INTERPRETATION IC 90.1-2007-04 OF
ANSI/ASHRAE/IESNA STANDARD 90.1-2007
Energy Standard for Buildings Except Low-Rise Residential Buildings

Date Approved: 5 March 2010

Request from: Jean Marais (Marais.Jean@big-gruppe.com), b.i.g. Bechtold INGENIEURGESELLSCHAFT MBH, Keithstraße 6, Berlin 10787.

Reference: This request for interpretation refers to the requirements presented in ANSI/ASHRAE/IESNA Standard 90.1-2007, Section 9.5.1 and Table 9.5.1, regarding building are type(s) and gross floor area used to calculate the interior lighting power allowance by the Building Area Method.

Background: ASHRAE 90.1-2007 Section 9.5.1c. states "Multiply the gross lighted floor areas of the building area type(s) times the LPD." Suggesting that multiple types may in some cases be used. In a 47,000 spectator FIFA football stadium, the two undergroung levels are mainly, but not exclusively, parking area and account for a substantially large amount of square footage. If the lighting power density (LPD) from Table 9.5.1 for a sports arena is used, 1.1 W/ft^2 (12 W/m^2), for all that parking square footage, the baseline building energy performance would perform so badly that the performance increase of the proposed design is at the 45% mark. Conversely, if the LPD for a parking garage is used, 0.3 W/ft^2 (3 W/m^2), for the square footage of the parking areas, that performance gain drops to 11% and the energy breakdown at least looks similar to the design case building.

Using two whole building types is still a long way off from doing a space-by-space method. I am inclined to err on the side of caution, being the more conservative outcome of using the 0.3W/ft^2 (3 W/m^2) for the square footage of the parking areas and having a realistic performance gain on the baseline building.

Interpretation: My interperitation is that more than one building area type may be applied, if reasonable to do so. In this case the building type definition (the IES pages where these types are broken down: http://lpd.ies.org/cgi-bin/lpd/lpdhome.pl). And more specifically, for whole building types: http://lpd.ies.org/cgi-bin/lpd/CategoryList.pl does not contain a parking area and because the parking is substantially large, it is reasonable to include an additional building area type to assign to this square footage.

Another example would be if a substantial portion of the stadium is utilized as office space during most of the year and enjoy many more hours of occupation compared to the rest of the facility. The office spaces would also qualify an extra building area type.

Question: Is this interpretation correct?

Answer: No

Comments: We do agree with the basis of your proposed interpretation. However, you have referenced a tool for examining the requirements of the 90.1 Standard (2004 version) found on the IES website and this is NOT an exact representation of the Standard itself.

The intent of the actual ANSI/ASHRAE/IES Standard 90.1-2007, Table 9.5.1, 'Lighting Power Densities Using the Building Area Method', allows for multiple separately identifiable building area types to be applied for compliance (See footnote "a" in Table 9.5.1). You will find both a parking garage and a sports arena building area type in Table 9.5.1.