**建筑节能设计报告书**

公共建筑

甲类

|  |  |
| --- | --- |
| 工程名称 | 建筑系馆改造后 |
| 工程地点 | 河南-南阳 |
| 设计编号 |  |
| 建设单位 |  |
| 设计单位 |  |
| 设 计 人 |  |
| 校 对 人 |  |
| 审 核 人 |  |
| 设计日期 | 2020年12月29日 |



|  |  |
| --- | --- |
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# 建筑概况

|  |  |
| --- | --- |
| 工程名称 | 建筑系馆改造后 |
| 工程地点 | 河南-南阳 |
| 地理位置 | 北纬：33.00° | 东经：112.58° |
| 建筑面积 | 地上8796㎡ 地下0㎡ |
| 建筑层数 | 地上6 地下0 |
| 建筑高度 | 22.2m |
| 建筑（节能计算）体积 | 33873.37 |
| 建筑（节能计算）外表面积 | 8111.08 |
| 北向角度 | 90 |
| 结构类型 |  |
| 外墙太阳辐射吸收系数 | 0.75 |
| 屋顶太阳辐射吸收系数 | 0.85 |

# 设计依据

1. 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)

2. 《民用建筑热工设计规范》(GB50176)

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）

# 建筑大样



立面图例



1层平面



2层平面



3层平面



4层平面



5层平面



6层平面

# 规定性指标检查

## 工程材料

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称 | 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) |
| 聚苯乙烯泡沫塑料 | 0.042 | 0.360 | 30.0 | 1380.0 | 0.0162 |  |
| 粗砂 | 0.580 | 8.260 | 1600.0 | 1010.0 | 0.0000 |  |
| 水泥砂浆 | 0.930 | 11.370 | 1800.0 | 1050.0 | 0.0210 |  |
| 钢筋混凝土 | 1.740 | 17.200 | 2500.0 | 920.0 | 0.0158 | 来源：《民用建筑热工设计规范》GB50176-2016 |
| 膨胀珍珠岩(ρ=80) | 0.058 | 0.628 | 80.0 | 1170.0 | 0.0000 |  |
| 钢筋混凝土（1） | 1.740 | 17.200 | 2500.0 | 920.0 | 0.0158 | 蒸汽渗透系数为测定值 |
| 细石防水砼 | 1.510 | 15.360 | 2300.0 | 934.1 | 0.0000 |  |
| 建筑钢材 | 58.200 | 126.284 | 7850.0 | 480.0 | 0.0000 | 蒸汽渗透系数没有给出 |
| （冬季）垂直空气间层（δ=5） | 0.050 | 0.066 | 1.2 | 1005.0 | 0.0000 | 选此材料时厚度设定为5mm |
| SBS改性沥青防水卷材 | 0.230 | 9.370 | 900.0 | 1620.0 | 0.0000 |  |
| 防水砂浆 | 0.930 | 11.306 | 1800.0 | 1050.0 | 0.0000 |  |
| 陶粒混凝土多孔砖墙 | 0.600 | 6.000 | 1100.0 | 750.0 | 0.0000 |  |
| 石灰砂浆 | 0.810 | 10.070 | 1600.0 | 1050.0 | 0.0443 | 来源：《民用建筑热工设计规范（GB50176-93）》 |
| 玻璃棉(ρ=100) | 0.050 | 0.553 | 100.0 | 840.0 | 0.0000 | 建筑材料手册（第四版） |
| 沥青油毡、油毡纸 | 0.170 | 3.302 | 600.0 | 1470.0 | 0.0000 | 蒸汽渗透系数没有给出 |

## 围护结构作法简要说明

**1. 屋顶构造：**屋顶构造一：（由上到下）

 细石防水砼 20mm＋粗砂 25mm＋SBS改性沥青防水卷材 2mm＋聚苯乙烯泡沫塑料 40mm＋水泥砂浆 20mm＋膨胀珍珠岩(ρ=80) 100mm＋钢筋混凝土（1） 150mm

**2. 外墙构造：**外墙构造一：（由外到内）

 建筑钢材 12mm＋（冬季）垂直空气间层（δ=5） 200mm＋防水砂浆 5mm＋聚苯乙烯泡沫塑料 8mm＋陶粒混凝土多孔砖墙 240mm

**3. 挑空楼板构造：**挑空楼板构造一：（由上到下）

 聚苯乙烯泡沫塑料 20mm＋钢筋混凝土 120mm＋聚苯乙烯泡沫塑料 20mm＋钢筋混凝土（1） 20mm＋聚苯乙烯泡沫塑料 20mm

**4. 外窗：**隔热金属框+中空玻璃（6mm中透光Low-E+12mm空气+6mm透明）：

 传热系数1.850W/m^2.K，太阳得热系数0.326

**5. 幕墙：**隔热金属框+中空玻璃（6mm中透光Low-E+12mm空气+6mm透明）：

 传热系数1.850W/m^2.K，太阳得热系数0.326

**6. 天窗：**隔热金属框+中空玻璃（6mm高透光Low-E+12mm空气+6mm透明）：

 传热系数2.700W/m^2.K，太阳得热系数0.539

## 体形系数

|  |  |
| --- | --- |
| 外表面积 | 8111.08 |
| 建筑体积 | 33873.37 |
| 体形系数 | 0.24 |

## 窗墙比

### 窗墙比

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 朝向 | 立面 | 窗面积(㎡) | 墙面积(㎡) | 窗墙比 | 限值 | 结论 |
| 南向 | 南-默认立面 | 783.25 | 1674.57 | 0.47 | 0.70 | 适宜 |
| 北向 | 北-默认立面 | 826.21 | 1729.70 | 0.48 | 0.70 | 适宜 |
| 东向 | 东-默认立面 | 200.36 | 918.90 | 0.22 | 0.70 | 适宜 |
| 西向 | 西-默认立面 | 214.74 | 960.11 | 0.22 | 0.70 | 适宜 |
| 标准依据 | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)第3.2.2条 |
| 标准要求 | 夏热冬冷地区甲类公共建筑各单一立面窗墙面积比 (包括透光幕墙 )均不宜大于0.70 |
| 结论 | 适宜 |

