

**Inspection Order No. :** IN-TJ-5602-14161-05rev1  
**BOSS No:** 1225671  
**Page No. :** 1 of 24  
**Date of issue:** Jun.30, 2014

**INSPECTION REPORT**  
 (non-negotiable)

- **Description and Quantity of Commodity:** Ductile iron fitting and pipes 804pcs  
Ductile iron manhole covers 51pcs  
Ball valve flange X flange 50 pcs
- **Name & Address Of Buyer:** E\*\*\*\*\*
- **Name & Address Of Seller:** SHANXI SOLID INDUSTRIAL CO., LTD & 1501, Building B, Dingyuan Times Center, Yingzhenanjie, Taiyuan City, Shanxi Province, China
- **Inspection Date & Place:**
- **P/I No.:** SFC-1402B, date: April 9, 2014
- **Nature Of Inspection:**

	Item	Comment
	Quantity check	Acceptable
	Visual quality check	Acceptable
	Packing check	Acceptable
	Marking check	Acceptable
	Dimension check	Subject to client's evaluation
	Witness hydraulic test	Acceptable
- **Inspector:**  Muva Yang
- **Reviewed by**  Joanne Zhang

This is to report that we, SGS-CSTC (Tianjin) Co., Ltd. at the request of SHANXI SOLID INDUSTRIAL CO., LTD conducted the following inspection:

**Instrument checklist**

During the inspection, the following instrument calibration status has been checked for inspection:

No.	MEASURING INSTRUMENT DESCRIPTION (Including measuring range and equipment No.)	CALIBRATION STATUS	CERTIFICATE NO. (OPTIONAL)
1	Vernier caliper (0-150)mm 5220811	Effective	长检字第 1400818

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2	Vernier caliper (0-300)mm 5191	Effective	长检字第 1400824
3	Vernier caliper (0-600)mm 11060048	Effective	长检字第 1400816
4	Vernier caliper (0-1000)mm 1100020	Effective	长检字第 1400822
5	Ultrasonic thickness gauge TT300 MT0112122713	Effective	长校字第 1401659
6	Coating thickness gauge AR930 01115383	Effective	长校字第 1402743
7	Cement thickness gauge Positextor 6000	Not provided	N/A
8	Pressure gauge 0-6MPa YY12102242	Effective	压检字第 1402061
9	Pressure gauge 0-6MPa YY12177814	Effective	压检字第 1402062
10	Steel tape 20m TJ20m-23	Effective	京西字第 13037422

**Inspection Finding:**

During inspection, below cargos present for this visit:

Item	Description	Specification	Quantity
1	Bend 11.25° Socket - Socket Ductile Iron , C30	DN600	12
2	Bend 11.25° Socket - Socket Ductile Iron, C30	DN900	148
3	Bend 22.50° Socket - Socket Ductile Iron	DN200	6
4	Bend 22.5° Socket - Socket Ductile Iron , C30	DN600	17
5	Bend 22.5° Socket - Socket Ductile Iron , C30	DN900	85
6	Bend 45° F x F Ductile Iron , PN16	DN900	1
7	Bend 45° Socket - Socket Ductile Iron	DN200	12
8	Bend 45° Socket - Socket Ductile Iron,C30	DN600	6
9	Bend 45° Socket - Socket Ductile Iron,C30	DN900	57
10	Bend 90° F x F Ductile Iron, PN25	DN150	30
11	Bend 90° F x F Ductile Iron, PN16	DN900	1
12	Bend 90° F x F , Ductile Iron, PN16	DN200	2
13	Bend 90° F x F , Ductile Iron , PN25	DN200	1
14	Bend 90° Socket - Socket Ductile Iron	DN200	3
15	Bend 90° F x F , Ductile Iron ,PN25	DN250	4
16	Bend 11.25° Socket - Socket Ductile Iron	DN200	9
17	Bend 45° F x F Ductile Iron, PN25	DN200	10
18	Bend 90° Ductile Iron , Flange x Spigot,PN16	DN200	2
19	Short Pipe Ductile Iron, F X F,PN25 L=5.8m	DN200	1
20	Short Pipe Ductile Iron, F X F, PN25 L=2m	DN200	5
21	Short Pipe Ductile Iron, F X F, PN25 L=4 m	DN200	1

22	Short Pipe Ductile Iron, F X F,PN25 L=1.5m	DN200	1
23	Short Pipe Ductile Iron, F X F,PN16 L=3m	DN900	1
24	Short Pipe Ductile Iron, F X F, PN16 L= 6m	DN900	6
25	Short Pipe Ductile Iron, F X F,PN16 L=0.5	DN600	2
26	Short Pipe Ductile Iron, F X F, PN16 L=0.50	DN900	4
27	Pipe Ductile Iron, F X F,PN16 L=5.50	DN200	2
28	Short Pipe Ductile Iron, F X Spigot, PN25 L= 2m	DN200	10
29	Short Pipe Ductile Iron, F X Spigot, PN25 L= 5.8m	DN200	4
30	Short Pipe Ductile Iron, F X Spigot, PN25 L= 6m	DN200	1
31	Short Pipe Ductile Iron, F X Spigot,PN25 L= 1.5m	DN200	2
32	Short Pipe Ductile Iron, F X Spigot,PN16 L= 2m	DN900	1
33	Short Pipe Ductile Iron, F X Spigot, PN25 L=4m	DN250	1
34	Short Pipe Ductile Iron, F X Spigot, PN25 L=6m	DN250	2
35	Short Pipe Ductile Iron, F X Spigot, PN25 L=2.5m	DN250	1
36	Pipe Ductile Iron, F X Spigot,PN16 L=6.00	DN200	1
37	Short Pipe Ductile Iron, F X F, PN25 L=0.65m	DN250	2
38	Short Pipe Ductile Iron, F X F, PN25 L=0.25m	DN250	8
39	Short Pipe Ductile Iron, F X F, PN25 L= 0.875m	DN250	1
40	Short Pipe Ductile Iron, F X F,PN25 L=0.25m	DN400	4
41	Short Pipe Ductile Iron, F X F,PN25 L=0.5m	DN600	10
42	Short Pipe Ductile Iron, F X F,PN25 L= 0.25m	DN80	6
43	Short Pipe Ductile Iron, F X F,PN25 L=0.5m	DN900	31
44	Short Pipe Ductile Iron, F X Spigot,PN25 L=2m	DN600	2
45	Short Pipe Ductile Iron, F X Spigot,PN25 L=2.5m	DN600	2
46	Short Pipe Ductile Iron, F X Spigot,PN25 L= 3m	DN600	3
47	Short Pipe Ductile Iron, F X Spigot,PN25 L= 3.5 m	DN600	1
48	Short Pipe Ductile Iron, F X Spigot,PN16 L= 2m	DN700	4
49	Short Pipe Ductile Iron, F X Spigot,PN25 L= 2m	DN900	23
50	Short Pipe Ductile Iron, F X Spigot,PN25 L= 3m	DN900	27
51	Tee F x F Ductile Iron ,PN25	DN900	1

