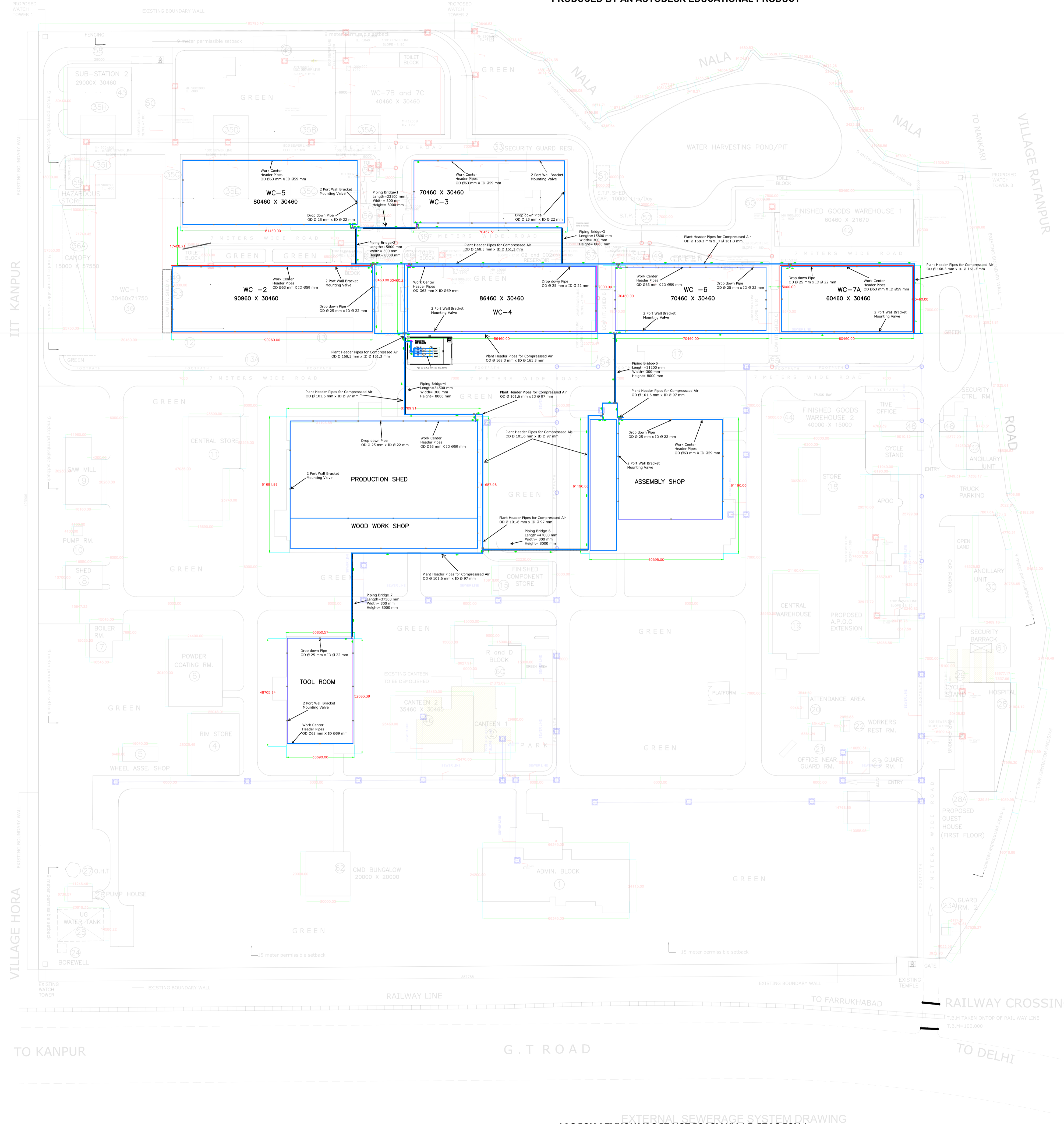


NOTES:-

- 1) Drop Down should be atleast 1 meter above from the ground surface



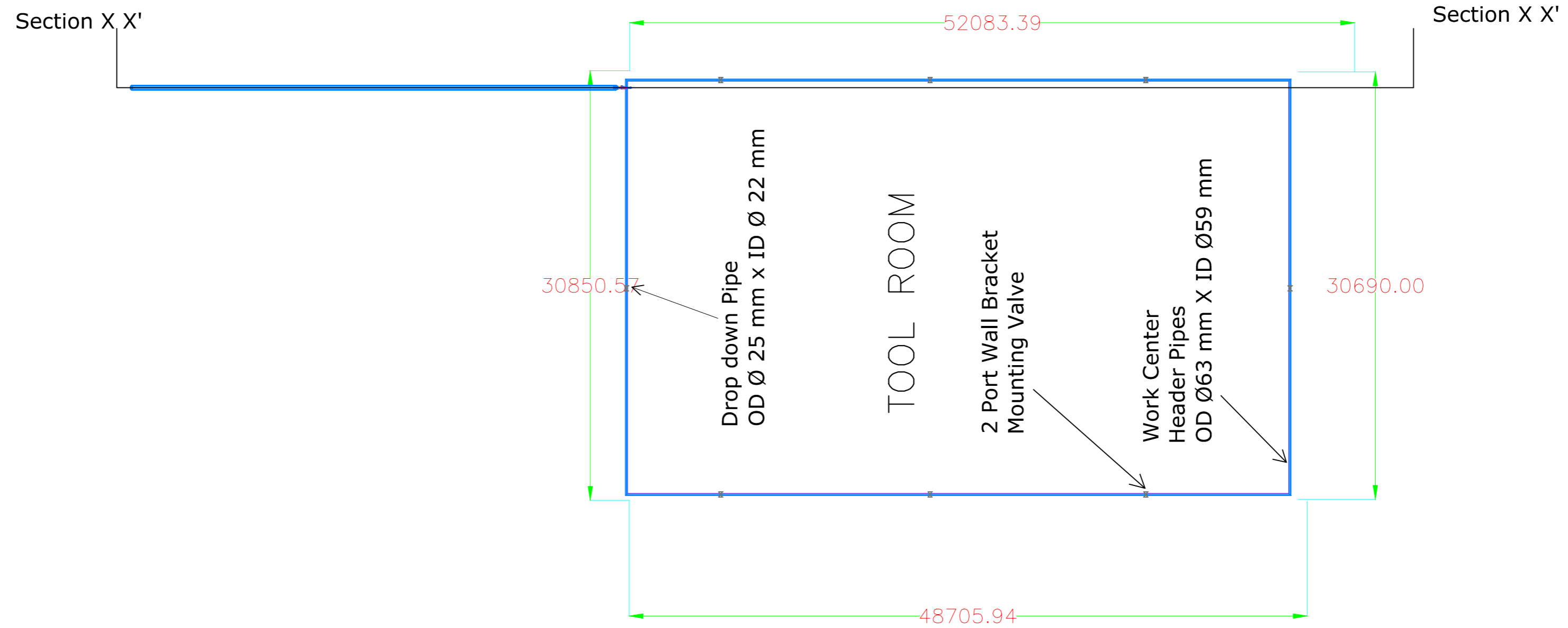
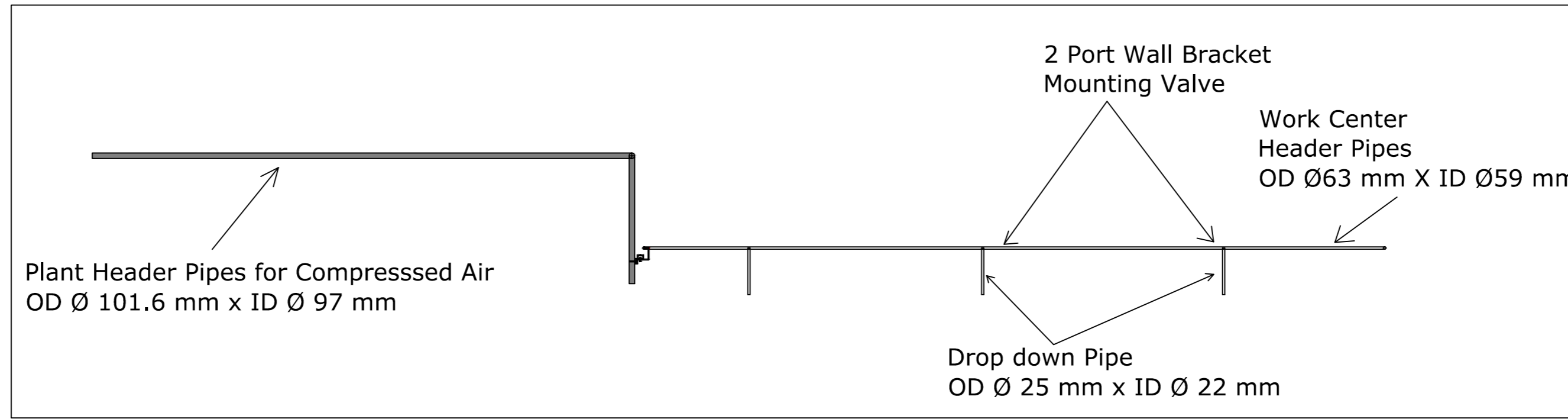
Layout & P&ID of

AIR COMPRESSOR & PIPING

Prepared & Submitted By:

TIRUPATI ENGINEERS

SECTION VIEW OF TOOL ROOM



Design, Supply , installation & Commissioning of Air Compressor System along with close loop Piping across Workcentres on Turn Key Basis.

ANNEXURE – A

Code No. _____

Qty. – As per Annexure- A

Description : As mention below vendor are request to go through the specifications and provide Air compressors (both Variable & Fixed Type) along with extruded Aluminium Piping across all existing and new shops in a close loop form as per given Indicative Layout.

