



# **“ Ready Reckoner ”**

## **District Cooling Connection**



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### **INTRODUCTION:**

Gujarat International Finance Tec-City ("GIFT") is being developed as a global financial and IT / ITes hub in the state of Gujarat, a first of its kind in India. GIFT has been planned as a city with next generation infrastructure and real estate including commercial high-rise business districts, quality residential housing, retail and recreational spaces.

GIFT is expected to be above or at par to all other International financial districts in terms of scale, scope and quality of infrastructure and real estate. GIFT will encompass an area of 886 acres with a total Built-up area ("BUA") of around 62 million square feet.

### **PURPOSE:**

The document describes the technical requirements for connecting the building HVAC system to GIFT City District Cooling System (DCS). The document should be used for planning, preparation of specifications and procurement during design, engineering and execution phases by the building developers.

The objective of this document is to ensure that all the design and installation requirements for connection to DCS via Energy Transfer Station (ETS) provided by the developer are designed to the same standard and in full compliance with the relevant requirements of GIFT district cooling infrastructure so as to maintain sustainable performance of district cooling system as a whole throughout the GIFT City.

This document is developed by GIFTCL to cover following main aspects of district cooling.

- a) District cooling supply requirements
- b) Design and Installation guidelines for developers
- c) Connection guidelines to DCS infrastructure

- d) Operation and Maintenance of system
- e) Procedures for DCS connection

This document is a modified version of the previous document that is adopted across the GIFT City for development and O&M of DCS infrastructure.

## **PREFACE**

This publication is produced by:

**GIFT CITY LIMITED**

This document shall provide general guidelines to develop and interface district cooling system with the building HVAC system in-order to provide reliable chilled water supply up to the end-user in GIFT City.

This document in general refers to standards in their latest editions and/or addendum as below:

- ASHRAE - American Society of Heating, Refrigeration and Air-Conditioning Engineers
- AHRI - Air-Conditioning, Heating & Refrigeration Institute, USA
- ASME - American Society of Mechanical Engineers
- ANSI - American National Standard Institute
- IS - Indian Standard
- BS - British Standard
- NBC - National building code of India (Latest Version)
- NFPA – National Fire Protection Authority

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## 1 DEFINITIONS

### **“AGREEMENT”**

means the application form along with general terms and conditions and other incidental documents signed and submitted by the Developer for the district cooling chilled water connection at a specified location within the utility tunnel near building envelope and duly accepted by the Service Provider.

### **“APPLICANT”**

A person who makes an application for supply of district cooling service, increase or reduction in the contract demand / sanctioned load, change of name, disconnection or restoration or termination of agreement, as the case may be, in accordance with the provisions of the Act and the Rules & Regulations made under.

### **“APPLICATION”**

The request by the Developer for Connection of chilled water in the prescribed format / application form of the Service Provider duly filled and signed by the Developer.

### **“AUTHORITY”**

Designated employees are authorized to conduct inspections and take steps to administer and enforce these requirements in line with the regulation.

The details of any construction which are not specifically dealt within this regulation shall be performed to the satisfaction of a designated employee, which authority shall be reasonably exercised by the designated employee.

Designated employees are hereby authorized to determine whether equipment, techniques, conditions, circumstances and all other matters meet the standards and requirements of this regulation or are otherwise

acceptable.

### **“AUTHORISED REPRESENTATIVE”**

To all officers, staff & representatives of the GIFT City Limited, discharging functions under the general or specific authority of the GIFTCL.

### **“BILL”**

Monthly bill or for such period as determined by the Service Provider, for the chilled water connection, to be issued by the Service Provider, for Demand charges, consumption charges and such other incidental charges, taxes, cess, duties and levies payable by the Developer.

### **“CODE”**

The National Building Code of India adopted by this regulation, or a subsequent and similar code adopted by this regulation.

### **“CONSUMER”**

Any person who is supplied with district cooling service for his own use by the GIFT District Cooling company and includes any person whose premises are for the time being connected for the purpose of receiving district cooling service.

### **“CONTRACT CAPACITY”**

It is the supply capacity that the Developer has requested and the service provider has agreed to provide, as stated in the chilled water connection agreement.

### **“DCS”**

The system adopted in GIFT City for air-conditioning of the buildings consisting of three major parts as under:

- I. **Source-** District Cooling Plant generating chilled water
- II. **Distribution-** Supply and Return pipe network from DCS plant up

to Individual Buildings

- III. **ETS-Interface** between DCS chilled water network and developer's chilled water system located inside the building

### **"DELAYED PAYMENT CHARGES"**

The charges as are payable by the Developer as per rate given in the Tariff Card, for late payments of the Bill or such other demands raised by the Service Provider.

### **"DELTA T"**

The difference between the entering and leaving chilled water temperature across chiller, heat exchanger, AHU cooling coil, Fan coil unit, cassette type unit, hi wall unit or any other heat transfer equipment associated with district cooling system.

### **"DEVELOPER"**

A persons or organization purchasing development rights of plot from the GIFTCL making necessary development and finally lease or sale flat to end user.

### **"DEVELOPER'S INSTALLATION"**

Associated equipment of the building's chilled water system installed and maintained by the developer such as piping, valves, heat exchangers, pumps, instruments etc. as applicable to provide operational HVAC system for the building.

### **"DISTRIBUTION NETWORK"**

The network installed for chilled water Supply and Return pipes from district cooling plant up to individual buildings inside utility tunnel.

### **"ETS"**

The Energy Transfer Station (ETS) is the point where the energy from district cooling system is transferred to the building's chilled water system. An ETS mainly consists of pipes, valves, fittings, heat exchangers

(PHE), pumps, metering devices, instruments etc.

### **“EXPANSION TANK”**

This is required in the closed loop chilled water system to compensate for the expansion, contraction or loss of water volume with varying temperatures and to maintain the system pressure.

### **“GOVERNMENT”**

The State Government having jurisdiction under the Act.

### **“INSTALLATION”**

The whole of chilled water system components installed / erected within a premise associated with a point of supply of a consumer, duly tested & connected to the GIFT District cooling system chilled water service.

### **“OCCUPIER”**

The person in occupation of the premises where chilled water energy is used or is proposed to be used for air-conditioning of occupier’s space.

### **“OWNER”**

A person, agent or employee who owns, manages or is in possession of land or a building to which this regulation applies. Who is in receipt of the whole or a part of any rents or profits, there from whether the rents and profits are received on the person’s own account, or as agent or trustee for another person.

### **“PHE”**

The PHE is a gasketed plate type heat exchanger which is a mechanical equipment separating the primary side chilled water distribution network from the secondary side chilled water network, wherein cooling energy is transferred from one side to another.

### **“POINT OF SUPPLY”**

The point of supply means the point where the scope of GIFTCL ends and

the scope of developer starts.

In case when the DCS service is laid through the utility tunnel, the Point of Supply shall be located approximately one meter away from penetrating wall where the DCS services will enter the building.

In case, if the DCS service is not laid through the tunnel, then the Point of Supply shall be up to one meter from the DCS valve & metering station inside the building subject to the technical feasibility.

### **“PREMISES”**

Includes any land, building or structure.

### **“PRIMARY SIDE”**

Supply and Return pipe network circulating chilled water produced in district cooling plant up to the plate type heat exchanger inside energy transfer station also referred as plant side.

### **“RECONNECTION”**

To restart of the supply for the chilled water connection on fresh application submitted by the Developer, after termination.

### **“RETURN TEMPERATURE” – DCS**

The temperature of the water as measured on the primary side of the chilled water return line to DCS at the “point of supply” leaving the PHE.

### **“RULES”**

The Rules prescribed or as may be prescribed under the Act.

### **“SECONDARY CHILLED WATER PUMPS”**

Pumps installed to distribute chilled water inside the building up to individual AHU/FCU and other terminal units.

### **“SECONDARY SIDE”**

Supply and Return pipe network, circulating chilled water up to

individual AHU/FCU unit or other terminal units in the building from the Energy Transfer Station also referred as building side.

### **“SECURITY DEPOSIT”**

The amount of security (*interest free*) to be deposited by the Developer, as per the Tariff Card, at the time of Application for Connection or Reconnection.

### **“SITE”**

The building or property or establishment owned or occupied by the Developer in the GIFT notified area from where the Developer would connect the chilled water pipes to the district cooling distribution network of the service provider.

### **“STREET”**

Includes any way, road, lane, square, court, alley, passage or open space, whether a thoroughfare or not, over which the public have a right of way and also the roadway and footway over any Public Bridge or Causeway.

### **“SUPPLY TEMPERATURE” – DCS**

The temperature of the water as measured on the primary side of the chilled water supply line from DCS at the “point of supply” entering the PHE.

### **“TARIFF CARD”**

A schedule, issued by the Service Provider, from time to time, in respect of the Security Deposit, Charges for New chilled water Connection, Delayed Payment Charges and such other charges to be paid by the Developer/ Developer to the Service Provider.

### **“TEMPORARY SUPPLY”**

Supply of chilled water for a temporary period as may be agreed between the GIFT CITY LIMITED and the developer.



### **“TON (TR)”**

A ton of refrigeration; being the rate at which heat is removed, which is equivalent to 12,000 BTU per hour

### **“TON HOUR (TR-HR)”**

A measured unit of chilled water energy consumption equivalent to 12000 BTU in one hour. Ton Hours are measured and metered by recording the flow of water and temperature differential between supply temperature at the point of supply and return temperature at the point of return.

