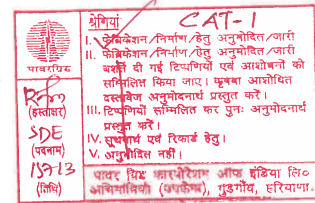
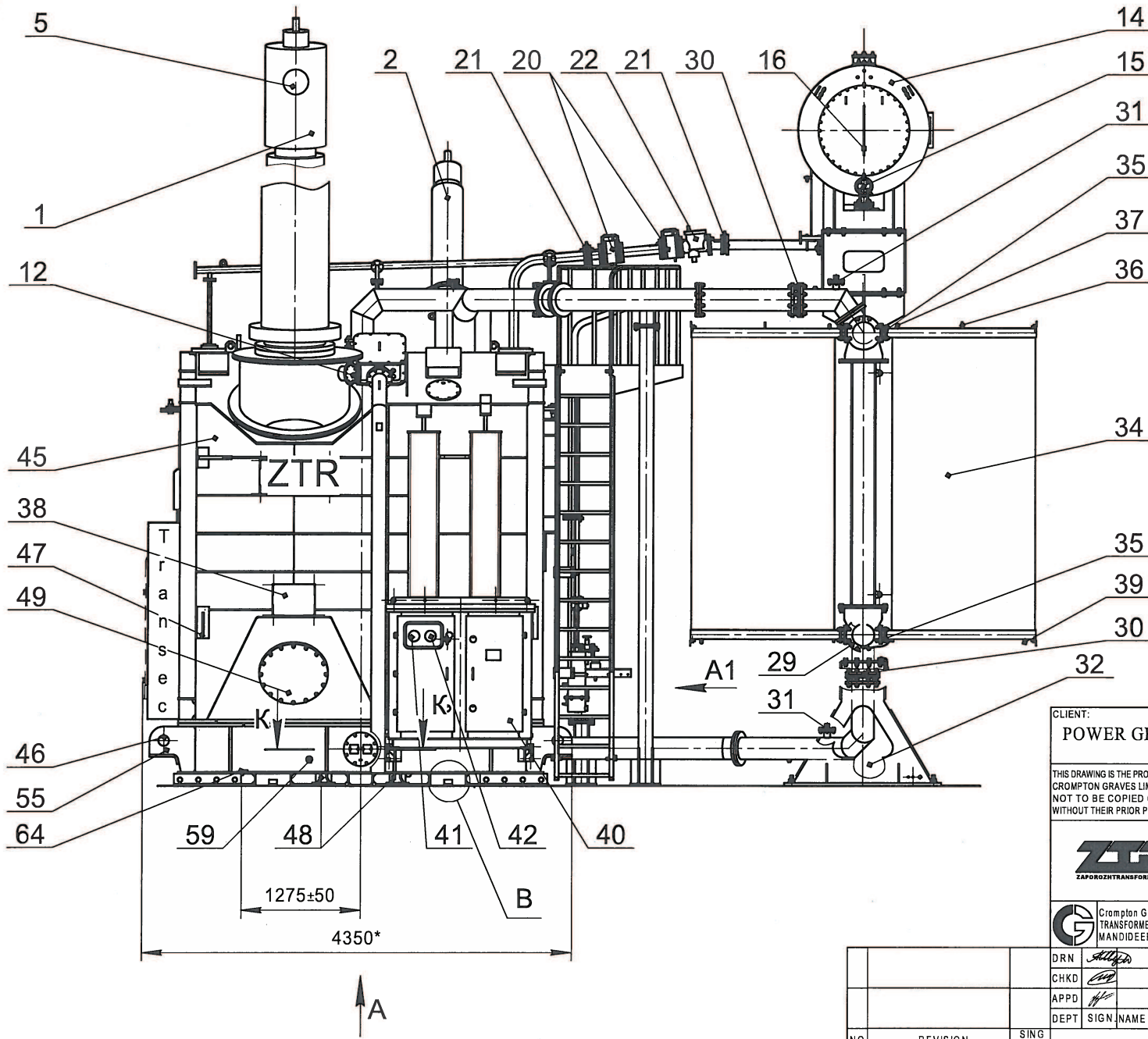


Figure 1



1. \*Transport dimensions.
2. The impact recorder, nitrogen plant, nitrogen pressure gauge are mounted for transportation period only.
3. Reactor is fitted with electronic impact recorder during transportation to measure the magnitude and direction of impact in all directions.
4. Reactor is installed on foundation.
5. Swivel carriages are mounted for reactor moving period only.
6. The common marshalling box for 4 reactors including reserve phase is installed separately on foundation.
7. Permissible acceleration magnitudes at transportation and shipment operations:
  - in longitudinal direction =  $1,5g$  ( $14,7m/s^2$ );
  - in traversal direction =  $0,5g$  ( $4,9m/s^2$ );
  - in vertical direction =  $0,5g$  ( $4,9m/s^2$ ).
8. Dimensions in mm.

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Crompton Greaves Ltd.  
 TRANSFORMER DIVISION  
 MANDIDEEP, BHOPAL

PROJECT: Reactor Package-R01 for Raipur P/S & Wardha S/S under System Strengthening in Raipur-Wardha Corridor for IPP Generation Projects in Chhattisgarh [DPR-6]; and for Wardha S/S & Aurangabad S/S under System Strengthening in Wardha-Aurangabad Corridor for IPP Generation Projects in Chhattisgarh [DPR-7].

