**建筑节能设计报告书**

公共建筑－综合权衡

甲类

|  |  |
| --- | --- |
| 工程名称 | 广州国际科技创新城一期工程A地块(自编号)14#地块1栋 |
| 工程地点 | 广东-广州 |
| 设计编号 | GC180066 |
| 建设单位 | 广州碧科智城开发建设投资有限公司 |
| 设计单位 | 深圳市华阳国际工程设计股份有限公司 |
| 设 计 人 |  |
| 校 对 人 |  |
| 审 核 人 |  |
| 设计日期 | 2018年08月19日 |



|  |  |
| --- | --- |
| 采用软件 | 节能设计BECS2018 |
| 软件版本 | 20170808 |
| 研发单位 | 北京绿建软件有限公司 |
| 正版授权码 | P47A47054 |

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# 建筑概况

|  |  |
| --- | --- |
| 工程名称 | 广州国际科技创新城一期工程A地块(自编号)14#地块1栋 |
| 工程地点 | 广东-广州 |
| 地理位置 | 北纬：23.08° | 东经：113.14° |
| 建筑面积 | 地上36334㎡ 地下0㎡ |
| 建筑层数 | 地上12 地下0 |
| 建筑高度 | 54.0m |
| 建筑（节能计算）体积 | 165206.31 |
| 建筑（节能计算）外表面积 | 19247.45 |
| 结构类型 | 框架剪力墙结构 |
| 外墙太阳辐射吸收系数 | 0.60 |
| 屋顶太阳辐射吸收系数 | 0.78 |

# 设计依据

1. 《公共建筑节能设计标准》(GB50189-2015)

2. 《民用建筑热工设计规范》(GB50176-2016)

3. 《建筑外门窗气密，水密，抗风压性能分级及检测方法》（GB/T 7106-2008）

4. 《建筑幕墙》（GB/T 21086-2007）

# 工程材料

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 材料名称 | 编号 | 导热系数λ | 蓄热系数S | 密度ρ | 比热容Cp | 蒸汽渗透系数u | 备注 |
| W/(m.K) | W/(㎡.K) | kg/m3 | J/(kg.K) | g/(m.h.kPa) |
| 水泥砂浆 | 1 | 0.930 | 11.370 | 1800.0 | 1050.0 | 0.0210 | 来源：《民用建筑热工设计规范（GB50176-93）》 |
| 石灰砂浆 | 18 | 0.810 | 10.070 | 1600.0 | 1050.0 | 0.0443 | 来源：《民用建筑热工设计规范（GB50176-93）》 |
| 钢筋混凝土 | 4 | 1.740 | 17.200 | 2500.0 | 920.0 | 0.0158 | 来源：《民用建筑热工设计规范（GB50176-93）》 |
| 细石混凝土保护层 | 36 | 1.740 | 17.200 | 2500.0 | 920.0 | 0.0158 | 来源：《民用建筑热工设计规范（GB50176-93）》 |
| 挤塑聚苯板(ρ=25-32) | 22 | 0.030 | 0.320 | 28.5 | 1647.0 | 0.0162 |  |
| 碎石、卵石混凝土(ρ=2300) | 29 | 1.510 | 15.360 | 2300.0 | 920.0 | 0.0173 | 蒸汽渗透系数为测定值 |
| 玻化微珠保温浆料(I型） | 40 | 0.070 | 1.200 | 350.0 | 1050.0 | 0.0000 |  |
| 岩棉板(ρ=60-160) | 35 | 0.041 | 0.615 | 110.0 | 1220.0 | 0.4880 |  |
| 加气混凝土砌块（B07级） | 37 | 0.220 | 3.590 | 700.0 | 1050.0 | 0.0000 |  |

# 围护结构作法简要说明

**1. 屋顶构造（1）：**覆土屋面（由外到内）

 夯实粘土(ρ=2000) 600mm＋ 细石混凝土保护层 50mm＋挤塑聚苯板(ρ=25-32) 50mm＋碎石、卵石混凝土(ρ=2300) 30mm＋钢筋混凝土 120mm

**2. 屋顶构造（2）：**铺装屋面（由外到内）

 水泥砂浆 20mm＋细石混凝土保护层 50mm＋挤塑聚苯板(ρ=25-32) 50mm＋碎石、卵石混凝土(ρ=2300) 30mm＋钢筋混凝土 120mm

**3. 外墙构造：**干挂铝板外墙（由外到内）

 水泥砂浆 20mm＋玻化微珠保温浆料(I型） 30mm＋加气混凝土砌块（B07级） 200mm＋水泥砂浆 15mm

**4. 挑空楼板构造：**挑空楼板（由外到内）

 岩棉板(ρ=60-160) 20mm＋钢筋混凝土 120mm

**5. 外窗构造（1）：**普通铝合金框+ 蓝灰色Low-E中空钢化10mm+12mm(空气）+10mm玻璃

 传热系数3.500W/m^2.K，自身遮阳系数0.310

**6. 外窗构造（2）：**普通铝合金框+ 10mm钢化+12mm(空气）+10mm钢化高通型超白玻璃

 传热系数4.000W/m^2.K，自身遮阳系数0.700

**7. 外窗构造（3）：**无框+12mm钢化+2.28SGP+12mm钢化夹胶高通型超白玻璃

 传热系数4.000W/m^2.K，自身遮阳系数0.700

# 体形系数

|  |  |
| --- | --- |
| 外表面积 | 19247.45 |
| 建筑体积 | 165206.31 |
| 体形系数 | 0.12 |

# 窗墙比

## 窗墙比

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 朝向 | 立面 | 窗面积(㎡) | 墙面积(㎡) | 窗墙比 |
| 南向 | 立面3 | 157.44 | 228.08 | 0.69 |
| 北向 | 立面4 | 4832.36 | 6991.71 | 0.69 |
| 东向 | 立面1 | 2522.40 | 3655.97 | 0.69 |
| 西向 | 立面2 | 2216.10 | 3167.79 | 0.70 |
| 平均 |  | 9728.30 | 14043.56 | 0.69 |

