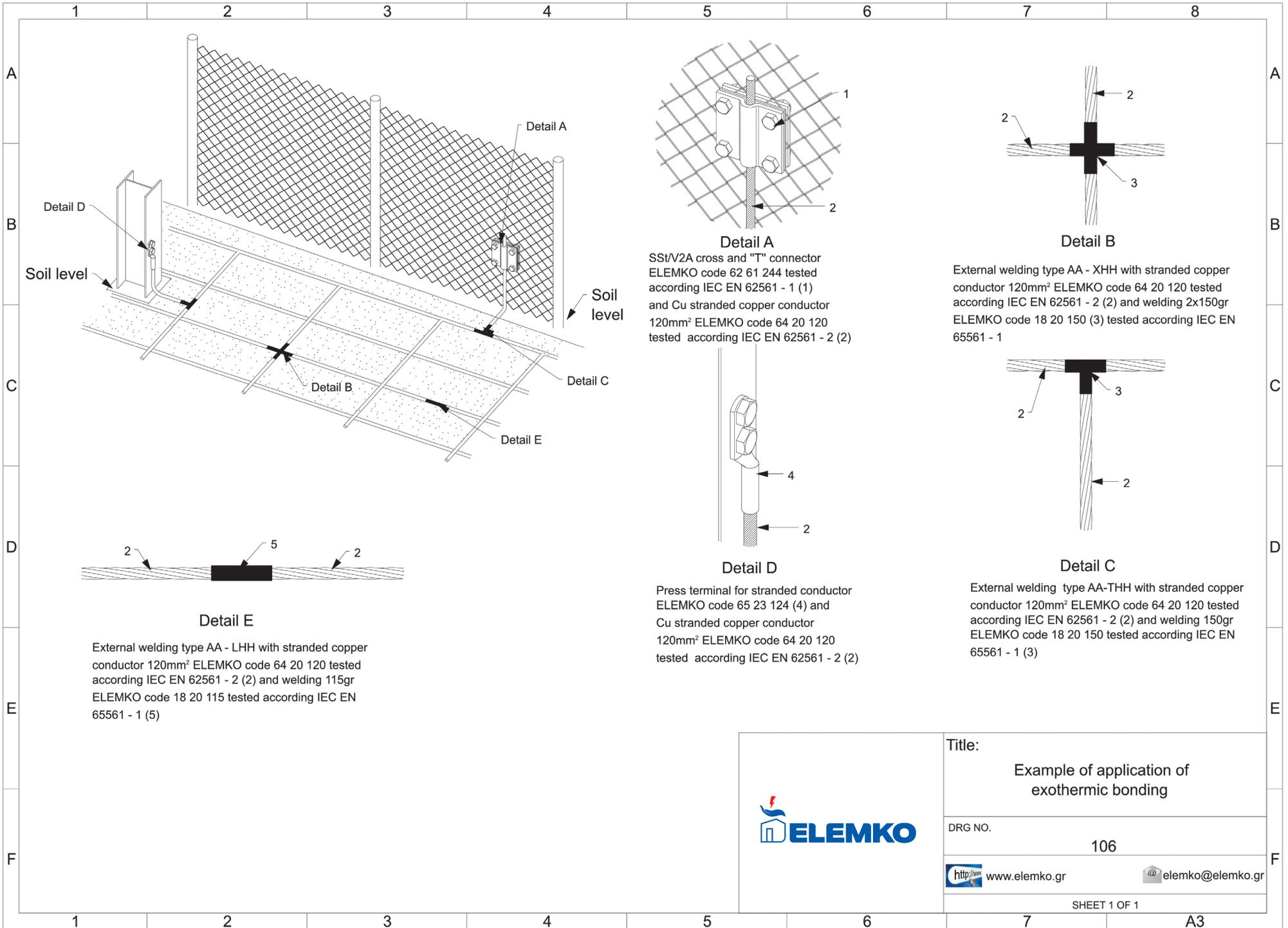
TITLE :
Typical earthing material usage example.

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035 - 0

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SHEET 1 OF 1

All dimensions in mm



Detail D

Soil level

Detail A

Soil level

Detail B

Detail C

Detail E

Detail E

External welding type AA - LHH with stranded copper conductor 120mm² ELEMKO code 64 20 120 tested according IEC EN 62561 - 2 (2) and welding 115gr ELEMKO code 18 20 115 tested according IEC EN 65561 - 1 (5)

Detail A

SSt/V2A cross and "T" connector ELEMKO code 62 61 244 tested according IEC EN 62561 - 1 (1) and Cu stranded copper conductor 120mm² ELEMKO code 64 20 120 tested according IEC EN 62561 - 2 (2)

Detail D

Press terminal for stranded conductor ELEMKO code 65 23 124 (4) and Cu stranded copper conductor 120mm² ELEMKO code 64 20 120 tested according IEC EN 62561 - 2 (2)

Detail B

External welding type AA - XHH with stranded copper conductor 120mm² ELEMKO code 64 20 120 tested according IEC EN 62561 - 2 (2) and welding 2x150gr ELEMKO code 18 20 150 (3) tested according IEC EN 65561 - 1

Detail C

External welding type AA-THH with stranded copper conductor 120mm² ELEMKO code 64 20 120 tested according IEC EN 62561 - 2 (2) and welding 150gr ELEMKO code 18 20 150 tested according IEC EN 65561 - 1 (3)

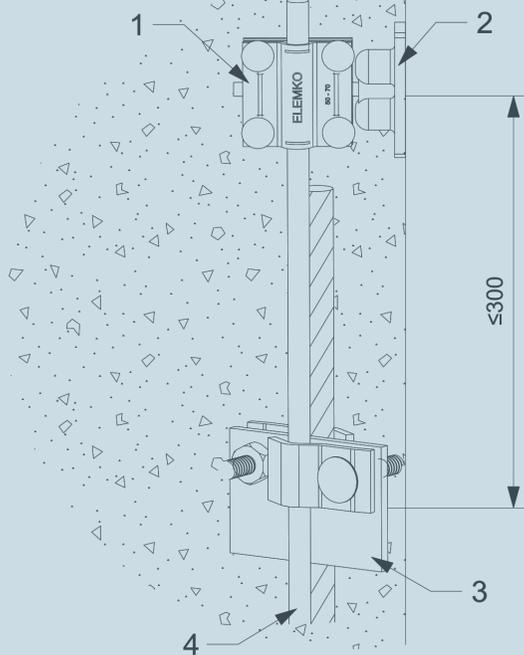
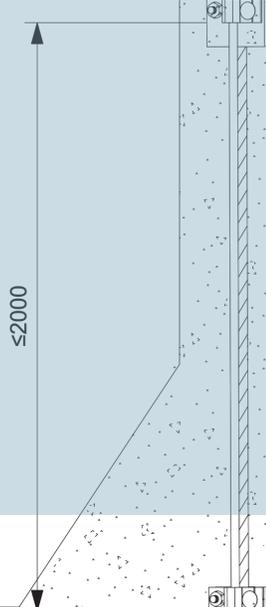
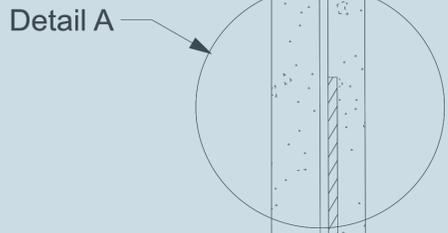


Title:
Example of application of exothermic bonding

DRG NO. 106

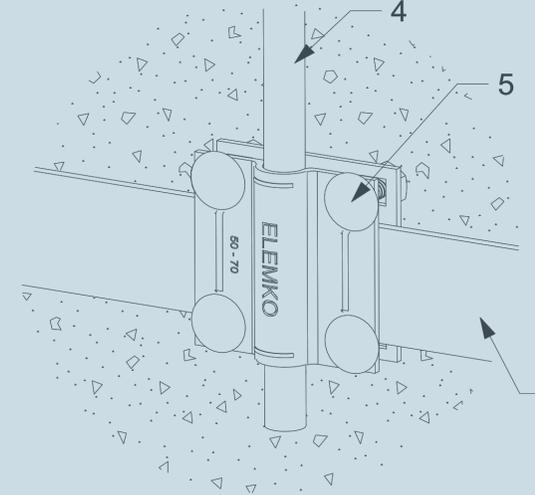
<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1



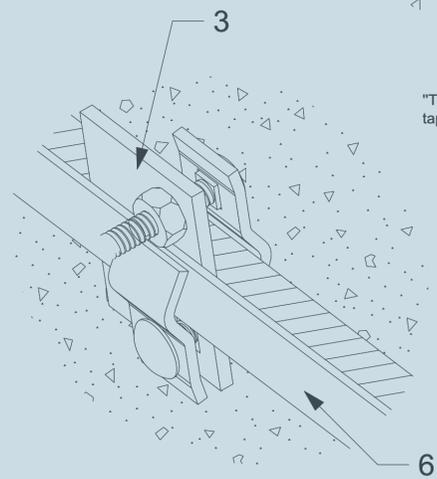
Detail A

"T" connection clamp (1) with wall earthingreceptable (2), clamp fastener connecting conductor to reinforcement (3) and round conductor (4)



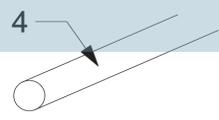
Detail B

"T" connection clamp (5) with tape (6) and round conductor (4)

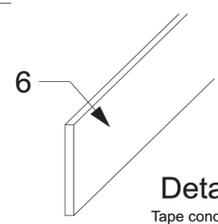


Detail C

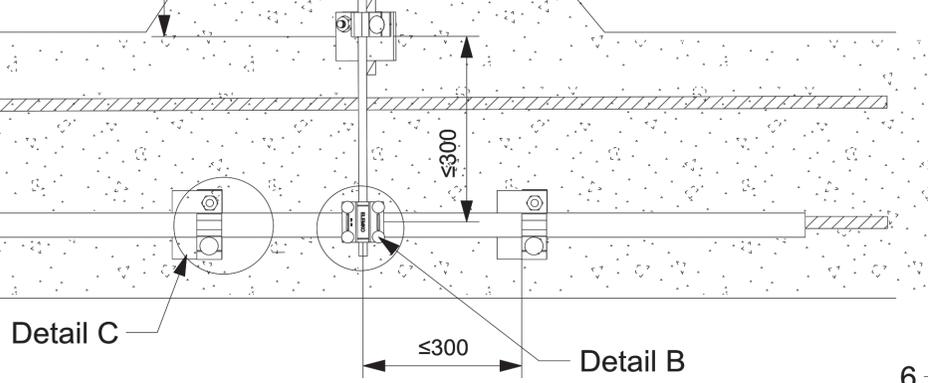
Clamp fastener (3) connecting reinforcement to tape conductor (6)



Detail D
Round conductor (6)

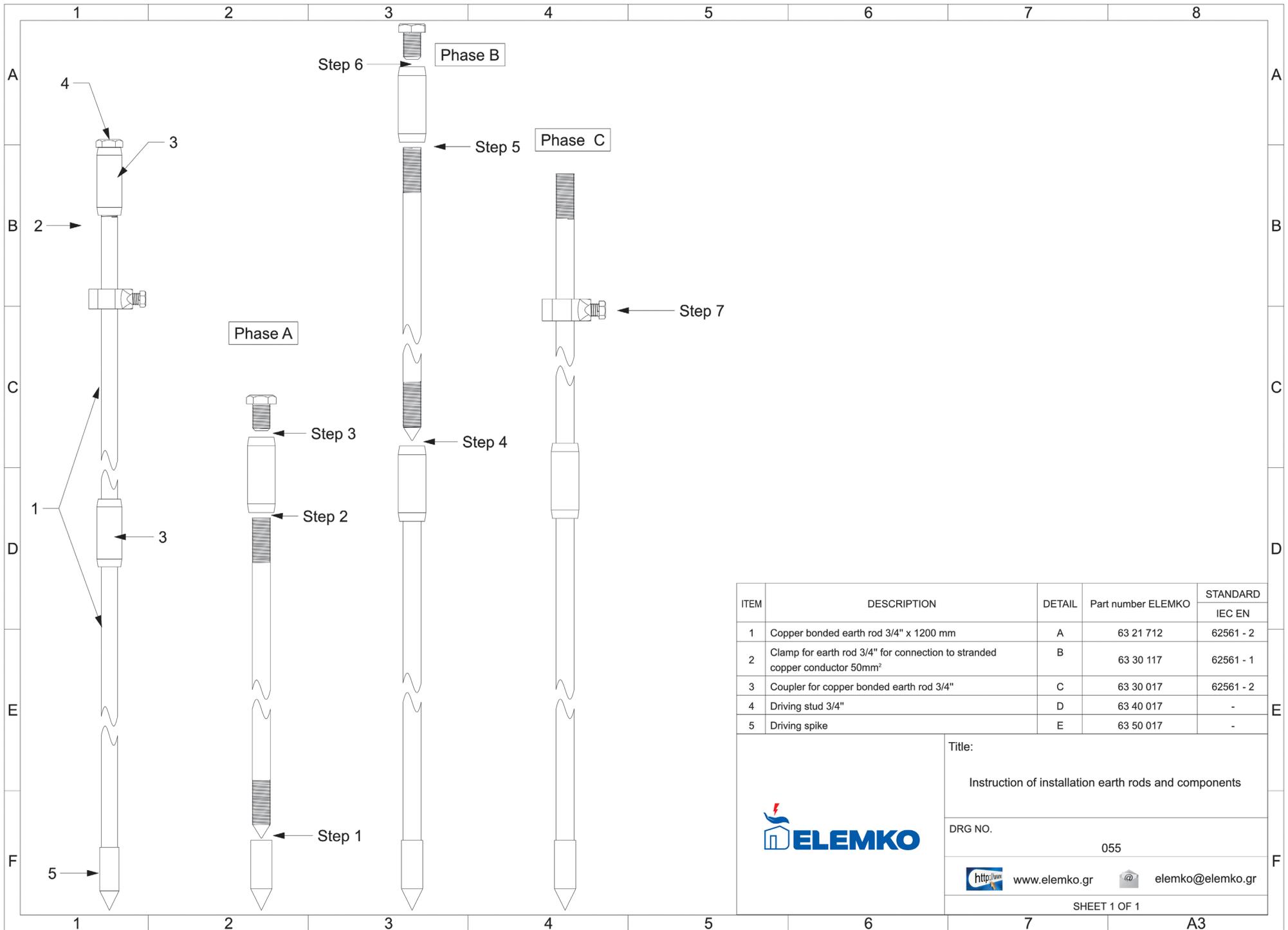


Detail E
Tape conductor (6)



EARTHING SYSTEMS





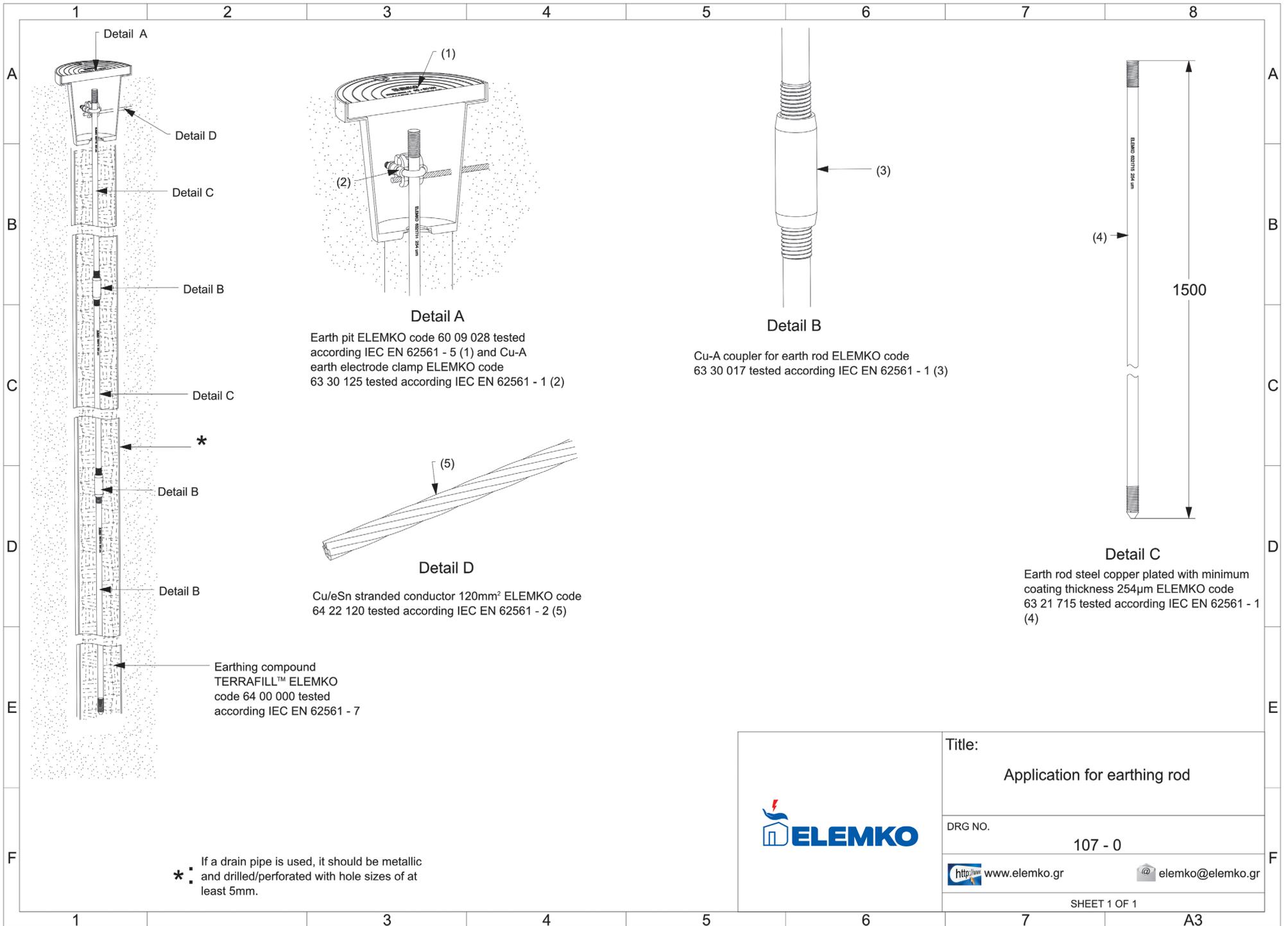
ITEM	DESCRIPTION	DETAIL	Part number ELEMKO	STANDARD
1	Copper bonded earth rod 3/4" x 1200 mm	A	63 21 712	IEC EN 62561 - 2
2	Clamp for earth rod 3/4" for connection to stranded copper conductor 50mm ²	B	63 30 117	62561 - 1
3	Coupler for copper bonded earth rod 3/4"	C	63 30 017	62561 - 2
4	Driving stud 3/4"	D	63 40 017	-
5	Driving spike	E	63 50 017	-

Title:
Instruction of installation earth rods and components

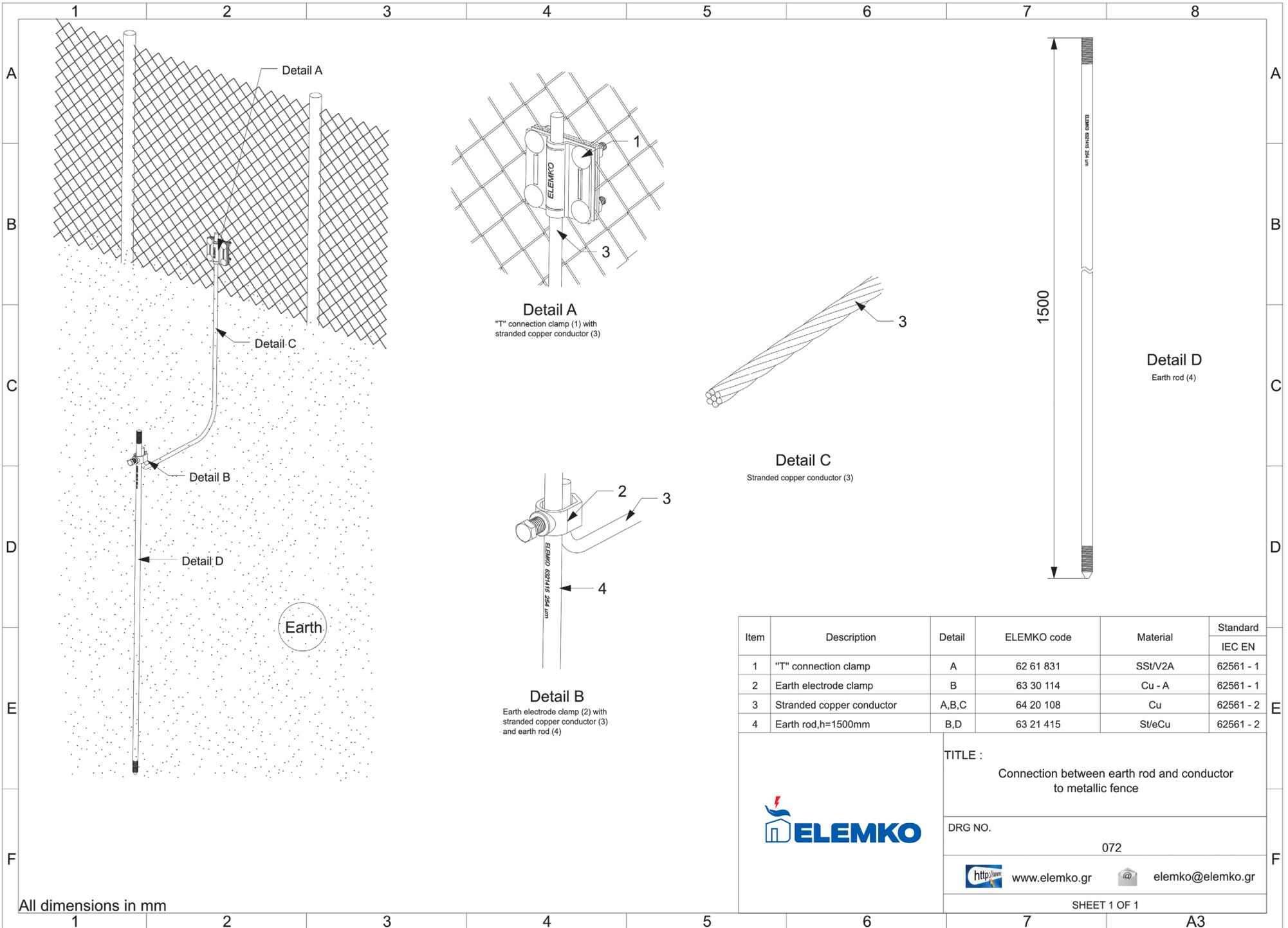
DRG NO.
055

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SHEET 1 OF 1

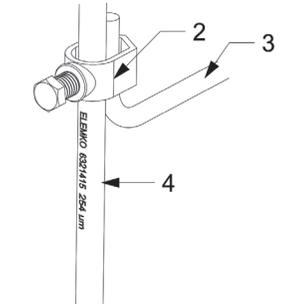


	Title:	Application for earthing rod
	DRG NO.	107 - 0
	http://www.elemko.gr	elemko@elemko.gr
	SHEET 1 OF 1	



Detail A
"T" connection clamp (1) with
stranded copper conductor (3)

Detail C
Stranded copper conductor (3)



Detail B
Earth electrode clamp (2) with
stranded copper conductor (3)
and earth rod (4)

Detail D
Earth rod (4)

Item	Description	Detail	ELEMKO code	Material	Standard
					IEC EN
1	"T" connection clamp	A	62 61 831	SS/V2A	62561 - 1
2	Earth electrode clamp	B	63 30 114	Cu - A	62561 - 1
3	Stranded copper conductor	A,B,C	64 20 108	Cu	62561 - 2
4	Earth rod, h=1500mm	B,D	63 21 415	St/eCu	62561 - 2



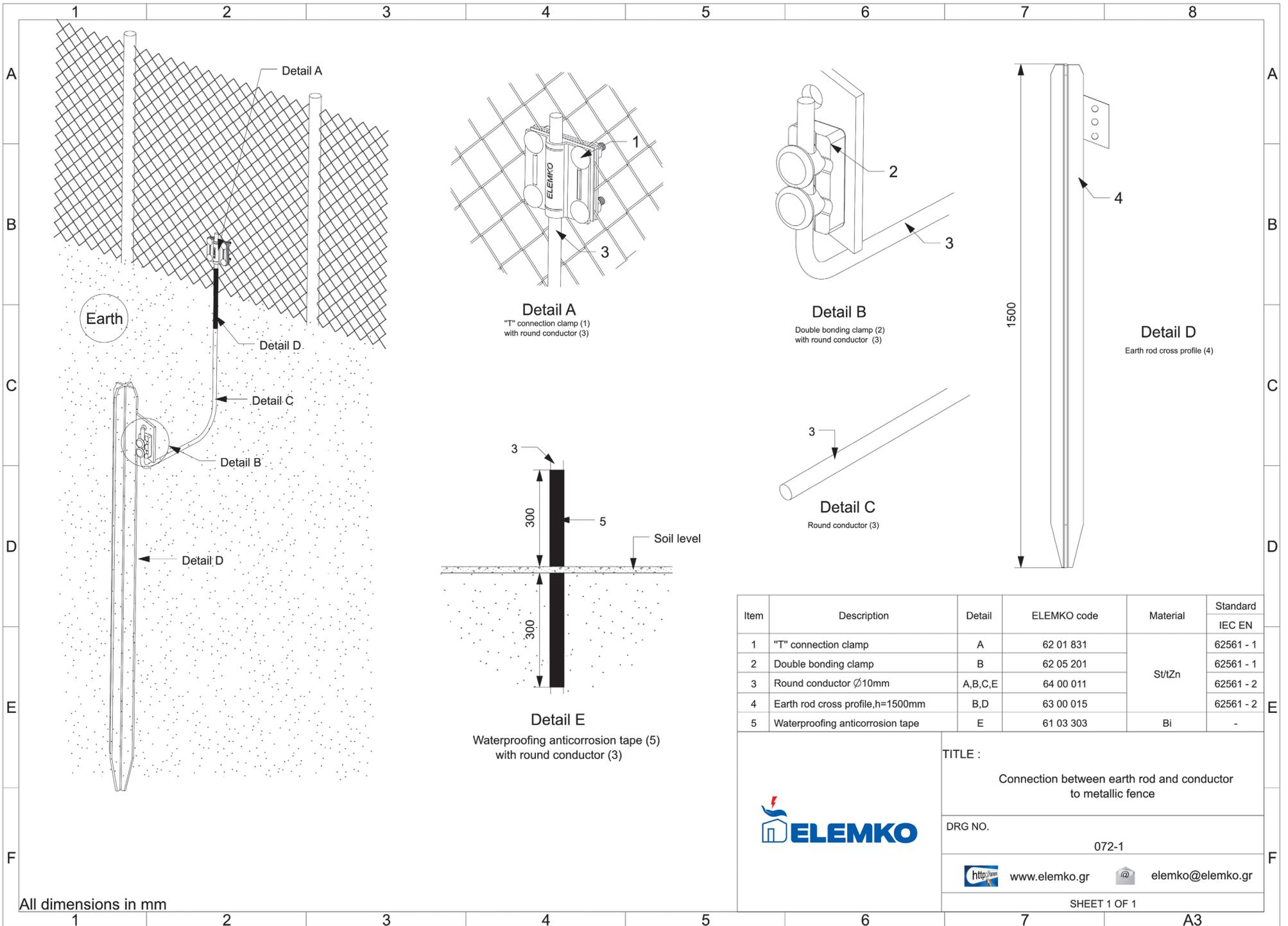
TITLE :
Connection between earth rod and conductor
to metallic fence

DRG NO.
072

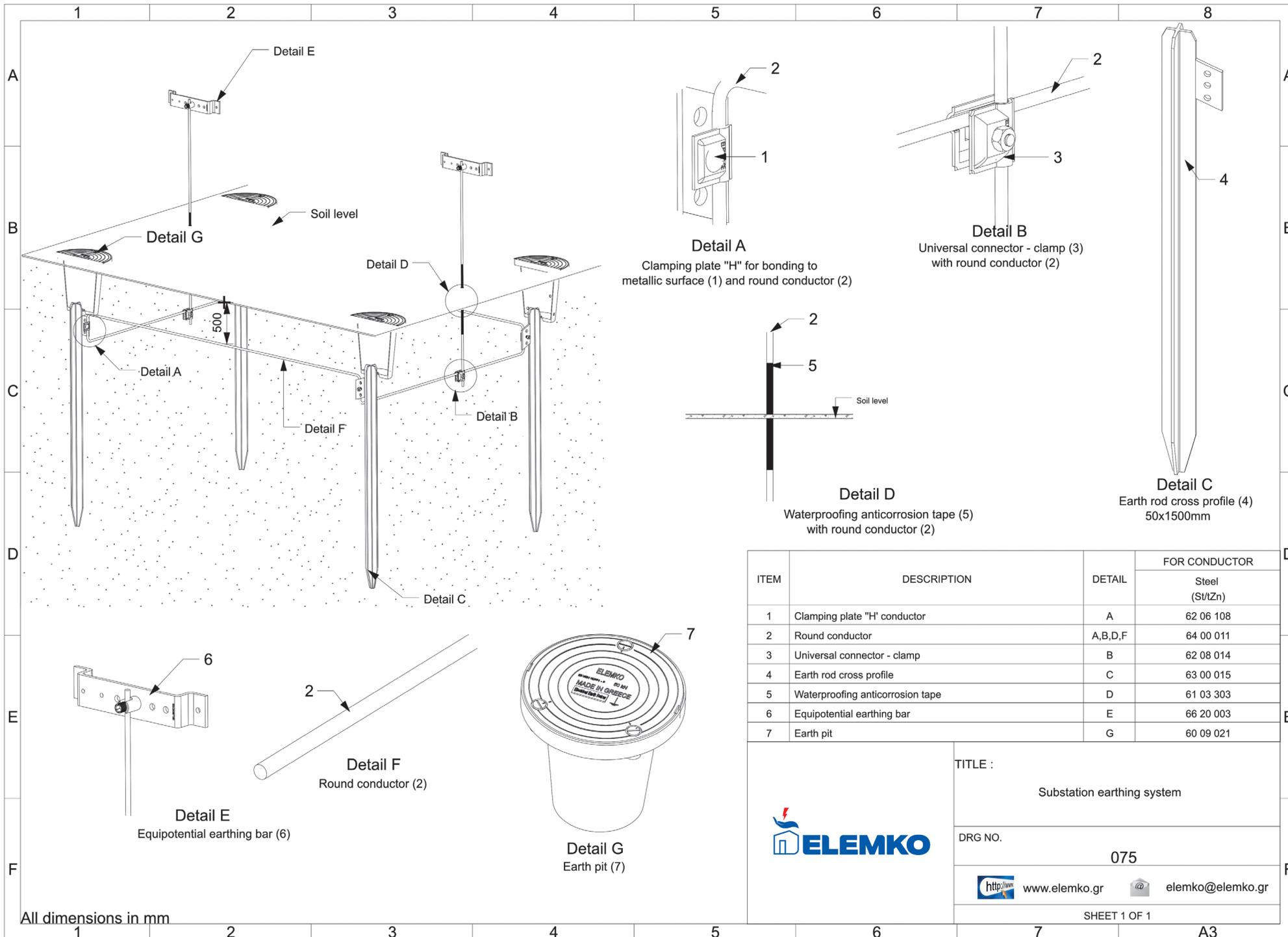
<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

All dimensions in mm



All dimensions in mm



ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR	
			Steel (St/Zn)	
1	Clamping plate "H" conductor	A	62 06 108	
2	Round conductor	A,B,D,F	64 00 011	
3	Universal connector - clamp	B	62 08 014	
4	Earth rod cross profile	C	63 00 015	
5	Waterproofing anticorrosion tape	D	61 03 303	
6	Equipotential earthing bar	E	66 20 003	
7	Earth pit	G	60 09 021	

ELEMKO

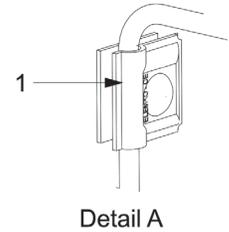
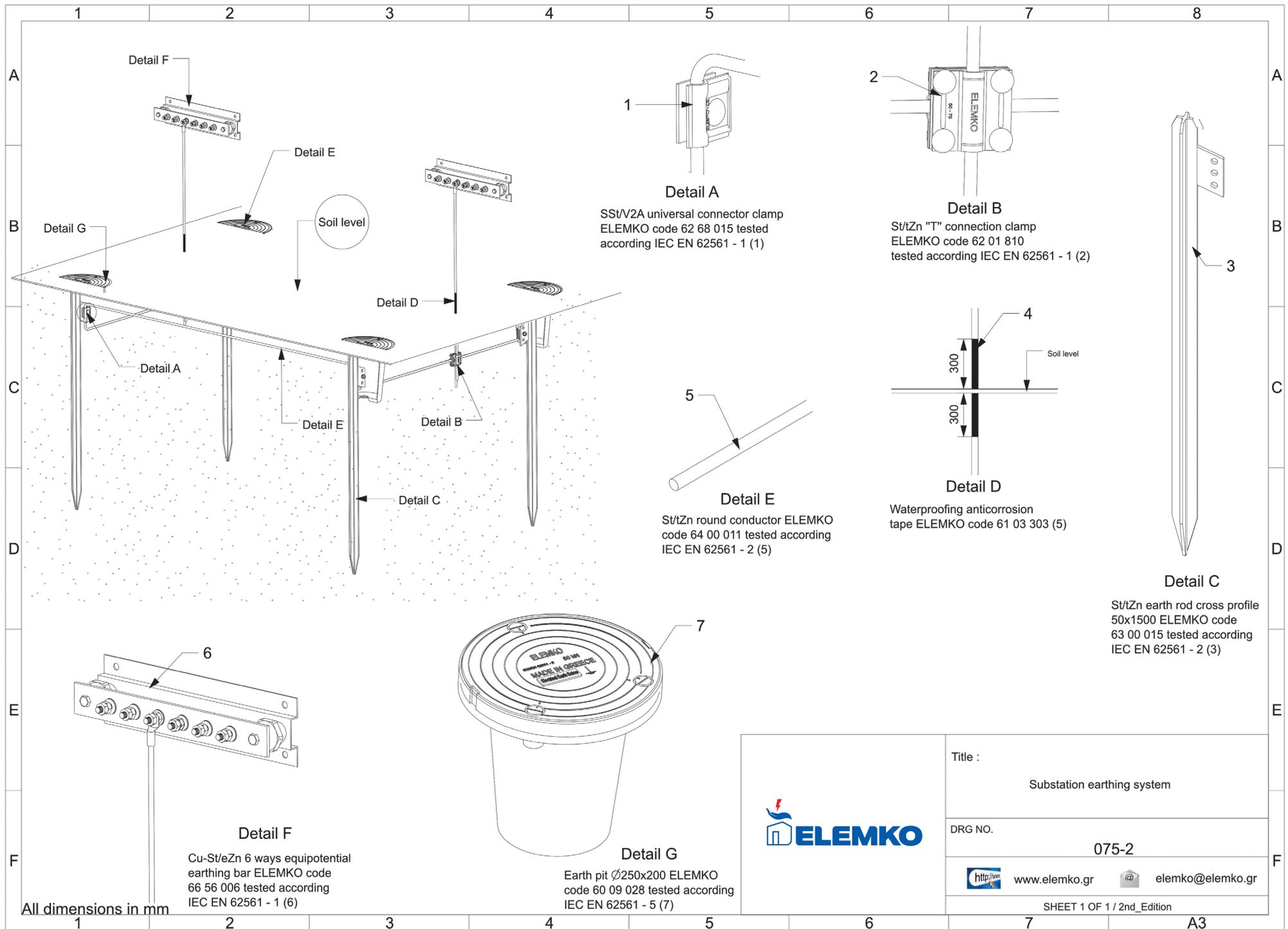
TITLE :
Substation earthing system

DRG NO.
075

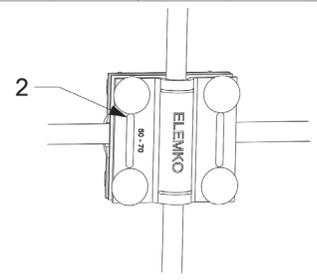
<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

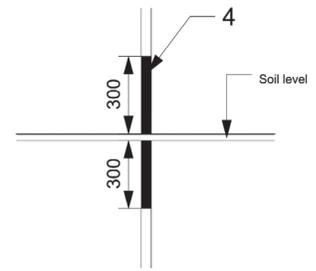
All dimensions in mm



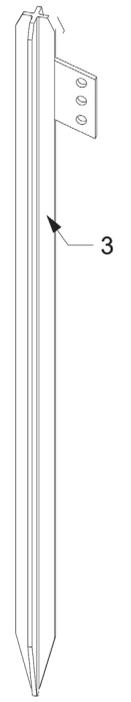
Detail A
 SSt/V2A universal connector clamp
 ELEMKO code 62 68 015 tested
 according IEC EN 62561 - 1 (1)



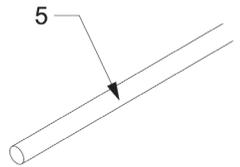
Detail B
 St/tZn "T" connection clamp
 ELEMKO code 62 01 810
 tested according IEC EN 62561 - 1 (2)



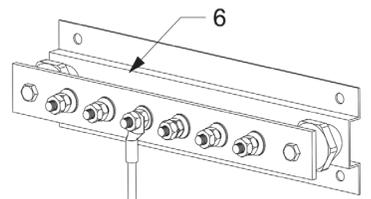
Detail D
 Waterproofing anticorrosion
 tape ELEMKO code 61 03 303 (5)



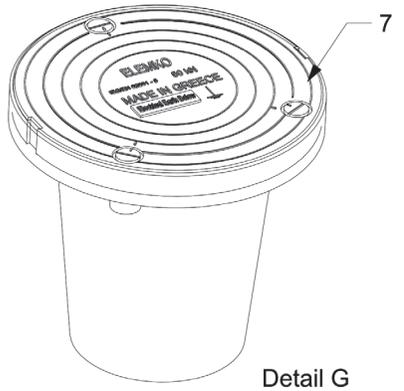
Detail C
 St/tZn earth rod cross profile
 50x1500 ELEMKO code
 63 00 015 tested according
 IEC EN 62561 - 2 (3)



Detail E
 St/tZn round conductor ELEMKO
 code 64 00 011 tested according
 IEC EN 62561 - 2 (5)



Detail F
 Cu-St/eZn 6 ways equipotential
 earthing bar ELEMKO code
 66 56 006 tested according
 IEC EN 62561 - 1 (6)

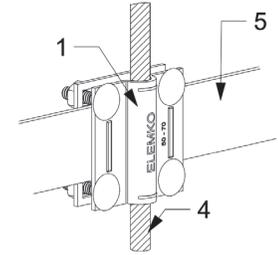
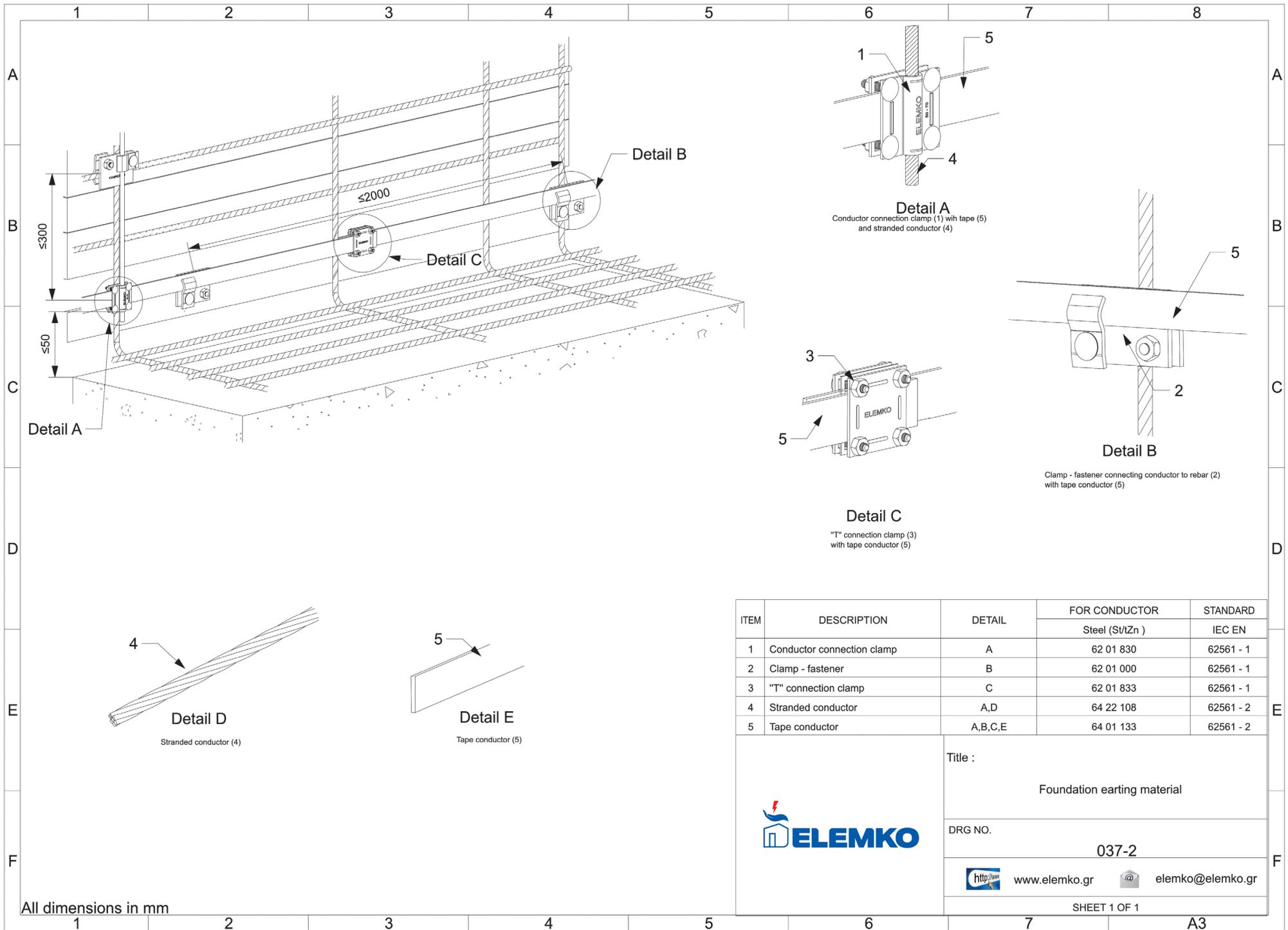


Detail G
 Earth pit Ø250x200 ELEMKO
 code 60 09 028 tested according
 IEC EN 62561 - 5 (7)

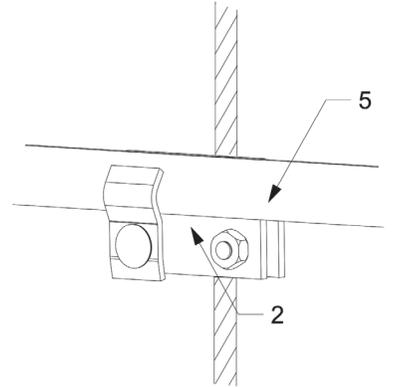


Title :	Substation earthing system
DRG NO.	075-2
www.elemko.gr	elemko@elemko.gr
SHEET 1 OF 1 / 2nd_Edition	

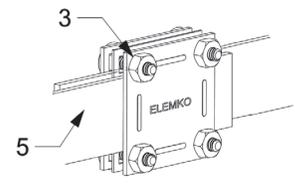
All dimensions in mm



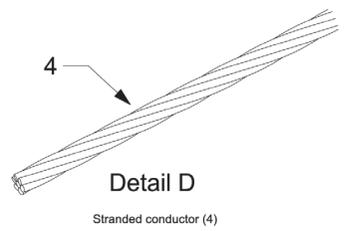
Detail A
Conductor connection clamp (1) with tape (5) and stranded conductor (4)



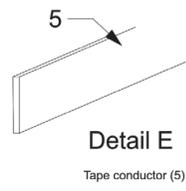
Detail B
Clamp - fastener connecting conductor to rebar (2) with tape conductor (5)



Detail C
'T' connection clamp (3) with tape conductor (5)



Detail D
Stranded conductor (4)



Detail E
Tape conductor (5)

ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR	STANDARD
			Steel (St/Zn)	IEC EN
1	Conductor connection clamp	A	62 01 830	62561 - 1
2	Clamp - fastener	B	62 01 000	62561 - 1
3	'T' connection clamp	C	62 01 833	62561 - 1
4	Stranded conductor	A,D	64 22 108	62561 - 2
5	Tape conductor	A,B,C,E	64 01 133	62561 - 2



