PROJECT: TSGENCO YADADRI TPS

PURCHASE INDENT NO: 81I2200105 dtd. 14.09.2021

TECHNICAL QUALIFYING REQUIREMENTS FOR AC KIOSK				
DESCRIPTION OF REQUIREMENT	**TO BE SUPPLIED/CONFIRMED/ SUBMITTED BY BIDDER**	**OFFERED**	**DEVIATION**	**REMARKS**
1. Bidder must have supplied and installed at least 50% (rounded off to next integer) of the tender BOQ quantity of AC KIOSK(S) as on date of bid opening.	Vendor to comply & confirm			
2. Name of customer/company with address where referred AC KIOSKS have been installed.	Vendor to inform			
3. Month & year of installation completion of AC Kiosks.	Vendor to inform			
4. Parameter of AC Kiosks supplied & installed	Vendor to inform			
5. Name, designation, Phone no., e-mail of contact person of customer.	Vendor to inform			
6. Copy of Purchase order & LR receipt of AC Kiosks OR Installation certificate/performance certificate issued by end-customer.	Vendor to submit			
7. BHEL reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false/incorrect, the offer shall be rejected.	Vendor to accept & confirm			

14/09/2021

14/09/2021

3/29011
9

BHARAT HEAVY ELECTRICALS LIMITED

TRANSMISSION BUSINESS ENGINEERING MANAGEMENT

DOCUMENT No.	TB-4-387-510-051A	Rev 01	Prepared	Checked	Approved
TYPE OF DOC.	TECHNICAL SPECIFICATION	NAME	MSP	SKS	AG
TITLE: AIR CONDITIONED KIOSK (AC KIOSK)		SIGN			
		DATE			
		GROUP	TBEM	W.O. No	
CUSTOMER	TELANGANA STATE POWER GENERATION CORPORATION LTD.				
PROJECT	400kV Switchyard at 5X 800 MW Yadadri TPS, Nalgonda				

CONTENTS

Sec. No.	Description	No. of Sheets
1.	Scope, Specific Technical Requirements and Quantities	02
2.	Annexure-A: Technical Specification for Split AC	04
3.	Equipment Specification	02
4.	Project Details & General Technical Requirements	13
5.	Guaranteed Technical Particulars (TO BE FILLED AT CONTRACT STAGE)	02
6.	Checklist (TO BE FILLED AT TENDER STAGE)	04
7.	Enclosure **(Typical AC Kiosk Drawing)**	11

Rev No.	Date	Altered	Checked	Approved	REVISION DETAILS

Distribution	To	TBTS	O/C	TBMM	TBQM	TBCM
	Copies	-	1	-	-	1

SECTION 1

SCOPE, SPECIFIC TECHNICAL REQUIREMENTS AND QUANTITIES

1.0 SCOPE

This technical specification covers the requirements of design, manufacture, testing at works, and packing, dispatch of Air Conditioned Kiosk and installation & erection of the same at site.

This section covers the specific technical requirements of AC KIOSK. In case of any discrepancies between the requirements mentioned in this section and those specified in the following sections of this specification, the specifications given herein shall prevail and shall be treated as binding requirements.

1.1 The equipment is required for the following project.

Name of customer : Telangana State Power Generation Corporation Limited (TSGENCO).

Name of Projects : **400kV Switchyard at 5X 800 MW Yadadri TPS, Nalgonda**

Refer Section - 3 for Project Details and General Specifications.

1.2 SPECIFIC TECHNICAL REQUIREMENTS

1.2.1. As per attached Section-II (TSGENCO specification).
1.2.2 The dimension of A.C. Kiosk shall be 7m (L) x 3m (B) x 3m (H)
1.2.3 A.C. Kiosk shall be provided with air conditioning unit of capacity - 2 Nos of AC for each Kiosk.
1.2.4 For AC specification please refer Annexure-A of Section-1.
1.2.4 Outer Powder Coating Thickness has to be given sufficient to avoid Rusting.
1.2.5 Kiosk Temp has to be hooked up-to SAS through BCU via Temperature transmitter.

1.2.6 Fire Alarm Panel & Smoke Detectors

1.2.6.1 Each kiosk shall be provided with microprocessor based 2 Zone Fire alarm system complete with following essential features/ fitments
- Photo Electric Smoke detectors,
- Hooter,
- Wiring & conduits,
- Fixing & mounting hardware for fire alarm panel & smoke detectors
- Control scheme complete with heavy duty contactors, wiring etc. for tripping the power supply to Air Conditioner units in case of fire.
- **Potential free fire alarm contacts shall be made available for its wiring to SAS.**

1.2.6.2 Aux supply available for the fire alarm panel in the kiosk shall be 230V AC / 220V DC.

1.2.7 Auxiliary Power Circuit Distribution

The wall mounted distribution board along with Auto change over shall receive two incoming 415V, 3 phase AC supplies through 2 Nos. TPN MCB for its further use in air conditioning, lighting, fire alarm panel etc. to be housed inside the kiosk. These MCBs shall have the aux contact (1 NO and 1 NC) for wiring "Aux Supply Fail alarm" signal to SAS (BCU Panel). **The terminal blocks used for above mentioned aux power incomer circuits shall be suitable for 3.5x35 sq. mm cable.**

Provision for remote control of AC units (i.e. making them ON and OFF) from SAS (BCU Panel) shall be made by offering control scheme complete with power contactors. The control DC from SAS shall be 220V DC.

1.2.8 A.C. Kiosk false flooring shall be provided with fire resistant tiles.

1.2.9 Offered A.C. Kiosk shall be as per the TSGENCO-approved drawings attached with Section-6, except the false flooring which shall be as per Cl. No. 1.2.6 above.

1.3 QUANTITY:

Sl No.	Description	Unit	Yadadri Substation
1	Air Conditioned Kiosk Size L x B x H (7m x 3m x 3m) without Air conditioners	Nos.	13
2	Air conditioning Unit (as per Annexure-A of Section-1) with all the accessories **(2 no's Each Kiosk) Along with 2 Nos suitable stabilizer/AC .**	Nos.	26
3	Installation & Erection of Air Conditioned Kiosk at site	Nos.	13
4	Proto Testing of Air Conditioned Kiosk at Works	Lot	1

Note:

1) The air conditioners are to be mounted inside the AC Kiosk along with its accessories. The complete installation of Air conditioners along with its accessories inside the kiosk shall be in the bidder scope.
2) Quantity is subject to change by +/-40% during detailed engineering stage.

1.4 TYPE TEST & ROUTINE TEST

AC Kiosk being supplied shall be proto tested as per the requirements stipulated under section-II.

1.5 MANUFACTURING QUALITY PLAN

Manufacturer shall follow Standard Manufacturing Quality Plan of customer.

ANNEXURE A (SECTION-I)

TECHNICAL SPECIFICATION FOR AIR CONDITIONING SYSTEM

1.0 GENERAL

1.1 This specification covers supply, installation, testing and commissioning and handing over to **TSGENCO, AC capacity of 3 Ton with all accessories (2 no's each kiosk)**.

1.2 Microprocessor based Controller to be provided between both the air conditioner to switch and controlling and monitoring the AC units for enhancement of life of air conditioner.

2.0 Scope

2.1 Required number of AC units of 3TR capacity each complete with air cooled outdoor condensing unit having hermetically sealed compressor and indoor evaporator unit.

2.2 Copper refrigerant piping complete with insulation between the indoor and outdoor units as required.

2.6 MS Brackets for outdoor condensing units, condensers as required.

3.0 AIR CONDITIONING SYSTEM FOR AC Kiosk Rooms.

3.1 **Air Conditioning** - The air conditionings system shall be provided in the Kiosks to be used for housing panels having control and protection IEDs for performing sub-station automation and protection functions generally confirm to relevant IS codes as detailed in Section-3. These kiosks shall be placed in the switchyard area generally unmanned; therefore, the air-conditioning system shall be rugged, reliable, maintenance free and designed for long life.

Sr. No.	Parameter	Specification
1	Power Supply	1 –Ø 230 V -50 Hz AC
2	A/C Package contains	Twin A/C Machines
3	Capacity in Ton	1.5 T X3.0 TR (considering size of the Kiosk)
4	Operation	LCD Remote
5	Refrigerant	R- 22 or as per manufacturer specification
6	Compressor type	Scroll

7	Features:	Auto change over in case of one m/c faulty. Special feature narrated in detailed spec.
8	Communication Mode	RS485
9	voltage stabilizer	Suitable voltage stabilizer along with air conditioner – 4 nos voltage stabilizer per kiosk

Operation:

The air conditioning is required for critical application i.e. for maintaining the temperature for critical sub-station control and protection equipment. To provide redundancy for such critical applications, each kiosk shall be installed with environment control system comprising of two units of air conditioners working in conjunction through a microprocessor based controller for desired operation. The system shall be designed for 24 Hours, 365 Days of the year to maintain the inside kiosk temperature for proper operation of the critical equipment. One of the air conditioner shall be running at a time and on failure of the same or as described hereunder, the other unit shall start automatically. To ensure longer life of the system, the redundant units shall also be running in cyclic operation through the controller. However, during running of one air-conditioner unit, if inside temperature of the shelter reaches to a predefined (i.e. 30°C), the other unit shall start running to maintain the temperature to specified value (i.e. 23°$\pm$2°C) and gives alarm for such situation. After achieving this temperature, the other unit shall again shut off.

Sequence of Operation of the Unit:

Suitable arrangement shall be made to operate the unit in the following order. However, the actual operation arrangement shall be finalized during detailed engineering.

1. Evaporator Fan
2. Condenser Fan
3. Compressor

Construction:

The air conditioning unit shall be completely self-contained. All components of the units shall be enclosed in a powder coated cabinet and colour of same shall be matched with kiosk colour. The unit shall be assembled, wired, piped, charged with refrigerant and fully factory tested as a system to ensure trouble free installation and start up. Suitable isolation or other by passing arrangement shall be provided such that any unit/component could be maintained / repaired without affecting the running standby unit. The maintenance of unit shall be possible from outside the kiosk.

Required Features of Various Components:

The compressor shall be very reliable, trouble free and long life i.e. hermitically sealed Scroll type of reputed make suitable for operation. Compressor should be installed on vibration isolated mountings or manufacturers recommended approved mounting. Valve shall be provided for charging/topping up of refrigerant. The bidder shall furnish details of their compressor indicating the MTBF, life of compressor and continuous run time of compressor without failure. The contractor shall also furnish details of all accessories i.e. refrigeration system, evaporator coil, condenser coil, evaporator blower filter, cabinet, indoor supply and return grill etc.

S.No	Parameter	Unit	Particulars
1	Total Capacity	KW	5.232x2
2	Total Capacity	BTU/HR	35705
3	Total tonnage of complete unit	TR	3
4	Tonnage of each unit	TR	1.5TR*2
5	Sensible Capacity	KW	4.709X2
6	Sensible Capacity	BTU/HR	32136
7	Sensible Capacity	TR	3
8	Sensible Heat Ratio		0.9
9	Free Cooling feature	Yes/ No	NO
10	Applicable standards		Meets IS : 8148
Compressor			
11	Scroll Compressor offered	Yes/ No	YES
12	Number of compressors in complete unit	No.	TWO
13	Make of Compressor		COPELAND or equivalent
14	MTBF		25000 working hrs
15	Life of Compressor		10 yrs for machine

16	Continuous running time		Each unit consists of two compressors, hence with 12 hrs operation for each compressor, the unit can run for 24 hrs
17	Refrigerant		R22
18	Safety Controls		YES
19	Protections		YES

4.0 Warranty

All compressors shall have minimum 5 years Warranty from the date of commissioning
.