### 外窗表

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 朝向 | 立面 | 编号 | 尺寸 | 楼层 | 数量 | 单个面积（㎡） | 合计面积（㎡） |
| 南向 | 南-默认立面783.25 |  | 0.84×1.78 | 1 | 1 | 1.49 | 1.49 |
|  | 3.21×1.79 | 1 | 1 | 5.76 | 5.76 |
|  | 3.29×1.79 | 2~3 | 2 | 5.90 | 11.80 |
|  | 3.13×1.79 | 2~3 | 2 | 5.61 | 11.21 |
|  | 33.60×3.60 | 3 | 1 | 120.96 | 120.96 |
| C1819 | 1.86×1.95 | 4~6 | 24 | 3.63 | 87.05 |
| C1829 | 1.86×2.90 | 1 | 6 | 5.39 | 32.36 |
| C1923 | 1.92×2.30 | 4 | 1 | 4.42 | 4.42 |
| C1923 | 1.96×2.30 | 4 | 1 | 4.50 | 4.50 |
| C1923 | 1.95×2.30 | 5 | 1 | 4.48 | 4.48 |
| C2023 | 2.00×2.30 | 2~6 | 71 | 4.60 | 326.60 |
| C2223 | 2.20×2.30 | 5 | 1 | 5.06 | 5.06 |
| C2423 | 2.40×2.30 | 2~6 | 10 | 5.52 | 55.20 |
| C2429 | 2.40×2.90 | 1 | 2 | 6.96 | 13.92 |
| C3739 | 3.72×3.90 | 1~2 | 4 | 14.51 | 58.03 |
| YC | 3.29×1.80 | 1 | 1 | 5.90 | 5.90 |
| YC | 2.42×1.80 | 1 | 1 | 4.34 | 4.34 |
| YC | 3.44×1.80 | 1 | 1 | 6.17 | 6.17 |
| YC | 3.36×1.80 | 2~3 | 2 | 6.02 | 12.05 |
| YC | 3.33×1.80 | 2~3 | 2 | 5.97 | 11.94 |
| 北向 | 北-默认立面826.21 |  | 3.60×3.90 | 1~3 | 3 | 14.04 | 42.12 |
|  | 3.17×3.90 | 1~3 | 3 | 12.37 | 37.10 |
|  | 4.56×3.90 | 1~3 | 3 | 17.77 | 53.30 |
|  | 4.56×3.90 | 1~3 | 3 | 17.77 | 53.30 |
| C1423 | 1.44×2.30 | 5 | 1 | 3.32 | 3.32 |
| C1523 | 1.58×2.30 | 5 | 1 | 3.65 | 3.65 |
| C1819 | 1.86×1.95 | 4~6 | 24 | 3.63 | 87.05 |
| C1820 | 1.80×2.00 | 2~6 | 10 | 3.60 | 36.00 |
| C1823 | 1.80×2.30 | 1,6 | 3 | 4.14 | 12.42 |
| C1823 | 1.89×2.30 | 3 | 1 | 4.35 | 4.35 |
| C1823 | 1.85×2.30 | 4 | 1 | 4.26 | 4.26 |
| C1829 | 1.86×2.90 | 1 | 8 | 5.39 | 43.15 |
| C1923 | 1.90×2.30 | 1 | 2 | 4.37 | 8.74 |
| C1923 | 1.92×2.30 | 3 | 1 | 4.42 | 4.42 |
| C1923 | 1.93×2.30 | 5 | 1 | 4.44 | 4.44 |
| C1923 | 1.92×2.30 | 6 | 1 | 4.43 | 4.43 |
| C2023 | 2.00×2.30 | 2~6 | 54 | 4.60 | 248.40 |
| C2423 | 2.40×2.30 | 1~6 | 12 | 5.52 | 66.24 |
| C3223 | 3.28×2.30 | 6 | 1 | 7.53 | 7.53 |
| C3223 | 3.24×2.30 | 6 | 1 | 7.44 | 7.44 |
| C3702 | 3.72×3.90 | 2 | 2 | 14.51 | 29.02 |
| C3723 | 3.72×3.90 | 2 | 1 | 14.51 | 14.51 |
| C3739 | 3.72×3.90 | 1 | 3 | 14.51 | 43.52 |
| C3808 | 3.84×0.90 | 2 | 1 | 3.46 | 3.46 |
| C3810 | 3.84×1.05 | 1 | 1 | 4.04 | 4.04 |
| 东向 | 东-默认立面200.36 |  | 0.66×1.80 | 1 | 1 | 1.19 | 1.19 |
|  | 2.99×3.90 | 1~3 | 3 | 11.67 | 35.02 |
|  | 3.29×3.90 | 1~3 | 3 | 12.83 | 38.49 |
|  | 3.11×3.90 | 1~3 | 3 | 12.13 | 36.40 |
|  | 2.48×3.90 | 1~3 | 3 | 9.65 | 28.96 |
|  | 0.72×1.80 | 2~3 | 2 | 1.29 | 2.58 |
|  | 2.99×3.60 | 3 | 1 | 10.78 | 10.78 |
| C2023 | 2.00×2.30 | 2~3 | 4 | 4.60 | 18.40 |
| C2923 | 2.92×2.30 | 4~6 | 3 | 6.72 | 20.15 |
| C3623 | 3.64×2.30 | 2 | 1 | 8.38 | 8.38 |
| 西向 | 西-默认立面214.74 |  | 3.60×3.90 | 1~3 | 3 | 14.04 | 42.12 |
|  | 0.64×1.80 | 1 | 1 | 1.15 | 1.15 |
|  | 2.26×3.90 | 1~3 | 3 | 8.82 | 26.46 |
|  | 3.27×3.90 | 1~3 | 3 | 12.74 | 38.23 |
|  | 3.39×3.90 | 1~3 | 3 | 13.21 | 39.62 |
|  | 0.73×1.80 | 2~3 | 2 | 1.31 | 2.62 |
| C1923 | 1.94×2.30 | 2~3 | 4 | 4.46 | 17.86 |
| C2023 | 2.00×2.30 | 2~3 | 4 | 4.60 | 18.40 |
| C2423 | 2.46×2.30 | 2~6 | 5 | 5.66 | 28.29 |

## 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 | 南-默认立面 | 0.47 | C2023 | 0.62 | 0.40 |
| 北向 | 北-默认立面 | 0.48 | C1823 | 0.62 | 0.40 |
| 东向 | 东-默认立面 | 0.22 | C2923 | 0.62 | 0.60 |
| 西向 | 西-默认立面 | 0.22 | C2423 | 0.62 | 0.60 |
| 标准依据 | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 房间 | 天窗编号 | 天窗面积（㎡） | 屋顶面积（㎡） | 面积比 |
| 6003 | 1, | 132.20 | 291.31 | 0.45 |
| 整栋建筑 | 132.20 | 2188.86 | 0.06 |
| 标准依据 | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)第3.2.7条 |
| 标准要求 | 天窗面积不应大于屋顶总面积的20% |
| 结论 | 满足 |

### 天窗类型

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 序号 | 构造名称 | 构造编号 | 传热系数 | 综合太阳得热系数 | 备注 |
| 1 | 隔热金属框+中空玻璃（6mm高透光Low-E+12mm空气+6mm透明） | 66 | 2.70 | 0.54 | 《全国民用建筑工程设计技术措施节能篇》 |
| 平均 |  | 2.70 | 0.54 |  |
| 标准依据 | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)第3.3.1条 |
| 标准要求 | K≤2.6,SHGC≤0.3 |
| 结论 | 不满足 |

## 屋顶构造

### 屋顶构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称（由上到下） | 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 |
| 细石防水砼 | 20 | 1.510 | 15.360 | 1.00 | 0.013 | 0.203 |
| 粗砂 | 25 | 0.580 | 8.260 | 1.00 | 0.043 | 0.356 |
| SBS改性沥青防水卷材 | 2 | 0.230 | 9.370 | 1.00 | 0.009 | 0.081 |
| 聚苯乙烯泡沫塑料 | 40 | 0.042 | 0.360 | 1.00 | 0.952 | 0.343 |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 膨胀珍珠岩(ρ=80) | 100 | 0.058 | 0.628 | 1.00 | 1.724 | 1.083 |
| 钢筋混凝土（1） | 150 | 1.740 | 17.200 | 1.00 | 0.086 | 1.483 |
| 各层之和∑ | 357 | － | － | － | 2.849 | 3.794 |
| 外表面太阳辐射吸收系数 | 0.85 |
| 传热系数K=1/(0.15+∑R) | 0.33 |
| 标准依据 | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)第3.3.1条 |
| 标准要求 | K应满足表3.3.1-4的规定(K≤0.50) |
| 结论 | 满足 |

## 外墙构造

### 外墙构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 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 |
| 建筑钢材 | 12 | 58.200 | 126.284 | 1.00 | 0.000 | 0.026 |
| （冬季）垂直空气间层（δ=5） | 200 | 0.050 | 0.066 | 1.00 | 4.000 | 0.264 |
| 防水砂浆 | 5 | 0.930 | 11.306 | 1.00 | 0.005 | 0.061 |
| 聚苯乙烯泡沫塑料 | 8 | 0.042 | 0.360 | 1.00 | 0.190 | 0.069 |
| 陶粒混凝土多孔砖墙 | 240 | 0.600 | 6.000 | 1.00 | 0.400 | 2.400 |
| 各层之和∑ | 465 | － | － | － | 4.596 | 2.819 |
| 外表面太阳辐射吸收系数 | 0.75 |
| 传热系数K=1/(0.15+∑R) | 0.21 |
| 标准依据 | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)第3.3.1条 |
| 标准要求 | K应满足表3.3.1-4的规定(K≤0.80) |
| 结论 | 满足 |

### 外墙主断面传热系数的修正系数ψ



## 挑空楼板构造

### 挑空楼板构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称（由上到下） | 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 |
| 聚苯乙烯泡沫塑料 | 20 | 0.042 | 0.360 | 1.00 | 0.476 | 0.171 |
| 钢筋混凝土 | 120 | 1.740 | 17.200 | 1.00 | 0.069 | 1.186 |
| 聚苯乙烯泡沫塑料 | 20 | 0.042 | 0.360 | 1.00 | 0.476 | 0.171 |
| 钢筋混凝土（1） | 20 | 1.740 | 17.200 | 1.20 | 0.010 | 0.198 |
| 聚苯乙烯泡沫塑料 | 20 | 0.042 | 0.360 | 1.00 | 0.476 | 0.171 |
| 各层之和∑ | 200 | － | － | － | 1.507 | 1.898 |
| 传热系数K=1/(0.15+∑R) | 0.60 |
| 标准依据 | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)第3.3.1条 |
| 标准要求 | K≤0.70 |
| 结论 | 满足 |