## **2 GIFT DISTRICT COOLING INFRASTRUCTURE**

### **2.1 Gift District Cooling System Philosophy:**

- GIFT is conceptualized to be a world class development, a globally benchmarked International Financial Services City which will work as a Central Business District (CBD) consisting of high-rise structures and state of the art infrastructure to support the development.
- GIFT has identified district cooling system to be adopted in tune with the prevailing International practices in developed countries for the air conditioning of the cities.
- District cooling is a system in which chilled water is generated at a centrally located chiller plants. The chilled water is further distributed through Chilled water supply pipes up to the buildings and is taken back to the DCS plant through Chilled water return pipes after extracting the heat from the building's Heat Exchangers.
- District cooling system comprises of three major elements:
  - ❖ The central chiller plants
  - ❖ Distribution system
  - ❖ Energy Transfer Station (ETS) installed by building developer

These elements are depicted in figure below:

### **2.2 District Cooling Plant:**

- GIFTCL has developed District Cooling Plant (DCP-1) for the generation of chilled water, located in Domestic Tariff Area (DTA).
- DCP-1 is being developed in different phases for a full capacity of 60,000 TR at this location to serve the cooling load requirement in GIFT city.
- At present, DCP-1 has 10,000 TR capacity chillers and 10,000 TR-Hr Thermal Storage Tank. The plant has 4 Nos. of 2,500 TR centrifugal

water-cooled chillers arranged in two sets of series counter flow configuration and working on R-134a eco-friendly refrigerant.

- Multiple DCS plants will be developed by GIFTCL in SEZ processing and non-processing area of GIFT City based on further development and increase in demand.
- All these plants will be interconnected to develop chilled water distribution loop which will be feeding building wise cooling load requirement of GIFT City. Chilled water will be distributed to the entire city at designated temperature up to individual building level, wherefrom the same will be taken up and distributed further to the individual end users/consumers within the building.

### **2.3 Distribution Network:**

- Chilled water distribution network of all chilled water supply and return pipes shall be carried through utility tunnel up to individual building level.
- Utility tunnel is an underground passage developed by GIFTCL to house utility lines such as chilled water pipes, drinking water and blow down water pipe, waste collection pipes, power and control cables etc.

### **2.4 Energy Transfer Station (ETS):**

- Energy transfer station shall be located at a suitable space inside each building at the basement level preferably within 50 mtr of the point of supply.
- The DCS side primary chilled water distribution network will be connected to the primary side of PHE(Plate Heat Exchanger) which will transfer the cooling energy to building side secondary chilled water network.

- The building side chilled water network shall be further extended up to individual air-handling units to cool the building space.

### 3 SYSTEM OF SUPPLY

#### 3.1 Supply Temperature:

- Except where otherwise previously approved in writing, GIFTCL shall provide chilled water to the developer's primary side of Heat exchanges as mentioned below under normal operating conditions:

	<u>Supply</u>	<u>Return</u>
Primary Side of PHE (DCS side)	5°C	14°C

Note: - Tolerance of 0.5°C shall be applicable on above.

- The developer must ensure that the Return Temperature on the primary side of PHE shall be 14°C or higher.
- The penalty charges for failure of the Developer to maintain chilled water return temperature lower than 14°C would be waived during the initial stage/development stage of GIFT City. On completion of this initial stage, the penalty charges shall be imposed on the Developer as per GIFTCL's norms.

#### 3.2 Supply Availability:

- GIFTCL shall exercise reasonable care and skill to provide the developer with an uninterrupted supply of chilled water within the design primary side PHE supply temperature of  $5 \pm 0.5$  °C under normal operating conditions.
- GIFTCL shall use its best efforts to prevent any interruption in the provision of the Supply and to minimise the duration of any such interruption. GIFTCL shall notify the developer immediately by telephone/email if there is any unexpected significant change in the operating status of the District Cooling System or if any interruption is expected to occur.

- District cooling supply may be interrupted or may deviate from the design primary supply temperature as specified in clause 3.1 under the following circumstances:
  - a) When GIFTCL takes necessary actions for safety reasons
  - b) When GIFTCL or the operator makes improvements or carries out maintenance, repairs or works
  - c) When matters outside the control of GIFTCL/or force majeure conditions
  - d) Faults in the developer installation
- For any planned works execution, GIFTCL shall give the developer at least 14 days prior written notice and such notice shall state the dates on, and times at which the Planned Works will be executed, and the extent to which the provision of the Supply at the Premises will likely to be interrupted.
- In case the developer requires redundant air conditioning system for server room/UPS/rack room/ICU & operation theatre of hospital, Developer may be permitted to install redundant secondary system for the mentioned area. However, the primary source of cooling shall be through DCS system.

Developer must take prior written approval from GIFTCL for the above work.

### **3.3 Supply Capacity:**

- GIFTCL shall always use its best efforts to provide the developer the contracted cooling capacity under normal operating conditions provided that the developer shall maintain the chilled water return temperature at  $14 \pm 0.5^{\circ}\text{C}$  at the primary side of ETS.
- If the developer fails to maintain chilled water return temperature as specified in clause 3.3 above, appropriate penalty charges will be imposed on the developer as per the standard practice.

- The Contract Capacity shall be fixed for the duration of the Initial Contract Period. However, if the developer's requirements for District Cooling Service at the Premises exceed the Contract Capacity, The developer may notify to GIFTCL request that the Contract Capacity be increased to the amount stated in such notice and the GIFTCL shall use its best efforts to accommodate The developer's request provided that:
  - a) The increase in the Contract Capacity shall be subject to there being available capacity in the District Cooling System.
  - b) If the increase in Contract Capacity necessitates upgrading of the Service Connection Facilities, the developer shall pay for the costs of such upgrading work.

## 4 BATTERY LIMITS AND SCOPE OF WORKS

- Following guidelines are established for clear understanding of scope of works to be carried out by developer and GIFTCL to successfully design, supply and connect developer's building chilled water system to GIFTCL's district cooling system.
- The developer shall follow annexure as given below which shall govern the scope of works in general to be carried out by both entities with respect to location, electro-mechanical equipment, piping and valves etc.
  - a) Annexure-I:  
Schematic diagram (P & ID) for district cooling connection
  - b) Annexure-II:  
Demarcation of boundary at DCS connection interface at the individual building showing point of supply for building chilled water network connection from the main distribution network

### 4.1 District cooling connection philosophy:

- GIFTCL shall be responsible for design, supply, install, operate and maintain primary side of district cooling system (Plant side) up to the point of supply as defined in the following paragraphs.
- The developer shall be responsible to design, supply, install, operate and maintain building side of district cooling system from the point of supply up to the individual points of consumptions for each user.
- GIFTCL is responsible for development and integration of the external district cooling infrastructure which includes district cooling plants and distribution network. Developer is responsible for development and integration of the chilled water system for building internal requirement.



## **4.2 GIFTCL Scope of works:**

- GIFTCL shall install chilled water supply and return network distribution pipeline into the Utility tunnel up to the specified location nearest to the developer's building wall.
- GIFTCL shall supply, install, operate and maintain all the electromechanical equipment such as control valves, BTU meter (on DCS side), isolation valves, pipes and fittings, PLC panel and instruments up to the point of supply located inside the tunnel for successful delivery of chilled water capacity.
- The point of supply as shown in Annexure-II is located approximately 1 mtr into the utility tunnel from the developer's building wall.
- The developer shall install and maintain isolation valves on supply and return lines at the point of supply to isolate GIFTCL's valve station from the building system.
- For SEM (Sub Energy Meter) of residential building, please refer to **"Residential Metering Policy"**.

## **4.3 Developer's Scope of works:**

- The developer shall provide supply and return chilled water pipes up to 1 mtr inside the utility tunnel with building isolation valves with companion matching flanges up to the point of supply. These valves shall be easily accessible for operation.
- Flange details shall be discussed and conveyed during the design stages at the time of finalisation of point of supply location as per the site location.
- The developer shall supply and install chilled water supply and return pipelines from the point of supply up to the primary side of heat exchanger located in the ETS room.

- The developer shall provide a suitable space for the installation of ETS equipment in the building. This should include space for heat exchangers, secondary pumps, expansion tanks, electrical panels, valves, service and interconnecting pipes and fittings and control panel for BMS etc.
- ETS room shall be preferably located in first basement or below level and shall have sufficient ceiling height (min 4 m).
- The developer shall provide all the required electro-mechanical equipment, piping, valves, temperature transmitter, BTU meter and fittings as per the approved P & ID and chilled water schematic as necessary for the satisfactory functioning of the building HVAC system.
- Before connecting the pipelines from the primary side of the PHE to the GIFTCL's pipe distribution network, it is mandatory to flush, clean and chemically treat the primary side chilled water network as per the specifications and guidelines of GIFTCL and representative.

### 4.4 Scope Matrix:

The brief scope of works is as per the following table. The developer shall provide, operate and maintain minimum following items for connection of his building chilled water system to the district cooling distribution network.

Item Description	Developer's Scope	GIFTCL's Scope
ETS Room complete with lighting, ventilation, plumbing, electric supply, PHE and Pump foundations, access doors etc.	✓	
Piping from DCS plant up to point of supply		✓
Piping from point of supply up to individual cooling units (PHE) inside the building	✓	

Isolation valve with companion flanges at point of supply	✓	
<b>Primary side (Plant side)</b>		
Control valve(s)		✓
BTU meter		✓
Strainer(s)		✓
Pressure indicators & transmitters		✓
Temperature indicators and transmitters		✓
Differential pressure sensor		✓
PLC panel		✓
Balancing valves for Flow control through individual PHE	✓	
All valves and accessories from PHE to building isolation valve (at Battery limit in tunnel)	✓	
Chemical Flushing, Cleaning and Treatment	✓	
<b>Secondary side (Building side)</b>		
Heat exchanger(s)	✓	
Secondary Pump(s)	✓	
Expansion Tank	✓	
Building Isolation valves with matching flanges at the point of supply	✓	
RTD for monitoring Secondary side supply and return chilled water temperature and its dedicated cabled connection up to point of supply.	✓	
BTU meter for building side	✓	
Balancing valves for Flow control through individual PHE	✓	
Pressure indicators & transmitters	✓	
Temperature indicators and transmitters	✓	
Strainer(s)	✓	
Safety valve	✓	

Balancing valves at each floor level	✓	
AHU(s), FCU(s) & other terminal units	✓	
PIBCV control valves	✓	

# Refer Annexure - 1 Schematic of District cooling connection for more details on valve arrangement.

## 5 DEVELOPERS INSTALLATION:

General guidelines are established in this document which shall be adopted by the developer for planning, procurement and execution stages for establishing and connecting building's chilled water system to district cooling chilled water network.

