TEST REPORT FIRES-FR-225-14-AUNE

Cable bearing system BAKS with power and communication cables of ELKOND HHK, a.s.

Reg. No. 041/S-159

The Experts on Fire Safety

TEST REPORT

FIRES-FR-225-14-AUNE

Tested property:	Function in fire
Test method:	STN 92 0205: 2014 (ZP-27/2008, DIN 4102-12: 1998-11)
Type of test:	Accredited
Date of issue:	22. 12. 2014
Name of the product:	Cable bearing system BAKS with power and communication cables of ELKOND HHK, a.s.
Manufacturer:	BAKS Kazimierz Sielski, ul. Jagodne 5, 05 – 480 Karczew, Poland (producer of cable bearing system) ELKOND HHK, a.s., Oravická 1228, Trstená 028 01, Slovak Republic (producer of cables)
Sponsor:	BAKS Kazimierz Sielski, ul. Jagodne 5, 05 – 480 Karczew, Poland
Test carried out:	Fires, s.r.o., Testing laboratory
Task No.:	PR-14-0438
Specimens received:	24. 11. 2014
Date of the test:	27. 11. 2014

Technician responsible for the technical side of this report: Bc. Dávid Šubert

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1. INTRODUCTION

This test report contains the results of test carried out by laboratory of FIRES, s.r.o., Testing laboratory in Batizovce, accredited by SNAS for testing. Certificate of accreditation No.: S-159. The purpose of the test was to gain information for product classification.

Test of function in fire was carried out according to standard STN 92 0205. Similar standards and regulations for tests of function in fire are ZP-27/2008 PAVUS and DIN 4102-12: 1998-11.

Deviations from standard at the test according to ZP-27/2008: This test was carried out according to standard STN 92 0205 and meets also all requirements of ZP-27/2008 and test results can be directly used for classification of tested cables according to ZP-27/2008. There are no deviations identified in process and carrying out of test.

Deviations from standard at the test according to DIN 4102-12: 1998-11: This test was carried out according to standard STN 92 0205 and meets requirements of DIN 4102-12: 1998-11. Basic deviation in process and carrying out of test between these standards is in measuring and in control of temperature in the test furnace. According to STN 92 0205, plate thermometers according to EN 1363-1 are used. According to DIN 4102-12: 1998-11, common thermocouples of construction which was used for this measurement till issue of EN 1363-1 are used. Measurement by plate thermometers acc. to EN 1363-1 can be considered as stricter method of temperature control in test furnace in compare with thermocouples used till issue of EN 1363-1. Therefore, it is possible to use results of test according to STN 92 0205 for classification of tested cables according to DIN 4102-12: 1998-11, but not conversely. Identified deviation results in stricter course of test and it can lead to reduced classification of tested cables what is accepted as enhanced security in practice.

Representatives from the sponsor's side witnessing the test:

Mr. Jacek Kliczek	BAKS Kazimierz Sielski
Mr. Dariusz Gowronski	BAKS Kazimierz Sielski
Ing. Peter Homola	ELKOND HHK, a.s.
test directed by	Ing. Marek Gorlický
test carried out by	Bc. Dávid Šubert
operator	Miroslav Hudák

2. MEASURING EQUIPMENT

Identification number	Measuring equipment	Note
F 90 004	Vertical test furnace for fire resistance testing	-
F 69 010	PLC system for data acquisition and control TECOMAT TC 700	-
F 40 017	Control and communication software to PLC TECOMAT TC 700	-
F 40 018	SW Reliance	-
F 40 019	Visual and calculating software to PLC TECOMAT TC 700	-
F 40 020	Driver Tecomat – Reliance (SW)	-
F 69 009	PLC system for data acquisition and climate control TECOMAT TC 604	-
F 60 001 - F 60 009	Sensors of temperature and relative air humidity	climatic conditions measuring
F 71 008, F 71 009	Transducer of differential pressure (–50 to + 150) Pa	pressure inside the test furnace
F 10 521 - F 10 528	Plate thermometers	temperature inside the test furnace, according to EN 1363-1

Identification number	Measuring equipment	Note
F 10 701	Sheathed thermocouple type K Ø 3 mm	ambient temperature
F 54 020	Digital calliper (0 to 200) mm	-
F 54 056	Racking meter	-
F 57 007	Digital stop-watch	-
F 96 015	Test signal panel	-

3. PREPARATION OF THE SPECIMENS

Testing laboratory didn't take off individual components of the specimens. Components take-off and its delivering to the testing laboratory were carried out by the test sponsor. Assembling of the supporting system into the test furnace and mounting of cables and weights into the supporting system was carried out by workers of BAKS Kazimierz Sielski and ELKOND HHK, a.s. under supervision of laboratory technician.

4. PREPARATION OF THE TEST

4.1 DESCRIPTION OF THE SPECIMENS STRUCTURE

Test specimen comprised from cable bearing system BAKS Kazimierz Sielski company – cable trays, ladders, mesh trays and clips with accessories (consoles, brackets, assembling profiles, hangers, etc.) and power and communication halogen free cables of company ELKOND HHK, a.s..

Cables
Used cables by test:

Power cables:
1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1 (36x)
1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1 (36x)
NHXH-J 4x1,5 RE FE180/E90 (4x)
NHXH-J 4x10 RE FE180/E90 (4x)
NHXH-J 4x1,5 RE FE180/E90 P (4x)
NHXH-J 4x10 RE FE180/E90 P (4x)

Communication cables:
SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1 (30x)
JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1 (14x)
JE-H(St)H 1x2x0,8 Bd FE180/PS60 (4x)

The length of cables was 5,2 m and 4,0 m from that was exposed to fire.

Cable bearing systems were made of following constructions:

Suspension tracks No. 1 and 2
Tracks are made of four consoles (WPCB1000) fixed to ceiling by threaded rods (PG M10) in spacing of 1500 mm. Brackets (WWS/WWSO300) are fixed to consoles by screws (SM M10x80). Consoles are reinforced in place of fixing brackets by spacer (BR40).

Track No. 1:
Cable trays (KGL/KGOL300H60, steel sheet thickness 0,7 mm) fixed together by screws (SGK M6x12). Trays are fixed to brackets by screws (SGK M6x12) and loaded with 10kg.m^{-1}. Cables are fixed to trays by cable clips (UDF).

Track No. 2:
Cable mesh trays (KDS/KDSO300H60, steel wire ∅ 4,5 mm) fixed together by junctions (USS/USSO). Mesh trays are fixed to brackets by junctions (ZS/ZSO) and loaded with 10kg.m^{-1}. Cables are fixed to mesh trays by cable clamps (UKZ1/UKZO1 – according to cable cross-section).

Suspension tracks No. 3 and 4
Tracks are made of four consoles (WPCB1000) fixed to ceiling by threaded rods (PG M10) in spacing of 1500 mm. Brackets (WWS/WWSO400) are fixed to consoles by screws (SM M10x20). Holders (UPW/UPWO) are fixed at the end of brackets with screws (SGK M8x14). Brackets are fixed through these holders by threaded rods (PG M10) with washer and nuts (M10) through the ceiling panels.

Track No. 3:
Cable trays (KGJ/KGOJ400H60, steel sheet thickness 0,9 mm) fixed together by screws (SGK M6x12). Trays are fixed to brackets by screws (SGK M6x12) and loaded with 20kg.m^{-1}. Cables are fixed to trays by plastic stripes.

Track No. 4:
Cable mesh trays (KDS/KDSO400H60, steel wire ∅ 4,5 mm) fixed together by junctions (USS/USSO). Mesh trays are fixed to brackets by junctions (ZS/ZSO) and loaded with 20kg.m^{-1}. Cables are fixed to trays by plastic stripes.

Suspension tracks No. 5 and 6
Tracks are made of four consoles combined of assembling profile (CWP40H22/04; length of profile 400 mm) and two threaded rods (PG M10) fixed through the ceiling panels in spacing of 1500 mm.

Track No. 5:
Cable trays (KGL/KGOL300H60, steel sheet thickness 0,7 mm) fixed together by screws (SGK M6x12). Trays are fixed to assembling profiles by screws (SGK M6x12) and loaded with 20kg.m^{-1}. Cables are fixed to trays by plastic stripes.

Track No. 6:
Cable mesh trays (KDS/KDSO300H60, steel wire ∅ 4,5 mm) fixed together by junctions (USS/USSO). Mesh trays are fixed to assembling profiles by junctions (ZS/ZSO) and loaded with 20kg.m^{-1}. Cables are fixed to mesh trays by cable clamps (UKZ1/UKZO1 – according to cable cross-section).

Suspension tracks No. 7 and 8
Tracks are made of cable trays (KFL100H60, steel sheet thickness 0,7 mm) fixed together by integrated junction and screws (SGK M6x12). Individual tracks are fixed together by threaded rods (PG M6) and center hanger (ZSW) together with nuts. Threaded rods are fixed to trapezoidal steel sheet (2,0 mm thick) by trapezoidal hanger (WT/WTO120) and threaded rod (PG M8) in spacing of 1500 mm. Trays are loaded with 5kg.m^{-1}.

Suspension tracks No. 9 and 10
Tracks are made of cable trays (KDS/KDSO100H60, steel wire ∅ 4,5 mm) fixed together by junctions (USS/USSO). Individual tracks are fixed together by threaded rods (PG M6) and center hanger (ZSW) together with nuts. Threaded rods are fixed to trapezoidal steel sheet (2,0 mm thick) by trapezoidal hangers (WT/WTO120) and threaded rods (PG M8) in spacing of 1500 mm. Trays are loaded with 5kg.m^{-1}.

Suspension tracks No. 11 and 12
Tracks are made of four consoles combined of assembling profile (CWP40H22/03; length of profile 300 mm) and two threaded rods (PG M10) fixed to trapezoidal steel sheet (2,0 mm thick) by trapezoidal hanger (WT/WTO120) and threaded rod (PG M10) in spacing of 1500 mm.

Track No. 11:
Cable trays (KGL/KGOL300H60, steel sheet thickness 0,7 mm) fixed together by screws (SGK M6x12). Trays are fixed to assembling profiles by screws (SGK M6x12) and loaded with 10kg.m^{-1}. Cables are fixed to trays by plastic stripes.

Track No. 12:
Cable mesh trays (KDS/KDSO300H60, steel wire ∅ 4,5 mm) fixed together by junctions (USS/USSO). Mesh trays are fixed to assembling profiles by junctions (ZS/ZSO) and loaded with 10kg.m^{-1}. Cables are fixed to mesh trays by cable clamps (UKZ1/UKZO1 – according to cable cross-section).

Suspension tracks No. 13 and 14
Tracks are made of four consoles (WPCB1000) fixed to ceiling by threaded rods (PG M10) in spacing of 1200 mm. Brackets (WWS/WWSO400) are fixed to consoles by screws (SM M10x20). Holders (UPW/UPWO) are fixed at the end of brackets with screws (SGK M8x14). Brackets are fixed through these holders by threaded rods (PG M10) with washer and nuts (M10) through the ceiling panels.

Track No. 13:
Cable trays (KCP/KCOP300H60, steel sheet thickness 1,5 mm) fixed together by two junctions (LPP/LPOPH60) and screws (SGK M6x12) on sides and by junction (BL/BLO300) and screws (SGK M6x12) on the bottom. Trays are fixed to brackets by screws (SGK M6x12) and loaded with 10kg.m^{-1}. Cables are fixed to trays by cable clips (UDF).

Track No. 14:
Cable ladders (DGOP400H60, steel sheet thickness 1,5 mm, spacing of transoms 150 mm) fixed together by two junctions (LDC/LDOCH60) and screws (SGK M8x14) on sides. Ladders are fixed to brackets by junctions (ZM/ZMO) and by screws (SGK M8x14) and loaded with 20kg.m^{-1}. Cables are fixed to ladders by cable clamps (UK1/UKO1 – according to cable cross-section).

Wall tracks No. 15 and 16
Tracks are made of four assembling profiles (CWP/CWOP40H40) fixed to wall by threaded rods (PG M10) in spacing of 1200 mm. Brackets (WWS/WWSO400) are fixed to profiles by screws (SM M10x20). Holders (UPWK/UPWKO) are fixed at the end of brackets with screws (SGK M8x14). Brackets are fixed through these holders by threaded rods (PG M10) with washer and nuts (M10) to assembling profiles by hangers WKPO.

Track No. 15:
Cable trays (KCP/KCOP300H60, steel sheet thickness 1,5 mm) fixed together by two junctions (LPP/LPOPH60) and screws (SGK M6x12) on sides and by junction (BL/BLO300) and screws (SGK M6x12) on the bottom. Trays are fixed to brackets by screws (SGK M6x12) and loaded with 10kg.m^{-1}. Cables are fixed to trays by cable clips (UDF).

Track No. 16:
Cable ladders (DGOP400H60, steel sheet thickness 1,5 mm, spacing of transoms 150 mm) fixed together by two junctions (LDC/LDOCH60) and screws (SGK M8x14) on sides. Ladders are fixed to brackets by junctions (ZM/ZMO) and by screws (SGK M8x14) and loaded with 20kg.m^{-1}. Cables are fixed to ladders by cable clamps (UK1/UKO1 – according to cable cross-section).

Ceiling track No. 17
Track is made of cable hangers (OZO) fixed to ceiling by expansion screws (MKR∅6 x 30) mm in spacing of 600 mm.

Ceiling track No. 18
Track is made of single cable clips (UDF) fixed to ceiling by expansion screws (MKR∅6 x 30) mm in spacing of 600 mm.

Ceiling track No. 19
Track is made of cable hangers (OZSO) fixed to ceiling by screws (SBSTM 7,5 x 52) mm in spacing of 600 mm.

Ceiling track No. 20
Track is made of single cable clips (UDF) fixed to trapezoidal steel sheet by steel self-drilling screws (SMD 4,8 x 16) mm in spacing of 600 mm.

Ceiling track No. 21
Track is made of cable hangers (OZMO) fixed to ceiling by expansion screws (MKR∅6 x 30) mm in spacing of 600 mm.

All bearing systems were from steel, galvanized according to the Sendzimir method PN-EN 10327:2005.
Cable penetration through the wall of test furnace was sealed by mineral wool Rockwool.
Loading with steel chain and line loads was used as the equivalent load.

More detailed information about construction of specimens is shown in the drawings which form an integral part of this test report. Drawings were delivered by sponsor.

All the information about technical specifications of used materials and semi-products, information about their type sign were delivered by sponsor. This information was not subject of the inspection of specimens. Parameters which were checked are quoted in paragraph 4.3.

4.2 DESCRIPTION OF SPECIMENS FIXATION

The test specimens were fixed on the ceiling of the test furnace which was created from aerated concrete panels with dimensions (4000 x 600 x 240) mm – 7 pieces. Ceiling panels were jointed by beam which provides balance deflection of the ceiling.

The type of specimen's fixation into the test furnace is shown in drawing documentation and it was selected by the sponsor.

4.3 INSPECTION OF SPECIMENS

Before and after the function in fire test, conformity of drawings and test specimens was checked. Specimens corresponded to the drawings which are part of this test report. Inspection of specimens consisted of visual review of the test specimens, used materials as well as size verification (number and cross sections of conductors, thickness, measurements of cables and trays) and also the way of specimens fixation to supporting construction was subject of inspection.

4.4 CLIMATIC CONDITIONING OF SPECIMENS

Test specimens were stored in the hall of testing laboratory under the following climatic conditions:

Ambient air temperature [°C]

mean	18,5
standard deviation	0,9

Relative air humidity [%]

mean	43,9
standard deviation	2,6

The humidity equilibrium state of test specimens was not determined. Test specimens did not comprise hygroscopic materials.

5. CARRYING OUT OF THE TEST

5.1 TEST GENERALLY

The test was carried out in horizontal test furnace with dimensions of (4000 x 3000 x 3000) mm (length x width x height).

5.2 CONDITIONS OF THE TEST

Conditions in the test furnace (temperature – standard temperature/time curve, pressure, content of O_2) as well as in the testing room (ambient temperature) corresponded to EN 1363-1 during the test. Detailed information is part of this test report, or in Quality records of the testing laboratory.

Values characterizing environment in the testing room directly before the test:

Relative air humidity [%]	**Ambient air temperature [°C]**
41,4	19,3

5.3 RESULTS OF THE TEST

Measured values of individual cables are stated in this test report.
During the test there was a gradual deflection of cable bearing system, but no failure or damage of tracks – even during cooling down of the tracks after termination of the test. Deflection of cable bearing system was not measured.

6. CLOSING

Evaluation of the test:

Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
1	2 cables NHXH-J 4x10 RE FE180/E90 P	16	41 minutes
2	2 cables NHXH-J 4x1,5 RE FE180/E90 P		48 minutes
3	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
4	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
5	2 cables NHXH-J 4x1,5 RE FE180/E90 P	15	71 minutes
6	2 cables NHXH-J 4x10 RE FE180/E90 P		64 minutes
7	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1	21	90 minutes no failure / interruption
8	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
9	2 cables NHXH-J 4x1,5 RE FE180/E90	14	90 minutes no failure / interruption
10	2 cables NHXH-J 4x10 RE FE180/E90		90 minutes no failure / interruption
11	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
12	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
13	2 cables NHXH-J 4x1,5 RE FE180/E90	13	90 minutes no failure / interruption
14	2 cables NHXH-J 4x10 RE FE180/E90		90 minutes no failure / interruption
15	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
16	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
17	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1	20	90 minutes no failure / interruption
18	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
19	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1	12	90 minutes no failure / interruption
20	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
21	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1	11	90 minutes no failure / interruption
22	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
23	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1	10	90 minutes no failure / interruption
24	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
25	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1	8	90 minutes no failure / interruption
26	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
27	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1	6	90 minutes no failure / interruption
28	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
29	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1	5	90 minutes no failure / interruption
30	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
31	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1	19	90 minutes no failure / interruption
32	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
33	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1	4	90 minutes no failure / interruption
34	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
35	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1	3	90 minutes no failure / interruption
36	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption

Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
37	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1	**18**	90 minutes no failure / interruption
38	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
39	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1	**2**	90 minutes no failure / interruption
40	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
41	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1	**1**	90 minutes no failure / interruption
42	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
43	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1	**17**	85 minutes
44	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		90 minutes no failure / interruption
52	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1	**15**	90 minutes no failure / interruption
53	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		90 minutes no failure / interruption
54	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS60		90 minutes no failure / interruption
55	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS60	**14**	47 minutes
56	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1		90 minutes no failure / interruption
57	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		90 minutes no failure / interruption
58	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1	**13**	66 minutes
59	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1	**20**	75 minutes
60	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		90 minutes no failure / interruption
61	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	**12**	90 minutes no failure / interruption
62	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	**11**	90 minutes no failure / interruption
63	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	**9**	90 minutes no failure / interruption
64	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	**7**	90 minutes no failure / interruption
65	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	**6**	90 minutes no failure / interruption
66	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	**5**	90 minutes no failure / interruption
67	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	**19**	90 minutes no failure / interruption
68	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	**4**	90 minutes no failure / interruption
69	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	**3**	90 minutes no failure / interruption
70	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1	**18**	83 minutes
71	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		90 minutes no failure / interruption
72	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	**2**	90 minutes no failure / interruption
73	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1		31 minutes
74	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	**1**	90 minutes no failure / interruption
75	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1		90 minutes no failure / interruption

The fire test was discontinued in 94th minute at the request of test sponsor.

Specimens S1 – S44 were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Specimens S52 – S75 were tested by one-phase voltage supply 1 x 110V with LED diodes 3V /0,03W.

