



# INFO

Cable Support Systems



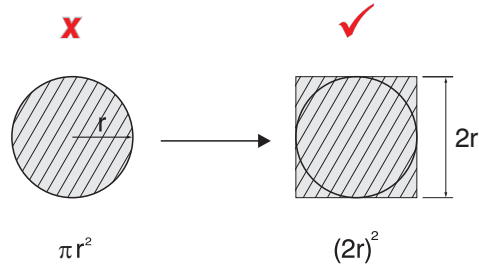
**INFO**

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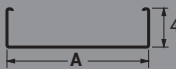

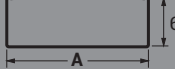
In practical application, cross section area of cables should be calculated according to the example below.

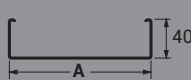
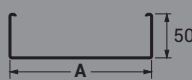
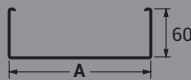




- 1- Please use  $(2r)^2$  the formula instead of  $\pi r^2$  for cross section.
- 2- Find the total cross section bu calculating all the cables.
- 3- Leave 20% reserve for additional cables.
- 4- Choose the correct transportation system from the table below.
- 5- When choosing please choose the figure rounded up from the cutaway sizes.

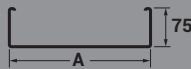

UKE/UKD/UKFG/UKFE/CTHF-E/CTN-E/CTE/CTK Cable Tray

		Tray Height (mm)						
		40	50	60	75	100	125	150
Tray Width (mm)	50	2000	2500	-----	-----	-----	-----	-----
	100	4000	5000	6000	7500	10000	-----	-----
	150	6000	7500	9000	11250	15000	18750	-----
	200	8000	10000	12000	15000	20000	25000	30000
	250	10000	12500	15000	18750	25000	31250	37500
	300	12000	15000	18000	22500	30000	37500	45000
	400	16000	20000	24000	30000	40000	50000	60000
	500	20000	25000	30000	37500	50000	62750	75000
	600	24000	30000	36000	45000	60000	75000	90000

A	Values								
	Nominal Cross-section (mm <sup>2</sup> )	Cable Outer (mm)	Weight (kg/m)	Quantity	Total Weight (kg/m)	Quantity	Total Weight (kg/m)	Quantity	Total Weight (kg/m)
50	4x1,5	13,0	0,250	8	2,000	12	3,000	12	3,000
	4x2,5	14,5	0,330	8	2,640	8	2,640	10	3,300
	4x4	16,5	0,435	6	2,610	6	2,610	9	3,915
	4x6	17,5	0,545	5	2,725	6	3,270	7	3,815
	4x10	19,5	0,745	3	2,235	3	2,235	5	3,725
	4x16	21,5	1,030	3	3,090	4	4,120	4	4,120
	4x25	27,5	1,610	1	1,610	2	3,220	2	3,220
	4x35	30,0	2,080	1	2,080	1	2,080	2	4,160
	4x50	33,0	2,690	1	2,690	1	2,690	1	2,690
100	4x1,5	13,0	0,250	21	5,250	28	7,000	33	8,250
	4x2,5	14,5	0,330	15	4,950	19	6,270	24	7,920
	4x4	16,5	0,435	12	5,220	18	7,830	19	8,265
	4x6	17,5	0,545	10	5,450	15	8,175	15	8,175
	4x10	19,5	0,745	9	6,705	9	6,705	14	10,430
	4x16	21,5	1,030	7	7,210	8	8,240	11	11,330
	4x25	27,5	1,610	3	4,830	5	8,050	6	9,660
	4x35	30,0	2,080	3	6,240	3	6,240	5	10,400
	4x50	33,0	2,690	2	5,380	3	8,070	3	8,070
150	4x1,5	13,0	0,250	32	8,000	42	10,500	48	12,000
	4x2,5	14,5	0,330	23	7,590	31	10,230	39	12,870
	4x4	16,5	0,435	16	6,960	24	10,440	27	11,745
	4x6	17,5	0,545	15	8,175	22	11,990	24	13,080
	4x10	19,5	0,745	14	10,430	15	11,175	21	15,645
	4x16	21,5	1,030	10	10,300	12	12,360	17	17,510
	4x25	27,5	1,610	5	8,050	5	8,050	9	14,490
	4x35	30,0	2,080	4	10,400	6	12,480	8	16,640
	4x50	33,0	2,690	4	10,760	4	10,760	6	16,140
200	4x1,5	13,0	0,250	44	11,000	58	14,500	65	16,250
	4x2,5	14,5	0,330	25	8,250	38	12,540	50	16,500
	4x4	16,5	0,435	23	10,005	33	14,355	33	14,355
	4x6	17,5	0,545	21	11,445	27	14,715	32	17,440
	4x10	19,5	0,745	19	14,155	22	16,390	29	21,605
	4x16	21,5	1,030	13	13,390	17	17,510	22	22,660
	4x25	27,5	1,610	7	11,270	10	16,100	13	20,930
	4x35	30,0	2,080	6	12,480	8	16,640	11	22,880
	4x50	33,0	2,690	5	13,450	6	16,140	9	24,210
250	4x1,5	13,0	0,250	53	13,250	74	18,500	83	20,750
	4x2,5	14,5	0,330	40	13,200	51	16,830	68	22,440
	4x4	16,5	0,435	29	12,615	44	19,140	47	20,445
	4x6	17,5	0,545	27	14,715	41	22,345	41	22,345
	4x10	19,5	0,745	23	17,135	27	20,115	35	26,075
	4x16	21,5	1,030	16	16,480	20	20,600	27	27,810
	4x25	27,5	1,610	9	14,490	13	20,930	17	27,370
	4x35	30,0	2,080	8	16,640	10	20,800	15	31,200
	4x50	33,0	2,690	7	18,830	7	18,830	11	29,590

A	Values								
	Nominal Cross-section (mm <sup>2</sup> )	Cable Outer (mm)	Weight (kg/m)	Quantity	Total Weight (kg/m)	Quantity	Total Weight (kg/m)	Quantity	Total Weight (kg/m)
300	4x1,5	13,0	0,250	65	16,250	86	21,500	97	24,250
	4x2,5	14,5	0,330	48	15,840	59	19,470	78	25,740
	4x4	16,5	0,435	36	15,660	53	23,055	58	25,230
	4x6	17,5	0,545	32	17,440	47	25,615	47	25,615
	4x10	19,5	0,745	29	21,605	32	23,840	44	32,780
	4x16	21,5	1,030	20	20,600	26	26,780	38	39,140
	4x25	27,5	1,610	10	16,100	14	22,540	20	32,200
	4x35	30,0	2,080	9	18,720	12	24,960	18	37,440
	4x50	33,0	2,690	8	21,520	8	21,520	13	34,970
400	4x1,5	13,0	0,250	89	22,250	118	29,500	130	32,500
	4x2,5	14,5	0,330	68	22,440	80	26,400	107	35,310
	4x4	16,5	0,435	47	20,445	71	30,885	71	30,885
	4x6	17,5	0,545	41	22,345	65	35,425	65	35,425
	4x10	19,5	0,745	40	29,800	46	34,270	59	43,955
	4x16	21,5	1,030	26	26,780	35	36,050	44	45,320
	4x25	27,5	1,610	14	22,540	19	30,590	28	45,080
	4x35	30,0	2,080	13	27,040	17	35,360	26	54,080
	4x50	33,0	2,690	11	29,590	11	29,590	18	48,420
500	4x1,5	13,0	0,250	113	28,250	113	28,250	163	40,750
	4x2,5	14,5	0,330	80	26,400	99	32,670	115	37,950
	4x4	16,5	0,435	57	24,795	87	37,845	93	40,455
	4x6	17,5	0,545	55	29,975	55	29,975	74	40,330
	4x10	19,5	0,745	49	36,505	49	36,505	44	32,780
	4x16	21,5	1,030	35	36,050	44	45,320	54	55,620
	4x25	27,5	1,610	18	28,980	26	41,860	32	51,520
	4x35	30,0	2,080	16	33,280	20	41,600	14	29,120
	4x50	33,0	2,690	14	37,660	14	37,660	22	59,180
600	4x1,5	13,0	0,250	134	33,500	178	44,500	196	49,000
	4x2,5	14,5	0,330	98	32,340	116	38,280	155	51,150
	4x4	16,5	0,435	72	31,320	105	45,675	108	46,980
	4x6	17,5	0,545	65	35,425	65	35,425	98	53,410
	4x10	19,5	0,745	58	43,210	58	43,210	88	65,560
	4x16	21,5	1,030	41	42,230	53	54,590	65	66,950
	4x25	27,5	1,610	21	33,810	31	49,910	42	67,620
	4x35	30,0	2,080	19	39,520	25	52,000	37	76,960
	4x50	33,0	2,690	17	45,730	17	45,730	27	72,630

A	Values						
	Nominal Cross-section (mm²)	Cable Outer (mm)	Weight (kg/m)	Quantity	Total Weight (kg/m)	Quantity	Total Weight (kg/m)
100	4x1,5	13,0	0,250	42	10,500	-	-
	4x2,5	14,5	0,330	30	9,900	-	-
	4x4	16,5	0,435	25	10,875	-	-
	4x6	17,5	0,545	20	10,900	-	-
	4x10	19,5	0,745	18	13,410	-	-
	4x16	21,5	1,030	12	12,360	-	-
	4x25	27,5	1,610	6	9,660	-	-
	4x35	30,0	2,080	6	12,480	-	-
	4x50	33,0	2,690	5	13,450	-	-
150	4x1,5	13,0	0,250	63	15,750	84	21,000
	4x2,5	14,5	0,330	48	15,840	67	22,110
	4x4	16,5	0,435	40	17,400	48	20,880
	4x6	17,5	0,545	32	17,440	48	26,160
	4x10	19,5	0,745	28	20,860	36	26,820
	4x16	21,5	1,030	19	19,570	30	30,900
	4x25	27,5	1,610	9	14,490	18	28,980
	4x35	30,0	2,080	8	16,640	14	29,120
	4x50	33,0	2,690	8	21,520	11	29,590
200	4x1,5	13,0	0,250	87	21,750	116	29,000
	4x2,5	14,5	0,330	65	21,450	91	30,030
	4x4	16,5	0,435	55	23,925	66	28,710
	4x6	17,5	0,545	42	22,890	63	34,335
	4x10	19,5	0,745	40	29,800	60	44,700
	4x16	21,5	1,030	26	26,780	43	44,290
	4x25	27,5	1,610	13	20,930	26	41,860
	4x35	30,0	2,080	12	24,960	18	37,440
	4x50	33,0	2,690	11	29,590	17	45,730
250	4x1,5	13,0	0,250	111	27,750	148	37,000
	4x2,5	14,5	0,330	83	27,390	117	38,610
	4x4	16,5	0,435	73	31,755	87	37,845
	4x6	17,5	0,545	56	30,520	81	44,145
	4x10	19,5	0,745	42	31,290	67	49,915
	4x16	21,5	1,030	33	33,990	55	56,650
	4x25	27,5	1,610	17	27,370	34	54,740
	4x35	30,0	2,080	15	31,200	23	47,840
	4x50	33,0	2,690	14	37,660	21	56,490

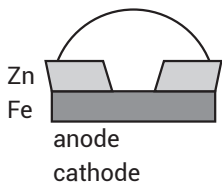
A	Values						
	Nominal Cross-section (mm <sup>2</sup> )	Cable Outer (mm)	Weight (kg/m)	Quantity	Total Weight (kg/m)	Quantity	Total Weight (kg/m)
300	4x1,5	13,0	0,250	132	33,000	176	44,000
	4x2,5	14,5	0,330	100	33,000	140	46,200
	4x4	16,5	0,435	87	37,845	94	40,890
	4x6	17,5	0,545	66	35,970	99	53,955
	4x10	19,5	0,745	62	46,190	91	67,795
	4x16	21,5	1,030	39	40,170	65	66,950
	4x25	27,5	1,610	24	38,640	36	57,960
	4x35	30,0	2,080	18	37,440	29	60,320
	4x50	33,0	2,690	17	45,730	26	69,940
400	4x1,5	13,0	0,250	150	37,500	210	52,500
	4x2,5	14,5	0,330	133	43,890	186	61,380
	4x4	16,5	0,435	118	51,330	141	61,335
	4x6	17,5	0,545	88	47,960	132	71,940
	4x10	19,5	0,745	82	61,090	112	83,440
	4x16	21,5	1,030	54	55,620	90	92,700
	4x25	27,5	1,610	32	51,520	56	90,160
	4x35	30,0	2,080	25	52,000	38	79,040
	4x50	33,0	2,690	23	61,870	35	94,150
500	4x1,5	13,0	0,250	225	56,250	300	75,000
	4x2,5	14,5	0,330	168	55,440	235	77,550
	4x4	16,5	0,435	118	51,330	177	76,995
	4x6	17,5	0,545	112	61,040	168	91,560
	4x10	19,5	0,745	102	75,990	156	116,220
	4x16	21,5	1,030	68	70,040	113	116,390
	4x25	27,5	1,610	53	85,330	70	112,700
	4x35	30,0	2,080	32	66,560	48	99,840
	4x50	33,0	2,690	29	78,010	44	118,360
600	4x1,5	13,0	0,250	270	67,500	360	90,000
	4x2,5	14,5	0,330	203	66,990	284	93,720
	4x4	16,5	0,435	178	77,430	213	92,655
	4x6	17,5	0,545	134	73,030	201	109,545
	4x10	19,5	0,745	126	93,870	158	117,710
	4x16	21,5	1,030	81	83,430	135	139,050
	4x25	27,5	1,610	53	85,330	84	135,240
	4x35	30,0	2,080	38	79,040	57	118,560
	4x50	33,0	2,690	36	96,840	54	145,260



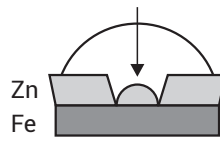
(Material that has been through the hot dip procedure before production.)

