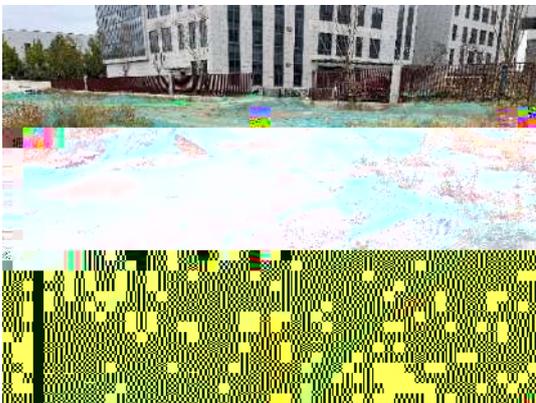
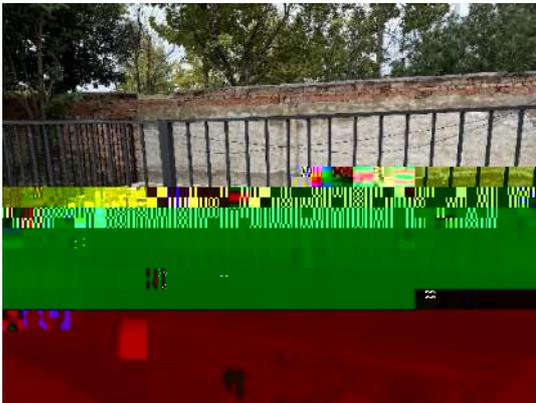
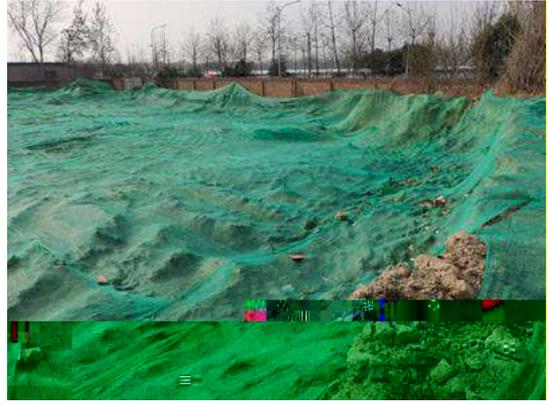
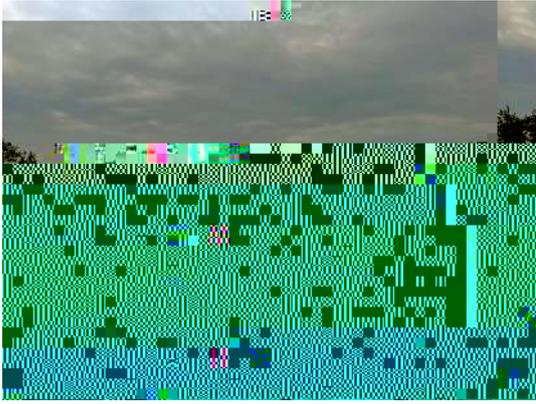


○

		1	陈峰
		2	
		3	
		4	雷春峰
		5	
		6	
		7	李树林
		8	



	.....	1
1	.....	1
1.1	.....	1
1.2	.....	3
1.3	.....	4
1.4	.....	7
1.5	.....	7
1.6	.....	7
1.7	.....	9
1.8	.....	9
1.9	.....	10
2	.....	12
2.1	.....	12
2.2	.....	15
3	.....	16
3.1	.....	16
3.2	.....	21
3.3	.....	25
3.4	.....	25
3.5	.....	32
3.6	.....	35
3.7	.....	36
3.8	.....	39
3.9	.....	40
4	.....	42
4.1	.....	42
4.2	.....	47
4.3	.....	50
4.4	.....	52

5	.....	57
5.1	.....	57
5.2	.....	57
5.3	.....	58
5.4	.....	61
5.5	.....	63
5.6	.....	67
5.7	.....	68
6	.....	72
6.1	.....	72
6.2	.....	72
6.3	.....	72
6.4	76
6.5	76
7	79
7.1	79
7.2	83
7.3	91
8	95
8.1	95
8.2	96
8.3	96
8.4	97
8.5	97
8.6	98
8.7	99
	102
1	102

1

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5

6

7-1

7-2

7-3

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10

11

12

13

1

2016 7

2016-2020

2016-2020

" "

		1.63hm ²	
	5	43415m ²	32435m ²
10980m ²		1720m ²	0.65hm ²
0.23hm ²	40.21%	1.99	13.96%
		737.10m ³	403.31m ³
		333.79m ³	115.00m ³
288.31m ³			
		7.14 m ³	6.05 m ³
1.09 m ³		4.96 m ³	

2021 11 2023 4

18 32000 19000

8000 1000 4000 6000

IPO

1

2020 3 10

2020-610162-41-03-006666

2020 8 12 2020

0248914

2021 2 4

610112202130047JK

2021 9

2

2021 3 “ ”