A. Specification for Air Compressors (Fixed & Variable Type)

A.1-Air Compressor Fixed Type 500 CFM (On Turn Key Basis)

S.No.	Description of requirement	Required
	Compressor Fixed Type	Qty 03 Set
	General specification	
1	Operating & Design Conditions as per given site data	Confirm
1.1	Site Data	
1.1.1	Site Location	Kanpur (U.P.)
1.1.2	Ambient Temperature	2- 45°C
1.1.3	Relative Humidity	85% max
1.1.4	Electric Supply	50Hz, 415V, 3
1.1.5	Classification	Non-hazardous / safe
1.2	Compressor (Fixed Type)	
	Technical Specification	
1.2.1	Type	Stationary, Two stage, Air Cooled, Electrically Driven, Screw Compressor with Acoustic Canopy
1.2.2	Location	Indoor
1.2.3	Capacity	550 CFM (Min.) at 7.5 bar
1.2.4	Discharge pressure capacity compressor	7.5 bar (Min.)

1.2.5	No. of Stages	Two
1.2.6	Nominal Motor Power (Kw/Hp)	75/100
1.2.7	Capacity control	0 - 100%
1.2.8	Service	Instrument Air, Pneumatic Air
1.2.9	Duty	Continuous Operation
1.2.10	Discharge Air Temperature (At after cooler outlet)	Ambient + 15°C max.
1.2.11	Quantity of Air required at Compressor outlet	The compressed air shall have dust less than 3 ppm rust Free content = 2 - 3 ppm (Maximum)
1.2.12	Noise Level	78 ±3 db at a distance of 1 m
1.3	Dryer Data	
	Capacity	
1.3.1	Type	Non-cyclic, Refrigerated, Air Cooled
1.3.2	Type of Unit	Stand alone
1.3.3	Quantity	3 Set (One with each component)
1.3.4	Inlet air detail	
1.3.4.1	Flow (At inlet basis)	To suit included FAD capacity of compressor
1.3.4.2	Flow range	0 to 100%
1.3.4.3	Moisture content in inlet air	Saturated air with max 95% RH
1.3.4.4	Inlet air temperature	45°C
1.3.4.5	Pressure	7.5 bar
1.3.5	Outlet air detail	
1.3.5.1	Quality	Free of oil, dust and moisture
2	Components	
2.1	Compressor	
2.1.1	Oil Cooler: Radiator (Aluminum block) type, Oil cooler with fan of suitable size for efficient cooling of oil shall be provided	Confirm
2.1.2	After Cooler: Air cooled radiator (Aluminum block) type, After- cooler to cool the discharge air to ambient +15°C.	Confirm
2.1.3	Motor: 3phase squirrel cage induction motor with TEFC enclosure Insulation class F, protection class: IP-55 and construction B3/B5 with minimum IE3 standard	Confirm
2.1.4.1	Panel to be fitted with the following transducers- Air pressure and temperature Oil pressure Hour Meter Suction air filter Vacuum Indicator Ampere meter Dew point indicator for dryer	Confirm

2.1.4.2	Minimum following protection Shall be provided- Pressure safety valve, High Air-oil temperature, High air Pressure, Motor overload	Confirm
2.1.4.3	Minimum following visual- indications Shall be provided- 1.Power supply ON 2.Compressor load Compressor unload 3.Motor overload 4.Discharge Air pressure	Confirm
2.1.5	Construction material for various components	
2.1.5.1	Air Outlet Ball Valve	Housing: Cast carbon steel Ball: S.S/Brass
2.1.5.2	Oil Filter	Cellulose Polyamide Reinforced?
2.1.5.4	Condenser / Fan Assembly	Pipes: Copper Fins: Aluminium Fan: Aluminium Grating: Steel/M.S
2.1.5.5	Inlet silencer	Polypropylene
2.1.5.6	Inlet Air filter	Outer and inner grating Zinc plated against corrosion
2.2	Air Dryer	
2.2.1	Casing	Shall be sturdy enough to sustain the load of unit formed from steel panels/ structure (as needed) and finished with oven baked epoxy powder coating
2.2.2	Refrigeration System	
2.2.2.1	Refrigerant Compressor	Hermetically sealed Maintenance free refrigerant compressor with suitable anti-vibration pads
2.2.2.2	Condenser	Air cooled Aluminium block type Aluminium bonded & Finned type condenser
2.2.2.3	Hot gas bypass valve	Confirm
2.2.2.4	Refrigerant suction stainer	The system shall also comprises with necessary instruments/ safety and control for automatic operation of the system
2.2.3	Heat Exchangers for- Refrigerant to Air (Evaporator) & Air to Air (Discharge air heater)	Finned coiled tube/Shell type (Vendor to select suitable Heat Exchanger).
2.2.4	Automatic Condensate Drain	Auto drain type.
2.3	Filters:	