## 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 | 隔热金属框+中空玻璃（6mm中透光Low-E+12mm空气+6mm透明） | 18 | 1.85 | 0.33 | 0.620 | 《全国民用建筑工程设计技术措施节能篇》 |
| 2 | 隔热金属框+中空玻璃（6mm中透光Low-E+12mm空气+6mm透明） | 65 | 1.85 | 0.33 | 0.620 | 《全国民用建筑工程设计技术措施节能篇》 |

### 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 | 外遮阳\_0 | 0.000 | 0.000 | 0.100 | 0.100 | 0.000 | 0.100 |

### 平均传热系数

1. 南向：

南-默认立面

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 |  | 1 | 1 | 1.491 | 1.491 | 18 | 1.850 |
| 2 |  | 1 | 1 | 5.760 | 5.760 | 18 | 1.850 |
| 3 |  | 2~3 | 2 | 5.902 | 11.804 | 18 | 1.850 |
| 4 |  | 2~3 | 2 | 5.606 | 11.212 | 18 | 1.850 |
| 5 |  | 3 | 1 | 120.960 | 120.960 | 65 | 1.850 |
| 6 | C1819 | 4~6 | 24 | 3.627 | 87.048 | 18 | 1.850 |
| 7 | C1829 | 1 | 6 | 5.394 | 32.364 | 18 | 1.850 |
| 8 | C1923 | 4 | 1 | 4.415 | 4.415 | 18 | 1.850 |
| 9 | C1923 | 4 | 1 | 4.500 | 4.500 | 18 | 1.850 |
| 10 | C1923 | 5 | 1 | 4.482 | 4.482 | 18 | 1.850 |
| 11 | C2023 | 2~6 | 71 | 4.600 | 326.600 | 18 | 1.850 |
| 12 | C2223 | 5 | 1 | 5.060 | 5.060 | 18 | 1.850 |
| 13 | C2423 | 2~6 | 10 | 5.520 | 55.200 | 18 | 1.850 |
| 14 | C2429 | 1 | 2 | 6.960 | 13.920 | 18 | 1.850 |
| 15 | C3739 | 1~2 | 4 | 14.508 | 58.032 | 18 | 1.850 |
| 16 | YC | 1 | 1 | 5.901 | 5.901 | 18 | 1.850 |
| 17 | YC | 1 | 1 | 4.343 | 4.343 | 18 | 1.850 |
| 18 | YC | 1 | 1 | 6.173 | 6.173 | 18 | 1.850 |
| 19 | YC | 2~3 | 2 | 6.025 | 12.050 | 18 | 1.850 |
| 20 | YC | 2~3 | 2 | 5.970 | 11.940 | 18 | 1.850 |
| 立面总面积(㎡) | 783.253 | 立面平均传热系数 | 1.850 |

2. 北向：

北-默认立面

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 |  | 1~3 | 3 | 14.040 | 42.120 | 65 | 1.850 |
| 2 |  | 1~3 | 3 | 12.367 | 37.102 | 65 | 1.850 |
| 3 |  | 1~3 | 3 | 17.766 | 53.299 | 65 | 1.850 |
| 4 |  | 1~3 | 3 | 17.766 | 53.299 | 65 | 1.850 |
| 5 | C1423 | 5 | 1 | 3.318 | 3.318 | 18 | 1.850 |
| 6 | C1523 | 5 | 1 | 3.645 | 3.645 | 18 | 1.850 |
| 7 | C1819 | 4~6 | 24 | 3.627 | 87.048 | 18 | 1.850 |
| 8 | C1820 | 2~6 | 10 | 3.600 | 36.000 | 18 | 1.850 |
| 9 | C1823 | 1,6 | 3 | 4.140 | 12.420 | 18 | 1.850 |
| 10 | C1823 | 3 | 1 | 4.350 | 4.350 | 18 | 1.850 |
| 11 | C1823 | 4 | 1 | 4.264 | 4.264 | 18 | 1.850 |
| 12 | C1829 | 1 | 8 | 5.394 | 43.152 | 18 | 1.850 |
| 13 | C1923 | 1 | 2 | 4.370 | 8.740 | 18 | 1.850 |
| 14 | C1923 | 3 | 1 | 4.419 | 4.419 | 18 | 1.850 |
| 15 | C1923 | 5 | 1 | 4.440 | 4.440 | 18 | 1.850 |
| 16 | C1923 | 6 | 1 | 4.427 | 4.427 | 18 | 1.850 |
| 17 | C2023 | 2~6 | 54 | 4.600 | 248.400 | 18 | 1.850 |
| 18 | C2423 | 1~6 | 12 | 5.520 | 66.240 | 18 | 1.850 |
| 19 | C3223 | 6 | 1 | 7.535 | 7.535 | 18 | 1.850 |
| 20 | C3223 | 6 | 1 | 7.444 | 7.444 | 18 | 1.850 |
| 21 | C3702 | 2 | 2 | 14.508 | 29.016 | 18 | 1.850 |
| 22 | C3723 | 2 | 1 | 14.508 | 14.508 | 18 | 1.850 |
| 23 | C3739 | 1 | 3 | 14.508 | 43.524 | 18 | 1.850 |
| 24 | C3808 | 2 | 1 | 3.460 | 3.460 | 18 | 1.850 |
| 25 | C3810 | 1 | 1 | 4.036 | 4.036 | 18 | 1.850 |
| 立面总面积(㎡) | 826.207 | 立面平均传热系数 | 1.850 |

3. 东向：

东-默认立面

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 |  | 1 | 1 | 1.192 | 1.192 | 18 | 1.850 |
| 2 |  | 1~3 | 3 | 11.673 | 35.020 | 65 | 1.850 |
| 3 |  | 1~3 | 3 | 12.831 | 38.493 | 65 | 1.850 |
| 4 |  | 1~3 | 3 | 12.133 | 36.399 | 65 | 1.850 |
| 5 |  | 1~3 | 3 | 9.654 | 28.961 | 65 | 1.850 |
| 6 |  | 2~3 | 2 | 1.292 | 2.584 | 18 | 1.850 |
| 7 |  | 3 | 1 | 10.778 | 10.778 | 65 | 1.850 |
| 8 | C2023 | 2~3 | 4 | 4.600 | 18.400 | 18 | 1.850 |
| 9 | C2923 | 4~6 | 3 | 6.716 | 20.148 | 18 | 1.850 |
| 10 | C3623 | 2 | 1 | 8.381 | 8.381 | 18 | 1.850 |
| 立面总面积(㎡) | 200.355 | 立面平均传热系数 | 1.850 |

4. 西向：

西-默认立面

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 |  | 1~3 | 3 | 14.040 | 42.120 | 65 | 1.850 |
| 2 |  | 1 | 1 | 1.145 | 1.145 | 18 | 1.850 |
| 3 |  | 1~3 | 3 | 8.819 | 26.457 | 65 | 1.850 |
| 4 |  | 1~3 | 3 | 12.744 | 38.232 | 65 | 1.850 |
| 5 |  | 1~3 | 3 | 13.206 | 39.617 | 65 | 1.850 |
| 6 |  | 2~3 | 2 | 1.310 | 2.619 | 18 | 1.850 |
| 7 | C1923 | 2~3 | 4 | 4.464 | 17.856 | 18 | 1.850 |
| 8 | C2023 | 2~3 | 4 | 4.600 | 18.400 | 18 | 1.850 |
| 9 | C2423 | 2~6 | 5 | 5.658 | 28.290 | 18 | 1.850 |
| 立面总面积(㎡) | 214.736 | 立面平均传热系数 | 1.850 |