GB50433-2018

DB6101/T3094-2020 2021 10

2021 11

0.99m

373.75.m~374.74m

500m

13%

13.5

7

26.9

~ : 1 g

41.3

« / e ¾

GB50433-2018

1

2016-2030

2

3

4

1

“ ”

2

3

	7.14 m ³	6.05 m ³
1.09 m ³	4.96 m ³	

30cm

0.32hm²

0.09 m³

4

1.63hm²

5

6

1.63hm² 1.63hm² —

GB50434-2018

DB6101/T3094-2020

95%	20%	95%	1.0
25%	20%	99%	13%
		30%	

5

1

2

3

4

5

1

716m

1.63hm²

	2021	11	2023	12	2021	11	2023	12
					1			
	1							
	1			1				
			5				1	
	1	1			1		1	
				222.75				
68.09			93.31				105.16	
	41.31		14.93		46.11			
13.64			27880.34					
	46.11				3.23			
12.00			14.88				8.00	
	8.00							
					99.38%			1.00
	99%		13.96%				100%	
68.00%			91.92%		99%			0.55

1

2

“ ”

3

4

5

6

2017 365

2018 133

	1.63hm ² 43415m ²					
	32000			19000		
	2021 11		2023 4		2023	
hm ²	1.63	hm ²	1.63	hm ²	0.00	
m ³						
	6.05	1.09	0.00	0.00	4.96	
				hm ²	1.63	
	[t/(km ² .a)]	200		[t/(km ² .a)]	200	
	%	95	99.38%		1.0 1.0	
	%	95	99	%	/ /	
	%					

2

1						1991		2010			
12		2011	3	1							
2						2013	7	26			
2013	10	1									
3						2007	10	28			
	2008	1	1								
1								5			
1995	5	30		2005	7	8	2017	12	22		
2							139	2005	3	1	
	2005	6	1								
3											
		2		2017	4	8					
1											
				2015	5	21					
2							2015	58			
							2015	247	2015	11	20
3											
				2017	365		2017	11	13		
4											
										2017	
75											
5											
				2018	133						

6				
		2018	135	
7				
		2018	25	
8				2018 32
9		"	"	
	2019		160	
10				
	2019		172	
11		"		
		2019	10	5
12				
	2020		161	
13				
	2020		9	
14				
		2020	564	
15				" "
	2020		157	
16				
		2020	63	
17				
2020	58			
18				
2021	143			
19				
				[2014]8
1				GB50433-2018
2				(DB53/062-2006)

3	(SL190-2007)	
4	GB/T16453.1~16453.4~2008	
5	DB61/T496-2010	
6	GB51018-2014	
7	(SL73.6-2015)	
8	—	
9	(GB/T21010-2017)	
10	GB50400-2016	
11	DB11/685-2013	
12	GB/T50805-2012	
13	GB/T51240-2018	
14	(GB/T50434-2018)	
15	2003 67	
16	2003 67	
17	DB6101/T3094-2020	
18	GB/T51297-2018	
19		
20		
1	2015-2030	2015 507
2015	12 15	
2	2016-2030	2016 35
3	2016-2030	2017 257
4		
5		
	2019	11