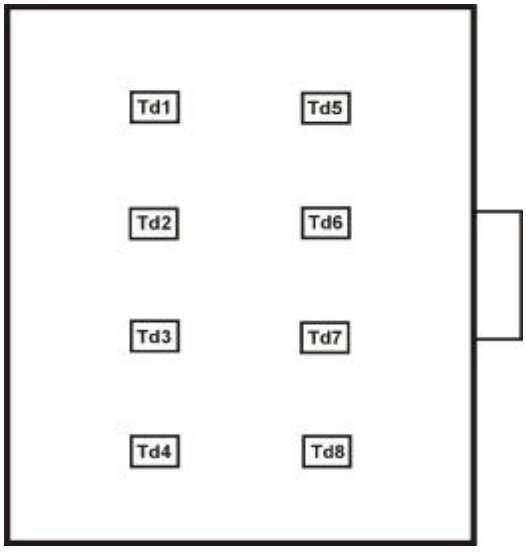
Circuit breakers with rating 3 A were used.

Measured values inside the test furnace

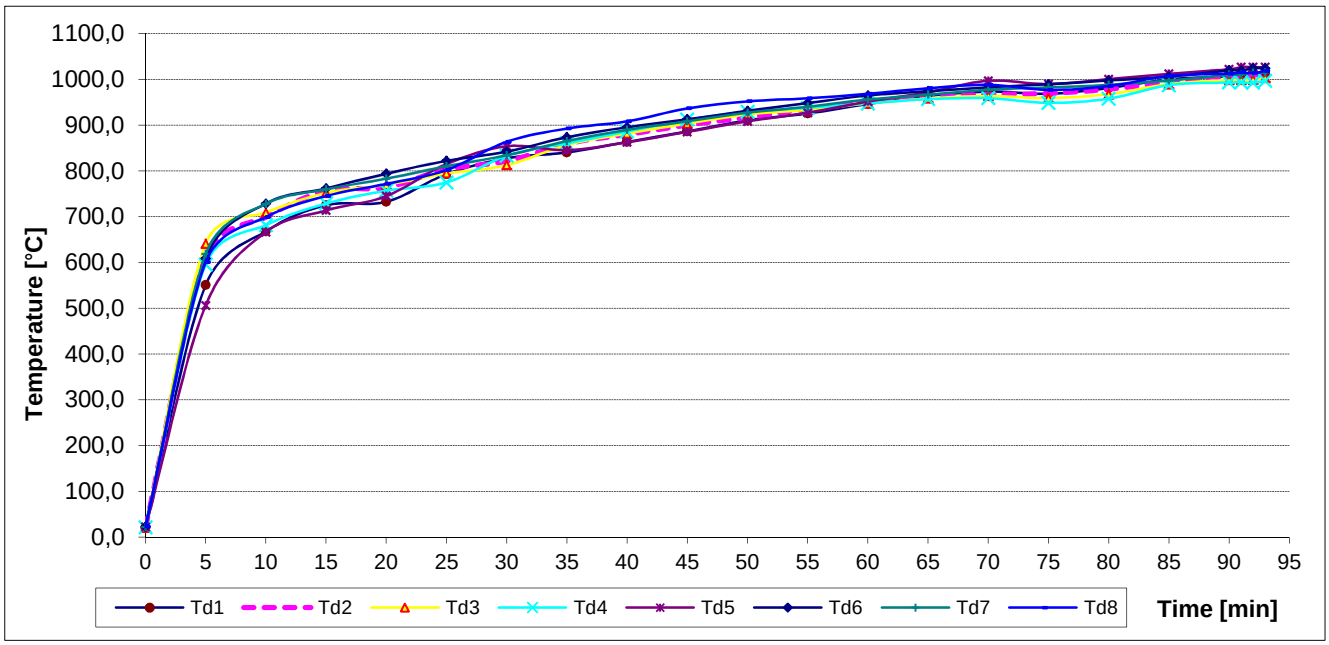
Time	Temperature [°C]											Deviation	Pressure
t [min]	Td1	Td2	Td3	Td4	Td5	Td6	Td7	Td8	Tave	Tn	To	d_e [%]	p [Pa]
0	20,3	21,2	20,4	21,1	22,3	22,7	22,1	22,6	21,6	20,0	19,3	0,0	20,0
5	550,5	612,5	641,1	595,4	506,3	608,9	618,5	600,3	591,7	576,0	19,4	-5,3	19,0
10	668,1	699,1	708,7	681,4	666,3	728,5	727,9	698,8	697,4	678,0	19,4	-0,7	18,0
15	725,2	757,1	752,1	728,8	713,8	761,7	759,8	745,2	743,0	739,0	19,5	0,7	19,9
20	732,7	764,0	769,7	756,9	744,9	794,0	783,2	771,7	764,6	781,0	19,5	0,2	17,6
25	793,0	804,0	794,6	774,8	815,1	822,1	810,4	802,0	802,0	815,0	19,6	-0,2	17,9
30	827,8	821,1	812,7	833,0	854,0	842,1	834,1	863,7	836,1	842,0	19,6	-0,5	19,7
35	840,6	859,5	856,6	860,5	845,5	873,8	865,1	892,7	861,8	865,0	19,7	-0,5	18,9
40	863,4	879,7	881,7	886,3	862,6	895,5	889,9	908,2	883,4	885,0	19,7	-0,5	18,5
45	886,3	900,3	903,5	912,0	885,4	912,8	908,3	936,6	905,7	902,0	19,8	-0,4	20,0
50	910,4	917,0	923,4	929,2	908,4	931,3	927,3	952,1	924,9	918,0	19,8	-0,3	17,3
55	925,6	935,4	933,3	937,8	927,3	948,4	940,3	958,6	938,3	932,0	19,9	-0,2	19,6
60	946,2	951,3	947,4	947,6	951,7	964,9	956,1	968,4	954,2	945,0	19,9	-0,1	19,5
65	964,3	962,1	958,5	956,9	971,9	974,5	966,6	980,6	966,9	957,0	20,0	0,0	19,1
70	973,5	967,2	963,8	958,9	997,1	982,5	977,5	988,1	976,1	968,0	20,0	0,1	19,3
75	968,6	969,4	959,4	948,8	989,8	989,3	982,4	977,0	973,1	979,0	20,1	0,0	17,1
80	981,2	978,6	967,8	957,9	1000,6	997,7	988,1	985,3	982,2	988,0	20,2	0,0	18,1
85	1000,1	993,6	989,6	987,5	1012,1	1005,9	997,5	1007,6	999,2	997,0	20,2	0,0	19,2
90	1006,8	1005,0	998,9	993,2	1022,2	1019,7	1009,9	1012,6	1008,5	1006,0	20,3	0,0	17,1
91	1009,6	1005,0	998,7	993,4	1026,7	1019,4	1010,2	1014,9	1009,7	1008,0	20,3	0,0	19,8
92	1013,8	1009,6	999,8	992,8	1026,9	1024,6	1014,5	1014,0	1012,0	1009,0	20,2	0,0	19,7
93	1012,8	1010,1	1003,4	997,1	1027,0	1024,4	1015,1	1018,1	1013,5	1011,0	20,3	0,0	18,5

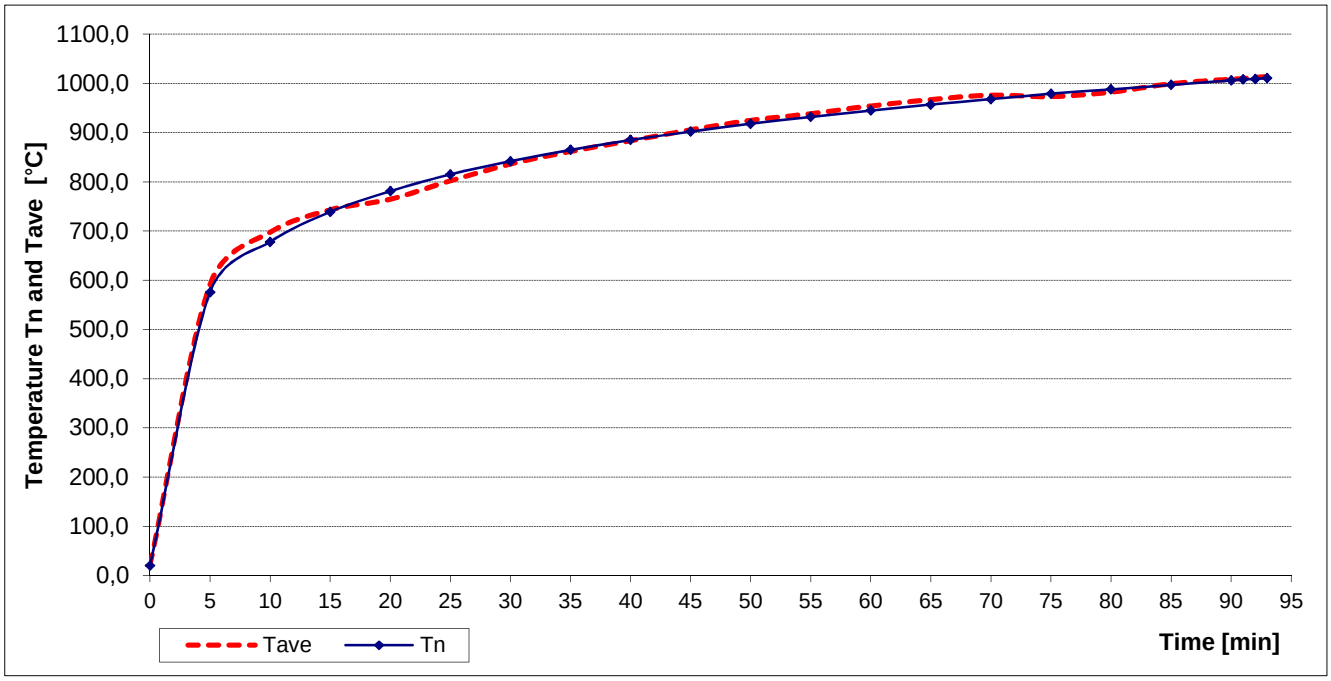
Tave Average temperature in the test furnace calculated from plate thermometers
Tn Standard temperature in the test furnace laid down to test guideline
To Ambient temperature
d_e Deviation of the average temperature from the standard temperature calculated according to test guideline
p Pressure inside the test furnace measured under the ceiling of the test furnace

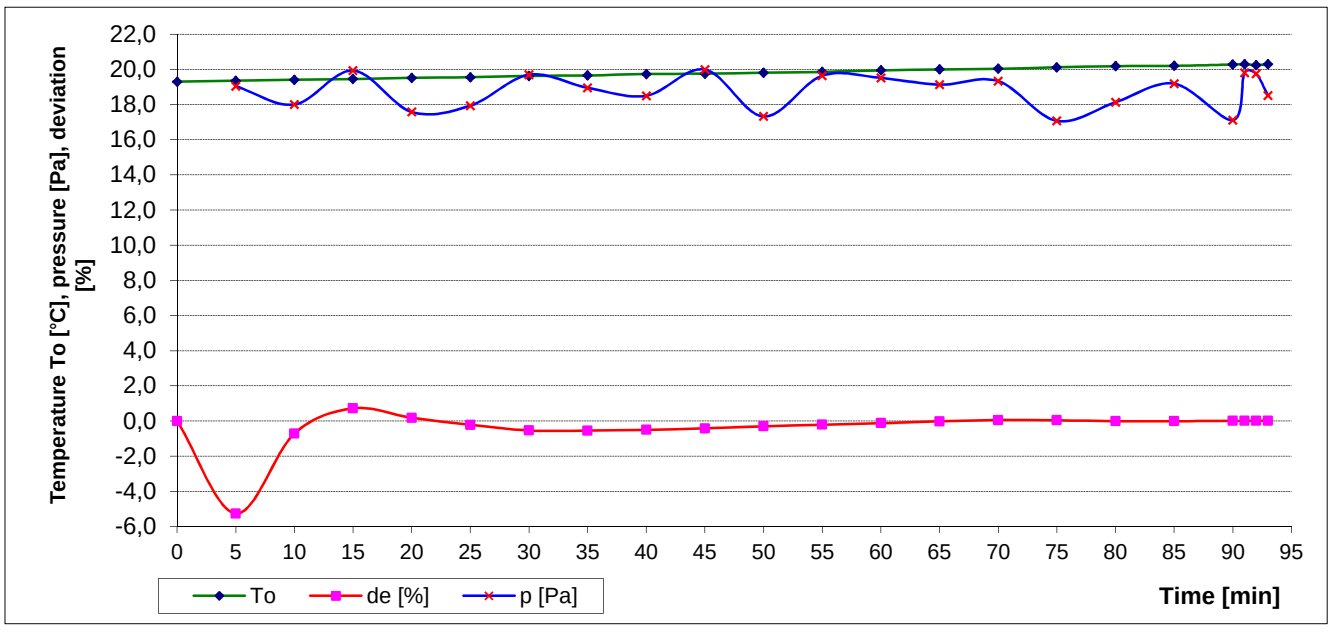
Layout of measuring points inside the test furnace:



Measured values inside the test furnace /graph







Measured time of tested specimens from S1 to S10 - power cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S1	1-L1	x
	2-L2	x
	3-L3	41:43
	4-PEN	x
S2	5-L1	x
	6-L2	x
	7-L3	48:06
	8-PEN	x
S3	9-L1	no failure / interruption
	10-L2	no failure / interruption
	11-L3	no failure / interruption
	12-PEN	no failure / interruption
S4	13-L1	no failure / interruption
	14-L2	no failure / interruption
	15-L3	no failure / interruption
	16-PEN	no failure / interruption
S5	17-L1	x
	18-L2	x
	19-L3	71:36
	20-PEN	x
S6	21-L1	64:58
	22-L2	x
	23-L3	x
	24-PEN	x
S7	25-L1	no failure / interruption
	26-L2	no failure / interruption
	27-L3	no failure / interruption
	28-PEN	no failure / interruption
S8	29-L1	no failure / interruption
	30-L2	no failure / interruption
	31-L3	no failure / interruption
	32-PEN	no failure / interruption
S9	33-L1	no failure / interruption
	34-L2	no failure / interruption
	35-L3	no failure / interruption
	36-PEN	no failure / interruption
S10	37-L1	no failure / interruption
	38-L2	no failure / interruption
	39-L3	no failure / interruption
	40-PEN	no failure / interruption

Specimen No.	Cables
1	2 cables NHXH-J 4x10 RE FE180/E90 P
2	2 cables NHXH-J 4x1,5 RE FE180/E90 P
3	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
4	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1
5	2 cables NHXH-J 4x1,5 RE FE180/E90 P
6	2 cables NHXH-J 4x10 RE FE180/E90 P
7	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
8	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1
9	2 cables NHXH-J 4x1,5 RE FE180/E90
10	2 cables NHXH-J 4x10 RE FE180/E90

x Conductor was turned off manually after permanent interruption / failure of other conductors in the cable
Power cables were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Circuit breakers with rating 3 A were used.

Measured time of tested specimens from S11 to S20 - power cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S11	41-L1	no failure / interruption
	42-L2	no failure / interruption
	43-L3	no failure / interruption
	44-PEN	no failure / interruption
S12	45-L1	no failure / interruption
	46-L2	no failure / interruption
	47-L3	no failure / interruption
	48-PEN	no failure / interruption
S13	49-L1	no failure / interruption
	50-L2	no failure / interruption
	51-L3	no failure / interruption
	52-PEN	no failure / interruption
S14	53-L1	no failure / interruption
	54-L2	no failure / interruption
	55-L3	no failure / interruption
	56-PEN	no failure / interruption
S15	57-L1	no failure / interruption
	58-L2	no failure / interruption
	59-L3	no failure / interruption
	60-PEN	no failure / interruption
S16	61-L1	no failure / interruption
	62-L2	no failure / interruption
	63-L3	no failure / interruption
	64-PEN	no failure / interruption
S17	65-L1	no failure / interruption
	66-L2	no failure / interruption
	67-L3	no failure / interruption
	68-PEN	no failure / interruption
S18	69-L1	no failure / interruption
	70-L2	no failure / interruption
	71-L3	no failure / interruption
	72-PEN	no failure / interruption
S19	73-L1	no failure / interruption
	74-L2	no failure / interruption
	75-L3	no failure / interruption
	76-PEN	no failure / interruption
S20	77-L1	no failure / interruption
	78-L2	no failure / interruption
	79-L3	no failure / interruption
	80-PEN	no failure / interruption

Specimen No.	Cables
11	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1
12	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
13	2 cables NHXH-J 4x1,5 RE FE180/E90
14	2 cables NHXH-J 4x10 RE FE180/E90
15	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
16	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1
17	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1
18	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
19	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
20	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1

Power cables were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Circuit breakers with rating 3 A were used.

Measured time of tested specimens from S21 to S30 - power cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S21	81-L1	no failure / interruption
	82-L2	no failure / interruption
	83-L3	no failure / interruption
	84-PEN	no failure / interruption
S22	85-L1	no failure / interruption
	86-L2	no failure / interruption
	87-L3	no failure / interruption
	88-PEN	no failure / interruption
S23	89-L1	no failure / interruption
	90-L2	no failure / interruption
	91-L3	no failure / interruption
	92-PEN	no failure / interruption
S24	93-L1	no failure / interruption
	94-L2	no failure / interruption
	95-L3	no failure / interruption
	96-PEN	no failure / interruption
S25	97-L1	no failure / interruption
	98-L2	no failure / interruption
	99-L3	no failure / interruption
	100-PEN	no failure / interruption
S26	101-L1	no failure / interruption
	102-L2	no failure / interruption
	103-L3	no failure / interruption
	104-PEN	no failure / interruption
S27	105-L1	no failure / interruption
	106-L2	no failure / interruption
	107-L3	no failure / interruption
	108-PEN	no failure / interruption
S28	109-L1	no failure / interruption
	110-L2	no failure / interruption
	111-L3	no failure / interruption
	112-PEN	no failure / interruption
S29	113-L1	no failure / interruption
	114-L2	no failure / interruption
	115-L3	no failure / interruption
	116-PEN	no failure / interruption
S30	117-L1	no failure / interruption
	118-L2	no failure / interruption
	119-L3	no failure / interruption
	120-PEN	no failure / interruption

Specimen No.	Cables
21	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
22	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1
23	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1
24	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
25	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1
26	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
27	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
28	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1
29	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
30	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1

Power cables were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Circuit breakers with rating 3 A were used.

Measured time of tested specimens from S31 to S40 - power cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S31	121-L1	no failure / interruption
	122-L2	no failure / interruption
	123-L3	no failure / interruption
	124-PEN	no failure / interruption
S32	125-L1	no failure / interruption
	126-L2	no failure / interruption
	127-L3	no failure / interruption
	128-PEN	no failure / interruption
S33	129-L1	no failure / interruption
	130-L2	no failure / interruption
	131-L3	no failure / interruption
	132-PEN	no failure / interruption
S34	133-L1	no failure / interruption
	134-L2	no failure / interruption
	135-L3	no failure / interruption
	136-PEN	no failure / interruption
S35	137-L1	no failure / interruption
	138-L2	no failure / interruption
	139-L3	no failure / interruption
	140-PEN	no failure / interruption
S36	141-L1	no failure / interruption
	142-L2	no failure / interruption
	143-L3	no failure / interruption
	144-PEN	no failure / interruption
S37	145-L1	no failure / interruption
	146-L2	no failure / interruption
	147-L3	no failure / interruption
	148-PEN	no failure / interruption
S38	149-L1	no failure / interruption
	150-L2	no failure / interruption
	151-L3	no failure / interruption
	152-PEN	no failure / interruption
S39	153-L1	no failure / interruption
	154-L2	no failure / interruption
	155-L3	no failure / interruption
	156-PEN	no failure / interruption
S40	157-L1	no failure / interruption
	158-L2	no failure / interruption
	159-L3	no failure / interruption
	160-PEN	no failure / interruption

Specimen No.	Cables
31	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
32	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1
33	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
34	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1
35	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
36	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1
37	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
38	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1
39	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
40	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1

Power cables were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Circuit breakers with rating 3 A were used.