## 外窗表

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 朝向 | 编号 | 尺寸 | 楼层 | 数量 | 单个面积（m2） | 合计面积（m2） |
| 南向157.44 | MQ1 | 7.39×2.10 | 1 | 1 | 15.53 | 15.53 |
| MQ3 | 14.43×3.50 | 2 | 1 | 50.51 | 50.51 |
| MQ5 | 13.06×3.50 | 3 | 1 | 45.70 | 45.70 |
| MQ7 | 13.06×3.50 | 4 | 1 | 45.70 | 45.70 |
| 北向4832.36 | MQ1 | 18.65×3.50 | 1 | 1 | 65.27 | 65.27 |
| MQ1 | 21.45×3.50 | 1 | 1 | 75.08 | 75.08 |
| MQ10 | 25.20×3.50 | 6~11 | 6 | 88.20 | 529.20 |
| MQ10 | 17.25×3.50 | 6~11 | 6 | 60.38 | 362.25 |
| MQ10 | 24.00×3.50 | 6~11 | 6 | 84.00 | 504.00 |
| MQ10 | 17.25×3.50 | 6~11 | 6 | 60.38 | 362.25 |
| MQ10 | 22.20×3.50 | 6~11 | 6 | 77.70 | 466.20 |
| MQ11 | 26.10×3.50 | 1 | 1 | 91.35 | 91.35 |
| MQ11 | 26.20×3.50 | 2 | 1 | 91.70 | 91.70 |
| MQ2 | 6.70×3.50 | 1 | 1 | 23.45 | 23.45 |
| MQ2 | 2.00×3.50 | 1 | 1 | 7.00 | 7.00 |
| MQ2 | 14.60×3.50 | 1 | 1 | 51.10 | 51.10 |
| MQ2 | 22.70×3.50 | 1 | 1 | 79.45 | 79.45 |
| MQ2 | 16.80×3.50 | 1 | 2 | 58.80 | 117.60 |
| MQ2 | 2.00×3.50 | 1 | 1 | 7.00 | 7.00 |
| MQ2 | 5.50×2.10 | 1 | 1 | 11.55 | 11.55 |
| MQ3 | 21.45×3.50 | 2 | 1 | 75.08 | 75.08 |
| MQ3 | 17.57×3.50 | 2 | 1 | 61.50 | 61.50 |
| MQ4 | 29.40×3.50 | 2 | 1 | 102.90 | 102.90 |
| MQ4 | 16.75×3.50 | 2 | 2 | 58.62 | 117.25 |
| MQ4 | 11.00×3.50 | 2 | 1 | 38.50 | 38.50 |
| MQ4 | 16.80×3.50 | 2 | 1 | 58.80 | 58.80 |
| MQ4 | 5.50×3.50 | 2 | 1 | 19.25 | 19.25 |
| MQ5 | 3.35×3.50 | 3 | 1 | 11.73 | 11.73 |
| MQ5 | 21.45×3.50 | 3 | 1 | 75.08 | 75.08 |
| MQ5 | 17.58×3.50 | 3 | 1 | 61.51 | 61.51 |
| MQ6 | 9.45×3.50 | 3 | 1 | 33.07 | 33.07 |
| MQ6 | 13.65×3.50 | 3 | 1 | 47.78 | 47.78 |
| MQ6 | 21.60×3.50 | 3 | 1 | 75.60 | 75.60 |
| MQ6 | 16.92×3.50 | 3 | 1 | 59.22 | 59.22 |
| MQ6 | 5.50×3.50 | 3 | 1 | 19.25 | 19.25 |
| MQ6 | 29.28×3.50 | 3 | 1 | 102.48 | 102.48 |
| MQ6 | 24.45×3.50 | 3 | 1 | 85.57 | 85.57 |
| MQ7 | 21.45×3.50 | 4 | 1 | 75.08 | 75.08 |
| MQ7 | 19.77×3.50 | 4 | 1 | 69.21 | 69.21 |
| MQ7 | 11.00×3.50 | 4 | 1 | 38.50 | 38.50 |
| MQ8 | 13.65×3.50 | 4 | 1 | 47.78 | 47.78 |
| MQ8 | 21.60×3.50 | 4 | 1 | 75.60 | 75.60 |
| MQ8 | 16.92×3.50 | 4 | 1 | 59.22 | 59.22 |
| MQ8 | 5.50×3.50 | 4 | 1 | 19.25 | 19.25 |
| MQ8 | 29.28×3.50 | 4 | 1 | 102.48 | 102.48 |
| MQ8 | 24.45×3.50 | 4 | 1 | 85.57 | 85.57 |
| MQ9 | 25.20×3.50 | 5 | 1 | 88.20 | 88.20 |
| MQ9 | 17.25×3.50 | 5 | 1 | 60.38 | 60.38 |
| MQ9 | 24.00×3.50 | 5 | 1 | 84.00 | 84.00 |
| MQ9 | 17.25×3.50 | 5 | 1 | 60.38 | 60.38 |
| MQ9 | 22.20×3.50 | 5 | 1 | 77.70 | 77.70 |
| 东向2522.40 | MQ1 | 24.62×2.10 | 1 | 1 | 51.70 | 51.70 |
| MQ10 | 25.20×3.50 | 6~11 | 6 | 88.20 | 529.20 |
| MQ10 | 17.25×3.50 | 6~11 | 6 | 60.37 | 362.25 |
| MQ10 | 17.25×3.50 | 6~11 | 6 | 60.38 | 362.25 |
| MQ2 | 25.70×2.10 | 1 | 1 | 53.97 | 53.97 |
| MQ2 | 8.30×3.50 | 1 | 1 | 29.05 | 29.05 |
| MQ2 | 25.70×2.10 | 1 | 1 | 53.97 | 53.97 |
| MQ3 | 20.19×3.50 | 2 | 1 | 70.67 | 70.67 |
| MQ4 | 17.85×3.50 | 2 | 1 | 62.48 | 62.48 |
| MQ4 | 22.80×3.50 | 2 | 1 | 79.80 | 79.80 |
| MQ4 | 19.05×3.50 | 2 | 1 | 66.67 | 66.67 |
| MQ5 | 20.19×3.50 | 3 | 1 | 70.67 | 70.67 |
| MQ6 | 9.20×3.50 | 3 | 1 | 32.20 | 32.20 |
| MQ6 | 13.65×3.50 | 3 | 1 | 47.77 | 47.77 |
| MQ6 | 12.45×3.50 | 3 | 1 | 43.58 | 43.58 |
| MQ6 | 24.45×3.50 | 3 | 1 | 85.57 | 85.57 |
| MQ6 | 9.15×3.50 | 3 | 1 | 32.03 | 32.03 |
| MQ7 | 20.19×3.50 | 4 | 1 | 70.67 | 70.67 |
| MQ8 | 13.65×3.50 | 4 | 1 | 47.77 | 47.77 |
| MQ8 | 12.45×3.50 | 4 | 1 | 43.58 | 43.58 |
| MQ8 | 24.45×3.50 | 4 | 1 | 85.57 | 85.57 |
| MQ8 | 9.15×3.50 | 4 | 1 | 32.03 | 32.03 |
| MQ9 | 25.20×3.50 | 5 | 1 | 88.20 | 88.20 |
| MQ9 | 17.25×3.50 | 5 | 1 | 60.37 | 60.37 |
| MQ9 | 17.25×3.50 | 5 | 1 | 60.38 | 60.38 |
| 西向2216.10 | MQ1 | 2.83×2.10 | 1 | 1 | 5.94 | 5.94 |
| MQ1 | 10.60×2.10 | 1 | 1 | 22.26 | 22.26 |
| MQ1 | 8.56×2.10 | 1 | 1 | 17.98 | 17.98 |
| MQ1 | 8.56×2.10 | 1 | 1 | 17.98 | 17.98 |
| MQ1 | 8.20×2.10 | 1 | 1 | 17.23 | 17.23 |
| MQ10 | 22.20×3.50 | 6~11 | 6 | 77.70 | 466.20 |
| MQ10 | 24.00×3.50 | 6~11 | 6 | 84.00 | 504.00 |
| MQ2 | 46.20×2.10 | 1 | 1 | 97.02 | 97.02 |
| MQ2 | 2.00×3.50 | 1 | 1 | 7.00 | 7.00 |
| MQ2 | 2.00×3.50 | 1 | 1 | 7.00 | 7.00 |
| MQ3 | 6.14×3.50 | 2 | 1 | 21.50 | 21.50 |
| MQ3 | 2.83×3.50 | 2 | 1 | 9.90 | 9.90 |
| MQ3 | 10.60×3.50 | 2 | 1 | 37.10 | 37.10 |
| MQ3 | 8.56×3.50 | 2 | 1 | 29.97 | 29.97 |
| MQ3 | 2.42×3.50 | 2 | 1 | 8.47 | 8.47 |
| MQ3 | 8.20×3.50 | 2 | 1 | 28.71 | 28.71 |
| MQ4 | 19.30×3.50 | 2 | 1 | 67.55 | 67.55 |
| MQ4 | 3.00×3.50 | 2 | 1 | 10.50 | 10.50 |
| MQ4 | 29.40×3.50 | 2 | 1 | 102.90 | 102.90 |
| MQ5 | 6.14×3.50 | 3 | 1 | 21.50 | 21.50 |
| MQ5 | 2.83×3.50 | 3 | 1 | 9.90 | 9.90 |
| MQ5 | 10.60×3.50 | 3 | 1 | 37.10 | 37.10 |
| MQ5 | 8.56×3.50 | 3 | 1 | 29.97 | 29.97 |
| MQ5 | 2.42×3.50 | 3 | 1 | 8.47 | 8.47 |
| MQ5 | 8.20×3.50 | 3 | 1 | 28.71 | 28.71 |
| MQ6 | 0.18×3.50 | 3 | 1 | 0.61 | 0.61 |
| MQ6 | 2.20×3.50 | 3 | 1 | 7.70 | 7.70 |
| MQ6 | 3.35×3.50 | 3 | 1 | 11.73 | 11.73 |
| MQ6 | 29.40×3.50 | 3 | 1 | 102.90 | 102.90 |
| MQ7 | 6.14×3.50 | 4 | 1 | 21.50 | 21.50 |
| MQ7 | 2.83×3.50 | 4 | 1 | 9.90 | 9.90 |
| MQ7 | 10.60×3.50 | 4 | 1 | 37.10 | 37.10 |
| MQ7 | 8.56×3.50 | 4 | 1 | 29.97 | 29.97 |
| MQ7 | 2.42×3.50 | 4 | 1 | 8.47 | 8.47 |
| MQ7 | 8.20×3.50 | 4 | 1 | 28.71 | 28.71 |
| MQ8 | 2.20×3.50 | 4 | 1 | 7.70 | 7.70 |
| MQ8 | 20.10×3.50 | 4 | 1 | 70.35 | 70.35 |
| MQ8 | 29.40×3.50 | 4 | 1 | 102.90 | 102.90 |
| MQ9 | 22.20×3.50 | 5 | 1 | 77.70 | 77.70 |
| MQ9 | 24.00×3.50 | 5 | 1 | 84.00 | 84.00 |

# 可见光透射比

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 朝向 | 立面 | 窗墙比 | 最不利窗编号 | 最不利透射比 | 透射比限值 |
| 南向 | 立面3 | 0.69 | MQ7 | 0.60 | 0.40 |
| 北向 | 立面4 | 0.69 | MQ10 | 0.60 | 0.40 |
| 东向 | 立面1 | 0.69 | MQ10 | 0.60 | 0.40 |
| 西向 | 立面2 | 0.70 | MQ10 | 0.60 | 0.40 |
| 标准依据 | 《公共建筑节能设计标准》(GB50189-2015)第3.2.4条 |
| 标准要求 | 当窗墙面积比小于0.40时，玻璃的可见光透射比不应当小于0.6;当窗墙面积比大于等于0.40时，玻璃的可见光透射比不应当小于0.4; |
| 结论 | 满足 |

# 天窗

## 天窗屋顶比

本工程无此项内容

## 天窗类型

本工程无此项内容

# 屋顶构造

## 屋顶相关构造

### 覆土屋面

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称（由外到内） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 夯实粘土(ρ=2000) | 600 | 1.160 | 12.990 | 1.50 | 0.172 | 3.359 |
| 细石混凝土保护层 | 50 | 1.740 | 17.200 | 1.00 | 0.029 | 0.494 |
| 挤塑聚苯板(ρ=25-32) | 50 | 0.030 | 0.320 | 1.20 | 1.389 | 0.533 |
| 碎石、卵石混凝土(ρ=2300) | 30 | 1.510 | 15.360 | 1.00 | 0.020 | 0.305 |
| 钢筋混凝土 | 120 | 1.740 | 17.200 | 1.00 | 0.069 | 1.186 |
| 各层之和∑ | 800 | － | － | － | 1.679 | 5.878 |
| 外表面太阳辐射吸收系数 | 0.80 |
| 传热系数K=1/(0.16+∑R) | 0.60 |
| 标准依据 | 《公共建筑节能设计标准》(GB50189-2015)第3.4.1条 |
| 标准要求 | K<=0.9 |
| 结论 | 满足 |

注：挤塑聚苯板(ρ=25-32)计算厚度为30mm，设计厚度增加25%为40mm.

### 铺装屋面

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称（由外到内） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 细石混凝土保护层 | 50 | 1.740 | 17.200 | 1.00 | 0.029 | 0.494 |
| 挤塑聚苯板(ρ=25-32) | 50 | 0.030 | 0.320 | 1.20 | 1.389 | 0.533 |
| 碎石、卵石混凝土(ρ=2300) | 30 | 1.510 | 15.360 | 1.00 | 0.020 | 0.305 |
| 钢筋混凝土 | 120 | 1.740 | 17.200 | 1.00 | 0.069 | 1.186 |
| 各层之和∑ | 270 | － | － | － | 1.528 | 2.763 |
| 外表面太阳辐射吸收系数 | 0.75[默认] |
| 传热系数K=1/(0.16+∑R) | 0.59 |
| 标准依据 | 《公共建筑节能设计标准》(GB50189-2015)第3.4.1条 |
| 标准要求 | K<=0.9 |
| 结论 | 满足 |

注：挤塑聚苯板(ρ=25-32)计算厚度为30mm，设计厚度增加25%为40mm.