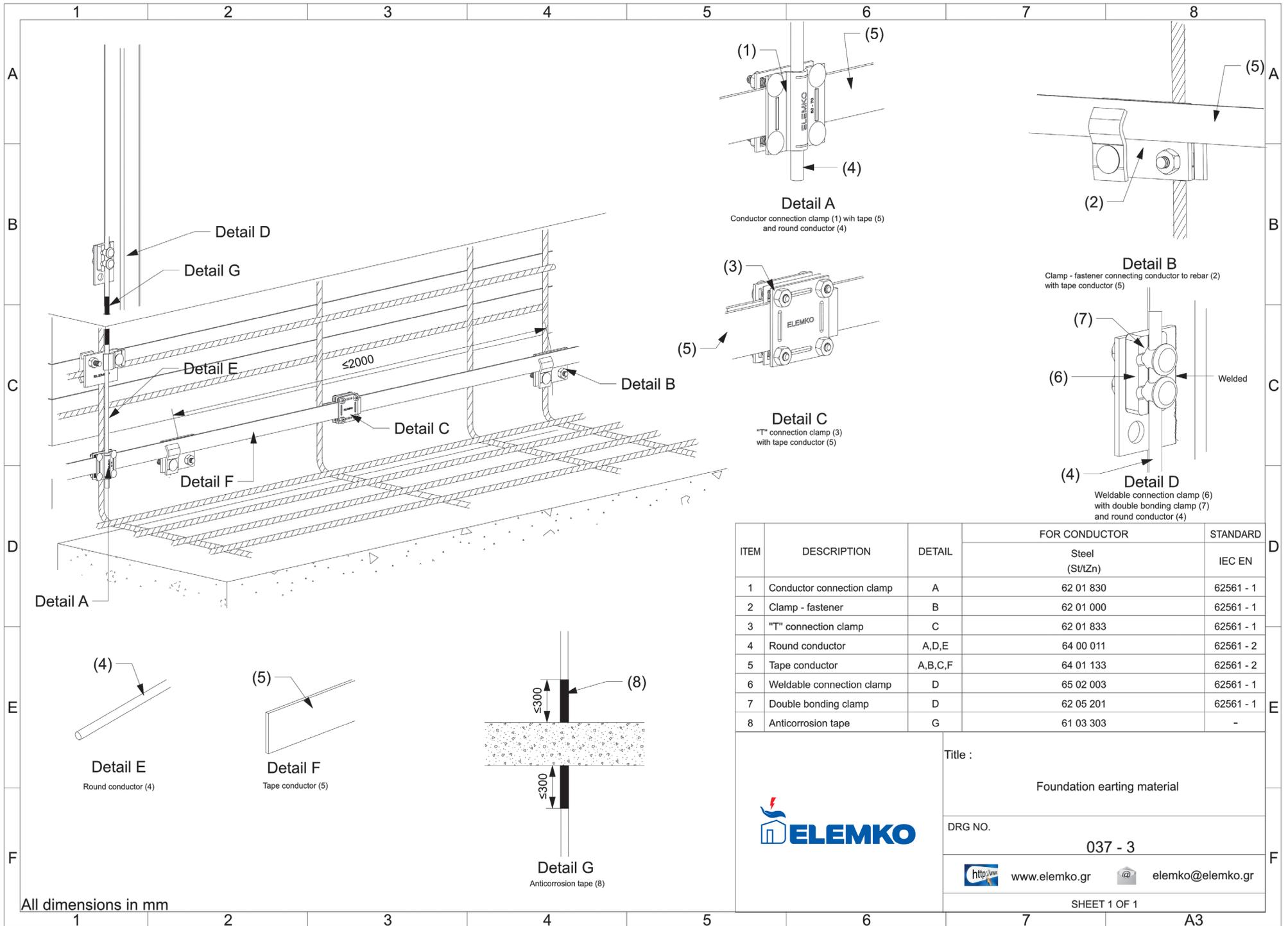
Title :
Foundation earthing material

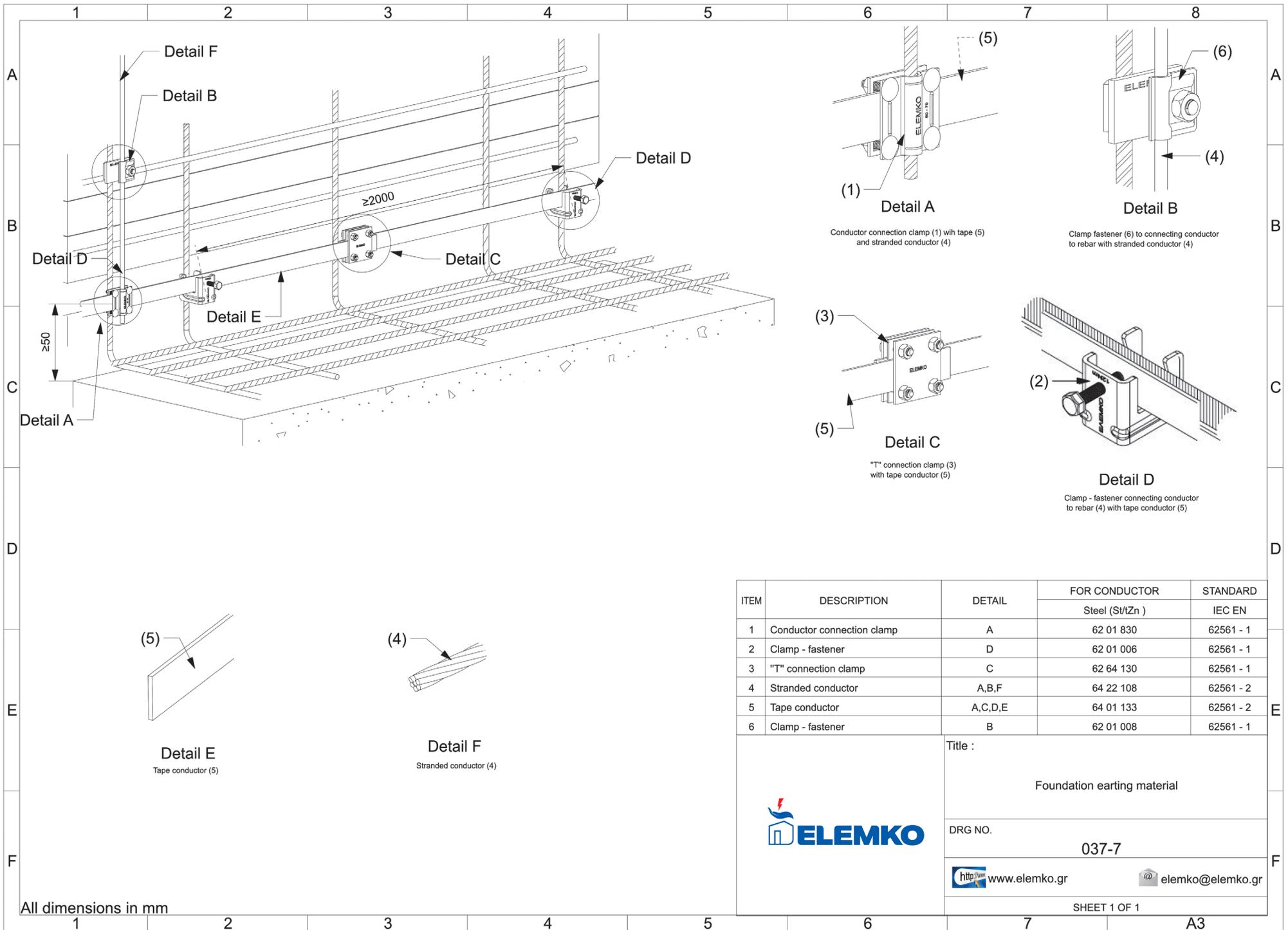
DRG NO.
037-2

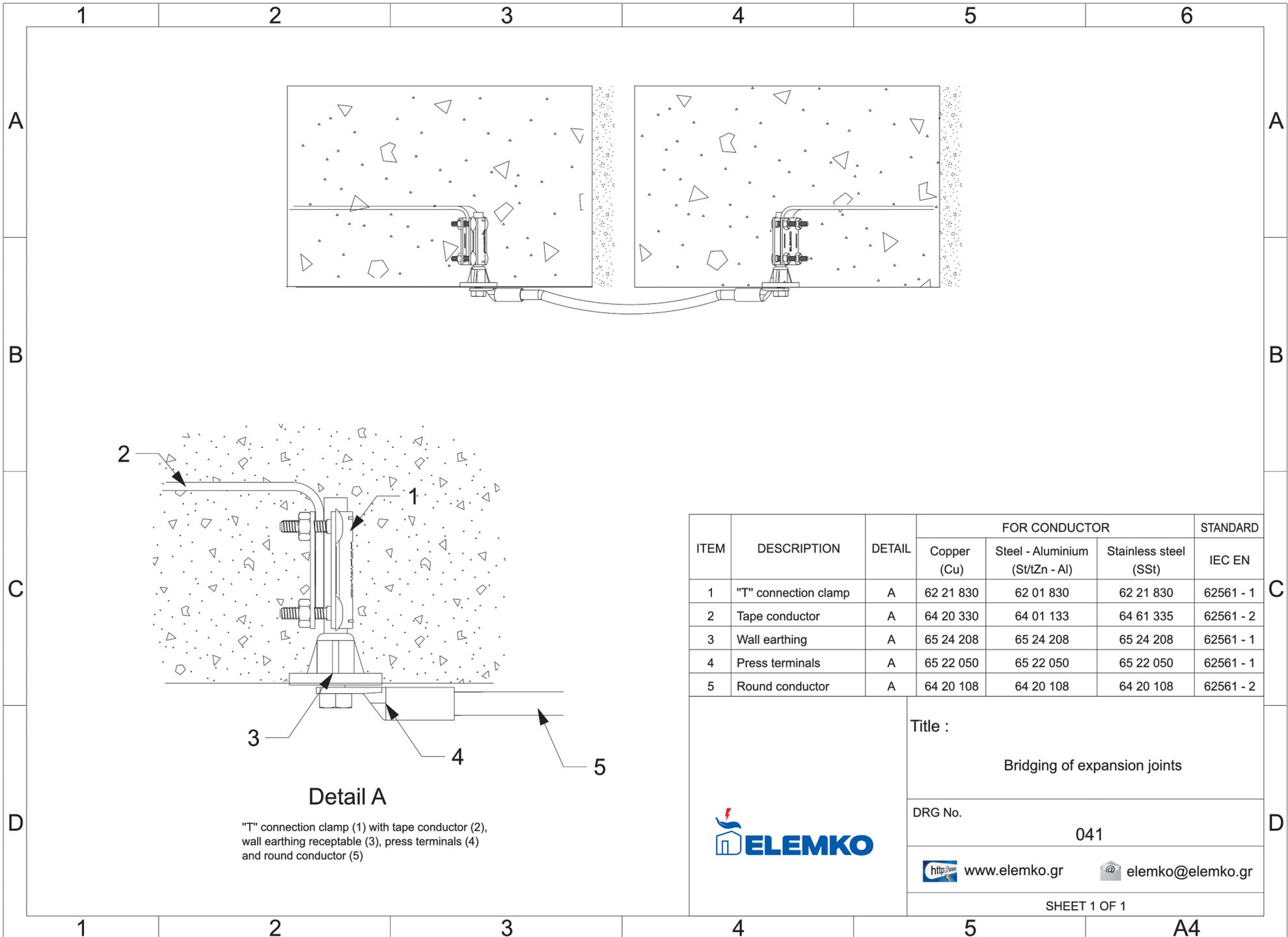
<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

All dimensions in mm







"T" connection clamp (1) with tape conductor (2), wall earthing receptable (3), press terminals (4) and round conductor (5)

ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD IEC EN
			Copper (Cu)	Steel - Aluminium (St/tZn - Al)	Stainless steel (SSt)	
1	"T" connection clamp	A	62 21 830	62 01 830	62 21 830	62561 - 1
2	Tape conductor	A	64 20 330	64 01 133	64 61 335	62561 - 2
3	Wall earthing	A	65 24 208	65 24 208	65 24 208	62561 - 1
4	Press terminals	A	65 22 050	65 22 050	65 22 050	62561 - 1
5	Round conductor	A	64 20 108	64 20 108	64 20 108	62561 - 2

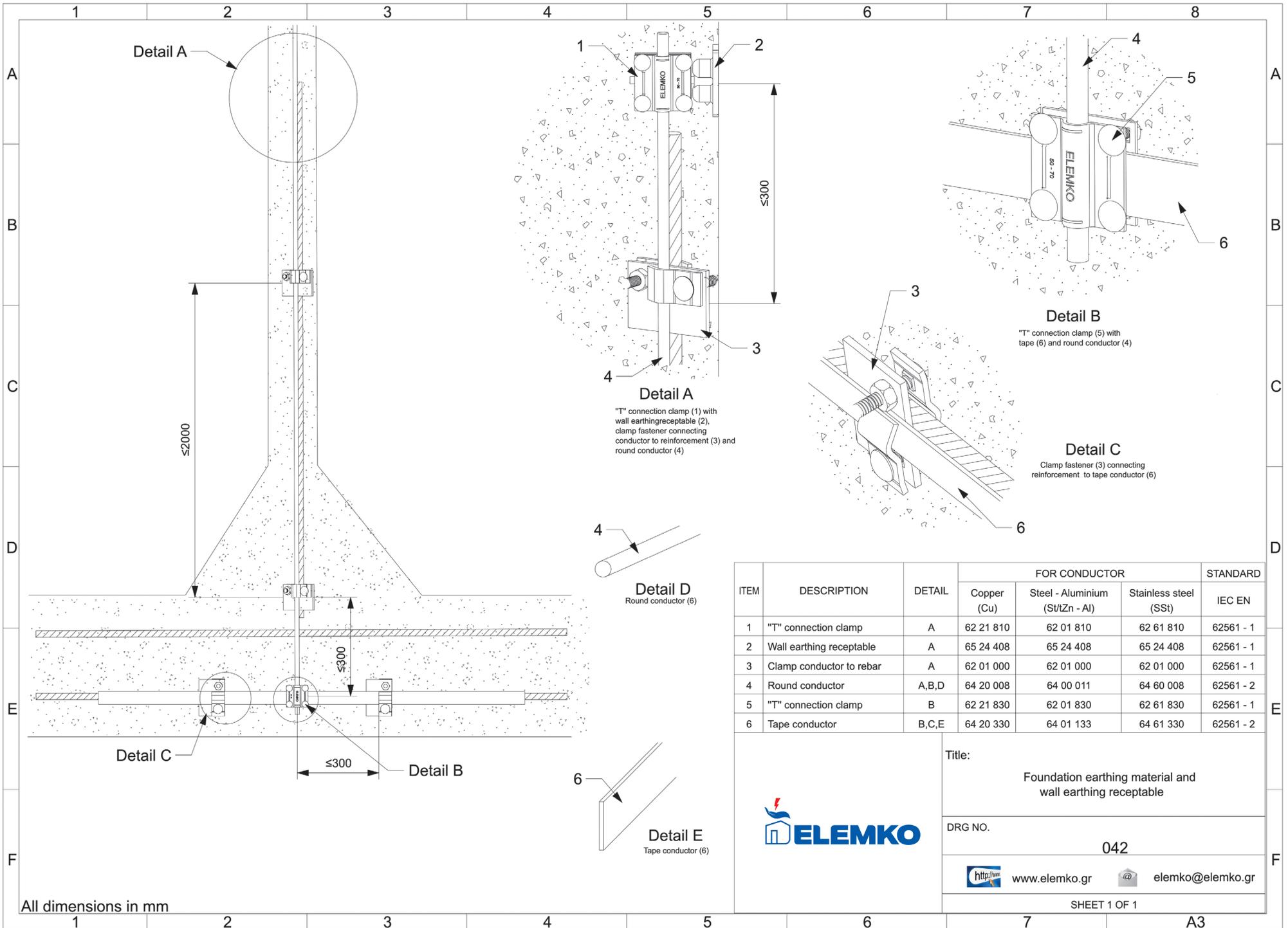
Title :
Bridging of expansion joints

DRG No.
041



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SHEET 1 OF 1



All dimensions in mm

ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD
			Copper (Cu)	Steel - Aluminium (St/tZn - Al)	Stainless steel (SS)	
1	"T" connection clamp	A	62 21 810	62 01 810	62 61 810	62561 - 1
2	Wall earthing receptable	A	65 24 408	65 24 408	65 24 408	62561 - 1
3	Clamp conductor to rebar	A	62 01 000	62 01 000	62 01 000	62561 - 1
4	Round conductor	A,B,D	64 20 008	64 00 011	64 60 008	62561 - 2
5	"T" connection clamp	B	62 21 830	62 01 830	62 61 830	62561 - 1
6	Tape conductor	B,C,E	64 20 330	64 01 133	64 61 330	62561 - 2

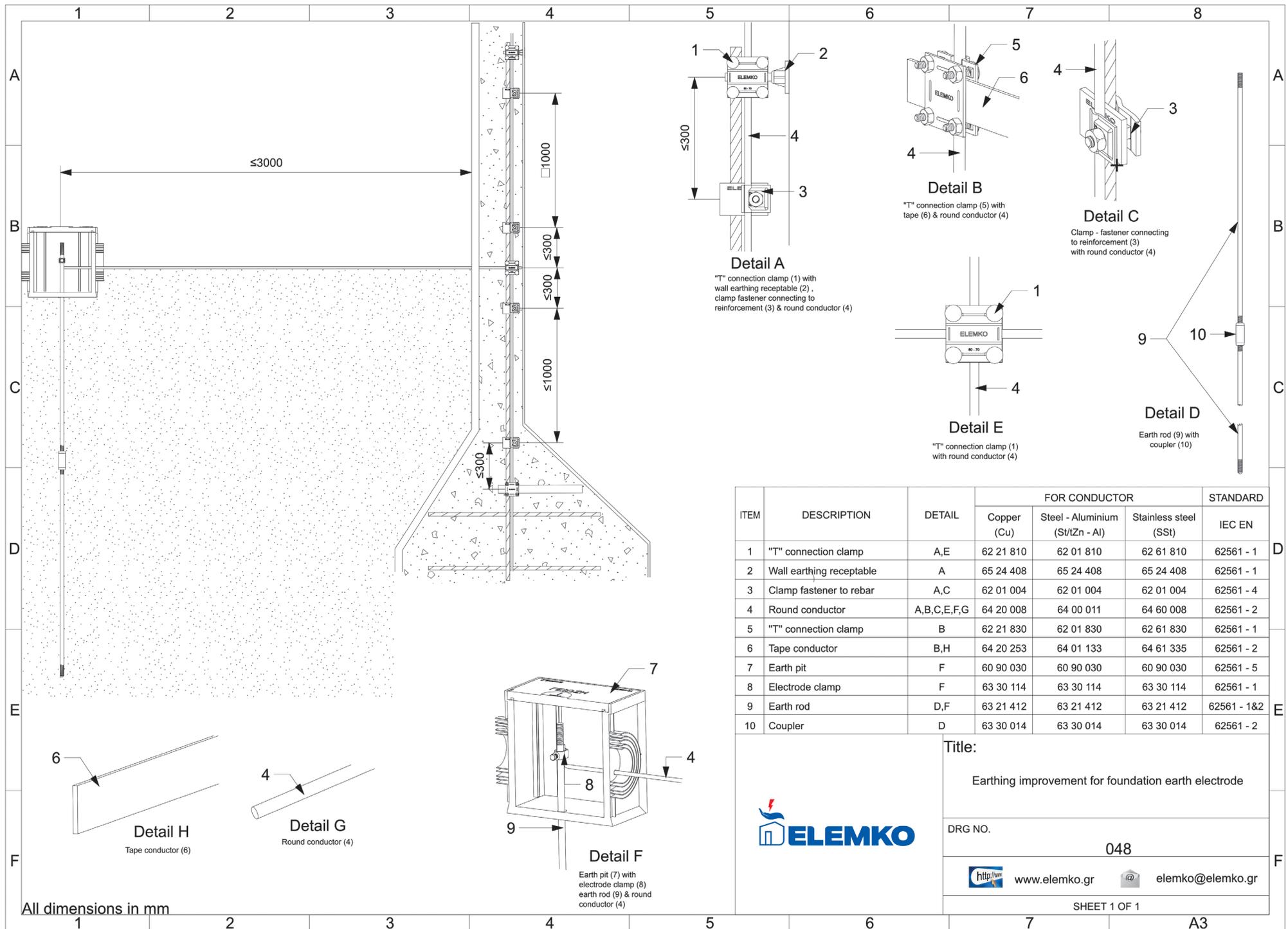


Title:
Foundation earthing material and wall earthing receptable

DRG NO.
042

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SHEET 1 OF 1



ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR			STANDARD
			Copper (Cu)	Steel - Aluminium (St/tZn - Al)	Stainless steel (SSt)	
1	"T" connection clamp	A,E	62 21 810	62 01 810	62 61 810	62561 - 1
2	Wall earthing receptable	A	65 24 408	65 24 408	65 24 408	62561 - 1
3	Clamp fastener to rebar	A,C	62 01 004	62 01 004	62 01 004	62561 - 4
4	Round conductor	A,B,C,E,F,G	64 20 008	64 00 011	64 60 008	62561 - 2
5	"T" connection clamp	B	62 21 830	62 01 830	62 61 830	62561 - 1
6	Tape conductor	B,H	64 20 253	64 01 133	64 61 335	62561 - 2
7	Earth pit	F	60 90 030	60 90 030	60 90 030	62561 - 5
8	Electrode clamp	F	63 30 114	63 30 114	63 30 114	62561 - 1
9	Earth rod	D,F	63 21 412	63 21 412	63 21 412	62561 - 1&2
10	Coupler	D	63 30 014	63 30 014	63 30 014	62561 - 2



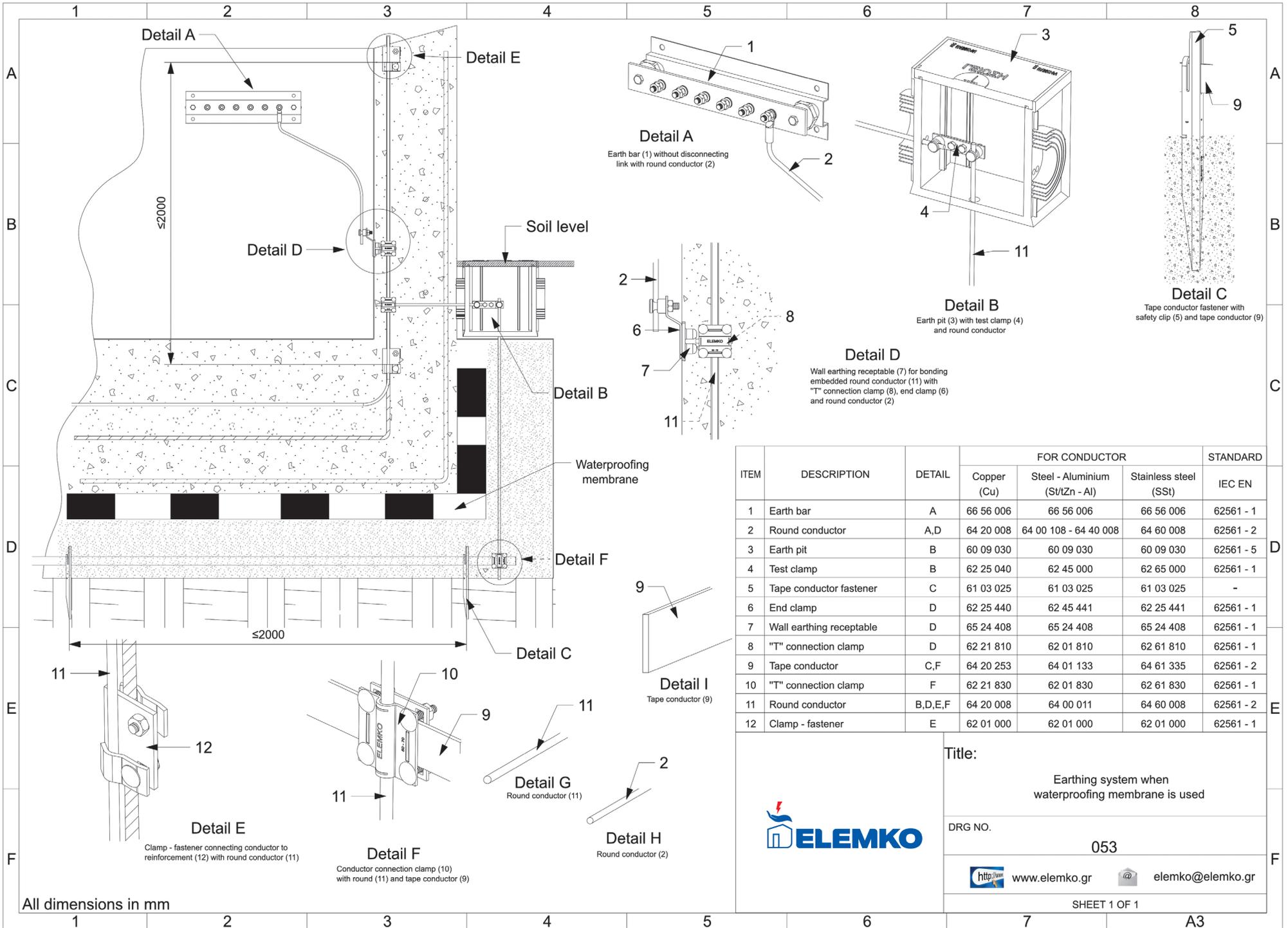
Title:
Earthing improvement for foundation earth electrode

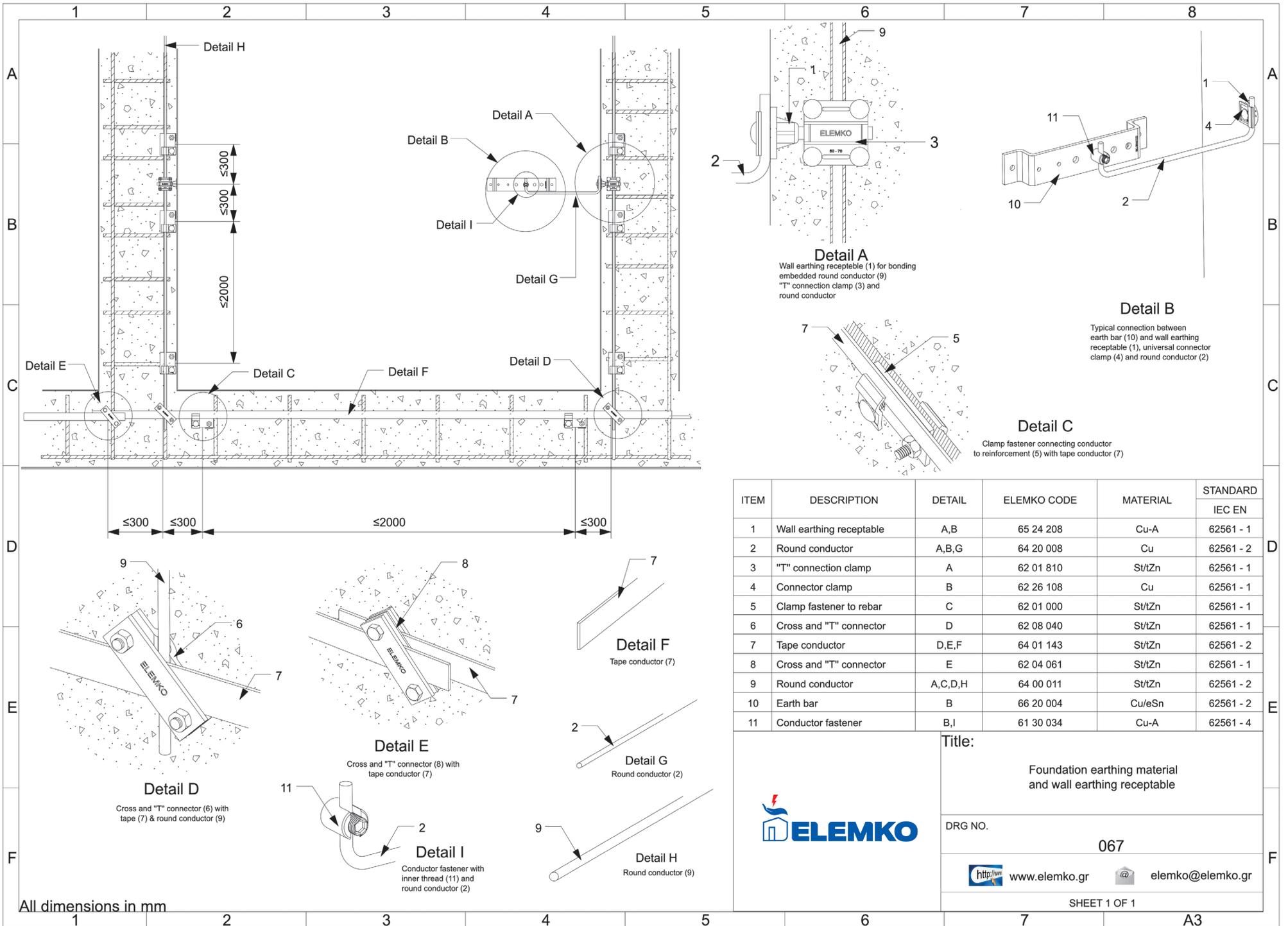
DRG NO. 048

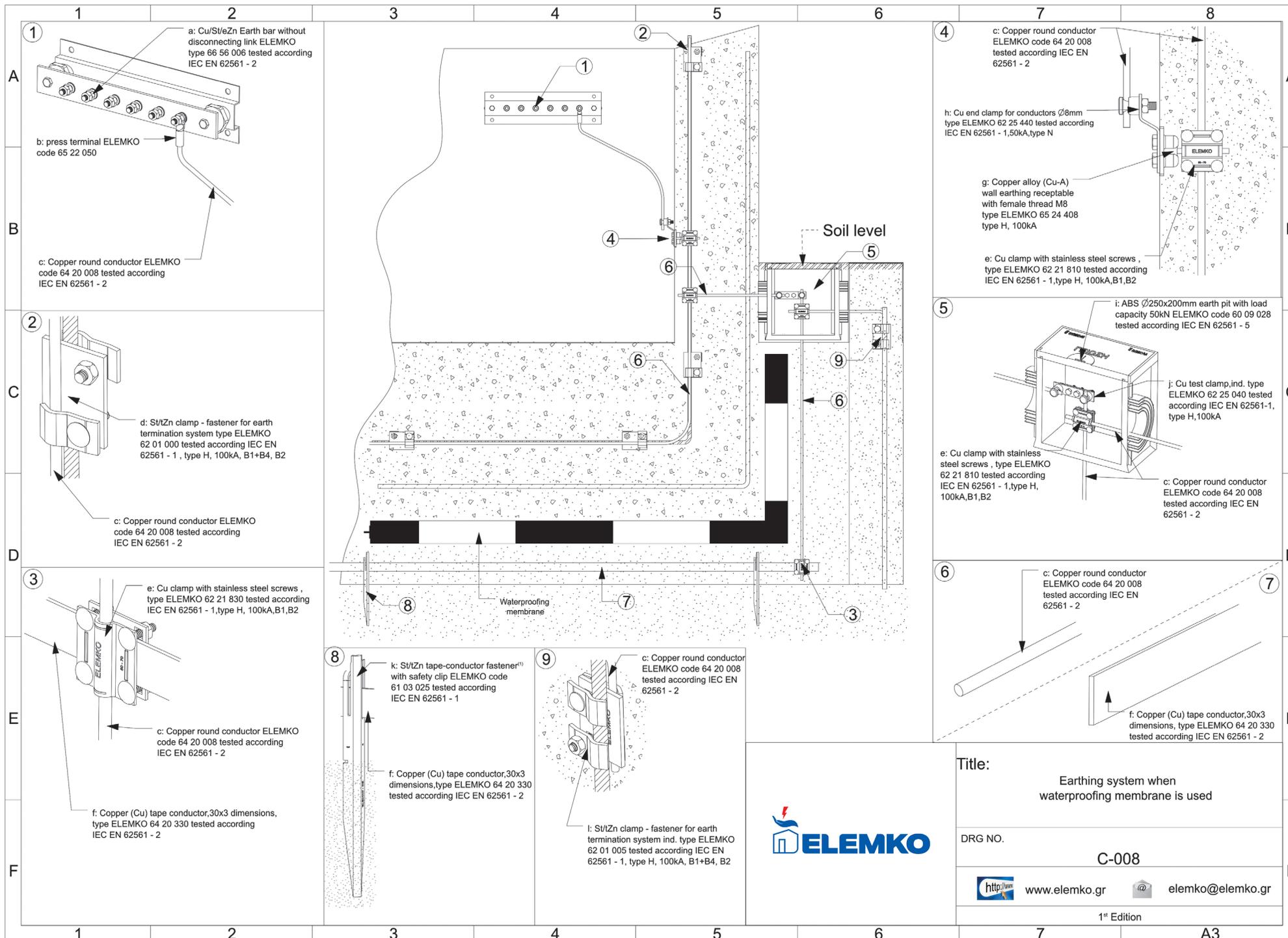
<http://www.elemko.gr> elemko@elemko.gr

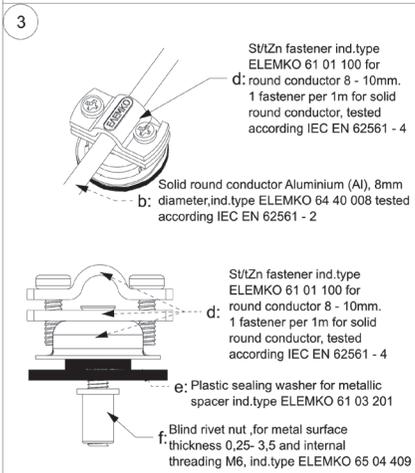
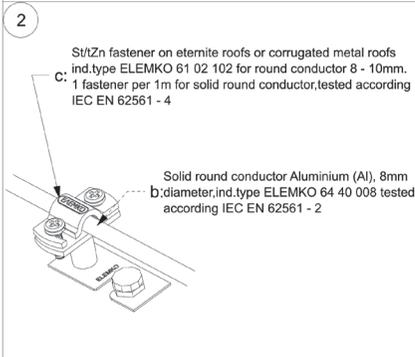
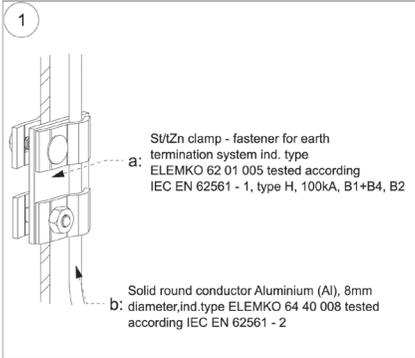
SHEET 1 OF 1

All dimensions in mm

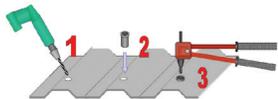




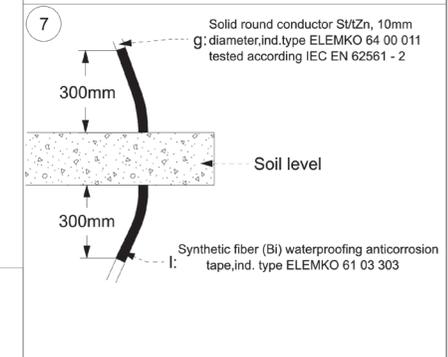
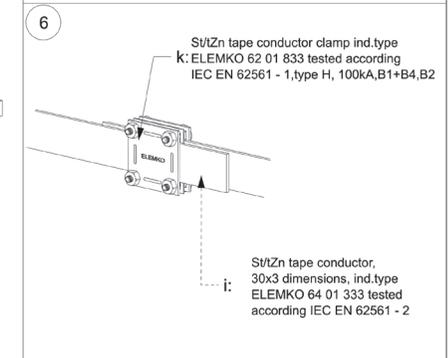
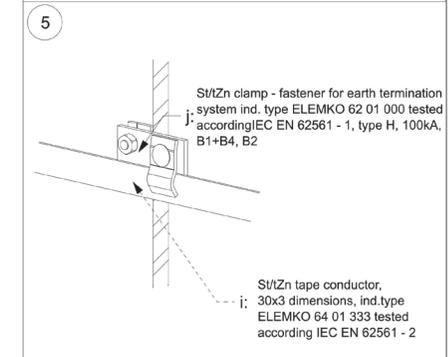
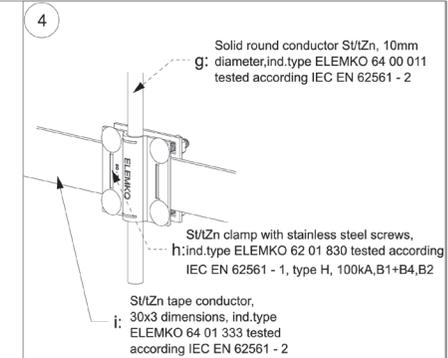
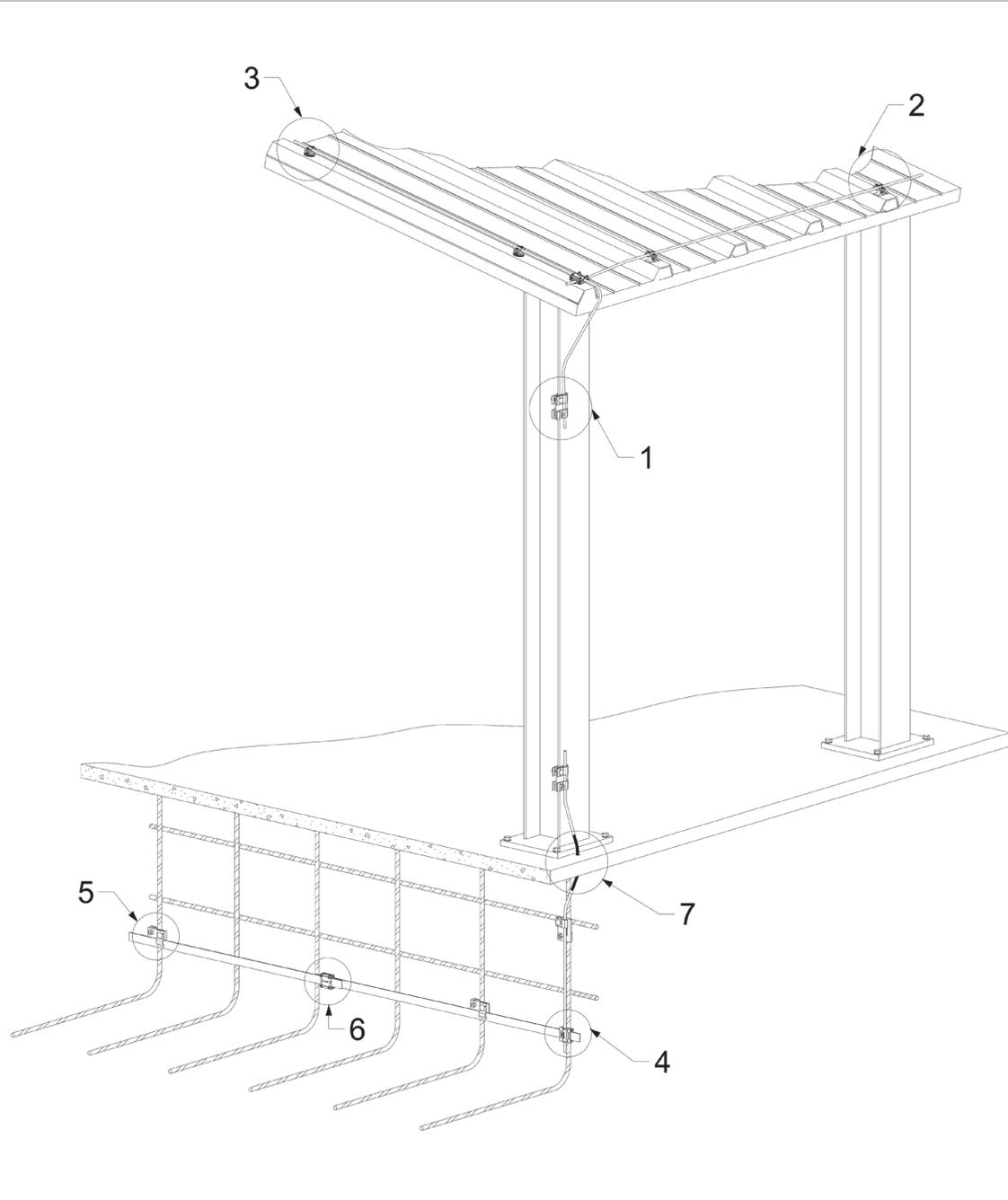


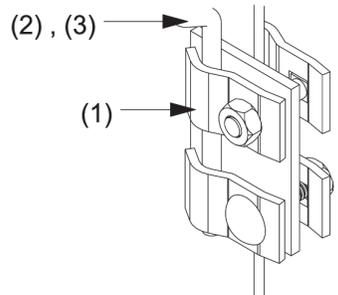
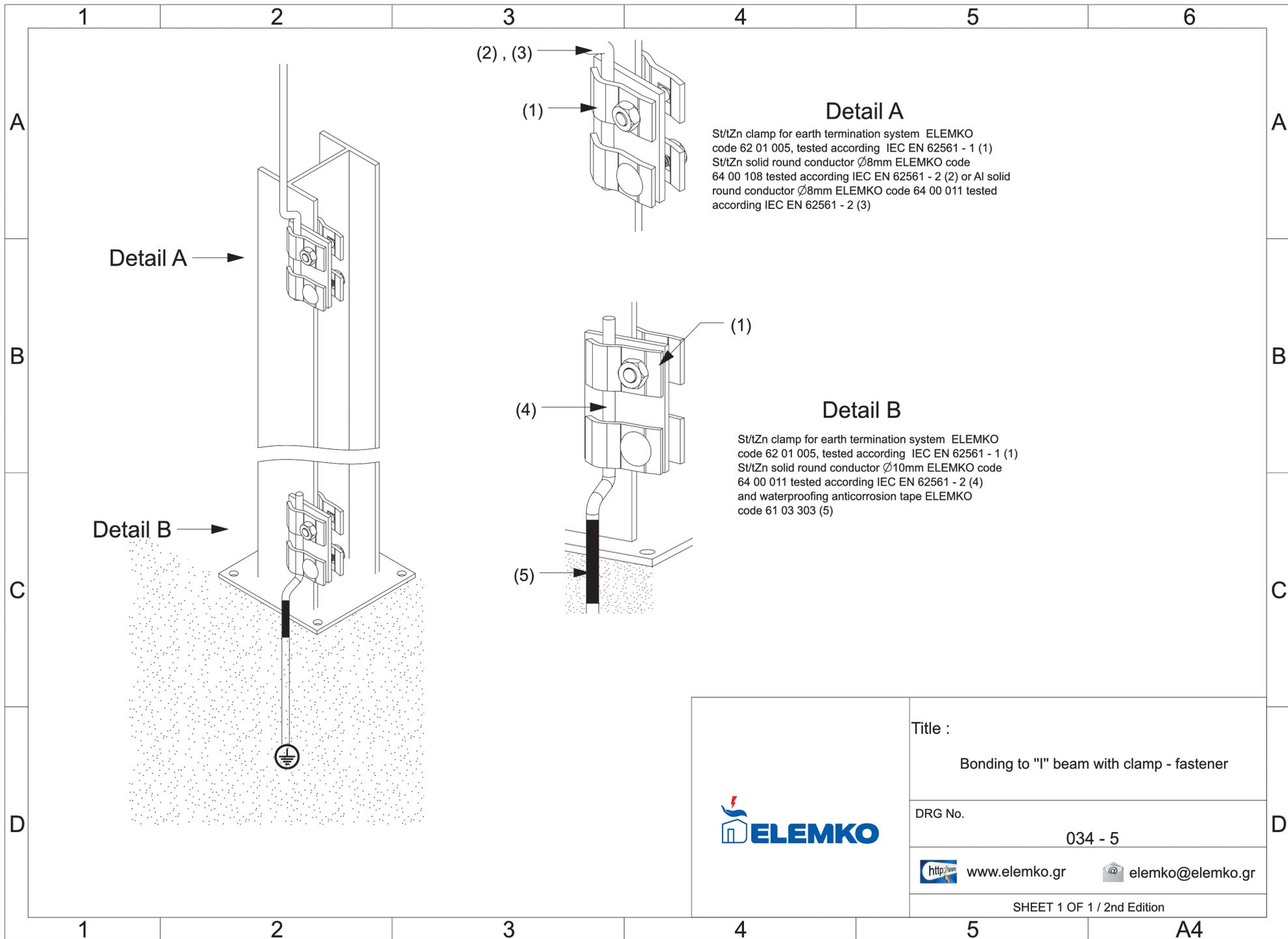


At picture you can see the installation of blind rivet nut:



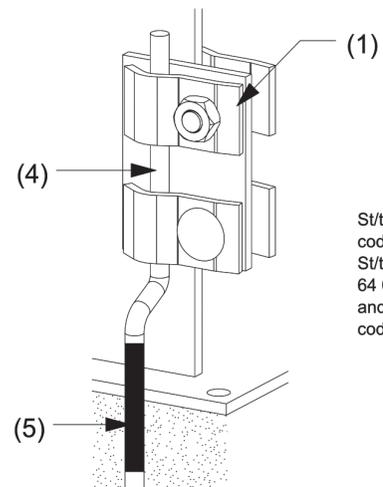
- 1) Drilling the metal panel
- 2) Install the blind rivet nut
- 3) Decompression blind rivet nut with hand riveter (ELEMKO code: 65 04 000)





