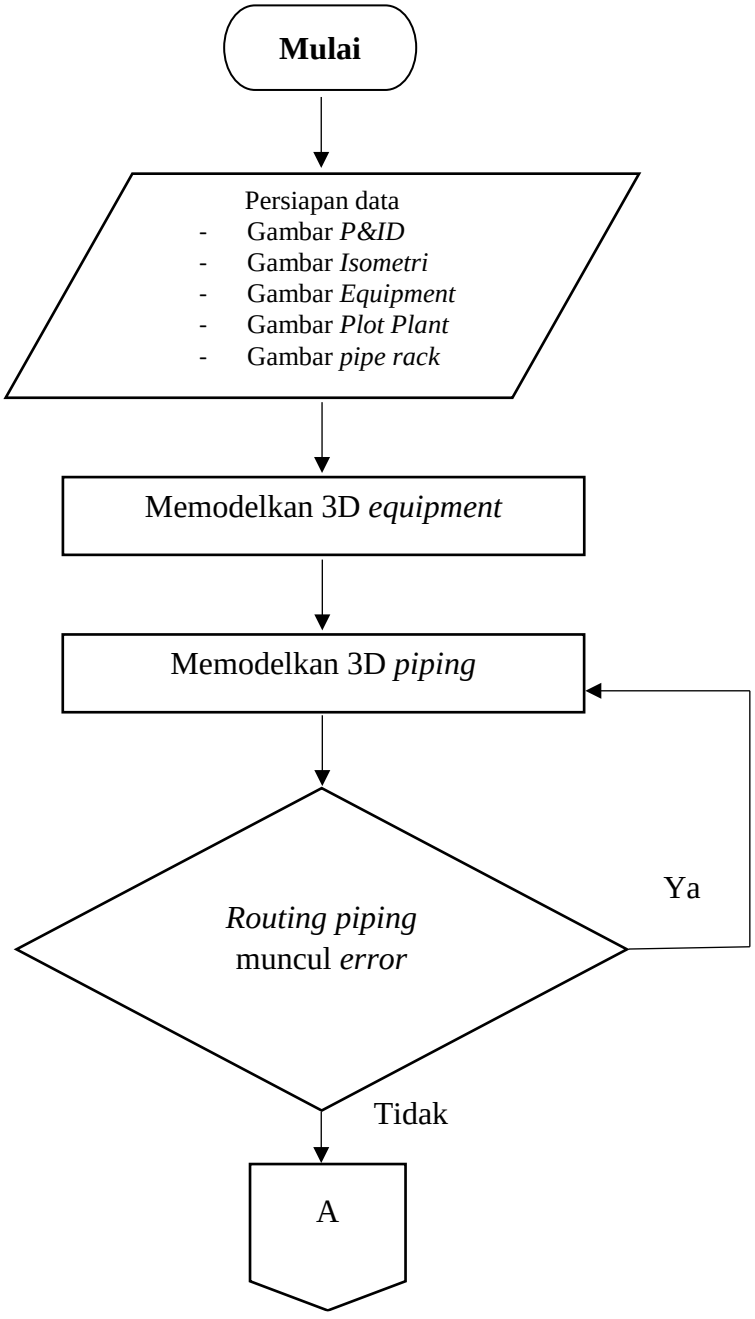
BAB IV

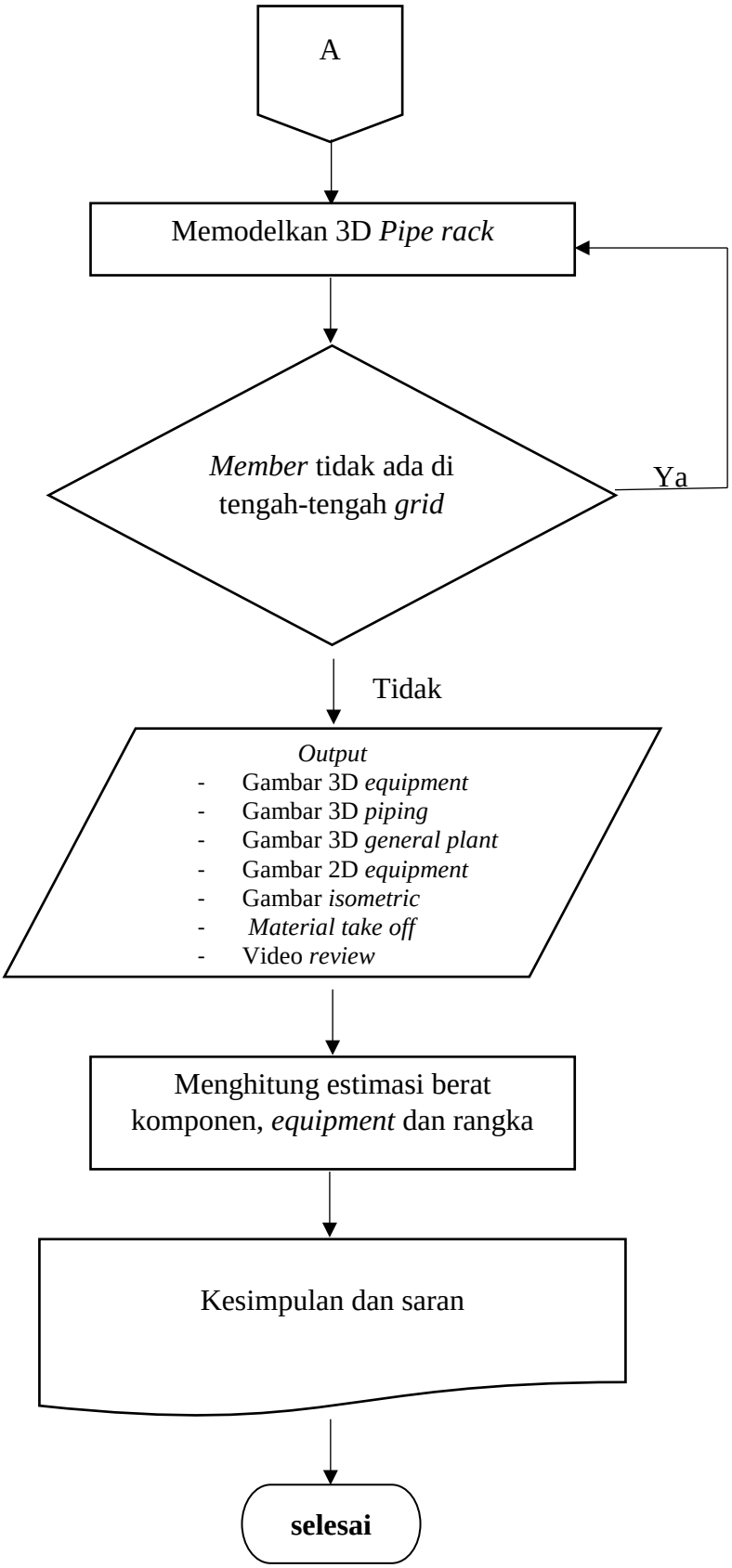
METODOLOGI

4.1 Diagram alir pemodelan di *AutoCAD Plant 3D* 2018

Langkah—langkah pemodelan atau desain dengan *AutoCAD Plant 3D* dapat dilakukan sesuai dengan diagram alir seperti gambar 4.1 :



