The WELL Building Standard®:
Technical Challenges and Solutions

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What is The WELL Building Standard®?

- air
- water
- nourishment
- light
- fitness
- comfort
- mind
FEATURES

PRECONDITIONS

OPTIMIZATIONS
WELL Building Standard® Certification

Testing Checklist

- Air
- Water
- Light
- Thermal
- Acoustics
Air Quality - Ambient Conditions, Outdoor Sources

- **Outdoor Air Quality**
  - CO, PM (2.5 +10), Ozone

- **Ground Radon Emissions**

- **Preconditions and Optimizations**
  - AP1 – Air quality testing *PT
  - AP5 – Air filtration
  - AP8 – Healthy entrance
  - AO14 – Infiltration management

- **Design and Construction Keys**
  - Establish ambient baseline(s)
  - Design and spec testing for envelope infiltration
  - If natural ventilation, performance simulation
  - Exhaust re-entrainment
  - Performance simulation
  - Envelope commissioning
Air Quality - Indoor Sources

Indoor Air Quality
- Formaldehyde, VOC, CO, PM (2.5 +10) Ozone, Radon

Preconditions and Optimizations
- AP1 – Air quality testing *PT
- AP3 – Ventilation effectiveness, DCV, performance verification
- AP4 – Spec low emitting materials
- AP5 – Air filtration
- AP8 – Healthy entrance
- AO21 – Displacement ventilation

Design and Construction Keys
- Interior pollutant and odour modeling and verification
- Ventilation effectiveness simulation
- Filtration effectiveness simulation
Water Quality - Sources

Water Quality
- Tubidity, Coliforms, Metals, Organics, Pesticides, Public Additives

Preconditions and Optimizations
- WP30 – WP 34 - Water Quality
  *PT
- WO36 – Water Treatment

Design and Construction Keys
- Establish seasonal ambient baseline(s)
- Filtration effectiveness assessment or simulation
- Provision of MEP area and equipment for advanced filtration
Light - Natural

**Light Quantity and Quality**
- Daylighting design, ambient, task, contrast, glare, autonomy
- Melonopic light

**Preconditions and Optimizations**
- LP54: Circadian Lighting *SM
- LP56: Solar Glare Control
- LO62: Daylight Modeling

**Design and Construction Keys**
- Anticipate and understand exterior conditions
- Anticipate and understand interior conditions, reflectivity, automated shading controls
- Simulate for daylight lux, cd/m², melonopic light EML = 1.1, sDA and ASE
Light - Artificial

**Light Quantity and Quality**
- Lighting design, ambient, task, contrast, electric lighting glare
- Melonopic light

**Preconditions and Optimizations**
- LP53: Visual Lighting Design *SM
- LP54: Circadian Lighting *SM
- LP55: Electric Light Control Glare

**Design and Construction Keys**
- Anticipate and understand interior conditions, reflectivity,
- Simulate for artificial lux, cd/m², melonopic light EML = varies by source
- Prioritize high EML fixtures, balance with energy conservation
Comfort - Acoustics Noise and Vibration - Exterior

- Sound Level and ‘Quality’
  - Noise intrusion

- Preconditions and Optimizations
  - CP74: Exterior Noise Intrusion *PT

- Design and Construction Keys
  - Establish outdoor ambient noise – including common transient noise sources
  - Model for noise intrusion
  - Anticipate that mitigating noise thru windows may influence size & style of operable windows, glazing construction, interior layout
Comfort - Acoustics Noise and Vibration - Interior

Sound Level and ‘Quality’
- Background noise, reverberation/intelligibility, sound insulation

Preconditions and Optimizations
- CP75: Internal Gen Noise *PT
- CO78: Reverberation Time*PT
- CO79: Sound Masking *PT
- CO80: Sound Reducing Surfaces
- CO81: Sound Barriers

Design and Construction Keys
- Establish/identify loud & quiet zones early in design
- Simulate for mechanical noise, reverberation time, masking coverage, and sound insulation
- Anticipate sound absorptive ceiling and walls finishes in offices, conference rooms & workspaces
Comfort - Thermal

**Thermal Comfort**
- Comfort criteria, natural ventilation allowances, variation for individual preference, radiant heating & Cooling

**Preconditions and Optimizations**
- CP76: Thermal Comfort *SM
- CO82: Individual Thermal Control
- CO83: Radiant Thermal Comfort

**Design and Construction Keys**
- Detailed review of space use, MET, CLO, airflow (velocity), temp and RH requirements, radiant effects
- Highly controlled and access to individualized HVAC
- Simulate for performance verification
Comfort - Thermal

Thermal Comfort

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Design and Construction Keys

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Thank you for your time.

Questions?

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