SECTION-II

SPECIFICATION FOR AIR CONDITIONED KIOSK

1.0 **Construction:**

The Kiosk shall be made of "sandwich insulated panels" 80 mm thick with poly Urethane Foam (PUF) as filler material between polyester pre-coated cold rolled steel. The insulation characteristics of PUF material shall conform to following requirement:

Sl. No.	Particular	Parameters
1.	Thickness	78.6 mm
2.	Density	40 kg/m3
3.	Compressive Strength	1.2 kg.cm3
4.	Tensile Strength	3.6 kg/m2
5.	Bending Strength	4.0 Kg/m2
6	Adhesion Strength	2.9 Kg/m2
7.	Dimension Stability	At25°C: 0.1% at 38°C: 0.1% and at 38°C: 0.4%
8.	Temperature Range	-15°C to 95°C
9.	Thermal Conductivity	0.02 kcal/hr/m/°C
10.	Fire Resistance	As per BS-4735 Horizontal Burn <125 mm
11.	Water absorption	0.2% @ 100% RH
12.	Vapour Permeability	0.08/0.12 a/hr/m2
13.	Self Extinguishing	Yes
14.	Biodegradable	Yes

The thickness of the inner-side and outer steel sheet except floor panel sheet shall be minimum 0.8 mm and 0.6 mm respectively. The outer bottom sheet shall be hot dip galvanised steel sheets of minimum 1.0 mm thickness to avoid rusting at bottom. The sandwich panels shall be manufactured by high-pressure injection techniques. The floor of the kiosk shall be suitably designed for accommodating the control and relay IEDs in the panels. The adequate lighting shall be provided in the kiosk. The Kiosk shall have adequate space for working and maintain clearances as per requirement of Indian Electricity Rules. The kiosk shall be provided with locking arrangement.

The kiosk shall be erected at least **300 mm** above the finished ground level with suitable pedestal to avoid any entry of water.

2.0 **Air-Conditioning: As mentioned in section -1**

3.0 **Proto Testing:**

One kiosk meeting the specified requirement as described above, shall be fabricated at the factory and offered for proto inspection at the factory. This proto shall be equipped with all required accessories like air-conditioning system, fire and smoke detector, lighting, various cut outs etc. The offered kiosk shall be inspected for finish, all fittings and accessories, opening including doors and locks. The kiosk shall be tested for dust and rain protection to check out any leakage and air tightness. The following main tests shall be carried out:

(a) Illumination inside the kiosk shall be switched off and it shall be checked that no light enters through panel joints, holes and other joints in the kiosk.

(b) Water Leakage Test (with a water pipe with suitable pressure from all sides for one hour.)

(c) Working and functional tests of all accessories like air-conditioning system, fire and smoke detector, lighting arrangements as per technical specification

(d) Start up test for air conditioner

(e) Satisfactory operation of air conditioner installed on Kiosk.

(f) The total heat load for panels and devices to be placed inside the kiosk including PLCC, all IEDs etc. shall be calculated and equivalent calculated heating load (maximum value from among the calculated values for various kiosk) shall be placed inside the kiosk and the kiosk shall be made operational for four hours with all accessories and inside & outside temperature of kiosk shall be recorded.

On successful completion of proto testing, all other system shall be manufactured after incorporation of all alteration/modifications observed/suggested during/after proto testing.

The detail test procedure shall be submitted by the contractor and get it approved from the owner before commencement of proto testing.

SECTION - 3

PROJECT DETAILS AND GENERAL SPECIFICATIONS

GENERAL TECHNICAL REQUIREMENTS

1.0 PROJECT DETAILS

Customer	:	M/s Telangana State Power Generation Corporation Ltd.
Project Title	:	5x800MW Yadadri Thermal Power Station
Project Location	:	Veerlapalem Village, Damercherla Mandal, Nalgonda District, Telangana
Nearest Railway station	:	Vishnupuram railway station.
Nearest Road Head	:	NH-9 is at 45km North SH-2 is at 7km South
Nearest Airport	:	Hyderabad (about 120 Km)
Postal Address	:	Chief Engineer (O&M), 5X800MW Yadadri Thermal Power Station, TSGENCO, Village - Veerlapalem, Mandal- Dameracheral, Dist. – Nalgonda, Telangana

1.1 SITE CONDITIONS (FOR DESIGN PURPOSES)

1.1.1 SITE CONDITIONS

a).	Average rainfall per year	:	1124 mm
b).	Maximum hourly rainfall intensity	:	102 mm
c).	Altitude	:	1000 m

1.1.2 DESIGN AMBIENT

a).	Minimum Temperature	:	13.5°C
b).	Maximum Temperature	:	45°C
c).	Design Ambient Temperature	:	50 °C

1.1.3 RELATIVE HUMIDITY

a).	Maximum	::	85%

1.1.4 WIND PRESSURE (AS PER IS:875-1987)

a). Design wind speed : 44 m/sec.

1.1.5 SEISMIC FACTORS

a). Horizontal Seismic Coefficient : As per latest IS : 1893

b). Vertical Seismic Coefficient : As per latest IS : 1893

} *Zone – III*

1.1.6 ELECTRICAL DATA

		400 kV System	415V AC System	240V AC System	220 V DC System	48 V DC System
I.	Nominal Voltage	400 kV	415 V	240 V	220 V	48 V
2.	Highest System Voltage	420 kV	457 V	264 V	242 V	55 V
3.	No. of phases	3	3	1	NA	NA
4.	Frequency	50 Hz	50 Hz	50 Hz	NA	NA
5.	Voltage variation	± 5%	± 10 %	± 10 %	+10 % to -15%	± 10 %
6.	Neutral Earthing	Effectively Earthed	Solidly Earthed	Solidly Earthed	-	-
7.	Fault Level	50 kA for 1 sec.	50 kA for 1 sec.	50 kA for 1 sec.	15 kA for 1 sec.	-

1.1.7 SYSTEM PARAMETERS

Dry and wet one minute power frequency withstand voltage	630 kVrms
Dry impulse withstand voltage positive and negative	1425 kVpeak
Minimum Total Creepage	25 mm/kV

1.1.8 MINIMUM CLEARENCE (AS PER IS: 10118)

Phase to phase (PP)	4200 mm
Phase to earth (PE)	3500 mm
Section clearance	6500 mm
Minimum ground clearance from plinth level (Plinth level : 300 mm)	8000 mm

Vertical ground clearance to nearest part not at earth potential of an insulator supporting live conductor/ equipment	2440 mm

1.2 INSTRUCTION TO BIDDERS

The bidders shall submit the technical requirements, data and information as per the technical data sheets, provided in Section-4.

The bidders shall furnish catalogues, engineering data, technical information, design documents, drawings etc fully in conformity with the technical specification. It is recognised that the Manufacturer may have standardised on the use of certain components, materials, processes or procedures different than those specified herein. Alternate proposals offering similar equipment based on the manufacturer's standard practice will also be considered provided such proposals meet the specified designs, standard and performance requirements and are acceptable to the Purchaser. Unless brought out clearly, the Bidder shall be deemed to conform to this specification scrupulously.

1.3 STANDARDS

The works covered by the specification shall be designed, engineered, manufactured, built, tested and commissioned in accordance with the Acts, Rules, Laws and Regulations of India.

The equipment to be furnished under this specification shall conform to latest issue (with all amendments) of specified standards.

In addition to meeting the specific requirement called for in Sections 1 and 2 of the Technical Specification, the equipment shall also conform to the general requirement of the applicable standards, which shall form an integral part of the specification. The Bidder shall note that standards mentioned in the specification are not mutually exclusive or complete in themselves, but intended to complement each other. When the specific requirements stipulated in the specifications exceed or differ from those required by the applicable standards, the stipulation of the specification shall take precedence.

Other internationally accepted standards, which ensure equivalent or better performance than that specified in the standards referred, shall also be accepted. The bidder shall submit copies of such standards.

In case governing standard for the equipment is different from IS or IEC, the salient points of difference shall be clearly brought out in the offer along with English language version of standard or relevant extract of the same. The equipment conforming to standards other than IS/IEC shall be subject to Purchaser's / owner's approval. The bidder shall clearly indicate in his bid the specific standards in accordance with which the works will be carried out.

1.4 TYPE TESTING, INSPECTION, TESTING & INSPECTION CERTIFICATE

All equipment being supplied shall conform to type tests and shall be subject to routine and acceptance tests in accordance with requirements stipulated under respective sections. Purchaser reserves the right to witness any or all the tests. The Manufacturer shall intimate the Purchaser the detailed programme about the tests at least three (3) weeks in advance in
case of domestic supplies & six (6) weeks in advance in case of foreign supplies. Purchaser reserves the option for getting any or all the type tests repeated on the equipment. The Manufacturer shall also submit type test procedure for approval of the Purchaser.

In the event of any discrepancy in the test reports i.e. any test report not acceptable due to any design/manufacturing changes (including substitution of components) or due to non-compliance with the requirement stipulated in the technical specification or any/all additional type tests not carried out without any additional cost implication to the Purchaser.

The price of conducting all tests and additional type tests is deemed to be included in Bid price. In case any bidder indicates that he shall not carry out a particular test, his offer shall be considered incomplete and shall be liable to be rejected.

The purchaser intends to repeat the type tests and additional type tests on cables for which test charges shall be payable as per provision of contract.

The Purchaser, his duly authorised representative and/or outside inspection agency acting on behalf of the Purchaser shall have at all reasonable times free access to the Contractors premises or Works and shall have the power, at all reasonable times to inspect and examine the materials and workmanship of the Works during its manufacture or erection if pert of the Works is being manufactured or assembled at other premises or works, the Manufacturer shall obtain for the Engineer and for his duly authorized representative permission to inspect as if the works were manufactured or assembled on the Manufacturer's own premises or works. Inspection may be made at any stage of manufacture, dispatch or at site at the option of the Purchaser and the equipment if found unsatisfactory due to bad workmanship or quality, material is liable to be rejected.

The Manufacturer shall give the Purchaser/inspector thirty (30) days written notice of any material being ready for testing. Such tests shall be to the Manufacturer's account except for the expenses of the inspector. Unless witnessing of the tests is virtually waived, the Purchaser/ inspector will attend such tests within thirty (30) days of the date of which the equipment is notified as being ready for test/ inspection, failing which the Manufacturer may proceed with the test which shall be deemed to have been made in the Inspector's presence and the Manufacturer shall forthwith forward duly certified copies of test reports in triplicate to the Inspector.

The Purchaser or Inspector shall, within fifteen (15) days from the date of inspection as defined herein, give notice in writing to the Manufacturer, of any objection to any drawings and all or any equipment and workmanship which in his opinion is not in accordance with the Contract. The

Manufacturer shall give due consideration to such objections and shall either make the modifications that may be necessary to meet the said objections or shall confirm in writing to the Purchaser/ inspector giving reasons therein, that no modifications are necessary to comply with the Contract.

When the factory tests have been completed at the Manufacturer's works, the Purchaser/ inspector shall issue a certificate to this effect within fifteen (15) days after completion of tests but if the tests are not witnessed by the Purchaser/inspector, the certificate shall be issued within fifteen (15) days of receipt of the Manufacturer's Test certificate by the Engineer/ Inspector. Failure of the Purchaser/inspector to issue such a certificate shall not prevent the Manufacturer from proceeding with the Works. The completion of this test or the issue of the certificate shall not bind the Purchaser to accept the equipment should it, on further tests/ after erection, be found not to comply with the Contract. The equipment shall be dispatched to site only after approval of test reports and issuance of MICC by the Purchaser.