Gambar 4.1 Diagram alir pemodelan



Gambar 4.2 Lanjutan diagram alir pemodelan

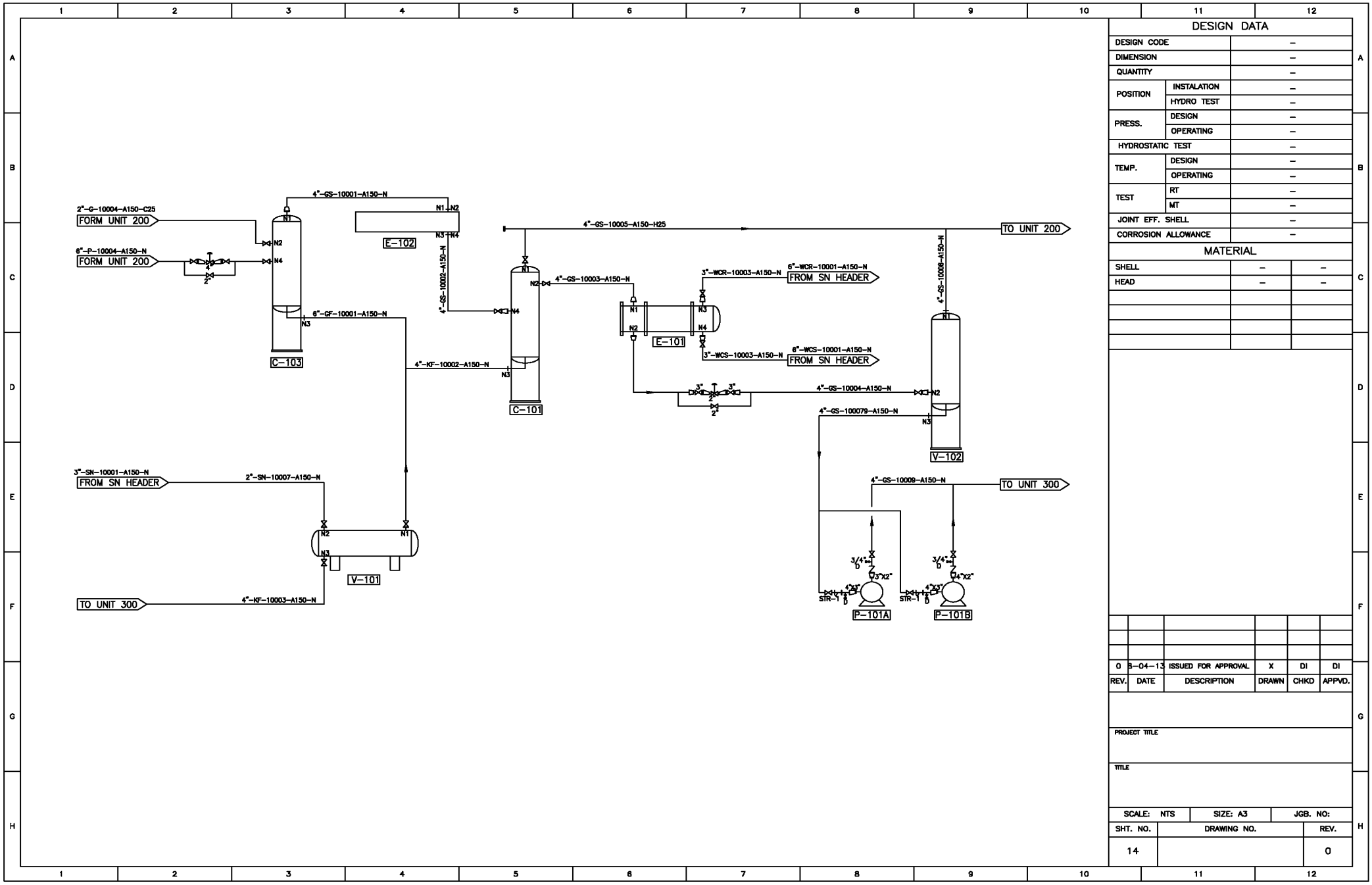
4.2 Persiapan data pemodelan

Data yang diperlukan untuk desain dalam software *AutoCAD Plant 3D* antara lain sebagai berikut :

4.2.1 Gambar P&ID

Gambar P&ID adalah gambar yang memperlihatkan diagram proses suatu pabrik yang telah dilengkapi dengan perpipaan antar *equipment* dan instrument-instrumennya untuk menghasilkan produk tertentu. Semua keterangan harus di tuangkan dalam piping layout, gunanya sebagai informasi.

Terdapat 4 gambar P&ID yang bisa digunakan sebagai referensi dalam pemodelan sebagai jalur pipa. P&ID 1 seperti pada Gambar 4.2, P&ID 2 seperti pada Gambar 4.3, P&ID 3 seperti pada Gambar 4.4 dan P&ID 4 seperti pada Gambar 4.2 telah memuat hubungan antar nozzle pada *equipment*.



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QUANTITY		–
POSITION	INSTALATION	–
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PRESS.	DESIGN	–
	OPERATING	–
HYDROSTATIC TEST		–
TEMP.	DESIGN	–
	OPERATING	–
TEST	RT	–
	MT	–
JOINT EFF. SHELL		–
CORROSION ALLOWANCE		–

MATERIAL		
SHELL	–	–
HEAD	–	–

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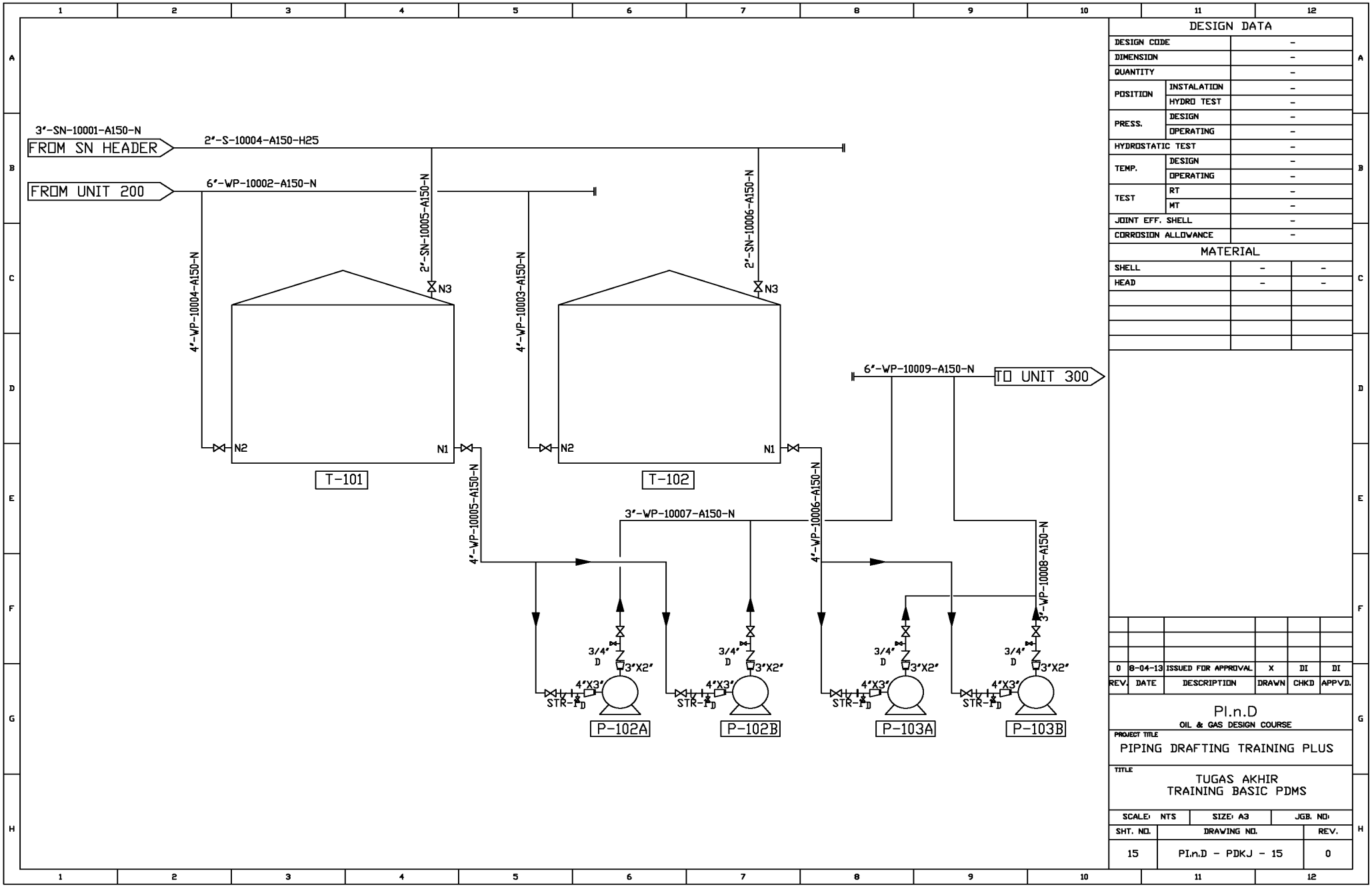
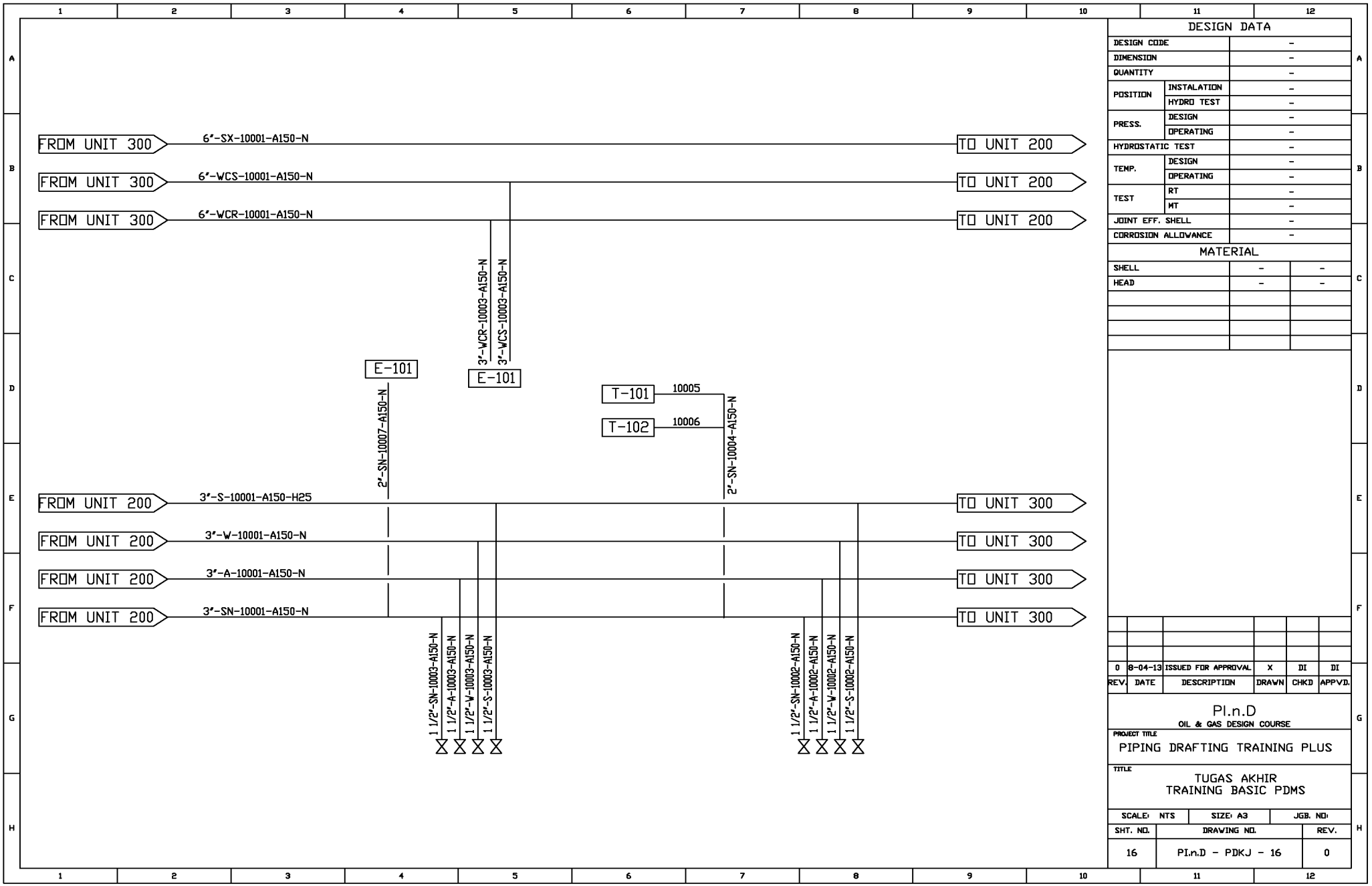
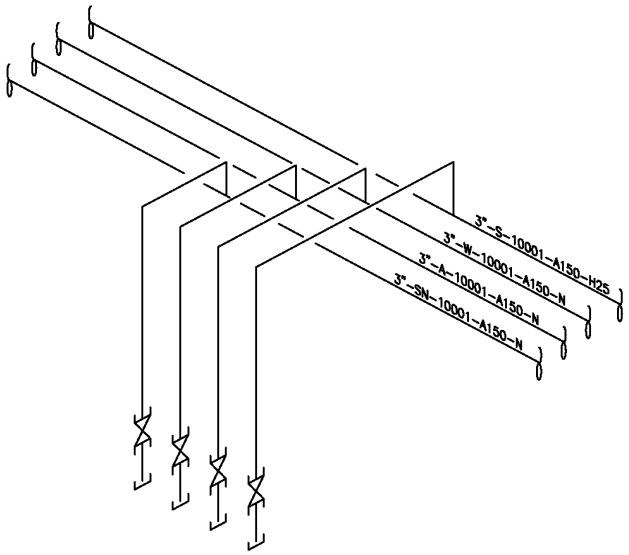
Gambar 4.3 *P&ID 1*



