



Toase-che Park Sanati Gohar Ofogh Petrochemical Co.

**CONCEPTUAL, BASIC and DETAIL DESIGN
ENGINEERING OF STYRENE PARK OFFSITE**



Document Title: P&ID for Active Carbon Filter

Document No. : EI027-ENR-VD-PR-PID-003

Rev.: R2

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STYRENE PARK OFFSITE

Document Title:

P&ID for Active Carbon Filter

R2	13/04/2024	Issued for Comment	M.Tavakoli	E.Malek	H.Keshmiri
R1	07/04/2024	Issued for Comment	M.Tavakoli	E.Malek	H.Keshmiri
R0	20/02/2024	Issued for Comment	M.Tavakoli	E.Malek	H.Keshmiri
Rev.	Issued Date	DESCRIPTION	PREPARED	CHECKED	APPROVED

PIPING SYMBOLS

	MAIN PROCESS LINES
	SECONDARY PROCESS AND UTILITY LINES
	FLOW DIRECTION
	TRACED PIPELINE
	FUTURE PIPELINE
	VENDOR PACKAGE
	JACKETED OR DOUBLE CONTAINMENT PIPELINE
	LINE CROSSING (CONNECTED)
	LINE CROSSING (UNCONNECTED)
	TWO PHASE FLOW (REQUIRE VIBRATION OR SUPPORT ANALYSIS)
	VIBRATION OR PULSATION LINE (REQUIRE VIBRATION OR SUPPORT ANALYSIS)
	BATTERY LIMIT
	SLOP
	CONTINUATION OF PIPE LINE BEYOND THE PIPE OR EQUIPMENT
	BOUNDARY OF SCOPE
	QUICK COUPLING (HOSE CONNECTION)
	HOLED PIPE SPRAY HEADER REDUCER
	HOSE
	REMOVABLE SPOOLPIECE
	FLANGE
	CHEMICAL SEWER TO DRAIN RECOVERY
	OILY SEWER
	STORM WATER SEWER
	GROUND OR PAVING SURFACE
	VENDOR OTHERS LIMITS OF SUPPLY

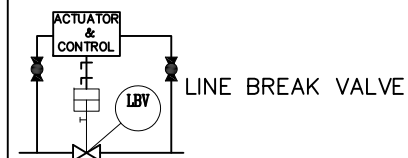
	GROUNDING FOR STATIC ELECTRICITY PROTECTION
	CHANGE OF PIPING CLASS DESIGNATION (CLASS BREAK)
	CHANGE OF INSULATION & PAINTING (DESIGN BREAK)
	CHANGE OF LINE NUMBER
	TEMPORARY STRAINER
	SP: SPECIAL PIECE
	SCH: CORROSION METER ELEMENT
	T TYPE STRAINER
	Y TYPE STRAINER
	BARRED TEE

PIPING CONNECTORS

	REFERENCE ARROWS FOR TWO DIRECTION LINE
	REFERENCE ARROWS AT THE SIDE OF THE DRAWING. (ONLY TO USED FOR PROCESS AND INSTRUMENT LINES.)
	REFERENCE ARROW FOR UTILITIES
	UTILITY TO CONTINUATION
	UTILITY FROM CONTINUATION
	PSV/TSV SIZE INLET PSV/TSV ORIFICE PSV/TSV SIZE OUTLET PSV/TSV SET PRESSURE (Barg)

VALVES SYMBOLS

	GATE VALVE
	GLOBE VALVE
	CHECK VALVE
	GATE VALVE BEHIND OFF
	ANGLE VALVE
	BALL VALVE (F.B.)
	BALL VALVE (R.B.)
	GATE VALVE WITH BODY BLEED
	BUTTERFLY VALVE
	HYDRAULIC CONTROL VALVE
	PLUG VALVE
	PILOT OPERATED RELIEF VALVE
	SELF ACTUATED REGULATOR VALVE
	SPRING LOADING VALVE
	THREWAY VALVE
	PRESSURE SAFETY VALVE/ PRESSURE VACUUM SAFETY VALVE
	PILOT OPERATED SAFETY VALVE/VACUUM RELIEF VALVE
	TEMPERATURE SAFETY VALVE
	PRESSURE/ VACUUM RELIEF VALVE
	MOTOR OPERATED VALVE
	DIAPHRAGM VALVE
	JACKETED GATE VALVE
	JACKETED GLOBE VALVE
	JACKETED CHECK VALVE
	JACKETED BALL VALVE
	JACKETED ANGLE VALVE



FITTINGS

	REDUCER
	FLANGE CONNECTION
	SPADE (BLIND)
	RING SPACER
	CAP
	FLANGED END
	QUICK COUPLING
	SPECTACLE BLIND (NORMALLY CLOSE)
	SPECTACLE BLIND (NORMALLY OPEN)
	STEAM TRAP WITH BUILT-IN STRAINER (THERMOSTATIC/THERMODYNAMIC TYPE)

REFERENCE DRAWING	DWG NO.	REV.