## 屋顶平均热工特性

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 构造名称 | 面积(m2) | 面积所占比例 | 传热系数KW / (㎡K) | 热惰性指标D | 太阳辐射吸收系数 |
| 覆土屋面 | 2464.36 | 0.556 | 0.60 | 2.52 | 0.80 |
| 铺装屋面 | 1970.74 | 0.444 | 0.59 | 2.76 | 0.75 |
| 合计 | 4435.10 | 1.000 | 0.60 | 2.63 | 0.78 |

# 外墙构造

## 外墙相关构造

### 干挂铝板外墙

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称（由外到内） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 玻化微珠保温浆料(I型） | 30 | 0.070 | 1.200 | 1.25 | 0.343 | 0.514 |
| 加气混凝土砌块（B07级） | 200 | 0.220 | 3.590 | 1.25 | 0.727 | 3.264 |
| 水泥砂浆 | 15 | 0.930 | 11.370 | 1.00 | 0.016 | 0.183 |
| 各层之和∑ | 265 | － | － | － | 1.108 | 4.206 |
| 外表面太阳辐射吸收系数 | 0.60[默认] |
| 传热系数K=1/(0.16+∑R) | 0.79 |

### 钢筋混凝土梁

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称（由外到内） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 岩棉板(ρ=60-160) | 50 | 0.041 | 0.615 | 1.30 | 0.938 | 0.750 |
| 钢筋混凝土 | 200 | 1.740 | 17.200 | 1.00 | 0.115 | 1.977 |
| 水泥砂浆 | 10 | 0.930 | 11.370 | 1.00 | 0.011 | 0.122 |
| 水泥砂浆 | 5 | 0.930 | 11.370 | 1.00 | 0.005 | 0.061 |
| 各层之和∑ | 265 | － | － | － | 1.069 | 2.910 |
| 外表面太阳辐射吸收系数 | 0.60[默认] |
| 传热系数K=1/(0.16+∑R) | 0.81 |

## 外墙主断面传热系数的修正系数ψ



## 外墙平均热工特性

1.　南向

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 构造名称 | 构件类型 | 面积(m2) | 面积所占比例 | 传热系数KW / (㎡K) | 热惰性指标D | 太阳辐射吸收系数 |
| 干挂铝板外墙 | 主墙体 | 70.64 | 1.000 | 0.79 | 4.21 | 0.60 |
| 考虑线性热桥后K | 0.79 \* 1.05 = 0.83 |

2.　北向

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 构造名称 | 构件类型 | 面积(m2) | 面积所占比例 | 传热系数KW / (㎡K) | 热惰性指标D | 太阳辐射吸收系数 |
| 干挂铝板外墙 | 主墙体 | 2159.35 | 1.000 | 0.79 | 4.21 | 0.60 |
| 考虑线性热桥后K | 0.79 \* 1.05 = 0.83 |

3.　东向

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 构造名称 | 构件类型 | 面积(m2) | 面积所占比例 | 传热系数KW / (㎡K) | 热惰性指标D | 太阳辐射吸收系数 |
| 干挂铝板外墙 | 主墙体 | 1133.58 | 1.000 | 0.79 | 4.21 | 0.60 |
| 考虑线性热桥后K | 0.79 \* 1.05 = 0.83 |

4.　西向

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 构造名称 | 构件类型 | 面积(m2) | 面积所占比例 | 传热系数KW / (㎡K) | 热惰性指标D | 太阳辐射吸收系数 |
| 干挂铝板外墙 | 主墙体 | 951.69 | 1.000 | 0.79 | 4.21 | 0.60 |
| 考虑线性热桥后K | 0.79 \* 1.05 = 0.83 |

5.　总体

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 构造名称 | 构件类型 | 面积(m2) | 面积所占比例 | 传热系数KW / (㎡K) | 热惰性指标D | 太阳辐射吸收系数 |
| 干挂铝板外墙 | 主墙体 | 4315.26 | 1.000 | 0.79 | 4.21 | 0.60 |
| 考虑线性热桥后K | 0.79 \* 1.05 = 0.83 |
| 标准依据 | 《公共建筑节能设计标准》(GB50189-2015)第3.4.1条 |
| 标准要求 | K<=1.5 |
| 结论 | 满足 |

# 挑空楼板构造

## 挑空楼板

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称（由外到内） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 岩棉板(ρ=60-160) | 20 | 0.041 | 0.615 | 1.00 | 0.488 | 0.300 |
| 钢筋混凝土 | 120 | 1.740 | 17.200 | 1.00 | 0.069 | 1.186 |
| 各层之和∑ | 140 | － | － | － | 0.557 | 1.486 |
| 传热系数K=1/(0.16+∑R) | 1.40 |

# 外窗热工

## 外窗构造

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 序号 | 构造名称 | 构造编号 | 传热系数 | 太阳得热系数 | 可见光透射比 | 备注 |
| 1 | 普通铝合金框+ 10mm钢化+12mm(空气）+10mm钢化高通型超白玻璃 | 72 | 4.00 | 0.61 | 0.600 | 来源《民用建筑热工设计规范》 |
| 2 | 普通铝合金框+ 蓝灰色Low-E中空钢化10mm+12mm(空气）+10mm玻璃 | 65 | 3.50 | 0.27 | 0.600 | 来源《民用建筑热工设计规范》 |
| 3 | 无框+12mm钢化+2.28SGP+12mm钢化夹胶高通型超白玻璃 | 71 | 4.00 | 0.61 | 0.600 | 来源《民用建筑热工设计规范》 |

## 外遮阳类型

### 平板遮阳



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 编号 | 水平挑出Ah (m) | 距离上沿Eh (m) | 垂直挑出Av (m) | 距离边沿Ev (m) | 挡板高Dh (m) | 挡板透射η\* |
| 1 | 平板遮阳1500 | 1.500 | 1.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 2 | 平板遮阳5150 | 5.150 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 3 | 平板遮阳7150 | 7.150 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 4 | 平板遮阳500 | 0.500 | 1.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 5 | 平板遮阳4000 | 4.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 6 | 平板遮阳8800 | 8.800 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 7 | 平板遮阳2000 | 2.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 8 | 平板遮阳3500 | 3.500 | 1.000 | 0.000 | 0.000 | 0.000 | 0.000 |

### 百叶遮阳



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 序号 | 编号 | 挑出A (m) | 百叶间距D (m) | 下垂C (m) |
| 1 | 百叶遮阳500X1800 | 0.500 | 1.800 | 0.000 |
| 2 | 百叶遮阳500X5400 | 0.500 | 5.400 | 0.000 |

## 平均传热系数

1. 立面1(东向)：

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（m2） | 总面积（m2） | 构造编号 | 传热系数 |
| 1 | MQ1 | 1 | 1 | 51.705 | 51.705 | 72 | 4.000 |
| 2 | MQ10 | 6~11 | 6 | 88.200 | 529.200 | 65 | 3.500 |
| 3 | MQ10 | 6~11 | 6 | 60.375 | 362.250 | 65 | 3.500 |
| 4 | MQ10 | 6~11 | 6 | 60.375 | 362.250 | 65 | 3.500 |
| 5 | MQ2 | 1 | 1 | 53.970 | 53.970 | 65 | 3.500 |
| 6 | MQ2 | 1 | 1 | 29.050 | 29.050 | 65 | 3.500 |
| 7 | MQ2 | 1 | 1 | 53.970 | 53.970 | 65 | 3.500 |
| 8 | MQ3 | 2 | 1 | 70.667 | 70.667 | 65 | 3.500 |
| 9 | MQ4 | 2 | 1 | 62.475 | 62.475 | 65 | 3.500 |
| 10 | MQ4 | 2 | 1 | 79.800 | 79.800 | 65 | 3.500 |
| 11 | MQ4 | 2 | 1 | 66.675 | 66.675 | 65 | 3.500 |
| 12 | MQ5 | 3 | 1 | 70.667 | 70.667 | 65 | 3.500 |
| 13 | MQ6 | 3 | 1 | 32.200 | 32.200 | 65 | 3.500 |
| 14 | MQ6 | 3 | 1 | 47.775 | 47.775 | 65 | 3.500 |
| 15 | MQ6 | 3 | 1 | 43.575 | 43.575 | 65 | 3.500 |
| 16 | MQ6 | 3 | 1 | 85.575 | 85.575 | 65 | 3.500 |
| 17 | MQ6 | 3 | 1 | 32.025 | 32.025 | 65 | 3.500 |
| 18 | MQ7 | 4 | 1 | 70.667 | 70.667 | 65 | 3.500 |
| 19 | MQ8 | 4 | 1 | 47.775 | 47.775 | 65 | 3.500 |
| 20 | MQ8 | 4 | 1 | 43.575 | 43.575 | 65 | 3.500 |
| 21 | MQ8 | 4 | 1 | 85.575 | 85.575 | 65 | 3.500 |
| 22 | MQ8 | 4 | 1 | 32.025 | 32.025 | 65 | 3.500 |
| 23 | MQ9 | 5 | 1 | 88.200 | 88.200 | 65 | 3.500 |
| 24 | MQ9 | 5 | 1 | 60.375 | 60.375 | 65 | 3.500 |
| 25 | MQ9 | 5 | 1 | 60.375 | 60.375 | 65 | 3.500 |
| 朝向总面积(m2) | 2522.396 | 朝向平均传热系数 | 3.510 |

2. 立面2(西向)：

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（m2） | 总面积（m2） | 构造编号 | 传热系数 |
| 1 | MQ1 | 1 | 1 | 5.937 | 5.937 | 65 | 3.500 |
| 2 | MQ1 | 1 | 1 | 22.260 | 22.260 | 65 | 3.500 |
| 3 | MQ1 | 1 | 1 | 17.984 | 17.984 | 65 | 3.500 |
| 4 | MQ1 | 1 | 1 | 17.984 | 17.984 | 65 | 3.500 |
| 5 | MQ1 | 1 | 1 | 17.226 | 17.226 | 65 | 3.500 |
| 6 | MQ10 | 6~11 | 6 | 77.700 | 466.200 | 65 | 3.500 |
| 7 | MQ10 | 6~11 | 6 | 84.000 | 504.000 | 65 | 3.500 |
| 8 | MQ2 | 1 | 1 | 97.020 | 97.020 | 65 | 3.500 |
| 9 | MQ2 | 1 | 1 | 7.000 | 7.000 | 65 | 3.500 |
| 10 | MQ2 | 1 | 1 | 7.000 | 7.000 | 71 | 4.000 |
| 11 | MQ3 | 2 | 1 | 21.503 | 21.503 | 65 | 3.500 |
| 12 | MQ3 | 2 | 1 | 9.895 | 9.895 | 65 | 3.500 |
| 13 | MQ3 | 2 | 1 | 37.100 | 37.100 | 65 | 3.500 |
| 14 | MQ3 | 2 | 1 | 29.973 | 29.973 | 65 | 3.500 |
| 15 | MQ3 | 2 | 1 | 8.470 | 8.470 | 65 | 3.500 |
| 16 | MQ3 | 2 | 1 | 28.710 | 28.710 | 65 | 3.500 |
| 17 | MQ4 | 2 | 1 | 67.550 | 67.550 | 65 | 3.500 |
| 18 | MQ4 | 2 | 1 | 10.500 | 10.500 | 65 | 3.500 |
| 19 | MQ4 | 2 | 1 | 102.900 | 102.900 | 65 | 3.500 |
| 20 | MQ5 | 3 | 1 | 21.503 | 21.503 | 65 | 3.500 |
| 21 | MQ5 | 3 | 1 | 9.895 | 9.895 | 65 | 3.500 |
| 22 | MQ5 | 3 | 1 | 37.100 | 37.100 | 65 | 3.500 |
| 23 | MQ5 | 3 | 1 | 29.973 | 29.973 | 65 | 3.500 |
| 24 | MQ5 | 3 | 1 | 8.470 | 8.470 | 65 | 3.500 |
| 25 | MQ5 | 3 | 1 | 28.710 | 28.710 | 65 | 3.500 |
| 26 | MQ6 | 3 | 1 | 0.613 | 0.613 | 65 | 3.500 |
| 27 | MQ6 | 3 | 1 | 7.700 | 7.700 | 65 | 3.500 |
| 28 | MQ6 | 3 | 1 | 11.725 | 11.725 | 65 | 3.500 |
| 29 | MQ6 | 3 | 1 | 102.900 | 102.900 | 65 | 3.500 |
| 30 | MQ7 | 4 | 1 | 21.503 | 21.503 | 65 | 3.500 |
| 31 | MQ7 | 4 | 1 | 9.895 | 9.895 | 65 | 3.500 |
| 32 | MQ7 | 4 | 1 | 37.100 | 37.100 | 65 | 3.500 |
| 33 | MQ7 | 4 | 1 | 29.973 | 29.973 | 65 | 3.500 |
| 34 | MQ7 | 4 | 1 | 8.470 | 8.470 | 65 | 3.500 |
| 35 | MQ7 | 4 | 1 | 28.710 | 28.710 | 65 | 3.500 |
| 36 | MQ8 | 4 | 1 | 7.700 | 7.700 | 65 | 3.500 |
| 37 | MQ8 | 4 | 1 | 70.350 | 70.350 | 65 | 3.500 |
| 38 | MQ8 | 4 | 1 | 102.900 | 102.900 | 65 | 3.500 |
| 39 | MQ9 | 5 | 1 | 77.700 | 77.700 | 65 | 3.500 |
| 40 | MQ9 | 5 | 1 | 84.000 | 84.000 | 65 | 3.500 |
| 朝向总面积(m2) | 2216.099 | 朝向平均传热系数 | 3.502 |