Gambar 4.4 *P&ID 2*



Gambar 4.5 *P&ID 3*



US01 & US02

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	OPERATING	-
HYDROSTATIC TEST		-
TEMP.	DESIGN	-
	OPERATING	-
TEST	RT	-
	MT	-
JOINT EFF. SHELL		-
CORROSION ALLOWANCE		-

MATERIAL		
SHELL	-	-
HEAD	-	-

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPVD.
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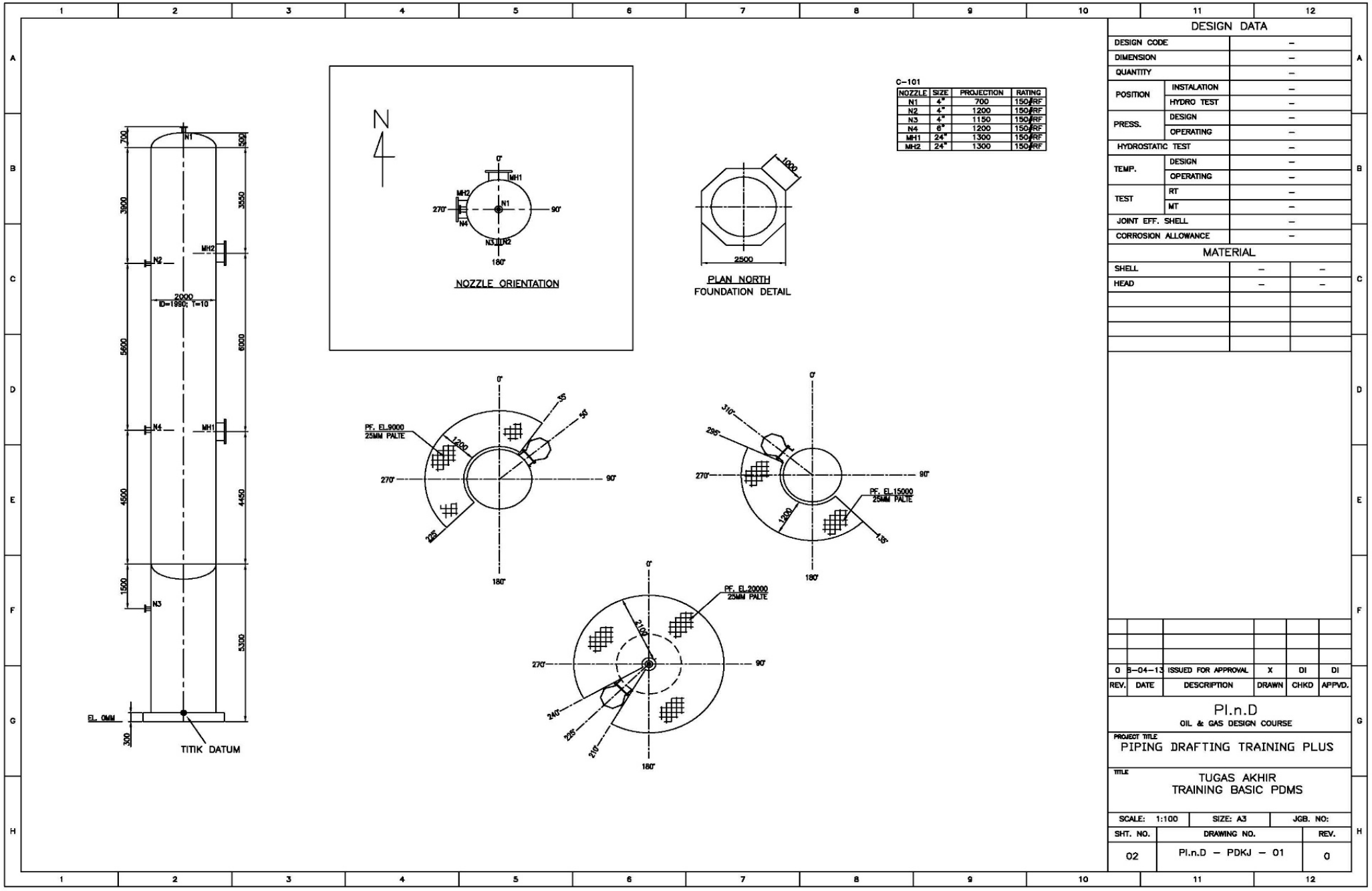
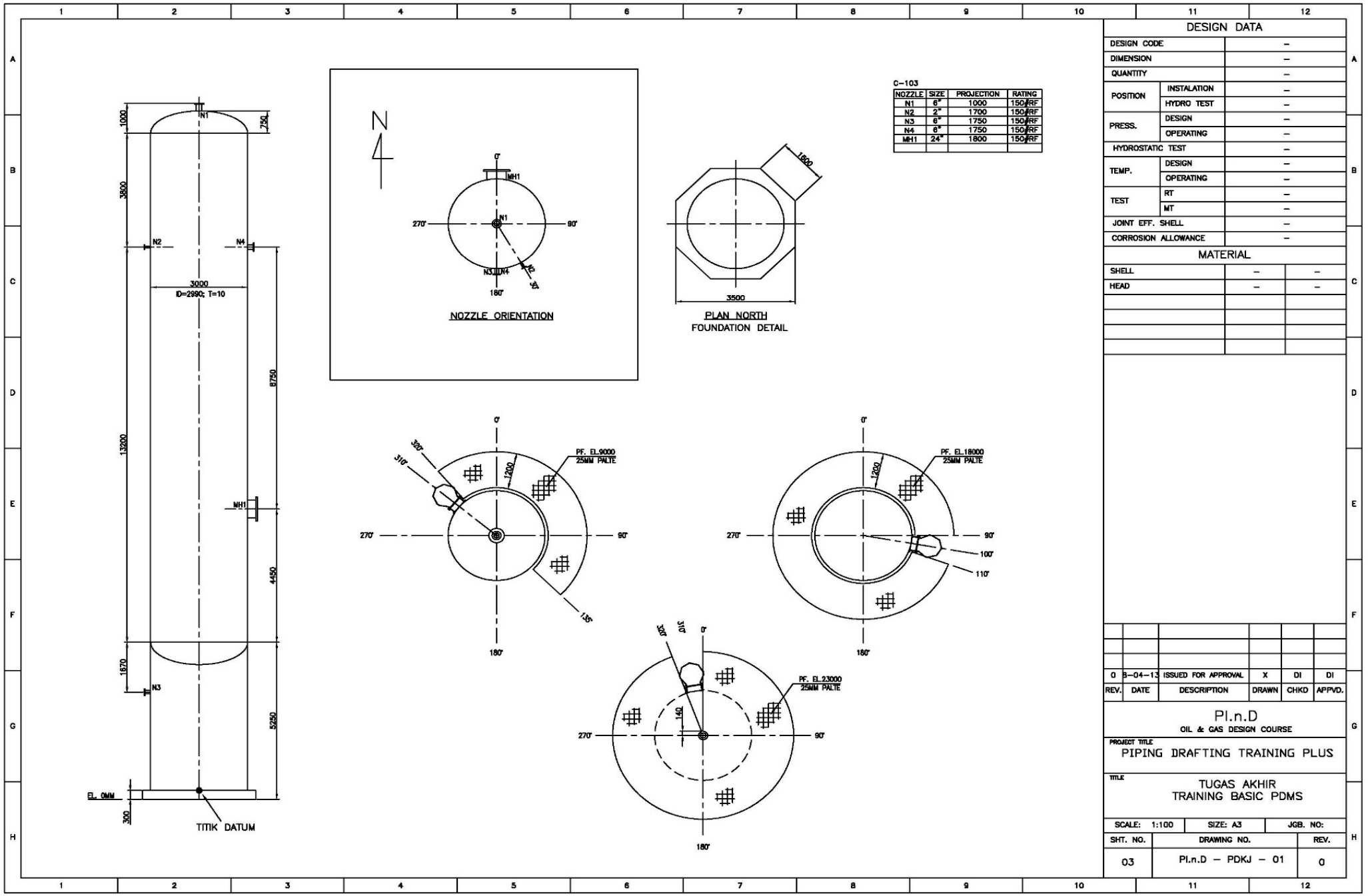
17	PI.n.D - PDKJ - 17	0

