**P R O F O R M A**

**Request for Market Information (“RFI”) for
Design, Supply, Delivery and Installation of Mini Automated Guided Vehicles cum Conveyor Belt System for CM Dispensary of The Chinese Medicine Hospital of Hong Kong (“CMHHK”)**

**(CMHPO Ref. : FPE-C4-09 )**

To : Project Director (CMHPO)

 (Attn. Idy LO, EM (CMHPO) 3A)

[by fax: 2127 4795 or email: ipwlo@healthbureau.gov.hk]

Your ref: (2) in HHB/H/24/17/3/7/1/12

In response to the RFI of the CMHPO, my/our company, with contact details provided in Part 1 below, would like to provide the information and relevant supporting documents in Parts 2 to 13 of this Proforma.

**Part 1 – Supplier’s Contact Details**

From:

(Name of the Supplier): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(please fill in)

Name and Post of Contact person: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(please fill in)

Email:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Telephone no.:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(please fill in) (please fill in)

**-----------------------------------------------------------------------------------------------------------------**

*This document does not constitute any offer or invitation / solicitation of any offer in connection with the exercise described herein. Neither this document nor any activities in connection therewith shall create any legal obligations or liabilities in any way on the part of the Health Bureau (HHB) or the Government of Hong Kong Special Administrative Region. Neither this document nor anything contained herein shall form the basis of any contract or commitment whatsoever. In responding to the RFI, a respondent shall be deemed to have agreed to all the terms of this Request for Market Information.*

RFI (CE)

**Purpose and Background Information of the RFI**

1. Purpose

Chinese Medicine Hospital Project Office (“**CMHPO**”) of the Health Bureau (“**HHB**”) of the Government intends to invite a tender for the design, supply, delivery and installation of **Mini Automated Guided Vehicles cum Conveyor Belt System** (hereinafter refers as the “**System**”) for CM Dispensary of The Chinese Medicine Hospital of Hong Kong (“**CMHHK**”) located at 1 Pak Shing Kok in Tseung Kwan O. The CMHPO therefore wishes to collect market information on Mini Automated Vehicles cum Conveyor Belt System.

1. Background of the CMHHK Project

The Chief Executive announced in the 2014 Policy Address that the Government had decided to reserve a site in Tseung Kwan O for setting up a CMHHK. The 2017 Policy Address stated that the Government decided to finance the construction of the CMHHK and identify by way of tender a suitable non-profit-making organisation (“NPMO”) to operate the CMHHK. CMHHK will be owned by the Government and the selected NPMO will operate the CMHHK. The CMHHK would be positioned as a flagship Chinese Medicine (“CM”) institution leading the development of CM services and Chinese medicines in Hong Kong. It will be a change driver, promoting service development, education and training, innovation and research, and facilitating collaboration with both local and international parties.

The CMHHK with provision of 400 beds will provide a comprehensive range of CM services. Service types include pure CM services, services with CM playing the predominant role in collaboration with Western Medicine (“WM”) and Integrated Chinese-Western Medicine (“ICWM”) services. The scope of service to be provided in the CMHHK covers inpatient, day-patient, outpatient and community outreach services.

To take forward the planning and development of the project on CMHHK, a designated office i.e. CMHPO, was established under the Health Bureau (the former Food and Health Bureau) on 2 May 2018. Hong Kong Baptist University (HKBU) was selected as the Contractor for the CMHHK operation. HKBU, as the Contractor, has incorporated a company limited by guarantee, namely HKBU Chinese Medicine Hospital Company Limited as the Operator to manage, operate and maintain the CMHHK. The CMHHK project has proceeded to the commissioning stage in 2021. It is targeted to commence hospital services by phases from 2025.

More information on the services provision and design of the CMHHK can be found in the following link:

<https://www.healthbureau.gov.hk/en/press_and_publications/otherinfo/200900_cmhp/index.html>

**Note to Suppliers**

1. If your company have more than one **Mini Automated Guided Vehicles cum Conveyor Belt System** that may meet the requirements of the System stated in this Proforma, **please complete and return, together with relevant supporting documents, one set of Proforma for each different** **Mini Automated Guided Vehicles cum Conveyor Belt System**.

**Part 2 – General Information of the System**

|  |  |
| --- | --- |
| 1. Place of origin
 |  |
| 1. Name of manufacturer
 |  |
| 1. Address of the manufacturer’s factory or plant (“Manufacturing Plant”)
 |  |
| 1. Product name of the System
 |  |
| 1. Model number/ name/ version number of the System
 |  |
| 1. Specifications of the Goods
 |  |
| 1. Product literature, equipment data sheet and catalogues
 |  |
| 1. Authorised agent or distributor of the manufacturer in Hong Kong
 |  |
| 1. Packing (if applicable)
 |  |
| 1. Delivery method and route (where the place of origin is outside Hong Kong)
 |  |
| 1. Warranty period of the System

(*Please refer to section G in Part 3 for details of the warranty service requirements*) | \_\_\_\_\_\_\_\_\_\_\_\_ months from Acceptance of the System(*Should not be less than 12 months*) |
| 1. Expected serviceable life (*Please specify any components of the System that cannot meet the serviceable life*)
 | The System shall have a serviceable life of \_\_\_\_\_\_\_ years from its date of acceptance except the following components: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(*Please also provide the expected life of these excluded components*) |
| 1. \*Total weight of the proposed System
 | \_\_\_\_\_\_\_\_\_\_\_\_kg |
| 1. \*Floor loading requirement for the proposed System
 | \_\_\_\_\_\_\_\_\_\_\_ kPa  |
| 1. \*Ceiling loading requirement for the proposed System
 | \_\_\_\_\_\_\_\_\_\_\_ kPa |

\* *The maximum floor loading capacity where the System is to be installed is* ***10 kPa****. The maximum ceiling loading capacity where the System is to be installed is* ***2kPa****. Please ensure that your proposed System can comply with this requirement.*

**Part 3 – Indicative Technical Requirements**

*Notes to Suppliers for Completion of Part 3*

1. *Unless specified otherwise, the “****System****” in this Part 3* ***refers to section (A) 1.1 below****.*
2. *The indicative technical requirements are for the purpose of collecting market information only. They are subject to changes and do not represent the final technical requirements of the intended tender.*
3. *Please indicate, as a point by point compliance statement, whether your proposed System “****Comply****” or “****Not Comply****” with an indicative technical requirement stated in Column II by ticking (🗸) in the appropriate box under* ***Column III*** *and* ***Column IV*** *respectively.*
4. ***Where applicable****, please quote the value of your proposed System in either Column III (if “****Comply****”) or Column IV (if “****Not Comply****”) respectively against corresponding indicative technical requirement (use additional sheet(s) if space is insufficient*
5. *Please provide supporting documents (such as catalogues, user manual and/or operation manual, etc.) to illustrate the features of your proposed Mini AGVs cum Conveyor Belt System against the corresponding indicative technical requirements.*

| **Column I** | **Column II** | **Column III** | **Column IV** |
| --- | --- | --- | --- |
| **Section** | **Technical Specification** | **Tick (🗸) the Appropriate Box** *(For aspects “Not Comply”, please also provide alternative proposal, if any)* |
| **Comply** | **Not Comply** |
| **(A)** | **Technical Requirements** |  |
|  | **Scope of Work** |  |
|  | The scope of works (the “Works”) shall comprise the design, supply, delivery, installation, planning, method statements, deep and active coordination, interface, supervision, testing, commissioning, training, documentation, system integration and activation, warranty and maintenance of the Mini Automated Guided Vehicles cum Conveyor Belt System for the Chinese Medicine Hospital of Hong Kong (“CMHHK”)[“the System”] to be provided to the Chinese Medicine Pharmacy (“CMPh”) at the CMHHK, and in accordance with the drawings and the Technical Specification. The completion of the System shall be based upon its full functionality and operation. |  |  |
|  | The Supplier shall provide the System in ready for use condition no later than **TWELVE (12)** months from the order date or a period shorter than **TWELVE (12)**. |  |  |
| * 1.
 | The components and associated equipment required for the System shall include, but not necessarily limited to, the following with their respective roles:1. Mini Automated Guided Vehicles (“AGVs”) runs horizontally at Overhead Platform (“OHP”) to transfer Chinese Medicines Package (“CMPACK”) in enclosed packaging that was loaded manually by CMHHK Operator onto Mini Lifters at designated locations;
2. Mini Lifters (“LFTs”) run vertically between Overhead Platform and floor levels. LFTs transfer the CMPACK between AGVs at OHP, dispatching stations, 3-Dimensional Sorters and Floor Level Conveyors at floor levels,;
3. 3-Dimensional Sorters (“3DS”) with bins and bins storage racks run vertically and horizontally at floor level to transfer the CMPACK from LFTs and sort the CMPACK into dedicated bins. The bins storage racks shall include Pick-To-Light (“PTL”) features to indicate and notify CMHHK Operator the specific totes(s) is/are completed or bins on storage rack are full, thus are ready for pick-up;
4. Floor Levels Conveyors (“FLC”) allow totes to run horizontally in double decks at floor level under Pharmacy issuing counters. The totes elevator runs fully automatically and continuously in vertical direction to lifting empty totes from lower deck to upper deck of FLC. The totes on upper deck of FLC collect and transfer CMPACK towards Pharmacy issuing counter and deliver to extended FLC at designated issuing stations. The empty totes are put back manually by CMHHK Operator to lower deck of FLC and run towards the exit of FLC for automatic and continuous circulation of totes;
5. Totes Stacker and De-Stacker (“TSDS”) at floor level integrate with the FLC. TSDS provides totes congestion control to manage quantities of totes on FLC to fulfil automatic and continuous totes collection, allocation, circulation and throughput requirement of the System;
6. Totes manual entry station at floor level to interface with FLC to provide automatic queue control for multiple manual in-feeding of totes;
7. AGVs charging Stations at OHP to recharge battery of AGVs; and
8. The Chinese Medicine Package Transfer System (“CMPTS”) to serve as the overall control and monitoring of system operation.
 |  |  |
| * 1.
 | The System to be provided to the CMPh under this Tender shall be implemented in Zone I and Zone II, as detailed in **Annex A** and the routes are described in brief below:-Zone I: the main route of the System shall be AGVs at OHP transfer CMPACK horizontally and circulates at the Chinese Medicine Pharmacy (“CMPh”) (manual dispensing section); and with LFTs connecting to the OHP, 3DS at designated location(s) to sort CMPACK into totes, at the level of totes storage bench at designated assembly stations to dispatch CMPACK; ANDZone II: the FLC shall receive CMPACK from Zone I; the main route of the FLC shall run below the Pharmacy issuing counter inside the CMPh; and with associated conveyor components to divert totes to the extended FLC at designated issuing stations at the Pharmacy counter.  |  |  |
|  | The Chinese Medicine Pharmacy (CMPh) Floor Plan (“the Floor Plan”) should be read in conjunction with the Technical Specifications. The Floor Plan is used as reference for the RFI.(Please refer to **Annex A** - The Chinese Medicine Pharmacy (CMPh) Floor Plan**)**) |  |  |
|  | **The CHMHK is targeted to commence hospital services on 4Q2025, the CMPh will commence services to public. The CMPh operation will cover all the CMPh area under Annex A. The site works at CMPh area under Annex A for System from delivery, installation, implementation, Testing and Commissioning (T&C), works tests to completed System in-services shall be executed parallelly with CMPh operation.** The Supplier shall propose an Equipment Installation and Layout Plan (EILP) and provide to Government Representative and CMHHK Operator for prior approval before executing the Works to achieve and deliver a complete workable system ready for CMPh operation.(Please provide details in **Part 3a – Particulars of Goods Schedule (Schedule A)**) |  |  |
|  | The Supplier shall incorporate Phasing and Sequencing Plan into EILP to indicate phasing and sequencing stages, procedures and details and to maintain CMPh daily normal operation and minimize the disturbance and effect to CMHHK Operator and public. The Phasing and Sequencing Plan shall include but not limited to the following:1. Portion and duration of site works of the System / sub-systems from delivery, installation, implementation, testing and commissioning works tests to completed System in services;
2. Changeover and migration of the System operation with CMPh daily operation;
3. Interface and coordination works with Interfacing Parties;
4. Safety measures (i.e. fire protection, maintain walkways, corridors and emergency exits, etc);
5. Contingency solutions for impacts to CMHHK Operator / public (i.e. noise and dust protection, electrical disruption/ migration, etc);

The Supplier shall be responsible to liaise with Interfacing Parties and external parties (if any) at no additional cost and time in order to facilitate the complete System installation, full functionality, performance and operation to cater the throughout requirements of the System and CMPh operation as stipulated in the Technical Specifications. |  |  |
|  | All the site works shall be arranged in the period as following:1. during office hours (i.e. Monday to Saturday 09:00-20:00) and;
2. non-office hours (i.e. Sunday and public holidays 09:00-20:00).