LEGENDS :

NOTES :

KEY PLAN :

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R0	20-Feb-24	Issued for Comment	M.T.	E.M.	H.K.	HRCO

CLIENT:

CONSULTING ENGINEER:

VENDOR:

PROJECT: **STYRENE PARK OFFSITE**

DRAWING TITLE: **P&ID for Active Carbon Filter**

DRAWING NO.	REV.	SIZE	SCALE	SHEET
EI027-ENR-VD-PR-PID-003	R2	A3	NTS	3 of 8

(1) ABBREVIATION OF UTILITY SERVICES

IA	INSTRUMENT AIR
PA	PLANT AIR
PW	POTABLE WATER
UW	SERVICE WATER
FW	FIRE WATER
CWS	COOLING WATER SUPPLY
CWR	COOLING WATER RETURN
DM	DEMINERALIZED WATER
CB	COOLING BLOW DOWN
NIT	NITROGEN
HS	HIGH PRESSURE STEAM
FG	FUEL GAS
SC	STEAM CONDENSATE

(2) LINE SERVICE CODE

ST	STYRENE
BD	1,3 BUTADIENE
AC	ACRYLONITRIL
PO	PROCESS OIL
CDC	CHEMICAL SEWER
POC	OILY SEWER
SN	SANITARY SEWER
AV	ATMOSPHERIC VENT

(3) GENERAL ABBREVIATIONS

AMB	AMBIENT
AP	ANALYSIS POINT
ATM	ATMOSPHERE
AC	AIR CONVEYOR
CAP	CAPACITY
DES	DESIGN
DP	DESIGN PRESSURE
DT	DESIGN TEMPERATURE
DWG	DRAWING
ESD	EMERGENCY SHUT DOWN
FV	FULL VACUUM
HLL	HIGH HIGH LIQUID LEVEL
HLL	HIGH LIQUID LEVEL
HPV	HIGH POINT VENT
HS	HAND SWITCH
ID	INSIDE DIAMETER
LLL	LOW LIQUID LEVEL
LLLL	LOW LOW LIQUID LEVEL
MAX	MAXIMUM
MIN	MINIMUM
MH	MANHOLE
MM	MILIMETER
NLL	NORMAL LIQUID LEVEL
NNF	NORMALLY NO FLOW
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OP	OPERATING
PLC	PROGRAMMABLE LOGIC CONTROLLER
DCS	DISTRIBUTED CONTROL SYSTEM
SD	SHUT DOWN
SEL	SELECTOR

SL	SILENCER
SP	SET POINT
SO	STEAM OUT
SHS	SHELL SIDE
SS	STAINLESS STEEL
LTCS	LOW TEMPERATURE CARBON STEEL
CS	CARBON STEEL
LF	LOW PRESSURE FLARE
HF	HIGH PRESSURE FLARE
STR	STRAINER
PD	PROCESS DRAIN
BOG	BOIL OFF GAS
NP	NO PAINTING
STD	STANDARD
TEMP	TEMPERATURE
TGS	TANK GAUGING SYSTEM
TE	TEMPERATURE ELEMENT
FE	FLOW ELEMENT
AG	ABOVE GROUND
UG	UNDER GROUND
RO	RESTRICTION DRIFICE
VB	VORTEX BREAKER
TS	TUBE SIDE
TYP	TYPICAL
UC	UNLOADING CONNECTION
VAC	VACUUM
FLR	FLARE DISCHARGE
LG	LEVEL GAUGE
PG	PRESSURE GAUGE
TG	TEMPERATURE GAUGE
RG	REFRIGERANT GAS
LSHH	LEVEL SWITCH HIGH HIGH
LSLL	LEVEL SWITCH LOW LOW
TI	TEMPERATURE INDICATOR
PI	PRESSURE INDICATOR
LI	LEVEL INDICATOR
RL	REFRIGERANT LIQUID
CSD	CAR SEALED OPEN
CSC	CAR SEALED CLOSED
FOF	FACE OF FLANGE
GR	GRADE
OSBL	OUT SIDE BATTERY LIMIT
ISBL	INSIDE BATTERY LIMIT
LC	LOCKED CLOSED
LO	LOCKED OPEN
LPD	LOW POINT DRAIN
LPT	LOW POINT
RF	RAISED FACE
RTD	RESISTANCE TEMPERATURE DETECTOR
RTJ	RING TYPE JOINT
T/T	TANGENT TO TANGENT
TT	TEMPERATURE TRANSMITTER
PT	PRESSURE TRANSMITTER
LT	LEVEL TRANSMITTER
FT	FLOW TRANSMITTER
PA	PRESSURE ALARM
TA	TEMPERATURE ALARM
LA	LEVEL ALARM
PAL	PRESSURE ALARM LOW
PALL	PRESSURE ALARM LOW LOW
PAH	PRESSURE ALARM HIGH
PAHH	PRESSURE ALARM HIGH HIGH
AI	ANALYZER INDICATOR
AT	ANALYZER TRANSMITTER
VG	VENT GAS
BL	BATTERY LIMIT

