



RUBB RELOCATABLE

port structures

the most versatile warehousing in the world



We Cover The World.®

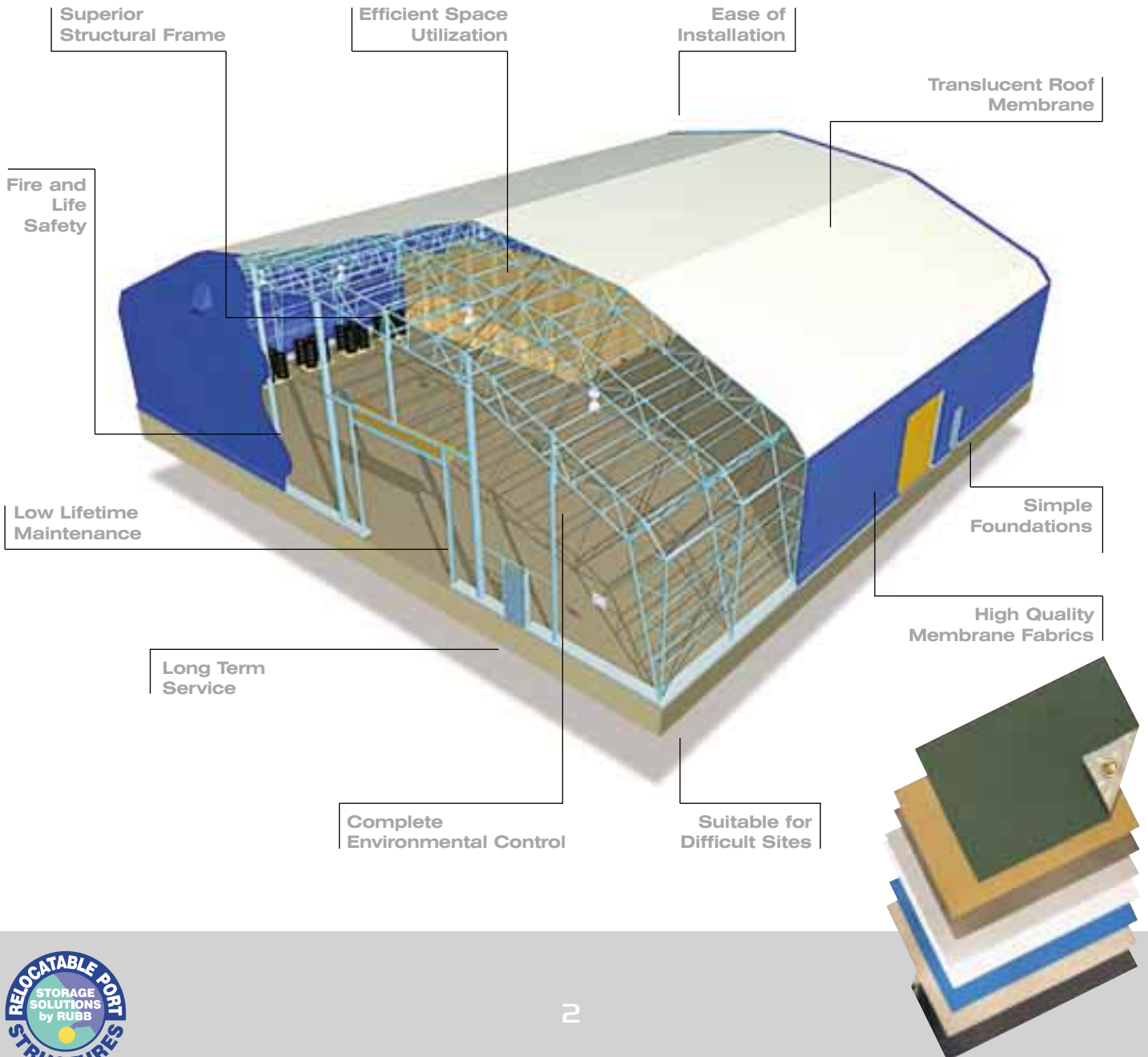


what's in a Rubb Building?

...total quality

The design and planning flexibility, speed of construction and durable, cost effective operation of Rubb Buildings provide port operations worldwide with a major competitive edge.

Our structures feature a high strength PVC coated polyester membrane cladding that is tensioned over a well engineered structural steel frame system. This design provides many benefits to the port user including the ability to cost effectively relocate the structures as port needs change. Relocatability means that these structures are considered equipment in many instances. Rubb's unrivaled skills and experience in the ports market enable us to design, fabricate, deliver and install responsibly engineered structures which fully meet our port client's needs. Most importantly, Rubb takes care of its customers both before and after the sale.



Superior Structural Frame

The backbone of a Rubb building is a well engineered structural framing system. Rubb gets the details right and then provides the best corrosion protection system in the industry.