### 5.1 Design criteria for Heat load Estimation:

- Developer needs to submit total heat load for the building with basis of calculation considering various parameters of heat load estimation as stated by relevant standards of ISHRAE/ASHRAE at the time of submission of DBR.
- Developer shall follow latest standards and guidelines established by ASHRAE for estimation of heat load.
  1. ISHRAE Weather data book
  2. ASHRAE Handbook of Fundamentals
  3. ASHRAE Standard 62.1-2016 ventilation for acceptable indoor air quality
  4. ASHRAE – 90.1 (2016) Energy standard for buildings except low-rise buildings
- Developer shall consider following inside and outside conditions for calculation of heat loads. Typical details of GIFT City location are as follows:

#### **Site Data:**

Site Latitude: 23.02° (N)

Site Altitude: 55 M above mean sea level.

#### **Outside Design Conditions (Refer latest weather data ISHRAE / ASHRAE)**

##### **Summer (0.4 % Occurrence):**

Dry Bulb Temperature: 108.5° F (42.5° C)

Mean Coincident Wet Bulb Temperature: 73.4° F (23° C)

Monsoon (0.4 % Occurrence):

Wet Bulb Temperature: 83.7° F (28.7° C)

Mean Coincident Dry Bulb Temperature: 93.02° F (33.9° C)

- This is considered as minimum load requirement basis for sizing of chilled water system components and operational philosophy of building chilled water system.
- Based on above calculation projection of heat load demand may be finalised.

## **5.2 Design criteria for heat exchanger:**

- The following general criteria of heat exchanger shall be followed for the design of PHE located in ETS by the developer.
  - a) The supply water temperature on the primary chilled water side will be  $5 \pm 0.5$  °C
  - b) Developer should select the heat exchanger for a nominal temperature approach of 1°C.
  - c) Chilled water flow rate per TR of cooling load should be 1.5 gpm.
  - d) Pressure rating shall be PN16 or higher based on building requirement.
- Pressure drop across heat exchanger at rated flow rate shall be less than 60 kPa on the primary side of PHE.
- Each heat exchanger should have a min. 15% free space for future capacity expansion to be able to add more PHE plates.

**Note:** Residential Developer shall select Plate Heat Exchanger's secondary side temperature range as mentioned in "Residential Metering Policy".

## **6 GENERAL SYSTEM SPECIFICATIONS:**

### **6.1 ETS room:**

- The developer shall provide a suitable space for the installation of ETS equipment. This should include space for heat exchangers, pumps, valves, service and interconnecting pipes and fittings and control panel for BMS etc.
- The ETS room shall be designed so as to efficiently operate and maintain all the equipment such as valves, piping, heat exchangers, Pumps, PLC components with enough clearance spaces. The maintenance works shall in no case interrupt chilled water supply operation of the building.
- ETS room shall be preferably located in first basement or below level and shall have sufficient ceiling height (min 4 m).
- GIFTCL shall have full and direct access to the ETS room 24/7 at all times round the year.
- Ventilation air into the room shall be filtered and indoor conditions for the ETS room shall be as per equipment manufacturer's recommendations.
- ETS room lighting shall consist of overhead white fluorescent type lighting with Lux levels not less than 150.
- ETS room shall have appropriate fire protection system in place.
- Lockable and insulated security doors shall be provided.
- The room shall be provided with all necessary overhead and under-floor plumbing services including water piping and floor drains.

## 6.2 Heat exchanger:

- Heat exchanger shall be plate type (PHE) designed, built and marked in full compliance to AHRI-400 Liquid to liquid plate type heat exchangers.
- The plate and frame heat exchanger shall be ASME stamped.
- Adequate numbers of heat exchangers with suitable standby capacity must be installed in ETS depending on the maximum designed cooling capacity by the developer.
- The table below is to be followed for selection of number of heat exchangers to be installed for the designated load.

Cooling Demand (TR)	Heat Exchangers (NO X TR)
300	3 Nos. X 150
500	3 Nos. X 250
800	3 Nos. X 400
1000	3 Nos. X 500
1500	3 Nos. X 750
2000	3 Nos. X 1000
2500	4 Nos. X 850
3000	4 Nos. X 1000

- The design of PHE should ensure to prevent intermixing and leakages of fluid between primary and secondary side of water loops.
- The PHE shall withstand the maximum test pressure of 1.5 times the design pressure.
- PHE Units shall be factory tested in accordance with applicable testing code.
- Developer to submit technical data sheet for heat exchanger at GFC stage for review & approval before procurement.



- A Y-strainer shall be provided at the inlet of heat exchanger to keep the heat exchanger clean and clear.
- Balancing valves for flow control through individual PHE shall be provided for primary and secondary side's return line.
- A pump status input shall be provided to the ETS control system so that the control valves remain fully closed when the building pumps are not running.
- ETS may be operated with variable flow through all heat exchangers, even at low load, to take advantage of the lower pressure drop and smaller approach.
- Clear stainless-steel nameplate shall be provided on each PHE with the relevant details such as manufacturers' name, type of unit, Serial No, capacity, Inlet/ Outlet connections, Design Pressure, Design temperature, working pressure, LMTD etc.

### **6.3 Primary side Piping, Valves & Accessories:**

(This clause is applicable for the works from the point of supply up to the primary side of PHE)

- Carrier pipe will be carbon steel as per IS1239 class C (Part 1): 2001 or latest, Heavy Duty, for pipe sizes 150 mm & below.
- Carrier pipe will be carbon steel as per IS 3589:2001 or latest for pipe sizes 200 mm & above with a minimum wall thickness of 6 mm.
- Pipe and fitting material shall be of same specification and shall meet requirements of relevant IS/ASME standards.
- All the pipes and fittings shall be rated for system design pressure of 9 kg/cm<sup>2</sup> and temperature of 5 +/- 0.5 °C. The pipe shall be hydrotested at 1.5 times the design pressure that is 13.5 kg/cm<sup>2</sup>. All valve and fitting shall be rated for minimum PN-16.

- It is recommended that the system piping may be pre-insulated or thermally insulated with closed cell PUF type with a minimum density of  $48 \text{ kg/m}^3$  or equivalent with thermal conductivity of  $0.026 \text{ w/m deg C}$  with insulation thickness of 50 mm for pipes below 400 mm dia. and 75 mm for pipes above 400 mm dia. Insulation shall be CFC free and class-O type along with a protective jacket.
- Isolation valves for the PHE shall be provided in the supply and return line to allow for maintenance and cleaning.
- Balancing valves for flow control through individual PHE shall be provided for primary and secondary sides.
- A differential pressure gauge shall be installed at the upstream and downstream of the PHEs to measure the actual pressure drop.
- A strainer is required at the inlet of the Plate heat exchanger. Drain plug assembly shall be provided for each strainer.
- The strainer element shall allow for cleaning without being dismantled. The connections shall be flanged only. General guidelines as follows.
  - a) Strainer shall be Y-type with blow off drain valve.
  - b) Screen shall be made of stainless steel with maximum Perforation mesh size of 0.6 to 1.0 mm. Free screening area shall be 3 to 4 times pipe cross section.
- Safety relief valve shall be provided in order to prevent overpressure during shut down. The valve shall be sized for thermal expansion at design load conditions and the set pressure should be consistent with the pressure class of the heat exchanger.
- A ON/OFF motorized butterfly valve shall be installed on the Primary side return pipe of each heat exchanger to control on/off operation of heat exchanger.

#### **6.4 Secondary side Piping, Valves & Accessories:**

- All the pipes and fittings shall be rated for system design pressure and temperature. The pipe shall be hydrotested at 1.5 times the design pressure.
- The general guidelines for piping, valves and fittings and insulation shall be as per the clause 6.3 of these documents. Insulation material & thickness of secondary piping shall adhere to ASHRAE 90.1 standard.
- Developer to provide temperature, pressure transmitters and indicators on the supply and return lines on the secondary side of heat exchangers in ETS room and the signal to be provided to GIFTCL.
- RTD Specification:  
Dual/single output Duplex/Simplex type, PT – 100 spring loaded mineral insulated RTD with Class A accuracy. The temperature transmitter output should be 0-20 mA or 4-20 mA configurable module with min. accuracy of  $\pm 0.25\%$  of span. Temperature measuring range of the transmitter should be 0 to 50 Deg. C. Repeatability over full range should be better than 0.02%.
- Pressure indicators shall be pipe mounted Pressure gauges of Stainless Steel with 6-inch phenolic dial, 316 SS Bourdon tube, nylon movements and micrometre type adjustable aluminium pointer with accuracy of  $\pm 1\%$  suitable for appropriate pressure range.
- Developer shall also provide strainers, flexible connections, safety valves, balancing valve, drain-pipes, air vents on the secondary side of heat exchanger as per approved P & ID.
- Developer shall supply expansion tank coupled with the secondary side chilled water network in order to maintain required water volume inside the system.

- Temporary flushing bypass connection to be installed on the secondary side return pipe of each exchanger to isolate PHE during chemical flushing and cleaning. Isolation valve in the bypass line shall be provided.
- AN ON/OFF motorized butterfly valve shall be installed on the secondary side return pipe of each heat exchanger to control on/off operation of heat exchanger. The number of heat exchanger to be operated will depend upon the instantaneous cooling demand required and flow rate of secondary side of heat exchanger.
- Drain valves and industrial grade air vents shall be supplied at appropriate locations in the secondary side chilled water system.

### **6.5 Secondary chilled water pumps:**

- Variable speed secondary chilled water pumps are required for the building distribution chilled water network. Varying the developer's side chilled water flow is required to maintain the differential temperature across the heat exchanger and achieve desired delta T in response to varying cooling load demand.
- Developer to submit technical data sheet for tertiary pump (building side) at GFC stage for review & approval before procurement.
- Developer to submit pump head calculation at DBR & GAD stage.
- Pumps shall be vertical/horizontal split case centrifugal type with TEFC class F insulation or higher and with IP 54 motor and variable speed control.
- Pumps shall run smoothly without undue noise & vibration. Noise level shall be limited to 85 dBA at 1.5 meter distance at sites. Vibration levels shall not exceed the levels given in BS 4675.
- Split casing pumps, prior to testing, shall be aligned with a dial indicator within 0.05 mm.