D	DRAIN
DIA	DIAMETER
P	PRESSURE
EL	ELEVATION
PIC	PRESSURE INDICATOR CONTROL
PS	PRESSURE SWITCH
TIC	TEMPERATURE INDICATOR CONTROL
TS	TEMPERATURE SWITCH
FI	FLOW INDICATOR
FG	FLOW GAUGE
FIC	FLOW INDICATOR CONTROL
FS	FLOW SWITCH
LS	LEVEL SWITCH
FO	FIBER OPTIC

VALVE TYPES

ARC	AUTOMATIC RECIRCULATION CHECK VALVE
XV	SHUT OFF VALVE
MOV	MOTORIZED VALVE
TSV	TEMPERATURE SAFETY VALVE
VRV	VACUUM RELIEF VALVE
PVV	PRESSURE VACUUM VALVE
BDV	BLOW DOWN VALVE
GV	GATE VALVE
BY	BUTTERFLY VALVE
CHV	CHECK VALVE
BV	BALL VALVE
PV	PRESSURE CONTROL VALVE
FV	FLOW CONTROL VALVE
KV	KNIFE GATE VALVE

NV	NEEDLE VALVE
RV	ROTARY VALVE
GB	GLOBE VALVE
DV	DIAPHRAGM VALVE
PG	PLUG VALVE
LV	LEVEL CONTROL VALVE
TV	TEMPERATURE CONTROL VALVE
DA	DART VALVE
SV	SLIDE VALVE
PH	PINCH VALVE
TW	THREE WAY VALVE
PSV	PRESSURE SAFETY VALVE
AV	ANALOGUE PROPORTIONAL VALVE
LBV	LINE BREAK VALVE

OTHER DESCRIPTION

MOTOR SIGNAL DEFINITION:

YL	MOTOR RUNNING STATUS
YA	MOTOR FAULT STATUS
YI	LOCAL/REMOTE STATUS
YX	WARNING EQUIPMENT STATUS

VALVE SELF POSITION:

FO	FAIL OPEN	L/R	LOCAL/REMOTE
FC	FAIL CLOSE	EM	EMERGENCY
FL	FAIL LOCK (LAST POSITION)	PE	PERMIT
FI	FAIL INDETERMINATE	OP	OPEN
TSO	TIGHT SHUTOFF	CL	CLOSE
ST	START		
SP	STOP		

(4) EQUIPMENT CATEGORY SYMBOLS

EQUIPMENT ITEMS	EQUIPMENT CODE	EQUIPMENT ITEMS	EQUIPMENT CODE
STORAGE TANK	TK	FILTER	F
HEAT EXCHANGER/CONDENSER	E	SUB-COOLER	C
TURBIN	T	ELECTRICAL HEATER	H
PUMP	P	DRUM	D
SUMP	SU	MIXER WITH MOTOR	MX
LOADING/UNLOADING ARM	LA/UNLA	BLOWER	B
FLARE PACKAGE	FL	METERING PACKAGE	M
PACKAGES	PK		
GAS TURBIN MOTOR	G		

(5) PIPING LINE NUMBERING SYSTEM

PIPING SHALL BE IDENTIFIED IN ACCORDANCE WITH THE FOLLOWING :

X - XXXX - 00 - XXX - XXXX - X

A B C D E F

WHERE :

A LINE SIZE IN INCHES.

B LINE SERVICE CODE, UP TO FOUR LETTERS,REFER TO SECTION (1&2).

C UNIT NUMBER

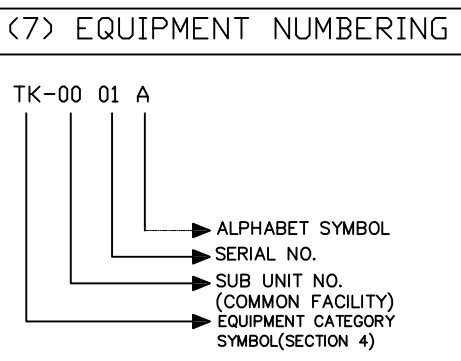
D SERIAL LINE No.

E PIPING MATERIAL CLASS,REFER TO PIPING MATERIAL SPECIFICATION, DOC. NO.: EI027-000-ED-PI-SPC-002

F INSULATION CODE , REFER TO SECTION (6).

(6) INSULATION CODE

E : ELECTRICAL TRACING
T : STEAM TRACING
H : HOT INSULATION
C : COLD INSULATION
P : PERSONNEL PROTECTION
PT : PAINTING
N : WITHOUT INSULATION



REFERENCE DRAWING	DWG NO.	REV.