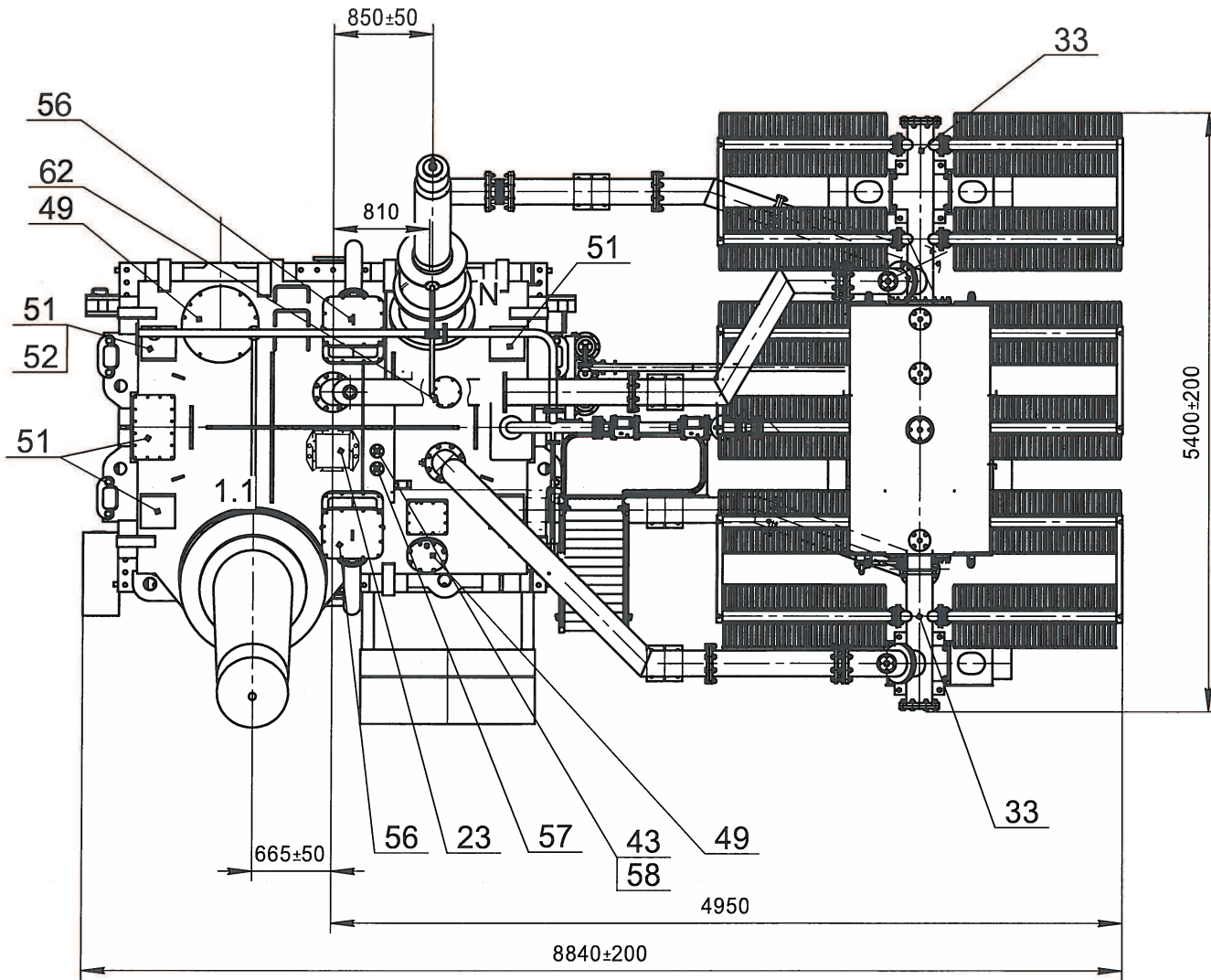
LOA Nos. :  
 CC-CS/153-WR1/RT-1424/3/G3/CA-I/4661 dated 17.05.2013  
 CC-CS/153-WR1/RT-1424/3/G3/CA-II/4662 dated 17.05.2013  
 CC-CS/153-WR1/RT-1424/3/G3/CA-III/4663 dated 17.05.2013

DRN	<i>[Signature]</i>	12.10.2012	Shunt reactor 110MVar, 765kV Outline Drawing	SHT.	TOTAL SHTS	REV.		
CHKD	<i>[Signature]</i>	12.10.2012						
APPD	<i>[Signature]</i>	12.10.2012						
DEPT	SIGN. NAME	DATE						
NO	REVISION	SING DATE	SCALE:					
			1:40	DRG.NO.:	DR 110-010.2	1	10	0

Перв. примен. 1/10 0  
 DRG.NO.: DR 110-010.2  
 Справ. №  
 Подп. и дата  
 Взам. инв. № / Инв. № дубл.  
 Подп. и дата  
 Фамилия, подпись  
 Инв. № подл.

Figure 1

DRG.NO.: DR 110-010.2 2/10 0



संख्या / CAJ-1  
 I. अधिकार/निर्माण/हेतु अनुमोदित/जारी  
 II. विकसन/निर्माण/हेतु अनुमोदित/जारी  
 बकाही दी गई टिप्पणियों एवं आशयों को  
 सम्मिलित किया जाए। कृपया आशयित  
 दस्तावेज अनुमोदनाथं प्रस्तुत करें।  
 III. निम्नलिखी सम्मिलित कर पुनः अनुमोदनाथं  
 प्रस्तुत करें।  
 IV. सुझाव एवं रिमार्क हेतु।  
 V. अनुमोदित नहीं।  
 चतुर् विड कारपोरेशन ऑफ इंडिया लि०  
 अभियंत्रिकी (उपकेन्द्र), बुडगीब, हरियाणा.