4.2.2 Gambar *Equipment*

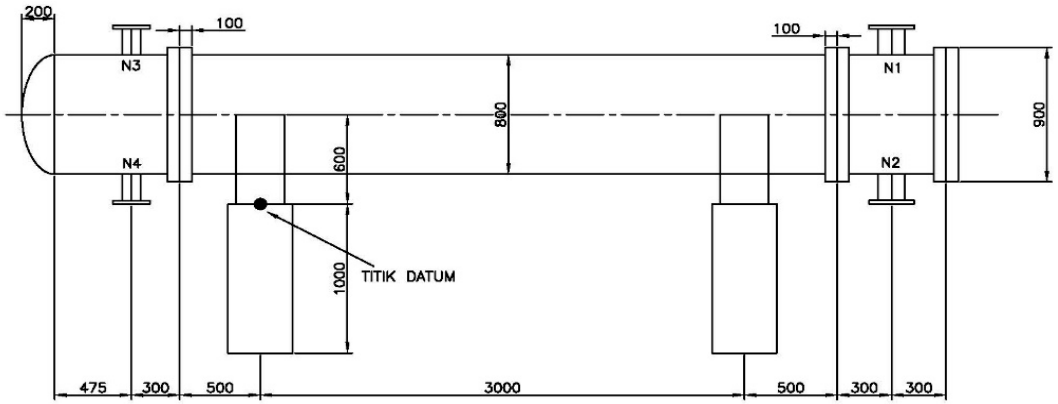
Gambar *equipment* adalah gambar yang menjelaskan tentang ukuran dan letak dari suatu alat. Gambar *equipment* akan memberikan penjelasan saat proses *design* atau pemodelan dari studi kasus (*piping drafting training plus pi.n.d oil and gas training course*) gambar-gambar *equipment* tersebut antara lain : C-101 seperti pada Gambar 4.6, C-103 seperti pada Gambar 4.7, E-101 seperti pada Gambar 4.8, E-102 seperti pada Gambar 4.9, P-101 AB seperti pada Gambar 4.10, P-102 AB seperti pada Gambar 4.11, P-103 AB seperti pada Gambar 4.12, T-101 seperti pada Gambar 4.13, T-102 seperti pada Gambar 4.14, V-101 seperti pada Gambar 4.15 dan V-102 seperti pada Gambar 4.16.



Gambar 4.7 *Equipment* C-101



Gambar 4.8 *Equipment* C-103



LOOKING NORTH

E–101

NOZZLE	SIZE	PROJECTION	RATING
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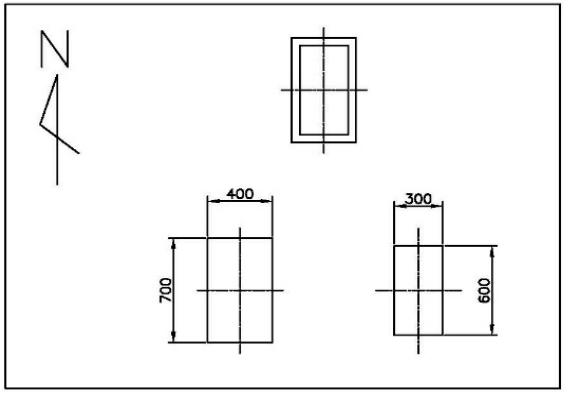
N2	6"	600	150#RF
N3	4"	600	150#RF
N4	4"	600	150#RF



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QUANTITY		–
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PRESS.	DESIGN	–
	OPERATING	–
HYDROSTATIC TEST		–
TEMP.	DESIGN	–
	OPERATING	–
TEST	RT	–
	MT	–
JOINT EFF. SHELL		–
CORROSION ALLOWANCE		–

MATERIAL		
SHELL	–	–
HEAD	–	–

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPVD.
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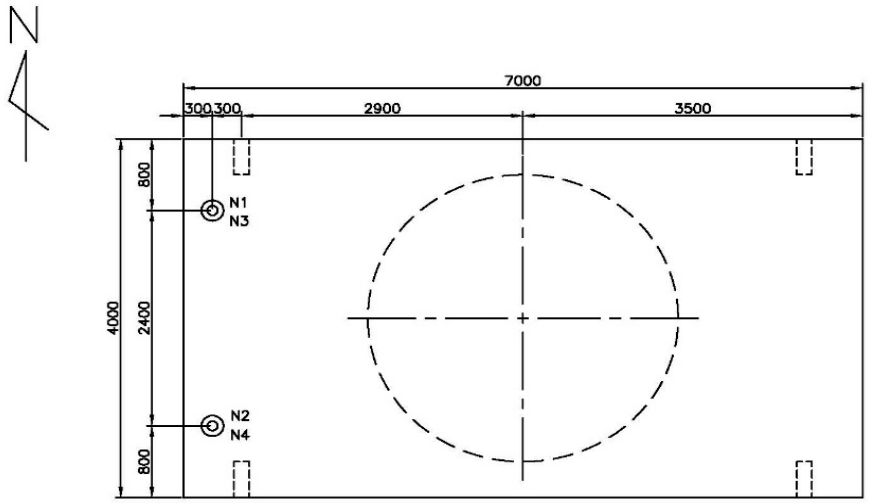

PLAN NORTH

E–102

NOZZLE	SIZE	PROJECTION	RATING
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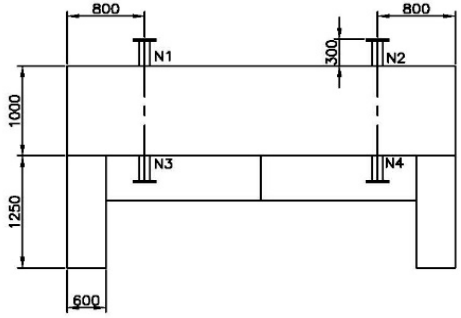
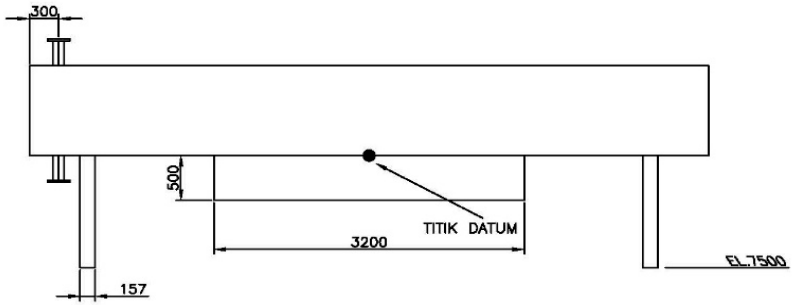
N2	4"	–	150#RF
N3	4"	–	150#RF
N4	4"	–	150#RF



LOOKING EAST



LOOKING NORTH

DESIGN DATA		
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DIMENSION		–
QUANTITY		–
POSITION	INSTALATION	–
	HYDRO TEST	–
PRESS.	DESIGN	–
	OPERATING	–
HYDROSTATIC TEST		–
TEMP.	DESIGN	–
	OPERATING	–
TEST	RT	–
	MT	–
JOINT EFF. SHELL		–
CORROSION ALLOWANCE		–