Sheet metal manufacturers plate sheet rolls in continuous hot dip galvanizing baths. Plating thickness by this process will reach up to minimum 7-14  $\mu\text{m}$ .

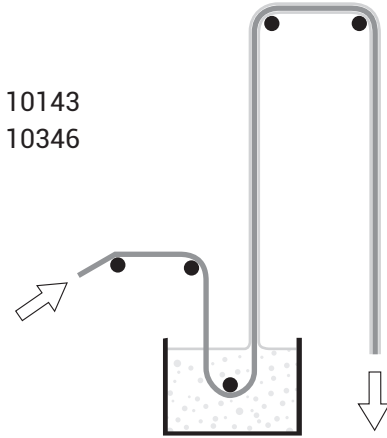
Material plated by the pre-galvanizing method will be protected against corrosion on cut surfaces due to the cathodic effect between the zinc and the steel elements. (It is valid and effective up to 2mm thickness).



Zinc salts will prevent corrosion till no zinc will remain at all.



TS EN 10143  
TS EN 10346



## Hot Dip Galvanization

This method is the process of plating plain steel materials by dipping into molten zinc melt after fabrication. Plating thickness by this process will to reach up to a minimum of 45  $\mu\text{m}$ .

TS EN ISO 1461



Corrosion of zinc plated and unprotected steel in atmosphere.

Atmosphere Types	Erosion of zinc coating ( $\mu/\text{year}$ )	Erosion of unprotected steel ( $\mu/\text{year}$ )
Open field	1,0- 3,4	6- 60
Sea side	2,4- 15,0	20-170
City	1,0- 6,0	30- 70
Industry	3,8- 19,0	30- 160
Tropik iklim	1,0- 9,7	1- 70

Corrosion Category	Typical Indoor Ambient	Typical Outdoor Ambient	Corrosion Load	Average Zinc Layer	Suitable Coating Type
C 1	Buildings with fresh air and air conditioning such as Offices, Department Stores, Schools, Hotels	-	Very Low	<0,1 µm/year	TS EN 10346 TS EN 10143 PREGALVANIZED
C 2	Unheated buildings where condensation may happen, for example: Warehouses, fitness centres	Environments where less pollution exists.	Low	0,1 - 0,7 µm/year	TS EN10346 TS EN 10143 PREGALVANIZED
C 3	Environments where high humidity levels and partial air pollution exist	Metropolitan and industrial environments, moderately polluted areas due to sulphur dioxide, sea-side resorts with low salt concentration.	Middle	0,7- 2,1 µm/year	TS EN ISO 1461 HOT-DIP
C 4	Chemical facilities, swimming pools, facilities over the sea.	Industrial zones and zones with low salt concentration.	Strong	2,1- 4,2 µm/year	TS EN ISO 1461 HOT-DIP
C 5	Buildings or zones where continuous condensation and strong pollution is possible.	Industrial zones where high humidity and an aggressive environment is possible.	Very Strong	4,2- 8,4 µm/year	Duplex (Hot -Dip + Electrostatic Powder Paint Coating) or 316L-Stainless
C 6	Buildings or zones where continuous condensation occurs and strong pollution is probable.	Sea shores with a high salt concentration or open sea environments.	Extremely Strong	>8,4 µm/year	Duplex (Hot -Dip + Electrostatic Powder Paint Coating) or 316L-Stainless

### Epoxy Paint;

- Kimyasallara direnci çok iyidir.
- Korozyona karşı direnci mükemmeldir.
- Yüzey sertliği yüksektir.
- UV dayanımı olmadığı için dış kullanıma uygun değildir, tebeşirleşirler.
- Zaman içerisinde renkte sararma olabilir.
- Değişik parlaklıkta ve özellikle mat boyalar kolaylıkla formüle edilebilir.

### Epoxy / Polyester Paint;

- Resistance against exterior effects is limited.
- Yellowing in colour may occur over time.
- If there is no excessive corrosive medium or chemical effect, it is suitable to be applied inside interior locations.
- It is difficult to obtain fully matt paint.
- Mechanical properties are suitable for daily application such as impact, flexibility and scratching.

### Polyester Paint;

- UV resistance is very good, it provides excellent resistance and durability under exterior conditions.
- It will not become yellowish and discolour.
- Mechanical properties are very good. (such as impact, flexibility etc.)



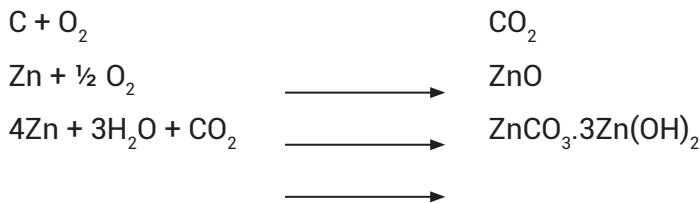
## Protection of Galvanized Sheet Metal during the Period of Stockpiling

By the virtue of its composition, the galvanized sheet metal is known to be particularly sensitive against the effects of materials of acidic character, polluted air, water and relative humidity present above a certain rate. The service life of galvanized sheet metal is shorter in the industrial areas where the air is densely polluted.

The most important element of atmospheric air pollution is sulphur dioxide.



The sulphurous and sulphuric acid forming at various rates reacts with the zinc and causes corrosion in the layer of galvanization. Decreasing the rate of atmospheric pollution or reducing it to zero will not be possible on an individual basis. To prevent the likely corrosion of the galvanized layer due to air pollution in stockpiling will be possible only by stockpiling the galvanized sheet metal in well protected warehouses. The matter causing the greatest concern regarding galvanized sheet steel are the white coloured spots called white rust, which develop on the surface of sheet metal during the course of stockpiling. Its development, however, can be minimized, even completely eliminated, by taking proper measures. The white rust is the result of a chemical reaction between zinc and the carbon dioxide, oxygen and water or moisture in the air.



The white rust phenomenon occurs during the stockpiling of galvanized sheet metal as a result of combined action of abovestated parameters and mostly in the case of stock-piled sheet metal. As the air with a high rate of moisture will be trapped between the pieces of stocked sheet metal, any differences in temperature will cause the trapped air to reach the dew point, leading to formation of droplets of water on the surfaces of sheet metal pieces. As a result, the oxygen dissolved in water will react with Zn to produce zinc hydroxide while the carbon dioxide present in the air will react with zinc to produce zinc carbonate. The combined result of these two reactions will lead to the development of zinc carbonate zinc hydroxide, called white rust.

In order to protect the stacked sheet metal against the effects of white rust for a certain period of time, although not for long,

the pieces of sheet metal are subjected to a process named passivation. During this process, a protective film is produced on the surface of galvanized sheet metal through a chemical reaction. That protective film will protect the galvanized sheet metal against the formation of white rust for a certain period of time. In order to ensure said protection, however, the following

conditions must be strictly observed.

- Stacked sheet metal must never be allowed to come in contact with water.
- There must be sufficient space provided for continuous circulation of air in the place where they are stacked.
- There must be sufficient space provided for proper circulation of air between the stacks of sheet metal. (min 300mm between the two stacks).
- The temperature differences in the places of stockpiling must be small. (between 5-10°C).
- The relative humidity in the places of stockpiling must not exceed 70%.
- The sheet metal must not be stockpiled in places where there is air pollution.
- Where the stacked sheet metal is to be stockpiled for long periods of time, each piece of sheet metal must be examined periodically, and any droplets of water likely to be formed on the surfaces of sheet metal must be wiped off and the surfaces must be dried.
- The stacks must be placed, without fail, on wooden palettes or props as to prevent the sheet metal to come in contact with the floor. When the above conditions are fulfilled, it will be possible to ensure proper circulation of air in the place of stockpiling, thereby ensuring the formation of white rust at a reduced level.

In the event that galvanized metallic products are cut and used in construction sites, the protective coating layer of the cut-off sections are damaged, and as a result, the material's strength against the corrosion is compromised. In order to avoid such a compromise and to improve the service life of the material, EAE recommends to apply ZINGA paint to cut-off sections.

## Zinga Specifications

- It contains 99.995% zinc as specified in ISO 3549 standard. The remaining part is composed of synthetic resin, pigments and solvents. The ZINGA layer which dries after its application to the surface contains 96% zinc in approximate.
- It protects the applied surfaces by way of two methods: Active and passive protection. The cathodic protection provided by it thanks to its high zinc content is called active protection. Zinc salts and zinc carbonates that are formed as a barrier following the application are called as passive protection.
- Its mechanical strength is high.
- It may be easily applied to locally corroded areas.
- It may be applied at such humidity values up to 95%.
- It may be easily applied by means of a brush or a roller.
- Dry ZINGA layer is not toxic.

Constituents	Zinc powder (produced by means of atomization process) Aromatic hydrocarbons binder and others
Density	2,67 kg/dm <sup>3</sup> (+-0,06 kg/dm <sup>3</sup> )
Quantity of solids	80 %by weight - 58% by volume
Thinner type	Zingasolv



## Application Directions

- Surface cracks that occur after the application of cut-off process will be ground.
- Ground surfaces are wiped off by means of a piece of cloth to ensure that there remains no dust and dirt.
- In order to ensure a homogenous distribution of the mixture in Zinga, the mixer apparatus will be dipped into the box by means of a drill, and the mixture operation continues until no solid particle remains at the bottom of the box.
- After Zinga reaches desired homogeneity, it will be applied to the cut-off surface with the help of a brush that is immune to the solvent and whose bristles are not nylon.
- A double-layer Zinga will be applied to reach nearly 80-100 micron coating thickness. The first layer must be strictly applied with the brush and nearly two hours should pass after the application. Then the second layer should be applied. During the application of the second layer, a roller should be used instead of the brush to obtain a smoother surface.