2.3.1	1 No. coarse filter, Mesh Size: 5 micron 1 No. fine filter, Mesh Size: 0.1 micron at outlet of the dryer shall be provided	Confirm
2.3.3	3 micron filtration level at 99.9% efficiency?	Confirm
2.3.4	Filter body	Aluminium alloy
2.3.5	Equipped with a differential pressure indicator to indicate the clogging of filter element to allow further action of element cleaning / replacement	Confirm
3	Documentation	
3.1	Detailed layout plan and prospect to be given	Each Documents 3 sets of hard copy and 1 set of soft copy along with delivery
3.2	Operating instruction	
3.3	Installation and Commissioning instruction	
3.4	Quality Test records	
3.5	Maintenance / repair charts	
3.6	Preventive maintenance instructions	
3.7	Requirement/recommendation for power supply controlled stabilizing has to be given	
3.8	Lifting instruction mentioned in packing list	
3.9	Detailed invoice and packing list of all items and devices and detailed prospect of machine and all other accessories enclosed in respective boxes	
4	Installation and Commissioning	
4.1	The complete installation and commissioning must be carried out by the supplier at the project (at the final destination/premises). Certificate of acceptance is to be signed by customer and supplier.	Confirm
5	Training at installation place	
5.1	Operator training	2 days
5.2	Maintenance course mechanical, electrical and electronic	2 days
5.3	Detailed invoice and packing list of all items and devices and detailed prospect of Table and all other accessories enclosed in respective boxes	Confirm
6	Warranty	Min 24 months

Specification A-2: Compressor Variable Type (On Turn Key Basis)

S.No.	Description of Requirement	Required
	Compressor Variable Type	Qty.-01 Set
	Technical Specification	
1	Operating & Design Conditions	
1.1	Site Data	
1.1.1	Site Location	Kanpur (U.P.)
1.1.2	Ambient Temperature	2° - 45 C
1.1.3	Relative Humidity	85% max
1.1.4	Electric Supply	50Hz, 415V, 3phase/240V
1.1.5	Are Classification	Non-hazardous / safe
1.1.6	Compressor Motor Capacity	100 HP
1.2	Compressor Detail Specification	
1.2.1	Type	Stationary, Two stages, Air Cooled Variable Speed Electrical Motor Driven, Screw Compressor with Acoustic Canopy
1.2.2	No. of Stages of Compressors	Two Stages
1.2.3	Cooling	Air – Cooled
1.2.4	Location	Indoor/Outdoor
1.2.5	Capacity FAD	550 CFM at 8 bar
1.2.6	Operating range of free air delivery	200 CFM - 550 CFM
1.2.7	Discharge pressure capacity compressor	7 - 8 bar
1.2.8	Capacity control	0 - 100%
1.2.9	Services/Application	Instrument Air, Pneumatic Air
1.2.10	Duty	Continuous operation
1.2.11	Discharge Air Temperature (At after cooler outlet)	Ambient +15 ^o C max.
1.2.12	Quantity of Air required at Compressor outlet	The compress air shall have dust ppm less than 3 & Oil content = 2 - 3 ppm
1.2.13	Noise Level	78 ± 3 db at a distance of 1 m.
1.3	Dryer Data	

	Capacity	
1.3.1	Type	Non-cyclic, Refrigerated, Air Cooled
1.3.2	Type of Unit	Integral with compressor in a single enclosure and same skid
1.3.3	Quantity	As given in schedule of quantity
1.3.4	Inlet air detail	
1.3.4.1	Flow (At inlet basis)	To suit included FAD capacity of compressor
1.3.4.2	Flow range	40 to 100%
1.3.4.3	Moisture content in inlet air	Saturated air with max 95% RH
1.3.4.4	Inlet air temperature	45 ^o C
1.3.4.5	Pressure	min. 7.5 bar
1.3.5	Outlet air detail	
1.3.5.1	Quality	Free of oil, dust and moisture
	Accepted Level	
2	Specification of Major Components	
2.1	Compressor	
2.1.1	Oil Cooler: Radiator (Aluminium block) type, Oil cooler with fan of suitable size for efficient cooling of oil shall be provided	
2.1.2	After Cooler: Air cooled radiator (Aluminium block) type, After- cooler to cool the discharge air to ambient + 15°C.	Confirm
2.1.3	Motor: 3phase squirrel cage induction motor with TEFC enclosure Insulation class F, protection class: IP-55 and construction B3/B5	Confirm
2.1.4.1	Panel to be fitted with the following transducers- Air pressure and temperature , Hour Meter Suction air filter Vacuum Indicator Ampere meter Dew point indicator for dryer	Confirm
2.1.4.2	Minimum following protection Shall be provided- Pressure safety valve Low oil pressure High air temperature Motor overload	Confirm
2.1.4.3	Minimum following visual- indications Shall be provided- 1.Power supply ON 2.Compressor load Compressor unload 3.Motor overload 4.Discharge Air pressure	Confirm
2.1.5	Construction material for various components	
2.1.5.1	Oil Filter	Cellulose Polyamide Reinforced or Better?