Инд. № подл. Подл. и дата  
 Взам. инв. № Инв. № дубл. Подл. и дата  
 Инв. № подл. Подл. и дата

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 CC-CS/153-WR1/RT-1424/3/G3/CA-III/4663 dated 17.05.2013

Shunt reactor 110MVA, 765kV  
 Outline Drawing

DRN	CHKD	APPD	DEPT	SIGN.	NAME	DATE
NO	REVISION	SING DATE	SCALE:	SHT.	TOTAL SHTS	REV.
			1:40	2	10	0

DRG NO.: DR 110-010.2

Cooling system is not shown

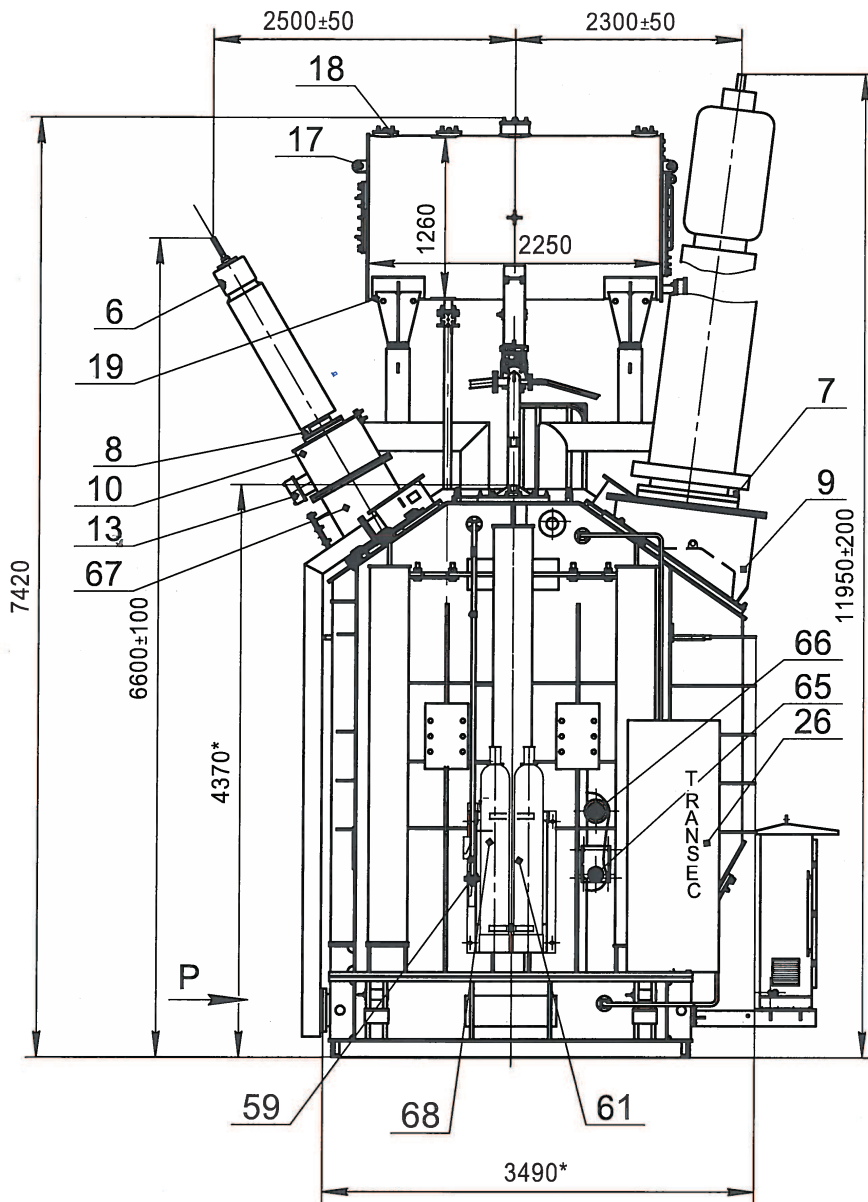
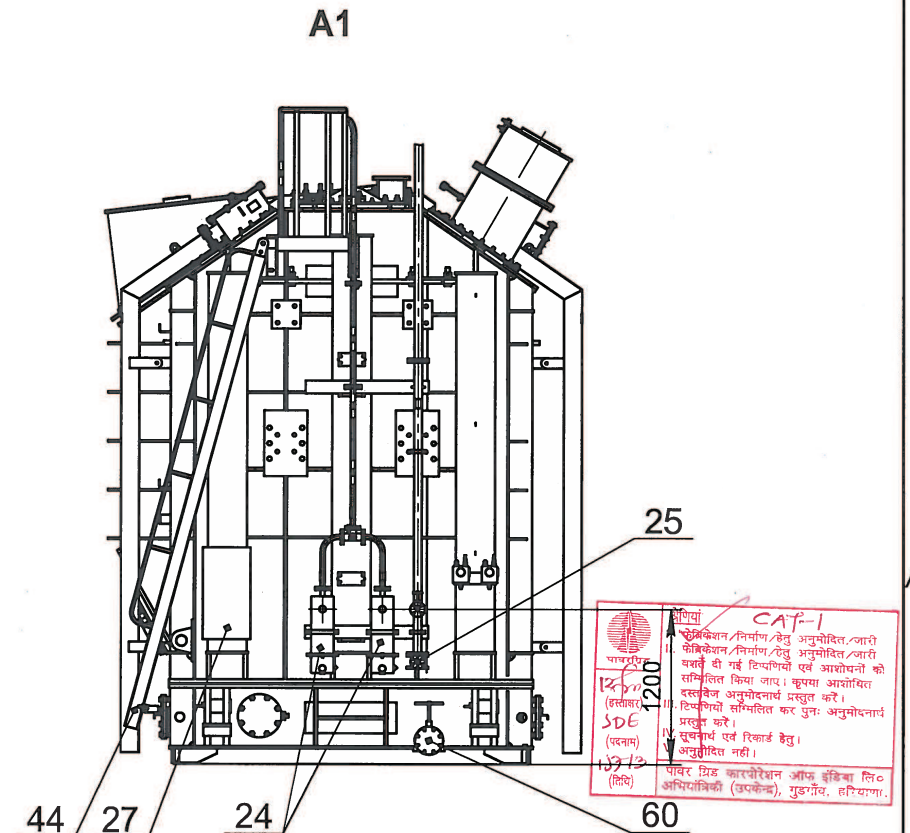