MATERIAL		
SHELL	–	–
HEAD	–	–

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPVD.
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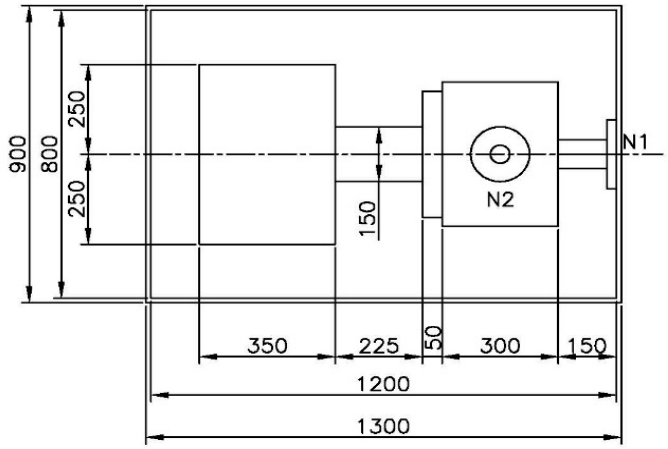

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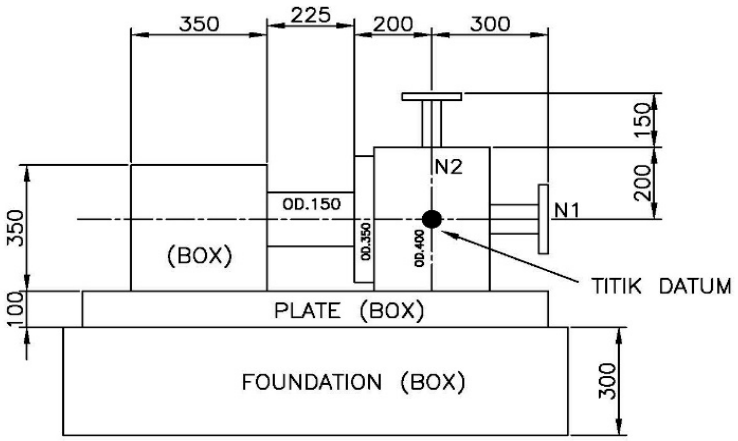
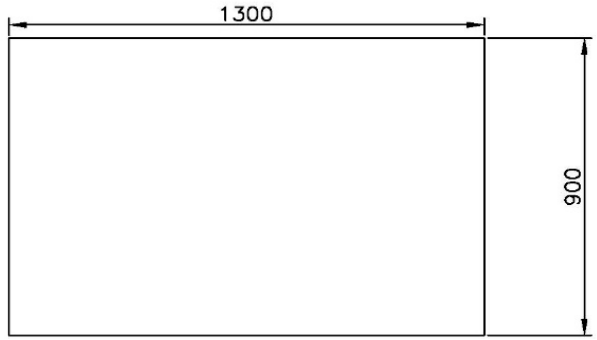


LOOKING WEST



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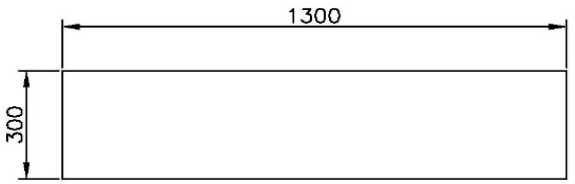

LOOKING WEST

FOUNDATION

P-101A/B

NOZZLE	SIZE	PROJECTION	RATING
N1	3"	300	150#RF
N2	2"	350	150#RF

DESIGN DATA		
DESIGN CODE		-
DIMENSION		-
QUANTITY		-
POSITION	INSTALATION	-
	HYDRO TEST	-
PRESS.	DESIGN	-
	OPERATING	-
HYDROSTATIC TEST		-
TEMP.	DESIGN	-
	OPERATING	-
TEST	RT	-
	MT	-
JOINT EFF. SHELL		-
CORROSION ALLOWANCE		-

MATERIAL		
SHELL	-	-
HEAD	-	-

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPVD.
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SHT. NO.	DRAWING NO.	REV.
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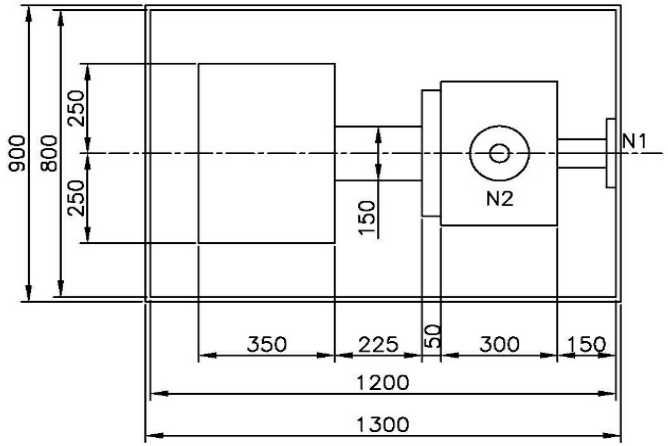

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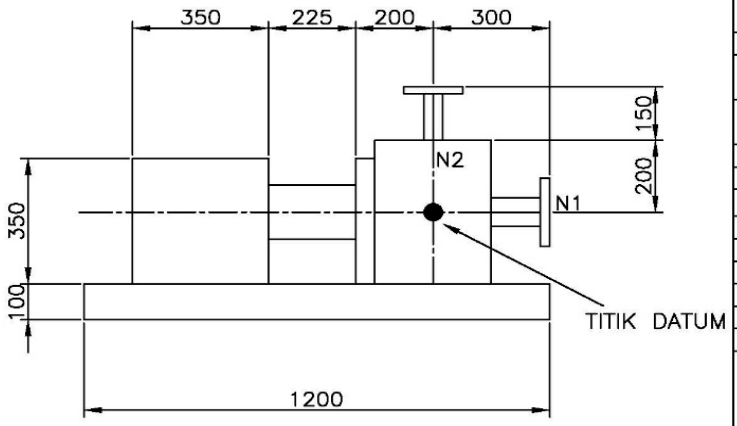

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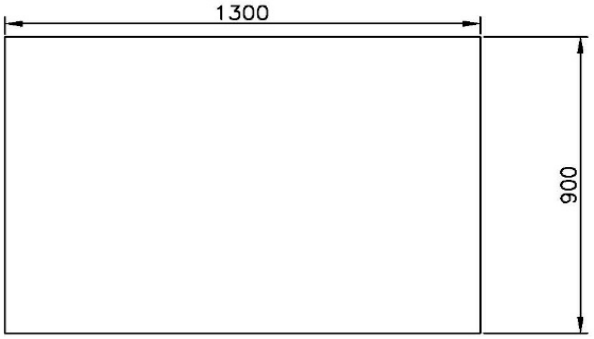
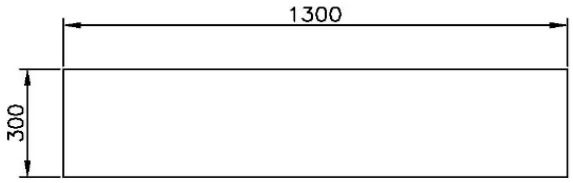


LOOKING PLAN



LOOKING SOUTH

FOUNDATION

P-102A/B

NOZZLE	SIZE	PROJECTION	RATING
N1	3"	300	150#RF
N2	2"	350	150#RF

DESIGN DATA		
DESIGN CODE		–
DIMENSION		–
QUANTITY		–
POSITION	INSTALATION	–
	HYDRO TEST	–
PRESS.	DESIGN	–
	OPERATING	–
HYDROSTATIC TEST		–
TEMP.	DESIGN	–
	OPERATING	–
TEST	RT	–
	MT	–
JOINT EFF. SHELL		–
CORROSION ALLOWANCE		–

MATERIAL		
SHELL	–	–
HEAD	–	–

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPVD.
0	8-04-13	ISSUED FOR APPROVAL	X	DI	DI

Pl.n.D
OIL & GAS DESIGN COURSE

PROJECT TITLE
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TITLE
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SHT. NO.	DRAWING NO.	REV.
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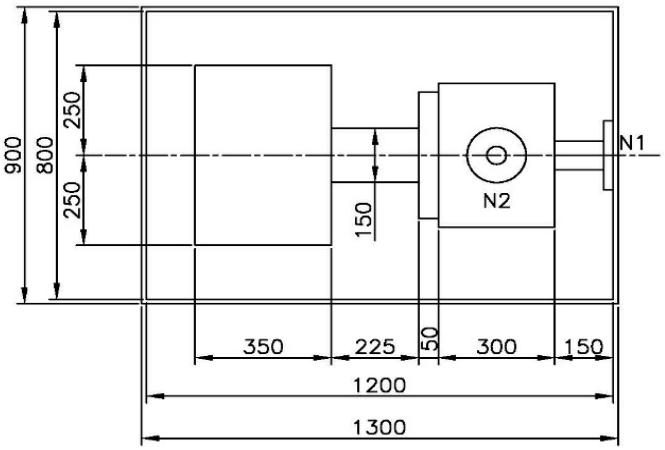