3. 立面3(南向)：

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（m2） | 总面积（m2） | 构造编号 | 传热系数 |
| 1 | MQ1 | 1 | 1 | 15.525 | 15.525 | 65 | 3.500 |
| 2 | MQ3 | 2 | 1 | 50.507 | 50.507 | 65 | 3.500 |
| 3 | MQ5 | 3 | 1 | 45.705 | 45.705 | 65 | 3.500 |
| 4 | MQ7 | 4 | 1 | 45.705 | 45.705 | 65 | 3.500 |
| 朝向总面积(m2) | 157.441 | 朝向平均传热系数 | 3.500 |

4. 立面4(北向)：

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（m2） | 总面积（m2） | 构造编号 | 传热系数 |
| 1 | MQ1 | 1 | 1 | 65.275 | 65.275 | 65 | 3.500 |
| 2 | MQ1 | 1 | 1 | 75.079 | 75.079 | 72 | 4.000 |
| 3 | MQ10 | 6~11 | 6 | 88.200 | 529.200 | 65 | 3.500 |
| 4 | MQ10 | 6~11 | 6 | 60.375 | 362.250 | 65 | 3.500 |
| 5 | MQ10 | 6~11 | 6 | 84.000 | 504.000 | 65 | 3.500 |
| 6 | MQ10 | 6~11 | 6 | 60.375 | 362.250 | 65 | 3.500 |
| 7 | MQ10 | 6~11 | 6 | 77.700 | 466.200 | 65 | 3.500 |
| 8 | MQ11 | 1 | 1 | 91.350 | 91.350 | 71 | 4.000 |
| 9 | MQ11 | 2 | 1 | 91.700 | 91.700 | 65 | 3.500 |
| 10 | MQ2 | 1 | 1 | 23.449 | 23.449 | 65 | 3.500 |
| 11 | MQ2 | 1 | 1 | 7.000 | 7.000 | 65 | 3.500 |
| 12 | MQ2 | 1 | 1 | 51.100 | 51.100 | 65 | 3.500 |
| 13 | MQ2 | 1 | 1 | 79.450 | 79.450 | 65 | 3.500 |
| 14 | MQ2 | 1 | 2 | 58.800 | 117.600 | 65 | 3.500 |
| 15 | MQ2 | 1 | 1 | 7.000 | 7.000 | 71 | 4.000 |
| 16 | MQ2 | 1 | 1 | 11.550 | 11.550 | 72 | 4.000 |
| 17 | MQ3 | 2 | 1 | 75.079 | 75.079 | 65 | 3.500 |
| 18 | MQ3 | 2 | 1 | 61.495 | 61.495 | 65 | 3.500 |
| 19 | MQ4 | 2 | 1 | 102.900 | 102.900 | 65 | 3.500 |
| 20 | MQ4 | 2 | 2 | 58.625 | 117.250 | 65 | 3.500 |
| 21 | MQ4 | 2 | 1 | 38.500 | 38.500 | 65 | 3.500 |
| 22 | MQ4 | 2 | 1 | 58.800 | 58.800 | 65 | 3.500 |
| 23 | MQ4 | 2 | 1 | 19.250 | 19.250 | 65 | 3.500 |
| 24 | MQ5 | 3 | 1 | 11.725 | 11.725 | 65 | 3.500 |
| 25 | MQ5 | 3 | 1 | 75.079 | 75.079 | 65 | 3.500 |
| 26 | MQ5 | 3 | 1 | 61.513 | 61.513 | 65 | 3.500 |
| 27 | MQ6 | 3 | 1 | 33.075 | 33.075 | 65 | 3.500 |
| 28 | MQ6 | 3 | 1 | 47.775 | 47.775 | 65 | 3.500 |
| 29 | MQ6 | 3 | 1 | 75.600 | 75.600 | 65 | 3.500 |
| 30 | MQ6 | 3 | 1 | 59.220 | 59.220 | 65 | 3.500 |
| 31 | MQ6 | 3 | 1 | 19.250 | 19.250 | 65 | 3.500 |
| 32 | MQ6 | 3 | 1 | 102.480 | 102.480 | 65 | 3.500 |
| 33 | MQ6 | 3 | 1 | 85.575 | 85.575 | 65 | 3.500 |
| 34 | MQ7 | 4 | 1 | 75.079 | 75.079 | 65 | 3.500 |
| 35 | MQ7 | 4 | 1 | 69.212 | 69.212 | 65 | 3.500 |
| 36 | MQ7 | 4 | 1 | 38.500 | 38.500 | 65 | 3.500 |
| 37 | MQ8 | 4 | 1 | 47.775 | 47.775 | 65 | 3.500 |
| 38 | MQ8 | 4 | 1 | 75.600 | 75.600 | 65 | 3.500 |
| 39 | MQ8 | 4 | 1 | 59.220 | 59.220 | 65 | 3.500 |
| 40 | MQ8 | 4 | 1 | 19.250 | 19.250 | 65 | 3.500 |
| 41 | MQ8 | 4 | 1 | 102.480 | 102.480 | 65 | 3.500 |
| 42 | MQ8 | 4 | 1 | 85.575 | 85.575 | 65 | 3.500 |
| 43 | MQ9 | 5 | 1 | 88.200 | 88.200 | 65 | 3.500 |
| 44 | MQ9 | 5 | 1 | 60.375 | 60.375 | 65 | 3.500 |
| 45 | MQ9 | 5 | 1 | 84.000 | 84.000 | 65 | 3.500 |
| 46 | MQ9 | 5 | 1 | 60.375 | 60.375 | 65 | 3.500 |
| 47 | MQ9 | 5 | 1 | 77.700 | 77.700 | 65 | 3.500 |
| 朝向总面积(m2) | 4832.360 | 朝向平均传热系数 | 3.519 |

## 综合太阳得热系数

1. 南向：

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（m2） | 总面积（m2） | 构造编号 | 窗太阳得热系数 | 外遮阳编号 | 外遮阳系数 | 综合太阳得热系数 |
| 1 | MQ1 | 1 | 1 | 15.525 | 15.525 | 65 | 0.270 |  | 1.000 | 0.270 |
| 2 | MQ3 | 2 | 1 | 50.507 | 50.507 | 65 | 0.270 |  | 1.000 | 0.270 |
| 3 | MQ5 | 3 | 1 | 45.705 | 45.705 | 65 | 0.270 |  | 1.000 | 0.270 |
| 4 | MQ7 | 4 | 1 | 45.705 | 45.705 | 65 | 0.270 |  | 1.000 | 0.270 |
| 朝向总面积(m2) | 157.441 | 综合太阳得热系数 | 1.000 | 0.270 |