Detail A

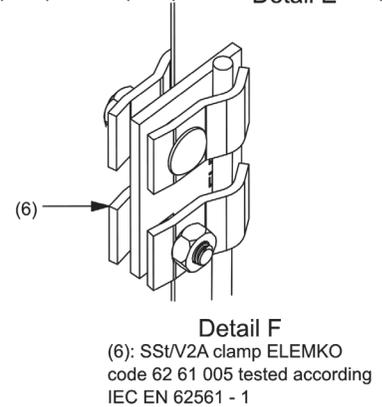
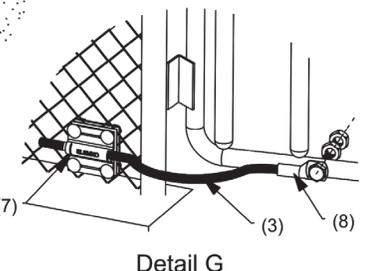
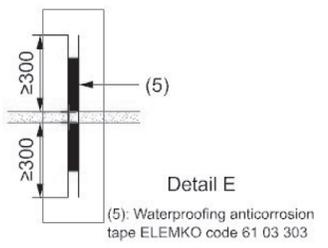
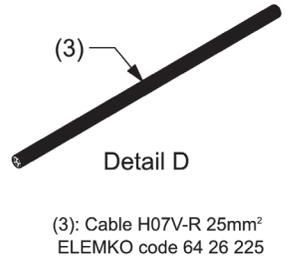
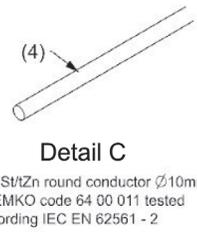
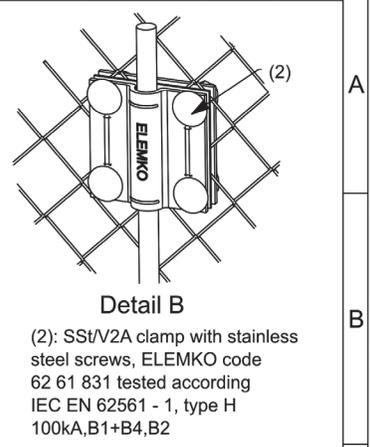
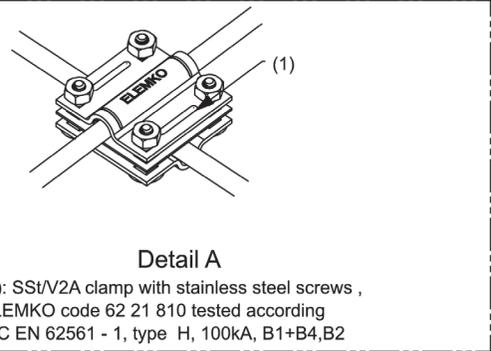
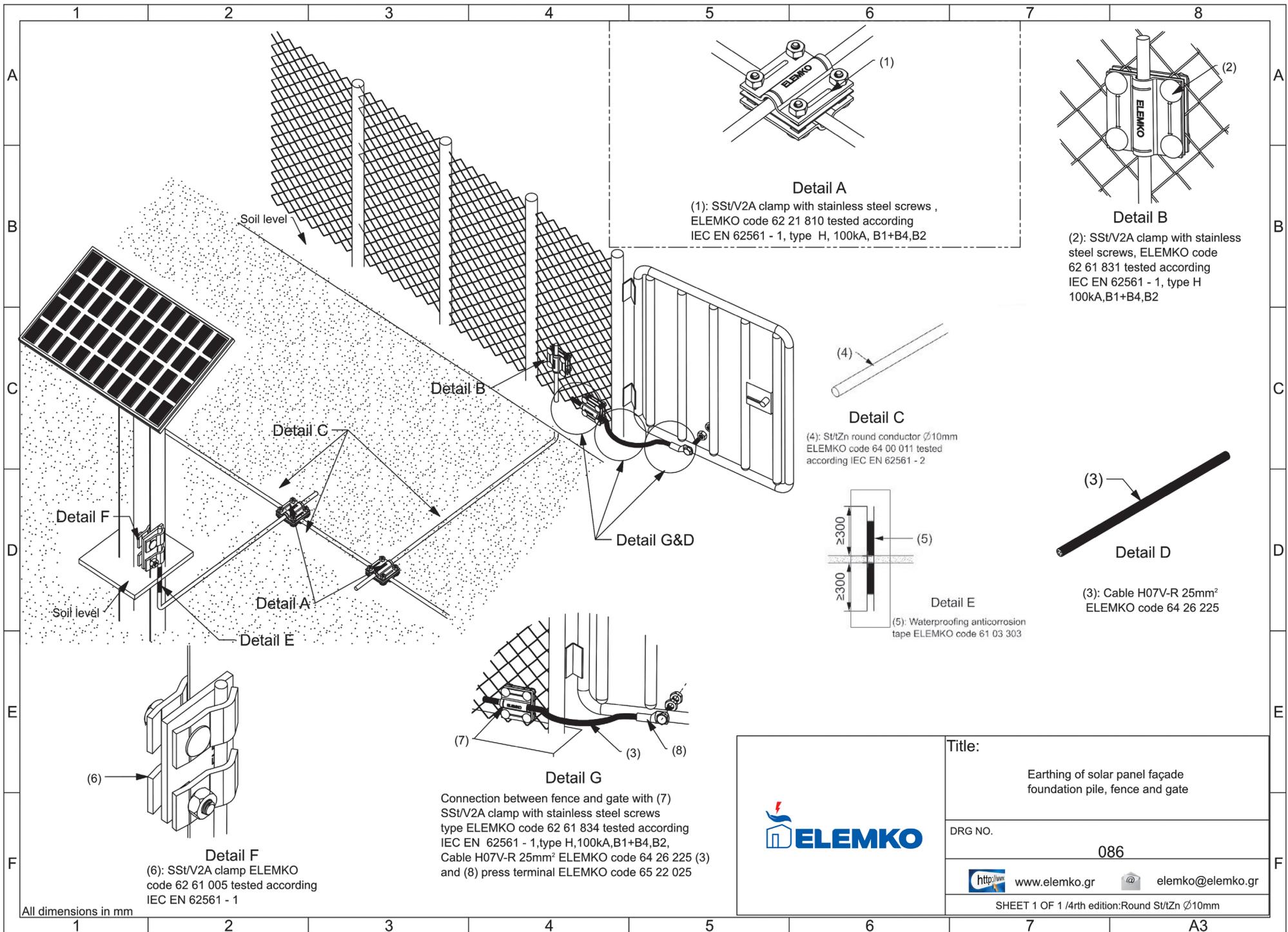
St/tZn clamp for earth termination system ELEMKO code 62 01 005, tested according IEC EN 62561 - 1 (1)
 St/tZn solid round conductor Ø8mm ELEMKO code 64 00 108 tested according IEC EN 62561 - 2 (2) or Al solid round conductor Ø8mm ELEMKO code 64 00 011 tested according IEC EN 62561 - 2 (3)



Detail B

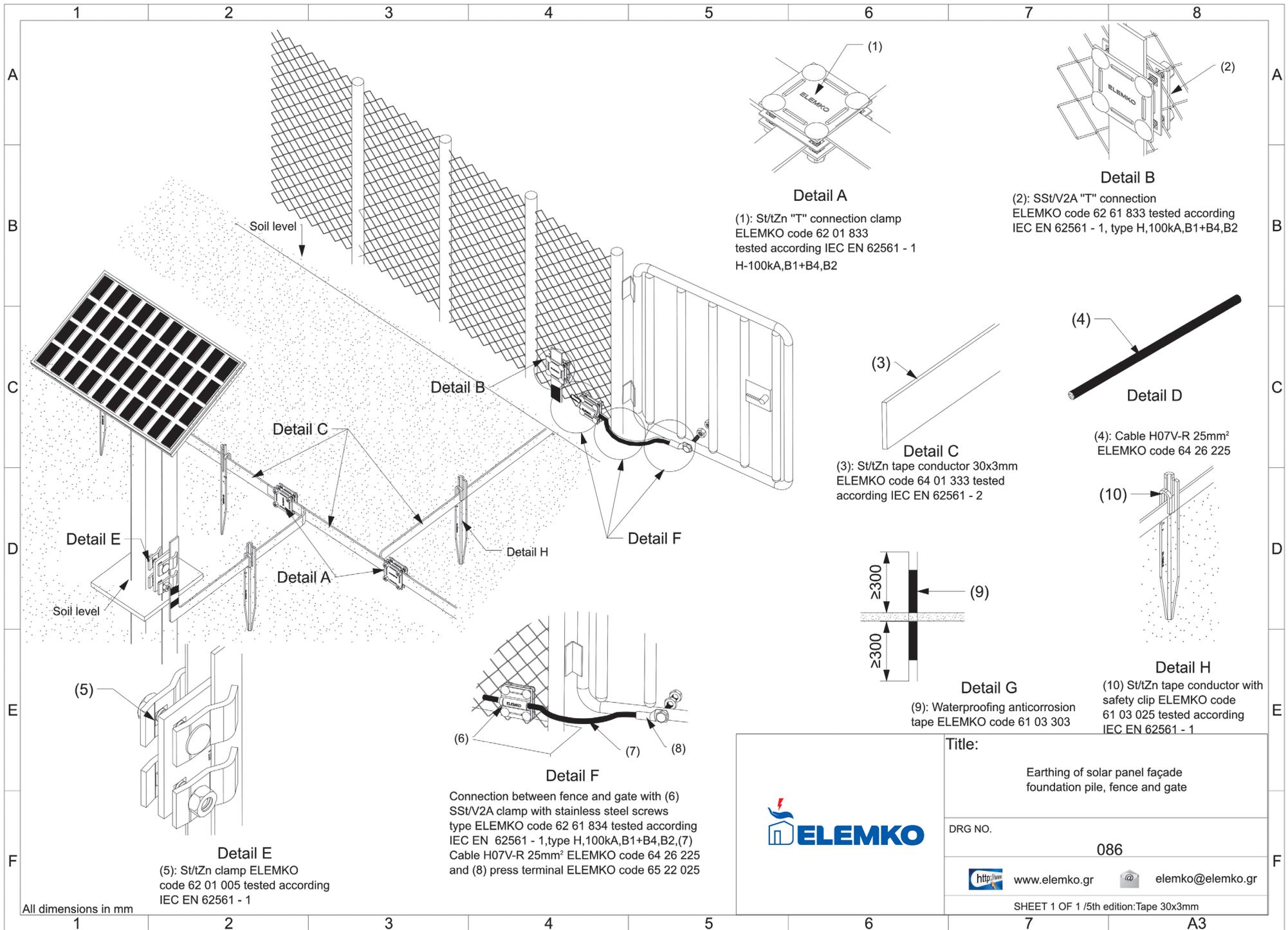
St/tZn clamp for earth termination system ELEMKO code 62 01 005, tested according IEC EN 62561 - 1 (1)
 St/tZn solid round conductor Ø10mm ELEMKO code 64 00 011 tested according IEC EN 62561 - 2 (4) and waterproofing anticorrosion tape ELEMKO code 61 03 303 (5)

Title :	
Bonding to "I" beam with clamp - fastener	
DRG No.	034 - 5
 www.elemko.gr	 elemko@elemko.gr
SHEET 1 OF 1 / 2nd Edition	



	Title:	Earthing of solar panel façade foundation pile, fence and gate
	DRG NO.	086
	http://www.elemko.gr elemko@elemko.gr	
	SHEET 1 OF 1 /4th edition:Round St/tZn $\varnothing 10\text{mm}$	

All dimensions in mm



Detail A

(1): St/tZn "T" connection clamp
 ELEMKO code 62 01 833
 tested according IEC EN 62561 - 1
 H-100kA,B1+B4,B2

Detail B

(2): SSt/V2A "T" connection
 ELEMKO code 62 61 833 tested according
 IEC EN 62561 - 1, type H,100kA,B1+B4,B2

Detail C

(3): St/tZn tape conductor 30x3mm
 ELEMKO code 64 01 333 tested
 according IEC EN 62561 - 2

Detail D

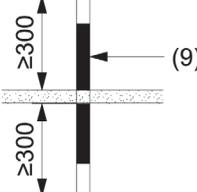
(4): Cable H07V-R 25mm²
 ELEMKO code 64 26 225

Detail F

Detail F
 Connection between fence and gate with (6)
 SSt/V2A clamp with stainless steel screws
 type ELEMKO code 62 61 834 tested according
 IEC EN 62561 - 1,type H,100kA,B1+B4,B2,(7)
 Cable H07V-R 25mm² ELEMKO code 64 26 225
 and (8) press terminal ELEMKO code 65 22 025

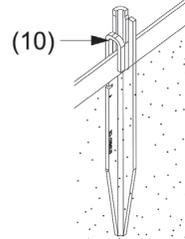
Detail E

(5): St/tZn clamp ELEMKO
 code 62 01 005 tested according
 IEC EN 62561 - 1



Detail G

(9): Waterproofing anticorrosion
 tape ELEMKO code 61 03 303



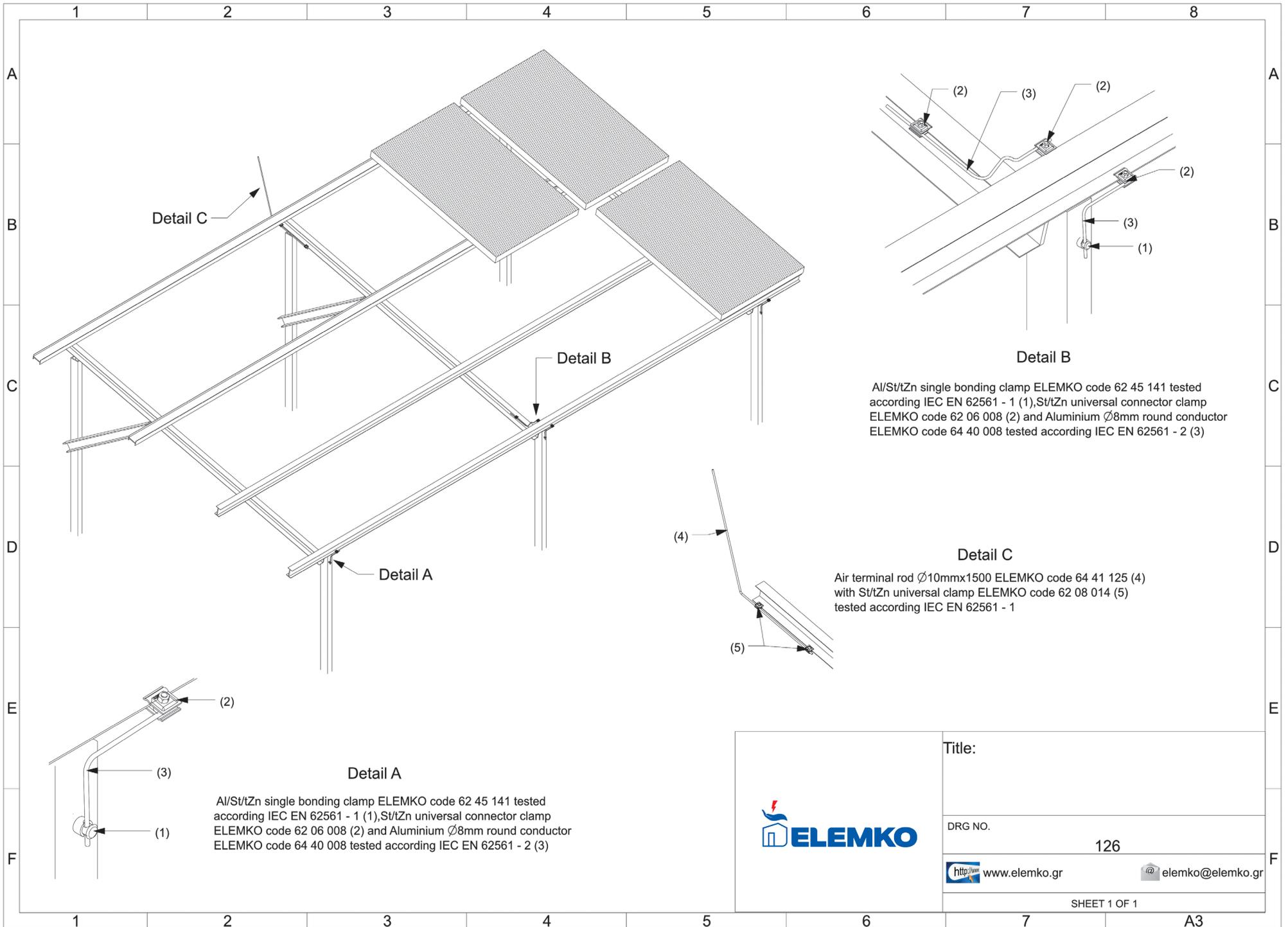
Detail H

(10) St/tZn tape conductor with
 safety clip ELEMKO code
 61 03 025 tested according
 IEC EN 62561 - 1



Title:	
Earthing of solar panel façade foundation pile, fence and gate	
DRG NO.	086
http://www.elemko.gr	elemko@elemko.gr
SHEET 1 OF 1 /5th edition:Tape 30x3mm	

All dimensions in mm



Detail C

Detail B

Detail A

Detail B

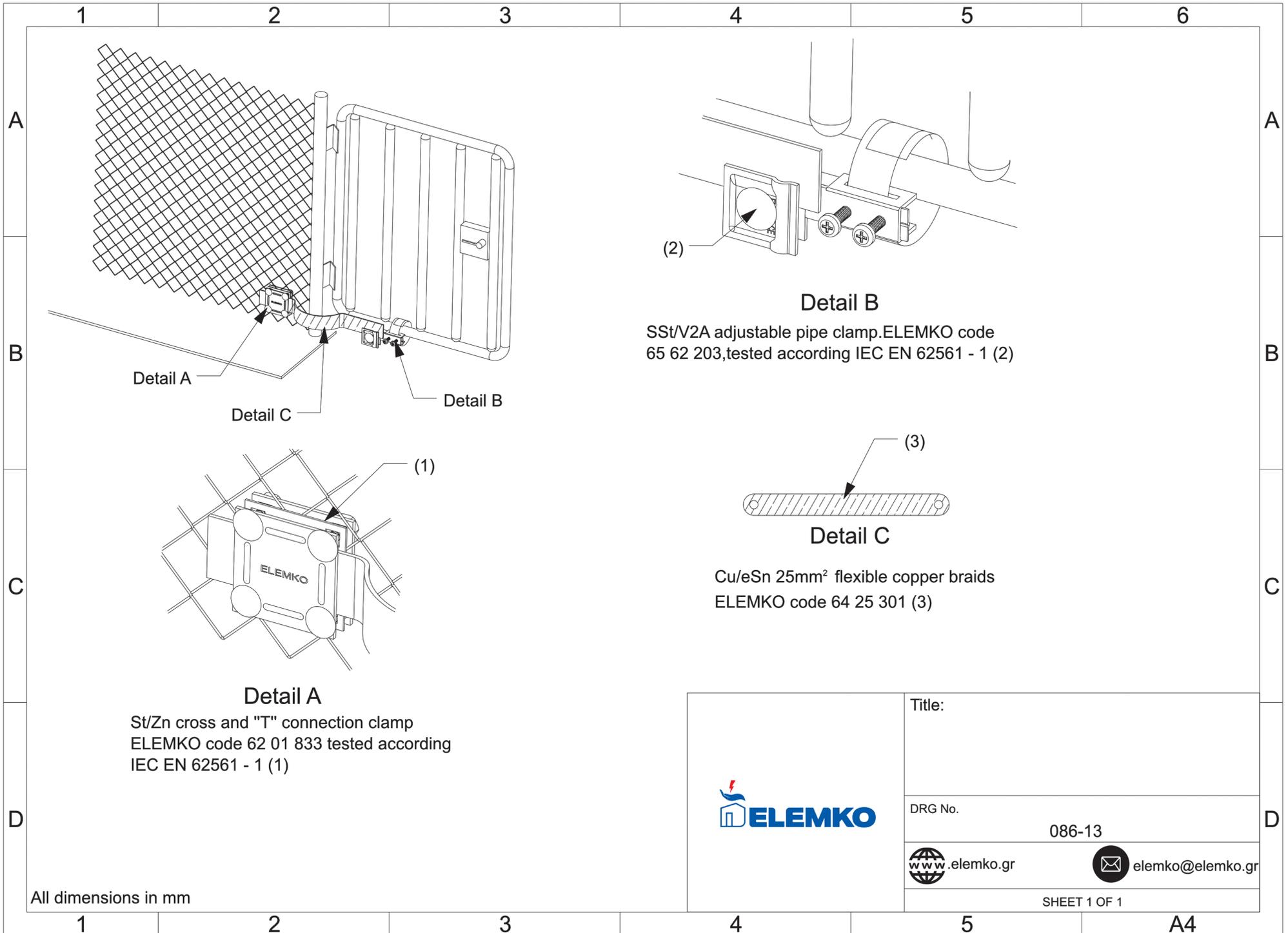
Detail C

Al/St/tZn single bonding clamp ELEMKO code 62 45 141 tested according IEC EN 62561 - 1 (1), St/tZn universal connector clamp ELEMKO code 62 06 008 (2) and Aluminium Ø8mm round conductor ELEMKO code 64 40 008 tested according IEC EN 62561 - 2 (3)

Al/St/tZn single bonding clamp ELEMKO code 62 45 141 tested according IEC EN 62561 - 1 (1), St/tZn universal connector clamp ELEMKO code 62 06 008 (2) and Aluminium Ø8mm round conductor ELEMKO code 64 40 008 tested according IEC EN 62561 - 2 (3)

Air terminal rod Ø10mmx1500 ELEMKO code 64 41 125 (4) with St/tZn universal clamp ELEMKO code 62 08 014 (5) tested according IEC EN 62561 - 1

	Title:
	DRG NO. 126
	http://www.elemko.gr @ elemko@elemko.gr
	SHEET 1 OF 1

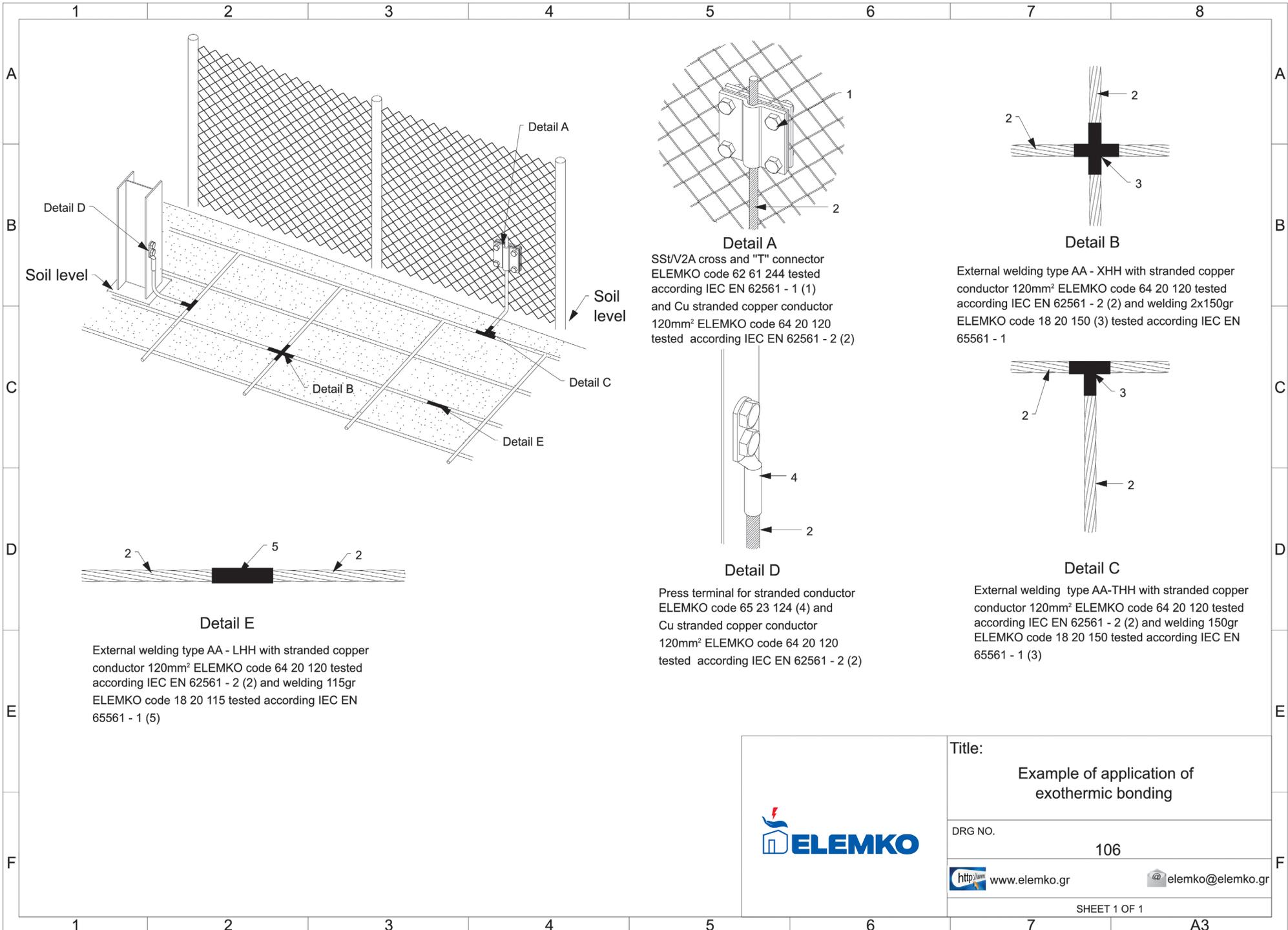


Detail A
 St/Zn cross and "T" connection clamp
 ELEMKO code 62 01 833 tested according
 IEC EN 62561 - 1 (1)

Detail B
 SSt/V2A adjustable pipe clamp.ELEMKO code
 65 62 203, tested according IEC EN 62561 - 1 (2)

Detail C
 Cu/eSn 25mm² flexible copper braids
 ELEMKO code 64 25 301 (3)

	Title:	
	DRG No.	086-13
	 www.elemko.gr	 elemko@elemko.gr
	SHEET 1 OF 1	

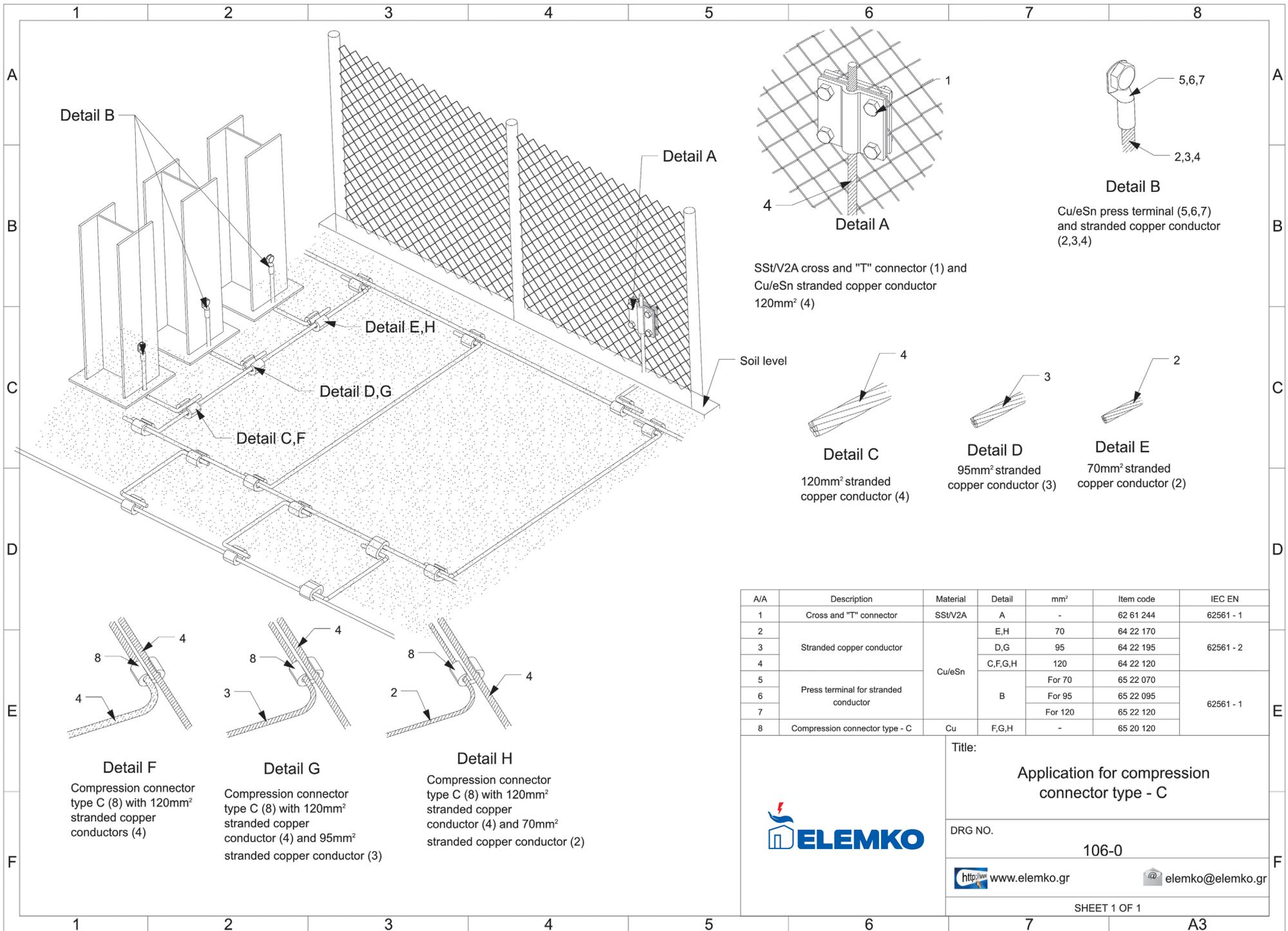


Title:
 Example of application of
 exothermic bonding

DRG NO.
 106

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SHEET 1 OF 1



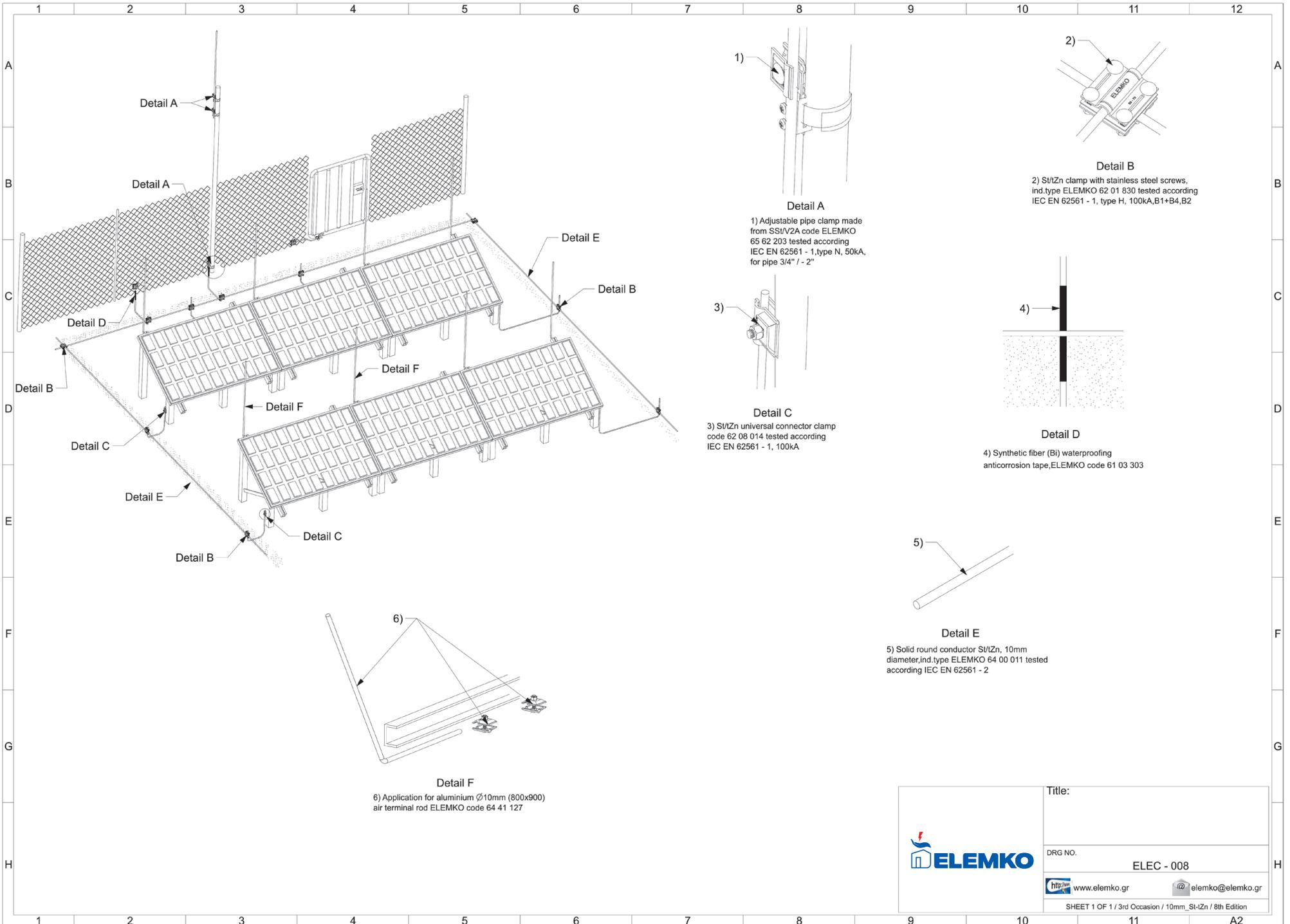
A/A	Description	Material	Detail	mm ²	Item code	IEC EN
1	Cross and "T" connector	SSt/V2A	A	-	62 61 244	62561 - 1
2	Stranded copper conductor	Cu/eSn	E,H	70	64 22 170	62561 - 2
3			D,G	95	64 22 195	
4			C,F,G,H	120	64 22 120	
5	Press terminal for stranded conductor	Cu/eSn	B	For 70	65 22 070	62561 - 1
6				For 95	65 22 095	
7				For 120	65 22 120	
8	Compression connector type - C	Cu	F,G,H	-	65 20 120	

Title:
Application for compression connector type - C

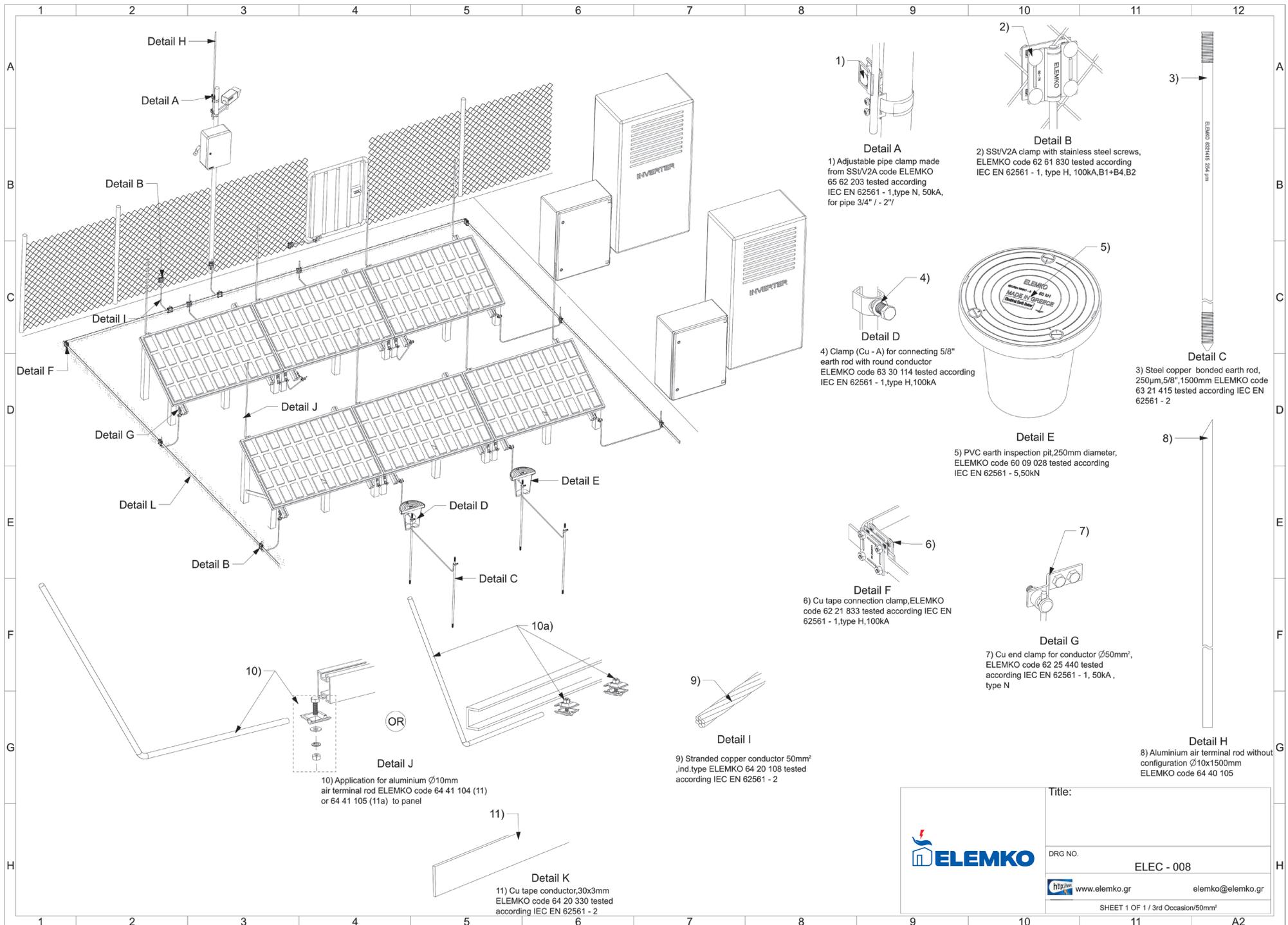
DRG NO.
106-0

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SHEET 1 OF 1

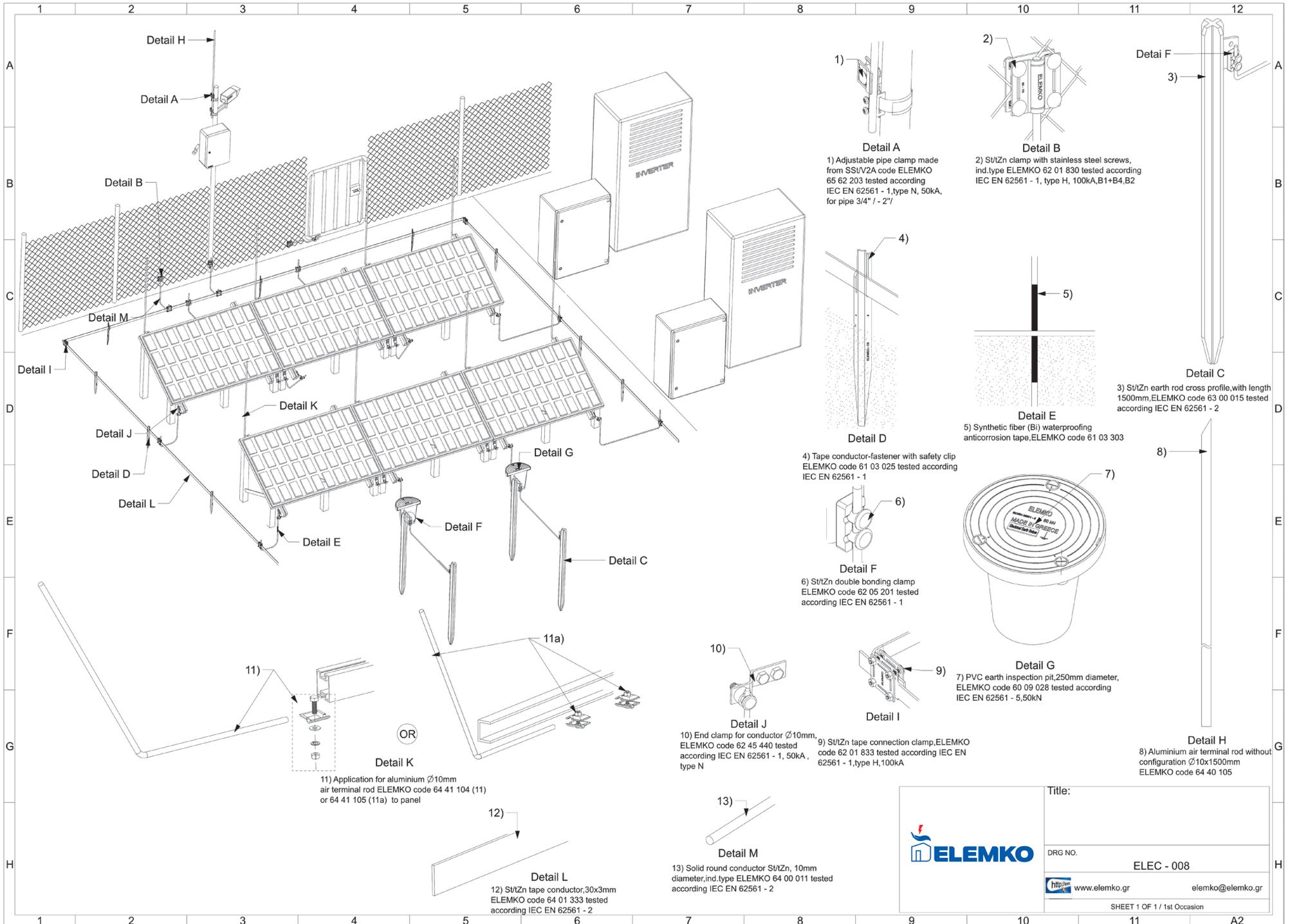


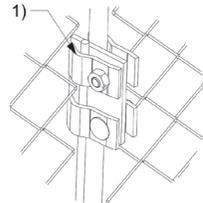
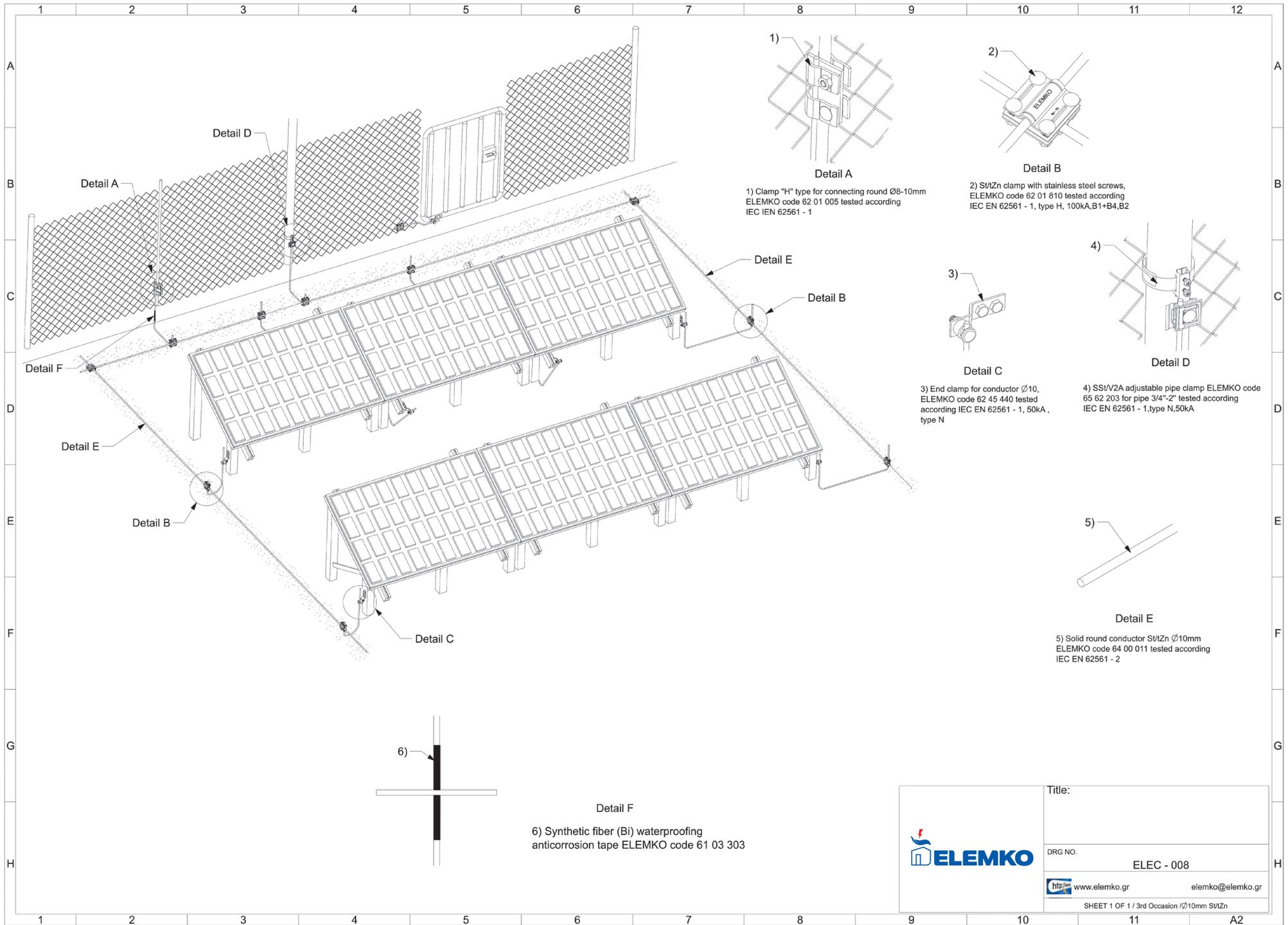
	Title:
	DRG NO. ELEC - 008
	http://www.elemko.gr  elemko@elemko.gr
SHEET 1 OF 1 / 3rd Occasion / 10mm_St-Zn / 8th Edition	



	Title:	
	DRG NO.	ELEC - 008
	http://www.elemko.gr	elemko@elemko.gr

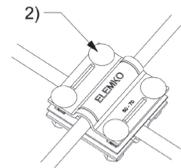
SHEET 1 OF 1 / 3rd Occasion/50mm²





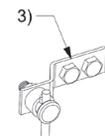
Detail A

1) Clamp "H" type for connecting round Ø8-10mm
ELEMKO code 62 01 005 tested according
IEC IEN 62561 - 1



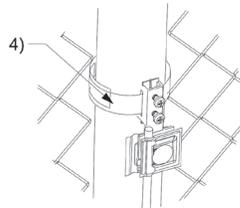
Detail B

2) S1/Zn clamp with stainless steel screws,
ELEMKO code 62 01 810 tested according
IEC EN 62561 - 1, type H, 100kA,B1+B4,B2



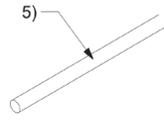
Detail C

3) End clamp for conductor Ø10,
ELEMKO code 62 45 440 tested
according IEC EN 62561 - 1, 50kA,
type N



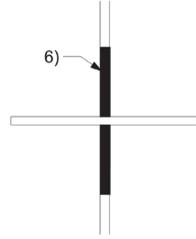
Detail D

4) SSI/V2A adjustable pipe clamp ELEMKO code
65 62 203 for pipe 3/4"-2" tested according
IEC EN 62561 - 1, type N, 50kA



