2007 05 14

2024 7

“ ”

960 /

2025 10

“ ”

<

> 2016 49 ì , m "

“ ” 77

ì , m " א ì , mǐ', m ƨ

ì , m " ì , m "

ì , m "

1.2

1.2.1

1.2.1.1

1

Ђ ̀Н ˮ

7 2016

88 2019 7 11 2

8 GB/T12801-2008

9 GB/T14161-2008

10 GB2894-2025

11 GB12348-2008

12 GB/T15259-2008

13 GB/T 3608-2008

14 GB50057-2010

15 2024 GB/T50011-2010

16 GB50187-2012

17 GB/T50034-2024

18 GB 6722-2014

19 2018 GB50016-2014

20 GB55037-2022

21 GB 51016-2014

22 GB50201-2014

23 GB18218-2018

24

GB/T8196-2018

25 KA/T 2063-2018

26 GB 2811-2019

27 GB/T29639-2020

28 GB16423-2020

29 GB21148-2020

30 1 GB 39800.1-2020

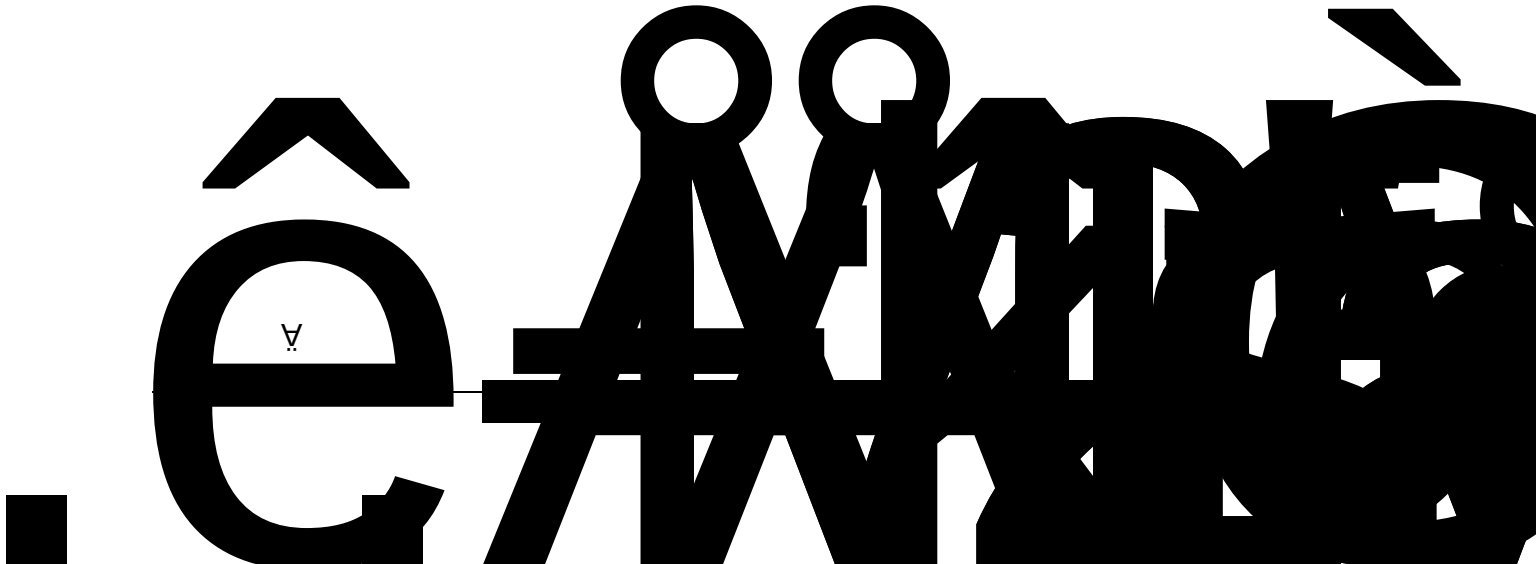
31 4 GB 39800.4-2020

32 GB/T12265-2021

33 GB/T13861-2022

34 GB 50029-2014

35



2

2.1

1

2007 05

285.61m

30m 255.61m 15-25 °

2.3

— 2

— 24 - 24—6

- 24—6—2

2.3.1

1.

