

CASE STUDY: MEMBRANE STRUCTURES IN EXISTING BUILDINGS

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Summary: This document depicts 3 different projects (2 commercial and 1 educational) developed with unique circumstances around them, specifically, membrane structures installed in existing buildings, bringing challenges such as rain water management, structural fixings, seal, and use of existing structures amongst other considerations.

INTRODUCTION

Tensile membrane structures are commonly built on the ground (reinforced concrete foundations) or within solid surroundings that can bring enough counterbalances to the tensioned system through foundations, lateral anchors or connections to other building systems.

In Guatemala, some building evolve due to different circumstances such as economic necessity or growth in which case the construction must be adapted to new requirements. Sometimes, the client himself or the contractor, don't see the necessity for cover from sun or from rain until the building is fully operational or until their clientele express concerns about these and other issues regarding operation and function. Besides the normal challenges or the elements considered normal in any other project, there were other factors that needed to be taken into account:

- From the contractor's perspective: the project's profit margin, considering new adaptations in order to fit the construction into receiving the tensile structure, such as structure modifications, flagstone reinforcement, etc.
- With the building's structural designer and contractor both in tune, architectural form and new elements complementing the existing architectural context had to be accomplished, and finally an agreed general layout between both client and architect.
- From the client's perspective: the designated budget, delays, and structural interventions to its property, deadlines in order to have revenue, since the entire project has commercial and economic implications.