Measured time of tested specimens from S41 to S44 - power cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S41	161-L1	no failure / interruption
	162-L2	no failure / interruption
	163-L3	no failure / interruption
	164-PEN	no failure / interruption
S42	165-L1	no failure / interruption
	166-L2	no failure / interruption
	167-L3	no failure / interruption
	168-PEN	no failure / interruption
S43	169-L1	85:28
	170-L2	85:28
	171-L3	85:28
	172-PEN	x
S44	173-L1	no failure / interruption
	174-L2	no failure / interruption
	175-L3	no failure / interruption
	176-PEN	no failure / interruption

Specimen No.	Cables
41	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1
42	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1
43	2 cables 1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1
44	2 cables 1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1

x Conductor was turned off manually after permanent interruption / failure of other conductors in the cable
Power cables were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Circuit breakers with rating 3 A were used.

Measured time of tested specimen S52 to S61 - communication cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S52A	209-L	no failure / interruption
	210-PEN	no failure / interruption
S52B	211-L	no failure / interruption
	212-PEN	no failure / interruption
S53A	213-L	no failure / interruption
	214-PEN	no failure / interruption
S53B	215-L	no failure / interruption
	216-PEN	no failure / interruption
S54A	217-L	no failure / interruption
	218-PEN	no failure / interruption
S54B	219-L	no failure / interruption
	220-PEN	no failure / interruption
S55A	221-L	47:55
	222-PEN	-
S55B	223-L	58:01
	224-PEN	-
S56A	225-L	no failure / interruption
	226-PEN	no failure / interruption
S56B	227-L	no failure / interruption
	228-PEN	no failure / interruption
S57A	229-L	no failure / interruption
	230-PEN	no failure / interruption
S57B	231-L	no failure / interruption
	232-PEN	no failure / interruption
S58A	233-L	no failure / interruption
	234-PEN	no failure / interruption
S58B	235-L	66:55
	236-PEN	-
S59A	237-L	75:43
	238-PEN	-
S59B	239-L	76:39
	240-PEN	-
S60A	241-L	no failure / interruption
	242-PEN	no failure / interruption
S60B	243-L	no failure / interruption
	244-PEN	no failure / interruption
S61A	245-L	no failure / interruption
	246-PEN	no failure / interruption
S61B	247-L	no failure / interruption
	248-PEN	no failure / interruption

Specimen No.	Cables
52	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1
53	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1
54	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS60
55	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS60
56	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1
57	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1
58	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1
59	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1
60	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1
61	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1

Signal cables were tested by three-phase voltage supply 1 x 110V with LED diods 3V / 0,03W.
Circuit breakers with rating 3 A were used.

Measured time of tested specimens from S62 to S71 - communication cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S62A	249-L	no failure / interruption
	250-PEN	no failure / interruption
S62B	251-L	no failure / interruption
	252-PEN	no failure / interruption
S63A	253-L	no failure / interruption
	254-PEN	no failure / interruption
S63B	255-L	no failure / interruption
	256-PEN	no failure / interruption
S64A	257-L	no failure / interruption
	258-PEN	no failure / interruption
S64B	259-L	no failure / interruption
	260-PEN	no failure / interruption
S65A	261-L	no failure / interruption
	262-PEN	no failure / interruption
S65B	263-L	no failure / interruption
	264-PEN	no failure / interruption
S66A	265-L	no failure / interruption
	266-PEN	no failure / interruption
S66B	267-L	no failure / interruption
	268-PEN	no failure / interruption
S67A	269-L	no failure / interruption
	270-PEN	no failure / interruption
S67B	271-L	no failure / interruption
	272-PEN	no failure / interruption
S68A	273-L	no failure / interruption
	274-PEN	no failure / interruption
S68B	275-L	no failure / interruption
	276-PEN	no failure / interruption
S69A	277-L	no failure / interruption
	278-PEN	no failure / interruption
S69B	279-L	no failure / interruption
	280-PEN	no failure / interruption
S70A	281-L	83:56
	282-PEN	-
S70B	283-L	no failure / interruption
	284-PEN	no failure / interruption
S71A	285-L	no failure / interruption
	286-PEN	no failure / interruption
S71B	287-L	no failure / interruption
	288-PEN	no failure / interruption

Specimen No.	Cables
62	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1
63	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1
64	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1
65	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1
66	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1
67	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1
68	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1
69	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1
70	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1
71	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1

Signal cables were tested by three-phase voltage supply 1 x 110V with LED diods 3V / 0,03W.
Circuit breakers with rating 3 A were used.

Measured time of tested specimens S72 to S75 - communication cables

Specimen	Bulbs	Time to permanent failure / interruption [min:s]
S72A	289-L	no failure / interruption
	290-PEN	no failure / interruption
S72B	291-L	no failure / interruption
	292-PEN	no failure / interruption
S73A	293-L	no failure / interruption
	294-PEN	no failure / interruption
S73B	295-L	31:12
	296-PEN	-
S74A	297-L	no failure / interruption
	298-PEN	no failure / interruption
S74B	299-L	no failure / interruption
	300-PEN	no failure / interruption
S75A	301-L	no failure / interruption
	302-PEN	no failure / interruption
S75B	303-L	no failure / interruption
	304-PEN	no failure / interruption

Specimen No.	Cables
72	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1
73	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1
74	2 cables SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1
75	2 cables JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1

Signal cables were tested by three-phase voltage supply 1 x 110V with LED diods 3V / 0,03W.
Circuit breakers with rating 3 A were used.

PHOTOS

Photo taken before the test.

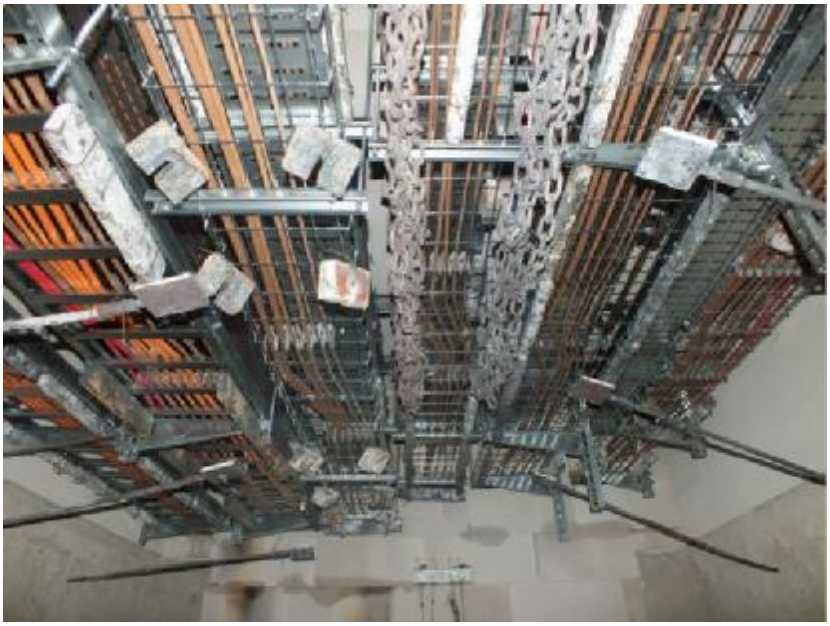


Photo taken before the test.

Photo taken before the test.

PHOTOS

Photo taken before the test.

Photo taken before the test.

Photo taken before the test.

PHOTOS

Photo taken after the test.

Photo taken after the test.

Photo taken after the test.

PHOTOS

Photo taken after the test.

Photo taken after the test.

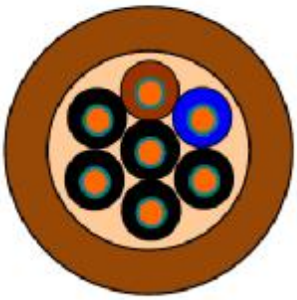
Photo taken after the test.

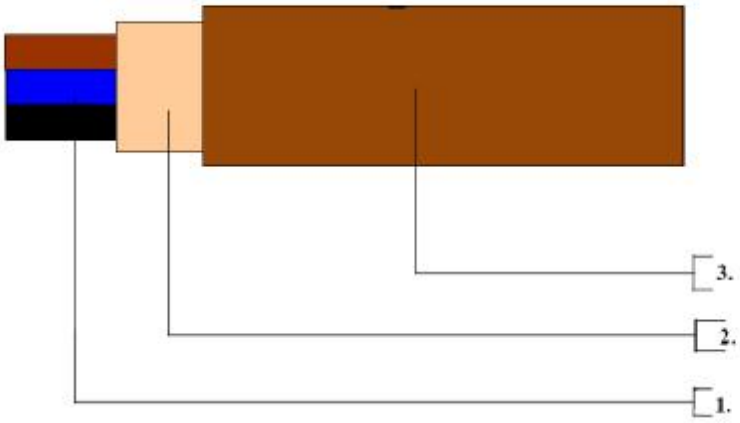
1-CXKH-V...RE P90-R B2ca-s1,d0,a1
derived typ N2XH...RE FE180/PS90 B2ca-s1,d0,a1

Power cable with cooper conductors, for rated voltage up to and including 0,6/1,0 (1,2) kV, with specific fire resistance according to STN IEC 60331-21 and fire characteristics evaluated according to reaction to fire classification according to Commission decision 2006/751/EC, implementing Council Directive 89/106/EHS of construction products. The cable complies with the STN 92 0205 circuit integrity of the electric cable system in the fire on appendix A in STN 34 7661.

Technical specification: **TPEFK 10-01-2002/705+A4**

TPEFK 02-12-2006/782+A5





Construction of the cable:

1. Circular copper conductor with composite insulation. Composite insulation is composed of glass-mica tape (It doesn´t apply to yellow-green wire) and cross-linked polyethylene. Wires are twisted in concentric layers into the cable core.
2. Over the cable core is in continuous extrusion layer from flame-retardant halogen-free filling packaging.
3. Sheath is from halogen-free flame-retarding thermoplastic type HM4 according to STN 34 7660 part 5G (HD 604 S1 part 5G). Colour of the sheath is brown.

Temperature conditions:

- During installation **-5°C to +50°C**
  (Minimum temperature of the cable for installation is + **5°C)**
- During operation **-30°C to +90°C**
- Cu core during operation **+90°C**

Cable usage:

Cables are designated for electrical distribution system. Cables are intended for the usage in the environment with fire danger in the fixed or free bedding (cable bridges, cable lugs or building structures). Cables can be used in the basic and wet environment. Cables are used to route cables for permanent electricity supply in case of fire.

Cables are designed for electrical distribution at the premises zone, which is required in terms of burning behaviour concerned the reaction to fire classification and complementary. They are also intended to be used for route cables for permanent electricity supply in case of fire. Conditions for their use are listed in the STN 34 7661 in Appendix A.

Nominal voltage:

- 0.6/1 (1.2) kV

Technical data:

Colour code according to STN EN 34 7411 (HD 308 S2:2001)

	Without a protective conductor				With a protective conductor		
Number of cores	2-O	3-O	4-O	5-O	3-J	4-J	5-J
1	●	●	●	●	●	●	●
2	●	●	●	●	●	●	●
3		●	●	●	●	●	●
4			●	●		●	●
5				●			●

Informative diameters and weight of the cables, heating value.

Construction of the cable	d [mm]	m [kg/km]	Heating value [MJ/m]
2x1,5 RE	10,2	151	1,58
3x1,5 RE	11,1	180	1,84
4x1,5 RE	12,1	219	2,21
5x1,5 RE	13,2	269	2,76
7x1,5 RE	14,1	307	3,05
12x1,5 RE	17,8	492	4,79
19x1,5 RE	21,0	681	6,55
24x1,5 RE	25,3	878	8,43
2x2,5 RE	10,7	178	1,70
3x2,5 RE	11,6	216	1,98
4x2,5 RE	12,8	267	2,45
5x2,5 RE	14,0	329	3,03
7x2,5 RE	15,1	392	3,39
12x2,5 RE	18,9	621	5,19
19x2,5 RE	22,4	874	7,08
24x2,5 RE	25,8	1117	9,05
1x4,0 RE	7,7	103	1,85
2x4,0 RE	11,9	234	2,04
3x4,0 RE	13,0	291	2,42
4x4,0 RE	14,2	358	2,93
5x4,0 RE	15,6	444	3,66
7x4,0 RE	17,0	541	4,10
12x4,0 RE	21,2	857	6,18
1x6,0 RE	8,0	124	1,87
2x6,0 RE	12,5	294	2,28
3x6,0 RE	13,5	363	2,61
4x6,0 RE	14,7	447	3,12
5x6,0 RE	16,1	541	3,75
7x6,0 RE	17,8	679	4,29
1x10,0 RE	9,2	178	2,84
3x10,0 RE	15,4	518	3,20
4x10,0 RE	17,1	641	3,80
5x10,0 RE	18,7	798	4,76

- d — informative diameter of the cable over the sheath
- m — informative weight of the cable

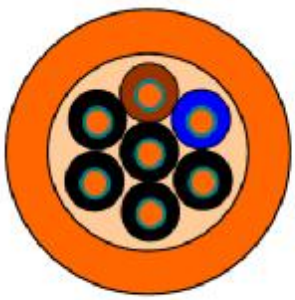
Subject to technical changes. Figures are not guaranteed.

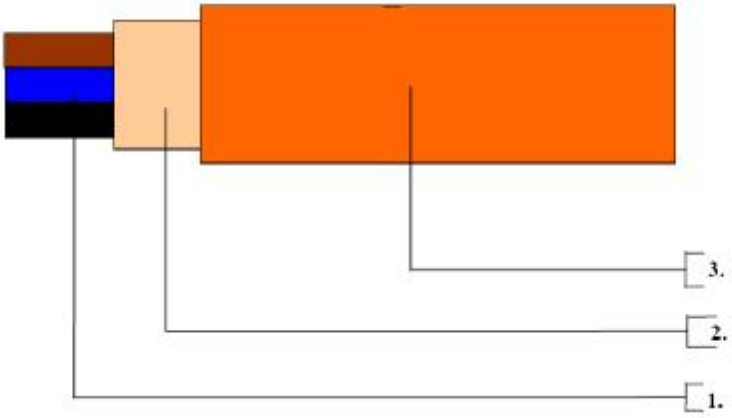
NHXH...RE FE180/E90
derived typ N2XH...RE FE180/PS90

Power cables with copper cores, with functionality during and after fire activity according to IEC 60331-21, with increased resistance against flame spread according to EN 50266-2-4, halogen-free with low smoke density generated at burning according to EN 61034-1,2 and with low waste corrosiveness according to EN 50267-2, with maintaining of the functional resistance of electrical cable systems at fire 90 min according to STN 92 0205 (DIN 4102 part 12) for rated voltage up to and including 0,6/1,0 (1,2) kV.

Technical specification: **TPEFK 11-11-2011/782+A2**

TPEFK 02-12-2006/782+A3





Construction of the cable:

1. Circular copper conductor with composite insulation. Composite insulation is composed of glass-mica tape (it doesn't apply to yellow-green wire) and cross-linked polyethylene Wires are twisted in concentric layers into the cable core.
2. Over the cable core is in continuous extrusion layer flame-retardant halogen-free filling packaging.
3. Sheath is from halogen-free flame-retarding thermoplastic type HM4 according to STN 34 7660 part 5G (HD 604 S1 part 5G). Colour of the sheath is orange.

Temperature conditions:

- During installation **-5° to +50°C** (Minimum temperature of the cable for installation is **+ 5°C**)
- During operation **-30°C to +90°C**
- Cu core during operation **+90°C**

Cable usage:

Cables are designated for electrical distribution system for the rated voltage. Cables are intended for the usage in the environment with fire danger in the fixed bedding (cable grids, cable hooks). Cables can be used in the environment with fire danger and can be installed on the flammable surface also, in the basic and wet environment, surroundings temperature – 25°C until +45°C.

Nominal voltage:

- 0.6/1 (1.2) kV

CABLES

Technical data:

Colour code according to STN EN 34 7411 (HD 308 S2:2001)

	Without a protective conductor				With a protective conductor		
Number of cores	2-O	3-O	4-O	5-O	3-J	4-J	5-J
1	●	●	●	●	●	●	●
2	●	●	●	●	●	●	●
3		●	●	●	●	●	●
4			●	●		●	●
5				●			●

Informative diameters and weight of the cables, heating value.

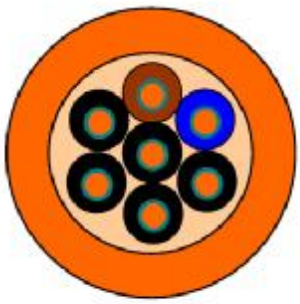
Construction of the cable	d [mm]	m [kg/km]	Heating value [MJ/m]
2x1,5 RE	9,3	131	1,22
3x1,5 RE	9,8	152	1,32
4x1,5 RE	10,5	177	1,68
5x1,5 RE	11,3	207	1,95
7x1,5 RE	12,2	149	2,21
10x1,5 RE	15,1	353	3,08
12x1,5 RE	15,5	489	3,31
14x1,5 RE	16,4	442	3,76
19x1,5 RE	17,7	548	4,45
24x1,5 RE	20,4	695	5,62
2x2,5 RE	9,9	162	1,50
3x2,5 RE	10,6	191	1,66
4x2,5 RE	11,3	225	1,89
5x2,5 RE	12,1	269	2,22
7x2,5 RE	13,2	329	2,53
12x2,5 RE	16,9	522	3,80
14x2,5 RE	17,8	593	4,26
19x2,5 RE	19,8	753	5,23
24x2,5 RE	22,6	953	6,44
2x4,0 RE	11,0	208	1,77
3x4,0 RE	11,7	251	1,96
4x4,0 RE	12,7	305	2,29
5x4,0 RE	13,8	365	2,71
7x4,0 RE	15,0	462	3,13
12x4,0 RE	19,4	738	4,76
2x6,0 RE	11,9	263	2,00
3x6,0 RE	12,7	323	2,22
4x6,0 RE	13,9	400	2,65
5x6,0 RE	15,1	481	3,15
7x6,0 RE	16,6	611	3,58
3x10,0 RE	14,6	478	2,80
4x10,0 RE	16,0	597	3,36
5x10,0 RE	17,8	741	4,06

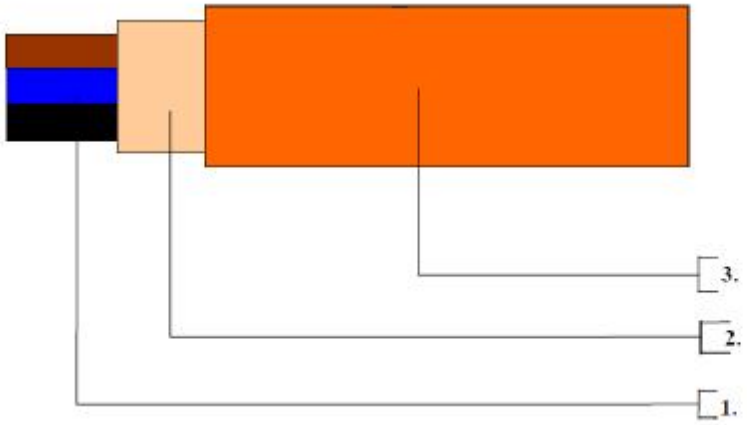
- d — informative diameter of the cable over the sheath
- m — informative weight of the cable

Subject to technical changes. Figures are not guaranteed.

