Accepted Manuscript

Title: ANALYTICAL STUDY ON DESIGN DEFICIENCIES IN THE ENVELOPE PROJECTS OF HEALTHCARE BUILDINGS IN SPAIN

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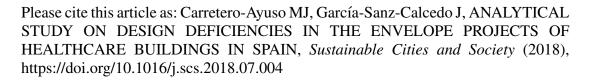
PII: S2210-6707(18)30734-0

DOI: https://doi.org/10.1016/j.scs.2018.07.004

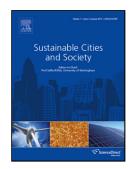
Reference: SCS 1174

To appear in:

Received date: 20-4-2018 Revised date: 8-7-2018 Accepted date: 10-7-2018



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ACCEPTED MANUSCRIPT

ANALYTICAL STUDY ON DESIGN DEFICIENCIES IN THE ENVELOPE PROJECTS OF HEALTHCARE BUILDINGS IN SPAIN

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Highlights

- Envelope design failures in 17 healthcare building projects were analyzed.
- Project failures in 51 different control parameters and 344 incidents were characterized.
- The 29% reviewed projects were of high quality, 53% of intermediate quality and 18% of poor quality.
- More detected failures had to do with the 'omission' of data (39%) or with the lack of 'definition' in the stipulations (25%).

ABSTRACT

The deficiencies in the design of a building influence its environmental sustainability. In this paper we examine the design failures which are common in the envelope of healthcare centres of Extremadura, Spain, by analysing a homogeneous sample of 17 projects of public healthcare centres sized between 350m² and 3500m². All healthcare centres' envelopes were comprised of brick facades and flat roofs. A total of 344 incidences were found in the sample, related to 51 control parameters. The average number of incidences per project was of 14. It was noted that 29% of the projects reviewed were of high quality, 53% of intermediate quality and 18% of poor quality. A significant amount of the detected failures had to do with the 'omission' of data (39%) or with the lack of 'definition' in the stipulations (25%). It has been demonstrated that larger and costlier healthcare centre projects usually have higher quality designs with fewer critical errors, independently of their geographical location and construction year. This research allows to identify the projects' aspects which can lead to errors in the envelope during the healthcare centres' service life. Furthermore, a tool has been developed to minimise failures in the design stage, preventing their later appearance.

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