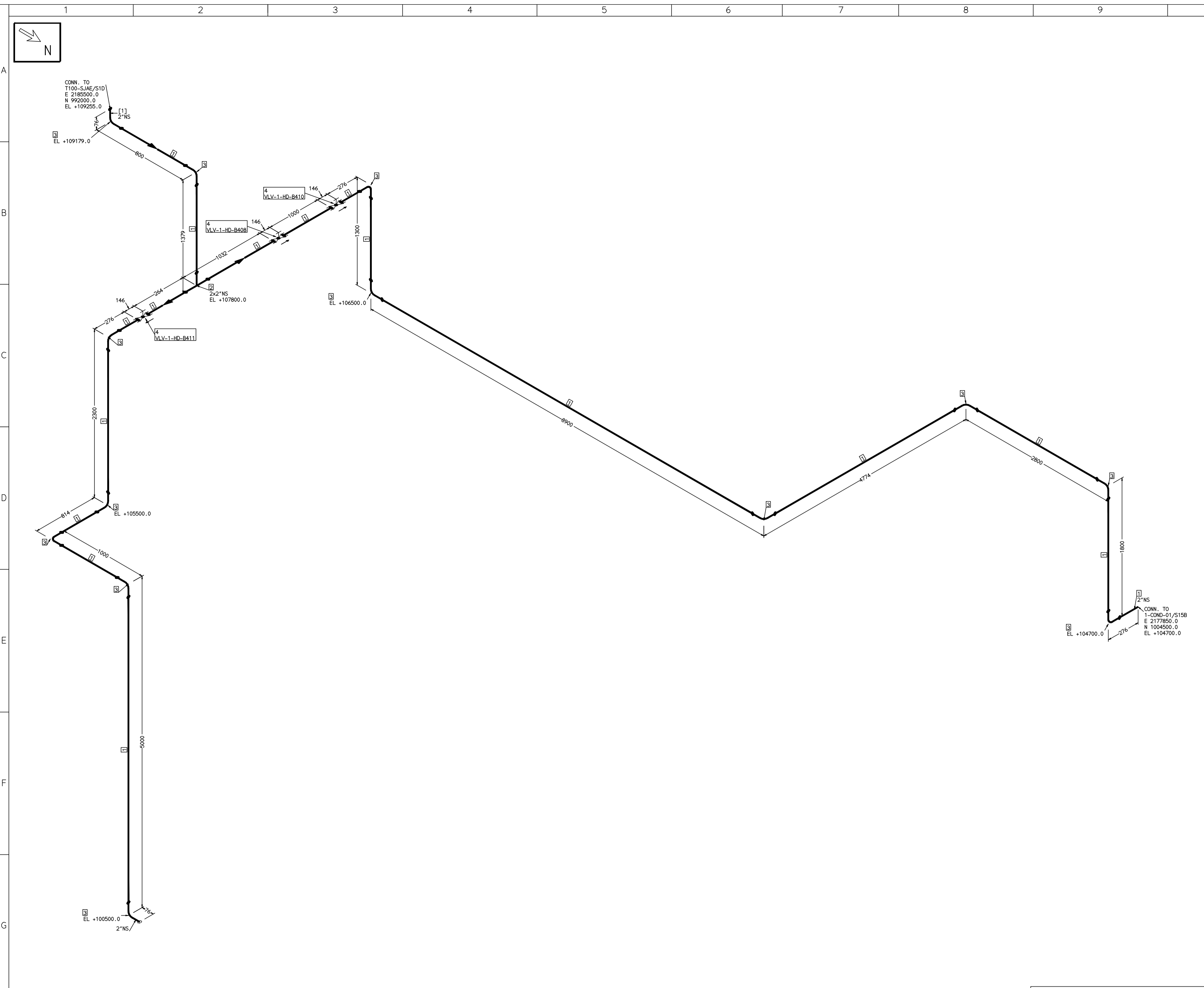


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[1]

- NOTES:-**
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 - ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
 - SUPPORT LOCATIONS ARE SUGGESTIVE. TYPE & LOCATION OF PIPE SUPPORTS TO BE FINALISED AFTER COMPLETION OF STRESS ANALYSIS.
 - PIPE FABRICATOR TO CONFIRM THE VALVE/INSTRUMENT DIMENSIONS BEFORE FABRICATING THE SPOOL PIPE. THE OVERALL LEG LENGTH SHOULD REMAIN AS PER THE ISOMETRIC AFTER ACCOUNTING FOR THE DEVIATIONS IN INLINE COMPONENT DIMENSIONS.
 - DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
 - REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
HSAD-HD-BHL-1-B420-2-11G-HC								11G-RHP	"

- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
 - WELD SYMBOL
- A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL - DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

RECORD OF REVISIONS:-

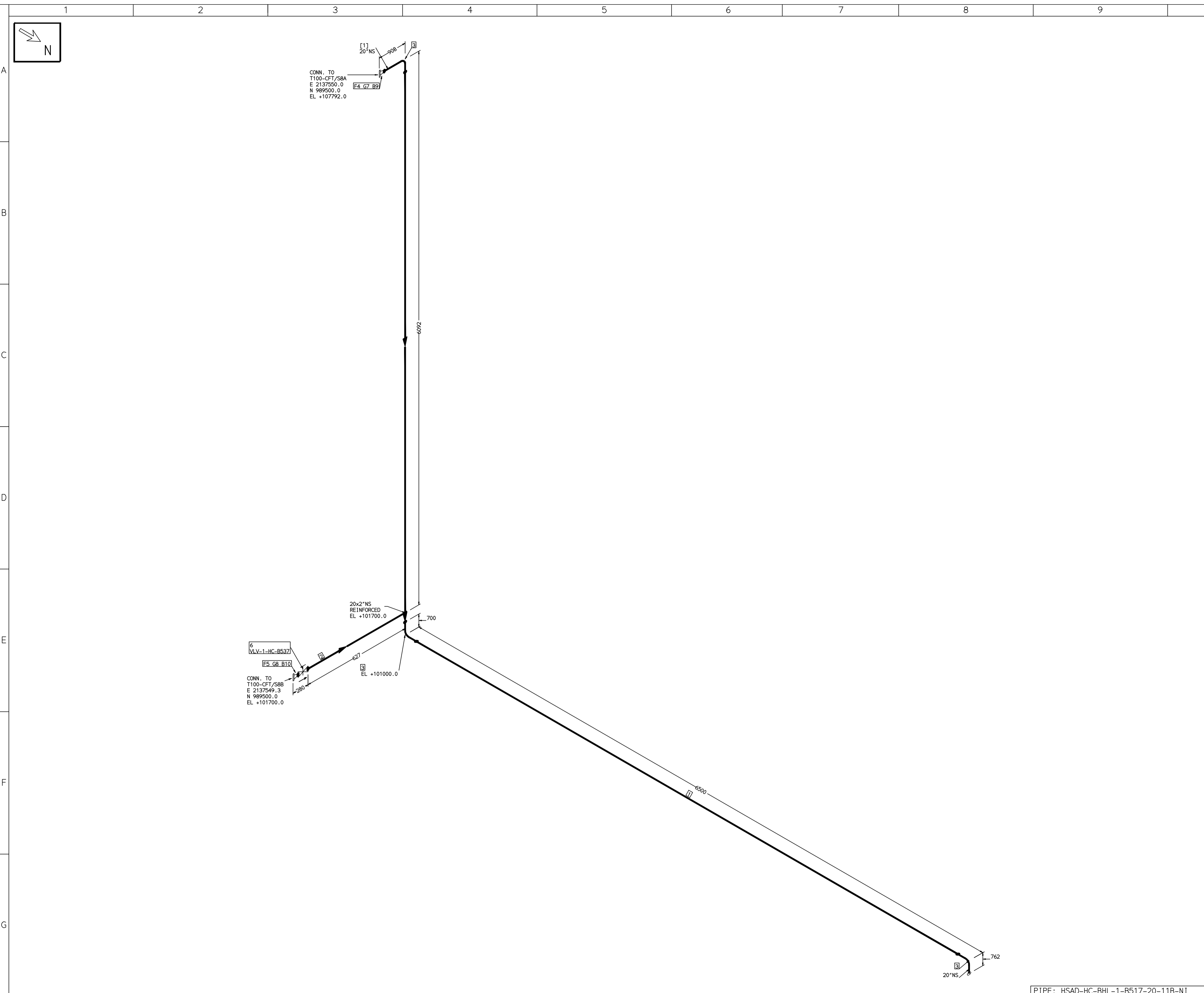
REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME	SIGN	DATE
	DRN. PCC	-SD-	05-05-14
	CHKD. VJK	-SD-	05-05-14
APPRD. GS	-SD-	05-05-14	
DRAWING NO:		REV	
1-381-01-06042		OOP	
SHT. No. 1	NO. OF SHTS. 1		

COMPUTER FILE NAME:

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COMPUTER FILE NAME:



FABRICATION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
1	PIPE EFSW ASME B36.10 PE	A672GRB60	20	S10		10300MM	78.56	AA1049457366	
2	PIPE SMLS ASME B36.10 PE	A106GRB	2	S40		375MM	5.44	AA1049355270	
3	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	20	S10		3	93.53	HY2242502446	
4	FLANGE WELD NECK ASME B16.5 CL150	A105	20	S10	CL150	1	82.17	HY2246361723	
5	FLANGE WELD NECK ASME B16.5 CL150	A105	2	S40	CL150	1	2.54	HY2246361065	
6	GATE VALVE HO ASME B16.10 CL150 BW	A216GRWCB	2		CL150	1	14.69	AA7521408640	

ERECTION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
7	GASKET M.S.W ASME B16.20 PTFE	SS304+PTFE	20		CL150	1	2.87	HY2240362116	
8	FILLER B16.5 CL150 RF	SS304+PTFE	2		CL150	1	0.11	HY2240362019	
9	GASKET M.S.W ASME B16.20 PTFE	SS304+PTFE	2		CL150	1	0.11	HY2240362019	
9	FILLER B16.5 CL150 RF	SS304+PTFE	2		CL150	1	0.11	HY2240362019	
9	170 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	1.1/8	M30X170	CL150	20	1.3	HY7142299037	
10	90 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X90	CL150	4	0.2	HY7142198052	

[1]

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PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-

1	2	3	4	5	6	7	8	9	10	11	12
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LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
HSAD-HC-BHL-1-B517-20-118-NI								118-RHP	

- LEGEND:-
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
 - WELD SYMBOL
- A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL - DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

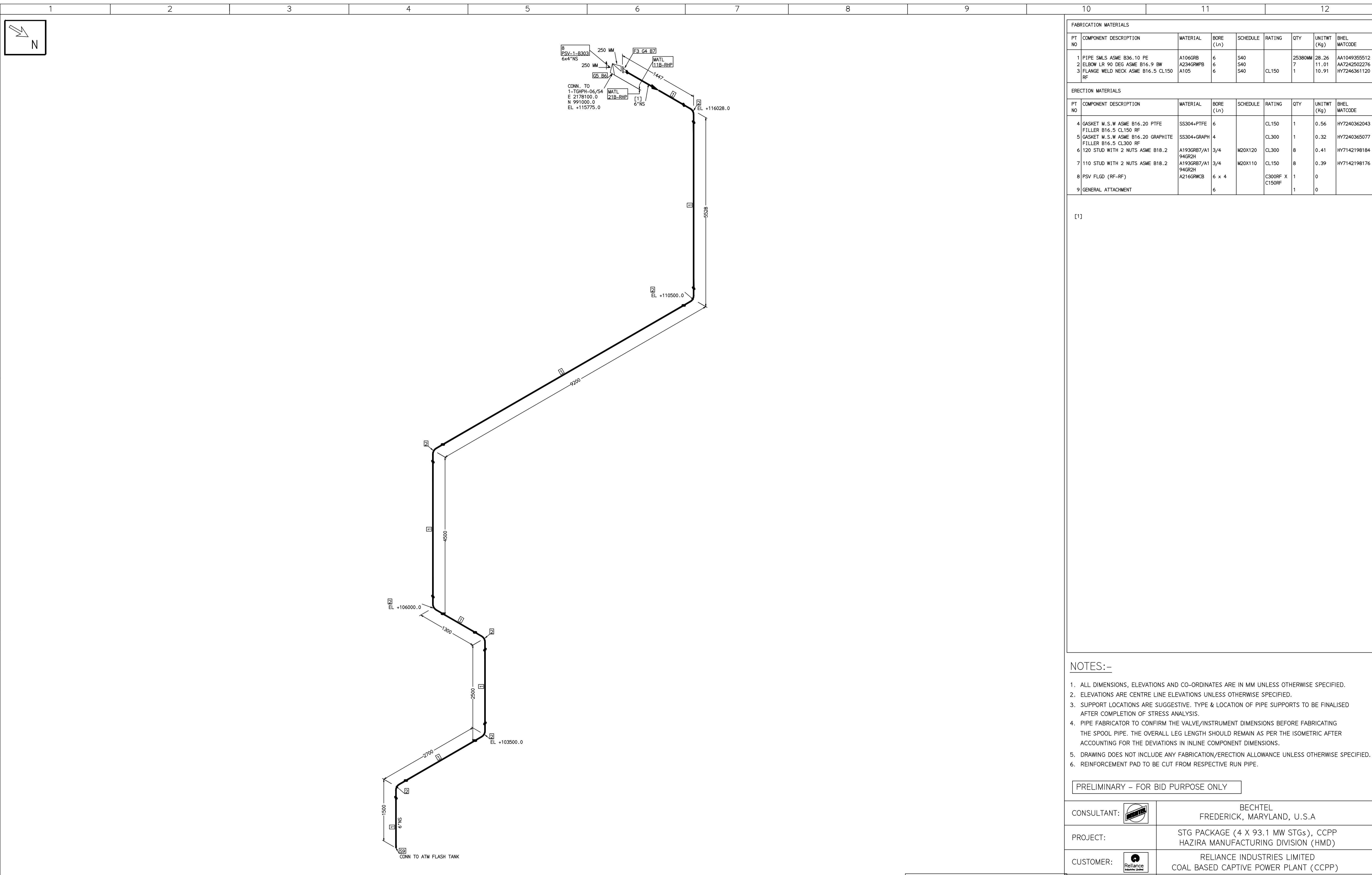
RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME	SIGN	DATE
	DRN. PCC	-SD-	05-05-14
	CHKD. VJK	-SD-	05-05-14
APPRD. GS	-SD-	05-05-14	
DRAWING NO:		REV	
1-381-01-06044		OOP	
SHT. No. 1	NO. OF SHTS. 1		

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FABRICATION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
1	PIPE SMLS ASME B36.10 PE	A106GRB	6	S40		25380MM	28.26	AA1049305512	
2	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	6	S40			11.01	AA7242502276	
3	FLANGE WELD NECK ASME B16.5 CL150	A105	6	S40	CL150	1	10.91	HY7246361120	

ERECTION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
4	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	6		CL150	1	0.56	HY7240362043	
5	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS304+GRAPH	4		CL300	1	0.32	HY7240365077	
6	120 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	3/4	M20X120	CL300	8	0.41	HY7142198184	
7	110 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	3/4	M20X110	CL150	8	0.39	HY7142198176	
8	PSV FLGD (RF-RF)	A216GRWCB	6 x 4		C300RF X C150RF	1	0		
9	GENERAL ATTACHMENT		6			1	0		

[1]

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PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
HSAF-SV-BHL-1-B302-6-11B-NI								11B-RHP	"

- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
 - WELD SYMBOL
 - A - ANCHOR
 - R - REST
 - RG - REST + GUIDE
 - RL - REST + LIMIT STOP
 - RGL - DIRECTION ANCHOR
 - RH - RIGID HANGER
 - SH - SPRING HANGER
 - BS - BOTTOM SPRING
 - VG - VERTICAL GUIDE

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

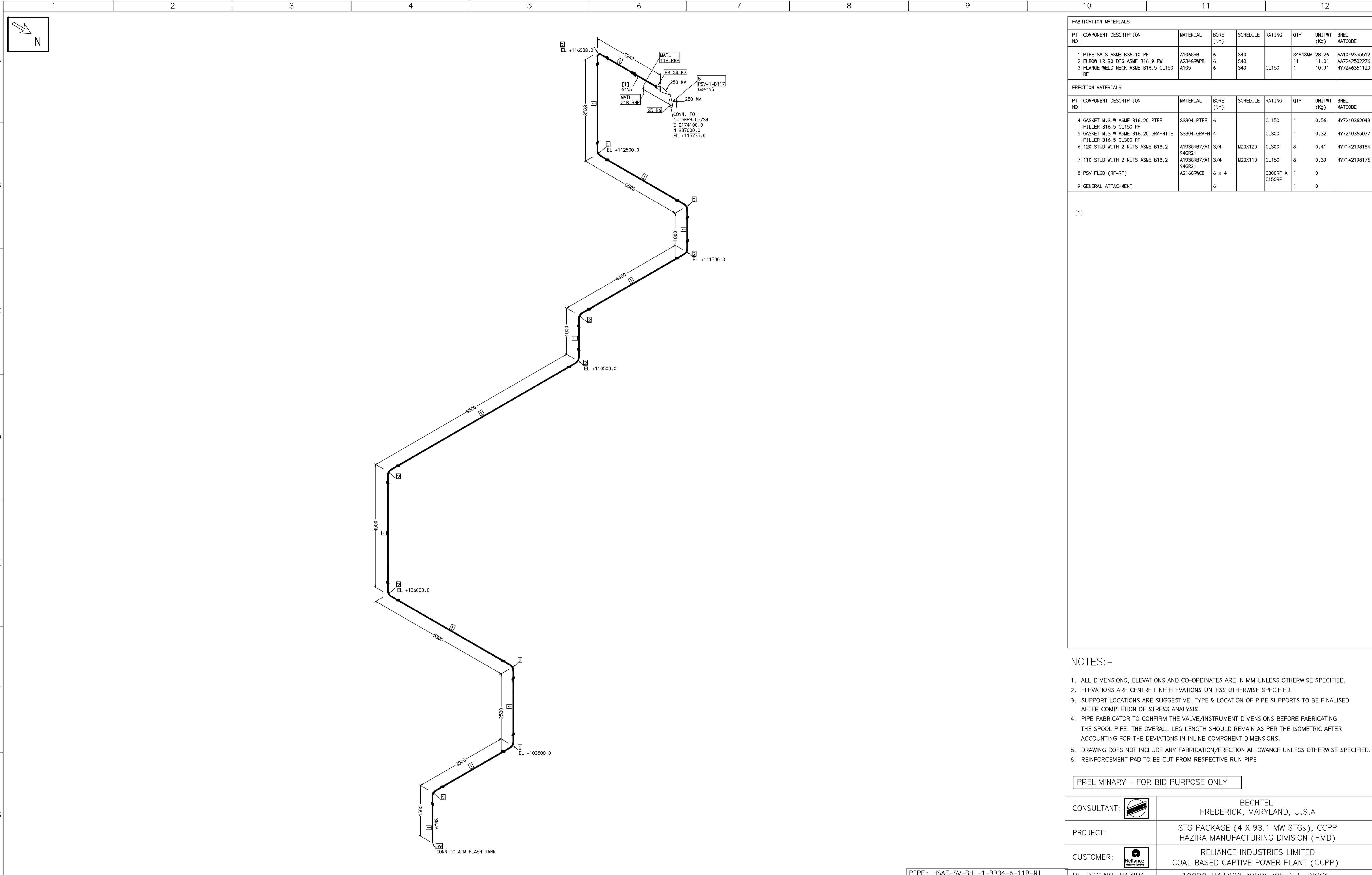
NAME	SIGN	DATE
DRN. PCC	-SD-	05-05-14
CHKD. VJK	-SD-	05-05-14
APPRD. GS	-SD-	05-05-14

SCALE: NTS

TITLE:	DRAWING NO:	REV
1-HPH6-SHELL-SIDE-PSV-OUTLET	1-381-01-06045	OOP
	SHT. No. 1	NO. OF SHTS. 1

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COMPUTER FILE NAME:



FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE SMLS ASME B36.10 PE	A106GRB	6	S40		34848MM	28.26	AA104935512		
2	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	6	S40		11	11.01	AA724250276		
3	FLANGE WELD NECK ASME B16.5 CL150 RF	A105	6	S40	CL150	1	10.91	HY724636120		

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
4	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	6		CL150	1	0.56	HY7240362043		
5	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS304+GRAPH	4		CL300	1	0.32	HY7240365077		
6	120 STUD WITH 2 NUTS ASME B18.2 94GR2H	A193GRB7/A1	3/4	M20X120	CL300	8	0.41	HY7142198184		
7	110 STUD WITH 2 NUTS ASME B18.2 94GR2H	A193GRB7/A1	3/4	M20X110	CL150	8	0.39	HY7142198176		
8	PSV FLGD (RF-RF)	A216GRWCB	6 x 4		C300RF X C150RF	1	0			
9	GENERAL ATTACHMENT		6			1	0			

[1]

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PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
HSAF-SV-BHL-1-B304-6-11B-NI								11B-RHP	

- LEGEND:-**
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 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
 - WELD SYMBOL
 - A - ANCHOR
 - R - REST
 - RG - REST + GUIDE
 - RL - REST + LIMIT STOP
 - RGL - DIRECTION ANCHOR
 - RH - RIGID HANGER
 - SH - SPRING HANGER
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 - VG - VERTICAL GUIDE