2. 北向：

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（m2） | 总面积（m2） | 构造编号 | 窗太阳得热系数 | 外遮阳编号 | 外遮阳系数 | 综合太阳得热系数 |
| 1 | MQ1 | 1 | 1 | 65.275 | 65.275 | 65 | 0.270 | 平板遮阳1500 | 0.788 | 0.212 |
| 2 | MQ1 | 1 | 1 | 75.079 | 75.079 | 72 | 0.609 | 平板遮阳1500 | 0.810 | 0.493 |
| 3 | MQ10 | 6~11 | 6 | 88.200 | 529.200 | 65 | 0.270 | 百叶遮阳500X5400 | 0.928 | 0.250 |
| 4 | MQ10 | 6~11 | 6 | 60.375 | 362.250 | 65 | 0.270 | 百叶遮阳500X5400 | 0.928 | 0.250 |
| 5 | MQ10 | 6~11 | 6 | 84.000 | 504.000 | 65 | 0.270 | 百叶遮阳500X5400 | 0.927 | 0.250 |
| 6 | MQ10 | 6~11 | 6 | 60.375 | 362.250 | 65 | 0.270 | 百叶遮阳500X5400 | 0.928 | 0.250 |
| 7 | MQ10 | 6~11 | 6 | 77.700 | 466.200 | 65 | 0.270 | 百叶遮阳500X5400 | 0.927 | 0.250 |
| 8 | MQ11 | 1 | 1 | 91.350 | 91.350 | 71 | 0.609 | 平板遮阳4000 | 0.670 | 0.408 |
| 9 | MQ11 | 2 | 1 | 91.700 | 91.700 | 65 | 0.270 | 平板遮阳2000 | 0.723 | 0.195 |
| 10 | MQ2 | 1 | 1 | 23.449 | 23.449 | 65 | 0.270 | 平板遮阳1500 | 0.788 | 0.212 |
| 11 | MQ2 | 1 | 1 | 7.000 | 7.000 | 65 | 0.270 | 平板遮阳1500 | 0.788 | 0.212 |
| 12 | MQ2 | 1 | 1 | 51.100 | 51.100 | 65 | 0.270 | 平板遮阳1500 | 0.788 | 0.212 |
| 13 | MQ2 | 1 | 1 | 79.450 | 79.450 | 65 | 0.270 | 平板遮阳1500 | 0.788 | 0.212 |
| 14 | MQ2 | 1 | 2 | 58.800 | 117.600 | 65 | 0.270 | 平板遮阳1500 | 0.810 | 0.218 |
| 15 | MQ2 | 1 | 1 | 7.000 | 7.000 | 71 | 0.609 | 平板遮阳500 | 0.919 | 0.559 |
| 16 | MQ2 | 1 | 1 | 11.550 | 11.550 | 72 | 0.609 | 平板遮阳8800 | 0.650 | 0.396 |
| 17 | MQ3 | 2 | 1 | 75.079 | 75.079 | 65 | 0.270 | 百叶遮阳500X1800 | 0.806 | 0.217 |
| 18 | MQ3 | 2 | 1 | 61.495 | 61.495 | 65 | 0.270 | 百叶遮阳500X1800 | 0.803 | 0.216 |
| 19 | MQ4 | 2 | 1 | 102.900 | 102.900 | 65 | 0.270 | 平板遮阳500 | 0.919 | 0.248 |
| 20 | MQ4 | 2 | 2 | 58.625 | 117.250 | 65 | 0.270 | 平板遮阳500 | 0.928 | 0.250 |
| 21 | MQ4 | 2 | 1 | 38.500 | 38.500 | 65 | 0.270 | 平板遮阳8800 | 0.650 | 0.175 |
| 22 | MQ4 | 2 | 1 | 58.800 | 58.800 | 65 | 0.270 | 平板遮阳500 | 0.919 | 0.248 |
| 23 | MQ4 | 2 | 1 | 19.250 | 19.250 | 65 | 0.270 | 百叶遮阳500X1800 | 0.803 | 0.216 |
| 24 | MQ5 | 3 | 1 | 11.725 | 11.725 | 65 | 0.270 | 百叶遮阳500X1800 | 0.803 | 0.216 |
| 25 | MQ5 | 3 | 1 | 75.079 | 75.079 | 65 | 0.270 | 百叶遮阳500X1800 | 0.806 | 0.217 |
| 26 | MQ5 | 3 | 1 | 61.513 | 61.513 | 65 | 0.270 | 百叶遮阳500X1800 | 0.803 | 0.216 |
| 27 | MQ6 | 3 | 1 | 33.075 | 33.075 | 65 | 0.270 | 平板遮阳3500 | 0.681 | 0.184 |
| 28 | MQ6 | 3 | 1 | 47.775 | 47.775 | 65 | 0.270 | 百叶遮阳500X5400 | 0.928 | 0.250 |
| 29 | MQ6 | 3 | 1 | 75.600 | 75.600 | 65 | 0.270 | 百叶遮阳500X5400 | 0.928 | 0.250 |
| 30 | MQ6 | 3 | 1 | 59.220 | 59.220 | 65 | 0.270 | 百叶遮阳500X5400 | 0.927 | 0.250 |
| 31 | MQ6 | 3 | 1 | 19.250 | 19.250 | 65 | 0.270 | 百叶遮阳500X1800 | 0.803 | 0.216 |
| 32 | MQ6 | 3 | 1 | 102.480 | 102.480 | 65 | 0.270 | 百叶遮阳500X5400 | 0.927 | 0.250 |
| 33 | MQ6 | 3 | 1 | 85.575 | 85.575 | 65 | 0.270 | 百叶遮阳500X5400 | 0.928 | 0.250 |
| 34 | MQ7 | 4 | 1 | 75.079 | 75.079 | 65 | 0.270 | 百叶遮阳500X1800 | 0.806 | 0.217 |
| 35 | MQ7 | 4 | 1 | 69.212 | 69.212 | 65 | 0.270 | 百叶遮阳500X1800 | 0.803 | 0.216 |
| 36 | MQ7 | 4 | 1 | 38.500 | 38.500 | 65 | 0.270 | 百叶遮阳500X1800 | 0.803 | 0.216 |
| 37 | MQ8 | 4 | 1 | 47.775 | 47.775 | 65 | 0.270 | 百叶遮阳500X5400 | 0.928 | 0.250 |
| 38 | MQ8 | 4 | 1 | 75.600 | 75.600 | 65 | 0.270 | 百叶遮阳500X5400 | 0.928 | 0.250 |
| 39 | MQ8 | 4 | 1 | 59.220 | 59.220 | 65 | 0.270 | 百叶遮阳500X5400 | 0.927 | 0.250 |
| 40 | MQ8 | 4 | 1 | 19.250 | 19.250 | 65 | 0.270 | 百叶遮阳500X1800 | 0.803 | 0.216 |
| 41 | MQ8 | 4 | 1 | 102.480 | 102.480 | 65 | 0.270 | 百叶遮阳500X5400 | 0.927 | 0.250 |
| 42 | MQ8 | 4 | 1 | 85.575 | 85.575 | 65 | 0.270 | 百叶遮阳500X5400 | 0.928 | 0.250 |
| 43 | MQ9 | 5 | 1 | 88.200 | 88.200 | 65 | 0.270 | 百叶遮阳500X5400 | 0.928 | 0.250 |
| 44 | MQ9 | 5 | 1 | 60.375 | 60.375 | 65 | 0.270 | 百叶遮阳500X5400 | 0.928 | 0.250 |
| 45 | MQ9 | 5 | 1 | 84.000 | 84.000 | 65 | 0.270 | 百叶遮阳500X5400 | 0.927 | 0.250 |
| 46 | MQ9 | 5 | 1 | 60.375 | 60.375 | 65 | 0.270 | 百叶遮阳500X5400 | 0.928 | 0.250 |
| 47 | MQ9 | 5 | 1 | 77.700 | 77.700 | 65 | 0.270 | 百叶遮阳500X5400 | 0.927 | 0.250 |
| 朝向总面积(m2) | 4832.360 | 综合太阳得热系数 | 0.889 | 0.249 |

3. 东向：

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（m2） | 总面积（m2） | 构造编号 | 窗太阳得热系数 | 外遮阳编号 | 外遮阳系数 | 综合太阳得热系数 |
| 1 | MQ1 | 1 | 1 | 51.705 | 51.705 | 72 | 0.609 | 平板遮阳5150 | 0.670 | 0.408 |
| 2 | MQ10 | 6~11 | 6 | 88.200 | 529.200 | 65 | 0.270 | 百叶遮阳500X5400 | 0.929 | 0.250 |
| 3 | MQ10 | 6~11 | 6 | 60.375 | 362.250 | 65 | 0.270 | 百叶遮阳500X5400 | 0.929 | 0.250 |
| 4 | MQ10 | 6~11 | 6 | 60.375 | 362.250 | 65 | 0.270 | 百叶遮阳500X5400 | 0.929 | 0.250 |
| 5 | MQ2 | 1 | 1 | 53.970 | 53.970 | 65 | 0.270 | 平板遮阳5150 | 0.670 | 0.181 |
| 6 | MQ2 | 1 | 1 | 29.050 | 29.050 | 65 | 0.270 | 平板遮阳7150 | 0.670 | 0.181 |
| 7 | MQ2 | 1 | 1 | 53.970 | 53.970 | 65 | 0.270 | 平板遮阳1500 | 0.735 | 0.198 |
| 8 | MQ3 | 2 | 1 | 70.667 | 70.667 | 65 | 0.270 | 百叶遮阳500X1800 | 0.807 | 0.218 |
| 9 | MQ4 | 2 | 1 | 62.475 | 62.475 | 65 | 0.270 |  | 1.000 | 0.270 |
| 10 | MQ4 | 2 | 1 | 79.800 | 79.800 | 65 | 0.270 | 平板遮阳500 | 0.922 | 0.249 |
| 11 | MQ4 | 2 | 1 | 66.675 | 66.675 | 65 | 0.270 | 百叶遮阳500X1800 | 0.807 | 0.218 |
| 12 | MQ5 | 3 | 1 | 70.667 | 70.667 | 65 | 0.270 | 百叶遮阳500X1800 | 0.807 | 0.218 |
| 13 | MQ6 | 3 | 1 | 32.200 | 32.200 | 65 | 0.270 |  | 1.000 | 0.270 |
| 14 | MQ6 | 3 | 1 | 47.775 | 47.775 | 65 | 0.270 | 百叶遮阳500X1800 | 0.807 | 0.218 |
| 15 | MQ6 | 3 | 1 | 43.575 | 43.575 | 65 | 0.270 | 百叶遮阳500X1800 | 0.807 | 0.218 |
| 16 | MQ6 | 3 | 1 | 85.575 | 85.575 | 65 | 0.270 | 百叶遮阳500X1800 | 0.807 | 0.218 |
| 17 | MQ6 | 3 | 1 | 32.025 | 32.025 | 65 | 0.270 | 平板遮阳500 | 0.922 | 0.249 |
| 18 | MQ7 | 4 | 1 | 70.667 | 70.667 | 65 | 0.270 | 百叶遮阳500X1800 | 0.807 | 0.218 |
| 19 | MQ8 | 4 | 1 | 47.775 | 47.775 | 65 | 0.270 | 百叶遮阳500X1800 | 0.807 | 0.218 |
| 20 | MQ8 | 4 | 1 | 43.575 | 43.575 | 65 | 0.270 | 百叶遮阳500X1800 | 0.807 | 0.218 |
| 21 | MQ8 | 4 | 1 | 85.575 | 85.575 | 65 | 0.270 | 百叶遮阳500X1800 | 0.807 | 0.218 |
| 22 | MQ8 | 4 | 1 | 32.025 | 32.025 | 65 | 0.270 | 平板遮阳500 | 0.922 | 0.249 |
| 23 | MQ9 | 5 | 1 | 88.200 | 88.200 | 65 | 0.270 | 百叶遮阳500X5400 | 0.929 | 0.250 |
| 24 | MQ9 | 5 | 1 | 60.375 | 60.375 | 65 | 0.270 | 百叶遮阳500X5400 | 0.929 | 0.250 |
| 25 | MQ9 | 5 | 1 | 60.375 | 60.375 | 65 | 0.270 | 百叶遮阳500X5400 | 0.929 | 0.250 |
| 朝向总面积(m2) | 2522.396 | 综合太阳得热系数 | 0.883 | 0.243 |

