



Proposal; Federal EPI Pre-Fabricated Warehouse for 20 Cold Rooms

Background

Established in 1978, the Expanded Programme on Immunization (EPI) currently aims to vaccinate approximately Six million children aged 0-11 months against nine target diseases throughout the country.

USAID has been providing technical assistance (TA) to the Federal EPI in ensuring smooth warehouse operations since 2015. The Country Director, USAID Global Health Supply Chain Program – Procurement and Supply Management (GHSC-PSM) project along with technical team held a meeting with National Program Manager and Deputy Program Manager of Federal EPI on February 28, 2018. During the meeting various options to accommodate incoming 20 cold rooms donated by Global Alliance for Vaccines and Immunizations (Gavi Alliance), mainly for Rota Virus Vaccine (Rotarix), were discussed. First tranche comprising 10 cold rooms is likely to be delivered to EPI in three months' time. It was mutually decided not to dismantle dry store which was rehabilitated, upgraded and equipped with USAID grant and establish a prefabricated new warehouse for the additional cold rooms. Following the discussions, Federal EPI requested Project's TA for determining the storage space requirements, designing the lay out and working out related costs. With these additional cold rooms, the cold storage capacity will be enhanced from 426,895 liters to 693,555 liters, thereby accommodating average yearly volumes of 13,452,493 doses Rotarix vaccine till 2025.

This proposal takes into account technical and financial requirements for establishing a pre-fabricated warehouse per international best practices.

Space Requirements

Space requirements have been calculated based on specifications of upcoming cold rooms. Total volume of cold rooms has been translated into net requirement in square feet, as depicted in table 1:

Table 1: External Dimensions of one cold room

External Dimensions of one cold room						Volume of cold room (cubic feet)	Total # of cold rooms	Total volume (cubic feet)	Total net land required (Sq. Ft.)
Length		Width		Height					
mm	ft	mm	ft	mm	ft				
3750	14.12	5700	18.72	2300	7.55	1996	20	39913	5287

Note: The outside installed air-condition unit increase the length from 12.31 to 14.12 Cubic Feet

The estimations of additional warehouse space requirements for 20 cold rooms including throughput/loading unloading area, aisles, administration and office area and passages are mentioned in table 2:

Table 2: Total space required for 20 cold rooms

Unit	Length	Width	Height	Total volume	Total net land required (Sq. Ft.)
In centimeters (CM)	70.40	14.782	4.57	983.2 CBM (Cubic Meter)	11203.5
In feet	231	48.5	15	168052.5Cf (Cubic Feet)	

The division of the total area volume of the proposed warehouse for the 20 cold rooms which is 11203.5 Sq Ft is mentioned as below:

Table 3: Division of total volume of warehouse

Total Land area	11203.5 Sq. Ft.
Space volume distribution	Volume Ratio
For the 20 cold rooms	24.05%
Aisle/passage area	70.68%
Throughput ¹ / Loading unloading area	5.27%

¹ Throughput is defined as the area where all moments of supplies/ materials receipts and dispatches are loaded/unloaded, and packed/unpacked.