The Supplier shall submit the proposed site works period at no additional cost and time to the Contract. The proposed site works shall subject to approval by Government Representative and CMHHK Operator. The Government Representative and CMHHK Operator reserve the right to change the site works period.  |  |  |
|  | The Supplier shall implement for all items and works on the EILP. This includes all incidentals, equipment, appliances, services, hoisting, scaffolding, supports, tools, supervision, labour, consumables, fees, licenses, etc., necessary to provide complete installation. |  |  |
|  | The Supplier shall provide equipment specifications, Building Services and Building / Structural Provisions Requirement (BSPR) to facilitate Design and Build (D&B) Contractor’s including but not limited to the required electrical and mechanical (E&M) provisions, cable trunking and conduit arrangement, power supply arrangement, fire service installations, site logistics, lift service, access control and other building service provisions, etc.. (Please provide details in **Part 3a – Particulars of Goods Schedule (Schedule B)**) |  |  |
|  | The Supplier shall be responsible for the design, supply and installation of supporting members by fixing to the reinforced concrete, provided by the D&B Contractor, for mounting of OHP, maintenance platforms and necessary equipment to facilitate equipment hoisting for installation and maintenance.  The supporting members shall be structurally tied to the building structure which is provided by the D&B Contractor.The Supplier shall design and provide his/her temporary and permanent installations to suit the provisions.(Please provide details in **Part 3a – Particulars of Goods Schedule (Schedule A)**) |  |  |
|  | The Supplier shall provide overhead loading / floor loading requirements including but not limited to main support members and hanger location, clearance, weight bearing for the System installation and maintenance to D&B Contractor for mounting of overhead platform, transportation of AGVs and maintenance platforms, also other necessary equipment for facilitating equipment hoisting for installation and maintenance. (Please provide details in **Part 3a – Particulars of Goods Schedule (Schedule B)**)  |  |  |
| * 1.
 | All mounting support details with necessary structural calculation and installation shall be certified by Registered Structural Engineer (RSE) under the Buildings Ordinance of the HKSAR to ensure the safety and anchorage of all of the installations prior to the submission for approval. The cost of the certification rendered by the RSE shall be borne by the Supplier.  |  |  |
|  | In the tender submission, the Supplier shall provide the structural design details indicating intended specifications of structural members and fixing methods which will be certified by a RSE after tender award and prior to the site installations. The Supplier shall coordinate with the D&B Contractor for the structural design of supports for the OHP and associated overhung items. The RSE shall fulfil the qualifications stipulated in **Clause 1.133** of this Part. |  |  |
|  | The Supplier shall provide all electrical, mechanical, builder’s works, and building services works associated with the Works installations or as required for satisfying the current relevant statutory regulations and rules in relation to the Works in this Tender. |  |  |
|  | The Supplier shall take responsibility for the liaison and coordination with the Government Representative and D&B Contractor for the site installation and co-ordination works to ensure smooth implementation of all necessary structural and building services works which shall be carried out by the Supplier for the installation of the Works. |  |  |
|  | The Supplier shall be responsible to supply and install all required materials, fittings, cables, pipework, ductworks, etc., for connecting the equipment to the corresponding building services provision by the D&B Contractor and its sub-contractor(s). Any revision or additional works on the building services provisions, including but not limited to Fire Service Installations (“FSI”), lighting, air-conditioning & mechanical ventilation, etc., shall be responsible by the Supplier to ensure the design performance would be not affected and degraded after installation of equipment. |  |  |
|  | The Supplier shall be responsible for sealing up any reserved wall openings for the system and associated provisions and providing and installing the appropriate fire barriers, fire-stop sealants, fire-stop blocks, etc., as necessary to maintain the fire resistance rating, where applicable. |  |  |
|  | The Supplier shall be responsible to re-provide, reinstate and make good of the fire barriers, fire-stop sealants, fire-stop blocks, etc. for fire compartmentation, fire rated enclosure, cables trays, pipes and other penetrations required for equipment installation to maintain the fire resistance rating, where applicable. |  |  |
|  | The Supplier shall be responsible for all statutory submissions for any revision or additional works on site to suit the installation and daily operation of the equipment if required.  |  |  |
|  | The Supplier shall arrange for all submissions and allow for all costs relating to statutory inspections andcertificates as appropriate and as necessary. |  |  |
|  | The Supplier shall make good all damages and penetrations to walls and floor finishes, false ceilings and any finishes incurred during the process of installing the System. The Supplier shall submit material samples of finishes for approval by the Government Representative prior to carrying out works. |  |  |
|  | The Supplier shall make good the FSI if the equipment affects the building FSI which is provided by the D&B Contractor. The Supplier shall be responsible for the cost incurred and submission to the government so that the area(s) remain compliance with relevant fire safety related statutory requirements in HKSAR. |  |  |
| * 1.
 | If there are any fire service works installed by the Supplier, all fire service installations shall be installed and certify by a registered fire service installations contractor and approved by the Fire Services Department (“FSD”). |  |  |
|  | The Supplier shall be responsible to apply and obtain license(s) from HKSAR Government Departments if necessary. The Supplier shall be responsible for all design, calculations, documentation, application, negotiation works until obtaining of the required license(s). |  |  |
|  | The Supplier shall provide all labour and materials necessary to form a complete implementation services as prescribed. It shall include not only the major items of equipment shown or specified but also all the auxiliary equipment and accessories necessary for the complete execution of the Works; and for the proper operation of the installation, testing and commissioning, and system integration and changeover, whether or not these equipment and accessories are mentioned in detail in the Tender Specification. |  |  |
|  | The Supplier shall be responsible for ensuring that the final installation is in full compliance with all requirements and regulations of relevant Government Authority. The Supplier shall also be responsible for obtaining all necessary permits, etc. where applicable. |  |  |
|  | The Works shall also fully comply with all statutory obligations, regulations, standards, codes of practice and circular letters relevant to the Works installation together with any amendments made thereto as required by relevant authorities for the safe and satisfactory standards of the work to be carried out for construction.  |  |  |
| * 1.
 | The Supplier shall note that interfaces will be required with the following Interfacing Parties in executing the Works:- 1. Party A1 - The Government Representative / The CMHHK Operator.
2. Party A2 - D&B Contractor and their sub-contractor(s) for the design and construction of CMHHK.
 |  |  |
|  | **Standards for the Works** |  |
|  | For design details, materials, equipment and workmanship, the Supplier shall refer to the requirement as stated in the Contract(s) and make reference to International Electrotechnical Commission (IEC), conformité européenne (CE) marking, International Organization for Standardization (ISO) and other international committees to be approved by the Government’s Representative. |  |  |
|  | The System offered by the Supplier shall comply with the latest edition of the following standards, regulations and statutory requirements, where applicable:1. American Society of Mechanical Engineers (ASME).
2. Electricity Ordinance (Chapter 406 of the Laws of HKSAR), and its subsidiary regulations, Code of Practice for the Electrical (Wiring) Regulations (2020 Edition) published by EMSD, Supply Rules of local Power Supply Utility.
3. All electrical works for the specification shall carried out by Registered Electrical Workers (REWs) of the appropriate grades, in accordance with the latest Electricity Ordinance (Chapter 406 of Laws of the HKSAR).
4. General Specification for Building Services Installation in Government Buildings of the HKSAR, 2022 Edition (hereinafter referred to as the ArchSD GS).
5. General Specification for Building 2022 Edition (hereinafter referred to as Building General Specification) (hereinafter referred to as ArchSD GSB);
6. Code of Practice for Minimum Fire Service Installations and Equipment and Inspection, Testing and Maintenance of Installations and Equipment, September 2022 Edition, issued by Fire Services Department (hereinafter referred to as the FSD COP).
7. Technical Guidance, Application of Loss Prevention Council Rules for Automatic Sprinkler Installation 2015 incorporating BS EN 12845 in Hong Kong, issued by Fire Services Department (hereinafter referred to as the FSD TG).
8. All electronic circuits and components shall comply with latest edition of ESG01 – ‘General Requirements for Electronic Contract’ issued by Electrical and Mechanical Services Department (“EMSD”).
9. All electric motors and components shall comply with the latest edition of “Code of Practice for Energy Efficiency of Building Services Installation” (Building Energy Code or BEC) and “Technical Guidelines on Code of Practice for Energy Efficiency of Building Services Installation” (TG-BEC) issued by Electrical and Mechanical Services Department (“EMSD”).
10. Factories and Industrial Undertakings (Lifting Appliances and Lifting Gear) Regulations.
11. Factories and Industrial Undertakings (Guarding and Operation of Machinery) Regulations.
12. Factories and Industrial Undertakings (Safety Officers and Safety Supervisors) Regulations.
13. Noise Control Ordinance (Chapter 400 of the Laws of the HKSAR).
14. The Works shall comply with all statutory obligations together with any amendments made thereto as required by all relevant local bodies and authorities for the safety and quality of installation. Such local bodies or authorities shall include, but not be limited to, the following:
	1. Electrical and Mechanical Services Department (“EMSD”)
	2. Fire Services Department (“FSD”)
	3. Labour Department (“LD”)
	4. Architectural Services Department (“ArchSD”)
	5. Environmental Protection Department (“EPD”)
	6. Water Supplies Department (“WSD”)
	7. Power Supply Utilities
	8. Any other local authorities or public utilities having jurisdiction
 |  |  |
|  | Installation, wiring and system equipment shall comply with the requirements of the following standards for the latest edition (as of three working days before the Tender Closing Date). Copies of the following standards must be obtained directly from the appropriate publisher:-1. The Electricity (Wiring) Regulations issued by the Hong Kong Government.
2. 2020 Edition of Code of Practice for the Electricity (Wiring) Regulations issued by the Electrical and Mechanical Services Department.
3. "Requirements for Electrical Installations" issued by the Institution of Engineering and Technology (IET Wiring Regulations, the latest Edition).
4. General Specification for Building Services Installation in Government Buildings of the Hong Kong Special Administrative Region (2022 Edition).
5. Local electricity supply company's requirements, the latest edition.
6. Handbook on Guarding and Operation of Machinery (Occupational Safety and Health Branch, Labour Department)
 |  |  |
|  | The materials, equipment, design calculations and tests used by the Supplier shall specifically comply with the requirements of, but not limited to, the following latest edition (as of three working days before the Tender Closing Date) of International Standards and Codes of Practice or portions thereof as applicable:-1. BS EN ISO 12100:2010 – Safety of machinery – General principles for design – Risk assessment and risk reduction
2. BS EN ISO 13857:2019 – Safety of machinery – Safety distances to prevent hazard zones being reached by upper and lower limbs
3. Other standards as stipulated in **Part 5 –**  **Information on Compliance with International Standards**
 |  |  |
|  | The Supplier may propose specific requirements / international standards of works applicable to the installation of the equipment and/or system other than those specified herein. Alternative international standards may be accepted provided that all parameters of this Specification can be met and the relevant Government departments approve the use of the standard. If alternative standards are being proposed, documentation shall be submitted to indicate the deviations between the proposed and specified standards for the Government Representative's approvalupon tender submission and prior to equipment ordering. |  |  |
|  | The Supplier shall be responsible for all matters concerning work safety and health. The Supplier shall assume full responsibilities for the safety and health management and bear full liabilities for all injuries to all persons and all damages to all properties which have resulted from any accidents related to the execution of the Works. |  |  |
|  | The Supplier shall appoint Safety Officer and Safety Supervisor in compliance with the Factories and Industrial Undertakings (Safety Officers and Safety Supervisors) Regulations to provide and execute all safety plan and measures from delivery, installation, Testing and Communication, work test to the complete System in operation, including but not limited to the followings, to comply the safety regulation, ordinance and requirements:1. Gas Welding and Fuming Cutting Equipment;
2. Electric Hand Tools and Safe use of Electricity;
3. Compliance with Fire precaution and use of Liquefied Petroleum Gas;
4. Compressed Air Vessel and Dangerous Goods;
5. Lifting Appliance, Lifting gear and Lifting machine;
6. Confined space;
7. Excavation Work;
8. Safety Guard of Machinery
9. Erection, Modification, Dismantling and repairing of Bamboo Scaffolding and Metal Scaffolding;
10. Guardrail;
11. General Safety Works for Contract of Sundries;
12. Safety Measures for Steel Formwork;
13. Noise and Dust Control
14. Water Pollution Control; and
15. Waste management.
 |  |  |
|  | **Electrical and Mechanical Requirements** |  |  |
|  | Main electricity supply of 380 volt AC three phase 80A TPN Isolator, with possible variation as stated in the Supply Rules of Power Companies in Hong Kong, shall be provided by D&B Contractor. The Supplier shall supply and install all necessary accessories, including cables, fuses and junction boxes, conduits, trunkings, electrical protective devices, all electrical requirements (i.e. three phase and single phase) and associated distribution switchboard that are required for the protection and connection of the components of the System. The conduits and trunking shall be installed to run along the structure of OHP. |  |  |
|  | The Supplier shall provide the total power rating and consumption of the system with breakdown of individual equipment and the electrical components, including but not limited to, power cable, fuse and protective devices shall be of sufficient gauge to meet continuous full load requirement. |  |  |
|  | The equipment/system shall be designed for operation on local electricity supply of 380 volt ± 6%, 50 Hz ± 2%, three phase, A.C or 220 volt ± 6%, 50 Hz ± 2%, single phase, A.C.  |  |  |
|  | The equipment/system shall be equipped with an over-current protective cut-out device. |  |  |
|  | The equipment/system shall be effectively bonded to earth unless it is double insulated. |  |  |
|  | Equipotential bonding shall be properly installed to the metallic parts of the equipment/system. |  |  |
|  | The Supplier shall ensure that the installation be provided with adequate and individual power source, which shall be equipped with adequate electrical protective device such as Isolator, RCD, MCB, MCCB and etc. |  |  |
|  | All components of the System shall be free of burrs, sharp edges, protrusion and other defects which may cause any potential hazard to the CMHHK operators. All surfaces and edges shall be smooth and non-abrasive. |  |  |
|  | The System shall be robust, stable and shall not be easily overturned under all operating conditions. |  |  |
|  | The relevant report(s)/certificate(s) for safe working load, etc. shall be provided. The test report(s)/certificate(s) shall be certified with company chop and signature as true copy. |  |  |
|  | The Supplier shall prepare and submit Work Completion Certificates WR1 and/or WR1(A) for all electrical installations provided in this Contract. Both Part l and Part 2 of the WR1 and/or WR1(A) shall be completed, submitted and signed by Registered Electrical Workers (REWs). |  |  |
|  | Adequate safety protective devices and/or measures, such as safety guards, warning signs, etc. shall be provided at the locations where deemed necessary to enhance the safety of CMHHK operators when the system is in operation. |  |  |
| **(B)** | **Implementation Services** |  |
|  | **General Requirements** |  |
|  | The Supplier shall design, supply and install the system to achieve an orderly operation flow; functioning for receiving, in-feeding, transferring, diverting and dispatching CMPACK to support the major CMPh sections as described in **Annex B - Operation Details of Chinese Medicine Pharmacy (CMPh) Sections** (as reference), which should be read in conjunction with the Technical Specification.  |  |  |
|  | Major components of the System shall comprise of: 1. Mini Automated Guided Vehicles (AGVs);
2. Overhead Platform (OHP)
3. Mini Lifters (LFTs);
4. Dimensional Sorters (3DS);
5. Floor Level Conveyors (FLC);
6. Totes Stacker and De-Stacker (TSDS);
7. Totes manual entry station;
8. AGVs Charging Stations; and
9. Chinese Medicine Package Transfer System (CMPTS) for overall control and monitoring for the System.
 |  |  |
|  | Whenever the System are activated for delivering CMPACK, the system shall be able to operate automatically and receive the CMPACK continuously without interruption.  |  |  |
|  | The design of the System for the CMPh shall include concept and functionality for receiving, in-feeding, transferring, diverting, dispatching, elevating and lowering of CMPACK to/from the AGVs, LFTs and FLC equipment/components and designated workstation according to the CMHHK Operator’s requisition; scanning and capturing the CMPACK’s transfer information; control and monitoring the operation flow of the AGVs, LFT, FLC and associated equipment/components; and interfacing between the Hospital Information System (Pharmacy Management System) (“HIS (PMS)”) with the Chinese Medicine Package Transfer System (CMPTS) of the Supplier as stipulated in **Clause 12** of this Part.  |  |  |
|  | The System shall handle **note less than 3,600 totes per day** for in-patient and out-patient. The System shall operate for approximately 12 hours per day. Among the barcoded CMPACK to be processed by the System, * approximately 60% shall be decoction pieces - Yin Ping (YP) [飲片]; and
* approximately 40% will be CM granules (CMGr);

Out of the above 60% decoction pieces,* approximately 50% of decoction pieces shall be further processed into CM decoction (CMD); and a tiny portion of other CM products such as proprietary Chinese medicines (pCM), CM compounding products (cpd CM) etc.

The System shall enable all these to be items entered manually by CMHHK Operator. |  |  |
|  | The System shall be designed to achieve overall throughput of **not less than 300 totes per hour** safely and efficiently to cover the Zones as described in **Clause 1.4** of this Part. |  |  |
|  | The CMPACK shall be a soft plastic / paper package in irregular shape labelled with a unique barcode provided by the CMHHK Operator. The size of each CMPACK shall be **250 mm (L) x 250 mm (W) x 250 mm (H) at minimum** respectively and weight of **5 kg (at minimum)** per batch. The System shall be capable to achieve stable, smooth, precise and seamless loading, transportation and offloading of CMPACK and without damaging the CMPACK, plastic packages and labels.  |  |  |
|  | The Supplier shall propose their design fulfilling the operational, functional and performance requirement within the available area indicated in **Annex A - Chinese Medicine Pharmacy (CMPh) Floor Plan**.  |  |  |
|  | The Supplier shall provide, design, supply and install all systems, subsystem, components and necessary equipment to achieve installation, maintenance and full functionality of the System including receiving, in-feeding, transferring, diverting, dispatching, elevating and lowering of CMPACK etc. The components and equipment shall include but not limited to the following:- 1. AGVs;
2. OHP;
3. LFTs;
4. 3DS;
5. FLC;
6. TSDS;
7. Totes manual entry station;
8. AGVs Charging Stations;
9. CMPTS capable to interface with the HIS (PMS) for workflow coordination of the System with different work areas as stated;
10. Barcode Devices;
11. Over-height and Over-weight totes detector;
12. Staging, diverting and congestion control mechanism;
13. Controllers and sensors;
14. Visual and audible alarms; and
15. Other necessary facilities to complete the required function for the System.
 |  |  |
|  | The Supplier shall provide, design, supply and install:-1. AGVs operating at OHP with bottom part of OHP at minimum 3,000 mm from the finished floor level;
2. LFT and associated components to connect at the required level with OHP, FLC and totes storage bench at designated locations;
3. 3DS with totes storage racks;
4. FLC;
5. TSDS to manage quantities of totes on FLC;
6. Totes manual entry station for manual in-feeding of totes carrying ready-to-dispatch CMPACK; and
7. all necessary motors, sensors, protective guard rails, structural support etc. to continuously transfer CMPACK to cover the CMPh (manual dispensing section), totes storage bench, and designated issuing stations at the Pharmacy issuing counter without interruption.

The design shall support with calculation proofing the capacity is sufficient to support the required overall throughput. The design shall include layout plan and contingency design description to prevent single point of failure.(Please provide details in **Part 3a – Particulars of Goods Schedule (Schedule A)**) |  |  |
|  | The Supplier shall provide dimensions, weight, load distribution, quantities of supply and all associated equipment / items of the proposed System. The estimated length for OHP, FLC and the estimated quantities of the extended FLC stations are stated below for reference only. Each of AGVs, LFTs, FLC, 3DS and TSDS shall be respectively interfaced with the inbound and outbound of CMPACK at the CMPh (manual dispensing section), bins storage bench and designated issuing stations. 1. The quantity of AGVs to be provided shall be 20 sets to cater overall throughput requirement of the System for Zone I;
2. The quantity of AGVs charging stations to be provided shall be 3 sets to cater overall throughput requirement of the System for Zone I;
3. The overall length of OHP, including any connecting LFTs to reach the bins storage bench at designated locations and FLC, shall be approximately 60 meters for Zone I;
4. The quantity of LFTs to be provided shall be total of 10 sets, i.e. 8 sets for Zone I and 2 sets for Zone II;
5. The quantity of 3DS with bins and bins storage racks to be provided shall be total of 2 sets for Zone I;
6. The quantity of the FLC to be provided shall be 1 set which shall collect totes from LFTs and transfer totes to and from any connecting conveyor parts to divert totes to the extended FLC (the quantity of which to be provided shall be 7 sets) at designated issuing stations (to support total 14 nos. of issuing counters), all at the Pharmacy counters. The overall length of FLC and extended FLC shall be approximately 22 meters long for Zone II;
7. The quantity of TSDS to be provided shall be total of 2 sets of Zone II to cater overall throughput requirement of the System; and
8. The quantity of totes manual entry station to be provided shall be total of 1 set for Zone II.