4. 西向：

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（m2） | 总面积（m2） | 构造编号 | 窗太阳得热系数 | 外遮阳编号 | 外遮阳系数 | 综合太阳得热系数 |
| 1 | MQ1 | 1 | 1 | 5.937 | 5.937 | 65 | 0.270 | 平板遮阳1500 | 0.760 | 0.205 |
| 2 | MQ1 | 1 | 1 | 22.260 | 22.260 | 65 | 0.270 | 平板遮阳1500 | 0.760 | 0.205 |
| 3 | MQ1 | 1 | 1 | 17.984 | 17.984 | 65 | 0.270 | 平板遮阳1500 | 0.760 | 0.205 |
| 4 | MQ1 | 1 | 1 | 17.984 | 17.984 | 65 | 0.270 | 平板遮阳1500 | 0.760 | 0.205 |
| 5 | MQ1 | 1 | 1 | 17.226 | 17.226 | 65 | 0.270 | 平板遮阳1500 | 0.760 | 0.205 |
| 6 | MQ10 | 6~11 | 6 | 77.700 | 466.200 | 65 | 0.270 | 百叶遮阳500X5400 | 0.928 | 0.250 |
| 7 | MQ10 | 6~11 | 6 | 84.000 | 504.000 | 65 | 0.270 | 百叶遮阳500X5400 | 0.928 | 0.250 |
| 8 | MQ2 | 1 | 1 | 97.020 | 97.020 | 65 | 0.270 | 平板遮阳1500 | 0.760 | 0.205 |
| 9 | MQ2 | 1 | 1 | 7.000 | 7.000 | 65 | 0.270 | 平板遮阳1500 | 0.817 | 0.220 |
| 10 | MQ2 | 1 | 1 | 7.000 | 7.000 | 71 | 0.609 | 平板遮阳500 | 0.930 | 0.566 |
| 11 | MQ3 | 2 | 1 | 21.503 | 21.503 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 12 | MQ3 | 2 | 1 | 9.895 | 9.895 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 13 | MQ3 | 2 | 1 | 37.100 | 37.100 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 14 | MQ3 | 2 | 1 | 29.973 | 29.973 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 15 | MQ3 | 2 | 1 | 8.470 | 8.470 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 16 | MQ3 | 2 | 1 | 28.710 | 28.710 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 17 | MQ4 | 2 | 1 | 67.550 | 67.550 | 65 | 0.270 | 平板遮阳8800 | 0.690 | 0.186 |
| 18 | MQ4 | 2 | 1 | 10.500 | 10.500 | 65 | 0.270 | 平板遮阳8800 | 0.690 | 0.186 |
| 19 | MQ4 | 2 | 1 | 102.900 | 102.900 | 65 | 0.270 | 平板遮阳500 | 0.930 | 0.251 |
| 20 | MQ5 | 3 | 1 | 21.503 | 21.503 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 21 | MQ5 | 3 | 1 | 9.895 | 9.895 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 22 | MQ5 | 3 | 1 | 37.100 | 37.100 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 23 | MQ5 | 3 | 1 | 29.973 | 29.973 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 24 | MQ5 | 3 | 1 | 8.470 | 8.470 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 25 | MQ5 | 3 | 1 | 28.710 | 28.710 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 26 | MQ6 | 3 | 1 | 0.613 | 0.613 | 65 | 0.270 | 平板遮阳500 | 0.930 | 0.251 |
| 27 | MQ6 | 3 | 1 | 7.700 | 7.700 | 65 | 0.270 | 平板遮阳500 | 0.930 | 0.251 |
| 28 | MQ6 | 3 | 1 | 11.725 | 11.725 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 29 | MQ6 | 3 | 1 | 102.900 | 102.900 | 65 | 0.270 | 平板遮阳500 | 0.930 | 0.251 |
| 30 | MQ7 | 4 | 1 | 21.503 | 21.503 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 31 | MQ7 | 4 | 1 | 9.895 | 9.895 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 32 | MQ7 | 4 | 1 | 37.100 | 37.100 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 33 | MQ7 | 4 | 1 | 29.973 | 29.973 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 34 | MQ7 | 4 | 1 | 8.470 | 8.470 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 35 | MQ7 | 4 | 1 | 28.710 | 28.710 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 36 | MQ8 | 4 | 1 | 7.700 | 7.700 | 65 | 0.270 |  | 1.000 | 0.270 |
| 37 | MQ8 | 4 | 1 | 70.350 | 70.350 | 65 | 0.270 | 百叶遮阳500X1800 | 0.804 | 0.217 |
| 38 | MQ8 | 4 | 1 | 102.900 | 102.900 | 65 | 0.270 | 平板遮阳500 | 0.930 | 0.251 |
| 39 | MQ9 | 5 | 1 | 77.700 | 77.700 | 65 | 0.270 | 百叶遮阳500X5400 | 0.928 | 0.250 |
| 40 | MQ9 | 5 | 1 | 84.000 | 84.000 | 65 | 0.270 | 百叶遮阳500X5400 | 0.928 | 0.250 |
| 朝向总面积(m2) | 2216.099 | 综合太阳得热系数 | 0.879 | 0.238 |

## 总体热工性能

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 朝向 | 立面 | 面积 | 传热系数 | 综合太阳得热系数 | 窗墙比 | 标准要求 | 结论 |
| 南向 | 立面3 | 157.44 | 3.50 | 0.27 | 0.69 | K≤4.00, SHGC≤0.44 | 满足 |
| 北向 | 立面4 | 4832.36 | 3.52 | 0.25 | 0.69 | K≤4.00, SHGC≤0.44 | 满足 |
| 东向 | 立面1 | 2522.40 | 3.51 | 0.24 | 0.69 | K≤4.00, SHGC≤0.44 | 满足 |
| 西向 | 立面2 | 2216.10 | 3.50 | 0.24 | 0.70 | K≤4.00, SHGC≤0.44 | 满足 |
| 综合平均 |  | 9728.30 | 3.51 | 0.25 | 0.69 |  |  |
| 标准依据 | 《公共建筑节能设计标准》(GB50189-2015)第3.4.1条 |
| 标准要求 | 单一立面窗墙比大于或等于0.40时，外窗传热系数和综合太阳得热系数应满足表3.4.1-3的要求 |
| 结论 | 满足 |

注：本表所统计的外窗包含凸窗。

# 有效通风换气面积

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 楼层 | 房间编号 | 房间面积（m2） | 立面面积（m2） | 门窗编号 | 门窗面积（m2） | 有效通风面积比 | 门窗类型 | 有效通风面积/外窗面积 | 有效通风面积/立面面积 | 结论 |
| 1 | 1001 | 895.13 | 601.80 | MQ2 | 11.55 | 0.12 | 幕墙 | － | 0.05 | 不适宜 |
| MQ1 | 51.70 | 0.10 | 幕墙 |
| MQ1 | 15.53 | 0.10 | 幕墙 |
| MQ1 | 17.23 | 0.10 | 幕墙 |
| MQ1 | 17.98 | 0.10 | 幕墙 |
| MQ1 | 17.98 | 0.10 | 幕墙 |
| MQ1 | 22.26 | 0.10 | 幕墙 |
| MQ1 | 5.94 | 0.10 | 幕墙 |
| MQ1 | 75.08 | 0.10 | 幕墙 |
| MQ1 | 65.27 | 0.10 | 幕墙 |
| 2001 | 2113.15 | 1028.30 | MQ2 | 97.02 | 0.12 | 幕墙 | － | 0.07 | 不适宜 |
| MQ2 | 58.80 | 0.12 | 幕墙 |
| MQ2 | 7.00 | 0.12 | 幕墙 |
| MQ11 | 91.35 | 0.13 | 幕墙 |
| MQ2 | 7.00 | 0.12 | 幕墙 |
| MQ2 | 58.80 | 0.12 | 幕墙 |
| MQ2 | 79.45 | 0.12 | 幕墙 |
| MQ2 | 51.10 | 0.12 | 幕墙 |
| MQ2 | 53.97 | 0.12 | 幕墙 |
| MQ2 | 7.00 | 0.12 | 幕墙 |
| MQ2 | 29.05 | 0.12 | 幕墙 |
| MQ2 | 7.00 | 0.12 | 幕墙 |
| MQ2 | 53.97 | 0.12 | 幕墙 |
| 2011 | 285.63 | 99.49 | MQ2 | 23.45 | 0.12 | 幕墙 | － | 0.03 | 不适宜 |
| 2 | 2002 | 560.05 | 311.43 | MQ3 | 21.50 | 0.12 | 幕墙 | － | 0.09 | 不适宜 |
| MQ3 | 29.97 | 0.12 | 幕墙 |
| MQ3 | 37.10 | 0.12 | 幕墙 |
| MQ3 | 9.90 | 0.12 | 幕墙 |
| MQ3 | 75.08 | 0.12 | 幕墙 |
| MQ3 | 61.50 | 0.12 | 幕墙 |
| 2025 | 423.12 | 257.96 | MQ4 | 38.50 | 0.15 | 幕墙 | － | 0.09 | 不适宜 |
| MQ3 | 70.67 | 0.12 | 幕墙 |
| MQ3 | 50.51 | 0.12 | 幕墙 |
| MQ3 | 28.71 | 0.12 | 幕墙 |
| 3 | 3002 | 108.46 | 32.60 | MQ5 | 8.47 | 0.15 | 幕墙 | － | 0.04 | 不适宜 |
| 4 | 4001 | 92.02 | 24.05 | MQ7 | 8.47 | 0.14 | 幕墙 | － | 0.05 | 不适宜 |

|  |  |
| --- | --- |
| 通风换气装置 | 有 |
| 标准依据 | 《公共建筑节能设计标准》(GB50189-2015)第3.2.8条 |
| 标准要求 | 甲类建筑外窗有效通风换气面积不宜小于所在房间立面面积的10%  |
| 结论 | 满足 |

注：1.达标时只列出一项，不达标时列出全部不达标项

2.外窗开启面积统计表详附表20.7。

# 隔热检查

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 构造名称 | 构造类型 | 朝向 | 传热系数 | 热惰性指标 | 面密度 | 面积(m2) | 内表最高温度(℃) | 温度限值(℃) | 结论 |
| 干挂铝板外墙 | 外墙 | 东 | 0.79 | 4.21 | 214 | 1133.58 | 27.25 | 28.00 | 满足 |
| 干挂铝板外墙 | 外墙 | 西 | 0.79 | 4.21 | 214 | 951.69 | 27.38 | 28.00 | 满足 |
| 覆土屋面 | 屋顶 | 上 | 0.60 | 2.52 | 495 | 2464.36 | 27.66 | 28.50 | 满足 |
| 铺装屋面 | 屋顶 | 上 | 0.59 | 2.76 | 531 | 1970.74 | 27.51 | 28.50 | 满足 |
| 标准依据 | 《公共建筑节能设计标准广东省实施细则》(DBJ15-51-2007)第4.2.2条和《民用建筑热工设计规范》GB50176 |
| 标准要求 | 内表面温度不超过限值 |
| 结论 | 满足 |