NHXH...RE FE180/E90 Projekt

Power cables with copper cores, with functionality during and after fire activity according to IEC 60331-21, with increased resistance against flame spread according to EN 50266-2-4, halogen-free with low smoke density generated at burning according to EN 61034-1,2 and with low waste corrosiveness according to EN 50267-2, with maintaining of the functional resistance of electrical cable systems at fire 90 min according to STN 92 0205 (DIN 4102 part 12) for rated voltage up to and including 0,6/1,0 (1,2) kV.





Construction of the cable:

1. Circular copper conductor with composite insulation. Composite insulation is composed of glass-mica tape (it doesn´t apply to yellow-green wire) and cross-linked polyethylene. Wires are twisted in concentric layers into the cable core.
2. Over the cable core is in continuous extrusion layer flame-retardant halogen-free filling packaging.
3. Sheath is from halogen-free flame-retarding thermoplastic type HM4 according to STN 34 7660 part 5G (HD 604 S1 part 5G). Colour of the sheath is orange.

Temperature conditions:

- During installation **-5° to +50°C**
  (Minimum temperature of the cable for installation is **+ 5°C)**
- During operation **-30°C to +90°C**
- Cu core during operation **+90°C**

Cable usage:

Cables are designated for electrical distribution system for the rated voltage. Cables are intended for the usage in the environment with fire danger in the fixed bedding (cable grids, cable hooks). Cables can be used in the environment with fire danger and can be installed on the flammable surface also, in the basic and wet environment, surroundings temperature – 25°C until +45°C.

Nominal voltage:

- 0.6/1 (1.2) kV

CABLES

Technical data:

Colour code according to STN EN 34 7411 (HD 308 S2:2001)

	Without a protective conductor				With a protective conductor		
Number of cores	2-O	3-O	4-O	5-O	3-J	4-J	5-J
1	●	●	●	●	●	●	●
2	●	●	●	●	●	●	●
3		●	●	●	●	●	●
4			●	●		●	●
5				●			●

Informative diameters and weight of the cables, heating value.

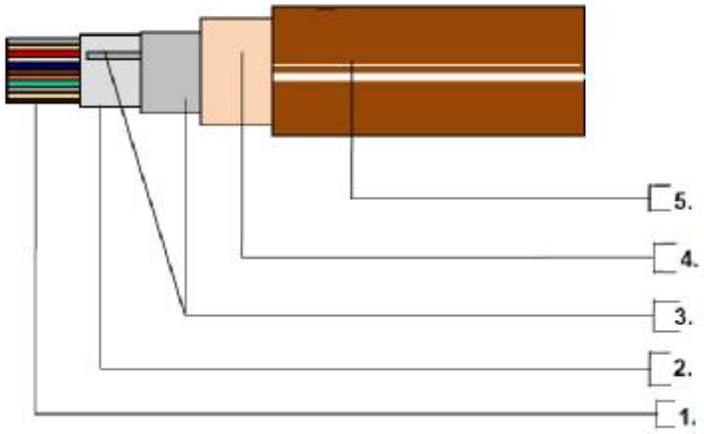
Construction of the cable	d [mm]	m [kg/km]	Heating value [MJ/m]
4x1,5 RE	11,2	192	1,89
4x10,0 RE	16,8	609	3,66

- d informative diameter of the cable over the sheath
- m informative weight of the cable

Subject to technical changes. Figures are not guaranteed.

SHXKFH-V180...Lg P90-R B2ca-s1,d1,a1

LF installation, screening cables with cooper conductor, with specific fire resistance according to IEC 60331-23 and fire characteristics evaluated according to reaction to fire classification according to Commission decision 2006/751/EC, implementing Council Directive 89/106/EHS of construction products. The cable complies with STN 92 0205 (for derived type ZP 27/2008) circuit integrity of the electric cable system in the fire on appendix A in STN 34 7661.
Technical specification: **TPEFK 19-03-2013/219/P90-R**



Construction of the cable:

1. Cooper conductor ∅ 0,8 mm and 1,0 mm, with composite insulation. Composite insulation is composed of glass-mica tape and halogen-free compound Cores are twisted into elements – pairs, which are grouped twisting (derived types positional twisting) to the cable core.
2. Over the cable core is circuit insulation from a no hydroscopic foil.
3. Over the circuit insulation is aluminium-polymer screening foil. To ensure continuity of the screening is placed under the foil the tinned wire.
4. Over the cable core is in continuous extrusion layer, flame-retardant halogen-free filling packaging.
5. Sheath is from halogen-free flame-retarding thermoplastic type HM4 (DIN VDE 0207 part 24), colour of the sheath is brown. Cables used for fire warning installation are red.

Temperature conditions:

- During installation **-5° to +50°C** (Minimum temperature of the cable for installation is **+ 5°C**)
- During operation **-30°C to +70°C**

Cable usage:

Cables SHXKFH-V180 P90-R are designed for transmission electrical signal. Cables are intended for the usage in the environment with fire danger in the fixed or free bedding (cable bridges, cable lugs or building structures). Cables can be used in the basic and wet environment. Cables can be installed on solid flammable materials or in them.

Cables are designed for electrical distribution at the premises zone, which is required in terms of burning behaviour concerned the reaction to fire classification and complementary. They are also intended to be used for route cables for permanent electricity supply in case of fire. Conditions for their use are listed in the STN 34 7661 in Appendix A. Their use is provided under the requirements of the relevant legislation on fire safety engineering and related technical standards.

Operational voltage:

- ∅ 0.8 mm 225 V
- ∅ 1.0 mm 380 V

Technical data:

Colour code of groups in cables

Pair	a core	b core
1	white	blue
2	white	orange
3	white	green
4	white	brown
5	white	grey
6	red	blue
7	red	orange
8	red	green
9	red	brown
10	red	grey

Informative diameters and weight of the cables, heating value of cables

Construction	d [mm]	m [kg/km]	l [m]	Heating value [MJ/m]
1 x 2 x 0,8	8,1	85	1 000	0,85
2 x 2 x 0,8	9,4	120	1 000	1,16
3 x 2 x 0,8	12,5	169	1 000	1,64
4 x 2 x 0,8	13,1	197	1 000	1,87
5 x 2 x 0,8	13,5	223	1 000	2,08
6 x 2 x 0,8	14,2	254	1 000	2,33
8 x 2 x 0,8	17,3	334	1 000	3,10
10 x 2 x 0,8	17,7	376	1 000	3,34

- d – informative diameter of the cable over the sheath
- m – informative weight of the cable
- tolerance of the production length is ± 1 %

Transmission parameters.

Diameter of conductors		0,8 mm	1,0 mm
Max. loop resistance [(Ω/km]		73,2	50,0
Mutual capacitance of a pair [nF/km]	max.	120[1)]	
Capacitance unbalance [pF/100m]	max.	200[2)]	
Operational voltage peak value [V]		225	380

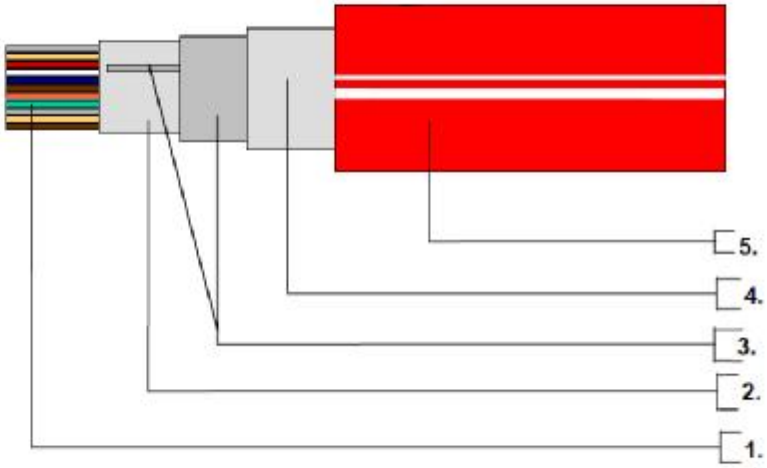
1) For constructions up to 4 pairs can the value be 20 % higher
2) 20 % values, but min. one value can be up to 500 pF/100m.
When measuring capacitance unbalances on a length (L) longer than 100 m, the measured value has to be divided with the coefficient L/100. Lengths shorter than 100 m are rated as 100 m lengths.

Subject to technical changes. Figures are not guaranteed.

JE-H(St)H ... Bd FE180/PS60

LF installation, screening cables with cooper conductor, with functionality 180 min during and after fire activity according to IEC 60331-23, with increased resistance against flame spread according to EN 50266-2-4 (cat. C), halogen-free with low smoke density generated at burning according to EN 61034-1, -2 and with low waste corrosiveness according to EN 50267-2-2, -3. With maintaining of the functional resistance of electrical cables systems at fire 60 min according to STN 92 0205 (DIN 4102 part 12).

Technical specification: **TPEFK 08-12-2006/289/P30-P60+A1**



Construction of the cable:

1. Copper conductor ∅ 0,8 mm, thermo-setting insulation from silicon compound. Cores are twisted into elements – pairs that are twisted to the cable core.
2. Over the cable core is circuit insulation from a no hydroscopic foil.
3. Over the circuit insulation is aluminium-polymer screening foil. To ensure continuity of the screening is placed under the foil the tinned wire.
4. Over the screening is circuit insulation from a no hydroscopic foil.
5. Sheath is from halogen-free flame-retarding thermoplastic type HM2 (DIN VDE 0207 part 24), colour of the sheath is brown. Cables used for fire warning installation are red.

Temperature conditions:

- During installation **-5° to +50°C** (Minimum temperature of the cable for installation is **+ 5°C)**
- During operation **-30°C to +70°C**

Cable usage:

Cables JE-H(St)H...FE 180/PS60 are designed for transmission electrical signal max. to 225 V. Cables are intended for the usage in the environment with fire danger in the fixed ore free bedding (cable grids, cable hooks) in the basic and wet environment.

Operational voltage:

- ∅ 0.8 mm 225 V

CABLES

Technical data:

Colour code of components

Pair	1		2		3		4	
Core	a	b	a	b	a	b	a	b
Colour	blue	red	gray	yellow	green	brown	white	black

Nominal diameter and weight of cable, production length.

Construction	d [mm]	m [kg/km]	l [m]
1x2x0,8	7,2	55	1 000
2x2x0,8	8,0	72	1000
3x2x0,8	10,0	105	1000
4x2x0,8	11,2	125	1000
8x2x0,8	17,5	209	1000
12x2x0,8	19,0	317	1000
16x2x0,8	21,0	395	500
20x2x0,8	21,0	460	500
24x2x0,8	26,0	520	500
28x2x0,8	26,5	595	500

1) In construction 1x4x0,8
- d – informative diameter of the cable over the sheath
- m – informative weight of the cable
- tolerance of the production length is ± 1 %

Transmission parameters.

Diameter of conductors		0,8 mm
Max. loop resistance [(Ω/km]		73,2
Mutual capacitance of a pair [nF/km]	max.	120[1)]
Capacitance unbalance [pF/100m]	max.	200[2)]
Operational voltage peak value [V]		225

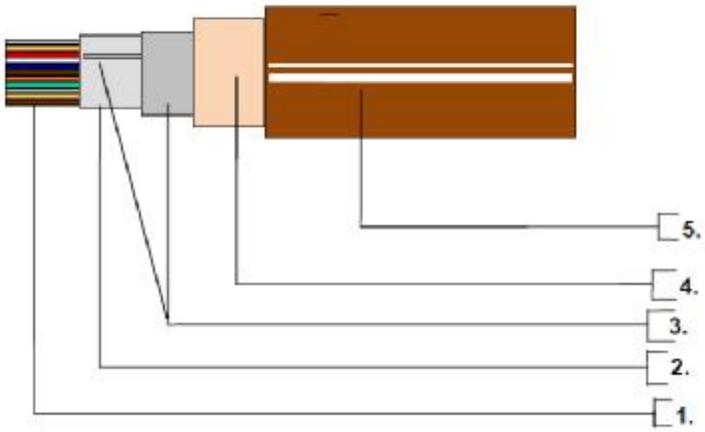
1) For constructions up to 4 pairs can the value be 20 % higher
2) 20 % values, but min. one value can be up to 500 pF/100m.

When measuring capacitance unbalances on a length (L) longer than 100 m, the measured value has to be divided with the coefficient L/100. Lengths shorter than 100 m are rated as 100 m lengths.

Subject to technical changes. Figures are not guaranteed.

JE-H(St)H...Bd FE180/PS90 B2ca-s1,d1,a1
derived typ SSKFH-V180...Lg P90-R B2ca-s1,d1,a1

LF installation, screening cables with cooper conductor, with specific fire resistance according to IEC 60331-23 and fire characteristics evaluated according to reaction to fire classification according to Commission decision 2006/751/EC, implementing Council Directive 89/106/EHS of construction products. The cable complies with STN 92 0205 (for derived type ZP 27/2008) circuit integrity of the electric cable system in the fire on appendix A in STN 34 7661.
Technical specification: **TPEFK 08-12-2006/289/P30-P90+A4**
TPEFK 19-03-2013/219+A1



Construction of the cable:

1. Copper conductor ∅ 0,8 mm, thermo-setting insulation from silicon compound. Cores are twisted into elements – pairs that are twisted to the cable core.
2. Over the cable core is circuit insulation from a no hydroscopic foil.
3. Over the circuit insulation is aluminium-polymer screening foil. To ensure continuity of the screening is placed under the foil the tinned wire.
4. Over the cable core is in continuous extrusion layer flame-retardant halogen-free filling packaging.
5. Sheath is from halogen-free flame-retarding thermoplastic type HM4 (DIN VDE 0207 part 24), colour of the sheath is brown. Cables used for fire warning installation are red.

Temperature conditions:

- During installation **-5° to +50°C**
  (Minimum temperature of the cable for installation is **+ 5°C)**
- During operation **-30°C to +70°C**

Cable usage:

Cables are designed for transmission electrical signal Cables are intended for the usage in the environment with fire danger in the fixed or free bedding (cable bridges, cable lugs or building structures). Cables can be used in the basic and wet environment. Cables can be installed on solid flammable materials or in them.

Cables are designed for electrical distribution at the premises zone, which is required in terms of burning behaviour concerned the reaction to fire classification and complementary. They are also intended to be used for route cables for permanent electricity supply in case of fire. Conditions for their use are listed in the STN 34 7661 in Appendix A. Their use is provided under the requirements of the relevant legislation on fire safety engineering and related technical standards.

Operational voltage:

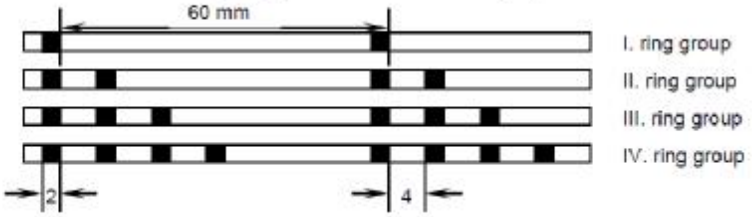
- ∅ 0,8 mm 225 V

Technical data:

Colour code of components

Pair	1		2		3		4	
Core	a	b	a	b	a	b	a	b
Colour	blue	red	gray	yellow	green	brown	white	black

Colour code of groups in cables JE-H(St)H ... Bd FE180/PS90



Note: Ring marking is not used in construction below 4x2...

Group number	Ring colour	Ring group number	Colour of identification tape
1 2 3 4	*pink*	I. II. III. IV.	-
5 6 7 8	*orange*	I. II. III. IV.	-

Colour code of groups in cables SSKFH-V180 ... Lg P90-R

Pair	a core	b core
1	white	blue
2	white	orange
3	white	green
4	white	brown
5	white	grey
6	red	blue
7	red	orange
8	red	green
9	red	brown
10	red	grey

Informative diameters and weight of the cables, heating value of cables JE-H(St)H ... Bd FE180/PS90

Construction	d [mm]	m [kg/km]	l [m]	Heating value [MJ/m]
1 x 2 x 0,8	7,6	74	1 000	0,72
2* x 2 x 0,8	8,6	100	1 000	0,91
3 x 2 x 0,8	11,7	160	1 000	1,49
4 x 2 x 0,8	12,1	179	1 000	2,09
8 x 2 x 0,8	17,8	329	1 000	2,92

- d – informative diameter of the cable over the sheath
- m – informative weight of the cable
- tolerance of the production length is ± 1 %

* In construction 1x4x0,8

CABLES

Informative diameters and weight of the cables, heating value of cables SSHFH-V180 ... Lg P90-R

Construction	d [mm]	m [kg/km]	l [m]	Heating value [MJ/m]
1 x 2 x 0.8	7,6	77	1 000	0,76
2 x 2 x 0.8	8,6	102	1 000	0,97
3 x 2 x 0.8	11,5	148	1 000	1,43
4 x 2 x 0.8	11,9	166	1 000	1,55
5 x 2 x 0.8	12,5	195	1 000	1,79
6 x 2 x 0,8	13,2	223	1 000	2,05
8 x 2 x 0,8	15,9	291	1 000	2,65
10 x 2 x 0.8	16,3	327	1 000	2,89

- d – informative diameter of the cable over the sheath
- m – informative weight of the cable
- tolerance of the production length is ± 1 %

Transmission parameters.

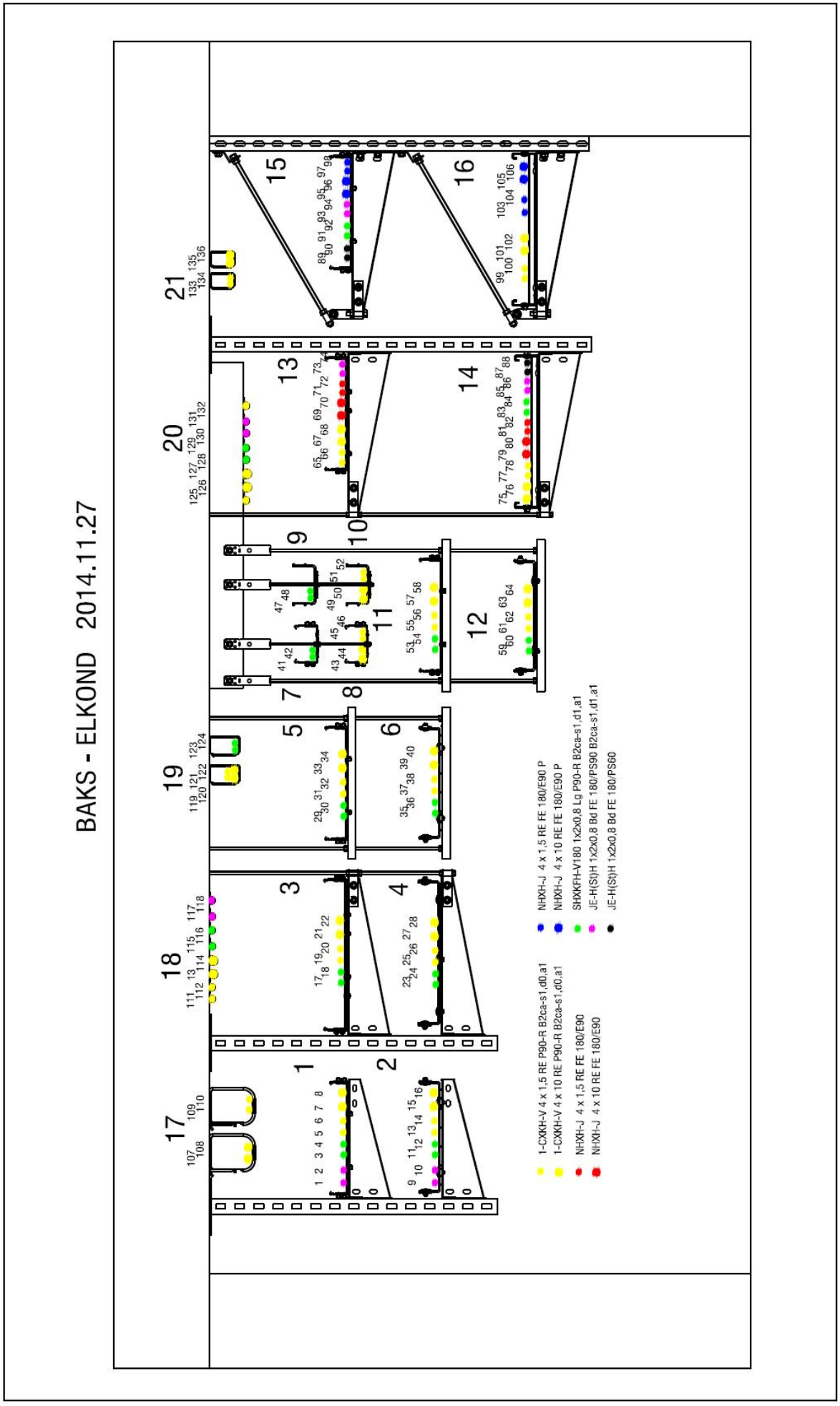
Diameter of conductors		*0,8 mm*
Max. loop resistance [(Ω/km]		*73,2*
Mutual capacitance of a pair [nF/km]	max.	*120*[1)]
Capacitance unbalance [pF/100m]	max.	*200*[2)]
Operational voltage peak value [V]		*225*

1) For constructions up to 4 pairs can the value be 20 % higher
2) 20 % values, but min. one value can be up to 500 pF/100m.