- The pumps shall be tested as per IS 5120, at rated speed.
- All pumps, motors and base frame shall be supplied with approved finish. Shop coat of paint that have become marred during shipment or erection shall be cleaned off with mineral spirits, wire brushed and spot primed over the affected areas, then coated with enamel paint to match the adjoining areas.
- Developer shall provide one set of variable speed pumps for each PHEs, the pumps shall be provided with appropriate standby capacity.
- Variable speed pumps shall be controlled by utilizing at least two industrial grade pressure differential transmitters (DPT) with adequate redundancy across most hydraulically remote terminal unit in the building.
- Variable speed pumps shall be equipped with at least one pressure switch in the supply line that will stop the pumps at max. Design pressure in case of a sudden valve closure or failure with the VFD's.
- An expansion tank shall be provided for secondary side piping network complete with safety relief valve.
- Suitable interlocks shall be provided to safeguard the system and achieve satisfactory system performance.

### **6.6 Air handling (AHU), Fan Coil (FCU) and terminal units:**

- Air handling units shall be designed in compliance to ANSI/AHRI 430-2009: (or latest revision) Central Station Air Handling Units.
- Air handling units shall preferably be Double skin PUF Insulated, and DIDW Backward Curved Centrifugal type fan or as for the site requirement.

- Cooling coils for AHU cooling coil, Fan coil unit, cassette type unit and hi wall unit shall be selected and sized to perform all cooling functions with the chilled water having 9°C delta T operation across the cooling coil and 1.5 GPM/TR of chilled water flow, except in case of residential units refer GIFT “Residential Metering Policy”.
- Cooling coil shall be selected with min. 6 rows depth and 500 fpm face velocity across coil and filters.
- Fan coil units may be Single skin Forward Curved Centrifugal type fan with MERV-8 filters.
- Developer shall use PIBCV modulating type control valves for all air handling units. The valve must be capable of controlling flow through full range of expected turn down and full range of expected differential pressure (delta P) across the valve.
- Developer to submit selection sheet, technical data sheet, test certificate & Lab test report (Min. 5 readings with time-based iteration) of indoor units at appropriate stage for review & approval before procurement.

## **7 METERING PHILOSOPHY:**

- One centralized metering device shall be procured and provided by GIFTCL that will be used for billing purpose.
- The physical location of the meter will be nearest to the point of supply of district cooling distribution network.
- The data points used to calculate billing are as below:
  - a. District cooling supply temperature
  - b. District cooling return temperature
  - c. District cooling chilled water flow rate
- The energy meter will be connected to DCS main plant PLC system for metering values transmission.
- Only GIFTCL reserves the right to disconnect metering device for any violation or conditions as described in the “DCS Supply Code” with prior notification.
- GIFTCL shall deliver the best efforts to maintain the meter record energy usage by the developer in good order from time to time. However, if there is a power interruption from the developer side and the meter fails to record the energy consumption during that period, GIFTCL reserves the right to make a reasonable estimation on energy usage based on the historical data as per the guidelines of “DCS Supply Code”.
- GIFTCL will perform regular validation of metering device to maintain accuracy of energy metering from time to time. During validation period, the energy usage will be estimated based on historical data as per the guidelines of “DCS Supply Code”.
- If the meter shall for any reason become faulty or inaccurate beyond the accuracy permissible limits, GIFTCL shall take up repair work/replacement work of such meter as appropriate.

- For the Residential Building GIFTCL shall provide Energy Meter to each individual consumer as mentioned in GIFT “Residential Metering Policy”.



## **8 BILLING AND PAYMENT:**

- The Developer agrees to pay all charges as applicable within the period specified on monthly bill issued to him at the rates specified by service provider prevailing at the time.
- The Developer remains responsible to pay for all charges during the period the Developer's premises is vacant, and/or his account remains in his name.
- Bill shall be sent for charges on a monthly basis i.e. once in a month or as determined by the Service Provider at the prevailing rate of charges for chilled water service in the particular period.
- The Service Provider reserves its right to vary the period / frequency and manner of billing from time to time without prior notice to the Developer. Every Bill issued by the Service Provider shall be paid in full or before its due date by the Developer or else Service Provider has the right to stop the services without any prior notice to the Developer.
- In case of payment after due date, the Developer shall have to pay delayed payment charge at rates, as decided by the Service Provider from time to time.
- In case of dishonour of any cheque for any charges payable to the Service Provider, the Developer shall without prejudice to the other rights of Service Provider hereunder or in law, be liable to pay to Service Provider such charges.
- The Developer shall at all times from the date of connection of chilled water till the expiry or termination of this Agreement will pay and maintain payment of security deposit to the Service Provider. The Service Provider would not pay any interest on the security deposit to the Developer.

- The security deposit shall be as per Tariff Card.
- The Service Provider would adjust any unpaid amount from security deposit, if the Developer fails to pay any sum due and payable by the Developer under this Agreement. The decision of the Service Provider shall be final and binding upon the Developer.
- If the Developer fails to pay the unpaid amount, the security deposit will be refunded to the Developer after the termination of the Agreement, or any such matter without any interest on this amount.

## **9 INSTALLATION, TESTING AND COMMISSIONING:**

### **9.1 Equipment:**

- Developer shall follow latest relevant standards and best installation practice and strictly follow manufacture's guidelines for installation of all the major equipment such as heat exchangers, pumps & AHU's etc.
- Installation checklist covering all major equipment, piping, valves and accessories shall be submitted to GIFTCL for review.
- The pump shall be installed on a concrete foundation with vibration isolators as per Approved-for-Construction shop drawings.
- Proper foundations, base pads, vibration isolators, j-bolts shall be provided as per the requirement of equipment.
- Adequate clearance shall be provided for operation and maintenance of different equipment along with detailed information of chain pulley blocks, ladders, maintenance walkway etc.
- All the equipment shall be easily accessible for operation. In cases wherein valves, strainers are beyond human reach, hand driven chains shall be provided for operating the same.

### **9.2 Welding:**

- All type of welding shall confirm to relevant sections of ASME BPV codes for welding practice, consumable materials and fit up processes as applicable.
- Developer shall depute the agency with welding licence and certified welders for the relevant welding operations.
- The developer shall carry out third party welding qualification along with necessary lab tests and submit the report to GIFTCL for information.

- All the Surfaces to be welded shall be smooth, uniform and free from fins, tears and other defects, which would adversely affect the quality of the weld.
- The welding shall be monitored at different stages such as welding fit up and edge preparation, root pass and filler pass as per the welding process specification (WPS) document.
- Developer shall submit WPS, welding rod material specs and welder's certificates and get it approved from GIFTCL.

### **9.3 Pipe supports:**

- In case of supports taken from column, Chilled water pipe supports shall be welded on to the insert plates. Insert plates shall be clearly marked with levels. Anchoring supports shall be avoided as far as possible.
- In case of supports from floor and ceiling, fabricated MS box type structures with rubber pads shall be used.
- Puff block of single U/double U type shall be provided for at least 120 deg C arc length of pipe. Direct contact of pipe with MS structure shall not be allowed.

### **9.4 Insulation:**

- The complete chilled water piping along with valves and fittings shall be insulated in order to avoid condensation of moisture from the air.
- Pipes and valves shall be preferably pre-insulated or thermally insulated with closed cell Class O type elastomeric material type with a protective jacket.
- Insulation thickness shall be strictly based on no condensation considering the local ambient conditions.

- Heat exchangers shall be factory insulated from the PHE manufacturer.
- Developer shall depute a specialist thermal insulation agency for the insulation of complete system.
- Proper care shall be taken for Insulation of joints and fittings. Insulation shall be made air-tight with suitable vapour barriers.
- Aluminium Cladding shall be provided to protect the chilled water pipe insulation from mechanical breakage. Cladding shall be smoothly installed over and above insulation surface as per standard installation practice.

### **9.5 Tagging and colour coding:**

- Pipes, valves and other equipment shall be according to IS 3589- colour code for the identification of pipelines or BS 1710.
- Piping notations shall be marked at equal intervals with clear visible size and flow direction.
- All equipment labels shall be of stainless steel plates fixed with screwed/ riveted to the equipment body/frame.
- In case of insulated equipment, the identification label shall be fixed to the external surface of the cladding material for clear visibility.

### **9.6 Hydrostatic pressure testing:**

- The developer shall be responsible for filling their internal chilled water system at initial start of the commissioning and any make up water requirement during chemical flushing, cleaning and pressure testing of the system.
- Pressure test of the developer internal chilled water pipe work shall be carried out hydraulically for a minimum 1.5 times the system design pressure. The primary side of DCS pipes shall be hydrotested

at 13.5 kg/cm<sup>2</sup> for 4 hours. This hydrotest shall be witnessed by GIFTCL representative.

- The test pressure shall be held at this value for not less than 4 hours without any pressure drop observed to ensure that the pipes are free from any leakage.
- The results of hydrostatic test shall be submitted to GIFTCL in the form of a report for final approval.

### **9.7 Chemical Flushing and Cleaning and chemical treatment:**

- The developer shall perform a complete flushing of the internal chilled water piping network using cleaning chemicals and potable water or as per recommendations of the developer's water treatment specialist agency.
- Developer shall install a temporary bypass connection for the flushing and cleaning of heat exchangers and primary chilled water network along with isolation valve in the bypass line.
- The developer shall submit method statements for flushing, cleaning and chemical treatment to be carried out for the approval to GIFTCL for primary side chilled water network prior to commencement of each activity. The chemical flushing will be initiated after GIFTCL approval.
- Developer shall submit the report of chemical flushing & passivation of chilled water pipe for primary side to GIFTCL for approval.
- The developer shall before connecting to District cooling network make sure that the chilled water circuit is fully cleaned, free from any debris, passivated and maintained the nitrite level of 700 PPM with nitrite based chemical compatible to the existing chemicals being used in DCS.