	Capacity	
2.1.5.2	Condenser / Fan Assembly	Pipes: Copper Fins: Aluminium Fan: Aluminium Grating: Steel /MS
3.1.5.3	Inlet silencer	Polypropylene
3.1.5.4	Inlet Air filter	Outer and inner grating Zinc plated against corrosion
2.2	Air Dryer	
2.2.1	Casing	Shall be sturdy enough to sustain the load of unit formed from steel panels/ structure (as needed) and finished with oven baked epoxy powder coating
2.2.2	Refrigeration System	
2.2.2.1	Refrigerant Compressor	Hermetically sealed Maintenance free refrigerant compressor with suitable anti-vibration pads.
2.2.2.2	Condenser	Air cooled Aluminium block type Aluminium bonded & Finned type condenser
2.2.2.3	Hot gas by pass valve?	Confirm
2.2.2.4	Refrigerant suction stainer	The system shall also comprises with necessary instruments/ safety and control for automatic operation of the system
2.2.3	Heat Exchangers for- Refrigerant to Air (Evaporator) & Air to Air (Discharge air heater)	Shell and Tube type (material Copper) (Vendor to select suitable heat exchanger).
2.2.4	Automatic Condensate Drain	Auto drain type.
2.3	Filters:	
2.3.1	1 No. coarse filter , Mesh Size: 5 micron 1 No. fine filter , Mesh Size:0.1 micron at outlet of the dryer shall be provided	Confirm
2.3.2	Cyclonic separation for pre filtration	Confirm
2.3.3	3 micron filtration level at 99.9% efficiency	Confirm
2.3.4	Filter body	Aluminum alloy or Better
2.3.5	Equipped with a differential pressure indicator to indicate the clogging of filter element to allow further action of element cleaning / replacement	Confirm

3	Documentation	
3.1	Detailed layout plan and prospect to be given	Each Documents 3 sets of hard copy and 1 set of soft copy along with delivery
3.2	Operating instruction	
3.3	Installation and Commissioning instruction	
3.4	Quality Test records	
3.5	Maintenance / repair charts	
3.6	Preventive maintenance instructions	
3.7	Requirement/recommendation for power supply controlled stabilizing has to be given	
3.8	Lifting instruction mentioned in packing list	
3.9	Detailed invoice and packing list of all items and devices and detailed prospect of machine and all other accessories enclosed in respective boxes	
4	General operating condition	
4.1	3 Phase 415V +/- 10%	Confirm
4.2	Frequency 50 Hz +/- 5%	Confirm
4.3	Protection level	IP54 or better
4.4	System should have capability to handle voltage, current and frequency fluctuation, necessary protection to be provided.	Confirm
4.5	Complete electrical system should be tropicalized for Indian condition +5 to 50 degree temp and RH 100% (Including additional accessories)	Confirm
5	Installation and Commissioning	
5.1	The complete installation and commissioning must be carried out by the supplier at the project (at the final destination/premises). Certificate of acceptance is to be signed by customer and supplier.	Confirm
6	Training at installation place	
6.1	Operator training	2 days
6.2	Maintenance course mechanical, electrical and electronic	2 days
6.3	Detailed invoice and packing list of all items and devices and detailed prospect of Table and all other accessories enclosed in respective boxes	

7	Warranty	Min 24 months
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B. Specification Air Piping Arrangement (On Turn Key Basis)

Description: Vendor to design the complete system base on the layout given. The pipe layout attached here with is indicative and vendor to improvise based on his own design.

SI No.	DESCRIPTION OF REQUIREMENT	Qty.	Vendor to Confirm/ Specify
1	It is proposed to create a centralized piping system with close loop networking Covering all the shop. This system will cover all the shop and connect the Fix and variable compressor to all working points		Vendor to Confirm/ Specify
2	No. of compressors/ Reservoirs to be connected		
2.1	500 CFM Fix type	3	Vendor to note for design
2.2	500 CFM Variable Type	1	Vendor to note for design
2.3	Reservoirs		
2.3.1	2000 L	1	
2.3.2	1000L	4	
2.3.3	500L	13	
2.4	Safety Valves	18	Vendor to note for design
2.5	Line Filter	18	Vendor to note for design
3	Shop wise pipe requirement (With No of drop locations)		
I	Work Centre-2 (Vendor to refer given Layout)		
1	Air Piping across the shop	1	Vendor to note for design
2	Main Grid 252 m		