### 综合太阳得热系数

1. 南向：

南-默认立面

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 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 |  | 1 | 1 | 1.491 | 1.491 | 18 | 0.326 | 外遮阳\_0 | 0.919 | 0.300 |
| 2 |  | 1 | 1 | 5.760 | 5.760 | 18 | 0.326 | 外遮阳\_0 | 0.976 | 0.318 |
| 3 |  | 2~3 | 2 | 5.902 | 11.804 | 18 | 0.326 | 外遮阳\_0 | 0.977 | 0.318 |
| 4 |  | 2~3 | 2 | 5.606 | 11.212 | 18 | 0.326 | 外遮阳\_0 | 0.975 | 0.318 |
| 5 |  | 3 | 1 | 120.960 | 120.960 | 65 | 0.326 | 外遮阳\_0 | 0.998 | 0.325 |
| 6 | C1819 | 4~6 | 24 | 3.627 | 87.048 | 18 | 0.326 | 外遮阳\_0 | 0.960 | 0.313 |
| 7 | C1829 | 1 | 6 | 5.394 | 32.364 | 18 | 0.326 | 外遮阳\_0 | 0.960 | 0.313 |
| 8 | C1923 | 4 | 1 | 4.415 | 4.415 | 18 | 0.326 | 外遮阳\_0 | 0.961 | 0.313 |
| 9 | C1923 | 4 | 1 | 4.500 | 4.500 | 18 | 0.326 | 外遮阳\_0 | 0.962 | 0.314 |
| 10 | C1923 | 5 | 1 | 4.482 | 4.482 | 18 | 0.326 | 外遮阳\_0 | 0.962 | 0.314 |
| 11 | C2023 | 2~6 | 71 | 4.600 | 326.600 | 18 | 0.326 | 外遮阳\_0 | 0.963 | 0.314 |
| 12 | C2223 | 5 | 1 | 5.060 | 5.060 | 18 | 0.326 | 外遮阳\_0 | 0.966 | 0.315 |
| 13 | C2423 | 2~6 | 10 | 5.520 | 55.200 | 18 | 0.326 | 外遮阳\_0 | 0.969 | 0.316 |
| 14 | C2429 | 1 | 2 | 6.960 | 13.920 | 18 | 0.326 | 外遮阳\_0 | 0.969 | 0.316 |
| 15 | C3739 | 1~2 | 4 | 14.508 | 58.032 | 18 | 0.326 | 外遮阳\_0 | 0.979 | 0.319 |
| 16 | YC | 1 | 1 | 5.901 | 5.901 | 18 | 0.326 | 外遮阳\_0 | 0.977 | 0.318 |
| 17 | YC | 1 | 1 | 4.343 | 4.343 | 18 | 0.326 | 外遮阳\_0 | 0.969 | 0.316 |
| 18 | YC | 1 | 1 | 6.173 | 6.173 | 18 | 0.326 | 外遮阳\_0 | 0.978 | 0.319 |
| 19 | YC | 2~3 | 2 | 6.025 | 12.050 | 18 | 0.326 | 外遮阳\_0 | 0.977 | 0.319 |
| 20 | YC | 2~3 | 2 | 5.970 | 11.940 | 18 | 0.326 | 外遮阳\_0 | 0.977 | 0.319 |
| 立面总面积(㎡) | 783.253 | 综合太阳得热系数 | 0.971 | 0.316 |

2. 北向：

北-默认立面

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 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 |  | 1~3 | 3 | 14.040 | 42.120 | 65 | 0.326 | 外遮阳\_0 | 0.978 | 0.319 |
| 2 |  | 1~3 | 3 | 12.367 | 37.102 | 65 | 0.326 | 外遮阳\_0 | 0.975 | 0.318 |
| 3 |  | 1~3 | 3 | 17.766 | 53.299 | 65 | 0.326 | 外遮阳\_0 | 0.982 | 0.320 |
| 4 |  | 1~3 | 3 | 17.766 | 53.299 | 65 | 0.326 | 外遮阳\_0 | 0.982 | 0.320 |
| 5 | C1423 | 5 | 1 | 3.318 | 3.318 | 18 | 0.326 | 外遮阳\_0 | 0.947 | 0.309 |
| 6 | C1523 | 5 | 1 | 3.645 | 3.645 | 18 | 0.326 | 外遮阳\_0 | 0.952 | 0.310 |
| 7 | C1819 | 4~6 | 24 | 3.627 | 87.048 | 18 | 0.326 | 外遮阳\_0 | 0.958 | 0.312 |
| 8 | C1820 | 2~6 | 10 | 3.600 | 36.000 | 18 | 0.326 | 外遮阳\_0 | 0.957 | 0.312 |
| 9 | C1823 | 1,6 | 3 | 4.140 | 12.420 | 18 | 0.326 | 外遮阳\_0 | 0.957 | 0.312 |
| 10 | C1823 | 3 | 1 | 4.350 | 4.350 | 18 | 0.326 | 外遮阳\_0 | 0.959 | 0.313 |
| 11 | C1823 | 4 | 1 | 4.264 | 4.264 | 18 | 0.326 | 外遮阳\_0 | 0.958 | 0.312 |
| 12 | C1829 | 1 | 8 | 5.394 | 43.152 | 18 | 0.326 | 外遮阳\_0 | 0.958 | 0.312 |
| 13 | C1923 | 1 | 2 | 4.370 | 8.740 | 18 | 0.326 | 外遮阳\_0 | 0.959 | 0.313 |
| 14 | C1923 | 3 | 1 | 4.419 | 4.419 | 18 | 0.326 | 外遮阳\_0 | 0.960 | 0.313 |
| 15 | C1923 | 5 | 1 | 4.440 | 4.440 | 18 | 0.326 | 外遮阳\_0 | 0.960 | 0.313 |
| 16 | C1923 | 6 | 1 | 4.427 | 4.427 | 18 | 0.326 | 外遮阳\_0 | 0.960 | 0.313 |
| 17 | C2023 | 2~6 | 54 | 4.600 | 248.400 | 18 | 0.326 | 外遮阳\_0 | 0.961 | 0.313 |
| 18 | C2423 | 1~6 | 12 | 5.520 | 66.240 | 18 | 0.326 | 外遮阳\_0 | 0.967 | 0.315 |
| 19 | C3223 | 6 | 1 | 7.535 | 7.535 | 18 | 0.326 | 外遮阳\_0 | 0.976 | 0.318 |
| 20 | C3223 | 6 | 1 | 7.444 | 7.444 | 18 | 0.326 | 外遮阳\_0 | 0.975 | 0.318 |
| 21 | C3702 | 2 | 2 | 14.508 | 29.016 | 18 | 0.326 | 外遮阳\_0 | 0.978 | 0.319 |
| 22 | C3723 | 2 | 1 | 14.508 | 14.508 | 18 | 0.326 | 外遮阳\_0 | 0.978 | 0.319 |
| 23 | C3739 | 1 | 3 | 14.508 | 43.524 | 18 | 0.326 | 外遮阳\_0 | 0.978 | 0.319 |
| 24 | C3808 | 2 | 1 | 3.460 | 3.460 | 18 | 0.326 | 外遮阳\_0 | 0.979 | 0.319 |
| 25 | C3810 | 1 | 1 | 4.036 | 4.036 | 18 | 0.326 | 外遮阳\_0 | 0.979 | 0.319 |
| 立面总面积(㎡) | 826.207 | 综合太阳得热系数 | 0.967 | 0.315 |

3. 东向：

东-默认立面

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 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 |  | 1 | 1 | 1.192 | 1.192 | 18 | 0.326 | 外遮阳\_0 | 0.902 | 0.294 |
| 2 |  | 1~3 | 3 | 11.673 | 35.020 | 65 | 0.326 | 外遮阳\_0 | 0.979 | 0.319 |
| 3 |  | 1~3 | 3 | 12.831 | 38.493 | 65 | 0.326 | 外遮阳\_0 | 0.977 | 0.318 |
| 4 |  | 1~3 | 3 | 12.133 | 36.399 | 65 | 0.326 | 外遮阳\_0 | 0.980 | 0.320 |
| 5 |  | 1~3 | 3 | 9.654 | 28.961 | 65 | 0.326 | 外遮阳\_0 | 0.970 | 0.316 |
| 6 |  | 2~3 | 2 | 1.292 | 2.584 | 18 | 0.326 | 外遮阳\_0 | 0.909 | 0.296 |
| 7 |  | 3 | 1 | 10.778 | 10.778 | 65 | 0.326 | 外遮阳\_0 | 0.979 | 0.319 |
| 8 | C2023 | 2~3 | 4 | 4.600 | 18.400 | 18 | 0.326 | 外遮阳\_0 | 0.970 | 0.316 |
| 9 | C2923 | 4~6 | 3 | 6.716 | 20.148 | 18 | 0.326 | 外遮阳\_0 | 0.979 | 0.319 |
| 10 | C3623 | 2 | 1 | 8.381 | 8.381 | 18 | 0.326 | 外遮阳\_0 | 0.983 | 0.320 |
| 立面总面积(㎡) | 200.355 | 综合太阳得热系数 | 0.975 | 0.318 |