Efficient Space Utilization

Rubb's truss frame system allows for cost effective clear span space and high vertical walls to suit customer needs. Multi-span Rubb linked buildings cover large areas with a fraction of the columns required for other construction types.

Ease of Installation

Rubb's prefabricated modular design means less on site installation time. The nearly 108,000 ft² (10,000 m²) warehouse for the Port of Philadelphia took only two months to install.

Translucent Roof Membrane

The use of white translucent roof fabrics provides a bright, efficient and safer interior work environment. Energy costs are reduced because artificial lighting is usually not required in daytime hours. In addition, the heat reflectivity of the white roof surface helps keep the building cooler.

High Quality Membrane Fabrics

Rubb uses high strength, heavy weight coated architectural fabrics from proven suppliers. Many Rubb structures are still in use with original membranes after a quarter century of use.

Simple Foundations

Many Rubb structures can be installed with relocatable foundations. Where concrete is required, the structural capability of the Rubb system typically allows for lower foundation costs than with other building types.

Suitable for Difficult Sites

The flexible membrane and steel frame design of a Rubb building allows installation on uneven or sloping sites. The buildings also accept moderate differential settlement common on port sites with filled land without the need for pilings.

Complete Environmental Control

The continuously sealed membrane of a Rubb building allows for efficient use where dehumidification or fumigation is required. Rubb buildings can also be effectively insulated, heated or air conditioned.

Fire and Life Safety

Rubb buildings offer proven fire performance advantages over other building types.

Low Lifetime Maintenance

The use of higher quality membrane materials and the rugged, post production galvanized welded frame of a Rubb building ensure a long, low maintenance service life. Rubb buildings are noted for their reliability and durability over time.

Long Term Service

Rubb's commitment to customer service continues after project completion and forms the basis for long term customer satisfaction.



Above: One of six buildings at the Merrill terminal which are used for the storage of up to 12,000 rolls of newsprint in a dehumidified climate controlled atmosphere.

Main Photo: NV, BVE and BVL Type buildings at the Merrill Marine Terminal, Portland Maine, USA.

The first building at this site was erected in 1984 and is still in use today with original membrane cladding.



Rubb Structures From Ports Around The World

Major user benefits

- **Galvanized Frame:** Post production hot dip galvanizing of all welded components to the ASTM A-123 standard ensures that steel surfaces, inside and out, are protected from corrosion. While this process adds to the initial cost, the long term benefits are obvious; low lifetime maintenance, superior structural integrity and performance, especially in harsh marine environments.
- **I-Beam foundation:** Rubb offers a proven and reliable I-beam foundation system that can be installed on most surfaces without excavation. These hot dip galvanized foundations can be cost effectively anchored with a variety of methods depending upon site constraints and are relocatable with the building.
- **Translucent Membrane:** The natural light which filters through the translucent roof of a Rubb building provides a balanced lighting effect even on cloudy days. This natural lighting not only saves on energy costs but also provides a brighter, safer and more efficient operating environment within the structure.
- **Fire Safety:** Rubb buildings have a proven track record of fire performance advantages over other types of construction. Ask for a copy of our Fire Performance CD or Video.

Searsport, Maine, USA. 140' (42.7m) x 228' (69m) BVE range Rubb building used for break bulk storage.



Port of Dundee, UK.

With the use of a white translucent roof material, this 100' (30m) x 315' (96m) warehouse for paper storage has no dark corners - reducing the need for lighting during day time hours.



Right:
Port Arthur, USA
 A 220' (67m) x 525'
 (160m) BVE Twin-link
 building provides an
 additional 115,500 ft²
 (10,720 m²) of transit
 storage in addition to
 covering the port's
 railroad siding.



Above: **Merrill Marine Terminal, Portland, Maine USA.** This recycled paper storage building was back in business with a new membrane roof one week after a major fire in 1999. The self-venting properties of the roof membrane enabled the building frame to survive an extreme fire with no structural damage.

Left: **Londonderry, UK.** A substantial warehouse measuring 131' (40m) x 475' (145m). To maximize internal storage space the building is constructed with I-Beam column walls as an alternative to the traditional 'lattice' design. Reason for choosing Rubb - versatility.



Above: **Belfast, Ireland, UK.** This warehouse measures 148' (45m) x 575' (175m). Like Londonderry it is constructed with column walls and has 6 individual 40' (12m) openings with canopies for ease of access.

Right: **Tilbury, UK.** Some years ago a 200' (60m) x 453' (138m) building was erected at Tilbury, a year later it was doubled in size to meet increased storage demand. Five years later it was dismantled, converted and relocated to three different berths within the port. Recently two of those buildings have again been relocated. The port now has more than 600,000 ft² (55,786m²) of Rubb buildings on site. A Rubb structure, no matter what size, enables the port operator to develop the port to suit changing demands.