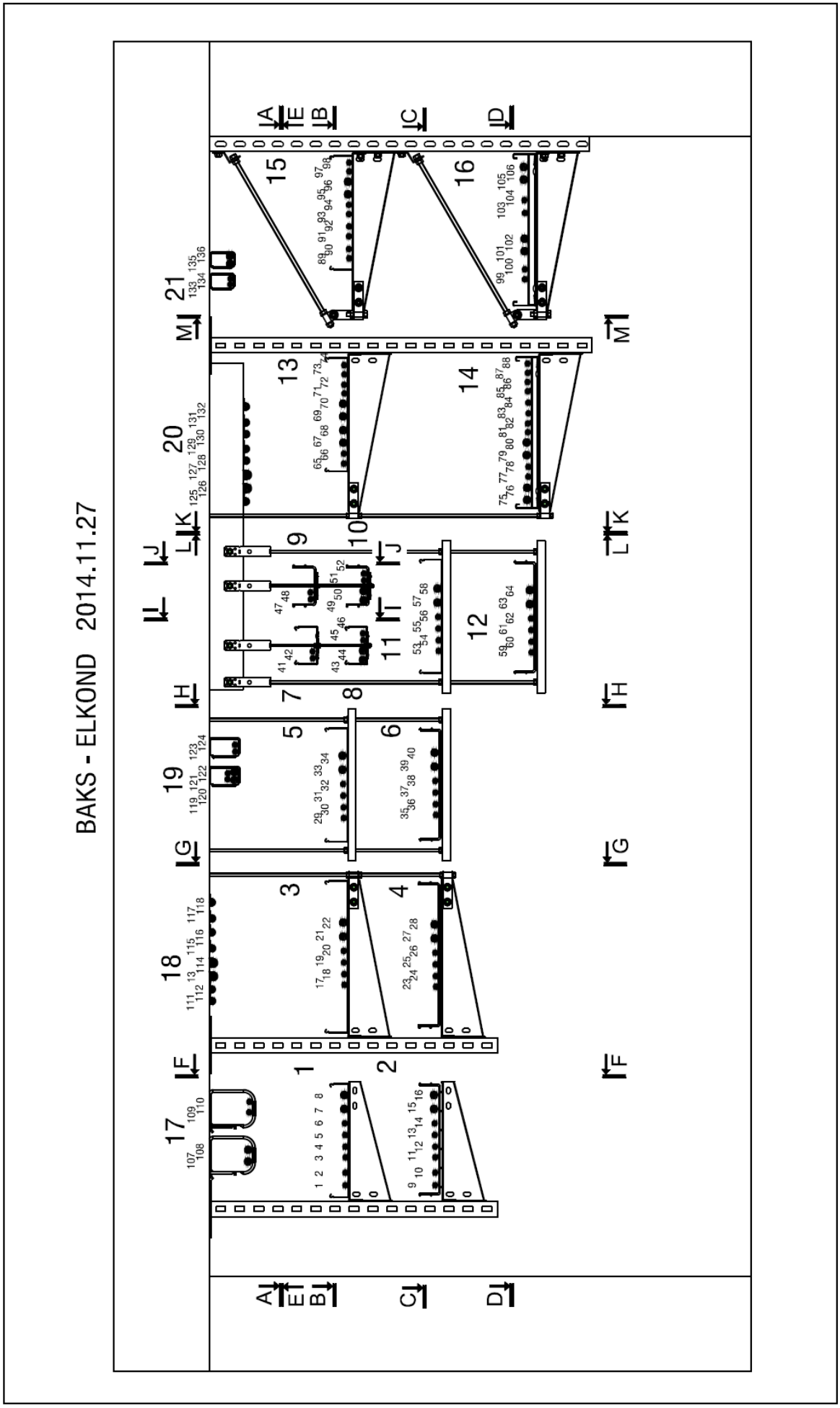
When measuring capacitance unbalances on a length (L) longer than 100 m, the measured value has to be divided with the coefficient L/100. Lengths shorter than 100 m are rated as 100 m lengths.

Subject to technical changes. Figures are not guaranteed.

DRAWINGS


BAKS - ELKOND 2014.11.27
1-CXKH-V 4 x 1,5 RE P90-R B2ca-s1,d0,a1
1-CXKH-V 4 x 10 RE P90-R B2ca-s1,d0,a1
NHXH-J 4 x 1,5 RE FE 180/E90
NHXH-J 4 x 10 RE FE 180/E90
NHXH-J 4 x 1,5 RE FE 180/E90 P
NHXH-J 4 x 10 RE FE 180/E90 P
SHXKFH-V180 1x2x0,8 Lg P90-R B2ca-s1,d1,a1
JE-H(St)H 1x2x0,8 Bd FE 180/PS90 B2ca-s1,d1,a1
JE-H(St)H 1x2x0,8 Bd FE 180/PS60

DRAWINGS



DRAWINGS

No.	No. FIRES	Type of cable	Position	Construction fixing, loading, ...
1	75	JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1	1	Cable trays KGL/KGOL 300H60, 1.5 m /10kg.m^{-1} / steel sheet thickness 0,7 mm Fixing: Consoles WPCB, brackets WWS/WWSO300
2		JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1		
3	74	SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
4		SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
5	42	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
6		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
7	41	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
8		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
9	73	JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1	2	Cable mesh trays KDS/KDSO 300H60, 1.5 m /10kg.m^{-1}. Steel wire ∅ 4 mm Fixing: Consoles WPCB, brackets WWS/WWSO300.
10		JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1		
11	72	SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
12		SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
13	40	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
14		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
15	39	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
16		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
17	69	SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	3	Cable trays KGJ/KGOJ 400H60, 1.5 m , 20kg.m^{-1} / steel sheet thickness 0,9 mm Fixing: Consoles WPCB, brackets WWS/WWSO400, threaded rods PGM 10
18		SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
19	36	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
20		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
21	35	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
22		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
23	68	SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	4	Cable mesh trays KDS/KDSO400H60, 1.5 m, 20kg.m^{-1}. Steel wire ∅ 4 mm. Fixing: Consoles WPCB, brackets WWS/WWSO400, threaded rods PGM10
24		SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
25	34	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
26		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
27	33	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
28		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
29	66	SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	5	Cable trays KGL/KGOL 300H60, 1.5 m, 20kg.m^{-1} , steel sheet thickness 0,7 mm Fixing: Assembling profiles CWP40H22/0,4, threaded rods PGM10
30		SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
31	30	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
32		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
33	29	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
34		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
35	65	SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	6	Cable mesh trays KDS/KDSO 300H60, 1.5 m, 20kg.m^{-1}. Steel wire ∅ 4 mm Fixing: Assembling profiles CWP40H22/0,4 threaded rods PGM10
36		SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
37	28	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
38		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
39	27	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
40		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		

DRAWINGS

No.	No. FIRES	Type of cable	Position	Construction fixing, loading, ...
41	64	SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	7	Cable trays KFL 100H60, 1.5 m, 5kg.m^{-1}, steel sheet thickness 0,7 mm. Fixing: Clamp ZSW threaded rods PGM6 + hanger WT120 (fixing to trapezoidal steel sheet)
42		SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
43	63	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1	8	
44		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
45	26	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
46		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
47	25	SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	9	Cable mesh trays KDS/KDSO 100H60, 1.5 m, 5kg.m^{-1}. Fixing: Clamp ZSW threaded rods PGM6 + hanger WT120 (fixing to trapezoidal steel sheet)
48		SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
49	24	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1	10	
50		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
51	23	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
52		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
53	62	SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	11	Cable trays KGL/KGOL 300H60, 1.5 m, 10kg.m^{-1}, steel sheet thickness 0,7 mm Fixing: Assembling profile CWP40H22, threaded rods PGM10, hangers WT120 (fixing to trapezoidal steel sheet)
54		SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
55	22	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
56		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
57	21	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
58		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
59	61	SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	12	Cable mesh trays KDS/KDSO 300H60, 1.5 m, 10kg.m^{-1}. Fixing: Assembling profiles CWP40H22, threaded rods PGM10, hangers WT120 (fixing to trapezoidal steel sheet)
60		SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
61	20	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
62		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
63	19	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
64		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
65	16	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1	13	Cable trays KCP/KCOP 300H60, 1.2 m, 10kg.m^{-1}, steel sheet thickness 1,5 mm Fixing: Consoles WPCB, brackets WWS/WWSO400, threaded rods PGM10
66		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
67	15	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
68		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
69	14	NHXH-J 4x10 RE FE180/E90		
70		NHXH-J 4x10 RE FE180/E90		
71	13	NHXH-J 4x1,5 RE FE180/E90		
72		NHXH-J 4x1,5 RE FE180/E90		
73	58	JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1		
74		JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1		

DRAWINGS

No.	No. FIRES	Type of cable	Position	Construction fixing, loading, ...
75	12	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1	14	Cable ladders DGOP 400H60, 1.2 m, 20kg.m^{-1}, steel sheet thickness 1,5 mm. Fixing: Consoles WPCB, brackets WWS/WWSO400, threaded rods PGM10
76		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
77	11	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
78		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
79	10	NHXH-J 4x10 RE FE180/E90		
80		NHXH-J 4x10 RE FE180/E90		
81	9	NHXH-J 4x1,5 RE FE180/E90		
82		NHXH-J 4x1,5 RE FE180/E90		
83	57	SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
84		SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
85	56	JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1		
86		JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1		
87	55	JE-H(St)H 1x2x0,8 Bd FE180/PS60		
88		JE-H(St)H 1x2x0,8 Bd FE180/PS60		
89	54	JE-H(St)H 1x2x0,8 Bd FE180/PS60	15	Cable trays KCP/KCOP 300H60, 1.2 m, 10kg.m^{-1}, steel sheet thickness 1,5 mm. Fixing: Assembling profiles CWP/CWOP40H40, brackets WWS/WWSO400, hangers UPWK/UPWKO, threaded rods PGM10, clamps WKPO
90		JE-H(St)H 1x2x0,8 Bd FE180/PS60		
91	53	SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
92		SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
93	52	JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1		
94		JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1		
95	6	NHXH-J 4x10 RE FE180/E90 P		
96		NHXH-J 4x10 RE FE180/E90 P		
97	5	NHXH-J 4x1,5 RE FE180/E90 P		
98		NHXH-J 4x1,5 RE FE180/E90 P		
99	4	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1	16	Cable ladders DGOP 400H60, 1.2 m, 20kg.m^{-1}, steel sheet thickness 1,5 mm. Fixing: Assembling profiles CWP/CWOP40H40, brackets WWS/WWSO400, hangers UPWK/UPWKO, threaded rods PGM10, clamps WKPO
100		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
101	3	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
102		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
103	2	NHXH-J 4x1,5 RE FE180/E90 P		
104		NHXH-J 4x1,5 RE FE180/E90 P		
105	1	NHXH-J 4x10 RE FE180/E90 P		
106		NHXH-J 4x10 RE FE180/E90 P		
107	44	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1	17	Cable hangers OZO fixed by MKR 6x30 in spacing of 600 mm.
108		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
109	43	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
110		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
111	38	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1	18	Cable clamps UDF fixed by MKR 6x30 in spacing of 600 mm.
112		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
113	37	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
114		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
115	71	SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
116		SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
117	70	JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1		
118		JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1		

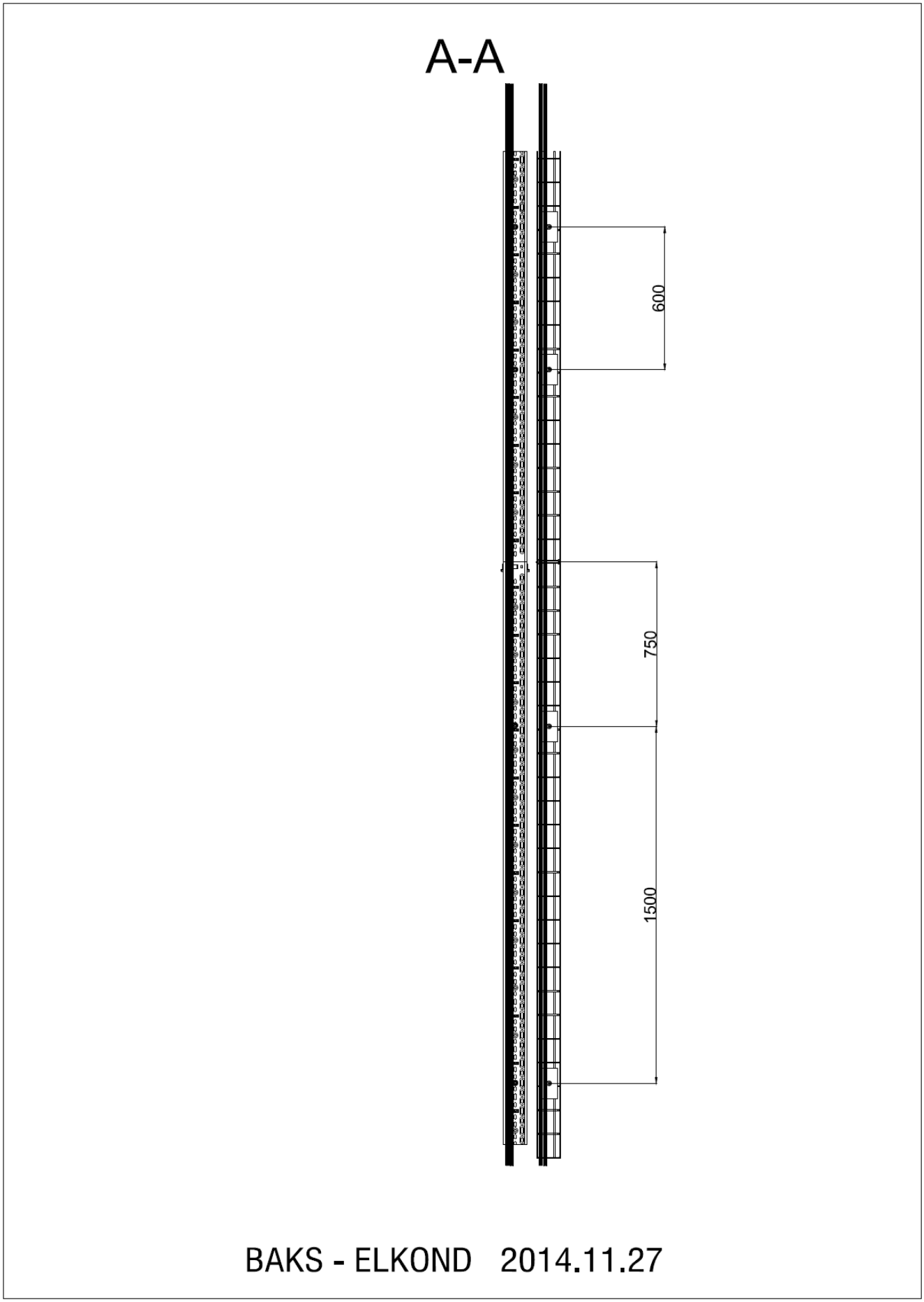
DRAWINGS

No.	No. FIRES	Type of cable	Position	Construction fixing, loading, ...
119	32	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1	19	Cable hangers OZSO fixed by SBSTM 7,5x52 in spacing of 600 mm.
120		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
121	31	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
122		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
123	67	SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
124		SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
125	17	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1	20	Cable clamps UDF fixed to trapezoidal steel sheet by screws SMD 4,8 x 16 in spacing of 600 mm.
126	18	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
127		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
128	60	SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
129		SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1		
130	59	JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1		
131		JE-H(St)H 1x2x0,8 Bd FE180/PS90 $B2_{ca}$-s1,d1,a1		
132	17	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
133	8	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1	21	Cable hangers OZMO fixed by MKR 6x30 in spacing of 600 mm.
134		1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1		
135	7	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		
136		1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1		