LEGENDS :

NOTES :

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CLIENT:

CONSULTING ENGINEER:

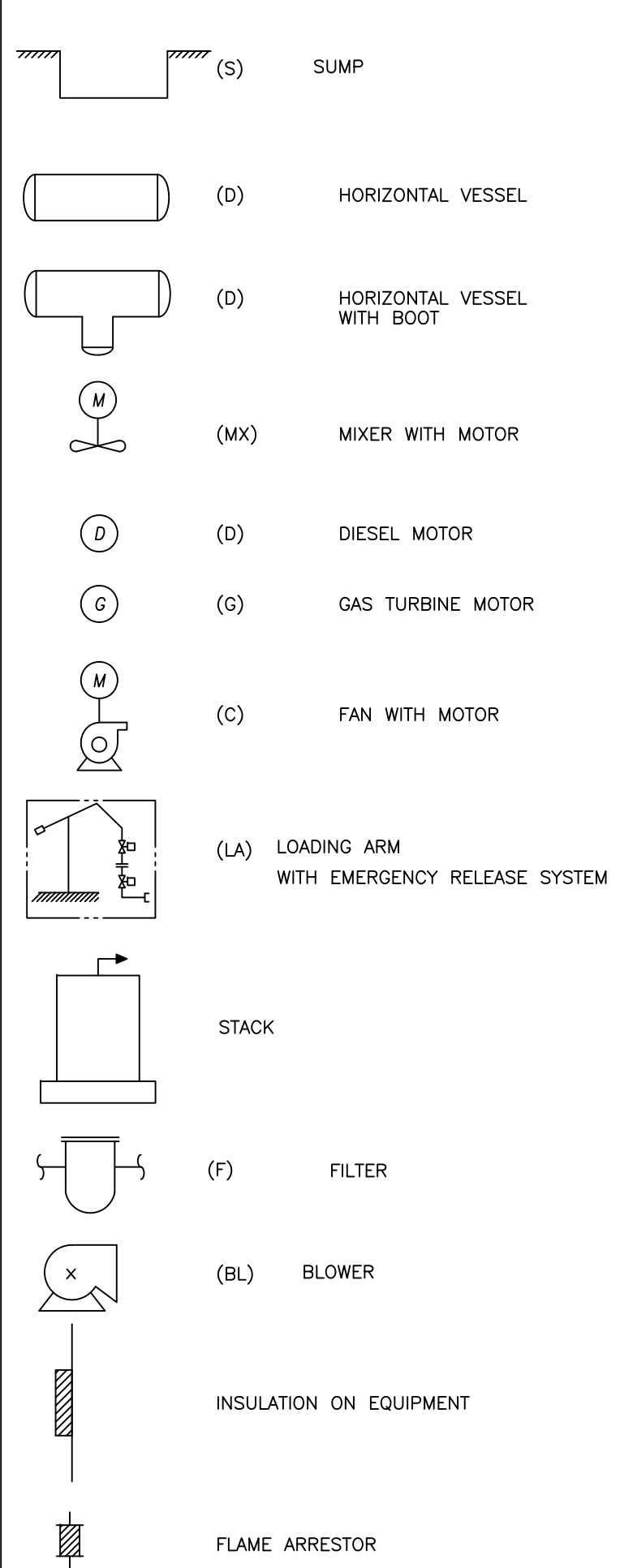
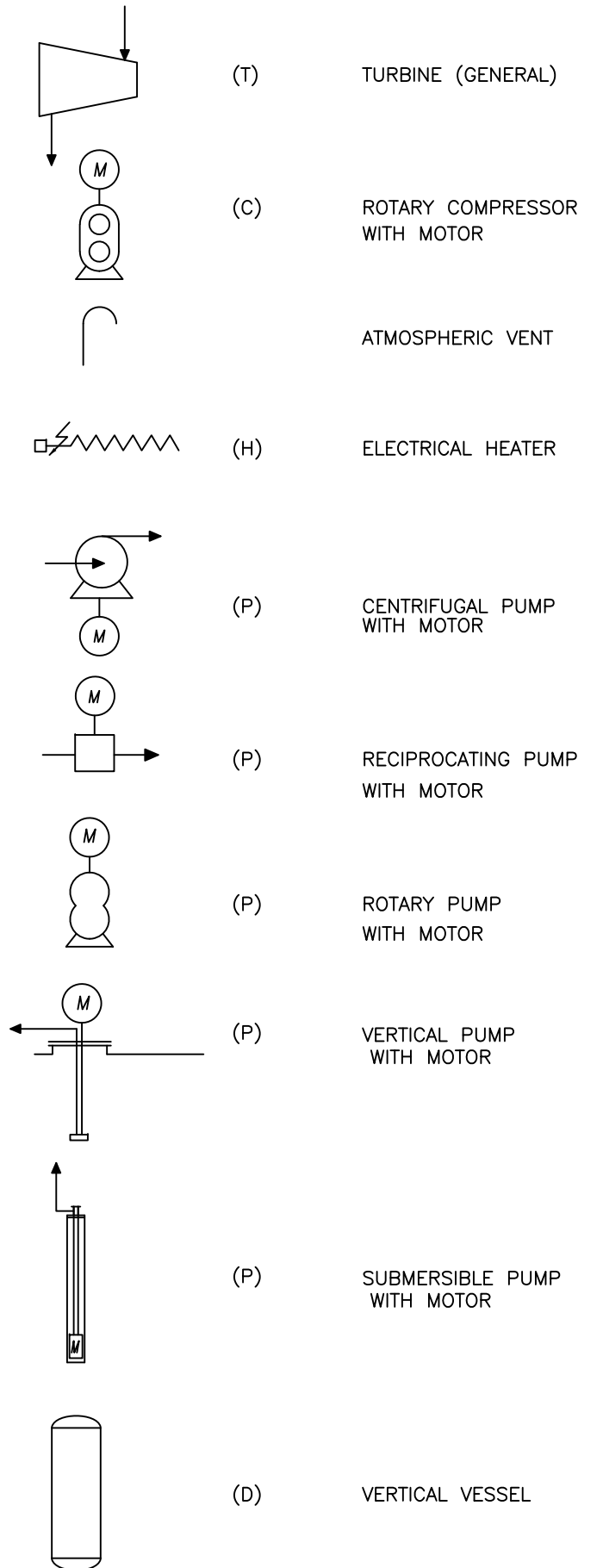
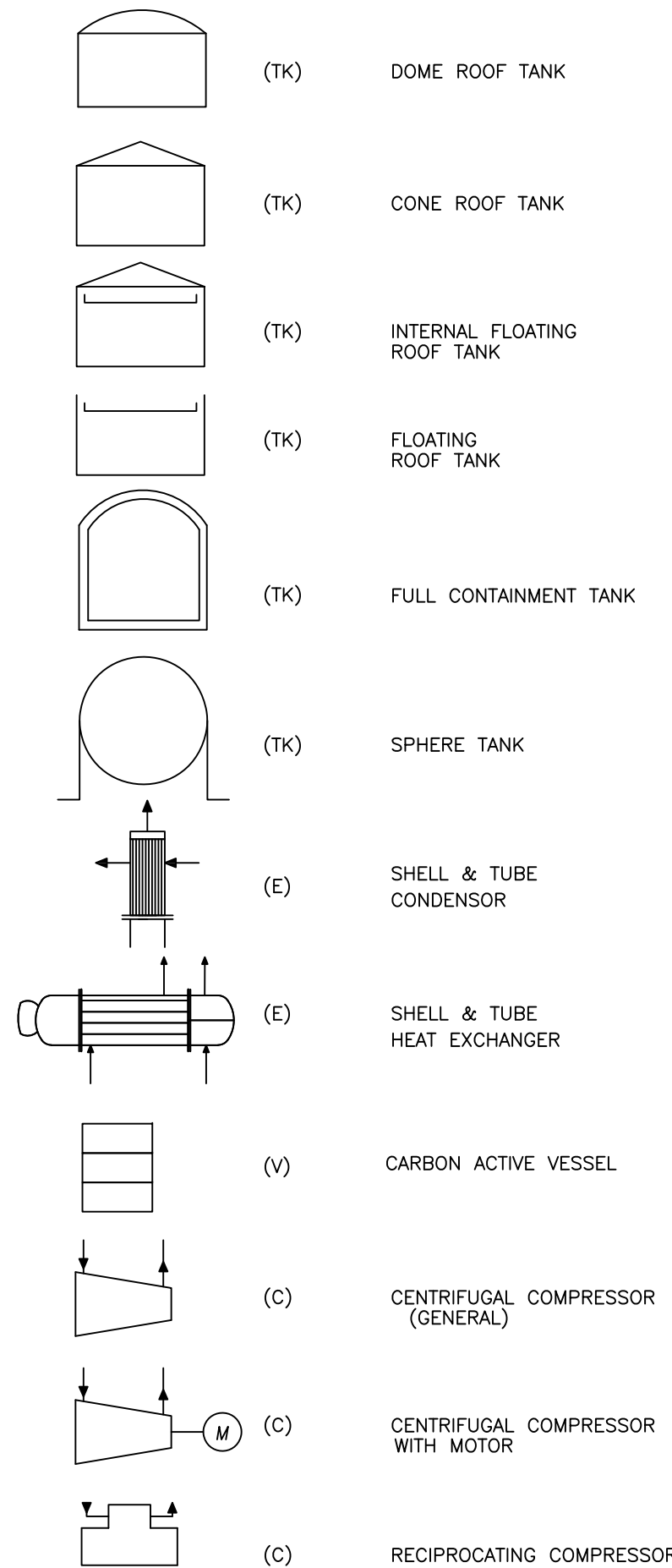
VENDOR:

PROJECT: **STYRENE PARK OFFSITE**

DRAWING TITLE: **P&ID for Active Carbon Filter**

DRAWING NO.	REV.	SIZE	SCALE	SHEET
EI027-ENR-VD-PR-PID-003	R2	A3	NTS	4 of 8

EQUIPMENT SYMBOLS



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R0	20-Feb-24	Issued for Comment	M.T.	E.M.	H.K.	HRCO

CLIENT:  PJPC

CONSULTING ENGINEER:  **پتروشیمی توسعه پارک**
صنعتی گستره افق

VENDOR:  EN3R TEKNOLOJI  HAMOON RAH

PROJECT: **STYRENE PARK OFFSITE**

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DRAWING NO.	REV.	SIZE	SCALE	SHEET
EI027-ENR-VD-PR-PID-003	R2	A3	NTS	5 of 8

CONTROL VALVES OR REGULATORS

- CONTROL VALVE (GENERAL)
- CONTROL GLOBE VALVE
- CONTROL BALL VALVE
- CONTROL BUTTERFLY VALVE
- S = SOLENOID VALVE
R = MANUAL RESET WHEN INDICATED
- SELF CONTAINED REGULATOR
- THREEWAY CONTROL VALVE
- CONTROL VALVE WITH HANDWHEEL
- THREEWAY CONTROL VALVE (WITH HANDWHEEL)
- DIRECT ACTING CONTROL VALVE
- JACKETED GLOBE CONTROL VALVE
- JACKETED BUTTERFLY CONTROL VALVE
- DIAPHRAGM CONTROL VALVE
- DAMPER CONTROL VALVE
- SELF ACTUATED REGULAR VALVE
- (CONTROL VALVE) WITH LIMIT SWITCH "ZSC" FOR CLOSE, "ZSO" FOR OPEN.
- (CONTROL VALVE) WITH SOLENOID VALVE
- CLOSE ON AIR FAILURE
- OPEN ON AIR FAILURE
- LOCK ON AIR FAILURE (AIR-TO-CLOSE POSITION)
- LOCK ON AIR FAILURE (AIR-TO-OPEN POSITION)
- CONTROL VALVE IDENTIFICATION

PRIMARY ELEMENT SYMBOLS

- CORIOLIS FLOW METER
- TURBIN FLOW ELEMENT
- AUTOMATIC REGULATOR WITH INTEGRAL FLOW INDICATION
- POSITIVE DISPLACER
- ROTAMETER
- ORIFICE PRIMARY ELEMENT
- MAGNETIC FLOW METER
- VORTEX FLOW METER
- ULTRASONIC FLOW METER
- RESTRICTION ORIFICE
- FLOW STRAIGHTENER
- FLOW NOZZLE
- LEVEL GAUGE
- LEVEL TRANSMITTER EXTERNAL LEVEL INSTRUMENT IE. DISPLACER OR DIFFERENTIAL PRESSURE TYPE. XX DP: DIFFERENTIAL
- XX LD: DISPLACER TYPE INTERNAL FLOAT TYPE
- DENSITY ELEMENT
- PRESSURE TAP DIAPHRAGM TYPE

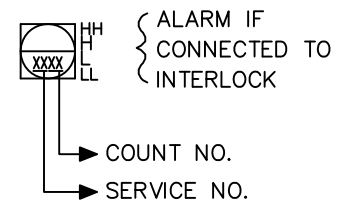
ACTUATORS

- DIAPHRAGM ACTUATOR
- ACTUATOR WITH HANDWHEEL
- PRESSURE BALANCED DIAPHRAGM ACTUATOR
- SINGLE/DOUBLE ACTING CYLINDER ACTUATOR
- MOTOR OPERATED ACTUATOR
- ELECTROHYDRAULIC ACTUATOR
- ELECTRIC PNEUMATIC TRANSDUCER
- SINGLE SOLENOID ACTUATOR
- SINGLE SOLENOID ACTUATOR WITH MANUAL RESET
- HAND ACTUATOR OR HANDWHEEL
- OFF-LINE SINGLE SOLENOID WITH SINGLE ACTUATOR
- OFF-LINE ANGLE SOLENOID WITH SINGLE ACTUATOR
- OFF-LINE 3-WAY SOLENOID WITH SINGLE ACTUATOR

INSTRUMENT SIGNAL LINE

- PROCESS CONNECTION OR MECHANICAL LINK/ INSTRUMENT SUPPLY
- PNEUMATIC SIGNAL
- ELECTRICAL SIGNAL
- CAPILLARY TUBING (FILLED SYSTEM)
- SOFTWARE LINK/DATA
- HYDRAULIC SIGNAL
- ELECTROMAGNETIC OR SONIC SIGNAL

INSTRUMENT CODES



INSTRUMENT OR FUNCTION SYMBOLS

- ESD LOGIC CONTROL (LOCATED IN FIELD)
- ESD LOGIC CONTROL (MOUNTED ON CONSOLE OR PANEL)
- ESD LOGIC CONTROL (MOUNTED ON LOCAL PANEL)
- INSTRUMENT MOUNTED ON PIPING / EQUIPMENT (LOCATED IN FIELD)
- INSTRUMENT MOUNTED ON CONSOLE
- INSTRUMENT MOUNTED ON LOCAL PANEL OR LOCAL GAUGE BOARD
- DCS FUNCTION NOT NORMALLY ACCESSIBLE TO OPERATOR
- DCS SHARED DISPLAY INDICATOR/CONTROLLER/ALARM
- PLC INSTRUMENT MOUNTED ON VENDOR PANEL
- DCS AUXILIARY OPERATORS INTERFACE DEVICE
- COMPUTER FUNCTION (LOCATED IN FIELD)
- COMPUTER FUNCTION (MOUNTED ON CONSOLE OR PANEL)
- DIAPHRAGM SEAL

REFERENCE DRAWING DWG NO. REV.