Above: **Convoys, Chatham Dock, UK.** This 115' (35m) x 360' (110m) BVE building shows how bright a Rubb building can be without the use of artificial lighting.

Above left: **Philadelphia, PA, USA.** After the collapse of a 108,000 ft² (10,000 m²) warehouse provided by others, Rubb accepted the challenge of replacing the structure with a new warehouse of similar size. Rubb overcame many challenges and finished within four months.

Right: **Virginia International Terminal, Norfolk Virginia, USA.** 156,000 ft² (14,500 m²). Rubb buildings can be linked together to create virtually any amount of open storage space as the photo below shows



Above: **Belfast, Ireland, UK.** Measuring 78' (24m) wide x 148' (45m) long, with 20' (6m) sidewalls, this building was delivered and erected within eight weeks from receipt of order, and included lighting and ventilation.

Left: **Dublin, Ireland.** After dealing with Rubb on a number of proposed projects, it wasn't until viewing a similar building at the Port of Tilbury, that the Dublin Port Company realized what an ideal and cost-effective prospect a Rubb building offered. This 78' (24m) span x 410' (125m) long building has one 20' (6m) high door on one gable and an additional five 20' (6m) doors down one side.



Rubb bulk storage structures...

Bulk Storage Facilities

Modular design, greater versatility and faster time to get the facility in productive use are just some of the advantages which Rubb bulk warehouses offer in comparison to conventional silo structures. The structures are easily configured to accommodate conveyors or other material handling equipment.

Prestressed concrete panels can be designed into the structure to provide effective hard walls for bulk material. Interior concrete ballast can also provide an effective berm as shown in the diagram on the lower right of the page. Unlike vertical silos, Rubb structures can be adapted to hold break bulk cargoes as well as bulk cargo. For storage of sand, salt and other corrosive materials Rubb can offer upgraded steel protection with duplex coatings and/or liner systems. In addition, the PVC cladding membrane is highly resistant to the effects of many sources of corrosion which affect steel panel systems.

- Complete protection against wind, snow, rain, and harsh marine environments.
- Choice of opaque membrane for light sensitive products or translucent membrane for efficient working conditions.
- Lower maintenance costs than traditional bulk storage.

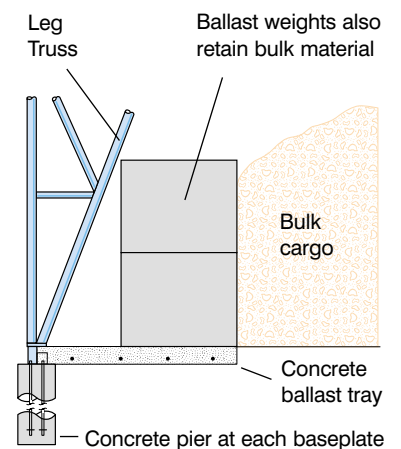


Left: **Theodore, Alabama, USA.** 130' (39.6m) x 433' (131.9m) BVE range Rubb building for bulk storage of Perlite. Note cast block berm.

Below: **Merrill Terminal, Portland, Maine, USA.** Translucent roof membrane provides excellent working conditions during day light hours. Rubb structures accommodate large bulk material handling equipment for efficient movement of materials.



Example of Ballast Block Containment Wall



Custom Built...

Rubb has the capability and experience to design, manufacture, deliver and install custom structures

With Rubb you can be sure everything is under control from creation to completion – including cost, quality and delivery. And while we generally have the right standard structure available to meet project needs, Rubb also can design custom solutions to meet special requirements. We have the in-house resources to provide a cost effective solution customized to your precise needs.

- Design - Using proven engineering software we can tailor the project to the specific requirements of site, type of cargo and logistics needed.
- Production - Steel and membrane components are fabricated with proper equipment and quality control.
- Installation - pre-engineered and pre-fabricated to make on site installation by a Rubb crew, or your crew, go smoothly and efficiently.



Brunswick Georgia, USA.

A critical storage requirement was met when Logistec discovered it urgently needed to replace aging wooden covers for two circular bulk storage facilities. Rubb designed, fabricated, delivered and installed two 116' (35.4m) diameter custom dome covers to attach to existing foundations.



Peace of mind when you choose a Rubb Structure...

Rubb structures are designed, manufactured, installed, serviced and warranted by the Rubb Group. Rubb's expertly engineered product design and the highest quality materials are backed by over thirty five years experience worldwide. More importantly, Rubb has a reputation for accountability and for providing practical solutions to weather protection problems of all kinds.

Our buildings are designed, manufactured and erected to ISO 9001/2000 standards and meet international building code standards for wind, snow and seismic loads.

After-sales service includes repairs and any further adaptation, relocation or refurbishment work. So your peace of mind extends well into the future.

We Cover The World.®



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