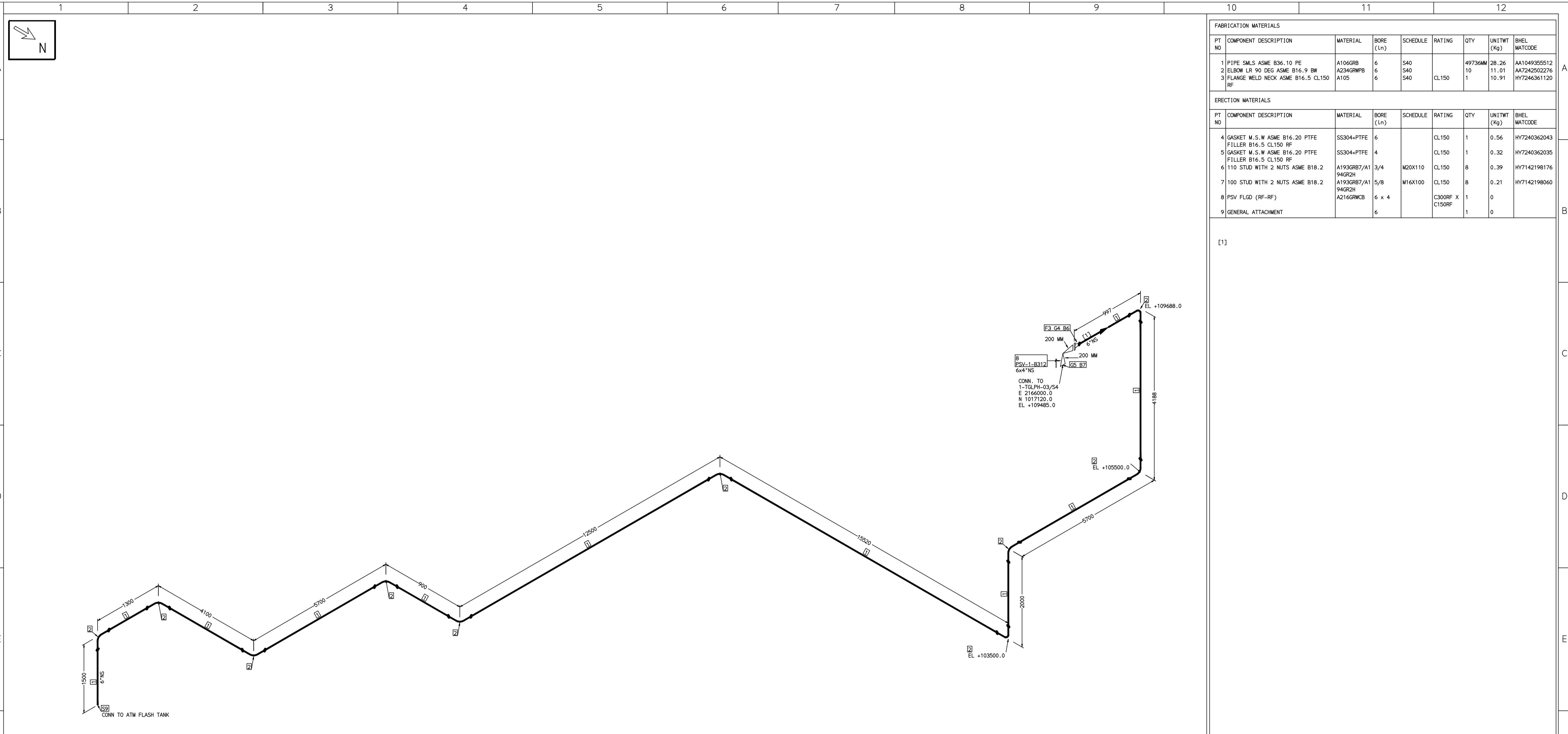
REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD		PROJECT ENGINEERING & SYSTEMS DIVISION		R.C.PURAM, HYDERABAD-502032.	
DRN.	PCC	-SD-	05-05-14	NAME	SIGN
CHKD.	VJK	-SD-	05-05-14	SCALE:	NTS
APPRD.	GS	-SD-	05-05-14	DRAWING NO:	REV
				1-381-01-06046	OOP
SHT. No. 1		NO. OF SHTS. 1			

TITLE: 1-HPH5-SHELL-SIDE-PSV-OUTLET

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COMPUTER FILE NAME:



FABRICATION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
1	PIPE SMLS ASME B36.10 PE	A106GRB	6	S40		49730MM	28.26	AA104935512	
2	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	6	S40		10	11.01	AA724250276	
3	FLANGE WELD NECK ASME B16.5 CL150 RF	A105	6	S40	CL150	1	10.91	HY7246361120	

ERECTION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
4	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	6		CL150	1	0.56	HY7240362043	
5	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	4		CL150	1	0.32	HY7240362035	
6	110 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	3/4	M20X110	CL150	8	0.39	HY7142198176	
7	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X100	CL150	8	0.21	HY7142198060	
8	PSV FLGD (RF-RF)	A216GRWCB	6 x 4		C300RF X C150RF	1	0		
9	GENERAL ATTACHMENT		6			1	0		

[1]

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PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-		LINE PARAMETERS:-								
LINE NUMBER		W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
HSAF-SV-BHL-1-B315-6-11B-NI									11B-RHP	"

LEGEND:-

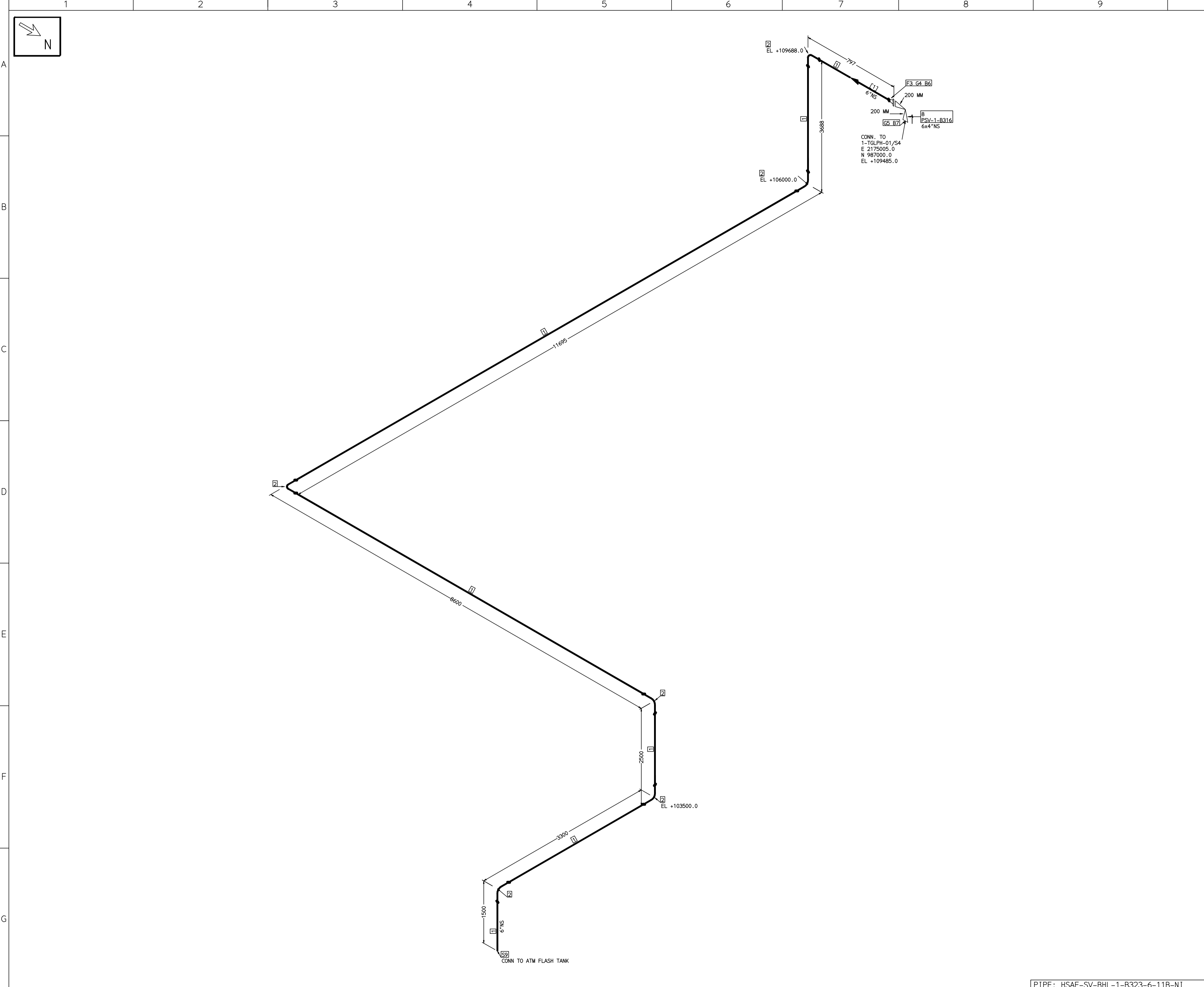
- ANCHOR
- REST
- REST + GUIDE
- REST + LIMIT STOP
- DIRECTION ANCHOR
- RIGID HANGER
- SPRING HANGER
- BOTTOM SPRING
- VERTICAL GUIDE

RECORD OF REVISIONS:-					
REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING		NAME DRN. PCC CHKD. VJK APPRD. GS	SIGN -SD- -SD- -SD-	DATE 05-05-14 05-05-14 05-05-14
TITLE: 1-LPH3-SHELL-SIDE-PSV-OUTLET		DRAWING NO: 1-381-01-06047		REV OOP
SHT. No. 1		NO. OF SHTS. 1		

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FABRICATION MATERIALS									
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1	PIPE SMLS ASME B36.10 PE	A106GRB	6	S40		29243MM	28.26	AA104935512	
2	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWB	6	S40		6	11.01	AA724250276	
3	FLANGE WELD NECK ASME B16.5 CL150 RF	A105	6	S40	CL150	1	10.91	HY724636120	

ERECTION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
4	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	6		CL150	1	0.56	HY7240362043	
5	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	4		CL150	1	0.32	HY7240362035	
6	110 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	3/4	M20X110	CL150	8	0.39	HY7142198176	
7	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X100	CL150	8	0.21	HY7142198060	
8	PSV FLGD (RF-RF)	A216GRWB	6 x 4		C300RF X C150RF	1	0		
9	GENERAL ATTACHMENT		6			1	0		

[1]

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CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-	
1	
2	
3	
4	
5	
6	
7	

LINE PARAMETERS:-									
LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
HSAF-SV-BHL-1-B323-6-11B-NI								11B-RHP	

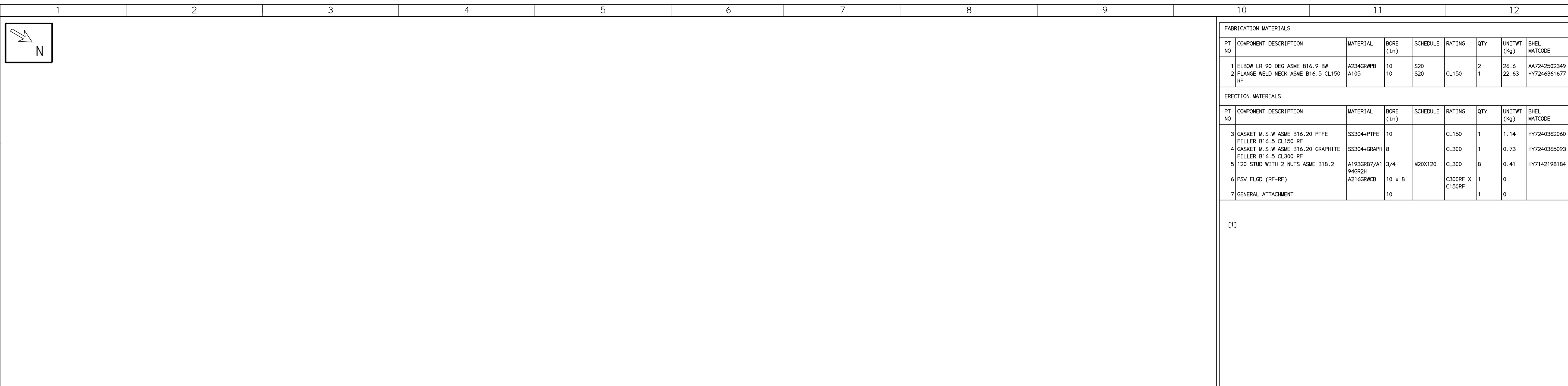
- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
 - WELD SYMBOL
- A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL - DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

RECORD OF REVISIONS:-					
REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD		PROJECT ENGINEERING & SYSTEMS DIVISION		R.C.PURAM, HYDERABAD-502032.	
PE&SD LAYOUTS & PIPING ENGINEERING		NAME	SIGN	DATE	
		DRN.	PCC	-SD-	05-05-14
		CHKD.	VJK	-SD-	05-05-14
		APPRD.	GS	-SD-	05-05-14
TITLE:		DRAWING NO:		REV	
1-LPH1-SHELL-SIDE-PSV-OUTLET		1-381-01-06049		OOP	
SHT. No. 1		NO. OF SHTS.		1	

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COMPUTER FILE NAME:



FABRICATION MATERIALS								
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE
1	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	10	S20	CL150	2	26.6	AA7242502349
2	FLANGE WELD NECK ASME B16.5 CL150 RF	A105	10	S20	CL150	1	22.63	HY7246361677

ERECTION MATERIALS								
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE
3	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	10		CL150	1	1.14	HY7240362060
4	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS304+GRAPH	8		CL300	1	0.73	HY7240365093
5	120 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	3/4	M20X120	CL300	8	0.41	HY7142198184
6	PSV FLDG (RF-RF)	A216GRWCB	10 x 8		C300RF X C150RF	1	0	
7	GENERAL ATTACHMENT		10			1	0	

[1]

NOTES:-

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- ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
- SUPPORT LOCATIONS ARE SUGGESTIVE. TYPE & LOCATION OF PIPE SUPPORTS TO BE FINALISED AFTER COMPLETION OF STRESS ANALYSIS.
- PIPE FABRICATOR TO CONFIRM THE VALVE/INSTRUMENT DIMENSIONS BEFORE FABRICATING THE SPOOL PIPE. THE OVERALL LEG LENGTH SHOULD REMAIN AS PER THE ISOMETRIC AFTER ACCOUNTING FOR THE DEVIATIONS IN INLINE COMPONENT DIMENSIONS.
- DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
- REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
HSAF-SV-BHL-1-B310-6-11B-NI								11B-RHP	"

LEGEND:-

- SUPPORT LOCATION
- DIRECTION OF FLOW
- DIRECTION OF SLOPE
- WELD SYMBOL

A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL - DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

RECORD OF REVISIONS:-

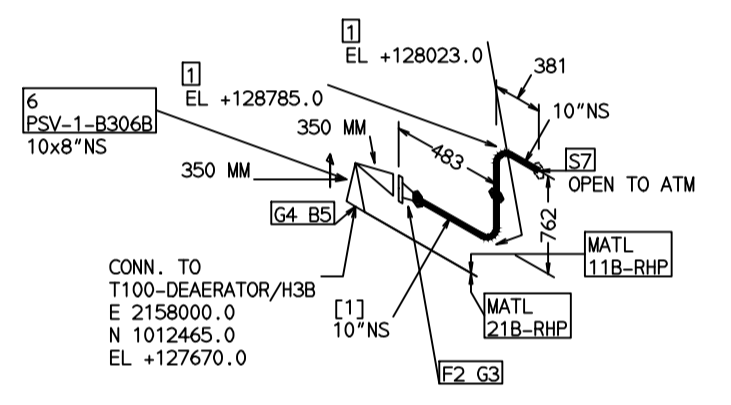
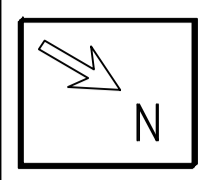
REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

NAME	SIGN	DATE
DRN. PCC	-SD-	05-05-14
CHKD. VJK	-SD-	05-05-14
APPRD. GS	-SD-	05-05-14

SCALE: NTS

TITLE:	1-DEAERATOR-PSV-1-OUTLET
DRAWING NO:	1-381-01-06050
REV	OOP
SHT. No.	1
NO. OF SHTS.	1

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FABRICATION MATERIALS								
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE
1	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	10	S20	CL150	2	26.6	AA7242502349
2	FLANGE WELD NECK ASME B16.5 CL150 RF	A105	10	S20	CL150	1	22.63	HY7246361677

ERECTION MATERIALS								
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE
3	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	10		CL150	1	1.14	HY7240362060
4	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS304+GRAPH	8		CL300	1	0.73	HY7240365093
5	120 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A194GR2H	3/4	M20X120	CL300	8	0.41	HY7142198184
6	PSV FLGD (RF-RF)	A216GRWCB	10 x 8		C300RF X C150RF	1	0	
7	GENERAL ATTACHMENT		10			1	0	

[1]

NOTES:-

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- PIPE FABRICATOR TO CONFIRM THE VALVE/INSTRUMENT DIMENSIONS BEFORE FABRICATING THE SPOOL PIPE. THE OVERALL LEG LENGTH SHOULD REMAIN AS PER THE ISOMETRIC AFTER ACCOUNTING FOR THE DEVIATIONS IN INLINE COMPONENT DIMENSIONS.
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- REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-	

LINE PARAMETERS:-									
LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
HSAF-SV-BHL-1-B311-6-11B-NI								11B-RHP	"

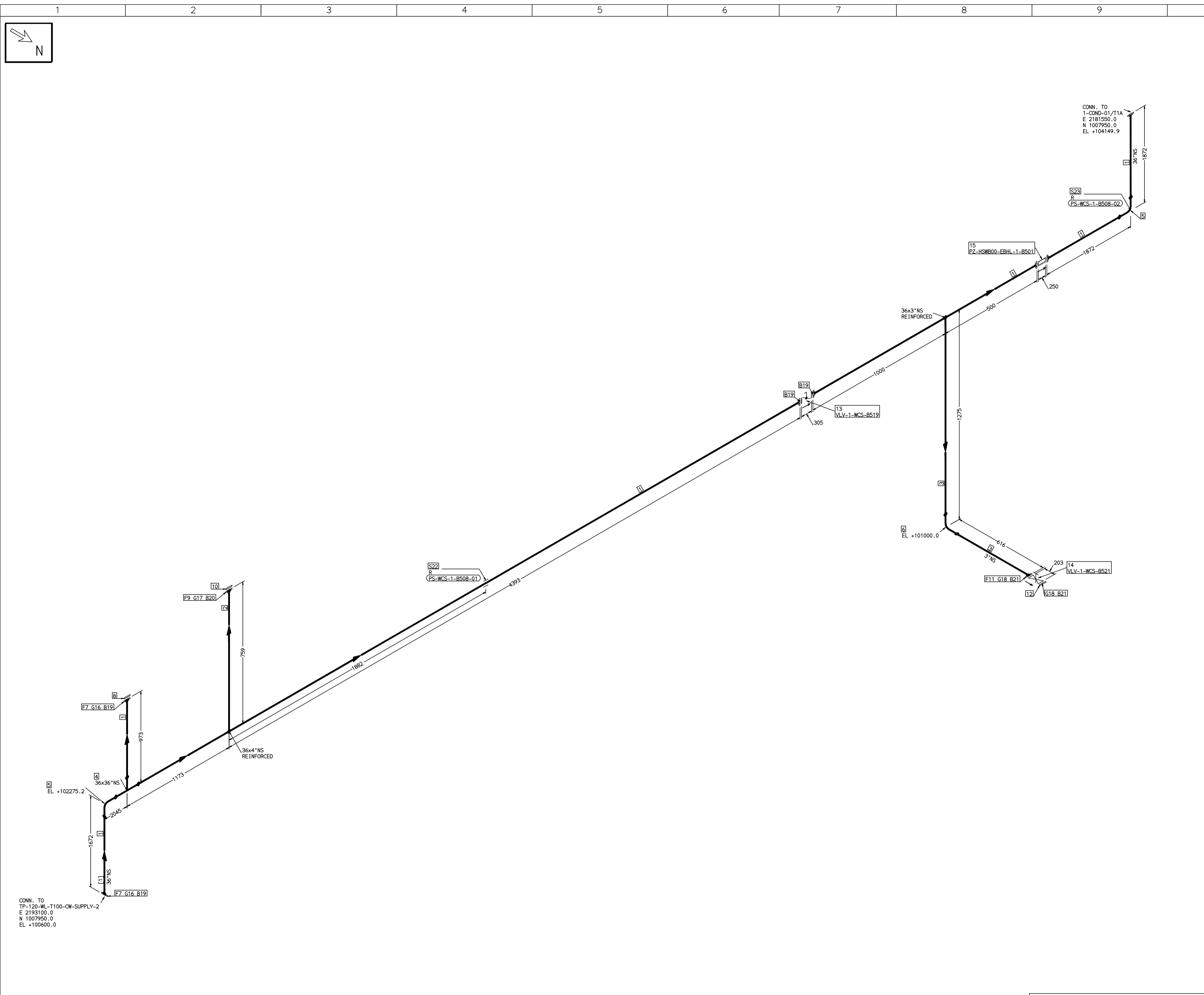
LEGEND:-	
	SUPPORT LOCATION
	DIRECTION OF FLOW
	DIRECTION OF SLOPE
	WELD SYMBOL
A	- ANCHOR
R	- REST
RG	- REST + GUIDE
RL	- REST + LIMIT STOP
RGL	- REST + LIMIT STOP
RH	- RIGID HANGER
SH	- SPRING HANGER
BS	- BOTTOM SPRING
VG	- VERTICAL GUIDE

RECORD OF REVISIONS:-					
REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING			
DRN.	PCC	-SD-	DATE
CHKD.	VJK	-SD-	05-05-14
APPRD.	GS	-SD-	05-05-14
SCALE: NTS			
DRAWING NO: 1-381-01-06051		REV OOP	
SHT. No. 1	NO. OF SHTS. 1		

COMPUTER FILE NAME:

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY DETRIMENTAL MANNER TO THE INTEREST OF THE COMPANY.



FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE ERW/SAW IS-3589 PE 36	IS3589RFE3	36	T10		7993MM	222.94			
2	PIPE ERW/SAW IS-1239 (PART 1) PE K	IS1239(BLAC	4	HVY		303MM	14.5			
3	PIPE ERW/SAW IS-1239 (PART 1) PE K	IS1239(BLAC	3	HVY		1206MM	9.9	AA1011052601		
4	TEE STRT ASME B16.9 BW	A234GRWB	36 x 36	XS		1	731			
5	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWB	36	XS		2	604.34			
6	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWB	3	STD		1	2.3	AA7242502160		
7	FLANGE STEEL-RING AWWA C207-D FF	IS2062GRB	36		PN10	2	0			
8	FLANGE BLIND AWWA C207-D FF	IS2062GRB	36		PN10	1	0			
9	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	4		CL150	1	5.9	AA7246101101		
10	FLANGE BLIND ASME B16.5 CL150 RF	A105	4		CL150	1	7.7	HY7246166106		
11	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	3		CL150	1	3.7	AA7246101080		
12	FLANGE BLIND ASME B16.5 CL150 RF (FF-C207D)	A105	3		CL150	1	4.1	HY7246166084		
13	BFLV GO AWWA C504 PN10 DFLGD (FF-C207D)	A216GRWCB	36		PN10	1	1200			
14	GATE VALVE HO ASME B16.10 CL150 RF(16.5)	A216GRWCB	3		CL150	1	29.94	AA7521408080		

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
15	RE JOINT PN10 FLGD AWWA (FF-C207D)	PTFE	36		PN10	1	0			
16	GASKET NAB FLAT RING (FF-C207D)	SS304+PTFE	36		CL150	2	0			
17	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	4		CL150	1	0.32	HY7240362035		
18	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	3		CL150	2	0.19	HY7240362027		
19	140 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	1.1/2	M39X170	PN10	680	2.53			
20	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X100	CL150	8	0.21	HY7142198060		
21	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X100	CL150	8	0.21	HY7142198060		
22	PIPE SUPPORT		36			1	0			
23	PIPE REST		36			1	0			

[1]

- NOTES:-**
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 - REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCS-BHL-1-B508-11D								11D-RHP	36"

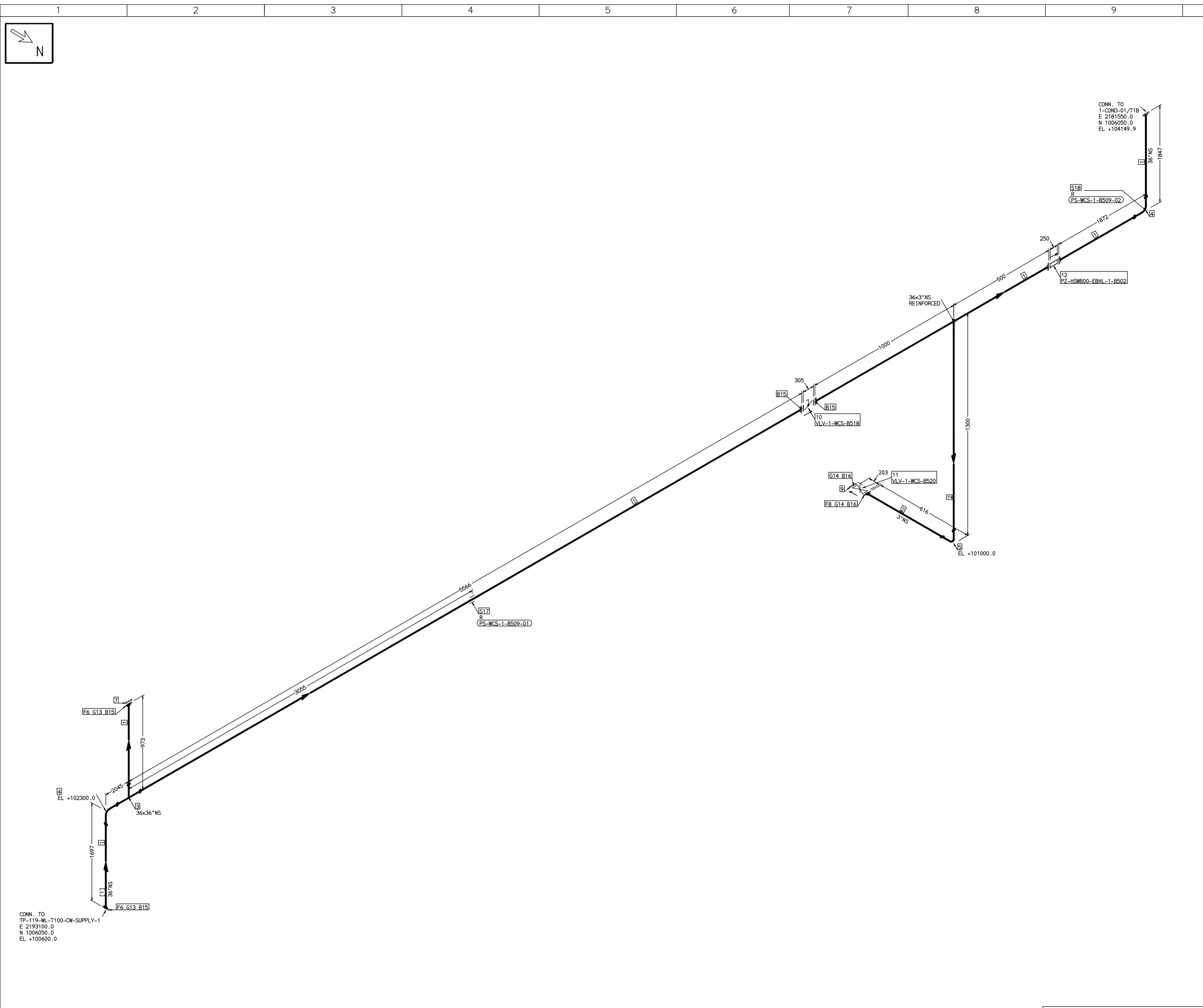
- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
 - WELD SYMBOL
- A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL - DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING		NAME	SIGN	DATE
DRN.	PCC	-SD-		05-05-14
CHKD.	VJK	-SD-		05-05-14
APPRD.	GS	-SD-		05-05-14
DRAWING NO: 1-381-01-06052		SCALE: NTS		REV OOP
SHT. No. 1				NO. OF SHTS. 1

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY DETRIMENTAL MANNER TO THE INTEREST OF THE COMPANY

COMPUTER FILE NAME:



FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE ERW/SAW IS-3589 PE	IS3589RFE3	36	T10		7993MM	222.94			
2	PIPE ERW/SAW IS-1239 (PART 1) PE	IS1239(BLAC K)	3	HVY		1231MM	9.9	AA1011052601		
3	TEE STRT ASME B16.9 BW	A234GRWPB	36 x 36	XS		1	731			
4	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	36	XS		2	604.34	AA7242502160		
5	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	3	STD		1	2.3			
6	FLANGE STEEL-RING ANMA C207-D FF	IS2062GRB	36		PN10	1	0			
7	FLANGE BLIND ANMA C207-D FF	IS2062GRB	36		PN10	1	0			
8	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	3		CL150	1	3.7	AA7246101080		
9	FLANGE BLIND ASME B16.5 CL150 RF	A105	3		CL150	1	4.1	HY7246166084		
10	BFLV GO ANMA C504 PN10 DFLGD (FF-C207D)	A216GRWCB	36		PN10	1	1200			
11	GATE VALVE HD ASME B16.10 CL150 RF(16.5)	A216GRWCB	3		CL150	1	29.94	AA7521408080		

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
12	RE JOINT PN10 FLGD ANMA (FF-C207D)	PTFE	36		PN10	1	0			
13	GASKET NAB FLAT RING (FF-C207D)	SS304+PTFE	36		CL150	2	0.19	HY7240362027		
14	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF		3			2	0.19			
15	140 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	1.1/2	M39X170	PN10	680	2.53			
16	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X100	CL150	8	0.21	HY7142198060		
17	PIPE SUPPORT		36			1	0			
18	PIPE REST		36			1	0			

[1]

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 - REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY	
CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCS-BHL-1-B509-36-11D								11D-RHP	36"

- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
 - WELD SYMBOL
- A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL - DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

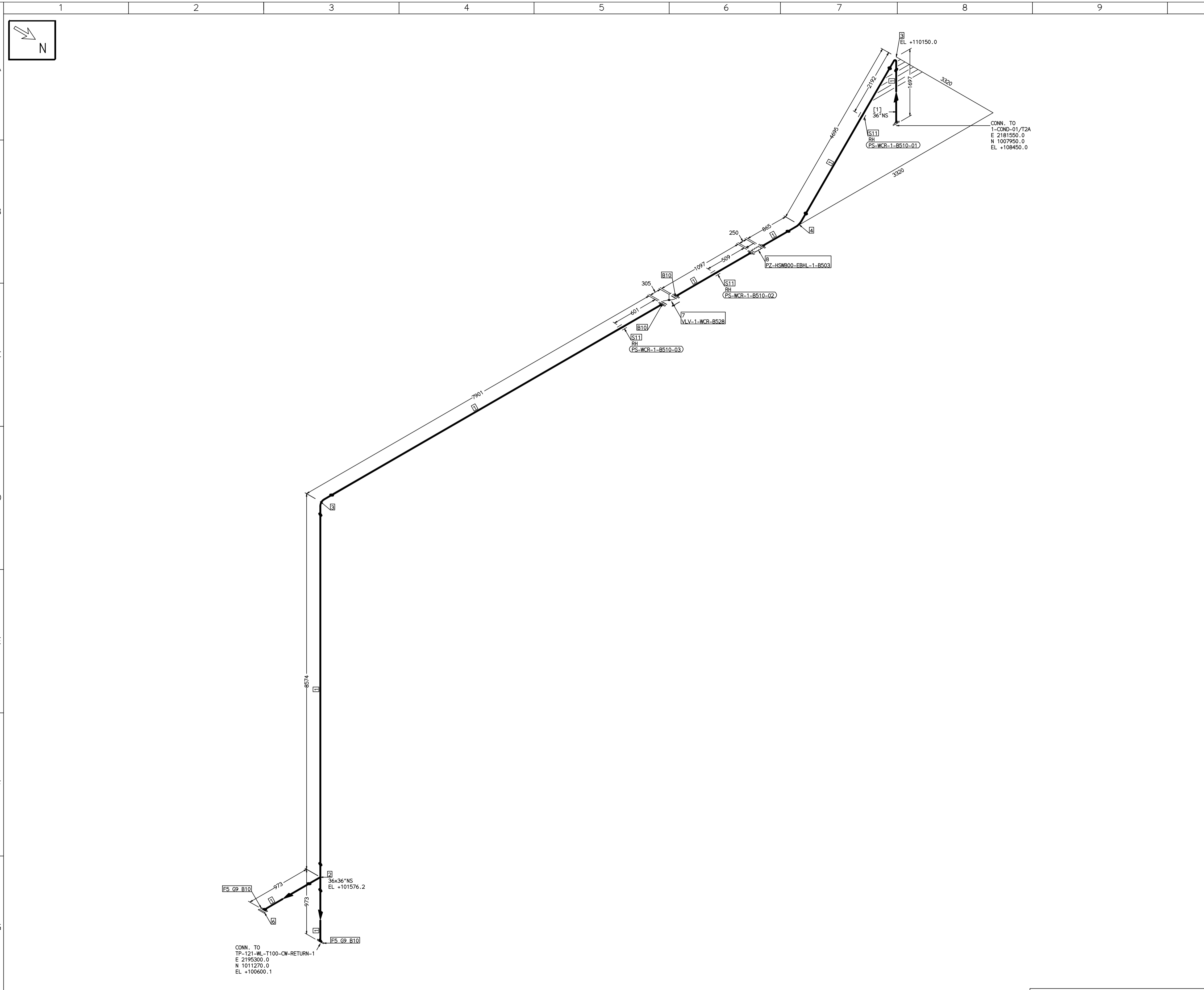
NAME	SIGN	DATE
DRN. PCC	-SD-	05-05-14
CHKD. VJK	-SD-	05-05-14
APPRD. GS	-SD-	05-05-14

SCALE: NTS

TITLE:	DRAWING NO:	REV
1-CW-INLET-2-TO-CONDENSER	1-381-01-06053	OOP
	SHT. No. 1	NO. OF SHTS. 1

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY DETRIMENTAL MANNER TO THE INTEREST OF THE COMPANY

COMPUTER FILE NAME:



FABRICATION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
1	PIPE ERW/SAW IS-3589 PE 30	IS3589RFE3	36	T10			18138MM	222.94	
2	TEE STRT ASME B16.9 BW	A234GRPB	36 x 36	XS		1		731	
3	ELBOW LR 90 DEG ASME B16.9 BW	A234GRPB	36	XS		2		604.34	
4	ELBOW LR 45 DEG ASME B16.9 BW	A234GRPB	36	XS		1		302.17	
5	FLANGE STEEL-RING AWWA C207-D FF	IS2062GRB	36		PN10	2		0	
6	FLANGE BLIND AWWA C207-D FF	IS2062GRB	36		PN10	1		0	
7	BFLY GO AWWA C504 PN10 DFLGD (FF-C207D)	A216GRWCB	36		PN10	1		1200	

ERECTION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
8	RE JOINT PN10 FLDG AWWA (FF-C207D)		36		PN10	1		0	
9	GASKET NAB FLAT RING (FF-C207D)	PTFE	36		PN10	2		0	
10	140 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A194GR2H	1.1/2	M39X170	PN10	680		2.53	
11	RIGID HANGER		36			3		0	

[1]

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 - REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-	

LINE PARAMETERS:-									
LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCR-BHL-1-B510-36-11D								11D-RHP	36"

- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
 - WELD SYMBOL
- A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL - DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

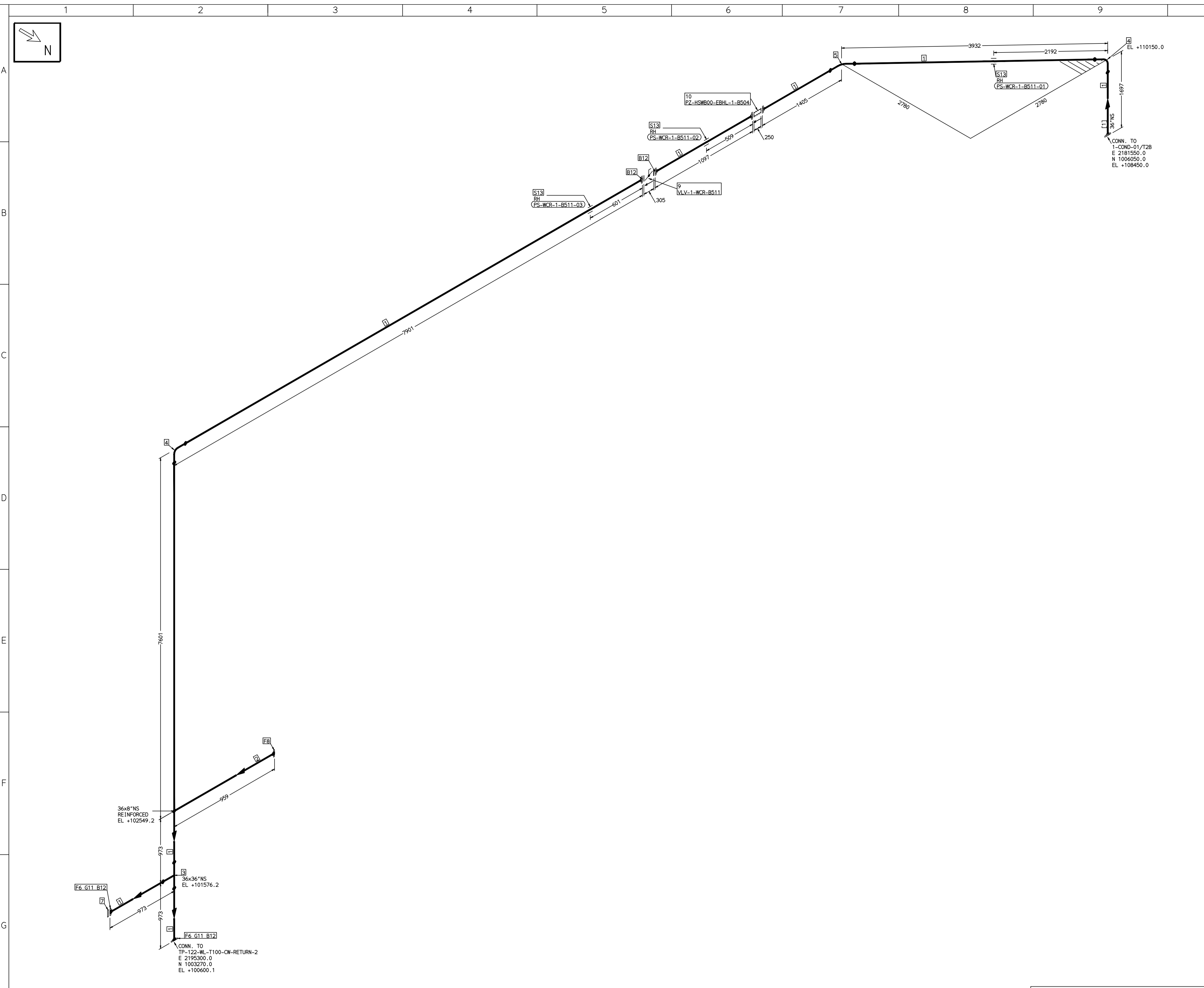
RECORD OF REVISIONS:-					
REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME	SIGN	DATE
	DRN. PCC	-SD-	05-05-14
	CHKD. VJK	-SD-	05-05-14
APPRD. GS	-SD-	05-05-14	
DRAWING NO:		REV	
1-381-01-06054		OOP	
SHT. No. 1	NO. OF SHTS. 1		

PIPE: WCR-BHL-1-B510-36-11D

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COMPUTER FILE NAME:



FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE ERW/SAW IS-3589 PE 30	IS3589RFE3 30	36	T10		17915MM	222.94			
2	PIPE ERW/SAW IS-3589 PE 30	IS3589RFE3 30	8	T6		513MM	31.53			
3	TEE STRT ASME B16.9 BW	A234GRWPB 36 x 36	XS			1	731			
4	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB 36	XS			2	604.34			
5	ELBOW LR 45 DEG ASME B16.9 BW	A234GRWPB 36	XS			1	302.17			
6	FLANGE STEEL-RING ANMA C207-D FF	IS206GRB 36			PN10	2	0			
7	FLANGE BLIND ANMA C207-D FF	IS206GRB 36			PN10	1	0			
8	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105 8			CL150	1	13.7		AA7246101136	
9	BLV GO ANMA C504 PN10 DFLGD (FF-C207D)	A216GRWCB 36			PN10	1	1200			

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
10	RE JOINT PN10 FLDG ANMA (FF-C207D)	PTFE 36				1	0			
11	GASKET NAB FLAT RING (FF-C207D)	PTFE 36			PN10	2	0			
12	140 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	1.1/2	M39X170	PN10	680	2.53			
13	RIGID HANGER		36			3	0			

[1]

- NOTES:-**
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 - ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
 - SUPPORT LOCATIONS ARE SUGGESTIVE. TYPE & LOCATION OF PIPE SUPPORTS TO BE FINALISED AFTER COMPLETION OF STRESS ANALYSIS.
 - PIPE FABRICATOR TO CONFIRM THE VALVE/INSTRUMENT DIMENSIONS BEFORE FABRICATING THE SPOOL PIPE. THE OVERALL LEG LENGTH SHOULD REMAIN AS PER THE ISOMETRIC AFTER ACCOUNTING FOR THE DEVIATIONS IN INLINE COMPONENT DIMENSIONS.
 - DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
 - REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-		LINE PARAMETERS:-									
NO	DESCRIPTION	LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
1		WCR-BHL-1-B511-36-11D								11D-RHP	36"

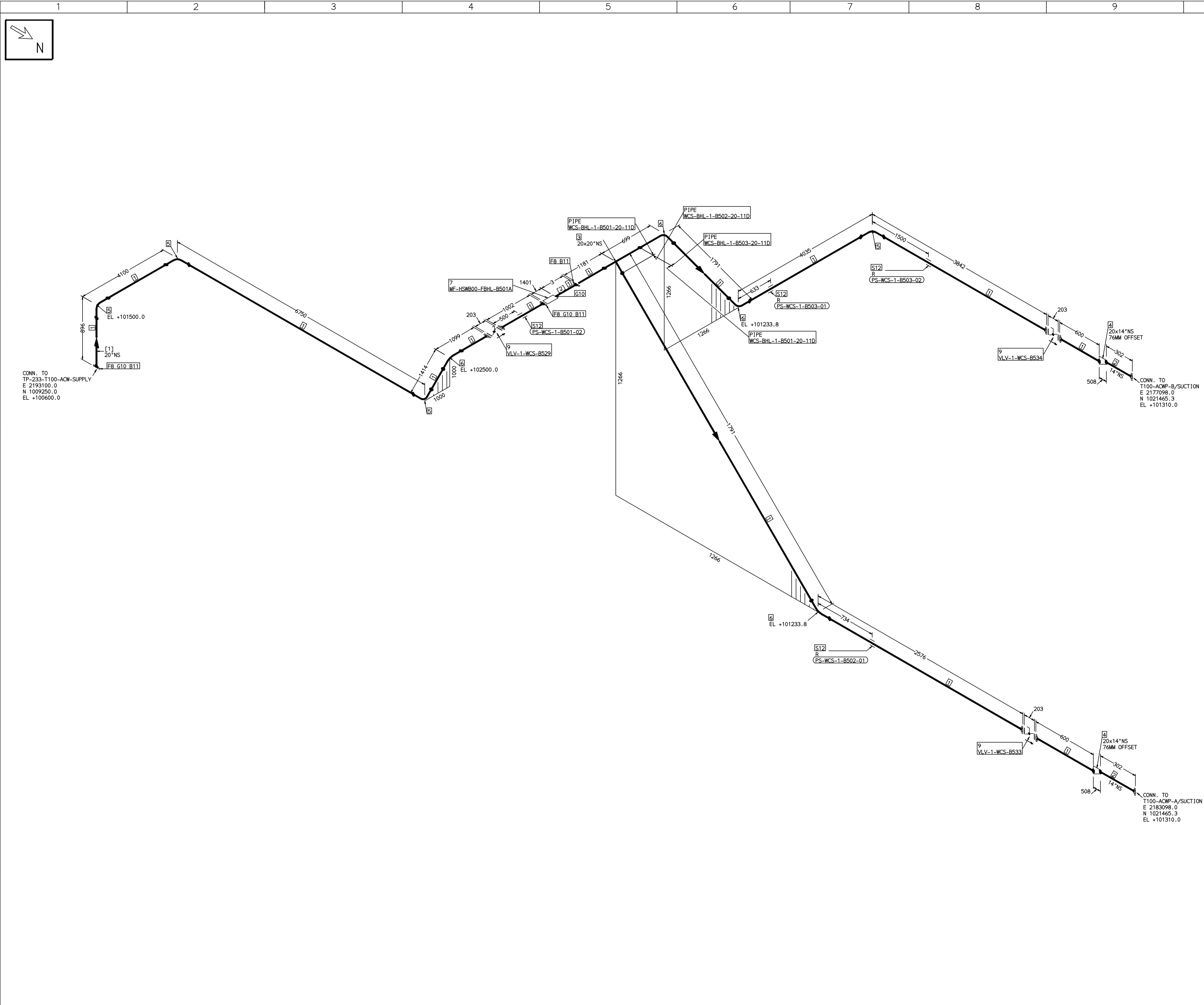
- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
 - WELD SYMBOL
- A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL - REST + DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
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RECORD OF REVISIONS:-					
REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING		NAME DRN. PCC CHKD. VJK APPRD. GS	SIGN -SD- -SD- -SD-	DATE 05-05-14 05-05-14 05-05-14
TITLE: 1-CW-OUTLET-2-FROM-CONDENSER		DRAWING NO: 1-381-01-06055		REV OOP
SHT. No. 1		NO. OF SHTS. 1		

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COMPUTER FILE NAME:



FABRICATION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
1	PIPE ERW/SAW 1S-3589 PE 30	IS3589GRFE3	20	T6		22589MM	74.28		
2	PIPE ERW/SAW 1S-3589 PE 30	IS3589GRFE3	14	T6		600MM	51.73		
3	TEE STRT ASME B16.9 BW	A234GRWPB	20 x 20	S10		1	120	HY7242511445	
4	ROCR ECC ASME B16.9 BW	A234GRWPB	20 x 14	S10XS10		2	50		
5	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	20	S10		4	93.53	HY7242502446	
6	ELBOW LR 45 DEG ASME B16.9 BW	A234GRWPB	20	S10		4	46.765	HY7242566614	
7	PIPING COMPONENT (USER DEFINED) CL150 RF(B16.5)	A234GRWPB	20		CL150	1	0		
8	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	20		CL150	3	75	AA7246101195	
9	BFLV G0 ANMA C504 PN10 DFLGD (FF-C207D)	A216GRWCB	20		PN10	3	330		

ERECTION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
10	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	20		CL150	3	2.87	HY7240362116	
11	170 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	1.1/8	M30X170	CL150	60	1.3	HY7142299037	
12	PIPE REST		20			4	0		

[1] [2]

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PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCS-BHL-1-B501-20-11D									11D-RHP 18"
WCS-BHL-1-B502-20-11D									11D-RHP 18"
WCS-BHL-1-B503-20-11D									11D-RHP 18"

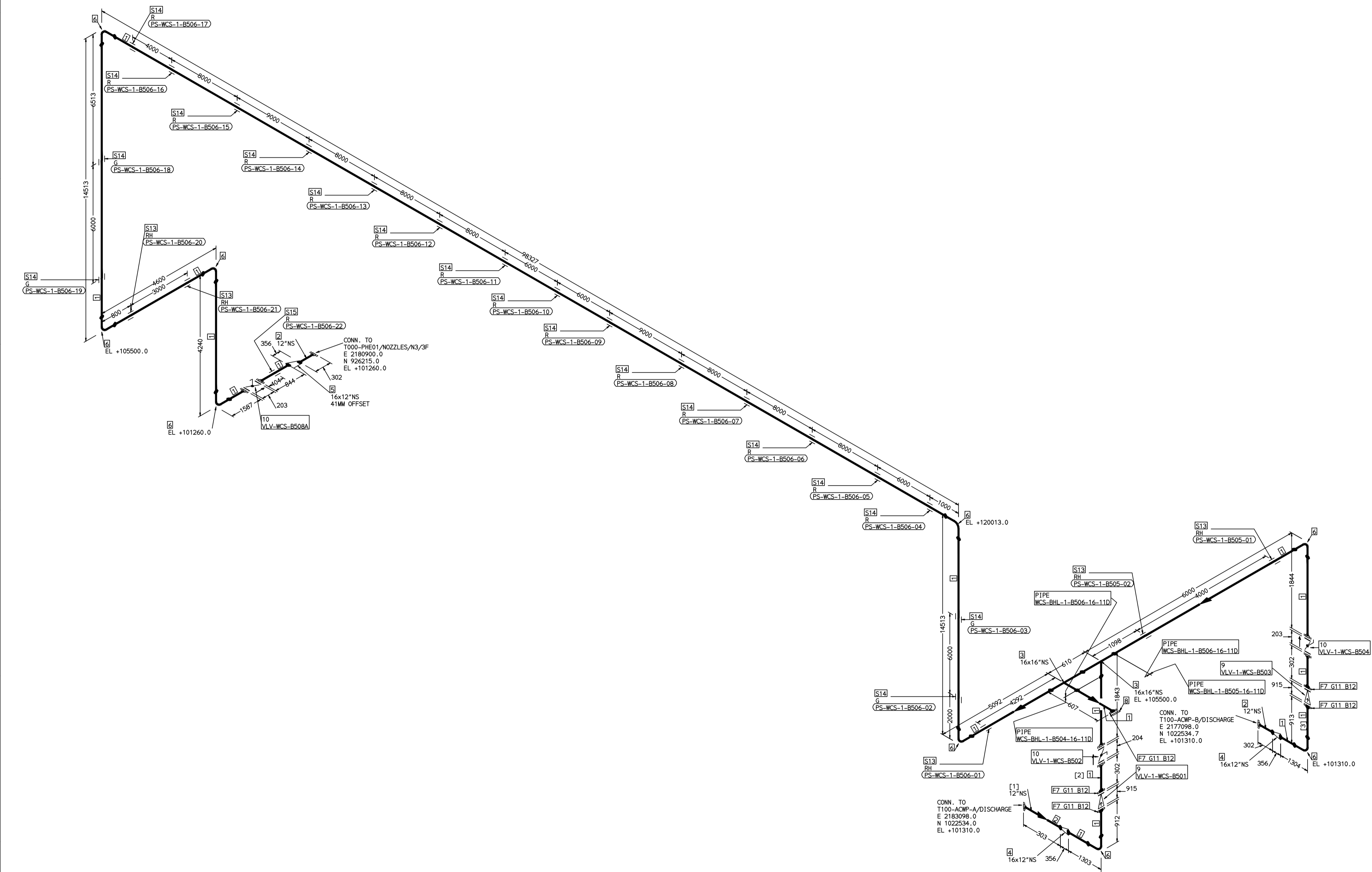
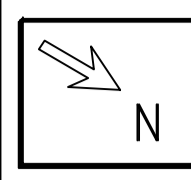
- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
 - WELD SYMBOL
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 - R - REST
 - RG - REST + GUIDE
 - RL - REST + LIMIT STOP
 - RGL - DIRECTION ANCHOR
 - RH - RIGID HANGER
 - SH - SPRING HANGER
 - BS - BOTTOM SPRING
 - VG - VERTICAL GUIDE

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS
REV					
REV					
REV					
REV					

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME	SIGN	DATE
	DRN. PCC	-SD-	05-05-14
	CHKD. VJK	-SD-	05-05-14
	APPRD. GS	-SD-	05-05-14
DRAWING NO: 1-381-01-06056		REV OOP	
SHT. No. 1		NO. OF SHTS. 1	

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FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE ERW/SAW IS-3589 PE	IS3589GRFE3 30	16	T6		144835M	59.25			
2	PIPE ERW/SAW IS-3589 PE	IS3589GRFE3 30	12	T6		M 900MM	47.02			
3	TEE STRT ASME B16.9 BW	A234GRWPB	16 x 16	S10			90.8		HY7242511429	
4	ROCR CONC ASME B16.9 BW	A234GRWPB	16 x 12	S10XS20			22.65		AA7242530636	
5	ROCR ECC ASME B16.9 BW	A234GRWPB	16 x 12	S10XS20			22.65			
6	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	16	S10			59.59		AA7242502420	
7	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	16		CL150		54		AA7246101179	
8	FLANGE BLIND ASME B16.5 CL150 RF	A105	16		CL150		82		HY7246166173	
9	SWING CHECK VALVE ASME B16.10 CL150 RF(B16.5)	A216GRWCB	16		CL150		1123.2			
10	RFLV GO ANNA CS04 FN10 DFLGD (FF-C207D)	A216GRWCB	16		FN10		160			

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
11	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	16		CL150	5	2.1		HY7240362094	
12	140 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	1	M27X140	CL150	80	0.92		HY7142198648	
13	RIGID HANGER		16			5	0			
14	PIPE SUPPORT		16			18	0			
15	PIPE REST		16			1	0			

[1] [2] [3]

- NOTES:-**
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 - REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY	
CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-

WCS-BHL-1-B504-16-11D	11D-RHP	14"
WCS-BHL-1-B506-16-11D	11D-RHP	14"
WCS-BHL-1-B505-16-11D	11D-RHP	14"

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCS-BHL-1-B504-16-11D									14"
WCS-BHL-1-B506-16-11D									14"
WCS-BHL-1-B505-16-11D									14"

- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - ↘ DIRECTION OF SLOPE
 - WELD SYMBOL
- A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL - DIRECTION ANCHOR
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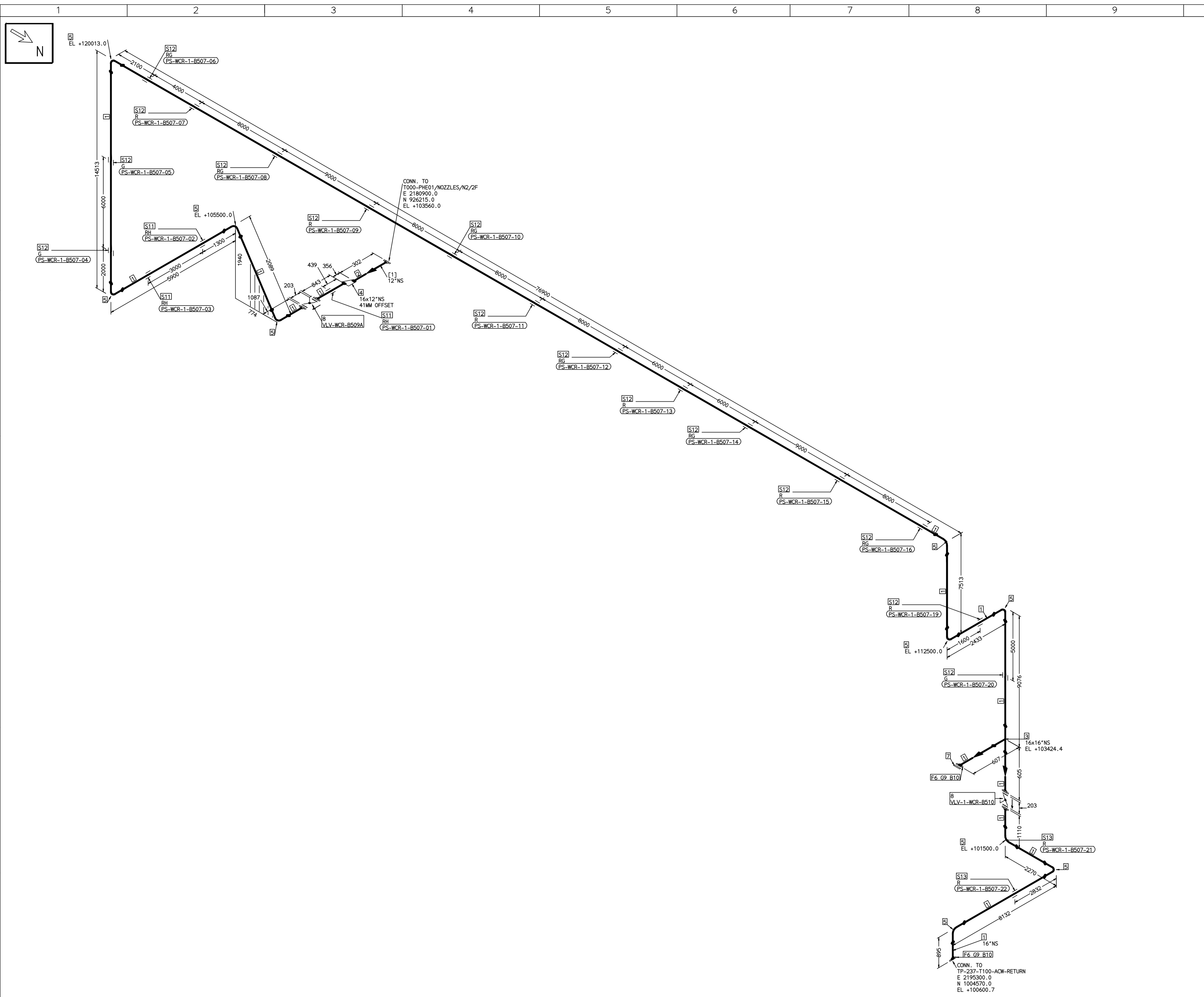
RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME	SIGN	DATE	
	DRN.	PCC	-SD-	05-05-14
	CHKD.	VJK	-SD-	05-05-14
	APPRD.	GS	-SD-	05-05-14
DRAWING NO:		REV		
1-381-01-06057		OOP		
SHT. No. 1	NO. OF SHTS. 1			

COMPUTER FILE NAME:

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FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE ERW/SAW IS-3589 PE 30	IS3589RFE3	16	T6		120854M	59.25			
2	PIPE ERW/SAW IS-3589 PE 30	IS3589RFE3	12	T6		M 300MM	47.02			
3	TEE STRT ASME B16.9 BW	A234GRWPB	16 x 16	S10		1	90.8	HY7242511429		
4	RDCR ECC ASME B16.9 BW	A234GRWPB	16 x 12	S10XS20		1	22.65			
5	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	16	S10		10	59.59	AA7242502420		
6	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	16		CL150	2	54	AA7244101179		
7	FLANGE BLIND ASME B16.5 CL150 RF	A105	16		CL150	1	82	HY7246166173		
8	BFLV GO ANNA CS04 PN10 DFLGD (FF-C207D)	A216GRWCB	16		PN10	2	160			

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
9	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	16		CL150	2	2.1	HY7240362094		
10	140 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	1	M27X140	CL150	32	0.92	HY7142198648		
11	RIGID HANGER		16			3	0			
12	PIPE SUPPORT		16			15	0			
13	PIPE REST		16			2	0			

[1]

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PRELIMINARY - FOR BID PURPOSE ONLY	
CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-	LINE PARAMETERS:-																				
	<table border="1"> <thead> <tr> <th>LINE NUMBER</th> <th>W PR (Kg/cm2)</th> <th>W TEMP (DegC)</th> <th>D PR (Kg/cm2)</th> <th>D TEMP (DegC)</th> <th>HT PR (Kg/cm2)</th> <th>INS THK S(mm)</th> <th>INS MAT</th> <th>PSPEC</th> <th>BORE</th> </tr> </thead> <tbody> <tr> <td>WCR-BHL-1-B507-16-11D</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>11D-RHP</td> <td>14"</td> </tr> </tbody> </table>	LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE	WCR-BHL-1-B507-16-11D								11D-RHP	14"
LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE												
WCR-BHL-1-B507-16-11D								11D-RHP	14"												

- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
 - WELD SYMBOL
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R - REST
RG - REST + GUIDE
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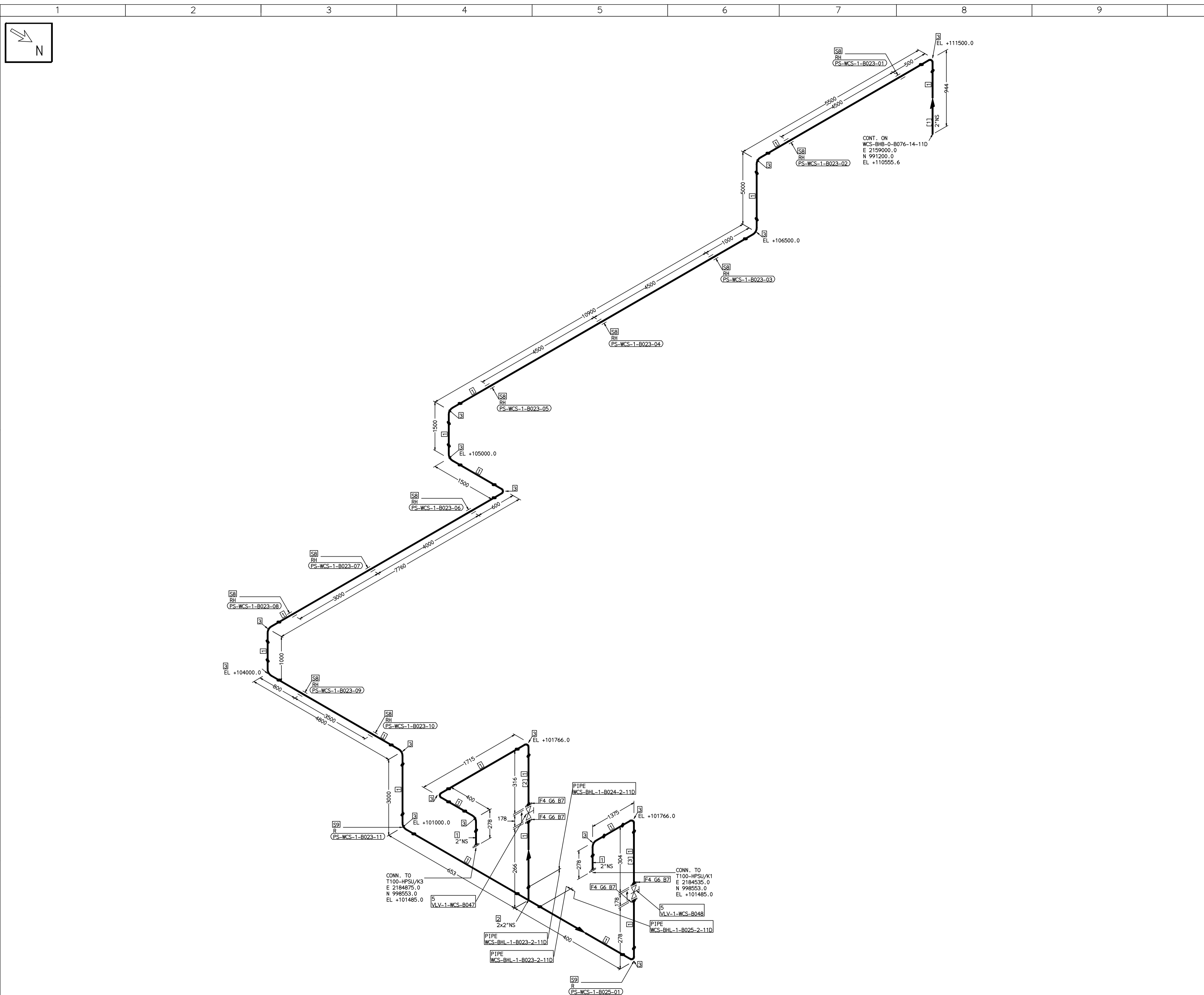
RECORD OF REVISIONS:-					
REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME		SIGN		DATE	
	DRN.	PCC	-SD-		05-05-14	
	CHKD.	VJK	-SD-		05-05-14	
	APPRD.	GS	-SD-		05-05-14	
TITLE: 1-ACW-RETURN-FROM-PHE						
DRAWING NO: 1-381-01-06058		REV OOP		SHT. No. 1 NO. OF SHTS. 1		

COMPUTER FILE NAME:

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COMPUTER FILE NAME:



FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE ERW/SAW 1S-1239 (PART 1) PE K)	IS1239(BLAC K)	2	HVY		45531MM	6.19	AA1011052580		
2	TEE STRT ASME B16.9 BW	A234GRWPB	2 x 2	STD		1	1.3	AA7242511119		
3	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	2	STD		16	0.75	AA7242502110		
4	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	2		CL150	4	2.3	AA7246101063		
5	GATE VALVE HO ASME B16.10 CL150 RF(16.5)	A216GRWCB	2		CL150	2	14.69	AA7521408063		

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
6	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	2		CL150	4	0.11	HY7240362019		
7	90 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X90	CL150	16	0.2	HY7142198052		
8	RIGID HANGER		2			10	0			
9	PIPE REST		2			2	0			

[1] [2] [3]

- NOTES:-**
- ALL DIMENSIONS, ELEVATIONS AND CO-ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
 - ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
 - SUPPORT LOCATIONS ARE SUGGESTIVE. TYPE & LOCATION OF PIPE SUPPORTS TO BE FINALISED AFTER COMPLETION OF STRESS ANALYSIS.
 - PIPE FABRICATOR TO CONFIRM THE VALVE/INSTRUMENT DIMENSIONS BEFORE FABRICATING THE SPOOL PIPE. THE OVERALL LEG LENGTH SHOULD REMAIN AS PER THE ISOMETRIC AFTER ACCOUNTING FOR THE DEVIATIONS IN INLINE COMPONENT DIMENSIONS.
 - DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
 - REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCS-BHL-1-B023-2-11D								11D-RHP	3"
WCS-BHL-1-B024-2-11D								11D-RHP	3"
WCS-BHL-1-B025-2-11D								11D-RHP	3"

- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
 - WELD SYMBOL
 - A - ANCHOR
 - R - REST
 - RG - REST + GUIDE
 - RL - REST + LIMIT STOP
 - RGL - DIRECTION ANCHOR
 - RH - RIGID HANGER
 - SH - SPRING HANGER
 - BS - BOTTOM SPRING
 - VG - VERTICAL GUIDE

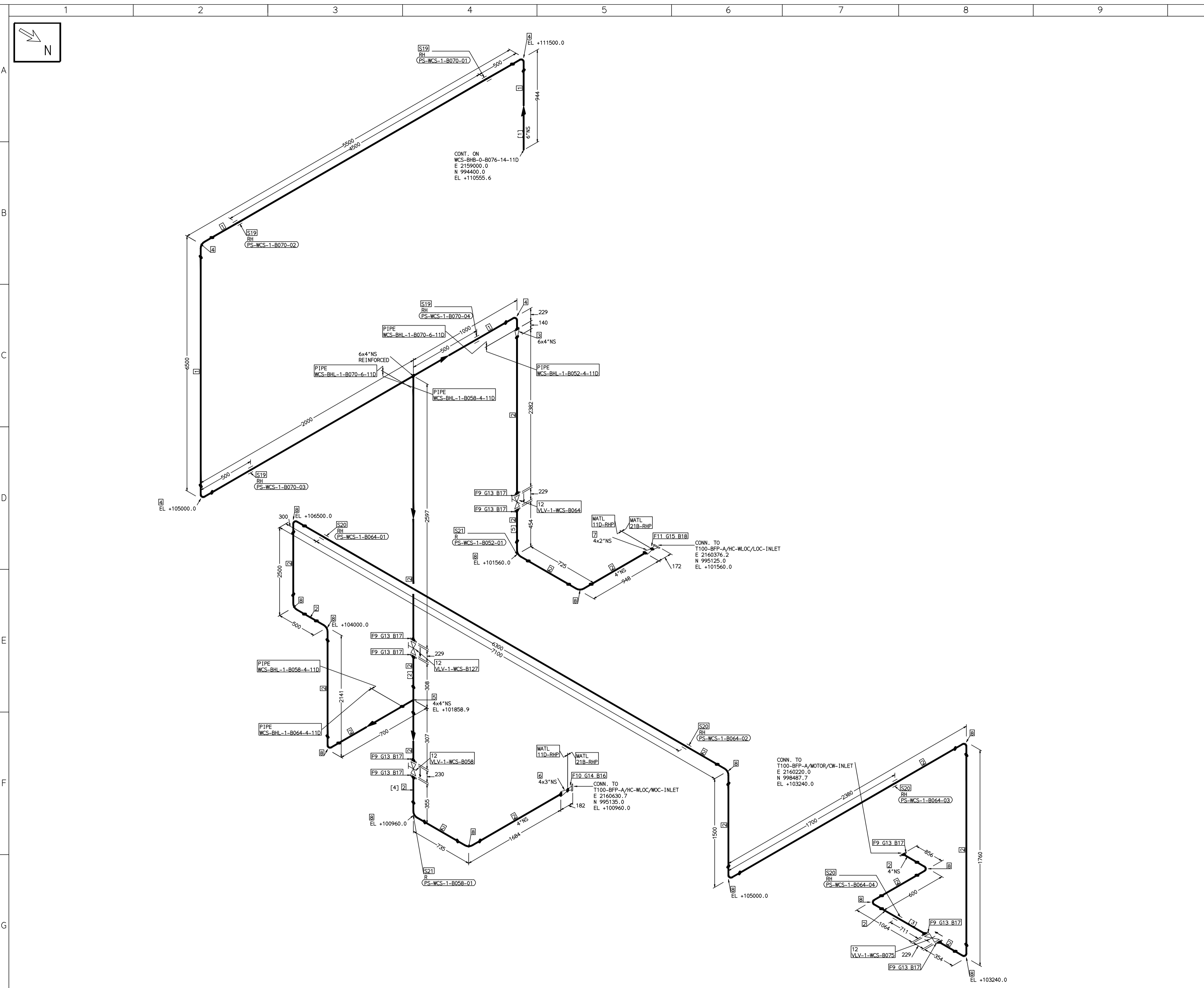
RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME	SIGN	DATE	
	DRN.	PCC	-SD-	05-05-14
	CHKD.	VJK	-SD-	05-05-14
	APPRD.	GS	-SD-	05-05-14
DRAWING NO:		REV		
1-381-01-06061		OOP		
SHT. No. 1	NO. OF SHTS. 1			