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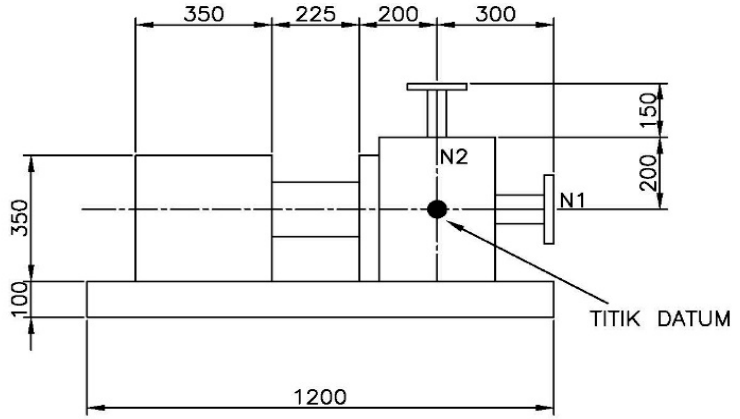

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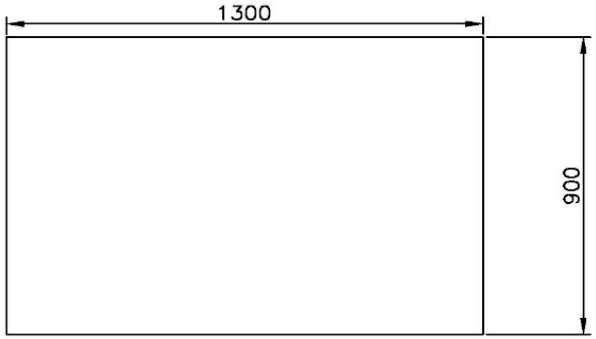

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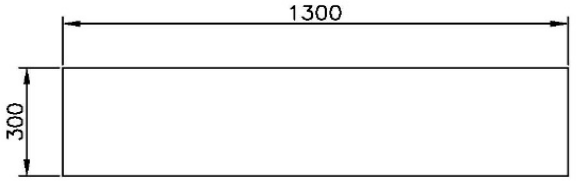

LOOKING SOUTH

FOUNDATION

P-103A/B

NOZZLE	SIZE	PROJECTION	RATING
N1	3"	300	150#RF
N2	2"	350	150#RF

DESIGN DATA		
DESIGN CODE		–
DIMENSION		–
QUANTITY		–
POSITION	INSTALATION	–
	HYDRO TEST	–
PRESS.	DESIGN	–
	OPERATING	–
HYDROSTATIC TEST		–
TEMP.	DESIGN	–
	OPERATING	–
TEST	RT	–
	MT	–
JOINT EFF. SHELL		–
CORROSION ALLOWANCE		–

MATERIAL		
SHELL	–	–
HEAD	–	–

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPVD.
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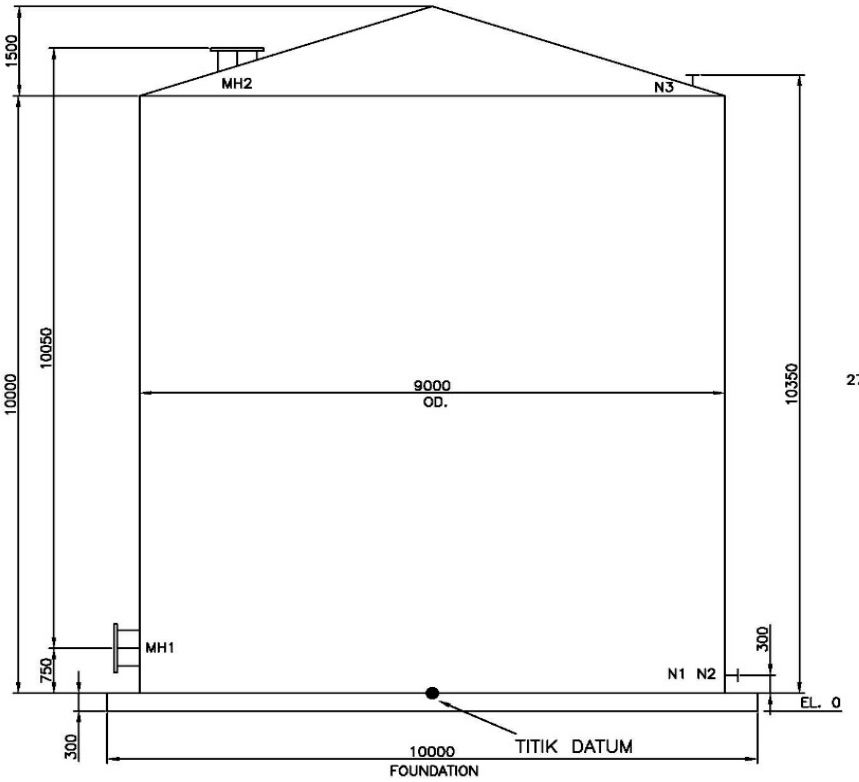

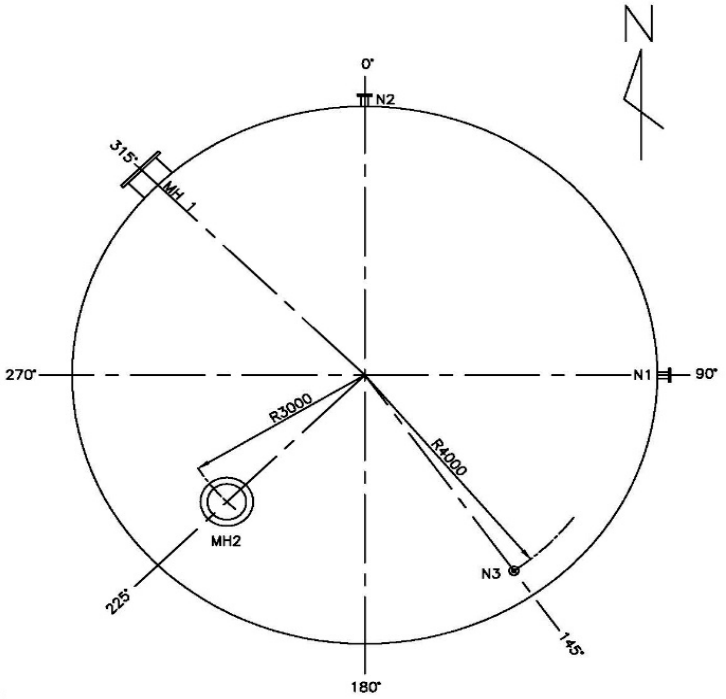

PLAN NORTH

T–101

NOZZLE	SIZE	PROJECTION	RATING
N1	4"	4700	150#RF
N2	4"	4700	150#RF
N3	2"	10350	150#RF
MH1	24"	4800	150#RF
MH2	24"	10800	150#RF

DESIGN DATA		
DESIGN CODE		–
DIMENSION		–
QUANTITY		–
POSITION	INSTALATION	–
	HYDRO TEST	–
PRESS.	DESIGN	–
	OPERATING	–
HYDROSTATIC TEST		–
TEMP.	DESIGN	–
	OPERATING	–
TEST	RT	–
	MT	–
JOINT EFF. SHELL		–
CORROSION ALLOWANCE		–

MATERIAL		
SHELL	–	–
HEAD	–	–

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPVD.
0	8–04–13	ISSUED FOR APPROVAL	X	DI	DI

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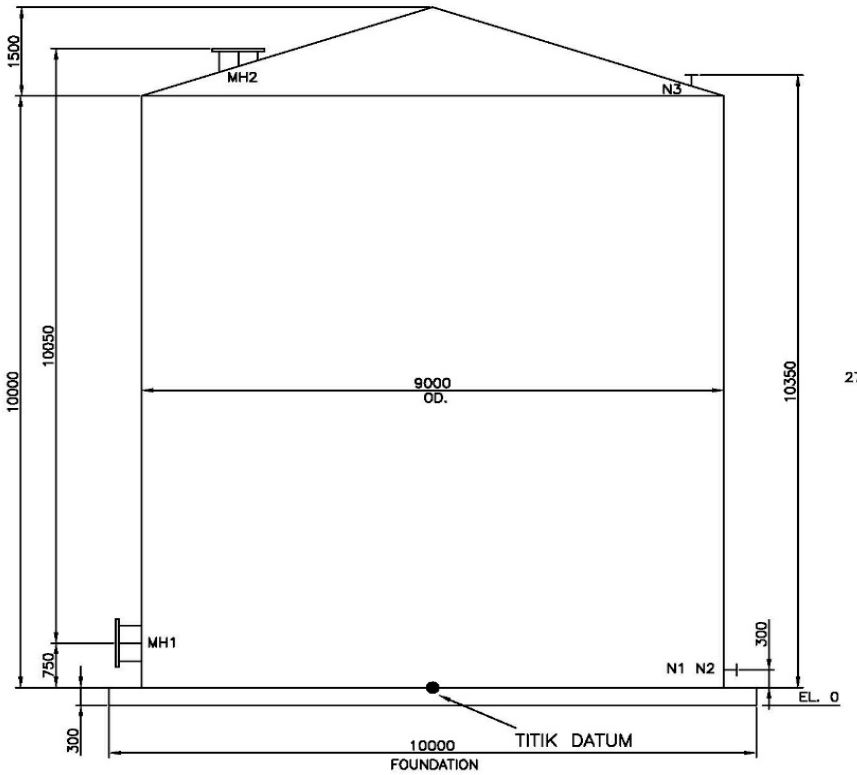