1

— 10 35 °

347.78m 40%

18.87m

IB3

80%

21 35 °

—

304.57

IB2

4.

2.3.2

1.

1

CaO 52% 54% S P 0.02%

F1

15 ° 20 °)

50m

F5

4100m 80 200m

78 80

260m 80 83

70 80m 15 ° 35 °

S1

H S21 3

+ 54.35 74.78m

63.72m 11.80% 40%

2

F5 124

800m 180 200m 345 ° 360 ° 15 ° 35 °

(S1

(H S21

40%

F5

124 1

9 66 °

3

1

2

37.68m

11.80%

5 35cm

5

15% 0.4 2mm 2.25mm

55% 0.5 2mm 3.25mm

2 25c

1 6cm 10cm

97%

+ 2% 1% 0.01 0.05mm

1.8m

0.5 3cm 1 10cm

2

0.3-3cm

5-9%

0.2-1.1mm 2mm

95%

+ 1.5% 1% 0.01-0.05mm

5-55cm

4.

1

CaO MgO $CaCO_3$ SiO_2

CaO 50.87 53.11% 51.99%

MgO 0.76 2.21% 1.40% SiO_2 2.27

3.57% 2.96%

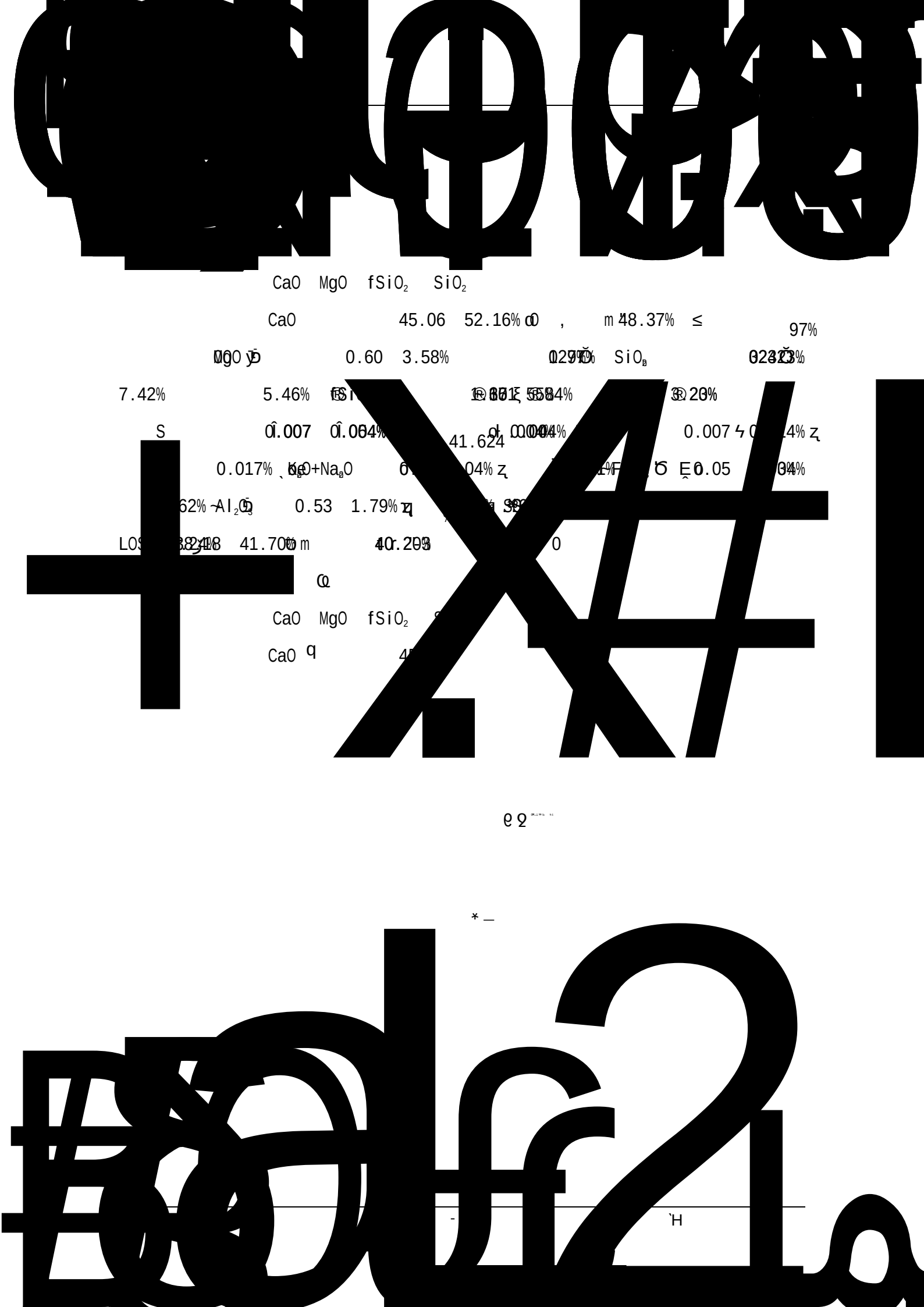
S 0.010 0.040% 0.034% P 0.001 0.027%

0.009% fSiO_2 1.16 2.66% 2.01% K_2O+Na_2O 0.22 0.43%

0.34% SO_3 0.066 0.099% 0.085% LOS 41.33 42.82%

42.05%

2



34.74 44.45% 39.6% MgO 0.21

2.8% 1.5%

2

3

Pt_3^3 ĉ Pt_3^3 n

Pt_3^3 g Q_h

2.

5

40 74 ° 0.6 1.8km 1 2m

3.

3 5

4.

5.

20m 50m -20m

Ь `H ˝ ´

50m

-20m 50m

6.

50m 50m