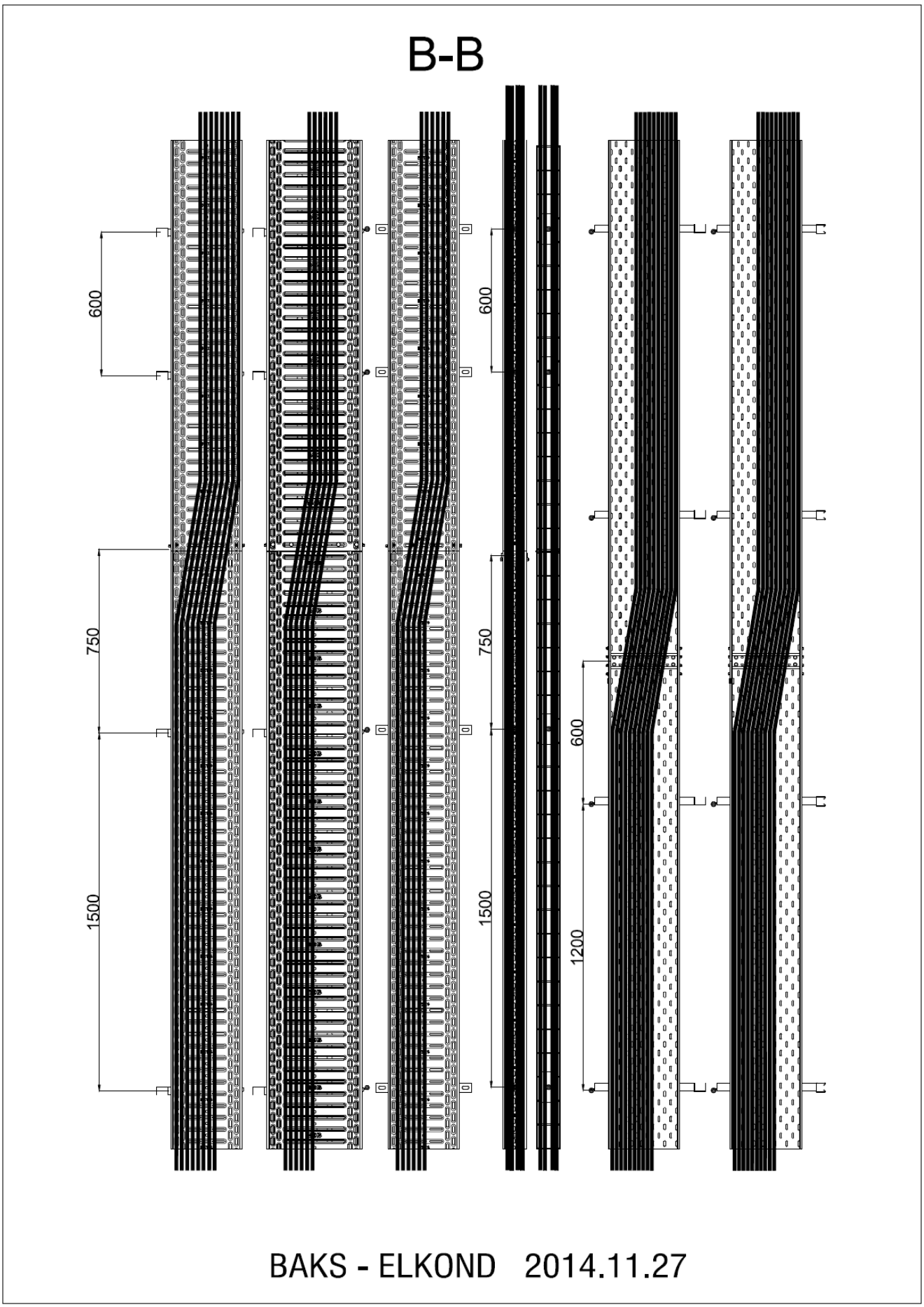
No	Cable type	Cable diameter, approx. [mm]	Cable weight, approx. [kg.m^{-1}]	Amount
1	1-CXKH-V 4x1,5 RE P90-R $B2_{ca}$-s1,d0,a1	12,6	0,207	36
2	1-CXKH-V 4x10 RE P90-R $B2_{ca}$-s1,d0,a1	17	0,66	36
3	NHXH-J 4x1,5 RE FE180/E90	11	0,185	4
4	NHXH-J 4x10 RE FE180/E90	16,5	0,64	4
5	NHXH-J 4x1,5 RE FE180/E90 P	10,5	0,152	4
6	NHXH-J 4x10 RE FE180/E90 P	16	0,577	4
7	SHXKFH-V180 1x2x0,8 Lg P90-R $B2_{ca}$-s1,d1,a1	8	0,085	30
8	JE-H(St)H 1x2x0,8 Bd FE180/PS90 B2ca-s1,d1,a1	7,5	0,08	14
9	JE-H(St)H 1x2x0,8 Bd FE180/PS60	7	0,54	4
			TOTAL	**136**