- GIFTCL recommend providing proper water treatment system for secondary side of chilled water pipes, this shall include following:
  - Water treatment system on secondary side of chilled water pipes shall include manual feed chemicals dosing pot with necessary corrosion inhibitors and biocides quantity necessary for testing, commissioning and smooth operation.
  - The developer shall appoint a specialised professional agency to handle water treatment system.
  - The developer shall provide an analysis of the characteristics of water in the secondary circuit before the commercial operation of ETS.
  - GIFTCL reserves the right to draw off water samples from the secondary circuit and analyse it at any time.
  - A suitable sampling point shall be identified and conveyed by the developer in the ETS room.
  - Developer shall install a temporary bypass connection for the flushing and cleaning of heat exchangers and secondary chilled water network along with isolation valve in the bypass line.

### **9.8 Water Quality:**

- The successful operation of district cooling system requires maintaining high water quality.
- A clean PHE must be ensured since operation is dependent on heat transfer between primary and secondary water circuits.
- The Developer shall submit design basis clearly indicating water quality parameters such as pH, TH, TDS, conductivity etc. to be maintained in building chilled water circuit for GIFTCL's approval.

GIFTCL shall provide minimum water quality guidelines to be maintained by the developer.

### **9.9 General Guidelines for installation, testing and commissioning:**

- Field quality plans, method statement, installation checklist and installation manual shall be submitted to GIFTCL for approval
- During system Installation there shall be supervision from the supplier/manufacturer of equipment.
- GIFTCL shall also supervise/witness installation of equipment in ETS room.
- Installation checklist for equipment shall be signed and documented in presence of supplier/manufacturer
- Material installation report shall be generated along with remarks/observations if any and shall be treated as a part of O & M manual document.
- Post installation tests as per approved QAP & Field quality plan shall be carried out by developer in presence of supplier/manufacturer of equipment.
- Proper combined report of test carried out and test certificates shall be prepared and submitted along with As-Built drawing.
- List of tests as per approved pre-commissioning check list and installation test report shall be submitted to third party for verification.
- Commissioning shall be done by third party in presence of developer, supplier/manufacturer.
- Commissioning test report shall be submitted to GIFTCL for review.



- Partial commissioning of any system will be treated as pre-commissioning and again whole commissioning process shall be followed for complete system commissioning.

### **9.10 Space allocation for ETS room:**

- The developer shall provide clearances and operating areas required around the equipment with due consideration for future operation, maintenance and up-gradation of the system.
- In general, the minimum clearance required around the heat exchangers are:-
  - a) 1000mm on the back side
  - b) 1500mm between side wall and heat exchanger
  - c) 1500mm between each heat exchanger

The above dimensions given are measured from edge to edge of equipment foundation and are subject to final approval by GIFTCL. However, supplier's/manufacturers guidelines if any shall be taken into consideration for clearance space.

- The heat exchanger foundation/ plinth to be provided by the Developer should be capable of supporting equipment load. The dimensions of the equipment plinth should be considered as well as plinth level with finished floor level.
- The foundation should be capable of supporting a maximum static plus dynamic load per equipment. The minimum cover between the finished floor levels with proper design for the reinforcement bar of the plinth should be considered.
- Sufficient space for delivery access should be allowed for equipment delivery for installation, maintenance and replacement of the same.
- Hoisting equipment shall be provided for the installation work and future operation and maintenance. The size of the hoisting

equipment shall be able to lift all the heat exchangers, pumps and valves inside ETS room.

## **10 OPERATION AND MAINTENANCE GUIDELINES:**

### **10.1 List of documents to be submitted:**

- The developer has to provide but not limited to following documents for inspection as and when required by GIFTCL.
  - General arrangement Drawings with plans and sections
  - Operation and Maintenance Manual
  - Schedule of Daily Operation
  - Schedule of Inspection of Machinery
  - Records of Key Activity of O & M
  - Staff position / Organogram / Hierarchy
  - Inventory of Stores

### **10.2 General O & M Guidelines:**

- Operation and routine maintenance work shall include the day to day operation, inspection, performance logging, maintenance, servicing, periodic testing and calibration of the equipment.
- Any tools, equipment, testing instruments, consumable items and sundry materials required for the operation and routine maintenance work shall be provided by the developer. Safety and protective equipment such as safety helmet, shoe, eye protectors, ear shields, etc. shall also be included.
- Maintenance & Pressure testing of PHE shall be done minimum once in a year. The report of PHE pressure testing shall be submitted to GIFTCL annually.
- Under any circumstances the operational PHE approach must be maintained as per OEM guidelines and should be approx. 1°C or less.
- Any failure of PHE or Associated components such as main isolation valves etc that may directly or indirectly adversely affect the operation or performance of DCS plant operation will attract

penalty. Hence, timely maintenance & replacement of non-functional valve is mandatory.

- Ensure adequate water is always available in chilled water circuit & make-up water pressurization system is functional in AUTO mode.
- Ensure regular servicing of all key equipment's for e.g. pumps, strainers, valves, electrical panels, Heat exchanger, indoor units and other associated equipment for optimum performance.
- Monitor and dose chemicals to control the corrosion & biological growth in the building side chilled water piping network.
- Operation, Routine Maintenance, Preventive Maintenance & Break down maintenance shall be carried out.
- It is recommended to operate, control & maintain the design parameters in building side HVAC System in AUTO Mode.
- Keep all records, log books, log sheets, maintenance job cards, etc. complete & in neat order to the satisfaction of the GIFTCL's Representative. All records, log books and log sheets, charts, maintenance job cards, etc., shall become the property of the GIFTCL.
- No drain from DCS side of PHE shall be allowed & dead plug to be installed in drain valves. Developer must not initiate drain under any circumstances without prior written permission & only in presence of GIFT DCS representative.
- Operate, control, maintain, replace and repair any part of equipment or material within the systems which may prove defective due to Developer's design, erection, operation, performance, or workmanship, or prove defective from any act or omission that may develop from use in the works or any section thereof. Defective is hereby defined to include, but not limited to operation or control

system failures, Performance below required minimum, excessive wear, unusual deterioration or aging of materials or finishes, unsafe conditions, the need of excessive maintenance, abnormal noise or vibration and similar unusual, unexpected and unsatisfactory conditions.

- Provide all routine operational maintenance and full prevention maintenance as recommended by the equipment manufacturers to keep equipment and systems in proper operation condition.
- Allow for maintaining adequate stocks of all manufacturer's recommended spare parts and consumables as necessary to guarantee that all equipment and systems can always be immediately repaired and properly maintained in satisfactory operation condition .

### **10.3 List of mandatory spares:**

- List of mandatory spares shall be added in the tender specification and requirements.
- The relevant standards and best industry practises shall be followed for provision of mandatory spares.

### **10.4 Tools & tackles:**

- Developer shall provide minimum one set of each necessary tool for hassle free O&M of installation.
- Storage Space shall be provided within the ETS room for spares and accessories.

### **10.5 Manuals:**

- One set of combined documents containing shall be handed over to O & M Staff
  1. As built Drawing of all equipment
  2. As built P & ID

3. As built MEP Layout drawing
4. Set of installation manual
5. Set of operation manual
6. Set of troubleshooting manuals
7. Summary of Past historical data recorded during snag & de-snag

### **10.6 O & M Formats:**

- Recommend maintenance checks shall be provided with clear demarcation of frequency of preventive maintenance classified as hourly, daily, weekly, monthly, quarterly, annually & SOS (as and when required).
- Maintenance report shall be prepared in through details so as to avoid any breakdown of infrastructure.

## **11 PROCEDURE FOR DISTRICT COOLING APPLICATION**

The GIFTCL provide functionality to apply online for new connection and modification in the existing connection. A consumer can access these functionalities on the GIFT website <https://utilities.giftgujarat.in>. Consumer can apply online for the following:

- Permanent connection
- Temporary connection
- Name change / Transfer
- Demand Alteration
- Removal of Connection

Along with an application, consumer is required to upload the requisite documents.

## **12 DESIGN AND VALIDATION OF DOCUMENTS, DRAWINGS AND MATERIAL SUBMITTALS:**

Based on validated cooling load and all above guidelines Developer shall develop the building chilled water system.

GIFTCL shall validate the design, system specifications, physical execution in different stages as stated in following order.

### **12.1 Preliminary design:**

Developer shall prepare design brief documents considering connection of chilled water system to District cooling system.

Developer shall submit following information at a preliminary stage to GIFTCL for validation.

- Design basis report including heat load estimation
- Building site plan drawing.

- Architectural layout drawing showing the ETS room location.

### **12.2 Detailed Design:**

In this stage, the developer shall submit the following submittals to GIFTCL review/Approval.

- ETS room piping and instrumentation diagram.
- Primary piping layout from the point of supply of main DCS network up to the PHE. Piping layout shall show tie-in points with co-ordinates and invert level.
- Detailed ETS layout and section drawing showing all equipment inside the ETS room.
- Secondary side chilled water equipment schedule and schematic drawings. (For information only)

### **12.3 Material Submittals:**

In this stage, the developer shall submit the following submittals to GIFTCL review.

- Material submittal for the major materials i.e. plate heat exchanger, chilled water pipes with the insulation, Secondary chilled water pumps, pressure independent (PIBCV ) /Two way control valve, isolation valves and instruments material submittals. Material submittal should be provided with selection sheets, detailed calculation of equipment, shop drawings and compliance statement.

### **12.4 Method statements:**

In this stage, the developer shall submit the following submittals to GIFTCL review.

- External utilities layout showing the interfacing between infrastructure and building services provided with the coordinates and invert levels.



- Shop drawings duly approved by the Building Consultant in compliance with Detail Design Approval. (For reference and record only)
- All welding documents: Welding Procedure Specification (WPS), Procedure Qualification Record (PQR), Welder Qualification Test (WQT), welding certificates, weld maps, etc.
- Method statement for the installation and testing/commissioning of secondary side of equipment inside ETS room.
- Method statement for flushing, cleaning, chemical treatment and hydro testing of chilled water network.