Detail E

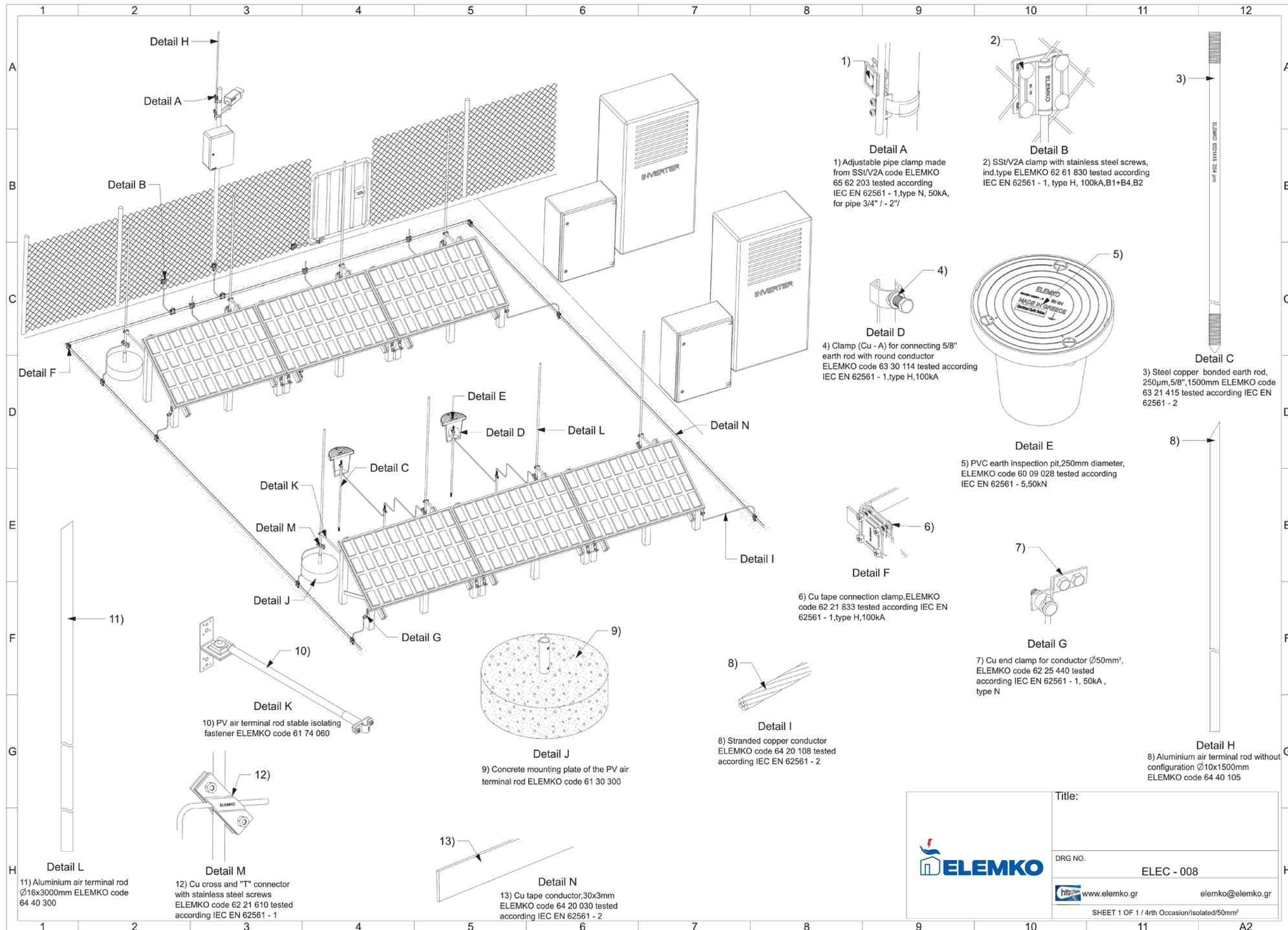
5) Solid round conductor S1/Zn Ø10mm
ELEMKO code 64 00 011 tested according
IEC EN 62561 - 2



Detail F

6) Synthetic fiber (Bi) waterproofing
anticorrosion tape ELEMKO code 61 03 303

	Title:	
	DRG NO.	ELEC - 008
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	SHEET 1 OF 1 / 3rd Occasion / Ø10mm S1/Zn	



Detail A
 1) Adjustable pipe clamp made from SSi/V2A code ELEMKO 65 62 203 tested according IEC EN 62561 - 1, type N, 50kA, for pipe 3/4" - 2"

Detail B
 2) SSi/V2A clamp with stainless steel screws, ind. type ELEMKO 62 61 830 tested according IEC EN 62561 - 1, type H, 100kA, B1+B4, B2

Detail D
 4) Clamp (Cu - A) for connecting 5/8" earth rod with round conductor ELEMKO code 63 30 114 tested according IEC EN 62561 - 1, type H, 100kA

Detail E
 5) PVC earth inspection pit, 250mm diameter, ELEMKO code 60 09 028 tested according IEC EN 62561 - 5, 50kN

Detail C
 3) Steel copper bonded earth rod, 250µm, 5/8", 1500mm ELEMKO code 63 21 415 tested according IEC EN 62561 - 2

Detail F
 6) Cu tape connection clamp, ELEMKO code 62 21 833 tested according IEC EN 62561 - 1, type H, 100kA

Detail G
 7) Cu end clamp for conductor Ø50mm², ELEMKO code 62 25 440 tested according IEC EN 62561 - 1, 50kA, type N

Detail I
 8) Stranded copper conductor ELEMKO code 64 20 108 tested according IEC EN 62561 - 2

Detail J
 9) Concrete mounting plate of the PV air terminal rod ELEMKO code 61 30 300

Detail K
 10) PV air terminal rod stable isolating fastener ELEMKO code 61 74 060

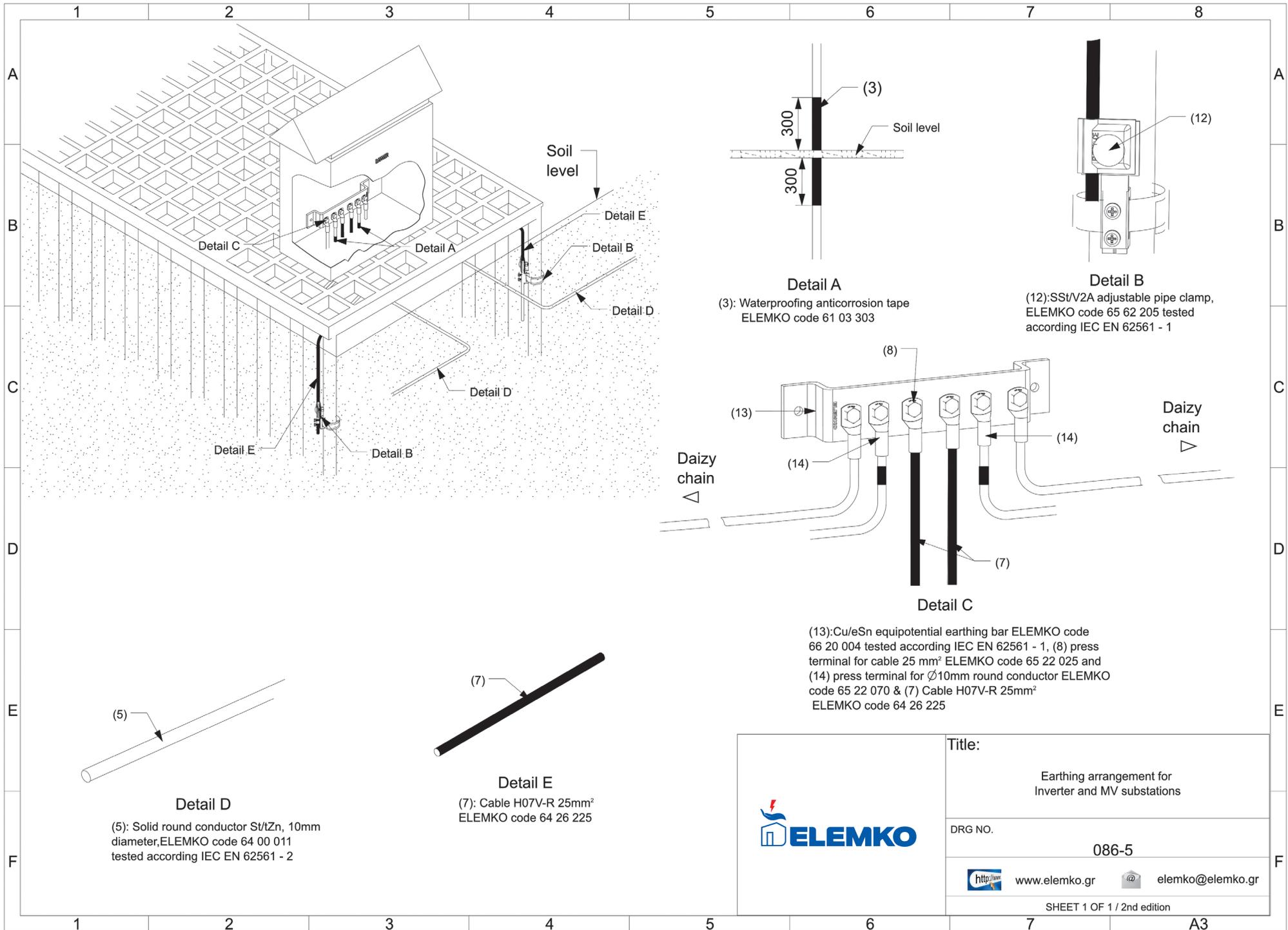
Detail L
 11) Aluminium air terminal rod Ø16x3000mm ELEMKO code 64 40 300

Detail M
 12) Cu cross and "T" connector with stainless steel screws ELEMKO code 62 21 610 tested according IEC EN 62561 - 1

Detail N
 13) Cu tape conductor, 30x3mm ELEMKO code 64 20 030 tested according IEC EN 62561 - 2

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	DRG NO.	ELEC - 008
	http://www.elemko.gr elemko@elemko.gr	

SHEET 1 OF 1 / 4th Occasion/Isolated/50mm²



Detail A
 (3): Waterproofing anticorrosion tape
 ELEMKO code 61 03 303

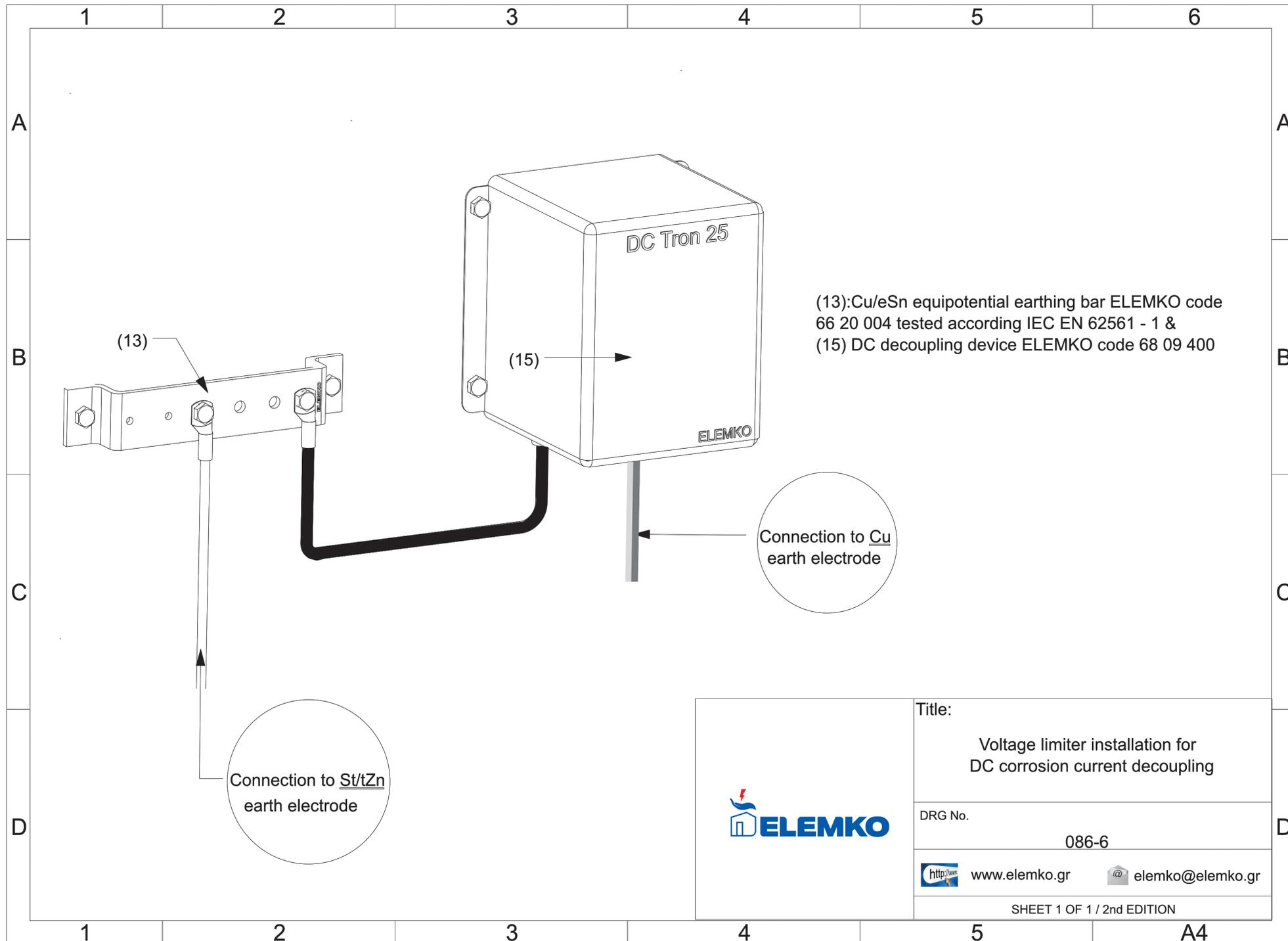
Detail B
 (12): SS/V2A adjustable pipe clamp,
 ELEMKO code 65 62 205 tested
 according IEC EN 62561 - 1

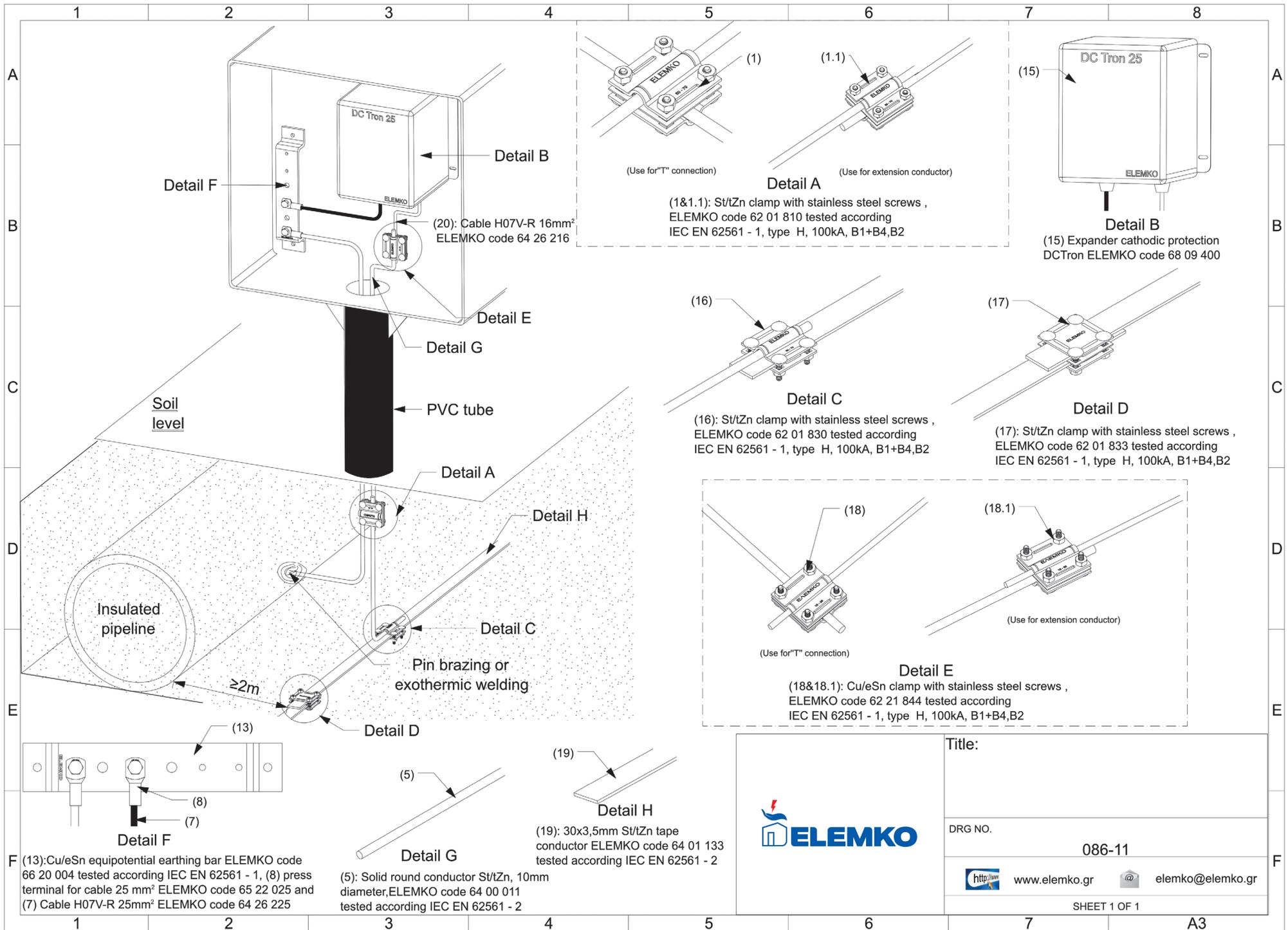
Detail C
 (13): Cu/eSn equipotential earthing bar ELEMKO code
 66 20 004 tested according IEC EN 62561 - 1, (8) press
 terminal for cable 25 mm² ELEMKO code 65 22 025 and
 (14) press terminal for Ø10mm round conductor ELEMKO
 code 65 22 070 & (7) Cable H07V-R 25mm²
 ELEMKO code 64 26 225

Detail D
 (5): Solid round conductor St/tZn, 10mm
 diameter, ELEMKO code 64 00 011
 tested according IEC EN 62561 - 2

Detail E
 (7): Cable H07V-R 25mm²
 ELEMKO code 64 26 225

	Title:	Earthing arrangement for Inverter and MV substations
	DRG NO.	086-5
	http://www.elemko.gr	elemko@elemko.gr
	SHEET 1 OF 1 / 2nd edition	





Detail F

Detail B

Detail E

Detail G

Detail A

Detail H

Detail C

Pin brazing or exothermic welding

Detail D

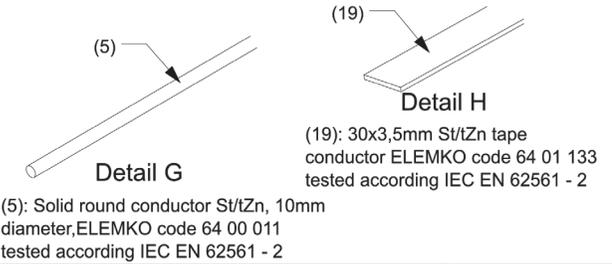
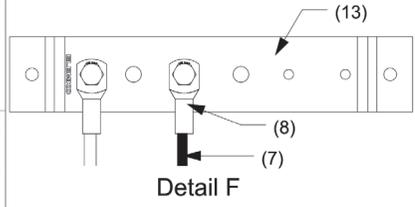
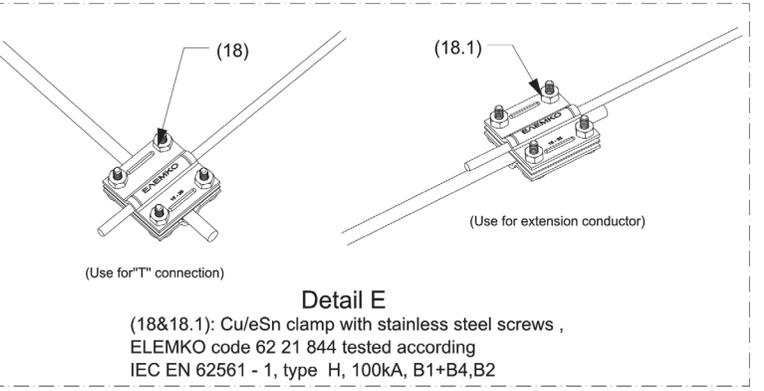
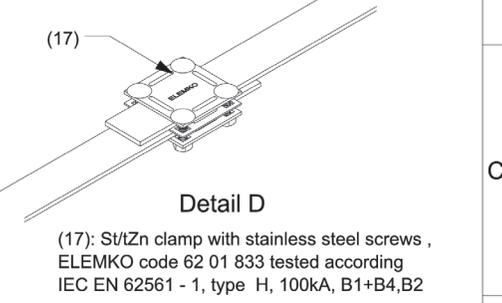
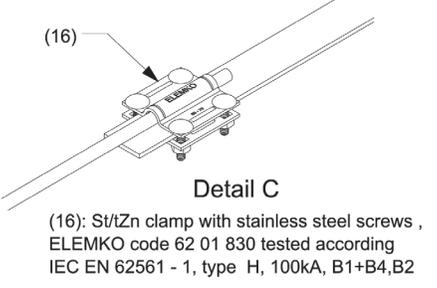
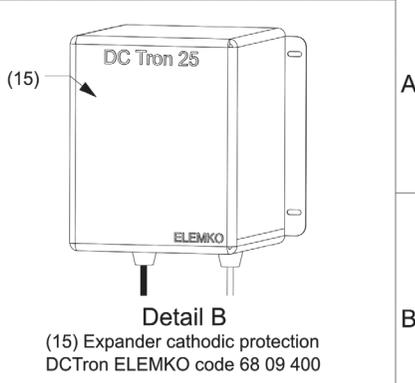
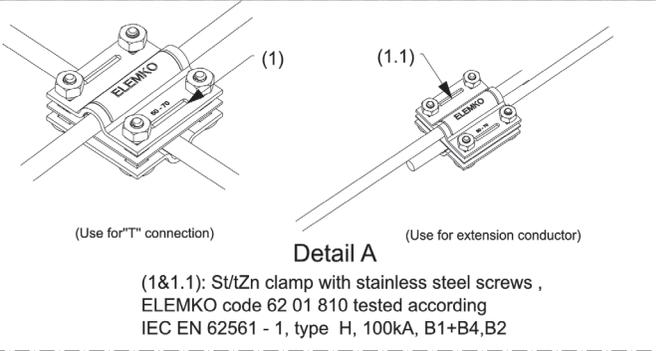
Detail H

Soil level

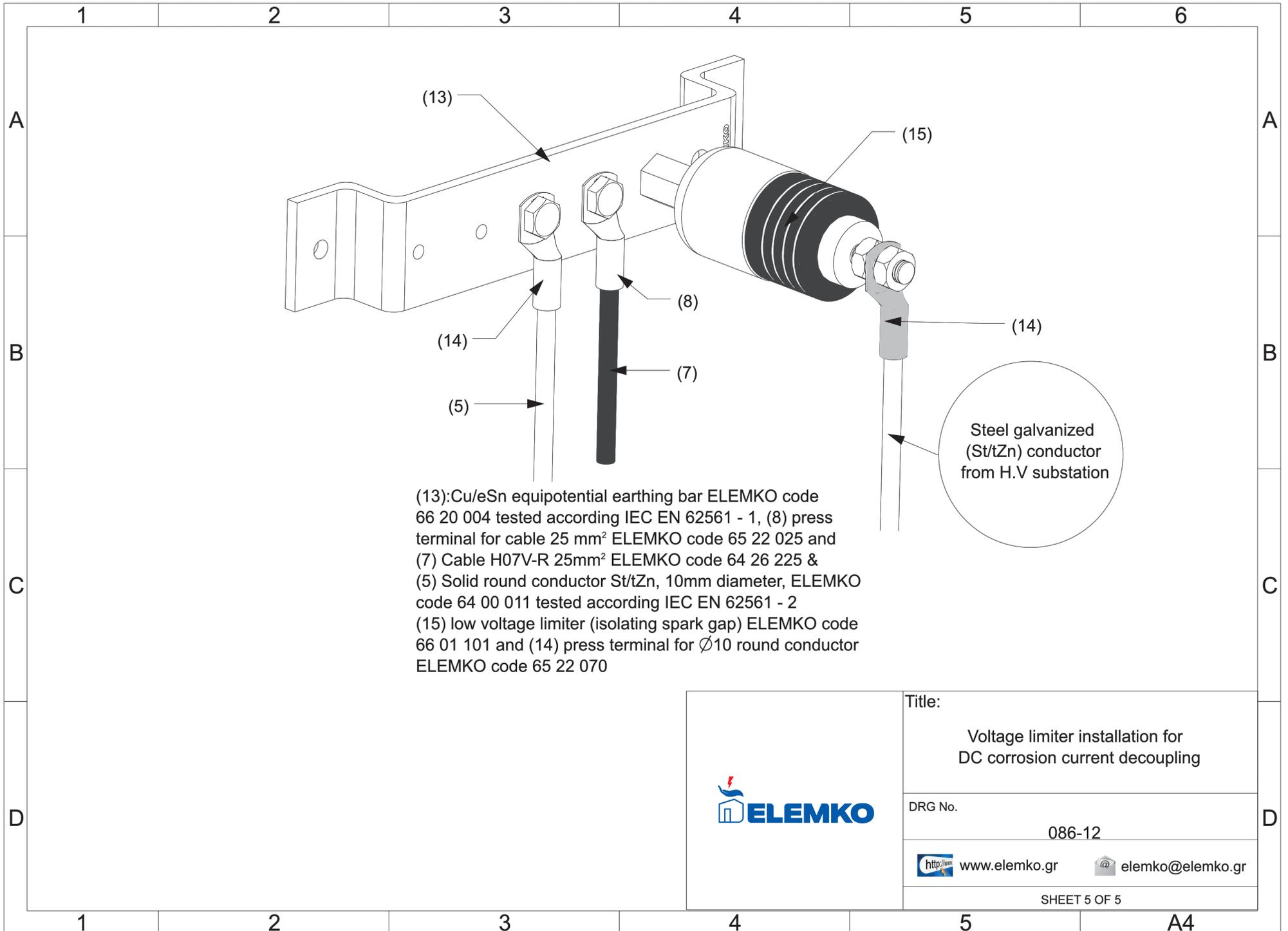
PVC tube

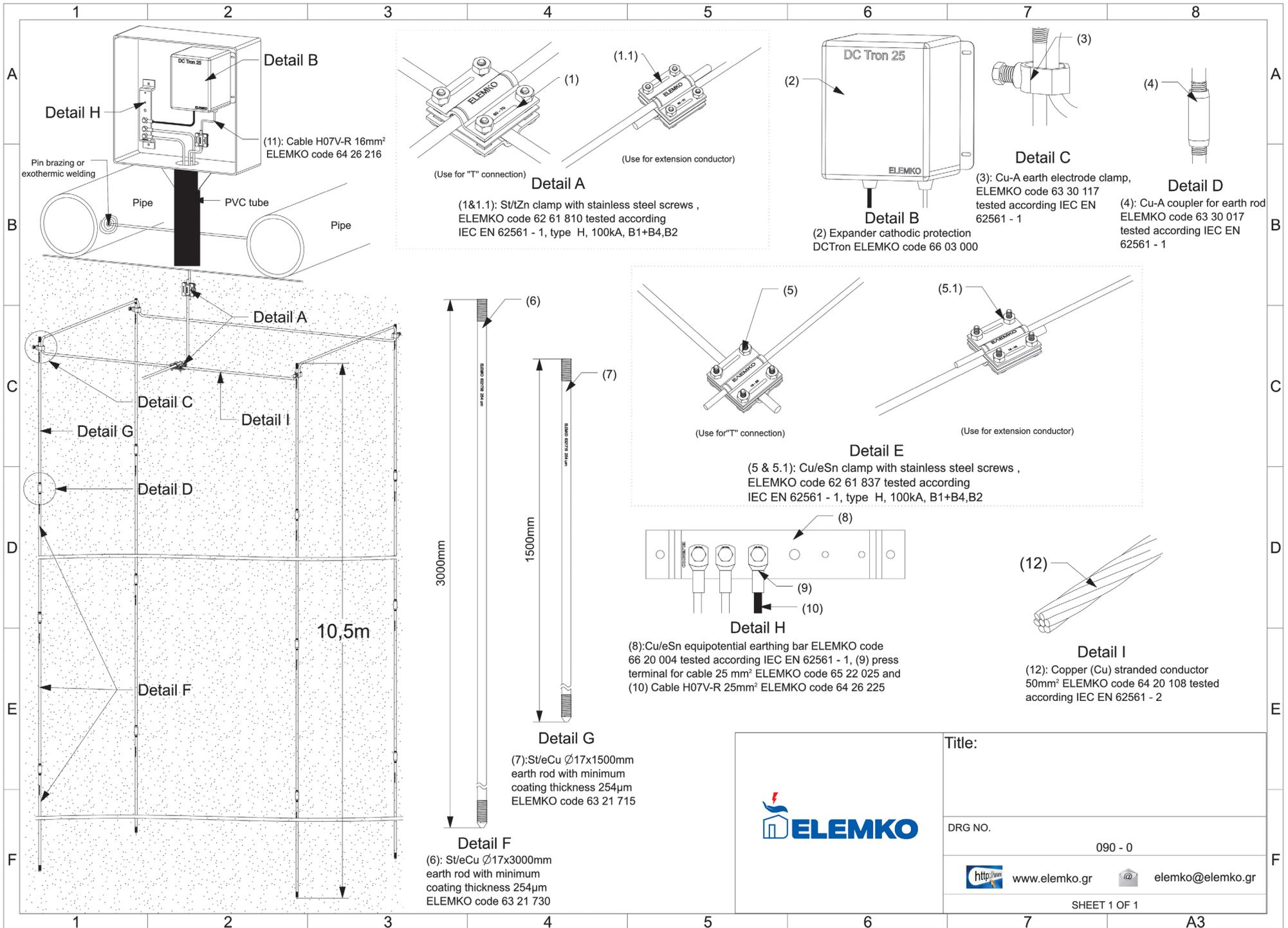
Insulated pipeline

≥2m

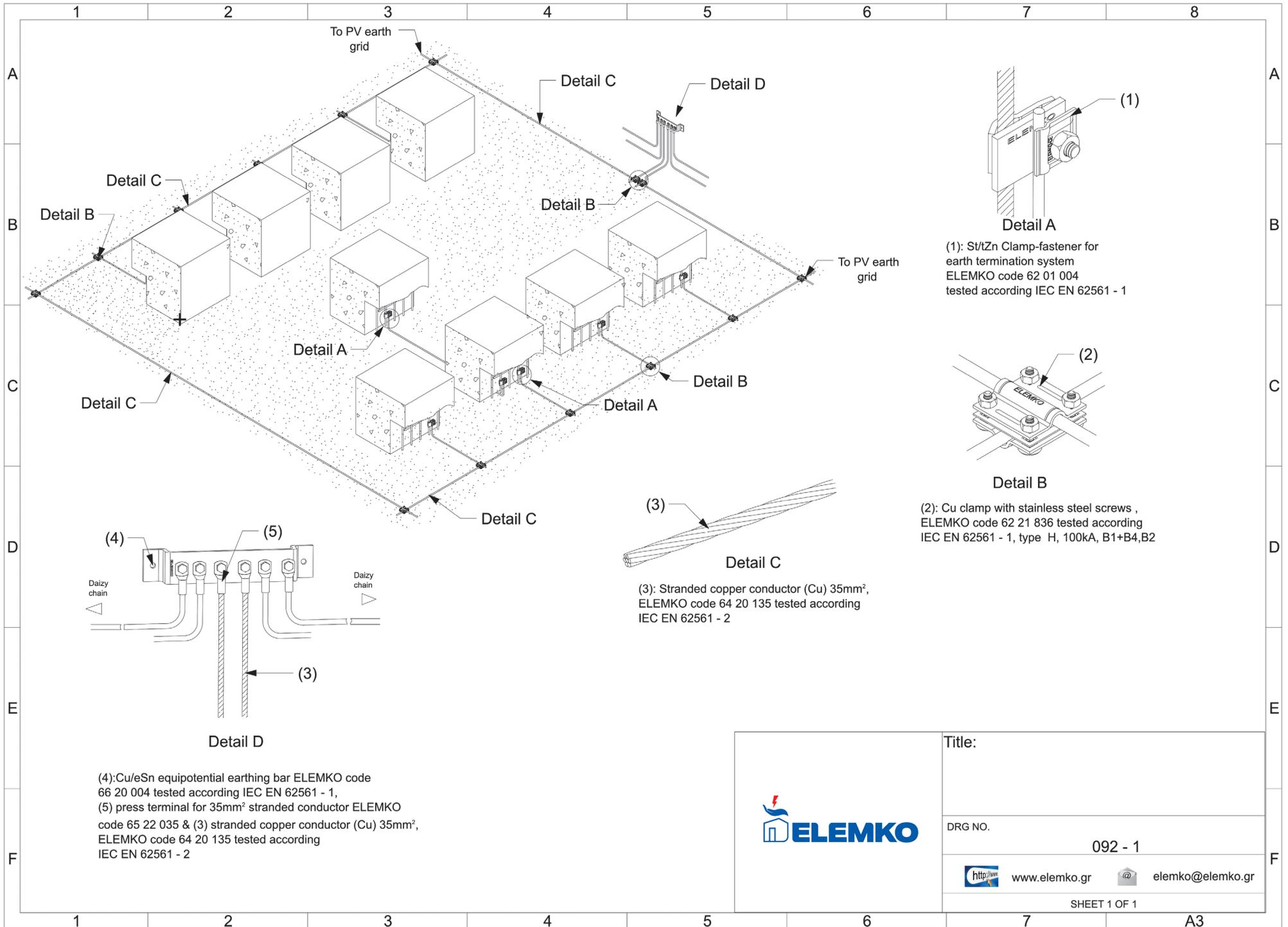


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SHEET 1 OF 1		

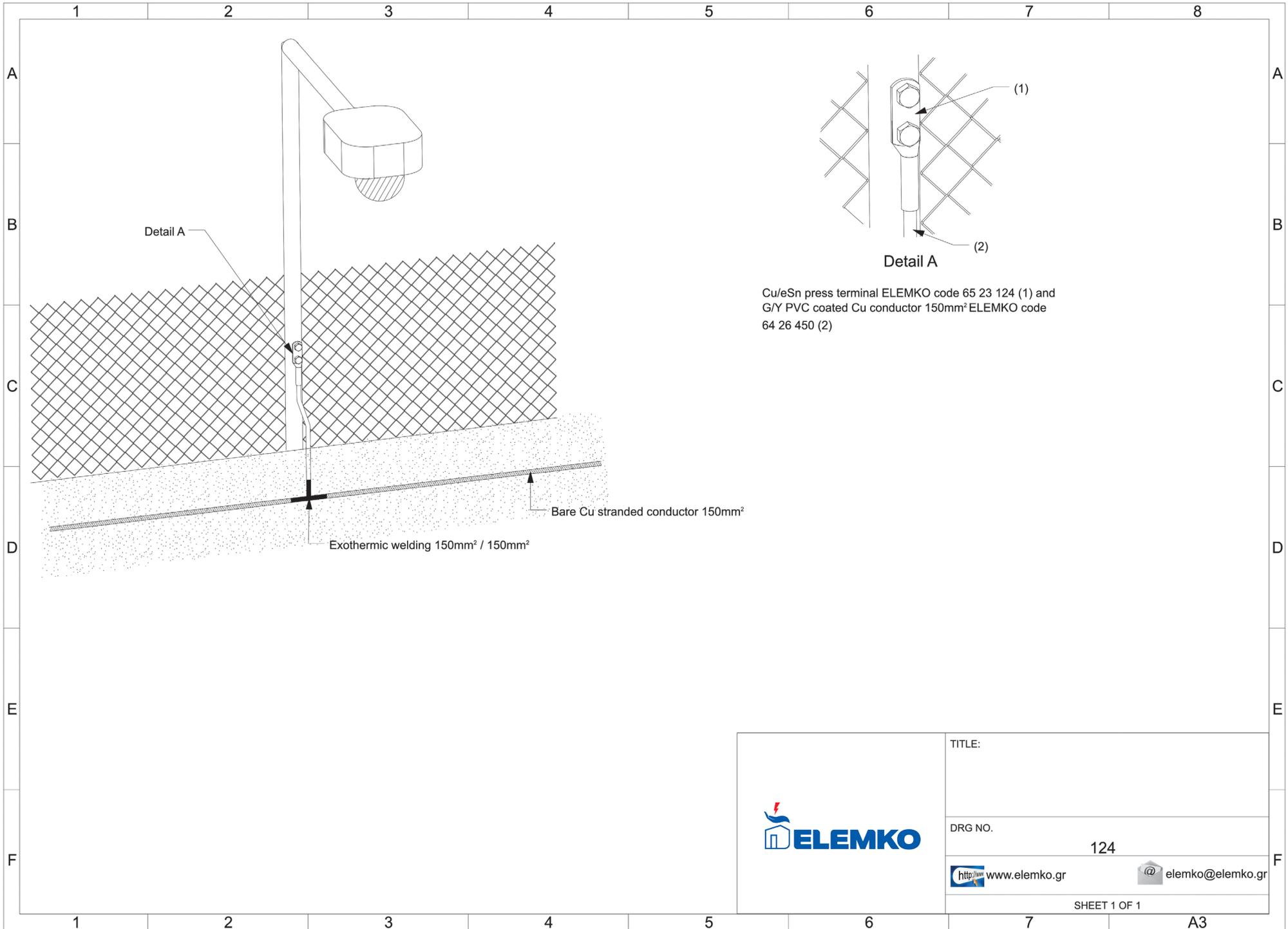




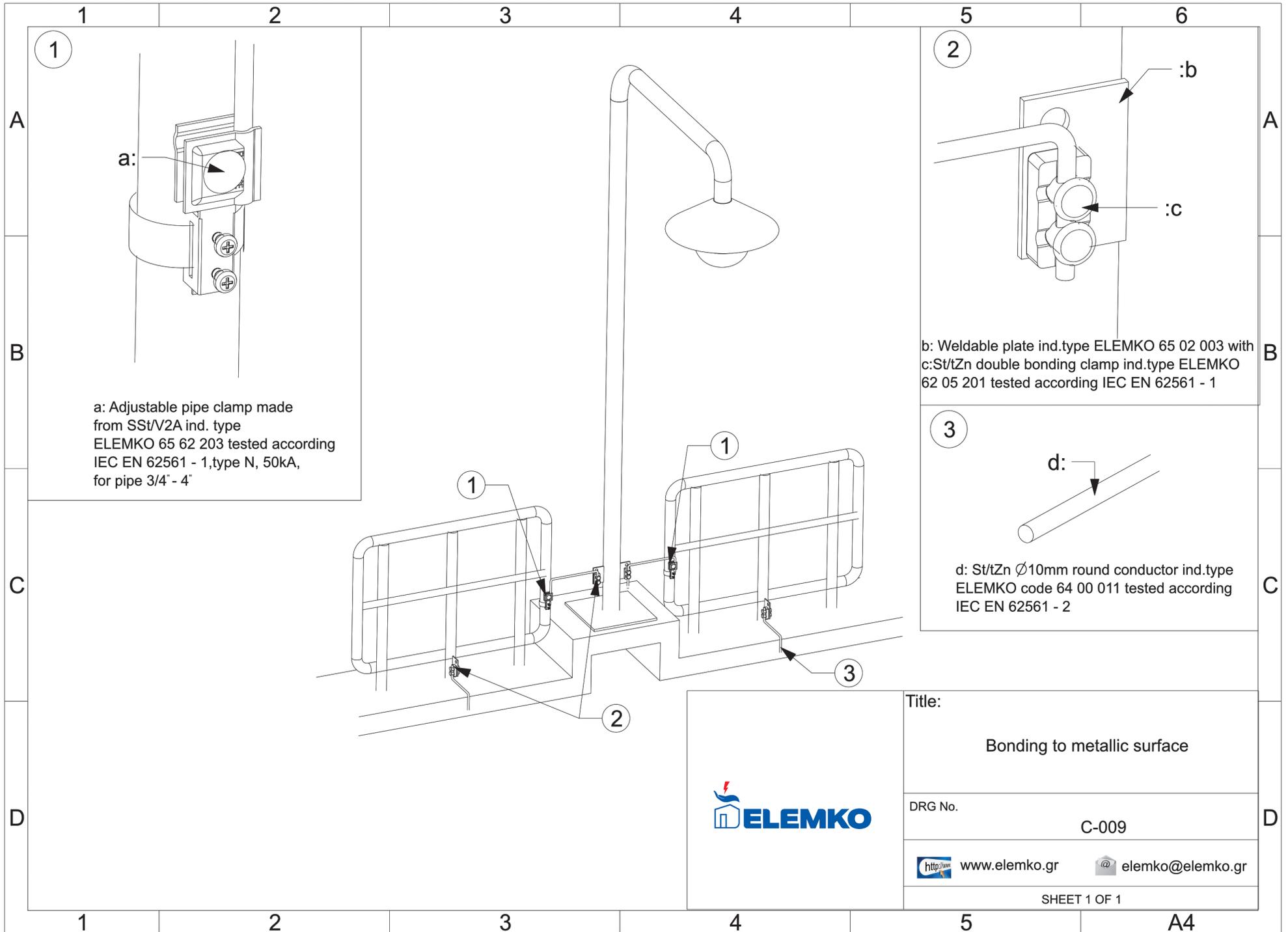
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	DRG NO.
	090 - 0
	http://www.elemko.gr elemko@elemko.gr
SHEET 1 OF 1	



	Title:
	DRG NO.
	092 - 1
	http://www.elemko.gr  elemko@elemko.gr
SHEET 1 OF 1	



	TITLE:
	DRG NO. 124
	http://www.elemko.gr  elemko@elemko.gr
	SHEET 1 OF 1



a: Adjustable pipe clamp made from SSt/V2A ind. type ELEMKO 65 62 203 tested according IEC EN 62561 - 1, type N, 50kA, for pipe 3/4" - 4"

b: Weldable plate ind.type ELEMKO 65 02 003 with c:St/tZn double bonding clamp ind.type ELEMKO 62 05 201 tested according IEC EN 62561 - 1

d: St/tZn \varnothing 10mm round conductor ind.type ELEMKO code 64 00 011 tested according IEC EN 62561 - 2