Figure 1



CAPI-1  
 1. कोशिका/निर्माण हेतु अनुमोदित/वारी  
 2. कोशिका/निर्माण हेतु अनुमोदित/वारी  
 चर्चा ही गई दिवसियों एवं आशोपनी को  
 सम्मिलित किया जाय। कृपया आशोपित  
 दस्तक अनुमोदनार्थ प्रस्तुत करे।  
 दिवसियों सम्मिलित कर पुनः अनुमोदनार्थ  
 प्रस्तुत करे।  
 3. सूचनाएं एवं रिपोर्ट हेतु।  
 अनुमोदित नही।  
 पावर ग्रिड कारपोरेशन ऑफ इंडिया लि०  
 अभियंत्रिकी (उपकेन्द्र), मुडगाँव, हरियाणा.

Инд. № подл. Подл. и дата  
 Взам. инв. № Инв. № дубл. Подл. и дата  
 Подл. и дата

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**G** Crompton Greaves Ltd.  
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 MANDIDEEP, BHOPAL

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 CC-CS/153-WR1/RT-1424/3/G3/CA-III/4663 dated 17.05.2013

DRN	<i>[Signature]</i>	12.10.2012	Shunt reactor 110MVar, 765kV Outline Drawing	SHT.	TOTAL SHTS	REV.
CHKD	<i>[Signature]</i>	12.10.2012				
APPD	<i>[Signature]</i>	12.10.2012				
DEPT	SIGN. NAME	DATE				
NO	REVISION	SING DATE	SCALE:			
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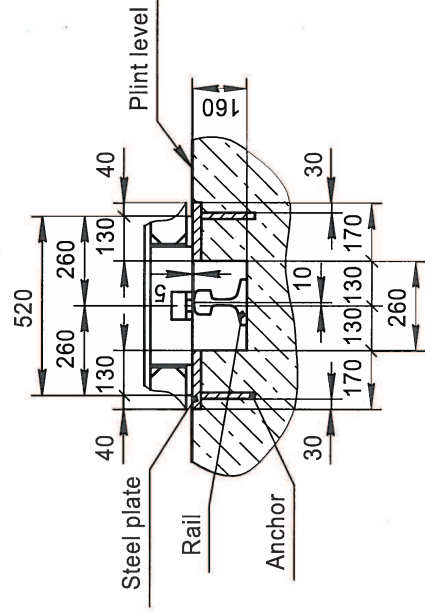




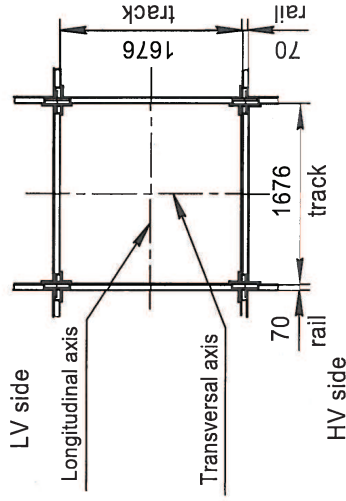
DRG.NO.: DR 110-010.2 6 / 10 0

Reactor fastening to plint

**B (1:10)**



Scheme of track location



Swivel carrage for reactor moving  
(1:15)

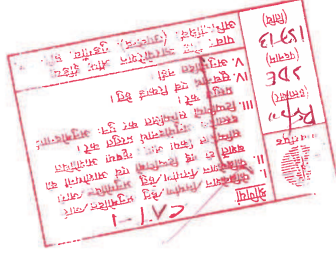
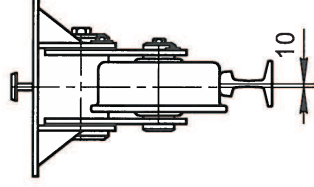
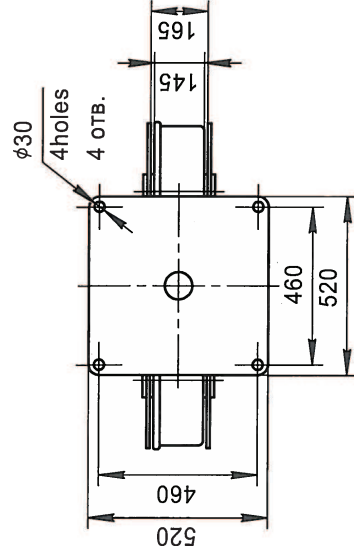
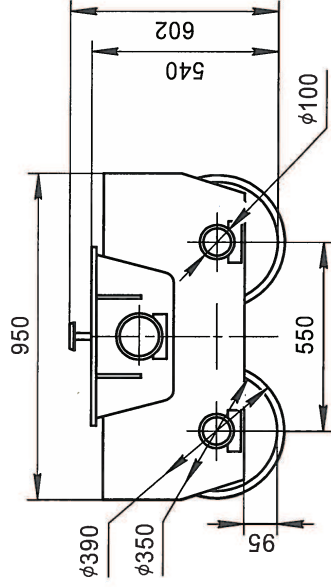


Table 4 - Swivel carriage parameters

Mass of one swivel carriage	0.436 tonnes
Load-carrying ability of one carriage	44 tonnes
Quantity of carriages	4

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CC-CS/153-WR/RT-1424/3/G3/CA-II/4663 dated 17.05.2013

DRN	12.10.2012
CHKD	12.10.2012
APPD	12.10.2012
DEPT	SIGN NAME
NO	REVISION
	SING DATE
	SCALE:
	1:40
	DRG.NO.:
	DR 110-010.2
	SHT.
	6
	TOTAL SHTS
	10
	REV.
	0