# 非中空窗面积比

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 朝向 | 非中空玻璃面积(㎡) | 透光面积(㎡) | 非中空面积比 | 限值 | 结论 |
| 南向 | 0.00 | 157.44 | 0.00 | 0.15 | 满足 |
| 北向 | 98.35 | 4832.36 | 0.02 | 0.15 | 满足 |
| 东向 | 0.00 | 2522.40 | 0.00 | 0.15 | 满足 |
| 西向 | 7.00 | 2216.10 | 0.00 | 0.15 | 满足 |
| 《标准》依据 | 《公共建筑节能设计标准》(GB50189-2015)第3.3.7条 |
| 标准要求 | 非中空玻璃的面积不应超过同一立面透光面积的15% |
| 结论 | 满足 |

# 外窗气密性

|  |  |  |
| --- | --- | --- |
| 层数 | 1～9层 | 10层以上 |
| 最不利气密性等级 | － | － |
| 外窗气密性措施 |  |  |
| 标准依据 | 《公共建筑节能设计标准》(GB50189-2015)第3.3.5条，分级与检测方法《建筑外门窗气密、水密、抗风压性能分级及检测方法》（GB/T 7106-2008） | 《公共建筑节能设计标准》(GB50189-2015)第3.3.5条，分级与检测方法《建筑外门窗气密、水密、抗风压性能分级及检测方法》（GB/T 7106-2008） |
| 标准要求 | 10层以下外窗气密性不应低于《建筑外门窗气密、水密、抗风压性能分级及检测方法》（GB/T 7106-2008）的6级 | 10层及以上外窗气密性不应低于《建筑外门窗气密、水密、抗风压性能分级及检测方法》（GB/T 7106-2008）的7级 |
| 结论 | － | － |

# 幕墙气密性

|  |  |
| --- | --- |
| 最不利气密性等级 | 3级 MQ1 |
| 幕墙气密性措施 |  |
| 通风换气装置 | 有 |
| 标准依据 | 《公共建筑节能设计标准》(GB50189-2015)第3.3.6条，《建筑幕墙》（GB/T 21086-2007） |
| 标准要求 | 幕墙气密性不应低于《建筑幕墙》（GB/T 21086-2007）的3级，即《建筑幕墙物理性能分级》(GB/T15225-94)的3级 |
| 结论 | 满足 |

# 综合权衡

## 计算条件

|  |  |  |
| --- | --- | --- |
|  | 设计建筑 | 参照建筑 |
| 屋顶传热系数K [W/(m2·K)] | 0.60(D:2.63) | 0.80 |
| 外墙（包括非透明幕墙）传热系数K [W/(m2·K)] | 0.83(D:4.21) | 1.50 |
| 屋顶透明部分传热系数K [W/(m2·K)] | － | － |
| 屋顶透明部分太阳得热系数 | － | － |
| 底面接触室外的架空或外挑楼板传热系数K [W/(m2·K)] | 1.40 | 1.50 |
| 外窗（包括透明幕墙） | 朝向 | 窗墙比 | 传热系数 | 太阳得热系数 | 窗墙比 | 传热系数 | 太阳得热系数 |
| 南向 | 0.69 | 3.50 | 0.27 | 0.69 | 2.50 | 0.24 |
| 北向 | 0.69 | 3.52 | 0.25 | 0.69 | 2.50 | 0.30 |
| 东向 | 0.69 | 3.51 | 0.24 | 0.69 | 2.50 | 0.24 |
| 西向 | 0.70 | 3.50 | 0.24 | 0.70 | 2.50 | 0.24 |
| 室内参数和气象条件设置 | 按《公共建筑节能设计标准》附录B设置 |

备注：1. — 代表本工程无对应项; 2. ——代表参照建筑不要求，取值同设计建筑。

## 房间类型

### 房间表

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 空调温度℃ | 供暖温度℃ | 新风量 | 人员密度 | 照明功率密度 | 电器设备功率 |
| 办公-其它 | 26 | 20 | 30(m^3/h.人) | 10(m^2/人) | 9(W/m^2) | 15(W/m^2) |
| 办公-普通办公室 | 26 | 20 | 30(m^3/h.人) | 10(m^2/人) | 9(W/m^2) | 15(W/m^2) |
| 办公-走廊 | 26 | 20 | 30(m^3/h.人) | 10(m^2/人) | 9(W/m^2) | 15(W/m^2) |
| 空房间 | － | － | 20(m^3/h.人) | 50(m^2/人) | 0(W/m^2) | 0(W/m^2) |

### 作息时间表

详见附录

## 综合权衡

|  |  |  |
| --- | --- | --- |
|  | 设计建筑 | 参照建筑 |
| 全年供暖和空调总耗电量(kWh/㎡) | 24.51 | 25.06 |
| 供冷耗电量(kWh/㎡) | 22.92 | 23.71 |
| 供热耗电量(kWh/㎡) | 1.59 | 1.35 |
| 耗冷量(kWh/㎡) | 57.29 | 59.28 |
| 耗热量(kWh/㎡) | 3.51 | 2.97 |
| 标准依据 | 《公共建筑节能设计标准》(GB50189-2015)第3.4.2条 |
| 标准要求 | 设计建筑的能耗不大于参照建筑的能耗 |
| 结论 | 满足 |

# 结论

|  |  |  |
| --- | --- | --- |
| 序号 | 检查项 | 结论 |
| 1 | 可见光透射比 | 满足 |
| 2 | 屋顶构造 | 满足 |
| 3 | 外墙构造 | 满足 |
| 4 | 外窗热工 | 满足 |
| 5 | 有效通风换气面积 | 满足 |
| 6 | 隔热检查 | 满足 |
| 7 | 非中空窗面积比 | 满足 |
| 8 | 外窗气密性 | 满足 |
| 9 | 幕墙气密性 | 满足 |
| 10 | 综合权衡 | 满足 |
| 结论 | 满足 |

# 附录

## 工作日/节假日室内空调温度时间表(℃)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 办公-其它 | 37 | 37 | 37 | 37 | 37 | 37 | 28 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 37 | 37 | 37 | 37 | 37 | 37 |
| 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| 办公-普通办公室 | 37 | 37 | 37 | 37 | 37 | 37 | 28 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 37 | 37 | 37 | 37 | 37 | 37 |
| 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| 办公-走廊 | 37 | 37 | 37 | 37 | 37 | 37 | 28 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 37 | 37 | 37 | 37 | 37 | 37 |
| 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| 空房间 | 37 | 37 | 37 | 37 | 37 | 37 | 28 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 37 | 37 | 37 | 37 | 37 | 37 |
| 37 | 37 | 37 | 37 | 37 | 37 | 28 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 37 | 37 | 37 | 37 | 37 | 37 |

注：上行：工作日；下行：节假日

## 工作日/节假日室内供暖温度时间表(℃)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 办公-其它 | 5 | 5 | 5 | 5 | 5 | 12 | 18 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 18 | 12 | 5 | 5 | 5 | 5 |
| 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 办公-普通办公室 | 5 | 5 | 5 | 5 | 5 | 12 | 18 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 18 | 12 | 5 | 5 | 5 | 5 |
| 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 办公-走廊 | 5 | 5 | 5 | 5 | 5 | 12 | 18 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 18 | 12 | 5 | 5 | 5 | 5 |
| 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 空房间 | 12 | 12 | 12 | 12 | 12 | 12 | 18 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 12 | 12 | 12 | 12 | 12 | 12 |
| 12 | 12 | 12 | 12 | 12 | 12 | 18 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 12 | 12 | 12 | 12 | 12 | 12 |

注：上行：工作日；下行：节假日

## 工作日/节假日人员逐时在室率(%)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 办公-其它 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 95 | 95 | 95 | 80 | 80 | 95 | 95 | 95 | 95 | 30 | 30 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 办公-普通办公室 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 95 | 95 | 95 | 80 | 80 | 95 | 95 | 95 | 95 | 30 | 30 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 办公-走廊 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 95 | 95 | 95 | 80 | 80 | 95 | 95 | 95 | 95 | 30 | 30 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 空房间 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 50 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 70 | 50 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 50 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 70 | 50 | 0 | 0 | 0 |

注：上行：工作日；下行：节假日

## 工作日/节假日照明开关时间表(%)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 办公-其它 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 95 | 95 | 95 | 80 | 80 | 95 | 95 | 95 | 95 | 30 | 30 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 办公-普通办公室 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 95 | 95 | 95 | 80 | 80 | 95 | 95 | 95 | 95 | 30 | 30 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 办公-走廊 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 95 | 95 | 95 | 80 | 80 | 95 | 95 | 95 | 95 | 30 | 30 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 空房间 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 50 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 80 | 90 | 100 | 100 | 100 | 10 | 10 | 10 |
| 10 | 10 | 10 | 10 | 10 | 10 | 10 | 50 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 80 | 90 | 100 | 100 | 100 | 10 | 10 | 10 |

注：上行：工作日；下行：节假日

## 工作日/节假日设备逐时使用率(%)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 办公-其它 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 95 | 95 | 95 | 50 | 50 | 95 | 95 | 95 | 95 | 30 | 30 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 办公-普通办公室 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 95 | 95 | 95 | 50 | 50 | 95 | 95 | 95 | 95 | 30 | 30 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 办公-走廊 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 95 | 95 | 95 | 50 | 50 | 95 | 95 | 95 | 95 | 30 | 30 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 空房间 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 50 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 70 | 50 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 50 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 70 | 50 | 0 | 0 | 0 |

注：上行：工作日；下行：节假日

## 室内人均新风量设计参数表

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 房间名称  | 夏季 | 新风量(m³/h·人) | 人员密度(m²/人) | 噪音(dB) |
| 温度(︒c) | 相对温度（%） |
| 大堂 | 26 | ＜65 | 20 | 8 | 45 |
| 办公室 | 26 | ＜65 | 30 | 10 | 40 |
| 走廊 | 26 | ＜65 | 20 | 5 | 45 |