LEGENDS :

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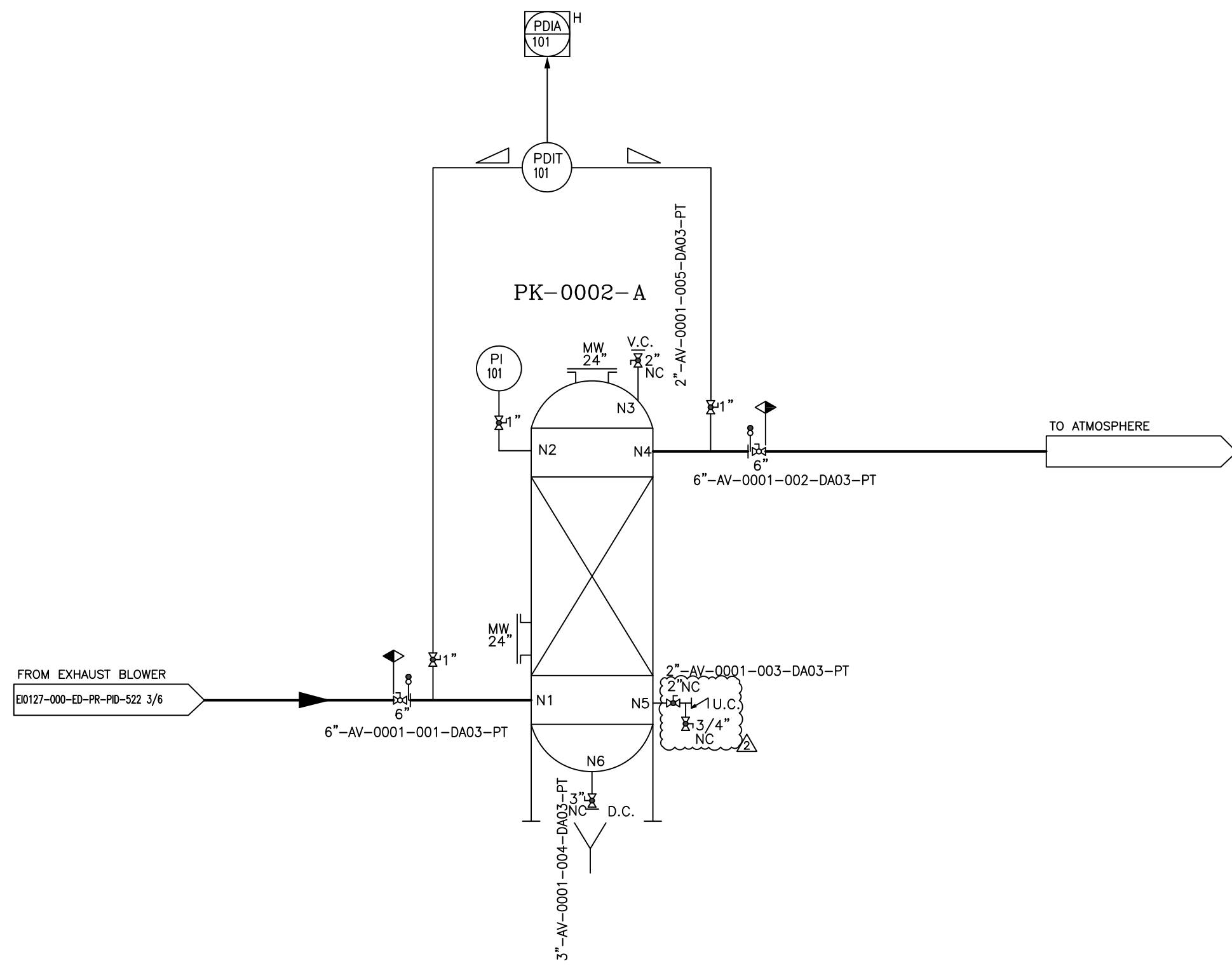
VENDOR:

PROJECT: **STYRENE PARK OFFSITE**

DRAWING TITLE: **P&ID for Active Carbon Filter**

DRAWING NO.	REV.	SIZE	SCALE	SHEET
E1027-ENR-VD-PR-PID-003	R2	A3	NTS	6 of 8

PK-0002-A AIR CARBON FILTER	
TYPE	: ACTIVATED CARBON
RATED CAPACITY	: 1188 Nm ³ /hr
VOLUME	: 20.8 m ³
ID x TT	: 2100 x 5300 mm
DP INT/EXT	: 0.2 barg / -0.1 barg
DT	: 85.0 °C
INSULATION	: No
MATERIAL	: CS