In all cases where the Contract provides for tests whether at the premises or at the works of the Manufacturer or of any Sub-Contractor, the Manufacturer except where otherwise specified shall provide free of charge such items as labour, materials, electricity, fuel, water, stores, apparatus and instruments as may be reasonably demanded by the Purchaser /Inspector or his authorised representative to carry out effectively such tests of the equipment in accordance with the Contract and shall give facilities to the Purchaser Inspector or to his authorised representative to accomplish testing.

The inspection by Purchaser and issue of Inspection Certificate thereon shall in no way limit the liabilities and responsibilities of the Manufacturer in respect of the agreed quality assurance programme forming a part of the Contract.

The Purchaser will have the right of having at his own expenses any other test(s) of reasonable nature carded out at Manufacturer's premises or at site or in any other place in addition of aforesaid type and routine tests, to satisfy that the material comply with the specification.

The Purchaser reserves the right for getting any field tests not specified in respective sections of the technical specification conducted on the completely assembled equipment at site. The testing equipment for these tests shall be provided by the Purchaser.

1.5 MATERIAL/WORKMANSHIP

1.5.1 GENERAL REQUIREMENT

Where the specification does not contain characteristics with reference to workmanship, equipment, materials and components of the covered Equipment it is understood that the same must be new, of highest grade of the best quality of their kind conforming to best engineering practice and suitable for the purposes for which they are intended.

The design of the Works shall be such that installation, future expansions, replacements and general maintenance may be undertaken with a minimum of time and expenses. Each component shall be designed to be consistent with its duty and suitable factors of safety, subject to mutual agreements and shall be used throughout the design. All joints and fastenings shall be devised, constructed and documented so that the component parts shall be accurately positioned and restrained to fulfil their required function. In general screw threads shall be standard metric threads. The use of other thread forms will only be permitted when prior approval has been obtained from purchaser.

Whenever possible, all similar part of the Works shall be made to gauge and shall also be made interchangeable with similar parts. All spare parts shall be interchangeable with, and shall be made of the same materials and workmanship as the corresponding parts of the Equipment supplied under the Specification. Where feasible, common component units shall be employed in different pieces of equipment in order to minimize spare parts stocking requirements. All equipment of the same type and rating shall be physically and electrically interchangeable.

All materials and equipment shall be installed in strict accordance with the manufacturer's recommendation(s). Only first-class work in accordance with the best modern practices will be accepted. Installation shall be construed as being the erection of equipment at its permanent location. This, unless otherwise specified, shall include unpacking, cleaning and lifting into position, grouting, levelling, aligning, coupling of or bolting down to previously installed equipment bases/foundations, performing the alignment check and final adjustment prior to initial operation, testing and commissioning in accordance with the manufacturer's tolerances /instructions and the Specification. All factory assembled rotating machinery shall be checked for alignment and adjustments made as necessary to re-establish the manufacture’s limits. Suitable guards shall be provided for the protection of personal on all exposed rotating and / or moving machine parts and shall be designed for easy installation and removal for maintenance purpose. The spare equipment(s) shall be installed at designated locations and tested for healthiness.
The Contractor shall apply oil and grease of the proper specification to suit the machinery, as is necessary for the installation of the equipment. Lubricants used for installation purposes shall be drained out and the system flushed through where necessary for applying the lubricant required for operation. The Contractor shall apply all operational lubricants to the equipment installed by him.
All oil, grease and other consumables used in the Works/ Equipment shall be purchased in India unless the Contractor has any special requirement for the specific application of a type of oil or grease not available in India. If such is the case, he shall declare in the proposal where such oil or grease is available. He shall help purchaser in establishing equivalent Indian make and Indian Contractor. The same shall be applicable to other consumables too.

1.5.2 PROVISIONS FOR EXPOSURE TO HOT AND HUMID CLIMATE

Outdoor equipment supplied under the specification shall be suitable for service and storage under tropical conditions of high temperature, high humidity, heavy rainfall and environment favourable to

the growth of fungi and mildew. The indoor equipments located in non-air conditioned areas shall also be of same type.

1.6 COLOUR SCHEME AND CODES FOR PIPE SERVICE

The contractor shall propose a colour scheme for those equipment/Items for which the colour scheme has not been specified in the specification for the approval of purchaser. The decision of purchaser shall be final. The scheme shall include:

Finishing colour of Indoor equipment

Finishing colour of Outdoor equipment.

Finish colour of all cubicles.

Finishing colour of various auxiliary system equipment including piping

Finishing colour of various building items.

All steel structures, plates etc. shall be painted with non-corrosive paint on a suitable primer. It may be noted that normally all electrical equipment in switchyard are painted with shade 631 of IS-5. All The indoor cubicles shall be of same colour scheme and for other miscellaneous items, colour scheme will be approved by the purchaser.

1.7 PAINTING

a) All sheet steel work shall be phosphated in accordance with the following procedure and in accordance with IS: 6005 "Code of practice for Phosphating Iron and Steel".

b) Oil, grease, dirt and swerve shall be thoroughly removed from emulsion by cleaning.

c) Rust and scale shall be removed by pickling with dilute acid followed by washing with running water, rinsing with slightly alkaline hot water and drying.

d) After phosphating, thorough rinsing shall be carried out with clean water followed by final rinsing with dilute bichromate solution and over drying.

e) The phosphate coating shall be sealed by the application of two coats of ready mixed, stoving type zinc chromate primer. The first coat may be "Flash dried" while the second coat shall be stoved.

f) After application of the primer, two coats of finishing epoxy paint shall be applied, each coat followed by stoving. The panel shall have colour conforming to shade 631 of IS-5 for outside and inside of the panel with black colour for base frame.

g) Each coat of primer and finishing paint shall be of a slightly different shade to enable inspection of the painting.

h) Finished painted appearance of panel shall present an asthetically pleasing appearance free from dents and uneven surface.

i) A small quantity of finishing paint shall be supplied for minor touching up required at site after the installation of the panels.

1.8 PROTECTION

a) All coated surfaces shall be protected against abrasion, impact, discoloration and any other damages. All exposed threaded portions shall be suitably protected with either a metallic or a non-metallic protecting device. All ends of all valves, pipings and conduit equipment connections shall be properly sealed with suitable devices to protect them from damage.

b) All equipment accessories and wiring shall have fungus protection, involving special treatment of insulation and metal against fungus, insects and corrosion.

c) The parts which are likely to get rusted, due to exposure to weather should also be properly treated and protected in a suitable manner.

d) Screens of corrosion resistant material shall be furnished on all ventilating louvers to prevent entry of insects.

1.9 FUNGISTATIC VARNISH

Besides the space heaters, special moisture and fungus resistant varnish shall be applied on the parts, which may be subjected or predisposed to the formation of fungi due to the presence or deposit of nutrient substances. The varnish shall not be applied to any surface of part where the treatment will interface with the operation or performance of the equipment. Such surfaces or parts shall be protected against the application to the varnish.

1.10 SURFACE FINISH

All interiors and exteriors of tanks, control cubicles and other metal parts shall be throughly cleaned to remove all rust, scales, corrosion, greases or other adhering foreign matter. All steel surfaces in contact with insulating oil as far as accessible shall be painted with not less than two coats of heat resistant, oil insoluble, insulating paints.

All metal surfaces exposed to atmosphere shall be given two primer coats of zinc chromate and two coats of epoxy paint with epoxy base thinner. All metal parts not accessible for paintaing shall be made of corrosion resisting material. All machine finished or bright surfaces shall be coated with a suitable preventive compound and suitably wrapped or other wise protected. All paints shall be carefully selected to withstand tropical heat and extremes of weather within the limit specified. The paint shall not scale off or wrinkle or be removed by abrasion due to normal handling.

1.11 GALVANIZING

All ferrous parts including all sizes of nuts, bolts, Plain and spring washers, support channels, structures, shall be hot dip galvanised conforming to latest version of IS:2629 or any other equivalent authoritative standard. However, hardware less than M12 size shall be electro-galvasized. Minimum weight of zinc coating shall be 610 gm/sq.mm and minimum thickness of coating shall be 85 microns for all items thicker than 6mm. For items lower than 6 mm thickness, requirement of coating shall be as per relevant ASTM.

1.12 AUXILIARY POWER SUPPLY

1.12.1 A.C power supply for auxiliaries will be available at 240 V, 50 C/s 1-phase, 2 wire and 415V, 50 C/s, 3-phase, 4 wire, neutral solidly earthed with variation in frequency of +/-5% and variation in voltage +/-10%

1.12.2 D.C. power supply at 220 V, 2-wire ungrounded will be available 187 V to 242 V.

1.13 INSPECTION AND TESTING

All tests and inspection of the equipment specified shall be performed to the extent and in the manner as stipulated in the relevant standards and in this specification. All type tests/routine tests/acceptance tests as specified shall be conducted in the presence of purchaser. Wherever equipment similar to the one being offered has already been type tested within 5 years from the date of opening the bid. Type tests done in an independent government laboratory or in the presence of representative of State Electricity Board or other reputed public undertakings, the type test reports of the same shall be submitted for scrutiny /approval. If these are found suitable and technically acceptable, conducting of type tests shall be waived off. Otherwise the subcontractor will have to carry out the type tests without any extra cost and without any delivery implications.

1.14 PACKAGING

Aluminium Tube shall be partially packed with Hessians cloths. Similar items shall be grouped and tied with steel wires/strip for convenient handling during transits.

MARKINGS

The following details are to be clearly indicated in the material forwarding documents:

a) Name and address of the consignee.

b) Purchase order number.

c) Name of supplier/s.

d) Description of equipment / material.

e) Tare weight.

f) Gross weight.

All the equipments shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at Site till the time of erection. On request of the purchaser, the Contractor shall also submit packing details/associated drawing for any equipment material under his scope of supply, to facilitate the purchaser to repack any equipment/ material at a later date, in case the need arises, while packing all the materials, the limitation from the point of view of availability of Railway wagon sizes in India should be taken account of. The Contractor shall be responsible for any loss or damage during transportation, handling and storage due to improper packing. Any demurrage wagons and other such charges claimed by the transporters, railways etc. shall be to the account of the Contractor. Purchaser takes no responsibility of the availability of the wagons.

1.15 HANDLING, STORING AND INSTALLATION

In accordance with the specific installation instructions as shown on manufacturer's drawings or as directed by the purchaser or his representative, the Contractor shall unload, store, erect, install, wire, test and place into commercial use all the equipment included in the contract. Equipment shall be installed in a neat, workmanlike manner so that it is level, plumb, square and properly aligned and oriented. Commercial use of switchyard equipment means completion of all site tests specified and energisation at rated voltage.

Contractor may engage manufacturer's Engineers to supervise the unloading, transportation to site, storing, testing and commissioning of the various equipment being procured by them separately. Contractor shall unload, transport, store, erect, test and commission the equipment as per instructions of the manufacturer's supervisory Engineer(s) and shall extend full cooperation to them.

In case of any doubt/misunderstanding as to the correct interpretation of manufacturer's drawings or instructions, necessary clarifications shall be obtained from the purchaser.

Contractor shall be held responsible for any damage to the equipment consequent to not following manufacturer's drawings/instructions correctly.