6

7

8

2021 11

2023 4

18

¢

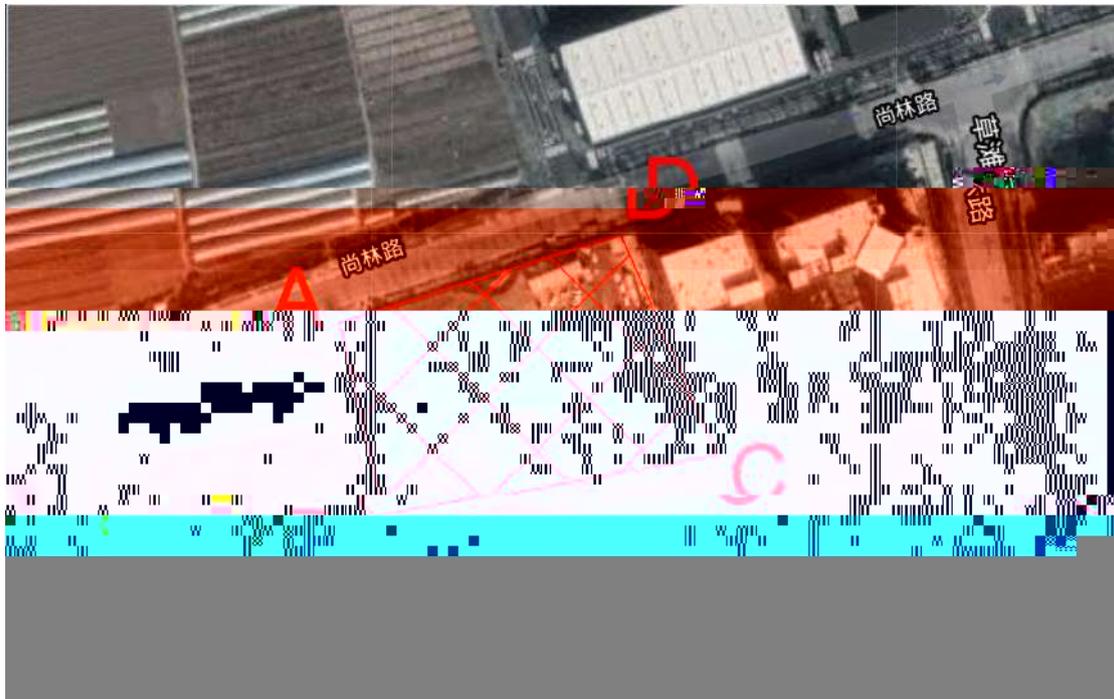
%

3

" "

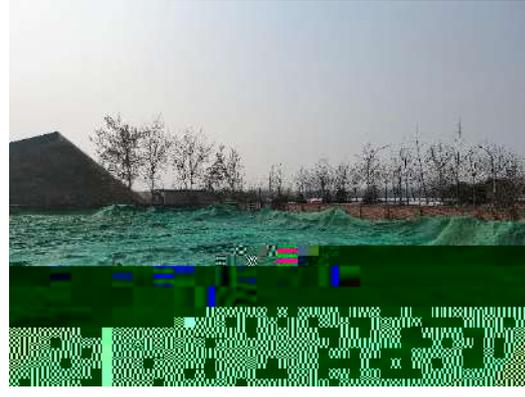
108° 52'39.46" 34° 22'35.06"

3.1-1



	A	108°52 37.31	34°22 37.76
	B	108°52 38.34	34°22 34.14
	C	108°52 44.31	34°22 35.12
	D	108°52 42.73	34°22 39.23

1.63hm²0.65hm²0.75hm²0.23hm²0.10hm²



" "

1.63hm²

	16259	m ²	24.4
	43415	m ²	65.1
	32435	m ²	
	27914	m ²	
	4521	m ²	6.99%
	10980	m ²	
	1720	m ²	1# 2#
	9260	m ²	
	1.99		
	6537	m ²	
	1138	m ²	
	40.21	%	
	6.99	%	
	2269	m ²	
	13.96	%	
	281		4 7
	605		

5 43415m² 32435m² 10980m²
 1720m² 1# 2# 3# 4#
 5#

1#		7207	23.7	5	1338	7202	
2#		10722	23.7	5	2337	10722	
3#		7207	23.7	5	1338	7240	
4#		2641	21.6	5	522	2641	
5#		4521	21.6	5	1138	4521	
		137		1	137	137	
	+	+			-1		
		43415			6537	32435	

NO4

0.23hm² 13.96%

0.06hm²

1

2

10kV

DN150

DN150

0.31hm²

1

“

”

()

15cm

2

0.96~1.40m

5m

250~300mm

200~250mm

200mm

3

300mm

—200mm

—100mm

—30mm

—60mm

200mm×100mm×60mm

4

1

2

3

10 15cm

4

5cm

5

1

0.06hm²

1

2

3

4

0.75hm² 1.63hm² 0.65hm²
 0.23hm² 0.10hm²

	hm ²	0.65			
	hm ²	0.75			
	hm ²	0.23			
	hm ²	0.06			
	hm ²	0.04			
	hm ²	1.63			

1.09 m³ 7.14 m³ 6.05 m³
 4.96 m³

1

2

3

4

			0.65hm ²		
1.15hm ²		375.15m			6.4m
			373.75m		1.4m
	5.0m		368.75	5.73	m ³
		2.1m			373.08m
	4.96	m ³			
			5.73	m ³	4.96
					m ³
			0.75hm ²		
				0.31hm ²	
				30cm	0.09
m ³					
				716m	1.5m
	1:0.5	1.2m	2.7m		0.21
m ³					
			0.30	m ³	0.09
					m ³
			0.06hm ²		

0.06hm ²		30cm	0.02 m ³			
			0.02 m ³			
		6.05 m ³		0.09 m ³ ,	4.96	
m ³	0.02 m ³					
		0.65hm ²				
				0.06hm ²		
6.4m		0.41 m ³				
			0.41 m ³			
		0.75hm ²				
				0.20hm ²		
	375.75m	377.15		1.4m		
0.29 m ³						
		716m	1.5m	1:0.5		
1.2m	2.7m		0.21 m ³			
			0.50 m ³			
		0.23hm ²				
				0.09hm ²		
		0.96m		0.09 m ³		
5cm	0.23hm ²	0.09 m ³				
		0.18 m ³				