Nominal Cross Section (mm <sup>2</sup> )	Cable Outer (mm)	Weight (kg/m)
1x4	9,0	0,125
1x6	9,5	0,150
1x10	10,5	0,200
1x16	11,5	0,265
1x25	13,5	0,385
1x35	14,5	0,490
1x50	15,0	0,610
1x70	16,7	0,820
1x95	18,5	1,090
1x120	20,0	1,340
1x150	22,0	1,610
1x185	24,1	2,000
1x240	27,5	2,630
2x1,5	12,0	0,195
2x2,5	13,0	0,250
2x4	14,5	0,320
2x6	15,5	0,385
2x10	17,0	0,510
2x16	19,0	0,675
2x25	23,5	1,040
2x35	25,5	1,320
2x50	28,0	1,680
2x70	31,5	2,225
2x95	36,0	3,000
2x120	39,0	3,660
2x150	42,5	4,440
2x185	47,5	5,510
2x240	54,0	7,210
3x1,5	12,5	0,220
3x2,5	13,5	0,285
3x4	15,0	0,370
3x6	16,0	0,455
3x10	18,0	0,615
3x16	20,0	0,835
3x25	24,5	1,290
3x35	27,5	1,680
3x50	30,0	2,130
3x70	33,5	2,880
3x95	38,5	3,890
3x120	41,5	4,730
3x150	46,0	5,810

Nominal Cross Section (mm <sup>2</sup> )	Cable Outer (mm)	Weight (kg/m)
3x185	51,5	7,250
3x240	58,0	9,430
3x16/10	21,0	0,955
3x25/16	26,0	1,460
3x35/16	28,5	1,830
3x50/25	31,5	2,410
3x70/35	35,5	3,270
3x95/50	40,5	4,380
3x120/70	44,5	5,490
3x150/70	48,0	6,470
3x185/95	54,0	8,190
3x240/120	61,5	10,680
4x1,5	13,0	0,250
4x2,5	14,5	0,330
4x4	16,5	0,435
4x6	17,5	0,545
4x10	19,5	0,745
4x16	21,5	1,030
4x25	27,5	1,610
4x35	30,0	2,080
4x50	33,0	2,690
5x1,5	14,0	0,290
7x1,5	15,0	0,345
10x1,5	18,0	0,465
12x1,5	18,5	0,515
14x1,5	19,0	0,570
19x1,5	21,0	0,705
21x1,5	22,0	0,770
24x1,5	24,0	0,870
30x1,5	25,5	1,040
40x1,5	28,0	1,300
5x2,5	15,5	0,385
7x2,5	16,5	0,460
10x2,5	20,0	0,635
12x2,5	21,0	0,710
14x2,5	21,5	0,805
19x2,5	24,0	0,990
21x2,5	25,5	1,110
24x2,5	28,0	1,260
30x2,5	29,5	1,490
40x2,5	33,0	1,910

## CE DECLARATION OF CONFORMITY

**Product Group** Cable Trays, Cable Ladders and Accessories

**Manufacturer** EAE Elektrik Asansor End. Insaat San. ve Tic. A.S.  
Akcaburgaz Mahallesi, 3114. Sokak,  
No:10 34522 Esenyurt-Istanbul

This is to attest, under our sole responsibility, that the aforementioned products conforms with the following regulations and standards.

**Standard :**

**TS EN 61537**

"Cable Tray Systems and Cable Ladder Systems"

**CE- Directive:**

2014/35/EU "Electrical equipment designed for use within certain voltage limits"

**Technical Document Preparation Official:**

EAE Elektrik Asansor End. Insaat San. ve Tic. A.S.  
Akcaburgaz Mahallesi, 3114. Sokak, No:10 34522 Esenyurt-Istanbul

Mustafa AKÇELİK

**Date:**

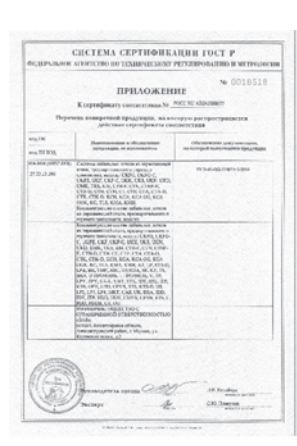
13.08.2024

**Document Signing Authority**

Elif Gamze KAYA OK  
Assistant General Manager









**TEST CERTIFICATE**

Issued to: EAE Elektrik A.Ş. Insaat San. ve Akçaburgaz M. 34510 Esenyurt Turkey

For the product: Low-voltage busbar trunking system

IP55

EAE Elektrik A.Ş. Insaat San. ve Akçaburgaz M. 34510 Esenyurt Turkey

**TEST CERTIFICATE**

Issued to: EAE Elektrik A.Ş. Insaat San. ve Akçaburgaz M. 34510 Esenyurt Turkey

For the product: Design verification

EAE Elektrik A.Ş. Insaat San. ve Akçaburgaz M. 34510 Esenyurt Turkey

**TEST CERTIFICATE**

Issued to: EAE Elektrik A.Ş. Insaat San. ve Akçaburgaz M. 34510 Esenyurt Turkey

For the product: IEC 61439-6: Clauses: 10.2 CC, and DD

EAE Elektrik A.Ş. Insaat San. ve Akçaburgaz M. 34510 Esenyurt Turkey

**TEST CERTIFICATE**

Issued to: EAE Elektrik A.Ş. Insaat San. ve Akçaburgaz M. 34510 Esenyurt Turkey

For the product: Busbar trunking system

EAE Elektrik A.Ş. Insaat San. ve Akçaburgaz M. 34510 Esenyurt Turkey

**TEST CERTIFICATE**

Issued to: EAE Elektrik A.Ş. Insaat San. ve Akçaburgaz M. 34510 Esenyurt Turkey

For the product: Joint and straight

EAE Elektrik A.Ş. Insaat San. ve Akçaburgaz M. 34510 Esenyurt Turkey

**TEST CERTIFICATE**

Issued to: EAE Elektrik A.Ş. Insaat San. ve Akçaburgaz M. 34510 Esenyurt Turkey

For the product: Meander 1051, 68

EAE Elektrik A.Ş. Insaat San. ve Akçaburgaz M. 34510 Esenyurt Turkey

**TEST CERTIFICATE**

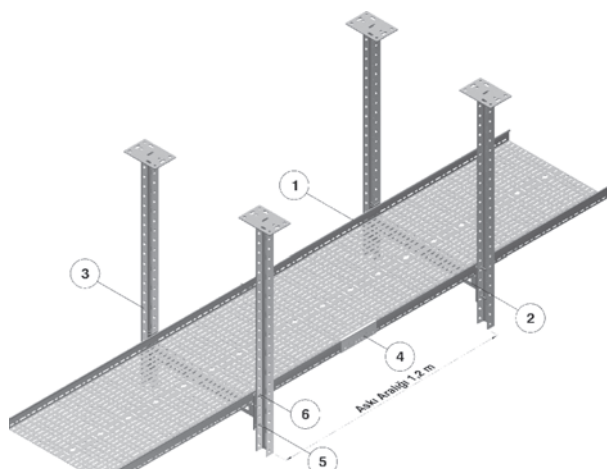
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For the product: 2 ED Arnhem, The Netherlands

EAE Elektrik A.Ş. Insaat San. ve Akçaburgaz M. 34510 Esenyurt Turkey

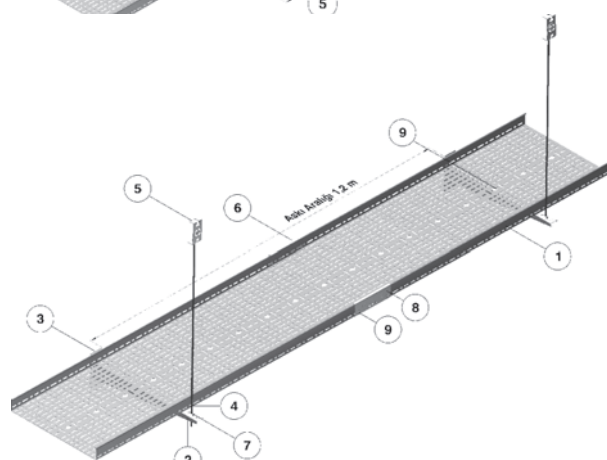
# INFO

## Hanging Example



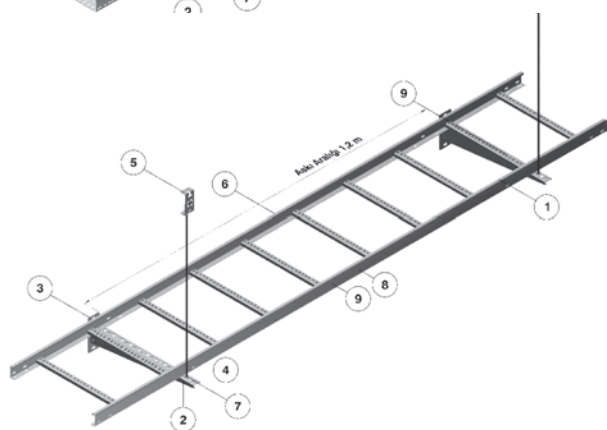
Order No	Description	Order Code	Quantity
1	60 KMA 600	3000109	1
2	UDYB 600	3007992	2
3	UDD 600	3008000	4
4	Joint Fitting	3008595	2
5	M10 Bolt	1000565	8
6	M10 Bolt Nut	1000522	8

Gaps Between Trays 1,2m



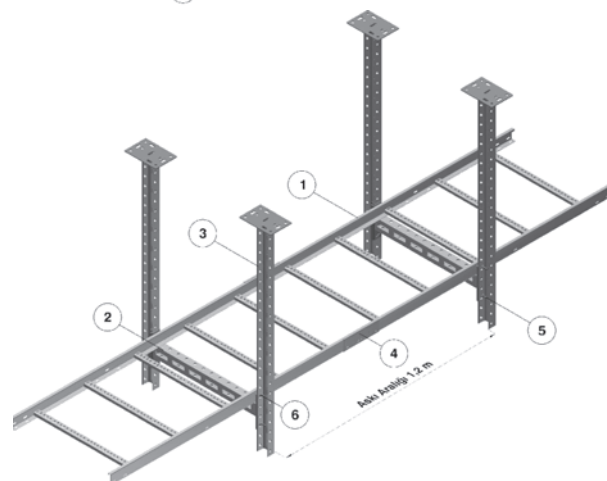
Order No	Description	Order Code	Quantity
1	60 CTA 500	3000109	1
2	STS Console	2000802	2
3	STS Head	2000244	2
4	M10 Rod	5000032	2
5	"U" Ceiling Mounting Fitting	3000001	2
6	Joint Fitting	3008595	2
7	M10 Bolt Nut	1000522	12
8	M6 Bolt	1000285	8
9	M6 Bolt Nut	1000520	8

Gaps Between Trays 1,2m



Order No	Description	Order Code	Quantity
1	60 KMA 500	3001572	1
2	STS Console	2000802	2
3	STS Head	2000244	2
4	M10 Rod	5000032	2
5	"U" Ceiling Mounting Fitting	3000001	2
6	Joint Fitting	3008595	2
7	M10 Bolt Nut	1000522	12
8	M6 Bolt	1000285	8
9	M6 Bolt Nut	1000520	8

Gaps Between Trays 1,2m



Order No	Description	Order Code	Quantity
1	60 KMA 600	3000109	1
2	UDYB 600	3007992	2
3	UDD 600	3008000	4
4	Joint Fitting	3008595	2
5	M10 Bolt	1000565	8
6	M10 Bolt Nut	1000522	8

Gaps Between Trays 1,2m

32% of all fires in the world every year are still attributable to electric contacts. Moreover this ratio continues to rise instead of an anticipated decline in parallel with the technological progress. It is obvious that it is not possible to fully avoid fires; but it is possible by taking certain safety measures to gain some vitally important time to ensure the safe evacuation of people!