70m 70m

7.

HCO_3^- · Cl-—Ca^{2+} 756.82

774.98mg/L 5.29 5.5mmol/L PH 7.17 7.34

8.

GB12719-2021

2.3.4

1.

2

1

3m

120 160kpa 200 280kpa

2

1m 1 5 RQD 0.14 1

0.81 1 3m 40.89

58.16 Mpa 0.26 0.44Mpa 2.2 5.9Mpa 0.25 0.30

2.47 35.58Mpa 52.93 61.45 °

2.

1

10 41 °

2

1

5

F1 F2 F3

F1 325 ° 235 ° 42 55 ° 600m

F2 F1 68 74 ° 1100m

F1 F2 1

2m F3 31 ° F2

F4 F5 F4 F5

30 ° 55 63 ° 1.8km

2

3

1 3m

3 5m

3.

RQD 0.81

48.41 Mpa 0.37Mpa 3.7Mpa

0.28 8.92Mpa 56.94 °

GB/T 19279-2021

RQD

4.

2

42 °

L1 124 ° 66 ° L2 52 ° 78 ° L3 188 °

65 ° 0.7 10m

5.

2.4

2.4.1

1574m b 1035m

2

10m

3-4m 6-8m

=

1a

300 3 8

2.4.3

1

12.0m 14.0m 8%

20m

2.4.4

2025 07

100m

+100

-20m 17

285m 100m 110m -20m 1.1091km^2

2.4.5

10m 285m -20m

100m

12.0m 8 20m

70t

2.6m³ 70t

960.0 t/a

1.0km

12.0m

14.0m	8%	

1	×	m	552×532	1009×840
2	×	m	451×429	818×433
3		m	285	110
4		m	100	-20
5		m	185	130
6		m	4	
7		m	8	
8		°	65	
9		°	40-46	
10		t	5788.31	
11		t	4630.52	
12		t	10418.83	
13		t/t	0.8	