0.09 m³

1.09 m³

0.02 m³

4.96 m³

0.31hm²

30cm

0.09 m³

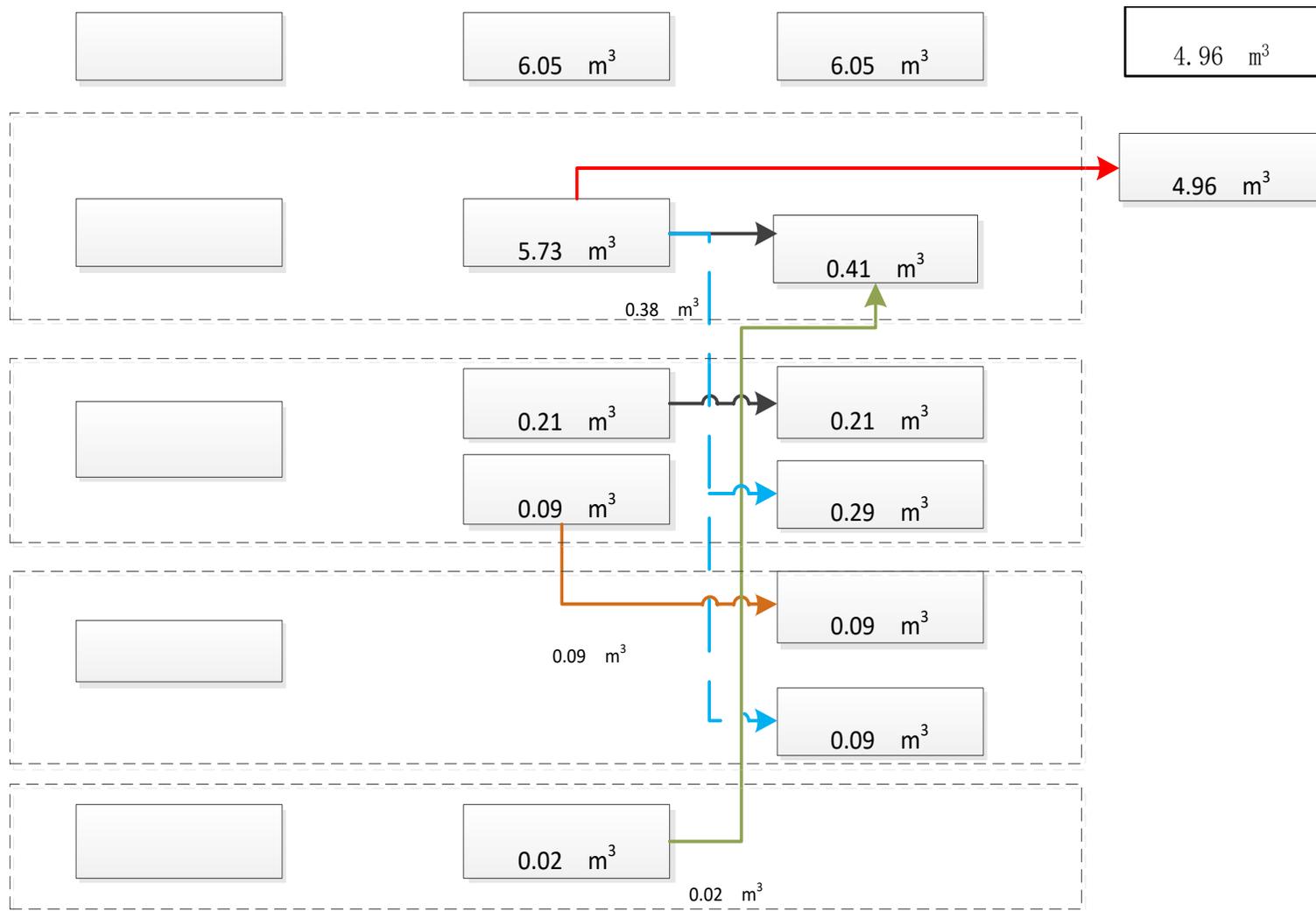
3.4-1

3.4-1

3.4-2

	2	3	3	3	3
	0.75	0.09	0	0	0.09
	0.23	0	0.09	0.09	0
	0.98	0.09	0.09	0.09	0.09

	hm ²																			
	0.65	5.73				5.73	0.41				0.41	0.02		0.38						4.96
	0.75		0.21	0.09		0.30		0.29		0.21	0.50	0.29		0.09						