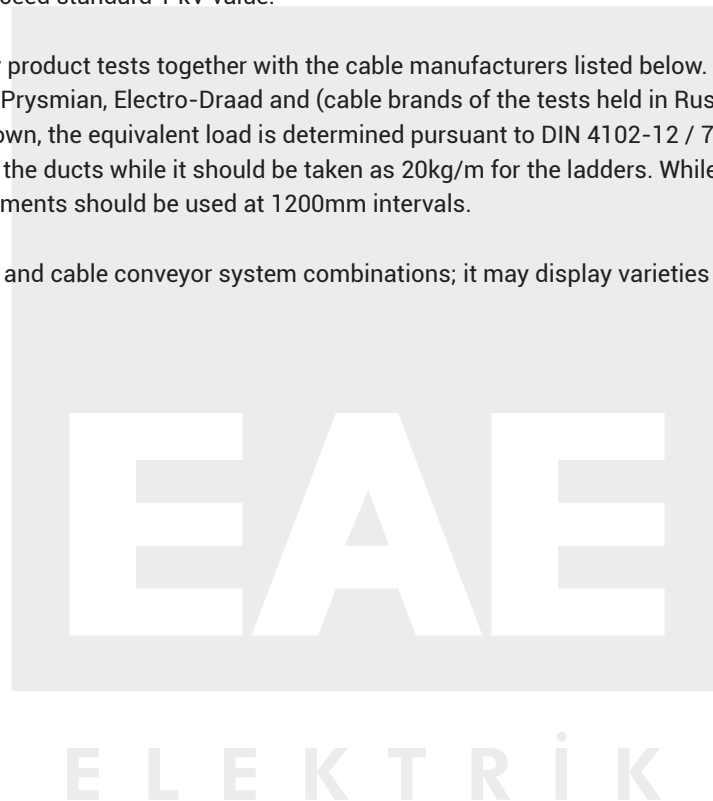
E30-E90 Fire Resistance Standard is the international criteria that allows the operation of functions which is required to gain this time. Its basic purpose is to ensure that certain systems that are vitally important for people during a fire, including emergency lighting, elevator or public address systems will remain operational and functional. Considering the fact that cabling for the said systems is over the cable conveyor systems, it will be more clearly understood how important these conveyor systems are in order to ensure the continuity of this functionality.

The test will take place in a special test furnace which can be heated based on the standard temperature and time curve. Cable systems are rated E30-E90 based on the level by which they maintain their functionality and they are mandatory in low voltage facilities that do not exceed standard 1 kV value.

EAE organized more than thirty product tests together with the cable manufacturers listed below. These brands include: Dätwyler, Eupen, Faber, Studer, Prysmian, Electro-Draad and (cable brands of the tests held in Russia).

While a duct or ladder is laid down, the equivalent load is determined pursuant to DIN 4102-12 / 7.3.2.4. Maximum load should be taken as 10kg/m for the ducts while it should be taken as 20kg/m for the ladders. While cables are laid down in a duct or ladder, duct bearing elements should be used at 1200mm intervals.

The test is applicable for cable and cable conveyor system combinations; it may display varieties for static structure.



### Universal Cable Tray and Universal Hanging Systems

- 1) In the specified locations in the project, perforated sheet metal should be used for the horizontal distribution of cables. The Universal Cable Trays of heavy-duty character should be used, with the edges curved inward in a circular manner, approximately 10mm in diameter, extending towards the outside.
- 2) Universal Cable Trays with a width of up to 100-200-300mm should have a sheet thickness of 0.7mm, and those with a width of 300-400-500-600mm should have a thickness of 0.9mm, made of galvanized sheet metal. The vertical edge height of the cable tray should be 40mm in all trays. However, depending on the cable cross-section and density, the edge height may be 50-60-75-100mm as needed. Products with edge heights of 75mm and 100mm are equipped with pass-through covers.
- 3) Sheet Cable trays should be produced in equal-length units, and their lengths should not be less than 3 meters.
- 4) Holes should be drilled along the edges and inside Universal Cable trays to ensure ventilation. Hole dimensions should be 7x26mm along the edge heights, longitudinal 7x28mm on the tray base surface, transverse 7x57mm slot holes, internal 11mm diameter holes, and 25mm diameter elbow holes. These holes should be punched with a minimum of 3mm for tray strength.
- 5) Galvanized sheet metal in compliance with TS EN 10346-TS EN 10143 standards should be used in the production of UKFE Cable Carriers. High-quality iron-based sheet material must comply with TS EN 10346-TS EN 10143 standards and be zinc-coated using the hot-dip method. Subsequently, Universal Cable Trays and accessories should be manufactured from galvanized sheet metal.
- 6) If requested, after this production, epoxy polyester electrostatic powder coating with RAL code should be applied. After the painting process, it should be baked at 180°C. The paint thickness should be a minimum of 50 µm. Painted trays and accessories should be packaged for protection. The length of galvanized and painted trays should be L=3000mm. (During assembly, in case of cutting cable trays, etc., the cut areas should be coated with electrostatic powder paint (in an oily paint consistency) using cellulose thinner and brushed. Allow 2 hours for drying.)
- 7) Where the height of Universal Cable Tray changes, LEVEL ADAPTATION MODULE or level change attachments should be used.
- 8) In places where the Cable Tray changes direction (as needed), 90° horizontal turn element, horizontal (T) connection element, (+) quadruple turn element, concave and convex turn elements should be used. These elements should not have sharp corners.
- 9) In vertical descents and ascents, panel cable connections, socket group, etc. connections: Vertical (T) descent element - Vertical (T) Middle Descent/Exit element should be used.
- 10) The connection of Cable Trays to each other should be made with Connection Elements. Each length is 3m. 2 pcs of connection elements should be used every three meters. The assembly of all turn elements is done by passing through the trays (no need for a connection element). The bolt holes should be suitable for the M6 connection bolt set. M6x12 domeheaded lockable bolts and flanged nuts should be used.
- 11) Due to cable density, connections of trays used in different widths will be made with Reduction Modules.
- 12) For connection assembly, lacquered, metric system-compatible (M6 Connection Bolt set) bolts, nuts, etc. should be used.
- 13) In all turn modules and reduction modules connections (H=40mm), 4 pcs, (H=60mm-75mm-100mm), 8 pcs of M6x12 Connection Bolt nut set should be used.
- 14) Cable trays should not be walked on or used as a walking path.

- 1) Projede belirtilen yerlerde, kabloların yatay dağıtımı için delikli sacdan yapılmış, (kenarları içe dairesel olarak kıvrık, dıştan dışa yaklaşık 10mm çapında) ağır hizmet karakterinde Üniöersal Kablo taşıyıcıları kullanılmalıdır.
- 2) Genişliğı 50-100- 150- 200mm'ye kadar olan Üniöersal Kablo taşıyıcıları sac kalınlığı 0,8- 1 mm, genişliğı 300mm'ye kadar olanlar 1,2mm, genişliğı 300-400-500-600mm'ye kadar olanlar 1,5-2mm kalınlığında galvanizli sacdan yapılmalıdır. Kablo taşıyıcı kanalların dik açılı kenar yüksekliğı; 40mm-50mm-60mm-75mm-100mm 'dir.
- 3) Sac Kablo Kanalları eşit uzunlukta üniteler halinde üretilmeli, boyları 3 metre den küçük olmamalıdır. Ancak, istenildiğinde: 4-5 ve 6 metreye kadar olan yekpare boylarda üretilmelidir. Ayrıca talep halinde, taşıyıcı sac kablo kanalları deliksiz olarak da üretilmelidir. Deliksiz üretimde, sadece ek yerlerinde delik olmalıdır.
- 4) Üniöersal kablo kanal kenarlarında ve içinde havalandırmayı sağlamak için tüm kanal boyunca delikler açılmış olmalıdır. Delik ebatları 8 x 23,8 x 30, 8 x 35 ve çap 11 delikler olmalıdır. Kanalın tam ortasında 166mm aralıklı 20,5mm çapında rakor için delikler olmalıdır.
- 5) Kablo taşıyıcı imalatında TS EN 10346-TS EN 10143 standartlarına uygun galvanizli sac kullanılmalıdır. Yüksek kaliteli demir esaslı sac malzeme; TS EN 10346- TS EN 10143 standartlarına uygun, sıcak daldırma metodu ile çinko kaplanmalıdır. Daha sonra, galvanizlenmiş sacdan, Üniöersal Kablo Kanalı ve aksesuarlarının imalatı yapılmalıdır.
- 6) Talep halinde bu imalatı takiben, RAL kodlu, epoksi polyester, elektrostatik toz boya atılmalıdır. Paintma işleminden sonra 180° derecede fırınlanmalıdır. Paint kalınlığı minimum 50 µm olmalıdır. Paintlı kanal ve aksesuarları daha sonra korunmak amacı ile ambalajlanmalıdır. Galvaniz üzeri boyalı kanalların uzunluğı: L=3000mm olmalıdır. (Montaj sırasında kablo kanalı kesilme vs. durumlarında bir kap içerisinde selülozik tiner ile sıvılandırılmış elektrostatik toz boya (yağılı boya kıvamında olacak), fırça ile kesilen yerlere rutuş yapılmalı ve 2 saat kuruması beklenmelidir.
- 7) Üniöersal Kablo Kanallarının yükseklik değıştirdiğı yerlerde, seviye değıştirme modülü veya seviye değıştirme ekleri kullanılmalıdır.
- 8) Taşıyıcı Kanalın yön değıştirdiğı yerlerde (ihtiyaca göre): 90° yatay dönüş elemanı; yatay ( T) Bağılantı elemanı; (+) Dörtlü dönüş elemanı iç bükey dönüş dış bükey dönüş elemanları kullanılmalıdır. Bu elemanların kullanım alanı keskin köşeli olmamalıdır.
- 9) Dikey iniş çıkışlarda, pano kablo bağılantılarında, priz grup vb. bağılantılarında: Dikey (T) duvardan iniş elemanı dikey (T) ortadan iniş / çıkış elemanı kullanılmalıdır.
- 10) Taşıyıcı Kanalların birbirlerine bağılantıları, Ekleme Elemanları ile yapılmalıdır. Her boy uzunluğı 3m'dir. Her üç metre'de 2 adet ek elemanı kullanılacaktır. Tüm dönüş elemanlarının montajı, kanallara geçme suretiyle yapılır (ek elemanına ihtiyaç yoktur). Cıvata delikleri M6 ek cıvata takımına uygun olmalıdır. M6x12- bombe başlı kilitlenebilir cıvata ve etekli-flanşlı somun, takımı kullanılmalıdır.
- 11) Kablo yoğunluğı nedeniyle, farklı genişlikte kullanılan kanalların bağılantıları ise Redüksiyon Modülleri ile yapılacaktır.
- 12) Bağılantı montajı için lak kaplı, metrik sisteme uygun (M6 Ek Cıvata takımı) cıvata ve somun vb. kullanılacaktır.
- 13) Tüm dönüş modülleri ve redüksiyon modülleri bağılantılarında (H=40mm için) 4 adet, (H=50mm için) 4 adet, (H= 60mm için) 4 adet, (H= 75mm için) 8 adet, (H= 100mm için) 8 adet, M6x12 ek cıvata somun, takımı kullanılmalıdır.
- 14) Kablo kanalı üzerinde yürünmemeli ve yürüyüş yolu olarak kullanılmamalıdır.



1. In the designated areas of the project, perforated sheet metal should be used for the horizontal distribution of cables, and universal cable trays of normal service character must be employed.
2. Universal cable trays with widths up to 50-100-150-200mm should be made of galvanized sheet metal with a thickness of 0.8-1mm; those with widths up to 300mm should have a thickness of 1.2mm, and those with widths up to 300-400-500-600mm should be made of 1.5-2mm thick galvanized sheet metal. The vertical edge height of cable carrier trays is 40mm-50mm-60mm-75mm-100mm.
3. Sheet cable trays should be produced in equal-length units, with lengths not less than 3 meters. However, when desired, they can be produced in continuous lengths of 4-5 and 6 meters. Additionally, upon request, carrier sheet cable trays should be produced without perforations, with holes only at the joints in seamless production.
4. All along the universal cable trays, holes should be drilled for ventilation, with hole dimensions of 8 x 23.8 x 30, 8 x 35, and a diameter of 11. In the middle of the tray, holes with a diameter of 20.5mm at intervals of 166mm should be present for couplings.
5. In the manufacture of cable trays, galvanized sheet metal in compliance with TS EN 10346-TS EN 10143 standards should be used. High-quality iron-based sheet material must comply with TS EN 10346-TS EN 10143 standards and be zinc-coated by the hot-dip method. Subsequently, universal cable trays and accessories should be manufactured from galvanized sheet metal.
6. Upon request, following this production, epoxy polyester with an RAL code should be applied. After the painting process, it should be baked at 180° degrees. The paint thickness should be a minimum of 50 µm. Painted trays and accessories should be packaged for protection. The length of painted trays over galvanized surfaces should be L=3000mm. (During installation, if there is a need to cut the cable channel, it should be painted with electrostatic powder paint thinned with cellulose thinner (in an oily paint consistency), brushed onto the cut areas, and allowed to dry for 2 hours).
7. In places where the height of universal cable tray changes, LEVEL ADAPTATION MODULES or level-changing attachments should be used.
8. Where the tray changes direction (as needed): 90° horizontal turn element; horizontal (T) connection element; (+) quadruple turn element; concave and convex turn elements should be used. These elements' usage areas should not have sharp angles.
9. In vertical descents/ascent, panel cable connections, socket group, etc., use vertical (T) wall descent element and vertical (T) middle descent/exit element.
10. Connections between trays should be made with connection elements. Each length is 3 meters, and 2 pcs of connection elements will be used every three meters. The installation of all turning elements is done by passing through the trays (no need for connection elements). Bolt holes should be suitable for M6 connection bolt set. M6x12 - domeheaded lockable bolt and flanged nut assembly should be used.
11. Due to cable density, connections between channels of different widths will be made with reduction modules.
12. For connection assembly, use lacquered, metric system-compliant (M6 connection bolt set) bolts and nuts, etc.
13. For all turning modules and reduction modules connections (H=40mm), use 4 pcs; (H=50mm), use 4 pcs; (H=60mm), use 4 pcs; (H=75mm), use 8 pcs; (H=100mm), use 8 pcs, M6x12 connection bolt nut set.
14. Cable trays should not be walked on or used as a walkway.