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY DETRIMENTAL MANNER TO THE INTEREST OF THE COMPANY

COMPUTER FILE NAME:



FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE ERW/SAW IS-1239 (PART 1) PE K	IS1239(BLAC K)	6	HVY			14341MM	21.3		
2	PIPE ERW/SAW IS-1239 (PART 1) PE K	IS1239(BLAC K)	4	HVY			27297MM	14.5		
3	RDCR CONC ASME B16.9 BW	A234GRWPB	6 x 4	STDSTD		1	3.9		AA7242530350	
4	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	6	STD		4	11.01		AA7242502276	
5	TEE STRT ASME B16.9 BW	A234GRWPB	4 x 4	STD		1	5.3		AA7242511216	
6	RDCR CONC ASME B16.9 BW	A234GRWPB	4 x 3	STDSTD		1	1.6		AA7242530261	
7	RDCR CONC ASME B16.9 BW	A234GRWPB	4 x 2	STDSTD		1	1.6		AA7242530210	
8	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	4	STD		14	4.23		AA7242502217	
9	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	4		CL150	9	5.9		AA7246101101	
10	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	3	S40	CL300	1	7.15		AA7246306080	
11	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	2	S40	CL300	1	3.5		AA7246306064	
12	GATE VALVE HD ASME B16.10 CL150 RF(16.5)	A216GRWCB	4		CL150	4	44.42		AA7521408101	

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
13	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	4		CL150	9	0.32		HY7240362035	
14	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS304+GRAPH	3		CL300	1	0.19		HY7240365050	
15	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS304+GRAPH	2		CL300	1	0.11		HY7240365069	
16	120 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	3/4	M20X120	CL300	8	0.41		HY7142198184	
17	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X100	CL150	72	0.21		HY7142198060	
18	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X100	CL300	8	0.21		HY7142198060	
19	RIGID HANGER		6			4	0			
20	RIGID HANGER		4			4	0			
21	PIPE REST		4			2	0			

[1] [2] [3] [4] [5]

- NOTES:-**
- ALL DIMENSIONS, ELEVATIONS AND CO-ORDINATES ARE IN MM UNLESS OTHERWISE SPECIFIED.
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 - SUPPORT LOCATIONS ARE SUGGESTIVE. TYPE & LOCATION OF PIPE SUPPORTS TO BE FINALISED AFTER COMPLETION OF STRESS ANALYSIS.
 - PIPE FABRICATOR TO CONFIRM THE VALVE/INSTRUMENT DIMENSIONS BEFORE FABRICATING THE SPOOL PIPE. THE OVERALL LEG LENGTH SHOULD REMAIN AS PER THE ISOMETRIC AFTER ACCOUNTING FOR THE DEVIATIONS IN INLINE COMPONENT DIMENSIONS.
 - DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
 - REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

BH&E BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME	SIGN	DATE
	DRN.	PCC	-SD- 05-05-14
	CHKD.	VJK	-SD- 05-05-14
	APPRD.	GS	-SD- 05-05-14

TITLE:	1-CW-SUPPLY-PIPING-BFP-A	DRAWING NO:	1-381-01-06063	REV	OOP
SHT. No.	1	NO. OF SHTS.	1		

REFERENCE DRAWINGS:-

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCS-BHL-1-B070-6-11D								11D-RHP	6"
WCS-BHL-1-B058-4-11D								11D-RHP	4"
WCS-BHL-1-B064-4-11D								11D-RHP	4"
WCS-BHL-1-B052-4-11D								11D-RHP	4"

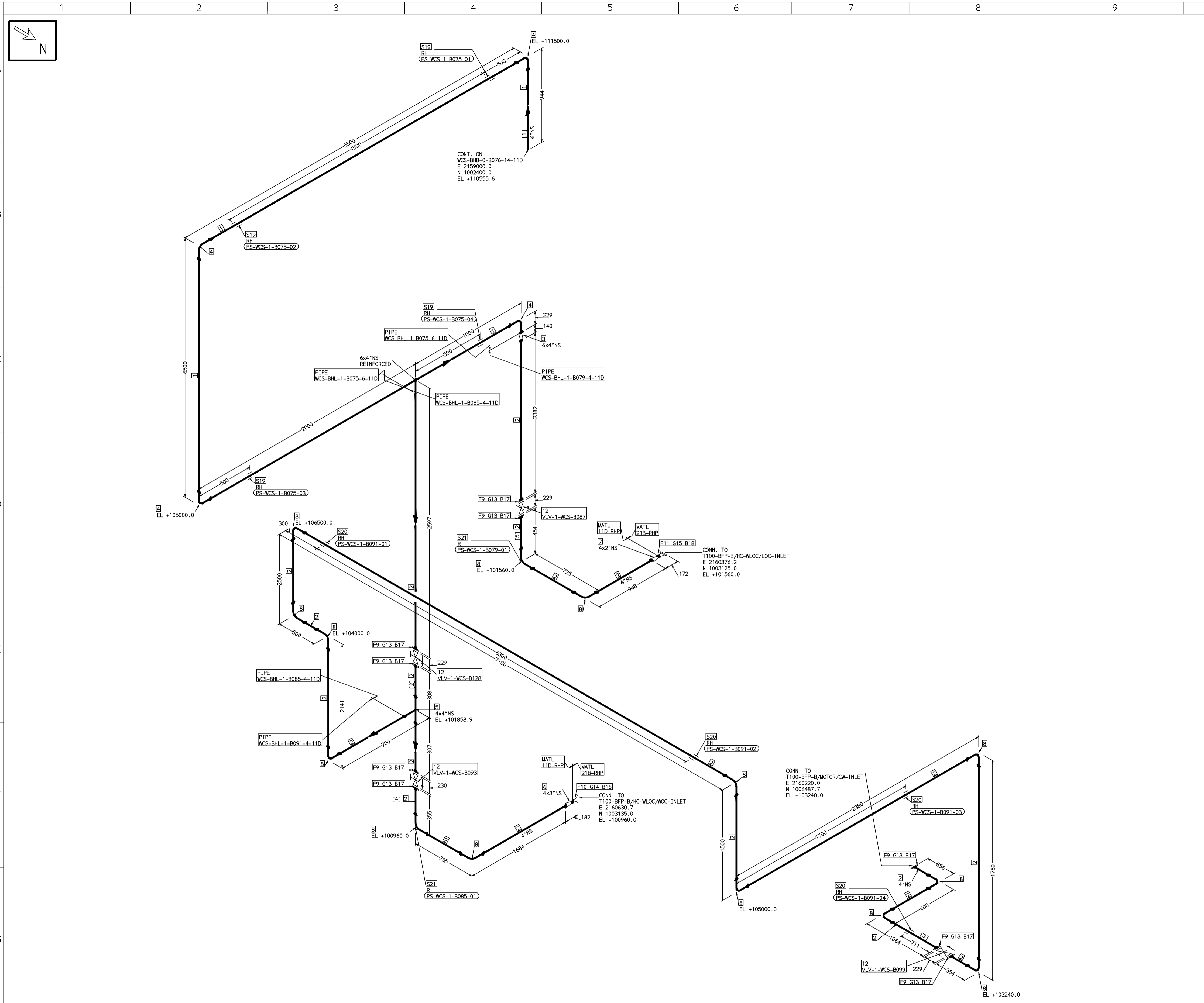
- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - ↘ DIRECTION OF SLOPE
 - WELD SYMBOL
- A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL - DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

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COMPUTER FILE NAME:



FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE ERW/SAW IS-1239 (PART 1) PE K	IS1239(BLAC K)	6	HVY		14341MM	21.3			
2	PIPE ERW/SAW IS-1239 (PART 1) PE K	IS1239(BLAC K)	4	HVY		27297MM	14.5			
3	RDCR CONC ASME B16.9 BW	A234GRWPB	6 x 4	STDSTD		1	3.9	AA7242530350		
4	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	6	STD		4	11.01	AA7242502276		
5	TEE STRT ASME B16.9 BW	A234GRWPB	4 x 4	STD		1	5.3	AA7242511216		
6	RDCR CONC ASME B16.9 BW	A234GRWPB	4 x 3	STDSTD		1	1.6	AA7242530261		
7	RDCR CONC ASME B16.9 BW	A234GRWPB	4 x 2	STDSTD		1	1.6	AA7242530210		
8	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	4	STD		14	4.23	AA7242502217		
9	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	3	S40	CL150	9	5.9	AA7246101101		
10	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	2	S40	CL300	1	7.15	AA7246306080		
11	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	2	S40	CL300	1	3.5	AA7246306064		
12	GATE VALVE HD ASME B16.10 CL150 RF(16.5)	A216GRWCB	4		CL150	4	44.42	AA7521408101		

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
13	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	4		CL150	9	0.32	HY7240362035		
14	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS304+GRAPH	3		CL300	1	0.19	HY7240365050		
15	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS304+GRAPH	2		CL300	1	0.11	HY7240365069		
16	120 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	3/4	M20X120	CL300	8	0.41	HY7142198184		
17	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X100	CL150	72	0.21	HY7142198060		
18	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X100	CL300	8	0.21	HY7142198060		
19	RIGID HANGER		6			4	0			
20	RIGID HANGER		4			4	0			
21	PIPE REST		4			2	0			

[1] [2] [3] [4] [5]

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PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCS-BHL-1-B075-6-11D								11D-RHP	6"
WCS-BHL-1-B085-4-11D								11D-RHP	4"
WCS-BHL-1-B091-4-11D								11D-RHP	4"
WCS-BHL-1-B079-4-11D								11D-RHP	4"

- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - ↘ DIRECTION OF SLOPE
 - WELD SYMBOL
 - A - ANCHOR
 - R - REST
 - RG - REST + GUIDE
 - RL - REST + LIMIT STOP
 - RGL - DIRECTION ANCHOR
 - RH - RIGID HANGER
 - SH - SPRING HANGER
 - BS - BOTTOM SPRING
 - VG - VERTICAL GUIDE

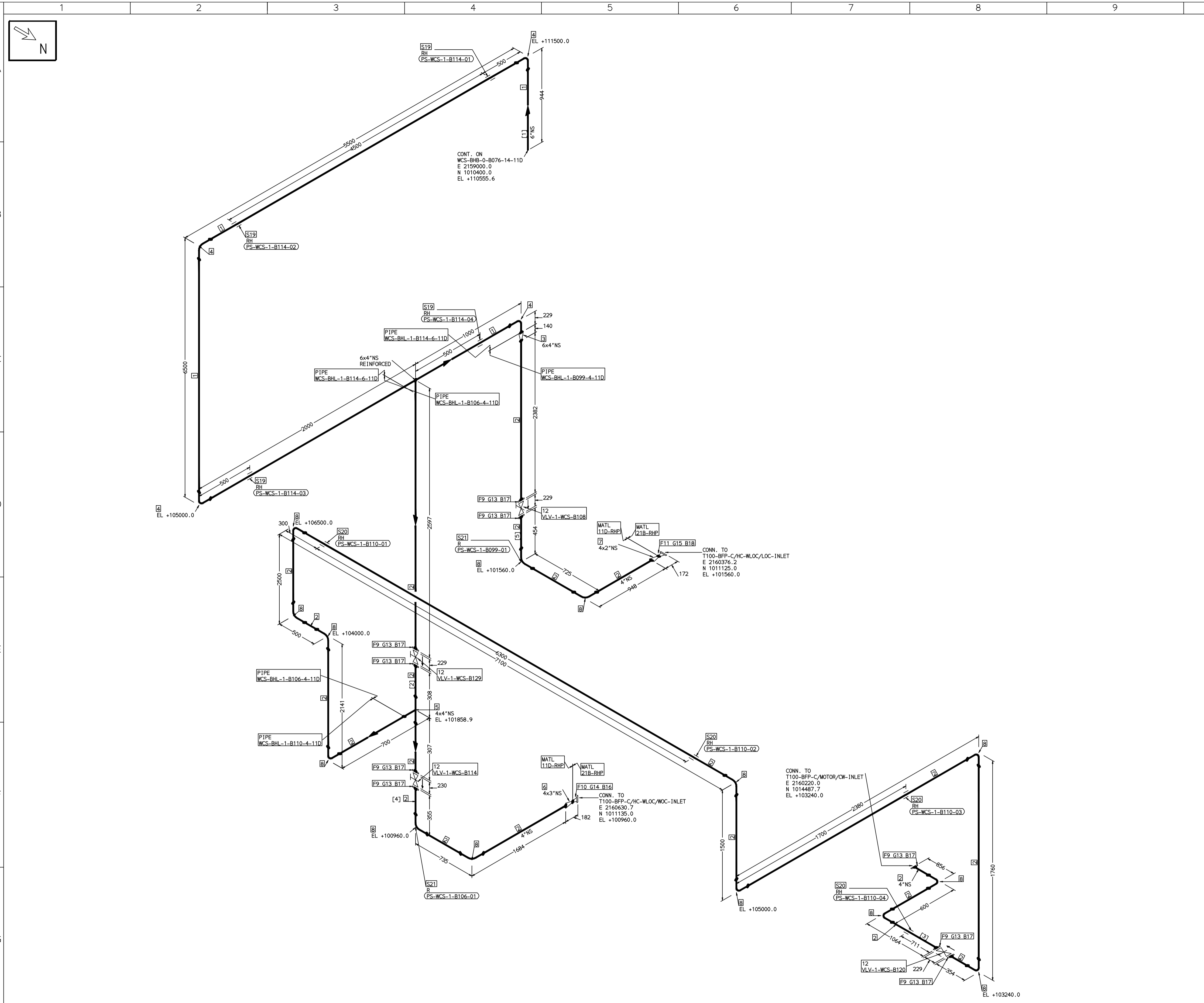
RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME	SIGN	DATE
	DRN. PCC	-SD-	05-05-14
	CHKD. VJK	-SD-	05-05-14
	APPRD. GS	-SD-	05-05-14
DRAWING NO: 1-381-01-06064			REV OOP
SHT. No. 1	NO. OF SHTS. 1		

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COMPUTER FILE NAME:



FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE ERW/SAW IS-1239 (PART 1) PE K	IS1239(BLAC K)	6	HVY			14341MM	21.3		
2	PIPE ERW/SAW IS-1239 (PART 1) PE K	IS1239(BLAC K)	4	HVY			27297MM	14.5		
3	RDCR CONC ASME B16.9 BW	A234GRWPB	6 x 4	STDSTD		1	3.9		AA7242530350	
4	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	6	STD		4	11.01		AA7242502276	
5	TEE STRT ASME B16.9 BW	A234GRWPB	4 x 4	STD		1	5.3		AA7242511216	
6	RDCR CONC ASME B16.9 BW	A234GRWPB	4 x 3	STDSTD		1	1.6		AA7242530261	
7	RDCR CONC ASME B16.9 BW	A234GRWPB	4 x 2	STDSTD		1	1.6		AA7242530210	
8	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	4	STD		14	4.23		AA7242502217	
9	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	4		CL150	9	5.9		AA7246101101	
10	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	3	S40	CL300	1	7.15		AA7246306080	
11	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	2	S40	CL300	1	3.5		AA7246306064	
12	GATE VALVE HD ASME B16.10 CL150 RF(16.5)	A216GRWCB	4		CL150	4	44.42		AA7521408101	

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
13	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	4		CL150	9	0.32		HY7240362035	
14	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS304+GRAPH	3		CL300	1	0.19		HY7240365050	
15	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS304+GRAPH	2		CL300	1	0.11		HY7240365069	
16	120 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	3/4	M20X120	CL300	8	0.41		HY7142198184	
17	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X100	CL150	72	0.21		HY7142198060	
18	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X100	CL300	8	0.21		HY7142198060	
19	RIGID HANGER		6			4	0			
20	RIGID HANGER		4			4	0			
21	PIPE REST		4			2	0			

[1] [2] [3] [4] [5]

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PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCS-BHL-1-B114-6-11D								11D-RHP	6"
WCS-BHL-1-B106-4-11D								11D-RHP	4"
WCS-BHL-1-B110-4-11D								11D-RHP	4"
WCS-BHL-1-B099-4-11D								11D-RHP	4"

- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - ↘ DIRECTION OF SLOPE
 - WELD SYMBOL
 - A - ANCHOR
 - R - REST
 - RG - REST + GUIDE
 - RL - REST + LIMIT STOP
 - RGL - DIRECTION ANCHOR
 - RH - RIGID HANGER
 - SH - SPRING HANGER
 - BS - BOTTOM SPRING
 - VG - VERTICAL GUIDE

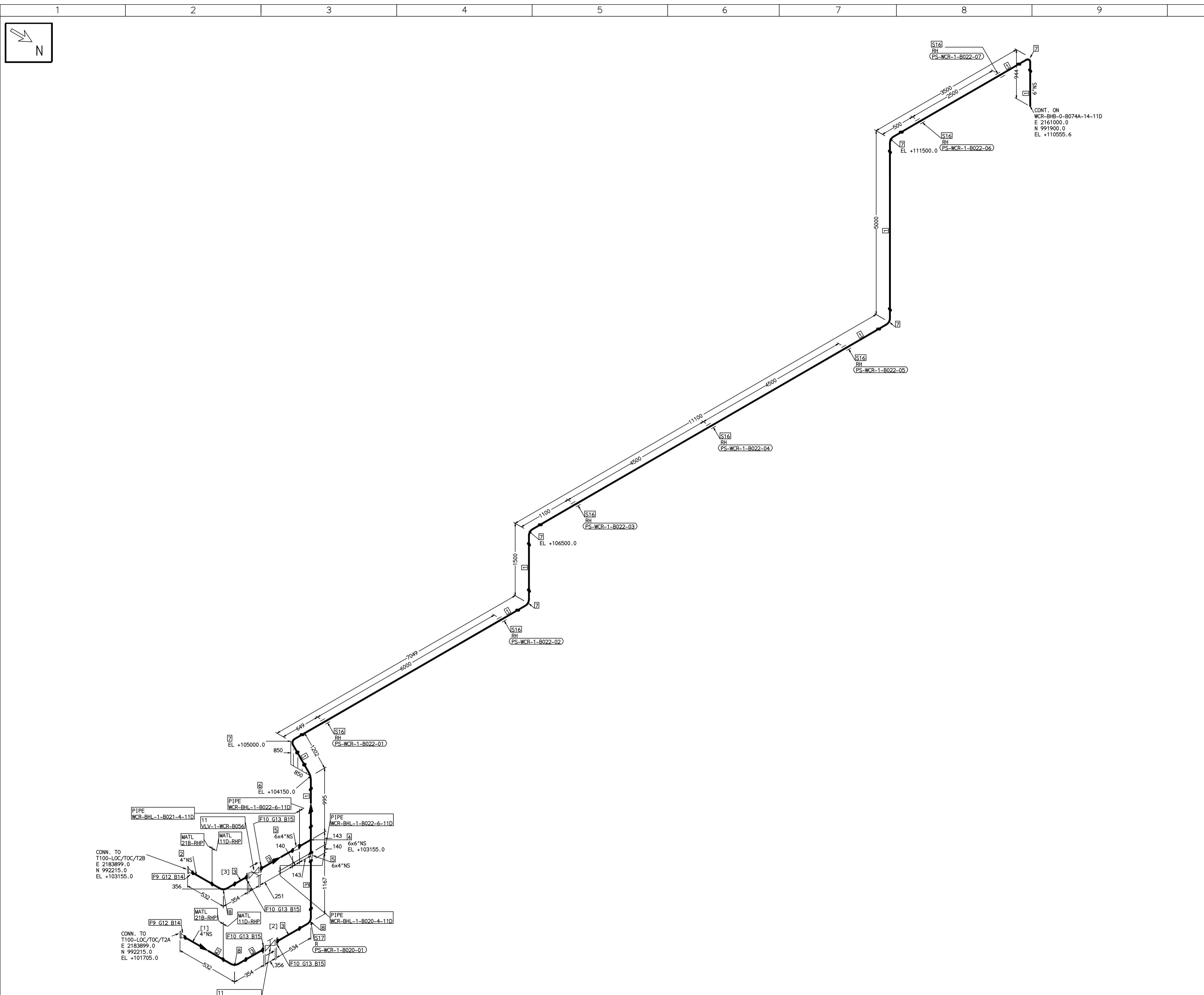
RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME	SIGN	DATE	
	DRN.	PCC	-SD-	05-05-14
	CHKD.	VJK	-SD-	05-05-14
	APPRD.	GS	-SD-	05-05-14
DRAWING NO:		REV		
1-381-01-06065		OOP		
SHT. No. 1	NO. OF SHTS. 1			

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY DETRIMENTAL MANNER TO THE INTEREST OF THE COMPANY

COMPUTER FILE NAME:



FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE ERW/SAW IS-1239 (PART 1) PE K)	IS1239(BLAC K)	6	HVY		28209MM	21.3			
2	PIPE SMLS ASME B36.10 PE	A106GRB	4	S40		588MM	16.08	AA1049355415		
3	PIPE ERW/SAW IS-1239 (PART 1) PE K)	IS1239(BLAC K)	4	HVY		204MM	14.5			
4	TEE STRT ASME B16.9 BW	A234GRWPB	6 x 6	STD		1	11	AA7242511275		
5	REDR CONC ASME B16.9 BW	A234GRWPB	6 x 4	STD&STD		2	3.9	AA7242530350		
6	ELBOW LR 45 DEG ASME B16.9 BW	A234GRWPB	6	STD		1	5.505	HY7242564568		
7	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	6	STD		6	11.01	AA7242502276		
8	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	4	STD		3	4.23	AA7242502276		
9	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	4	S40	CL300	2	11.65	AA7246306102		
10	FLANGE SLIP-ON ASME B16.5 CL300 RF	A105	4		CL300	4	10	AA7246106103		
11	GLOBE VALVE HO ASME B16.10 CL300	A216GRWCB	4		CL300	2	86.36	AA7501428107		

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
12	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS304+GRAPH	4		CL300	2	0.32	HY7240365077		
13	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL300 RF	SS304+PTFE	4		CL300	4	0.32	HY7240363074		
14	120 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	3/4	M20X120	CL300	16	0.41	HY7142198184		
15	120 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	3/4	M20X120	CL300	32	0.41	HY7142198184		
16	RIGID HANGER		6			7	0			
17	PIPE REST		4			1	0			

[1] [2] [3]

- NOTES:-**
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 - ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
 - SUPPORT LOCATIONS ARE SUGGESTIVE. TYPE & LOCATION OF PIPE SUPPORTS TO BE FINALISED AFTER COMPLETION OF STRESS ANALYSIS.
 - PIPE FABRICATOR TO CONFIRM THE VALVE/INSTRUMENT DIMENSIONS BEFORE FABRICATING THE SPOOL PIPE. THE OVERALL LEG LENGTH SHOULD REMAIN AS PER THE ISOMETRIC AFTER ACCOUNTING FOR THE DEVIATIONS IN INLINE COMPONENT DIMENSIONS.
 - DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
 - REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

BHARAT HEAVY ELECTRICALS LTD		PROJECT ENGINEERING & SYSTEMS DIVISION		R.C.PURAM, HYDERABAD-502032.	
DRN.	PCC	-SD-	05-05-14	NAME	SIGN
CHKD.	VJK	-SD-	05-05-14	APPRD.	GS
PE&SD LAYOUTS & PIPING ENGINEERING			SCALE: NTS		

TITLE:	1-CW-RETURN-FROM-OIL-COOLERS	DRAWING NO:	1-381-01-06066	REV	OOP
SHT. No. 1		NO. OF SHTS.		1	

REFERENCE DRAWINGS:-

WCR-BHL-1-8020-4-11D	11D-RHP	4"
WCR-BHL-1-8022-6-11D	11D-RHP	4"
WCR-BHL-1-8021-4-11D	11D-RHP	4"

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCR-BHL-1-8020-4-11D								11D-RHP	4"
WCR-BHL-1-8022-6-11D								11D-RHP	4"
WCR-BHL-1-8021-4-11D								11D-RHP	4"

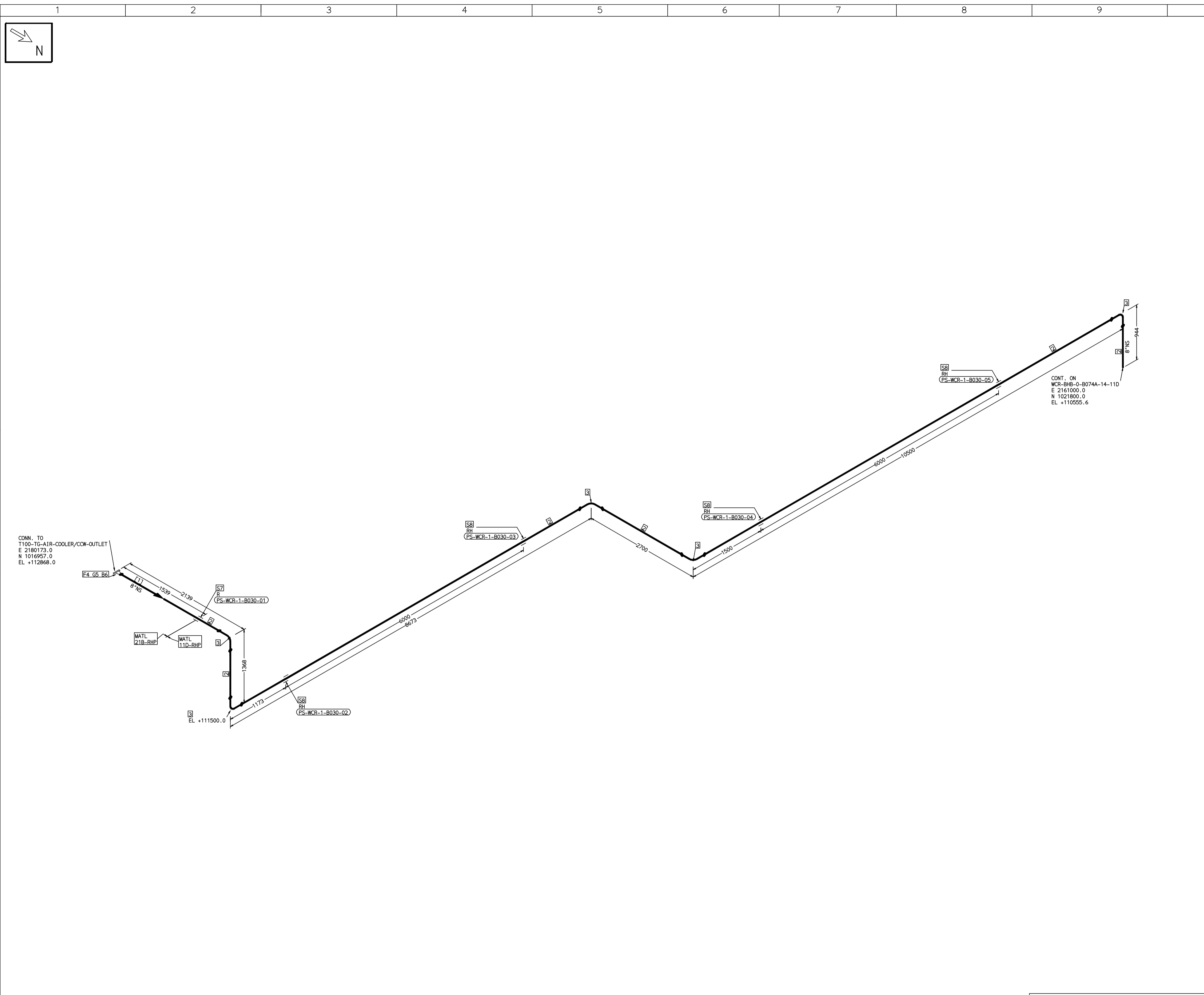
- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
 - WELD SYMBOL
- A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL - DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY DETRIMENTAL MANNER TO THE INTEREST OF THE COMPANY

COMPUTER FILE NAME:



FABRICATION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
1	PIPE SMLS ASME B36.10 PE	A106GRB	8	S40			142.55	AA1049355580	
2	PIPE ERW/SAM 15-3589 PE	153589RFE3	8	T6			217.53		
3	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	8	S20		5	16.99	AA7242502314	
4	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	8	S40	CL300	1	30.61	HY7246306820	

ERECTION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
5	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS304+GRAPH	8		CL300	1	0.73	HY7240365093	
6	150 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	7/8	M24X150	CL300	12	0.69	HY7142198494	
7	PIPE REST		8			1	0		
8	RIGID HANGER		8			4	0		

[1]

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 - SUPPORT LOCATIONS ARE SUGGESTIVE. TYPE & LOCATION OF PIPE SUPPORTS TO BE FINALISED AFTER COMPLETION OF STRESS ANALYSIS.
 - PIPE FABRICATOR TO CONFIRM THE VALVE/INSTRUMENT DIMENSIONS BEFORE FABRICATING THE SPOOL PIPE. THE OVERALL LEG LENGTH SHOULD REMAIN AS PER THE ISOMETRIC AFTER ACCOUNTING FOR THE DEVIATIONS IN INLINE COMPONENT DIMENSIONS.
 - DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
 - REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCR-BHL-1-B030-8-11D								11D-RHP	8"

- LEGEND:-**
- ANCHOR
 - REST
 - REST + GUIDE
 - REST + LIMIT STOP
 - DIRECTION ANCHOR
 - RIGID HANGER
 - SPRING HANGER
 - BOTTOM SPRING
 - VERTICAL GUIDE

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

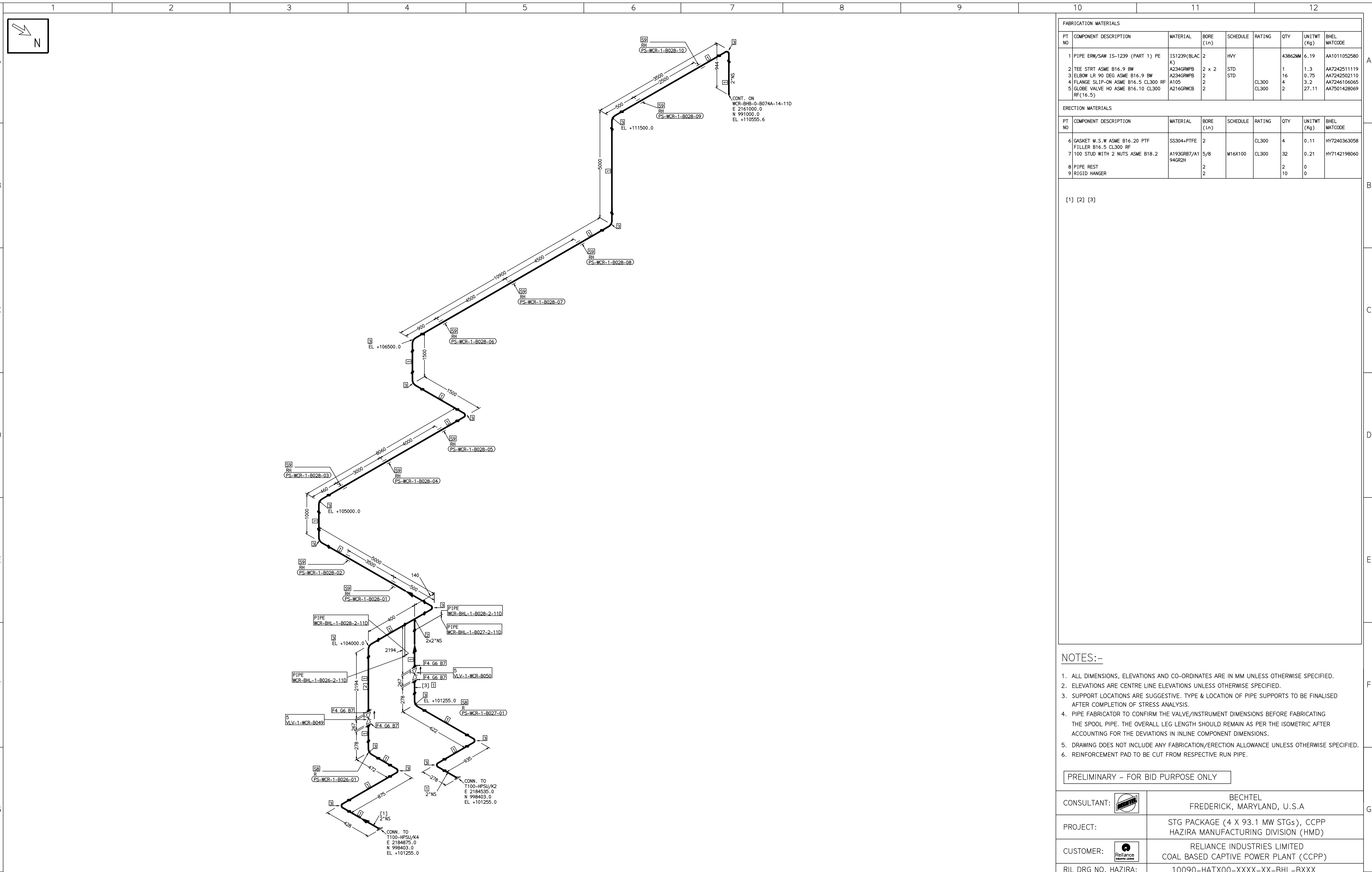
NAME	SIGN	DATE
DRN. PCC	-SD-	05-05-14
CHKD. VJK	-SD-	05-05-14
APPRD. GS	-SD-	05-05-14

SCALE: NTS

TITLE:	DRAWING NO:	REV
1-CW-RETURN-PIPING-TGAC	1-381-01-06067	OOP
	SHT. No. 1	NO. OF SHTS. 1

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY DETRIMENTAL MANNER TO THE INTEREST OF THE COMPANY

COMPUTER FILE NAME:



FABRICATION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
1	PIPE ERW/SAW 1S-1239 (PART 1) PE K)	IS1239(BLAC	2	HVY		43862MM	6.19	AA1011052580	
2	TEE STRT ASME B16.9 BW	A234GRWP	2 x 2	STD		1	1.3	AA7242511119	
3	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWP	2	STD		16	0.75	AA7242502110	
4	FLANGE SLIP-ON ASME B16.5 CL300 RF	A105	2		CL300	4	3.2	AA7246106065	
5	GLOBE VALVE HO ASME B16.10 CL300 RF(16.5)	A216GRWCB	2		CL300	2	27.11	AA7501428069	

ERECTION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (In)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
6	GASKET M.S.W ASME B16.20 PTF FILLER B16.5 CL300 RF	SS304+PTFE	2		CL300	4	0.11	HY7240363058	
7	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X100	CL300	32	0.21	HY7142198060	
8	PIPE REST		2			2	0		
9	RIGID HANGER		2			10	0		

[1] [2] [3]

NOTES:-

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- PIPE FABRICATOR TO CONFIRM THE VALVE/INSTRUMENT DIMENSIONS BEFORE FABRICATING THE SPOOL PIPE. THE OVERALL LEG LENGTH SHOULD REMAIN AS PER THE ISOMETRIC AFTER ACCOUNTING FOR THE DEVIATIONS IN INLINE COMPONENT DIMENSIONS.
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- REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCR-BHL-1-B026-2-11D								11D-RHP	3"
WCR-BHL-1-B028-2-11D								11D-RHP	3"
WCR-BHL-1-B027-2-11D								11D-RHP	3"

LEGEND:-

- SUPPORT LOCATION
- DIRECTION OF FLOW
- DIRECTION OF SLOPE
- WELD SYMBOL
- A - ANCHOR
- R - REST
- RG - REST + GUIDE
- RL - REST + LIMIT STOP
- RGL - DIRECTION ANCHOR
- RH - RIGID HANGER
- SH - SPRING HANGER
- BS - BOTTOM SPRING
- VG - VERTICAL GUIDE

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

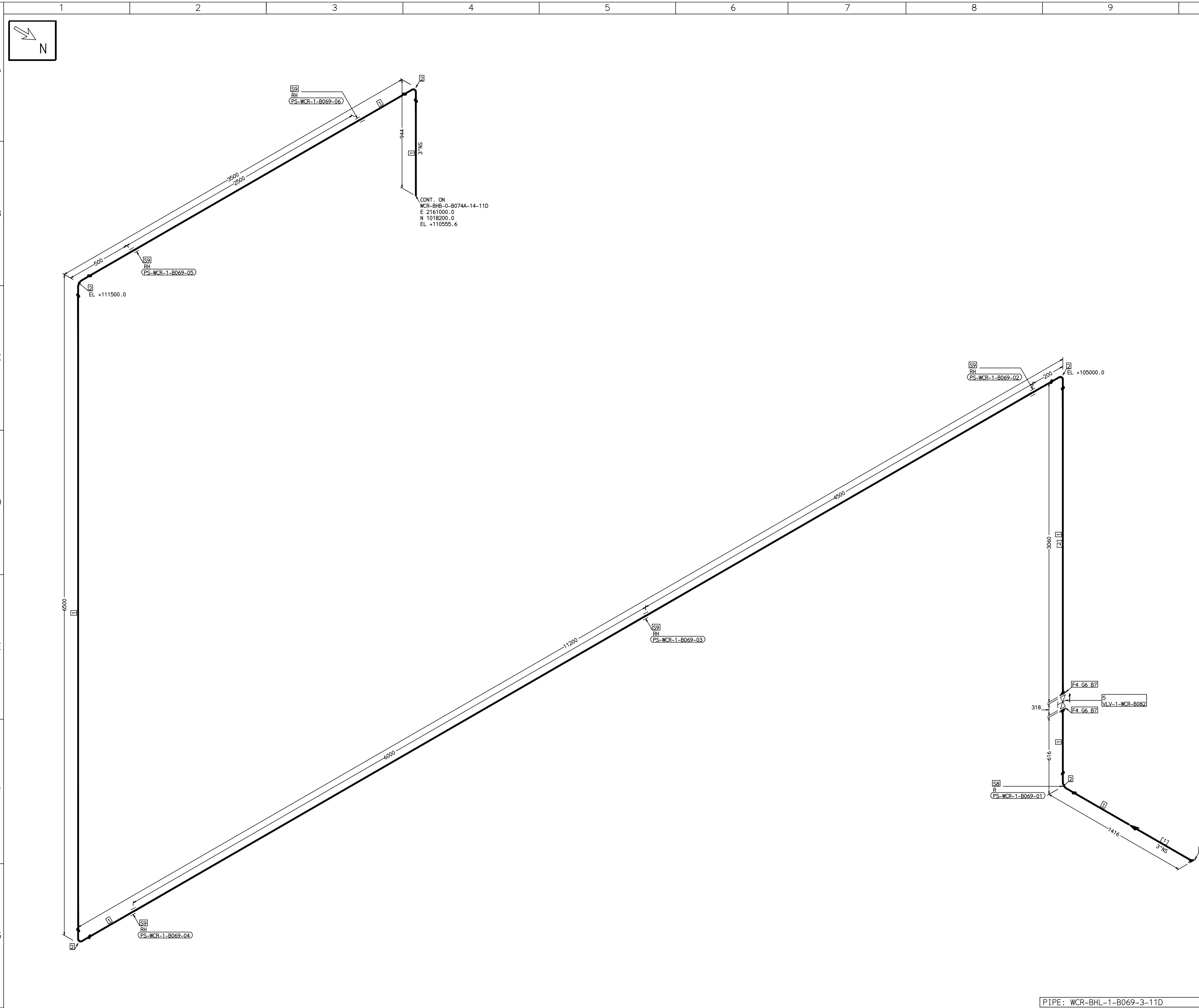
NAME	SIGN	DATE
DRN. PCC	-SD-	05-05-14
CHKD. VJK	-SD-	05-05-14
APPRD. GS	-SD-	05-05-14

SCALE: NTS

TITLE:	DRAWING NO:	REV
1-CW-RETURN-FROM-HPSU-COOLERS	1-381-01-06068	OOP
SHT. No. 1	NO. OF SHTS.	1

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COMPUTER FILE NAME:



FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE ERW/SAW 1S-1239 (PART 1) PE K)	IS1239(BLAC	3	HVY		26090MM	9.9	AA1011052601		
2	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	3	STD		5	2.3	AA7242502160		
3	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	3		CL150	1	3.7	AA7246101080		
4	FLANGE SLIP-ON ASME B16.5 CL300 RF	A105	3		CL300	2	5.9	AA7246106081		
5	GLOBE VALVE HO ASME B16.10 CL300 RF(16.5)	A216GRWCB	3		CL300	1	52.29	AA7501428085		

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
6	GASKET M.S.W ASME B16.20 PTF FILLER B16.5 CL300 RF	SS304+PTFE	3		CL300	2	0.19	HY7240363066		
7	120 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	3/4	M20X120	CL300	16	0.41	HY7142198184		
8	PIPE REST		3			1	0			
9	RIGID HANGER		3			5	0			

[1] [2]

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 - REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCR-BHL-1-B069-3-11D								11D-RHP	

- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
 - WELD SYMBOL
- A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL - DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

RECORD OF REVISIONS:-

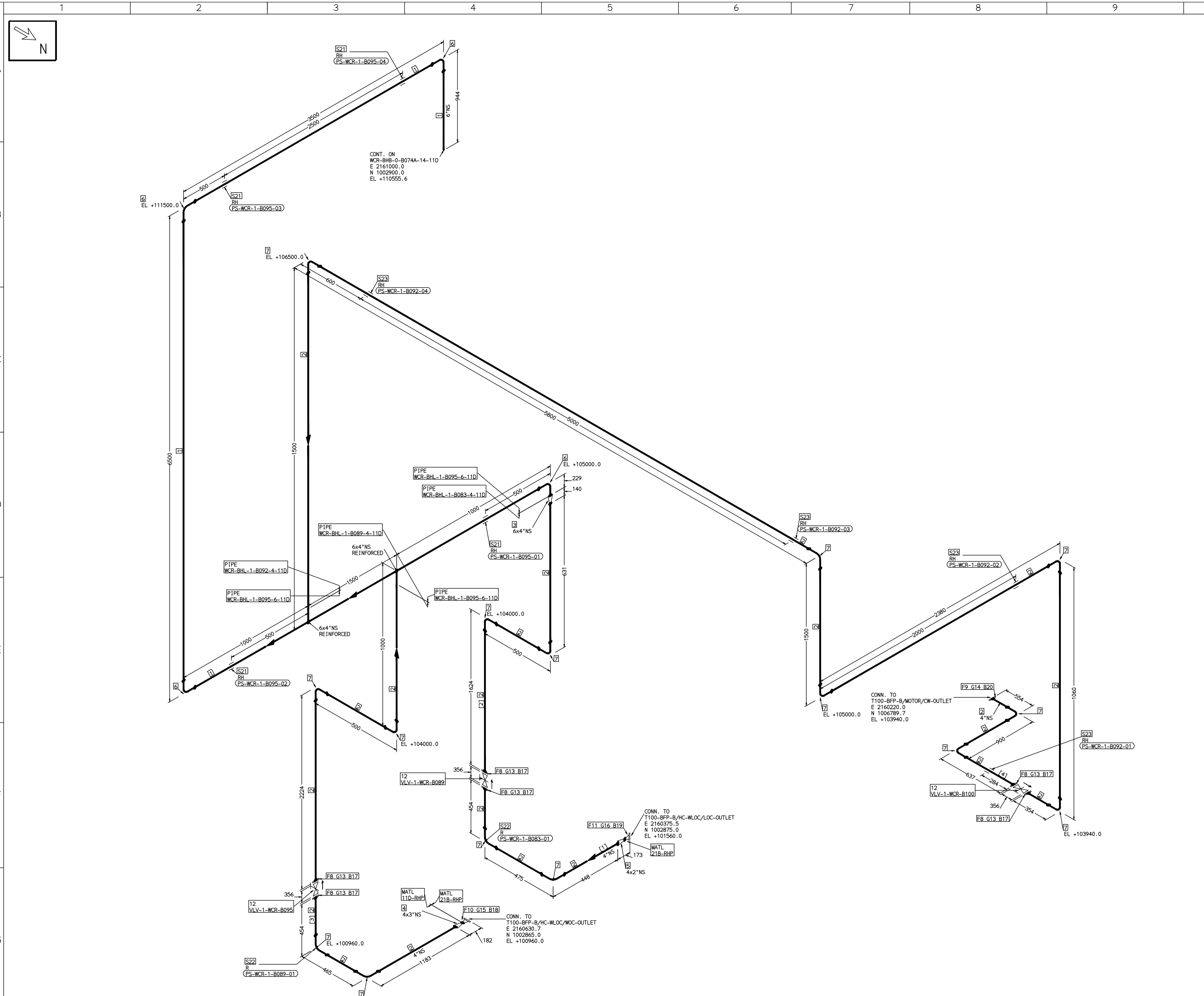
REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME	SIGN	DATE	
	DRN.	PCC	-SD-	05-05-14
	CHKD.	VJK	-SD-	05-05-14
	APPRD.	GS	-SD-	05-05-14
DRAWING NO:		REV		
1-381-01-06069		OOP		
SHT. No. 1	NO. OF SHTS. 1			