52	Tee F x F Ductile Iron , PN25	DN150	15
53	Tee F x F Ductile Iron, PN25	DN600	1
54	Tee F x F Ductile Iron, PN16	DN700	1
55	Reducer Tee F x F Ductile Iron,PN25	900*400	1
56	Reducer Tee Socket - Socket, flanged branch Ductile Iron,PN25	900*200	8
57	Reducer Tee F x F Ductile Iron, PN25	600*200	2
58	Reducer Tee F x F Ductile Iron ,PN25	900*200	23
59	Reducer Tee Ductile Iron all socket	600*200	2
60	Reducer Tee Socket - Socket, flanged branch Ductile Iron,PN16	700*200	1
61	Reducer Tee F x F Ductile Iron, PN25	600*250	3
62	Reducer Tee F x F Ductile Iron , PN16	900*200	1
63	Concentric Reducer F x F Ductile Iron , PN25	200*80	10
64	Concentric Reducer F X F Ductile Iron, PN25	200*150	35
65	Concentric Reducer F X F Ductile Iron , PN25	80*50	4
66	Concentric Reducer F X F Ductile Iron, PN 25	400*250	1
67	Concentric Reduction Ductile Iron , F x F, PN25	900*600	1
68	Concentric Reduction . F x F Ductile Iron, PN16	900*700	1
69	Concentric Reduction F x F Ductile Iron , PN16	700*600	2
70	Concentric Reduction . F x F Ductile Iron, PN25	600*400	2
71	Blind Flange, PN25	DN600	2
72	Blind Flange, PN25	DN900	1
73	Dismantling Joint Ductile Iron , F x F, PN25	DN150	10
74	Dismantling Joint Ductile Iron , F x F, PN25	DN250	2
75	Dismantling Joint Ductile Iron , F x F, PN25	DN400	1
76	Dismantling Joint Ductile Iron , F x F, PN25	DN900	2
77	Dismantling Joint Ductile Iron , F x F, PN25	DN600	2
78	Dismantling Joint Ductile Iron , F x F, PN16	DN900	2
79	Dismantling Joint Ductile Iron , F x F, PN16	DN600	1
80	Flexible Coupling Ductile Iron Pipe, PN25	DN250	2
81	Flexible Coupling Ductile Iron Pipe, PN25	DN600	10

82	Flexible Coupling Ductile Iron Pipe, PN25	DN700	4
83	Flexible Coupling Ductile Iron Pipe , PN25	DN900	73
84	Flexible Coupling Ductile Iron, PN16	DN900	1
85	Manhole Cover Ductile Iron EN124 D400 cleaning open 1160*1460	1160*1460	8
86	Manhole Cover Ductile Iron EN124 D400 cleaning open 1464*864	1464*864	8
87	Manhole Cover Ductile Iron EN124 class 125 cleaning open 800*800	800*800	35
88	Ball Valve F x F, HD, PN25	DN80	6
89	Ball Valve, F x F, PN25	DN50	4
90	Ball Valve , F x F, PN25	DN150	10
91	Ball Valve, F x F,PN25	DN150	30

### 1. Quantity Check:

- ♦ Reference documents:
  - [Packing list no.: invoice No.: SXS14EL-015, DATE :MAY.19,2014]
  - [Packing list no.: invoice No.: SXS14EL-016, DATE :MAY.19,2014]
- ♦ Method of quantity check
  - [Total package counting]
  - [check on the quantity within the selected packages]

The quantity check was performed by SGS inspector during inspection and found there were total 342 packages on site, as per client's requirement total 20 packages were randomly selected for inner pieces check, details as below:

PL No.	Package No.	DESCRIPTION	REQ. QTY.	ACT. QTY.
invoice No.: SXS14EL-015	1	Bend 11.25° Socket - Socket Ductile Iron DN900, C30	2	2
	103	Bend 22.5° Socket - Socket Ductile Iron DN900, C30	2	2
	117	Bend 22.5° Socket - Socket Ductile Iron DN900, C30	2	2
		Concentric Reducer F x F Ductile Iron 200*80, PN25	9	9
		Concentric Reducer F X F Ductile Iron 200*150, PN25	16	16
	122	Bend 45° Socket - Socket Ductile Iron DN900,C30	2	2
	148	Bend 11.25° Socket - Socket Ductile Iron DN600, C30	3	3
		Bend 22.5° Socket - Socket Ductile Iron DN600, C30	3	3
	156	Short Pipe Ductile Iron, F X F, DN900 PN25 L=0.5m	2	2
	170	Short Pipe Ductile Iron, F X Spigot, DN900 PN25 L= 2m	1	1
	192	Reducer Tee F x F Ductile Iron , 900*200 PN25	1	1
		Blind Flange, DN900 PN25	1	1
	236	Short Pipe Ductile Iron, F X Spigot, DN700 PN16 L= 2m	1	1

		Bend 90° F x F Ductile Iron, DN150, PN25	8	8
		Concentric Reducer F X F Ductile Iron, 200*150 PN25	3	3
		Concentric Reducer F X F Ductile Iron , 80*50 PN25	4	4
		Bend 22.50° Socket - Socket Ductile Iron DN200	3	3
	239	Bend 90° F x F Ductile Iron, DN900 PN16	1	1
		Short Pipe Ductile Iron, F X F, DN 900 PN25 L=0.5m	1	1
		Concentric Reducer F X F Ductile Iron, 400*250 PN 25	1	1
		Short Pipe Ductile Iron, F X F, DN250 PN25 L= 0.875m	1	1
	241	Blind Flange, DN600 PN25	2	2
		Tee F x F Ductile Iron , DN150 PN25	7	7
		Bend 22.50° Socket - Socket Ductile Iron DN200	3	3
		Bend 45° Socket - Socket Ductile Iron DN200	1	1
	244	Short Pipe Ductile Iron, F X F, DN200 PN25 L=2m	5	5
		Short Pipe Ductile Iron, F X F, DN200 PN25 L=1.5m	1	1
		Short Pipe Ductile Iron, F X Spigot, DN200 PN25 L= 2m	3	3
	2#	Flexible Coupling Ductile Iron Pipe , DN900 PN25	4	4
		Flexible Coupling Ductile Iron Pipe, DN600 PN25	4	4
	8#	Flexible Coupling Ductile Iron Pipe , DN900 PN25	4	4
		Dismantling Joint Ductile Iron , F x F, DN150 PN25	2	2
	20#	Dismantling Joint Ductile Iron , F x F, DN900 PN25	1	1
	1B	Ball Valve, F x F, DN50 PN25	4	4
		Ball Valve F x F, HD, PN25	6	6
	1C	Ball Valve, F x F, DN150 PN25	18	18
invoice No.: SXS14EL-016	1	Short Pipe Ductile Iron, F X F, DN900 PN16 L=0.50	4	4
	4	Reducer Tee F x F Ductile Iron, 600*250 PN25	2	2
		Concentric Reduction . F x F Ductile Iron, 600*400 PN25	1	1
	7	Bend 45° F x F Ductile Iron, DN200 PN25	5	5
Bend 90° Ductile Iron , Flange x Spigot, DN200 PN16		2	2	

**Note:**

The quantity check was according with the packing list (invoice No.: SXS14EL-015, DATE :MAY.19,2014) and packing list (invoice No.: SXS14EL-016, DATE :MAY.19,2014).

**2. Visual Quality Check:**

- Sample size: [as per client's requirement, total 48pcs]

Total 48 pcs of cargos were randomly selected for visual quality check and found:

2.1 For ductile fitting and short pipes:

2.1.1 The cargos were painted with black bitumen on the external surface and lined with cement on the internal surface.

2.1.2 There was one flange spigot short pipe DN600XL3000 PN25 with cement line fall off, SGS inspector required the manufacturer to repair and the manufacturer repaired it before SGS inspector left manufacturer. Details refer to reference photos.

2.1.3 There was no other obvious defect (such as: scratch, broken, fracture, rust) found on the surfaces.

2.2 For Flexible Coupling Ductile Iron Pipe and Dismantling Joint Ductile Iron , F x F:

The cargos were found painted with blue coating on the external and internal surface and in normal condition. There was no obvious defect (such as: scratch, broken, fracture, rust) found on the surfaces.

2.3 For ductile iron manhole covers:

The cargos were found painted with black coating on the external and internal surface and in normal condition. There was no obvious defect (such as: scratch, broken, fracture, rust) found on the surfaces.

2.4 For ball valves:

2.4.1 The cargos were found painted with blue coating on the external and internal surface and in normal condition.

2.4.2 There was one Ball Valve, F x F, DN 10 PN25 was found with scratches on the body, SGS inspector required the manufacturer to repair and the manufacturer repaired it before SGS inspector left manufacturer. Details refer to reference photos.

**3. Packing check**

- ♦ Sample size: [as per client's requirement, total 48pcs]

Total 48pcs of cargos were randomly selected for packing check during inspection, details as below:

3.1 For Bend 22.5° Socket - Socket Ductile Iron, DN900 C30:

3.1.1 The cargos were packed into wooden case, the wooden case were bundled with steel strips.

3.1.2 There were 3 packages of above cargos were packing into wooden frame case, the wooden frame case were bundled with steel strips and finally wrapped with plastic film.

3.2 For other DN900 fittings, DN900 short pipes (length not more than 2m), Concentric reducer DN700X600 and DN600X400:

The cargos were stacked on wooden pallet and bundled with steel strips, there was rubber mats between cargos and steel strips. Finally the cargos were wrapped with plastic film.

3.3 For short pipes (length more than 2m):

The pipe stacked on the wooden sticks and bundled with steel strips, there was rubber mats between cargos and steel strips. Finally the cargos were wrapped with plastic film.

3.4 For other ductile fittings:

3.4.1 Partial of them were packed into wooden case, the wooden case were bundled with steel strips.

3.4.2 Partial of them were packing into wooden frame case, the wooden frame case were bundled with steel strips and finally wrapped with plastic film.

3.5 For Dismantling Joint Ductile Iron and Flexible Coupling Ductile Iron Pipe

3.5.1 Each cargo was wrapped plastic bubble film and stacked on wooden pallet, then bundled with steel wire.

3.5.2 Each pallet cargos were packed with paper and wrapped with plastic film.

3.6 For ductile iron manhole covers:

The cargos were stacked on wooden pallets and bundled with steel strips, then wrapped with plastic film.

3.7 For ball valve:

Each valve was wrapped with plastic bag and with plastic protector at each end, then packed into wooden case.

Remark:





- The packing result was according with packing list (invoice No.: SXS14EL-015, DATE: MAY.19,2014).