2.4.6.2

2.4.6.3

1

590BC

Atlscopco976 60m/ · 130mm

70 ° 11.00m 1.0m

GB6722-2014

200m

50% 300m

2-2

1		t/m^3	2.7	2.7
2		10^{4}t	960.000	768.000
		10^{4}m^3	355.56	284.44

3

3 10t

2 12t

3

12.0m 8 20m

70t

2.4.7

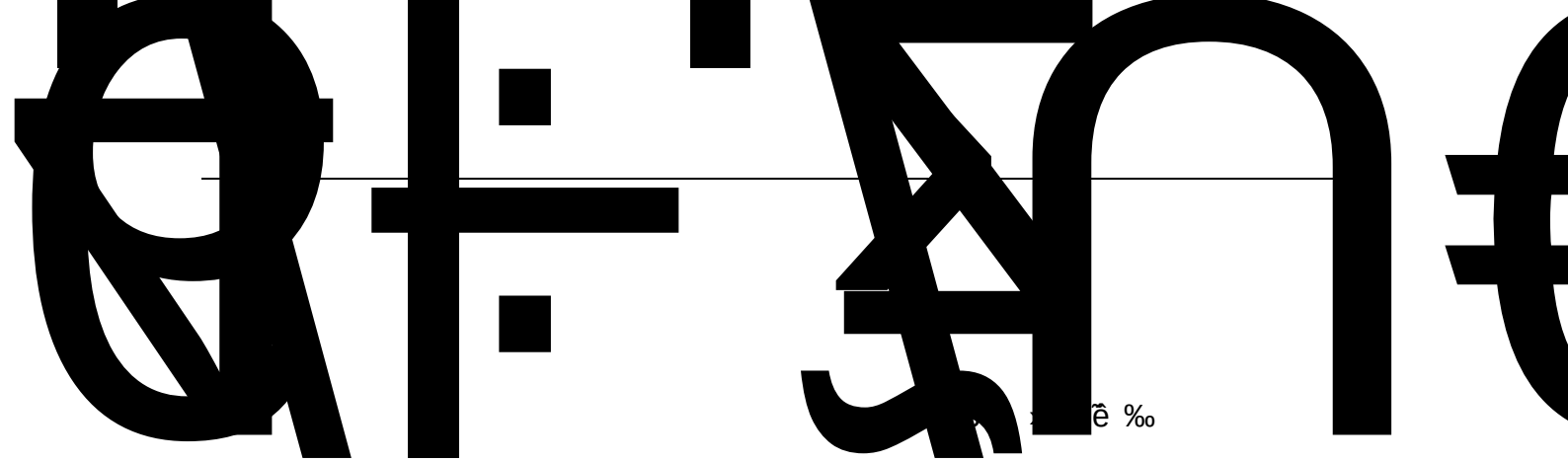
4 >1

2.4.8

1

35m

100m ṅ



ê ‰

3

į

} ˜ LbD Ã

Ø Ê>| u f

4

˜1Ä

ɟ ɔ

Ь `H ˝ ´

3

3.1

1 3-1

3-1

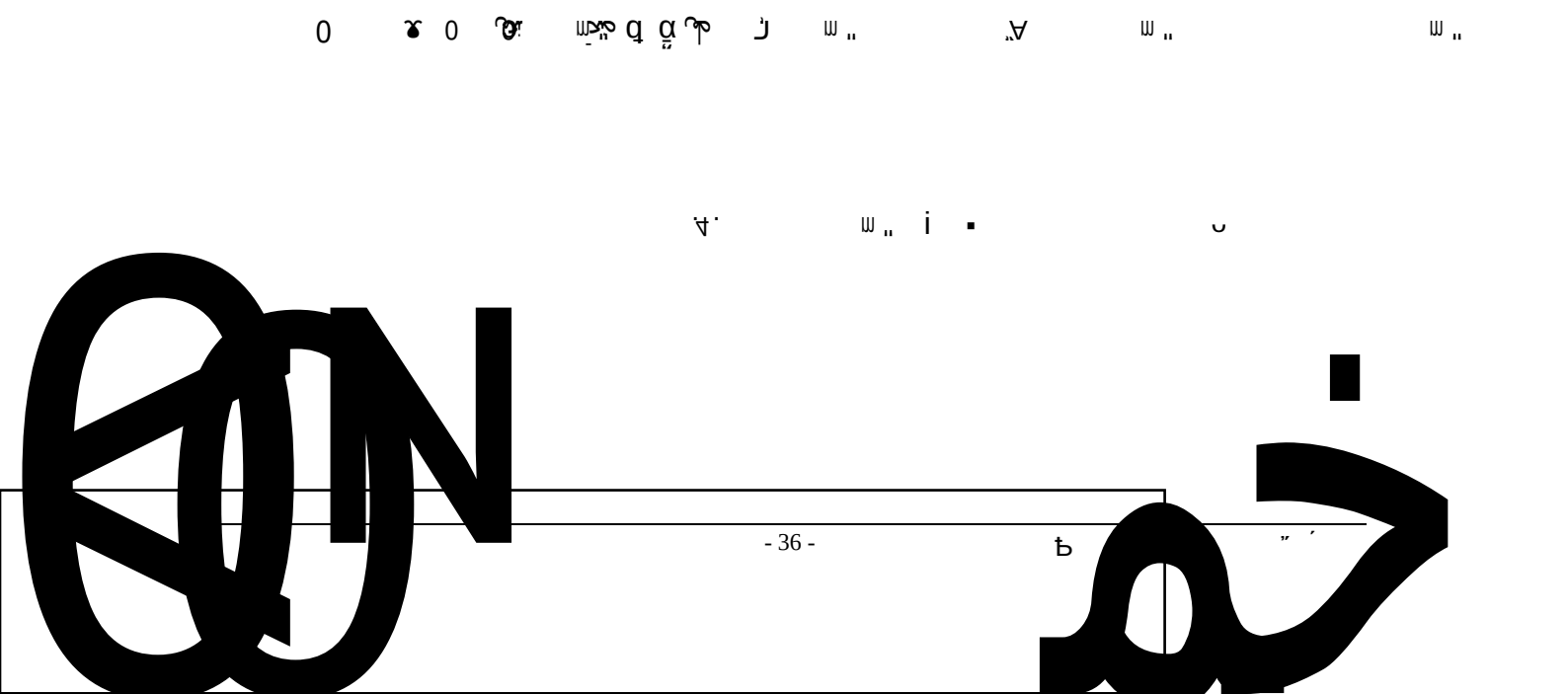
	1	3.0.8		
	2.	3.0.10		
	3.	GB16423-2020 5.7.1.2	1m	
	4	4.5.3		

1

2.4.1

2

6.0mk



3

3.2

3.2.1

70t

1

Ä Ä2

3

4

5

“ ” “ ”

3.2.2

3-2

3-2

1.

2.

3.

4.

5.

6Â2

7. , ع m ,

Ь `H ˝ ´

	1. 2. 3. 4.			1. 2. 3. 4.
	1. 2. “ ”			1. 2. “ ”

3.2.3

3.3

3

3.3.1

3.3.1.1

1

3 5

“ ”

“ ”

3.3.1.2

1

1

-

2

5

46°

3

ô ô า

2 3-3

3-3

	1. 2. 3.	1. , 2. “ ”		1. 2. 3.
	1. 2.			1. 2.

3.3.1.3

1

1

“ ” “ ” “ ” “ ” “ ”

3.3.2.2

1 3-4

3-4

	1. 2. 3.	1. 2.		1. 2. 3. 4.
	1. 2.			1. 2.

1.

1.

2.

3.

4.

5.

6.

7.

8

1.

2.

3.

2.

3.

1.

2.

3.

4. سم

300m

GB6722-2014

3.3.3

3.3.3.1

1

1

2

3

4

2

1

2

3

3

“ ” “ ” “ ”

3.3.3.2

3-5

3-5

	1. 2. 3. 4. 5. 6.	1. 2.		1. 2. 3. 4. 5. 6.