$$= + +$$

—

GB50400-2016

$$= 10 \times \times h \times$$

W—

—

$$= 0.55$$

h_y—

mm

GB50400-2016

45.5mm

F—

hm²

1.63hm²

$$W = 404.63 \text{m}^3$$



$$= 10000 \times h \times$$

W —

h— m 5cm

F— hm² 0.23hm²

$$W = 115.00\text{m}^3$$

= -

$$289.63\text{m}^3$$

$$741.65\text{m}^3$$

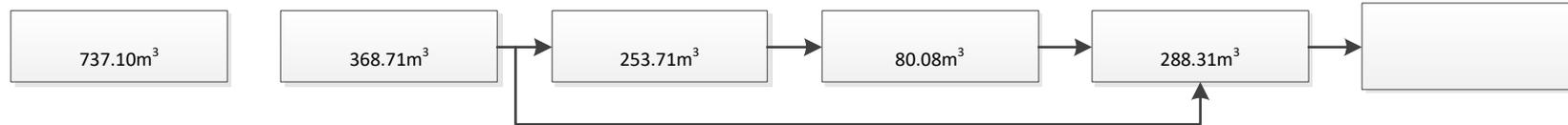
$$404.63\text{m}^3$$

$$371.94\text{m}^3$$

$$115.00\text{m}^3$$

$$289.63\text{m}^3$$

	hm ²	mm		m ³	m ³	m ³	m ³			m ³	
	0.65	45.50	0.80	295.75	236.60	59.15	0.00	115.00	0.00	289.63	371.94
	0.52	45.50	0.29	236.60	68.61	0.00	167.99				
	0.23	45.50	0.80	104.65	83.72	20.93	0.00				
	0.00	45.50	0.50	0.00	0.00	0.00	0.00				
	0.00	45.50	0.15	0.00	0.00	0.00	0.00				
	0.23	45.50	0.15	104.65	15.70	0.00	88.95				
	1.63		0.55	741.65	404.63	80.08	256.94	115.00	0.00	289.63	371.94



5500 6000
, ,
400 ,
0.35S 8 0.20g
2km
2.94m 373.58 376.52m
500m
13%

	30cm		0.31hm ²		
13.5	7		26.9	41.3	1
	-0.9		-17	27.8	10
4431.3		1500		591.10mm	
	920mm		210	3.2m/s	
		35cm			
				1.45km	
		8.82~12.00m		364.36~365.26m	
	2m	3m		370.26m	
1					
					2016-
2030		2017	257		
	200t/km ² ·a				SL190-
2007				GB/T50434-2018	
			1000t/km ² ·a		
		DB6101/T3094-2020			200t/km
² . a					
		2013	188		

2016-2030

591.10mm 72.5% 7 9

1

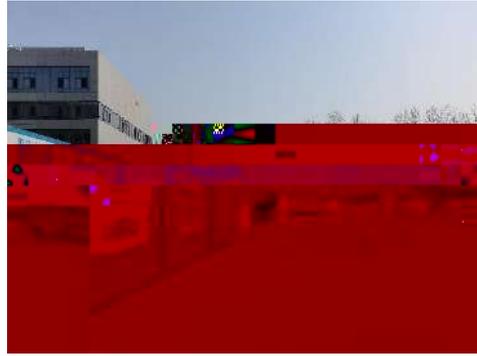
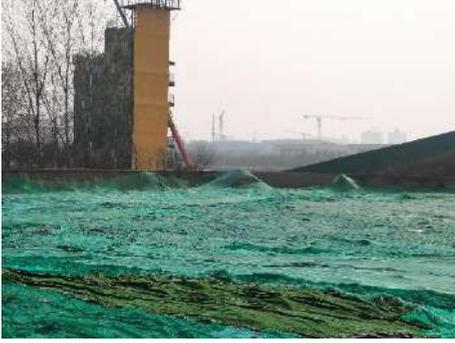
2

3

4

5

6



1

2

3

4

5

2016-

2030

GB/T50434-2018

DB6101/T3094-

2020

2021 9

0.31hm²

30cm

GB50433-2018

2008 24

20%

13.96%

4

GB50433-2018

2010 12 25

4.1-1



		6.05 m ³ 1.09 m ³ 4.96 m ³ 0.09 m ³	

GB50433-2018

4.1-2

1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

12				
10				
11				
12				
13				

GB50433-2018

1

2

3

4

5

(GB50434-2018)

“ ”

GB50433-2018

2008 24

20%

13.96%

“ ”

1

2

3

2021 10 -2023 4 7-9

1.63hm²

1.09 m³

7.14 m³

6.05 m³

4.96 m³

1

2

3

GB50434-2018

"

"

1

2

1

2

3

1

4

30cm

0.09 m³

5

3

1

2

3

4

“ ” “ ”

4.4-2

1		m	50	0.25
2			1	1.30
3			3	3.90
4		m ²	16770	5.20
5		m ²	5146	87.48

6		hm ²	0.23	41.31
7		hm ²	0.23	11.50
8		m	716	5.01
9		m ³	0.09	0.33

4

5

5

1.63hm² 1.63hm² — —

- 1
- 2
- 3
- 4
- 5
- 6
- 7

		hm²	
		0.65	
		0.75	
		0.23	
		0.06	
		0.04	
		1.63	

1

2

3

4

GB/T 50434-2018
3094-2020

DB6101/T

1

2013 188

2016~2030

2016~2030

GB/T50434-2018

2

1

GB/T50434-

2018

93% 95% 22%

568.9mm

2

1.0

1.0

3

1%~2%

94%

2%

24%

4

1	%	—	93				—	93
2		—	0.8			+0.2	—	1.0
3	%	90	92		+2		92	94
4	%	90	90				/	/
4	%	—	95				—	95
5	%	—	22		+2		—	24