**4. Marking check**

- Sample size: [as per client's requirement, total 48pcs ]

Shipping mark:

Shipping mark was found nailed on the package as below:

	
<p>Shipping mark for short pipe and fitting</p>	<p>Shipping mark for short pipe and fitting</p>
	
<p>Shipping mark for manhole cover</p>	<p>Shipping mark for Dismantling Joint Ductile Iron and Flexible Coupling Ductile Iron Pipe</p>





Mark and label on the product:

Mark casted on the Bend Socket - Socket Ductile Iron as below:

**SOLID**

**ISO2531**

**DN\*\*\*** (nominal diameter) **X\*\*** (angel) **DI 2014**

**\*\* \* \* \* \*** (heat No.)

Mark casted on the Bend F x F Ductile Iron as below:

**SOLID**

**ISO2531 PN\*\*** (16 or 26)

**DN\*\*\*** (nominal diameter) **X\*\*** (angel) **DI 2014**

**\*\* \* \* \* \*** (heat No.)

Mark casted or painting on the Short Pipe Ductile Iron, F x F and F x spigot as below:

**SOLID**

**ISO2531 PN\*\*** (16 or 26)

**DN\*\*\*** (nominal diameter) **X\*\*\*\*** (length) **DI 2014**

**\*\* \* \* \* \*** (heat No.) (only for casted mark)

Mark casted on the Tee F x F Ductile Iron and Reducer Tee Socket - Socket, flanged branch as below:

**SOLID**

**ISO2531 PN\*\*** (16 or 26)

**DN\*\*\*** (nominal diameter) **X\*\*\*** (nominal diameter) **DI 2014**

**\*\* \* \* \* \*** (heat No.)

Mark casted on the Concentric Reducer F x F Ductile Iron as below:

**SOLID**

**ISO2531 PN\*\*** (16 or 26)

**DN\*\*\*** (nominal diameter) **X\*\*\*** (nominal diameter) **DI 2014**

**\*\* \* \* \* \*** (heat No.)

Mark on the blind flange DN900, PN25 as below:

**SOLID**  
**ISO2531 PN25**  
**DN900 DI 2014**  
**14 05 17 1**

Mark casted on Dismantling Joint Ductile Iron and Flexible Coupling Ductile Iron Pipe:

**SOLID GGG50 DN\*\* PN\*\***

Mark on ductile iron manhole covers:

**SOLID EN124 D400 or B125 \*\*\*x\*\*\***

Mark on ball valve:

**SOLID DI DN\*\* PN25** (for ball valve DN80 and DN50)  
**SOLID 2014 DN150 25 WCB \*\*\*x\*\*\*** (for ball valve DN150)

Remark:

- The shipping mark was according with packing list (invoice No.: SXS14EL-015, DATE :MAY.19,2014).
- The mark on product was according with client's requirement and drawing provided by supplier.

**5. Dimension Check:**

- Sample size: [as per client's requirement, total 48pcs]
- Reference document: [ISO2351:1998, ISO2531:2009, GB13295:2008, ISO4179:1985, ISO 81791-:1995, ISO 8179-2:1995, ISO 4179:2005, ISO7005-2.2:1988, BS4504-3.2:1989, manufacturer's drawing and client's requirement]

During inspection total 48 pcs of cargos were randomly selected for dimension check, details as below:

DE: the outside diameter of the spigot	f: the facing height
B: the flange thickness of at edge	Ø d: the diameter of the holes of the flange
n: Number hole	e: the thickness of fittings main body
L: work length	d: the facing diameter
D: the outside diameter of the flange	K: the diameter of the bolt circle
D3: the inner diameter of the socket	D5: the inner diameter of the socket

For double socket bend:

(unit: mm)

Item	Qty.	---	D3	D5	e	T <sub>bitumen</sub>	T <sub>cement</sub>
Specification		Req. value	224.5(-1/+1.5)	245.2(-1/+1.5)	Min 7	Min91 μm	Min 2
DN 200 11.25°	1	Act. value	225.54~225.76	224.88~226.24	8.31~10.63	120~267	5.96~8.90
DN 200 22.5°	1	Act. value	225.26~225.92	245.36~245.82	9.27~10.87	101~132	6.14~9.88
DN 200 45°	1	Act. value	225.08~225.46	245.24~245.62	7.90~9.47	114~172	6.62~7.78
		Req. value	637.5(-1/+2.7)	668(-1/+2.7)	Min 10.3	Min91 μm	Min 3
DN600 11.25° ,	1	Act. value	638.14~638.82	668.22~670.32	12.90~15.51	98.1~255	6.72~11.90

C30										
DN600 22.5° , C30	1	Act. value	637.78~638.32	667.24~670.54	12.16~12.42	127~221	7.18~8.22			
DN600 45° , C30	1	Act. value	637.64~639.12	667.82~667.98	13.23~15.73	91.5~169	6.02~9.78			
		Req. value	947.5(-1/+4.1)	991.3(-1/+4.1)	Min 13.6	Min91 μ m	Min 3.5			
DN900 11.25° , C30	2	Act. value	946.58~951.58	990.76~993.16	15.43~16.15	98.9~259	6.12~8.56			
DN900 22.5° , C30	2	Act. value	950.46~951.26	991.24~992.36	15.69~16.76	108~252	5.88~7.98			
DN900 45° , C30	2	Act. value	949.26~950.72	990.56~993.92	16.00~17.75	91.6~168	5.80~8.30			

For double-flanged bend:

(unit: mm)