	7 8. 9 10. “ ” 11. 0.5m			7. 8. 9. 10. “ ” 11. 0.5m
	1. 2. 3			1 2. 3.

3.4

3.4.1

1

2

1 3-6

3-6

2

8

—10 -4.5 —8 7 22 —24 600—

800mm 165 220 0.8m

70m

Q_3

$$_3 = 1.366 \quad \frac{(2 \quad - \quad)}{\lg \ _0 - \lg \ _0}$$

Q_3 m^3/d

K m/d ZK2501 ZK2502

K=0.059m/d

H m -20m

H0=13.75m

H=33.75m

S m -20m S=H

r_0 m $r_0 = \overline{2\pi}$

P 3541m r0 563.57m

R m $R = 2S\sqrt{HK}$ =95.25m

R_0 m $R_0=R+r_0$ R_0 658.82m

Q_3 1353.63m^3/d

27364.08+1353.63=28717.71m^3/d 73474.12+1353.63=74827.75m^3/d

3

-20m

$' =$

H ′ —

K—— 1.25

Hp—— 70m -20m 50m 5m

$' = 1.25 \times (70 + 5) = 93.75$m

20 24

28717.71m³/d

$$' = \frac{}{20} = \frac{28717.71}{20} = 1435.89\text{m}^3/\text{h}$$

20

24

5d 120h

74827.75m^3/d

$$' = \frac{2}{20} = \frac{74827.75}{20} = 3741.39\text{m}^3/\text{h}$$

$$' = \frac{2}{5\times 24} = \frac{74827.75}{5\times 24} = 623.56\text{m}^3/\text{h}$$

3 QKSG800-112-410

800m^3/h 112m 410kW 10kV

4

$$' = \sqrt{\frac{4}{3600\pi}} = \sqrt{\frac{4\times 800}{3600\times 3.14\times 2}} = 0.376\text{m}$$

'

—— m

——

—— 800m^3/h

—— 1.2 2.2m/s 2m/s

Φ377

Φ377 × 9 3

3.4.2

3-7

3-7

1. B N©

ɏ א v

1

2

3

4

“ ” “ ”

3.5.2

3-8

3-8

1.

2. (

)

3.

4. ѫ Ѣ

	1. 2. 3. 4. 5.			1. 2. 3. 4. 5.

3.5.3

3.

4.

2.	5.5		

3.6.4

“ ”

“ ”