Power cables	**88**
Communication cables	**48**

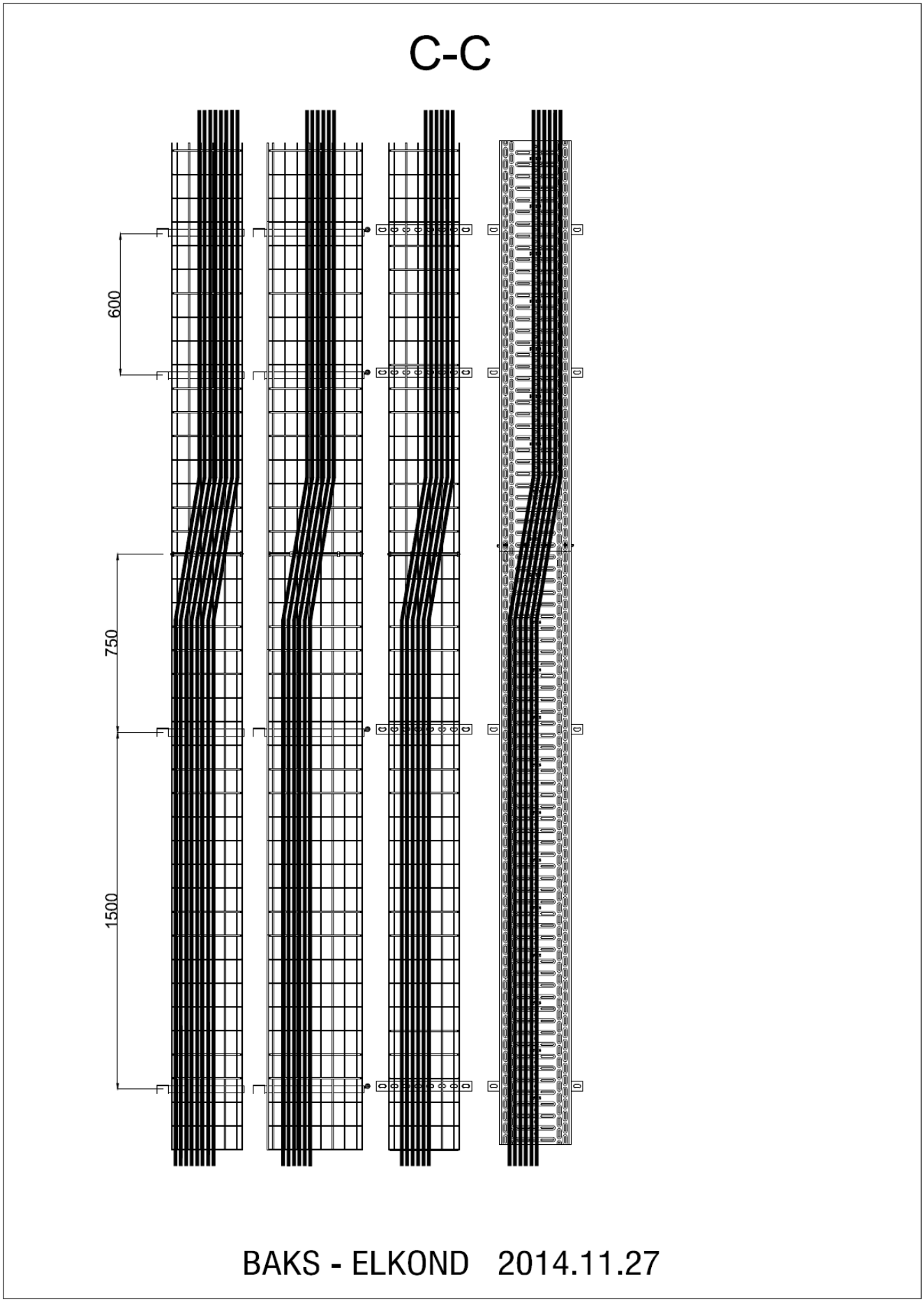
DRAWINGS



DRAWINGS

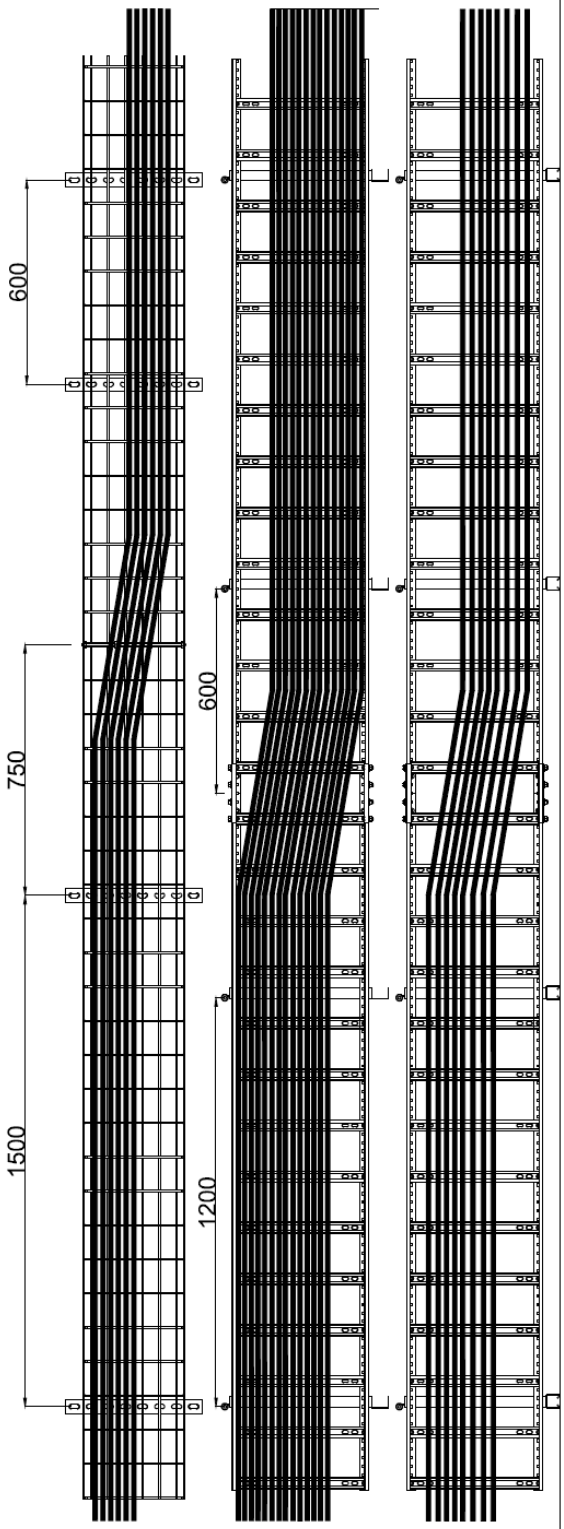


DRAWINGS



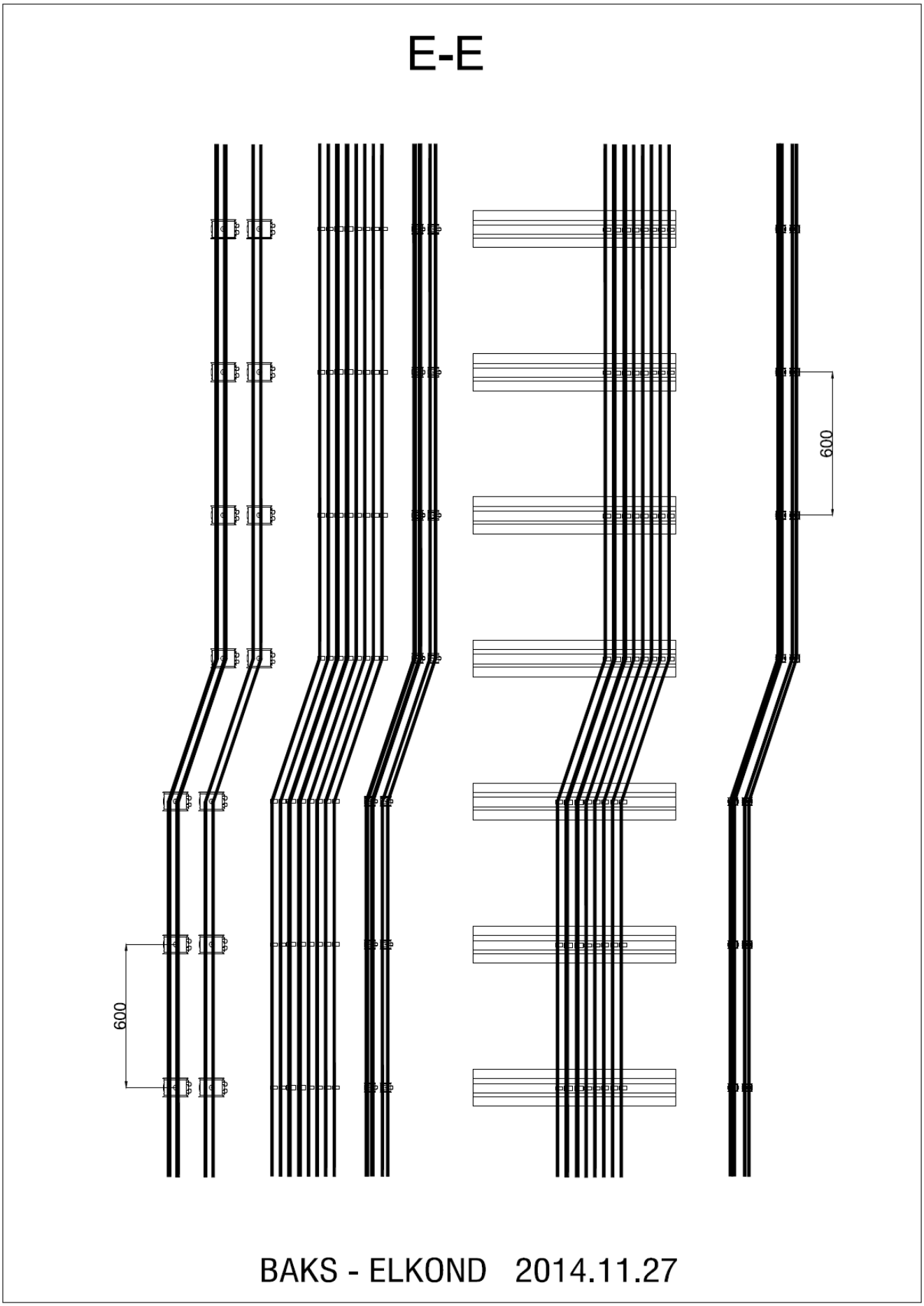
DRAWINGS

D-D

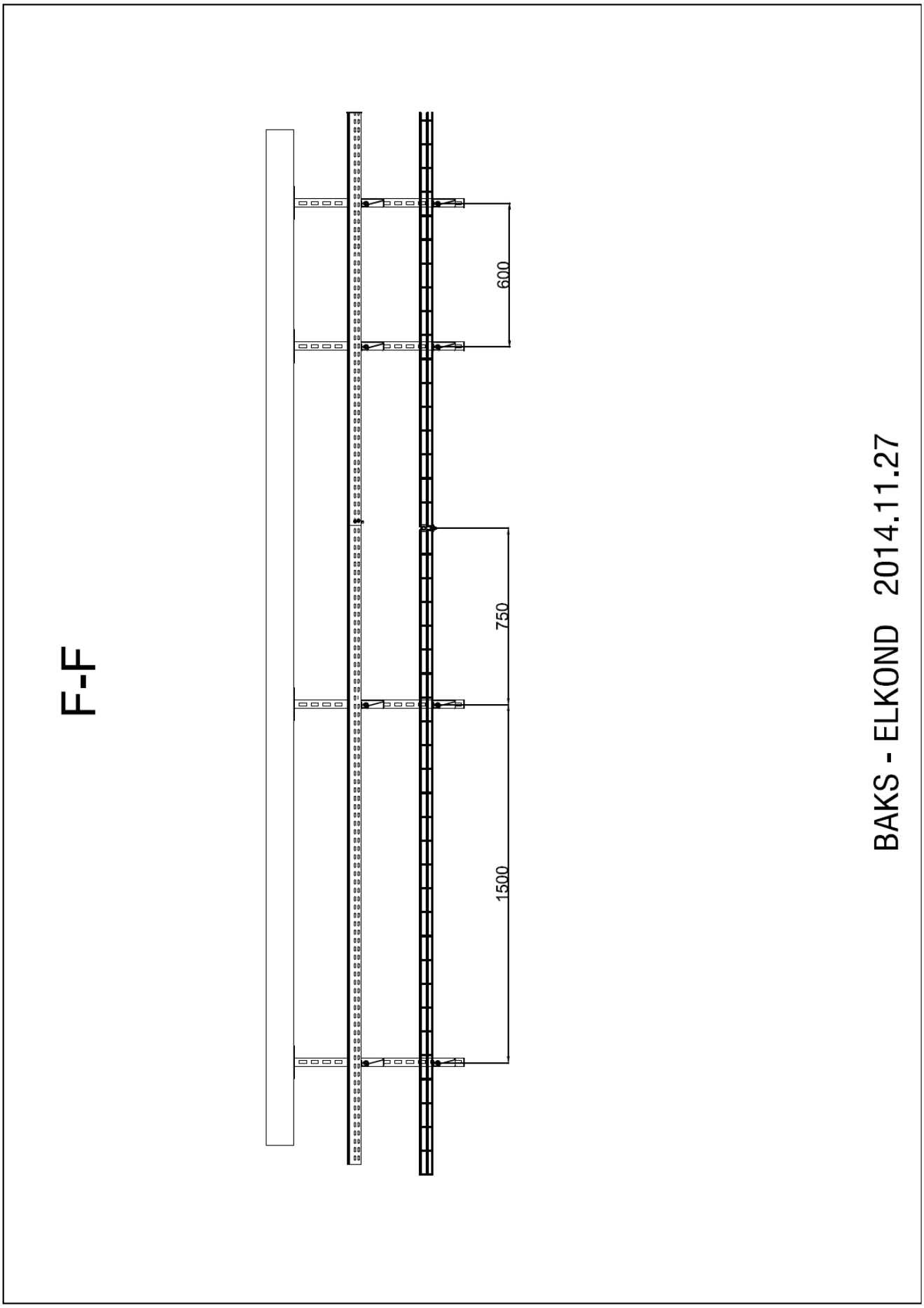


BAKS - ELKOND 2014.11.27

DRAWINGS

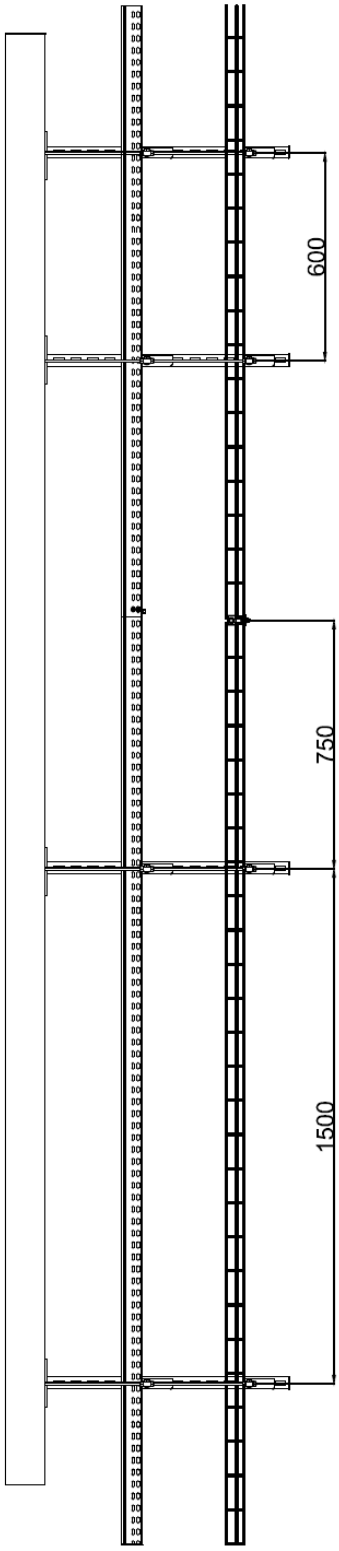


DRAWINGS



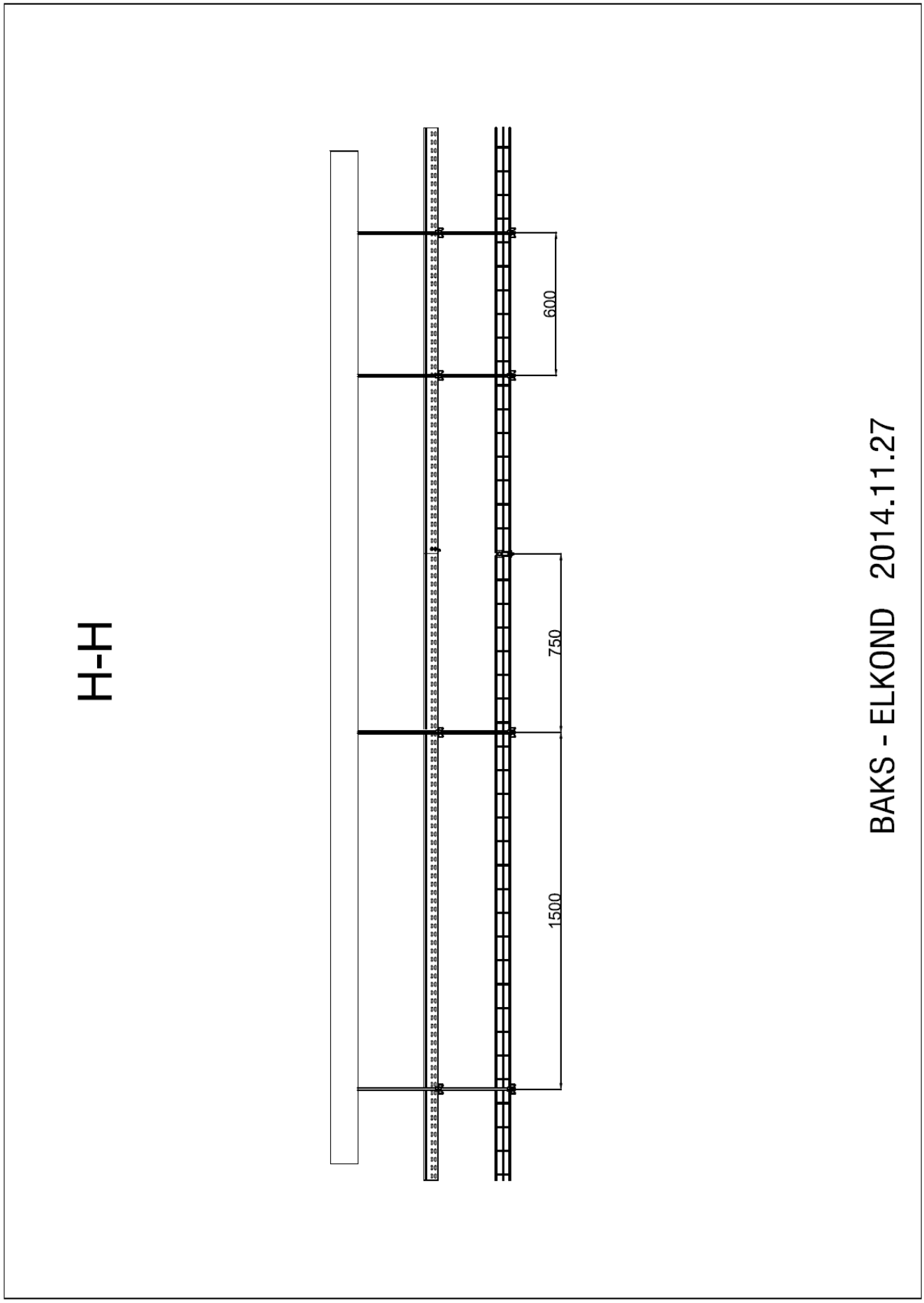
DRAWINGS

G-G



BAKS - ELKOND 2014.11.27

DRAWINGS



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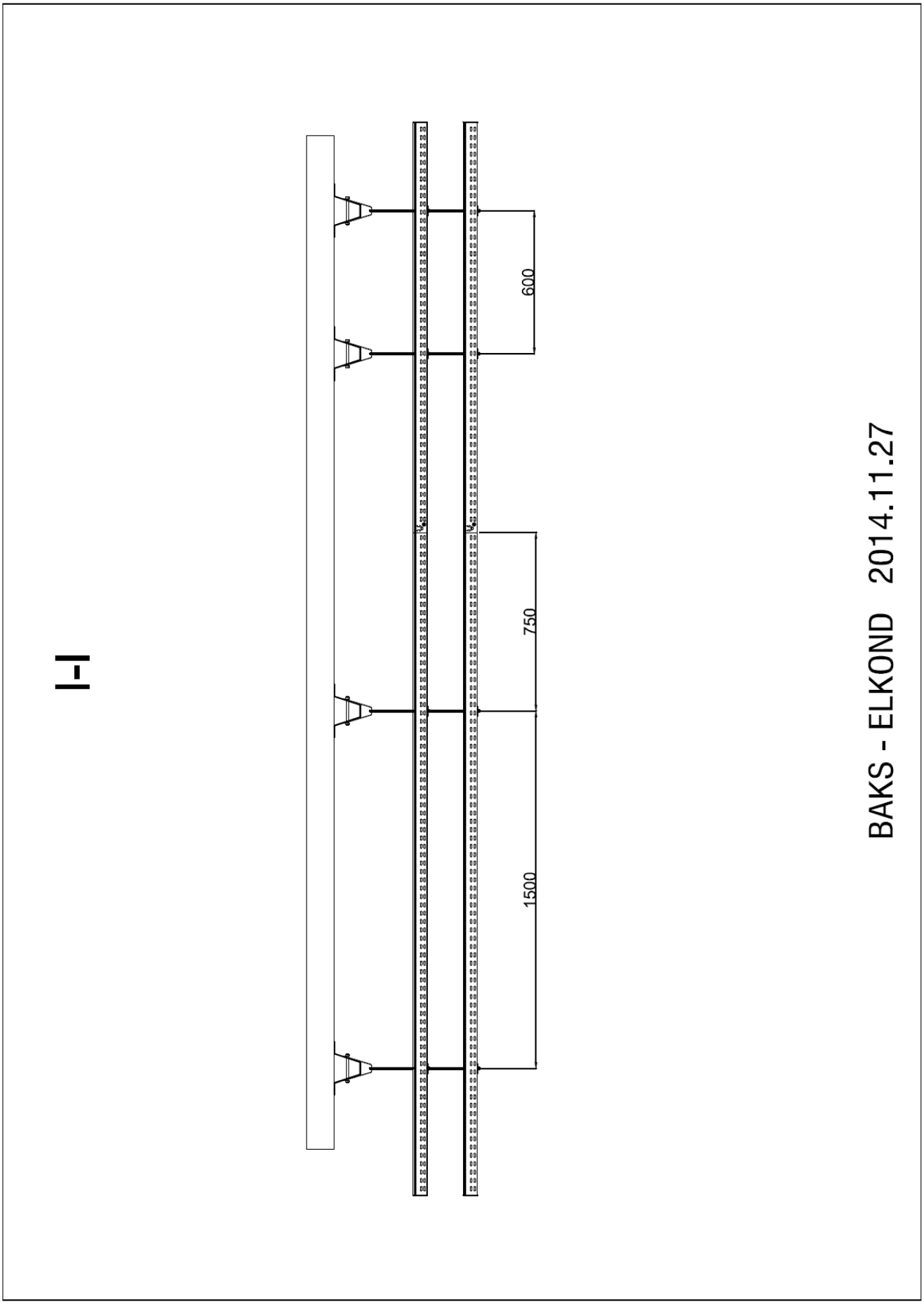
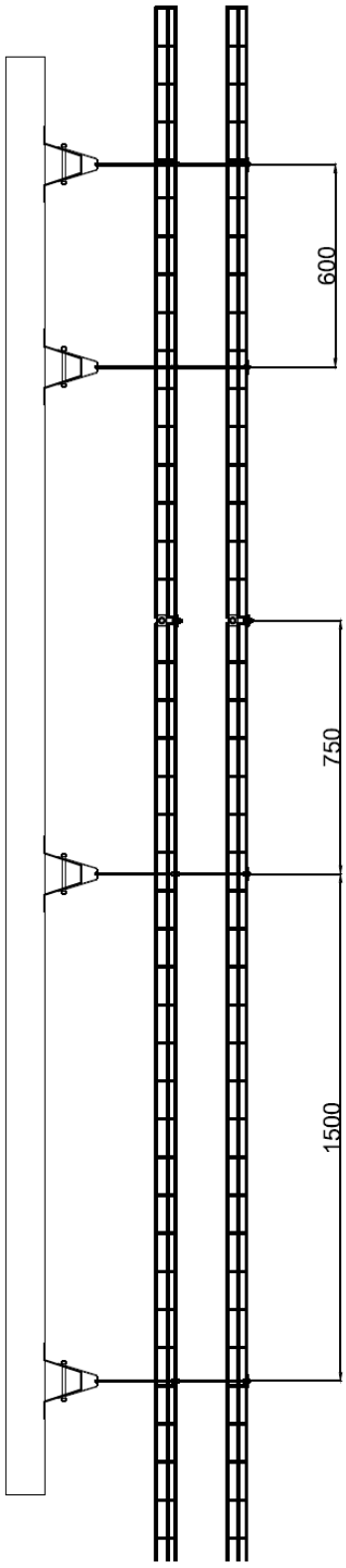


DRAWINGS

J-J



BAKS - ELKOND 2014.11.27

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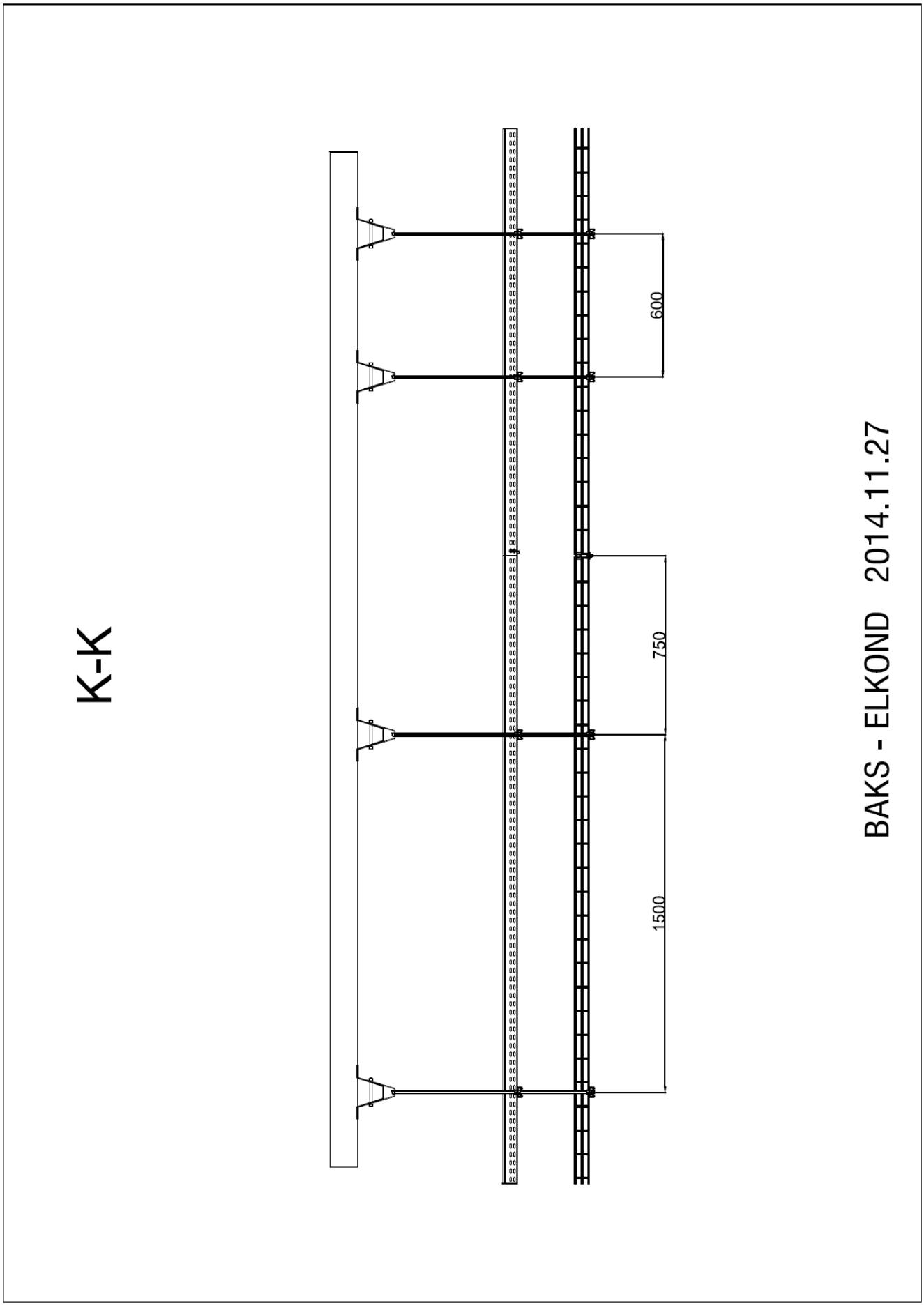
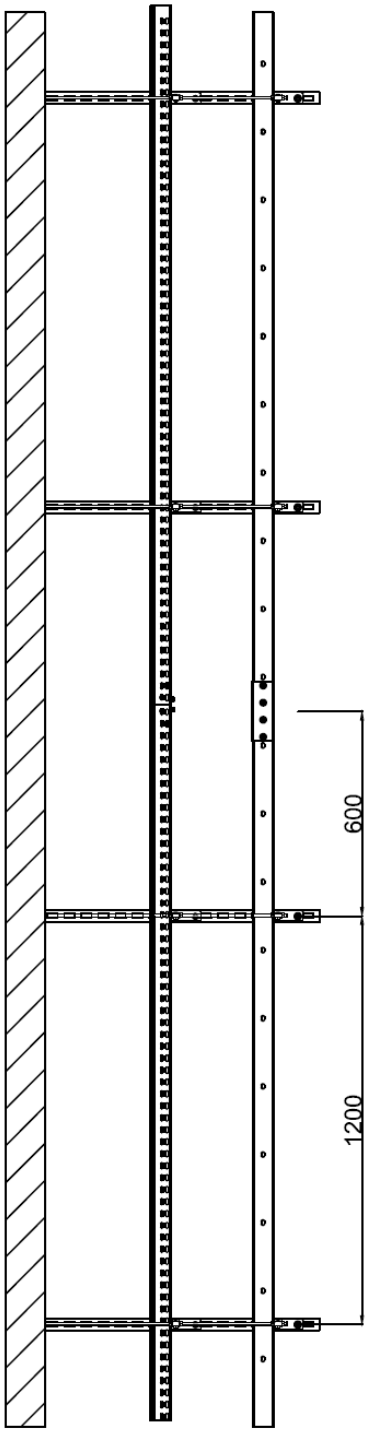