Please refer to **Annex A - Chinese Medicine Pharmacy (CMPh) Floor Plan** for details.  |  |  |
|  | The System shall be designed to be capable of detecting and rejecting over-height, over-weight and jammed CMPACK and totes at the point of entry. (i.e. the manual loading of CMPACK at LFT and manual loading of totes at totes manual entry station) |  |  |
|  | The System shall be able to warn CMHHK Operator of unidentified object, over-height and over-weight CMPACK and totes; and visual and/or audible alarms shall be activated for the warning. |  |  |
|  | The System shall sustain the full load of CMPACK (at minimum 5 kg per batch), except otherwise specified, for all the equipment. |  |  |
|  | The transfer speed of the AGVs, LFTs, 3DS, FLC, TSDS and associated equipment shall be able to fulfil throughput requirement of the system. |  |  |
|  | The system overall accuracy shall be not less than 99.9%. |  |  |
|  | The System shall be designed with contingency mode to prevent single point of failure.  |  |  |
|  | The System shall be designed with contingency plan and workflows to prevent single point of failure of the whole System. The Supplier shall, include but not limited to, propose and provide dedicated location(s) to collect CMPACK from AGVs at OHP and LFTs; all necessary tools and associated setups, etc, to facilitate the retrieval of and to offload all CMPACK at high level to floor level by CMHHK Operator manually. The contingency workflows shall be in safe, efficient, effective and workable manner for continuous CMPh operation during partial and total failure of the System (e.g. loss of main power supply, malfunction and breakdown of equipment items / components, etc). |  |  |
|  | The Supplier shall provide at least ONE (1) Emergency Stop (E-Stop) button of the System at readily accessible level for CMHHK Operator and maintenance personnel to immediately stop for the whole System in case of need. E-stop buttons shall have a large red mushroom head with protective cover to avoid unintentional contact and be suitably labelled in both English and Chinese. |  |  |
|  | The System shall be capable to detect any foreseeable fault condition (such as busy traffic and jam fault) by the use of sensors, suitable controllers and program logic. The speed and movement of the AGVs, LFTs, 3DS, FLC, TSDS and all associated equipment shall respectively be adjusted and even stopped completely automatically to suit the actual situation to prevent operation hazards and further damage to the System. |  |  |
|  | The System shall be designed with fault reset procedures for CMHHK Operator to clear the fault or for maintenance staff to perform maintenance of and repair work to the System, thus preventing un-intended automatic startup of the System and moving parts. Appropriate audio and visual alarms with time delay shall be provided on site to inform staff well before System startup. |  |  |
|  | The Supplier shall provide design and provision, including but not limited to AGVs, LFTs, 3DS, FLC, TSDS and all necessary components and accessories, including hardware and software, to coordinate and manage the entire workflow and transportation between different levels and work areas with considerations including but not limited to the following:- 1. Minimize the footprint of equipment installation;
2. Optimize the system operation flow efficient;
3. Maintain access path of staff members and operators;
4. Contingency plan to prevent single point of failure;
5. Conveyor contingency design to prevent single point of failure; and
6. Maintain replacement route of equipment and path for equipment maintenance
 |  |  |
|  | The Supplier shall design, supply and install all necessary ancillary and auxiliary parts such as safety fences / guards fixed / movable and maintenance platform to enable the System to operate safely, effectively, efficiently and in such manner as to fulfil the contract requirements. The fences / guards should be designed for ease of installation and dismantling to facilitate maintenance with due consideration given to the particular site conditions. Interlocking mechanism shall be implemented so that the system cannot be operated unless the installed fence / guard is in “lock” position. |  |  |
|  | The Supplier shall design to enable power on / off the whole System in one go, including but not limited to, Operation Workstation(s), control panels of all equipment items / components and software, for daily operation. The System shall provide scheduling features for CMHHK Operator to customize the power on / off schedule of the System. |  |  |
|  | The System shall be designed to enable future enhancement and support third-party integration through open Application Programming Interface (API). The Supplier shall be responsible to liaise with external parties (if any) on technical feasibility, installation, alteration and testing and commissioning at his own cost in order to facilitate the System full functional and operational enhancement as stipulated in the Technical Specifications. |  |  |
|  | The System shall be used to serve the CMPh operation on a daily basis; thus the required quality, occupational safety and health as well as efficiency shall be built into logistic flow, workflow, facilities and contingencies and risk management process. |  |  |
|  | The overall appearance of the System shall be clean, tidy, professional, and well-maintained at all times. |  |  |
|  | The visual and external design of the System shall look modern, and fits in with the overall aesthetic aspect of the CMPh. The colour of the System should be chosen to complement and blend with the overall design and colour scheme of the CMPh. The Supplier shall provide the System design drawings (for all items / components) with proposed colour scheme for the approval of the Government Representative. |  |  |
|  | The Supplier shall offer a System with a serviceable life of not less than ten (10) years from the Final Acceptance Date of the System. |  |  |
|  | The Supplier shall provide a delivery and installation method statements, including but not limited to, AGVs, OHP, LFT, FLC, TSDS and all associated equipment to the Site. The purpose of the method statement is to demonstrate full understanding of how the systems and equipment items shall be delivered and installed under the designated site conditions stipulated in the Technical Specification and Annex A (Composite Drawing) to this Part. The content of the method statement shall cover timing and duration for each step of the delivery and installation, safety measures to avoid damaging of the systems, and equipment as well as to others, and contingencies as required. (Please provide details in **Part 3a – Particulars of Goods Schedule (Schedule A)**) |  |  |
|  | All installation and maintenance services shall be carried out by qualified personnel. The Supplier shall have a local Project Implementation Team to support all offered equipment and systems. The Project Implementation Team shall comprise a project lead with mix of suitable professional and technical team members including but not limited to system engineer and electrical & mechanical personnel with qualification and experience to provide the service. |  |  |
|  | The Supplier shall provide the company relevant experience of supply and installation of similar equipment in the past three (3)years. (Please provide details in **Part 10 – Sales Volume of the Offered Goods**) |  |  |
|  | The Supplier shall provide the organisation charts of the Project Implementation Team and the Technical Support Team, and the qualification and experience of the team members. (Please provide details in **Part 11 – Company’s Project Team**) |  |  |
|  | **Mini Automated Guided Vehicles (AGVs) at Overhead Platform (OHP)** |  |
|  | **Operational Requirement** |  |
|  | The AGVs operating at Overhead Platform (OHP) shall form the main line of the System providing AGVs circulation and connect to the 3DS, bins storage bench and FLC under the Pharmacy issuing counter via LFTs. The LFTs, 3DS, FLC, TSDS, totes manual entry station and all associated equipment and shall not block the main access path of staff members. |  |  |
|  | The AGVs shall, via LFT1. receive CMPACK manually loaded by CMHHK Operator at the dispatching stations;
2. transfer CMPACK to Pharmacy issuing counter via FLC; and
3. transfer CMPACK to 3DS and sort CMPACK to designated bins for manual handling of re-circulation / re-dispatching

The transfer of CMPACK at each connecting points shall be seamless, in controlled manner and without any damage to CMPACK (i.e. transfer of CMPACK such as in free fall without controls is **NOT** permitted). |  |  |
|  | The AGVs shall handle the CMPACK in two scenarios:-Scenario 1: The assembled CMPACK for immediate transfer to be issued to patients. The AGVs shall transfer the CMPACK directly via LFTs and FLC to the designated issuing stations and bypass the assembly stations. Scenario 2: The partially assembled CMPACK for immediate transfer to 3DS where prescription(s) of the patient shall be grouped / assembled according to the pick-up mode and time as indicated in the system. |  |  |
|  | The AGVs shall transfer CMPACK to and from designated location of LFTs. The LFT shall transfer CMPACK between the required level of the receiving points (such as totes storage bench, 3DS, and FLC) through connecting components and accessories. |  |  |
|  | The AGV shall be designed with tilt-tray type to securely hold and transfer CMPACK at OHP and designated location of LFT without dropping CMPACK out of AGVs. The Supplier shall be responsible to rectify any problem arising from dropped items to achieve **NO DROP** of CMPACK, at no additional cost, to fulfil CMPh operation requirements and throughout requirements of the System. |  |  |
|  | The depth (D), width (W) and height (H) of the AGV shall be within 500mm (D) x 400mm (W) x 350mm (H) respectively. The inclination angle of tilt-tray shall be note less than 45 to 75 degree or wider and adjustable for secure offload of CMPACK at designated locations. |  |  |
|  | Loading capacity shall be designed to be capable to transfer at minimum 5 kg full load per batch of CMPACK |  |  |
|  | The net weight of the AGV (without CMPACK) shall not be higher than 9kg. |  |  |
|  | The AGVs shall be powered by rechargeable Lithium-ion battery. The battery capacity shall support shall support continuous operation with full load for not less than 4 hours at charging time 10 minutes or less (to achieve 100% charged). The capacity of the driving battery shall not be less than **63Wh.** |  |  |
|  | The battery shall comply with IEC 62133-2 or other equivalent safety standard. The required relevant certificate(s) shall be provided. |  |  |
|  | The battery shall provide safety protections, including but not limited to, over-voltage, under-voltage, temperature, overcurrent and short circuit, etc. The required relevant tests certificate(s) shall be provided. |  |  |
|  | The charging cycle of Lithium-ion battery shall be at minimum of 3,000 cycles at fully charged.  |  |  |
|  | The operation ambient temperature of the AGVs shall be from 10oC to 55oC. The operation humidity of the AGVs shall be not less than 95% (non-condensed) |  |  |
|  | The AGVs shall be equipped with safety protection mechanism, including but not limited to, collision detection technology, auto protective stop function and auto-resume operation function within pre-set time interval. The Supplier shall provide the methodology and technology employed to achieve this safety protection mechanism. |  |  |
|  | The AGVs shall support automatic docking and charging to charging station during idle time and low battery status. The threshold of AGV battery charging level shall be adjustable according to the requirements of CMPh Operation. |  |  |
|  | The AGVs shall be equipped with wireless communication technology and in compliance with Telecommunications Ordinance (Cap 106) in Hong Kong by Office of the Communication Authority (OFCA) or other equivalent wireless communication safety standards in Hong Kong. The required relevant certificate(s) shall be provided. |  |  |
|  | The AGV shall be capable of being cleaned and disinfected easily without affecting its structure, finishing and functions. |  |  |
|  | The Supplier shall provide **TWENTY (20) sets** of AGVs and provide details of AGVs’ specification, in the Design Report as stipulated in **Clause 21** of this Part, to cater for overall throughput requirement of the system. |  |  |
|  | The Supplier shall design, supply and install the Access Point of Wi-Fi, including but not limited to, trunking and conduits for internal wireless networks communication. The trunking and conduits shall be installed and run along the structure of OHP. |  |  |
|  | The AGV charging station shall be installation at OHP and designed in dimension within 550mm (D) x 550mm (W) x 400mm (H) or smaller.  |  |  |
|  | The input voltage of AGV charging stations shall be 220 V AC 50 Hz ± 2%. |  |  |
|  | The AGV charging station shall be equipped with safety features for electric shock, fire prevention and overheat protection.  |  |  |
|  | The Supplier shall provide **THREE (3) sets** of AGVs charging station and provide details of AGVs charging stations specification to cater for overall throughput requirement of the system. |  |  |
|  | The OHP shall be ceiling mounted. The Supplier shall be responsible for the design, supply and installation of supporting members for mounting of overhead platform, maintenance platforms and necessary equipment to facilitate equipment hoisting for installation and maintenance |  |  |
|  | The installation of the OHP shall comply with the following building services requirements:- 1. overall height measuring from the from the finished floor level to the bottom part of the OHP including supporting members shall be 3,000 mm minimum;
2. overall height measuring from the bottom of the OHP including supporting members such as hangers and all associated components to the false ceiling level shall not be more than 1,000 mm;
3. overall width of the OHP including the mat, supporting members and protective shall be less than or equal to dimension indicated;
4. clearance for maintenance of the OHP shall not be more than 1,000 mm;
5. loading of each support member imposed to reinforced concrete slab and beam by D&B Contractor for supporting the AGVs and OHP, including maintenance platform and associated components;
6. spacing of main support members for supporting the OHP, including maintenance platform and associated components, shall not be more than 1,200 mm; and

Please refer to **Annex A - Chinese Medicine Pharmacy (CMPh) Floor Plan** for details; and fill in the required information in **Part 3a (Schedule A) - Schematic Section of Overhead Platform (OHP).** |  |  |
|  | All sides of the OHP shall provide safety protective measures, including but not limited to safety guards, fences, nets, barriers and the like, at appropriate locations to safeguard falling of AGVs and objects from height, to safeguard against external intrusion and to enhance the safety of CMHHK Operator when the system is in operation.  |  |  |
|  | The safety protective measures shall be designed to withstand the impact of AGVs operating at maximum speeds to prevent falling AGVs and objects. The safety protective measures shall be designed for practical installation, for secure fastening and yet for convenient and ease of detachment for clearance of objects on OHP by CMHHK Operator and for facilitating maintenance, with due consideration of the particular site conditions. |  |  |
|  | The safety protective measures, including but not limited to side guards and other exposed metal parts of the OHP, shall be made of stainless-steel grade 304. |  |  |
|  | The base frame, size and type of the material for OHP shall be made of adequate rigidity, durable structure and shall be suitably reinforced to withstand the static and dynamic loading, vibration and movement of the AGVs. |  |  |
|  | The mats of OHP shall be fire retardant type and comply with National Fire Protection Association (NFPA) 253 or other equivalent standards. The required relevant certificate(s) shall be provided.  |  |  |
|  | The material of the mats shall be durable, maintenance-free and designed to prevent jams during operation. |  |  |
|  | **Functional Requirement** |  |
|  | The control of AGVs shall properly fit into the work process of the CMPh operation sections along the transfer line to achieve stable and smooth transportation flow.  |  |  |
|  | The control of AGVs shall integrate with LFTs, 3DS, FLC and associated components and accessories to ensure the CMPACK could be transferred precisely and smoothly to the designated locations. |  |  |
|  | The CMPACK shall be enclosed in packaging labelled with barcode prior to transfer and scanned at entry stations of LFTs at dispatching stations |  |  |
|  | The AGVs shall transfer the CMPACK to the next designated locations via the LFTs. |  |  |
|  | The entry stations of LFTs shall be able to detect and reject over-height, over-weight and jammed CMPACK. The CMPTS shall warn the CMHHK Operator to queue the upcoming CMPACK at the dispatching stations. |  |  |
|  | The data of CMPACK in transfer, including but not limited to job transaction information, items, and weights, shall be captured end-to-end. The Supplier shall propose and provide the I/O (In/Out) Point list to fulfil the requirement of communication between the CMPTS and the HIS (PMS). |  |  |
|  | The CMPTS shall notify the CMHHK Operator when the dispatching capacity is reached; any CMPACK already loaded to AGVs shall continue to circulate and queue at designated LFT offloading points. |  |  |
|  | The CMPTS shall be able to warn CMHHK Operator and reject unidentified object, over-height and over-weight CMPACK; and visual and/or audible alarms shall be activated for the warning. |  |  |
|  | **Performance Requirement** |  |
|  | The AGVs shall be equipped with energy saving mode that can be switched automatically into the operating mode of the system and into sleep mode during idle time  |  |  |
|  | The transfer speed of the AGVs per each CMPACK to designated locations shall be designed in accordance with the throughput of the system, such that the AGVs shall not be a bottleneck in the system*.* |  |  |
|  | The power sound level of the AGVs shall not exceed 65 dBA. |  |  |
|  | The Supplier shall provide at least ONE (1) Emergency Stop (E-Stop) button of AGVs at readily accessible level for CMHHK Operator and maintenance personnel to immediately stop the movement of AGVs in case of need. E-stop buttons shall have a large red mushroom head with protective cover to avoid unintentional contact and be suitably labelled in both English and Chinese. |  |  |
|  | The Supplier shall provide extra Emergency Stop (E-Stop) button at readily accessible level to stop the movement of AGVs in emergency situation at locations, other than the work stations as described in **Clause 5.43** of this Part. |  |  |
|  | The indicator of emergency stop shall be installed at local Operation Workstation(s) for indicating the emergency stop is pressed and shall be reset by key switch with LED light indication type) or other alternatives approved by the Government Representative. . |  |  |
|  | **Mini-Lifters (LFT)** |  |
|  | **Operational Requirement** |  |
|  | The LFTs shall be compatible and integrated with the AGVs, 3DS and totes entry point of FLC, and shall run between different horizontal levels and shall transfer CMPACK between the destination levels. |  |  |
|  | The connection points of LFTs installation shall be the same level as the designated locations to receive/dispatch CMPACK to and from the AGVs at OHP, 3DS, FLC, and totes storage bench. |  |  |
|  | The LFT shall be designed with vertical upwards and downwards mechanism and the movement from one level to another; thus the LFTs shall enable moving upwards to transfer CMPACK onto the AGVs at OHP and moving downwards to transfer CMPACK to the designated connecting area (i.e. 3DS, FLC and bins storage bench). The transfer of CMPACK at each connecting points shall be seamless, in controlled manner and without any damage to CMPACK (i.e. transfer of CMPACK such as in free fall without controls is **NOT** permitted). |  |  |
|  | The LFT shall be capable to transfer CMPACK to level matching with the cycling time of the AGVs, 3DS and FLC, and the designated connecting areas as coordinated by the CMPTS. |  |  |
|  | The throughput of the LFT shall be designed in accordance with the throughput of the System, that the LFT shall not be a bottleneck in the system.  |  |  |
|  | The design of the LFT shall fulfil the throughput requirement of the System. The LFT shall transfer CMPACK via below paths.1. Path for completed CMPACK to be issued out directly: CMPACK shall be transferred directly to designated issuing stations via LFTs, FLC and extended FLC.
2. Path for partially completed CMPACK: CMPACK shall be transferred to designated totes at 3DS via LFTs for re-dispatching.
3. Path for complete assembled CMPACK: CMPACK shall be transferred to designated issuing stations.
 |  |  |
|  | The LFTs shall be designed and constructed in light, minimal footprint, robust, rust proof material and enclosed with protective physical barriers in transparent. |  |  |
|  | The LFTs shall be provided with safety mechanisms incorporated into the System operation, such as light curtains at in-feeding windows to protect CMHHK Operator and fall arrestors to stop unintentional falling down of LFTs during malfunction and electrical breakdown. |  |  |
|  | Loading capacity of LFTs shall be designed to be capable to transfer full load of CMPACK (at minimum 5 kg per batch) and lift up to / receive from the AGVs at OHP, with a minimum safety factor of 1.5. |  |  |
|  | All moving parts of the Equipment shall be fenced off and safeguarded with protective physical barriers to prevent access by personnel other than authorized maintenance staff and to prevent external intrusion and falling of objects. The physical barriers shall allow direct view inside and blend with the colour of the System subject to the approval of the Government Representative. |  |  |
|  | The Supplier shall design, supply and install **TEN (10) sets** of LFTs (at minimum) with breakdown by the respective zoning groups below and provide details of LFTs specification. Each LFT shall be interfaced with the AGVs at OHP, 3DS and FLC at the CMPh and the Pharmacy counter.1. Zone I: EIGHT (8) sets
2. Zone II: TWO (2) sets
 |  |  |
|  | The installation of the LFTs shall comply with the following spatial and floor loading requirements/ restriction unless otherwise approved by the Government Representatives:1. Floor loading of each LFT shall not be greater than 10kPa;
2. overall height of each LFT including the connection components and accessories to the OHP shall be kept under 4,000 mm;
3. dimension of each LFT shall be within 900 mm (L) x 600 mm (W) x 4,000 mm (H) respectively;
4. clearance for installation of the LFT, including tools employed for installation, from the finished floor level to false ceiling level shall be 4,000 mm maximum; and
5. each LFT height of travel shall not exceed 3,500mm.