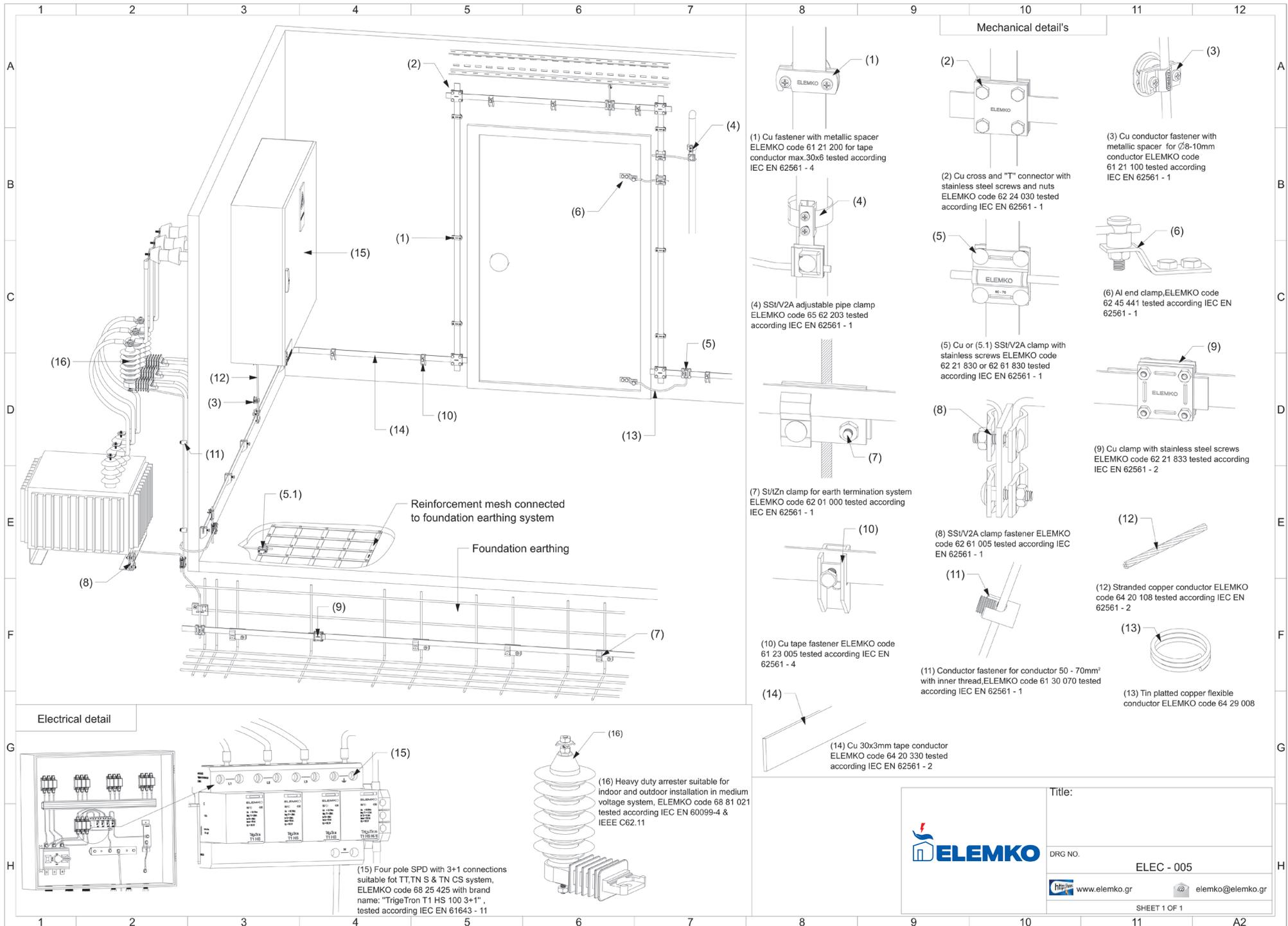


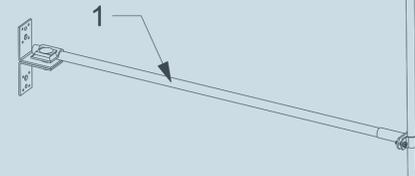
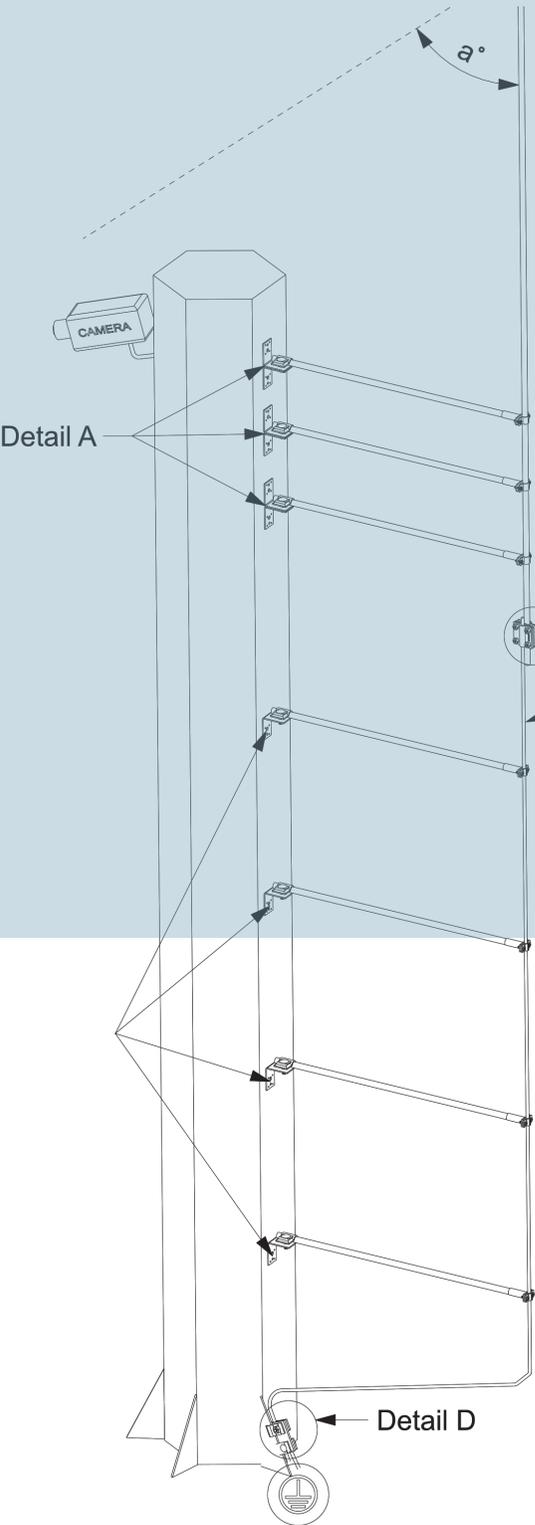
Title:
Bonding to metallic surface

DRG No.
C-009

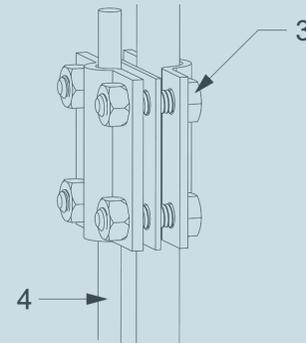
<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

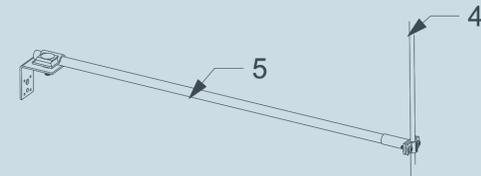




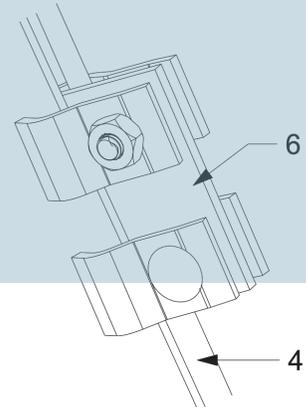
Detail A
Isolating fastener rotating shaft PV (1)
and air terminal rod (2)



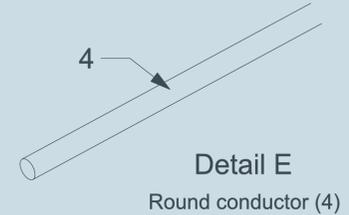
Detail B
"T" connection clamp (3) with air terminal rod (2)
and round conductor (4)



Detail C
Isolating fastener rotating shaft
PV (5) with round conductor (4)

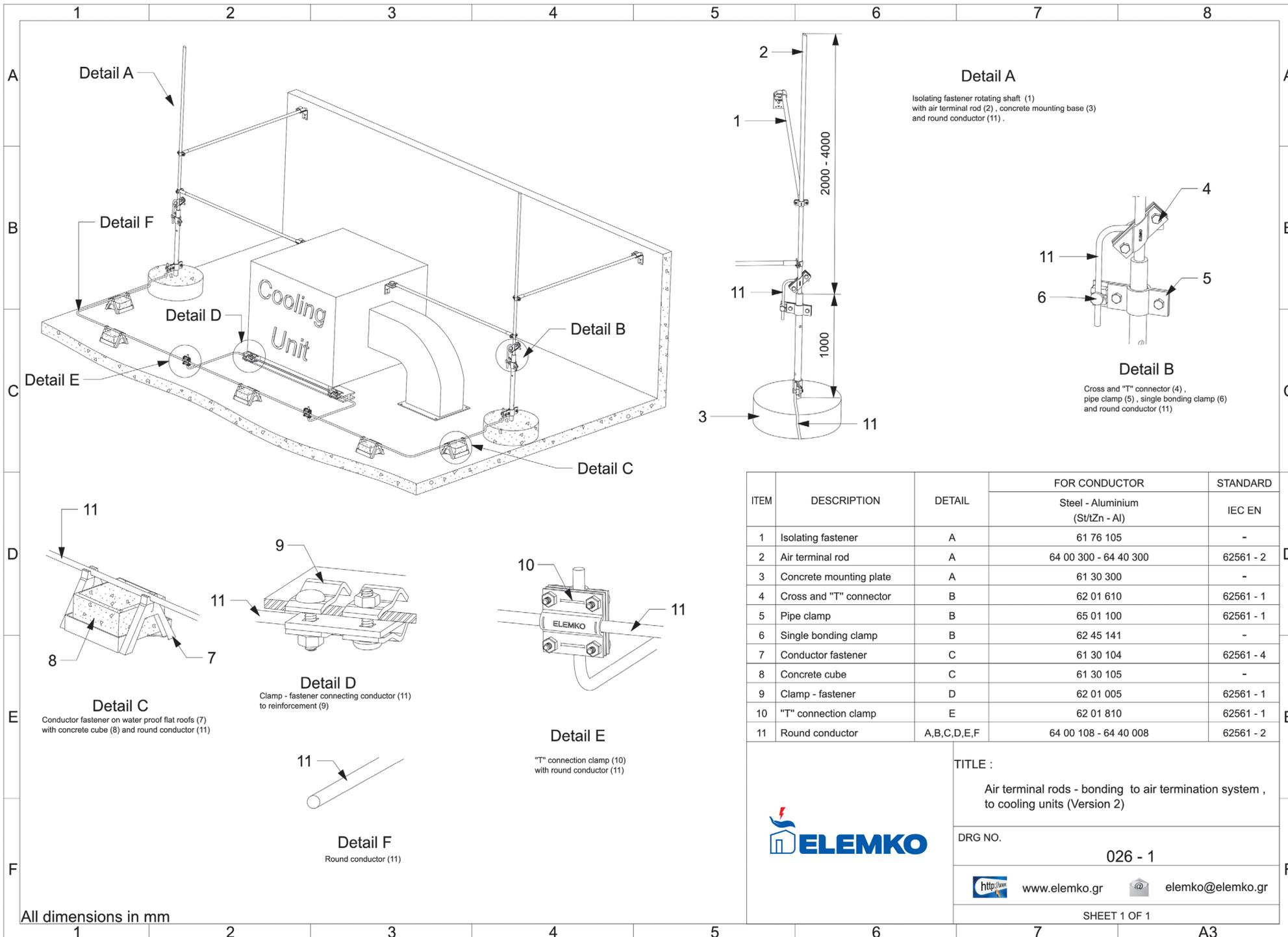


Detail D
Clamp - fastener (6) with round conductor (4)



Detail E
Round conductor (4)

ISOLATED LPS



Detail A
 Isolating fastener rotating shaft (1) with air terminal rod (2), concrete mounting base (3) and round conductor (11).

Detail B
 Cross and "T" connector (4), pipe clamp (5), single bonding clamp (6) and round conductor (11)

ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR	STANDARD
			Steel - Aluminium (St/tZn - Al)	IEC EN
1	Isolating fastener	A	61 76 105	-
2	Air terminal rod	A	64 00 300 - 64 40 300	62561 - 2
3	Concrete mounting plate	A	61 30 300	-
4	Cross and "T" connector	B	62 01 610	62561 - 1
5	Pipe clamp	B	65 01 100	62561 - 1
6	Single bonding clamp	B	62 45 141	-
7	Conductor fastener	C	61 30 104	62561 - 4
8	Concrete cube	C	61 30 105	-
9	Clamp - fastener	D	62 01 005	62561 - 1
10	"T" connection clamp	E	62 01 810	62561 - 1
11	Round conductor	A,B,C,D,E,F	64 00 108 - 64 40 008	62561 - 2

TITLE :
 Air terminal rods - bonding to air termination system , to cooling units (Version 2)

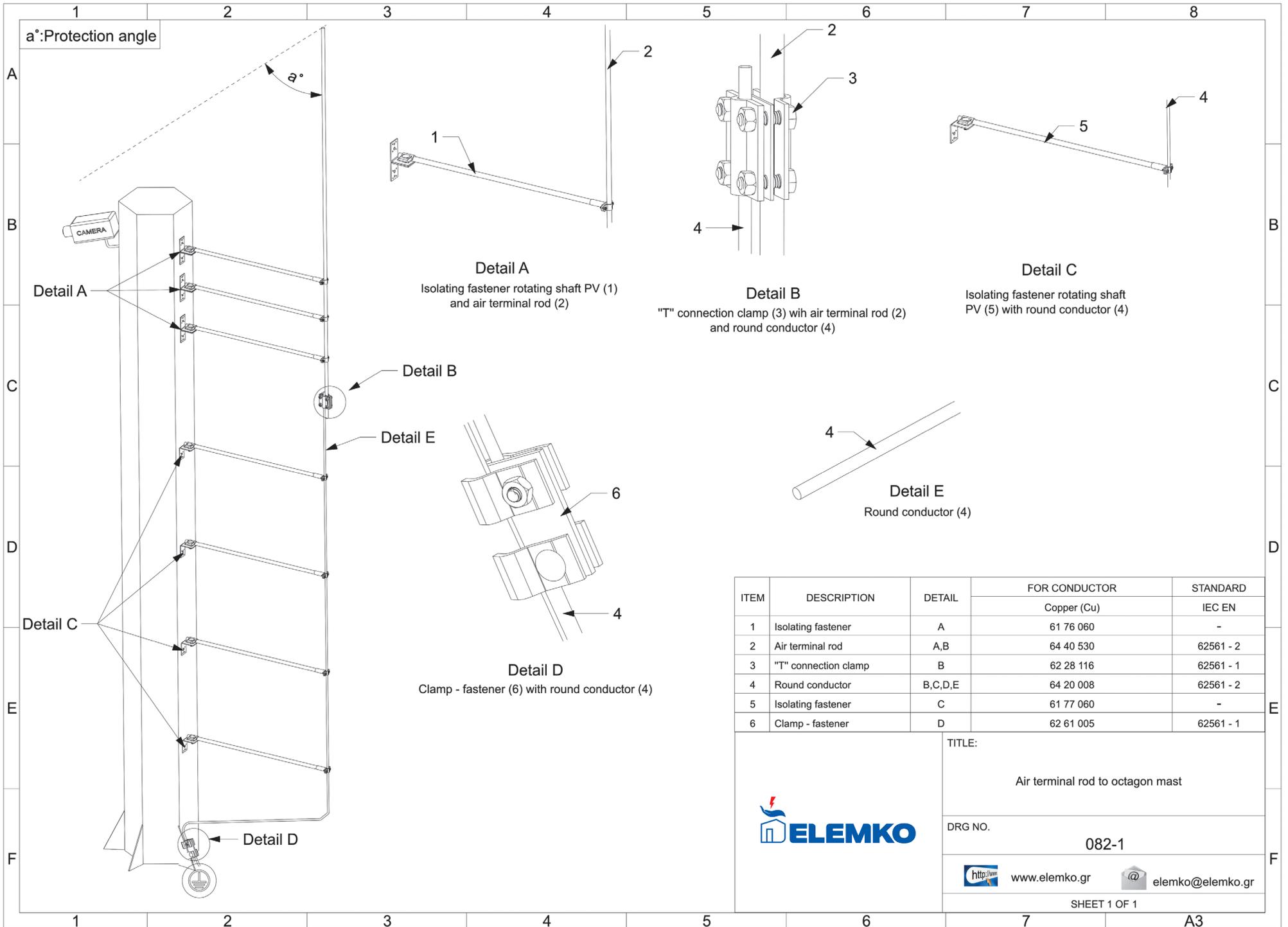
DRG NO.
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SHEET 1 OF 1



All dimensions in mm



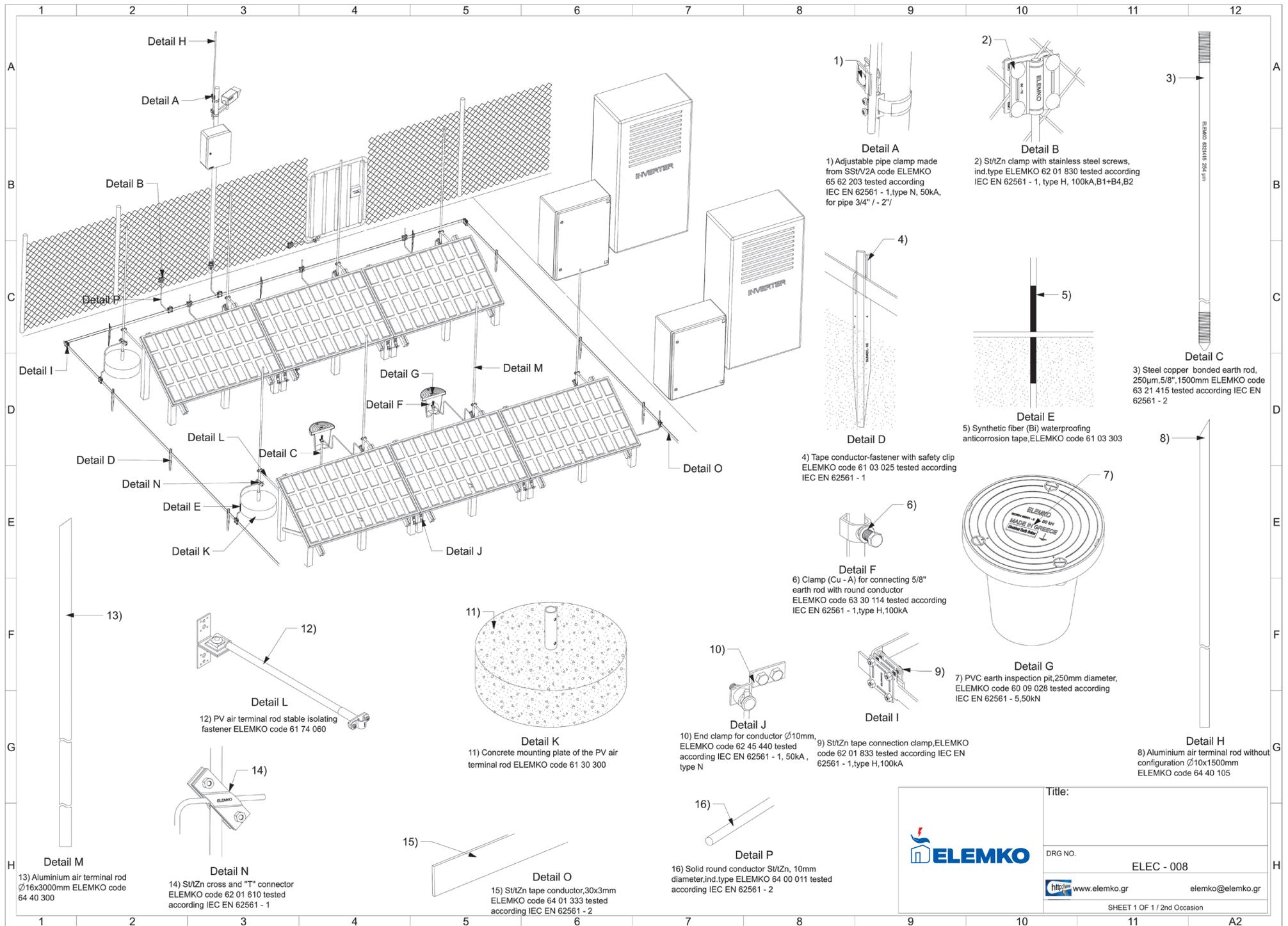
ITEM	DESCRIPTION	DETAIL	FOR CONDUCTOR	STANDARD
			Copper (Cu)	IEC EN
1	Isolating fastener	A	61 76 060	-
2	Air terminal rod	A,B	64 40 530	62561 - 2
3	"T" connection clamp	B	62 28 116	62561 - 1
4	Round conductor	B,C,D,E	64 20 008	62561 - 2
5	Isolating fastener	C	61 77 060	-
6	Clamp - fastener	D	62 61 005	62561 - 1

TITLE:
Air terminal rod to octagon mast

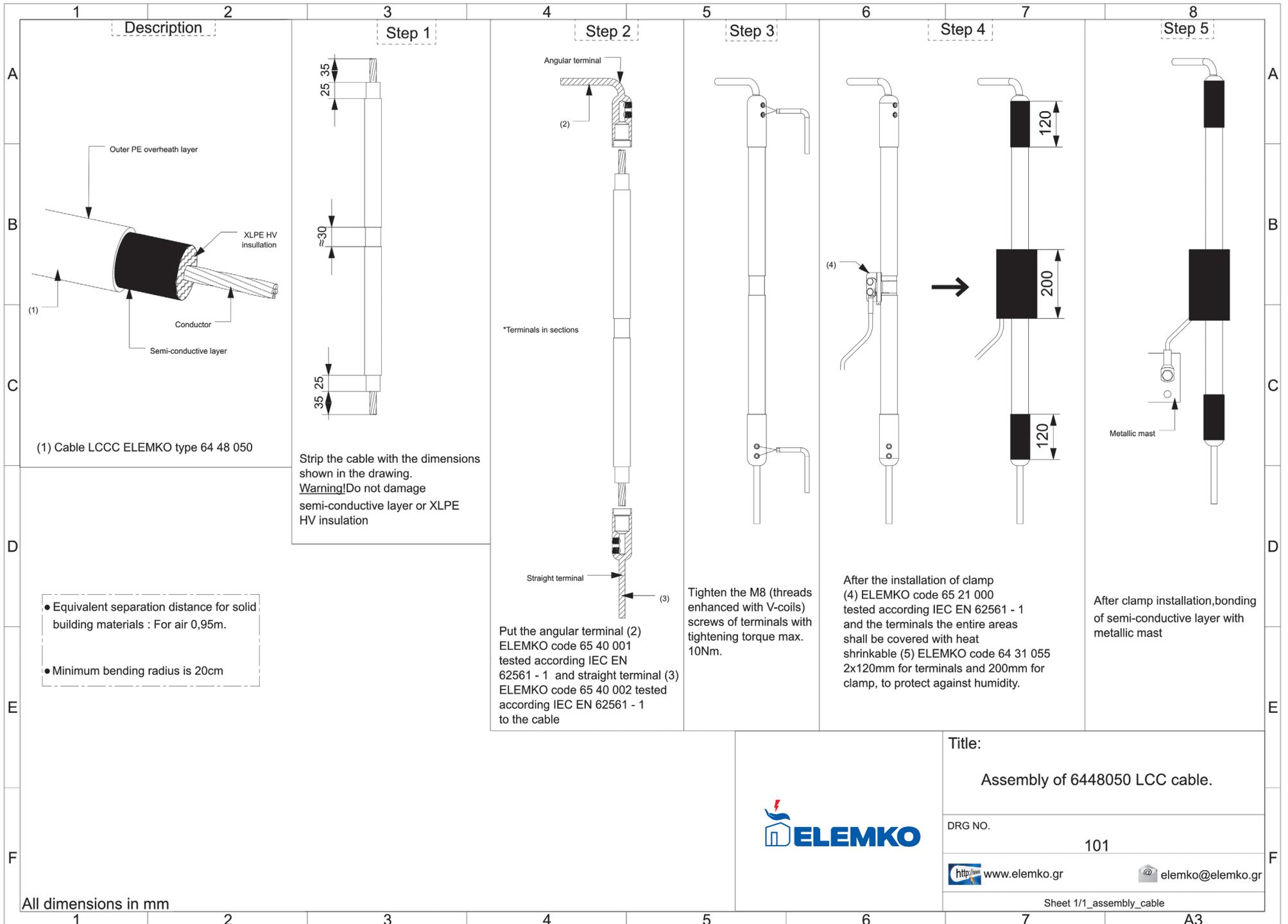
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082-1

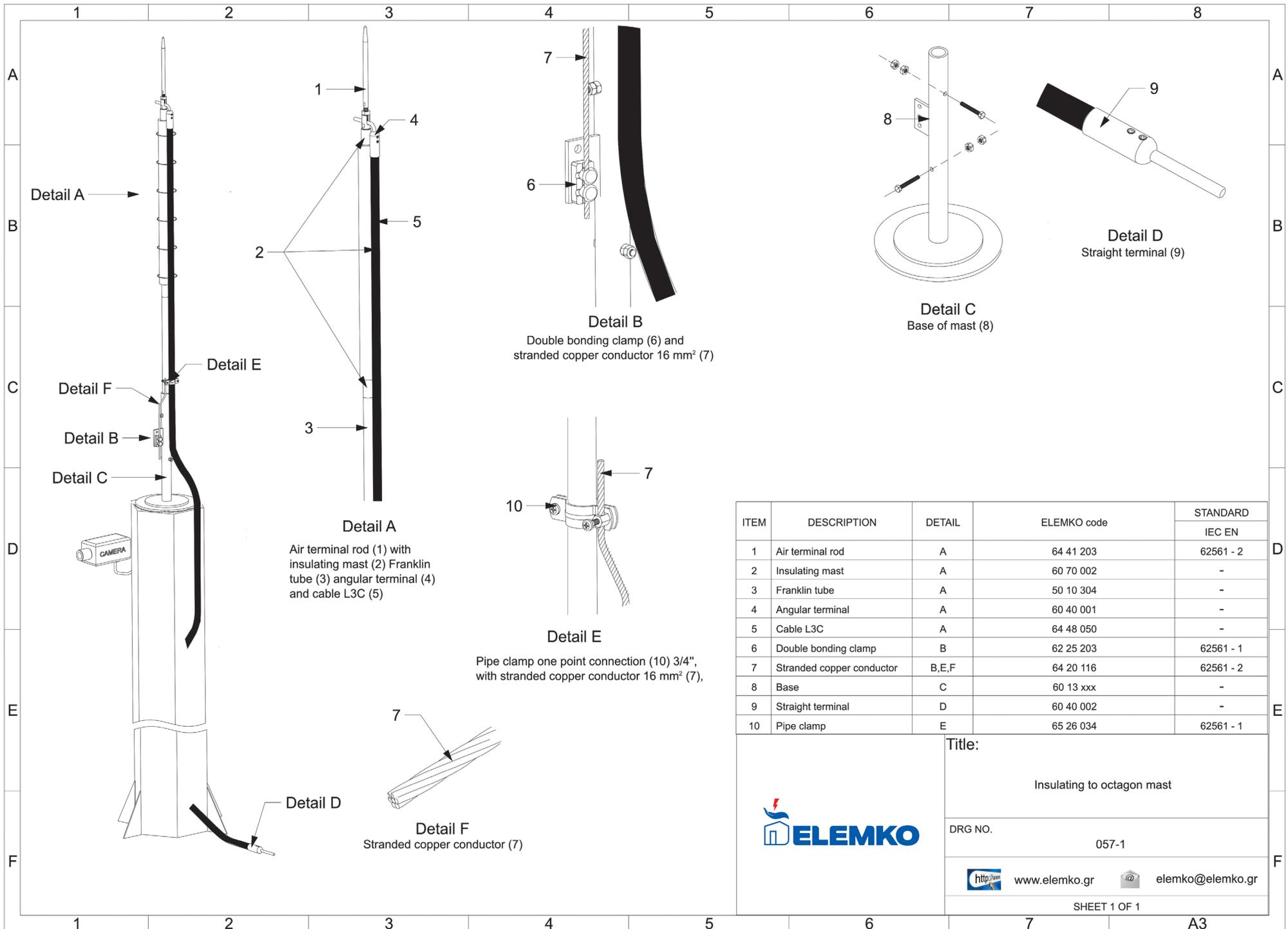
 <http://www.elemko.gr>  elemko@elemko.gr

SHEET 1 OF 1



	Title:	
	DRG NO.	ELEC - 008
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SHEET 1 OF 1 / 2nd Occasion		





Detail A

2

Detail B
Double bonding clamp (6) and
stranded copper conductor 16 mm² (7)

Detail C
Base of mast (8)

Detail D
Straight terminal (9)

Detail F

Detail E

Detail B

3

Detail E
Pipe clamp one point connection (10) 3/4",
with stranded copper conductor 16 mm² (7),

Detail A
Air terminal rod (1) with
insulating mast (2) Franklin
tube (3) angular terminal (4)
and cable L3C (5)

Detail D

Detail F
Stranded copper conductor (7)

ITEM	DESCRIPTION	DETAIL	ELEMKO code	STANDARD
				IEC EN
1	Air terminal rod	A	64 41 203	62561 - 2
2	Insulating mast	A	60 70 002	-
3	Franklin tube	A	50 10 304	-
4	Angular terminal	A	60 40 001	-
5	Cable L3C	A	64 48 050	-
6	Double bonding clamp	B	62 25 203	62561 - 1
7	Stranded copper conductor	B,E,F	64 20 116	62561 - 2
8	Base	C	60 13 xxx	-
9	Straight terminal	D	60 40 002	-
10	Pipe clamp	E	65 26 034	62561 - 1

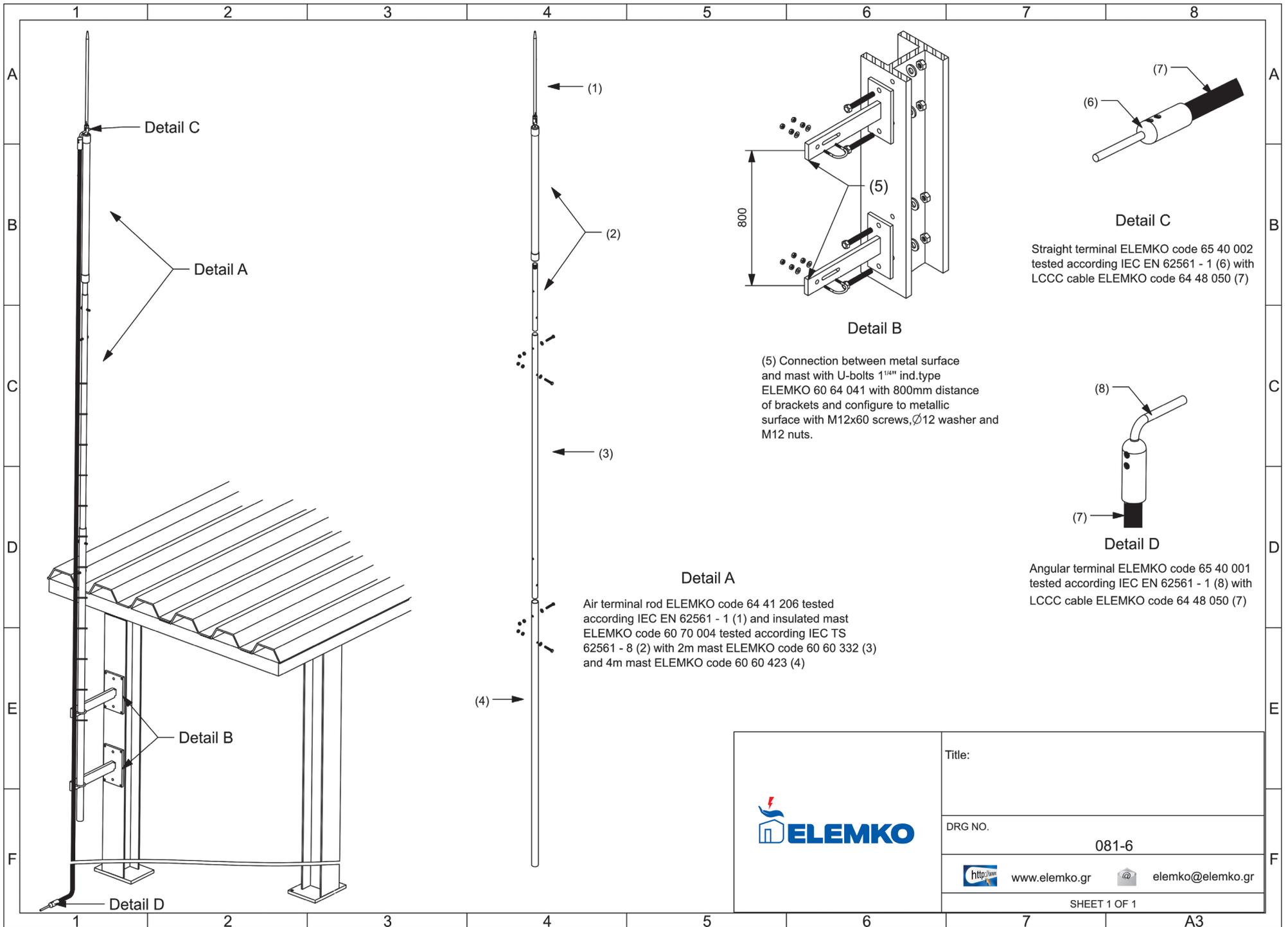


Title:
Insulating to octagon mast

DRG NO.
057-1

<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

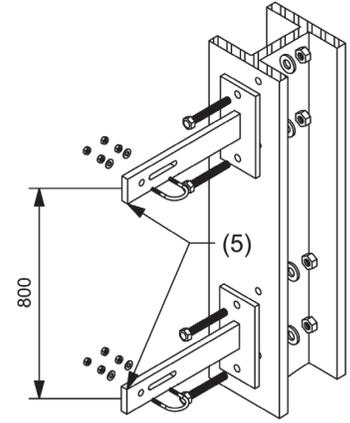


Detail C

Detail A

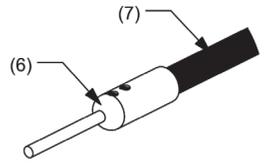
Detail B

Detail D



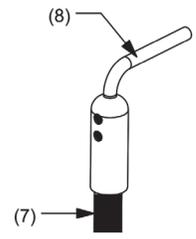
Detail B

(5) Connection between metal surface and mast with U-bolts 1^{1/4}" ind.type ELEMKO 60 64 041 with 800mm distance of brackets and configure to metallic surface with M12x60 screws, Ø12 washer and M12 nuts.



Detail C

Straight terminal ELEMKO code 65 40 002 tested according IEC EN 62561 - 1 (6) with LCCC cable ELEMKO code 64 48 050 (7)



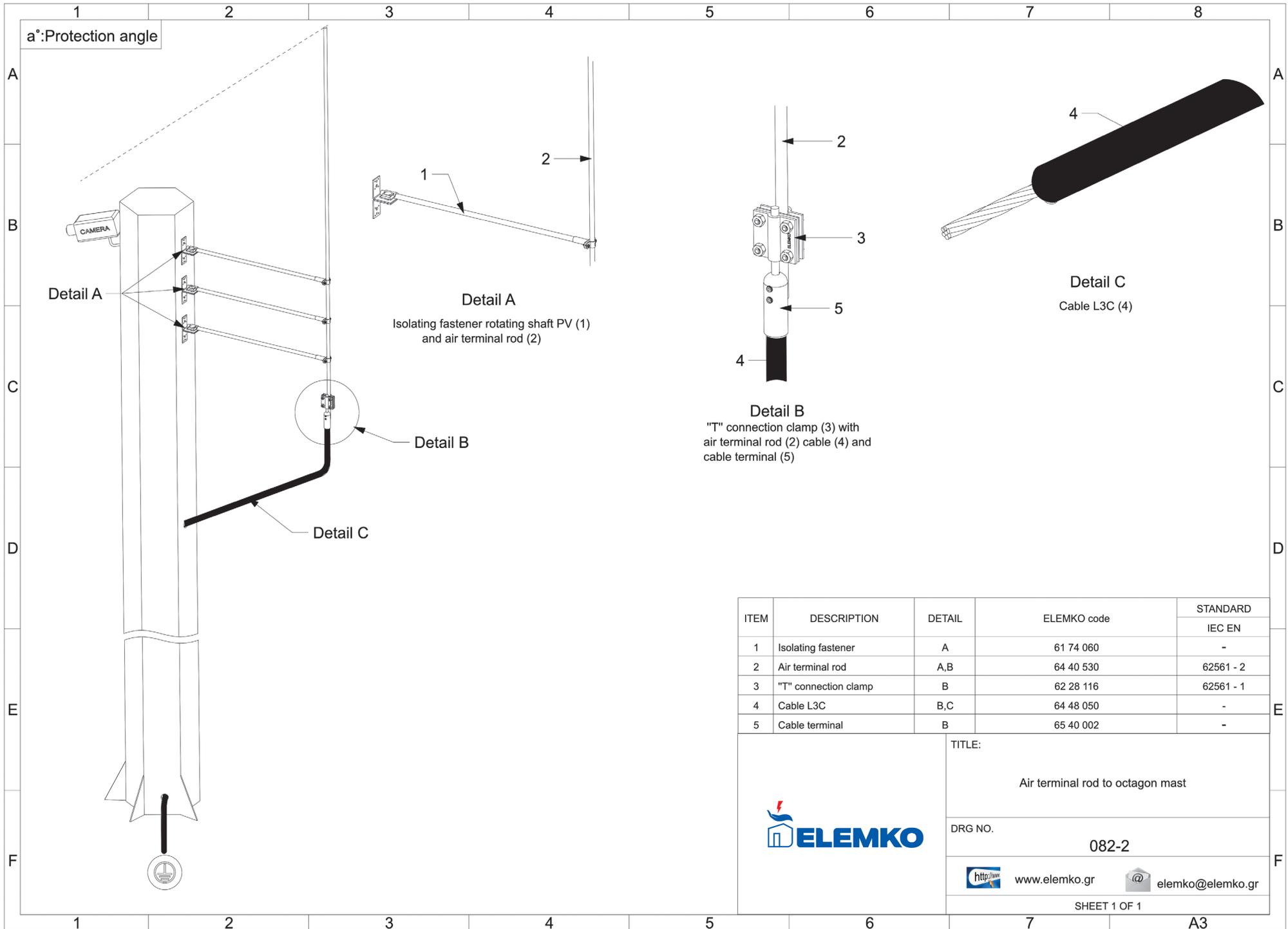
Detail D

Angular terminal ELEMKO code 65 40 001 tested according IEC EN 62561 - 1 (8) with LCCC cable ELEMKO code 64 48 050 (7)

Detail A

Air terminal rod ELEMKO code 64 41 206 tested according IEC EN 62561 - 1 (1) and insulated mast ELEMKO code 60 70 004 tested according IEC TS 62561 - 8 (2) with 2m mast ELEMKO code 60 60 332 (3) and 4m mast ELEMKO code 60 60 423 (4)

	Title:
	DRG NO.
	081-6
	http://www.elemko.gr elemko@elemko.gr
SHEET 1 OF 1	



a°:Protection angle

Detail A

Detail A
Isolating fastener rotating shaft PV (1)
and air terminal rod (2)

Detail B

Detail B
"T" connection clamp (3) with
air terminal rod (2) cable (4) and
cable terminal (5)

Detail C
Cable L3C (4)

ITEM	DESCRIPTION	DETAIL	ELEMKO code	STANDARD
				IEC EN
1	Isolating fastener	A	61 74 060	-
2	Air terminal rod	A,B	64 40 530	62561 - 2
3	"T" connection clamp	B	62 28 116	62561 - 1
4	Cable L3C	B,C	64 48 050	-
5	Cable terminal	B	65 40 002	-

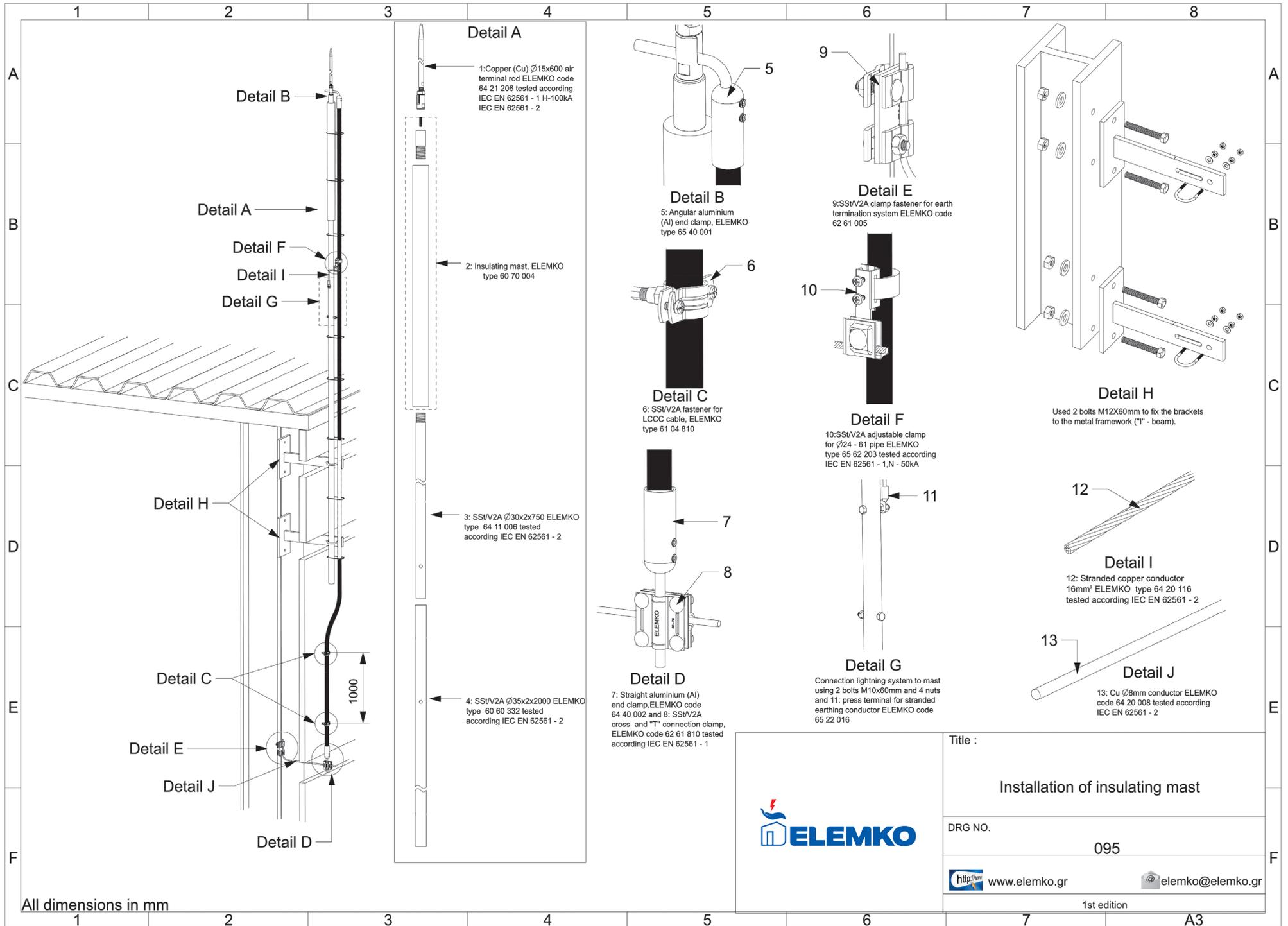


TITLE:
Air terminal rod to octagon mast

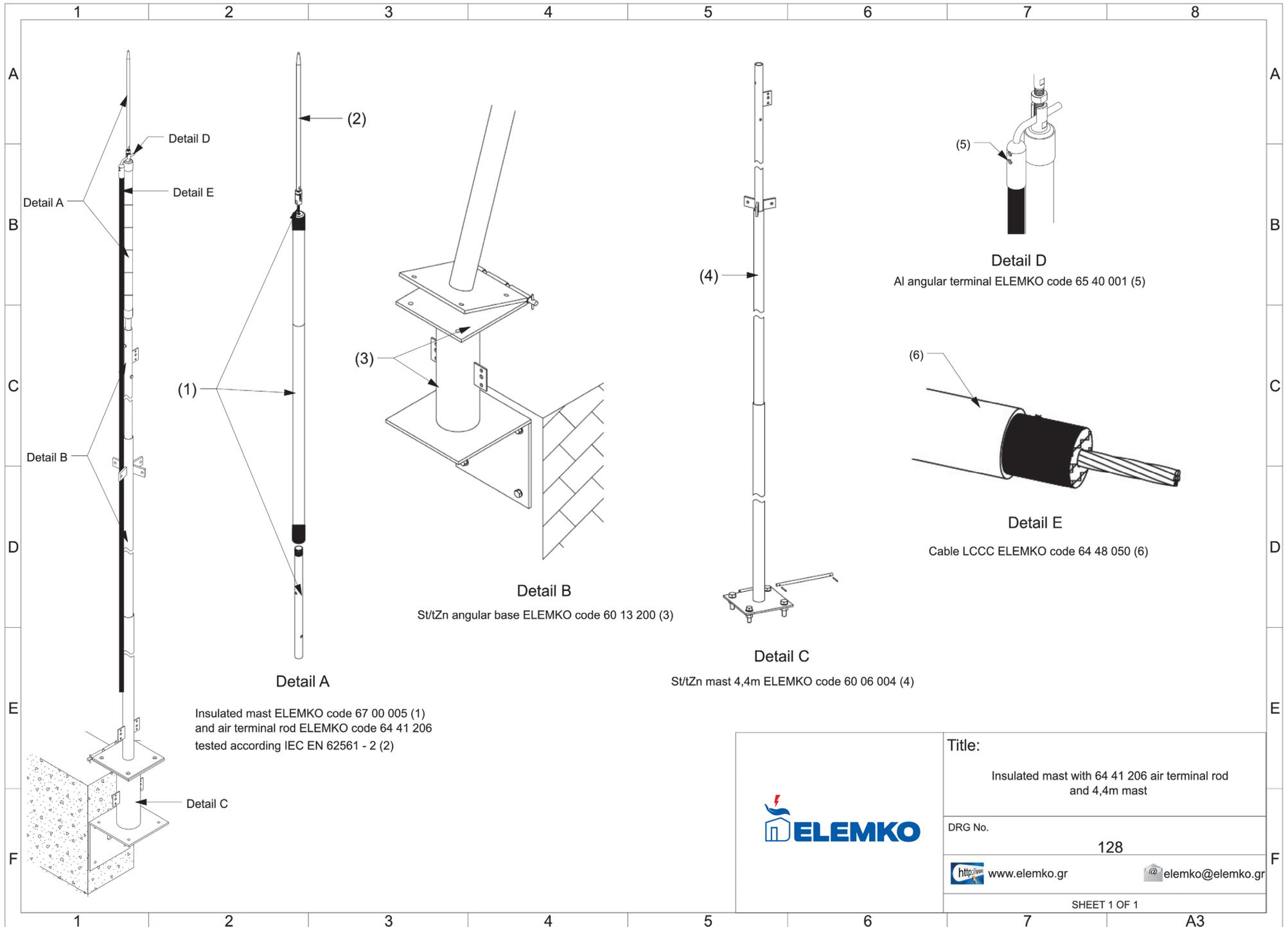
DRG NO.
082-2

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SHEET 1 OF 1



All dimensions in mm



Insulated mast ELEMKO code 67 00 005 (1)
 and air terminal rod ELEMKO code 64 41 206
 tested according IEC EN 62561 - 2 (2)

