

Projet REGAIN – Interreg IVB North West Europe Mise en place d'une méthodologie transnationale

État d'avancement n°1 du 19/05/09

La première partie de la mise en œuvre d'une méthodologie transnationale correspondait à l'établissement d'une méthodologie commune, pour la conception et la construction de bâtiments semi-industriels/semi-tertiaires environnementalement efficaces, et plus particulièrement efficaces du point de vue énergétique.

Chacun des partenaires du projet REGAIN imprime à son projet sa vision des objectifs du développement durable et de leur mise en œuvre dans son contexte propre. Ce contexte « local » est également exprimé sous la forme des valeurs cibles affectées aux critères d'évaluation de la qualité environnementale des projets, via l'outil d'évaluation commun « SB-Tool », proposé par l'équipe italienne et choisi par l'ensemble des partenaires du projet comme outil de référence.

Il existe actuellement une palette d'outils d'évaluation, parmi lesquels :

 VALIDEO : mis au point, en Belgique, par le Centre Scientifique et Technique de la Construction (CSTC) et le Bureau SECO, VALIDEO est en fin de phase de certification et pourra bientôt être appliqué, dans un premier temps, aux bâtiments tertiaires uniquement.

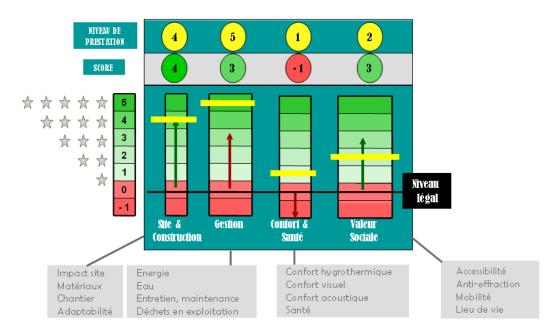




Figure 1 : Mode de cotation et critères d'évaluation de VALIDEO

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Seize critères généraux d'évaluation ont été définis dans 4 domaines (Site et Construction, Gestion, Confort et Santé, Valeur sociale) : voir Figure 1 ci-dessus. Pour chaque critère, une cotation est établie, qui est de 0 point lorsque le prescrit légal correspondant est respecté, sans plus; ensuite de 1 à 5 points au fur et à mesure de l'accroissement de qualité du projet pour le critère concerné. La cote est négative (-1) si le projet ne rencontre pas le prescrit légal, par exemple un bâtiment existant qui ne respecte plus la législation ayant évolué. La somme des cotations obtenues conduit à un résultat global exprimé en nombre d'étoiles (1 à 5).

L'outil VALIDEO n'est encore applicable qu'aux seuls bâtiments tertiaires et demanderait une adaptation importante pour s'appliquer à un bâtiment mixte atelier-bureaux.

• BREAM (Building Research Establishment Environmental Assessment Method) : mis au point par le "CSTC anglais", le Building Research Establishment, BREEAM comporte également plusieurs chapitres de critères couvrant les sujets de la qualité environnementale et affecte une cotation pour chacun de ces critères (Figure 2).

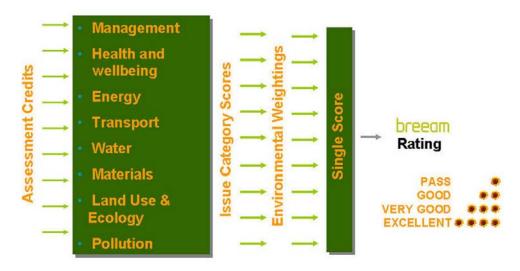


Figure 2 : Mode de cotation et critères d'évaluation de BREEAM

Pour être appliqué dans des contextes nationaux différents, BREEAM nécessiterait une adaptation particulière à chacun, comme cela est en cours par exemple pour les Pays-Bas qui souhaitent l'utiliser dans le cadre de la certification des bâtiments.

 LEED (Leadership in Energy and Environmental Design) : dans le contexte américain (USA), LEED est un label indépendant géré par l'US Green Building Council, qui poursuit l'objectif de transformer le secteur de la construction en l'amenant à mieux intégrer le bien-être de ses occupants, la performance environnementale et le rendement économique des bâtiments. D'expérience, il peut être établi que l'utilisation de LEED entraîne un surcoût de construction estimé à une moyenne d'environ 2 % du coût des travaux, mais engendre une amélioration de la productivité des travailleurs qui l'occupent : l'impact sur le coût salariat de cet accroissement de la productivité des usagers rentabilise très rapidement le surcoût de construction consenti. L'adaptation de LEED à un contexte européen serait plus importante encore que celle de BREEAM.



• HQE (Haute Qualité Environnementale) : français, cet outil d'évaluation regroupe les critères d'appréciation des bâtiments évalués en 14 cibles, elles-mêmes regroupées en 4 familles (éco-construction, éco-gestion, santé, confort) : voir Figure 3.

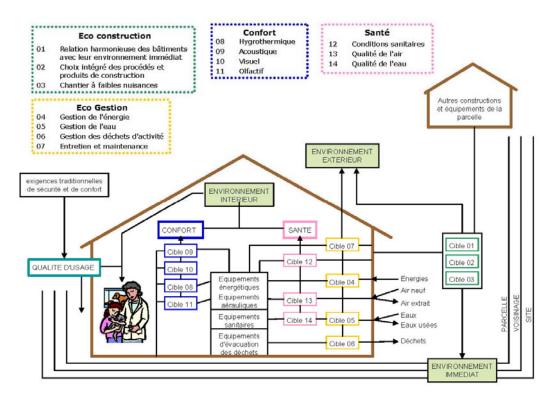


Figure 3 : Critères d'évaluation par HQE

Le label HQE ne comporte pas l'approche économique du projet qui reste pourtant un des trois piliers du développement durable (environnement, social et économie).

 MINERGIE : suisse, le label Minergie (tout comme le label PassivHaus en Allemagne et en Autriche) est essentiellement axé sur l'énergie et n'approche les autres aspects de qualité environnementale que par le biais de son extension « Minergie-ECO ». Son adaptation aux projets REGAIN serait difficile.

L'équipe italienne partenaire du projet REGAIN a proposé un outil tout à fait complet et aisément adaptable à des contextes nationaux et régionaux : SB-Tool. Développé l'Université de Thessalonique dans le cadre d'un projet de recherche européen comprenant 25 pays participants, le « Sustainable Building – Tool » évalue les bâtiments suivant plus d'une centaine de critères regroupés en 7 familles, comprend également des aspects sociaux, économiques et culturels (voir Figure 4 ci-après) et permet d'affecter les poids souhaités à chacun des critères à l'intérieur de chaque famille et entre les familles de critères elles-mêmes.

Cette faculté d'adaptation de SB-Tool aux contextes locaux a favorisé le choix de SB-Tool par de nombreux organismes dans de nombreux pays dans le monde (Australie, Espagne, France, Japon, Chine, Corée, Taïwan, Norvège, Suède, Allemagne, Pays-Bas, Autriche, Finlande, Grèce, Canada, Etats-Unis, Grande Bretagne, Chili, Argentine...) et par les parenaires du projet REGAIN pour évaluer leurs projets de bâtiments.



Lors de la réunion plénière despartenaires du projet REGAIN qui s'est tenue à Glasgow, un certain nombre de cescritères d'appréciation ont été considérés comme ne s'appliquant pas aux projets de bâtiments mixtes et d'autres encore ne s'appliquent pas au contexte du site de Créalys sur lequel s'implantera le projet du BEP. Le poids relatif affecté à chaque critère et à chacune de leurs familles a été également décidé collégialement.

A Site Selection, Project Planning and Development

- A1 Site Selection
- A2 Project Planning
- A3 Urban Design and Site Development
- B Energy and Resource Consumption
- B1 Total Life Cycle Non-Renewable Energy
- B2 Electrical peak demand for facility operations
- B3 Renewable Energy
- B4 Materials
- B5 Potable Water
- C Environmental Loadings
- C1 Greenhouse Gas Emissions
- C2 Other Atmospheric Emissions
- C3 Solid Wastes
- C4 Rainwater, Stormwater and Wastewater
- C5 Impacts on Site
- C6 Other Local and Regional Impacts
- D Indoor Environmental Quality
- D1 Indoor Air Quality
- D2 Ventilation
- D3 Air Temperature and Relative Humidity
- D4 Daylighting and Illumination
- D5 Noise and Acoustics
- E Service Quality
- E1 Safety and Security During Operations
- E2 Functionality and efficiency
- E3 Controllability
- E4 Flexibility and Adaptability
- E5 Commissioning of facility systems
- E6 Maintenance of Operating Performance
- F Social and Economic aspects
- F1 Social Aspects
- F2 Cost and Economics
- G Cultural and Perceptual Aspects
- G1 Culture & Heritage
- G2 Perceptual

Figure 4 : Familles des critères d'évaluation par SB-Tool

L'adaptation au contexte belge, wallon et sur le site de Créalys est en cours de réalisation : l'Annexe comporte les critères retenus et les valeurs pivots de la cotation des critères particuliers, dont certaines restent encore à compléter.

L'équipe italienne a proposé récemment un étalonnement de l'énergie grise et des émissions de CO₂ consécutives à la production et à la mise en œuvre des matériaux de construction dans un projet de bâtiment mixte : cet étalonnement sera utilisé afin de déterminer ces deux paramètres du projet de Créalys.