Shunt reactor 110MVAr, 765kV  
Outline Drawing

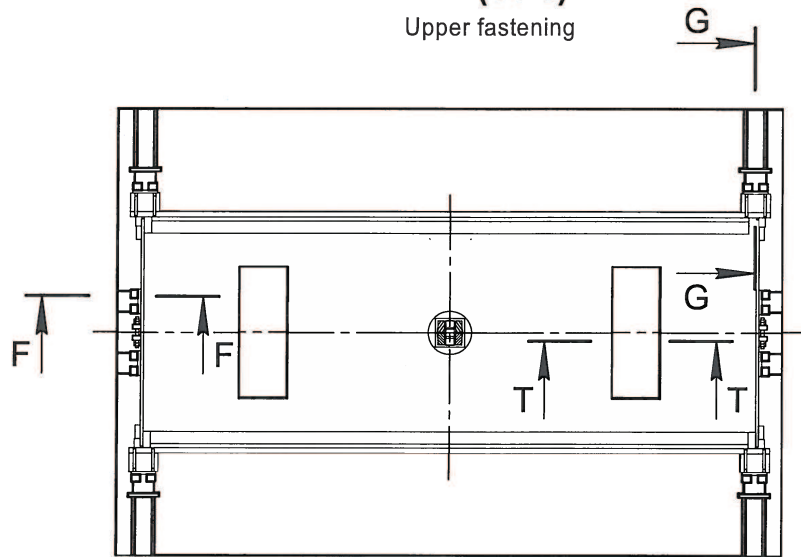
DR 110-010.2

7 / 10

DRG.NO.: DR 110-010.2

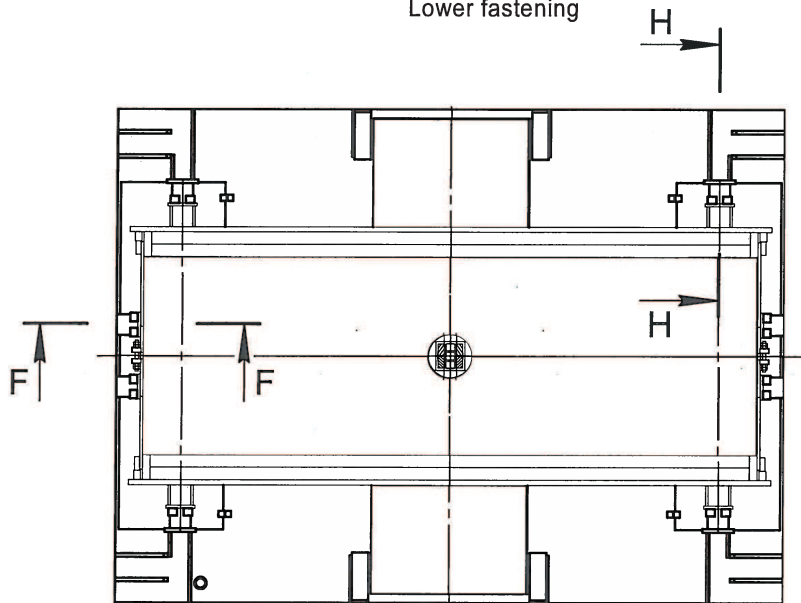
**D-D (1:25)**

Upper fastening

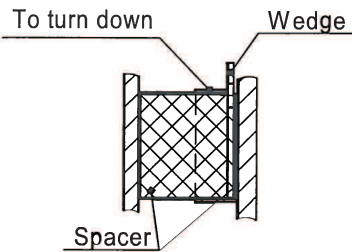


**E-E (1:25)**

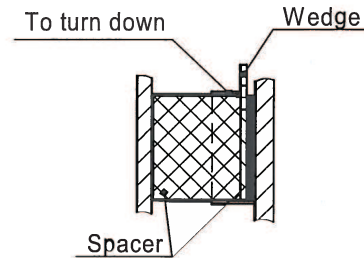
Lower fastening



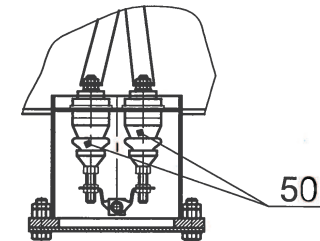
**G-G (1:5)**



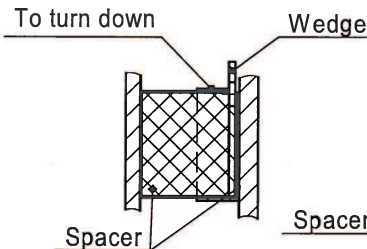
**F-F (1:5)**



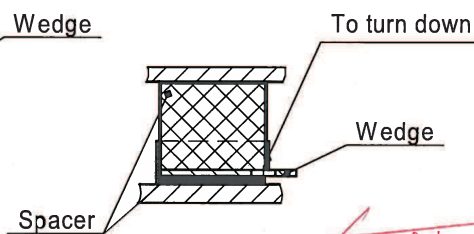
**K-K (1:10)**



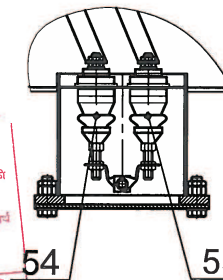
**H-H (1:5)**



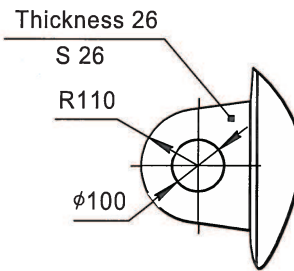
**T-T (1:5)**



**C-C (1:10)**



**Lifting device for tank upper part (1:10)**



**CAI-1**  
 1. कोशिकाओं/विभाग/सेट अनुमोदित/पारि  
 2. कोशिकाओं/विभाग/सेट अनुमोदित/पारि  
 करने की गई दिवसियों एवं आशुपत्रों को  
 संश्लेषित किया जाए। कृपया आशुपत्र  
 स्वतंत्र अनुमोदनाएँ प्रस्तुत करें।  
 3. दिवसियों संश्लेषित कर पुनः अनुमोदनाएँ  
 प्रस्तुत करें।  
 4. हस्ताक्षर एवं टिकट डेटु।  
 5. अनुमोदित नहीं।  
 पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड  
 अभियंता/सहायक (उपकेन्द्र), राउरपुर, छत्तीसगढ़