1. UKFG cable trays should be manufactured with a length of 3050mm and should overlap by 50mm during assembly. They can be assembled with a self-locking system. The base holes on UKFG cable trays should have a reinforcing shape for increased strength. The use of additional elements is not necessary, but it should be optionally compatible with external additional elements. For grounding, M6 x 12 dome-headed lockable bolts and flanged nut sets should be used.
2. In the designated areas of the project, for the horizontal distribution of cables, universal cable trays of heavy-duty character (with edges inwardly circularly curved, approximately 10mm in diameter outward) should be used.
3. Universal cable trays with widths up to 100-200-300mm should be made of galvanized sheet metal with a thickness of 0.7mm; those with widths up to 300-400-500-600mm should have a thickness of 0.9mm. The vertical edge height of cable trays should be 40mm for all trays. However, depending on the cable cross-section and density, the edge height can be 50-60-75-100mm as needed. Products with edge heights of 75mm and 100mm have passing cover features.
4. Sheet cable trays should be produced in equal-length units, with lengths not less than 3050mm.
5. To ensure ventilation, holes should be drilled throughout the entire length of the universal cable trays. Hole dimensions should be 7x26mm on the edge heights, 7x28mm longitudinally on the base surface of the tray, 7x57mm transversely slot holes, diameter 11 holes, and diameter 25mm coupler holes on the inside. These holes should be minimally 3mm shaped to enhance the trays strength.
6. In the manufacturing of UKFG cable trays, galvanized sheet metal compliant with TS EN 10346-TS EN 10143 standards should be used.
7. In places where the height of universal cable trays changes, LEVEL ADAPTATION MODULEs or level-changing attachments should be used.
8. Where the tray changes direction (as needed): 90° horizontal turn element; horizontal (T) connection element; (+) quadruple turn element; concave and convex turn elements should be used. The usage area of these elements should not have sharp angles.
9. In vertical descents/ascent, panel cable connections, socket group, etc., use vertical (T) wall descent element and vertical (T) middle descent/exit element.
10. Due to cable density, connections between trays of different widths will be made with Reduction Modules.
11. For connection assembly, use lacquered, metric system-compliant (M6 connection bolt set) bolts and nuts, etc.

1. It is used for the horizontal and vertical distribution of cables at the specified location in the project.
2. The reinforcing curve at the upper part of the cable ladder edges should be 10mm, and the reinforcing curve at the lower part should be 23mm.
3. Hole dimensions opened for creating joints in cable ladder edges will be 7x20.
4. Cable ladder crossbars will be riveted to the edges at intervals of 300mm.
5. Side wall sheets of the cable ladder should be reinforced by shaping along the length of the wall sheet.
6. The number of side wall forms should be one for 40-50-60mm side wall heights, two for 75-100mm side wall heights, and three for 125-150mm side wall heights. Cable ladders should be produced in equal lengths with a length of 3m. Optionally, they should be produced in 6m lengths.
7. The cable ladder should only be foldable in one direction.
8. Cable ladder crossbars should be produced as C. The C crossbar should be 10mm in height, 27mm in width, and with dimensions of 7x15 at 25mm intervals.
9. Cable ladder manufacturing should comply with TS EN 61537 standards. The galvanized thickness should be 7-14 µm.
10. In the manufacture of ladder trays, sheets compliant with TS EN 10346 - TS EN 10143 standards should be used. Highquality iron-based sheet material must comply with TS EN 10346 -TS EN 10143 standards and be zinc-coated by the hotdip method. Subsequently, ladder trays and accessories should be manufactured from galvanized sheet metal.
11. Level Adaptation Modules or level-changing attachments should be used where the height of the cable ladder changes.
12. The connections between cable ladders should be made with two pcs of additional elements. The installation of all turning elements into the trays should be done with additional elements.
13. Where the cable ladder changes direction; 90° horizontal turn element, horizontal (T) connection element, quadruple turn element should be used.
14. Due to cable density, connections between trays of different widths should be made with (Z type) Reduction Modules. The reduction from the middle should consist of two symmetrical elements. Right reduction and left reduction; a combination of one normal reduction element and one additional element should be used.
15. For connection assembly, use lacquered, M6 Bold, nut set. The bolt should be M6x12. The bolt should be domed, flanged, and lockable in its socket. The M6 nut should be single-flanged and should have a tab.
16. In both the additional module and the reduction modules, for each additional element: If the cable ladder edge height is 40-50-60mm, use 4 pcs; if it is 75-100-125mm, use 8 pcs; if it is 150mm, use 12 pcs.
17. The cable ladder should not be walked on or used as a walkway.



1. It is used for the horizontal and vertical distribution of power cables at the specified locations in the project.
2. The strength-enhancing curve at the upper part of the cable ladder edges should be 10mm. The traverse welding foot at the lower part of the cable ladder edges should be 23 mm.
3. Hole dimensions opened for creating joints in cable ladder edges will be 7x20 mm.
4. Cable ladder crossbars will be welded to the edges at intervals of 300 mm.
5. Side wall sheets of the cable ladder should be reinforced by shaping along the length of the wall sheet.
6. The number of side wall forms should be one for 40-50-60 mm side wall heights, two for 75-100 mm side wall heights, and three for 125-150 mm side wall heights. Cable ladders should be produced in equal lengths with a length of 3 m. Optionally, they should be produced in 6 m lengths.
7. Cable ladders should be manufactured from 1.2 - 1.5 or 2 mm sheet metal.
8. Cable ladders should be produced in equal lengths with a length of 3 m.
9. Cable ladder crossbars should be produced as U. The U crossbar should be 17 mm in height, 35 mm in width, with a single-sided angled curve, and holes on the flat surface should be 25 mm apart with dimensions of 7.5x14 mm.
10. Cable ladders should comply with TS EN 61537 TS EN ISO 1461 standards for manufacturing. High-quality ironbased sheet material should be zinc-coated by the hot-dip method in accordance with TS EN ISO 1461 standards after drilling and bending. Before zinc coating, necessary cleaning and degreasing processes should be carried out. After this process, washing should be done, and then it should be passed through a flux bath. The galvanized thickness should be a minimum of 45 µm.
11. Where the height of the cable ladder changes, LEVEL ADAPTATION MODULEs or level-changing attachments should be used.
12. The connections between cable ladders should be made with two pcs of additional elements. The installation of all turning elements into the channels should be done with additional elements.
13. Where the cable ladder changes direction; 90° horizontal turn element, horizontal (T) connection element, quadruple turn element should be used.
14. Due to cable density, connections between trays of different widths should be made with (Z type) Reduction Modules. Reduction from the middle should consist of two symmetrical elements. Right reduction and left reduction; a combination of one normal reduction element and one additional element should be used.
15. For connection assembly, use lacquered, M6 Bolt, nut set. Bolt dimensions should be M6x12. The bolt should be domed, flanged, and lockable in its socket. The M6 Nut should be single-flanged and have a tab.
16. The Additional Bolt set to be used in both the additional module and the reduction modules: If the cable ladder edge height is 40 - 50 - 60 mm, use 4 pcs; if it is 75 mm, use 8 pcs - if the edge height is 100 mm, use 12 pcs.
17. The cable ladder should not be walked on or used as a walkway.

EAE TRUNKING SYSTEM	In strong current installations, just like in weak current installations, it is a cable tray system that provides reliable, easy, quick, mechanical, and optical protection, allowing cables to be carried within it after installation.
	The edges of the tray are made from perforated metal material that has been bent inward to enhance strength.
	Straight lengths are produced as standard 3 meters.

The EAE Trunking Cable Tray System product range varies according to its external dimensions. The height and width values are specified below.

50 X 50	75 X 75	100 X 100	150 X 150	200 X 200
50 X 75	75 X 100	100 X 150	150 X 200	200 X 300
50 X 100	75 X 150	100 X 200	150 X 300	
50 X 150	75 X 200	100 X 300		
50 X 200	75 X 300			
50 X 300				

- For the trays specified in the table, sheet metal with a thickness of 1mm-1.2mm-1.5mm is used. Straight lengths and turn modules are supplied with their covers.
- In straight lengths, there are 3 locking points to secure the covers. Each locking point has 2 locks for widths of 100, 150, and 200mm, and 1 lock for widths of 50 and 75mm.
- The TKS Series Trunking Tray Cover has a special locking system. It can be easily locked by quarter-turning the locking system. The tongue under the cover ensures that the cover is securely fixed to the tray with a quarter-turn.
- Grounding (electrical continuity) of the tray is crucial for data and telephone cables. In the EAE Trunking Tray system, there are grounding continuity and reduced resistance link gaps at additional points on each straight length and turn module. These links are available within the product range.
- Straight lengths are connected to each other with the TKS Joint element. Two joint elements are used at each joint point.
- The number of additional bolt sets using zinc-coated M6x12 dome-headed square neck bolts and M6 serrated washer nuts varies according to the channel height at each joint point.
- For heights of 50 and 75mm, 2 sets are used at each joint element, For a height of 100mm, 4 sets are used at each joint element, For a height of 150mm, 6 sets are used at each joint element, For a height of 200mm, 6 additional bolt sets are used at each joint element.
- No additional elements are used in the assembly of turn modules. They can be assembled using the parts on the module itself.
- Turn modules provide easy cable routing with their round turning angle, avoiding damage to the cable with smooth turning lines.
- Pre-galvanized Trunking Cable Tray System: Raw materials must comply with TS EN 10346-TS EN 10143 standards. The total galvanized dipping thickness should be 7-14  $\mu\text{m}$ .
- Hot-Dip Galvanized Trunking Tray System: Hot-dip galvanizing should be done according to TS EN 1461 standards. The total galvanized dipping thickness should be 45-55  $\mu\text{m}$ .
- Stainless Steel sheet of 304 quality is used.