Where assemblies are supplied in more than one section, contractor shall make all necessary mechanical and electrical connections between sections including the connection between buses. Contractor shall also do necessary adjustments/alignments necessary for proper operation of circuit breakers, isolators and their operating mechanisms. All components shall be protected against damage during unloading, transportation, storage, installation, testing and commissioning. Any equipment damaged due to negligence or carelessness or otherwise shall be replaced by the contractor at his own expenses.

Contractor shall be responsible for examining all the shipment immediately of any damage, shortage, discrepancy etc. for the purpose of Purchaser’s information only. The Contractor shall submit to the

purchaser every week a report detailing all the receipts during the weeks. However, the Contractor shall be solely responsible for any shortages or damages in transit, handling and/or in storage and erection of the equipment at Site. Any demurrage, pilferage and other such charges claimed by the transporters, railways etc. shall be to the Contractor' account.

The Contractor shall be fully responsible, for the equipment/material until the same is handed over to the purchaser in an operating condition after commissioning. Contractor shall be responsible for the maintenance to the equipment/material while in storage as well as after erection until taken over by Purchaser, as well as protection of the same against theft, element of such nature, corrosion, damages etc.

The Contractor shall be responsible for making suitable indoor storage facilities, to store all equipments which require indoor storage.

The words erection and installation used in the specification are synonymous. Exposed live parts shall be placed high enough above ground to meet the requirements of electrical and other statutory safety codes.

The minimum phase to earth, phase to phase and section clearance along-with other technical parameters for the various switchyard voltage levels to be maintained shall be strictly as per the approved drawings.

The design and workmanship shall be in accordance with the best engineering practices to ensure satisfactory performance throughout the service life. If at any stage during the execution of the Contract, it is observed that the erected equipment(s) do not meet the above minimum clearances, the Contractor shall immediately proceed to correct the discrepancy at his risks and costs.

1.16 TOOLS AND TACKLES

The Contractor shall supply with the equipment one complete set of all special tools and tackles for the erection, assembly, dis-assembly and maintenance of the equipment. However, these tools and tackles shall be separately, packed and brought on to Site.

1.14 EQUIPMENT BASES

A cast iron or welded steel base-plate shall be provided for all rotating equipment, which is to be installed on a concrete base unless otherwise agreed to by the Purchaser. Each base-plate shall support the unit and its drive assembly, shall be of a neat design with pads for anchoring the units shall have a raised lip all around, and shall have threaded drain connections.

1.15 QUALITY

BHEL quality plan to be followed subject to TBEM / customer's approval.

1.16 DOCUMENTATION

1.16.1 DRAWINGS

All drawings shall be prepared in AutoCAD and ultimate documentation would include drawings/documents on CDs. All dimensions and data shall be in SI metric units.

All items of the equipment should be clearly identified by proper part nos. in the contract drawings. Such parts, which are to be dispatched to site from works in dispatchable units and are reassembled at site, should be marked by proper identification marks at works and indicated in the drawings and quantified. The shipping list should be sent along with the general arrangement drawings for engineer's approval. All the items of the shipping list should be identified in the drawing.

The drawing submitted by the supplier shall be reviewed by the purchaser as far as practicable within two weeks of receipt of drawings and shall be modified by the sub-contractor if any modifications and/or corrections are required by the purchaser. The sub-contractor shall incorporate such modifications and / or corrections and submit the final drawings for approval. Any delay arising out of failure of the subcontractor to rectify the drawings shall not alter the contract completion date.

Further work by the subcontractor shall be in strict accordance with these drawings and no deviation shall be allowed without the written approval of the purchaser.

All manufacturing and fabrication work in connection with the equipment prior to the approval of the drawings shall be at supplier's risk.

Approval of drawing or work by the purchaser/consultant shall not relieve the subcontractor of any of his responsibilities and liabilities under the contract.

In case of any modifications that may be necessary during erection or commissioning of the equipment, the subcontractor shall carry out modifications in the original drawing & submit 'As Built drawings' and required no. of prints thereof.

1.16.2 INSTRUCTION MANUALS

The supplier shall submit to the purchaser, draft instruction manuals for approval within 30 days of placement of order. The final instruction manuals complete in all respects shall be submitted 60 days before the first shipment of the equipment. The instruction manuals shall contain full details and drawings of all the equipment furnished, the erection procedures, testing, operation & maintenance procedures of the equipment.

If after the commissioning and initial operation of the plant, the instruction manuals require any modification/ addition / changes, the same shall be incorporated and the up- dated final instruction manuals shall be submitted as required.

1.16.3 **TITLE BLOCK & DRAWING/ DOCUMENT NUMBERING SCHEME**

Title block for drawing / document should be followed as per ANNEXURE-3

1.16.4 **DOCUMENTATION SCHEDULE AT CONTRACT STAGE**

A.	For approval	No of Copies
	Copies of all drawings with project details, dimension, shipping weights, No. of cases & dimensions, fixing details, tolerance etc.	10
	Copies of type test reports.	5
	Copies of works quality plan & field quality plan.	5
	Copies of installation, operation & maintenance manual.	5
	Copies of drawings on floppies/CDs	1 set
B.	After approval and for information / distribution	
	Copies of all drawings	15
	Copies of installation, operation & maintenance manual including Routine test reports	15
	Sets of RTF of drawings	2
	CDs of Drgs and O & M Manuals	4
C.	As Built Drawings	
	Hard copies of Drawings	15
	CDs	4

NOTE:

1. Any revision of drawings / documents shall be submitted in the same no. of copies submitted first time for approval
2. Final drawings / documents shall be submitted in bound volume with customer and project details etc. written on the top.

		SECTION-4	
	GUARANTEED TECHNICAL PARTICULARS		
Sl No	**Description**		
1	**Walls /Roof**	Panel Thickness & Material	
2		Cladding	
3		Roof Slope	
4		Roof Design Load	
5	**Floor**	Panel Thickness	
6		Cladding	
7		Additional Floor	
8		Floor Design Load	
9		Reinforcement	
10	**Doors**	Type & Size	
11		Door Profile	
12		Opening	
13		Door Gasketting	
14	**PUF Materiral Property**	Thickness	
15		Density	
16		Compressive Strength	
17		Tensile Strength	
18		Bending Strength	
19		Adhesions Strength	
20		Diamesion Stability	
21		Temperature Range	
22		Thermal Conductivity	
23		Fire Resistance	
24		Vapour Permeability	
25		Self Extinguishing	

		SECTION-4	
	GUARANTEED TECHNICAL PARTICULARS		
Sl No	**Description**		
26	**Kiosk Dimension**	Length	
27		Width	
28		Height	
29		Over all Dimensional	
30	**Colour Shade of Kiosk**	RAL	
31	**Air Conditioner**	Model	
32		Capacity	
33		Air Flow	
34		Power Supply	
35		Compressor Type	
36		Controller	
37		Cooling /Circuit	
38		Total Cooling /Circuit	
39	**Illumination**	Model	
40		Make	
41		Lamp Type	
42		Lamp Base	
43		Nominal Voltage	
44		Mains Current	
45		Capacitor	
46		Power Factor	
47		Weight	
48	**Smoke Detector**	Type	
49		Quantity	

SECTION-5
CHECK LIST FOR INFORMATION TO BE FURNISHED WITH OFFER RETURN THIS CHECKLIST AS PART OF THE OFFER DULY SIGNED

The offer may not be considered if the following information and this Checklist are not enclosed with the Offer.

BHEL ENQUIRY. NO:

BIDDER OFFER REFERENCE:

A)

(1)	(2)	(3)	(4)	(5)
S.No.	**Parameters**	**Data**	**Yes / No**	**Remarks in case reply in Col (4) is *NO***
1.0	**Applicable Standard**	Latest IS 13947(Part 1), IS 5039, IS 8623, IEC 60439, IS 13703 (All Parts), IS 12436 (requirement of grade PUR1)		
2.0	**Size (**L x B x H)	7.0m x 3.0m x 3.0m		
3.0	**Walls /Roof**			
3.1	Panel Thickness & Material	80mm Polyurethane Foam (PUF)		
3.2	Cladding	**i)** Inner 0.8mm polyester Precoated cold rolled Steel Sheet		
		ii) Outer 0.6mm polyester Precoated cold rolled Steel Sheet		
3.3	Roof Slope	1 in 50 one side with 100 mm overhung on all sides		
3.4	Roof Design Load	200 kg/m^2		
4.0	**Floor**			
4.1	Panel Thickness	80mm Polyurethane Foam (PUF)		
4.2	Cladding	**i)** Inner 0.8mm Precoated Steel Sheet		
		ii) Outer 1.0mm hot dip Galvanised Steel Sheet		
4.3	Additional Floor	~~18mm. Particle Board~~/ Fire Resistant Tiles with Anti-static PVC Flooring		
4.4	Floor Design Load	700 kg/m^2		
4.5	Reinforcement	ISCM Floor Grid below the PUF Floor Panels		
4.6	***False flooring***	**Provided with Fire Resistant tiles**		
5.0	**Doors**			
5.1	Type & Size	**i)** Main Door - 1200mm (W) x 2200mm(H) – 1 No		
		ii) Emergency Exit Door - 750mm (W) x 2200mm (H)-1 No		
5.2	Door Profile	Steel Extrusions		
5.3	Opening	**i)** Main Door Openable from Outside (Door flap open outside)		

		ii) Emergency Door Openable from Inside (Door flap open outside)		
(1)	**(2)**	**(3)**	**(4)**	**(5)**
S.No.	**Parameters**	**Data**	**Yes / No**	**Remarks in case reply in Col (4) is *NO***
5.4	Door Gasketting	Neoprene based rubber gasket		
6.0	**PUF Material Property**			
6.1	Thickness	78.6mm		
6.2	Density	40kg.± 2kg/m^3 (CFC Free)		
6.3	Compressive Strength	1.2kg./cm^2		
6.4	Tensile Strength	3.6kg / m^2		
6.5	Bending Strength	4kg / m^2		
6.6	Adhesions Strength	2.9kg./m^2		
6.7	Dimension Stability	At - 25^{0}C : 0.1% ; at 38^{0}C : 0.1%, and at more than 38^{0}C : 0.4%		
6.8	Temperature Range	-15^{0}C to 95^{0}C		
6.9	Thermal Conductivity	0.02 kcal/hr/m/^{0}C		
6.10	Fire Resistance	As per BS - 4735, Horizontal Burn < 125mm		
6.11	Vapour Permeability	0.08/0.12g/hr/m^2		
6.12	Self Extinguishing	Yes		
6.13	Water absorption	0.2%@100%RH		
6.14	Over all Dimensional Tolerance	± 10mm		
7.0	**Colour Shade of Kiosk**	RAL – 9003/ 9002 ***(* To be finalised during detailed engineering)***		
8.0	**MS (Painted /Galvanised) Structural Staircase**	Provided		
9.0	**Air Conditioner**			
9.1	Minimum Capacity**	**3 Ton (2 no's for Each Kiosk)** adequacy of the capacity to be checked as per heat load calculation to meet the specification requirements		
9.2	Power Supply	415V, 3Ph , 50HZ		
10.0	**Illumination**			
10.1	Nominal Voltage	240 Volts		
10.2	Power Factor	≥0.90		
10.3	Lux level inside kiosk	Minimum 350 Lux at floor level		

10.4	One lighting fixture complete with luminaries and wiring just outside the kiosk on each of main & emergency exit doors	Provided		
(1)	**(2)**	**(3)**	**(4)**	**(5)**
S.No.	**Parameters**	**Data**	**Yes / No**	**Remarks in case reply in Col (4) is *NO***
11.0	**Fire Alarm Panel & Smoke Detector system**	2 zone microprocessor based fire alarm panel and Photo electric Smoke Detectors.		
12.0	**Portable Fire Extinguisher**	4.5kG CO_2 Type Portable Fire Extinguisher- 1 No.		
13.0	**Alarm signals to be wired to SAS (BCU Panel)**	1) AC-1 in trouble		
		2) AC-2 in trouble		
		3) Room Temp High alarm		
		4) Fire Alarm		
		5) Aux Supply-1 Fail alarm (MCB Trip/ Off)		
		6) Aux Supply-2 Fail alarm (MCB Trip/ Off)		
14.0	Necessary temperature transducer (along with all accessories)	Provided		
15.0	Degree of Protection	IP 55		
16.0	**Proto Testing**	To be performed on one kiosk as per procedure mentioned in Clause No. 3 of Annexure-I of Section-1		
17.0	Installation & Erection at site of the supplied AC Kiosk	Included in scope of this tender		
18.0	Provision of remote control of air conditioning system from SAS (BCU Panel)	Provided by offering power contactors duly wired to make AC units “ON” and “OFF”		

B)

(1)	(2)	(3)
S.No.	**Description**	**Confirmation of Supplier**
1.	Bidder to confirm that all drawings / data sheets/QP/ valid type tests reports/ all relevant information shall be submitted to BHEL for organising approval of ultimate customer.	