4. 西向：

西-默认立面

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 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 |  | 1~3 | 3 | 14.040 | 42.120 | 65 | 0.326 | 外遮阳\_0 | 0.982 | 0.320 |
| 2 |  | 1 | 1 | 1.145 | 1.145 | 18 | 0.326 | 外遮阳\_0 | 0.896 | 0.292 |
| 3 |  | 1~3 | 3 | 8.819 | 26.457 | 65 | 0.326 | 外遮阳\_0 | 0.966 | 0.315 |
| 4 |  | 1~3 | 3 | 12.744 | 38.232 | 65 | 0.326 | 外遮阳\_0 | 0.981 | 0.320 |
| 5 |  | 1~3 | 3 | 13.206 | 39.617 | 65 | 0.326 | 外遮阳\_0 | 0.977 | 0.318 |
| 6 |  | 2~3 | 2 | 1.310 | 2.619 | 18 | 0.326 | 外遮阳\_0 | 0.907 | 0.296 |
| 7 | C1923 | 2~3 | 4 | 4.464 | 17.856 | 18 | 0.326 | 外遮阳\_0 | 0.968 | 0.316 |
| 8 | C2023 | 2~3 | 4 | 4.600 | 18.400 | 18 | 0.326 | 外遮阳\_0 | 0.969 | 0.316 |
| 9 | C2423 | 2~6 | 5 | 5.658 | 28.290 | 18 | 0.326 | 外遮阳\_0 | 0.975 | 0.318 |
| 立面总面积(㎡) | 214.736 | 综合太阳得热系数 | 0.974 | 0.318 |

### 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 | 南-默认立面 | 783.25 | 1.85 | 0.32 | 0.47 | K≤2.40, SHGC≤0.35 | 满足 |
| 北向 | 北-默认立面 | 826.21 | 1.85 | 0.32 | 0.48 | K≤2.40, SHGC≤0.40 | 满足 |
| 东向 | 东-默认立面 | 200.36 | 1.85 | 0.32 | 0.22 | K≤3.00, SHGC≤0.44 | 满足 |
| 西向 | 西-默认立面 | 214.74 | 1.85 | 0.32 | 0.22 | K≤3.00, SHGC≤0.44 | 满足 |
| 综合平均 |  | 2024.55 | 1.85 | 0.32 | 0.38 |  |  |
| 标准依据 | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)第3.3.1条 |
| 标准要求 | 外窗传热系数和综合太阳得热系数满足表3.3.1-4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（㎡） | 立面面积（㎡） | 门窗编号 | 门窗面积（㎡） | 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 | 1006 | 146.78 | 147.42 | C2423 | 5.52 | 0.50 | 外窗 | 0.50 | 0.08 | 不适宜 |
| C2429 | 6.96 | 0.50 | 外窗 |
| C2429 | 6.96 | 0.50 | 外窗 |
| C2423 | 5.52 | 0.50 | 外窗 |
| 1020 | 39.35 | 60.48 | C1829 | 5.39 | 0.50 | 外窗 | 0.50 | 0.09 | 不适宜 |
| C1829 | 5.39 | 0.50 | 外窗 |
| 1021 | 35.80 | 25.20 | C1823 | 4.14 | 0.50 | 外窗 | 0.50 | 0.08 | 不适宜 |
| 1023 | 35.84 | 25.20 | C1823 | 4.14 | 0.50 | 外窗 | 0.50 | 0.08 | 不适宜 |
| 2 | 2031 | 63.80 | 59.40 | C2423 | 5.52 | 0.50 | 外窗 | 0.50 | 0.09 | 不适宜 |
| C2423 | 5.52 | 0.50 | 外窗 |
| 2069 | 35.96 | 21.60 | C1820 | 3.60 | 0.50 | 外窗 | 0.50 | 0.08 | 不适宜 |
| 2071 | 35.96 | 21.60 | C1820 | 3.60 | 0.50 | 外窗 | 0.50 | 0.08 | 不适宜 |
| 3 | 3030 | 63.80 | 59.40 | C2423 | 5.52 | 0.50 | 外窗 | 0.50 | 0.09 | 不适宜 |
| C2423 | 5.52 | 0.50 | 外窗 |
| 3066 | 35.96 | 21.60 | C1820 | 3.60 | 0.50 | 外窗 | 0.50 | 0.08 | 不适宜 |
| 3074 | 35.96 | 21.60 | C1820 | 3.60 | 0.50 | 外窗 | 0.50 | 0.08 | 不适宜 |
| 4 | 4027 | 63.80 | 59.40 | C2423 | 5.52 | 0.50 | 外窗 | 0.50 | 0.09 | 不适宜 |
| C2423 | 5.52 | 0.50 | 外窗 |
| 4065 | 35.96 | 21.60 | C1820 | 3.60 | 0.50 | 外窗 | 0.50 | 0.08 | 不适宜 |
| 4073 | 35.96 | 21.60 | C1820 | 3.60 | 0.50 | 外窗 | 0.50 | 0.08 | 不适宜 |
| 5 | 5028 | 63.80 | 59.40 | C2423 | 5.52 | 0.50 | 外窗 | 0.50 | 0.09 | 不适宜 |
| C2423 | 5.52 | 0.50 | 外窗 |
| 5064 | 35.96 | 21.60 | C1820 | 3.60 | 0.50 | 外窗 | 0.50 | 0.08 | 不适宜 |
| 5072 | 35.96 | 21.60 | C1820 | 3.60 | 0.50 | 外窗 | 0.50 | 0.08 | 不适宜 |
| 6 | 6010 | 63.80 | 59.40 | C2423 | 5.52 | 0.50 | 外窗 | 0.50 | 0.09 | 不适宜 |
| C2423 | 5.52 | 0.50 | 外窗 |
| 6011 | 58.90 | 57.24 | C2423 | 5.52 | 0.50 | 外窗 | 0.50 | 0.08 | 不适宜 |
| C1823 | 4.14 | 0.50 | 外窗 |
| 6022 | 35.96 | 21.60 | C1820 | 3.60 | 0.50 | 外窗 | 0.50 | 0.08 | 不适宜 |
| 6024 | 35.96 | 21.60 | C1820 | 3.60 | 0.50 | 外窗 | 0.50 | 0.08 | 不适宜 |
| 通风换气装置 | 有 |
| 标准依据 | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)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：达标时只列出一项，不达标时列出全部不达标项

## 非中空窗面积比

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 朝向 | 立面 | 非中空玻璃面积(㎡) | 透光面积(㎡) | 非中空面积比 | 限值 | 结论 |
| 南向 | 南-默认立面 | 0.00 | 783.25 | 0.00 | 0.15 | 满足 |
| 北向 | 北-默认立面 | 0.00 | 826.21 | 0.00 | 0.15 | 满足 |
| 东向 | 东-默认立面 | 0.00 | 200.36 | 0.00 | 0.15 | 满足 |
| 西向 | 西-默认立面 | 0.00 | 214.74 | 0.00 | 0.15 | 满足 |
| 标准依据 | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)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 | 7级 C1423 | － |
| 外窗气密性措施 |  |  |
| 标准依据 | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)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） | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)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 | 满足 | － |

## 幕墙气密性

|  |  |
| --- | --- |
| 最不利气密性等级 | 4级  |
| 幕墙气密性措施 |  |
| 通风换气装置 | 有 |
| 标准依据 | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)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 |

## 规定性指标检查结论

|  |  |  |  |
| --- | --- | --- | --- |
| 序号 | 检查项 | 结论 | 可否性能权衡 |
| 1 | 窗墙比 | 适宜 |  |
| 2 | 可见光透射比 | 满足 |  |
| 3 | 天窗屋顶比 | 满足 |  |
| 4 | 天窗类型 | 不满足 | 可 |
| 5 | 屋顶构造 | 满足 |  |
| 6 | 外墙构造 | 满足 |  |
| 7 | 挑空楼板构造 | 满足 |  |
| 8 | 外窗热工 | 满足 |  |
| 9 | 有效通风换气面积 | 满足 |  |
| 10 | 非中空窗面积比 | 满足 |  |
| 11 | 外窗气密性 | 满足 |  |
| 12 | 幕墙气密性 | 满足 |  |
| 结论 | 不满足 | 可 |

□说明：本工程规定性指标设计**不满足**要求，需依据《河南公共建筑节能设计标准》(DBJ41/T 075-2016)的要求进行节能设计的权衡判断。

# 热工性能权衡判断

## 说明

本建筑按河南公共建筑节能设计标准DBJ41/T 075-2016之规定进行强制性条文和必须满足条款的规定性指标检查，结果未能达标，按标准规定继续进行热工性能权衡判断。