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DRN	<i>[Signature]</i>	12.10.2012
CHKD	<i>[Signature]</i>	12.10.2012
APPD	<i>[Signature]</i>	12.10.2012
DEPT	SIGN/NAME	DATE

SCALE: 1:40  
 DRG.NO.: DR 110-010.2  
 SHT. 7  
 TOTAL SHTS 10  
 REV. 0

Shunt reactor 110MVA, 765kV  
 Outline Drawing

Инв. № подл. Подл. и дата. Взам. инв. № Инв. № подл. Подл. и дата.

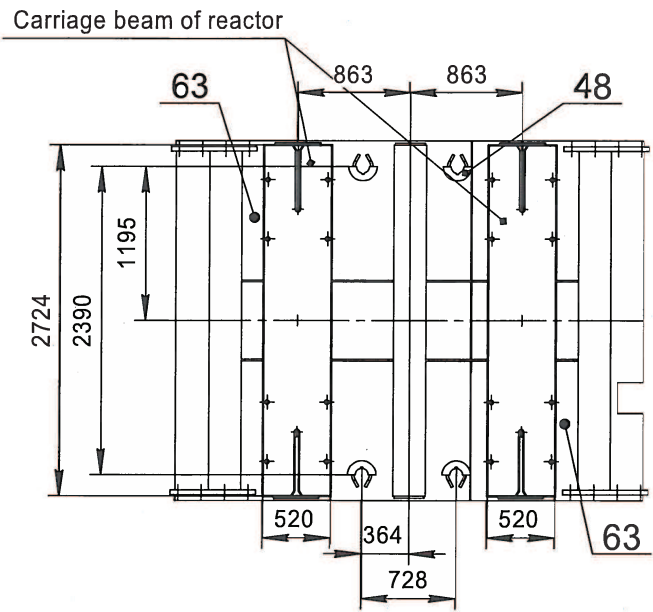
DR 110-010.2

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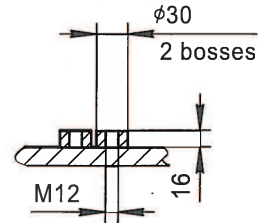
8/10

DRG.NO.: DR 110-010.2

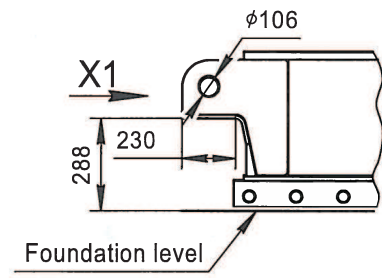
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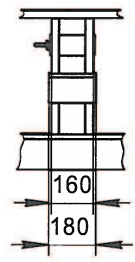
J (1:5)



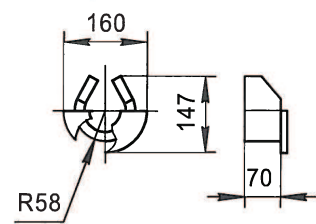
X (1:20)



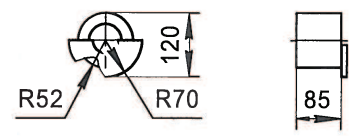
X1 (1:20)



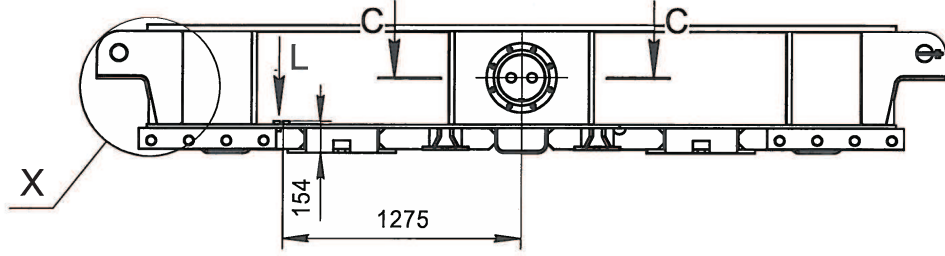
Bracket for reactor movement 1:5



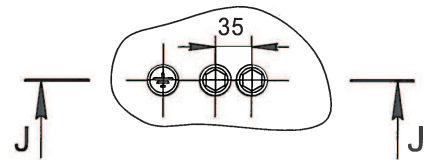
Lifting device for active part (1:5)



P (1:25)



L (1:5)



श्रीगणेशाय नमः  
 I. अधिकारान् विना/बिना अनुमोदित/करी  
 II. अधिकारान् विना/बिना अनुमोदित/करी  
 बर्ना से नव् दिव्यिनी एवं आश्रीकृत  
 संचालित किया जाए। कृपया आश्रीकृत  
 बर्ना अनुमोदनाय प्रस्तुत करें।  
 III. दिव्यिनी संचालित कर पुनः अनुमोदित  
 प्रस्तुत करें।  
 IV. कृपया एवं रिफरेंस हेतु।  
 V. अनुमोदित नही।  
 पावर ग्रिड कारपोरेशन ऑफ इंडिया लि.  
 अभियंता/इंजी. (उपकेन्द्र), रायपुर, छत्तीसगढ़

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DRN	<i>[Signature]</i>	12.10.2012
CHKD	<i>[Signature]</i>	12.10.2012
APPD	<i>[Signature]</i>	12.10.2012
DEPT	SIGN	NAME