Date: **Signature of the authorized representative of Bidder**

Company Seal

SECTION-6

ENCLOSURE

1. Drawing for AC Kiosk

COMPUTER DRG. PATH NAME' :

INVENTORY NO. SIGN & DATE

KIOSK PANEL SPECIFICATION

KIOSK Type	*Length*	*Width*	*Height*	*Qty*
600 MV Type - A	7000MM.	3000MM.	3000MM./3080MM	08Nos.

Construction:
Panel Type : Polyurethene Sandwich Type Panel

Walls / Roof

Panel Thickness : 80mm.
Cladding : Inner 0.8mm polyster Precoated Steel Sheet
Outer 0.6mm polyster Precoated Steel Sheet
Roof : 100mm overhang on all sides.
Roof Design Load : 200 kg/m2. AC Kiosk is not lifttable.

Floor
Panel Thickness : 80mm.
Cladding : Inner 0.8mm polyster Precoated Steel Sheet
Outer 1.0mm Galvanised Steel Sheet
Additional Floor : Fire Resistant Tiles with Anti-static PVC Flooring
Floor Design Load : 700kg/m2.
Reinforcement : ISMB Floor Grid below the PUF Floor Panels
Doors
Type & Size : Main Door - 1200mm (W) x 2200mm (H) - 1no.
Emergency Exit Door - 750mm (W) x 2200mm (H) - 1no.
Door Profile : Steel Extrusions
Opening : Main Door Openable from Outside
Emergency Door Openable from Inside.
(Both door flaps are open outside)
Door Gasketting : EPDM based rubber gasket (15 MM.Min THICK)

PUF Material Property:

Thickness	: 78.6mm.
Density	: 40kg /.m3 ±2 (CFC Free)
Compressive Strength	: 1.2kg. / cm2
Tensile Strength	: 3.6kg. / m2
Bending Strength	: 4kg. / m2
Adhesion Strength	: 2.9kg. / m2
Dimension Stability	: At -25°C : 0.1%; at 38°C: 0.4%
Temperature Range	: - 15°C to + 95°C
Thermal Conductivity	: 0.02 kcal / hr / m /°C
Fire Resistance	: As per BS-4735, Horizontal Burn < 125mm.
Vapour Permiability	: 0.08 / 0.12 g/hr/m2
Water absorption	: 0.2% @ 100 % RH
Self Extingushing	: Yes
Biodegradable	: Yes

Over all Dimensional Tolerance : ± 10mm.

Colour Shade of Kiosk
: RAL - 9002 (Outer Shade)
: Inner Shade should be Glossy white.
: Base Frame Should be As per T.S.
Approx. wt. of AC Kiosk
7000mm X 3000mm X 3000 mm : 3800 Kgs.

Air Conditioner Technical Specifications

Model	: SENSICOOL
Make	: VOLTAS
Capacity	: (2 x 2TR) 4TR
Air Flow	: 2030 (CMH/Circuit)
Power Supply	: 230V, 3Ph, 50HZ
Controller	: Micro Processor Control
Cooling / Circuit	: 5400 Kcal/ Hr
Total Cooling / Circuit	: 6000 Kcal/ Hr

Air Conditioner operation :
The System is designed to maintain the inside kiosk temperature for proper operation of the critical equipment. One of the Air conditioner shall be running at a time and on failure of the same or as described hereunder, the other unit shall automatically. to ensure longer life of the system, the redundant units shall also be running in cycle operation(for a cycle time of 4 hours/12 hrs-user defined) through the controller. However, during running of one air conditioner unit,if inside temperature of the shelter reaches to a predefined(i.e. 30°c), the other shall start running to maintain the temperature,to specified value (i.e.23+2°c).After achieving this temperature,the other unit shall again shut off.

Illumination

Model	: BTSM0228V2
Make	: Bajaj make or Equivalent
Lamp type	: Normal Tube 2x28W
Nominal Voltage	: 240 Volts
Mains Current	: 0.63Amps.
Capacitor	: 8.00+4.00 Mfd
Power Factor	: ≥0.90
Weight	: 3.220 kg (Approx)

Quantity
IN TYPE-A KIOSK : 3 NOS.

D/C Emergency Lamp

MODEL	: 30505/31/86
Make	: PHILLIPS or Equivalent
Lamp Base	: 50X306MM
POWER SUPPLY	: 90V - 380V AC
RECHARGING TIME	: 5 HRS
OPERATING TIME APPROX	: 6 HRS .
Weight	: 1 kg (Approx)
Quantity	: 2 No For Each Shelter.

Smoke Detector

Type	: Ionization Type Smoke Detector
Make	: Apollo/Agni
Quantity per Kiosk	: 2 Nos.

Out put contact shall be made available in fire alarm panel for Integrating with switchyard fire alarm system.

Fire Detectors shall be provided.
Potential free contact shall be provided to with it to SCADA.
Fire Alarm : 2-Zone fire alarm panel operating of 240v AC.
(It shall be derived from 240V AC available in kiosk).
Temp. Transducer (output 4-20 mA analogysignal be provided for monitoring temp kiosk

STRUCTURES

The KISOK will have internal structual frame. The structures shall be bolted/welded/revetted and painted matching with the internal color shade.
All the structures shall conform to IS:2062
Welding shall be 6mm. unless specified.

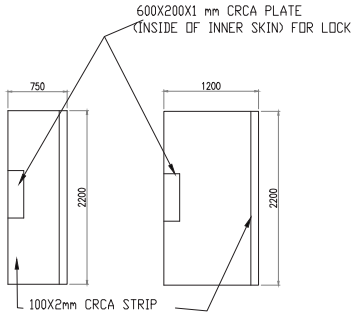
NOTES:

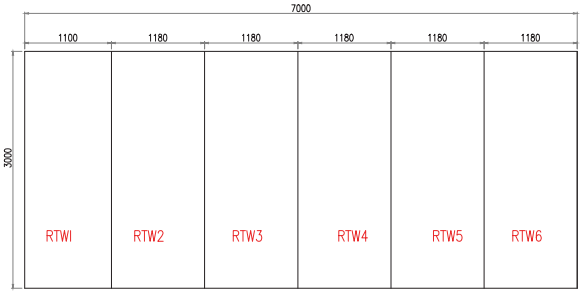
1. All the dimensions are in MM. unless otherwise mentioned.
2. Refer separate drawing for civil pedestal foundation
3. KIOSK will be dispatched in knock down condition and assembled at site.
4. All Cutouts for the panels will be done at site after installation of the kiosk.
5. Degree of protection on: IP 55.
6. Radiant 3 Way Locking arrangement should provided for main& emergency doors.
7. Air condition monitoring facility shall be given with SCADA.

REV.	DATE	ALTERED / CHECKED / APPROVED	REV.	DATE	ALTERED / CHECKED / APPROVED	REV.	DATE	ALTERED / CHECKED / APPROVED
ZONE			ZONE			ZONE		

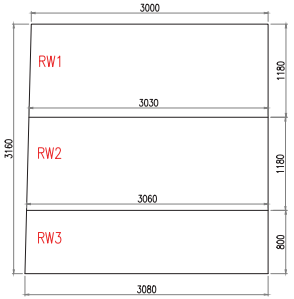
COMPUTER DRG. PATH NAME :

INVENTORY NO. SIGN & DATE

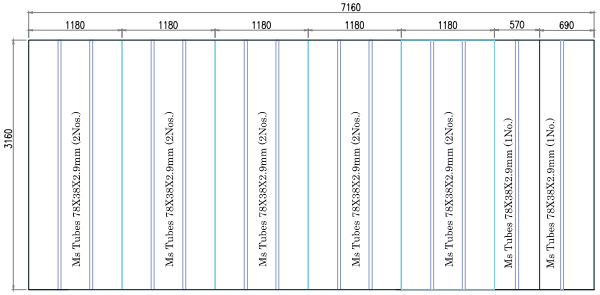




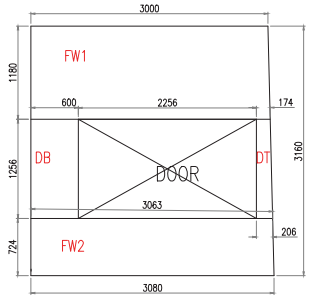
RIGHT SIDE WALL



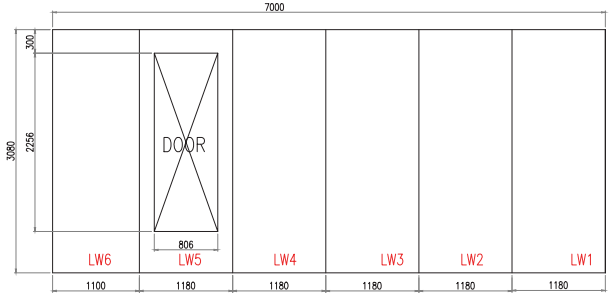
REAR SIDE WALL



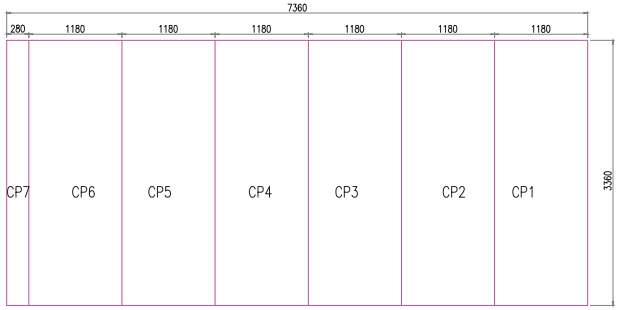
FLOOR PANEL



FRONT SIDE WALL



LEFT SIDE WALL



CEILING PANEL LAYOUT
ROOF OVER HANG 100mm ALL SIDE

SPECIFICATIONS :-
OUTER SIZE :- 7160(L)X3160(W)X3240(H)mm
INNER SIZE :- 7000(L)X3000(W)X3080(H)mm
SKIN:- Inner :- 0.8mm Polyester Precoated steel sheet
Outer :- 0.6 mm Polyester Precoated steel sheet
Inner Skin Colour:- Glossy white
Outer Skin Colour:- (RAL-9002)

FLOOR PANEL PUF :- 80mm
SKIN:- Inner :- 0.8mm Precoated steel sheet
Outer :- 1.0 mm(GI) hot deep galvanised Sheet Steel

OUTER FLASHING - 0.6 mm GI (RAL-9002)
3160X150X150 = 04 Nos.(Wall TO Wall Joint)
3160X150X150 = 02 Nos. (Wall TO Floor Joint)
3580X150X150 = 04 Nos. (Wall TO Floor Joint)
3160X75X75 = 02 Nos. (Wall TO Roof Joint)
3580X75X75 = 04 Nos. (Wall TO Roof Joint)

INNER FLASHING - 0.8 mm GI Painted Glossy white
3080X75X75 = 04 Nos.(Wall TO Wall Joint)
3580X75X75 = 04 Nos.(Wall TO Roof Joint)
3000X75X75 = 02 Nos.(Wall TO Roof Joint)
3580X75X75 = 04 Nos.(Wall TO Floor Joint)
3000X75X75 = 02 Nos.(Wall TO Floor Joint)
U-CHANEL 0.6 MM. 40X82X40
1200 = 4 Nos. { A/C CUTOUT }
PVC Mat 2 mm Thick = 7000X3000mm = 1 Nos.
Inner flashing of PPGI 40X40=20Rmt.