### **12.5 ETS Installation and Inspection:**

- The developer shall time to time raise inspection call to GIFTCL through a prescribed format well in advance of the actual inspection date.
- However, GIFTCL may inspect the installation at any stage but particularly to the following stages.
  1. Major materials delivery inspection.
  2. After plate heat exchangers are installed.
  3. Radiographic testing for weld joints.
  4. Pressure Testing
  5. Flushing
- GIFTCL will conduct a final inspection after equipment, components and piping are installed and connected and ready for operation.
- GIFTCL will validate all equipment rating and drawings based on standards defined in above clauses.
- Developer shall submit soft (in AutoCAD and PDF formats) as well as hard copy of each submission along with “Letter of Transmittal” in

set of three copies signed and stamped by signing authority of developer; GIFTCL will review and issue comments based on the submitted documents along with “Letter of Approval” which shall have codes indicating the status of approval.

- Developer shall process for compliance of GIFTCL’s comments and resubmit the revised submission for approval with “Letter of Transmittal” as described in above point till receipt of final approval from GIFTCL
- Based on final “Letter of Approval” received from GIFTCL for each infrastructure, developer shall submit the final co-ordinated drawing of ETS room in 3D Model along with walk through model of premises.

**12.6 Application form, terms, and conditions for DCS connection**  
**(To be filled on online portal - <https://utilities.giftgujarat.in>.)**

## Application Form

## Gujarat International Finance Tec-City Company Limited

Applied for Utility: <input type="checkbox"/> District Cooling System <input type="checkbox"/> Water <input type="checkbox"/> Sewage <input type="checkbox"/> Solid Waste (AWCS)	
સેવાનો પ્રકાર: ડિસ્ટ્રિક્ટ કુલિંગ સિસ્ટમ પાણી સુએજ એ ડબલ્યુ સી એસ	
APPLICATION FOR: <input type="checkbox"/> Permanent Connection <input type="checkbox"/> Temporary Connection <input type="checkbox"/> Name Change <input type="checkbox"/> Demand Extension <input type="checkbox"/> Demand Reduction <input type="checkbox"/> Removal of Services	
અરજીનો પ્રકાર: કાયમી જોડાણ ટંકામી જોડાણ નામ બદલી માંગનો વધારો માંગનો ઘટાડો સેવા બંદ કરવી	

Type of Premises/ જગ્યાનો વર્ગ (પ્રકાર) :		For Office Use / ઓફિસ કામ માટે :		તાજેતરનો પાસપોર્ટ સાઈઝ ફોટો Latest Passport size Photo  Sign Here / ચહી
<input type="checkbox"/> Domestic ઘરેલું	<input type="checkbox"/> Non-Domestic બિન ઘરેલું	Date તારીખ		
<input type="checkbox"/> Others – Please Specify અન્ય – વિગત સ્પષ્ટ જણાવો _____		Application No. અરજી નંબર		
For Temporary Supply / ટંકામી જોડાણ હોય તો : Date of connection _____ to _____ સંભાળની તારીખ થી સુધી		Consumer No. ગ્રાહક નંબર		
In Case of Name change: Name of existing consumer નામ બદલી માટે : હાલનાં ગ્રાહકનું નામ _____		SAP No. એસ એ પી નંબર		
		Applicable Tariff લાગુ થતક		
<input type="checkbox"/> E-Bill confirmation / ઈ-બિલ પુષ્ટિ				

Details of Applicant supported by necessary evidences are furnished hereunder / અરજદારની વિગતો જરૂરી દસ્તાવેજ પુરાવા સહિત આ સાથે સામેલ છે:  
 Full Name of Applicant  
 અરજદારનું નામ \_\_\_\_\_

Applicant Type / અરજદારનો પ્રકાર							
<input type="checkbox"/> Public Ltd. પબ્લિક લી.	<input type="checkbox"/> Pvt. Ltd. પ્રાઇવેટ લી.	<input type="checkbox"/> Partnership ભાગીદારી	<input type="checkbox"/> Proprietary માલિકી	<input type="checkbox"/> Govt. Dept. સરકારી વિભાગ	<input type="checkbox"/> Reg. Trust રજીસ્ટર્ડ ટ્રસ્ટ	<input type="checkbox"/> Co-operative Society કો. એ. સોસાયટી	
PAN No. :				GST No. :			
Occupancy Type: કબજાનો પ્રકાર		<input type="checkbox"/> Owner માલિક	<input type="checkbox"/> Joint Owner સહ માલિક	<input type="checkbox"/> Tenant ભાડુઆત	<input type="checkbox"/> Lease લીઝ	<input type="checkbox"/> Others અન્ય	
Connection Address details / સંભાળની જગ્યા અને વિગતો :							
Unit / Flat No.: એકમ / ફ્લેટ નં. :		Floor No.: ફ્લોર નં. :		Building Name: બિલ્ડિંગ નું નામ :			
Block No.: બ્લોક નં. :		Road No.: રોડ નં. :		Zone: ઝોન :		<input type="checkbox"/> DTA ડીટીએ	<input type="checkbox"/> SEZ એસઝેડી
E-mail: ઈ-મેલ :		GIFT City, Gandhinagar - 382355 ગિફ્ટ સિટી, ગાંધીનગર - ૩૮૨૩૫૫					
Mobile No.: મોબાઇલ નં. :				Landline Tel. No.: લેન્ડલાઇન ટે. નં. :			
Name and Designation of Authorized Person: અધિકૃત અધિકારીનું નામ અને પદ :							
Total Build up Area / કુલ વિસ્તાર બનાવો : _____ sq m / ચો મી				Total number of Occupants / કબજેકરનારની કુલ સંખ્યા :			
DCS Demand details / ડિસ્ટ્રિક્ટ કુલિંગ સિસ્ટમ માંગની વિગતો :							
Contract Demand / કરાર માંગ : _____ TR / ટી આર				Ultimate Demand / અંતિમ માંગ : _____ TR / ટી આર			
Water / Sewage / AWCS Demand details / પાણી / સુએજ / એ ડબલ્યુ સી એસ માંગની વિગતો :							
Total Water Demand / કુલ પાણીની માંગ : _____ Liters/day / મિતિ દિવસ લિટર							
Flushing / ફલશિંગ : _____ Liters/day		Domestic / સ્થાનિક : _____ Liters/day		Gardening / બાગસામ : _____ Liters/day			

**A) List of latest documents to be attached with new application**

**i) Identity Proof (self-attested) (anyone)**

- ☐ Electoral Identity Card ☐ Passport ☐ Ration Card  
☐ Driving License ☐ PAN Card ☐ Aadhar Card

**ii) Proof of ownership or occupancy for which utility connection is required (anyone)**

- ☐ Copy of registered sale deed or lease deed  
☐ Letter of Allotment  
☐ Ownership Certificate issued by GIFTUDA  
☐ NOC from Developer (For Temporary connection only)  
☐ Copy of Index (For Name Change)

**iii) If the applicant is a company, trust, educational institute, government department etc. The application form shall be signed by a competent authority (e.g., Branch Manager, Principal, Executive Engineer, etc.) along with a relevant resolution authority letter of the institution concerned.**

**iv) In case of Public and/or Private Limited Company – The applicant shall furnish the Memorandum and Articles of Association and Certificate of Incorporation along with an authorization in the name of the applicant for signing the requisition form and agreement.**

**v) In case of a partnership firm – The applicant shall furnish the partnership deed and an authorization in the name of applicant for signing the requisition form and agreement.**

**vi) Clearly marked area of utilization on approved plan of GIFTUDA, jointly signed by building developer's authorized representative and Leaseholder's authorized representative.**

**vii) List of Directors with address & contact details on company's letter head (exempted for Government Institutions, PSU Banks).**

**viii) Copy of PAN and GST details of the applicant.**

**ix) Duly filled and signed installation test certificate is to be submitted before the release of connection. The installation test certificate is to be signed and sealed by the developer.**

**x) Buildup area certificate from GIFT UDA.**

**B) List of latest documents to be attached with application for Name Change**

**i) Submit the document mentioned at A i) & ii)**

**ii) No Objection Certificate from the registered consumer or authorized person of the premises shall be required for cases involving transfer of security deposit in the name of applicant.**

**iii) No Objection Certificate by Co-Owner, in case of joint Ownership.**

**iv) Copy of latest bill duly paid.**

**v) In case the existing consumer is deceased, death certificate is required.**

**vi) In case of change of name to legal heir, any of the following document shall be considered as acceptable proof of legal heir:**

- ☐ Registered Will/deed ☐ Succession or legal heir certificate.  
☐ Mutation in municipal/land records

**vii) NOC from other legal heir(s) in case the connection is to be changed in the name of one of the legal heirs.**

**viii) If the applicant is company, submit the documents mentioned at A iii), iv), v), vii) & viii).**

**C) In case of application for contract demand alteration/conversion of service/change of consumer category, submit work completion certificate and installation test certificate from developer (A ix)).**

**D) Any Utility dues outstanding in GIFT City area of operation in consumer's name: Yes /No.**

If 'Yes', provide Consumer No. \_\_\_\_\_

ગિકેટ સિટી ક્ષેત્રમાં અરજદારનાં નામે અન્ય સ્થળે કોઈપણ બીલ ચુકવવાનું બાકી છે : હા / ના જો 'હા' હોય તો ગ્રાહક નંબર આપો : \_\_\_\_\_

**E) Any Utility dues outstanding for the premises for which connection applied for: Yes/No.**

If 'Yes', provide Consumer No. \_\_\_\_\_

જે પરિસરમાં કનેક્શન માટે અરજ કરી છે તે પરિસર માટે કોઈપણ બિલ ચુકવવાનું બાકી છે : હા / ના. જો 'હા' હોય તો ગ્રાહક નંબર આપો : \_\_\_\_\_

**F) Declaration / જાહેરનામું**

**I / We hereby declare that.**

**a) The information provided in this application is true to my knowledge.**

**b) I/We desire and agree with the utility supplier to avail connection for the above-mentioned purpose and of the demand provided in this application form for the period not less than 2 yrs. From the first day of the month next to date of commencement of connection by the supplier.**

**c) I/We have read the Supply Code issued by GIFT and agree to abide by the conditions mentioned therein.**

**d) I/We will deposit utility dues regularly as per the applicable tariff and any other charges.**

**e) I/We will own the responsibility of security and safety of the meter, its accessories, and the Installation thereafter.**

હું / અમે આથી જાહેર કરીએ છીએ કે

એ) આ અરજમાં આપેલી માહિતી મારી જાણકારી મુજબ સાચી છે.