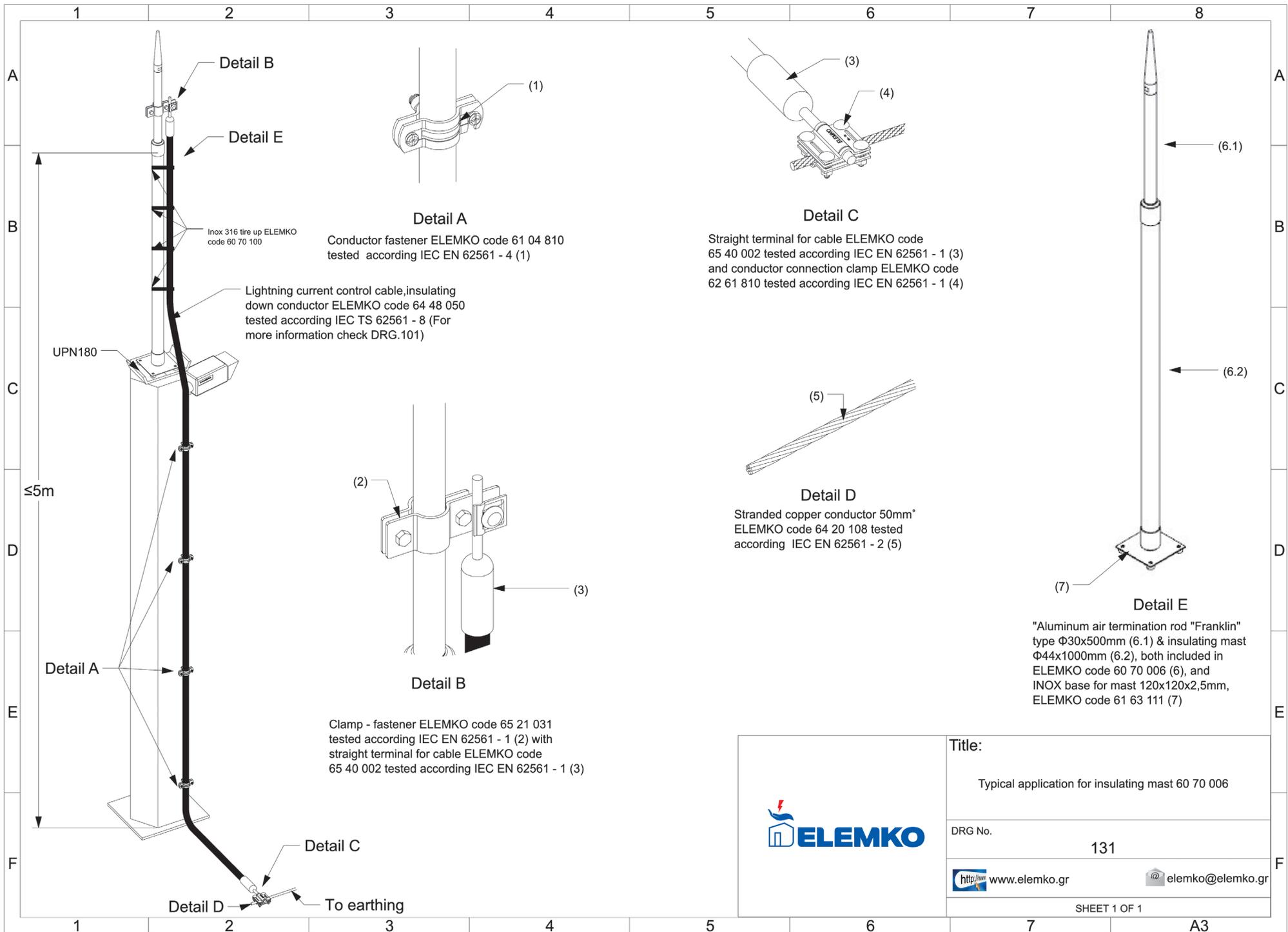
St/tZn angular base ELEMKO code 60 13 200 (3)

St/tZn mast 4,4m ELEMKO code 60 06 004 (4)

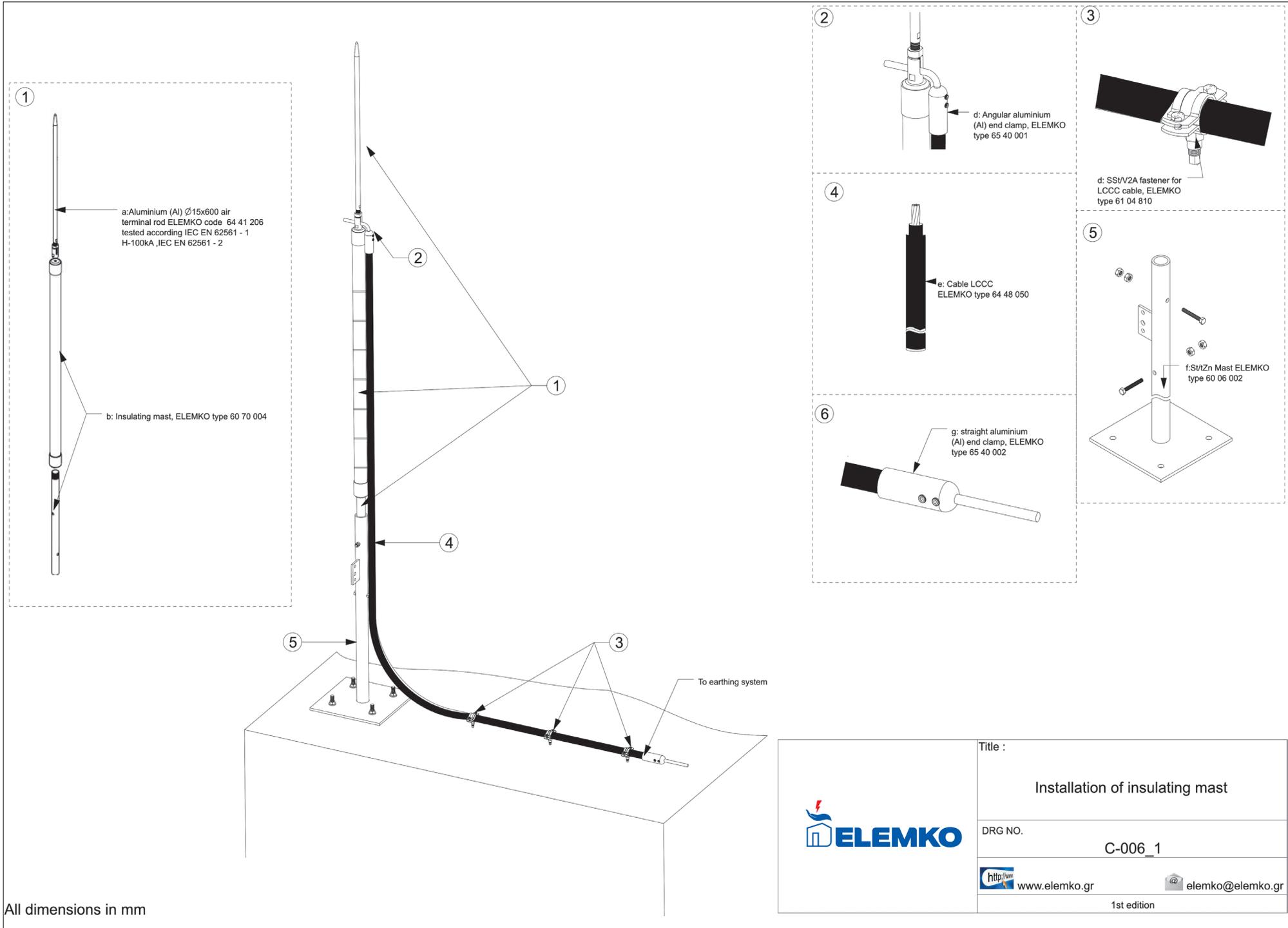
Al angular terminal ELEMKO code 65 40 001 (5)

Cable LCCC ELEMKO code 64 48 050 (6)

	Title:
	Insulated mast with 64 41 206 air terminal rod and 4,4m mast
	DRG No.
	128
	http://www.elemko.gr elemko@elemko.gr
SHEET 1 OF 1	

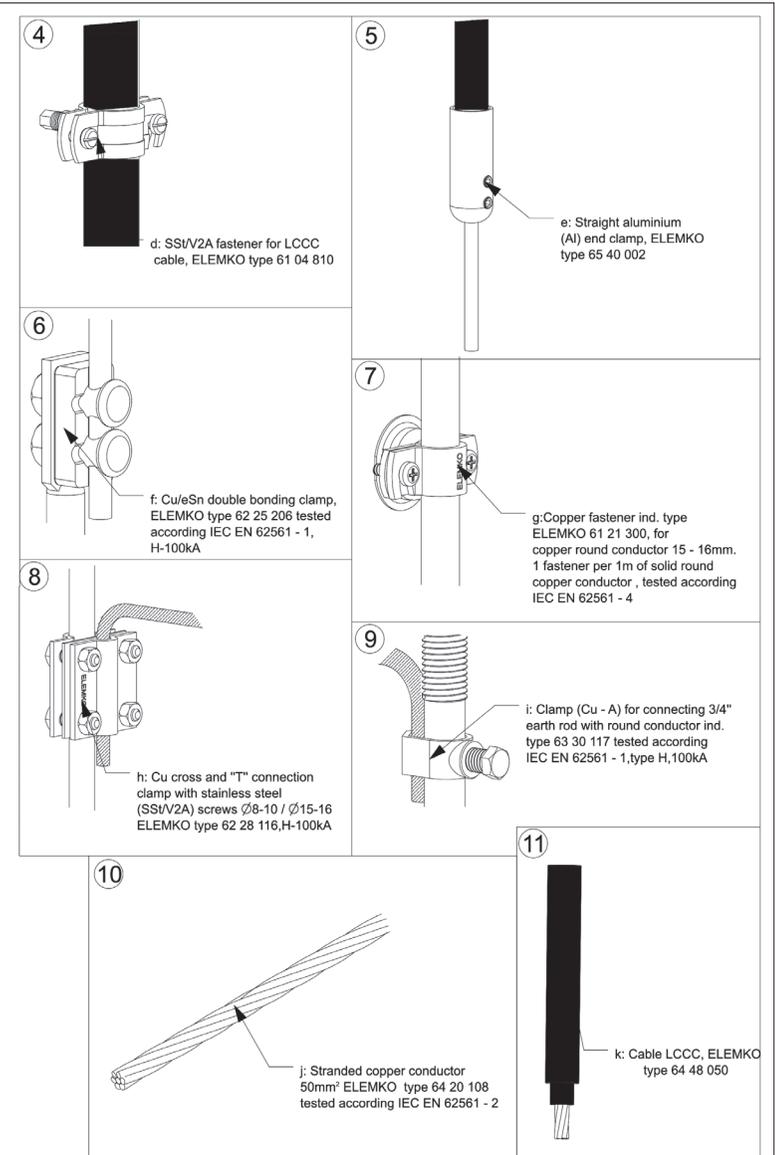
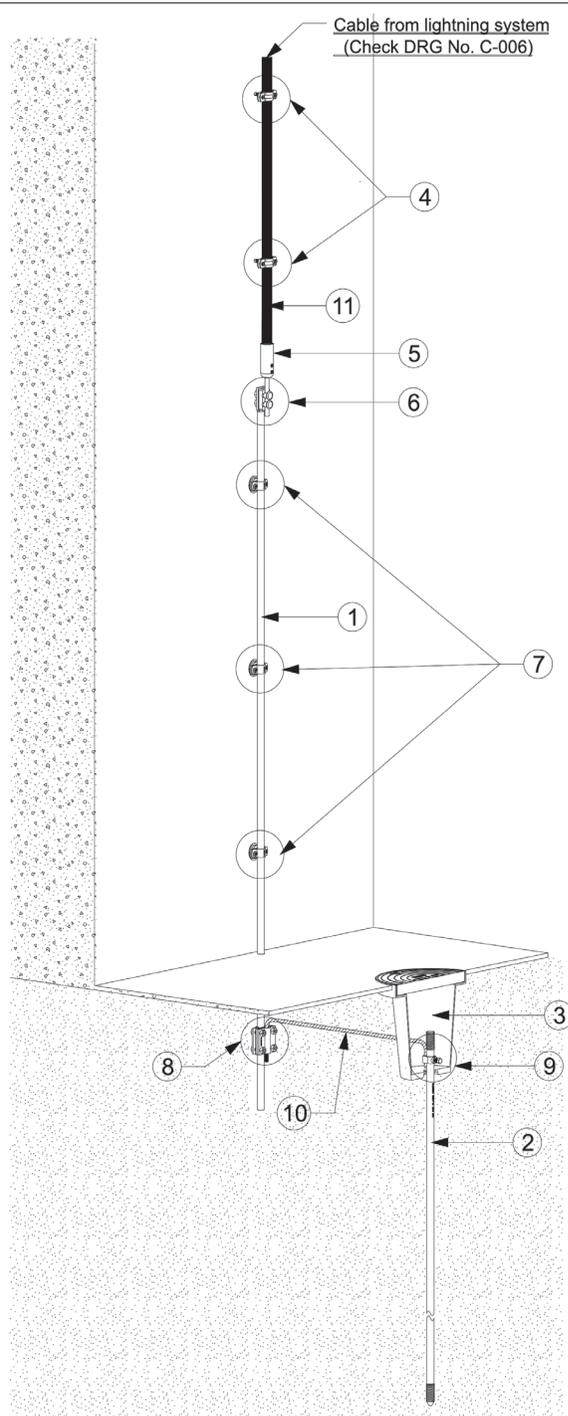
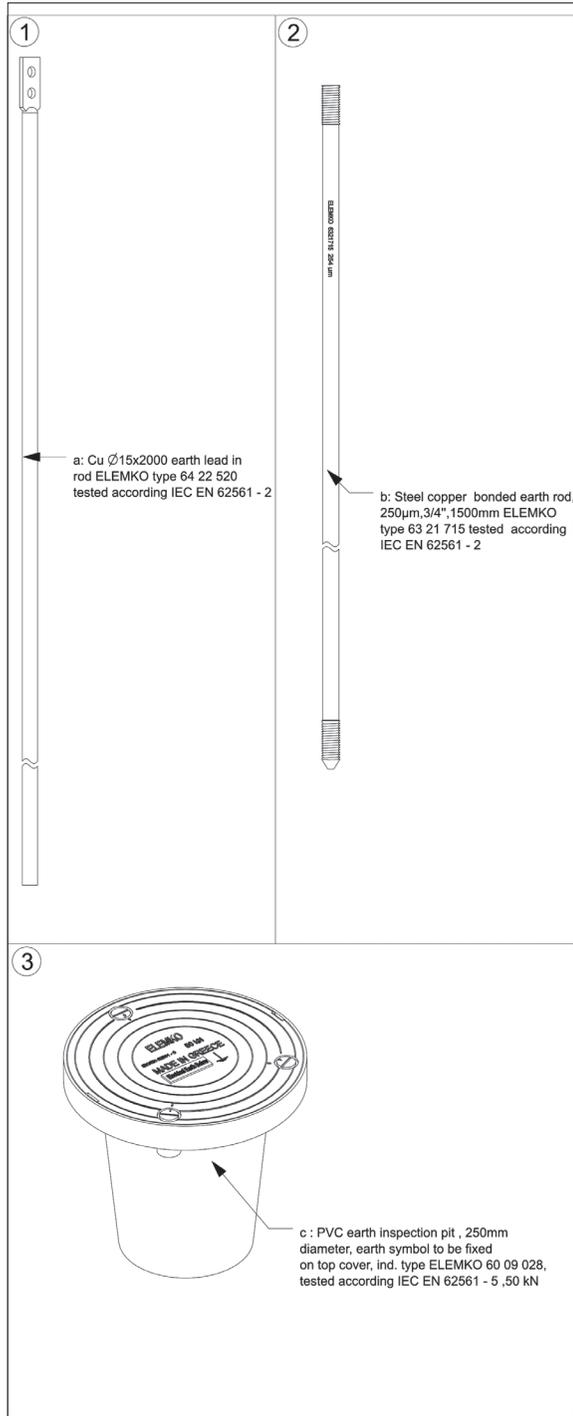


	Title:
	Typical application for insulating mast 60 70 006
	DRG No.
	131
	http://www.elemko.gr
	elemko@elemko.gr
SHEET 1 OF 1	



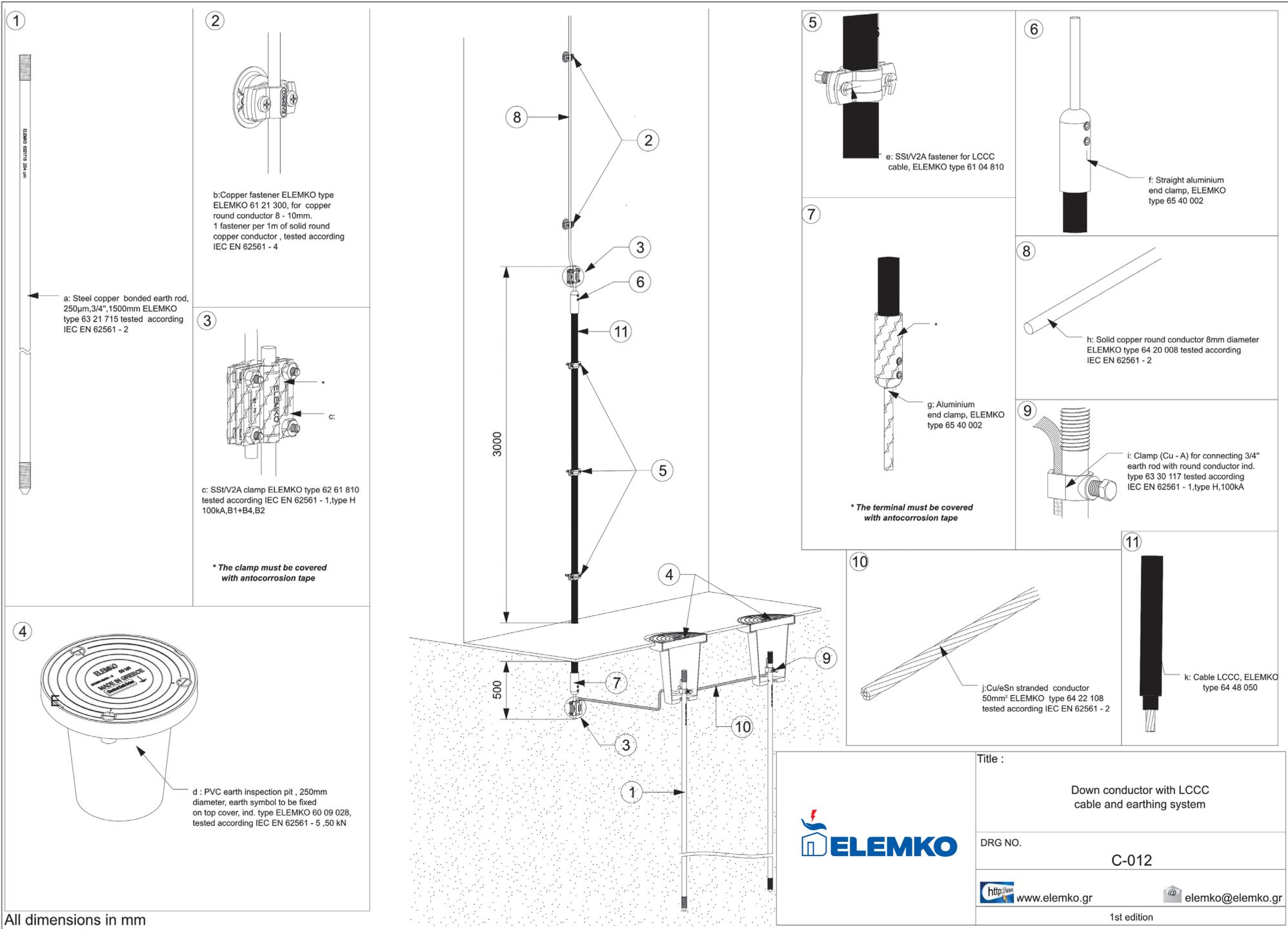
All dimensions in mm

	Title :	Installation of insulating mast
	DRG NO.	C-006_1
	http://www.elemko.gr	elemko@elemko.gr
	1st edition	



	Title :	Down conductor with LCCC cable and earthing system
	DRG NO.	C-007
	http://www.elemko.gr	elemko@elemko.gr
	1st edition	

All dimensions in mm



1
a: Steel copper bonded earth rod, 250µm, 3/4", 1500mm ELEMKO type 63 21 715 tested according IEC EN 62561 - 2

2
b: Copper fastener ELEMKO type ELEMKO 61 21 300, for copper round conductor 8 - 10mm. 1 fastener per 1m of solid round copper conductor, tested according IEC EN 62561 - 4

3
c: SSV2A clamp ELEMKO type 62 61 810 tested according IEC EN 62561 - 1, type H 100kA, B1+B4, B2

* The clamp must be covered with anticorrosion tape

4
d: PVC earth inspection pit, 250mm diameter, earth symbol to be fixed on top cover, ind. type ELEMKO 60 09 028, tested according IEC EN 62561 - 5, 50 kN

All dimensions in mm

5
e: SSV2A fastener for LCCC cable, ELEMKO type 61 04 810

6
f: Straight aluminium end clamp, ELEMKO type 65 40 002

7
g: Aluminium end clamp, ELEMKO type 65 40 002

* The terminal must be covered with anticorrosion tape

8
h: Solid copper round conductor 8mm diameter ELEMKO type 64 20 008 tested according IEC EN 62561 - 2

9
i: Clamp (Cu - A) for connecting 3/4" earth rod with round conductor ind. type 63 30 117 tested according IEC EN 62561 - 1, type H, 100kA

10
j: Cu/eSn stranded conductor 50mm² ELEMKO type 64 22 108 tested according IEC EN 62561 - 2

11
k: Cable LCCC, ELEMKO type 64 48 050

ELEMKO

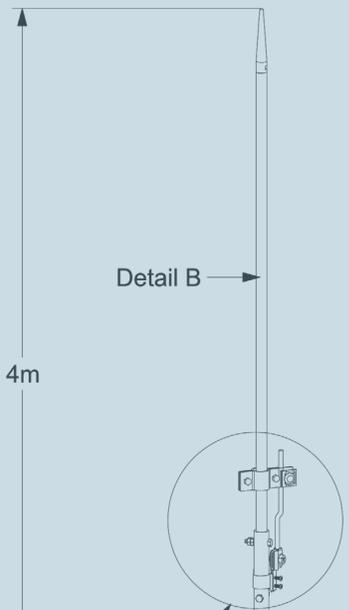
Title :
Down conductor with LCCC cable and earthing system

DRG NO.
C-012

<http://www.elemko.gr> elemko@elemko.gr

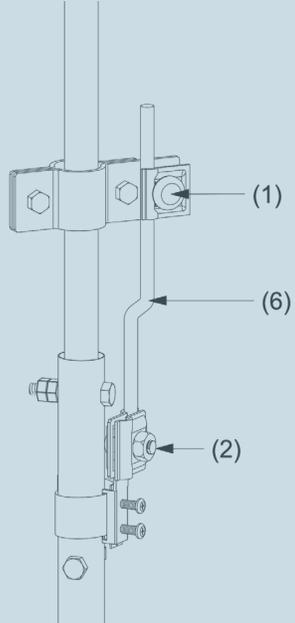
1st edition

Installation guide



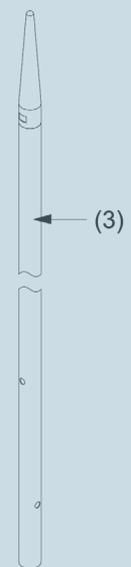
Detail B

4m



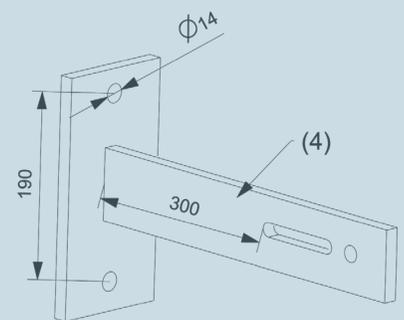
Detail A

Connection between parts of the mast using franklin connector ind.type ELEMKO 65 21 031 (1) and adjustable pipe clamp ind.type ELEMKO 65 62 203 (2) and round copper conductor ind.type ELEMKO 64 20 008 (6)



Detail B

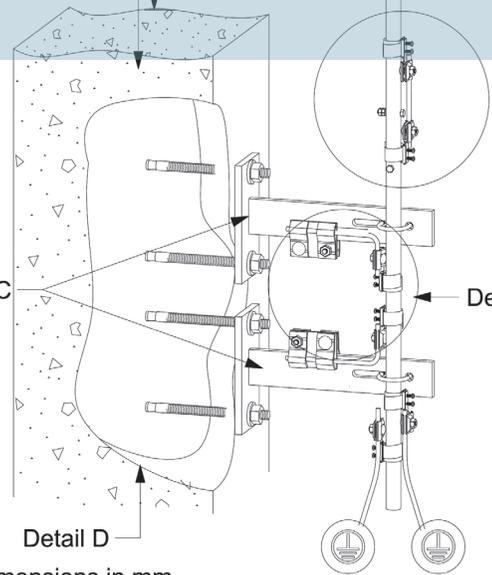
Franklin rod $\varnothing 30 \times 2850$ ind.type ELEMKO 64 21 112 (3)



Detail C

Bolt brackets ind.type ELEMKO 60 13 005 (4)

Used to heavy anchors to fix each brackets to the concrete with to two decompression screws

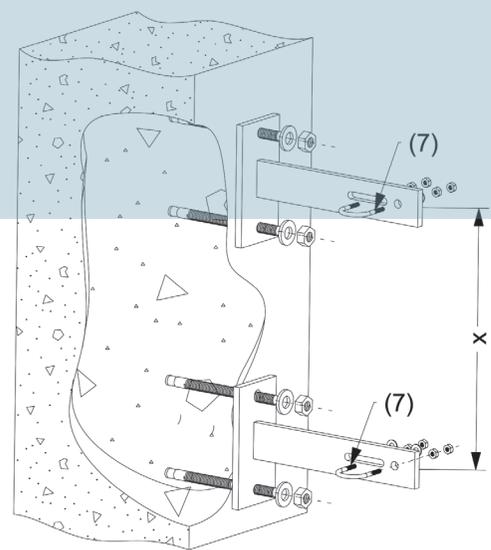


Detail C

Detail E

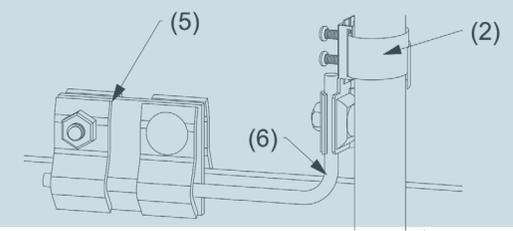
Detail D

All dimensions in mm



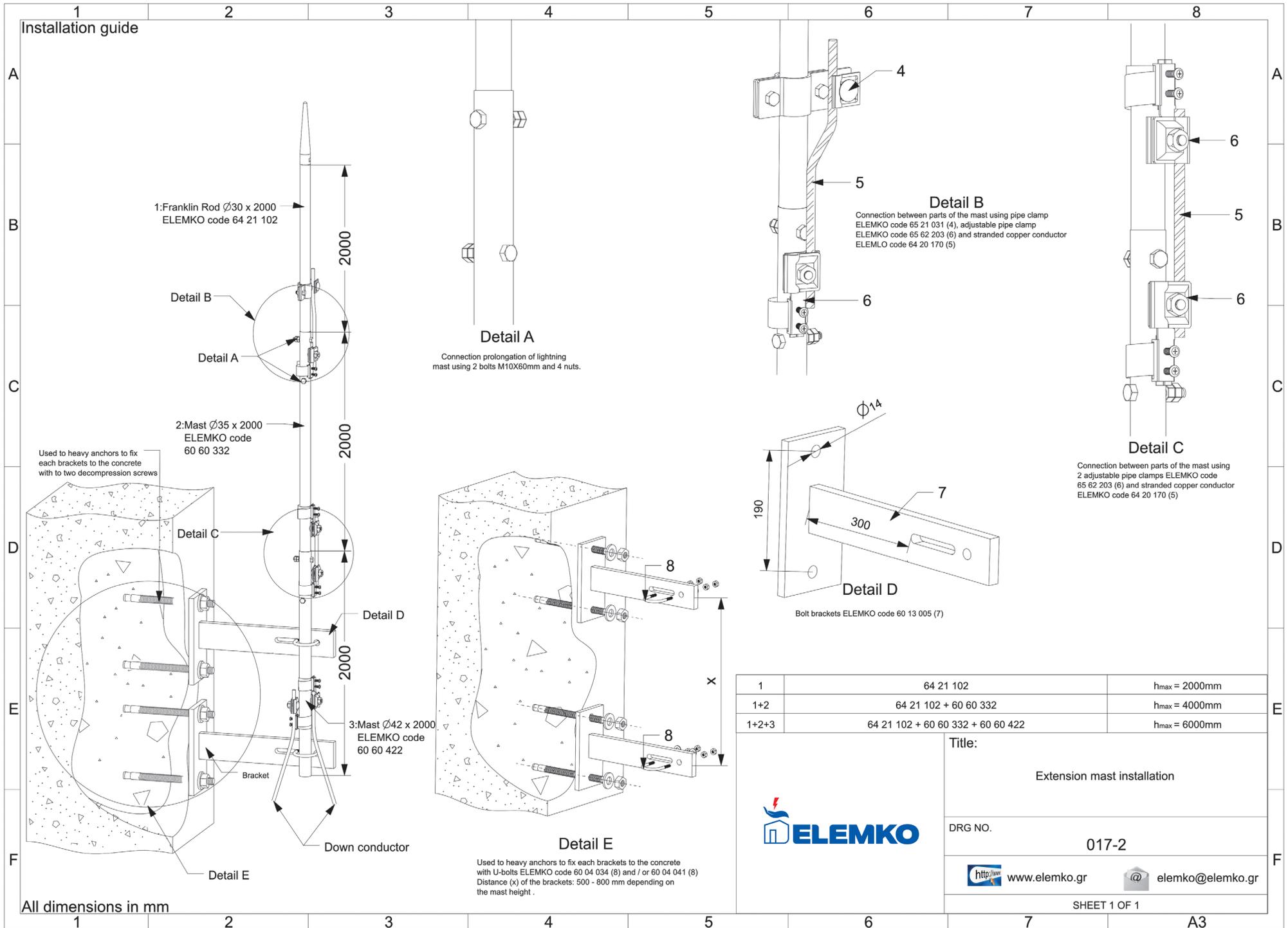
Detail D

Used to heavy anchors to fix each brackets to the concrete with U-bolts ind.type ELEMKO 60 64 041 for 1 1/4" tube Distance (x) of the brackets: 500 - 800 mm depending on the mast height .



MASTS VARIOUS





1	64 21 102	$h_{max} = 2000\text{mm}$
1+2	64 21 102 + 60 60 332	$h_{max} = 4000\text{mm}$
1+2+3	64 21 102 + 60 60 332 + 60 60 422	$h_{max} = 6000\text{mm}$

ELEMKO

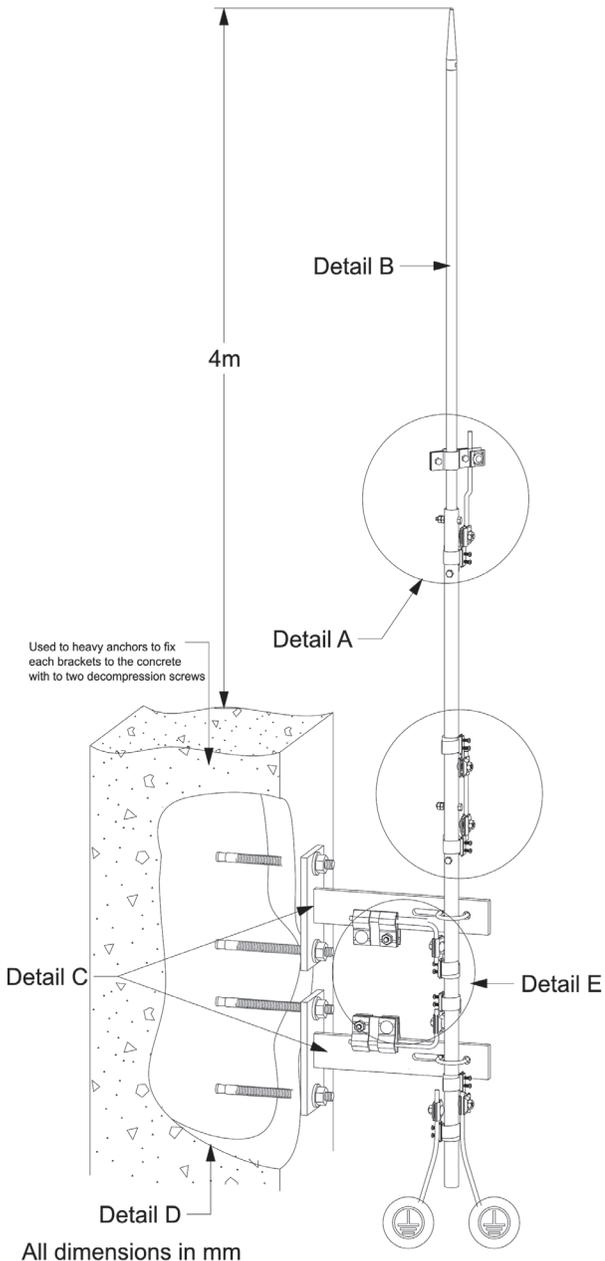
Title:
Extension mast installation

DRG NO.
017-2

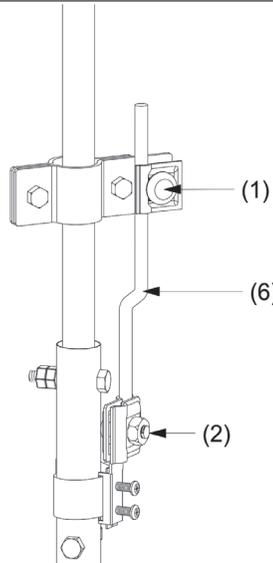
<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

Installation guide

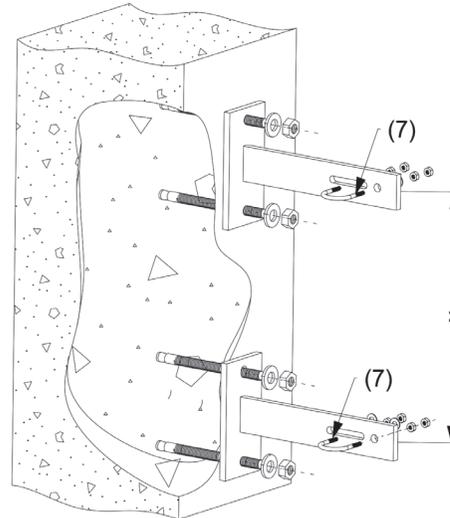


All dimensions in mm



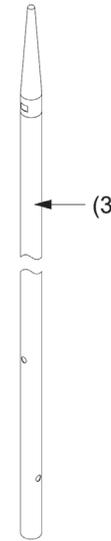
Detail A

Connection between parts of the mast using franklin connector ind.type ELEMKO 65 21 031 (1) and adjustable pipe clamp ind.type ELEMKO 65 62 203 (2) and round copper conductor ind.type ELEMKO 64 20 008 (6)



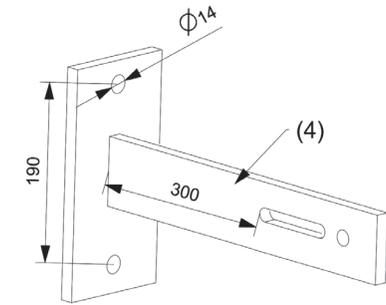
Detail D

Used to heavy anchors to fix each brackets to the concrete with U-bolts ind.type ELEMKO 60 64 041 for 1 1/4" tube Distance (x) of the brackets: 500 - 800 mm depending on the mast height .



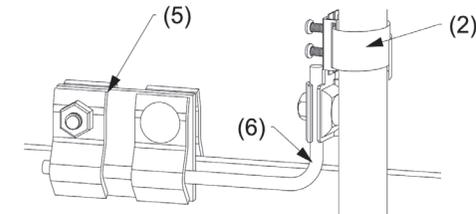
Detail B

Franklin rod $\varnothing 30 \times 2850$ ind.type ELEMKO 64 21 112 (3)



Detail C

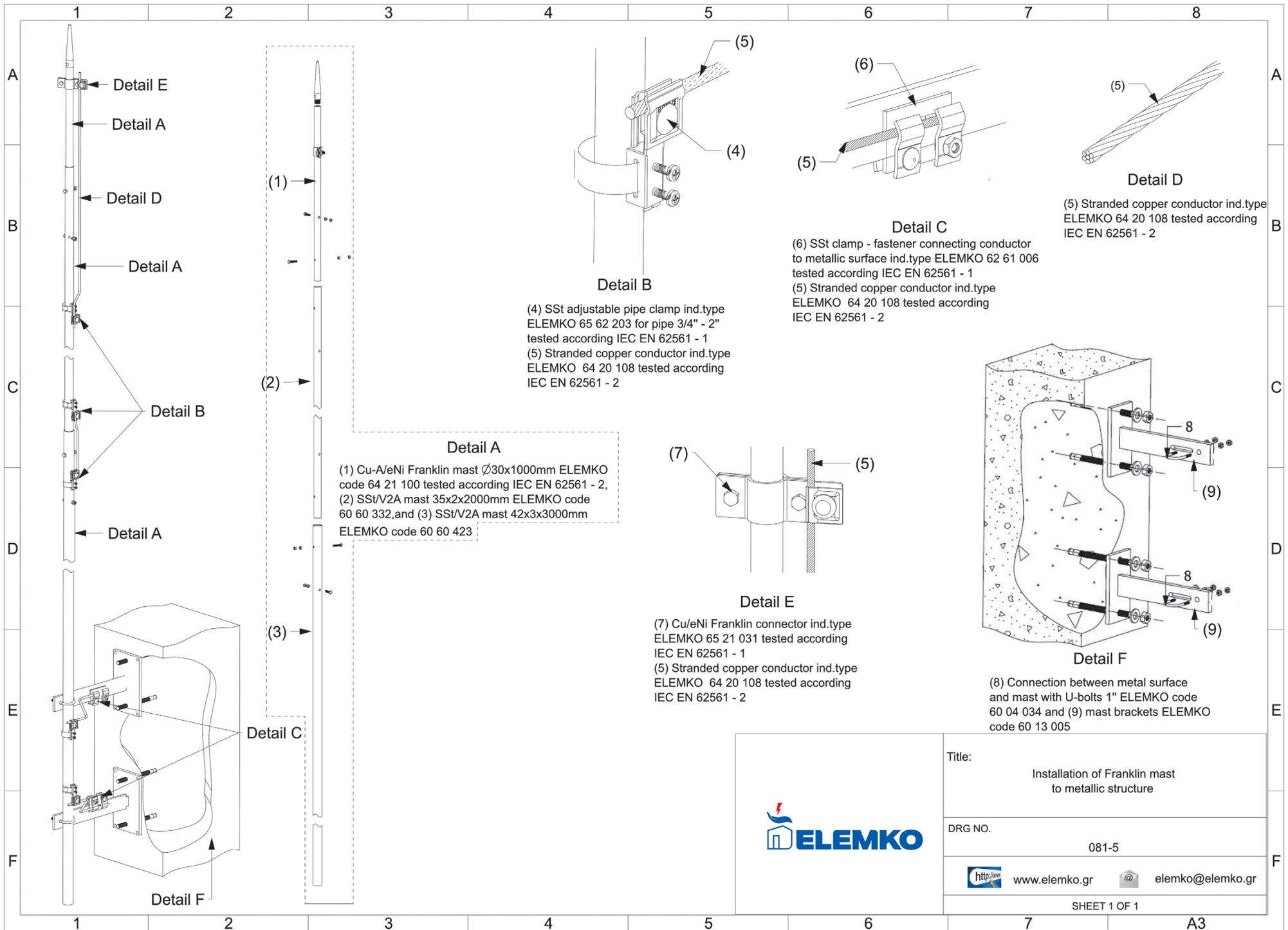
Bolt brackets ind.type ELEMKO 60 13 005 (4)

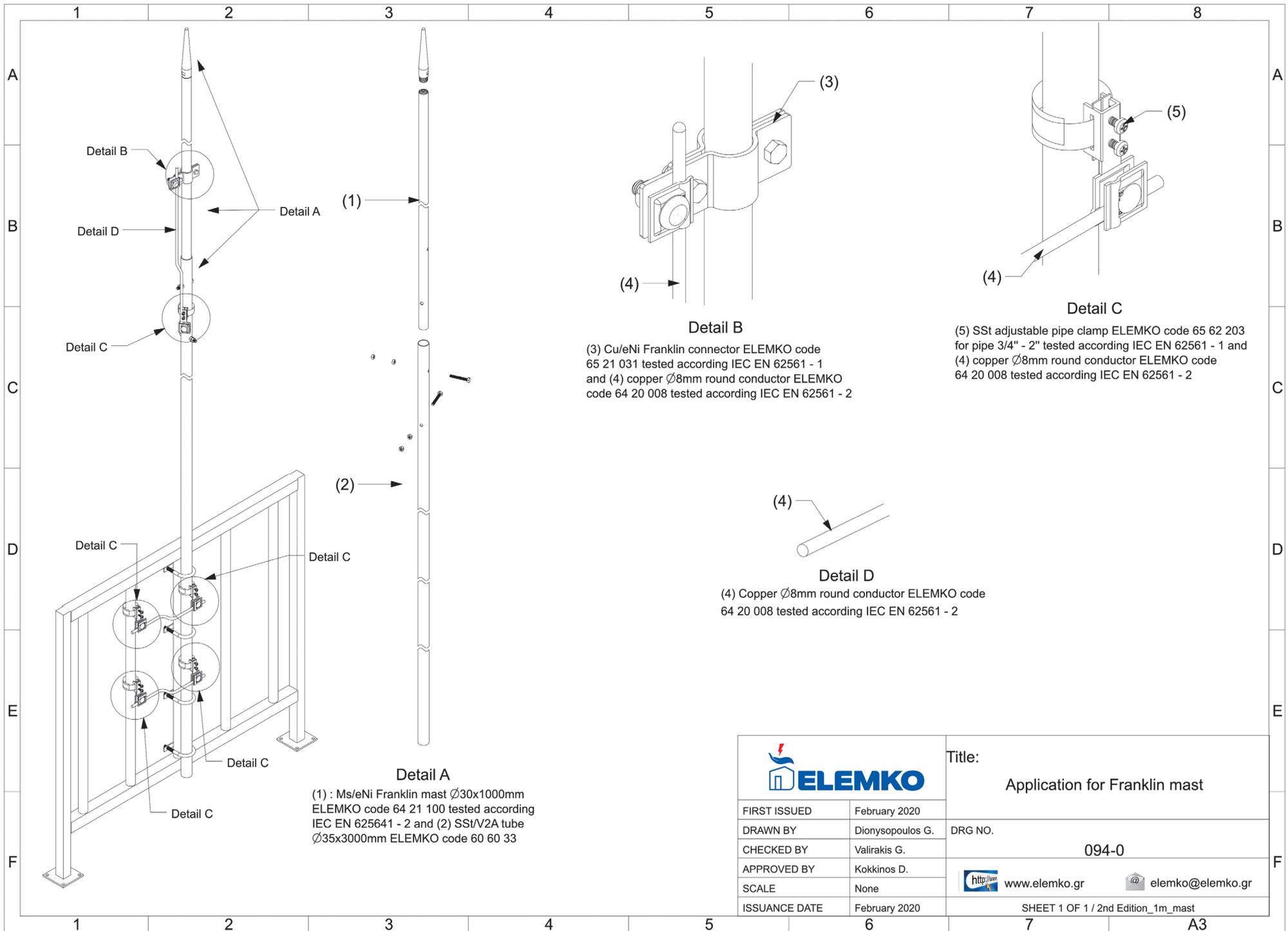


Detail E

Earthing mast to brackets with adjustable pipe clamp ind.type ELEMKO 65 62 203 (2), copper round conductor ind.type ELEMKO 64 20 008 (6) and clamp - fastener ind.type ELEMKO 62 61 006 (5)

	Title:	
	Extension mast installation	
	DRG NO.	017-6
	http://www.elemko.gr	elemko@elemko.gr
SHEET 1 OF 1		





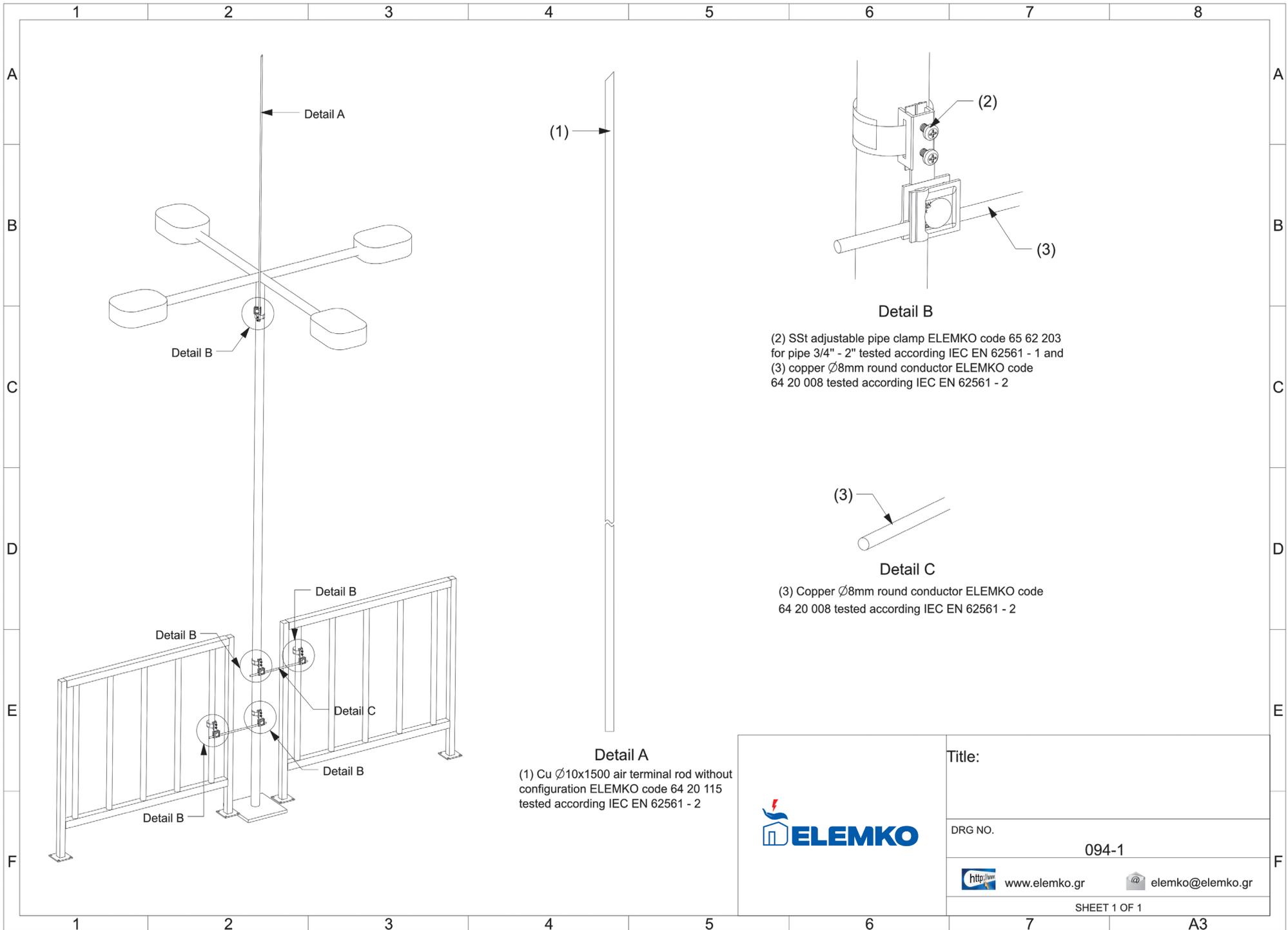
Detail A
 (1) : Ms/eNi Franklin mast Ø30x1000mm
 ELEMKO code 64 21 100 tested according
 IEC EN 625641 - 2 and (2) SS1/V2A tube
 Ø35x3000mm ELEMKO code 60 60 33