Specification	Qty.	---	D	d	K	f	B	n×Ø d	e	T <sub>bitumen</sub>	T <sub>cement</sub>
DN900 90° , PN16	1	Req. value	1125	1001(- 5.5/+8.5)	1050(± 2)	5(- 4/+2.5)	41.5(± 5)	28×Ø40(0/+1)	Min 13.6	Min91 μ m	Min 3.5
		Act. value	1123.3	1004.7	1051.8	4.72	39.52	28X (40.26~40.34)	17.27~ 18.17	167~294	5.28~ 6.32
DN900 45° , PN16	1	Req. value	1125	1001(- 5.5/+8.5)	1050(± 2)	5(- 4/+2.5)	41.5(± 5)	28×Ø40(0/+1)	Min 13.6	Min91 μ m	Min 3.5
		Act. value	1120.4	999.5	1051.8	2.62	44.14	28X (40.14~40.22)	13.60~ 19.56	144~193	8.80~ 10.12
DN150 90° , PN25	1	Req. value	300	211(- 4.5/+5.5)	250(± 1.5)	3(- 2/+1.5)	17(± 4)	8×Ø28(0/+1)	Min 7.0	Min91 μ m	Min 2
		Act. value	300.42	212.28	250.32	2.04	19.06	8×Ø (28.06~28.34)	7.61~ 8.52	102~183	7.32~ 9.36
DN200 45° , PN25	1	Req. value	360	274(- 4.5/+5.5)	310(± 1.5)	3(- 2/+1.5)	19(± 4)	12×Ø28(0/+1)	Min 7.0	Min91 μ m	Min 2
		Act. value	357.82	275.46	310.62	3.04	19.74	12×Ø (28.24~28.42)	8.94~ 9.64	128~237	6.18~ 9.38

For short pipe ductile iron, FXF:

(unit: mm)

Specification	Qty.	---	D	d	K	f	B	n×Ø d	e	L	T <sub>bitumen</sub>	T <sub>cement</sub>
DN200 PN 25, L=2m, K9	1	Req. value	360	274(- 4.5/+5.5)	310(± 1.5)	3(- 2/+1.5)	19(± 4)	12×Ø28 (0/+1)	≥7	2000(± 10)	Min91 μ m	Min 2
		Act. value	359.56	273.66	310.52	2.36	21.34	12×Ø (28.34~28.38)	10.21~ 10.85	2000.8	104~ 138	2.62~ 3.02
DN250 PN 25, L=0.25m, K12	1	Req. value	425	330(- 4.5/+5.5)	370(± 2)	3(- 2/+1.5)	21.5(± 4)	12×Ø31 (0/+1)	≥7.45	250(± 10)	Min91 μ m	Min 2
		Act. value	426.92	329.16	370.94	3.04	24.12	12×Ø (31.26~31.34)	9.32~ 10.36	251.12	96.9~ 102	7.16~ 9.80

DN600 PN 25, L=0.5m, K12	1	Req. value	845	720(-5/+6.5)	770(±2)	5(-4/+2.5)	38(±5)	20×Ø40 (0/+1)	≥11.3	500(±10)	Min91 μm	Min 3
		Act. value	845.18	719.96	769.92	4.96	38.14	20×Ø (40.36~40.42)	11.31~11.50	500.12	114~159	6.84~9.56
DN900 PN 25, L=0.5m, K12	1	Req. value	1185	1028(-5.5/+8.5)	1090(±2)	5(-4/+2.5)	50.5(±5)	28×Ø49 (0/+1)	≥14.6	500(±10)	Min91 μm	Min 3.5
		Act. value	1186.2	1027.44	1089.4	2.56	50.34	28×Ø (49.36~49.44)	15.29~17.52	502.3	110~219	7.92~10.26
DN900 PN 16, L=6m, K9	1	Req. value	1125	1001(-5.5/+8.5)	1050(±2)	5(-4/+2.5)	41.5(±5)	28×Ø40 (0/+1)	≥10.4	6000(±10)	Min91 μm	Min 3.5
		Act. value	1125.3	1000.7	1051.6	3.36	44.36	28×Ø (40.52~40.64)	10.50~14.27	5999.8	110~176	6.06~6.86
DN900 PN 16, L=0.5m, K12	1	Req. value	1125	1001(-5.5/+8.5)	1050(±2)	5(-4/+2.5)	41.5(±5)	28×Ø40 (0/+1)	≥14.6	500(±10)	Min91 μm	Min 3.5
		Act. value	1118.2	1001.3	1051.8	3.26	40.04	28×Ø (40.42~40.86)	15.51~17.80	501.2	175~203	9.26~14.56

For short pipe ductile iron, F X Spigot:

(unit: mm)

Specification	Qty	---	D	d	K	f	B	n×Ø d	DE	e	L	T <sub>bitumen</sub>	T <sub>cement</sub>
DN200 PN 25, L=2m, K9	1	Req. value	360	274(-4.5/+5.5)	310(±1.5)	3(-2/+1.5)	19(±4)	12×Ø28 (0/+1)	222(-3/+1)	≥7	2000 (±10)	Min91 μm	Min 2
		Act. value	358.72	271.86	311.26	2.12	20.88	12×Ø (28.24~28.28)	219.98	7.74~8.60	2001.3	92.1~184.1	3.50~4.54
DN600 PN 25, L=3m, K9	1	Req. value	845	720(-5/+6.5)	770(±2)	5(-4/+2.5)	38(±5)	20×Ø40 (0/+1)	635(-4/+1)	≥8	3000 (±10)	Min91 μm	Min 3
		Act. value	846.18	717.18	769.72	2.04	41.08	20×Ø (40.42~40.56)	631.36	12.73~13.90	2994.7	108~213	5.80~5.88
DN700 PN 25, L=2m, K12	1	Req. value	910	794(-5.5/+8.5)	840(±2)	5(-4/+2.5)	34.5(±4.5)	24×Ø 37(0/+1)	738(-4.2/+1)	≥12.4	2000 (±10)	Min91 μm	Min 3.5
		Act. value	908.34	789.18	839.82	3.46	38.88	24×Ø (37.36~37.54)	735.58	17.18~18.31	2005.4	128~267	5.08~7.68
DN900 PN 25, L=2m, K12	1	Req. value	1185	1028(-5.5/+8.5)	1090(±2)	5(-4/+2.5)	50.5(±5)	28×Ø49 (0/+1)	945(-4.8/+1)	≥14.6	2000 (±10)	Min91 μm	Min 3.5
		Act. value	1182.8	1030.3	1091.2	2.28	52.42	28×Ø (49.08~49.26)	943.9	15.83~19.73	2002.3	99.7~165	6.66~6.82
DN900 PN 25, L=3m, K9	1	Req. value	1185	1028(-5.5/+8.5)	1090(±2)	5(-4/+2.5)	50.5(±5)	28×Ø49 (0/+1)	945(-4.8/+1)	≥10.4	3000 (±10)	Min91 μm	Min 3.5
		Act. value	1185.5	1029.3	1088.6	4.82	50.72	28×Ø (49.32~49.54)	944.28	12.97~15.04	2997.3	95~197	5.52~7.34