La suite de la méthodologie comportera notamment :

- la continuation de l'adaptation des valeurs pivots des critères SB-Tool ;
- la relecture attentive du cahier des charges rédigé par l'équipe de projet, dans le souci d'obtenir la meilleure qualité environnementale possible pour le budget considéré ;
- l'élaboration de fiches techniques types qui pemettront aux entreprises de proposer

et/ou de suggérer du matériel et/ou des matériaux particulièrement innovants ;

- la préparation d'une liste de personnes et organismes à tenir informés de l'avancement du projet et à inviter à des visites du futur chantier ;
- l'étalissement d'un cahier de suivi retraçant le fil rouge du projet, depuis sa conception jusqu'à la réception définitive ;
- la préparation d'un mode d'évaluation du projet par les usagers eux-mêmes, en phase d'utilisation.

Ainsi fait à Liège, le 19/05/09,



Prof. J.-M. HAUGLUSTAINE.

Annexe : Liste des critères retenus par SB-Tool et adaptation, au contexte belge et au projet BEP Créalys, des valeurs associées à l'échelle de cotation des critères.



P	onchmarke /	A for designated occupancies in BigTown,	pe	Small Indu	strial				
D		Europe	Uses included	Office					
		Luiope	.⊆	0					
New	Construction	Design Phase	Gei	Generic .					
Α	Site Selec								
A1	Site Selection	on							
A1.1	Pre-developme	ent ecological value or sensitivity of land.							
	Intent	To encourage the selection of sites that have low ecological value or that are ecologically stable.		plicable pha					
	Indicator	Ecological value and / or sensitivity of land used for construction, as determined by a competent authority or by existing documentation.	P-Dsn.	Dsn	Ops.				
	Information sources	Reference x, y and z.							
	Applicable project type	Any occupancy except renovation projects							
	Assessment method	Review of site analysis report by an ecologist.							
		a							
	Applicable Standards	с с							
		d							
	Information Submittals	e f							
	Total project	Total project			Score				
	Negative	The site currently supports a wide range of flora and fauna.			-1				
	Acceptable practice	The site currently supports a range of flora and fauna consistent with other sites in the a	rea.		0				
	Good Practice	The site currently supports a range of flora and fauna that is less diverse than other sites	s in the are	a.	3				
	Best Practice	The site currently supports a very limited range of flora and fauna.			5				
A1.2	Pre-developme	ent agricultural value of land.				rejected in Glasgow			
	Intent	To discourage the use of land with high agricultural value.		plicable pha					
	Indicator	Agricultural value of land used for construction, as determined by a competent authority or by existing documentation.	P-Dsn.	Dsn	Ops.				
	Information sources	Reference x, y and z.							
	Applicable project type	Any occupancy except renovation projects.							
	Assessment method	Review of site analysis report by an agronomist.							
		a							
	Applicable Standards	Applicable Standards b							
		c d							
	Information Submittals e								
	Total project	f Total project			Score				
		Land used for the project is Class A (best grade) agricultural land.			Score -1				
	-1								
		Land used for the project is Class B agricultural land. Land used for the project is Class C (lowest grade) agricultural land.			3				
	Best Practice	Land used for the project has no agricultural value.			5				

Bonchmarks /	A for designated occupancies in BigTown,	pe a	Small Indu	strial	
	Europe	Uses included	Office		
	Europe	. <u>C</u>	0		
New Construction	Design Phase	Gei	neric	•	
A1.3 Vulnerability of	f land to flooding.				rejected in Glasgow
Intent	To discourage the selection of land for building where there is a substantial risk that the site may be flooded.		olicable pha ctive if gree		
Indicator	Height above 100-year flood plain as defined in official documentation or assessment by competent authorities.	P-Dsn.	Dsn	Ops.	
Information sources	Reference x, y and z.				
Applicable project type	Any occupancy except renovation projects				
Assessment method	Review of site analysis report.				
	a				
Applicable Standards	c				
	d				
Information Submittals	e				
	f				
Total project	Total project		m	Score	
Negative			1.0	-1	
Acceptable practice	The height of the minimum elevation of the site above the elevation of the 100-year flood	d plain is :	1.3	0	
Good Practice Best Practice			2.0	3 5	
	Levelopment to contaminate nearby bodies of water.		2.5	5	rejected in Glasgow
Intent	To discourage the selection of land for building where the risk of polluting an adjacent water body is high.		olicable pha ctive if gree		
Indicator	Distance of the building from water body or wetland as defined in official documentation or assessment by competent authorities.	P-Dsn.	Dsn	Ops.	
Information sources	Reference x, y and z.				
Applicable project type	Any occupancy except renovation projects			1	
Assessment method	Review of site analysis report.				
	a				
Applicable Standards	b				
	cd				
Information Submittals					
mormation Submittais					
Total project	Total project		m	Score	
Negative			15	-1	
Acceptable practice	0				
Good Practice	equal to or less than:		55	3	
Best Practice			75	5	

Benchmarks A	A for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	strial			
New Construction	Design Phase	Gei	neric				
A1.5 Pre-developme	ent contamination status of land.				JMH proposes to reject it for the context of Crealys		
Intent	To encourage the use of previously contaminated land for building.		•				
Indicator	Official documentation or assessment by competent authorities.	P-Dsn.	Dsn	Ops.			
Information sources	Brownfield lands should be preferentially developed, since this will reduce pressures to use more valuable lands for development.						
Applicable project type	Any occupancy except renovation projects						
Assessment method	Review of site analysis report by a geophysical specialist.						
Applicable Standards	a b						
Information Submittals	c d						
mornator Submittais	6 f			1			
Total project	Total project			Score			
Negative	The site is documented as having no sub-surface contamination.			-1			
Acceptable practice	The site is documented as having no sub-surface contamination.			0			
Good Practice	The site is documented as having moderate sub-surface contamination.			3			
Best Practice	The site is documented as having major sub-surface contamination.			5			
A1.6 Proximity of sit	e to public transportation.						
Intent	To encourage the selection of sites that are within a short distance of a public transport stop.		olicable pha ctive if gree				
Indicator	Distance in m. to public transport stop from a main building entry or exit door.	P-Dsn.	Dsn	Ops.			
Information sources	Reference x, y and z.						
Applicable project type	Any occupancy, where public transport is available in the area.						
Assessment method	Review of site plan and existing public transit routes.						
	a						
Applicable Standards	b						
	c						
	d						
Information Submittals	e f						
Total project	Total project Total project m Score					instead of	Source
Negative	700	580	Survey				
Acceptable practice			300	0	300	500	Survey
Good Practice	The distance of the project from a public transport stop is equal to or less than:		200	3	200	260	Survey
Best Practice			100	5	100	100	Survey

Benchmarks A	A for designated occupancies in BigTown, Europe	Uses included	Small Indus Office 0	strial			
New Construction	Design Phase	Ge	neric				
A1.7 Distance betwe	een site and centres of employment or residential occupation	ncies.					
Intent	To encourage the selection of sites that are within a reasonable distance of centers of employment.		plicable pha Active if gree				
Indicator	If Residential, distance to the nearest center of employment with at least 3 different Indicator firms or organizations hiring a minimum of 10 persons; if non-residential, distance to nearest major area of housing.		Dsn	Ops.			
Information sources	Reference x, y and z.						
Applicable project type	All occupancies except for Enclosed Parking or Open Space.						
Assessment method	Review of site plan by an outside planner.						
	a						
Applicable Standards	b						
	c						
Information Submittals	d						
momation outprintais	f						
Occupancy 1	Small Industrial	on	m	Score	Values proposed by JMH	instead of	Source
Negative			10 000	-1	10 000	5 800	Survey
Acceptable practice			6 000	0	6 000	5 000	Survey
Good Practice	The distance to nearest major area of affordable housing is equal to or less than:		2 000	3	2 000	2 600	Survey
Best Practice			1 000	5	1 000	1 000	Survey
Occupancy 2	Office	on	m	Score	Values proposed by JMH	instead of	Source
Negative			700	-1	700	0	Survey
Acceptable practice	The distance to nearest major area of affordable housing is equal to or less than:		300	0	300		Survey
Good Practice	The distance to neurost major area of anonable nousing is equal to of less traff.		200	3	200	0	Survey
Best Practice			100	5	100		Survey

B	enchmarks E	Uses included	Small Indu Office 0	ustrial		
New	Construction	Design Phase	Ger	ieric		
В	Energy ar					
B1	Total Life Cy	cle Non-Renewable Energy				
B1.1	Annualized nor	n-renewable primary energy embodied in construction mat	erials.			
	Intent	To minimize the embodied primary energy used in the building, annualized over the estimated lifespan of the building.		licable pha ctive if gree		
	Indicator	Estimate of embodied primary energy used for structure, envelope (excl. glazing), and major interior components, as determined by a program designed to estimate embodied energy and emissions through LIfe Cycle Analysis; also, estimate of lifespan.		Dsn	Ops.	
	Information sources	Note that minimization of embodied energy may not always be optimal. For example, the greater embodied energy associated with high thermal mass will, in most cases, reduce operating energy, and the total net lifecycle energy could then be reduced.		•	•	
	Applicable project type	All occupancies	Assumed	lifespan in years	50	
	Assessment method	Use an embodied energy estimating system, based on LCA (Life Cycle Assessment). Alt estimating method provided in this system.	ernatively,	use the cru	de	
	Applicable Standards	a b c				
	Information Submittals	d e				
		f				
	Occupancy 1	Small Industrial	GJ/m2	MJ/m2 per yr.	Score	Data to be received fr Italian team
	Negative		8.6	172	-1	
	Acceptable practice	The predicted embodied energy for materials used in the structure and building envelope.	8.0 6.2	160 124	0	
	Good Practice as determined an acceptable LCA-based estimating method :				3	
	Best Practice Occupancy 2		5.0 GJ/m2	100 MJ/m2	5 Score	Data to be received for
	Negative		12.6	per yr. 252	-1	Italian team
	Acceptable practice		12.0	252	-1	
	Good Practice	as determined an acceptable LCA-based estimating method :	10.2	204	3	
	Best Practice		9.0	180	5	1

