



# TECHNICAL PERFORMANCE FACTORS

'BUILDINGS IN USE' STUDY: TECHNICAL FACTORS

EXTERIOR WALLS

PERFORMANCE TEST				
stability . . . . .				
movement . . . . .				
-structural loading . . . . .				
-thermal movement . . . . .				
-setting . . . . .				
impact . . . . .				
air infiltration . . . . .				
moisture infiltration . . . . .				
thermal conductivity . . . . .				
staining . . . . .				
discoloration . . . . .				
delamination . . . . .				
deterioration . . . . .				
aesthetics . . . . .				

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**ROOFS**

PERFORMANCE TEST				
drainage (ponding) . . . . .				
moisture penetration . . . . .				
sag. . . . .				
movement . . . . .				
deterioration. . . . .				
erosion. . . . .				
impact . . . . .				
indentation. . . . .				
brittleness. . . . .				

'BUILDINGS IN USE' STUDY: TECHNICAL FACTORS

INTERIOR WALLS

PERFORMANCE TEST				
structural stability. . . . .				
impact. . . . .				
attached loads. . . . .				
cohesion. . . . .				
delamination. . . . .				
wearability . . . . .				
indentation . . . . .				
abrasion. . . . .				
scratch . . . . .				
water absorption. . . . .				
stain . . . . .				
cleanability. . . . .				
dust accumulation . . . . .				
replacement/repair. . . . .				
aesthetics. . . . .				

**'BUILDINGS IN USE' STUDY: TECHNICAL FACTORS**

**CEILINGS**

PERFORMANCE TEST				
deflection. . . . .				
parallel to floor . . . . .				
displacement. . . . .				
cohesion. . . . .				
adhesion. . . . .				
indentation (impact). . . . .				
scratch . . . . .				
staining. . . . .				
anthropometric fit. . . . .				
color homogeneity . . . . .				
flaking/peeling . . . . .				
fading. . . . .				
dust accumulation . . . . .				
cleanability. . . . .				
access to plenum. . . . .				
replacement/repair. . . . .				
out-of-system hardware. . . . .				
aesthetics. . . . .				

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**FINISHED FLOORS**

PERFORMANCE TEST				
indentation . . . . .				
impact . . . . .				
resiliency . . . . .				
brittleness . . . . .				
cohesion . . . . .				
adhesion . . . . .				
levelness . . . . .				
abrasion . . . . .				
scratch . . . . .				
wear . . . . .				
slip resistance . . . . .				
static discharge . . . . .				
cleanability . . . . .				
dust accumulation . . . . .				
water absorption . . . . .				
delamination . . . . .				
replacement/repair . . . . .				
cigarette burn . . . . .				
color fastness (fading) . . . . .				

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**FINISHED FLOORS (CONT)**

color homogeneity . . . . .  
aesthetics. . . . .

color homogeneity . . . . .				
aesthetics. . . . .				

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LIGHTING

PERFORMANCE TEST				
illumination - natural . . . . . (footcandles $f_c$ )				
illumination - artificial . . . . . (footcandles $f_c$ )				
illumination - combined . . . . . (footcandles $f_c$ )				
shade fully drawn . . . . . (footcandles)				
luminaire luminance . . . . . (footlamberts)				
room contrast . . . . . ratio				
glare . . . . .				
task/surround . . . . . contrast ratio				
illumination . . . . .				
luminance gain (cleaning) . . . . .				



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ACOUSTICS

PERFORMANCE TEST				
ambient, sound level: db. . . . . (w/children, lights)				
ambient, sound level: db. . . . . (w/o children)				
ambient, sound level: db. . . . . (w/o children, lights)				
attenuation, db . . . . . (classroom-classroom)				
attenuation, db . . . . . (classroom-hall)				
reverberation 500hz . . . . . (seconds) 1000hz 2000hz				
mechanical systems noise: db. . .				
impact-generated noise: db . . .				

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HVAC

PERFORMANCE TEST				
ambient temp. . . . .				
temp. gradient. . . . .				
humidity. . . . .				
air movement. . . . .				
safety hazards. . . . .				

# BUILDINGS IN USE' STUDY

## FUTURE TEST DEVELOPMENT

The next step in development of field testing will attempt to investigate and develop additional tests in the eight areas of subsystems and attributes.

This will include:

Exterior walls	Measurement of movement through the use of gauges  Testing samples for compliance with specifications
Roofs	Core sampling
Floors	Testing samples for compliance with specifications
Lighting	Compatibility of existing tests with visual comfort Index (VCI)
Acoustics	Articulation index test development for 'open' situations  Use of recording long term ambient levels
HVAC	Room air velocity test  Radiant effects measurement building

## BUILDINGS IN USE' STUDY

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Surface/volume and operating costs

Economics

A study of the relations between architectural decisions, building costs and life cycle costs.