Any structural provision, such as lifting anchor, shall not be provided. The Supplier shall arrange installation equipment on its own and at its own cost. |  |  |
|  | **Functional Requirement** |  |
|  | The LFTs shall be capable to identify, transport, load and offload CMPACK. |  |  |
|  | LFTs shall be designed to transfer and track locations of barcoded CMPACK to/from the AGVs, 3DS, FLC and the designated connecting areas. |  |  |
|  | LFTs shall consist of entry station, such as in-feeding windows, and workstation. The entry station of LFT shall also be equipped with barcode scanners to detect and reject over-height and over-weight CMPACK. |  |  |
|  | The CMPACK shall be enclosed in packaging labelled with barcode prior to transfer. All barcoded CMPACK shall be scanned and loaded manually onto the LFT. The CMPACK with unidentified barcode shall be rejected. |  |  |
|  | The CMPACK shall be transferred via LFTs to the level and entry point of FLC to facilitate manual association of CMPACK and further transfer CMPACK to totes on FLC. |  |  |
|  | The LFTs shall be able to warn CMHHK Operator of unidentified object, over-height and over-weight CMPACK. Visual and/or audible alarms shall be activated for the warning. |  |  |
|  | For all access panels of moving components, such as motor, gear box, chains, belt and associated accessories, the interlocking and safety mechanism shall be provided. When access panel opens, the LFTs shall active alerts and stop operation of all moving components immediately. |  |  |
|  | For all Human-Machine Interface (i.e. entry station of the LFTs), the interlocking and safety mechanism, such as interlocking guard and light curtain, shall be implemented to stop the System operation immediately and to prevent access panels (if any) from being opened when mechanism triggered. |  |  |
|  | **Performance Requirement** |  |
|  | The LFTs shall be equipped with energy saving mode that can be switched automatically into the operating mode of the system and into sleep mode during idle time. The LFT can be manually operated to retrieve CMPACK down to floor level.  |  |  |
|  | The speed of each transfer transaction counting from “CMPACK entering” to “CMPACK leaving” the LFT shall not be longer than 5 seconds per transfer or faster speed to fulfil the throughput requirement of the System. |  |  |
|  | The power sound level of the LFT shall not exceed 65 dBA. |  |  |
|  | The Supplier shall provide at least ONE (1) local operation panel for each LFT. The CMHHK Operator and maintenance personnel shall be able to perform manual operation of LFTs through the local panel; for fully control, monitor and diagnose malfunction; and modify parameters of the LFTs.  |  |  |
|  | The Supplier shall provide at least ONE (1) Emergency Stop (E-stop) for each LFT (total 10 sets) at readily accessible level for CMHHK Operator and maintenance personnel to immediately stop the movement of LFT in case of need. E-stop buttons shall have a large red mushroom head with protective cover to avoid unintentional contact and be suitably labelled in both English and Chinese. |  |  |
|  | The Supplier shall provide extra Emergency stop (E-stop) button at readily accessible level and control point(s) to stop the LFTs in emergency situation at locations, other than the LFTs as described in **Clause 6.25** of this Part, such as local operation panel. |  |  |
|  | The indicator of emergency stop shall be installed at local operation panel for indicating the emergency stop is pressed and shall be reset by key switch with LED light indication type or other alternatives approved by the Government Representative. |  |  |
|  | Two alert indicators (e.g. with amber colour) with buzzers shall be installed at both sides of the LFT to alert CMHHK operator when the LFT is moving and stopped. |  |  |
|  | **3-Dimensional Sorters (“3DS”)** |  |
|  | **Operational Requirement** |  |
|  | The 3DS with bins and bins storage racks shall be compatible and integrated with the LFT, and shall run between different levels of the horizontal and transfer CMPACK to the designated totes automatically. |  |  |
|  | The connection points of 3DS installation shall be the same level as the LFT to sort and receive CMPACK. |  |  |
|  | The 3DS shall be designed with mechanism which enable to move vertically upwards and downwards, horizontally forward and backwards, and from one level to another; thus enabling them to transfer CMPACK to the designated bins. |  |  |
|  | The 3DS shall be capable to transfer CMPACK to level matching with the cycling time of the AGVs and LFTs, and to the designated connecting areas as coordinated by the CMPTS. |  |  |
|  | The throughput of the 3DS shall be designed in accordance with the throughput of the System, that the 3DS shall not be a bottleneck in the system.  |  |  |
|  | The 3DS shall be designed and constructed in light, minimal footprint, robust, rust proof material and enclosed with protective physical barriers in transparent. |  |  |
|  | The 3DS shall be provided with safety mechanisms incorporated into the System operation, such as light curtains at in-feeding windows to protect CMHHK Operator and fall arrestor to stop unintentional falling down of lifting mechanism during malfunction and electrical breakdown. |  |  |
|  | Loading capacity shall be designed to be capable to transfer at minimum 5 kg full load per batch of CMPACK from the LFT and to the designated bins, with a minimum safety factor of 1.5. |  |  |
|  | All moving areas of the System shall be fenced off and safeguarded with protective physical barriers to prevent external intrusion and falling of objects. The physical barriers shall allow direct view inside and blend with the colour of the system subject to the approval of Government Representative. |  |  |
|  | The Supplier shall design, supply and install **TWO (2) sets** of 3DS for the System at Zone I and provide details of 3DS specification. Each 3DS shall be interfaced with the AGVs at OHP and LFT at the CMPh. |  |  |
| * 1.
 | Each 3DS shall be equipped with **TWO (2)** totes storage racks on dual sides. Each bins storage rack shall provide storage capacity of 20 bins (at minimum) with 5 columns x 4 rows per side, for total 40 bins (at minimum) per 3DS. |  |  |
|  | The installation of the 3DS shall comply with the following building services requirements:-1. Floor loading of each 3DS shall not be greater than 10kPa;
2. the length (L), width (W) and height (H) of each 3DS shall be within 2,600 mm (L) x 900 mm (W) x 2,500 mm (H) respectively;
3. dimension of bins storage rack including the connection components and accessories shall be 1,600 mm (L) x 400 mm (W) x 1,800 mm (H) respectively; and
4. clearance for installation of the 3DS, including tools employed for installation, from the finished floor level to false ceiling level shall be 4,000 mm maximum.
 |  |  |
|  | **Functional Requirement** |  |
|  | 3DS shall be capable to identify, transport and load CMPACK via LFTs to the designated totes on to bins storage rack. |  |  |
|  | 3DS shall be designed to transfer and track locations of barcoded CMPACK at bins storage racks. |  |  |
|  | 3DS shall include visual indicators, such as PTL features, to indicate when the individual bins are completed or when the bins on storage rack are full, which means they are ready for pick up. |  |  |
|  | 3DS shall be capable to identify the absence of individual bins on racks and consequently shall transfer CMPACK to alternative bins.  |  |  |
|  | 3DS shall be capable to identify the absence of whole bins storage rack and consequently shall transfer CMPACK to alternative racks. |  |  |
|  | For all Human-Machine Interface (i.e. pick-up of individual bins or the whole bins storage racks), the interlocking and safety mechanism shall be implemented to stop the 3DS operation immediately and to stop the access panels (if any) from opening when the mechanism is triggered. |  |  |
|  | **Performance Requirement** |  |
|  | The 3DS shall be equipped with energy saving mode that can be switched automatically into the operating mode of the system and into sleep mode during idle time.  |  |  |
|  | The 3DS can be manually operated to retrieve CMPACK down to floor level during malfunction and electrical breakdown. |  |  |
|  | The power sound level of the 3DS shall not exceed 65 dBA. |  |  |
|  | The Supplier shall provide at least ONE (1) operation panel at each 3DS. The CMHHK Operator and maintenance personnel shall be able to perform manual operation of 3DS through the local panel; for fully control, monitor and diagnose malfunction; and modify parameters of the 3DS through the panel. |  |  |
|  | The Supplier shall provide at least ONE (1) Emergency Stop (E-stop) for each 3DS (total 2 sets of 3DS) at readily accessible level for CMHHK Operator and maintenance personnel to immediately stop the movement of 3DS in case of need. E-stop buttons shall have a large red mushroom head with protective cover to avoid unintentional contact and be suitably labelled in both English and Chinese. |  |  |
|  | The Supplier shall provide extra Emergency stop (E-stop) button at readily accessible level to stop the moving components of the 3DS in emergency situation at locations, such as bins pick-up points, as described in **Clause 7.23** of this Part. |  |  |
|  | The indicator of emergency stop shall be installed at 3DS and local operation panel for indicating the emergency stop is pressed and shall be reset by key switch with LED light indication type or other alternative solution approved by the Government Representative. |  |  |
|  | Two alert indicators (e.g. with amber colour) with buzzers shall be installed at both sides of the 3DS to alert CMHHK Operator when the 3DS is moving. |  |  |
|  | **Floor level Conveyor (FLC)** |  |
|  | **Operational Requirement** |  |
|  | The FLC shall be designed in double deck to, 1. receive totes with CMPACK from the totes entry point at upper deck and divert to totes via extended FLC forwards to designated receiving station at the Pharmacy counter;
2. return empty totes (put by CMHHK Operator manually) at lower deck and transfer backwards to the exit point of FLC to totes elevator for fully automatic and continuous totes circulation; and
3. integrate with TSDS to manage the quantities of totes on FLC.
 |  |  |
|  | The installation of the FLC shall comply with the following spatial and floor loading requirements / restrictions unless otherwise approved by the Government Representative:1. structural support of the FLC shall be minimised;
2. floor loading of each FLC shall not be greater than 10kPa;
3. overall height measuring under the issuing stations
	1. the upper deck of the FLC / extended FLC with top part (i.e., bottom of tote) at maximum 610mm
	2. the lower deck of the FLC / extended FLC with top part (i.e. bottom of tote) at maximum 210mm, from the finished floor level;
4. overall width of the FLC / extended FLC including any safety guard shall not be more than 500mm leaving not less than 250mm leg room at under counter; and
5. overall length of the extended FLC at each receiving station (total of 7 nos.) shall measure not less than 1,000 mm from the edge of the Pharmacy issuing counter top; and
6. section(s) of FLC / extended FLC shall facilitate transfer, installation and maintenance of FLC to suit the spacing of non-removable intermediate supports for counter benches (counter benches and immediate supports supplied and installed by D&B Contractor).

Please refer to **Annex A - Chinese Medicine Pharmacy (CMPh) Floor Plan** for details; and fill in the required information in **Part 3a (Schedule A) - Schematic Section of Floor Conveyor (FLC) under Issuing Counters.** |  |  |
|  | The FLC and extended FLC shall be designed in modular type to enable quick and efficient modular replacement to minimize assemble time and resume daily operation as soon as possible. |  |  |
|  | The FLC shall be driven by power electronics and variable speed motors.  |  |  |
|  | The width and height of the FLC and extended FLC shall be fitted for safe transfer of tote sized 300 mm (L) x 300 mm (W) x 200 mm (H). |  |  |
|  | The design of FLC and extended FLC shall be suitably reinforced to withstand the static and dynamic loading, vibration and movement of the totes. The structure of FLC and extended FLC shall be isolated from the vibration source from any moving components throughout all transportation routes of FLC and extended FLC. The base frame, size and type of material of FLC and extended FLC shall be made of stainless-steel grade 304 or materials with adequate rigidity and durable structure approved by the Government Representative. |  |  |
|  | The Supplier shall design the safety protective measures of FLC in compliance with the Factories and Industrial Undertakings (Guarding and Operation of Machinery) Regulations. The safety protective measures shall include, but not limited to, safety guards, fences, nets, barriers and the like, at appropriate locations to enhance the safety of CMHHK Operator when the System is in operation and the safety of maintenance personnel during maintenance.  |  |  |
|  | The safety protective measures, including but not limited to, side (facing the leg room and under Pharmacy issuing counter tables) and under guards (or equivalent) and other exposed metal parts of the FLC shall be made of stainless-steel grade 304 or materials with adequate rigidity and durable structure approved by the Government Representative. The safety guarding shall be securely fastened and access to all moving components shall be given to authorized person. The mounting of guarding shall be designed for practical installation and dismantling to facilitate maintenance with consideration of particular site condition. |  |  |
|  | All moving components shall be fenced off and safeguarded with protective physical barriers to prevent external intrusion and falling of objects. The physical barriers shall be provided with clear visualization of totes operation on FLC and blend with the colour of the system subject to the approval of the Government Representative. |  |  |
|  | All non-metal FLC materials shall be fire retardant type and comply with ISO 340 or other equivalent standards. The Contactor shall provide all necessary information, including but not limited to, technical datasheet and certificate(s). |  |  |
|  | The material of the FLC shall be durable and designed to prevent jams during CMPACK transfer. |  |  |
|  | The FLC materials shall allow cleaning with cleaning agents included water/soap water/diluted alcohol. |  |  |
|  | **Functional Requirement** |  |
|  | The control of FLC shall properly fit into the work process of the CMPh operation sections along the transfer line to achieve stable and smooth transportation flow. (Please refer to **Annex B - Operation Details of Chinese Medicine Pharmacy (CMPh) Sections** for reference).  |  |  |
|  | The control of FLC shall integrate with LFTs and associated components and accessories to ensure the CMPACK could be offloaded to totes automatically and transferred to the designated issuing stations. |  |  |
|  | The offloading location of LFTs shall enable to detect, reject over-height and jammed CMPACK in totes and prior to transfer to issuing stations. The CMPTS shall warn the CMHHK Operator with visual and audible alarms  |  |  |
|  | **Performance Requirement** |  |
|  | The FLC shall be equipped with energy saving mode that can be switched automatically into the operating mode and into sleep mode during idle time. |  |  |
|  | The transfer speed of the FLC to designated locations shall be designed in accordance with the throughput of the system, that the FLC shall not be a bottleneck in the system. |  |  |
|  | The power sound level of the FLC shall not exceed 65 dBA. |  |  |
|  | The Supplier shall provide at least ONE (1) local operation panel for each section of FLC. The CMHHK Operator and maintenance personnel shall be able to perform manual operation of FLC and extended FLC through local panel; for fully control, monitor and diagnose malfunction; modify parameters of the FLC and extended FLC. |  |  |
|  | The Supplier shall provide at least ONE (1) Emergency Stop (E-Stop) button for each section of FLC and extended FLC at readily accessible level for CMHHK Operator and maintenance personnel to immediately stop the movement of the respective individual sections of FLC and extended FLC in case of need. E-stop buttons shall each have a large red mushroom head with protective cover to avoid unintentional contact and be suitably labelled in both English and Chinese.  |  |  |
|  | The Supplier shall provide extra Emergency Stop (E-Stop) button at readily accessible level and control point(s) to stop the FLC and extended FLC in emergency situation at locations, other than the work stations along the FLC and extended FLC as described in **Clause 8.20** of this Part.  |  |  |
|  | The indicator of emergency stop shall be installed at local operation panel for indicating the emergency stop is pressed and shall be reset by key switch with LED light indication type or other alternatives approved by the Government Representative. |  |  |
|  | Two alert indicators (e.g. with amber colour) with buzzers shall be installed at each section of FLC and extended FLC to alert CMHHK Operator when the FLC is moving and stopped. |  |  |
|  | The Supplier shall provide at minimum seven (7) sets of two-levels shelving for temporary holding of up to 3 totes per level (waiting for pick-up) above each of the extended FLC at the issuing counters (to support total 14 nos. of issuing counters). The shelving shall be made of stainless-steel grade 304 or materials with adequate rigidity, durable structure and finishing approved by the Government Representative. |  |  |
|  | **Totes Stacker and De-Stacker (TSDS)** |  |
|  | The Supplier shall design, supply and install **TWO (2) sets** of TSDS for the System at Zone II and provide details of TSDS specification with calculation proving the mechanism and capacity is sufficient to support the overall throughout requirement of the system. |  |  |
|  | The TSDS and the connecting components to FLC shall be designed with congestion control to minimize traffic jam and interruption the continuous operation of FLC. The TSDS shall be capable to manage the quantity of totes on FLC and extended FLC automatically to support the overall throughout requirement of the system. The TSDS shall:1. stack the empty totes returning and diverting from lower deck of FLC when the quantity of totes on FLC is busy and exceeded design range; and
2. de-stack and allocate totes back to lower deck of FLC when the quantity of totes on FLC is insufficient.
 |  |  |
|  | The installation of the TSDS shall comply with the following requirements:-1. footprint of the TSDS shall be 1,000mm (L) x 900mm (D) x 1,300mm (H) or smaller; and
2. the height level of TSDS shall match with the lower deck of the FLC.
 |  |  |
|  | The TSDS shall be designed and constructed in light, minimal footprint, robust, rust proof material and enclosed with protective physical barriers in transparent. |  |  |
|  | The design of the TSDS shall not be a bottleneck for the overall throughout requirement of the system. The maximum throughput of the TSDS shall be indicated. |  |  |
|  | **Totes manual entry station** |  |
|  | The Supplier shall design, supply and install **ONE (1) set** of totes manual entry station for the System at Zone II and provide details specification with calculation proving the mechanism and capacity is sufficient to support the overall throughout requirement of the system. |  |  |
|  | The totes manual entry station shall be designed with loading platform to automatic provide queue control of multiple manual in-feeding of totes into FLC. The manual in-feeding of totes shall integrate and minimize interruption to the operation of system. |  |  |
|  | The entry station shall be equipped with barcode scanners and able to detect and reject over-height and over-weight CMPACK. |  |  |
|  | The barcode of CMPACK in totes shall be scanned before CMPACK loaded manually at entry station onto the FLC. The CMPACK with unidentified barcode shall be rejected. |  |  |
|  | The totes manual entry station shall not block the main access path of staff members. |  |  |
|  | **Double-sided and single-sided bins storage bench** |  |
|  | Bins storage bench shall be designed with bins storage capacity for temporarily storage of CMPACK awaiting the arrival of additional packaging items to finalize the prescription order. The not yet completed CMPACK in bins shall be manually transferred from 3DS to the bench for manual handling of re-dispatching.  |  |  |
|  | Bins storage bench shall be designed to provide bins storage with location tracking of barcode labelled CMPACK / totes and visual indicators, such as PTL features, to indicate the location of dedicated / specific bin(s). |  |  |
|  | The Supplier shall design, supply and install total storage capacities (at minimum) as below:1. **TWO (2) sets** of double-sided (DS) bins storage bench with associated bins. Each of double-sided bins storage bench shall provide storage capacity of 9 bins (at minimum) per side, for total 18 bins (at minimum) per bins storage bench, which in total 36 bins (at minimum); and
2. **SIX (6) sets** of single-sided (SS) bins storage bench with associated bins. Each single-sided bins storage bench shall provide storage capacity of total 9 totes (at minimum), which in total 54 bins (at minimum).
 |  |  |
|  | The installation of the totes storage bench shall comply with the following requirements:-1. overall dimension of DS bins storage bench shall be within 1,000 mm (L) x 1,200 mm (W) x 950 mm (H) respectively; and
2. dimension of SS bins storage bench shall be within 1,000 mm (L) x 700 mm (W) x 950 mm (H) respectively.
 |  |  |
|  | The electrical outlets and network dataports (supplied and installed by D&B Contractor) will be located at ceiling level above bins storage benches. The Supplier shall supply and install the panel / hub housing the electrical outlets and network dataports outlets, and associated cable containment, base box and connection works from fuse connection unit (20A Double Pole / 13A Fuse Spur) to the work surface of bench provided by the Supplier. The supply, installation, laying and connection shall be carried out as follows:1. electrical cable by the Supplier;
2. network data cable by others (CMHHK IT Contractor)
 |  |  |
|  | The cable containments for electrical and networks cables shall be laid in different compartments. The enclosure of cable containments, base box and outlets shall comply with ArchSD GS and the finishing of outer parts of panel / hub / enclosure of cable containment shall be constructed in stainless-streel grade 316 mirror finish or blend with the colour of the System subject to the approval of the Government Representative. |  |  |
| 1.
 | **System Requirement – Chinese Medicine Package Transfer System (CMPTS)** |  |
|  | **General Requirement** |  |
|  | The Supplier shall provide a system, namely the “Chinese Medicine Package Transfer System (CMPTS)”, which comprises but not limited to computer equipment, control panels and Programmable Logic Controllers (PLC), to form an integrated system with database and application designed to manage, support and optimise the logistical flow and activity status of the connecting components of the System, and provide overall control and monitoring of the System in CMs transportation including but not limited to CMPACK and totes’ track-and-trace. |  |  |
|  | The CMPTS shall be an integrated system with data server to perform data transaction, and control server to control and monitoring activities of the System and include but not limited to the following key functions:1. The HIS (PMS) shall provide relevant information for the CMs transfer including, but not limited to
2. Job transaction / prescription no.;
3. Weight / size;
4. Inbound / outbound locations; and
5. Status CMPACK (e.g. completed, partially completed).
6. The CMPTS is the platform to receive CMHHK Operator’s command and control of the field equipment under the System (i.e. AGVs, OHP, LFTs, 3DS, FLC and totes manual entry station) to execute activities to achieve the required operations;
7. The CMPTS shall enable CMHHK Operator to manage, control, command and monitor the activities for all the equipment items of the System. The CMPTS shall schedule, execute and command the equipment items for all inbound, transportation and outbound missions;
8. The CMPTS shall provide real-time location tracking, actions, mission and status of all AGVs and the other equipment items which shall be controlled, monitored by CMHHK Operator via workstation;
9. The real time data of all AGVs shall be updated with an interval of less than one second. The real time data of the AGVs shall include but not limited to:
10. Existing Position
11. Existing Mission
12. Operation Status (e.g. battery level, charging and networks status and any errors)
13. Estimated remaining battery levels
14. Next mission and queued missions
15. The CMPTS shall provide AGVs’ traffic management, path planning optimization for shortest and best route, fleet management, standby and parking management, runtime schedule management and battery charging strategy;
16. The CMPTS shall manage not less than 2 standby and parking AGVs at each loading area of LFTs during idle status;
17. The CMPTS shall provide the real-time location tracking of specific CMPACK on AGVs and totes on FLC / extended FLC;
18. The CMPTS shall notify the CMHHK Operator when the dispatching capacity is reaching the maximum; any CMPACK already loaded to AGVs shall continue to circulate and queue automatically at designated LFT offloading points;
19. The CMPTS shall be able to warn CMHHK Operator and reject unidentified object, over-height, over-weight and jammed CMPACK. Visual and/or audible alarms shall be activated for the warning;
20. The CMPTS shall be programmable to operate with the contingency plan for retrieval and offload of all CMPACK from the System; and
 |  |  |
|  | The CMPTS shall be capable to interface and communicate with HIS (PMS), and shall receive command from CMHHK Operators, determine logistic operation flow, provide searching, records log and reporting, and command the System and its connecting components and accessories to perform the required operations. |  |  |
|  | The CMPTS shall interface with HIS (PMS) via a CMHHK integration platform with support to industry standard protocols including but not limited to:* 1. Application Programming Interface (API)
	2. Simple Object Access Protocol (SOAP)
	3. Representational State Transfer (REST)
	4. Web Services Description Language (WSDL)
	5. Extensible Markup Language (XML)
 |  |  |
|  | All inbound, transportation, retrieve and outbound missions shall be managed by the CMPTS. The CMHHK Operator shall operate the CMPTS via the control panel or the Operation Workstations. |  |  |
|  | The Operation Workstations shall be configured with CMPTS and transmit / receive the command / status to and from the CMPTS server, or they can communicate with the server with web-based applications. The Supplier shall propose the design between the CMPTS Server and Operation Workstations for the Government Representative’s approval. |  |  |
|  | The Supplier shall provide CMPTS Servers with all necessary software and hardware (including but not limited to computer, scanner, and handheld device) and the CMPTS shall employ multi-user operating system at both server and workstation level. |  |  |
|  | The servers of CMPTS, including the data server and control server shall be supplied and installed by the Supplier. The data server shall be hosted in the equipment racks in both Primary Data Centre (“PDC”) and Secondary Data Centre (“SDC”) of the CMHHK. The control server shall be hosted in PDC and SDC of the CMHHK or in the equipment racks (supplied and installed by the Supplier) inside CMPh. The data and control servers shall each be configured with one server for duty and the other server for hot-standby purpose. If both data server and control server are hosted within PDC and SDC of the CMHHK, they may run on the same or separate physical hardware in each data centre. |  |  |
|  | Data synchronisation shall be conducted between the server(s) for duty and the other server(s) for hot-standby purpose. |  |  |
|  | The server(s) of CMPTS shall be configured with redundancy design between the server(s) for duty and the other server(s) for hot-standby purpose. The capacity of the server(s) for either duty or hot-standby shall be able to support all business operation needs. The failure of either server(s) shall not lead to interruption of service for over thirty (30) minutes and loss of stored information. |  |  |
|  | The server(s) of CMPTS outside PDC or SDC shall be equipped with Uninterruptible Power Supply (UPS) for not less than fifteen (15) minutes to continue operation and retrieve CMPACK from the System without any disturbance during power supply failure before supply restoration.  |  |  |
|  | The servers of CMPTS shall be designed with automatic failover capability. If the duty server fails, the application shall continue to run on the hot-standby server automatically without any interruption or data loss. The hot-standby server shall be a physical server with operation system. |  |  |
|  | The CMPTS shall perform the process including but not limited to the following:-1. Receive signal and dispatching commands of CMHHK Operators from the Operation Workstation;
2. Receive dispatching commands from HIS (PMS) for CMPACK movements;
3. Initialize all activities of the System such as inbound, transportation, retrieval, outbound status etc.; and update the HIS (PMS) with the above information including CMPACK and totes movement;
4. Receive, record and store the dispatching commands of the scanned barcode information on every CMPACK and tote in the CMPTS server;
5. Signal to transfer the barcoded CMPACK and totes according to the dispatching commands to the designated location (such as designated loading points);
6. Determine the necessity to withhold the loading of CMPACK onto AGVs via LFTs or automatic queue control the offloading of CMPACK from AGVs to designated locations via LFT,, when heavy traffic at certain points are anticipated; and send signal to initialize re-circulation / re-dispatching of these CMPACK afterwards;
7. Generate packing slips / reports for the CMHHK Operator’s verifying on request;
8. In any circumstance, information of unfinished / interrupted task shall be stored in the system; and user shall be given the option to discard all the commands without execution or continue to proceed with tasks / commands from the point of interruption as soon as the CMPTS resumes normal;
9. Provide the graphical user interface in the Operation Workstations for CMHHK Operators to input commands and data and retrieve the data stored in the server; and
10. Generate reports in the graphical user interface from the System.
 |  |  |
|  | The Supplier shall provide, design, supply and install the CMPTS and all associated peripherals equipment. The CMPTS shall consist of the following equipment, including but not limited to: 1. Operation Workstations;
2. CMPTS Servers;
3. Software of CMPTS (for Workstations and Servers), catalogue, and architecture design diagram;
4. Controls and overview status of equipment items (e.g. AGVs, LFTs, 3DS, FLC, etc); and
5. Other necessary equipment and components to complete the required function for CMPTS.