3	Drop pipe 80 m		
4	FRL 12 nos.		
5	Flexible pipe 66 m		
II	Work Centre -3 (Vendor to refer given Layout)		
1	Air Piping across the shop	1	
2	Main Grid 210 m		Vendor to note for design
3	Drop pipe 66 m		
4	FRL 10 nos.		
5	Flexible pipe 55 m		
III	Work Centre -4 (Vendor to refer given Layout)		
1	Air Piping across the shop	1	Vendor to note for design
2	Main Grid 245 m		
3	Drop pipe 106 m		
4	FRL 16 nos.		
5	Flexible pipe 88 m		
IV	Work Centre -5 (Vendor to refer given Layout)		
1	Air Piping across the shop	1	Vendor to note for design
2	Main Grid 172 m		
3	Drop pipe 106 m		
4	FRL 16 nos.		
5	Flexible pipe 88 m		
V	Work Centre -6 (Vendor to refer given Layout)		

1	Air Piping across the shop	1	Vendor to note for design
2	Main Grid 210 m		
3	Drop pipe 150 m		
4	FRL 24 nos.		
5	Flexible pipe 132 m		
VI	Work Centre -7(Vendor to refer given Layout)		
1	Work Centre -7A		
1	Air Piping across the shop	1	Vendor to note for design
2	Main Grid 189 m		
3	Drop pipe 66 m		
4	FRL 10 nos.		
5	Flexible pipe 55 m		
2	Work Centre -7B		
1	Air Piping across the shop	1	Vendor to note for design
2	Main Grid 110 m		
3	Drop pipe 40 m		
4	FRL 6 nos.		
5	Flexible pipe 33 m		
3	Work Centre -7C		
1	Air Piping across the shop	1	Vendor to note for design
2	Main Grid 105 m		
3	Drop pipe 66 m		

4	FRL 10 nos.		
5	Flexible pipe 55 m		
VII	Existing Production Shop & Wood Working (Vendor to refer given Layout)		
1	Air Piping across the shop	1	Vendor to note for design
2	Main Grid 410 m		
3	Drop pipe 125 m		
4	FRL 19 nos.		
5	Flexible pipe 105 m		
VIII	Existing Tool Room (Vendor to refer given Layout)		
1	Air Piping across the shop	1	Vendor to note for design
2	Main Grid 183 m		
3	Drop pipe 53 m		
4	FRL 8 nos.		
5	Flexible pipe 44 m		
IX	Ottobock (Vendor to refer given Layout)		
1	Air Piping across the shop	1	Vendor to note for design
2	Main Grid 165 m		
3	Drop pipe 40 m		
4	FRL 6 nos.		
5	Flexible pipe 33 m		
X	Existing Assembly Shop (Vendor to refer given Layout)		

1	Air Piping across the shop	1	Vendor to note for design
2	Main Grid 200 m		
3	Drop pipe 80 m		
4	FRL 12 nos.		
5	Flexible pipe 66 m		
XI	Total Connecting Header Pipe in between the Shops 480m (Vendor to refer given Layout)		Vendor to note for design
4	Estimated BOM for the systems is as below, Vendor to take quantity as estimated or better to ensure safe & rigid installation of system.		Confirm
5	Summarized Bill of Quantity		
6	Supply of pneumatic pipe line for Various shop	Approx Qty. (Minimum)	Size
6.1	PLANT HEADER PIPING		
6.1.1	Plant Header Pipes (Vendor to design the sizes as per given length)	840 m	Vendor to confirm as per design
6.1.2	Plant Header Connector	230 No.	Vendor to confirm as per design
6.1.3	Plant Header Elbow	20 No.	Vendor to confirm as per design
6.1.4	Plant Header Tee	10 No.	Vendor to confirm as per design
6.1.5	Plant Header Reducing Tee for compressor room	5 No.	Confirm
6.1.6	Plant Header Reducing Tee for Work Centre	15 No.	Confirm
6.1.7	Plant Header Flange	45 No.	
6.1.8	Plant Header Drop for	2 No.	Confirm
6.1.9	Plant Header Drop for Safety Valve	30 No.	Confirm

6.1.10	Plant Header Drop for Pressure Gauge	18 No.	Confirm
6.1.11	Plant Header End Cap	5 No.	Confirm
6.1.12	Plant Header Fixing Clip	500 No.	Confirm
6.1.13	Plant Header Isolation Valve	20 No.	Confirm
6.1.14	Clamp and Accessories for fixing piping	Lump sum	Suitable for lock
6.2	COMPRESSOR ROOM		
6.2.1	Compressor Room Header Pipes (Vendor to design the sizes as per given length)	96 m	Vendor to confirm as per design
6.2.2	Pipe Connector	125 No.	Vendor to confirm as per design
6.2.3	Pipe Elbo	40 No.	Vendor to confirm as per design
6.2.4	Pipe Tee	8 No.	Vendor to confirm as per design
6.2.5	Pipe Flange	50 No.	Confirm
6.2.6	Pipe Drop	4 No.	Confirm
6.2.7	Pipe Drop for Safety Valve	4 No.	
6.2.8	Pipe Male Stud to Connect Compressor	5 No.	Confirm
6.2.9	Pipe Fixing Clip	100 No.	Confirm
6.2.10	Pipe Isolation Valve	20 No.	Confirm
6.2.11	Clamp and Accessories for fixing piping	Lumpsum	
6.3	WORK CENTRES WISE HEADER PIPING		
6.3.1	WC Header Pipes (Vendor to design the sizes as per given length)	2190 m	Vendor to confirm as per design
			Vendor to confirm as