REFERENCE DRAWING	DWG NO.	REV.
PFD	E10127-ENR-VD-PR-PFD-002	R1
P&ID FOR STYRENE STORAGE TANK	E10127-000-ED-PR-PID-522	R4

LEGENDS :

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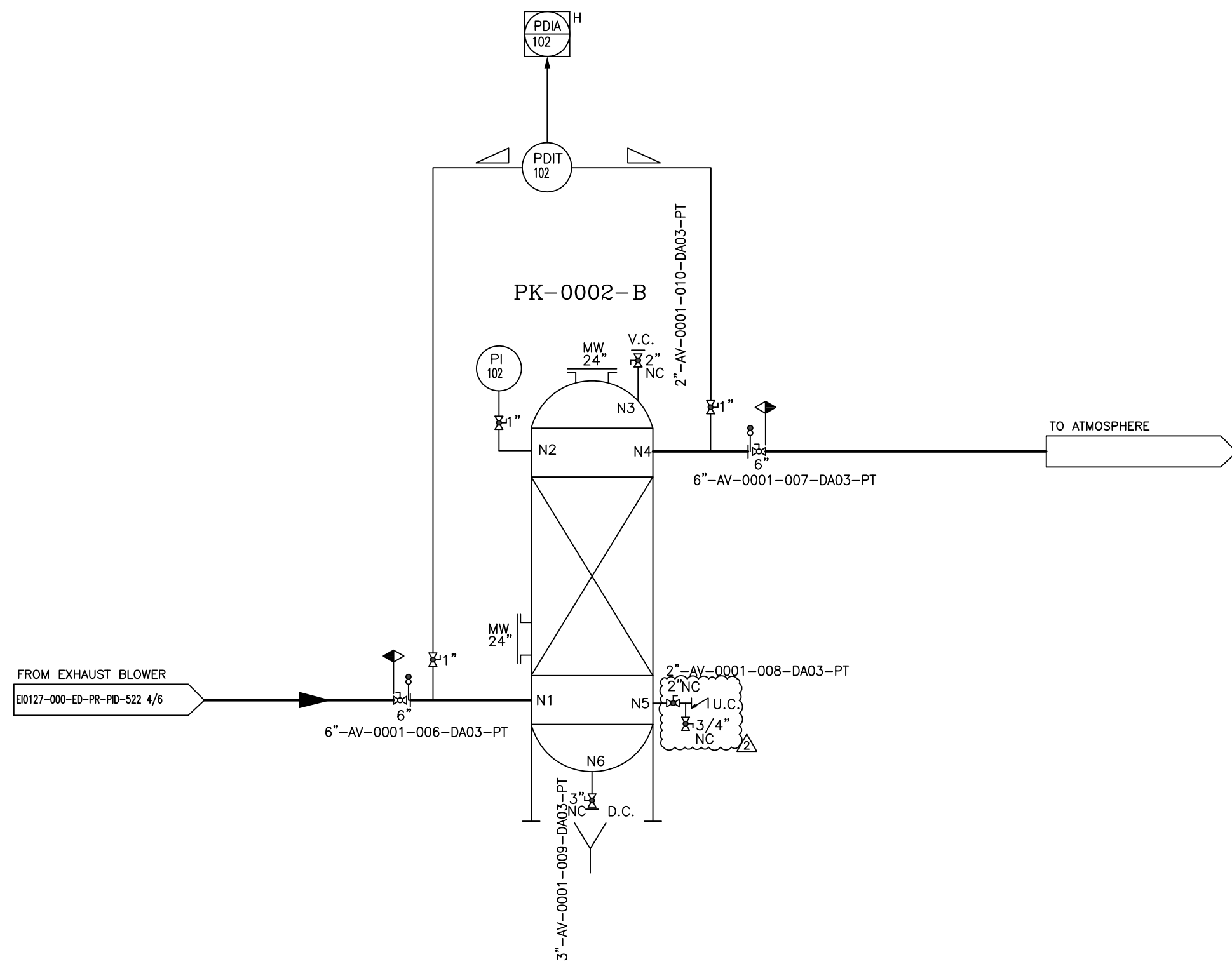
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DRAWING NO.	REV.	SIZE	SCALE	SHEET
E1027-ENR-VD-PR-PID-003	R2	A3	NTS	7 of 8

PK-0002-B
AIR CARBON FILTER

TYPE : ACTIVATED CARBON
 RATED CAPACITY : 1188 Nm³/hr
 VOLUME : 20.8 m³
 ID x TT : 2100 x 5300 mm
 DP INT/EXT : 0.2 barg / -0.1 barg
 DT : 85.0 °C
 INSULATION : No
 MATERIAL : CS



REFERENCE DRAWING	DWG NO.	REV.
PFD	EI0127-ENR-VD-PR-PFD-002	R1
P&ID FOR STYRENE STORAGE TANK	EI0127-000-ED-PR-PID-522	R4

LEGENDS :

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