GB/T50434-2018

DB6101/T3094-2020

5.3-2

1	%	-	95
2		-	1.0
3	%	92	95
4	%	95	95
5	%	-	99
6	%	-	28
7	%	-	30
8	%	-	25
9		-	0.4
10	%	-	30
11	%	30	-

2008 24

20%

13.96%

13%

0.40

0.55

0.23m²

13.0%

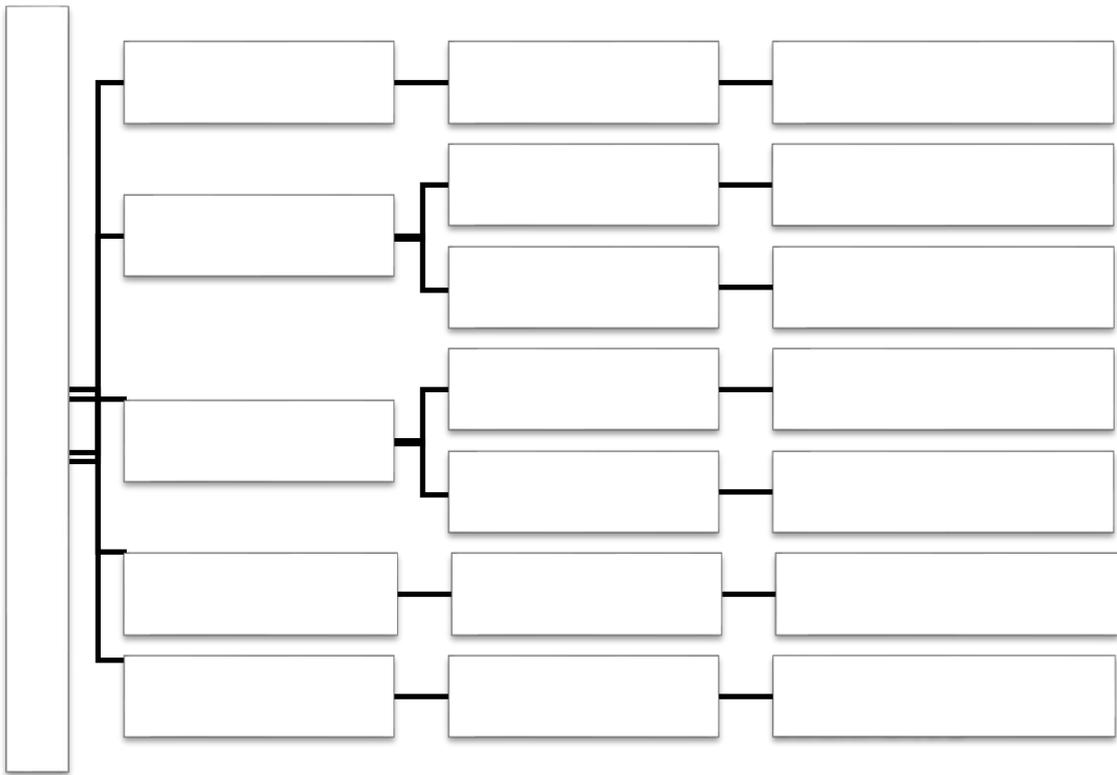
GB/T50434-2018

DB6101/T 3094-2020

5.3-3

1	%	-	95
2		-	1.0
3	%	92	95
4	%	/	/
5	%	-	99
6	%	-	13
7	%	-	13
8	%	-	25
9		-	0.55
10	%	-	20
11	%	30	-

5.4-1



			30cm		
				3.0m	
	1:1				
0.33hm ²		30cm	0.09	m ³	
				50m	
DN300~500	HDPE		716m	1.5m	
		300mm	—200mm	—100mm	
	—30mm	—60mm			
200mm×100mm×60mm			5196m ²		
1					
		0.09	m ³	0.23hm ²	
0.42m					
2					
					0.23hm ²

0.23hm²

14.2%

	1		5.0-5.5	2.0-2.5	12		
	2		3.0-3.5	2.0-2.5	8-12		
	3		5.0-5.5	3.0-3.5	12		
	7		2.0-2.5	3.0-3.5	12		
	1		5.5-6.0	3.0-3.5	10-12		
	9		2.0-2.5	2.0-2.5	10		
	3		2.0-2.5	1.2			

1

6600m²

1

7420m²

2

3

3.0m

1.0m

2.0m

3

1

7.0m

5.0m

1

8@150

8@400

50cm

C30

2

L7.5cm

50cm 20

1

2330m²

	350		2	0.05		35
	583.0m ³					
1						
	420m ²					
2						
		0.04hm ²		30kg/hm ²		
	1.2kg					
3						
				0.3m	0.8m	
1.2m			111m	66.6m ³		
4						
		30cm	30cm	1:0.5	50m	
5						
	1.0m	1.0m	3.0m	1:1		
	1					