3.7

1 2

2

3

4

5

6

7

8

3.8

[2004]56

GB18218-2018

10 1/

11

12

4.1.3.2

1

45°

2

——

——

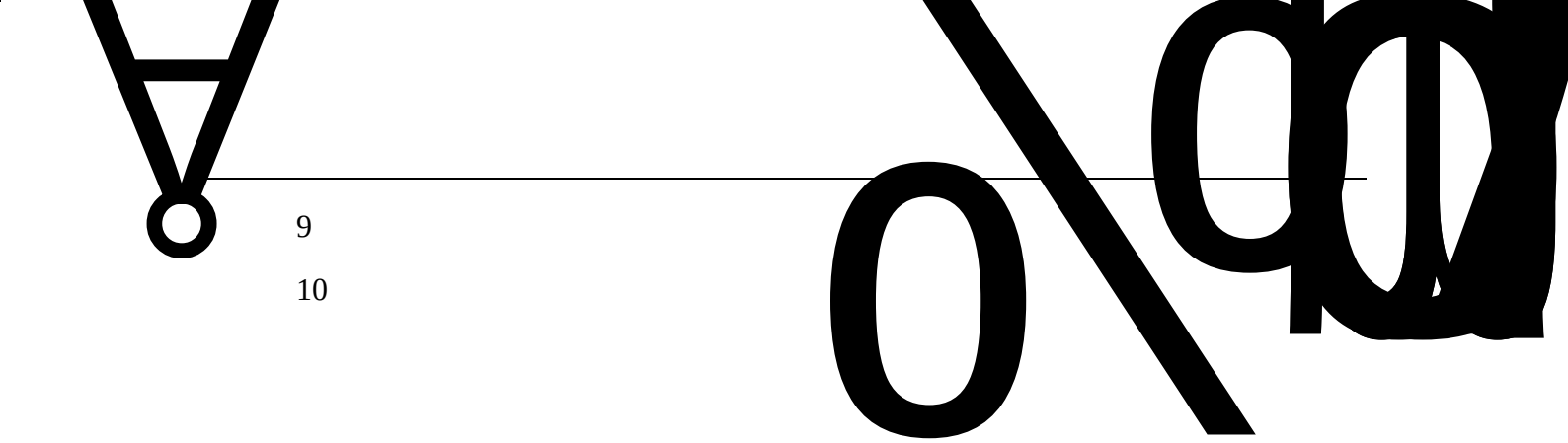
——

—— 15°

—— 90°

——

3 ĎÄ

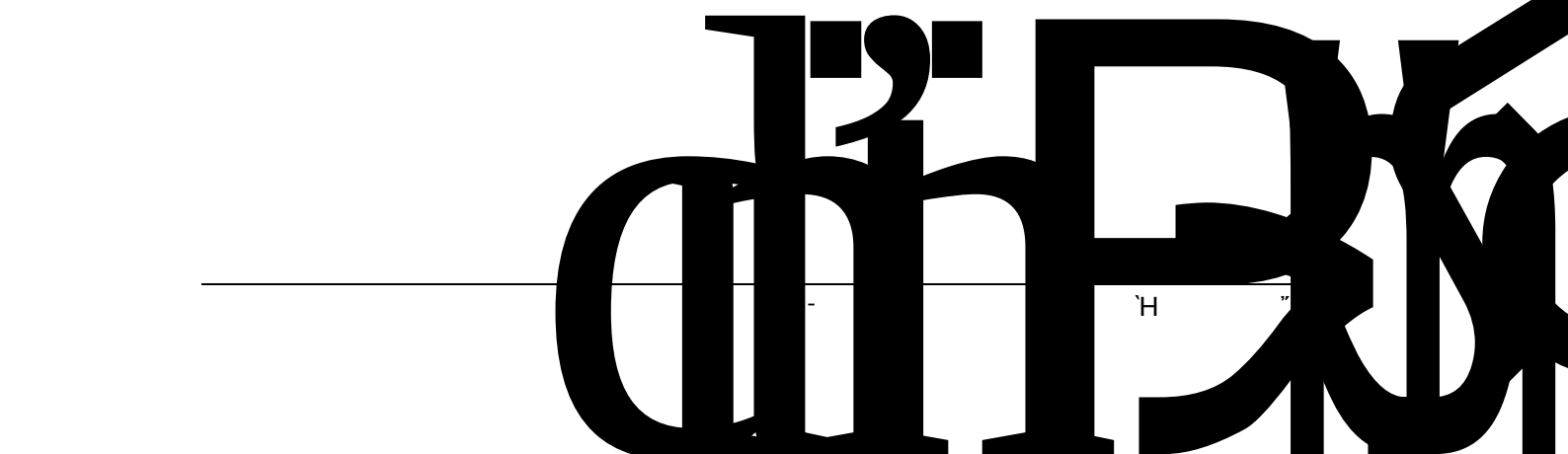


9

10

1 3

=



4.1.3.3

1

2

1m

3

4

5

6

4.1.4

1

2

3

4

5

4.1.5

1

2

3

4

“ ”

5

4.1.6

1

2

3

4.1.7

1

2

3

4

5

6

7

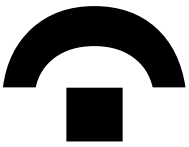
8

9

10

11

12 ˜ 10



13

4.2

1

2

θ ˜

`

4

5 Ǔ , m"

5

5.1

5.2

5.2.1

7

5.2.2

5.2.3

6

1

2

3

7

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16