Shunt reactor 110MVA, 765kV Outline Drawing		
NO	REVISION	SING DATE
SCALE: 1:40		

DRG.NO.:	DR 110-010.2	SHT.	8	TOTAL SHTS	10	REV.	0
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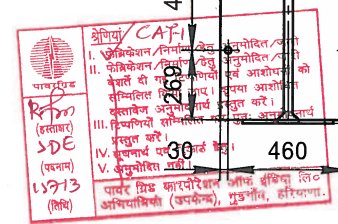
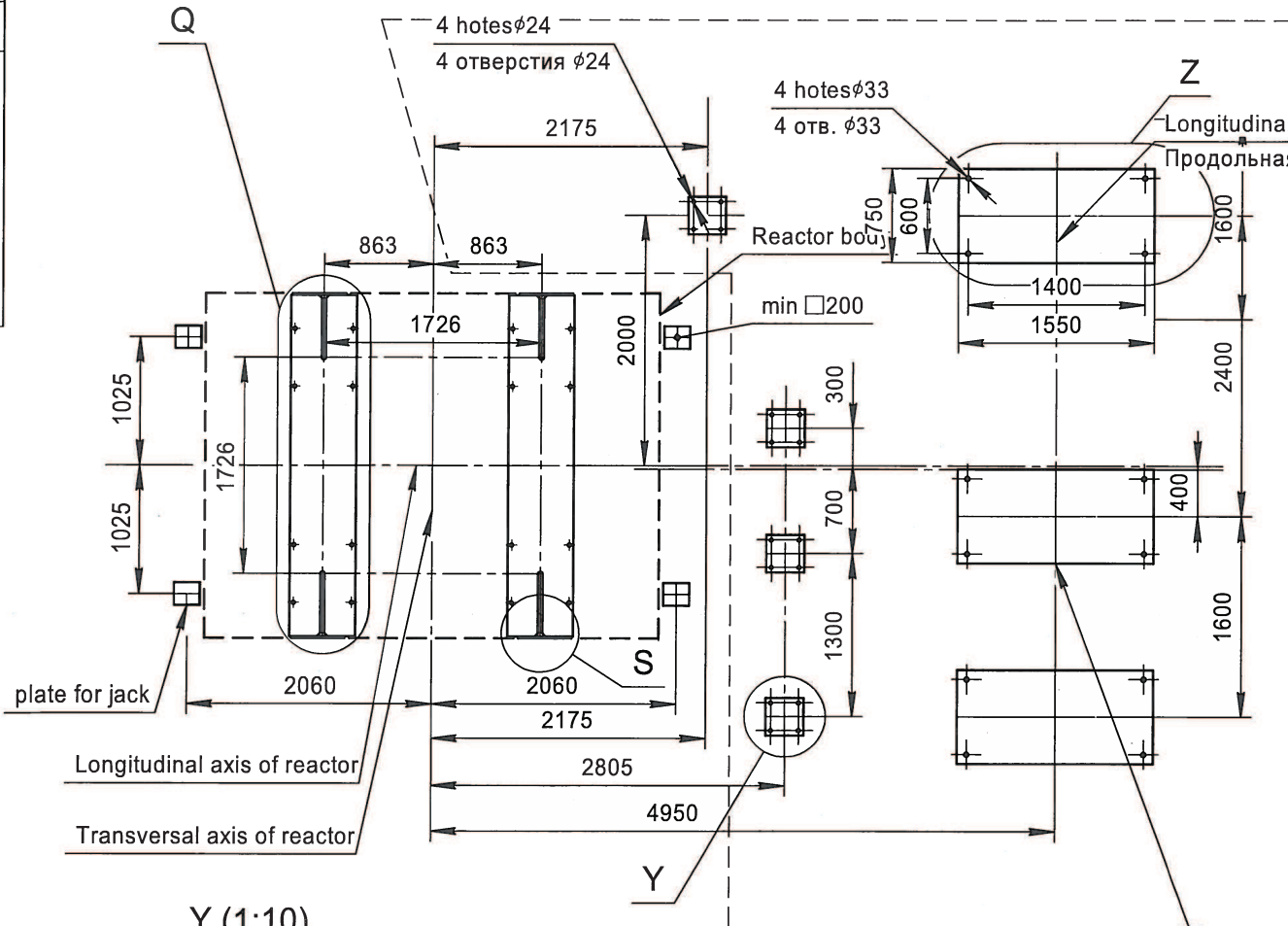
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DR 110-010.2

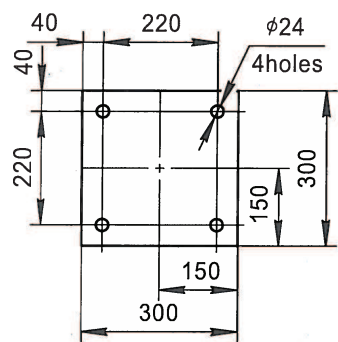
Q (1:20)

Arrangement foundation for reactor body and cooling system

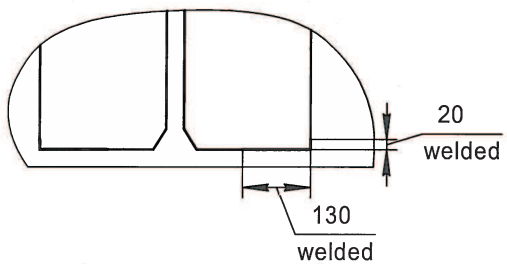
DRG.NO.: DR 110-010.2 9/10 0



Y (1:10)



S (1:10) Longitudinal axis of cooling system



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PROJECT: Reactor Package-R01 for Raipur P/S & Wardha S/S under System Strengthening in Raipur-Wardha Corridor for IPP Generation Projects in Chhattisgarh [DPR-6]; and for Wardha S/S & Aurangabad S/S under System Strengthening in Wardha-Aurangabad Corridor for IPP Generation Projects in Chhattisgarh [DPR-7].