TITLE: 1-CW-RETURN-FROM-SWAS-PANEL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY DETRIMENTAL MANNER TO THE INTEREST OF THE COMPANY

COMPUTER FILE NAME:



FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE ERW/SAW IS-1239 (PART 1) PE K)	IS1239(BLAC K)	6	HVY			12841MM	21.3		
2	PIPE ERW/SAW IS-1239 (PART 1) PE K)	IS1239(BLAC K)	4	HVY			19945MM	14.5		
3	RDCR CONC ASME B16.9 BW	A234GRWPB	6 x 4	STDSTD		1	3.9	AA7242530350		
4	RDCR CONC ASME B16.9 BW	A234GRWPB	4 x 3	STDSTD		1	1.6	AA7242530261		
5	RDCR CONC ASME B16.9 BW	A234GRWPB	4 x 2	STDSTD		1	1.6	AA7242530210		
6	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	6	STD		4	11.01	AA7242502276		
7	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	4	STD		15	4.23	AA7242502217		
8	FLANGE SLIP-ON ASME B16.5 CL300 RF	A105	4		CL300	6	10	AA7246106103		
9	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	4		CL150	1	5.9	AA7246101101		
10	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	3	S40	CL300	1	7.15	AA7246306080		
11	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	2	S40	CL300	1	3.5	AA7246306064		
12	GLOBE VALVE HO ASME B16.10 CL300 RF(16.5)	A216GRWCB	4		CL300	3	86.36	AA7501428107		

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
13	GASKET M.S.W ASME B16.20 PTF FILLER B16.5 CL300 RF	SS304+PTFE	4		CL300	6	0.32	HY7240363074		
14	GASKET M.S.W ASME B16.20 PTF FILLER B16.5 CL150 RF	SS304+PTFE	4		CL150	1	0.32	HY7240362035		
15	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS304+GRAPH	3		CL300	1	0.19	HY7240365050		
16	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS304+GRAPH	2		CL300	1	0.11	HY7240365069		
17	120 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	3/4	M20X120	CL300	48	0.41	HY7142198184		
18	120 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	3/4	M20X120	CL300	8	0.41	HY7142198184		
19	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X100	CL300	8	0.21	HY7142198060		
20	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X100	CL150	8	0.21	HY7142198060		
21	RIGID HANGER		6			4	0			
22	PIPE REST		4			2	0			
23	RIGID HANGER		4			4	0			

[1] [2] [3] [4]

NOTES:-

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- REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-	

LINE PARAMETERS:-									
LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCR-BHL-1-B083-4-11D								11D-RHP	4"
WCR-BHL-1-B095-6-11D								11D-RHP	6"
WCR-BHL-1-B089-4-11D								11D-RHP	4"
WCR-BHL-1-B092-4-11D								11D-RHP	4"

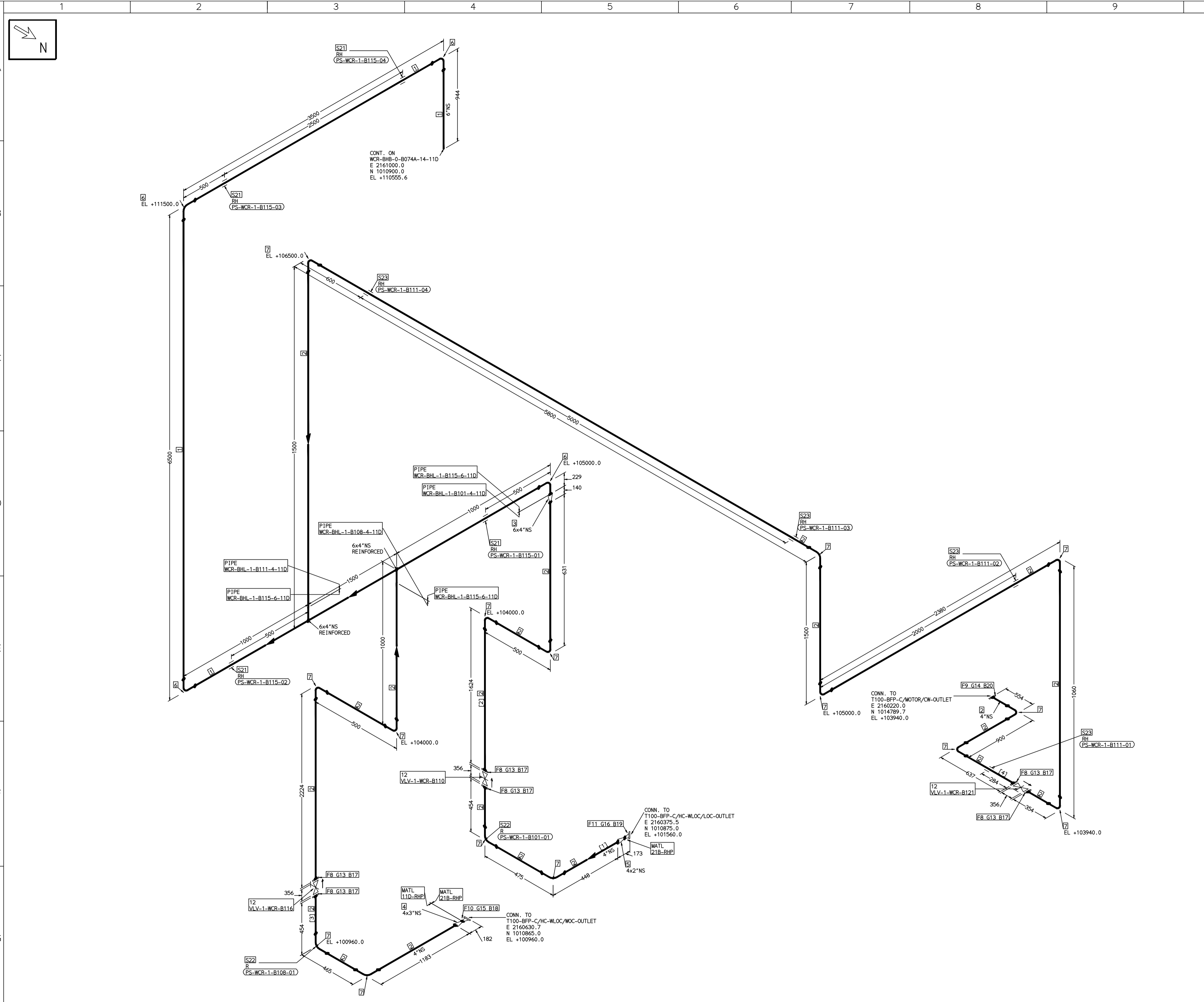
LEGEND:-	
	A - ANCHOR
	R - REST
	RG - REST + GUIDE
	RL - REST + LIMIT STOP
	RGL - DIRECTION ANCHOR
	RH - RIGID HANGER
	SH - SPRING HANGER
	BS - BOTTOM SPRING
	VG - VERTICAL GUIDE

RECORD OF REVISIONS:-					
OOP	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
05-05-14		PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME	SIGN	DATE
	DRN. PCC	-SD-	05-05-14
	CHKD. VJK	-SD-	05-05-14
	APPRD. GS	-SD-	05-05-14
	SCALE: NTS		
TITLE: 1-CW-RETURN-PIPING-BFP-B	DRAWING NO: 1-381-01-06071	REV OOP	
	SHT. No. 1	NO. OF SHTS.	1

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY DETRIMENTAL MANNER TO THE INTEREST OF THE COMPANY

COMPUTER FILE NAME:



FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE ERW/SAW IS-1239 (PART 1) PE K)	IS1239(BLAC K)	6	HVY			12841MM	21.3		
2	PIPE ERW/SAW IS-1239 (PART 1) PE K)	IS1239(BLAC K)	4	HVY			19945MM	14.5		
3	RDCR CONC ASME B16.9 BW	A234GRWPB	6 x 4	STDSTD		1	3.9	AA7242530350		
4	RDCR CONC ASME B16.9 BW	A234GRWPB	4 x 3	STDSTD		1	1.6	AA7242530261		
5	RDCR CONC ASME B16.9 BW	A234GRWPB	4 x 2	STDSTD		1	1.6	AA7242530210		
6	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	6	STD		4	11.01	AA7242502276		
7	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	4	STD		15	4.23	AA7242502217		
8	FLANGE SLIP-ON ASME B16.5 CL300 RF	A105	4		CL300	6	10	AA7246106103		
9	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	4		CL150	1	5.9	AA7246101101		
10	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	3	S40	CL300	1	7.15	AA7246306080		
11	FLANGE WELD NECK ASME B16.5 CL300 RF	A105	2	S40	CL300	1	3.5	AA7246306064		
12	GLOBE VALVE HO ASME B16.10 CL300 RF(16.5)	A216GRWCB	4		CL300	3	86.36	AA7501428107		

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
13	GASKET M.S.W ASME B16.20 PTF FILLER B16.5 CL300 RF	SS304+PTFE	4		CL300	6	0.32	HY7240363074		
14	GASKET M.S.W ASME B16.20 PTF FILLER B16.5 CL150 RF	SS304+PTFE	4		CL150	1	0.32	HY7240362035		
15	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS304+GRAPH	3		CL300	1	0.19	HY7240365050		
16	GASKET M.S.W ASME B16.20 GRAPHITE FILLER B16.5 CL300 RF	SS304+GRAPH	2		CL300	1	0.11	HY7240365069		
17	120 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	3/4	M20X120	CL300	48	0.41	HY7142198184		
18	120 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	3/4	M20X120	CL300	8	0.41	HY7142198184		
19	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X100	CL300	8	0.21	HY7142198060		
20	100 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	5/8	M16X100	CL150	8	0.21	HY7142198060		
21	RIGID HANGER		6			4	0			
22	PIPE REST		4			2	0			
23	RIGID HANGER		4			4	0			

[1] [2] [3] [4]

- NOTES:-**
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 - PIPE FABRICATOR TO CONFIRM THE VALVE/INSTRUMENT DIMENSIONS BEFORE FABRICATING THE SPOOL PIPE. THE OVERALL LEG LENGTH SHOULD REMAIN AS PER THE ISOMETRIC AFTER ACCOUNTING FOR THE DEVIATIONS IN INLINE COMPONENT DIMENSIONS.
 - DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
 - REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-

WCR-BHL-1-B101-4-11D
WCR-BHL-1-B115-6-11D
WCR-BHL-1-B108-4-11D
WCR-BHL-1-B111-4-11D

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCR-BHL-1-B101-4-11D								11D-RHP	4"
WCR-BHL-1-B115-6-11D								11D-RHP	6"
WCR-BHL-1-B108-4-11D								11D-RHP	4"
WCR-BHL-1-B111-4-11D								11D-RHP	4"

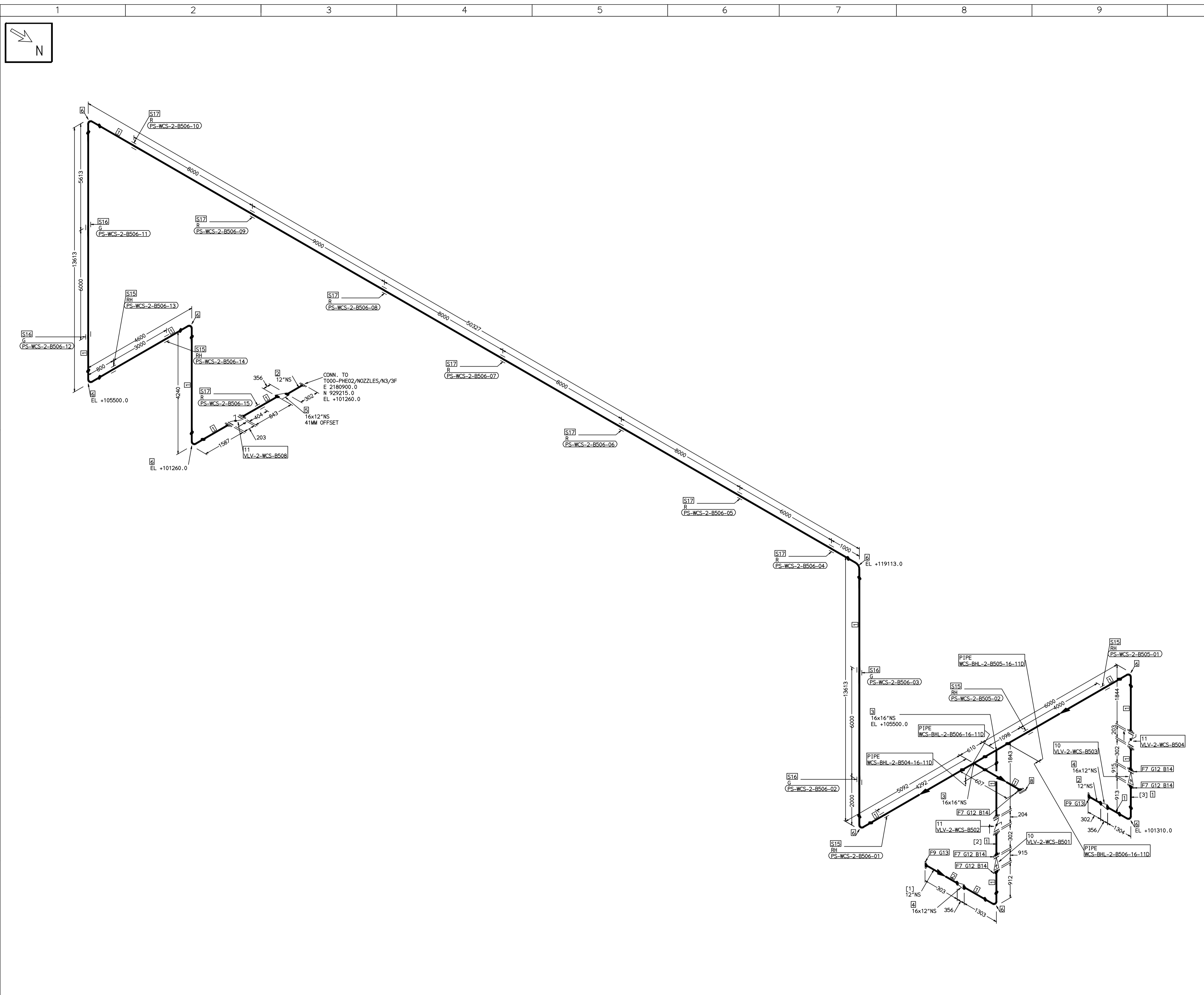
- LEGEND:-
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - ↘ DIRECTION OF SLOPE
 - WELD SYMBOL
 - A - ANCHOR
 - R - REST
 - RG - REST + GUIDE
 - RL - REST + LIMIT STOP
 - RGL - DIRECTION ANCHOR
 - RH - RIGID HANGER
 - SH - SPRING HANGER
 - BS - BOTTOM SPRING
 - VG - VERTICAL GUIDE

RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME	SIGN	DATE
	DRN.	PCC	-SD- 05-05-14
	CHKD.	VJK	-SD- 05-05-14
	APPRD.	GS	-SD- 05-05-14
	SCALE: NTS		
TITLE: 1-CW-RETURN-PIPING-BFP-C	DRAWING NO: 1-381-01-06072	REV OOP	
	SHT. No. 1	NO. OF SHTS.	1

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY DETRIMENTAL MANNER TO THE INTEREST OF THE COMPANY



FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE ERW/SAW IS-3589 PE 30	IS3589RFE3	16	T6		97034MM	59.25			
2	PIPE ERW/SAW IS-3589 PE 30	IS3589RFE3	12	T6		900MM	47.02			
3	TEE STRT ASME B16.9 BW	A234GRWPB	16 x 16	S10		2	90.8	HY7242511429		
4	RDCR CONC ASME B16.9 BW	A234GRWPB	16 x 12	S10XS20		2	22.65	AA7242530636		
5	RDCR ECC ASME B16.9 BW	A234GRWPB	16 x 12	S10XS20		1	22.65			
6	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	16	S10		9	59.59	AA7242502420		
7	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	16		CL150	5	54	AA7246101179		
8	FLANGE BLIND ASME B16.5 CL150 RF	A105	16		CL150	1	82	HY7246166173		
9	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	12		CL150	2	29	AA7246101152		
10	SWING CHECK VALVE ASME B16.10 CL150 RF (B16.5)	A216GRWCB	16		CL150	2	1123.2	AA7541408174		
11	BFLV 60 ANMA C504 PN10 DFLGD (FF-C207D)	A216GRWCB	16		PN10	3	160			

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
12	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	16		CL150	5	2.1	HY7240362094		
13	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	12		CL150	2	1.41	HY7240362078		
14	140 STD WITH 2 NUTS ASME B18.2	A193GRB7/A194GR2H	1	M27X140	CL150	80	0.92	HY7142198648		
15	RIGID HANGER		16			5	0			
16	PIPE SUPPORT		16			4	0			
17	PIPE REST		16			8	0			

[1] [2] [3]

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PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-

WCS-BHL-2-B504-16-11D	11D-RHP	14"
WCS-BHL-2-B506-16-11D	11D-RHP	14"
WCS-BHL-2-B505-16-11D	11D-RHP	14"

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCS-BHL-2-B504-16-11D								11D-RHP	14"
WCS-BHL-2-B506-16-11D								11D-RHP	14"
WCS-BHL-2-B505-16-11D								11D-RHP	14"

- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - ↘ DIRECTION OF SLOPE
 - WELD SYMBOL
- A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL - DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

RECORD OF REVISIONS:-

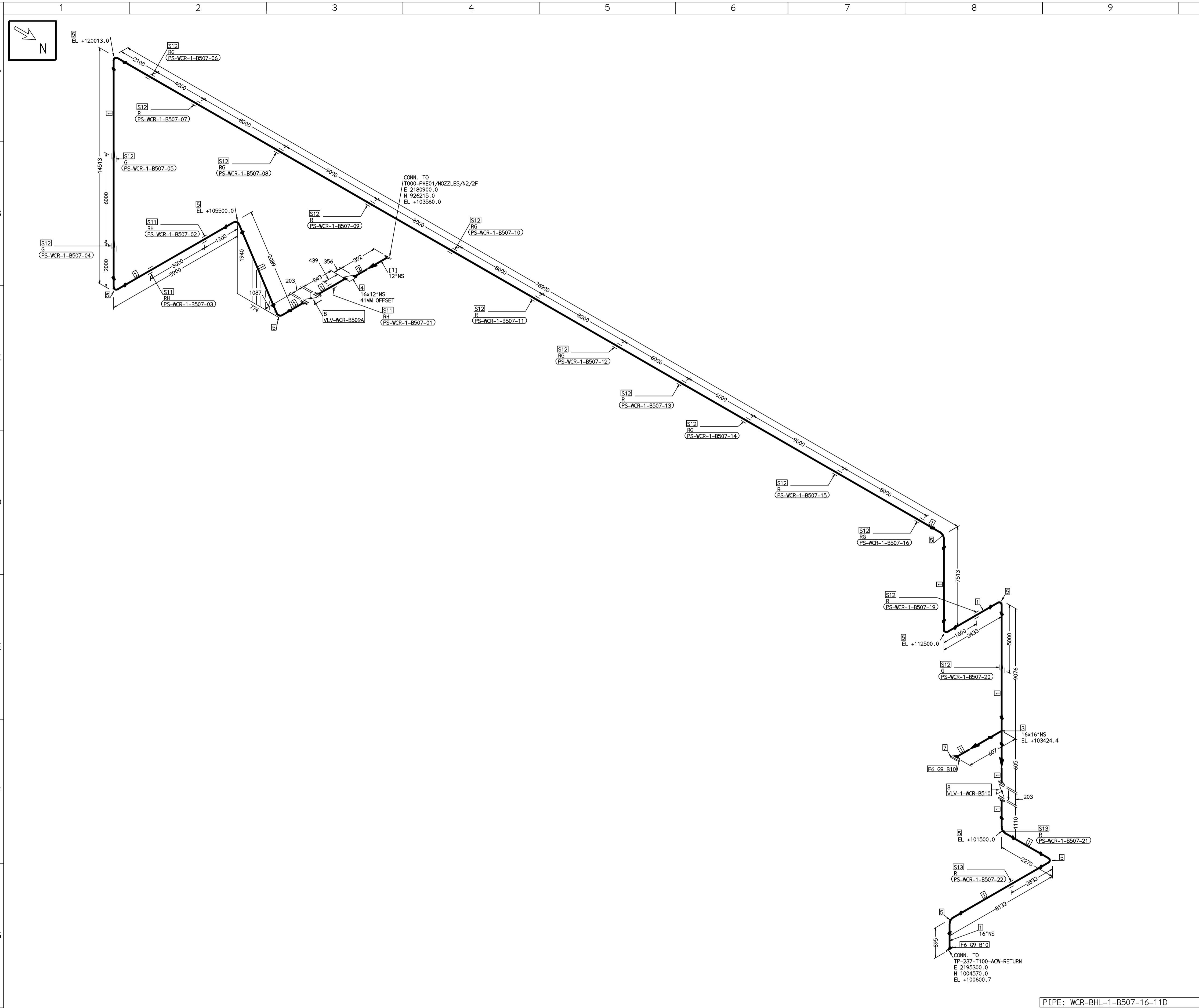
REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME	SIGN	DATE	
	DRN.	PCC	-SD-	05-05-14
	CHKD.	VJK	-SD-	05-05-14
	APPRD.	GS	-SD-	05-05-14
DRAWING NO:		REV		
1-381-01-06073		OOP		
SHT. No. 1	NO. OF SHTS. 1			