Detail B
 (3) Cu/eNi Franklin connector ELEMKO code
 65 21 031 tested according IEC EN 62561 - 1
 and (4) copper Ø8mm round conductor ELEMKO
 code 64 20 008 tested according IEC EN 62561 - 2

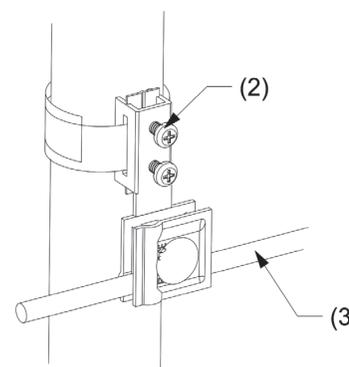
Detail C
 (5) SSt adjustable pipe clamp ELEMKO code 65 62 203
 for pipe 3/4" - 2" tested according IEC EN 62561 - 1 and
 (4) copper Ø8mm round conductor ELEMKO code
 64 20 008 tested according IEC EN 62561 - 2

Detail D
 (4) Copper Ø8mm round conductor ELEMKO code
 64 20 008 tested according IEC EN 62561 - 2

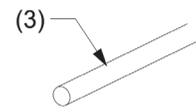
		Title:	
		Application for Franklin mast	
FIRST ISSUED	February 2020	DRG NO.	
DRAWN BY	Dionysopoulos G.		
CHECKED BY	Valirakis G.	094-0	
APPROVED BY	Kokkinos D.	 www.elemko.gr  elemko@elemko.gr	
SCALE	None		
ISSUANCE DATE	February 2020	SHEET 1 OF 1 / 2nd Edition_1m_mast	



Detail A
 (1) Cu \varnothing 10x1500 air terminal rod without configuration ELEMKO code 64 20 115 tested according to IEC EN 62561 - 2

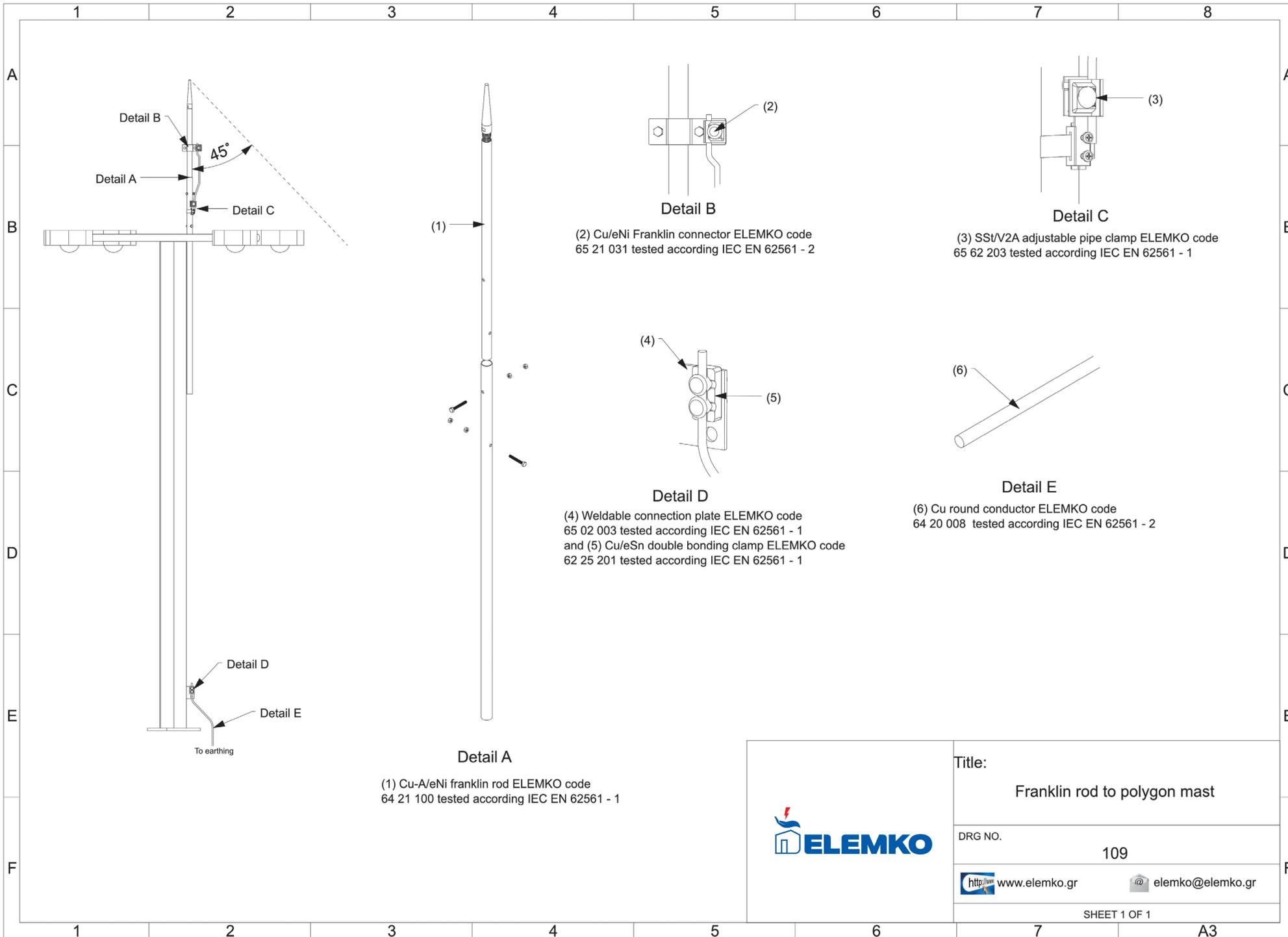


Detail B
 (2) SSt adjustable pipe clamp ELEMKO code 65 62 203 for pipe 3/4" - 2" tested according to IEC EN 62561 - 1 and
 (3) copper \varnothing 8mm round conductor ELEMKO code 64 20 008 tested according to IEC EN 62561 - 2

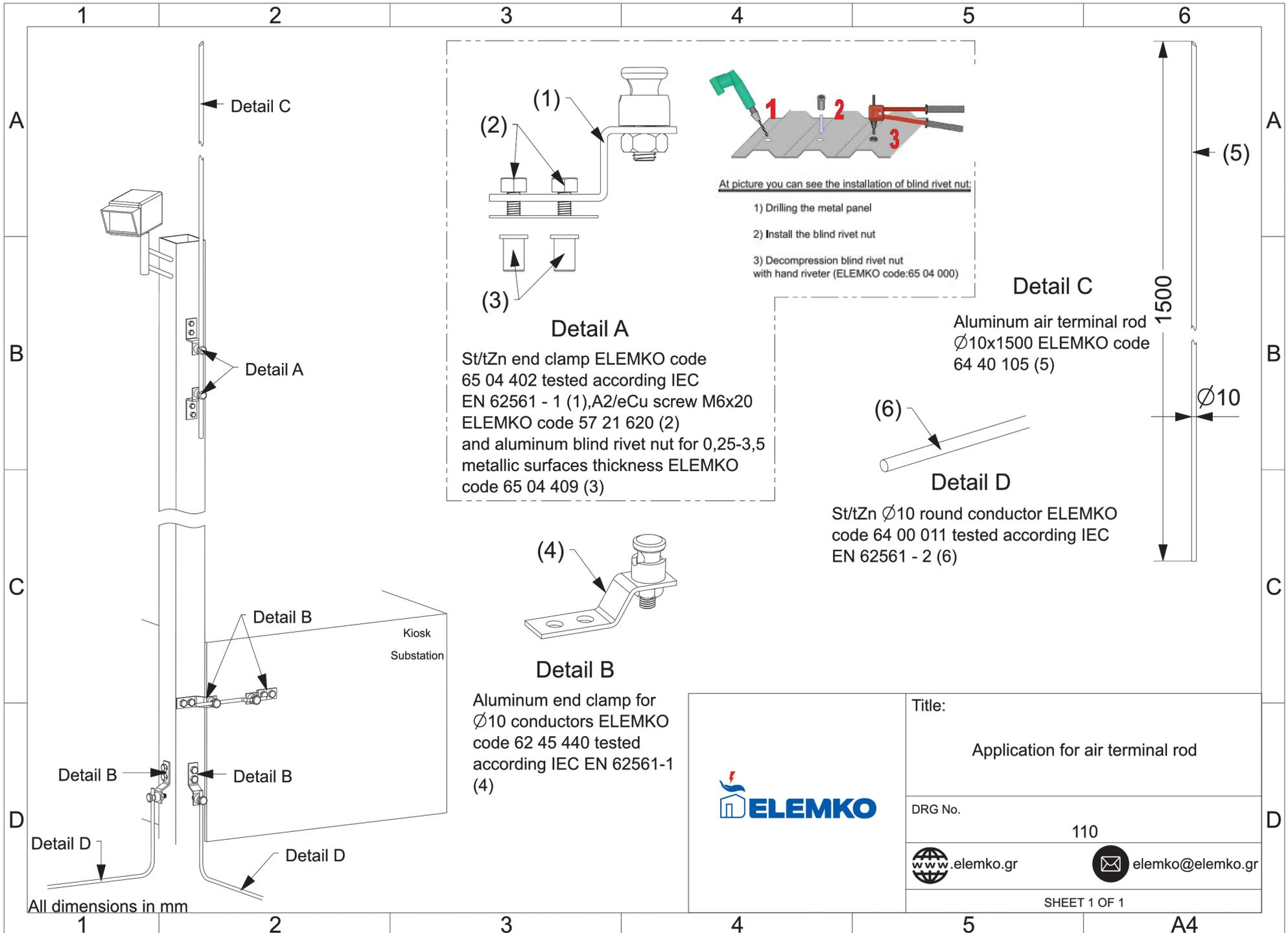


Detail C
 (3) Copper \varnothing 8mm round conductor ELEMKO code 64 20 008 tested according to IEC EN 62561 - 2

	Title:	
	DRG NO.	094-1
	http://www.elemko.gr	 elemko@elemko.gr
	SHEET 1 OF 1	



	Title:	Franklin rod to polygon mast
	DRG NO.	109
	http://www.elemko.gr  elemko@elemko.gr	
	SHEET 1 OF 1	



Detail A

St/tZn end clamp ELEMKO code 65 04 402 tested according IEC EN 62561 - 1 (1), A2/eCu screw M6x20 ELEMKO code 57 21 620 (2) and aluminum blind rivet nut for 0,25-3,5 metallic surfaces thickness ELEMKO code 65 04 409 (3)

Detail B

Aluminum end clamp for Ø10 conductors ELEMKO code 62 45 440 tested according IEC EN 62561-1 (4)

Detail C

Aluminum air terminal rod Ø10x1500 ELEMKO code 64 40 105 (5)

Detail D

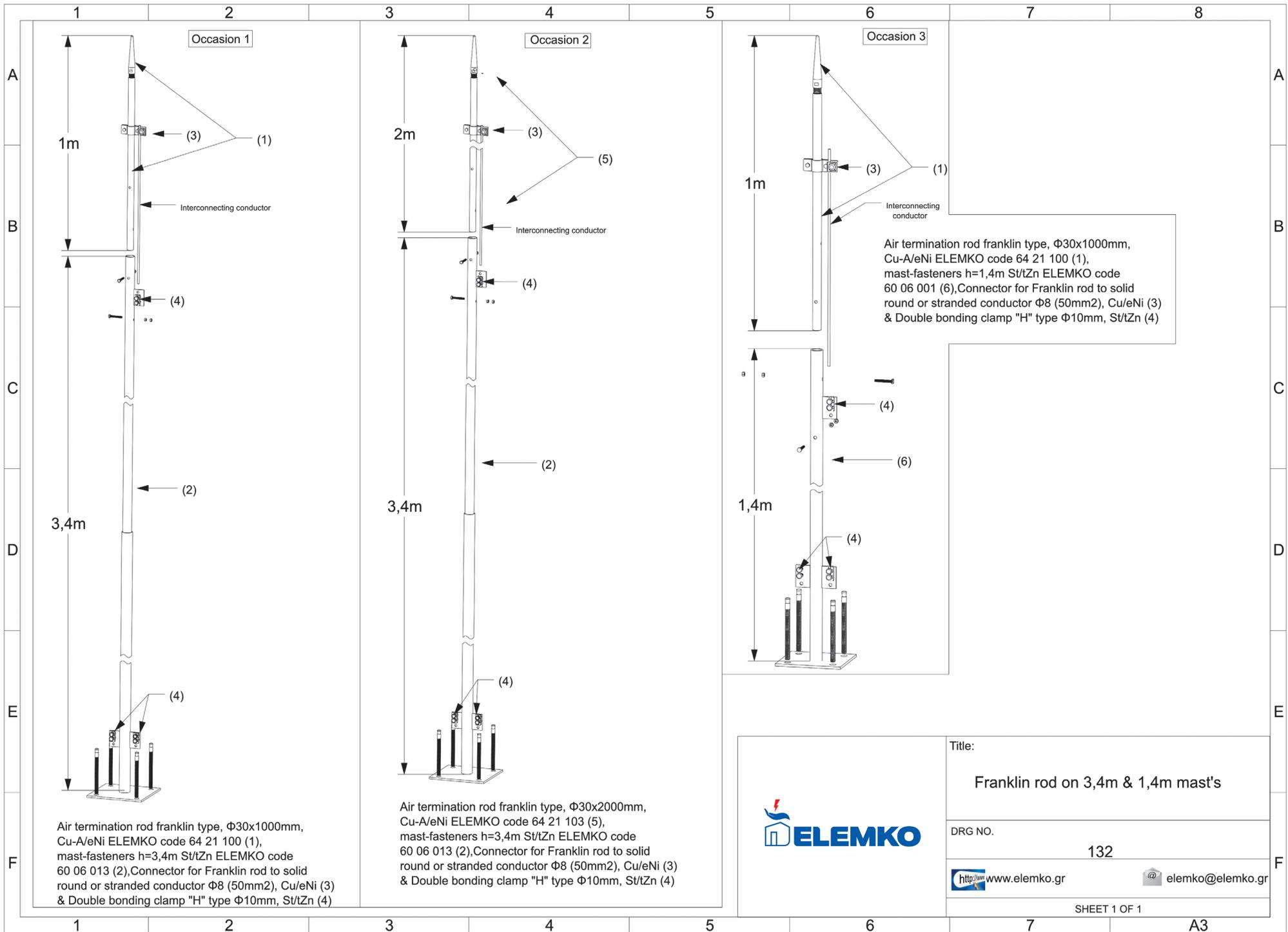
St/tZn Ø10 round conductor ELEMKO code 64 00 011 tested according IEC EN 62561 - 2 (6)

Installation Process:

At picture you can see the installation of blind rivet nut:

- 1) Drilling the metal panel
- 2) Install the blind rivet nut
- 3) Decompression blind rivet nut with hand riveter (ELEMKO code:65 04 000)

	Title:	
	Application for air terminal rod	
	DRG No.	110
	elemko.gr elemko@elemko.gr	SHEET 1 OF 1



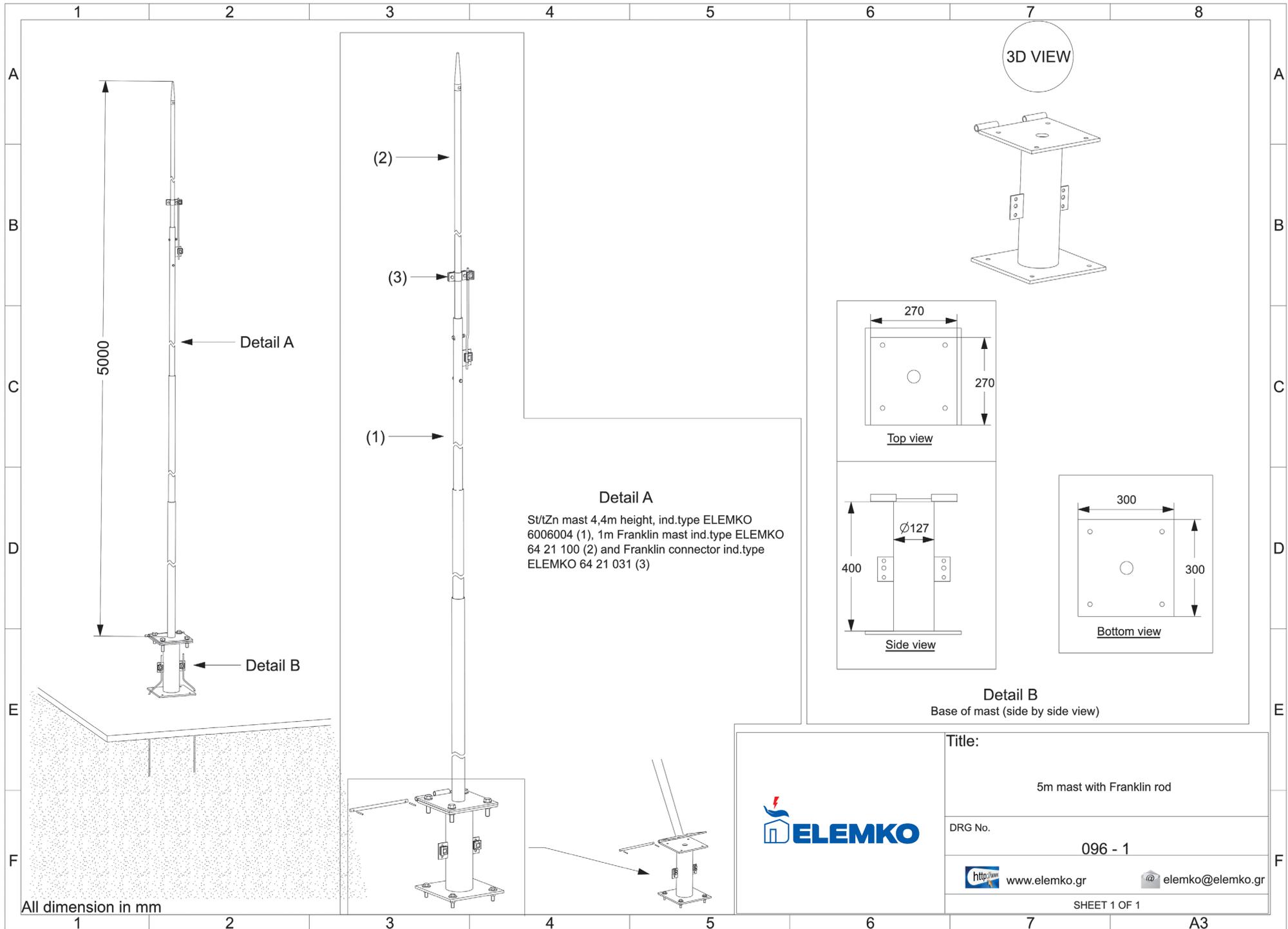
ELEMKO

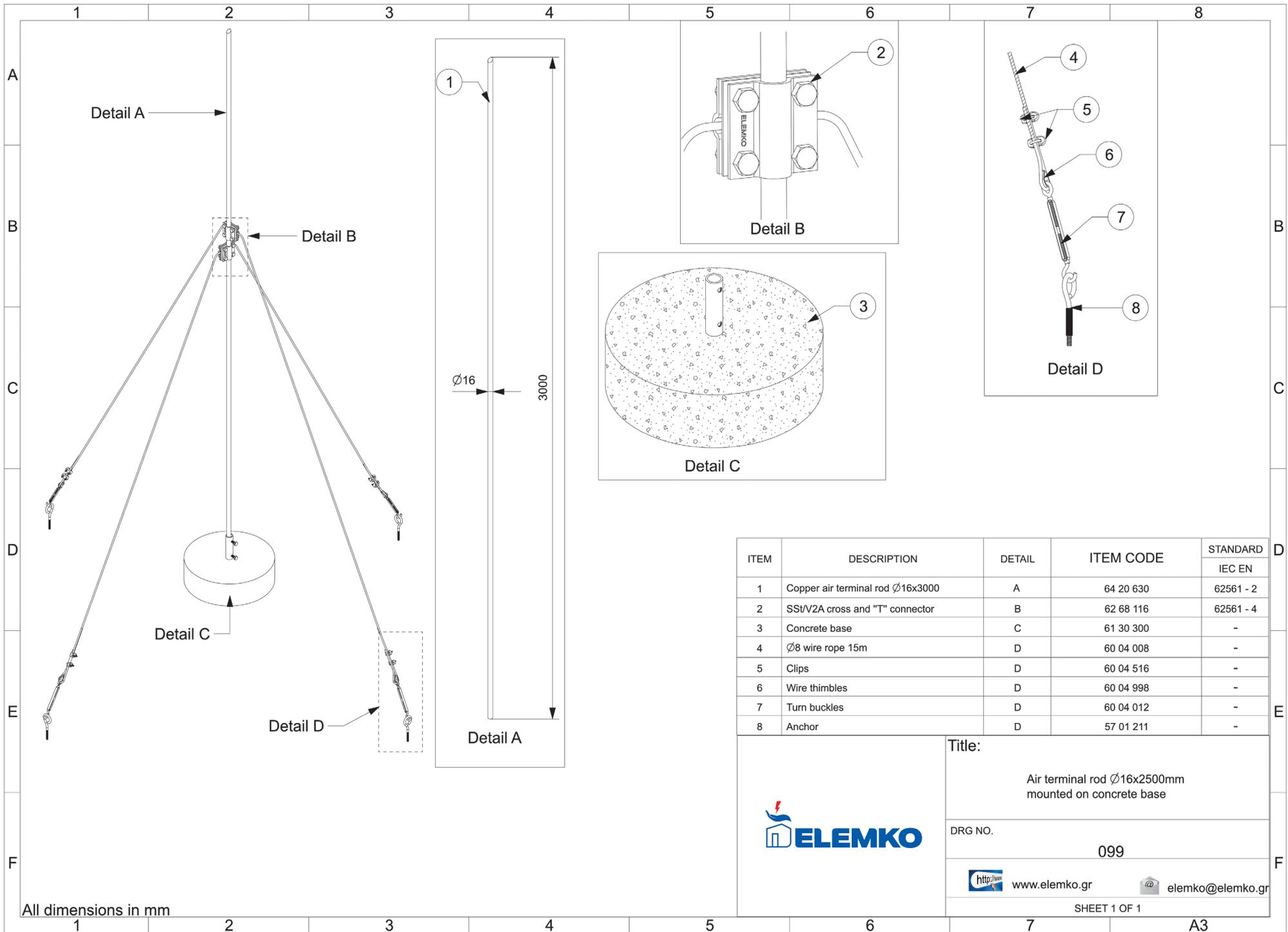
Title:
Franklin rod on 3,4m & 1,4m mast's

DRG NO.
132

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SHEET 1 OF 1





ITEM	DESCRIPTION	DETAIL	ITEM CODE	STANDARD
				IEC EN
1	Copper air terminal rod $\varnothing 16 \times 3000$	A	64 20 630	62561 - 2
2	SSt/V2A cross and "T" connector	B	62 68 116	62561 - 4
3	Concrete base	C	61 30 300	-
4	$\varnothing 8$ wire rope 15m	D	60 04 008	-
5	Clips	D	60 04 516	-
6	Wire thimbles	D	60 04 998	-
7	Turn buckles	D	60 04 012	-
8	Anchor	D	57 01 211	-

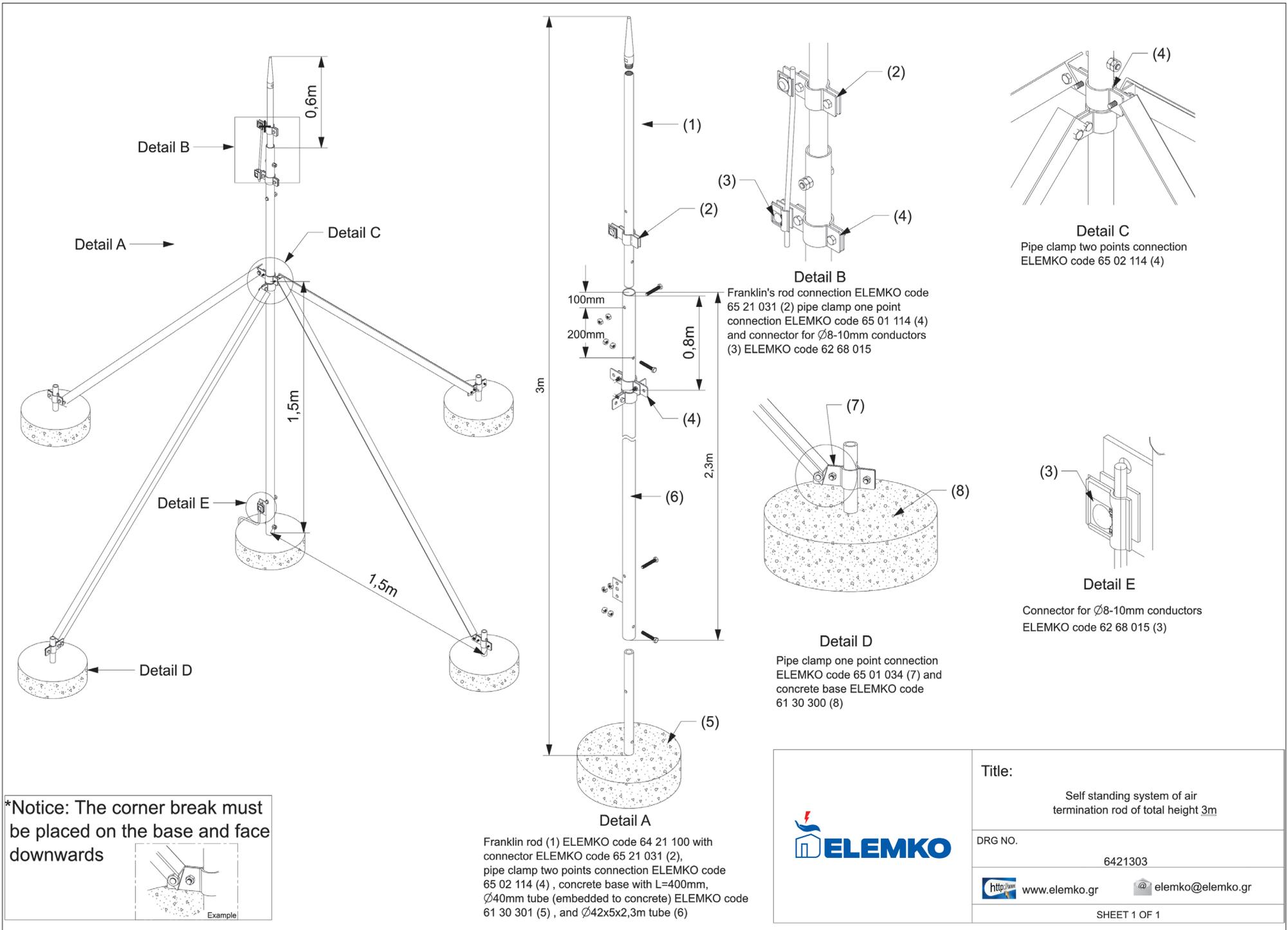
Title:
Air terminal rod $\varnothing 16 \times 2500$ mm mounted on concrete base

DRG NO.
099

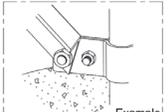
 <http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

All dimensions in mm



*Notice: The corner break must be placed on the base and face downwards



Example

Franklin rod (1) ELEMKO code 64 21 100 with connector ELEMKO code 65 21 031 (2), pipe clamp two points connection ELEMKO code 65 02 114 (4), concrete base with L=400mm, Ø40mm tube (embedded to concrete) ELEMKO code 61 30 301 (5), and Ø42x5x2,3m tube (6)

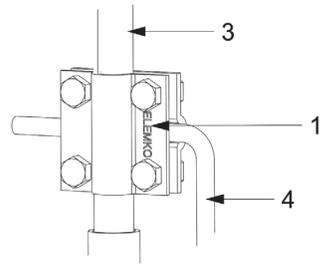
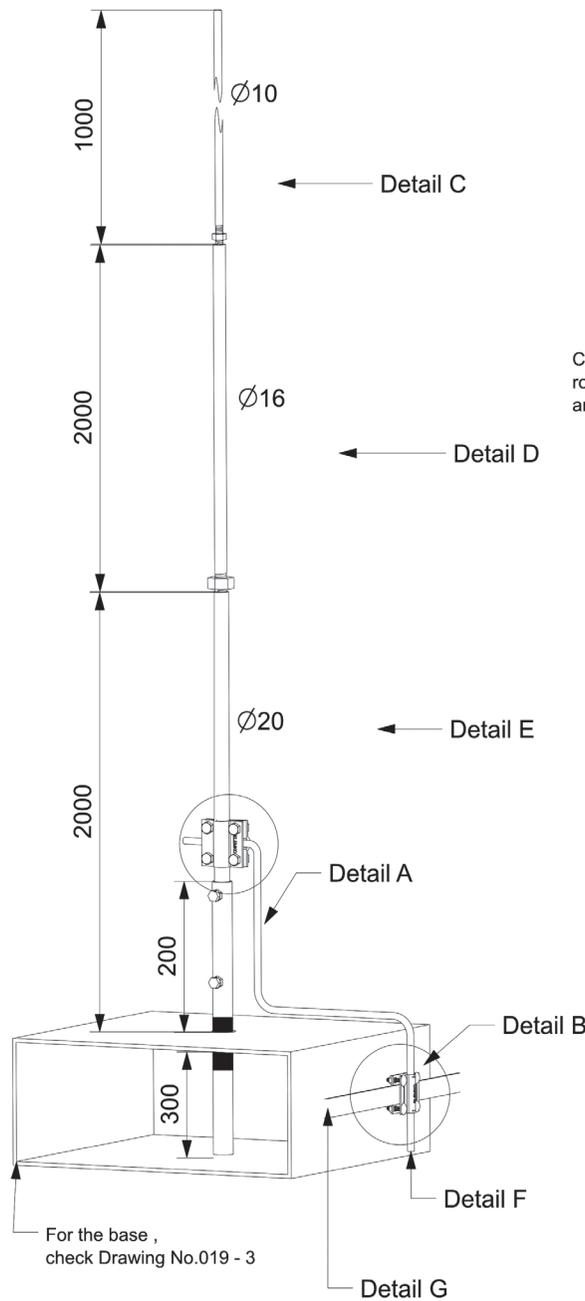
Franklin's rod connection ELEMKO code 65 21 031 (2) pipe clamp one point connection ELEMKO code 65 01 114 (4) and connector for Ø8-10mm conductors (3) ELEMKO code 62 68 015

Pipe clamp one point connection ELEMKO code 65 01 034 (7) and concrete base ELEMKO code 61 30 300 (8)

Detail C
Pipe clamp two points connection
ELEMKO code 65 02 114 (4)

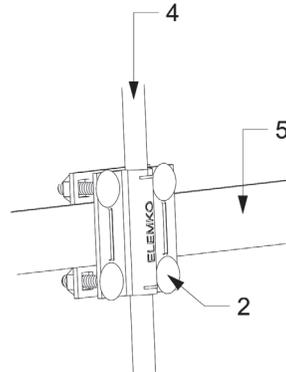
Detail E
Connector for Ø8-10mm conductors
ELEMKO code 62 68 015 (3)

	Title:	Self standing system of air termination rod of total height 3m
	DRG NO.	6421303
	http://www.elemko.gr  elemko@elemko.gr	
	SHEET 1 OF 1	



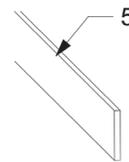
Detail A

Cross and "T" connection clamp (1)
round conductor (4)
and air terminal rod (3)



Detail B

Conductor connection clamp (2)
with round (4) and tape conductor (5)

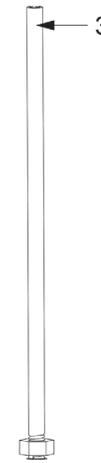


Detail G
Tape conductor (5)



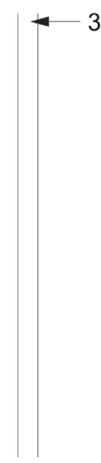
Detail C

Air terminal rod Ø10 (3)



Detail D

Air terminal rod Ø16 (3)



Detail E

Air terminal rod Ø20 (3)



Detail F
Round conductor (4)

Item	Description	Detail	Item number	Material	Standard
					IEC EN
1	Cross and "T" connector	A	62 08 016	St/tZn	62561 - 1
2	Conductor connection clamp	B	62 01 830	St/tZn	62561 - 1
3	Air terminal rod	A,C	Included in ELEMKO item code 64 40 500	Al	62561 - 2
		D			
		E			
4	Round conductor	A,B,F	64 00 011	St/tZn	62561 - 2
5	Tape conductor	B,G	64 01 133	St/tZn	62561 - 2
6	Stainless steel pipe	A	Included in ELEMKO item code 64 40 500	SS	62561 - 2



TITLE :

Use of air termination rod ELEMKO code 64 40 500

DRG NO.

019 - 2



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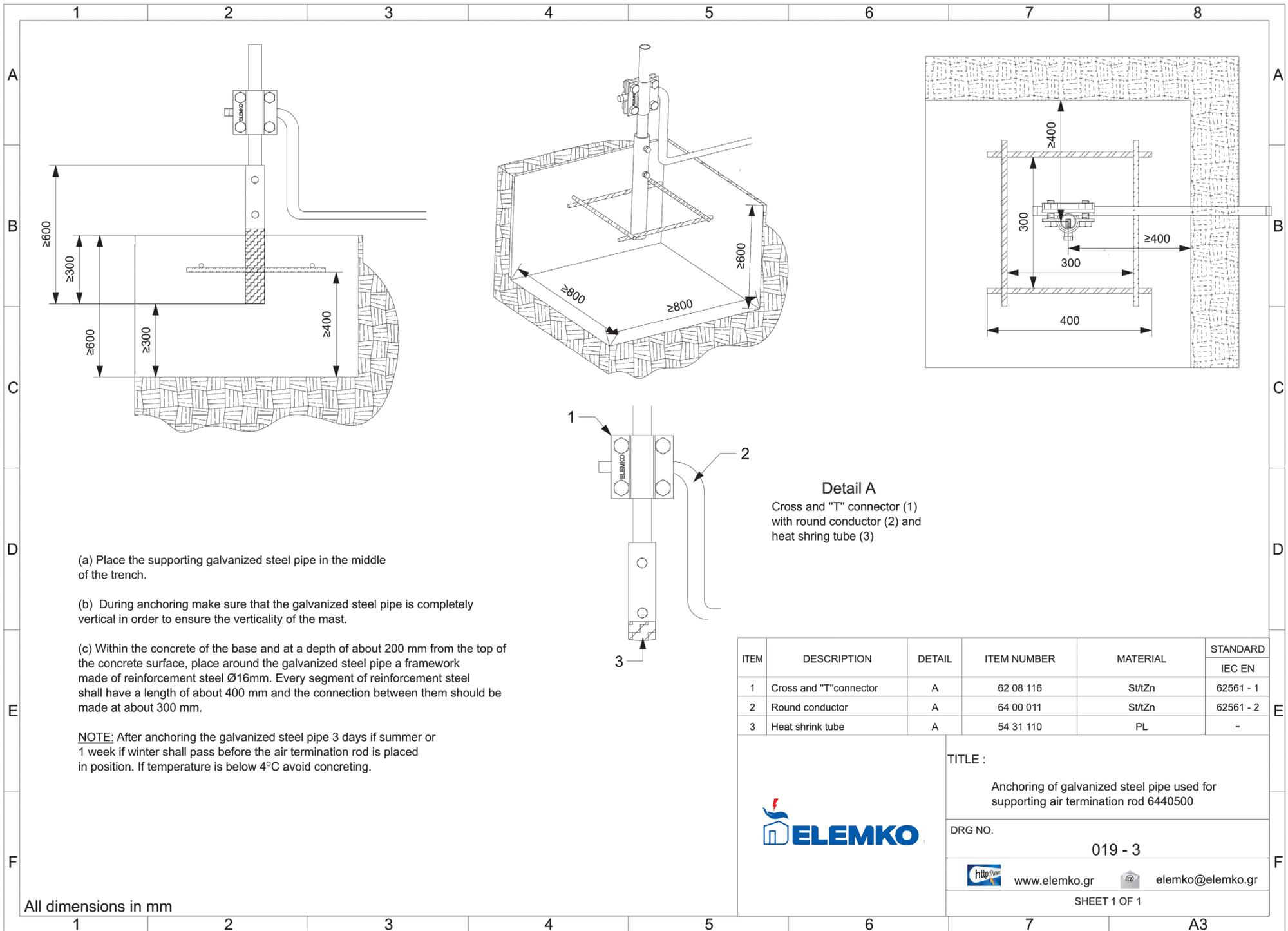


elemko@elemko.gr

SHEET 1 OF 1

All dimensions in mm

A3



- (a) Place the supporting galvanized steel pipe in the middle of the trench.
- (b) During anchoring make sure that the galvanized steel pipe is completely vertical in order to ensure the verticality of the mast.
- (c) Within the concrete of the base and at a depth of about 200 mm from the top of the concrete surface, place around the galvanized steel pipe a framework made of reinforcement steel Ø16mm. Every segment of reinforcement steel shall have a length of about 400 mm and the connection between them should be made at about 300 mm.

NOTE: After anchoring the galvanized steel pipe 3 days if summer or 1 week if winter shall pass before the air termination rod is placed in position. If temperature is below 4°C avoid concreting.

Detail A
 Cross and "T" connector (1)
 with round conductor (2) and
 heat shring tube (3)

ITEM	DESCRIPTION	DETAIL	ITEM NUMBER	MATERIAL	STANDARD
					IEC EN
1	Cross and "T"connector	A	62 08 116	St/tZn	62561 - 1
2	Round conductor	A	64 00 011	St/tZn	62561 - 2
3	Heat shrink tube	A	54 31 110	PL	-



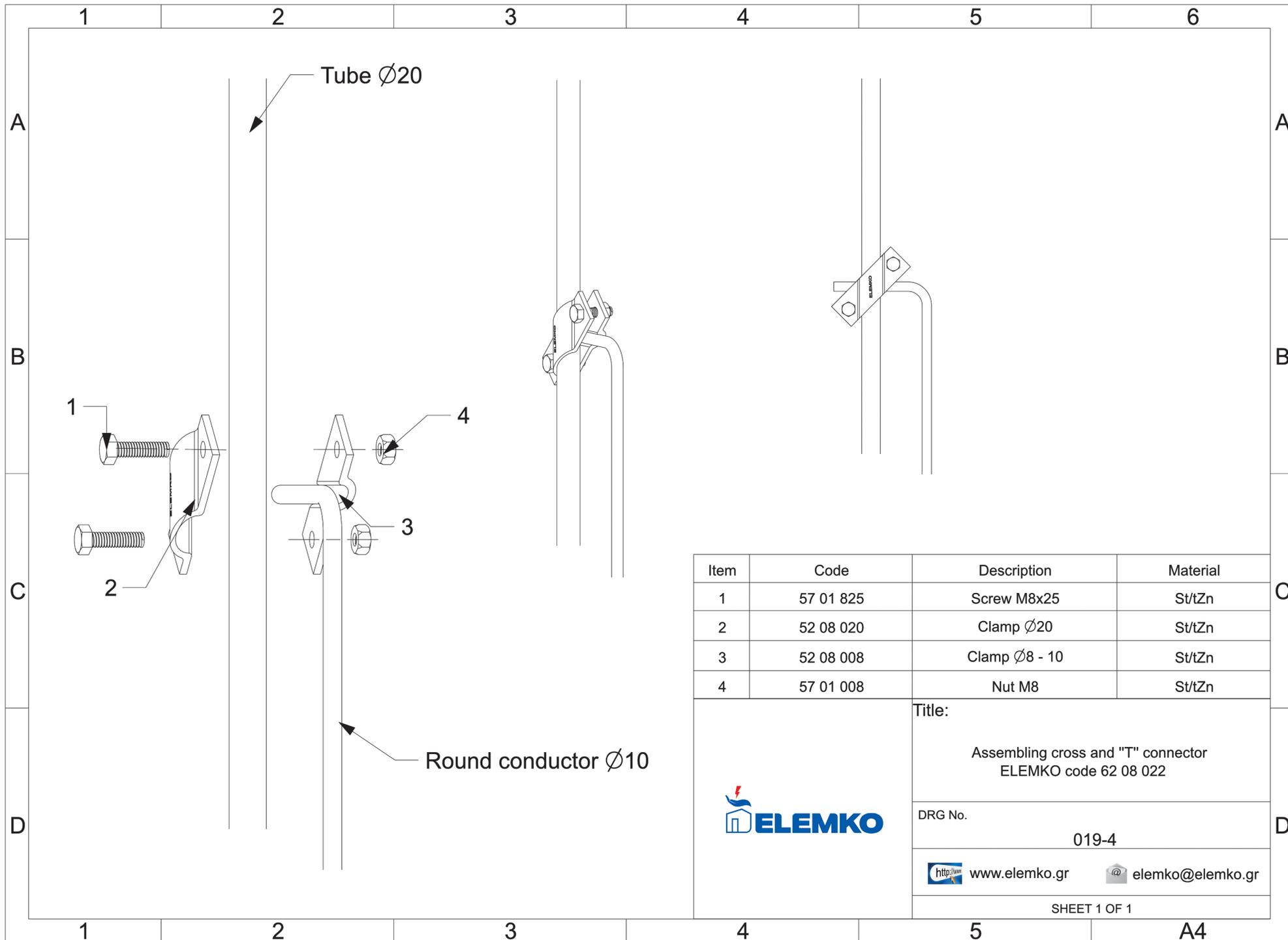
TITLE :
 Anchoring of galvanized steel pipe used for supporting air termination rod 6440500

DRG NO.
 019 - 3

<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1

All dimensions in mm



Item	Code	Description	Material
1	57 01 825	Screw M8x25	St/tZn
2	52 08 020	Clamp $\varnothing 20$	St/tZn
3	52 08 008	Clamp $\varnothing 8 - 10$	St/tZn
4	57 01 008	Nut M8	St/tZn

Title:

Assembling cross and "T" connector
ELEMKO code 62 08 022

DRG No.

019-4



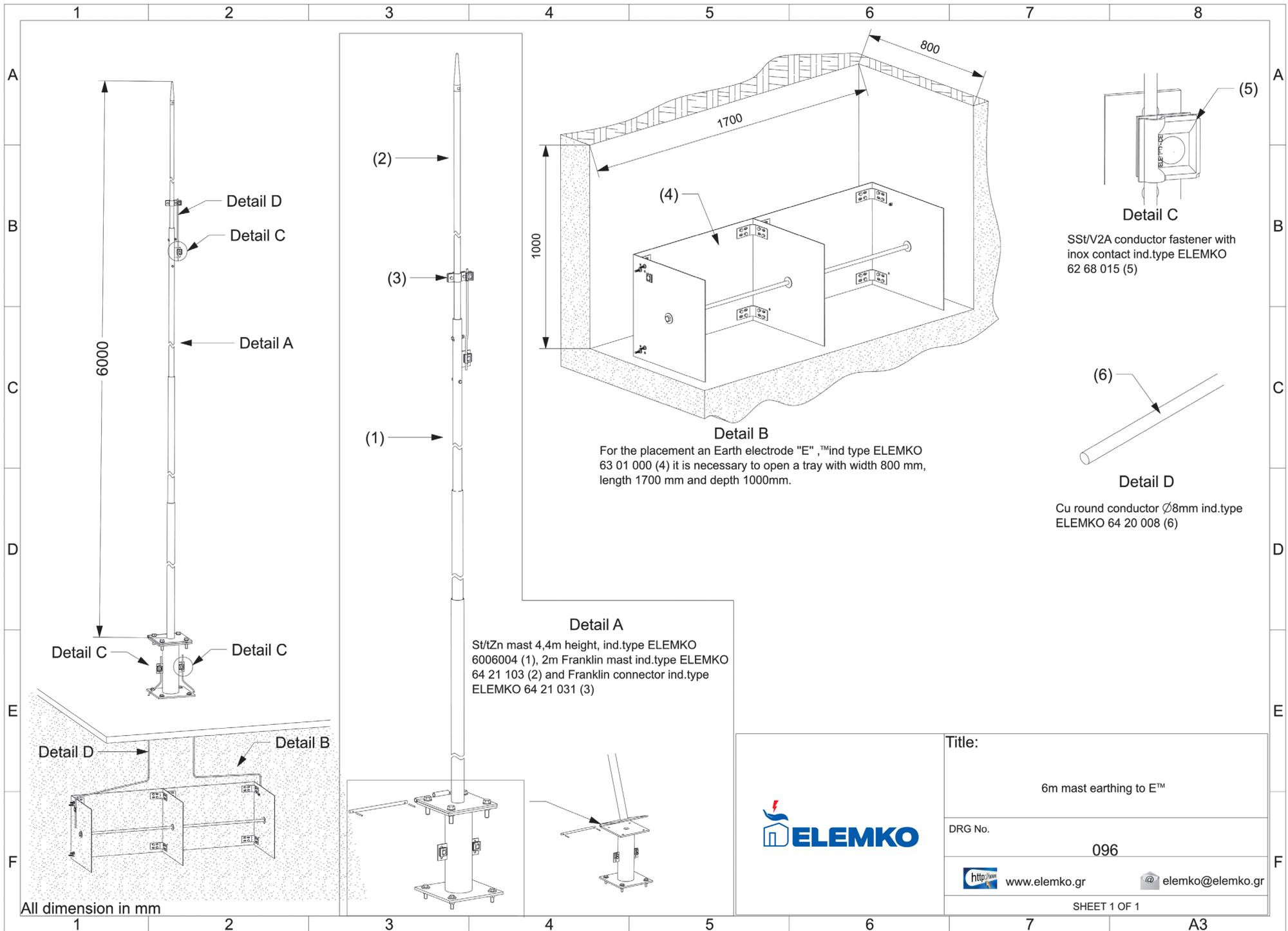
www.elemko.gr



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SHEET 1 OF 1





6000

Detail D

Detail C

Detail A

Detail C

Detail C

Detail D

Detail B

All dimension in mm

(2)

(3)

(1)

1000

1700

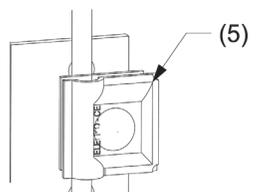
800

Detail B

For the placement an Earth electrode "E" ,™ind type ELEMKO 63 01 000 (4) it is necessary to open a tray with width 800 mm, length 1700 mm and depth 1000mm.