-

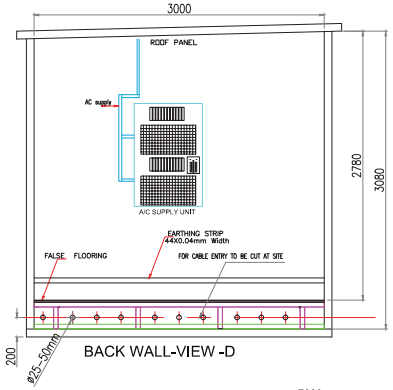
Door:- 2NOS. DOORS (Shelter Type) 80mm thick C/W accessories
Door Profile : STEEL EXTRUDED
Door opening size to be mainted as per drawing.
Door Skin: Inner -0.6mm Pre coated steel
Outer -0.6mm Pre coated steel
Weather strip -above door

DOOR CONOPY
1500 mm = 1Nos. (RAL-9002)
1000 mm = 1Nos. (RAL-9002)
1000 mm = 1Nos. (RAL-9002) FOR AC

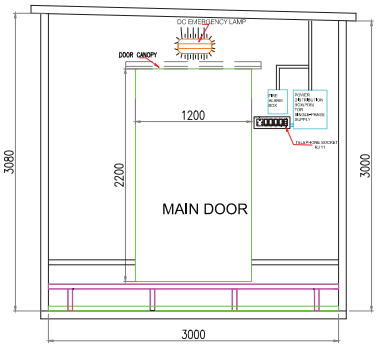
REV.	DATE	ALTERED / CHECKED / APPROVED	REV.	DATE	ALTERED / CHECKED / APPROVED	REV.	DATE	ALTERED / CHECKED / APPROVED
ZONE			ZONE			ZONE		

COMPUTER DRG. PATH NAME :

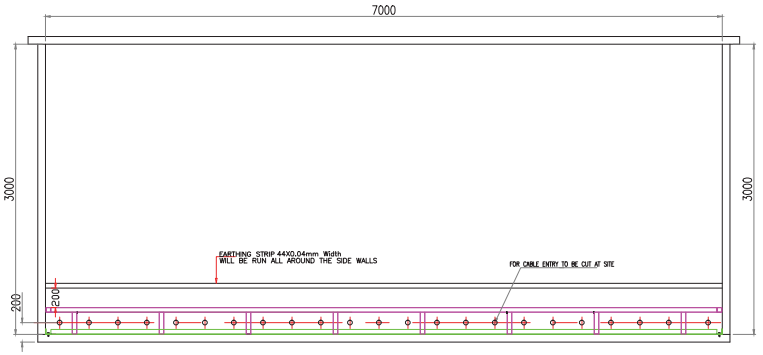
INVENTORY NO. SIGN & DATE



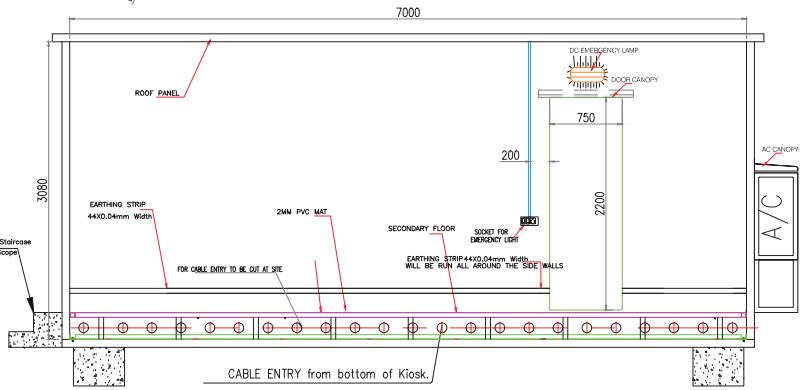
BACK WALL-VIEW -D



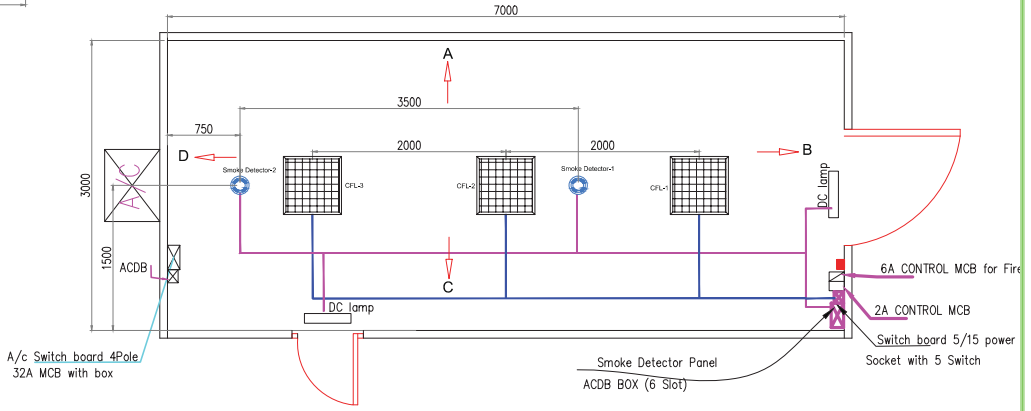
FRONT WALL VIEW -B



RIGHT WALL INSIDE VIEW -A



LEFT WALL INSIDE VIEW -C



REV.	DATE	ALTERED
		CHECKED
		APPROVED
ZONE		

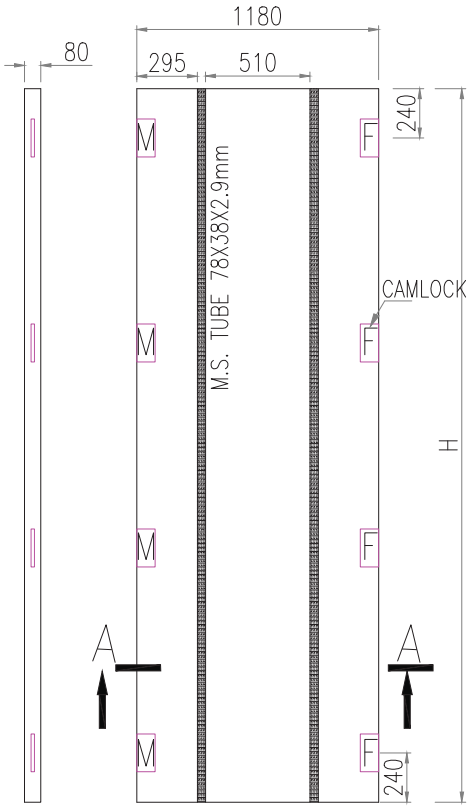
REV.	DATE	ALTERED
		CHECKED
		APPROVED
ZONE		

REV.	DATE	ALTERED
		CHECKED
		APPROVED
ZONE		

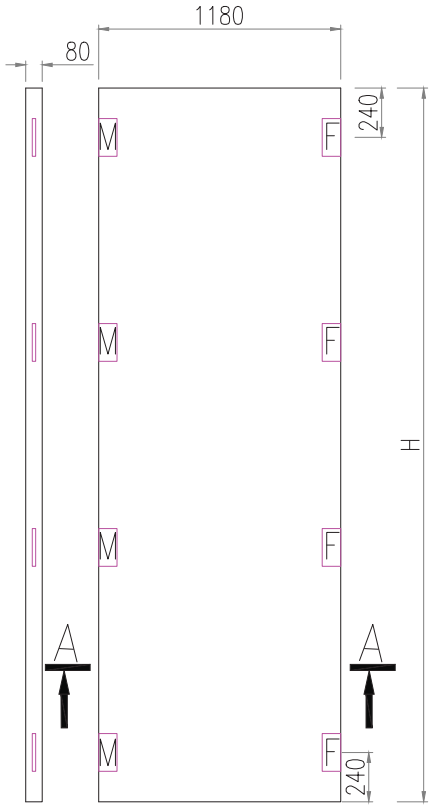
THIRD ANGLE PROJECTION (ALL DIMENSIONS ARE IN MM)

COMPUTER DRG. PATH NAME :

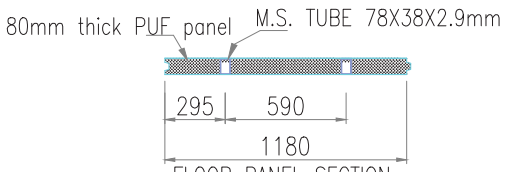
INVENTORY NO. SIGN & DATE



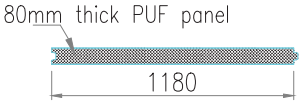
FLOOR PANEL



FLOOR PANEL



FLOOR PANEL SECTION

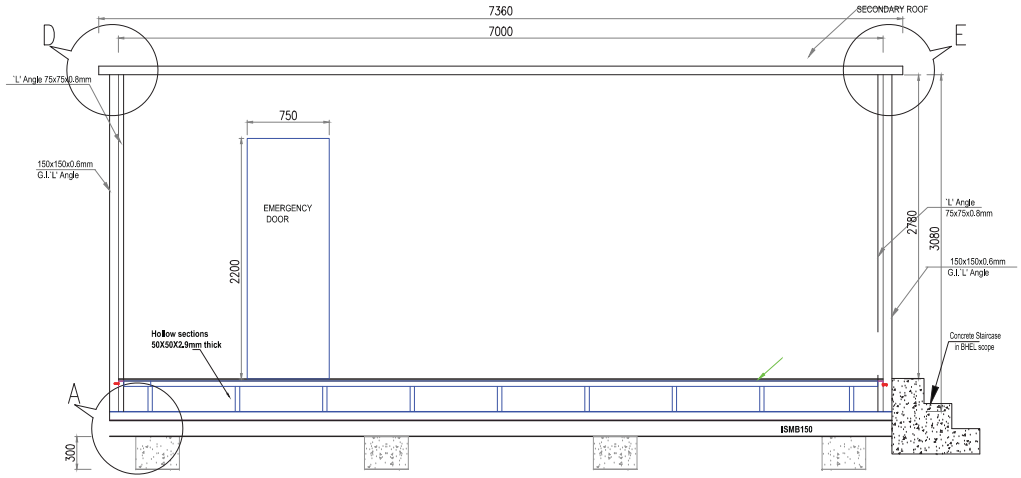


PUF PANEL SECTION
SECTION A-A

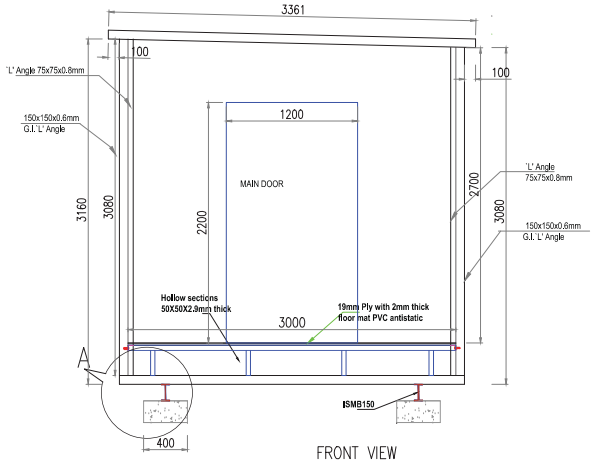
REV.	DATE	ALTERED / CHECKED / APPROVED	REV.	DATE	ALTERED / CHECKED / APPROVED	REV.	DATE	ALTERED / CHECKED / APPROVED
ZONE			ZONE			ZONE		