1		m ³	0.09	
2		m	716	
3		m ²	5196	
1		m ³	0.09	
2		hm ²	0.23	
1		hm ²	0.23	
1		m ²	6600	
1		m ²	7420	
2			2	
3			1	
1		m ²	2330	
1		m ³	583.0	
1		m ²	420	
2		hm ²	0.04	
3		m	111	
4		m	50	
5			1	

1

2

“

”

3

4

“

”

5.6-1

1

2

3

4

24h

2~3

1

" "

2

3

4

1

2

— — —

3

1/3

4

3

“ ”



6

2020 161
1.63hm²

2021 11 2023 12 2021 11 2023 12

1

2

3

4

2021 11 2023 12

GB/T51240-2018

2020 161

1

1

CAD

2

a

%

%

b

2m×2m

c

5m×5m

2m×2m

4

GPS

5

3

2020 161

1

1

1

1

5

1

1

1

1

1

2020 161

1

1	0.6cm		30
2			3
3			2
4		m ²	5
5			2
6			5
7			5
8			1
9			1
10			2
11			3
12			2
13			2
14	50m		3
15	4m		2
1	GPS		1
2			1
3			1
4			1

" "

" "

7

1

2

3

2003 67

4

5

2021

1

2003 67

2

2015 38

3

2016 132

4

2018 32

5

2017 75

6

2019 39

7

2019 448

8

2018 2019

9

2020 9

10

1

2

3

2%

4

1

2%

3.22

2

2007 670

“ ”

2019 160

1

5 / .

4.5

12

3

8.00
4

4.58 0.22 4.80

5 / • 1 2.16
10.08

14.88
5

2017 365

8

5
26.20 6%
6

2017 75 1.7 /m²
16400.20m² 27880.34

2003 67
1

	2018	2019
120 /		
2	15 /	
	2021	1
3		
1		
2		
	2003	67
	3.0%	2.0%
	5.0%	4.0%
	5.0%	3.3%
	7.0%	5.0%
	9%	
4		
	2019	448
		1.13
	1.09	

			3
			2
			5
			5
			4
			5
			4.3
			4.4
			3.3
			7
			5
			9
			9

222.75

68.09

93.31

105.16

41.31

14.93

46.11

13.64

27880.34

46.10

3.22

12.00

14.88

8.00

8.00

			105.16				17.68	87.48
1		92.82				5.34	87.48	92.82
2		12.34				12.34		12.34
					41.31		41.31	
1				41.31		41.31		41.31
			14.28				9.10	5.18
1		2.05				2.05		2.05
2		6.20				6.20		6.20
3		0.72				0.72		0.72
4		1.62					1.62	1.62
5		3.69				0.13	3.56	3.69
			119.44		41.31		68.09	92.66
						46.10		46.10
1					3.22		3.23	3.23
2					12.00		12.00	18.00
3					14.88		14.88	16.75
4					8.00		8.00	13.00
5					8.00		8.00	15.00
						46.10	68.09	138.76
	6%							12.41
								2.79
							68.09	153.96

					105.16	
					92.82	
1		m ³	0.09		0.33	
2		m	716		5.01	
3		m ²	5146		87.48	
					12.34	
1		m ³	0.09		0.84	
2		hm ²	0.23		11.50	
					41.31	
					41.31	
1		hm ²	0.23		41.31	
					14.93	
					2.05	
1		m ²	6600		2.05	
					6.20	
1		m ²	7420		2.30	
2			2		2.60	
3			1		1.30	
					0.72	
1		m ²	2330		0.72	
					1.62	
1		m ³	583	27.72	1.62	
					3.69	
1		m ²	420		0.13	
2		hm ²	0.04	1395.66	0.01	
3		m	111		2.00	
3.1		m ³	66.6	267.85	1.78	
3.2		m ³	66.6	33.61	0.22	
4		m	50			
5			1		1.30	

1		3.22
2		12.00
3		14.88
4		8.00
5		8.00
		46.10

1	1031	74kw	158.52	38.60	16.81	20.93	0.86	119.92		33.00				86.92						
2	1043	37kw	65.08	6.20	2.69	3.35	0.16	58.88		17.88				41.00		0.00		0.00		
3	1001	0.5m ³	164.57	39.70	19.44	18.78	1.48	124.87		37.13				87.74						
4	3040	8m ³	120.68	30.64	10.52	20.12		90.04		17.88				72.16						

				()	()	()	()
1		32.5 [#]	t	420.00	8.40	9.85	438.25
2		92 [#]	kg	9.89			9.89
3		0 [#]	kg	8.20			8.20
4			m ³	160.00	3.20	3.75	166.95
5			m ³	155.00	3.10	3.64	161.74
6			m ³	110.00	2.20	2.58	114.78
7			m ³	220.00	4.40	5.16	229.56
8			t	4585.00	91.70	107.56	4784.26
9			m ³	4.00			4.00
10			kw·h	1.00			1.00
11			m ³	0.27			0.27
12		200×100×60	m ³	750.00	15.00	17.60	782.60
13				0.70	0.01	0.02	0.73
14			m ²	2.00	0.04	0.05	2.09
15			m ²	18.00	0.36	0.42	18.78
16			kg	25.00	0.50	0.59	26.09
17			m ³	1750.00	35.00	41.06	1826.06
18			kg	5.00	0.10	0.12	5.22
19			kg	7.00	0.14	0.16	7.30
20			m ³	105.00	2.10	2.46	109.56
21			m ²	75	1.50	1.76	78.26