Benchmarks	B for designated c Europe	occupancies in BigTown,	Uses included	Small Ind Office 0	ustrial			
New Construction		Design Phase	Gen	eric				
B1.2 Annual non-re	newable primary energ	•						
Inter	To minimize the amount of non-renewable energy (not including on-site renewable energy) used annually for building operations, commensurate with functional needs.				ases en)			
Indicate	MJ of delivered energy per m2 of by means of an acceptable metho	net area, including fuel and electrical use, as predicted of or tool.		Dsn	Ops.			
Information source	s See IEA.org for data and case stu	idies.	٠	٠	٠			
Applicable project typ	e Any occupancy except for Open	Space			М			
Assessment metho	During early design stages a screening tool may be used, but in later stages an hour-by-hour simulation pro- be used. Benchmarks for Ops should be derived from operational data for the relevant occupancy types, a od occupancy of at least one year. Note that benchmarks should be set using Delivered energy data, since this commonly available. SBTool applies a conversion factor to these values to convert them to primary energy Results.							
Applicable Standard	adardsb							
	C							
Information Submitta	se se							
	f							
	1 Small Industrial		Elec. MJ/m2 per yr	Total MJ/m2 per yr	Score	Values proposed by JMH		Source
Negativ Acceptable practic		nergy per m2 of net area used for operations, as	540 500	1460 1300	-1 0		1 460 1 300	
Good Practic		able method or tool.	380	820	3		820	
Best Practic	e		300	500	5	144 MJ/m2	500	IBGE 40 kWh/m2 = 144 MJ/m2
Occupancy			Elec. MJ/m2 per yr	MJ/m2 per yr.	Score	Values proposed by JMH	instead of	Source
Negativ Acceptable practic		nergy per m2 of net area used for operations, as	320 300	375 350	-1 0		375 350	
Good Practic	e predicted by means of an accepta	able method or tool.	240	275	3		275	
Best Practic	e		200	225	5	54 MJ/m2	225	IBGE 15 kWh/m2 = 54 MJ/m2
B1.3 Annual non-re	newable primary energ	y used for facility cooling						
Inter	t To minimize the amount of non-re energy) used annually for building	enewable energy (not including on-site renewable g operations, commensurate with functional needs.		licable pha ctive if gree				
Indicate	MJ of delivered energy per m2 of by means of an acceptable metho	net area, including fuel and electrical use, as predicted of or tool.		Dsn	Ops.			
Information source	s See IEA.org for data and case stu	udies.	•	•	٠			
Applicable project typ	e Any occupancy except for Open S	Space						
Assessment metho	be used. Benchmarks for Ops sh doccupancy of at least one year. N	ening tool may be used, but in later stages an hour-by- ould be derived from operational data for the relevant o tote that benchmarks should be set using Delivered ene lies a conversion factor to these values to convert them	ccupancy ty rgy data, sir	pes, after a	a period of what is			
Applicable Standard	a sb	Devile a devid						
	c	Revise text						
	d							
Information Submitta	se f							
Occupancy	1 Small Industrial		Elec. MJ/m2 per yr	Total MJ/m2 per yr	Score	Values proposed by JMH	instead of	Source
Negativ			540	1460	-1		1 460	
Acceptable practic Good Practic		nergy per m2 of net area used for operations, as able method or tool.	500 380	1300 820	0		1 300 820	
Best Practic	-		300	500	5	152 MJ:m2	500	IBGE 45 kWh/m2 = 152 MJ/m2
Occupancy	2 Office		Elec. MJ/m2 per yr	MJ/m2 per yr.	Score	Values proposed by JMH	instead of	Source
Negativ			320	375	-1		375	
Acceptable practic Good Practic		nergy per m2 of net area used for operations, as able method or tool.	300 240	350 275	0		350 275	
Best Practic	е		200	225	5	152 MJ:m2	225	IBGE 45 kWh/m2 = 152 MJ/m2

Bench	nmarks E	3 for designated o Europe	occupancies in BigTown,	Small Industrial Office 0					
New Con	struction		Design Phase	Gen	eric				
B1.4 Ann	B1.4 Annual non-renewable primary energy used for lighting and equipment								
	Intent To minimize the amount of non-renewable energy (not including on-site renewable energy) used annually for building operations, commensurate with functional needs.					ases en)			
	Indicator	MJ of delivered energy per m2 of by means of an acceptable methor	net area, including fuel and electrical use, as predicted ad or tool.		Dsn	Ops.			
Info	ormation sources	See IEA.org for data and case stu	udies.	٠	٠	٠			
Applic	cable project type	Any occupancy except for Open S	Space			М			
Ass	During early design stages a screening tool may be used, but in later stages an hour-by-hour simuli be used. Benchmarks for Ops should be derived from operational data for the relevant occupancy Assessment method occupancy of at least one year. Note that benchmarks should be set using Delivered energy data, s commonly available. SBTool applies a conversion factor to these values to convert them to primary Results.					a period of what is			
Appl	licable Standards	b c	Revise text						
Inform	nation Submittals	d e							
		f		-	.				
	Occupancy 1	Small Industrial		Elec. MJ/m2 per yr	Total MJ/m2 per yr	Score	Values proposed by JMH	instead of	Source
	Negative			540	1460	-1		1 460	
Ac	ceptable practice Good Practice	MJ of delivered non-renewable en predicted by means of an accepta	nergy per m2 of net area used for operations, as able method or tool.	500 380	1300 820	0		1 300 820	
	Best Practice			300	500	5		500	IBGE 2 W/m2*1600h/an*3.6/1000=11.5 MJ/m2
	Occupancy 2	Office		Elec. MJ/m2 per yr	MJ/m2 per yr.	Score	Values proposed by JMH	instead of	Source
Ac	Negative ceptable practice			320 300	375 350	-1 0		375 350	
710		MJ of delivered non-renewable en predicted by means of an accepta	nergy per m2 of net area used for operations, as able method or tool.	240	275	3		275	
	Best Practice			200	225	5		225	IBGE 2 W/m2*1600h/an*3.6/1000=11.5 MJ/m2
B2 Ele	ctrical pe	ak demand for fac	cility operations						
	Intent	To minimize the peak monthly ele where the grid is near peak capa	ectrical demand for building operations, especially city.		licable pha ctive if gree				
	Indicator	Average of peak monthly electrica of an acceptable method or tool.	al demand for one year, W/m2, as predicted by means		Dsn	Ops.			
Info	ormation sources	References x, y and z							
Applic	cable project type	Any occupancy except open space	ce						
Ass	sessment method	Review of contract documentation	n and sample equipment specifications by an ouside ele	ctrical engir	ieer.				
Appl	licable Standards	a b							
		с							
la fa an		d							
Inform	nation Submittals	f							
	Occupancy 1	Small Industrial		on	W/m2	Score	Values proposed by JMH	instead of	Source
	Negative	-			6	-1	6	6	o.k. with proposal
Ac	ceptable practice Good Practice	nie peak mentiny electrical deme	and for the occupancy, as predicted by means of an acc	eptable	5 3	0	5	5 3	o.k. with proposal
	Best Practice				2	5	2	2	o.k. with proposal o.k. with proposal
	Occupancy 2	Office		on	W/m2	Score	Values proposed by JMH	instead of	Source
	Negative				0	-1		0	BEP:?
Ac	ceptable practice Good Practice	The peak monthly electrical dema method or tool.	and for the occupancy, as predicted by means of an acc	eptable	0	0		0	BEP : ? BEP : ?
	Best Practice					5		-	BEP:?

Be	enchmarks E	3 for designated occupancies in BigTown, Europe	Uses included	Small Inde Office 0	ustrial			
New	Construction	Design Phase	Gen	eric				
В3	Renewable I	Energy			•			
B3.1 Use of off-site energy that is generated from renewable sources.								
	Intent To encourage the use of sources that generate power by renewable energy means, e.g. (Active if green) (Active if green)							
	Indicator Percent of annual purchased electricity consumption for the Total Building that is planned to be obtained from sources that generate power by means of renewable energy.			Dsn	Ops.			
	NABERS (Australian system) defines Acceptable Practice as 20% and Best Practice as Information sources 100%, whereas HK-BEAM equivalents are 4% and 20% and BREEAM specifies a threshold of 10%.			e from grid, r Emission worksheet	0.0%			
Applicable project type Any occupancy where renewable sources are available.								
	Assessment method	Review of contract documentation and sample equipment specifications by an ouside ele	ctrical engir	ieer.				
		a						
	Applicable Standards	b c						
		d						
	Information Submittals	e						
		f						
		Total project		Percent	Score	Values proposed by JMH	instead of	Source
	Negative			0%	-1	0%	0%	o.k. with proposal
	Acceptable practice	rine percent of annual purchased electricity consumption planned to be obtained from sol	urces that	0%	0	0%	0%	o.k. with proposal
	Good Practice			30%	3	30%	30%	o.k. with proposal
	Best Practice			50%	5	50%	50%	o.k. with proposal
B3.2	Provision of on	-site renewable energy systems.						
	Intent	To encourage the use of on-site renewable energy systems.		licable pha				
	Indicator	The amount of energy intended to be contributed by renewable energy systems, in MJ/m2 per year, not including daylighting or Ground Source Heat Pumps (GSHP).		Dsn	Ops.			
	Information sources	We suggest a higher level for Residential and Schools than for Office, because of possibility of using renewable sources for pre-heating Hot Water. E-Benchmark suggests a minimum of 10% and LEED ranges from 5% to 20%.		•	•			
	Applicable project type	Any occupancy except Enclosed Parking and Open Space.						
	Assessment method	Review of contract documentation and sample equipment specifications by an ouside ele expertise.	ctrical engir	eer with re	enewables			
		a						
	Applicable Standards	b						
c								
d Information Submittalse								
f								
Occupancy 1 Total project M				MJ/m2	Score	Values proposed by JMH	instead of	Source
	Negative			per yr. 40	-1	40	40	o.k. with proposal
	-	The predicted annual contribution of on-site renewable energy planned for operations, as	per	50	0	50	50	o.k. with proposal
	Good Practice			80	3	80	80	o.k. with proposal
	Best Practice			100	5	100	100	o.k. with proposal