બી) હું/અમે ગિકેટ સિટી સાથે ઉચ્છા અને સંપત્તિ ધરાવીએ છીએ કે ઉપરોક્ત હેતુ માટે જ જોડાણ શરૂ કરવામાં આવે એ તારીખ પછીના મહિનાના પ્રથમ દિવસથી બે વર્ષથી ઓછા નહીં એવા સમયગાળા માટે આ અરજ ફોર્મમાં દર્શાવેલ માંગ પ્રમાણે હોય.

સી) હું / અમે ગિકેટ સિટીનાં સપ્લાઈ કોડ વાંચેલ છે અને તેમાં ઉલ્લેખિત થયેલો સારો બાય થવા સંમત છું/છીએ.

ડી) હું / અમે જિલ્લાના બાકી નાણાં નિયમિત રીતે લાગુ દર અને અન્ય ચાર્જિસ પ્રમાણે જમા કરાવીશ / કરાવીશું.

ઈ) હું / અમે મીટર, અને એક્સેસરીઝ અને ઈન્સ્ટોલેશન પછીની સુરક્ષા અને તકેદારીની જવાબદારી લઈશ / લઈશું.

.....  
(Signature of the consumer or Authorized Signatory with Company Seal)

(ગ્રાહક અથવા અધિકૃત અધિકારીની સહી અને સીકલ)

Witness Name / સાથીનું નામ

.....  
(Building Developer Authorized Person / બિલ્ડિંગના વિકાસકર્તા અધિકૃત અધિકારી)

Witness Signature /સાથીની સહી

.....  
(Building Developer Authorized Person / બિલ્ડિંગના વિકાસકર્તા અધિકૃત અધિકારી)

\*In case of thumb impression, name & signature of witness is necessary. In case the applicant is a Firm / Partnership / Ltd. Company, Power of attorney holder's signature must be supported by official seal.

### **13 CHILLED WATER CONNECTION COMMENCEMENT AND POINT OF SUPPLY:**

- On submission of the Application and payment of the security deposit charges as per the tariff card, the Service Provider or its representative will carry out a technical survey of the Site to review ETS room location inside the building and probable route for connection piping up to point of supply in the utility tunnel.
- On completion of the technical survey, the Service Provider shall determine.....
  - a) That the Developer has completed in all respects all the arrangements in the building chilled water network for receiving chilled water supply as per the service provider's guidelines at least three months prior to the date initially indicated by the Developer for taking the supply.
  - b) The location and manner of laying chilled water pipes along with isolation valves preferably located approx. 1m outside the building but in the utility tunnel for connecting to the District cooling main distribution network as per the prevailing engineering norms.
- The Developer shall make necessary arrangement for connection of chilled water pipes from ETS room up to the point of supply to be connected to main district cooling distribution network along with necessary isolation valves, fittings and other instruments. The Developer shall comply with the standard engineering norms and practices for the connection and shall also follow the instruction as may be given by the Service Provider. If at the time of connection or subsequently any damage caused to the property / pipeline/ system

of the service provider, it shall be repaired by the Developer at his own cost as per the satisfaction of the service provider.

- The chilled water connection will be provided subject to necessary approval and permission being received along with the payments of the applicable charges, received from the Developer as charges towards the cost of providing the connection as well as payment of security deposit.

## **14 GENERAL OBLIGATIONS OF THE DEVELOPER:**

- Prior to the commencement of district cooling chilled water connection, the Developer shall at its own cost obtain all necessary consents, approvals and permissions from all relevant authorities as may be required. It will be the sole responsibility of the Developer to obtain all such “No Objection Certificates” (NOCs).
- The Developer shall not install/use any independent chilled water production facilities in his premises and cause such facilities to operate in parallel with the system unless otherwise agreed to in writing by the service provider.
- The Developer shall not under any circumstances supply district cooling service received from the service provider to any third party - building or premises other than his premise.
- The Developer shall at its own cost make suitable arrangement for the cooling need of the premises if the operations of the premises cannot tolerate any failure, reduction, interruption, inconsistency in the supply. In such cases, the Developer shall intimate/inform the service provider about the arrangements made by him for the said purpose.
- The Developer shall always permit the Service Provider’s authorized representative to access the premises/Site .
- The Service Provider reserves the right to discontinue the Services in the event of any dispute between the Developer and the Service Provider.
- The Developer shall take all adequate precautions and adopt all safety measures to safeguard pipeline, valves and other equipment installed by the Service Provider for chilled water connection. In case the Developer carries out any unauthorized repair, alteration,

modification, directly or indirectly, in the pipeline, valves, equipment installed for the purpose of chilled water connection, the same shall be deemed to be breach of the contractual terms contained therein and in case of any accident, the Developer shall be solely responsible for the same. Service Provider shall not take any responsibility on account of the same. Service Provider has the right to stop the services immediately in such cases.



## **15 GENERAL OBLIGATIONS OF THE SERVICE PROVIDER:**

- The service provider shall be solely responsible for design, supply, testing, commissioning, operation and maintenance of the district cooling system. The service provider shall connect the district cooling system network to the building's chilled water network at the point of supply located in the utility tunnel near the Developer's premises/building.
- The Service Provider will endeavour to provide the Developer with consistent and regular Services for chilled water supply.
- The Service Provider reserves the right to revise chilled water charges from time to time without any prior notice.
- There shall be no rebate provided to the Developer in case of any loss due to breakage in the upstream of the main pipeline. The Service Provider upon intimation by the Developer shall rectify the problem in the main pipeline however shall not be liable for any compensation.

## **16 CHARGES FOR SUPPLY:**

- The district cooling chilled water connection shall be valid only after receipt of security deposit and completion of all formalities by the Developer.
- The district cooling chilled water connection charges in various segments like Commercial, residential, institutional, etc will be determined by the Service Provider and tariff card will be issued for the same. These charges may be subject to revisions from time to time, without prior notice to the Developer.
- The Developer shall be liable to pay one time installation charge, security deposit, Demand charge, consumption charge etc. as per the tariff structure in force at the time of agreement period. The decision of the Service Provider as for the charges to the Developer shall be final. The current tariff structure is provided as Annexure -III
- The Developer acknowledges and accepts that service provider shall have the right to adjust its rates and charges, at its discretion, and /or when there is change in cost of providing district cooling chilled water connection.
- All cess, taxes, duties, assessments and any other levies imposed or to be imposed in future by any State or Central Government or any Statutory Authority in relation to the chilled water connection shall be passed on and be payable by the Developer.

## 17 TERMINATION:

- Without prejudice to the other rights of the Service Provider in law otherwise, the Service Provider may at any time, immediately and without notice disconnect the Services and terminate the Agreement with the Developer, if;
  - (i) The Developer fails to pay the Service Provider any sum due to the Service Provider under the terms and conditions and/or otherwise within 30 days from the due date of payment thereof.
  - (ii) The Developer fails to comply with any of its obligations and/or commits any breach of the covenant or conditions on his part to be observed, performed or fulfilled.
  - (iii) The particulars as furnished by the Developer in the Application are found to be false or incorrect.
  - (iv) The chilled water connection is used by the Developer for any other purpose.
  - (v) The Developer tampers/modifies/alters the Connection without the consent of the Service Provider.
- The Developer may, by written notice of one month to the Service Provider requests Termination of chilled water connection.
  - (i) In such case, no charges/contributions paid by the Developer to the Service Provider shall be refunded except the Security Deposit, without any interest, subject to settlement of all pending bills and dues by the Developer.
- In the event of Termination of the chilled water Connection, without prejudice to the other rights of the Service Provider:
  - (i) The Service Provider shall suspend the Services.

- (ii) The Developer shall be liable to pay the Service Provider all amounts due till that date of Termination of this Agreement.

## **18 RECONNECTION:**

- If after termination the Developer applies for the restart of the chilled water connection, all (“Reconnection”) charges like Connection / commissioning (as determined by the Service Provider) shall be borne and paid by the Developer and Developer has to complete all formalities related to new Connection.
- Reconnection of chilled water will be at the sole discretion of the Service Provider and the Service Provider may refuse the same, without assigning any reasons whatsoever.

## **19 TRANSFER OF THE CONNECTION:**

- The Service Provider permits transfer of the chilled water connection from one name to another name in the event of transfer or assignment of the leasehold rights of the Building, The transfer will be permitted subject to the payment of such charges as may be decided by the Service Provider, from time to time. The transfer of chilled water connection from one name to another name is subject to submission of fresh application and necessary documents, as may be required by the Service Provider and will be affected only upon full satisfaction by the Service Provider.

## **20 LIABILITY / INDEMNITY:**

- The Developer shall not use the chilled water connection for any illegal or unlawful activity or purpose. In case of any offense under or violation of any law, statute or regulation by the Developer, the Developer alone shall be responsible and liable for the said offense or violation and the Developer agrees to indemnify and keep indemnified the Service Provider from and against any loss, claim, action or proceeding that may be suffered or incurred by the Service Provider as a result of any such offense or violation by the Developer.
- The Developer shall be liable for any loss or damage caused to pipes equipment or installations whether caused on account of negligence by the Developer or its associates or agents or due to theft, sabotage or otherwise however.
- The Developer shall be deemed to be in exclusive possession and control of the chilled water supply and return pipeline with isolation valves up to the point of supply connecting to main district cooling chilled water network pipeline of District cooling System outside the building in the utility tunnel and the Developer shall be liable for any damage caused to any person or property as a result thereof. Accordingly, the Developer shall protect, indemnify and hold the Service Provider harmless against all claims, demands, actions, suits, proceedings, judgments and all liabilities, costs, expenses, damages or losses arising out of resulting from or incidental or in connection with chilled water supply.
- The indemnity provisions will be enforceable notwithstanding termination of Services for chilled water connection.