7

$$\frac{\text{TM } 1.62\text{hm}^2}{1.63\text{hm}^2} \times 100\%$$

1.62hm²

99.38%

7.3-1

	0.65		0.65	0.65	100.00
	0.75	0.51	0.22	0.73	98.65
	0.23	0.23		0.23	

4.91 m³ 4.96

m³ 99%

= /

“ ”

= + 30% /

×100%

= / ×100%

0.16hm² 0.23hm²

100.00% 14.11%

	hm ²	hm ²	hm ²	%	%
	0.65				
	0.75				
	0.23	0.16	0.23	100.00%	
	1.63	0.16	0.23	100.00%	14.11%

0.51hm² 0.75hm²

68.00%

$$\eta = \sum_{i=1}^n S_i \psi_i$$

η $S_i \quad i$ $\psi_i \quad i$ n i

0.55

11

7.3-4

%	95	99.38	
	1.0	1.0	
%	95	99	
%	/	/	/
%	99	100	
%	13	13.96	
%	13	13.96	
%	25	68.00	
	0.55	0.55	
%	20	91.92	
%	30	99	

GB/T50434-2018

99.38%

1.00 99% 13.96%

100% 68.00% 91.92% 99%

0.55

8

“ ”

2019 160

“ ”

1

1

2

3

4

5

6

7

2016 65

“ ”

2019 160

2020 161

2020 161

" "

" "

2019 160

SL523-2011

SL336-2006

20hm²

20

m³

200hm²

200 m³

7.14

m³

1

2

3

4

2017 46

2019 172

2017 365

20

3

" "

2019 160

5

5

1 2019 160

4

5

6

1

2

3

1

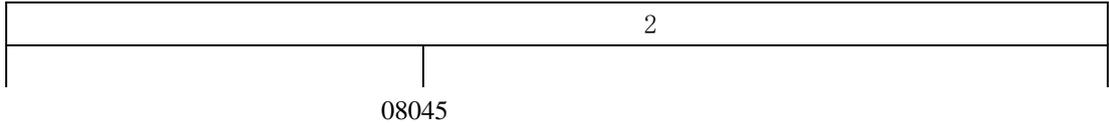
GB/T51240-2018

2020 161

2

3

1					
01093					100m ³
					692.70
()					641.39
1					67.38
			4.90	13.75	67.38
2					8.09
		%	11.00	73.50	8.09
3					565.92
	74kw		3.57	158.52	565.92
()		%	3.00	641.39	19.24
()		%	5.00	641.39	32.07
		%	5.00	692.70	34.64
		%	7.00	727.34	50.91
		%	9.00	778.25	70.04
		%	10.00	848.29	84.83
					933.12



4					
P101-03053					100m ³
					19883.44
()					18410.59
1			1162	13.75	15977.50
2					2433.09
			3300	0.73	2409.00
		%	1	2409.00	24.09
3					
		%	3.00	18410.59	552.32
		%	5.00	18410.59	920.53
		%	5.00	19883.44	994.17
		%	7.00	20877.61	1461.43
		%	9.00	22339.04	2010.51
		%	10.00	24349.55	2434.96
					26784.51

5					
P101-03054					100m ³
					2494.80
()					2310.00
1			168	13.75	2310.00
2					
3					
		%	3.00	2310.00	69.30
		%	5.00	2310.00	115.50
		%	5.00	2494.80	124.74
		%	7.00	2619.54	183.37
		%	9.00	2802.91	252.26
		%	10.00	3055.17	305.52
					3360.69

6		
P ₃₇ -01193		100m ³

8					
P87-03003					100m ²
					2473.54
()					2290.31
1			16.00	13.75	220.00
2					2070.31
		m ²	106.00	18.78	1990.68
		%	4.00	1990.68	79.63
3					
		%	3.00	2290.31	68.71
		%	5.00	2290.31	114.52
		%	4.40	2473.54	108.84
		%	7.00	2582.38	180.77
		%	9.00	2763.15	248.68
		%	10.00	3011.83	301.18
					3313.01

9					
3040					100m ³
					2069.83
					1916.50
1					245.44
			17.85	13.75	245.44
2					1508.50
			12.5	120.68	1508.50
3					408.00
		m ³	100	4.00	400.00
		%	2	400.00	8.00
		%	3.00	1916.50	57.50
		%	5.00	1916.50	95.83
		%	4.40	2069.83	91.07
		%	7.00	2160.90	151.26
		%	9.00	2312.16	208.09
		%	10.00	2520.25	252.03
					2772.28