1. In the locations specified in the project, perforated sheet metal should be used for the horizontal distribution of cables, and universal cable trays of normal service character should be used.
2. Universal cable trays with widths of 50-100-150-200mm should be made of 0.8-1mm thick galvanized sheet metal, those with widths up to 300mm should be 1.2mm thick, and those with widths of 300-400-500-600mm should be made of 1.5-2mm thick galvanized sheet metal. The vertical edge height of the cable trays is 40mm-50mm-60mm-75mm-100mm.
3. Perforated cable trays should be produced in equal-length units, with a minimum length of 3 meters. However, they can be produced in continuous lengths up to 4-5 and 6 meters if requested. Additionally, upon request, sheet cable trays should be producible without perforations. In non-perforated production, there should only be holes at the joints.
4. Ventilation holes should be opened along the entire length of universal cable trays to ensure ventilation both on the edges and inside the trays. Hole dimensions should be 8 x 23.8 x 30, 8 x 35, and a diameter of 11. Holes for couplings with a diameter of 20.5mm spaced at intervals of 166mm should be present in the middle of the tray.
5. The manufacture of Sheet Cable Trays must comply with TS EN ISO 1461 standards. High-quality iron-based sheet material should be zinc-coated using the hot-dip method in accordance with TS EN ISO 1461 standards after the punching and bending processes. Necessary cleaning and de-greasing processes should be carried out before zinc coating. After galvanizing, the material should undergo final inspection and cleaning.
6. Upon request, after this manufacturing process, epoxy polyester electrostatic powder paint with RAL code should be applied. It should be baked at 180° degrees after the painting process. The paint thickness should be a minimum of 50µm. Painted trays and accessories should be packaged for protection. The length of galvanized and painted trays should be L=3000mm. In case of cutting the cable channel during assembly, in a container, electrostatic powder paint diluted with cellulose thinner (in an oily paint consistency) should be applied with a brush to the cut areas, touch-up should be done, and it should be allowed to dry for 2 hours.
7. LEVEL ADAPTATION MODULE or level-changing attachments should be used where Universal Cable Trays change height.
8. Where the Tray changes direction (as needed): 90° horizontal turn element; horizontal (T) connection element; (+) quadruple turn element, inner and outer convex turn elements should be used. The use of these elements should not involve sharp corners.
9. In vertical descents and ascents, panel cable connections, socket group, etc. connections: Vertical (T) wall descent element - Vertical (T) Center Descent/Ascent element should be used.
10. The connections between Trays should be made with Connection Elements. Each length is 3m. Two pieces of connecting elements should be used every three meters. The assembly of all turn elements is done by passing through the channels (no need for additional connecting elements). Bolt holes should be suitable for M6 Connection Bolt set. M6x12 - domed head lockable Bolt and flanged nut set should be used.
11. Due to cable density, connections of trays used in different widths will be made with Reduction Modules.
12. For connection assembly, lacquered, metric system-compatible (M6 Connection Bolt set) Bolts and nuts, etc. should be used.
13. In all connection points of turn modules and reduction modules (for H=40mm) 4 pcs, (for H=50mm) 4 pcs, (for H=60mm) 4 pcs, (for H=75mm) 8 pcs, (for H=100mm) 8 pcs of M6x12 connection Bolt nut set should be used.
14. Cable trays should not be walked on or used as a walking path.

1. Universal Cable Trays with a width of up to 100-200-300mm should be made of 1.5mm thick sheet metal, and those with a width of up to 400-500-600mm should be made of 2mm thick galvanized sheet metal. The vertical edge height of the cable trays is 60mm-75mm-100mm.
2. Sheet Cable Trays should be produced in equal-length units, with lengths not less than 3 meters. However, upon request, they can be produced in continuous lengths of 4-5 and 6 meters. Additionally, upon request, sheet cable trays can be produced without perforations. In perforation-free production, holes should only be present at joint locations.
3. Holes should be drilled along the edges and inside the universal cable trays to provide ventilation throughout the tray. Hole dimensions should be 8 x 23.8 x 30, 8 x 35, and diameter 11. Holes for connectors with a diameter of 20.5mm at intervals of 166mm should be present in the middle of the tray.
4. Manufacturing of cable trays must comply with TS EN ISO 1461 standards. High-quality iron-based sheet material should be zinc-coated using the hot-dip method in accordance with TS EN ISO 1461 standards after the punching and bending processes. Necessary cleaning and degreasing processes should be carried out before zinc coating. Finally, washing and rinsing should be performed, followed by passing through a flux bath. The thickness of the galvanized coating should be a minimum of 45 µm. After galvanization, a final inspection and cleaning of the material should be conducted.
5. Upon request, after this manufacturing process, epoxy polyester electrostatic powder paint with an RAL code should be applied. The painted trays should be baked at 180°C. The paint thickness should be a minimum of 50 µm.
6. Painted trays and accessories should be packaged for protection. The length of galvanized painted trays should be L=3000mm. In case of cutting the cable trays during installation, a cellulose thinner-diluted electrostatic powder paint (in an oily paint consistency) should be applied to the cut areas with a brush, and a drying time of 2 hours should be allowed.
7. In places where Universal Cable Trays change height, LEVEL ADAPTATION MODULE or level adjustment attachments should be used.
8. In places where the Tray changes direction (as needed): 90° horizontal turn element; horizontal (T) Connection element; (+) four-way turn element, inner concave turn, and outer concave turn elements should be used. The use of these elements should not involve sharp corners.
9. In vertical descents and ascents, panel cable connections, socket group, etc. connections: Vertical (T) descent element - Vertical (T) Middle Descent/Ascent element should be used.
10. Connections between Trays should be made with Connecting Elements. Each length is 3m, and 2 pieces of connecting elements will be used every three meters. The assembly of all turning elements is done by passing through the trays (no need for additional connecting elements). Bolt holes should be suitable for M6 Connecting Bolt set. M6x12 - domed head lockable Bolt and flanged nut set should be used.
11. Due to cable density, connections between trays of different widths will be made with Reduction Modules.
12. For connection assembly, lacquered, metric system-compatible (M6 Connecting Bolt set) Bolt and nut, etc. should be used.
13. In all turning module and reduction module connections (for H=40mm) 4 pieces, (for H=50mm) 4 pieces, (for H=60mm) 4 pieces, (for H=75mm) 8 pieces, (for H=100mm) 8 pieces of M6x12 Connecting Bolt nut set should be used.
14. The cable tray should not be walked on or used as a walking path.

1. In the specified locations in the project, perforated sheet metal Universal Cable Trays of heavy-duty character (with edges curved inward in a circular manner, approximately 10 mm in diameter externally) should be used for the horizontal distribution of cables.
2. Universal Cable Trays with widths of 100-300 mm should be made of galvanized sheet metal with a thickness of 0.7 mm, and those with widths up to 400-600 mm should be made with a thickness of 0.9 mm. The vertical edge height of cable trays should be 40-50-60-75-100 mm in all trays. Edge heights of 75 mm and 100 mm have pass-through covers. Depending on the cable section and density, if needed, the edge height can be 40 mm - 50 mm - 60 mm for CTHF-E cable trays, with thicknesses for widths of 100-200 mm: 0.8 mm, for 300-400 mm: 1 mm, and for 500-600 mm: 1.2 mm.
3. Sheet Cable Trays should be produced in equal-length units, and their lengths should not be less than 3 meters.
4. To provide ventilation at the edges and inside Universal Cable Trays, holes should be drilled throughout the tray. Hole dimensions should be 7 x 26 mm for edge heights, longitudinal slot holes of 7 x 28 mm on the trays base surface, transverse slot holes of 7 x 57 mm, internal holes with a diameter of 11 mm, and coupler holes with a diameter of 25 mm. These holes should be chamfered at a minimum of 3 mm for tray strength.
5. Manufacturing of CTHF-E Cable Trays must comply with TS EN ISO 1461 standards. High-quality iron-based sheet material should be hot-dipped in zinc according to TS EN ISO 1461 standards after the punching and bending process. Necessary cleaning and degreasing processes should be carried out before zinc coating. The final process should include washing, rinsing, and passing through a flux bath. The thickness of the galvanized coating should be a minimum of 45 µm. After the galvanization process, the material should undergo final inspection and cleaning.
6. Upon request, following this manufacturing process, epoxy polyester electrostatic powder coating with an RAL code should be applied. After the painting process, it should be baked at 180° degrees. The paint thickness should be a minimum of 50 µm. Painted trays and accessories should be packaged for protection. The length of galvanized and painted trays should be L=3000 mm. (In case of cutting the cable tray during assembly, similar to oil paint, cellulose thinner-diluted electrostatic powder paint should be applied with a brush to the cut areas, and it should be allowed to dry for 2 hours.)
7. In places where Universal Cable Trays change height, LEVEL ADAPTATION MODULE or level-changing attachments should be used.
8. In places where the tray changes direction (as needed): 90° horizontal turn element; horizontal (T) connection element; (+) quadruple turn element, concave and convex turn elements should be used. The usage area of these elements should not have sharp corners.
9. In vertical descents and exits, panel cable connections, socket group connections, etc.: Vertical (T) wall descent element - Vertical (T) middle descent/exit element should be used.
10. The connections between trays should be made with Coupling Elements. Each length is 3m. Two coupling elements should be used every three meters. The assembly of all turning elements is done by passing through the trays (no need for coupling elements). Bolt holes should be suitable for M6 additional Bolt set. M6x12 - dome-headed lockable Bolt and flanged nut set should be used.
11. Due to cable density, connections between trays of different widths will be made with Reduction Modules.
12. For connection assembly, lacquered, metric system-compatible (M6 additional Bolt set) Bolts, nuts, etc. should be used.
13. In all turning modules and reduction modules connections (for H=40-50 mm), 4 pcs, (for H=60 mm), 8 pcs M6x12 additional Bolt nut set should be used.
14. Cable trays should not be walked on or used as a walking path.

1. Universal Cable Trays with a width of up to 100-200-300mm should be made of 1.5mm thick sheet metal, and those with a width of up to 400-500-600mm should be made of 2mm thick galvanized sheet metal. The vertical edge height of the cable trays is 60mm-75mm-100mm.
2. Sheet Cable Trays should be produced in equal-length units, with lengths not less than 3 meters. However, upon request, they can be produced in continuous lengths of 4-5 and 6 meters. Additionally, upon request, sheet cable trays can be produced without perforations. In perforation-free production, holes should only be present at joint locations.
3. Holes should be drilled along the edges and inside the universal cable trays to provide ventilation throughout the tray. Hole dimensions should be 8 x 23.8 x 30, 8 x 35, and diameter 11. Holes for connectors with a diameter of 20.5mm at intervals of 166mm should be present in the middle of the tray.
4. Manufacturing of cable trays must comply with TS EN ISO 1461 standards. High-quality iron-based sheet material should be zinc-coated using the hot-dip method in accordance with TS EN ISO 1461 standards after the punching and bending processes. Necessary cleaning and degreasing processes should be carried out before zinc coating. Finally, washing and rinsing should be performed, followed by passing through a flux bath. The thickness of the galvanized coating should be a minimum of 45 µm. After galvanization, a final inspection and cleaning of the material should be conducted.
5. Upon request, after this manufacturing process, epoxy polyester electrostatic powder paint with an RAL code should be applied. The painted trays should be baked at 180°C. The paint thickness should be a minimum of 50 µm.
6. Painted trays and accessories should be packaged for protection. The length of galvanized painted trays should be L=3000mm. In case of cutting the cable trays during installation, a cellulose thinner-diluted electrostatic powder paint (in an oily paint consistency) should be applied to the cut areas with a brush, and a drying time of 2 hours should be allowed.
7. In places where Universal Cable Trays change height, LEVEL ADAPTATION MODULE or level adjustment attachments should be used.
8. In places where the Tray changes direction (as needed): 90° horizontal turn element; horizontal (T) Connection element; (+) four-way turn element, inner concave turn, and outer concave turn elements should be used. The use of these elements should not involve sharp corners.
9. In vertical descents and ascents, panel cable connections, socket group, etc. connections: Vertical (T) descent element - Vertical (T) Middle Descent/Ascent element should be used.
10. Connections between Trays should be made with Connecting Elements. Each length is 3m, and 2 pieces of connecting elements will be used every three meters. The assembly of all turning elements is done by passing through the trays (no need for additional connecting elements). Bolt holes should be suitable for M6 Connecting Bolt set. M6x12 - domed head lockable Bolt and flanged nut set should be used.
11. Due to cable density, connections between trays of different widths will be made with Reduction Modules.
12. For connection assembly, lacquered, metric system-compatible (M6 Connecting Bolt set) Bolt and nut, etc. should be used.
13. In all turning module and reduction module connections (for H=40mm) 4 pieces, (for H=50mm) 4 pieces, (for H=60mm) 4 pieces, (for H=75mm) 8 pieces, (for H=100mm) 8 pieces of M6x12 Connecting Bolt nut set should be used.
14. The cable tray should not be walked on or used as a walking path.