## 外窗开启面积统计表

|  |
| --- |
| **广州国际科技创新城一期工程A地块(自编号)14#地块1栋 幕墙开启面积统计表** |
| 层数 | **房间编号** | **外墙宽度(m)** | **外墙高度(m)** | **外墙面积(㎡)** | **需开启率** | **需开启面积(㎡)** | **实开启面积(㎡)** |  **开启扇折算系数** | **实际开启率** | **备注** |
| 一层 | 大堂 | 437.53 | 6.0 | 2859.18  | 10.00% | 285.92  | 427.25  | 0.80  | 11.95% | 　 |
| 二层 | 办公2-01 | 69.54 | 4.5 | 312.93  | 10.00% | 31.29  | 49.76  | 0.80  | 12.72% |   |
| 办公2-02 | 46.45 | 4.5 | 209.03  | 10.00% | 20.90  | 44.96  | 0.80  | 17.21% |   |
| 办公2-03 | 46.35 | 4.5 | 208.58  | 10.00% | 20.86  | 32.72  | 0.80  | 12.55% |   |
| 办公2-04 | 39.65 | 4.5 | 178.43  | 10.00% | 17.84  | 27.92  | 0.80  | 12.52% |   |
| 办公2-05 | 23.50 | 4.5 | 105.75  | 10.00% | 10.58  | 15.04  | 0.80  | 11.38% |   |
| 办公2-06 | 39.45 | 4.5 | 177.53  | 10.00% | 17.75  | 25.60  | 0.80  | 11.54% |   |
| 办公2-07 | 57.04 | 4.5 | 256.68  | 10.00% | 25.67  | 38.24  | 0.80  | 11.92% |   |
| 公共区域 | 31.63 | 4.5 | 142.34  | 10.00% | 14.23  | 29.34  | 0.80  | 16.49% |   |
| 三层 | 办公3-01 | 62.80 | 4.5 | 282.60  | 10.00% | 28.26  | 44.32  | 0.80  | 12.55% |   |
| 办公3-02 | 37.85 | 4.5 | 170.33  | 10.00% | 17.03  | 24.56  | 0.80  | 11.54% |   |
| 办公3-03 | 21.60 | 4.5 | 97.20  | 10.00% | 9.72  | 16.32  | 0.80  | 13.43% |   |
| 办公3-04 | 41.45 | 4.5 | 186.53  | 10.00% | 18.65  | 29.28  | 0.80  | 12.56% |   |
| 办公3-05 | 43.25 | 4.5 | 194.63  | 10.00% | 19.46  | 29.36  | 0.80  | 12.07% |   |
| 办公3-06 | 27.10 | 4.5 | 121.95  | 10.00% | 12.20  | 19.44  | 0.80  | 12.75% |   |
| 办公3-07 | 24.50 | 4.5 | 110.25  | 10.00% | 11.03  | 17.04  | 0.80  | 12.36% |   |
| 办公3-08 | 25.35 | 4.5 | 114.08  | 10.00% | 11.41  | 15.04  | 0.80  | 10.55% |   |
| 办公3-09 | 39.89 | 4.5 | 179.51  | 10.00% | 17.95  | 28.32  | 0.80  | 12.62% |   |
| 公共区域 | 9.10 | 4.5 | 40.95  | 10.00% | 4.10  | 6.80  | 0.80  | 13.28% |   |
| 四层 | 办公4-01 | 69.54 | 4.5 | 312.93  | 10.00% | 31.29  | 49.12  | 0.80  | 12.56% |   |
| 办公4-02 | 43.25 | 4.5 | 194.63  | 10.00% | 19.46  | 28.64  | 0.80  | 11.77% |   |
| 办公4-03 | 21.60 | 4.5 | 97.20  | 10.00% | 9.72  | 16.32  | 0.80  | 13.43% |   |
| 办公4-04 | 41.45 | 4.5 | 186.53  | 10.00% | 18.65  | 29.28  | 0.80  | 12.56% |   |
| 办公4-05 | 43.25 | 4.5 | 194.63  | 10.00% | 19.46  | 30.00  | 0.80  | 12.33% |   |
| 办公4-06 | 27.10 | 4.5 | 121.95  | 10.00% | 12.20  | 20.40  | 0.80  | 13.38% |   |
| 办公4-07 | 43.95 | 4.5 | 197.78  | 10.00% | 19.78  | 30.64  | 0.80  | 12.39% |   |
| 办公4-08 | 57.04 | 4.5 | 256.68  | 10.00% | 25.67  | 38.88  | 0.80  | 12.12% |   |
| 公共区域 | 6.44 | 4.5 | 28.98  | 10.00% | 2.90  | 10.30  | 0.80  | 28.44% |   |
| 五层 | 办公5-01 | 41.45 | 4.5 | 186.53  | 10.00% | 18.65  | 28.96  | 0.80  | 12.42% |   |
| 办公5-02 | 25.20 | 4.5 | 113.40  | 10.00% | 11.34  | 19.04  | 0.80  | 13.43% |   |
| 办公5-03 | 41.45 | 4.5 | 186.53  | 10.00% | 18.65  | 28.64  | 0.80  | 12.28% |   |
| 办公5-04 | 39.65 | 4.5 | 178.43  | 10.00% | 17.84  | 27.28  | 0.80  | 12.23% |   |
| 办公5-05 | 25.20 | 4.5 | 113.40  | 10.00% | 11.34  | 27.59  | 0.80  | 19.47% |   |
| 办公5-06 | 39.65 | 4.5 | 178.43  | 10.00% | 17.84  | 31.75  | 0.80  | 14.24% |   |
| 六层 | 办公6-01 | 41.45 | 4.5 | 186.53  | 10.00% | 18.65  | 28.96  | 0.80  | 12.42% |   |
| 办公6-02 | 25.20 | 4.5 | 113.40  | 10.00% | 11.34  | 19.04  | 0.80  | 13.43% |   |
| 办公6-03 | 41.45 | 4.5 | 186.53  | 10.00% | 18.65  | 23.52  | 0.80  | 10.09% |   |
| 办公6-04 | 39.65 | 4.5 | 178.43  | 10.00% | 17.84  | 27.60  | 0.80  | 12.37% |   |
| 办公6-05 | 25.20 | 4.5 | 113.40  | 10.00% | 11.34  | 19.04  | 0.80  | 13.43% |   |
| 办公6-06 | 39.65 | 4.5 | 178.43  | 10.00% | 17.84  | 23.84  | 0.80  | 10.69% |   |
| 七层 | 办公7-01 | 41.45 | 4.5 | 186.53  | 10.00% | 18.65  | 28.96  | 0.80  | 12.42% |   |
| 办公7-02 | 25.20 | 4.5 | 113.40  | 10.00% | 11.34  | 19.04  | 0.80  | 13.43% |   |
| 办公7-03 | 41.45 | 4.5 | 186.53  | 10.00% | 18.65  | 23.52  | 0.80  | 10.09% |   |
| 办公7-04 | 39.65 | 4.5 | 178.43  | 10.00% | 17.84  | 27.60  | 0.80  | 12.37% |   |
| 办公7-05 | 25.20 | 4.5 | 113.40  | 10.00% | 11.34  | 19.04  | 0.80  | 13.43% |   |
| 办公7-06 | 39.65 | 4.5 | 178.43  | 10.00% | 17.84  | 23.84  | 0.80  | 10.69% |   |
| 八层 | 办公8-01 | 41.45 | 4.5 | 186.53  | 10.00% | 18.65  | 28.96  | 0.80  | 12.42% |   |
| 办公8-02 | 25.20 | 4.5 | 113.40  | 10.00% | 11.34  | 19.04  | 0.80  | 13.43% |   |
| 办公8-03 | 41.45 | 4.5 | 186.53  | 10.00% | 18.65  | 23.52  | 0.80  | 10.09% |   |
| 办公8-04 | 39.65 | 4.5 | 178.43  | 10.00% | 17.84  | 27.60  | 0.80  | 12.37% |   |
| 办公8-05 | 25.20 | 4.5 | 113.40  | 10.00% | 11.34  | 19.04  | 0.80  | 13.43% |   |
| 办公8-06 | 39.65 | 4.5 | 178.43  | 10.00% | 17.84  | 23.84  | 0.80  | 10.69% | 　 |
| 九层 | 办公9-01 | 41.45 | 4.5 | 186.53  | 10.00% | 18.65  | 28.96  | 0.80  | 12.42% |   |
| 办公9-02 | 25.20 | 4.5 | 113.40  | 10.00% | 11.34  | 19.04  | 0.80  | 13.43% |   |
| 办公9-03 | 41.45 | 4.5 | 186.53  | 10.00% | 18.65  | 23.52  | 0.80  | 10.09% |   |
| 办公9-04 | 39.65 | 4.5 | 178.43  | 10.00% | 17.84  | 27.60  | 0.80  | 12.37% |   |
| 办公9-05 | 25.20 | 4.5 | 113.40  | 10.00% | 11.34  | 19.04  | 0.80  | 13.43% |   |
| 办公9-06 | 39.65 | 4.5 | 178.43  | 10.00% | 17.84  | 23.84  | 0.80  | 10.69% | 　 |
| 十层 | 办公10-01 | 41.45 | 4.5 | 186.53  | 10.00% | 18.65  | 28.96  | 0.80  | 12.42% |   |
| 办公10-02 | 25.20 | 4.5 | 113.40  | 10.00% | 11.34  | 19.04  | 0.80  | 13.43% |   |
| 办公10-03 | 41.45 | 4.5 | 186.53  | 10.00% | 18.65  | 23.52  | 0.80  | 10.09% |   |
| 办公10-04 | 39.65 | 4.5 | 178.43  | 10.00% | 17.84  | 27.60  | 0.80  | 12.37% |   |
| 办公10-05 | 25.20 | 4.5 | 113.40  | 10.00% | 11.34  | 19.04  | 0.80  | 13.43% |   |
| 办公10-06 | 39.65 | 4.5 | 178.43  | 10.00% | 17.84  | 23.84  | 0.80  | 10.69% | 　 |
| 十一层 | 办公11-01 | 41.45 | 4.5 | 186.53  | 10.00% | 18.65  | 28.96  | 0.80  | 12.42% |   |
| 办公11-02 | 25.20 | 4.5 | 113.40  | 10.00% | 11.34  | 19.04  | 0.80  | 13.43% |   |
| 办公11-03 | 41.45 | 4.5 | 186.53  | 10.00% | 18.65  | 23.52  | 0.80  | 10.09% |   |
| 办公11-04 | 39.65 | 4.5 | 178.43  | 10.00% | 17.84  | 27.60  | 0.80  | 12.37% |   |
| 办公11-05 | 25.20 | 4.5 | 113.40  | 10.00% | 11.34  | 19.04  | 0.80  | 13.43% | 　 |
| 办公11-06 | 39.65 | 4.5 | 178.43  | 10.00% | 17.84  | 23.84  | 0.80  | 10.69% | 　 |