(Please provide details in **Part 3a – Particulars of Goods Schedule (Schedule C)**) |  |  |
|  | The Supplier shall work with the contractor of IT infrastructure to ensure the proper hosting, installation and configuration of the system in accordance with the requirements described in **Annex C –** **Details of the Government Supplied Hardware and Software in CMHHK**.  |  |  |
|  | If there are any operational reasons that the system resided within the CMHHK premises needs to connect to the CMHHK network for information exchange with the HIS and any subsystems, the Supplier shall be responsible for implementing such network connection and ensure that all the requirements described in **Annex D –** **Furniture and Equipment (F&E) Security Guidelines for CMHHK** are strictly adhered to. |  |  |
|  | All software, OS, firmware and apps implemented by the Supplier shall be with one-off-full-license without any subscription fee. The software, OS, firmware and apps shall be capable to fulfil all operational and functional requirement without upgrade/patch, or the upgrade/patch shall be free of charge. |  |  |
|  | Languages of all display / working station information for all equipment and systems shall be English and Traditional Chinese. |  |  |
|  | All proposed computer equipment and products including but not limited to server. network products (including network switches, routers, etc.), LCD & LED monitor, computers (including desktop, notebook, tablet), scanner etc shall meet the essential requirements on green features as stipulated in the Government website at the following address: https://www.epd.gov.hk/epd/english/how\_help/green\_procure/green\_procure.html |  |  |
|  | **Software Requirement** |  |  |
|  | The CMPTS Software for the System shall be an integrated system software to manage, command and monitor the activities of the components of the System, and manage the transportation flow of the CMPACK and totes. The CMPTS shall manage the missions initialized by the CMHHK Operator then arrange and command the System to control the AGVs, LFTs, 3DS, FLC, TSDS and the associated components to execute the mission. |  |  |
|  | The Supplier shall provide graphical user interface (GUI) for operation of the servers, workstations and control panels. The GUI shall incorporate direct manipulation icon, menu, and windows / web-based features. The CMHHK Operator shall interact with the servers and workstations using a standard keyboard and mouse or a touch screen. GUI of the CMPTS user interface shall be in English and Traditional Chinese. |  |  |
|  | The CMHHK Operator shall operate the System via the CMPTS workstations at all designated workstations and assembly stations. |  |  |
|  | The operation instructions the System shall be programmed with the following filters, including but not limited to:-1. Job transaction / prescription no.;
2. Weight / size;
3. Inbound/outbound date/time; and
4. Status e.g. item pending for assembly
 |  |  |
|  | The inbound / outbound time of a certain CMPACK and totes shall be captured by the CMPTS via but not limited to the following methods:1. Scanning of information printed on the barcode on the tote; and
2. Manual input
 |  |  |
|  | The logistic activities data shall include the information of each CMPACK and tote transferred by the System and shall be stored in the CMPTS for not less than two years, for later retrieval and analysis. The information shall include but not limited to:1. Job transaction / prescription no.
2. Weight / size
3. Inbound / outbound date / time
4. Status e.g. pending item for assembly

The Supplier shall ensure the storage capacity of the servers are capable to store the required data and logistic activities. |  |  |
|  | The information stored at the CMPTS shall be organized by the CMPTS and be retrieved via the GUI and exported in .xlsx or .csv (comma-separated values) format.The organized operation data in daily / monthly / annually basis, shall include but not limited to:1. Total received CMPACK and tote\*
2. Quantity of Inbound CMPACK and tote \* processed by workstations
3. Quantity of Outbound CMPACK and tote \* processed by workstations
4. Quantity of scanned CMPACK and tote \* bypass the System
5. Utilization rate of the System
6. Rejected CMPACK and tote \*
7. Average, maximum and minimum time between inbound and outbound of CMPACK and tote \*

*\* CMPACK and tote (by job type and CM type)*The information shall be programmed with the following filters, including but not limited to:1. A certain selected starting and ending period
2. Single or multiple selected transaction / prescription / job
3. Single or multiple selected CM types

The GUI shall output the selected data in numerical, pie chart and bar chart format. |  |  |
|  | The CMPTS shall be equipped with Reports function which shall be designed to allow the CMHHK Operator to export, review and analysis the operation history data of the System. The Reports function shall include but not limited to the following elements or by user requisition:-1. Transportation data;
2. Search Engine;
3. Equipment Fault Data;
4. Equipment Maintenance Data; and
5. Workflow Management Data
 |  |  |
|  | The Reports function shall be designed to allow the CMHHK Operator to access and interpret different types of report. The types of report shall include but not limited to the following:1. System Operation Report (Daily / Monthly / Annual)
2. System Failure Rate Report

The Reports function shall be designed to allow the CMHHK Operator to search, access and generate the reports as stated. The search engine shall be designed to allow multiple filtering functions. The filters of the search engine shall include but not limited to the following:1. Day
2. Month
3. Year

The data in the report shall be well-organized and included in a table. The data in the report shall include but not limited to the following:1. Details of each transfer (e.g. date, time, workstations, etc.)
2. Total quantity of CMPACK and totes processed
3. Quantity / weight / size of the totes processed