**E-Line Wire Cable Tray and Hanging Systems**

1. It is used for the horizontal and vertical distribution of cables at the specified location in the project.
2. Cable Trays should be produced in equal-length units, with lengths being produced in continuous lengths of L=3m.
3. Horizontal and vertical wires of Cable Trays are produced with diameters of 4mm and 5mm.
4. Cable Trays are created by connecting horizontal wires at 100mm intervals in the vertical direction and vertical wires at 50mm intervals in the horizontal direction.
5. Low voltage installation cable trays to be laid inside Cable Channels must be in a separate compartment. For example, a Separator of the same length and height as the tray should be mounted inside Cable trays, or low voltage installation cables should be in separate cable trays. Cables should be secured to the cable tray with plastic cable ties.
6. High-quality iron-based wire material should be coated with zinc using the Electro Galvanizing (EG) method in accordance with the DiN 50961, TSE 149 standards after the wire mesh welding and bending process. Electro galvanizing is a galvanizing method where zinc adheres to steel through the electrolysis method. Electro galvanized products are suitable for indoor use and show approximately 10-15 microns of coating thickness. They exhibit approximately 96 hours of resistance in salt spray tests. They have a clean, smooth, and shiny appearance.
7. Cable Trays, YD, T, AD, turns can be completed either as a single product module or through the cutting and joining method described in the catalogue.
8. Connections between Cable Trays should be made with three-piece connecting elements. The assembly of all turning elements to the Trays should be done with additional elements.
9. For connection assembly, a lacquered M6 Bolt and nut set should be used. Bolt dimensions should be M6x20. The bolt should have a domed head with a locking slot, and the M6 Nut should be flanged with a lockable tab.
10. The Cable Tray should not be walked on or used as a walking path.

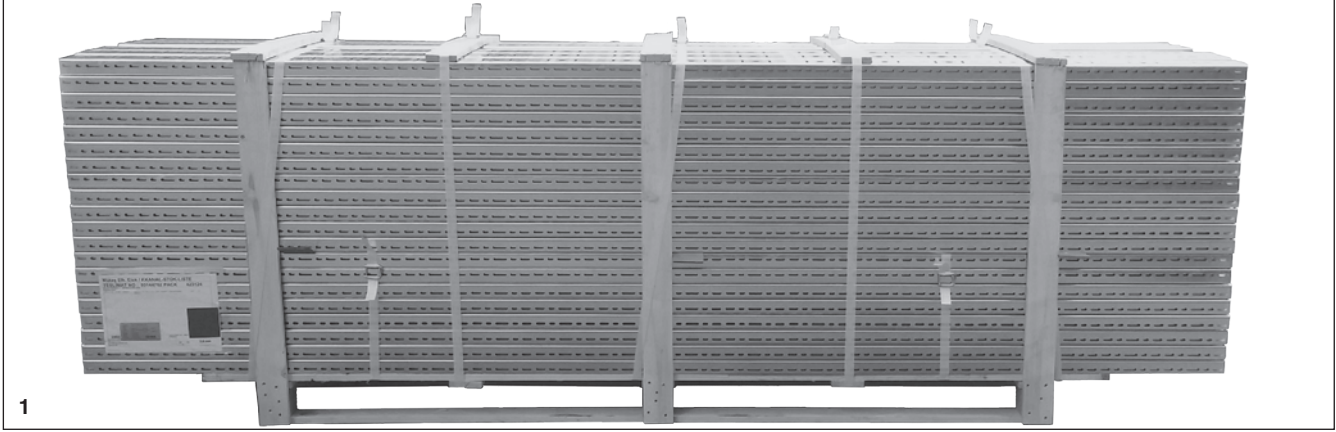
**EAE Wire Cable Tray General Product Features HDG (TLS)****E-Line Wire Cable Tray and Suspension Systems**

1. It is used for the transportation of cables in horizontal and vertical distribution at the specified location in the project.
2. Wire CableTrays should be produced in units of equal length, and their lengths should be manufactured as a single piece with L=3 m.
3. Horizontal and vertical wires of Cable Trays are produced with Ø4 and Ø5.
4. Wire Cable Trays are created by joining horizontal wires at intervals of 100mm in the vertical direction and vertical wires at intervals of 50mm in the horizontal direction.
5. Low-current installation cable trays laid inside Cable Trays must be in a separate compartment. For example, a separator should be mounted inside Cable Trays, with the same length and height, or low-current installation cables should be in separate cable trays. Cables should be secured to the cable tray with plastic cable ties.
6. High-quality iron-based wire material must be zinc-coated with the hot-dip method according to TS EN ISO 1461 standards after wire mesh welding and bending processes. Before zinc coating, necessary cleaning and degreasing processes should be carried out. As a final step, washing and rinsing should be done, and then it should be passed through the flux bath. The galvanizing thickness should be a minimum of 45 µm. After the galvanizing process, the final inspection and cleaning of the material should be carried out.
7. Cable Tray, YD, T, AD, turns can be completed either as a single product module or with the cutting and joining method described in the catalogue.
8. The connections between Cable Trays should be made with three pieces of additional elements. The assembly of all turning elements to the trays should be done with additional elements.
9. For connection assembly, a lacquer-coated M6 bolt and nut set should be used. The bolt dimensions should be M6x20. The bolt should have a dome-headed flash and be lockable in its slot. The M6 Nut should be flanged and have claws.
10. The Cable Tray should not be walked on or used as a walkway.

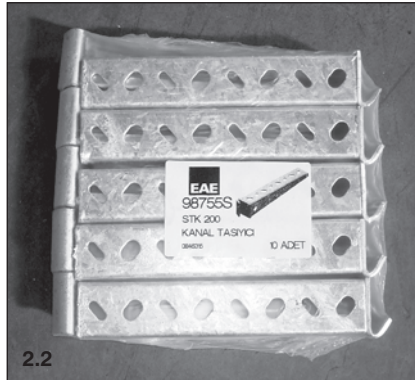
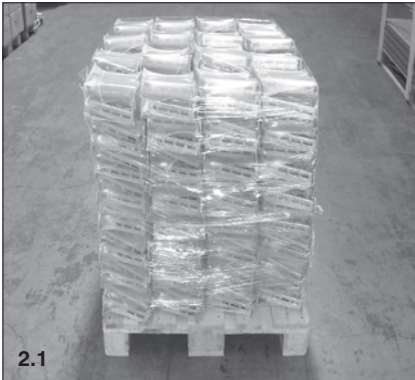
1. It is used for the horizontal and vertical distribution of cables at the specified location in the project.
2. Cable Trays should be produced in equal-length units, with lengths being produced in continuous lengths of L=3m.
3. Horizontal and vertical wires of Cable Trays are produced with diameters of Ø4mm and Ø5mm.
4. Cable Trays are created by connecting horizontal wires at 100mm intervals in the vertical direction and vertical wires at 50mm intervals in the horizontal direction.
5. Low voltage installation cable trays to be laid inside Cable Trays must be in a separate compartment. For example, a Separator of the same length and height as the channels should be mounted inside Cable Trays, or low voltage installation cables should be in separate cable trays. Cables should be secured to the cable tray with plastic cable ties.
6. High-quality Stainless Steel (SS304) (AISI 304) material is used for Cable Trays. After the stainless steel wire mesh welding and bending process, it undergoes chemical treatments (acid cleaning and passivation for surface cleaning) to passivate, preventing color changes that may occur due to thermal effects. AISI 304 stainless steel is a high-quality stainless steel suitable for applications in facades, industrial facilities, and similar environments. AISI 304 (1.4301) stainless steel is particularly used in factories, facades, and similar environments due to its high anticorrosive properties. Extra coating on the stainless steel surface is not necessary when not needed. AISI 304 stainless steel is an ideal material for extremely corrosive environments.
7. Cable Trays, YD, T, AD, turns can be completed either as a single product module or through the cutting and joining method described in the catalogue.
8. Connections between Cable Trays should be made with three-piece connecting elements. The assembly of all turning elements to the trays should be done with additional elements.
9. For connection assembly, a lacquered M6 Bolt and nut set should be used. Bolt dimensions should be M6x20. The bolt should have a domed head with a locking slot, and the M6 Nut should be flanged with a lockable tab.
10. The cable tray should not be walked on or used as a walking path.



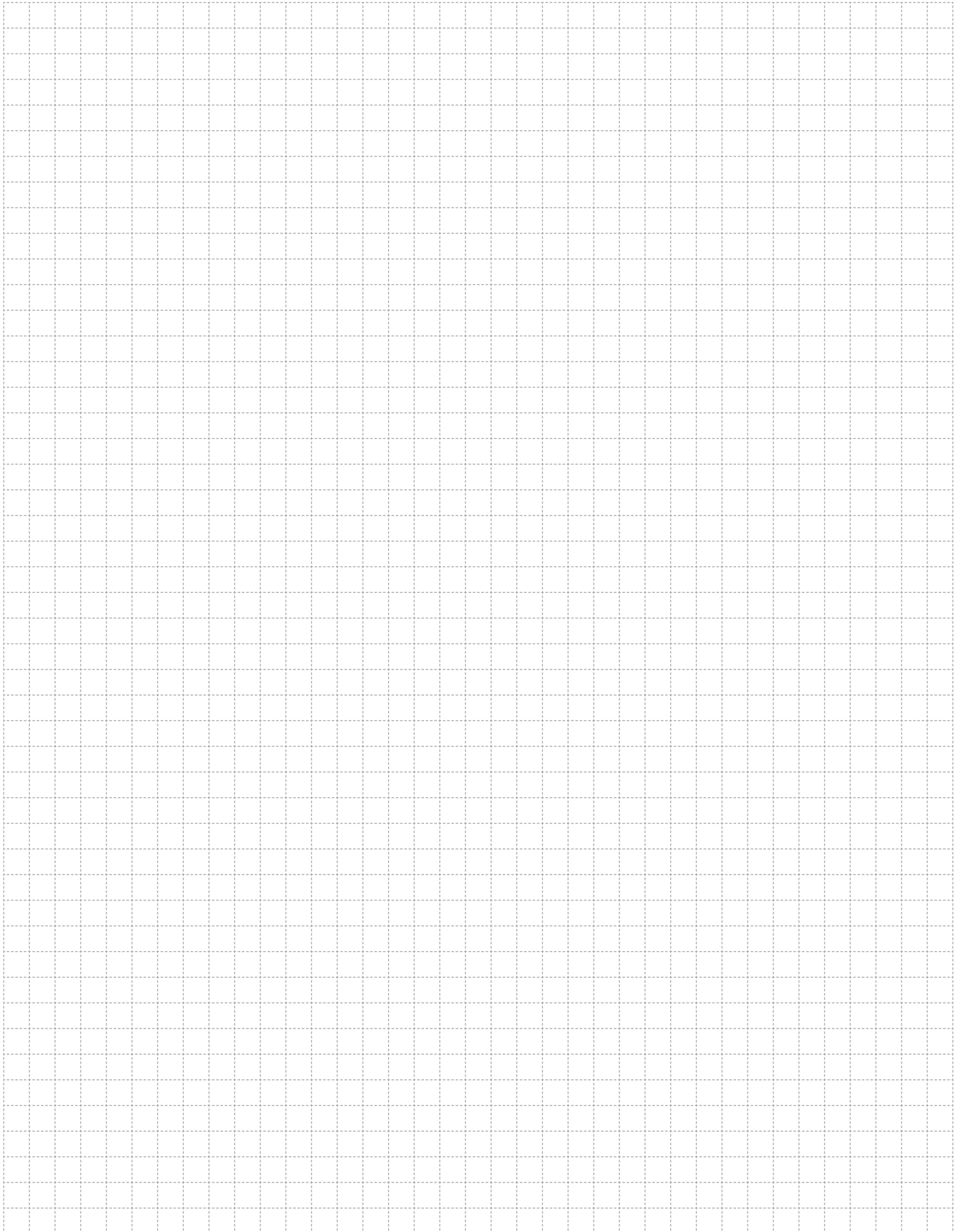
1) Cable trays and modules are packaged with wooden pallets to safely transport them to the field. After the products are properly stacked on wooden pallets, they are secured to the pallet with PVC strip bands to prevent them from slipping. Boards nailed to the sides and top of the pallet provide protection against forces that may come from above or from the sides.