6.3.2	WC Header Connector	350 No.	per design
6.3.3	WC Header Elbow	130 No.	Vendor to confirm as per design
6.3.4	WC Header Tee	45 No.	Vendor to confirm as per design
6.3.5	WC Header Drop	165 No.	Confirm
6.3.6	WC Header Drop for Safety Valve	75 No.	Confirm
6.3.7	WC Header Drop for Pressure Gauge	55 No.	
6.3.8	WC Header Male Stud	55 No.	Confirm
6.3.9	WC Header Pipe to Pipe Isolation Valve	80 No.	Confirm
6.3.10	WC Header Fixing Clip	1300 No.	Confirm
6.3.11	WC Header Ball Valve	30 No.	Confirm
6.3.12	Clamp and Accessories for fixing piping	Lumpsum	Confirm
6.4	WORK CENTRE WISE DROP DOWN PIPING		
6.4.1	WC Drop Pipes (Vendor to design the sizes as per given length)	990 m	Vendor to confirm as per design
6.4.2	WC Drop Elbow	170 No.	Vendor to confirm as per design
6.4.3	WC Drop Wall Mount 2 Port Male Stud	170 No.	Confirm
6.4.4	WC Drop Fixing Clip	500 No.	Confirm
6.4.5	WC Drop Ball Valve	350 No.	Confirm
6.4.6	Clamp and Accessories for fixing piping	Lumpsum	
6.4.7	FRL Units	160 no	Confirm
6.4.8	Flexible Pipe12 mm.	1000 m	
6.4.9	Flexible Pipe12 mm PU onnector	800 no.	

6.5	Dust filter	13 nos.	
6.6	Safety Valves (on every 30 m)	110 nos.	
6.7	Pressure Guage	75 nos.	
6.8	Ball Valves for Safety Valves and Pressure Guage	185 nos.	
6.9	Hardware Set	Lumpsum	
6.10	Mechanical Drain Valve with bypass valve arrangement	20 nos	
7	Pipe and Fitting Technical Specification	Details	Vendor Specification
7.1	Pipe		Extruded aluminum pipes
7.2	Pipe Manufacturing Standards		EN755.2 /EN755.8 /EN573.3
7.3	Fittings		Made of Polymers
7.4	Pipe to Fitting Joint (No welding joint accepted)		Push Type/ Threaded type (Leak proof)
7.5	Allowable pressure drop in whole system		Between 0.4 bar to 1 bar
7.6	Pipe internally should be corrosion and leakage free		Vendor to confirm
7.7	Weight per meter of pipe and design the support		Vendor to confirm
7.8	Working temperature: -20°C to +70°C		.-20 to +70 Degree
7.9	Vacuum level: 0.13 bar absolute pressure Compatible with all compressor oils		0.13 bar absolute pressure
7.10	Minimum Working pressure : 7 Bar		7 Bar
7.11	Maximum working pressure: 13 bar		13 Bar
7.12	All Piping and it's accessories shall be Fire-resistant (according to UL94) Suitable for outdoor installation		Vendor to Confirm and note
7.13	Necessary tool for the fitting of pipe at site		Vendor to provide all necessary

			tool
7.14	Loading Pressure		Confirm
8	Scope of work		Confirm
8.1	Complete Design of piping network as per above mentioned details		Submit the Layout diagram with calculations
8.2	Supply of material as per Bill of material mentioned above		Confirm
8.3	Fabrication of Mounting bracket and Drilling at site		Confirm
8.4	Installation and commissioning of pipe across the shops at site		Confirm
8.5	Testing at required CFM and Pressure for 36 hrs.		Confirm
8.6	Maintenance up to 1 year of operation		Confirm
8.7	Spares for necessary operation (List to be Provide)		Confirm
9	Documentation		
9.1	Detailed layout plan and prospect to be given		Each Documents 3 sets along with delivery
9.2	Installation and Commissioning instructions		
9.3	Requirement/recommendation for power supply controlled stabilizing has to be given.		
9.4ss	Detailed invoice and packing list of all items and devices and detailed prospect of Table and all other accessories enclosed in respective boxes		
10	Installation and Commissioning		
10.1	The complete installation and commissioning must be carried out on turnkey basis by the supplier at the project (at the final destination/premises). Certificate of acceptance is to be signed by customer and supplier.		Confirm
11	Service		
11.1	The authorized Service Partners in India (Name & Address) must be certified by manufacturer and shown in the quotation		Confirm
12	Warranty		Min 24 months