DN900 PN 16, L=2m, K12	1	Req. value	1125	1001(-5.5/+8.5)	1050(±2)	5(-4/+2.5)	41.5(±5)	28×Ø40 (0/+1)	945(-4.8/+1)	≥14.6	2000 (±10)	Min91 μm	Min 3.5
		Act. value	1119.5	1003.1	1051.7	5.82	38.82	28×Ø (40.32~40.48)	943.6	15.26 ~ 18.38	2005.2	139~293	7.60~8.34

For tee FXF ductile iron:

(unit: mm)

Specification	Qty	---	D	d	K	f	B	n×Ø d	e	L1	T <sub>bitumen</sub>	T <sub>cement</sub>
DN150 PN 25	1	Req. value	300	211(-4.5/+5.5)	250(±1.5)	3(-2/+1.5)	17(±4)	8×Ø28 (0/+1)	Min 7	440(±10)	Min91 μm	Min 2
		Act. value	302.98	213.42	250.46	1.56	20.48	8×Ø (28.22~28.26)	8.43~8.56	444.5	91.5~128	5.16~8.16
DN900 PN 25	1	Req. value	1185	1028(-5.5/+8.5)	1090(±2)	5(-4/+2.5)	50.5(±5)	28×Ø49 (0/+1)	Min 13.6	1500(±10)	Min91 μm	Min 3.5
		Act. value	1181.3	1030.8	1091.8	2.54	48.02	28×Ø (49.26~49.48)	17.43~22.51	1495.2	98.3~187.9	8.58~9.32

For reducer tee socket-socket, flange branch

(unit: mm)

Specification	Qty.	---	D	d	K	f	B	n×Ø d	e2	T <sub>cement</sub>
900X200, PN25	1	Req. Value	360	274(-4.5/+5.5)	310(±1.5)	3(-2/+1.5)	19(±4)	12×Ø28 (0/+1)	Min 7	Min 2
		Act. Value	361.68	273.4	311.3	3.06	20.32	12×Ø (28.16~28.22)	10.76~11.23	11.18~11.80
		---	D3	D5	e1	L1	T <sub>bitumen</sub>	T <sub>cement</sub>	---	---
		Req. Value	947.5(-1/+4.1)	991.3(-1/+4.1)	Min 13.6	355(±20)	Min91 μm	Min 3.5	---	---
		Act. Value	948.88	991.58	18.29~19.10	369.8	139~226	7.54~7.94	---	---

For Reducer Tee F x F Ductile Iron:

(unit: mm)

Specification	Qty	---	D	d	K	f	B	n×Ø d	e1	L1	T <sub>cement</sub>
900X200, PN25	1	Req. Value	1185	1028(-5.5/+8.5)	1090(±2)	5(-4/+2.5)	50.5(±5)	28×Ø49 (0/+1)	Min 13.6	730(±10)	Min 3.5
		Act. Value	1178.4	1027.9	1089.4	4.12	51.38	28×Ø (49.22~49.30)	15.66~19.36	727.2	9.12~10.92
		---	D	d	K	f	B	n×Ø d	e2	T <sub>cement</sub>	T <sub>bitumen</sub>
		Req. Value	360	274(-4.5/+5.5)	310(±1.5)	3(-2/+1.5)	19(±4)	12×Ø28 (0/+1)	Min 7	Min 2	Min91 μm
		Act. Value	357.82	276.22	310.92	2.92	19.38	12×Ø (28.12~28.32)	10.57~11.35	10.48~10.86	119~312
Specification	Qty	---	D	d	K	f	B	n×Ø d	e1	L1	T <sub>cement</sub>
600X250, PN25	1	Req. Value	845	720(-5/+6.5)	770(±2)	5(-4/+2.5)	37(±5)	20×Ø40 (0/+1)	Min 10.3	----	Min 3
		Act.	846.18	719.29	771.26	3.08	38.62	20×Ø	13.49~	1100.3	8.68~

	Value						(40.36~40.42)	14.15		11.80
	---	D	d	K	f	B	n×Ø d	e2	T <sub>cement</sub>	T <sub>bitumen</sub>
	Req. Value	425	330(-4.5/+5.5)	370(±2)	3(-2/+1.5)	21.5(±4)	12×Ø31(0/+1)	Min 7.0	Min 2	Min91 μm
	Act. Value	429.82	330.92	371.42	3.18	23.96	12×Ø(31.38~31.58)	10.00~10.81	10.68~11.02	100~192

Concentric reducer F x F:

(unit: mm)