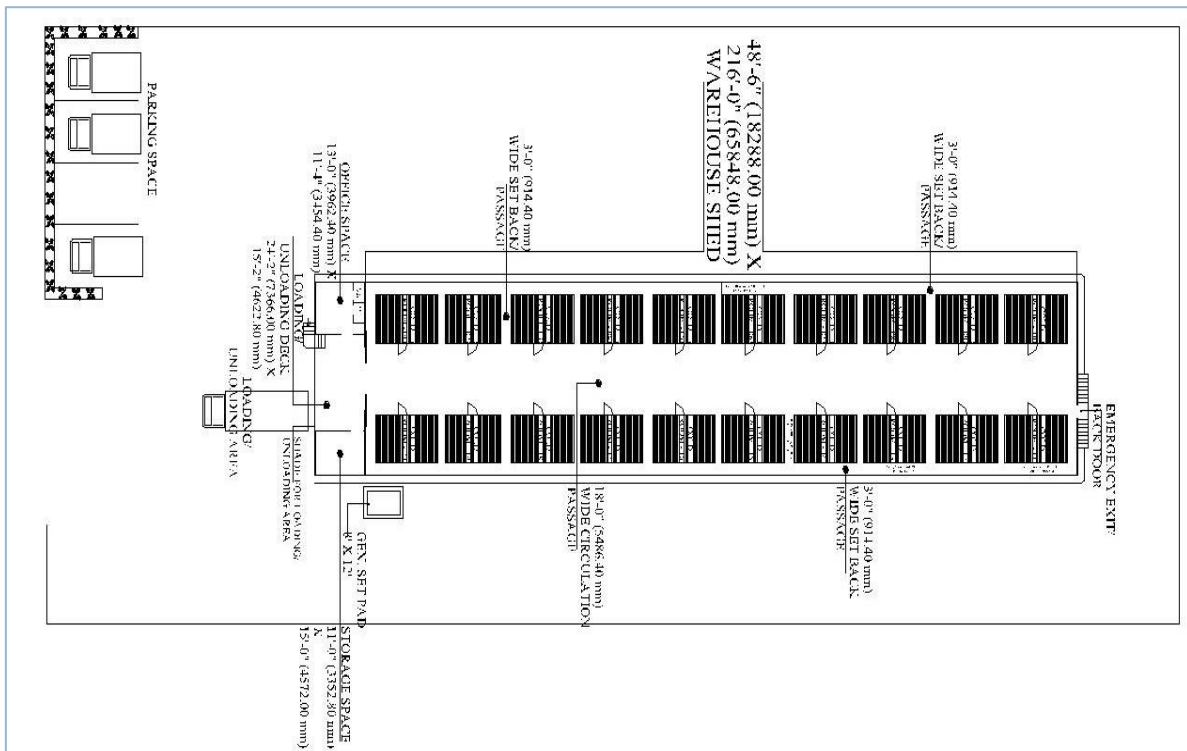
Warehouse parameters

Parameters to be considered while designing a pre-fabricated warehouse is listed below:

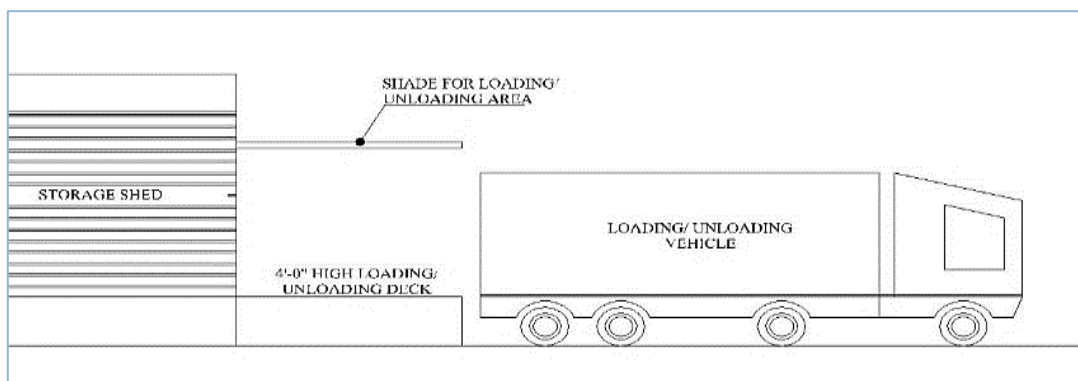
- **Size of the Shed:** 48.5 ft x 216 ft.
- **Loading & Unloading Area:** 24 ft x 15ft.
- **Office area:** 143 Sq Ft with 2 x mini store & electrical room of 165 Sq. Ft.
- **Foundation pad:** 4 feet high from the natural ground surface
- **Foundation:** Designed with reinforced cement concrete frame structure
- **Ailes:** 12 ft wide for movement of material between the cold rooms
- **Height of the shed:** 15ft.
- **Sandwich Panels:** Thickness of 25mm in walls & roof with steel structures frame for fabrication of shed
- **Exhaust fans:** 8 exhaust fans with size of 1m x 1m in the shed

The proposed layout plan and drawing of Pre – Engineering Building (PEB) is given below:

1. Internal view of warehouse layout plan with cold rooms & aisle



2. Warehouse Loading and Unloading Ramp





3. 3 D view of Warehouse



Cost Estimations:

The cost estimations accounting for complete cost of civil work and installations of electricity and power system for the cold rooms have been summarized in table 4:

Table 4: Estimated Proposed budget for 20 Cold Rooms installations and warehousing

#	Item Description	Unit	Quantity	Unit Price	Total Price PKR(million)
1	Foundation Work of the Shed	Sq. ft.	11240	1,350	15
2	Pre-Engineering Building Supply & Installation	Sq. ft.	11240	3,240	36
3	Electrical Works (Lights, Cables, DBs, Exhaust Fan, Cable Tray)	L.Sum	11240	878	10
4	Unforeseen 10%	L.Sum	-	-	6
				Total Amount	67

Way forward:

Based upon above design specifications and cost projections, Federal EPI should secure financing for establishment of a pre-fabricated warehouse. The land adjacent to rear boundary wall of Federal EPI Complex will have to be allocated by the Ministry for this purpose. Detailed drawing and quotations from different vendors will have to be obtained through an RFP. Total time needed for completion of this Project is from 3 to 6 months. USAID GHSC-PSM project will be happy to provide any further TA for construction of the warehouse.