COMPUTER FILE NAME:

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COMPUTER FILE NAME:



PIPE: WCR-BHL-1-B507-16-11D

FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE ERW/SAW 1S-3589 PE 30	IS3589GRFE3	16	T6		120854M	59.25			
2	PIPE ERW/SAW 1S-3589 PE 30	IS3589GRFE3	12	T6		M 300MM	47.02			
3	TEE STRT ASME B16.9 BW	A234GRWPB	16 x 16	S10		1	90.8	HY7242511429		
4	RDCR ECC ASME B16.9 BW	A234GRWPB	16 x 12	S10XS20		1	22.65			
5	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	16	S10		10	59.59	AA7242502420		
6	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	16		CL150	2	54	AA7244101179		
7	FLANGE BLIND ASME B16.5 CL150 RF	A105	16		CL150	1	82	HY7246166173		
8	BFLV GO ANNA CS04 PN10 DFLGD (FF-C207D)	A216GRWCB	16		PN10	2	160			

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
9	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304-PTFE	16		CL150	2	2.1	HY7240362094		
10	140 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	1	M27X140	CL150	32	0.92	HY7142198648		
11	RIGID HANGER		16			3	0			
12	PIPE SUPPORT		16			15	0			
13	PIPE REST		16			2	0			

[1]

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PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-	LINE PARAMETERS:-																				
	<table border="1"> <thead> <tr> <th>LINE NUMBER</th> <th>W PR (Kg/cm2)</th> <th>W TEMP (DegC)</th> <th>D PR (Kg/cm2)</th> <th>D TEMP (DegC)</th> <th>HT PR (Kg/cm2)</th> <th>INS THK S(mm)</th> <th>INS MAT</th> <th>PSPEC</th> <th>BORE</th> </tr> </thead> <tbody> <tr> <td>WCR-BHL-1-B507-16-11D</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>11D-RHP</td> <td>14"</td> </tr> </tbody> </table>	LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE	WCR-BHL-1-B507-16-11D								11D-RHP	14"
LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE												
WCR-BHL-1-B507-16-11D								11D-RHP	14"												

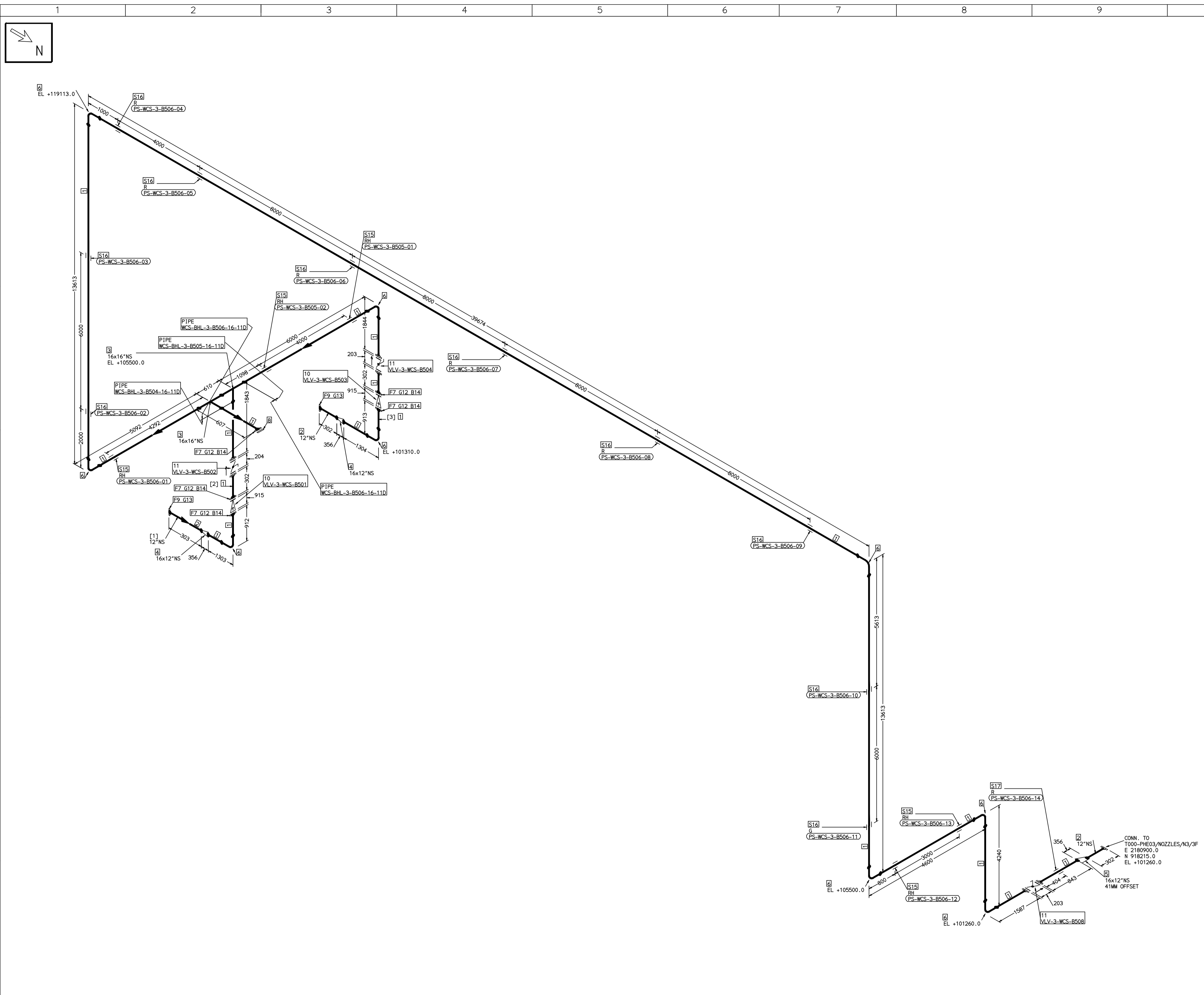
- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
 - WELD SYMBOL
- A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL - DIRECTION ANCHOR
RH - RIGID HANGER
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VG - VERTICAL GUIDE

RECORD OF REVISIONS:-					
REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME	SIGN	DATE
	DRN. PCC	-SD-	05-05-14
	CHKD. VJK	-SD-	05-05-14
	APPRD. GS	-SD-	05-05-14
DRAWING NO:		REV	
1-381-01-06074		OOP	
SHT. No. 1	NO. OF SHTS. 1		

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COMPUTER FILE NAME:



FABRICATION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
1	PIPE ERW/SAW IS-3589 PE 30	IS3589RFE3	16	T6		86381MM	59.25			
2	PIPE ERW/SAW IS-3589 PE 30	IS3589RFE3	12	T6		900MM	47.02			
3	TEE STRT ASME B16.9 BW	A234GRWPB	16 x 16	S10		2	90.8	HY7242511429		
4	RDCR CONC ASME B16.9 BW	A234GRWPB	16 x 12	S10XS20		2	22.65	AA7242530636		
5	RDCR ECC ASME B16.9 BW	A234GRWPB	16 x 12	S10XS20		1	22.65			
6	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	16	S10		9	59.59	AA7242502420		
7	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	16		CL150	5	54	AA7246101179		
8	FLANGE BLIND ASME B16.5 CL150 RF	A105	16		CL150	1	82	HY7246166173		
9	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	12		CL150	2	29	AA7246101152		
10	SWING CHECK VALVE ASME B16.10 CL150 RF (B16.5)	A216GRWCB	16		CL150	2	1123.2	AA7541408174		
11	BFLV GO ANMA CS04 PN10 DFLGD (FF-C207D)	A216GRWCB	16		PN10	3	160			

ERECTION MATERIALS										
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE		
12	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	16		CL150	5	2.1	HY7240362094		
13	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	12		CL150	2	1.41	HY7240362078		
14	140 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A194GR2H	16	M27X140	CL150	80	0.92	HY7142198648		
15	RIGID HANGER		16			5	0			
16	PIPE SUPPORT		16			10	0			
17	PIPE REST		16			1	0			

[1] [2] [3]

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PRELIMINARY - FOR BID PURPOSE ONLY

CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCS-BHL-3-B504-16-11D								11D-RHP	14"
WCS-BHL-3-B506-16-11D								11D-RHP	14"
WCS-BHL-3-B505-16-11D								11D-RHP	14"

- LEGEND:-**
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 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
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R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
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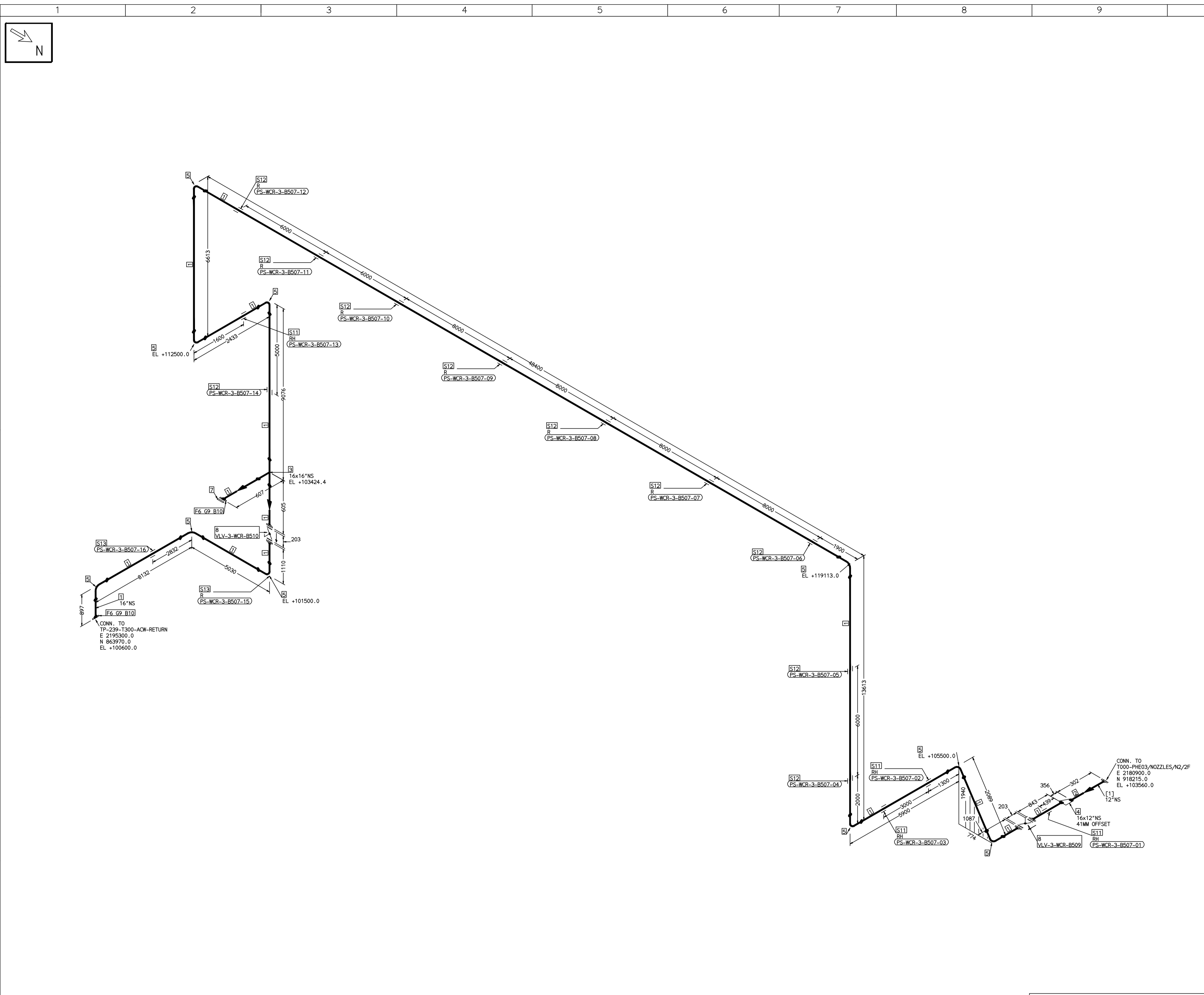
RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BH&E BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME	SIGN	DATE
	DRN. PCC	-SD-	05-05-14
	CHKD. VJK	-SD-	05-05-14
	APPRD. GS	-SD-	05-05-14
	SCALE: NTS		
TITLE: 3-ACW-PUMP-DISCH-UPTO-PHE	DRAWING NO: 1-381-01-06075	REV OOP	
	SHT. No. 1	NO. OF SHTS.	1

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COMPUTER FILE NAME:



FABRICATION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
1	PIPE ERW/SAW 1S-3589 PE 30	IS3589GRFE3 30	16	T6		93316MM	59.25		
2	PIPE ERW/SAW 1S-3589 PE 30	IS3589GRFE3 30	12	T6		300MM	47.02		
3	TEE STRT ASME B16.9 BW	A234GRWPB	16 x 16	S10		1	90.8	HY7242511429	
4	RDCR ECC ASME B16.9 BW	A234GRWPB	16 x 12	S10XS20		1	22.65	AA7242502420	
5	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	16	S10		10	59.59	AA7246101179	
6	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	16		CL150	2	54	HY7246166173	
7	FLANGE BLIND ASME B16.5 CL150 RF	A105	16		CL150	1	82		
8	BFLV GO ANNA CS04 PN10 DFLGD (FF-C207D)	A216GRWCB	16		PN10	2	160		

ERECTION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
9	GASKET M.S.W ASME B16.20 PTFE FILLER B16.5 CL150 RF	SS304+PTFE	16		CL150	2	2.1	HY7240362094	
10	140 STUD WITH 2 NUTS ASME B18.2	A193GRB7/A1 94GR2H	1	M27X140	CL150	32	0.92	HY7142198648	
11	RIGID HANGER		16			4	0		
12	PIPE SUPPORT		16			10	0		
13	PIPE REST		16			2	0		

[1]

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 - ELEVATIONS ARE CENTRE LINE ELEVATIONS UNLESS OTHERWISE SPECIFIED.
 - SUPPORT LOCATIONS ARE SUGGESTIVE. TYPE & LOCATION OF PIPE SUPPORTS TO BE FINALISED AFTER COMPLETION OF STRESS ANALYSIS.
 - PIPE FABRICATOR TO CONFIRM THE VALVE/INSTRUMENT DIMENSIONS BEFORE FABRICATING THE SPOOL PIPE. THE OVERALL LEG LENGTH SHOULD REMAIN AS PER THE ISOMETRIC AFTER ACCOUNTING FOR THE DEVIATIONS IN INLINE COMPONENT DIMENSIONS.
 - DRAWING DOES NOT INCLUDE ANY FABRICATION/ERECTION ALLOWANCE UNLESS OTHERWISE SPECIFIED.
 - REINFORCEMENT PAD TO BE CUT FROM RESPECTIVE RUN PIPE.

PRELIMINARY - FOR BID PURPOSE ONLY	
CONSULTANT:	BECHTEL FREDERICK, MARYLAND, U.S.A
PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK (mm)	INS MAT	PSPEC	BORE
WCR-BHL-3-B507-16-11D								11D-RHP	14"

- LEGEND:-**
- SUPPORT LOCATION
 - DIRECTION OF FLOW
 - DIRECTION OF SLOPE
 - WELD SYMBOL
- A - ANCHOR
R - REST
RG - REST + GUIDE
RL - REST + LIMIT STOP
RGL - DIRECTION ANCHOR
RH - RIGID HANGER
SH - SPRING HANGER
BS - BOTTOM SPRING
VG - VERTICAL GUIDE

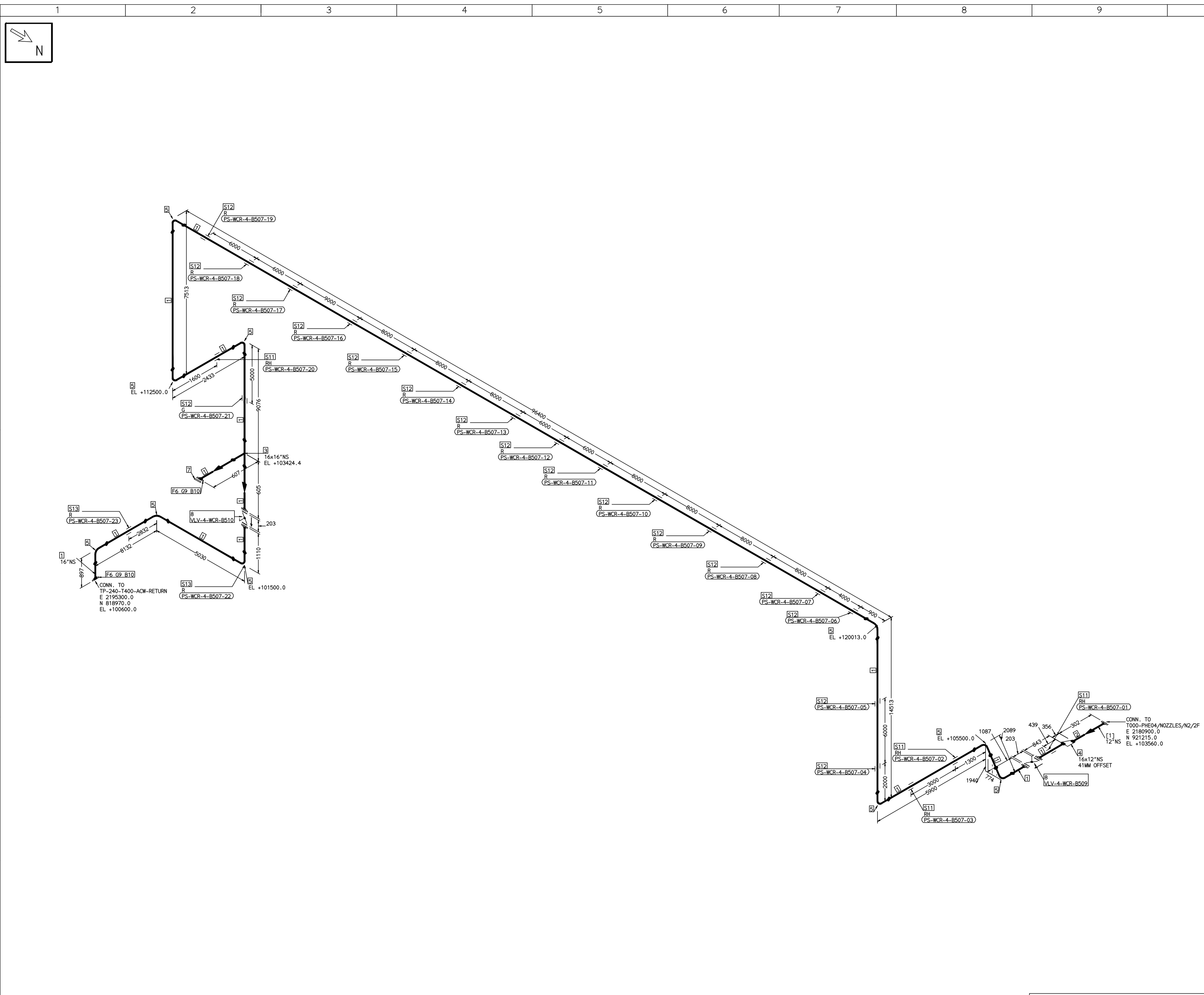
REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

NAME	SIGN	DATE
DRN. PCC	-SD-	05-05-14
CHKD. VJK	-SD-	05-05-14
APPRD. GS	-SD-	05-05-14

SCALE: NTS

TITLE:	3-ACW-RETURN-FROM-PHE	REV	OOP
DRAWING NO:	1-381-01-06076	SHT. No.	1
		NO. OF SHTS.	1

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FABRICATION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
1	PIPE ERW/SAW 1S-3589 PE 30	IS3589GRFE3	16	T6		143116M	59.25		
2	PIPE ERW/SAW 1S-3589 PE 30	IS3589GRFE3	12	T6		300MM	47.02		
3	TEE STRT ASME B16.9 BW	A234GRWPB	16 x 16	S10		1	90.8	HY7242511429	
4	RDCR ECC ASME B16.9 BW	A234GRWPB	16 x 12	S10XS20		1	22.65		
5	ELBOW LR 90 DEG ASME B16.9 BW	A234GRWPB	16	S10		10	59.59	AA7242502420	
6	FLANGE SLIP-ON ASME B16.5 CL150 RF	A105	16		CL150	2	54	AA7244101179	
7	FLANGE BLIND ASME B16.5 CL150 RF	A105	16		CL150	1	82	HY7246166173	
8	BFLV GO ANNA CS04 PN10 DFLGD (FF-C207D)	A216GRWCB	16		PN10	2	160		

ERECTION MATERIALS									
PT NO	COMPONENT DESCRIPTION	MATERIAL	BORE (Ln)	SCHEDULE	RATING	QTY	UNITWT (Kg)	BHEL MATCODE	
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11	RIGID HANGER		16			4	0		
12	PIPE SUPPORT		16			17	0		
13	PIPE REST		16			2	0		

[1]

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PROJECT:	STG PACKAGE (4 X 93.1 MW STGs), CCPP HAZIRA MANUFACTURING DIVISION (HMD)
CUSTOMER:	RELIANCE INDUSTRIES LIMITED COAL BASED CAPTIVE POWER PLANT (CCPP)
RIL DRG NO. HAZIRA:	10090-HATX00-XXXX-XX-BHL-BXXX

REFERENCE DRAWINGS:-

LINE PARAMETERS:-

LINE NUMBER	W PR (Kg/cm2)	W TEMP (DegC)	D PR (Kg/cm2)	D TEMP (DegC)	HT PR (Kg/cm2)	INS THK S(mm)	INS MAT	PSPEC	BORE
WCR-BHL-4-B507-16-11D								11D-RHP	14"

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RECORD OF REVISIONS:-

REV	ISSUE DATE	DESCRIPTION	DRN BY	CHKD BY	APPRD BY
OOP	05-05-14	PRELIMINARY - FOR BID PURPOSE ONLY	PCC	VJK	GS

BHARAT HEAVY ELECTRICALS LTD PROJECT ENGINEERING & SYSTEMS DIVISION R.C.PURAM, HYDERABAD-502032. PE&SD LAYOUTS & PIPING ENGINEERING	NAME	SIGN	DATE	
	DRN.	PCC	-SD-	05-05-14
	CHKD.	VJK	-SD-	05-05-14
	APPRD.	GS	-SD-	05-05-14
DRAWING NO:		REV		
4-ACW-RETURN-FROM-PHE		1-381-01-06077		
SHT. No. 1		NO. OF SHTS. 1		

COMPUTER FILE NAME: