

APPLYING “WELL BUILDING STANDARDS” IN INTERIOR DESIGN OF ADMINISTRATIVE BUILDINGS (AN ANALYTICAL STUDY OF THE AMERICAN SOCIETY OF INTERIOR DESIGNERS’ HEADQUARTERS OFFICE AS AN APPLIED MODEL)

تطبيق "معايير البناء الجيدة" في العمارة الداخلية للمباني الإدارية (دراسة تحليلية لمكتب مقر الجمعية الأمريكية لمصممي الديكور الداخلي كنموذج تطبيقي)

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ABSTRACT

Scope – The administrative buildings affect the health of the individuals who are in them, whether it is a psychological or physical effect.

Methodology – Reviewing a model of applying "WELL Building Standards" system and describing and analyzing the standards and features of this program that were applied through this model.

Purpose – How to benefit from the “WELL Building Standards” program at the American Society of Interior Designers headquarters in the interior design of administrative buildings in Egypt.

Findings – "WELL Building Standards" system provides a thorough approach to addressing the diverse physical and psychological requirements of the occupants in the American Society of Interior Designers headquarters office. It does so by establishing a universal framework for evaluating health within the indoor built environment.

Conclusion – Enhancing the physical and psychological health of the human being is done by improving the quality of indoor environment of the building, and it's necessary to resort the “WELL Building Standards” program and using its standards in the interior design.

KEYWORDS

Indoor environment; American Society of Interior Designers headquarters; WELL Building Standards;

المخلص

الحدود – تؤثر كل من الأبنية والمكاتب الإدارية على صحة الأفراد الموجودين فيها سواء كان ذلك تأثيراً نفسياً أو جسدياً، وذلك من خلال تصميم العمارة الداخلية لهذه الأبنية / المكاتب.

المنهجية – استعراض نموذج تطبيقي لنظام "معايير البناء الجيدة" و وصف و تحليل معايير و بنود هذا النظام التي تم تطبيقها في العمارة الداخلية لهذا النموذج الموضح في ذلك البحث.

الهدف – كيفية الاستفادة من نظام "معايير البناء الجيدة" في المقر الرئيس للجمعية الأمريكية لمصممي الديكور الداخلي في التصميم الداخلي للمباني الإدارية في مصر.

النتائج – استطاع نظام "معايير البناء الجيدة" منهجاً شاملاً لمعالجة المتطلبات الجسدية والنفسية المتنوعة لشاغلي المكتب الرئيسي للجمعية الأمريكية لمصممي الديكور الداخلي، وهو يفعل ذلك من خلال إنشاء إطار عالمي لتقييم الصحة داخل البيئة المبنية الداخلية.

الخاتمة - إن التغيير في طريقة الفكر التصميمي و توجيهه نحو تعزيز صحة الإنسان الجسدية و النفسية يساهم بشكل كبير في جودة البيئة الداخلية للمبنى/المكتب الإداري.

الكلمات المفتاحية

البيئة الداخلية؛ مقر الجمعية الأمريكية لمصممي الديكور الداخلي؛ معايير البناء الجيدة؛

1. INTRODUCTION

In the last decade, significant progress has been made by standard-setting institutions and green building standards in advancing the field of design. This progress has led to the widespread adoption of environmentally sustainable and mindful building practices worldwide. However, efforts to enhance well-being and human health have played a relatively minor role in the development of design standards.

It is now considered imperative to prioritize comfort and human health in interior design practices, aiming not only for environmental sustainability but also for the well-being of individuals.

"WELL Building Standards®" (v1) is an environmental assessment program for controlling, accrediting and measuring the properties of the indoor environment which affect people's health and well-being, through seven standards:

- Air standard
- Mind standard
- Water standard
- Comfort standard
- Light standard
- Fitness standard
- Nourishment standard

"WELL Building Standards" program was launched by Delos in October 2014 and is overseen by the International WELL Building Institute. This program offers optimal interior design solutions rooted in evidence-based scientific and medical research.

By prioritizing health and wellness, this program places them at the core of interior design decisions and presents innovative solutions for indoor environments. Developed through a seven-year research collaboration with architects, scientists, clinicians, and interior designers. The program incorporates a series of studies which delve into the connection between individuals' well-being and the interior spaces where people spend over 91% of their day.

1.1 WELL BUILDING STANDARDS PILLARS

"WELL Building Standards" program adopts a holistic approach to improve human well-being within indoor spaces, addressing three key pillars:

- Operations
- Behavior
- Design

This research will predominantly center on the pillar of "design," a component within the field of study of interior design.

1.2 FEATURES OF WELL BUILDING STANDARDS

Each of the 105 features that make up these seven standards—which total 105 in total—is intended to address a specific aspect of the comfort or health of occupants of the building, and each one of these features is broken down into parts that are typically defined according to the type of building. This means that depending on the type of project which is being undertaken, only specific "WELL Building Standards" features may be applied in it (Figure 1).

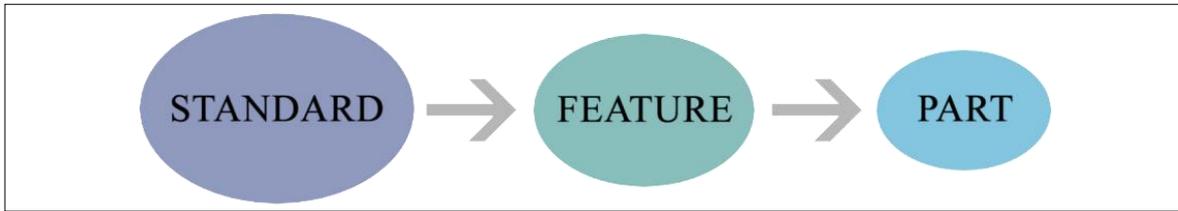


Figure 1, Each standard consists of features, and the features contain parts. (Source: Basma Darwish, 2023)

“WELL building standards” features are classified into: (preconditions) or (optimizations). The following is an explanation of what each of them:

1.3 PRECONDITIONS (P)

Some of "WELL Building Standards" features are classified as preconditions - required for all "WELL Building Standards" certifications' levels. The preconditions is considered the core of wellness in the indoor environment of the administrative buildings, and It is required to note that all preconditions for the accreditation of "WELL Building Standards" certificate must be implemented.

1.4 OPTIMIZATIONS (O)

Optimizations are not necessary to obtain Silver accreditation, but providing an opportunity to obtain Gold or Platinum accreditation. These optimizations incorporate optional strategies, protocols, techniques and interior designs. International WELL Building Institute encourages all administrative buildings to achieve the largest possible number of optimizations.

1.5 CERTIFICATES OF WELL BUILDING STANDARDS

The "WELL Building Standards" program provides certification at three distinct levels: Silver, Gold, or Platinum (Figure 2). To attain certification at any level, a project must satisfy all preconditions features. Moreover, for higher levels of "WELL Building Standards" certification, a project needs to successfully incorporate a percentage of optimization features (Table 1), in addition to meeting all preconditions. Buildings receive certification once a sufficient number of features are completed.



Figure 2, Certificates of the three levels: Silver, Gold, and Platinum. (Source: IWBI pbc, 2019)

Table 1, shows the requirements for the levels of “WELL building standards” certificates.

Certificate level	Preconditions	Optimizations
Silver certification	All applicable	None
Gold certification	All applicable	40% of applicable
Platinum certification	All applicable	60% of applicable

After we knew what "WELL Building Standards - Version 1" is, a model of one of the administrative offices that obtained the "WELL Building Standards - Version 1" certificate will be presented, including standards and features that have been applied to promote human health and well-being within this administrative facility.

2. AMERICAN SOCIETY OF INTERIOR DESIGNERS HEADQUARTERS OFFICE (ASID)

A nonprofit organization based in the United States (Figure 3) that promotes the interior design profession, the association has built its new administrative headquarters in Washington, D.C. as a living laboratory to demonstrate the impact of design on the human experience.



Figure 3, Entrance of ASID Headquarters Office. (Source: ASID Research, 2020)

2.1 OFFICE DESCRIPTION

- Location: Washington DC, Washington State – USA.
- Area: 790m².
- Building: No. 910.
- Floor: 9th.
- Interior Designer: Perkins +Will.
- Executive Office: Bios.
- Launching date: May 2016.
- Type of activity: Office of an interior design company (workplace).
- Certifications: LEED® Platinum and WELL V1 Platinum.

2.2 OFFICE DESIGN PHILOSOPHY

The design vision of the office is based on “designing a workplace for the future”, defining project objectives and setting priorities. Based on these basics, the following determinants were followed in designing the office:

- | | | |
|-----------------------|------------------|-------------------------|
| • Health and wellness | • Resiliency | • Social Responsibility |
| • Technology | • Sustainability | • Advocacy |
| • Workstyles | • Flexibility | • Miscellaneous |

2.3 OFFICE PLAN

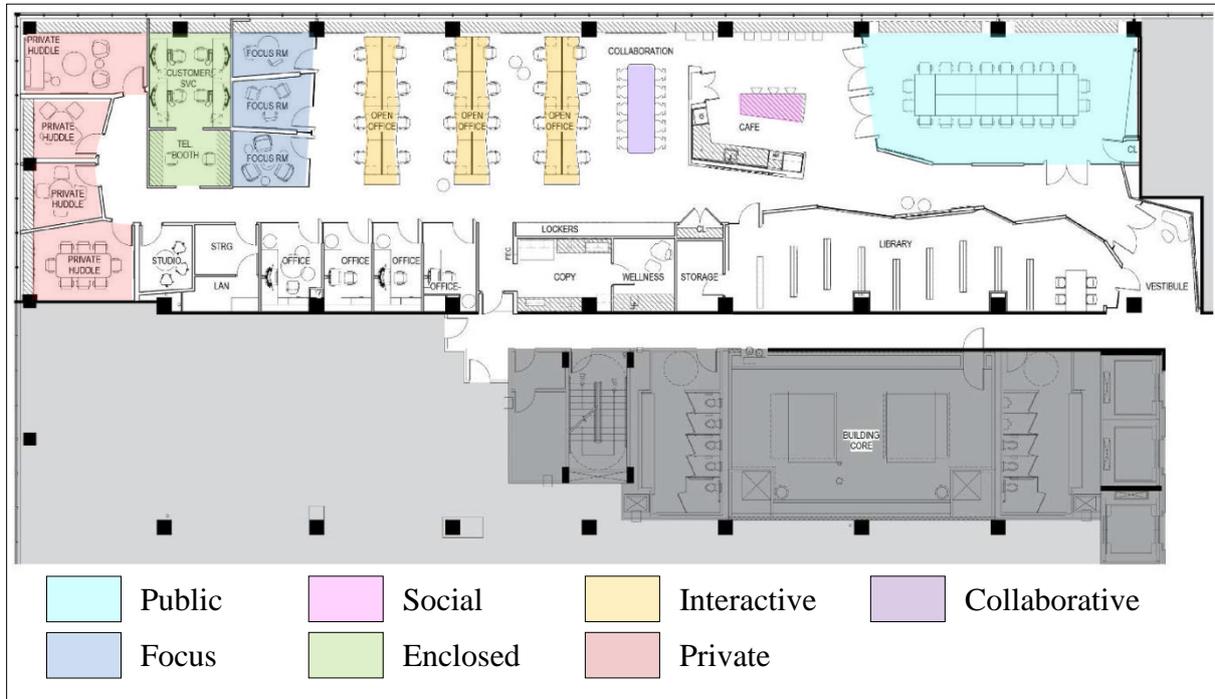


Figure 4, ASID plan showing the organization of the space. (Source: ASID Research, 2017)

2.4 WELL BUILDING STANDARD IMPLEMENTATION PROCESS

ASID recognizes that designing plays a fundamental role in influencing well-being and human health, which is why the company's headquarters office was awarded the "WELL Building Standards-V1" Platinum Level Certification in September 2017 (Figure 5) According to the "New and Existing Interiors" projects, demonstrating how the convergence of interior architecture design regulations and performance measures can enhance the overall human experience, through implementing 36 preconditions (Figure 6) and 51 optimizations (Figure 7).



Figure 5, Platinum certificate obtained by "ASID" HQ office (Source: IWBI, 2019)



Figure 6, Number of Preconditions that "ASID" HQ office achieved (Source: IWBI, 2019)

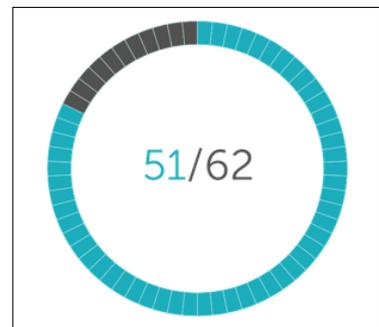


Figure 7, Number of Optimizations that "ASID" HQ office achieved (Source: IWBI, 2019)

3. AIR STANDARD

Air standard provides guidelines for air quality; Where building materials can affect air quality and health, ASID has successfully adhered to optimal indoor air quality regulations and criteria, promoting the health and well-being of office occupants by employing strategies that involve the careful selection of specific materials and furnishings, the HVAC system, humidity control, maintenance and operations, and generally ASID office provides improved air quality, indoor air quality is continuously monitored and prominently displayed to occupants The office is in the main aisle, and the ASID office has listed 21 features which are 9 preconditions (P) and 12 optimizations (O) to meet the air standard requirements. Look at (Table 2).

Table 2, "Air Standard" features that have been applied and what have not been applied in "ASID" HQ office.

Air Standard							
No	Feature Title	Done	Type	No	Feature Title	Done	Type
1	Air quality standards	✓	P	16	Humidity control	✗	O
2	Smoking ban	✓	P	17	Direct source ventilation	✓	O
3	Ventilation effectiveness	✓	P	18	Air quality monitoring and feedback	✓	O
4	VOC reduction	✓	P	19	Operable windows	✗	O
5	Air filtration	✓	P	20	Outdoor air systems	✗	O
6	Microbe and mold control	✓	P	21	Displacement ventilation	✗	O
7	Construction pollution management	✓	P	22	Pest control	✓	O
8	Healthy entrance	✓	O	23	Advanced air purification	✓	O
9	Cleaning protocol	✓	P	24	Combustion minimization	✓	O
10	Pesticide management	-	-	25	Toxic material reduction	✓	O
11	Fundamental material safety	✓	P	26	Enhanced material safety	✓	O
12	Moisture management	-	-	27	Antimicrobial activity for surfaces	✓	O
13	Air flush	✓	O	28	Cleanable environment	✓	O
14	Air infiltration management	✗	O	29	Cleaning equipment	✓	O
15	Increased ventilation	✗	O				

3.1 PRECONDITIONS

3.1.1 AIR QUALITY STANDARDS

There are various sensors that report the air quality in the indoor environment of the office by measuring ozone (O₃) (Figure 8), carbon dioxide (CO₂) (Figure 9) and particulate matter (PM).



Figure 8, Ozone sensor in "ASID" HQ office
(Source: Susan Chung, 2017)



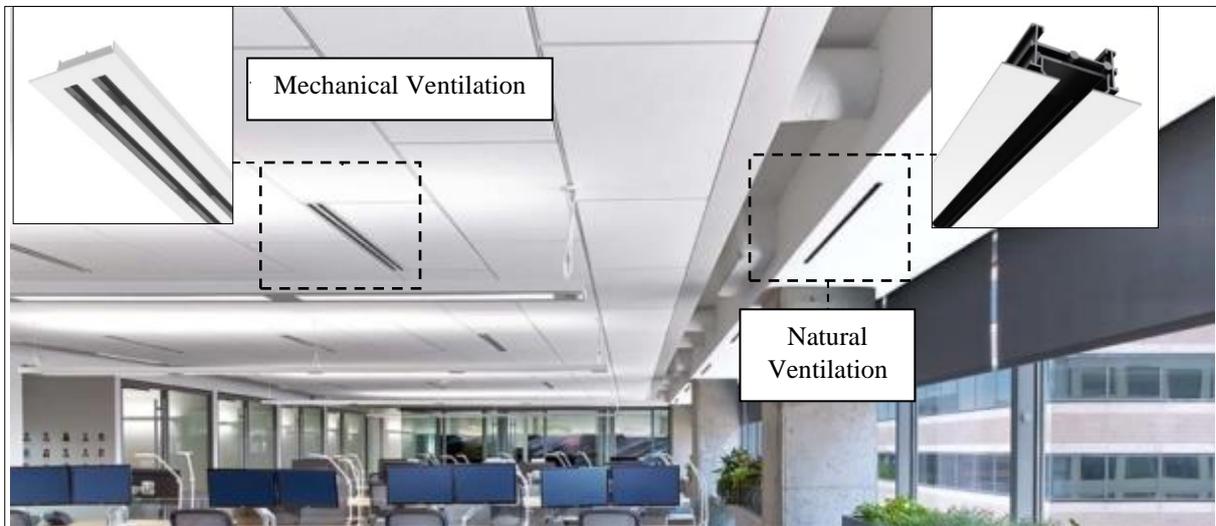
Figure 9, Carbon Dioxide sensor in "ASID" HQ office (Source: Susan Chung, 2017)

3.1.2 SMOKING BAN

Smoking is prohibited in ASID headquarters office.

3.1.3 VENTILATION EFFECTIVENESS

- Heating and Cooling: The office uses a central ceiling air conditioning system with an 8 mm thick galvanized iron mesh air distributor for mechanical ventilation, and for natural ventilation an external air supply system is installed that is controlled upon request using a strip air distributor type (SKU: 140) (Figure 10) .
- An efficient ventilation design regulates the rate of ventilation of the outside air to maintain CO₂ levels within the office below 800 parts per million (ppm).



*Figure 10, Supplying ASID headquarters office with both mechanical ventilation and natural ventilation.
(Source: ASID Research, 2017)*

3.1.4 AIR FILTRATION

- Class 13 MERV filters are applied in the ventilation system for filtering incoming outside air, while Class 8 MERV filters are employed in the ventilation system to filter recirculated air.
- Carbon filters have been added to the office air handling units; to provide improved filtration of volatile organic compounds (VOCs) in addition to particulate matter (PM₁₀).

3.1.5 MICROBE AND MOLD CONTROL

UV lamps are used in the drain pans and cooling coils of ASID headquarters office mechanical system supplies.

3.2 OPTIMIZATIONS

3.2.1 TOXIC MATERIAL REDUCTION

The interior finishes or furnishings within ASID office do not contain any PVC, polyurethane, phthalates or brominated or polybrominated flame retardants.

3.2.2 ENHANCED MATERIAL SAFETY

- All identified materials in the ASID office have been rigorously evaluated to eliminate substances that could have negative health effects.
- Furniture is either BIFMA, Declare, Cradle to Cradle certified, or comes with sanitary product statements and these stringent guidelines apply equally to all donor products, including Teknion, Lutron products, USAI Lighting, Steelcase + Coalesse, Herman Miller, Humanscale and OFS Brands.

4. MIND STANDARD

ASID headquarters office followed the requirements of the sanity standard by applying technology and "biophilic" design strategies; to reduce stress and improve well-being, these connections came from the landscape by the window but also from the incorporation of natural elements or patterns inspired by nature in the office. Plants and wooden tables directly integrate nature with the ASID headquarters office, establishing a tangible setting that enhances cognitive and emotional well-being.

ASID implemented 14 features with 5 preconditions (P) and 9 optimizations (O) that met mind standard (Table 3).

Table 3, "Mind Standard" features that have been applied and what have not been applied in "ASID" HQ office.

Mind Standard							
No	Feature Title	Done	Type	No	Feature Title	Done	Type
1	Health and wellness awareness	✓	P	10	Workplace family support	✓	○
2	Integrative design	✓	P	11	Self-monitoring	✓	○
3	Post-occupancy surveys	✓	P	12	Stress and addiction treatment	✓	○
4	Beauty and design I	✓	P	13	Altruism	✓	○
5	Biophilia I - Qualitative	✓	P	14	Material transparency	✗	○
6	Adaptable spaces	✓	O	15	Organizational transparency	✗	○
7	Healthy sleep Policy	✓	O	16	Beauty and design II	✓	○
8	Business travel	✓	O	17	Biophilia II - quantitative	✗	○
9	Building health policy	✓	O				

4.1 PRECONDITIONS

4.1.1 BEAUTY AND DESIGN I

- Most of the interior spaces of ASID office include natural lighting.
- The western and northern interior facades of ASID office have views of the windows in the open air.

4.1.2 BIOPHILIA I - QUALITATIVE

Biophilic design strategies are used throughout; to reduce stress and stimulate higher levels of cognitive and emotional functioning for the occupants of the ASID headquarters office; Configurations that evoke feelings of mystery and sanctuary have been used to resonate with the occupants on a subconscious level and enhance their experience of the space. Examples include:

- The exposed structure pattern of dragonfly wings embedded in the glass binding in the entry corridor is an abstract reference to natural fractal patterns (Figure 11).



Figure 11, Natural pattern inspired by a dragonfly wing in the entry corridor of the ASID headquarters office. (Source: Architectural Health/Yang Architects LLC, 2019)

- The conference room carpet's design alludes to the ocean in a visual and biophilic way.
- The corridor of the entrance creates an enigmatic pathway to the ASID office through its zigzag layout.
- Uninterrupted access to the northern and western exterior facade provides exposure to daylight from multiple angles.

4.2 OPTIMIZATIONS

4.2.1 ADAPTABLE SPACES

- Enclosable focus rooms are provided with 2 seats per room (Figure 12).
- Cooperation area is provided as an enclosable room with 4 seats, which it is equipped with a white board and a screen; to discuss ideas or work (Figure 13).



Figure 12, Enclosable focus room with 2 seats in ASID office. (Source: Perkins&Will, 2019)



Figure 13, Enclosable room for cooperation with 4 seats, white board and screen in ASID office (Source: Susan Chung, 2017)

- When the craving for solitude takes over, employees can retreat to the soundproofed break room (Figure 14), which includes a yoga mat and stability ball, doubles as a nap room and space for quiet respite for someone going through a stressful moment at work.

4.2.2 BEAUTY AND DESIGN II

There is an art installation in the corridor wall opposite the library (Figure 15).



Figure 14, Break room in ASID office. (Source: Architectural Health/Yang Architects LLC, 2019)



Figure 15, Art installation on the wall of the corridor opposite the library in ASID office. (Source: ASID®, 2017)

5. WATER STANDARD

ASID headquarters office fulfilled all the features of the water standard (Table 4) by working with the “Carr” company for water systems, by promoting clean and safe water through appropriate filtration, and the appropriate water quality requirements for various uses in ASID headquarters office, as well as interest in promoting drinking water and carrying out performance testing and maintenance operations.

Table 4, "Water Standard" features that have been applied in "ASID" headquarters office.

Water Standard							
No	Feature Title	Done	Type	No	Feature Title	Done	Type
1	Fundamental water quality	✓	P	5	Public water additives	✓	P
2	Inorganic contaminants	✓	P	6	Periodic water quality testing	✓	O
3	Organic contaminants	✓	P	7	Water treatment	✓	O
4	Agricultural contaminants	✓	P	8	Drinking water promotion	✓	O

5.1 PRECONDITIONS

5.1.1 FUNDAMENTAL WATER QUALITY

Suspended Solids: The water was tested by the International WELL Building Institute (IWBI) evaluator to ensure that drinking water meets specified turbidity standards.

5.2 OPTIMIZATIONS

5.2.1 WATER TREATMENT

The office is designed to achieve a 40% reduction in water use, and includes an advanced sediment water purification system by using carbon and ultraviolet filters.

5.2.2 DRINKING WATER PROMOTION

The points for distributing pure drinking water are located 30 meters away from all regularly occupied areas such as the café (Figure 16) and the meeting room (Figure 17).

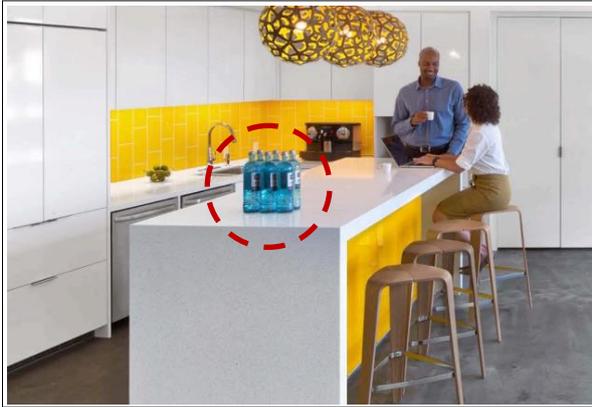


Figure 16, The distribution of pure drinking water in ASID's café (Source: Susan Chung, 2017)



Figure 17, The distribution of pure drinking water in ASID's meeting room (Source: Susan Chung, 2017)

6. COMFORT STANDARD

ASID headquarters office has established criteria for crafting an indoor space that is free from disturbances, fosters productivity, and provides comfort. ASID has listed 10 features which are 4 preconditions (P) and 6 optimizations (O) to fulfill the comfort standard (Table 5).

Table 5, "Comfort Standard" features that have been applied and what have not been applied in "ASID" HQ office.

Comfort Standard							
No	Feature Title	Done	Type	No	Feature Title	Done	Type
1	Accessible design	✓	P	7	Reverberation time	✓	O
2	Ergonomics: Visual and physical	✓	P	8	Sound masking	✓	O
3	Exterior noise intrusion	✓	O	9	Sound reducing surfaces	✓	O
4	Internally generated noise	✓	P	10	Sound barriers	✓	O
5	Thermal comfort	✓	P	11	Individual thermal comfort	✓	O
6	Olfactory comfort	✗	O	12	Radiant thermal comfort	✗	O

6.1 PRECONIDITIONS

6.1.1 ACCESSIBLE DESIGN

An elevator is available to reach the office on the ninth floor.

6.1.2 ERGONIMICS: VISUAL AND PHYSICAL

- Desks are equipped with desktop height adjustment stands, mice, wireless keyboards (Figure 18) and adjustable chairs; To provide flexibility in equipment placement.
- The meeting room table is equipped with electrical outlets (Figure 19).



Figure 18, A desk with a desktop height adjustment stand, a mouse & a wireless keyboard at ASID office (Source: ASID®, 2017)

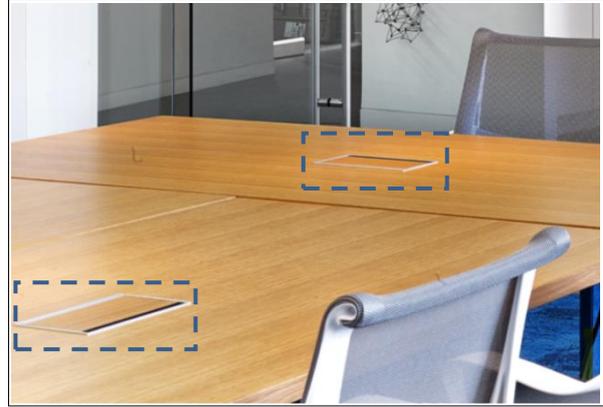


Figure 19, The meeting table is equipped with electrical outlets at ASID headquarters office (Source: Metropolis, 2016)

6.1.3 INTERNALLY GENERATED NOISE

Acoustic design reduces distracting noise and improves privacy; The average office sound levels is 60 dB.

6.1.4 THERMAL COMFORT

- The office contains an exact temperature equal to 23.8°C.
- The HVAC system in the office is divided into separate areas that have independent control.
- Relative humidity does not exceed 38%.

6.2 OPTIMIZATIONS

6.2.1 SOUND MASKING

There is a Sound Masking system in ASID headquarters office (Figure 20). The sound masking system does a very good job of canceling noise and enabling speech privacy in the office. Satisfaction with low noise and speech privacy increased significantly, along with overall satisfaction in the office.



Figure 20, Shows the ceiling where the sound masking system is installed in ASID headquarters office. (Source: Architectural Health/Yan Architects LLC, 2019)

6.2.2 SOUND REDUCTION SURFACES

- The high-performance acoustic ceiling tiles systems (Figure 21) and Acoustic Wall Panels (Figure 22) contribute to the acoustic privacy in the office. ASID customer service team has allocated an area to receive calls throughout the day, and to ensure their privacy along with those working in the open office, this area contains walls with a higher noise insulation class (NIC) and acoustic panels to absorb sound.
- The office plan accounted for varying levels of acoustic privacy, with more interactive space, such as the large conference room and café - located at the front part of the office area and more acoustically insulated spaces, such as the meeting rooms at the opposite end.



Figure 21, The suspended ceiling system consists of acoustic tiles absorbing sound in ASID office (Source: Armstrong®, 2018)



Figure 22, Wall cladding using acoustic panels in ASID's customers service room (Source: Susan Chung, 2017)

7. LIGHT STANDARD

ASID headquarters office has implemented the guidelines for all features of the light standard (Table 6). These guidelines are intended to minimize interference with the body's circadian rhythm, boost productivity, ensure good visual clarity, and also include specifications for tailored lighting systems to improve alertness, enhance the well-being of office occupants, in addition to supporting better sleep.

Table 6, "Light Standard" features that have been applied in "ASID" headquarters office.

Light Standard							
No	Feature Title	Done	Type	No	Feature Title	Done	Type
1	Visual lighting design	✓	P	7	Surface design	✓	○
2	Circadian lighting design	✓	P	8	Automated shading & dimming controls	✓	○
3	Electric light glare control	✓	P	9	Right to light	✓	○
4	Solar glare control	✓	P	10	Daylight Modeling	✓	○
5	Low-glare workstation design	✓	○	11	Daylighting fenestration	✓	○
6	Color quality	✓	○				

7.1 PRECONIDITIONS

7.1.1 VISUAL LIGHTING DESIGN

The basic office lighting is longitudinal LED lighting units with a brightness of 441.6 lux (Figure 23), and task lighting units are available for all desks (Figure 24).



Figure 23, The main lighting unit used in ASID office. (Source: Metropolis, 2016)



Figure 24, Existence of task lighting units in ASID desks. (Source: Susan Chung, 2017)

7.1.2 CIRCADIAN LIGHTING DESIGN

The office used the daily lighting system in more than 50 percent of the continuous lighting load, which simulates the daily color temperature cycle of natural daylight, and the lighting units operate with color-changing fluorescent lamps (Lutron Quantum Control), and 81 percent of interior spaces tested in the office exceed 250 Melanopic Lux.

7.1.3 SOLAR GLARE CONTROL

There is an automated shading system on all exterior facades and is connected to solar sensors on the windows that automatically track the condition and intensity of sunlight and the appropriate height of the shades (Figure 25); To reduce glare and heat gain as well as maximize the benefits of natural daylight.

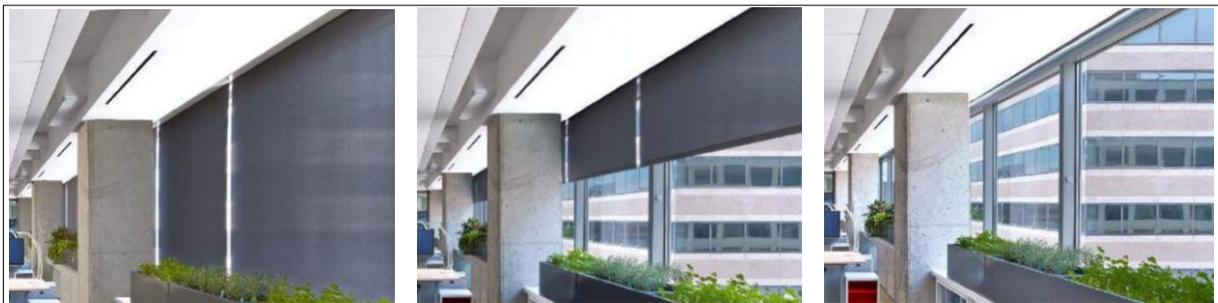


Figure 25, Shows the automated shading system in ASID headquarters office (Source: Susan Chung, 2017)

7.2 OPTIMIZATIONS

7.2.1 AUTOMATED SHADING AND DIMMING CONTROLS

Occupancy sensors are installed for more than 75 percent of the connected lighting load, as daylight-sensing photocells dim during periods of time when daylight harvesting is possible.

7.2.2 RIGHT TO LIGHT

North-facing windows provide workstations with access to daylight; about 75 percent of offices are within 25 feet of an outside-facing window.

8. FITNESS STANDARD

The fitness standard has allowed ASID to seamlessly integrate exercise and fitness into everyday life by implementing active design strategies throughout the office and offering physical elements and components to facilitate an active and health-conscious lifestyle. ASID has listed 6 features as one precondition (P) and 5 optimizations (O) to fulfill the fitness standard (Table 7).

Table 7, "Fitness Standard" features that have been applied and what have not been applied in "ASID" HQ office.

Fitness Standard							
No	Feature Title	Done	Type	No	Feature Title	Done	Type
1	Interior fitness circulation	✗	O	5	Physical activity spaces	✓	O
2	Activity incentive programs	✓	P	6	Active transformation support	✗	O
3	Structured fitness opportunities	✓	O	7	Fitness equipment	✓	O
4	Exterior active design	✓	O	8	Active furnishings	✓	O

8.1 OPTIMIZATIONS

8.1.1 PHYSICAL ACTIVITY SPACES

There is a gym in the location where office is located (Figure 26).

8.1.2 ACTIVE FURNISHINGS

- All individual workstations permit employees to switch between sitting and standing positions by using the height-adjustable desks (Figure 27).
- The copy room has tables that support standing, and the design of the shelves and drawers encourages physical activity.



Figure 26, A gym in the vicinity of ASID office (Source: Susan Chung, 2017)

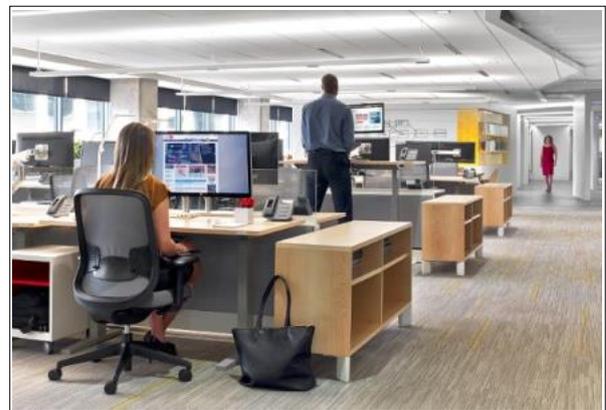


Figure 27, The work desks in ASID are designed with adjustable heights to suit standing and sitting positions (Source: Susan Chung, 2017)

9. NOURISHMENT STANDARD

ASID headquarters office was able to achieve most of the features of the nourishment standard, as there is a café in the office that provides a space for eating and provides healthy snacks, and the reduction of unhealthy ingredients by providing a plate of at least five fruits and vegetables that are provided every morning; To attract employees to healthy eating habits, to provide nutritional information to encourage healthy behaviors, and to have plates and cups with small serving sizes to promote healthy portions. ASID headquarters office has listed 14 features which are 8 preconditions (P) and 6 optimizations (O) to meet the nourishment standard (Table 8).

Table 8, "Nourishment Standard" features that have been applied & what have not been applied in "ASID" office.

Nourishment Standard							
No	Feature Title	Done	Type	No	Feature Title	Done	Type
1	Fruits and vegetables	✓	P	9	Safe food preparation materials	✓	○
2	Processed foods	✓	P	10	Serving sizes	✓	○
3	Food allergies	✓	P	11	Special diets	✓	○
4	Hand washing	✓	P	12	Responsible food production	✓	○
5	Food contamination	✓	P	13	Food storage	✓	○
6	Artificial Ingredients	✓	P	14	Food production	✗	○
7	Nutritional Information	✓	P	15	Mindful eating	✓	○
8	Food advertising	✓	P				

9.1 OPTIMIZATIONS

9.1.1 MINDFUL EATING

The major social area of the ASID headquarters is a café with a dining area.