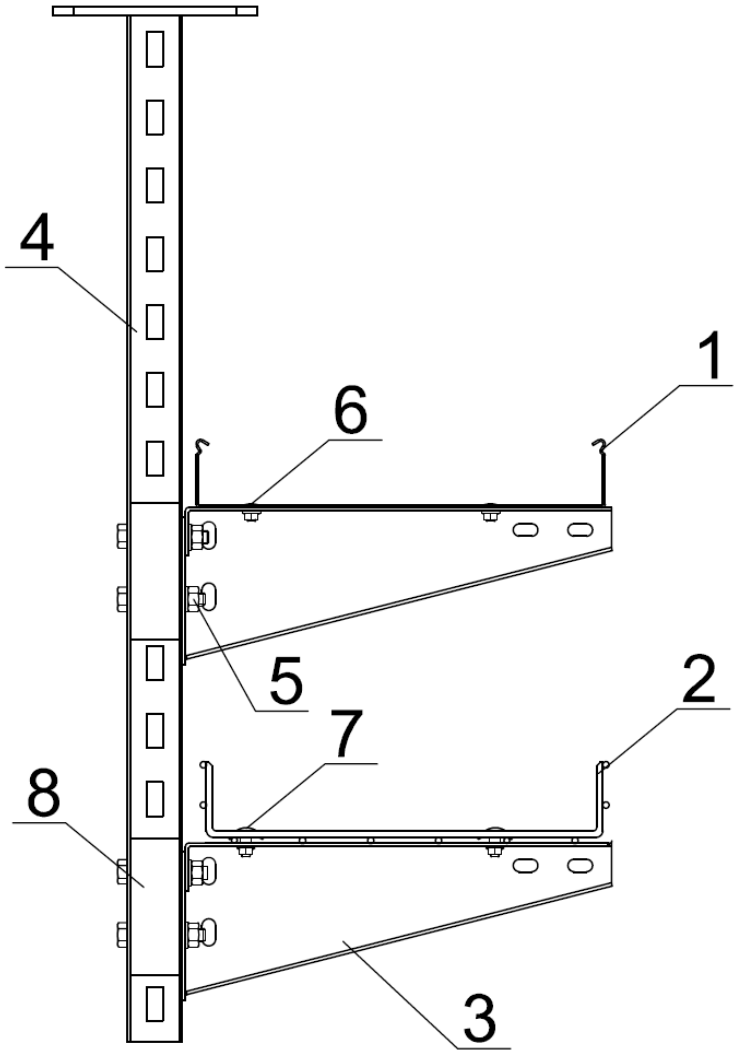
DRAWINGS

L-L



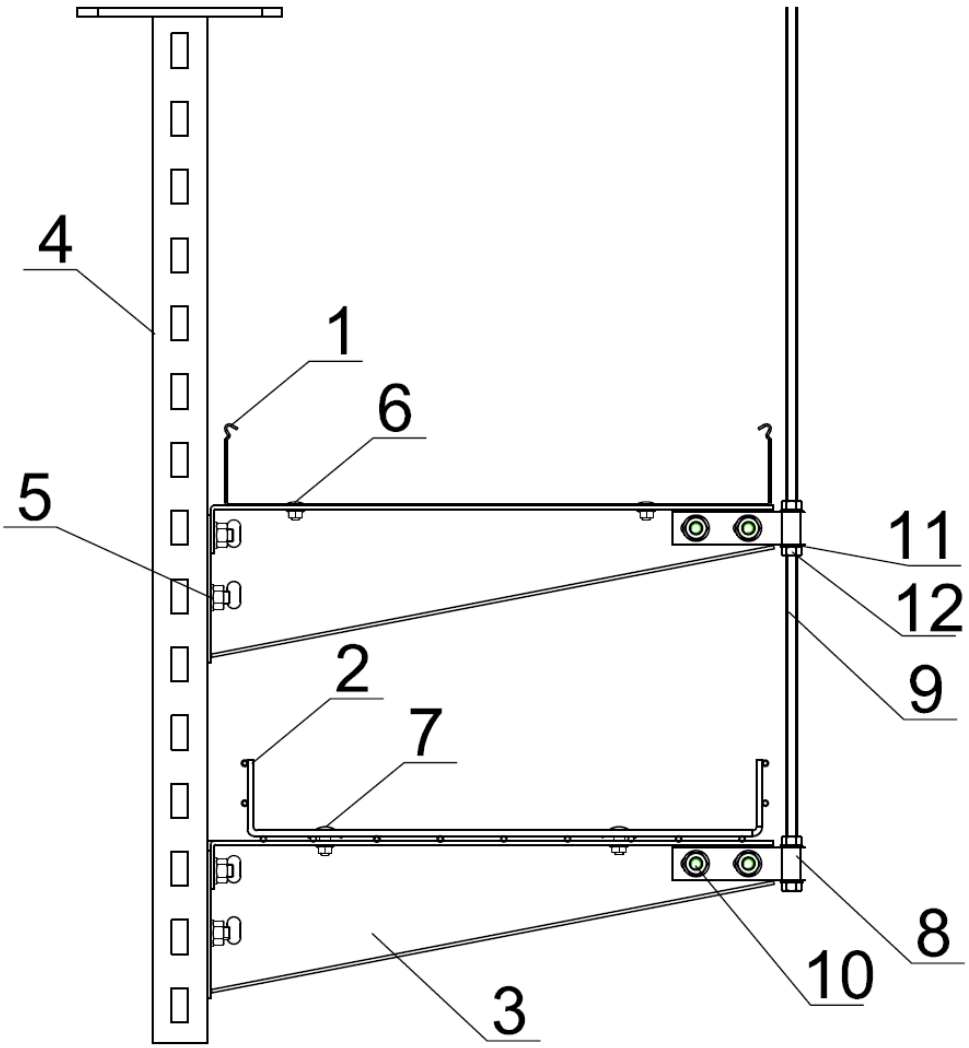
BAKS - ELKOND 2014.11.27

DRAWINGS



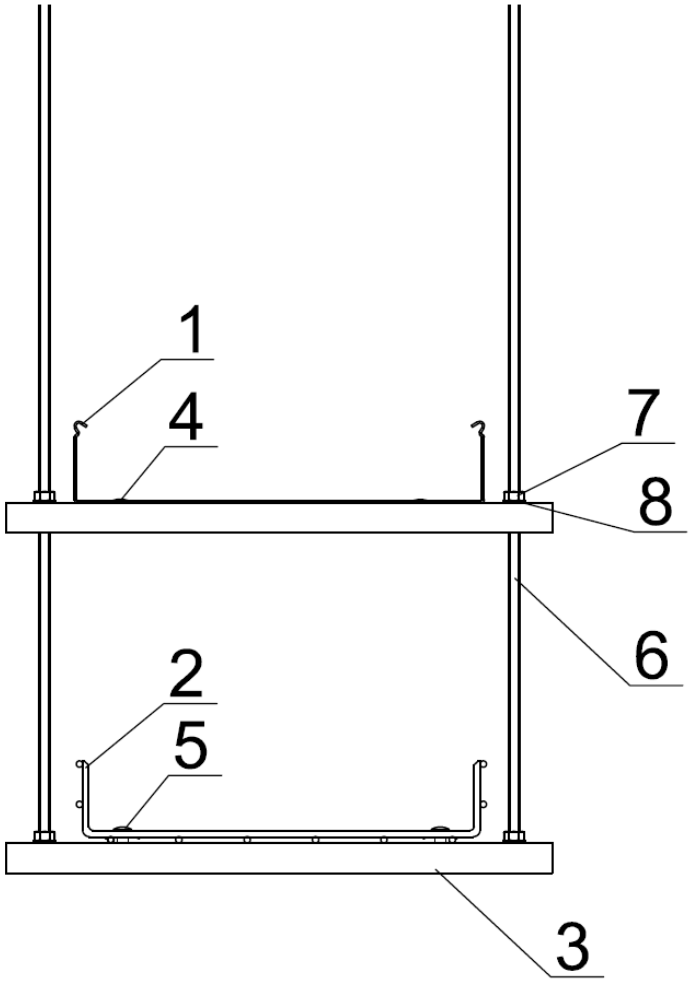
L.p.	Nazwa	Symbol	Szt.
8	Blacha rozporowa	BR40	2
7	Zacisk śrubowy	ZSO	2
6	Śruba z łbem grzybkowym	SGKM6x12	2
5	Śruba M10	SMM10x20	4
4	Wspornik sufitowy	WPCB1000	1
3	Wysięgnik	WWS/WWSO300	2
2	Koryto siatkowe	KDS/KDSO300H60	1
1	Koryto	KGL/KGOL300H60	1

DRAWINGS



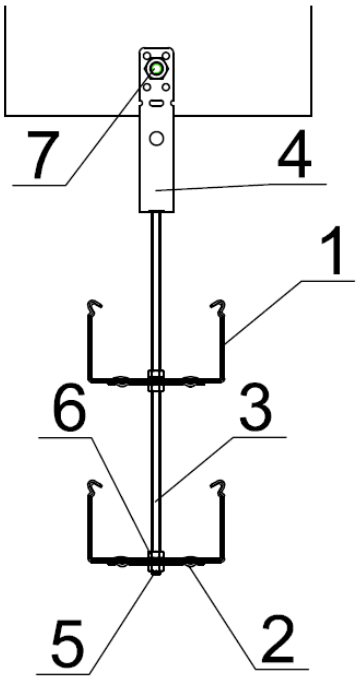
L.p.	Nazwa	Symbol	Szt.
12	Nakrętka	NSM...	4
11	Podkładka	PP...	4
10	Śruba z łbem grzybkowym	SGKM8x14	4
9	Pręt gwintowany	PGM...	1
8	Uchwyt	UPW	2
7	Zacisk śrubowy	ZSO	2
6	Śruba z łbem grzybkowym	SGKM6x12	2
5	Śruba M10	SMM10x20	4
4	Wspornik sufitowy	WPCB1000	1
3	Wysięgnik	WWS/WWSO400	2
2	Koryto siatkowe	KDS/KDSO400H60	1
1	Koryto	KGJ/KGOJ400H60	1

DRAWINGS



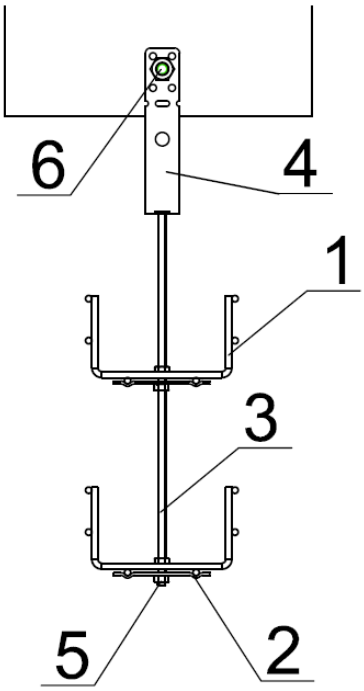
L.p.	Nazwa	Symbol	Szt.
8	Podkładka	PP...	8
7	Nakrętka	NSM...	8
6	Pręt gwintowany	PGM...	2
5	Zacisk śrubowy	ZSO	2
4	Śruba z łbem grzybkowym	SGKM6x12	2
3	Ceownik wzmocniony	CWP40H22/...	2
2	Koryto siatkowe	KDS/KDSO400H60	1
1	Koryto	KGJ/KGOJ400H60	1

DRAWINGS



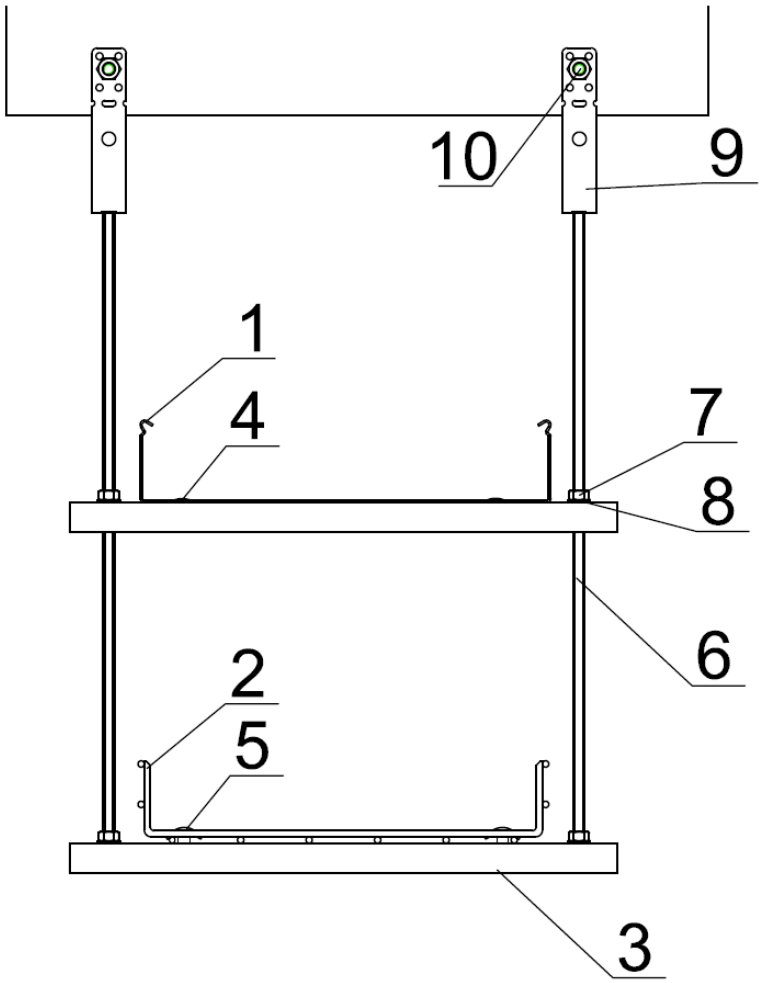
L.p.	Nazwa	Symbol	Szt.
7	Pręt gwint. + nakr. + podkł.	PGM... + 2xNSM... + 2xPP...	1
6	Podkładka	PP...	2
5	Nakrętka	NSM...	5
4	Wieszak trapezowy	WT/WTO120...	1
3	Pręt gwintowany	PGM...	1
2	Zacisk	ZSW	2
1	Koryto	KFL100H60	2

DRAWINGS



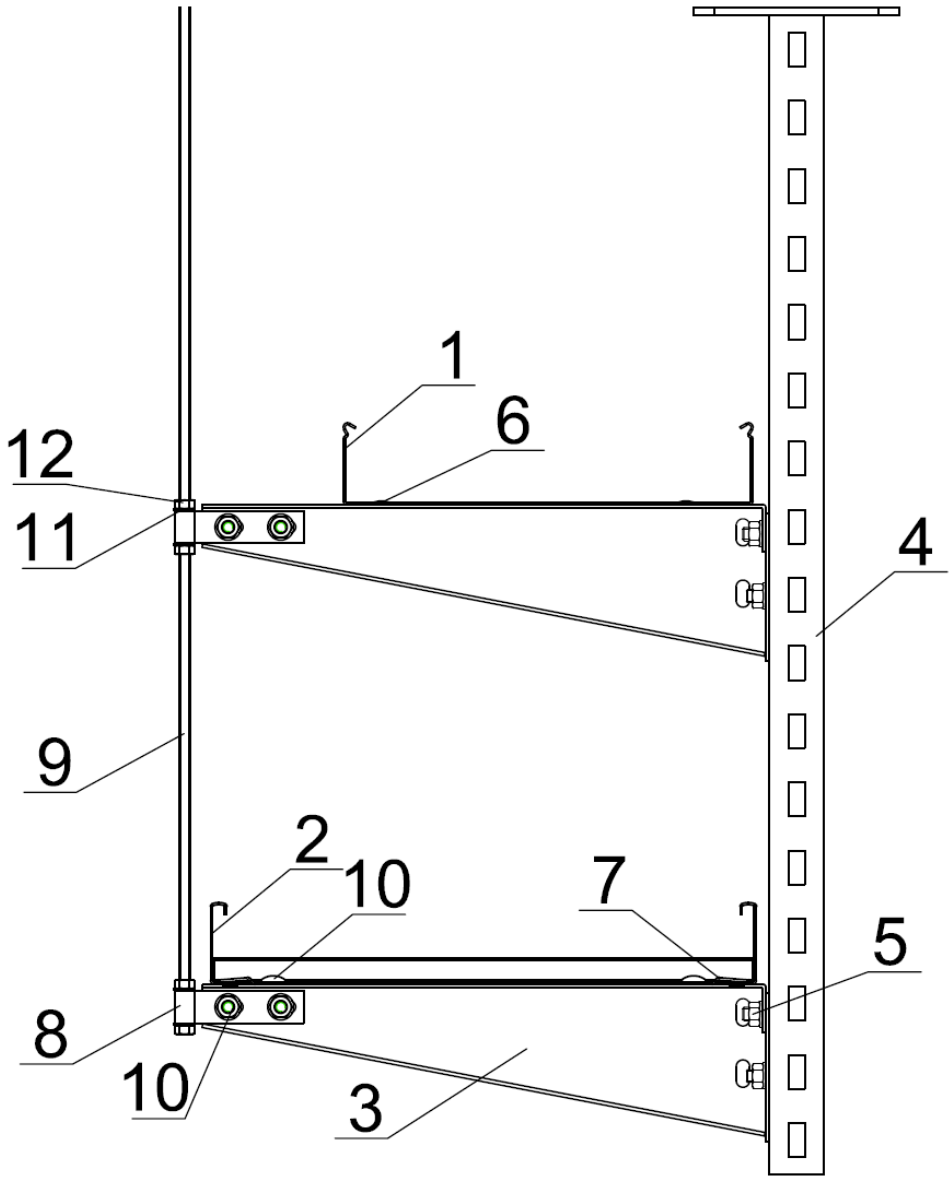
6	Pręt gwint. + nakr. + podkł.	PGM... + 2xNSM... + 2xPP...	1
5	Nakrętka	NSM...	2
4	Wieszak trapezowy	WT/WTO120...	1
3	Pręt gwintowany	PGM...	1
2	Zacisk	ZSW	2
1	Koryto siatkowe	KDS/KDSO100H60	2
L.p.	Nazwa	Symbol	Szt.

DRAWINGS



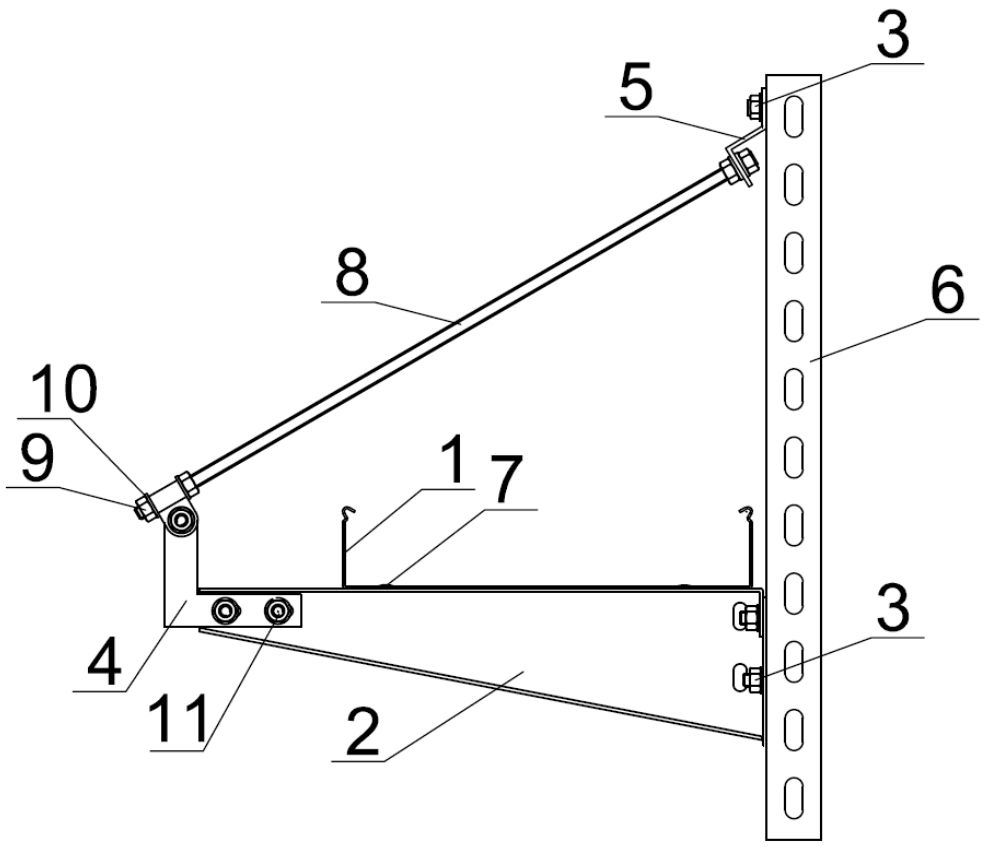
L.p.	Nazwa	Symbol	Szt.
10	Pręt gwint. + nakr. + podkł.	PGM... + 2xNSM... + 2xPP...	2
9	Wieszak trapezowy	WT/WTO120...	2
8	Podkładka	PP...	8
7	Nakrętka	NSM...	10
6	Pręt gwintowany	PGM...	2
5	Zacisk śrubowy	ZSO	2
4	Śruba z łbem grzybkowym	SGKM6x12	2
3	Ceownik wzmocniony	CWP40H22/...	2
2	Koryto siatkowe	KDS/KDSO300H60	1
1	Koryto	KGL/KGOL300H60	1

DRAWINGS



L.p.	Nazwa	Symbol	Szt.
12	Nakrętka	NSM...	4
11	Podkładka	PP...	4
10	Śruba z łbem grzybkowym	SGKM8x14	4
9	Pręt gwintowany	PGM...	1
8	Uchwyt	UPW	2
7	Zacisk mocujący	ZM/ZMO	2
6	Śruba z łbem grzybkowym	SGKM6x12	2
5	Śruba M10	SMM10x20	4
4	Wspornik sufitowy	WPCB1000	1
3	Wysięgnik	WWS/WWSO400	2
2	Drabina kablowa	DGOP400H60	1
1	Koryto	KCP/KCOP300H60	1

DRAWINGS



L.p.	Nazwa	Symbol	Szt.
11	Śruba z łbem grzybkowym	SGKM8x14	2
10	Podkładka	PP...	4
9	Nakrętka	NSM...	4
8	Pręt gwintowany	PGM...	1
7	Śruba z łbem grzybkowym	SGKM6x12	2
6	Ceownik wzmocniony	CWP/CWOP40H40/...	1
5	Wieszak	WKPO	1
4	Uchwyt	UPWK/UPWKO	1
3	Śruba M10	SMM10x20	3
2	Wysięgnik	WWS/WWSO400	1
1	Koryto	KCP/KCOP300H60	1

7. FINAL PROVISION

§ This report details the method of construction, the test conditions and results obtained when the specific element of construction described herein was following the procedure outlined in EN 1363-1, and where appropriate STN 92 0205. Any significant deviation with respect to size, constructional details, loads, stresses, edge or end conditions other than those allowed under the field of direct application in the relevant test method is not covered by this report.

§ Because of the nature of the fire resistance testing and consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.

§ The test results refer only to the tested subjects. This test report is not an approval of the tested product by the test laboratory or the accreditation body overseeing the laboratory's activities. The test was carried out on testing equipment that is the property of FIRES, s.r.o., Batizovce. Without the written permission of the test laboratory this test report may be copied and/or distributed only as the whole. Any modifications of the test report can be made only by the fire resistance test laboratory FIRES, s.r.o., Batizovce.

Approved by:

Ing. Štefan Rástocký
leader of the testing laboratory

Prepared by:

Bc. Dávid Šubert
technician of the testing laboratory

8. NORMATIVE REFERENCES

EN 1363-1: 2012	Fire resistance tests. Part 1: General requirements
STN 92 0205:2014	Fire behaviour of construction products and building constructions. Circuit integrity maintenance of cable systems. Requirements, testing and classification.
DIN 4102 – 2:1977-09	Fire behaviour of building materials and elements - requirements and testing
DIN 4102 – 12:1998-11	Fire resistance of electric cable systems required to maintain circuit integrity
ZP-27/2008 PAVUS	Test method for determination of functionality class of cables and cable loadbearing constructions - cable circuits in case of fire

THE END OF THE TEST REPORT