System failure rate during specific time period (including time and date of failure, total time and frequency of failure and uptime etc.) |  |  |
|  | The CMPTS shall employ a recognised and supported multi-tasking / multi-user operating system, appropriate for use in a real-time application, at both the workstation and the server level. Note that the version of the operating system provided shall be a version supported by the manufacturer at the time of installation and performance of the Acceptance Tests. The selection of the operating system shall be subject to the Government Representative’s approval. |  |  |
|  | The CMPTS shall provide secure control of access to system functions. The security method shall include user identification and password authentication to prevent access to system operation and data by unauthorized users. The access control security shall have the capability for multiple levels including as a minimum:1. System Administrator - full system access and capability to add and delete users, view all logs, perform all functions supported by the software, and capability to limit access and control functions of selected CMHHK Operator;
2. CMHHK Operator with control - system access based on supervisor selection to view data and perform control operations but cannot add / delete users;
3. CMHHK Operator view only - may view data based on supervisor selection, and reports but cannot perform control functions; and
4. The access control function shall be configurable to enable user profiles to be adjusted.
 |  |  |
|  | If there is no CMHHK Operator activity for a configurable period of time, the CMPTS shall automatically log the CMHHK Operator off, following display of a confirmation dialog box. The system shall continue to perform its transaction logging, data collection and fully automated functions regardless of whether an CMHHK Operator is logged in. |  |  |
|  | The CMPTS shall provide non-volatile storage for event logs, alarm records and commands/instructions from the CMHHK Operators for future retrieval, exportation and printout.The format of the records shall be editable by the commercial-off-the-shelf word or spreadsheet software applications. |  |  |
|  | The CMPTS shall be capable of processing batch of data messages from PMS via a provided integration platform. |  |  |
|  | The CMPTS shall be capable of processing data messages from HIS (PMS) and response within 5 seconds for 95% of data exchange. |  |  |
|  | The CMPTS shall support the Lightweight Directory Access Protocol (LDAP) integration for users, password management with Active Directory for Windows 2016 or above. |  |  |
|  | Software-based simulator of CMPTS should be provided by the respective Supplier to facilitate the initial and on-going integration test of the interface between HIS (PMS) before and after commissioning. |  |  |
|  | **Hardware Requirement – CMPTS Server** |  |
|  | The CMPTS software shall be installed in x86-64bit servers. The servers shall have the following minimum hardware configuration:- 1. Two rack mounted enterprise grade server computer configured in Active/Passive or VM, with latest series of 8C/16T Intel Xeon or AMD EPYC processor or better;
2. 64GB ECC DDR4 RAM;
3. built-in Gigabit Ethernet adaptors;
4. 960GB SSD, Life span 600TBW and MTBF>1.6Million hours or better, configured in RAID 1;
5. 12TB SSD with life span 600TBW or Harddisk with at least 7200 rpm; with MTBF>1.6Million hours or better and configured in RAID 5;
6. At least 3 no. of USB 3.0 ports;
7. 19” rack mounted 1080p LCD monitor, keyboard, point device; and
8. Windows Server 2019 Standard (English) or newer version, with at least 10 user CAL (client access licence) and at least 10 device client access licence, or other OS subject to the Government Representative’s approval.
 |  |  |
|  | The Supplier shall ensure the processor and memory of the server is capable to process the logistic activities and commands and to store the information of the respective storage facilities. |  |  |
|  | The server of CMPTS shall be configured with site redundancy design across PDC and SDC. The failure of either Active or Passive server shall not lead to interruption of service and stored information. |  |  |
|  | **Hardware Requirement – Workstation** |  |
|  | The Supplier shall provide one (1) Operation Workstation (installed at convenient and easy-to-access location(s) / checkpoint(s) of the CMPh) to allow the CMHHK Operator to configure, edit, verify and monitor the data of the System on day-to-day operations.  |  |  |
|  | The data exchange workstations shall be connected to CMPTS and HIS (PMS) and serve as the data exchange facility. |  |  |
| * 1.
 | Each Workstation shall be based on x86-64 PC with the following minimum requirement:- 1. All-in-one computer that integrates with the monitor;
2. Latest Intel core i7 or AMD Ryzen 7 processor, 8Cores 16 Thread or better;
3. 32GB DDR4 RAM or DDR5 RAM better;
4. Intel Iris Xe or AMD Vega graphic or better;
5. Enterprise Graded 512GB SSD with MTBF >1,500,000 hours, configured in RAID 1;
6. Integrated 1000Base Ethernet Port;
7. 802.11ax Wi-Fi 6 connection;
8. At least two USB 3.0 ports;
9. 21 inch display, 1920 x 1080, LED backlight;
10. Latest version of Microsoft Windows;
11. Latest version of Microsoft Office (Word, Excel and PowerPoint), one off full license version; and
12. USB Mouse and Keyboard.
 |  |  |
|  | **Barcode Devices** |  |
|  | The Supplier shall provide barcode devices at the following stations, including but not limited to:-1. Dispatching stations; and
2. Totes manual entry station.
 |  |  |
|  | The Supplier shall provide appropriate numbers of barcode devices to read the information from the barcode on the CMPACK, bins and totes. The barcode devices shall be provided with redundancy. If one device fails at one checkpoint, the code shall be read by the redundant device. |  |  |
|  | The information of CMPACK (such as prescription number, job transaction, weight/size) carried in the bins / totes shall be associated with the barcode code identity number of the totes through HIS (PMS) and CMPTS interface data exchange.  |  |  |
|  | The barcode devices shall support but not limited to the followings functions:1. scan / read the identity number of the CMPACK / bins / totes;
2. associate and synchronize the CMPACK and tote information with the identity number of the CMPACK and tote to facilitate product tracking and tracing in the process; and
3. identify the identity number of bins on 3DS for the relocation of the totes from 3DS to any double-sided and single-sided bins storage bench when totes on 3DS are full.
 |  |  |
|  | The information from the barcode on the CMPACK, bins and totes shall contain the required logistic activities data to complete the transfer. |  |  |
|  | The Supplier shall provide 1. at least ONE (1) set of barcode scanner at each dispatching stations at LFTs (i.e. 10 sets in total);
2. at least ONE (1) set of barcode scanner at totes manual entry station; and
3. at least ONE (1) set of barcode scanner each at double-sided and single-sided bins storage bench.
 |  |  |
|  | The barcode code scanner shall be optic scanner and capable to read and decode the data in the following formats and input to the workstation of the System:-1. 1D bar codes formats, including but not limited to:
	1. UPC (Universal Product Code)
	2. UPN (Universal Product Number)
	3. EAN (European Article Number)
	4. UCC/EAN-128
	5. Code 39
	6. Code 128 (ISO/IEC 15417:2007)
	7. ITF (Interleaved 2 of 5)
	8. HIBC (Health Industry Bar Code)
2. 2D bar codes formats, including but not limited to:
	1. PDF417 (ISO/IEC 15438)
	2. QR Code (ISO/IEC 18004)
	3. Aztec (ISO/IEC 24778)
	4. Data Matrix (ISO/IEC 16022)
 |  |  |
|  | The barcode scanner shall be operated in online-mode and update records in real-time unless connection to server is not available.  |  |  |
| 1.
 | **Totes** |  |
|  | The Supplier shall provide **300 numbers of totes** with sized 300 mm (L) x 300 mm (W) x 200 mm (H). The Supplier shall provide details of totes’ specification, in the Design Report as stipulated in **Clause 211** of this Part, to cater for overall throughput of at least 300 totes per hour. |  |  |
|  | Each tote shall be capable to carry up to weight and size of CMPACK (as stipulated in **Clause 4.7** of this Part) without deformation. |  |  |
|  | Each tote shall have a designated spot for affixing unique barcode label for tote identification.  |  |  |
|  | The material of the totes shall be fire-retardant type and comply with UL94 V0 or equivalent standard. The thickness of the material shall not less than 2 mm and with adequate rigidity and durable structure approved by the Government Representative. The Supplier shall provide all necessary information, including but not limited to, technical datasheet and certificate(s). |  |  |
| * 1.
 | The design of the totes shall be lightweight, durable and reusable; and the bottom surface shall be as flat as possible. |  |  |
|  | The design of the totes shall be featured with interlocking design elements or stacking rims that allow them to be stacked safely and securely during storage. |  |  |
|  | The Supplier shall provide calculation to prove the dimensions and weight holding capacity of the totes could be supported by the System during the transferring process. |  |  |
|  | The CMPTS shall associate the required logistic activities information of the CMPACK in the tote with the identity number on the barcode code of the tote to facilitate track and trace of the transfer. |  |  |
|  | The totes shall be safeguarded with mechanism to prevent from flipping-over during transfer. |  |  |
|  | **Closed Circuit Television (CCTV) system for surveillance of CMPACK on AGVs at OHPs** |  |
|  | The Supplier shall design, supply and install a CCTV system for full coverage at OHP, including but not limited to, the following equipment, accessories, cables and software1. Fixed cameras;
2. POE switches;
3. Access switches;
4. Network Video Recorders;
5. Uninterrupted Power Supply (UPS);
6. Server racks;
7. Monitors and control keyboards;
8. Lightings;
9. All MCCBs, mounting brackets, mounting structures, power cables, data cables, connectors, adaptors, cable containments, installation materials and associated accessories for complete and proper function of the CCTV system; and
10. All necessary firmware, software, licenses and interfaces required shall be offered on permanent basis in compliance with the requirements. Any trial version or time-limited version is not accepted.
 |  |  |
|  | The CCTV system shall adjust and optimise field of view, shutter time, frame rate, resolution, contrast, brightness, white balance, day threshold and, sensitivity of the fixed cameras, such that clear and stable video images on intended coverage areas are provided for real-time surveillance and recording at all times.. |  |  |
|  | The CCTV system shall store video at 1080p resolution (1920 x 1,080 pixels) at 25 frames per second or better from all fixed cameras. The video management software shall manage all video recording, IP video streaming, video decoding, video record retrieval, data encryption, data security and configuration. Video recordings exceeding the recording cycle shall be automatically deleted based on first-in-first-out basis. |  |  |
|  | The CCTV system shall enable CMHHK Operator access through display monitor of local Operation Workstation(s) to view live camera images and playback of the recorded video images. |  |  |
| **(C)** | **Equipment Interface / Testing and Commissioning** |  |
|  | **Equipment Interface** |  |  |
|  | The Supplier is responsible for performing all the interface tasks including identification, design and implementation with the Contract. In the circumstances, the Supplier shall be responsible to communicate and/or coordinate with the Interfacing Party described in **Clause 1.29** of this Part, if applicable. |  |  |
|  | The Supplier shall interface the CMPTS with the HIS (PMS) of Party A1 following the details described in **Clause 12** of this Part. |  |  |
|  | The Supplier shall conduct coordination and interface works with the Party A2 for the building services provisions and building / structural provisions to the System and the associated components in the Contract. |  |  |
|  | The Supplier shall provide the equipment layout, the proposed internal partition wall arrangement of clean zone and dirty zone, etc and the information of building services requirements and interfacing locations to the Interfacing Party to manage the interface design, management and implementation works. |  |  |
|  | The Supplier shall be responsible to develop, update and coordinate with the support from the Interfacing Party for the interface management plan and develop the detailed interface documents after the commencement of the Works and throughout the execution of the Works, to ensure that:-1. All interfacing issues are required for complete system function, are satisfactorily completed;
2. All design, supply, installation and testing of the System are fully coordinated; and
3. All equipment supplied under the Contract to perform the System function are capable to work, whilst meeting the requirements of the respective Specification.
 |  |  |
|  | The roles and responsibilities of the Supplier shall be as follows:-1. To identify and establish all the necessary interfaces and their requirements jointly and mutually with the Interfacing Party;
2. To provide the necessary information, material, technical expertise and manpower required for the interface design and interface testing works;
3. To provide all required information and Building Services requirements to the Party A2, to perform the interfacing design, management and implementation works;
4. To plan, coordinate and finalize the interfacing design with the Interfacing Party as well as with any third party or statutory authorities that are necessary in the course of interface design development;
5. To plan, co-ordinate, organize and execute all interface tests during off-site and on-site environment;
6. To produce jointly with the Interfacing Party all the required interface management plan and detailed interface documents which shall include detailed interface programme, and relevant interface test documents and submit to the Government Representative for acceptance;
7. To appoint a competent and experienced person who will be the single point of contact on interface design and management with the Interfacing Party and the Government Representative; and
8. To prepare and submit all interface design meeting minutes, and monthly interface design progress report to the Government Representative for information.
 |  |  |
|  | The Party A2 shall provide cable containment with cables from the power supply unit to respective System / equipment; and power supply sockets at the nearest column / wall in the vicinity of respective System / equipment. The Supplier of shall be responsible for the final connection to the System / equipment.  |  |  |
|  | The Party A2 shall provide network for the System / equipment. The Supplier shall be responsible for the final connection to the System / equipment.  |  |  |
| * 1.
 | The Party A2 shall install the building fire services provisions. The Supplier shall coordinate with Party A2 in timely manner and arrange sufficient space and support for Party A2 to install fire services provision to comply with the statutory requirements. If the Supplier fails to align with Party A2’s construction programme for the installation of fire services provisions, the Supplier shall be responsible to rectify the fire services provisions so that the CMPh shall comply with the statutory requirements on fire services provisions. |  |  |
|  | Electrical and Mechanical Services Interface Unless otherwise specified, the electrical and mechanical services connected with the System shall be provided by Party A2. The Supplier shall be required to take responsibility for the liaison and coordination with Party A2 for the site installation and coordination work to ensure satisfactory complete implementation of all necessary Electrical and Mechanical Services for the System and the associated components required in this Contract. The electrical and mechanical services for the System include but not limited to power sockets, dataports, trunking and conduits etc.If the Supplier fails to liaise and co-ordinate with Party A2 for the electrical and mechanical services installation, subsequently resulting in the electrical and mechanical services installed by Party A2 requiring rectification attributed to the Supplier’s afore-mentioned fault, then the Supplier, at no additional cost and time, shall be responsible to rectify the electrical and mechanical services installation to fulfil the requirement of CMPh. |  |  |
|  | Lighting InterfaceThe lighting system shall be provided by Party A2. However, the Supplier shall provide to Party A2 the lighting requirement for CMPh operation and shall ensure that, subsequent to the lighting system supplied and installed by Party A2, the lighting system provides sufficient lighting intensity; particularly such lighting intensity shall be maintained after installing the ceiling mounted equipment has been installed in place.If the Supplier fails to align with Party A2’s construction programme and provide Party A2’s required information for the installation of lighting system, subsequently resulting in the lighting system installed by Party A2 requiring rectification attributed to the Supplier’s afore-mentioned fault, then the Supplier, at no additional cost and time, shall be responsible to rectify the lighting system to fulfil the requirement of CMPh operation. |  |  |
|  | Fire Services InterfaceAll equipment implemented by the Supplier shall be complied with all FSD’s requirement. The fire service provision shall be provided by the D&B Contractor.The Supplier shall coordinate with the Party A2 to arrange sufficient space and support for the fire service provision such as in-rack/ fire sprinklers and the pipe works, etc. The Supplier shall make good of the Fire Service Installation (“FSI”) if the equipment affect the FSI by the D&B Contractor. The Supplier shall be responsible for the cost incurred and submission to the government so that the area(s) remain compliance with relevant fire services statutory requirements. |  |  |
|  | Building and Structural Provision Interface 1. The building and structural provision such as sunken floor, structural beams, concrete plinths, reinforced floor slab, floor and wall opening, façade opening, etc. shall be provided by the D&B Contractor;
2. The Supplier shall coordinate with Party A2 for the requirement of the supporting structure and the space requirement for the installation and operation of the System; and
3. The Supplier shall provide, for design coordination with Party A2 on all ceiling mounted installation building / structural provisions, the arrangements of the supporting systems and structural calculation which are certified by RSE for the System including but not limited to OHP and maintenance platform.
 |  |  |
|  | The Supplier shall be required to coordinate with Party A2 for the exact details of building and structural provisions including cabling, wiring accessories and cable containment system extending from connection terminal provided by the D&B Contractor.  |  |  |
|  | The Supplier shall provide all conduit systems for final cable connections of the system interfaces, the works shall include all ground continuity connection works between metal trunking and the conduit systems.  |  |  |
|  | **Testing and Commissioning** |  |  |
|  | The Supplier shall meet the testing and commissioning requirements of the relevant standards referenced in the specification including but not limited to as follows:1. “General Specification for Civil Engineering Works”, Section 13 – Work for Electrical and Mechanical Installations issued by Civil Engineering and Development Department of The Government of the Hong Kong Special Administration Region.
2. “Testing and Commissioning Procedure for Electrical Installation in Government Buildings of The Hong Kong Special Administrative Region”, issued by the Building Services Branch, ArchSD (2022 Edition)
 |  |  |
|  | Each Subset, Sub-system and System shall be respectively be subject to all of the following works tests:-1. Factory Acceptance Tests (FAT);
2. Site Acceptance Test (SAT); and
3. User Acceptance Test (UAT).
 |  |  |
|  | Software-based simulator of CMPTS should be provided to facilitate the initial and on-going integration test of the interface between HIS (PMS) and CMPTS before and after commissioning. |  |  |
| **(E)** | **Training** |  |
|  | **General Requirements** |  |  |
|  | The Supplier shall provide technical support personnel(s) during the nursing period of not less than **TWO (2) weeks** onsite from the start of Warranty Period, within the normal business hours of CMPh to provide advice, immediate and hands on support to the Government Representative and the CMHHK Operator, in relation to the operation, defect trouble shooting and rectification. The technical support personnel(s) shall be trained and qualified by manufacturer with practical experience in installation, servicing and maintenance of the System. |  |  |
|  | The Supplier shall provide comprehensive operational and technical training to the System administration staff, operational staff and end-users to ensure that the operations personnel achieve the necessary levels of proficiency to manage and operate the System. |  |  |
|  | CMHHK Operator’s representatives shall be nominated to appropriate training sessions. The Supplier shall ‘train-the-trainer’ on all system functions **TWO (2) months** before system activation and shall allow sufficient time for other training to be performed by the CMHHK Operator’s trainer before the system activation. |  |  |
|  | The Supplier shall customize his training provisions and facilities, including training materials, classroom training, computer-based training software packages and/or video-based self-study packages, for the CMPh. The Supplier shall be responsible for the on-going support, maintenance, enhancement and updates to the training materials for the whole service life. |  |  |
|  | All of the training sessions shall be conducted at venues in Hong Kong. |  |  |
|  | The training documentation shall be submitted to the Government Representative for approval at least **six (6)** weeks before commencement of the training. It may be based on the proprietary maintenance or operation manuals. The Supplier shall ensure that the training documentation is prepared in an orderly manner, incorporating introductory manuscripts which correlate to the proprietary maintenance or operational details. Such training documentation may be incorporated into the maintenance and operation manuals or instructions as supplementary information. The Supplier shall ensure consistency between the training material and the relevant maintenance and operation manual. |  |  |
|  | The Supplier shall agree to give the exclusive rights to the Government and the CMHHK Operator to copy any training documentation and materials for in-house training purposes without any prior permission or cost. |  |  |
|  | All of the above training requirements and courses shall be conducted in English and/or Cantonese. |  |  |
| **(F)** | **Documentation Requirement Upon Contract Award** |  |
|  | For each item of equipment offered, the Supplier shall supply with the tender full and complete technical information in English sufficiently detailed to enable a technical appraisal of the equipment. |  |  |
|  | Drawings, diagrams, sketches and patching records related to the overall project shall be submitted by the Supplier. Patching records showing the patch panel port ID and the extension number shall be submitted. All of these records shall relate to the installations under this Procurement Contract and Implementation Plan; those by other contractors. Standards shall comply with **BS 8888** and **BS EN ISO 5457** or their equivalent and are to include drawing numbers and a means of recording amendments. |  |  |
|  | The work programme shall comprise all the construction-related activities using the critical path method (CPM). The programme shall provide sufficient detail andclarity to reflect the intricacies and interdependencies of activities so that the Supplier can plan, programme, monitor, control and report on the progress of his work. In addition, it shall provide supervising officer and the CMHHK Operator a tool to monitor and follow the progress for all phases of the Works.  |  |  |
| 1.
 | The Design Report shall cover but not limited to the following contents:-1. design criteria and approach;
2. design calculation;
3. system description;
4. system schematics;
5. equipment schedule;
6. equipment layout;
7. design layout and equipment installation of floor plan (including space requirement for installation, operation and maintenance) ;
8. layout plan of connection point of building services provision;
9. independent risk assessment on mechanical safety;
10. architecture of design diagram of CMPTS;
11. operation time Gantt chart and production capacity;
12. foreseeable fault and fault handling strategy;
13. totes’ specification;
14. list of spare parts and local storage;
15. contingency plan on system breakdown over 4 hours;
16. operation and maintenance plan; and
17. catalogues of equipment
 |  |  |
|  | The Supplier shall supply enough information on software documentation to ensure the operation and maintenance of the System and the sub-systems concerned. The provided information shall conform to the guidelines given in BS 7649 or its equivalent. |  |  |
|  | The O&M manuals shall contain at least the following information documented with individual sections for different services and fully indexed for ease of reference:1. Description of System concepts and configuration, illustrated with block and schematic diagrams down to modular level;
2. Operating instructions (unless supplied separately) with detailed explanations of proper system start-up and shut-down procedures;
3. Individual equipment specifications and system interface parameters;
4. Maintenance checklist and schedules (unless supplied separately);
5. Safety procedures;
6. Detailed drawings showing electronic components / mechanical device identifications and layouts;
7. Fault diagnosis charts with detailed explanation of how the anomalies such as system malfunction and power failure should be handled and rectified / repaired;
8. As-built documents / records and drawings;
9. Detailed spare parts lists (unless supplied separately); and
10. Software documentation