В	enchmarks E	B for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	ustrial		
New	Construction	Design Phase	Ger	eric			
В4	Materials						
B4.1	Re-use of suita	ble existing structure(s).					
	Intent To encourage the re-use of any sound structures that exist on the site, as part of the Applicable phases (Active if green)						
	Indicator	The development of an inventory and the percent, by area, of an existing structure that is re-used or recycled, where the structures are in usable condition.	Dsn	C&C.	Ops.		
	Information sources	0					
	Applicable project type	Any occupancy, where an existing structure in usable condition is located on the site.					
	#REF!	If there is an existing structure on the site, the basis of assessment should be a report tha and economic assessment of the existing structure, carried out by a team of qualified prof		a structural	, functiona		
		a					
	Applicable Standards	р с					
		d					
	Information Submittals	e					
				Percent		Not applicable in the	
		Total project		by area	Score	context of Cralys	
	Negative Acceptable practice	The percentage (by area) of existing sound structures that is planned to be re-used as pa	rt of the	13% 25%	-1		
	Good Practice		it of the	61%	3		
	Best Practice			85%	5		
B4.2	Use of recycled	materials from off-site sources.					
	Intent	To encourage the use of recycled materials from off-site sources as part of the new facility, where they are suitable.		licable pha ctive if gree			
	Indicator	The percentage, by cost, of the materials, products, and furnishings in the project are recycled from off-site sources.	Dsn	C&C.	Ops.		
	Information sources	LEED ranges from 25% to 50%.					
	Applicable project type	Total building.					
	#REF!	Review of contract documentation by an outside materials specialist.					
		a					
	Applicable Standards	b					
	Information Submittals						
	f						
	Total project	Total Project		% by cost	Score	Data to be received from Italian team	
	Negative			7%	-1		
	Acceptable practice	The percentage (by cost) of the materials, products, and furnishings in the project that are	e made	10%	0		
	Good Practice	from materials that recycled from off-site post-consumer sources :		19%	3		
	Best Practice			25%	5		

Benchmarks E	3 for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	ustrial			
New Construction	Design Phase	Ger	neric				
B4.3 Use of bio-based products obtained from sustainable sources.							
Inten	Intent To encourage the use of bio-based products that are certified by a recognized Applicable phases (Active if green)						
Indicato	The percentage, by cost, of bio-based products used in the building, including wood and agricultural products, that are certified by a recognized certification agency.	Dsn	C&C.	Ops.			
Information sources	0						
Applicable project type	Total building, all sizes.						
Assessment method	Review of contract documentation by an outside materials specialist.						
Applicable Standards	ab						
	cd						
Information Submittals	e f						
Total project	Total Project		Percent by cost	Score	Data to be received from Italian team		
Negative Acceptable practice	The percentage (by cost) of the wood-based products in the building certified by a recogn certification agency as coming from renewable sources :	ized	9% 10%	-1 0		_	
Good Practice Best Practice	uerinication agency as coming nom enervatie sources .		13% 15%	3 5			
B4.4 Use of cement	supplementing materials in concrete.						
Inten	To encourage the use of cement supplementing materials in concrete, such as flyash, steel slag or rice ash, in order to reduce GHG emissions from the use of cement.	App (A	olicable pha ctive if gree	ises en)			
Indicato	The percentage, by volume, of cement substitute used in concrete.	Dsn	C&C.	Ops.			
Information sources	Note that up to 50% of CSM has been used, but curing time increases with volume used. ranges from 15% to 25%.	Typical in	dustry utilis	ation			
Applicable project type	a0						
Assessment method	Review of contract documentation by an outside concrete specialist.						
	a						
Applicable Standards	sb						
Information Submittals	<u> </u>						
Julia	f						
Total project	Total Project		% by vol.	Score	Values proposed by JMH	instead of	Source
Negative	3		2%	-1	0%	2%	
Acceptable practice	The percentage, by volume, of an acceptable cement supplementing material used in cor	crete :	10%	0	0%	10%	No law constraint
Good Practice Best Practice			34%	3	10%	34%	
Best Practice			50%	5	25%	50%	

Benchmarks B for designated occupancies in BigTown, Europe			Small Indi Office 0	ustrial			
New Construction	Design Phase	Gen	eric				
B4.5 Use of mate	rials that are locally produced.						
1	tent to encourage the procurement of high-weight materials such as aggregate, sand, concrete, masonry, steel and glass,from sources within the greater urban region.		licable pha ctive if gree				
Indi	The percentage, by weight, of the aggregate, sand, concrete, masonry, steel and glass sator used in the project produced within the greater urban region, if local sources of acceptable quality are available.	Dsn	C&C.	Ops.			
Information sou	rces LEED specifies specific distances, but we consider that this is not applicable to all areas.	•					
Applicable project	type Total building, all sizes.						
Assessment me	thed Review of contract documentation by an outside materials specialist.						
Applicable Stand	a						
Applicable Stand	c						
	d						
Information Subm	f						
Total pr	Total Project		% by weight	Score	Values proposed by JMH	instead of	Source
Neg	ative		42%	-1		42%	
Acceptable pra	The percentage, by weight, of the aggregate, cana, consister, maconity, etcol and glace a	sed in the	50%	0		50%	No law constraint
Good Pra	ctice project produced within the greater urban region :		74%	3		74%	
Best Pra	ctice		90%	5		90%	
B4.6 Design for c	isassembly, re-use or recycling.						
1	tent To encourage a building design that will facilitate the easy dis-assembly of components so that they can be re-used or recycled at the end of the service life of the components.	App (Ac	licable pha tive if gree	ases en)			
Indi	cator Measures taken to facilitate future disassembly and re-use or recycling.	Dsn	C&C.	Ops.			
Information sou	rces 0						
Applicable project	type Total building			<u> </u>			
Assessment me	thod Review of contract documentation by an outside deconstruction specialist.						
	a						
Applicable Stand	ardsb						
	с						
	d						
Information Subm	Ittals e						
Total pr	project Total Project Score						
Neg	ative No measures have been taken to facilitate future disassembly, re-use or recycling.						
Acceptable pra	Limited measures have been taken to facilitate future disassembly, re-use or recycling, so modular interior partitions and other interior components.	ures have been taken to facilitate future disassembly, re-use or recycling, such as the use of 0 or partitions and other interior components.					
Good Pra	Measures have been taken to facilitate future disassembly, re-use or recycling, such as the interior components and the use of bolted structural or building envelope components.	ne use of mo	odular	3			
Best Pra	Extensive measures have been taken to facilitate future disassembly, re-use or recycling ctice modular interior components, the use of bolted structural or building envelope componen composite or bonded materials.	, such as the ts, and the r	e use of ion-use of	5			

Benchmarks E	Benchmarks B for designated occupancies in BigTown, Europe			ustrial			
New Construction	Design Phase	Ger	ieric				
B5 Potable Wat	er						
B5.1 Use of potable	water for site irrigation.						
Inten	To discourage the use of potable water for irrigation; and to ensure that any potable water used for irrigation purposes during dry seasons is minimal.		licable pha				
Indicato	The development of a credible irrigation management plan for areas landscaped with non native species (excluding stored rainwater or greywater used for this purpose).	Dsn	C&C.	Ops.			
Information sources	50						
Applicable project type	Total project						
Assessment method	Review pf landscaping plans by an outside landscape architect.						
	a						
Applicable Standards	3b						
	d						
Information Submittals	e						
	f						1
Total project	Total Project		M^3/m^2	Score	Values proposed by JMH	instead of	Source
Negative			4.8	-1	5%	4.8	o.k. with proposal
Acceptable practice	The predicted net annual potable water volume used for irrigation of areas landscaped wi native species (excluding stored rainwater or greywater used for this purpose) :	th non-	4.0	0	4%	4.0	o.k. with proposal
Good Practice Best Practice			1.6 0.0	3 5	2%	1.6 0.0	o.k. with proposal o.k. with proposal
	water for building and occupancy needs.		0.0	Ū	070	0.0	
Inten	To minimize the amount of potable water imported to the site and used for occupancy needs, excluding building system uses or irrigation of exterior areas.		licable pha ctive if gree				
Indicato	Prediction of total potable water use, in L per person per day, based on a credible water management plan for occupancy fixtures and use. Note that the benchmarks are expressed as L / m2 per year in order to allow uses such as indoor parking to be compared to other uses such as office or residential.	Dsn	C&C.	Ops.			
Information sources	See File C for fixtures and water consumption data for the specific project.	•					
Applicable project type	By separate occupancies, excluding irrigation water for outdoor areas.		•				
Assessment method	Review of contract documentation by a specialist in water use.						
	a						
Applicable Standards	sb						
	с						
Information Submittals	u 						
	f						
Occupancy 1	Small Industrial	on	L / m2 per year	Score	Values proposed by JMH	instead of	Source
Negative	2		1600	-1		1 600	BEP : ?
Acceptable practice		cted to be	1500	0		1 500	BEP:?
Good Practice			1200	3		1 200	BEP:?
Best Practice			1000	5		1 000	BEP:?
Occupancy 2	Office	on	L / m2 per year	Score	Values proposed by JMH	instead of	Source
Negative			215	-1		215	BEP : ?
	Based on a credible water management plan, the volume of potable water predi used for occupancy needs :	cted to be	200	0		200	BEP:?
Good Practice			155	3		155	BEP : ?
Best Practice			125	5		125	BEP:?