10. RESULTS

- Successful interior architecture design for administrative buildings offices is based on the study of the seven standards of the "WELL Building Standards -Version 1" Program that must be taken into account: air, mind, water, comfort, light, fitness and nourishment.
- The Air Standard promotes the maintenance of clean air by reducing sources of indoor air pollution, requiring optimal indoor air quality to support the health of administrative building occupants by:
 - Ensuring a basic level of proper ventilation and high indoor air quality.
 - Reducing the impact of volatile organic compounds in interior architecture design materials on indoor air quality.
 - Removal of indoor and outdoor airborne pollutants through air purification.
 - Reducing the growth of mold and bacteria inside the administrative building, especially due to water damage or condensation on the cooling coils.
- The Water Standard encourages the provision of safe and clean water through the implementation of appropriate filtration techniques and regular testing in order for the occupants of the administrative building to obtain the best water quality for various uses by:

- Improving water quality by requiring the use of water treatment systems.
- Encouraging water consumption by making high-quality drinking water accessible to occupants.
- The Nourishment Standard supports the availability of fresh, healthy foods, limits unhealthy ingredients and encourages improved eating habits and food culture by:
 - Reducing the harmful contaminants that may arise from food preparation materials and eliminating surfaces that harbor pathogens.
 - Improving access to fresh food by providing space, infrastructure and tools for food production in the administrative building.
 - Encouraging mindful eating behaviors by providing shared dining spaces.
- The Light Standard provides lighting guidelines aimed at minimizing disruption to the body's circadian system, enhancing productivity, supporting good quality sleep and providing adequate visual acuity when needed by:
 - Reducing direct and overhead glare by placing restrictions on the luminous intensity of lamps.
 - Avoiding glare from the sun by blocking or reflecting direct sunlight away from the occupants of the administrative building.
 - Encouraging reliance on natural light through automatic shading and dimming systems.
- The Fitness Standard encourages the integration of physical activity into daily life by providing opportunities and support for an active lifestyle and discouraging sedentary behaviors by:
 - Encouraging intermittent bouts of physical activity and reducing sedentary behavior through accessible, safe, and visually attractive stairs, doorways, and walkways.
 - Promoting daily physical activity by providing free support in the building for active furnishings.
- The Comfort Standard defines design requirements to create distraction-free, productive and comfortable indoor environments by:
 - Promoting equality by providing administrative buildings that are accessible and usable by people of all physical abilities.
 - Reducing acoustic disturbances by reducing external noise leakage and internal noise sources.
 - Ensuring an adequate level of thermal comfort.
 - Achieving maximum comfort in the sense of smell by reducing the transmission of strong and annoying odors within the administrative building.
- The Mind Standard requires design, technology, and therapeutic strategies that provide a physical environment that improves cognitive and emotional health by:
 - Creating unique and culturally rich spaces in a thoughtful manner.
 - Nurturing the innate relationship between humans and nature within the administrative building.
 - Enhancing administrative building occupant comfort and spatial familiarity by designing spacious, familiar and aesthetically attractive spaces.

- Supporting the psychological well-being of the occupants of the administrative building by including the natural environment in the design of the interior architecture.

11. RECOMMENDATIONS

- Meeting air quality standards by reducing VOCs, filtrating the air, managing humidity and air infiltration, reducing toxic substances, controlling microbes and mold, providing direct source ventilation, operable windows and a healthy entrance ensuring no ingress of harmful substances and contaminated air. Through the entrance to the administrative building, as well as preventing the use of asbestos and meeting strict limits for mercury and lead in the internal installations of the administrative building.
- Preserving the water resource while improving its quality for human health in the context of various uses, therefore, the administrative building requires an extensive initial assessment of the water source in the administrative building by detecting turbidity and coliforms, installing filters to meet the required water limits, and administrative buildings must continue to Conduct periodic tests to maintain water quality over time.
- Using safe food preparation materials, increasing the availability of healthy foods, supporting their production within the administrative building, and providing indoor spaces designated for dining; It can have an impact on employees' food choices and overall dietary patterns, enabling people to make more informed food choices that lead to better health and well-being.
- Maintaining the correct synchronized circadian rhythms of the human body and avoiding eye strain and headaches during working hours in the administrative building through visual lighting design, circadian lighting design, controlling the glare of electric light, controlling the glare of solar light, and following a low-glare workstation design, applying automatic shading and dimming controls, enhancing visually stimulating color quality, controlling overall brightness through surface design, right of access to daylight, following daylight opening standards.
- Follow policies and strategies that promote physical activity and reduce sedentariness, which can be implemented in the administrative building, such as active furnishing, support for active transportation, implementation of requirements for indoor fitness movement paths, and provision of physical activity spaces and equipment; To help combat obesity and other chronic diseases.
- Create a comfortable environment; Where employees in the administrative building can feel comfortable and work more productively, by providing comfortable seats and adjusting the height of the screen and desktop to improve comfortable sitting/standing position, design accessible interior space, reduce external noise interference, reduce internally generated noise, enhance thermal comfort, enhance olfactory comfort and use acoustic comfort methods through sound masking systems, sound reducing surfaces and sound barriers.
- Identify workplace policies that can be implemented to positively impact mood, sleep, stress levels, and psychosocial well-being; In order to enhance and empower the general health and well-being of the administrative building occupants by providing adaptable

spaces, a biophilia plan was implemented that integrates the office building with nature, combining beauty and design.

12. PREVIOUS STUDIES

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The extent of the benefit from previous studies is that the ability to control the indoor environment of the building is an essential element in the success of designing the quality of the indoor environment, and the worker's right to receives more attention by designing comfortable workplaces

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