Specification	Qty	---	D	d	K	f	B	n×Ø d	e1	T <sub>bitumen</sub>	T <sub>cement</sub>
200X80, PN25	1	Req. Value	360	274(-4.5/+5.5)	310(±1.5)	3(-2/+1.5)	19(±4)	12×Ø28(0/+1)	Min 7.0	Min91 μm	Min 2
		Act. Value	359.22	272.56	310.92	2.74	20.96	12×Ø(28.34~28.56)	9.86~10.13	99.7~202	6.18~6.62
		---	D	d	K	f	B	n×Ø d	e2	L	
		Req. Value	200	132(-4/+4.5)	160(±1.5)	3(-2/+1.5)	16(±4)	8×Ø19(0/+0.5)	Min 7.0	----	---
		Act. Value	199.16	130.92	160.74	3.12	17.22	8×Ø(19.06~19.34)	7.94~10.03	602.24	---
Specification	Qty	-----	D	d	K	f	B	n×Ø d	e1	T <sub>bitumen</sub>	T <sub>cement</sub>
200X150, PN25	1	Req. Value	360	274(-4.5/+5.5)	310(±1.5)	3(-2/+1.5)	19(±4)	12×Ø28(0/+1)	Min 7.0	Min91 μm	Min 2
		Act. Value	359.84	274.92	310.48	3.36	19.32	12×Ø(28.12~28.36)	10.32~10.55	122~187	4.35~8.46
		---	D	d	K	f	B	n×Ø d	e2	L	
		Req. Value	300	211(-4.5/+5.5)	250(±1.5)	3(-2/+1.5)	17(±4)	8×Ø28(0/+1)	Min 7.0	300( ± 10)	---
		Act. Value	301.24	213.18	249.36	1.98	17.96	8×Ø(28.04~28.16)	10.12~10.77	300.88	---
Specification	Qty	---	D	d	K	f	B	n×Ø d	e1	T <sub>bitumen</sub>	T <sub>cement</sub>
80X50, PN25	1	Req. Value	200	132(-4/+4.5)	160(±1.5)	3(-2/+1.5)	16(±4)	8×Ø19(0/+0.5)	Min 7.0	Min91 μm	Min 2
		Act. Value	200.36	133.12	160.54	2.86	16.96	8×Ø(19.04~19.12)	8.14~8.76	104~134	5.38~6.54
		---	D	d	K	f	B	n×Ø d	e2	L	
		Req. Value	165	99(-4/+4.5)	125(±1.5)	3(-2/+1.5)	16(±4)	4×Ø19(0/+0.5)	Min 7.0	----	---
		Act. Value	165.78	99.52	125.52	3.62	16.88	4×Ø(19.02~19.06)	8.04~8.93	202.34	---
Specification	Qty	---	D	d	K	f	B	n×Ø d	e1	T <sub>bitumen</sub>	T <sub>cement</sub>
600X400, PN25	1	Req. Value	845	720(-5/+6.5)	770(±2)	5(-4/+2.5)	37(±5)	20×Ø40(0/+1)	Min 10.3	Min91 μm	Min 3
		Act. Value	841.82	719.24	769.26	4.96	38.76	20×Ø(40.18~40.42)	14.36~14.74	102~233	9.06~10.76
		---	D	d	K	f	B	n×Ø d	e2	L	---
		Req.	620	503(-	550(±	4(-	28(±	12×Ø37	Min 8.1	----	---

Specification	Qty	Value	5/+6.5)	2)	3/+2)	4.5)	(0/+1)				
		Act. Value	614.46	502.96	550.62	3.02	29.22	12xØ (37.14~37.22)	13.87~ 14.26	704.3	
---	D	d	K	f	B	n×Ø d	e1	T <sub>bitumen</sub>	T <sub>cement</sub>		
700X600, PN16	1	Req. Value	910	794(- 5.5/+8.5)	840(± 2)	5(- 4/+2.5)	34.5(± 4.5)	24×Ø37 (0/+1)	Min 11.4	Min91 μ m	Min 3.5
		Act. Value	905.62	791.12	839.64	5.86	36.66	24×Ø (37.22~37.28)	12.66~ 14.55	143~240	5.88~ 9.28
		---	D	d	K	f	B	n×Ø d	e2	L	T <sub>cement</sub>
		Req. Value	840	720(- 5/+6.5)	770(± 2)	5(- 4/+2.5)	31(± 4.5)	20×Ø37 (0/+1)	Min 10.3	600( ± 10)	Min 3
Act. Value	837.68	718.34	769.74	4.46	32.14	20×Ø (37.06~37.28)	12.40~ 13.59	598.84	8.92~ 9.94		

For blind flange:

Specification	Qty	---	D	d	K	f	B	n×Ø d	T <sub>bitumen</sub>
DN900, PN25	1	Req. Value	1185	1028(- 5.5/+8.5)	1090(± 2)	5(- 4/+2.5)	50.5(± 5)	28X49(0/+1)	Min91 μ m
		Act. Value	1183.8	1023.24	1091.2	4.28	55.08	28X (49.04~49.22)	173~405

For Dismantling Joint Ductile Iron , F x F:

Specification	Qty	---	D	d	K	f	B+f	n×Ø d	T <sub>coating</sub>
DN150, PN25	1	Req. Value	300	211	250	3	20(0/+3)	8×Ø28	Min 300um
		Act. Value	300.68	211.76	250.26	2.22	22.94	8×Ø (27.52~27.76)	308~836
DN900, PN25	1	Req. Value	1185	1028	1090	5	55.5(0/+5)	28X Ø 49	Min 300um
		Act. Value	1186.7	1022.7	1090.3	5.24	53.36	28X Ø(48.26~48.62)	374~946

For Flexible Coupling Ductile Iron Pipe:

Specification	Qty	Req. Value	T <sub>coating</sub>
DN600, PN25	1	Req. Value	Min 250um
		Act. Value	314~520
DN900, PN25	1	Req. Value	Min 250um
		Act. Value	297~515

For DUCTILE IRON MANHOLE COVERS:

Description	Required value	Frame size	Height of frame
Manhole Cover Ductile Iron EN124 D400, cleaning open	Required value	1630	1330
	Actual value	1627.	1326.