			g	Small Indu	strial	1			
В	enchmarks (C for designated occupancies in BigTown, Europe	Uses included	Office					
			⊆	0	1				
New	Construction	Design Phase	Ger	neric	•				
С	Environm	ental Loadings							
C1	C1 Greenhouse Gas Emissions								
C1.1	C1.1 Annualized GHG emissions embodied in construction materials.								
	To minimize the amount of CO2-equivalent emissions from primary non-renewable Intent energy used in the extraction, fabrication and transportation of materials and components in the building.								
	Indicato	CO2-equivalent emissions per Kg. per m2 of gross area, as determined by calculations based on design documents and fuel emission values plus process-related emissions related to the region of production, and annualized according to the predicted lifespan of the building.	Dsn		Ops.	Lifespan = 35 years (Glasgow meeting)			
	Benchmarks for GJ/m2 are the same as those selected for Benchmark B1.1. Values in years, from Basic sources BREEAM range from about 1000 to 300 kgCO2/m2 for Residential, and 100 to 500 kgCO2/m2 for Residential, and 100 to 500 worksheet worksheet sources are supported by the second								
	Applicable project type	All occupancies		g eCO2 per nbodied GJ	55				
	Assessment method	We recommend that this analysis be carried out only with new projects, since there are li difficulties in obtaining emsission data for materials that are located in an existing building		surmountal	ble				
		a							
	Applicable Standards								
		d							
	Information Submittals								
		f							
	Occupancy 1	Small Industrial	GJ/m2	kg/m2 * year	Score	Data to be received from Italian team			
	Negative		8.6	9.5	-1				
	Acceptable practice	The annualized amount of CO2-equivalent emissions from primary non-renewable energy used in materials and components for structure and building envelope, based on	8.0	8.8	0				
	Good Practice	design documents :	6.2	6.8	3				
	Best Practice		5.0	5.5	5				
	Occupancy 2 Office		GJ/m2	kg/m2 * year	Score	Data to be received from Italian team			
	Negative		12.6	13.9	-1				
	Acceptable practice	energy used in materials and components for structure and building envelope, based on	12.0	13.2	0				
	Good Practice	design documents :	10.2	11.2	3				
	Best Practice		9.0	9.9	5				

Benchmarks (C for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	strial		
New Construction	Design Phase	Ger	neric			
C1.2 Annual GHG e	missions from all energy used for facility heating.					
Inten	To minimize the amount of CO2-equivalent emissions from all energy used for annual building operations.		olicable pha ctive if gree			
Indicato	Annual CO2-equivalent emissions per Kg. per m2 of net area, as determined by an hour- by-hour simulation program and calculations based on regional fuel emission values.	Dsn		Ops.		
	Values in the UK BREEAM system range from 167 to 30 kgCO2/m2 for Residential, 250 r about 48 to 17 kgCO2/m2 for Schools.	to 20 kgCO	2/m2 for Of	fice and		
Information source:	Emissions for Residential taken from average Canadian building stock values for 1999 (NRCan data).		CO2 per GJ, all Industrial	55.0		
	Emissions for Commercial taken from average Canadian building stock values for 1999 (NRCan data).	Est. kg C	CO2 per GJ, Office	55.0		
	0	Est. kg C	O2 per GJ, 0	55.0		
Applicable project type	All occupancies except open space	Values be B1.2 in B	elow are ba mkB	ased on		
Assessment method	The use of an hour-by-hour simulation tool, as required for B1.2, will produce annual ener data are combined by SBTool with emission data (see Emissions worksheet) to produce of emissions.			s. These		
Applicable Standards	a b					
	c d					
Information Submittal	e 					
Occupancy 1	r Small Industrial	М	kg/m2 per yr.	Score	Values proposed by JMH	
Negative	3		80	-1		
Acceptable practice	Based on the results of an hour-by-hour simulation program and regional fuel emission va	alues, the	72	0		
Good Practice	amount of CO2-equivalent emissions from primary non-renewable energy used for annua operations of the occupancy is predicted to be :	l	45	3		
Best Practice	3		28	5		
Occupancy 2	Office	М	kg/m2 per yr.	Score	Values proposed by JMH	
Negative			21	-1		
Acceptable practice	Based on the results of an hour-by-hour simulation program and regional fuel emission va amount of CO2-equivalent emissions from primary non-renewable energy used for annua	alues, the I	19	0		
Good Practice			15	3		
Best Practice	3		12	5		

instead of

Source

Source

Benchmarks (Benchmarks C for designated occupancies in BigTown, Europe						
New Construction	·	Uses included	0				
New Construction	Design Phase	Ger	neric	•			
C1.3 Annual GHG e	missions from all energy used for facility cooling.						
Intent	To minimize the amount of CO2-equivalent emissions from all energy used for annual building operations.		licable phas ctive if gree				
Indicator	Annual CO2-equivalent emissions per Kg. per m2 of net area, as determined by an hour- by-hour simulation program and calculations based on regional fuel emission values.	Dsn		Ops.			
	Values in the UK BREEAM system range from 167 to 30 kgCO2/m2 for Residential, 250 to 20 kgCO2/m2 for Office and about 48 to 17 kgCO2/m2 for Schools.						
Information sources	Emissions for Residential taken from average Canadian building stock values for 1999 (NRCan data).		O2 per GJ, all Industrial	55.0			
	Emissions for Commercial taken from average Canadian building stock values for 1999 (NRCan data).		O2 per GJ, j/m2 per yr.	55.0			
	0 Est. kg						
Applicable project type	All occupancies except open space	Values be B1.2 in Bi	elow are ba mkB	ased on			
Assessment method	The use of an hour-by-hour simulation tool, as required for B1.2, will produce annual ener data are combined by SBTool with emission data (see Emissions worksheet) to produce e emissions.	gy consum estimates o	ption results f operating	s. These			
Applicable Standards	^ª Text to be						
Information Submittals	d						
Occupancy 1	r Small Industrial	М	kg/m2 per yr.	Score	Values proposed by JMH		
Negative			80	-1			
Acceptable practice	Based on the results of an hour-by-hour simulation program and regional fuel emission va amount of CO2-equivalent emissions from primary non-renewable energy used for annua		72	0			
Good Practice		•	45	3			
Best Practice			28	5			
Occupancy 2	Office	М	kg/m2 per yr.	Score	Values proposed by JMH		
Negative			21	-1			
	Acceptable practice Based on the results of an hour-by-hour simulation program and regional fuel emission values, the amount of CO2-equivalent emissions from primary non-renewable energy used for annual						
Good Practice	operations of the occupancy is predicted to be :		15	3			
Best Practice			12	5			

instead of

Source

Source

Benchmarks (C for des	signated occupancies in Europe	BigTown,	Uses included	Small Indu Office 0	strial		
New Construction		Design Phase		Ger	neric			
C1.4 Annual GHG e	emissions f	rom all energy used for lighting	and equipment.					
Inten	t building operat	e amount of CO2-equivalent emissions from all tions.	energy used for annual		olicable phas ctive if gree			
Indicato		quivalent emissions per Kg. per m2 of net area, tion program and calculations based on regiona		Dsn		Ops.		
		IK BREEAM system range from 167 to 30 kgCC kgCO2/m2 for Schools.	02/m2 for Residential, 250	to 20 kgCO	2/m2 for Of	fice and		
Information sources	(NRCan data).	Residential taken from average Canadian buildir	ng stock values for 1999		02 per GJ, all Industrial	55.0		
mornation sources		Commercial taken from average Canadian buildi	ing stock values for 1999	Est. kg CO2 per GJ, kg/m2 per yr. 55.0				
	0			Est. kg C	02 per GJ, 20.625	55.0		
Applicable project type	e All occupancies	s except open space		Values be B1.2 in B	elow are ba mkB	ased on		
Assessment method		hour-by-hour simulation tool, as required for B1. ined by SBTool with emission data (see Emissio				s. These		
Applicable Standards	a sb c	Text to be revised						
Information Submittals	d se f							
Occupancy 1	Small Indust	trial		М	kg/m2 per yr.	Score	Values proposed by JMH	instead of
Negative	е				80	-1		80
Acceptable practice	Based on the reamount of CO3	esults of an hour-by-hour simulation program ar 2-equivalent emissions from primary non-renewa	nd regional fuel emission va	alues, the	72	0		72
Good Practice		he occupancy is predicted to be :	and energy used for dilling		45	3		45
Best Practice	e				28	5		28
Occupancy 2	2 Office			М	kg/m2 per yr.	Score	Values proposed by JMH	instead of
Negative					21	-1		21
	amount of CO2	esults of an hour-by-hour simulation program ar 2-equivalent emissions from primary non-renewa			19	0		19
Good Practice		he occupancy is predicted to be :			15	3		15
Best Practice	e				12	5		12