LOA Nos. :  
 CC-CS/153-WR1/RT-1424/3/G3/CA-I/4661 dated 17.05.2013  
 CC-CS/153-WR1/RT-1424/3/G3/CA-II/4662 dated 17.05.2013  
 CC-CS/153-WR1/RT-1424/3/G3/CA-III/4663 dated 17.05.2013

**ZTR**  
 ZAPOROZHTRANSFORMATOR

Crompton Greaves Ltd.  
 TRANSFORMER DIVISION  
 MANDIDEEP, BHOPAL

DRN	<i>[Signature]</i>	12.10.2012
CHKD	<i>[Signature]</i>	12.10.2012
APPD	<i>[Signature]</i>	12.10.2012
DEPT	SIGN/NAME	DATE

Shunt reactor 110MVar, 765kV  
 Outline Drawing

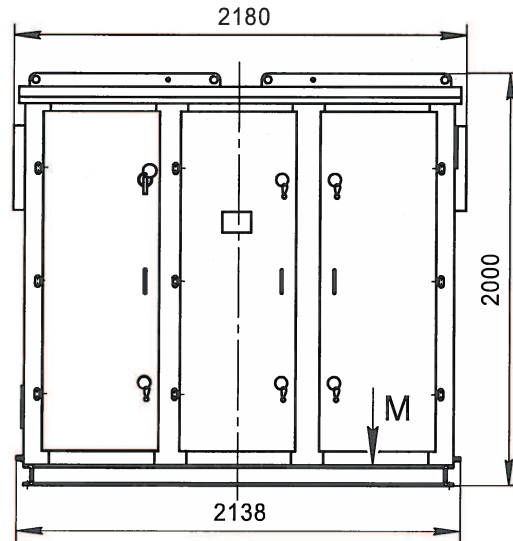
NO	REVISION	SING DATE	SCALE:	SHT.	TOTAL SHTS	REV.
			1:40	9	10	0

DRG.NO.: DR 110-010.2

DR 110-010.2

Common marshalling box (1:25)

The common marshalling box for 4 reactors including reserve phase is installed separately on foundation.



M (1:15)

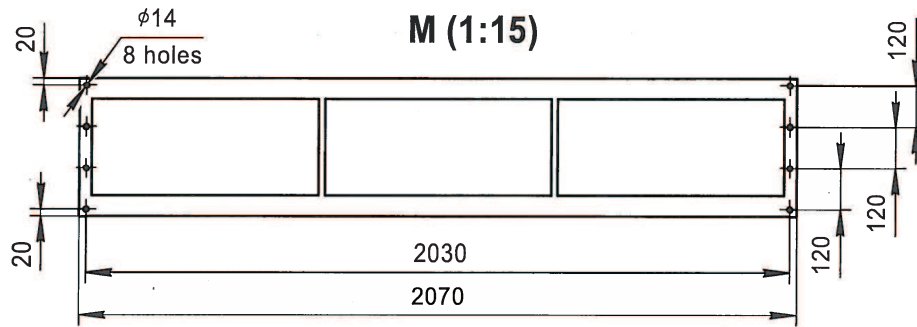
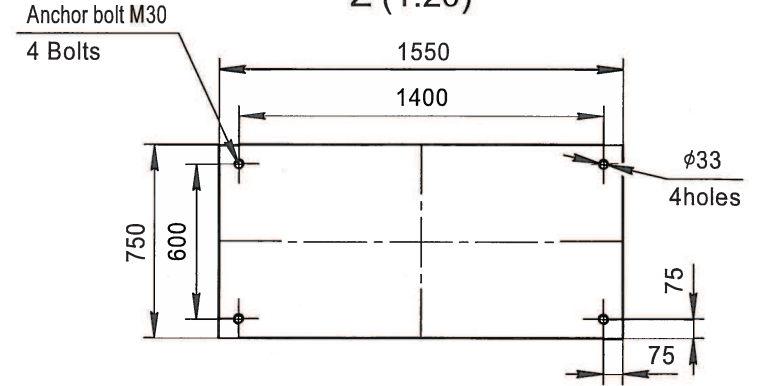


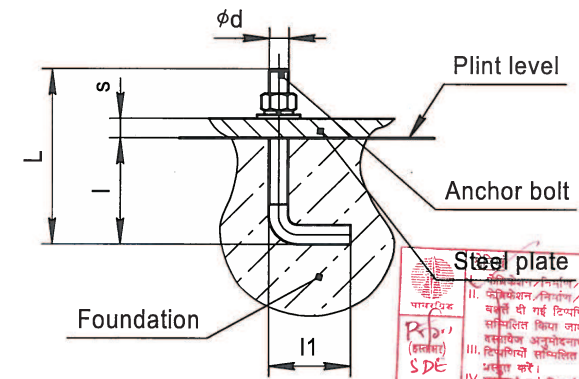
Table 5- Foundation and anchor bolts parameters

View	Quant. of foundations	Max. load at each location, kN/m <sup>2</sup>	Thickness of steel plates (s, mm)	Quant. of anchor bolts for the each foundation	Anchor bolts dimensions		
					d	L, mm	l, mm
Y	7	10	22	4	M20	245	200
Z	4	90	30	4	M30	350	300
Q	2	338,8	18	8	M24	455	400
M	1	25	13	8	M12	235	200

Z (1:20)



Foundation bolt



**Steel plate CAT-1**  
 पावर ग्रीड कॉर्पोरेशन ऑफ इंडिया लि.  
 (कॉरपोरेशन)  
 SDE  
 (सहकारी)  
 15/13  
 (दिनांक)

CLIENT:  
**POWER GRID CORPORATION OF INDIA LTD.**  
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Shunt reactor 110MVA, 765kV  
 Outline Drawing

DRN	12.10.2012
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NO	REVISION	SING DATE	SCALE:	SHT.	TOTAL SHTS	REV.
			1:40	10	10	0

DRG.NO.: DR 110-010.2