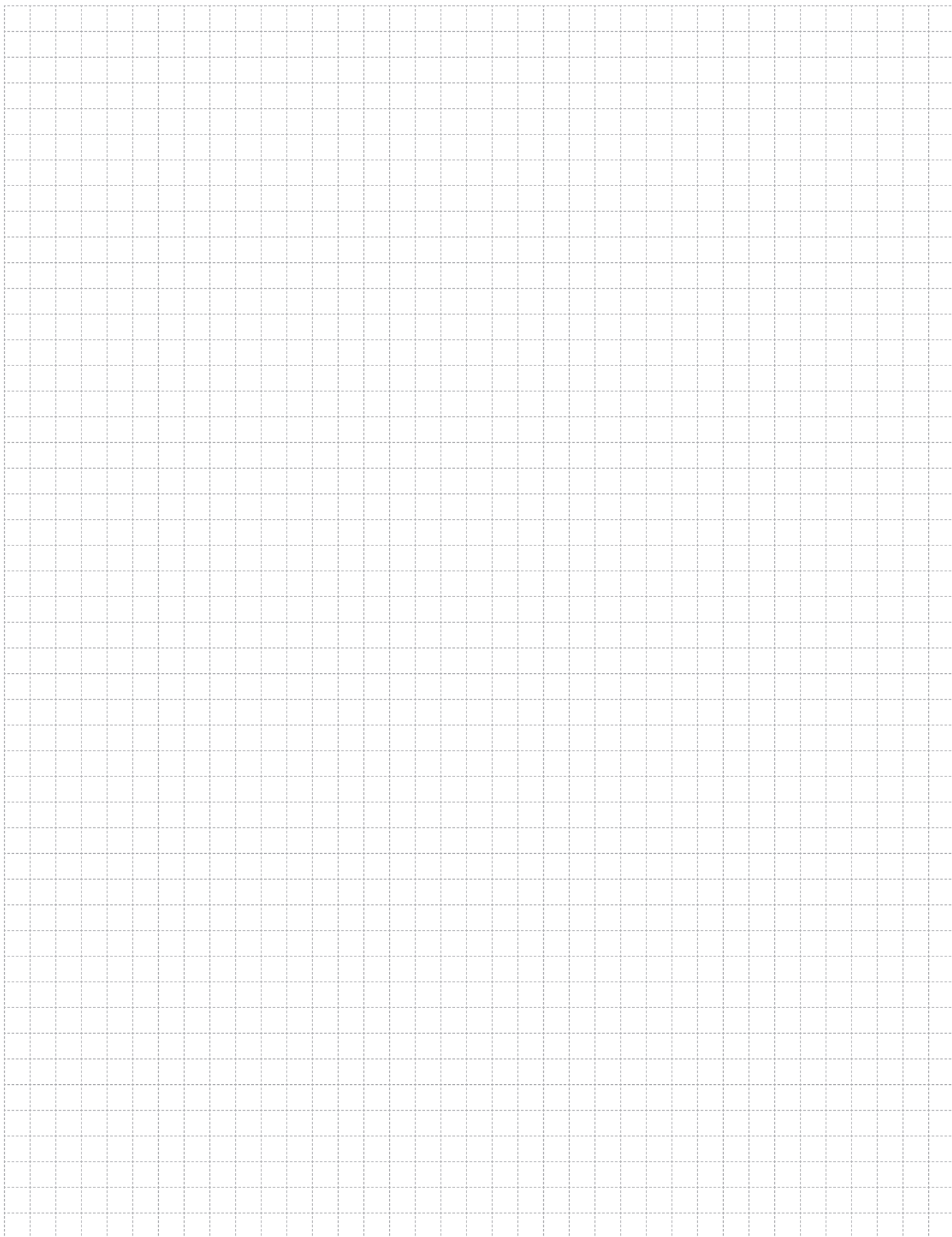


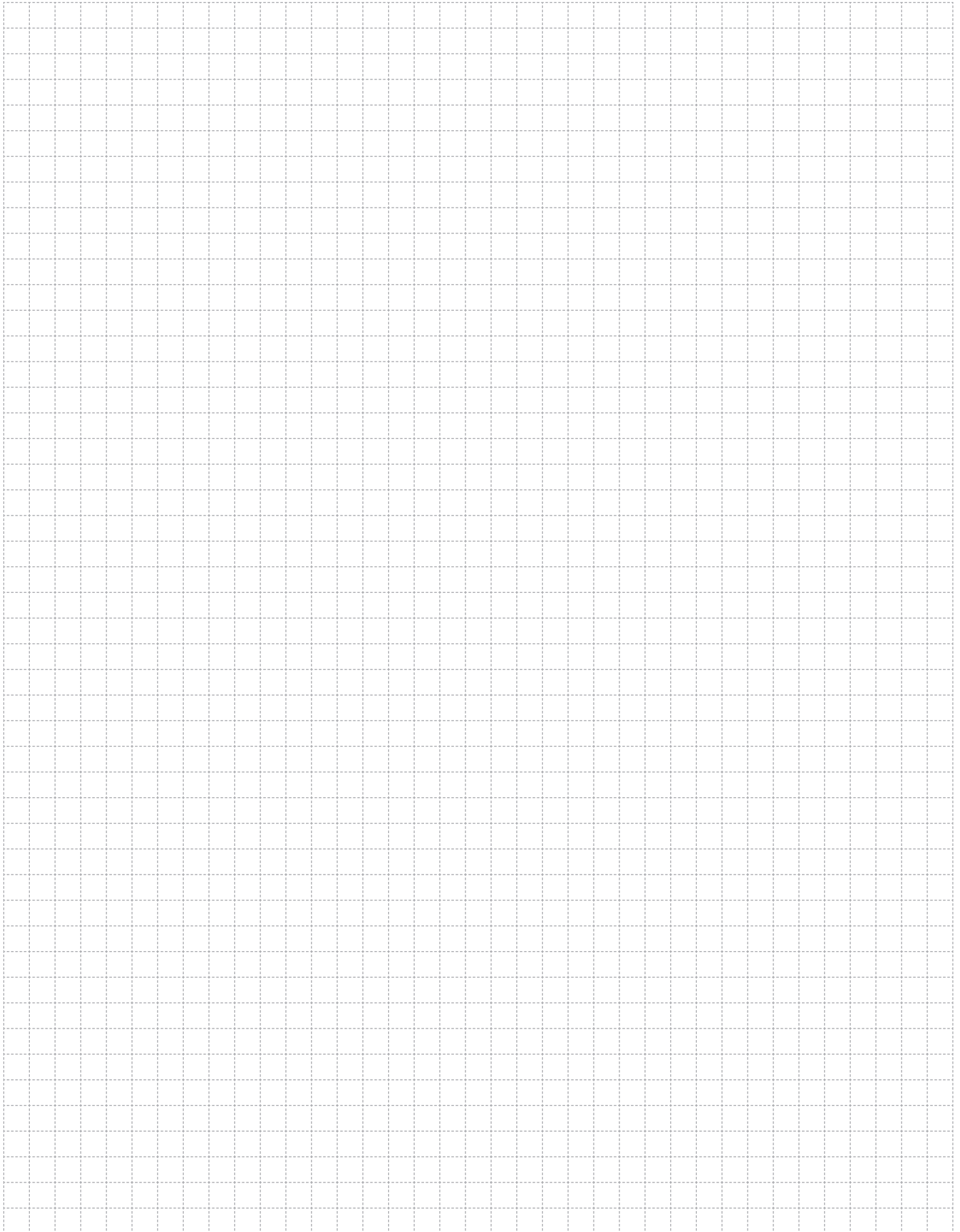
2) The suspension materials used in the installation of cable trays are initially covered with shrink nylon through a heat treatment process. The packaging is designed not to exceed a total weight of 25 kg for ease of transportation. The quantities of products in the package are in multiples of 10 to facilitate the counting process. To ensure product identification, labels containing the code, description, a small technical drawing, and the quantity of the contents are affixed to each package. Small product packages are then stacked on a wooden pallet, wrapped securely with stretch nylon to prevent dispersion, and supported with PVC strip bands around them.



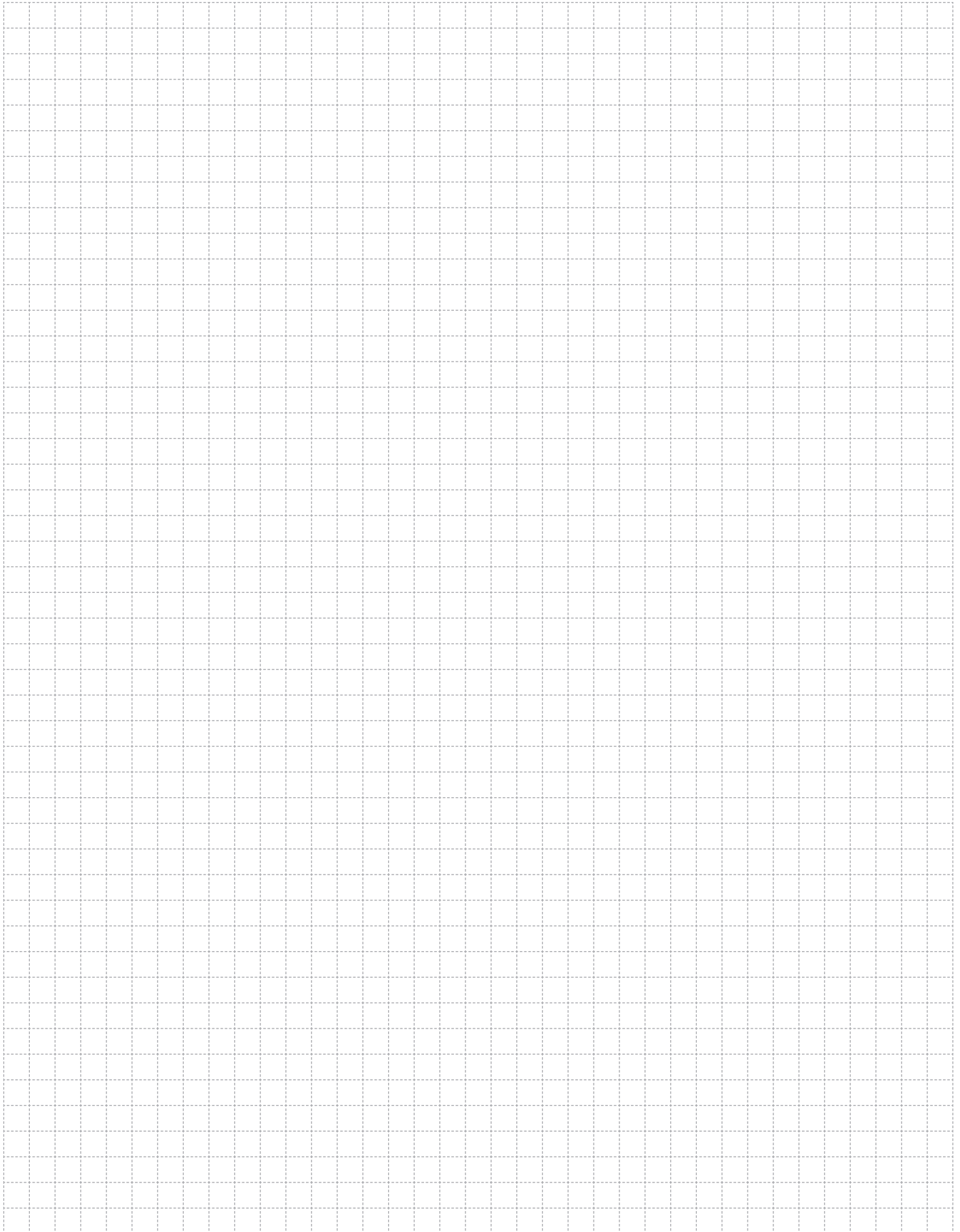
3) Additional components, such as bolts, nuts, anchors, etc., are packaged in cardboard boxes. Bolt, nut, washer, and anchor materials are initially placed in plastic bags to prevent rusting. All boxes are prepared not to exceed 25 kg and are marked with labels containing product information. Small product packages are then stacked on a wooden pallet, securely wrapped with stretch nylon to prevent dispersion, and supported with PVC strip bands around them. All pallets are marked with labels containing product information. The label on the pallet also includes customer information and the total weight of the pallet. The packaging method described above is intended for large-scale projects. It may vary for small shipments and warehouses.

A large rectangular area filled with a fine grid of dashed lines, intended for taking notes or drawing diagrams.



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