## **21 FORCE MAJURE**

The Service Provider shall not be liable for any loss / damage, costs, charges or expenses whatsoever that may be caused to or occasioned by the Developer or another person on account of failure to perform or for the delay in performing any provisions of this Agreement if the same is caused or results due to acts of God, War, Revolt, Fire, Tempest, Flood, Earthquake, Lighting, direct or indirect consequences of God (declared/undeclared) Sabotage, Hostilities, National emergencies, civil disturbances, commotion, embargo or any other law promulgation, regulation or ordinance whether Central or State or Municipal, breakage bursting or freezing of pipeline or occurrence of any event beyond the control of the Service Provider provided further that the Service Provider shall not be responsible and/or liable for any losses direct or consequential caused to the Developer if the same is caused due to the reasons stated hereinabove.

## **22 AMENDMENT:**

The Service Provider may at any time amend, add to or delete any or all these terms and conditions with immediate effect and in such case, the amended terms and conditions shall be informed to the Developer and shall be binding on the Developer.

## **23 TERMS BINDING ON SUCCESSORS:**

These terms and conditions shall be binding on the heirs, administrator, successor and assigns of the Developer.

## **24 NOTICE:**

Any notice to the Developer will be sent to the address of the Developer stated in its Application.

## **25 ARBITRATION:**

“All disputes arising out of this Agreement shall be referred to the sole arbitrator appointed by the MD/CEO of the Service Provider and the provisions of The Arbitration and Conciliation Act 1996 shall be applicable. The award of the Sole Arbitrator shall be final and binding on both the Service Provider and the Applicant. The seat of arbitration shall be at Gandhinagar. However, in case of any application or appeal to be preferred, the courts at Gandhinagar would only have the exclusive jurisdiction.

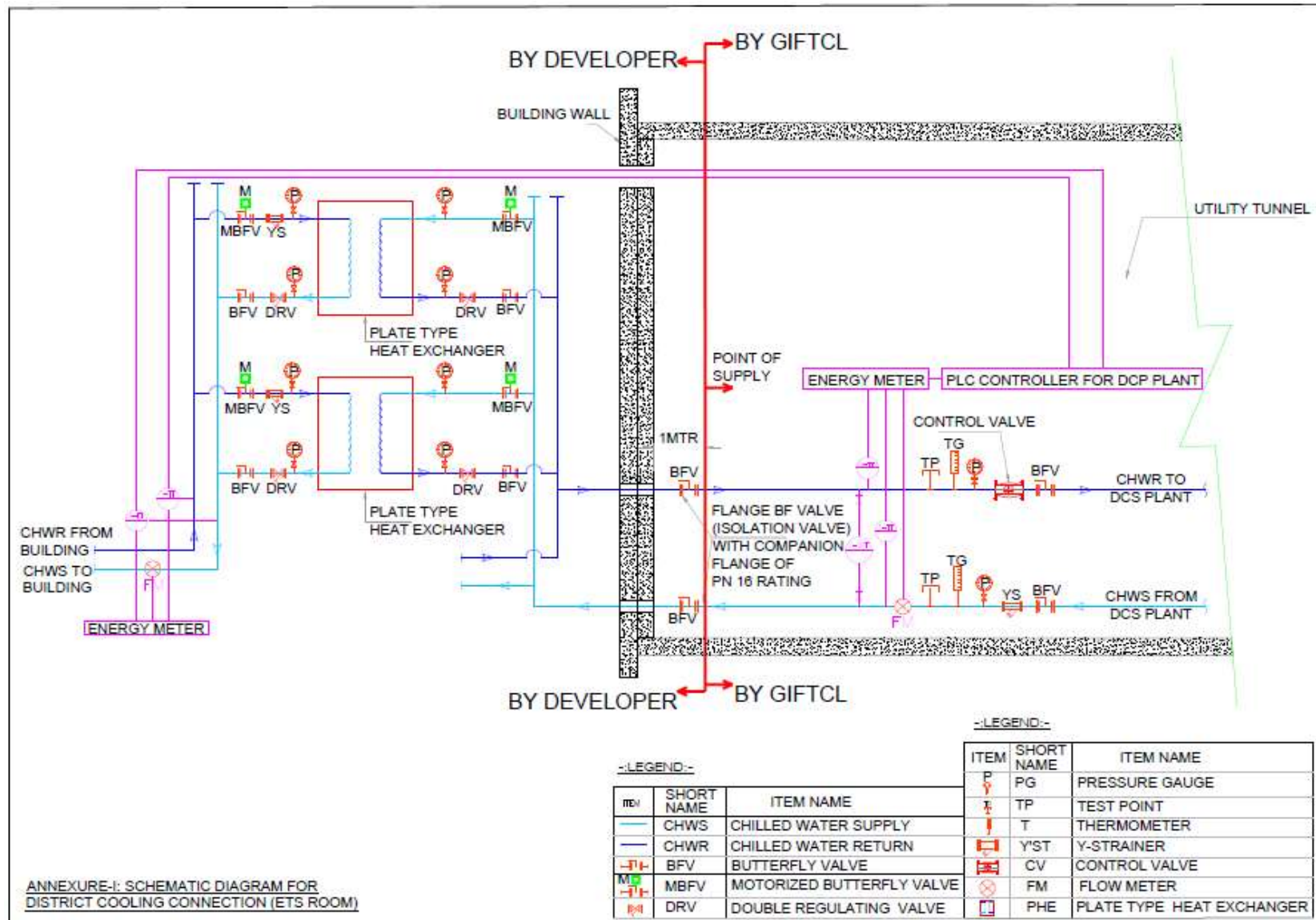
### **DECLARATION:**

I confirm that I am authorized to make this Agreement with GIFT CITY LIMITED for district cooling chilled water connection. I do hereby declare that I have read and understood the above terms and conditions including the charges as applicable from time to time. I hereby accept the above stated terms and conditions in its entirety, irrevocably and unconditionally and accordingly put and subscribe my hand to these terms and conditions.

Name of the Developer

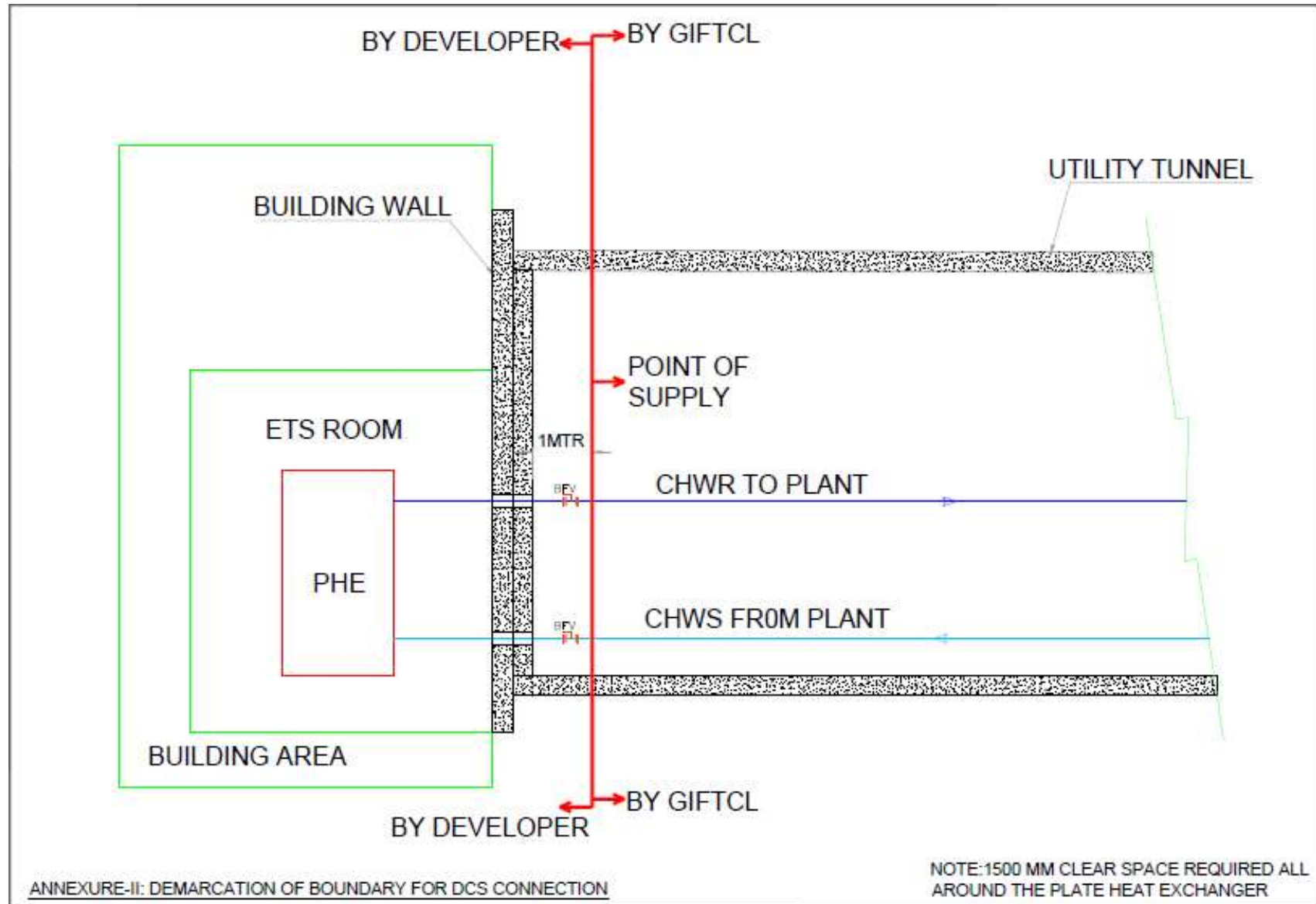
Sign and seal of the Developer

## 26 ANNEXURE -I - SCHEMATIC DIAGRAM FOR DISTRICT COOLING CONNECTION





## 27 ANNEXURE -II: DEMARCATION OF BOUNDARY FOR DCS CONNECTION





Reg. Office: EPS - Building no. 49A, Block 49, Zone 04, Gyan Marg, GIFT City,  
Gandhinagar – 382050.

Contact No: +91 079-6170 8300 | E-mail: [query@giftgujarat.in](mailto:query@giftgujarat.in)

[www.giftgujarat.in](http://www.giftgujarat.in)