## 屋顶构造

### 屋顶构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称（由上到下） | 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 |
| 细石防水砼 | 20 | 1.510 | 15.360 | 1.00 | 0.013 | 0.203 |
| 粗砂 | 25 | 0.580 | 8.260 | 1.00 | 0.043 | 0.356 |
| SBS改性沥青防水卷材 | 2 | 0.230 | 9.370 | 1.00 | 0.009 | 0.081 |
| 聚苯乙烯泡沫塑料 | 40 | 0.042 | 0.360 | 1.00 | 0.952 | 0.343 |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 膨胀珍珠岩(ρ=80) | 100 | 0.058 | 0.628 | 1.00 | 1.724 | 1.083 |
| 钢筋混凝土（1） | 150 | 1.740 | 17.200 | 1.00 | 0.086 | 1.483 |
| 各层之和∑ | 357 | － | － | － | 2.849 | 3.794 |
| 外表面太阳辐射吸收系数 | 0.85 |
| 传热系数K=1/(0.15+∑R) | 0.33 |
| 标准依据 | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)第3.4.1条 |
| 标准要求 | K<=0.7 |
| 结论 | 满足 |

## 外墙构造

### 外墙构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 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 |
| 建筑钢材 | 12 | 58.200 | 126.284 | 1.00 | 0.000 | 0.026 |
| （冬季）垂直空气间层（δ=5） | 200 | 0.050 | 0.066 | 1.00 | 4.000 | 0.264 |
| 防水砂浆 | 5 | 0.930 | 11.306 | 1.00 | 0.005 | 0.061 |
| 聚苯乙烯泡沫塑料 | 8 | 0.042 | 0.360 | 1.00 | 0.190 | 0.069 |
| 陶粒混凝土多孔砖墙 | 240 | 0.600 | 6.000 | 1.00 | 0.400 | 2.400 |
| 各层之和∑ | 465 | － | － | － | 4.596 | 2.819 |
| 外表面太阳辐射吸收系数 | 0.75 |
| 传热系数K=1/(0.15+∑R) | 0.21 |
| 标准依据 | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)第3.4.1条 |
| 标准要求 | K<=1.0 |
| 结论 | 满足 |

### 外墙主断面传热系数的修正系数ψ



## 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 | 隔热金属框+中空玻璃（6mm中透光Low-E+12mm空气+6mm透明） | 18 | 1.85 | 0.33 | 0.620 | 《全国民用建筑工程设计技术措施节能篇》 |
| 2 | 隔热金属框+中空玻璃（6mm中透光Low-E+12mm空气+6mm透明） | 65 | 1.85 | 0.33 | 0.620 | 《全国民用建筑工程设计技术措施节能篇》 |

### 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 | 外遮阳\_0 | 0.000 | 0.000 | 0.100 | 0.100 | 0.000 | 0.100 |

### 平均传热系数

1. 南向：

南-默认立面

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 |  | 1 | 1 | 1.491 | 1.491 | 18 | 1.850 |
| 2 |  | 1 | 1 | 5.760 | 5.760 | 18 | 1.850 |
| 3 |  | 2~3 | 2 | 5.902 | 11.804 | 18 | 1.850 |
| 4 |  | 2~3 | 2 | 5.606 | 11.212 | 18 | 1.850 |
| 5 |  | 3 | 1 | 120.960 | 120.960 | 65 | 1.850 |
| 6 | C1819 | 4~6 | 24 | 3.627 | 87.048 | 18 | 1.850 |
| 7 | C1829 | 1 | 6 | 5.394 | 32.364 | 18 | 1.850 |
| 8 | C1923 | 4 | 1 | 4.415 | 4.415 | 18 | 1.850 |
| 9 | C1923 | 4 | 1 | 4.500 | 4.500 | 18 | 1.850 |
| 10 | C1923 | 5 | 1 | 4.482 | 4.482 | 18 | 1.850 |
| 11 | C2023 | 2~6 | 71 | 4.600 | 326.600 | 18 | 1.850 |
| 12 | C2223 | 5 | 1 | 5.060 | 5.060 | 18 | 1.850 |
| 13 | C2423 | 2~6 | 10 | 5.520 | 55.200 | 18 | 1.850 |
| 14 | C2429 | 1 | 2 | 6.960 | 13.920 | 18 | 1.850 |
| 15 | C3739 | 1~2 | 4 | 14.508 | 58.032 | 18 | 1.850 |
| 16 | YC | 1 | 1 | 5.901 | 5.901 | 18 | 1.850 |
| 17 | YC | 1 | 1 | 4.343 | 4.343 | 18 | 1.850 |
| 18 | YC | 1 | 1 | 6.173 | 6.173 | 18 | 1.850 |
| 19 | YC | 2~3 | 2 | 6.025 | 12.050 | 18 | 1.850 |
| 20 | YC | 2~3 | 2 | 5.970 | 11.940 | 18 | 1.850 |
| 立面总面积(㎡) | 783.253 | 立面平均传热系数 | 1.850 |

2. 北向：

北-默认立面

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 |  | 1~3 | 3 | 14.040 | 42.120 | 65 | 1.850 |
| 2 |  | 1~3 | 3 | 12.367 | 37.102 | 65 | 1.850 |
| 3 |  | 1~3 | 3 | 17.766 | 53.299 | 65 | 1.850 |
| 4 |  | 1~3 | 3 | 17.766 | 53.299 | 65 | 1.850 |
| 5 | C1423 | 5 | 1 | 3.318 | 3.318 | 18 | 1.850 |
| 6 | C1523 | 5 | 1 | 3.645 | 3.645 | 18 | 1.850 |
| 7 | C1819 | 4~6 | 24 | 3.627 | 87.048 | 18 | 1.850 |
| 8 | C1820 | 2~6 | 10 | 3.600 | 36.000 | 18 | 1.850 |
| 9 | C1823 | 1,6 | 3 | 4.140 | 12.420 | 18 | 1.850 |
| 10 | C1823 | 3 | 1 | 4.350 | 4.350 | 18 | 1.850 |
| 11 | C1823 | 4 | 1 | 4.264 | 4.264 | 18 | 1.850 |
| 12 | C1829 | 1 | 8 | 5.394 | 43.152 | 18 | 1.850 |
| 13 | C1923 | 1 | 2 | 4.370 | 8.740 | 18 | 1.850 |
| 14 | C1923 | 3 | 1 | 4.419 | 4.419 | 18 | 1.850 |
| 15 | C1923 | 5 | 1 | 4.440 | 4.440 | 18 | 1.850 |
| 16 | C1923 | 6 | 1 | 4.427 | 4.427 | 18 | 1.850 |
| 17 | C2023 | 2~6 | 54 | 4.600 | 248.400 | 18 | 1.850 |
| 18 | C2423 | 1~6 | 12 | 5.520 | 66.240 | 18 | 1.850 |
| 19 | C3223 | 6 | 1 | 7.535 | 7.535 | 18 | 1.850 |
| 20 | C3223 | 6 | 1 | 7.444 | 7.444 | 18 | 1.850 |
| 21 | C3702 | 2 | 2 | 14.508 | 29.016 | 18 | 1.850 |
| 22 | C3723 | 2 | 1 | 14.508 | 14.508 | 18 | 1.850 |
| 23 | C3739 | 1 | 3 | 14.508 | 43.524 | 18 | 1.850 |
| 24 | C3808 | 2 | 1 | 3.460 | 3.460 | 18 | 1.850 |
| 25 | C3810 | 1 | 1 | 4.036 | 4.036 | 18 | 1.850 |
| 立面总面积(㎡) | 826.207 | 立面平均传热系数 | 1.850 |

3. 东向：

东-默认立面

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 |  | 1 | 1 | 1.192 | 1.192 | 18 | 1.850 |
| 2 |  | 1~3 | 3 | 11.673 | 35.020 | 65 | 1.850 |
| 3 |  | 1~3 | 3 | 12.831 | 38.493 | 65 | 1.850 |
| 4 |  | 1~3 | 3 | 12.133 | 36.399 | 65 | 1.850 |
| 5 |  | 1~3 | 3 | 9.654 | 28.961 | 65 | 1.850 |
| 6 |  | 2~3 | 2 | 1.292 | 2.584 | 18 | 1.850 |
| 7 |  | 3 | 1 | 10.778 | 10.778 | 65 | 1.850 |
| 8 | C2023 | 2~3 | 4 | 4.600 | 18.400 | 18 | 1.850 |
| 9 | C2923 | 4~6 | 3 | 6.716 | 20.148 | 18 | 1.850 |
| 10 | C3623 | 2 | 1 | 8.381 | 8.381 | 18 | 1.850 |
| 立面总面积(㎡) | 200.355 | 立面平均传热系数 | 1.850 |