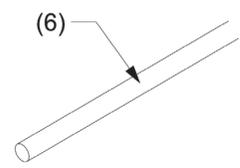
Detail A

Zn/Sn mast 4,4m height, ind.type ELEMKO 6006004 (1), 2m Franklin mast ind.type ELEMKO 64 21 103 (2) and Franklin connector ind.type ELEMKO 64 21 031 (3)



Detail C

SSI/V2A conductor fastener with inox contact ind.type ELEMKO 62 68 015 (5)



Detail D

Cu round conductor Ø8mm ind.type ELEMKO 64 20 008 (6)



Title:

6m mast earthing to E™

DRG No.

096



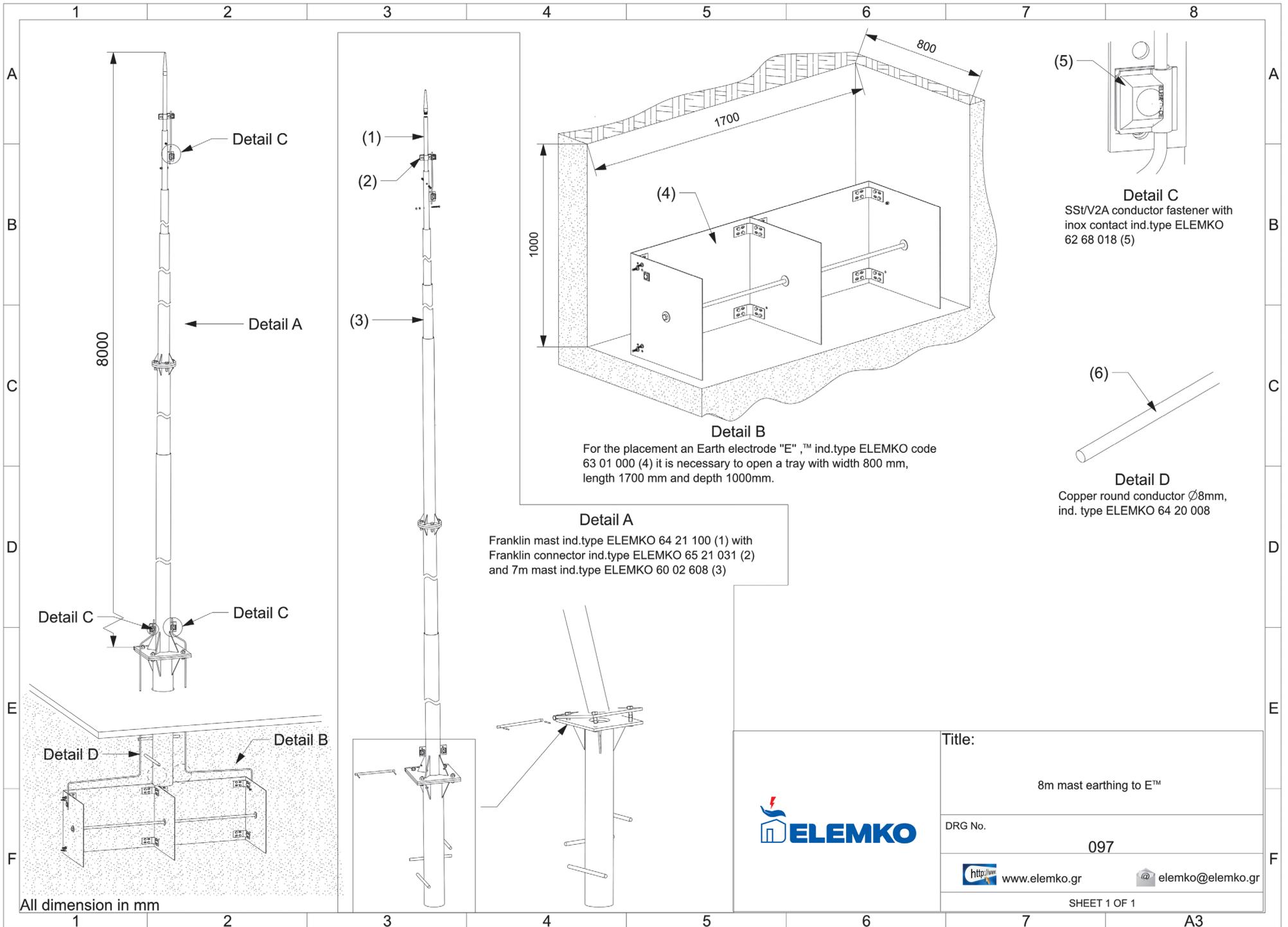
www.elemko.gr



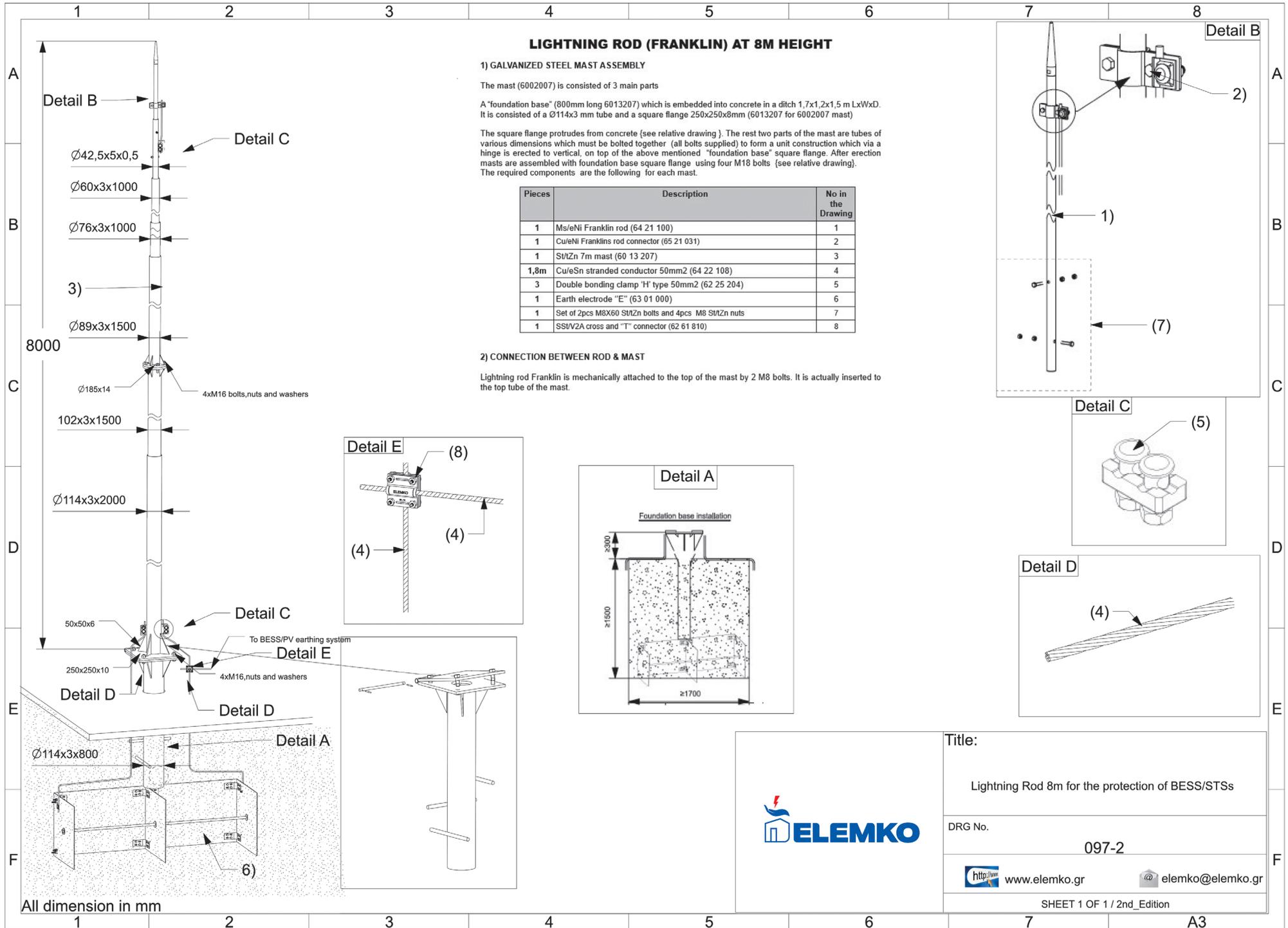
elemko@elemko.gr

SHEET 1 OF 1

A3



Title:	8m mast earthing to E™
DRG No.	097
http://www.elemko.gr	elemko@elemko.gr
SHEET 1 OF 1	



LIGHTNING ROD (FRANKLIN) AT 8M HEIGHT

1) GALVANIZED STEEL MAST ASSEMBLY

The mast (6002007) is consisted of 3 main parts

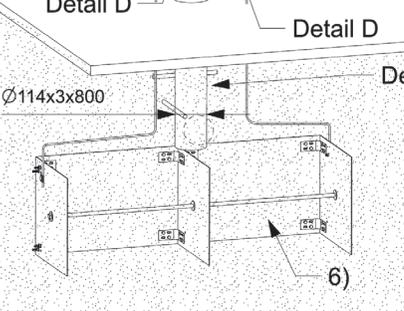
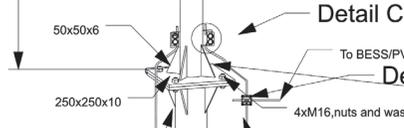
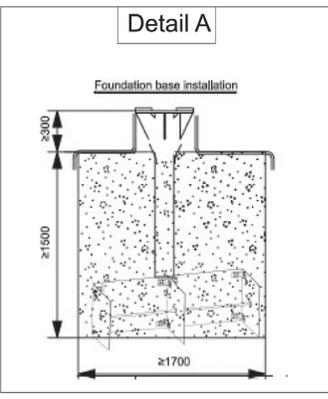
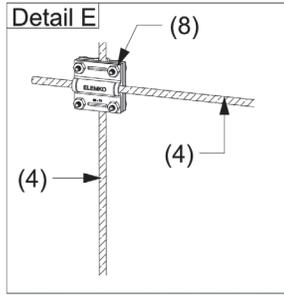
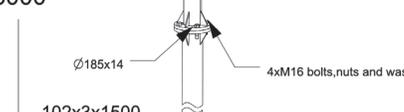
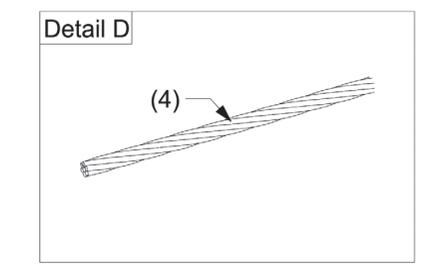
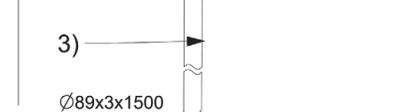
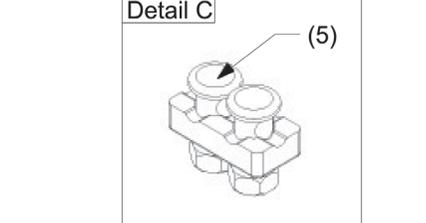
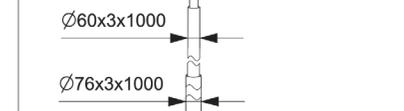
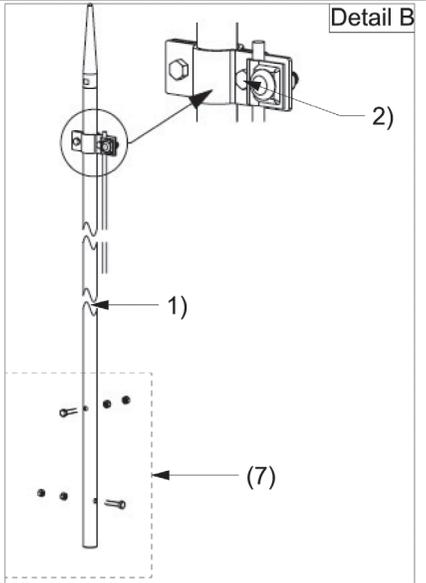
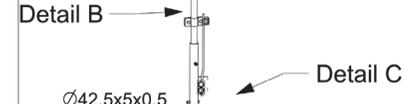
A "foundation base" (800mm long 6013207) which is embedded into concrete in a ditch 1,7x1,2x1,5 m LxWxD. It is consisted of a Ø114x3 mm tube and a square flange 250x250x8mm (6013207 for 6002007 mast)

The square flange protrudes from concrete (see relative drawing). The rest two parts of the mast are tubes of various dimensions which must be bolted together (all bolts supplied) to form a unit construction which via a hinge is erected to vertical, on top of the above mentioned "foundation base" square flange. After erection masts are assembled with foundation base square flange using four M18 bolts (see relative drawing). The required components are the following for each mast.

Pieces	Description	No in the Drawing
1	Ms/eNi Franklin rod (64 21 100)	1
1	Cu/eNi Franklins rod connector (65 21 031)	2
1	St/Zn 7m mast (60 13 207)	3
1,8m	Cu/eSn stranded conductor 50mm ² (64 22 108)	4
3	Double bonding clamp 'H' type 50mm ² (62 25 204)	5
1	Earth electrode "E" (63 01 000)	6
1	Set of 2pcs M8x60 St/Zn bolts and 4pcs M8 St/Zn nuts	7
1	SSI/V2A cross and "T" connector (62 61 810)	8

2) CONNECTION BETWEEN ROD & MAST

Lightning rod Franklin is mechanically attached to the top of the mast by 2 M8 bolts. It is actually inserted to the top tube of the mast.



All dimension in mm



Title:
Lightning Rod 8m for the protection of BESS/STSS

DRG No.
097-2

<http://www.elemko.gr>  elemko@elemko.gr

SHEET 1 OF 1 / 2nd_Edition

LIGHTNING ROD (FRANKLIN) AT 9M HEIGHT

1) GALVANIZED STEEL MAST ASSEMBLY

The mast (6002008) is consisted of 3 main parts

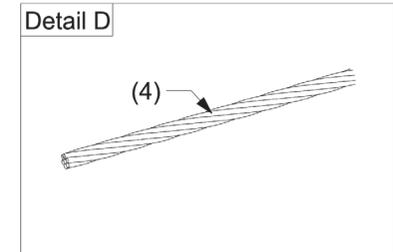
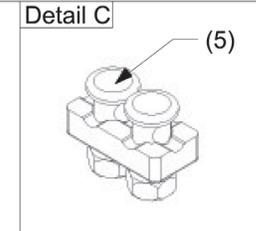
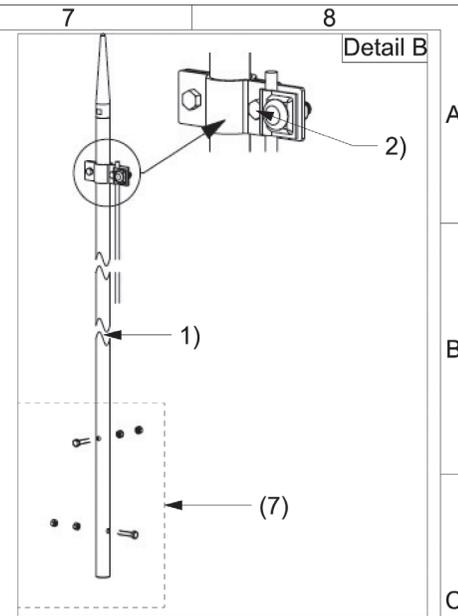
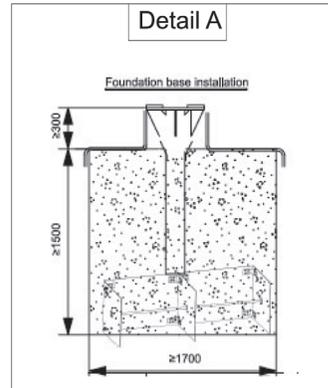
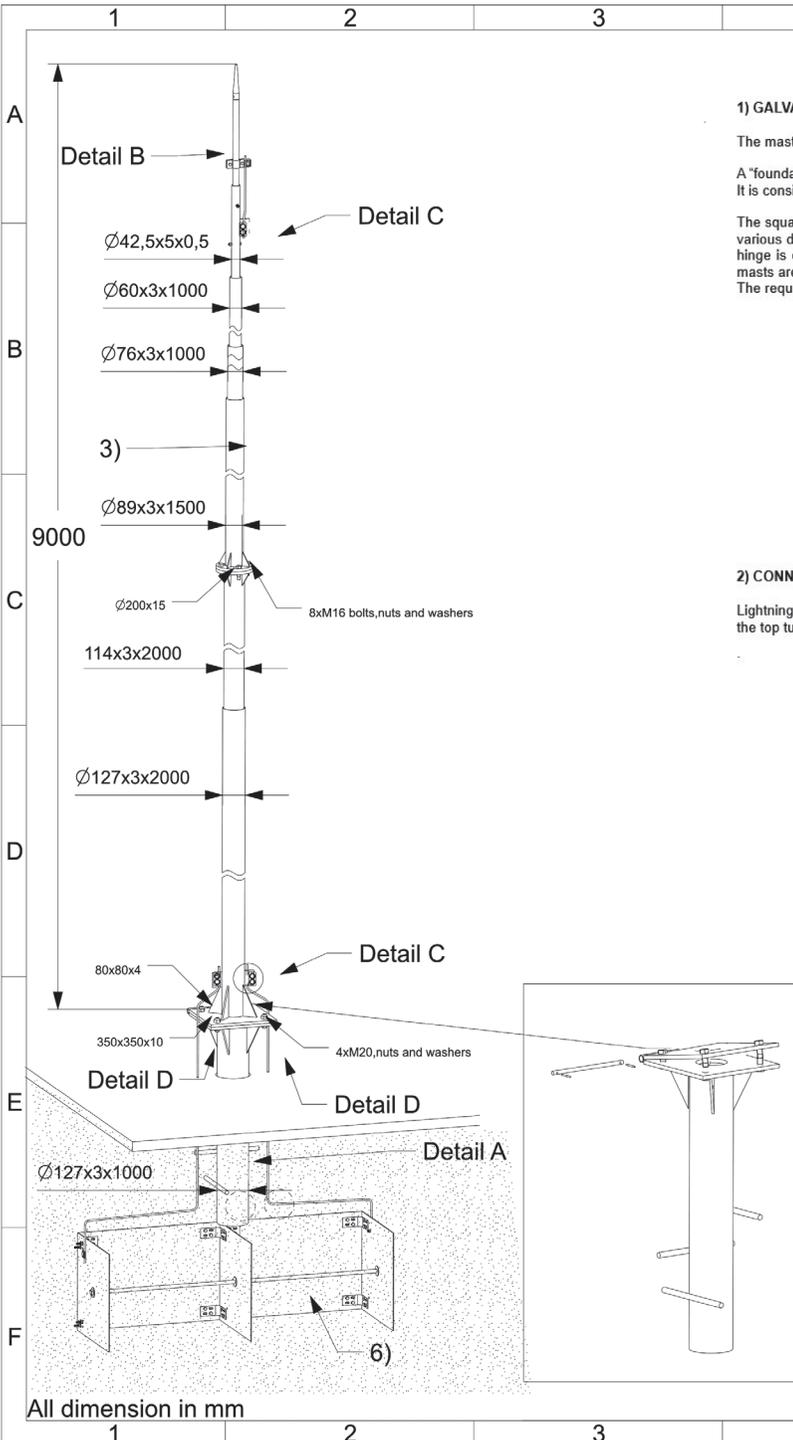
A "foundation base" (1000mm long 6013208) which is embedded into concrete in a ditch 2,5x1x1,5 m LxWxD. It is consisted of a $\varnothing 127 \times 3$ mm tube and a square flange 350x350x10mm (6013208 for 6002008 mast)

The square flange protrudes from concrete (see relative drawing). The rest two parts of the mast are tubes of various dimensions which must be bolted together (all bolts supplied) to form a unit construction which via a hinge is erected to vertical, on top of the above mentioned "foundation base" square flange. After erection masts are assembled with foundation base square flange using four M16 bolts (see relative drawing). The required components are the following for each mast.

Pieces	Description	No in the Drawing
1	Ms/eNi Franklin rod (64 21 100)	1
1	Cu/eNi Franklins rod connector (65 21 031)	2
1	St/Zn 8m mast (60 13 208)	3
1,8m	Cu stranded conductor 50mm ² (64 20 108)	4
3	Double bonding clamp 'H' type 50mm ² (62 25 204)	5
1	Earth electrode "E" (63 01 000)	6
1	Set of 2pcs M8x60 St/Zn bolts and 4pcs M8 St/Zn nuts	7

2) CONNECTION BETWEEN ROD & MAST

Lightning rod Franklin is mechanically attached to the top of the mast by 2 M8 bolts. It is actually inserted to the top tube of the mast.



Title:

DRG No.

097-4

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SHEET 1 OF 1

LIGHTNING ROD (FRANKLIN) AT 13M HEIGHT

1) GALVANIZED STEEL MAST ASSEMBLY

The masts (6002012) consist from 4 main parts

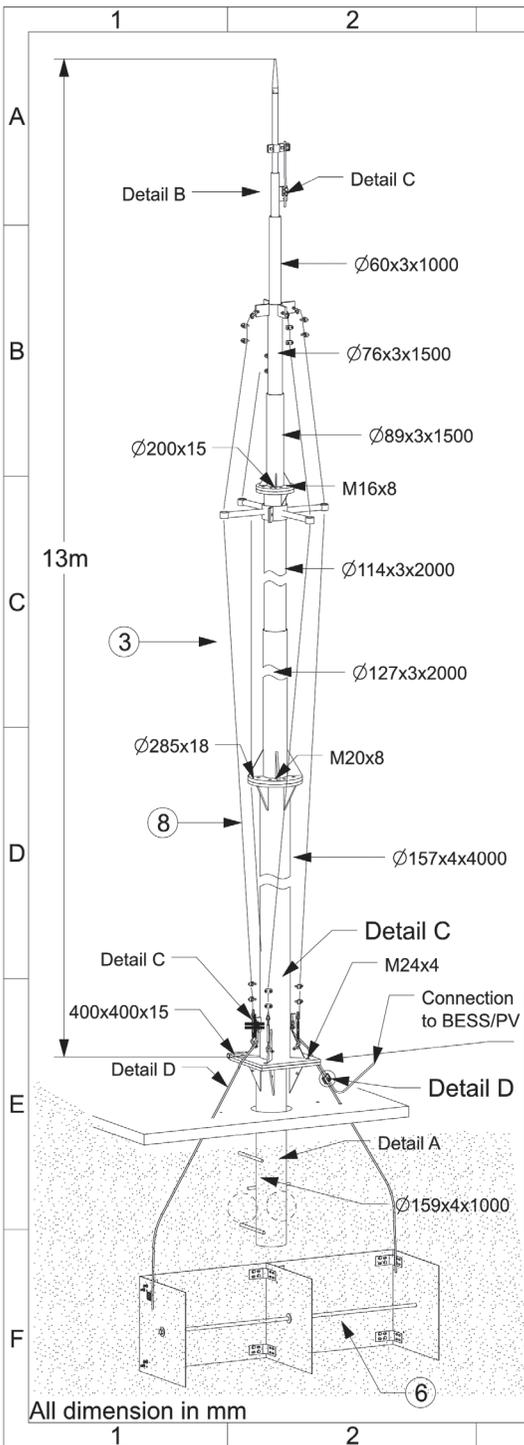
A "foundation base" (1000 Long 6013212) which is embedded into concrete in a dich 2,5x1x1,5 m LxWxD and consists of a Ø159x4 mm tube and a square flange 400x400x16mm. The square flange protrudes from concrete (see attached drawing). The rest three parts of the mast are tubes of various dimensions which must be bolted together (all bolts supplied) to form a unit construction which via a hinge is erected to vertical, on top of the above mentioned "foundation base" square flange, of course after erection these are bolted together using four M24 bolts (see attached drawing). The second part of the masts has an internal reinforcement consisting of a tube welded to the external tube via spacers.

For the support of the whole structure several wire ropes are employed. These are 4 wire ropes from the top of the mast (at the point where Ø76 and Ø60 are connected) to the bottom section (at the fins of the base) using a "Cross Construction" tightened at the third section of the mast (at the upper part of the Ø114 tube) (see attached drawing). The required wire ropes and the parts for their connection, tightening and bending are the following for each mast.

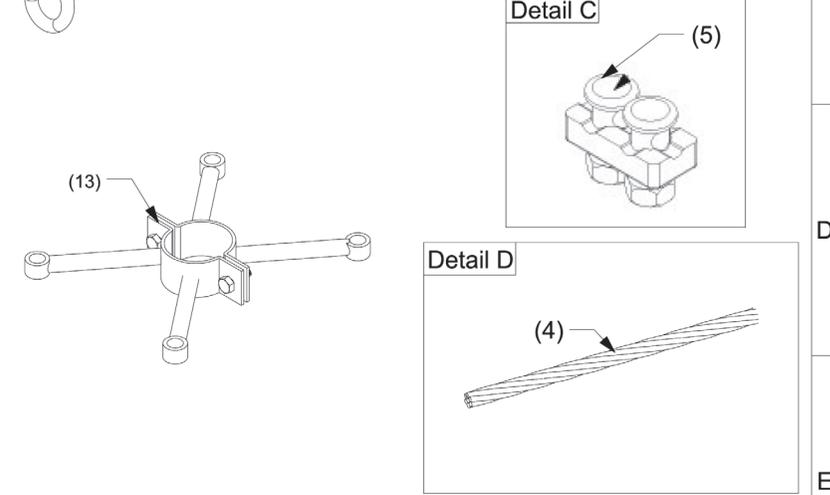
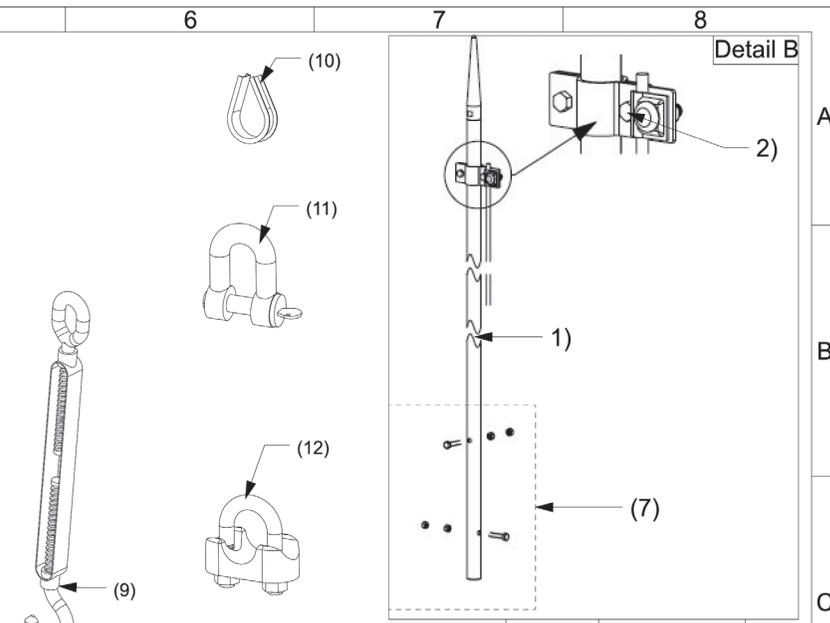
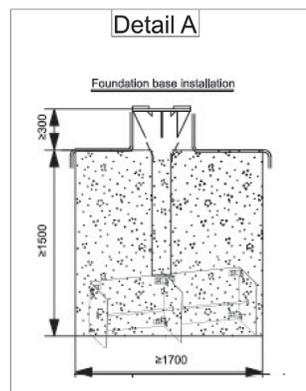
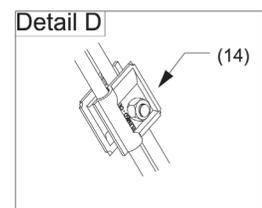
Pieces	Description	No in the Drawing
1	Ms/eNi Franklin rod (64 21 100)	1
1	Cu/eNi Franklins rod connector (65 21 031)	2
1	St/Zn 12m mast (60 02 012)	3
1,8m	Cu stranded conductor 50mm ² (64 20 108)	4
3	Double bonding clamp 'H' type 50mm ² (62 25 204)	5
1	Earth electrode "E" (63 01 000)	6
1	Set of 2pcs M8X60 St/Zn bolts and 4pcs M8 St/Zn nuts	7
4	GALVANISED WIRE ROPE Ø8 mm 19 FROM TOP TO BOTTOM OF THE MAST THROUGH "CROSS CONSTRUCTION"	8
4	TURN BUCKLES	9
8	WIRE THIMBLES	10
8	D-SHACKLES	11
16	CLIPS	12
1	Cross construction set	13
1	Universal connector clamp Cu (62 28 014)	14

2) CONNECTION BETWEEN ROD & MAST

Lightning rod Franklin is mechanically attached to the top of the mast by 2 M8 bolts. It is actually inserted to the top tube of the mast.



All dimension in mm



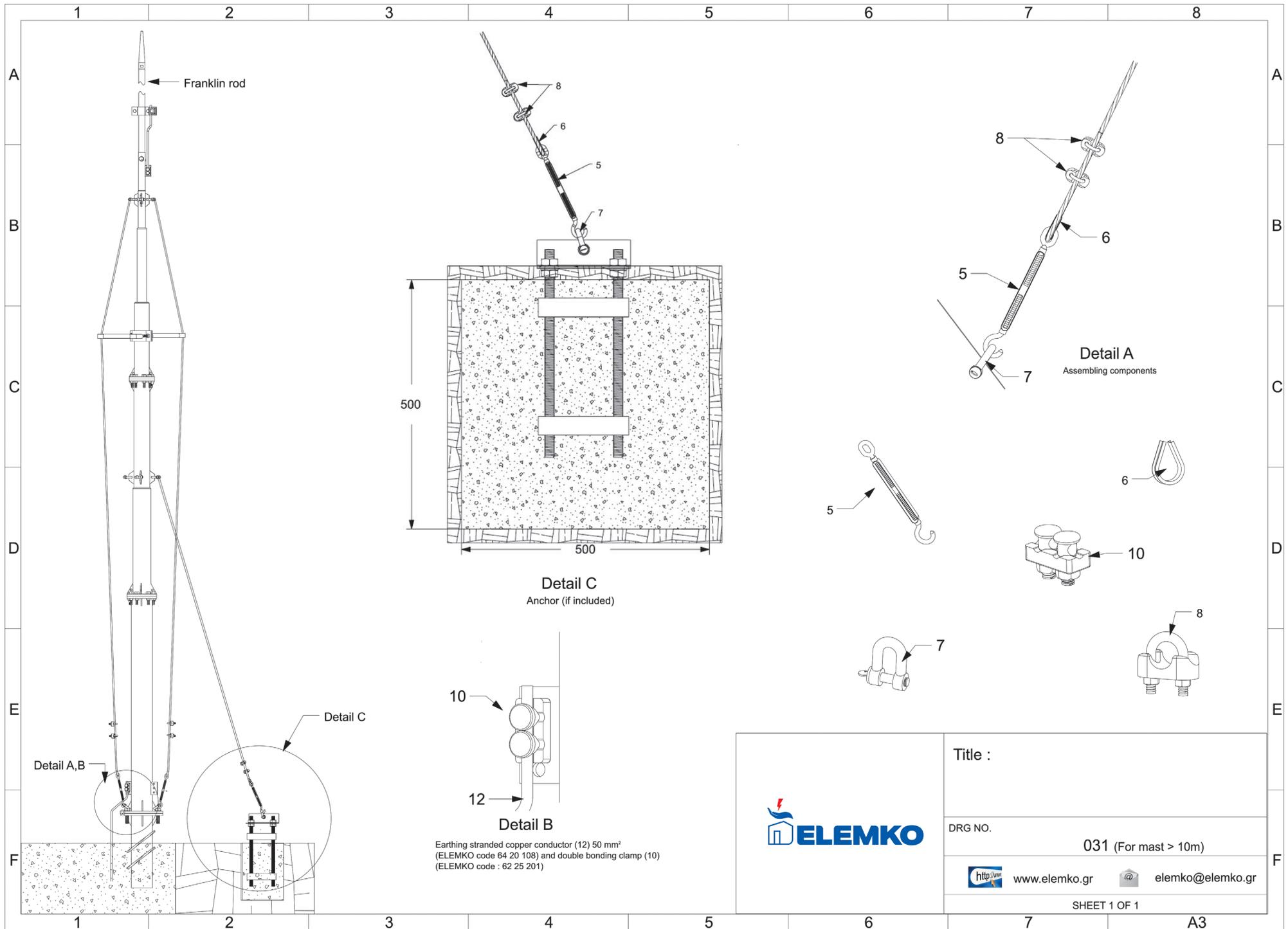


Title:
Lightning Rod 13m

DRG No.
097-3

<http://www.elemko.gr> elemko@elemko.gr

SHEET 1 OF 1



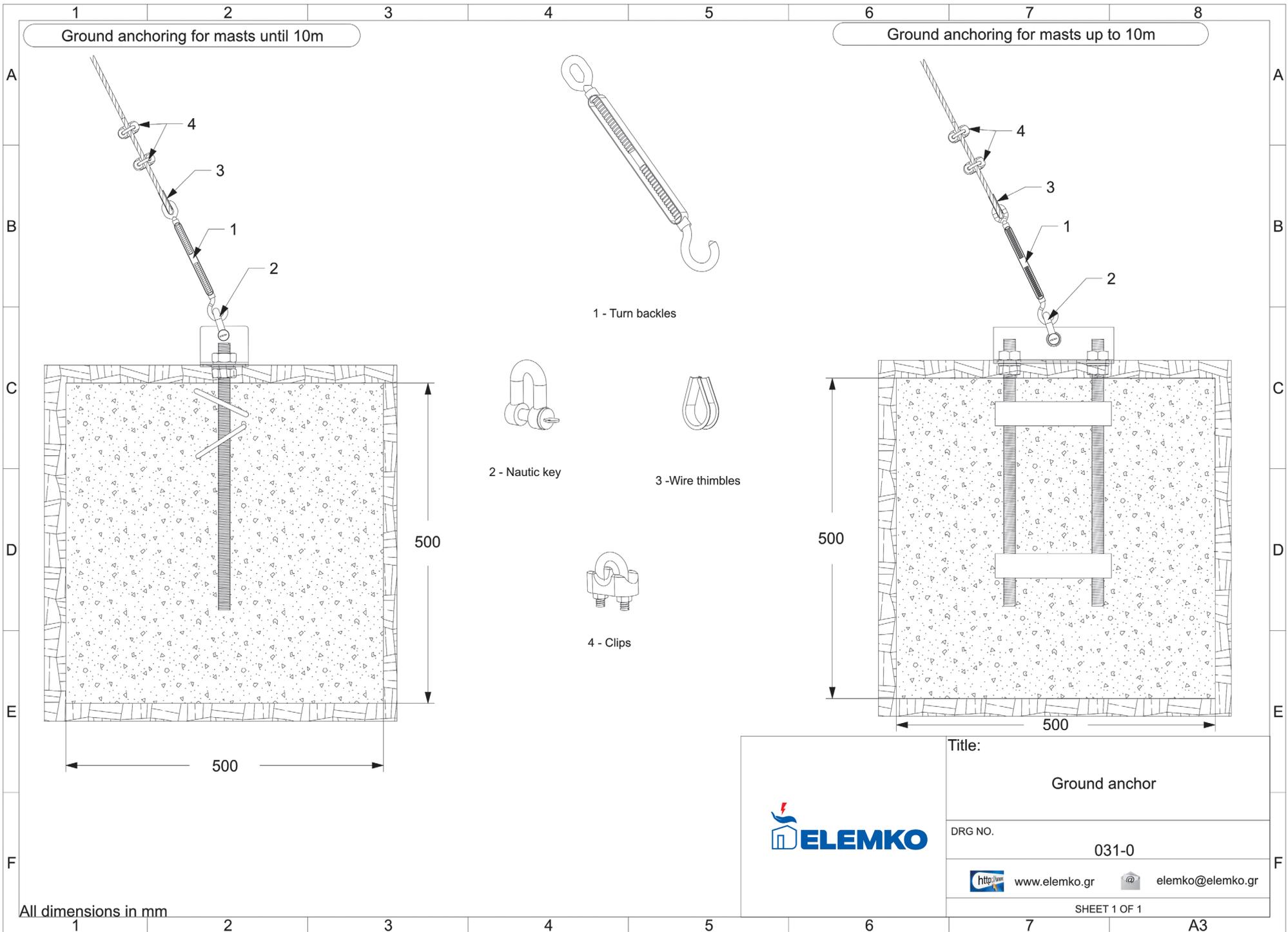
Detail C
Anchor (if included)

Detail A
Assembling components

Detail B

Earthing stranded copper conductor (12) 50 mm²
(ELEMKO code 64 20 108) and double bonding clamp (10)
(ELEMKO code : 62 25 201)

	Title :
	DRG NO.
	031 (For mast > 10m)
	http://www.elemko.gr elemko@elemko.gr
SHEET 1 OF 1	



Ground anchoring for masts until 10m

Ground anchoring for masts up to 10m

1 - Turn backles

2 - Nautic key

3 - Wire thimbles

4 - Clips

500

500

500

500

All dimensions in mm

Title:

Ground anchor

DRG NO.

031-0



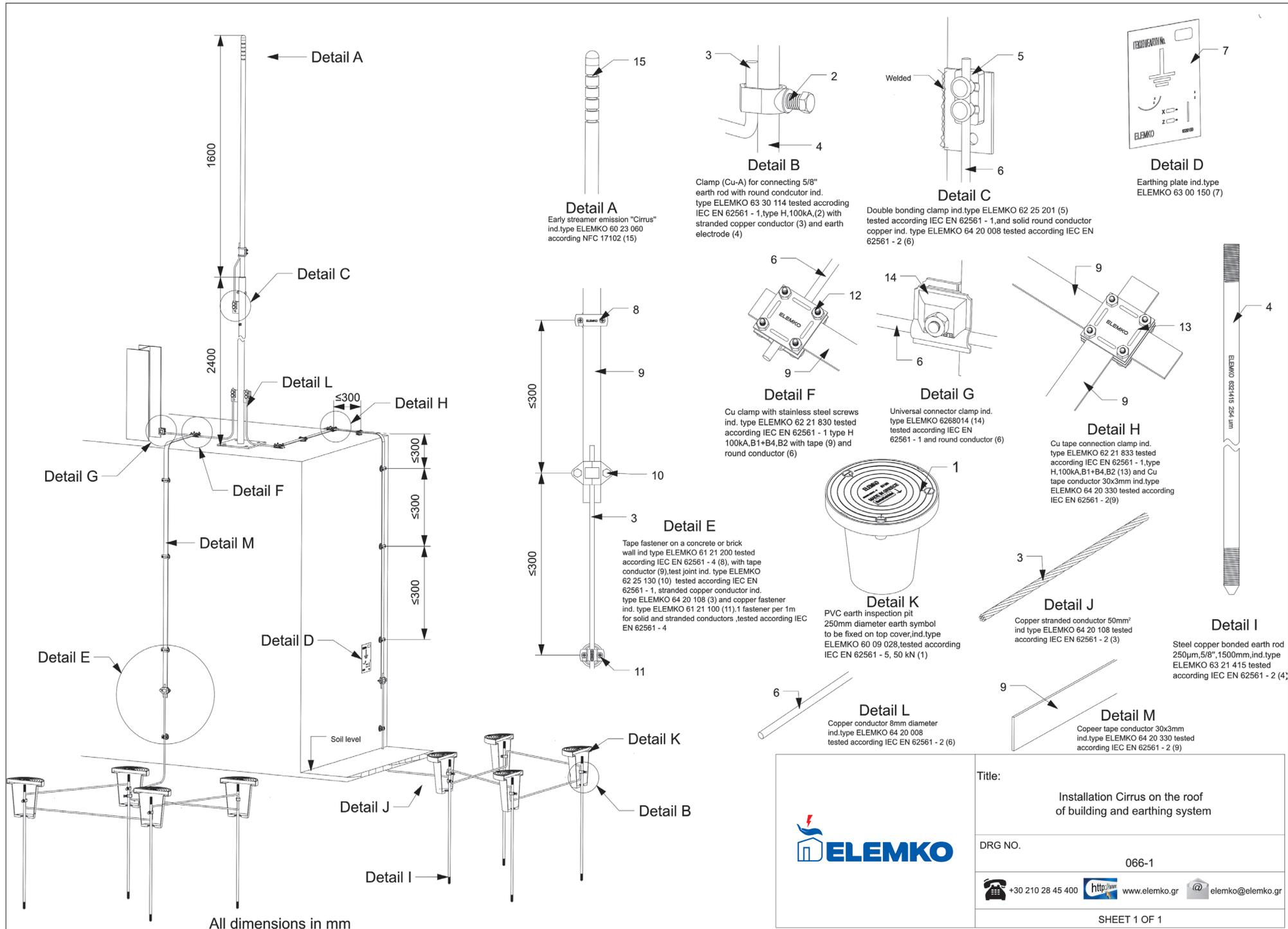
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SHEET 1 OF 1





All dimensions in mm

Detail A
Early streamer emission "Cirrus"
ind.type ELEMKO 60 23 060
according NFC 17102 (15)

Detail B
Clamp (Cu-A) for connecting 5/8"
earth rod with round conductor ind.
type ELEMKO 63 30 114 tested according
IEC EN 62561 - 1, type H, 100kA, (2) with
stranded copper conductor (3) and earth
electrode (4)

Detail C
Double bonding clamp ind.type ELEMKO 62 25 201 (5)
tested according IEC EN 62561 - 1, and solid round conductor
copper ind. type ELEMKO 64 20 008 tested according IEC EN
62561 - 2 (6)

Detail D
Earthing plate ind.type
ELEMKO 63 00 150 (7)

Detail E
Tape fastener on a concrete or brick
wall ind.type ELEMKO 61 21 200 tested
according IEC EN 62561 - 4 (8), with tape
conductor (9), test joint ind. type ELEMKO
62 25 130 (10) tested according IEC EN
62561 - 1, stranded copper conductor ind.
type ELEMKO 64 20 108 (3) and copper fastener
ind. type ELEMKO 61 21 100 (11), 1 fastener per 1m
for solid and stranded conductors, tested according IEC
EN 62561 - 4

Detail F
Cu clamp with stainless steel screws
ind. type ELEMKO 62 21 830 tested
according IEC EN 62561 - 1 type H
100kA, B1+B4, B2 with tape (9) and
round conductor (6)

Detail G
Universal connector clamp ind.
type ELEMKO 6268014 (14)
tested according IEC EN
62561 - 1 and round conductor (6)

Detail H
Cu tape connection clamp ind.
type ELEMKO 62 21 833 tested
according IEC EN 62561 - 1, type
H, 100kA, B1+B4, B2 (13) and Cu
tape conductor 30x3mm ind.type
ELEMKO 64 20 330 tested according
IEC EN 62561 - 2(9)

Detail K
PVC earth inspection pit
250mm diameter earth symbol
to be fixed on top cover, ind.type
ELEMKO 60 09 028, tested according
IEC EN 62561 - 5, 50 kN (1)

Detail J
Copper stranded conductor 50mm²
ind.type ELEMKO 64 20 108 tested
according IEC EN 62561 - 2 (3)

Detail I
Steel copper bonded earth rod
250µm, 5/8", 1500mm, ind.type
ELEMKO 63 21 415 tested
according IEC EN 62561 - 2 (4);

Detail L
Copper conductor 8mm diameter
ind.type ELEMKO 64 20 008
tested according IEC EN 62561 - 2 (6)

Detail M
Copper tape conductor 30x3mm
ind.type ELEMKO 64 20 330 tested
according IEC EN 62561 - 2 (9)

	Title:	Installation Cirrus on the roof of building and earthing system	
	DRG NO.	066-1	
	Phone	+30 210 28 45 400	http
	Website	www.elemko.gr	Email
SHEET 1 OF 1			



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