Source

Source

Renchr	narks (C for designated occupancies in BigTown,	s ed	Small Indu	strial			
Denom		Europe	Uses included	Office				
		Europe	.⊑	0				
New Const	ruction	Design Phase	Ger	neric				
C2 Othe	r Atmos	spheric Emissions						
C2.1 Emiss	sions of a	cidifying emissions during facility operations.						
	Intent	To minimize the production of atmospheric emissions from building operations that may result in acidification.	App (A			SO2 (not emitted anymore) replaced by NOx		
	Indicator	SO2 Equiv. per year in kg. per unit net area	Dsn		Ops.			
Inform	nation sources	References x, y and z			М			
Applicab	le project type	Total project						
	#REFI Review of contract documents and equipment specifications.							
	а							
Applica	ble Standards	b						
		с						
		d						
Informat	Information Submittals e							
	Total project Kg. / m2 per yr.		Score	Values proposed by JMH	instead of	Source		
Accor	Negative ptable practice	The predicted emission of SO2 equivalent per year in kg. per unit area net, based on the	results of	0.45	-1 0		0.45	
	Good Practice	an acceptable hour-by-hour simulation program and taking into account the characteristic		0.40	3		0.25	
	Best Practice			0.15	5		0.15	
C2.2 Emiss	sions leac	ling to photo-oxidants during facility operations.						•
	Intent	To minimize the production of atmospheric emissions from building operations that may result in photo-oxidants.		licable pha ctive if gree				
	Indicator	Ethene equiv. per year in gm per net unit area	Dsn		Ops.			
Inform	nation sources	References x, y and z						
Applicab	le project type	Total project						
Asses	sment method	Review of contract documents and equipment specifications.						
		a						
Applica	ible Standards	b						
		c						
		d						
Informat	Information Submittals e							
	Total project	Total Project		gm./m2 per yr.	Score	Values proposed by JMH	instead of	Source
	Negative			0.278	-1		0.278	
Accep	otable practice			0.250	0		0.250	
	Good Practice	of an acceptable hour-by-hour simulation program, and taking into account the characteri available fuels :	stics of	0.166	3		0.166	
	Best Practice			0.110	5		0.110	

Benchmarks (C for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	strial			
New Construction	Design Phase	Ger	neric				
C3 Solid Waste	S						
C3.1 Solid waste res	sulting from the construction and demolition process.						
Inten	To minimize the amount of waste off the site by encouraging the development and implementation of a construction waste management program, with sorting, re-use and recycling measures.	Applicable phases (Active if green)					
Indicato	The development of a credible construction waste management plan and the percentage, by weight, of construction waste to be re-used (on or off the site) or re- cycled, as predicted in the plan.	Dsn	C&C.	Ops.			
Information sources	It is assumed that a construction waste management plan is developed, and construction amounts recorded.	pecific					
Applicable project type	Total Project						
Assessment method	Review of construction management plan by an outside party with construction and solid	pertise.					
	a						
Applicable Standards	b 						
	d						
Information Submittals	e						
	1						
Total project	Total Project		Percent	Score	Values proposed by JMH	instead of	Source
Negative			-7%	-1		-7%	
Acceptable practice Good Practice		ycled, as	10% 61%	0		10% 61%	
Best Practice			95%	5		95%	
C2 2 Calid waste rev	ulting from to cility an anoticing						
C3.2 Solid Waste les	sulting from facility operations.	1					
Inten	To encourage the provision of facilities for storage of waste on each floor or each major work area, and space for the central sorting and storage of waste, with access to a truck loading area.		licable pha ctive if gree				
Indicato	Facilities provided in the design for the storage and sorting of solid wastes in both dispersed and central locations.	Dsn		Ops.			
Information sources	We specify storage areas per dwelling and per work group, and assume that the central s	storage area	a will be size	ed to suit.			
Applicable project type	Separate criteria for residential and non-residential; NA for parking or open space						
Assessment method	Review of construction documents by an outside party with solid waste management exp	ertise.					
Applicable Standards	a						
	d						
Information Submittals							
	f						
Occupancy 1	Small Industrial	on	percent	Score	Values proposed by JMH	instead of	Source
Negative			70%	-1		70%	
	Acceptable practice A central sorting and storage area is located close to a truck loading area, and storage has been provided sufficient for all wastes that may accumulate over a period of one week. It is estimated that the percentage of total waste that can be sorted and 89%			0		75%	
			3		89%		
Best Practice			98%	5		98%	
Occupancy 2	Office	on	percent	Score	Values proposed by JMH	instead of	Source
Negative		as heen	70%	-1		70%	
Acceptable practice Good Practice	A central sorting and storage area is located close to a truck loading area, and storage ha provided sufficient for all wastes that may accumulate over a period of one week. It is es that the presentance of the locate that can be parted and	timated	75% 90%	0		75% 90%	
Best Practice	······································		100%	3 5		100%	
				, U		10070	

Benchmarks (Benchmarks C for designated occupancies in BigTown, Europe					
New Construction	Ger	neric				

Benchmarks (C for designated occupancies in BigTown,	Uses included	Small Indu Office	strial			
	Europe	incl ⁱ	0				
New Construction	Design Phase	Ger	neric	·			
C4 Rainwater,	Stormwater and Wastewater						
C4.1 Liquid effluents	s from facility operations sent off the site.						
Inten	t To minimize the volume of waste water, including effluent, sent off the site to be treated.		olicable pha ctive if gree				
Indicato	r The volume of liquid waste per person per day that is sent off the site for treatment.	Dsn		Ops.			
Information sources	The default (0) volume is assumed to be 95% of the potable water consumption with no on-site treatment, as per BmkA 5.2 (see cells at right)	1425	190	0			
Applicable project type	By separate occupancies.						
Assessment method	Review of contract documents.						
Applicable Standard	aApplicable Standards b						
	с						
Information Submittal							
Information Submittal	se f						
Occupancy 1	I Small Industrial	on	L / m2 * yr.	Score	Values proposed by JMH	instead of	Source
Negative	e		1520	-1		1 520	
Acceptable practice	The predicted volume of liquid waste per m2 per year to be sent off the site for trea		1425	0		1 425	
Good Practice			1140	3		1 140	
Best Practice			950 L/m2*	5		950	
Occupancy 2	2 Office	on	yr.	Score	Values proposed by JMH	instead of	Source
Negative			204	-1		204	
Acceptable practice	The predicted volume of liquid waste per m2 per year to be sent off the site for tr	eatment	190	0		190	
Good Practice Best Practice			147 119	3 5		147 119	-
	ainwater for later re-use.		113	5		113	
Inten	t To encourage the retention of rainwater on the site for later re-use.		olicable pha ctive if gree				
Indicato	The percent of annual rainwater falling on the site that is planned to be retained on the site for future use on the site or in the building in holding ponds or tanks.	Dsn		Ops.			
Information sources	s References x, y and z						
Applicable project type	e Total project						
Assessment method	Review of contract documents and landscaping plans by a person with experience in this	field.					
	a						
Applicable Standard	sb -						
	c d Information Submittals e						
Information Submittals							
	f						
Total projec	Total project Percent Score				Values proposed by JMH	instead of	Source
Negative			0%	-1		0%	
Acceptable practice		ite for	0%	0		0%	
Good Practice	future use on the site or in the building in holding ponds or tanks.		45%	3		45%	
Best Practice	e		75%	5		75%	

B	enchmarks (C for designated occupancies in BigTown, Europe		Small Indu Office 0	strial			
New	Construction	Design Phase	ncluded Ger	neric	·			
C4.3	4.3 Untreated stormwater retained on the site.							
	Inten	To minimize the volume of stormwater sent off the site.	App (A	licable pha ctive if gree	ses n)			
	Indicato	Percent of stormwater that is retained on the site.	Dsn	<u> </u>	Ops.			
	Information sources	References x, y and z						
	Applicable project type	By separate occupancies.						
	Assessment method	Review of contract documents and landscaping plans by a person with experience in this	ntract documents and landscaping plans by a person with experience in this field.					
	Applicable Standards	a						
	Applicable Standards	c						
		d						
	Information Submittals e							
	Total project	rotal Project		Percent	Score	Values proposed by JMH	instead of	Source
	Negative	3		10%	-1		10%	
	Acceptable practice	The percent of stormwater retained on the site, on an annualized basis:		25%	0		25%	
	Good Practice			70%	3		70%	
	Best Practice			100%	5		100%	
N.A.	N.A.							
N.A.	ΝΑ							
N.A.	N.A.							
	N.A	N.A.	App (A	licable phas ctive if gree	ses n)			
	N.A	N.A.	Dsn	C&C.	Ops.			
	N.A	N.A.						
	N.A	N.A.						
	N.A	N.A.						
	N.A	N.A.						
	N.A	N.A.						
	N.A	N.A.						
		N.A.						
		N.A.						
		N.A.			1			
	N.A.	N.A.			Score			
	N.A	N.A.	-1					
	N.A	N A.			0			
	N.A	NA.			3			
	N.A	N.A.			5			

Benchmarks (C for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	strial
New Construction	Design Phase	Ger	neric	
N.A. N.A.				•
N.A.	N.A.		plicable pha active if gree	
N.A.	N.A.	Dsn	C&C.	Ops.
N.A.	N.A.			
N.A.	N.A. N.A.			
N.A.	N.A.			
N.A.	N.A.			Score
N.A.	N.A.			-1
N.A.	N.A.			0
N.A.	N.A.			3
N.A.	N.A.			5
N.A. N.A.				
N.A.	N.A.		plicable pha ctive if gree	
N.A.	N.A.	Dsn	C&C.	Ops.
N.A.	N.A.			
	N.A. N.A.			
	N.A. N.A.			Score
	N.A.			
	N.A. N.A.			-1 0
	N.A.			3
N.A.	NA.			5