4. 西向：

西-默认立面

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 |  | 1~3 | 3 | 14.040 | 42.120 | 65 | 1.850 |
| 2 |  | 1 | 1 | 1.145 | 1.145 | 18 | 1.850 |
| 3 |  | 1~3 | 3 | 8.819 | 26.457 | 65 | 1.850 |
| 4 |  | 1~3 | 3 | 12.744 | 38.232 | 65 | 1.850 |
| 5 |  | 1~3 | 3 | 13.206 | 39.617 | 65 | 1.850 |
| 6 |  | 2~3 | 2 | 1.310 | 2.619 | 18 | 1.850 |
| 7 | C1923 | 2~3 | 4 | 4.464 | 17.856 | 18 | 1.850 |
| 8 | C2023 | 2~3 | 4 | 4.600 | 18.400 | 18 | 1.850 |
| 9 | C2423 | 2~6 | 5 | 5.658 | 28.290 | 18 | 1.850 |
| 立面总面积(㎡) | 214.736 | 立面平均传热系数 | 1.850 |

### 综合太阳得热系数

1. 南向：

南-默认立面

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 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 |  | 1 | 1 | 1.491 | 1.491 | 18 | 0.326 | 外遮阳\_0 | 0.919 | 0.300 |
| 2 |  | 1 | 1 | 5.760 | 5.760 | 18 | 0.326 | 外遮阳\_0 | 0.976 | 0.318 |
| 3 |  | 2~3 | 2 | 5.902 | 11.804 | 18 | 0.326 | 外遮阳\_0 | 0.977 | 0.318 |
| 4 |  | 2~3 | 2 | 5.606 | 11.212 | 18 | 0.326 | 外遮阳\_0 | 0.975 | 0.318 |
| 5 |  | 3 | 1 | 120.960 | 120.960 | 65 | 0.326 | 外遮阳\_0 | 0.998 | 0.325 |
| 6 | C1819 | 4~6 | 24 | 3.627 | 87.048 | 18 | 0.326 | 外遮阳\_0 | 0.960 | 0.313 |
| 7 | C1829 | 1 | 6 | 5.394 | 32.364 | 18 | 0.326 | 外遮阳\_0 | 0.960 | 0.313 |
| 8 | C1923 | 4 | 1 | 4.415 | 4.415 | 18 | 0.326 | 外遮阳\_0 | 0.961 | 0.313 |
| 9 | C1923 | 4 | 1 | 4.500 | 4.500 | 18 | 0.326 | 外遮阳\_0 | 0.962 | 0.314 |
| 10 | C1923 | 5 | 1 | 4.482 | 4.482 | 18 | 0.326 | 外遮阳\_0 | 0.962 | 0.314 |
| 11 | C2023 | 2~6 | 71 | 4.600 | 326.600 | 18 | 0.326 | 外遮阳\_0 | 0.963 | 0.314 |
| 12 | C2223 | 5 | 1 | 5.060 | 5.060 | 18 | 0.326 | 外遮阳\_0 | 0.966 | 0.315 |
| 13 | C2423 | 2~6 | 10 | 5.520 | 55.200 | 18 | 0.326 | 外遮阳\_0 | 0.969 | 0.316 |
| 14 | C2429 | 1 | 2 | 6.960 | 13.920 | 18 | 0.326 | 外遮阳\_0 | 0.969 | 0.316 |
| 15 | C3739 | 1~2 | 4 | 14.508 | 58.032 | 18 | 0.326 | 外遮阳\_0 | 0.979 | 0.319 |
| 16 | YC | 1 | 1 | 5.901 | 5.901 | 18 | 0.326 | 外遮阳\_0 | 0.977 | 0.318 |
| 17 | YC | 1 | 1 | 4.343 | 4.343 | 18 | 0.326 | 外遮阳\_0 | 0.969 | 0.316 |
| 18 | YC | 1 | 1 | 6.173 | 6.173 | 18 | 0.326 | 外遮阳\_0 | 0.978 | 0.319 |
| 19 | YC | 2~3 | 2 | 6.025 | 12.050 | 18 | 0.326 | 外遮阳\_0 | 0.977 | 0.319 |
| 20 | YC | 2~3 | 2 | 5.970 | 11.940 | 18 | 0.326 | 外遮阳\_0 | 0.977 | 0.319 |
| 立面总面积(㎡) | 783.253 | 综合太阳得热系数 | 0.971 | 0.316 |

2. 北向：

北-默认立面

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 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 |  | 1~3 | 3 | 14.040 | 42.120 | 65 | 0.326 | 外遮阳\_0 | 0.978 | 0.319 |
| 2 |  | 1~3 | 3 | 12.367 | 37.102 | 65 | 0.326 | 外遮阳\_0 | 0.975 | 0.318 |
| 3 |  | 1~3 | 3 | 17.766 | 53.299 | 65 | 0.326 | 外遮阳\_0 | 0.982 | 0.320 |
| 4 |  | 1~3 | 3 | 17.766 | 53.299 | 65 | 0.326 | 外遮阳\_0 | 0.982 | 0.320 |
| 5 | C1423 | 5 | 1 | 3.318 | 3.318 | 18 | 0.326 | 外遮阳\_0 | 0.947 | 0.309 |
| 6 | C1523 | 5 | 1 | 3.645 | 3.645 | 18 | 0.326 | 外遮阳\_0 | 0.952 | 0.310 |
| 7 | C1819 | 4~6 | 24 | 3.627 | 87.048 | 18 | 0.326 | 外遮阳\_0 | 0.958 | 0.312 |
| 8 | C1820 | 2~6 | 10 | 3.600 | 36.000 | 18 | 0.326 | 外遮阳\_0 | 0.957 | 0.312 |
| 9 | C1823 | 1,6 | 3 | 4.140 | 12.420 | 18 | 0.326 | 外遮阳\_0 | 0.957 | 0.312 |
| 10 | C1823 | 3 | 1 | 4.350 | 4.350 | 18 | 0.326 | 外遮阳\_0 | 0.959 | 0.313 |
| 11 | C1823 | 4 | 1 | 4.264 | 4.264 | 18 | 0.326 | 外遮阳\_0 | 0.958 | 0.312 |
| 12 | C1829 | 1 | 8 | 5.394 | 43.152 | 18 | 0.326 | 外遮阳\_0 | 0.958 | 0.312 |
| 13 | C1923 | 1 | 2 | 4.370 | 8.740 | 18 | 0.326 | 外遮阳\_0 | 0.959 | 0.313 |
| 14 | C1923 | 3 | 1 | 4.419 | 4.419 | 18 | 0.326 | 外遮阳\_0 | 0.960 | 0.313 |
| 15 | C1923 | 5 | 1 | 4.440 | 4.440 | 18 | 0.326 | 外遮阳\_0 | 0.960 | 0.313 |
| 16 | C1923 | 6 | 1 | 4.427 | 4.427 | 18 | 0.326 | 外遮阳\_0 | 0.960 | 0.313 |
| 17 | C2023 | 2~6 | 54 | 4.600 | 248.400 | 18 | 0.326 | 外遮阳\_0 | 0.961 | 0.313 |
| 18 | C2423 | 1~6 | 12 | 5.520 | 66.240 | 18 | 0.326 | 外遮阳\_0 | 0.967 | 0.315 |
| 19 | C3223 | 6 | 1 | 7.535 | 7.535 | 18 | 0.326 | 外遮阳\_0 | 0.976 | 0.318 |
| 20 | C3223 | 6 | 1 | 7.444 | 7.444 | 18 | 0.326 | 外遮阳\_0 | 0.975 | 0.318 |
| 21 | C3702 | 2 | 2 | 14.508 | 29.016 | 18 | 0.326 | 外遮阳\_0 | 0.978 | 0.319 |
| 22 | C3723 | 2 | 1 | 14.508 | 14.508 | 18 | 0.326 | 外遮阳\_0 | 0.978 | 0.319 |
| 23 | C3739 | 1 | 3 | 14.508 | 43.524 | 18 | 0.326 | 外遮阳\_0 | 0.978 | 0.319 |
| 24 | C3808 | 2 | 1 | 3.460 | 3.460 | 18 | 0.326 | 外遮阳\_0 | 0.979 | 0.319 |
| 25 | C3810 | 1 | 1 | 4.036 | 4.036 | 18 | 0.326 | 外遮阳\_0 | 0.979 | 0.319 |
| 立面总面积(㎡) | 826.207 | 综合太阳得热系数 | 0.967 | 0.315 |