1160*1460		8	5	
Manhole Cover Ductile Iron EN124 D400, cleaning open 1464*864	Required value	1630	1030	100
	Actual value	1628.5	1025.3	103.92
Manhole Cover Ductile Iron EN124 D400, cleaning open 800*800	Required value	960	960	65
	Actual value	960.1	961.5	66.62

For ball valves:

Specification	Qty.		D	d	K	DN	f	b	n×Ø d	L
Ball Valve F x F, HD, DN80, PN25	1	Req. Value	200	138	160	80	3	22	8xØ18	180
		Act. Value	200.62	136.58	160.22	79.82	2.14	22.9	8xØ (17.92~17.86)	178.86
Ball Valve F x F, HD, DN50, PN25	1	Req. Value	165	102	125	50	3	20	4xØ18	150
		Act. Value	166.14	99.32	125.18	50.02	1.86	20.74	4xØ (17.56~17.88)	150.94
Ball Valve F x F, HD, DN150, PN25	1	Req. Value	300	211	250	150	3	30	8xØ27	360
		Act. Value	300.24	210.88	250.24	150.62	2.68	30.86	8xØ (27.04~27.08)	363.32

Note: Thickness of external coating=thickness of zinc rich coating (150g/m<sup>2</sup> convert into thickness≈21 μ m)+ thickness of painting (Min 91 μ m)

Remark:

- For ductile fitting and short pipe, there was no tolerance for D, the actual value was subject to client's evaluation.
- For reduce tee FXF DN600X250 PN25, Concentric reducer F x F DN200X80 PN25 and Concentric reducer F x F DN80X50 PN25, there was no required value specified in reference document, the actual value was subject to client's evaluation.
- For Dismantling Joint Ductile Iron , F x F, there was no tolerance for D, d, K, f, Ø d, the actual value was subject to client's evaluation, other value was acceptable.
- For ball valve and DUCTILE IRON MANHOLE COVERS, there was no tolerance for all the dimension and the actual value was subject to client's evaluation.
- The calibration certificate for cement thickness gauge was not provided by manufacturer and the thickness for cement was subject to client's evaluation.

#### 6. Witness hydraulic testing

- Sample size: [as per client's evaluation, total 10pcs ]
- Reference document: [ISO 2531:1998]

Total 10pcs of cargos were randomly selected for hydraulic test. Since limitation condition in manufacturer, the ball valve was not performed hydraulic test in manufacturer. Test details as below:

Item	Specification	Quantity	Test pressure (bar)	Duration (s)	Result
1	Bend 45° F x F Ductile Iron , DN 900 PN16	1	10	10	Acceptable



2	Short Pipe Ductile Iron, F X F, DN900 PN16 L=0.50	1	16	10	Acceptable
3	Short Pipe Ductile Iron, F X Spigot, DN900 PN16 L= 2m	1	16	10	Acceptable
4	Short Pipe Ductile Iron, F X Spigot, DN700 PN16 L= 2m	1	16	10	Acceptable
5	Short Pipe Ductile Iron, F X F, DN600 PN25 L=0.5m	1	25	10	Acceptable
6	Short Pipe Ductile Iron, F X F, DN900 PN25 L=0.5m	1	16	10	Acceptable
7	Reducer Tee Socket - Socket, flanged branch Ductile Iron, DN900X200 PN25	1	16	10	Acceptable
8	Tee F x F Ductile Iron , DN900 PN25	1	16	10	Acceptable
9	Reducer Tee F x F Ductile Iron , DN900X200 PN25	1	20	10	Acceptable
10	Concentric Reduction F x F Ductile Iron , DN700X600 PN16	1	16	10	Acceptable

**Remark:**

- The result of test is in accordance with the ISO2531:1998.

- Standard witnessing/observing disclaimer (regulatory witnessing)

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**Attachment:** Photos during inspection



Quantity check



Quantity check



Quantity check



Visual quality check



Visual quality check



Visual quality check



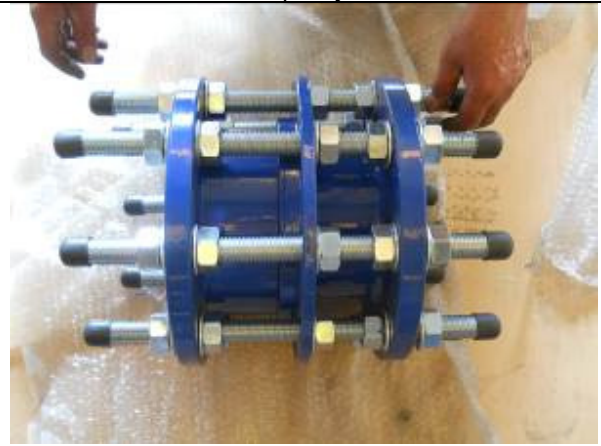
Visual quality check



Visual quality check



Visual quality check



Visual quality check



Visual quality check



Visual quality check





Visual quality check



cement fall off



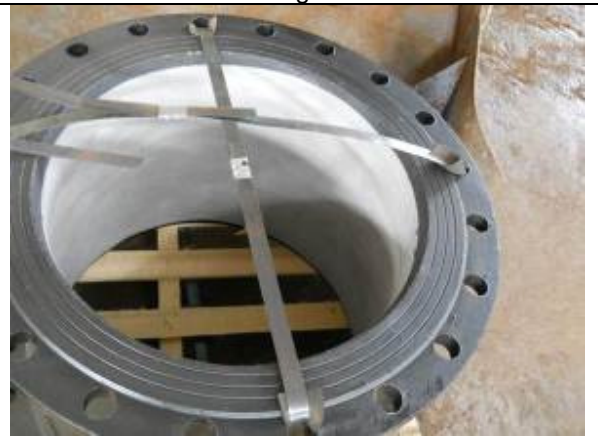
Repaired by manufacturer



Painting scratch



Painting repaired



Packing check



Packing check



Packing check



Packing check



Packing check



Packing check



Packing check



	
<p>Packing check</p>	<p>Marking check</p>
	
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<p>Marking check</p>	<p>Marking check</p>



Dimension check



Dimension check



Dimension check



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Hydraulic pressure test



Hydraulic pressure test

End of report

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SGS-CSTC STANDARDS  
TECHNICAL SERVICES CO., LTD.

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