COMPUTER DRG. PATH NAME :

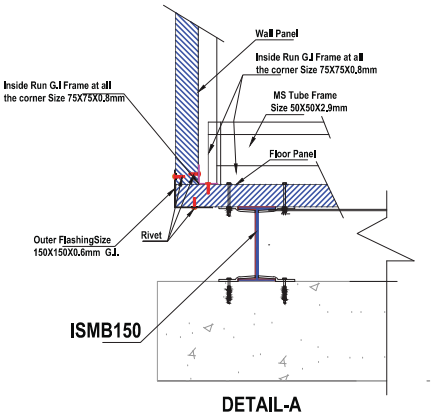
INVENTORY NO. SIGN & DATE



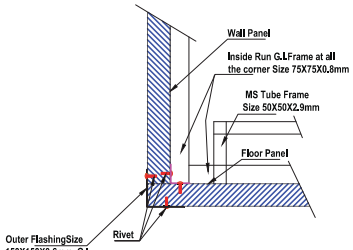
SIDE VIEW



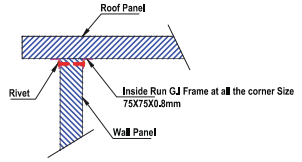
FRONT VIEW



DETAIL-A

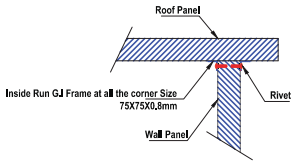


Tpy. :~ Wall & Floor Panel Joint



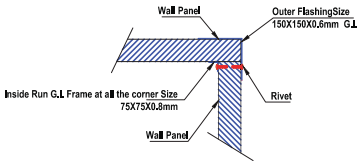
Tpy. :~ Wall & Roof Panel Joint

DETAIL-D



Tpy. :~ Wall & Roof Panel Joint

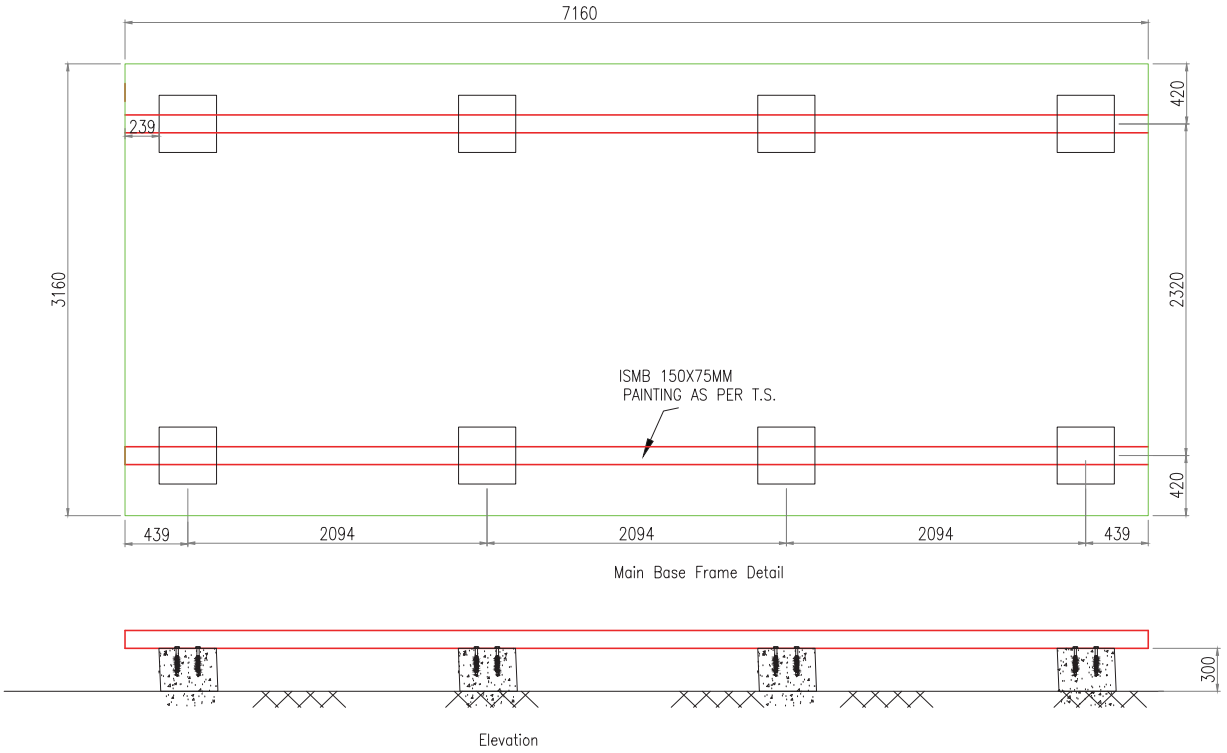
DETAIL-E



Tpy. :~ Wall & Wall Panel Joint

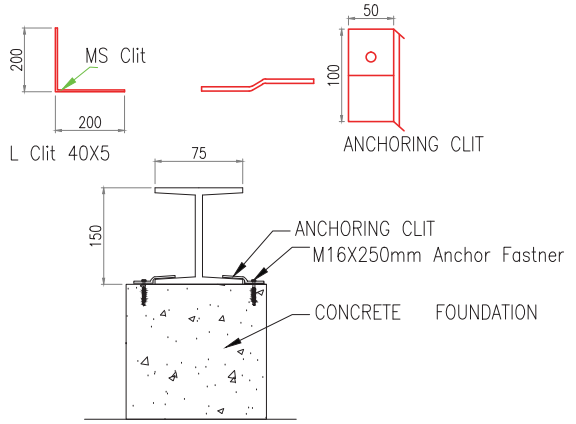
Corner Joint

REV.	DATE	ALTERED / CHECKED / APPROVED	REV.	DATE	ALTERED / CHECKED / APPROVED	REV.	DATE	ALTERED / CHECKED / APPROVED
ZONE			ZONE			ZONE		

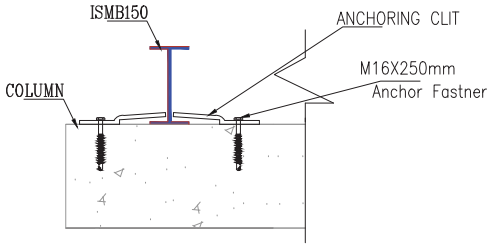


Main Base Frame Detail

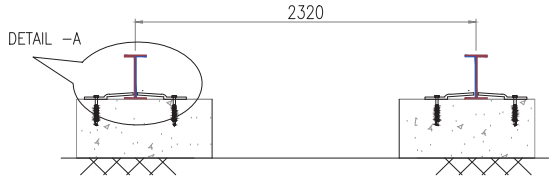
Elevation



Base Fixing Arrangement



ISMB JOINT DETAIL
DETAIL–A

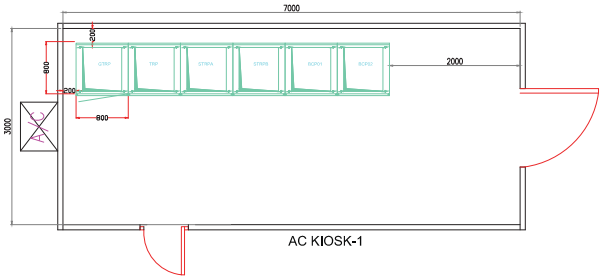


Side view Main Base Frame Detail

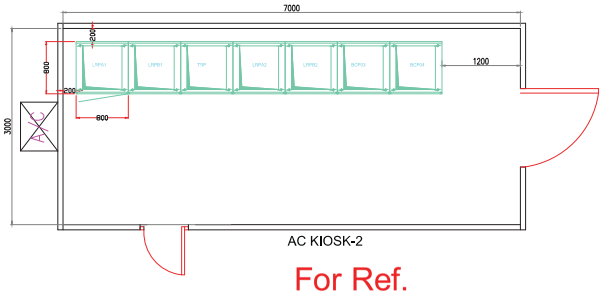
REV.	DATE	ALTERED / CHECKED / APPROVED	REV.	DATE	ALTERED / CHECKED / APPROVED	REV.	DATE	ALTERED / CHECKED / APPROVED
ZONE			ZONE			ZONE		

COMPUTER DRG. PATH NAME :

INVENTORY NO. SIGN & DATE

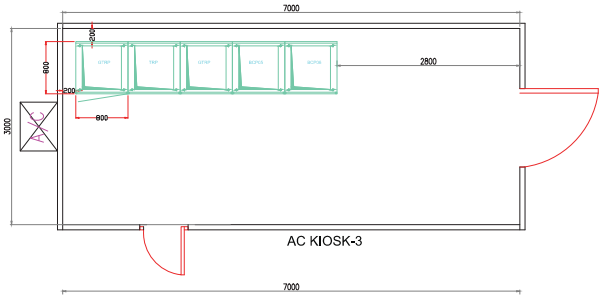


AC KIOSK-1



AC KIOSK-2

For Ref.