3. 东向：

东-默认立面

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 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 |  | 1 | 1 | 1.192 | 1.192 | 18 | 0.326 | 外遮阳\_0 | 0.902 | 0.294 |
| 2 |  | 1~3 | 3 | 11.673 | 35.020 | 65 | 0.326 | 外遮阳\_0 | 0.979 | 0.319 |
| 3 |  | 1~3 | 3 | 12.831 | 38.493 | 65 | 0.326 | 外遮阳\_0 | 0.977 | 0.318 |
| 4 |  | 1~3 | 3 | 12.133 | 36.399 | 65 | 0.326 | 外遮阳\_0 | 0.980 | 0.320 |
| 5 |  | 1~3 | 3 | 9.654 | 28.961 | 65 | 0.326 | 外遮阳\_0 | 0.970 | 0.316 |
| 6 |  | 2~3 | 2 | 1.292 | 2.584 | 18 | 0.326 | 外遮阳\_0 | 0.909 | 0.296 |
| 7 |  | 3 | 1 | 10.778 | 10.778 | 65 | 0.326 | 外遮阳\_0 | 0.979 | 0.319 |
| 8 | C2023 | 2~3 | 4 | 4.600 | 18.400 | 18 | 0.326 | 外遮阳\_0 | 0.970 | 0.316 |
| 9 | C2923 | 4~6 | 3 | 6.716 | 20.148 | 18 | 0.326 | 外遮阳\_0 | 0.979 | 0.319 |
| 10 | C3623 | 2 | 1 | 8.381 | 8.381 | 18 | 0.326 | 外遮阳\_0 | 0.983 | 0.320 |
| 立面总面积(㎡) | 200.355 | 综合太阳得热系数 | 0.975 | 0.318 |

4. 西向：

西-默认立面

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 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 |  | 1~3 | 3 | 14.040 | 42.120 | 65 | 0.326 | 外遮阳\_0 | 0.982 | 0.320 |
| 2 |  | 1 | 1 | 1.145 | 1.145 | 18 | 0.326 | 外遮阳\_0 | 0.896 | 0.292 |
| 3 |  | 1~3 | 3 | 8.819 | 26.457 | 65 | 0.326 | 外遮阳\_0 | 0.966 | 0.315 |
| 4 |  | 1~3 | 3 | 12.744 | 38.232 | 65 | 0.326 | 外遮阳\_0 | 0.981 | 0.320 |
| 5 |  | 1~3 | 3 | 13.206 | 39.617 | 65 | 0.326 | 外遮阳\_0 | 0.977 | 0.318 |
| 6 |  | 2~3 | 2 | 1.310 | 2.619 | 18 | 0.326 | 外遮阳\_0 | 0.907 | 0.296 |
| 7 | C1923 | 2~3 | 4 | 4.464 | 17.856 | 18 | 0.326 | 外遮阳\_0 | 0.968 | 0.316 |
| 8 | C2023 | 2~3 | 4 | 4.600 | 18.400 | 18 | 0.326 | 外遮阳\_0 | 0.969 | 0.316 |
| 9 | C2423 | 2~6 | 5 | 5.658 | 28.290 | 18 | 0.326 | 外遮阳\_0 | 0.975 | 0.318 |
| 立面总面积(㎡) | 214.736 | 综合太阳得热系数 | 0.974 | 0.318 |

### 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 | 南-默认立面 | 783.25 | 1.85 | 0.32 | 0.47 | K≤3.00, SHGC≤0.44 | 满足 |
| 北向 | 北-默认立面 | 826.21 | 1.85 | 0.32 | 0.48 | K≤3.00, SHGC≤0.44 | 满足 |
| 东向 | 东-默认立面 | 200.36 | 1.85 | 0.32 | 0.22 | K(不要求), SHGC(不要求) | 满足 |
| 西向 | 西-默认立面 | 214.74 | 1.85 | 0.32 | 0.22 | K(不要求), SHGC(不要求) | 满足 |
| 综合平均 |  | 2024.55 | 1.85 | 0.32 | 0.38 |  |  |
| 标准依据 | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)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。

## 综合权衡

### 计算条件

|  |  |  |
| --- | --- | --- |
|  | 设计建筑 | 参照建筑 |
| 天窗屋顶比 | 0.06 | 0.06 |
| 屋顶传热系数K [W/(m2·K)] | 0.33(D:3.79) | 0.50 |
| 外墙（包括非透明幕墙）传热系数K [W/(m2·K)] | 0.21(D:2.82) | 0.80 |
| 屋顶透明部分传热系数K [W/(m2·K)] | 2.70 | 2.60 |
| 屋顶透明部分太阳得热系数 | 0.54 | 0.30 |
| 底面接触室外的架空或外挑楼板传热系数K [W/(m2·K)] | 0.60 | 0.70 |
| 外窗（包括透明幕墙） | 朝向 | 立面 | 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 | 南-默认立面 | 0.47 | 1.85 | 0.32 | 0.47 | 2.40 | 0.35 |
| 北向 | 北-默认立面 | 0.48 | 1.85 | 0.32 | 0.48 | 2.40 | 0.40 |
| 东向 | 东-默认立面 | 0.22 | 1.85 | 0.32 | 0.22 | 3.00 | 0.44 |
| 西向 | 西-默认立面 | 0.22 | 1.85 | 0.32 | 0.22 | 3.00 | 0.44 |
| 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-普通办公室 | 26 | 20 | 30(m3/h.人) | 10(㎡/人) | 9(W/㎡) | 15(W/㎡) |
| 办公-走廊 | 26 | 20 | 30(m3/h.人) | 10(㎡/人) | 9(W/㎡) | 15(W/㎡) |
| 学校-教室 | 26 | 20 | 30(m3/h.人) | 6(㎡/人) | 9(W/㎡) | 5(W/㎡) |
| 空房间 | － | － | 20(m3/h.人) | 50(㎡/人) | 0(W/㎡) | 0(W/㎡) |

#### 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/㎡) | 26.15 | 30.60 |
| 供冷耗电量(kWh/㎡) | 9.79 | 11.11 |
| 供热耗电量(kWh/㎡) | 16.36 | 19.49 |
| 耗冷量(kWh/㎡) | 24.47 | 27.77 |
| 耗热量(kWh/㎡) | 36.03 | 42.92 |
| 标准依据 | 《河南公共建筑节能设计标准》(DBJ41/T 075-2016)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 |

## 综合权衡判断结论

|  |  |  |
| --- | --- | --- |
| 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 | 非中空窗面积比 | 满足 |
| 7 | 外窗气密性 | 满足 |
| 8 | 幕墙气密性 | 满足 |
| 9 | 综合权衡 | 满足 |
| 结论 | 满足 |

■说明：本工程设计建筑的采暖和空气调节能耗不大于参照建筑的采暖和空气调节能耗。权衡判断**满足**《河南公共建筑节能设计标准》(DBJ41/T 075-2016)的要求。

## 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-普通办公室 | 37 | 37 | 37 | 37 | 37 | 37 | 29 | 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 |
| 学校-教室 | 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 |
| 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-普通办公室 | 10 | 10 | 10 | 10 | 10 | 12 | 16 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 18 | 10 | 10 | 10 | 10 | 10 |
| 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| 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 |
| 学校-教室 | 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 |
| 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-普通办公室 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 100 | 100 | 100 | 30 | 100 | 100 | 100 | 100 | 50 | 20 | 10 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 45 | 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 |
| 学校-教室 | 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 |
| 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-普通办公室 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 36 | 62 | 56 | 54 | 43 | 53 | 55 | 58 | 67 | 40 | 18 | 10 | 10 | 10 | 10 | 10 | 10 |
| 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 |
| 学校-教室 | 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 |
| 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-普通办公室 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 20 | 10 | 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 |
| 学校-教室 | 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 |
| 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

### 工作日/节假日空调系统运行时间表(1:开,0:关)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 系统编号 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 默认 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 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 | 0 |
| 办公 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 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 | 0 |
| 教室 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 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 | 0 |

注：上行：工作日；下行：节假日