If any of the above is supplied separately from the O&M manuals, reference shall be made as to where it is provided / located. |  |  |
|  | The Supplier shall provide full documentation of the software supplied, including but not limited to the following:-1. Version number;
2. Flowchart and source codes (for self-developed software, scripts, etc.);
3. Hardware and software platform requirements for the software;
4. Software installation files stored in commonly used storage medium, such as USB storage device, CD-ROM, DVD-ROM, etc.;
5. Licence of the software (if applicable);
6. Installation and configuration procedures;
7. List of parameters, configurations, and settings with description;
8. Routine maintenance procedures; and
9. System software and system backup and restoration procedures.
 |  |  |
|  | The Supplier shall submit at least three (3) sets of printed copies of the operation and maintenance (“O&M”) manuals in English and/or in Traditional Chinese as directed by the Government within two weeks after completion of the User Acceptance Test. The Supplier shall submit the documentation and AutoCAD drawings in form of softcopy, such as USB storage device, CD/DVD and etc. |  |  |
|  | The Supplier shall provide all necessary information, including all technical information, special toolkits, access codes, passwords, software keys, hardware keys and associated accessories, which are necessary for servicing, maintenance, fault diagnosis, trouble shooting and quality assurance of the System. The information shall be provided in O&M manual; otherwise it shall be provided to the Government within one month after commencement of the Warranty Period. |  |  |
|  | Fully illustrated spare part manuals shall be provided for easy control of component spare parts and general descriptions other than factory assigned part numbers.  |  |  |
|  | Summary of documents for submission shall include, but not limit to, the following documents:-1. System Design and Configuration Proposal;
	1. Equipment Layout Plan;
	2. Various System Design Plan;
	3. Cabling Design Plan;
	4. System Schematic Drawing;
	5. E&M Provision Requirement;
	6. Equipment Installation Detail Drawing;
	7. Equipment and Material Approval Submission;
	8. Workmanship Benchmark Sample Submission;
2. Work Plan
	1. Organization Chart, Worker list, Project team contact list
	2. Implementation Schedule for Installation;
	3. System Implementation Plan;
	4. Delivery Schedule of Major Equipment;
	5. Major Equipment List – Equipment and Cable;
	6. Equipment/Cable Installation Plan;
3. Test Plan
	1. Factory Acceptance Report – System Equipment and Cables;
	2. Commissioning Test Procedure;
	3. Testing Equipment Calibration Certification;
4. User Training Plan;
5. Testing Reports and Wiring Records;
6. Software Licence Record;
7. Inventory/Spare parts Record;
8. Fault Register and Follow Up Action; and
9. O&M Manual.
 |  |  |
| **(F)** | **Indicative Warranty Service** |  |
|  | The Supplier shall, at his own expense, make good, to the satisfaction of the client’s representative, any defects on the equipment due to improper workmanship, faulty design or component failure which may arise within a period of one year from the acceptance of the equipment. Components that have been interchanged during the warranty period shall have a new warranty period for one year commencing from the date of replacement. |  |  |
|  | The Supplier shall provide **TWELVE (12) months** Warranty Period after the user acceptance testing and the completion of rectification of all defects.The Supplier shall provide all parts for replacement to enable the equipment to be restored to its normal operational conditions. The lead time of all parts shall be less than 24 hours or such other time agreed to by the user. |  |  |
|  | The Supplier shall provide all parts for replacement to enable the equipment to be restored to its normal operational conditions. The lead time of all parts shall be less than 24 hours or such other time agreed to by the user. |  |  |
|  | The Supplier shall provide free software upgrade and rectification, if applicable, include but not limited to any repair and related routine maintenance services. |  |  |
|  | The Supplier shall rectify the faulty issues (e.g. defects, software or machines malfunction) including but not limited to all necessary checking, repairs, fastening / replacement of parts, calibration, adjustments, cleansing and lubrication during production operation. |  |  |
|  | The Supplier shall provide a 24 hours hotline for fault reporting to ensure prompt fault attendance. The faults and complaints response time shall be **within half an hour** by telephone and shall be **within FOUR (4) hours** by arrival onsite from the reporting of fault to the Supplier and by telephone 24 hours a day throughout the year, including Sundays and Public Holidays. |  |  |
|  | Within thirty (30) days before the end of the Warranty Period, the Supplier shall perform cleansing and maintenance works including but not limited to the following:1. Inspection and rectify all defects; and
2. Replacement of damaged parts.
 |  |  |
|  | During the Warranty Period, the Supplier shall perform at least twice preventive maintenance services. |  |  |
|  | The Supplier shall submit a Warranty Period Work Plan at least one (1) month in advance the commencement of Warranty Period. |  |  |
|  | Upon expiry of the Warranty Period, a functional test shall be carried out by the Supplier. Any defects found, except wear and tear, on the Works shall be rectified within a reasonable time by the Supplier without any charge to the Government. The Government Representative may extend the Warranty Period accordingly to compensate the down time of the defective system components or the Works as a whole. |  |  |
| **(G)** | **Indicative Maintenance Service** |  |
|  | **Comprehensive Maintenance Services** |  |
|  | The Supplier shall provide comprehensive maintenance services to all equipment offered in this Contract for a period of FIVE (5) years after 12-months warrantee service, including preventive maintenance (PM) service, corrective maintenance (CM) service and replacement of genuine spare parts to maintain the full function to the performance specifications. |  |  |
|  | The Supplier shall provide preventive maintenance (PM) service at least twice per year for all equipment offered in this Contract. Items that require more frequent checking would be agreed between the CMHHK Operator and the Supplier.  |  |  |
|  | The Supplier shall provide corrective maintenance (CM) service for all equipment offered in this Contract. The Supplier shall be responsible to solve the maintenance issues including but not limited to defects, software failure and malfunction of equipment. |  |  |
|  | The Supplier shall provide technical support team during the period of warranty service, preventive maintenance (PM) service, and corrective maintenance (CM) service. The team shall comprise professional engineer, electrical & mechanical (E&M) supervisor, work supervisor and control system technician with qualification and experience to provide the service on-site. (Please provide details in **Part 11 – Company’s Project Team)** |  |  |
|  | The Supplier shall provide fee for each year of the 9 year maintenance period, after the Warranty Period, of maintaining the offered equipment / system and accessories in order to provide services in accordance with the standards laid down by the equipment manufacturers.(Please provide details in **Part 8 – Indicative Maintenance Charges and Spare Parts Price**) |  |  |
|  | The Supplier shall be responsible for maintaining the latest patches, fixes and anti-virus definitions for the supplied computers / servers. |  |  |
|  | Unless otherwise specified herein the maintenance services including but not limited to maintenance of Systems software including provision for the latest fixes and OS software releases and the right of upgrade to them, shall be provided free of additional charges. The Supplier shall also provide the services for the system software maintenance works with minimum thirty (30) man-days per year. |  |  |
|  | The Supplier shall responsible to obtain and renew necessary license / certificate for the Equipment and system that is required to comply with applicable Ordinances in Hong Kong without additional cost to the operator. |  |  |
|  | Should an equipment under the statutory requirement of licensing, the Supplier shall be responsible for reminding Operator Representative of the license expiry date; and the Supplier shall be responsible to engage appropriate authorized technical party for equipment assessment, and providing support with relevant technical document to the operator for license renewal so as to fulfil the statutory requirement wherever applicable. |  |  |
|  | Upon notiﬁcation of any relevant recalls, safety alerts, ﬁeld correction notices, incidents involving the offered equipment / system items, the Supplier shall attend to the call on site as soon as practically reasonable, inform the equipment manufacturer for investigation and collect the detailed investigation report and safety recommendation to the user. |  |  |
|  | The Supplier shall provide a list of frequently used spare parts to the user upon completion of Warranty Period for setting up parts store in CMPh. Sufficient back up stocks of the recommended essential spare parts shall be kept in Hong Kong. |  |  |
|  | The Supplier shall provide a list of frequently used consumables to the user with price quoted. For the consumables not covered in this contract, the Supplier shall submit quotation(s) for the recommended consumables for users’ acceptance when replacement of consumables is considered necessary. The Supplier shall agree to maintain the quoted price for THREE (3) years from the warranty expiry date.  |  |  |
|  | **Preventive Maintenance on Services Scope, Parts, Works and Schedule** |
|  | The Supplier shall provide preventive maintenance (PM) service at least twice per year for all equipment offered in this Contract. The preventive maintenance shall include but not limited to all necessary healthiness check, repairs, fastening / replacement of parts, calibration, adjustments, cleaning and lubrication necessary in accordance with manufacturer’s checklist (if applicable), or procedures outlined in the service manual, etc.  |  |  |
|  | The Supplier shall perform preventive maintenance service with the standards or manuals laid down by the equipment manufacturers. |  |  |
|  | The scope of maintenance to be performed shall include the following services, unless otherwise specified. Items that require more frequent checking on regular basis would be agreed between the CMHHK Operator and the Supplier such as every three (3) months / monthly / weekly basis.1. impurities and dust removal on the surface and inside the equipment and their associated accessories;
2. inspection of the Systems, the sub-systems and the environmental working conditions, routine cleaning of the cabinets etc.;
3. collection and evaluation of error table / fault printouts which contain the results of self-testing of the Systems and the sub-systems such that preventive actions can be taken at an early stage to avoid major breakdowns;
4. adjustments, calibration, cleansing and lubrication necessary to ensure the performance of the Pharmacy Equipment;
5. checks on the operation of the alarms of the Systems and the sub-systems; and
6. routine safety test as recommended by the manufacturer to verify the satisfactory operation of the Systems and the sub-systems.
 |  |  |
|  | Preventive maintenance shall be carried out within or outside operation hours (e.g. beyond 08:00 – 22:00) or any other schedule as agreed with the operator.  |  |  |
|  | **Corrective Maintenance on Services Scope, Parts, Works and Response time** |
|  | Upon notification by the user, the Supplier shall response to the fault/request in less than half an hour. This service shall include all necessary repairs, replacement of parts and any necessary technical support to restore the equipment to its normal operational conditions as soon as possible or no more than 24 hours. |  |  |
|  | The Supplier shall provide an emergency maintenance services on 24 hours a day, 7 days a week basis.  |  |  |
|  | The Supplier shall analyse all faults/problems and find out the underlying cause(s). Based on the findings, the Supplier shall propose appropriate measure(s) to the operator to prevent re-occurrence of the similar faults/problems. |  |  |
|  | The Supplier shall ensure that the software system uptime is not less than 99.7%of the total normal working hours. “Down Time” will be calculated from the point of system break to the point when system service can be resumed. |  |  |
|  | The Supplier shall submit the maintenance workflow and escalation path for alarm and alert generated from the Systems. The workflow shall include the entire mechanism starting from receiving of alarm notification to fault rectification. Procedures and responsible person shall be clearly indicated in the plan.  |  |  |
|  | Upon completion of thecorrective maintenancework, the Supplier shall submit a report on the equipment breakdown investigation result and corrective action taken. |  |  |

**Part 3a – Particulars of Goods Schedule (Schedule A)**

**Equipment Installation and Layout Plan (EILP)**

(To be completed and returned by the Supplier)

Please use separate sheet to provide the technical specification with information stated below including layout plan and drawing.

1. Installation plan of structural framework of the System
	* Layout and location of the structural framework;
	* Material and Dimension of the structural framework;
	* Installation details of the structural framework; and
	* Section drawings showing the clear headroom required for the operation.
2. Floor mounted equipment layout and suspended equipment layout for the Systems;
3. Floor loading requirements;
4. Dimensions, weight of System/equipment and load distribution information of equipment and associated items;
5. Plinth requirement and details (if applicable) and/or hanging structure requirement and details (if applicable);
6. Maintenance access requirement and maintenance platform arrangement;
7. Installation and permanent equipment delivery route requirement;
8. Space requirement for the installation and operation of the System;
9. Methods of installation the System and equipment;
10. Locations and level of connection point, and special requirements of mechanical (or equivalent) device in the System;
11. Design calculation;
12. Description of operation mechanism in details including bottleneck process improvement plan, intelligence methodology, staging system during operation, and contingency planning during machine breakdown, etc;
13. Phasing and Sequencing Plan; and
14. Any provisions requirements to execute the EILP that are not identified above.

**Part 3a (Schedule A) - Table: Please fill in the required information** (To be completed and returned by the Supplier)

| **Items** | **Equipment Details** |
| --- | --- |
| **Equipment** | Dimension L/W/H (mm) | Specifications[e.g. payload, max. loading, etc (please list details)] | Weight of equipment  | Loading  | Transfer speed (at maximum) | Noise level   | Remarks(Please provide details/ certificate) |
| AGVs  | (L):\_\_\_\_\_\_\_\_\_mm(W):\_\_\_\_\_\_\_\_\_mm (H):\_\_\_\_\_\_\_\_\_mm | Payload:\_\_\_\_\_\_\_ (kg)  | Each AGV:\_\_\_\_\_\_\_ (kg)  |  | \_\_\_\_\_\_\_\_\_ (m/min) | Min. \_\_\_\_\_\_Avg. \_\_\_\_\_\_Max.\_\_\_\_\_\_\_(≤ dBA) | * Technology employed
* Battery Safety Standard, Charging Cycle
* Please also mark dimension on the proposed System floor and elevation layout plan in Part 3a (Schedule A)
 |
| OHP  | Each Section(L):\_\_\_\_\_\_\_\_\_mm(W):\_\_\_\_\_\_\_\_\_mm (H):\_\_\_\_\_\_\_\_\_mm | Matt material & thickness:\_\_\_\_\_\_\_\_\_\_\_\_  | Each Section\_\_\_\_\_\_\_\_\_ (kg/m) | Loading of each support member to reinforced concrete \_\_\_\_ (kg/m) |  |  | * Fire retardant standard:
 |
| LFT | (L):\_\_\_\_\_\_\_\_\_mm(W):\_\_\_\_\_\_\_\_\_mm (H):\_\_\_\_\_\_\_\_\_mm  | Payload:\_\_\_\_\_\_\_ (kg)Driven methods: \_\_\_\_\_\_\_\_\_\_\_\_ | Each LFT\_\_\_\_\_\_\_ (kg) | Floor loading \_\_\_\_\_\_ (kPa) | \_\_\_\_\_\_\_\_\_\_(sec. per transfer) – up or down, including the time taken to enter / leave the LFT | Min. \_\_\_\_\_\_Avg. \_\_\_\_\_\_Max.\_\_\_\_\_\_\_(≤ dBA) | * Technology employed
* Fail-safe design and safety mechanism for unintentional fall down of moving components
* Contingency plan during malfunction and electrical breakdown
 |
| 3DS | (L):\_\_\_\_\_\_\_\_\_mm(W):\_\_\_\_\_\_\_\_\_mm (H):\_\_\_\_\_\_\_\_\_mm  | Payload:\_\_\_\_\_\_\_ (kg)Driven methods: \_\_\_\_\_\_\_\_\_\_\_\_ | Each 3DS\_\_\_\_\_\_\_ (kg) | Floor loading \_\_\_\_\_\_ (kPa) | \_\_\_\_\_\_\_\_\_\_(sec. per transfer) – up or down, including the time taken to transfer CMPACK to totes | Min. \_\_\_\_\_\_Avg. \_\_\_\_\_\_Max.\_\_\_\_\_\_\_(≤ dBA) | * Technology employed
* Fail-safe design and safety mechanism for unintentional fall down of moving components
* Contingency plan during malfunction and electrical breakdown
 |
| FLC | (L):\_\_\_\_\_\_\_\_\_mm(W):\_\_\_\_\_\_\_\_\_mm (H):\_\_\_\_\_\_\_\_\_mmHeight from finished floor: For upper deck level \_\_\_\_\_\_\_\_\_mmFor Lower deck level \_\_\_\_\_\_\_\_\_mm | Conveyor material.\_\_\_\_\_\_\_\_\_\_\_  | Each section:\_\_\_\_\_\_\_ (kg) | Floor loading \_\_\_\_\_\_ (kPa) | \_\_\_\_\_\_\_\_\_ (m/min) | Min. \_\_\_\_\_\_Avg. \_\_\_\_\_\_Max.\_\_\_\_\_\_\_(≤ dBA) | * Fire retardant standard:
 |

**Part 3a (Schedule A) - Table: Please fill in the required information** (To be completed and returned by the Supplier)

| **Items** | **Equipment Details** |
| --- | --- |
| **Equipment** | Dimension L/W/H (mm) | Specifications[e.g. payload, max. loading, etc (please list details)] | Weight of equipment  | Loading  | Transfer speed (at maximum) | Noise level   | Remarks(Please provide details/ certificate) |
| Extended FLC | (L):\_\_\_\_\_\_\_\_\_mm(W):\_\_\_\_\_\_\_\_\_mm (H):\_\_\_\_\_\_\_\_\_mm | Conveyor material:\_\_\_\_\_\_\_\_\_\_\_\_ | Each section:\_\_\_\_\_\_\_\_\_\_\_\_ (kg) | Floor loading \_\_\_\_\_\_ (kPa) | \_\_\_\_\_\_\_\_\_ (m/min) | Min. \_\_\_\_\_\_Avg. \_\_\_\_\_\_Max.\_\_\_\_\_\_\_(≤ dBA) | * Fire retardant standard:
 |
| TSDS | (L):\_\_\_\_\_\_\_\_\_mm(W):\_\_\_\_\_\_\_\_\_mm (H):\_\_\_\_\_\_\_\_\_mm | Driven methods: \_\_\_\_\_\_\_\_\_\_\_\_ | Each section:\_\_\_\_\_\_\_\_\_\_\_\_ (kg) | Floor loading \_\_\_\_\_\_ (kPa) | \_\_\_\_\_\_\_\_\_ (m/min) | Min. \_\_\_\_\_\_Avg. \_\_\_\_\_\_Max.\_\_\_\_\_\_\_(≤ dBA) | * Technology employed
* Fail-safe design and safety mechanism for unintentional fall down of moving components
* Contingency plan during malfunction and electrical breakdown
 |

|  |
| --- |
| **Delivery and Installation requirements** |
| Space requirements for delivery route of the equipment and any associated components required for installation and assembly shall be  | \_\_\_\_\_\_\_ mm (L) x \_\_\_\_\_\_\_ mm (W) x \_\_\_\_\_\_\_ mm (H) |
| Temporary clearance area for LFT installation and assembling at / near LFT installation position shall be  | \_\_\_\_\_\_\_ mm (L) x \_\_\_\_\_\_\_ mm (W) x \_\_\_\_\_\_\_ mm (H) OR \_\_\_\_\_\_ mm radius |
| Other (Please specify) |  |

**Part 3a (Schedule A) - Table: Please fill in the required information** (To be completed and returned by the Supplier)

|  |
| --- |
| **Total Power consumption requirements** |
| Total Power consumption (380 volt AC three Phase): | \_\_\_\_\_\_\_ Ampere \_\_\_\_\_\_\_ kW |
| Other (Please specify) |  |

**Part 3a (Schedule A) - Table: Please fill in the required information** (To be completed and returned by the Supplier)

|  |
| --- |
| **Floor requirements** |
| Floor loading: | \_\_\_\_\_\_\_ (kg)  |
| Surface flatness: |  |
| Surface levelness: |  |
| Surface roughness: |  |
| Other (Please specify) |  |

**Part 3a (Schedule A) - Schematic Section of Overhead Platform (OHP):** **Please provide the schematic section of OHP for the proposed System.** (To be proposed (if any), completed and returned by the Supplier)



**Part 3a (Schedule A) - Schematic Section of Floor Conveyor (FLC) under Issuing Counters: Please provide the schematic section of FLC for the proposed System** (To be proposed (if any), completed and returned by the Suppliers)



**Part 3a (Schedule A) - Delivery and Installation Method Statements**

(To be completed and returned by the Supplier)

The Supplier shall submit a proposed delivery and installation method statements including but not limited to, AGVs, OHP, LFT, FLC, TSDS and associated equipment to the Site. The purpose of the method statement is to demonstrate full understanding of how the systems and equipment items will be delivered and installed under the designated site conditions stipulated in the Technical Specification. The content of the method statement shall cover timing and duration for each step of the delivery and installation, safety measures to avoid damaging of the systems, and equipment as well as to others, and contingencies as required.