13	Vendor to ensure that he had done minimum 3 similar installations (Specifically on Extruded Aluminum Pipes	For proof PO and other supporting documents has to be submitted.
14	Additional Qualification Criteria (Vendor has to ensure the same while designing , Installing and Commissioning utility)	Confirm
14.1	Vendor has to consider the pipe made of extruded Aluminum manufactured as per EN 755.2 standard (refer specification) along with test certificates	Confirm
14.2	Vendor has to ensure that all pipe joints are CE certified and come with factory test certificates and are made of special polymer which can take pressure of 25 bar.	Confirm
14.3	Vendor has to ensure that the whole pipe line across the whole new factory as well as existing work centers will not have any welding joint. (100% weld free piping system) also there will not be any welding joint for safety and accuracy. The pipes will come in direct fitting condition and will just be installed on the bracket provided of structural. The installation fittings come along with pipes.	Confirm
14.4	Vendor has to ensure all drop downs from which the air is used is fitted with FRL (Compulsory Arrangement) as air leaving compressor is hot, dirty, and wet which can damage and shorten life of downstream equipment, Before air can be used it needs to be filtered, regulated and lubricated. An air line filter cleans the compressed air. It strains the air and traps solid particles (Dust, Dirt, Rust) and separates liquids (Water, Oil) entrapped in the compressed air. Hence we do not need any Separate Air Dryer, As Air Dryer alone will not serve the purpose.	Confirm
14.5	Vendor has to ensure that in whole system pressure drop (which will be tested after installation in 0.4 bar to 1 bar .	Confirm
14.6	Vendor has to ensure that he at least the working temperature of the pipe will be -20° to +70 ° to ensure that pipes are designed to take care of expansion and compression of air due to temperature variations.	Confirm
14.7	Vendor has to ensure that the system will be designed to give at least working pressure of 7 to 13 bar (Keeping in mind the pressure requirement of our machine)	Confirm
14.8	Vendor to ensure to give sufficient no. of reservoirs for providing uniform pressure across the whole line.	Confirm
14.9	Vendor to ensure the type of compressor should be of Direct drive type where there is no efficiency loss in the system between motor and drive.	Confirm
14.10	Vendor to ensure the compressor should be of positive displacement type and counter rotating screw type which gives the best output.	Confirm
14.11	Vendor to ensure that apart from giving End point fitted with FRL. The compressor exit and reservoir exit also has required filters.	Confirm
14.12	Vendor has to ensure the flexible pipe considered at machine use point is fixed type and at manual use point it is the auto retractable type (which is auto spring loaded system and retract automatically after the person has finished using).	Confirm

14.13	Vendor to ensure that the piping system should be designed in the close loop. In case there is a leakage in on particular section the same can be isolated with valves and rest of the plant can used compressed air work.	Confirm
14.14	Vendor to ensure to provide sufficient no of safety valves/closing valves to ensure safety of the whole system	Confirm
14.15	Vendor to ensure that all pipes and utilities used should be fire proof, enough safety and sensors are provided to detect the leakage and failures.	Confirm
14.16	Vendor should ensure that all designing , supply, installation, commission , test , synchronization of the complete system in his scope which will give 100 % smooth work.	Confirm
14.17	Vendor should ensure that volumetric efficiency test has been conducted in the ALIMCO premises after successful installation & Commissioning and after that on annual basis.	Confirm

DELIVERY PERIOD INCLUDING INSTALLATION & COMMISSIONING:

The delivery period including installation & commissioning of both Air Compressors & Air Piping at the destination mentioned in Para 1 on page no. 02 of the tender documents will be 5 months from the date of placement of Purchase Order/work contract.

WARRANTY:

The Entire machine inclusive of all system/accessories should be covered under warranty for a period of 24 months from the date of commissioning.

Note:

1. Air Compressors & Air Piping shall be supplied with 3 sets of comprehensive operation and maintenance manual.
2. Breakdown calls to be attended within 48 hrs.
3. Supply to be done on Turnkey Basis. ALIMCO shall provide electrical supply point near to the place of installation.
4. Civil foundation details and drawings with specifications to be provided by the tenderer.
5. Total power consumption (in KW) to be provided by the tenderer.
6. Layout drawing should be provided in CAD format.
7. All necessary Details as asked in Annexure-A to be duly full-filled failing which Bid shall be technically Rejected.
8. The Drawing/Layout attached along with details is for standard purpose and should be the minimum qualifying criteria in all aspect. However vendor is free to design its own plan & supply above standard inculcating minimum requirement of the plant and if any change should be submitted while filling bid.
9. Entire System shall be designed and commissioned for ease of access of all facilities and maintenance.

10. The Bus bar trunking (BBT) for electricity has been provided at 8.5 meter height. Sufficient suitable cable, cable tray, circuit breaker, fittings to connect the plant & it's accessories from power source is in vendor's scope.
11. Separate list of spares along with rate, required for smooth functioning & it's accessories. The list is solely required with respect to future requirements/reference. Hence total cost of items from the list should not be the part of final price of tender quote.