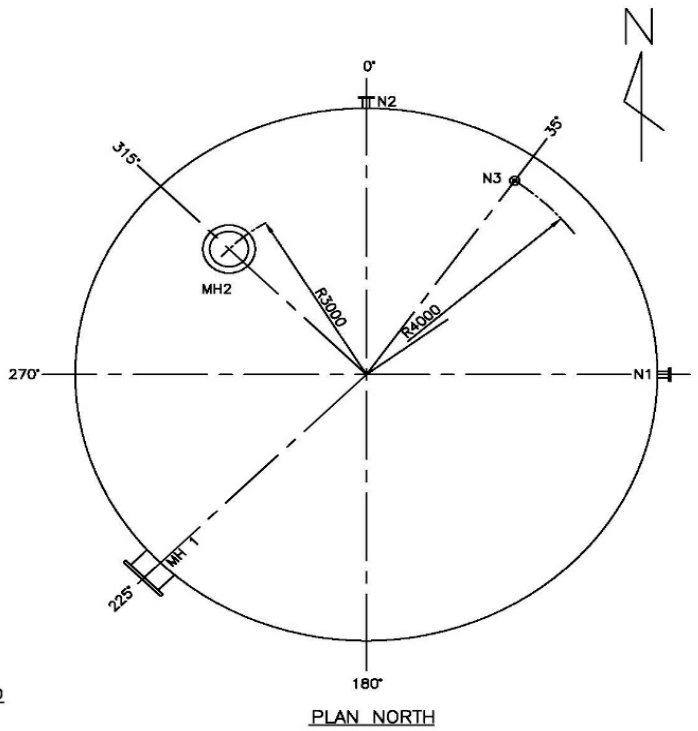

PLAN NORTH

T–102

NOZZLE	SIZE	PROJECTION	RATING
N1	4"	4700	150#RF
N2	4"	4650	150#RF
N3	4"	10350	150#RF
MH1	24"	4800	150#RF
MH2	24"	10800	150#RF

DESIGN DATA		
DESIGN CODE		–
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QUANTITY		–
POSITION	INSTALATION	–
	HYDRO TEST	–
PRESS.	DESIGN	–
	OPERATING	–
HYDROSTATIC TEST		–
TEMP.	DESIGN	–
	OPERATING	–
TEST	RT	–
	MT	–
JOINT EFF. SHELL		–
CORROSION ALLOWANCE		–

MATERIAL		
SHELL	–	–
HEAD	–	–

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPVD.
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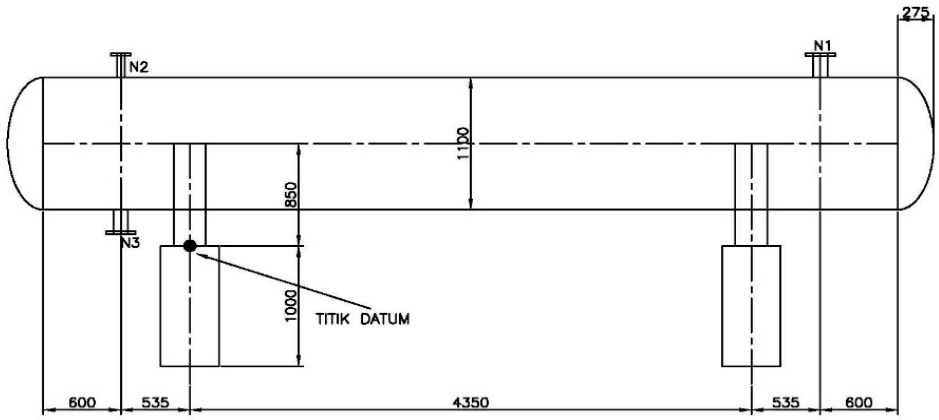
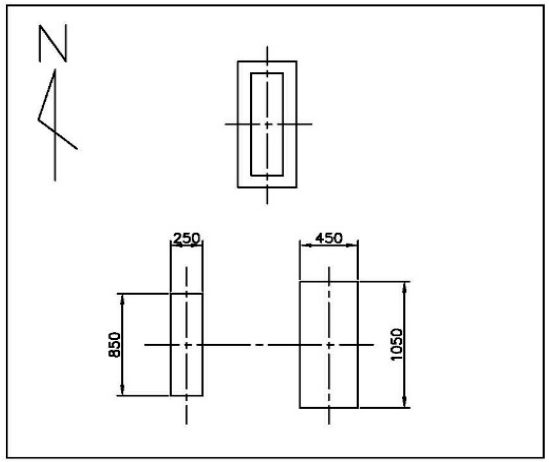


LOOKING NORTH



V-101

NOZZLE	SIZE	PROJECTION	RATING
N1	6"	750	150#RF
N2	2"	750	150#RF
N3	4"	750	150#RF

DESIGN DATA		
DESIGN CODE		–
DIMENSION		–
QUANTITY		–
POSITION	INSTALATION	–
	HYDRO TEST	–
PRESS.	DESIGN	–
	OPERATING	–
HYDROSTATIC TEST		–
TEMP.	DESIGN	–
	OPERATING	–
TEST	RT	–
	MT	–
JOINT EFF. SHELL		–
CORROSION ALLOWANCE		–

MATERIAL		
SHELL	–	–
HEAD	–	–

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPVD.
0	8-04-13	ISSUED FOR APPROVAL	X	DI	DI

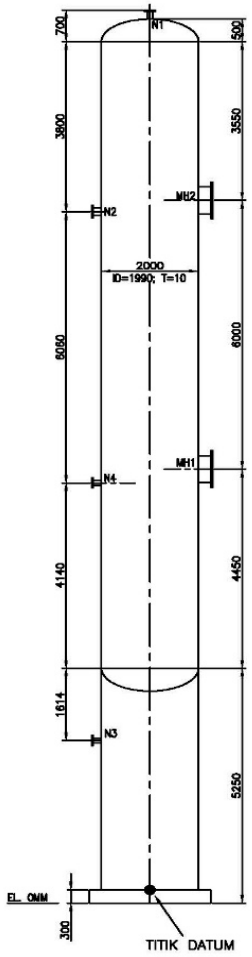
Pl.n.D
OIL & GAS DESIGN COURSE

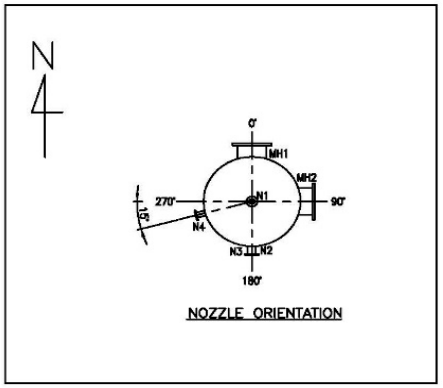
PROJECT TITLE
PIPING DRAFTING TRAINING PLUS

TITLE
TUGAS AKHIR
TRAINING BASIC PDMS

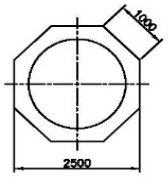
SCALE: 1:75	SIZE: A3	JGB. NO:

SHT. NO.	DRAWING NO.	REV.
11	Pl.n.D – PDKJ – 09	0





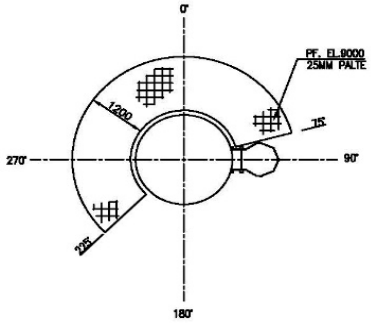
NOZZLE ORIENTATION

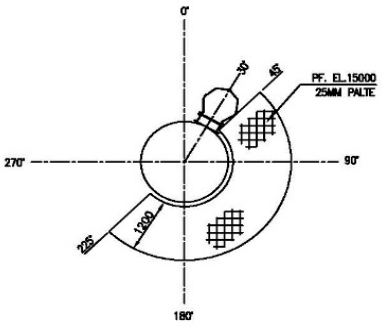


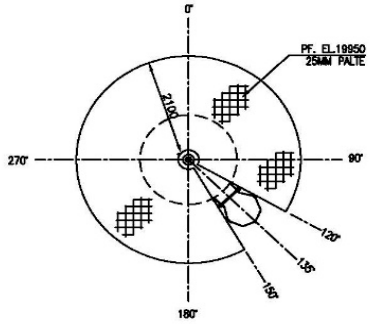
PLAN NORTH
FOUNDATION DETAIL

V-102

NOZZLE	SIZE	PROJECTION	RATING
N1	4"	700	150#RF
N2	6"	1200	150#RF
N3	4"	1150	150#RF
N4	4"	1200	150#RF
MH1	24"	1300	150#RF
MH2	24"	1300	150#RF







DESIGN DATA

DESIGN CODE		–
DIMENSION		–
QUANTITY		–
POSITION	INSTALATION	–
	HYDRO TEST	–
PRESS.	DESIGN	–
	OPERATING	–
HYDROSTATIC TEST		–
TEMP.	DESIGN	–
	OPERATING	–
TEST	RT	–
	MT	–
JOINT EFF. SHELL		–
CORROSION ALLOWANCE		–