(Please use separate sheet and insert drawings and diagram, if needed)

**Part 3a – Particulars of Goods Schedule (Schedule B)**

(To be completed and returned by the Supplier)

**Building Services and Building / Structural Provisions Requirement (BSPR)**

| Item no. | Information required | Information to be provided by the Supplier |
| --- | --- | --- |
|  | Dimension of Equipment |  |
|  | Location and Loading of Equipment |  |
|  | Amount of Electricity Supply (i.e. including normal power, UPS and essential power) and locations of connection point (i.e. power box and power socket) |  |
|  | Fire Services provision requirement (such as in-rack fire sprinklers and the pipe works, etc) |  |
|  | Cable routing and connection points, dataports, and special trunkings, conduits, cable trays and brackets etc. |  |
|  | Lighting requirement after installing the ceiling mounted equipment (i.e. to ensure sufficient lighting intensity maintained) |  |
|  | Any civil and structure provisions required to execute the equipment installation works that are not identified above such as sunken floor, structural beams, concrete plinths, reinforced floor slab, floor and wall opening, façade opening, etc. |  |
|  | Any provisions requirements that are not identified above.  |  |
|  |  |  |
| Notes:  | (i) | Please use separate sheets if space is inadequate. |
|  | (ii) | Please input N/A if the information is not applicable. |

**Part 3a – Particulars of Goods Schedule (Schedule C)**

(To be completed and returned by the Supplier)

**System Requirements**

The Supplier shall provide, architecture design diagram, supply and install the system and all associated peripherals equipment. The information shall consist of the operation workstations, servers, software, hardware and the necessary equipment and components to complete the required function for the system.

Please provide information below and use separate sheets if space is inadequate.

**Part 4 – Implementation Plan**

The Supplier shall propose a Deadline Completion Date of **not later than twelve (12) months** from the Order Date.

*(Note to Suppliers: Please provide the estimated time periods required for the completion of the following tasks, counting from the date of issue an order (“Order Date”). Both the start and end date of the Order Date is referenced as* ***Month 0****. The System should be* ***Ready for Use in the last month of the Implementation Plan.****)*

|  |  |
| --- | --- |
| **Tasks of the Implementation Plan** | **Estimated Time Period for** **Performing the Tasks**(The Order Date is set as Month **0**) |
| **Start** (Month) | **End** (Month) |
|  | Order Date *(i.e. the date of order placed by the Government, if any)*  | **0** |  |
|  | Submission of Site Preparation Information (if applicable) |  |  |
|  | Design of the System  |  |  |
|  | Implementation Services (*Please refer to* ***section B in Part 3*** *for details*) |  |  |
|  | 1. \*First fix
 |  |  |
|  | 1. \*\*Final fix
* Delivery of Equipment
* Installation of Equipment
 |  |  |
|  | Delivery of Documentation (*Please refer to* ***section E in Part 3*** *for details*) |  |  |
|  | Training (*Please refer to* ***section D in Part 3*** *for Details*) |  |  |
|  | Acceptance Tests |  |  |
|  | Any other tasks considered necessary by your company *(Please provide details, use separate sheet if space is insufficient)*: |  |  |
|  | System Ready for Use *(i.e. the date when the System has passed all acceptance tests and accepted by the Government)*  |  |  |

Definition

**\*** Site access allowed for installation works without involving valuable equipment and final finishes. (e.g. installation of supporting members for the mounting of OHP, maintenance platforms and necessary equipment to facilitate equipment hoisting for installation and maintenance, conduits and cables for electrical system, air ducts for heating or air-conditioning, pipework for water and gas distribution etc.; the supporting members shall be structurally tied to the building structure which is provided by the D&B Contractor.)

**\*\*** Site handed over to the Hospital for delivery and installation of equipment, works for final finishes, testing and commissioning

Note: no site access or installation works allowed during 1Q2025 due to fire service inspection period by the FSD

**Part 5 – Information on Compliance with International Standards (if applicable)**

(*Note to Suppliers: Please indicate in the box below whether the proposed Mini Automated Guided Vehicles cum Conveyor Belt System can meet with the standards stated in Column I* ***by inserting a tick in an appropriate box under Column III****. If your proposed Mini Automated Guided Vehicles cum Conveyor Belt System does not meet the standards stated in Column I, please indicate the equivalent standards met by your proposed Mini Automated Guided Vehicles cum Conveyor Belt System in Column IV. In any case,* ***please attach copies of relevant valid certificates to prove compliance with such standards****.*)

| **Column I** | **Column II** | **Column III** | **Column IV** |
| --- | --- | --- | --- |
| International Standard | Requirements  | Comply with the Standard in Column I? | Comply with the following equivalent standard (*If “****No****” in Column III*) |
| Yes | No |
| BS 1363 | Specification for 13A Fused Plugs and Switched and Unswitched Socket outlets and Boxes |  |  |  |
| IEC 61000  | Electromagnetic compatibility |  |  |  |
| Code of Practice | Minimum Fire Service Installations and Equipment and Inspection, Testing and Maintenance of Installations and Equipment, September 2022 Edition, issued by Fire Services Department  |  |  |  |
| Technical Guidance | Application of Loss Prevention Council Rules for Automatic Sprinkler Installation 2015 incorporating BS EN 12845 in Hong Kong, issued by Fire Services Department |  |  |  |
| Compliance with other international standard(s) in addition to the above (*please specify*) |
|  |  |  |  |  |

**Part 6 – Information on Licencing, Marketing Authorization and MDACS Listing (if applicable)**

(*Note to Suppliers: Please advise whether your company and the proposed System have the following licence, marketing authorization and Medical Device Administrative Control System (“MDACS”) listing. If affirmative, please provide copies of relevant licences, confirmation and certificates for our reference.)*

| Question | Licensing/Certification/Listing Information of the System |  *(Please tick in the appropriate box)* |
| --- | --- | --- |
| #Yes | No |
| 1 | Does your company have valid licence(s) to sell, deal with, possess and use irradiating apparatus in Hong Kong issued under the Radiation Ordinance (Chapter 303 of the Laws of Hong Kong) (“IA Licence”)? |  |  |
| 2 | Has the proposed System been listed in a valid IA Licence? |  |  |
| 3 | Dose the proposed System have marketing authorization of Food and Drug Administration (FDA) of the United States? |  |  |
| 4 | If the proposed System has marketing authorization of FDA, please specify below the type of marketing authorization (i.e. approval, clearance or exemption). \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |  |
| 5 | Does the proposed System have marketing authorization of the European Union (EU) for affixing of CE marking on the product? |  |  |
| 6 | If the proposed System has marketing authorization of EU, please state the type of supporting document (\*delete which is not applicable).* + - * 1. \*Declaration of conformity by the manufacturer; or
				2. \*Certificate of conformity issued by a notified body.
 |  |  |
| 7 | Does the proposed System have marketing authorization in country/region other than United States and EU? Please specify below if your answer is “Yes”.Country / Region : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |  |
| 8 | Has your proposed System been listed in the MDACS of the Department of Health?  |  |  |
| 9 | What class of medical device is your proposed System (if applicable)?1. EU : Class \_\_\_\_\_\_
2. United States : Class \_\_\_\_\_\_
3. Other country/region (please specify below):
* Country/Region \_\_\_\_\_\_\_\_\_
* Class \_\_\_\_\_\_\_\_\_
 |  |  |

#Please provide a copy of the licence/confirmation/certificate for reference.

**Part 7 – Indicative Price Information**

(*Note* *to Suppliers: The price information provided in this Part 7 is for Government’s consideration only and shall not constitute any commitment on the part of the Government or your company. Nevertheless, please provide the information as accurate as possible.*)

**(a) Indicative Price Information for the System**

| **Item** | **Description** | **Estimated****Quantity** | **Unit Price** | **Estimated Goods Price** |
| --- | --- | --- | --- | --- |
| **One-time Unit Price(HK$)** | **Estimated Goods Price for the Item specified opposite****(HK$)** |
| **(a)** | **(b)** | **(c) = (a) x (b)** |
|  | Provision of the System Design, supply, delivery and installation (including associated Works for Electrical and Mechanical Building Services Interface, Lighting Interface, Building and Structural Provision Interface), testing, commissioning and implementation completion of the Mini Automated Guided Vehicles cum Conveyor Belt System (the “System”) comprising the following as detailed in the Technical Specifications:(**Clause 1.3, 15.10, 15.11, 15.13** in Part 3 of Technical Specification; **Annex A** - Chinese Medicine Pharmacy (CMPh) Floor Plan) |  |  |  |
|  | Mini-Automated Guide Vehicles (AGVs) | **20 sets** |  |  |
|  | AGV charging stations (for Zone I) | **3 sets** |  |  |
|  | Overhead Platform (OHP) including any connecting components with Mini-Lifters (LFTs) (overall approximately 60m long) | **1 lot** |  |  |
|  | Mini-Lifters (LFTs) (total 10 sets for Zone I & II) | **10 sets** |  |  |
|  | 3-Dimensional Sorters (3DS) with bins and bins storage racks | **2 sets** |  |  |
|  | Floor Level Conveyor (FLC) (approximately 22m) | **1 set** |  |  |
|  | Extended FLC at issuing stations to support 14 issuing counters | **7 sets** |  |  |
|  | Totes Stacker and De-stacker | **2 sets** |  |  |
|  | Totes Manual Entry Station | **1 set** |  |  |
|  | Bins Storage Benches |  |  |  |
| (a) | Double-sided with associated bins | **2 sets** |  |  |
| (b) | Single-sided with associated bins | **6 sets** |  |  |
|  | Chinese Medicine Package Transfer System (CMPTS) including all associated software, servers, workstation and barcode device, etc. | **1 set** |  |  |
|  | Totes | **300 no.** |  |  |
|  | Close Circuit Television System | **1 set** |  |  |
|  | **Subtotal of Item (1a) to (1m)** |  |
|  | Provision of Fire Services Installation : (including co-ordinate with Party A2, install and rectify fire services provisions, and make arrangement for FSD inspection)(**Clause 1.24, 1.24 and 15.12** in Part 3 of Technical Specification) | **1 lot** |  |  |
|  | Chinese Medicine Package Transfer System (CMPTS)(including system development, hardware and software requirements, workstation, device, scanner etc.)(**Clause 12** in Part 3 of Technical Specification) | **1 set** |  |  |
|  | Training(including comprehensive operational and technical training to the system administration staff, operational staff and end-users to ensure that the operation personnel achieve the necessary levels of proficiency to manage and operate the system) | **1 lot** |  |  |
|  | Documentation(**Clause** Error! Reference source not found.**8** in Part 3 of Technical Specification) | **1 lot** |  |  |
|  | Items not listed above but are required by the Supplier for the complete installation and implementation.*[Note: Supplier are to list and specify such items together with the relevant rates/prices. If no such items are listed and/or priced, it shall be deemed that the price for such required items, if any, are included elsewhere in this or other Schedule(s)]* | **1 lot** |  |  |
|  | **Subtotal of Item 2 – 6:** |  |
|  | **Total One-time Charge (Total Price of Items 1 - 6):** |  |

**Part 8 – Indicative Maintenance Charges and Spare Parts Price**

(Notes to Suppliers for completion of Part 8)

1. *Pursant to item 1 of Part 7(a) above, the proposed System shall have a warranty period of not less than 12 months. The indicative warranty service requirements are stipulated in* ***section G in Part 3****, which are subject to changes at the sole discretion of the Government.*
2. *Indicative maintenance service requirements after the free warranty period are stipulated in* ***section H in Part 3****, which are subject to changes at the sole discretion of the Government*
3. *It is expected that the maintenance services shall be comprehensive, all inclusive and shall cover all parts, components, labour and software support services. If your company considers that any components of the System may not be covered by the maintenance services (****saving that the labour shall always be covered by the maintenance services****) and may need to be charged separately, please indicate replacement costs of these components and their replacement frequency.*
4. *The annual maintenance charge within the serviceable life of the proposed System* ***is adjustable in accordance with the consumer price index (B) upon the expiry of each 12-months period of maintenance service****.*
5. **Indicative Maintenance Prices of the Proposed System**

| **Year** | **Annual Maintenance Charge****(HK$ per annum)** |
| --- | --- |
| First 12-months period of maintenance service after the end of warranty period |  |

1. **Indicative Replacement Prices of System’s Components not covered by the Maintenance Services (if applicable) (***Leave the following table blank if not applicable***)**

(*Note to Suppliers:* ***The labor costs for replacement of these components shall always be covered by the maintenance charges for the provision of the maintenance services*** *regardless whether the prices for the supply of these components are covered by the maintenance services or not.)*

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Name of Items | IndicativeReplacement Price (HK$/no.) | Indicative Replacement Frequency (*e.g. once every 3 years*) |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |

1. **Indicative overtime charges for provision of maintenance services after office hours (if applicable)**

(*Office hours mean 9 am to 6 pm from Monday to Friday excluding public holidays*)

|  |  |  |
| --- | --- | --- |
| (a) | Rates of overtime charges for maintenance service outside the office hours | HK$ per hour |
| (b) | Minimum service hour(s) per call |  service hour(s) per call |

1. **Indicative Prices for Replacement of Other Spare Parts (if applicable)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Name of Items | Price (HK$/no.) | Indicative Replacement Frequency (*e.g. once every 3 years*) | Expected time for delivery (weeks) |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |
| 5 |  |  |  |  |
| 6 |  |  |  |  |

1. **Indicative Price for Annual Support Services of Software (if applicable)**

(*Note to Suppliers:* Please provide below annual charge for support services of the System’s software during the serviceable life of the System for the CMHHK Operator’s consideration. *The support services should include but not limited to:*

1. *provision and renewal of software toolkits, access codes, passwords, software keys and hardware keys, etc. necessary for all kinds of adjustments, in-depth diagnosis and trouble shooting of the System; and*
2. *version upgrade of the software.)*

|  |  |
| --- | --- |
|  | (a) Free of charge during serviceable life  |
|  |  |
|  | (b) Yearly cost at $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Part 9 – Supplementary Information**

1. Number of proposed System Already Installed (leave blank if information is not available)

In Hong Kong : \_\_\_\_\_\_\_\_\_\_ sets

Globally : \_\_\_\_\_\_\_\_\_\_ sets

1. Year of Launch of the Proposed System (leave blank if information is not available)

My/our proposed System was first launched in the market in Year \_\_\_\_\_\_\_\_\_\_\_\_\_

1. Pre-Installation Requirements of the Proposed System (if any)

*(Pre-installation requirements may include any preparation work and provisions that are necessary for the installation of the System, such as the requirements of ceiling mount support, power supply requirements, etc.)*

**Part 10 – Sales Volume of the Offered Goods**

(To be completed and returned by the Supplier)

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Description** | **Annual Sales for the past three years** | **Remarks** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Part 11 – Company’s Project Team**

(To be completed and returned by the Supplier)

All installation and maintenance services shall be carried out by qualified maintenance personnel.

The Supplier shall provide the organisation chart (OC) and the qualification and experience of the team members of the:-

1. Project Implementation Team to support all offered equipment and systems.
2. Technical Support Team to provide service during the period of warranty, and for subsequent preventive maintenance (PM) and corrective maintenance (CM).

Please fill in the qualification and experience of team members in the table below:-

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Post** | **Responsibilities** | **Qualifications and Experience** |
| Project Implementation Team |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| Technical Support Team |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Organisation Chart (provide in separate sheet, if needed)

Organisation Chart of Project Implementation Team

Organisation Chart of Technical Support Team

**Part 12 – Questionnaires**

(To be completed and returned by the Supplier)

| **Information Required** | **Complete by Suppliers****(use separate sheet, if needed)** |
| --- | --- |
| 1. What is the delivery lead time from the date of order placement?
 |  |
| 1. What is the period of installation to ready for use (including license application, test and commissioning)?
 |  |
| 1. What are the details on parts and services covered in Warranty Service?
 |  |
| 1. What are the details on parts and services covered in Maintenance Service (e.g. Preventive Maintenance, Corrective Maintenance, Schedule and Response Time)?
 |  |
| 1. What is the payment schedule?
 |  |
| 1. Please provide tasks that are not identified in the Implementation Plan Specification of the equipment and system.
 |  |
| 1. Please provide works that are not identified in the Warrantee Services and Maintenance Services Specification of the equipment and system.
 |  |
| 1. What are the difference in the scope of maintenance services / program provided by your company during the warranty period of 12 months and the maintenance period after expiry of free warranty?
 |  |
| 1. Please provide the number and the physical dimensions of the servers for the CMPTS to accommodate the project needs.
 |  |
| 1. Please provide details of frequently used consumables (e.g. tote for replacement, barcode label for tote transfer), and the lead time of delivery.
 |  |
| 1. Any ISO (International Organization for Standardization) quality accreditation from the manufacturer, if yes please list details
 |  |
| 1. Any experiences in obtaining certification (e.g CE, UL) from authoritative organization in related projects implemented, if yes please list details
 |  |
| 1. All proposed computer equipment and products, including but not limited to, desktop computer and server, of the System shall meet green feature(s) from environment aspects, if yes please list details. For example:
	1. Product components (circuit boards, batteries, electrical, electronic and plastic components) shall comply with RoHS. Maximum Concentration Values of the RoHS restricted substances are:
	* Lead: 0.1% by weight
	* Cadmium: 0.01% by weight
	* Mercury: 0.1% by weight
	* Hexavalent chromium: 0.1% by weight
	* PBBs: 0.1% by weight
	* PBDEs: 0.1% by weight
2. Product shall comply with international power consumption standard such as Energy Star.
3. Equipment should have obtained a Recognition Type Energy Label under the Energy Efficiency Labelling Scheme of EMSD.
4. Energy consumption of the product should not be greater than 3W and 1W during sleep mode and off mode, respectively.
5. Any of the plastic parts should be manufactured without chlorinated paraffins flame retardants.
6. Component parts should not contain halogenated substances.
 |  |

**Part 13 – Other Information Provided by the Supplier Useful for the Consideration of the Government**

|  |  |
| --- | --- |
| **Information Provided** | **Details** |
|  |  |
|  |  |
|  |  |

**END**