AC KIOSK-3

REV.	DATE	ALTERED
		CHECKED
		APPROVED
ZONE		

REV.	DATE	ALTERED
		CHECKED
		APPROVED
ZONE		

REV.	DATE	ALTERED
		CHECKED
		APPROVED
ZONE		

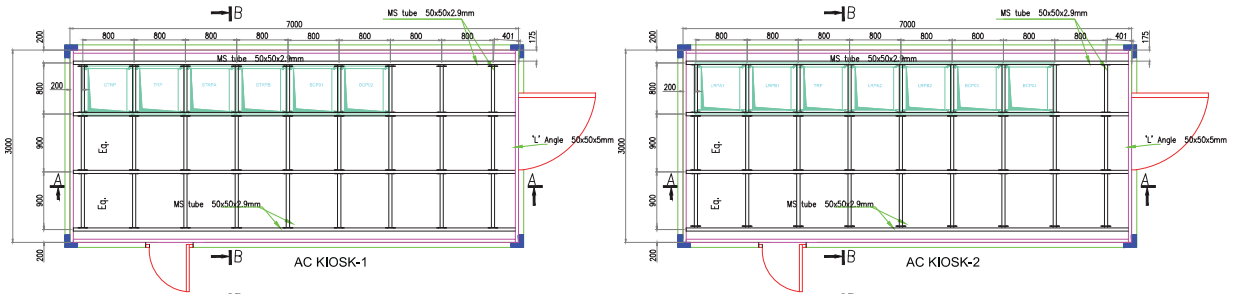
COMPUTER DRG. PATH NAME :

INVENTORY NO. SIGN & DATE

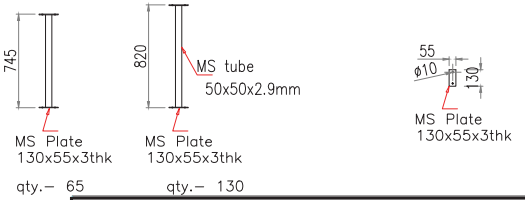
DATE SHEET 07 OF 10 REV. 04

COMPUTER DRG. PATH NAME :

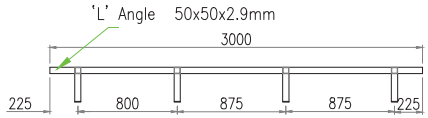
INVENTORY NO. SIGN & DATE



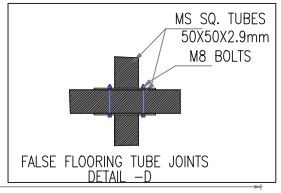
False floor



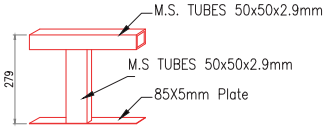
For ref



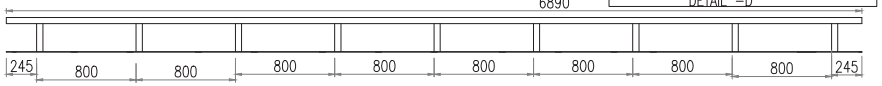
SECTION B–B



FALSE FLOORING TUBE JOINTS
DETAIL –D



FALSE FLOORING Hight 300mm
M.S.Tube Frame Hight 279 mm
19 mm Ply + 2 mm Mat =21 mm



SECTION A–A QTY–4Nos each

REV.	DATE	ALTERED / CHECKED / APPROVED	REV.	DATE	ALTERED / CHECKED / APPROVED	REV.	DATE	ALTERED / CHECKED / APPROVED
ZONE			ZONE			ZONE		

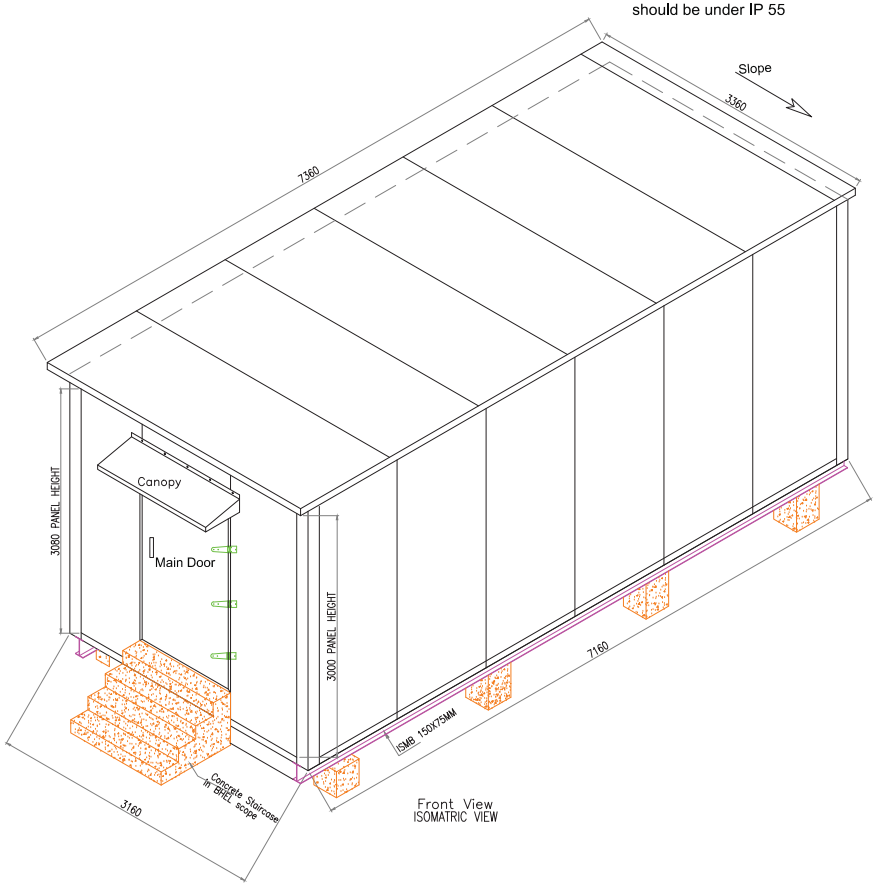
THIRD ANGLE PROJECTION (ALL DIMENSIONS ARE IN MM)

COMPUTER DRG. PATH NAME :

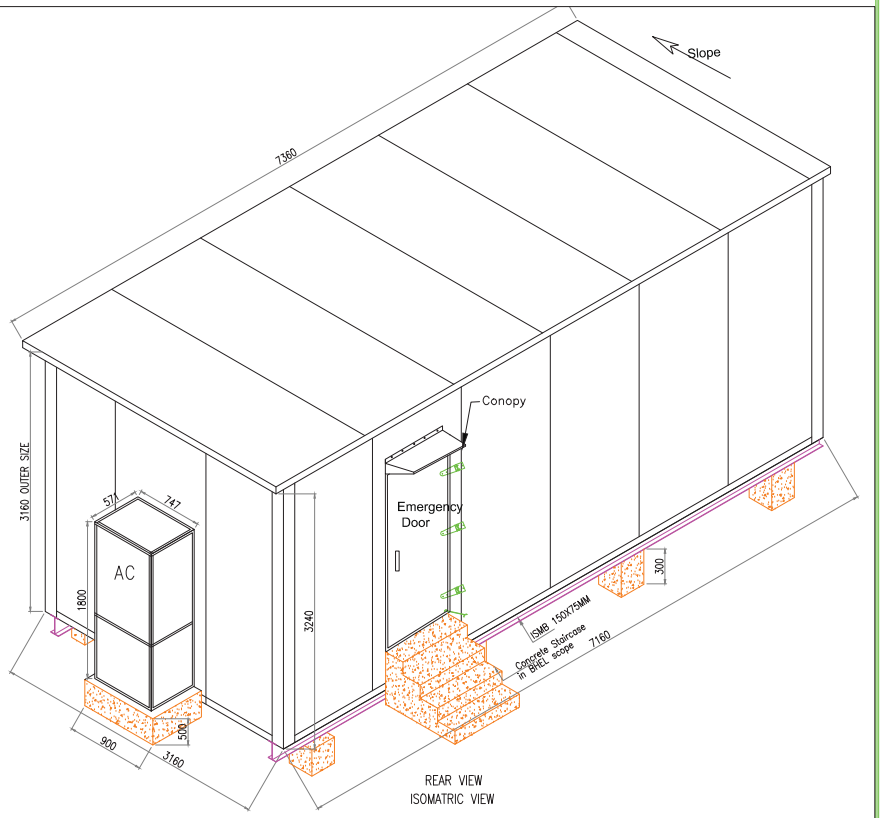
INVENTORY NO. SIGN & DATE

1 2 3 4 5 6 7

Note-Proctection standard
should be under IP 55



Front View
ISOMATRIC VIEW

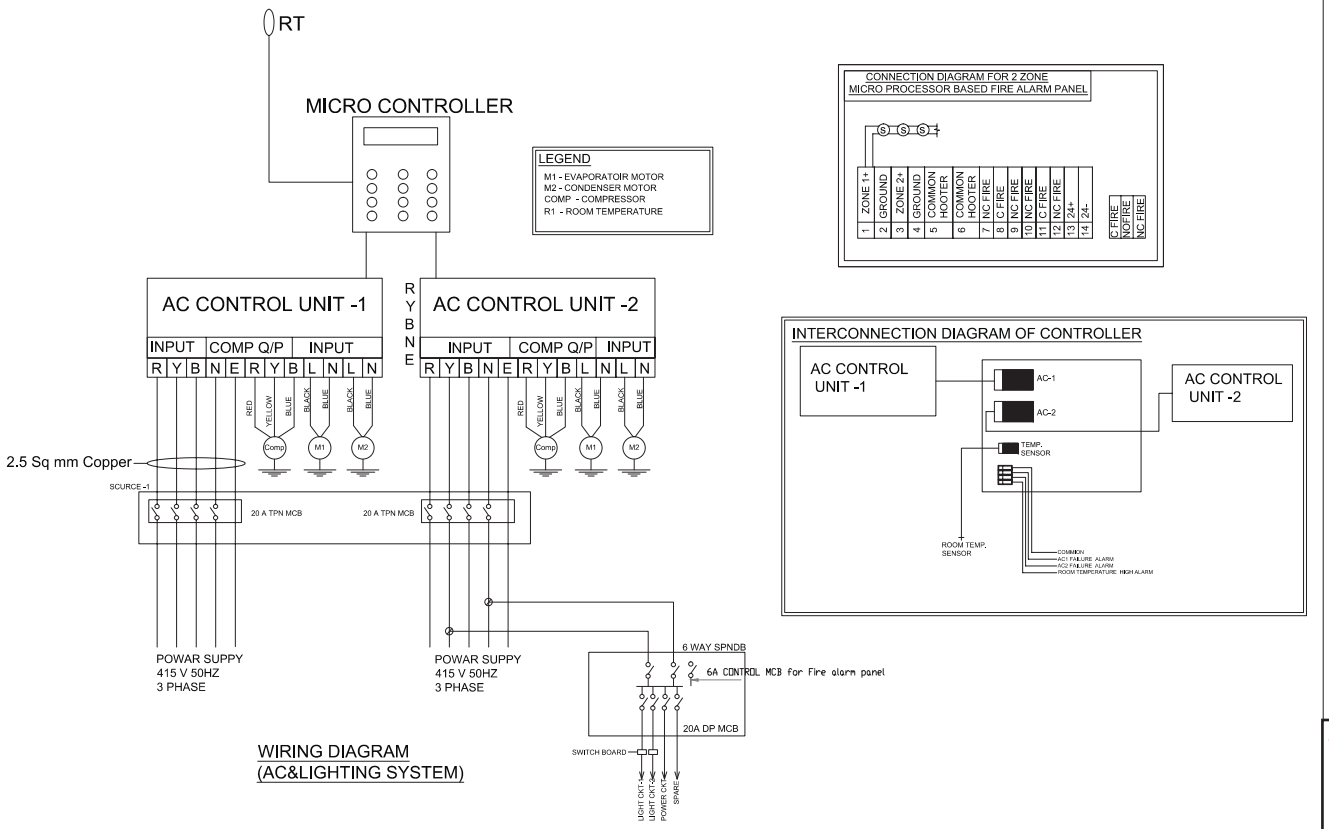


REAR VIEW
ISOMATRIC VIEW

REV.	DATE	ALTERED / CHECKED / APPROVED	REV.	DATE	ALTERED / CHECKED / APPROVED	REV.	DATE	ALTERED / CHECKED / APPROVED
ZONE			ZONE			ZONE		

COMPUTER DRG. PATH NAME :

INVENTORY NO. SIGN & DATE



WIRING DIAGRAM
(AC&LIGHTING SYSTEM)

REV.	DATE	ALTERED / CHECKED / APPROVED
ZONE		

REV.	DATE	ALTERED / CHECKED / APPROVED
ZONE		

REV.	DATE	ALTERED / CHECKED / APPROVED
ZONE		