MATERIAL

SHELL	–	–
HEAD	–	–

REV.	DATE	DESCRIPTION	DRAWN	CHKD	APPVD.
0	8-04-13	ISSUED FOR APPROVAL	X	DI	DI

Pl.n.D
OIL & GAS DESIGN COURSE

PROJECT TITLE
PIPING DRAFTING TRAINING PLUS

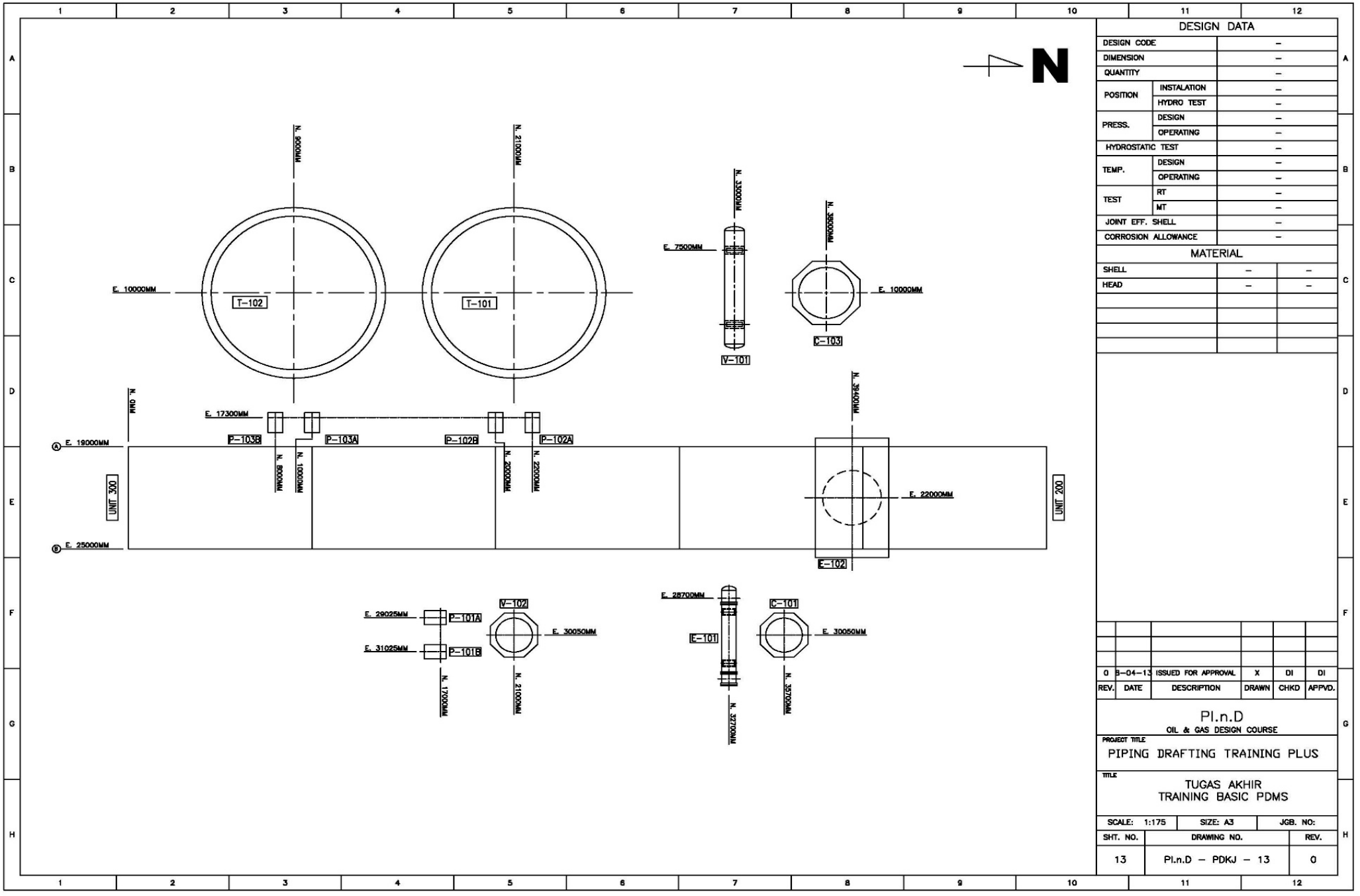
TITLE
TUGAS AKHIR
TRAINING BASIC PDMS

SCALE: 1:100	SIZE: A3	JGB. NO:

SHT. NO.	DRAWING NO.	REV.
01	Pl.n.D – PDKJ – 01	0

4.2.3 Gambar *Plot plan*

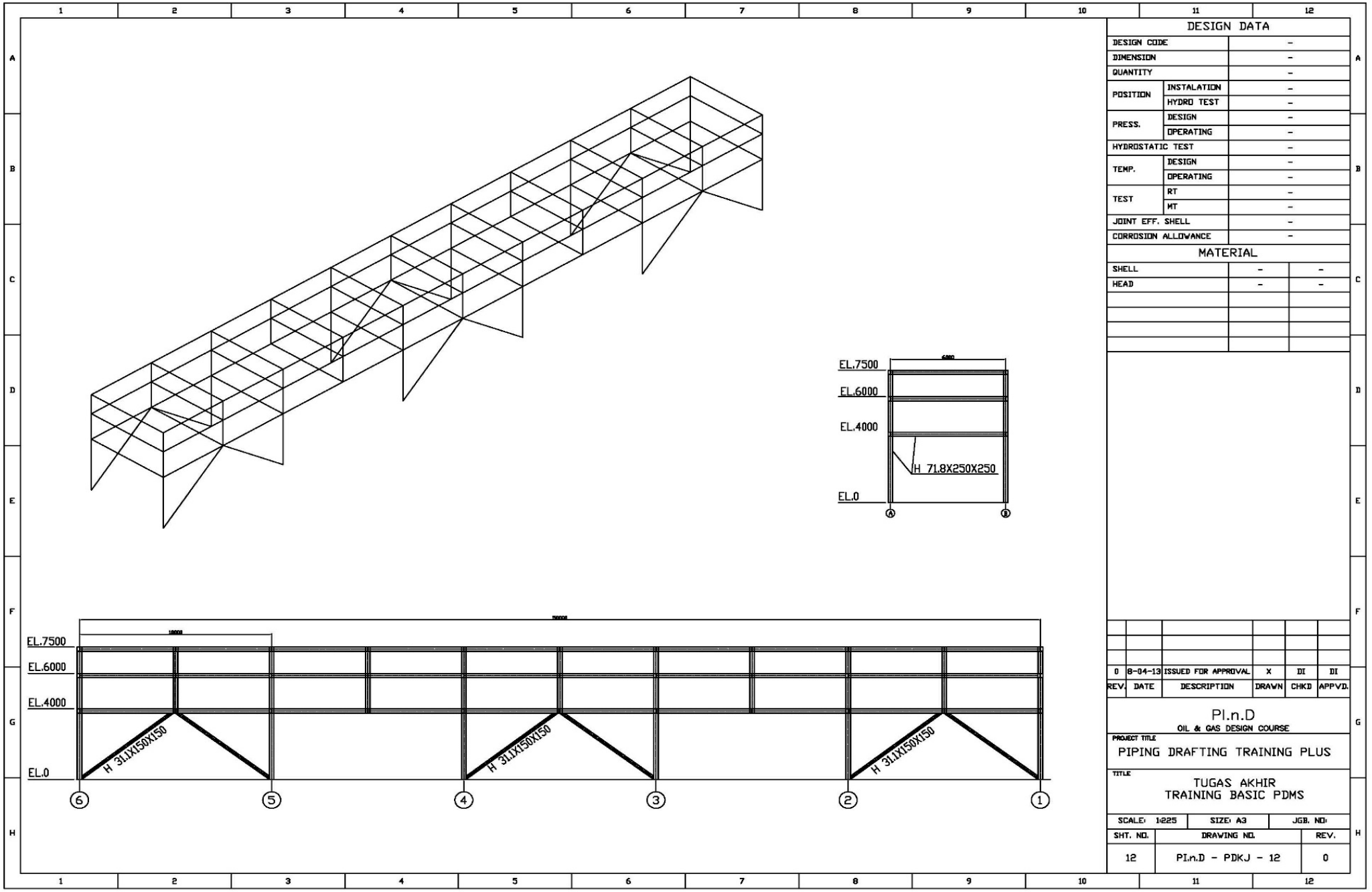
Gambar *plot plan* adalah gambar pandangan atas yang memperlihatkan lokasi setiap *equipment* yang telah diatur sehingga memenuhi syarat kontruksi, produksi dan pemeliharaan *equipment* tersebut. Gambar *plot plan* bisa dilihat pada Gambar 4.17.



Gambar 4.18 *Plot plan*

4.2.4 Gambar Pipe Rack

Gambar pipe rack adalah suatu gambar rak yang dibuat untuk membuat jalur pipa terlihat lebih seragam dan tertata. Gambar *pipe rack* bisa dilihat pada Gambar 4.18.



Gambar 4.19 *Pipe rack*