Be	enchmarks (C for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	strial			
New	Construction	Design Phase	Ger	neric				
N.A.	N.A.				I			
	N.A.	NA.		olicable pha ctive if gree				
	N.A.	N.A.	Dsn		Ops.			
	N.A.	N.A.	٠					
	N.A.	N.A.		1	1			
	N.A.	N.A.						
	N.A.	N.A.						
	N.A.							
	N.A.	N.A.						
	N.A.	N.A.						
	N.A.	N.A.						
	N.A. N.A.	N.A. N.A.			Score			
	N.A.	N.A.			-1			
	N.A.	NA.			0			
	N.A.	N.A.			3			
	N.A.	N.A.			5			
C6	Other Local	and Regional Impacts				Not applicable (decided in Glasgow)		
C6.1	Cumulative the	rmal changes to lake water or sub-surface aquifers.						
	Intent	To ensure that building operations involving ground-source or ground-water heat pumps do not change the average annual temperature of sub-surface aquifers, nor affect the water quality of such aquifers.		blicable pha ctive if gree				
	Indicator	Predictions of changes in the average annual temperature of sub-surface aquifers, determined by simulation studies.	Dsn		Ops.			
	Information sources	References x, y and z						
	Applicable project type	For Total Project if a water-source or ground-source heat pumps (GSHP) is being used.			•			
	#REF!	Review of mechanical drawings, specifications and equipment by geophysical engineer.						
		a						
	Applicable Standards	b						
		с						
		d -						
	Information Submittals	e f						
	Total proiect	Total Project		Deg. C	Score			
	Negative			1.8	-1			
	Acceptable practice		e the	1.5	0			
	Good Practice	average annual temperature of sub-surface aquifers by :		0.6	3			
	Best Practice			0.0	5			

Denehmerke	C for designated occupancies in BigTown,		Small Indu	strial				
Benchmarks		Uses included	Office					
	Europe	inc	0					
New Construction	Design Phase	Ger	neric					
C6.2 Heat Island Eff	ect - landscaping and paved areas.				Not applicable to Crealys context			
Inten	To ensure that open areas of the site are either landscaped, or are paved with reflective materials, to minimize infrared re-radiation to the atmosphere that would increase the urban heat island effect.		olicable pha ctive if gree					
Indicator	Reflectance and area of paved and landscaped areas, as indicated by drawings and specifications.	Dsn		Ops.				
Information sources	References x, y and z							
Applicable project type	Total Project							
Assessment method								
	a							
Applicable Standards	Applicable Standards b							
	d							
Information Submittals								
	f							
Total project	Total Project		Percent	Score				
Negative			40%	-1				
	Drawings and specifications indicate that the area of landscaped open area plus paved ar surface reflectance of 60% or greater, as a percentage of total open area (site area minus	reas with a building	50%	0				
Good Practice Best Practice	footprint) is :		80%	3 5				
			10078	5	Not applicable			
C6.3 Heat Island Eff	ect - rooning.				to Crealys context			
Inten	To encourage the use of roofing systems with high reflectance or a landscaped or green roof, or a combination of these, so that reflected infrared radiation to the atmosphere is minimized.		olicable phas ctive if gree					
Indicator	Reflectance and area of roofing material; or the use of a green roof, as indicated by drawings and specifications.	Dsn		Ops.				
Information sources	References x, y and z							
Applicable project type	Total Project							
Assessment method	Review of roofing specifications.							
	a							
Applicable Standards	b							
	c							
Information Submittals	d							
information Submittais								
Total project								
Negative			Percent 0%	Score -1				
-	According to drawings and specifications, the percentage of total roof area provided with a	a Green	0%	0				
Good Practice	roof or a roofing system with a surface reflectance of 60%, or a combination of these, is :		60%	3				
Best Practice			100%	5				

Benchmarks C	Small Indu Office 0	strial						
New Construction	New Construction Design Phase Gene							
C6.4 Atmospheric lig	C6.4 Atmospheric light pollution.							
Intent	To minimize the spillage of light into the atmosphere from ground-level sources.		licable pha ctive if gree					
Indicator	Percentage of total exterior light output that lies outside a vertical 120 degree cone, as indicated by drawings and specifications.	Dsn		Ops.				
Information sources	Information sources 0							
Applicable project type	Applicable project type Total Project							
Assessment method	Assessment method Review of building and site illumination plans and design team analysis.							
	a							
Applicable Standards	b							
	d							
Information Submittals	e							
	f							
Total project	Percent	Score						
Negative			90%	-1				
Acceptable practice	The percentage of total exterior light output that lies outside a vertical 120 degree cone, a indicated by drawings and specifications is :	IS	75%	0				
Good Practice	50%							
Best Practice								

B	enchmarks [D for designated occupancies in BigTown, Europe	Uses included	Small Inde Office 0	ustrial		
Nev	v Construction	Design Phase	Ger	neric			
D	Indoor En	vironmental Quality					
D1	Indoor Air Q	uality				n	
D1.1	Pollutant migra	tion between occupancies.			1		
	Intent	Ensure that areas that contain equipment or activities generating chemical pollutants, are separately ventilated and isolated from other occupied spaces. Examples include copier rooms, waste storage areas and janitorial rooms.	App (a	plicable phaticities phaticities phaticities of the phaticity of the phati	ases en)		
	Indicator	Measures taken to isolate areas or rooms where pollutants may be generated, as indicated by drawings and specifications.	Dsn		Ops.		
	Information sources	0					
	Applicable project type	Separate by occupancy type.				4	
	#REF!	Review of contract documents and mechanical system by an oustide mechanical engineer	r.				
	Applicable Standards	ab					
	Information Submittals	- d e					
		f					
	Occupancy 1	Small Industrial		on	Score		
	Negative	Drawings and specifications indicate that some rooms and spaces in this occupancy that or activities generating chemical pollutants are not separately ventilated.	contain eq	uipment or	-1		
	Acceptable practice	Drawings and specifications indicate that all rooms and spaces in this occupancy that cont activities generating chemical pollutants, are separately ventilated.	tain equipr	ment or	0		
	Good Practice	Drawings and specifications indicate that all rooms and spaces in this occupancy that cont activities generating chemical pollutants, are separately ventilated and there is little possib or from other occupied spaces.			3		
	Best Practice	Drawings and specifications indicate that all rooms and spaces in this occupancy that cont activities generating chemical pollutants, are separately ventilated and there is NO possibi from other occupied spaces.	tain equip ility of mig	ment or ration to or	5		
	Occupancy 2	Office		on	Score		
	Negative	Drawings and specifications indicate that some rooms and spaces in this occupancy that or activities generating chemical pollutants are not separately ventilated.	contain eq	uipment or	-1		
	Acceptable practice	Drawings and specifications indicate that all rooms and spaces in this occupancy that cont activities generating chemical pollutants, are separately ventilated.	tain equipr	ment or	0		
	Good Practice	Drawings and specifications indicate that all rooms and spaces in this occupancy that cont activities generating chemical pollutants, are separately ventilated and there is little possib or from other occupied spaces.	tain equipr pility of mig	ment or gration to	3		
	Best Practice	Drawings and specifications indicate that all rooms and spaces in this occupancy that cont activities generating chemical pollutants, are separately ventilated and there is NO possibi			5		
D1.2	CO2 concentra	from other occupied spaces.					
		To ensure that carbon dioxide concentrations stay below acceptable levels in typical	Apr	plicable ph	ases		
	Intent	primary occupancy areas.		ctive if gree			
	Indicator	Designs for HVAC systems that conform to ASHRAE, CIBSE or other acceptable protocol.	Dsn		Ops.		
	Information sources	Reference x, y and z					
	Applicable project type	Non-residential Occupancies, except for Open Space.				4	
	Assessment method Review of contract documents and mechanical system by an outside mechanical engineer.						
	Applicable Standards	a					
		c					
	Information Submittals	d e					
	Occupancy 1	f Small Industrial	on	ppm	Score	Values proposed by JMH	instead
	Negative			1160	-1	1 000	1 000
	Acceptable practice	Designs for HVAC systems, carried out in accordance with ASHRAE, CIBSE or other acce standards, predict concentrations of CO2 during operating conditions equal to or less than	eptable	1050 720	0	800 700	800 700
	Good Practice			500	5	600	600
	Good Practice Best Practice						
		Office	on	ppm	Score	Values proposed by JMH	instead of
	Best Practice Occupancy 2 Negative			640	-1	1 000	1 000
	Best Practice Occupancy 2		eptable				instead of 1 000 800 700

Benchmarks [Uses ncluded	Small Industrial Office								
	Europe	U incl	0							
New Construction	Design Phase	Gei	neric							
D1.3 IAQ monitoring	during project operations.									
Intent	To ensure long-term indoor air quality in non-residential occupancies by installing a Intent permanent carbon dioxide monitoring system to provide objective data on indoor air quality, with monitoring points located in typical primary occupancy areas.									
Indicator	Measures anticipated to ensure adequate monitoring of IAQ quality.	Dsn		Ops.						
Information sources	Reference A, B and C.									
Applicable project type	Applicable project type By separate occupancies except outdoor space.									
Assessment method	Review of contract documents and mechanical system by an outside mechanical enginee	r.								
Applicable Standards	a b									
	c									
	d									
Information Submittals	e f									
Occupancy 1	' Small Industrial		on	Score						
Negative	No specific measures are anticipated to ensure adequate and on-going monitoring of IAQ	quality in		-1						
	aleas.									
	Annual monitoring is anticipated to assess IAQ quality in public areas.			0						
	Quarterly monitoring is anticipated to assess IAQ quality in public areas. Daily monitoring is anticipated to assess IAQ quality in public areas.			3 5						
Occupancy 2			on	Score						
Negative	No specific measures are anticipated to ensure adequate and on-going monitoring of IAO	quality in		-1						
Acceptable practice	Annual monitoring is anticipated to assess IAQ quality in public areas.			0						
Good Practice	Quarterly monitoring is anticipated to assess IAQ quality in public areas.			3						
Best Practice	Daily monitoring is anticipated to assess IAQ quality in public areas.			5						
D2 Ventilation										
D2.1 Effectiveness of	f ventilation in naturally ventilated occupancies.									
Intent	To ensure that the number, placement and type of windows or other openings in a naturally-ventilated building are capable of providing a high level of air quality and ventilation.		plicable pha ctive if gree							
Indicator	Area and location of windows that provide natural ventilation.	Dsn		Ops.						
Information sources	Cross-ventilation is defined as spaces where openable windows are located on at least two separate walls.	•								
Applicable project type	By separate occupancies for buildings under a defined height limit.	Height	limit, floors	16						
Assessment method	Review of contract documents and mechanical system by an outside mechanical engineer natural ventilation issues.	r with spec	cific knowle	dge of						
Applicable Standards	a 									
Applicable Standards	c									
	d									
Information Submittals	e									
Occupancy 1	f Small Industrial		м	Score						
Negative	The apprendite area of openings from primary occupancy areas to the exterior is less than			-1						
Acceptable practice The aggregate area of openings from primary occupancy areas to the exterior is at least 5% of the aggregate area of openings from primary occupancy areas to the exterior is at least 5% of the aggregate primary for area, and more than 50% of all primary spaces have cross-ventilation.										
Good Practice The aggregate area of openings from primary occupancy areas to the exterior is at least 5% of the aggregate area and at more than 75% of all primary from extension area, and at more than 75% of all primary spaces have cross-ventilation.										
Best Practice primary floor area, and more than 90% of all primary soccupancy areas to the exterior is at least 10% of the aggregate primary floor area, and more than 90% of all primary spaces have cross-ventilation.										
Occupancy 2	Office		М	Score						
Negative	The aggregate area of openings from primary occupancy areas to the exterior is less than aggregate primary floor area, and less than 50% of all primary spaces have cross-ventilati	5% of the on.		-1						
Acceptable practice	The aggregate area of openings from primary occupancy areas to the exterior is at least 5 primary floor area, and more than 50% of all primary spaces have cross-ventilation.	% of the a	iggregate	0						
Good Practice	The aggregate area of openings from primary occupancy areas to the exterior is at least 5 primary floor area, and at more than 75% of all primary spaces have cross-ventilation.	% of the a	iggregate	3						
Best Practice	The aggregate area of openings from primary occupancy areas to the exterior is at least 1 primary floor area, and more than 90% of all primary spaces have cross-ventilation.	0% of the	aggregate	5						

Benchmarks [D for designated occupancies in BigTown,	s ed	Small Ind	ustrial	
Denominario I	Europe	Uses included	Office 0		
New Construction	Design Phase	Gei	neric		
D2.2 Air quality and	ventilation in mechanically ventilated occupancies.				
Intent	To ensure that mechanical ventilation and cooling systems are designed in a manner that will ensure a satisfactory level of air quality and ventilation.		plicable pha		
Indicator	Conformance of the design to the requirements of a recognized relevant standard, such as ASHRAE or CIBSE.	Dsn		Ops.	
Information sources	Reference x, y and z				
Applicable project type	Any occupancy except Outdoor Area				
Assessment method Applicable Standards	Review of contract documents and mechanical system by an outside mechanical enginee a b	r.			
	c				
Information Submittals	e				
	f				
Occupancy 1	Small Industrial		М	Score	
Negative	Mechanical ventilation in some primary occupancy areas does not fully satisfy the minimu ASHRAE 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE of			-1	
Acceptable practice	Mechanical ventilation in some primary occupancy areas meets the minimum requirement 2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE or other stand		RAE 62-	0	
Good Practice	Mechanical ventilation in more than 50% of primary occupancy areas exceeds the minimu ASHRAE 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE of			3	
Best Practice	Mechanical ventilation in 100% of primary occupancy areas exceeds the minimum require 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE or other sta	ements of <i>i</i> andard.	ASHRAE	5	
Occupancy 2	Office		М	Score	
Negative	Mechanical ventilation in some primary occupancy areas does not fully satisfy the minimu ASHRAE 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE c			-1	
Acceptable practice	Mechanical ventilation in some primary occupancy areas meets the minimum requirement 2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE or other stand		RAE 62-	0	
Good Practice	Mechanical ventilation in more than 50% of primary occupancy areas exceeds the minimu ASHRAE 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE c			3	
Best Practice	Mechanical ventilation in 100% of primary occupancy areas exceeds the minimum require 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE or other sta		ASHRAE	5	
D2.3 Air movement i	in mechanically ventilated occupancies.				
Intent	To ensure that air movement in mechanically ventilated occupancies is sufficient to satisfy requirements for human comfort.		#REF!		
Indicator	Predicted air speed in m/s, as indicated by an analysis of proposed HVAC system characteristics or by post-occupancy monitoring.	Dsn		Ops.	
Information sources	Reference x, y and z				
Applicable project type	Total project				
Assessment method	Review of contract documents and mechanical system by an outside mechanical enginee	r.			
	a				
Applicable Standards					
	d				
Information Submittals	e				
	f				
Occupancy 1	Small Industrial	on	m/s	Score	
Negative Acceptable practice			0.0	-1 0	
Good Practice	An analysis of proposed HVAC system characteristics indicates that air speed at working during typical operating conditions is likely to be :	level	0.0	3	
Best Practice			0.0	5	
Occupancy 2	Office	on	m/s	Score	
Negative			1.2	-1	
Acceptable practice	An analysis of proposed HVAC system characteristics indicates that air speed at working during typical operating conditions is likely to be :	level	1.5	0	
Good Practice Best Practice			2.4	3 5	ŀ
Dest mactice	1		3.0	Э	L

Source

Source

Benchmarks [Uses included	Small Industrial Office 0		
New Construction	Design Phase	Ger	neric	

of the latter	D for designated occupancies in BigTown,	Uses included	Small Inde Office	ustrial	
	Europe	U. inclt	0		
lew Construction	Design Phase	Ger	ieric		
3 Air movement	in mechanically ventilated occupancies.				
Inter	To ensure that mechanical ventilation and cooling systems are designed in a manner that will ensure a satisfactory level of air quality and ventilation.		licable pha		
Indicato	Conformance of the design to the requirements of a recognized relevant standard, such as ASHRAE or CIBSE.	Dsn		Ops.	
Information sources	Reference x, y and z				
Applicable project type	Any occupancy except Outdoor Area				
#REF	Review of contract documents and mechanical system by an outside mechanical engineer	r.			
Applicable Standard	text to be revised				
	d				
Information Submittal	e				
Occupancy 7	Small Industrial		М	Score	
Negative	Mechanical ventilation in some primary occupancy areas does not fully satisfy the minimur ASHRAE 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE o	m requirem or other star	nents of ndard.	-1	
Acceptable practice	Mechanical ventilation in some primary occupancy areas meets the minimum requirement 2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE or other standa	ts of ASHR ard.	AE 62-	0	
Good Practice	Mechanical ventilation in more than 50% of primary occupancy areas exceeds the minimu ASHRAE 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE o			3	
Best Practice	Mechanical ventilation in 100% of primary occupancy areas exceeds the minimum require 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE or other sta	ements of A andard.	SHRAE	5	
Occupancy 2	Office		М	Score	
Negative	Mechanical ventilation in some primary occupancy areas does not fully satisfy the minimur ASHRAE 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE o			-1	
Acceptable practice	Mechanical ventilation in some primary occupancy areas meets the minimum requirement 2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE or other standa		AE 62-	0	
Good Practice	Mechanical ventilation in more than 50% of primary occupancy areas exceeds the minimu ASHRAE 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE o	im requiren or other sta	nents of ndard.	3	
Best Practice	Mechanical ventilation in 100% of primary occupancy areas exceeds the minimum require 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE or other sta		SHRAE	5	
4 Effectiveness	of ventilation in mechanically ventilated occupancies.				
	Ensure, through the use of appropriate simulation programs, that the ventilation system				
Inter	Ensure, unlocgin bas of apprictus similation programs, that are remained system in mechanically-ventilated non-residential occupancies will bring ventilation air to where it is needed, i.e. to seating areas or workers or visitors.		licable pha ctive if gree		
Inter	in mechanically-ventilated non-residential occupancies will bring ventilation air to where it is needed, i.e. to seating areas or workers or visitors.	(ad			
Indicato	in mechanically-ventilated non-residential occupancies will bring ventilation air to where it is needed, i.e. to seating areas or workers or visitors. Percent of ventilation air reaching work surfaces, as indicated by an analysis of proposed	(ad		en)	
Indicato	In mechanically-ventilated non-residential occupancies will bring ventilation air to where it is needed, i.e. to seating areas or workers or visitors. Percent of ventilation air reaching work surfaces, as indicated by an analysis of proposed HVAC system and room characteristics.	(ad		en)	
Indicato Information source: Applicable project typ	In mechanically-ventilated non-residential occupancies will bring ventilation air to where it is needed, i.e. to seating areas or workers or visitors. Percent of ventilation air reaching work surfaces, as indicated by an analysis of proposed HVAC system and room characteristics. Reference x, y and z	(ad		en)	
Indicato Information source: Applicable project typ	In mechanically-ventilated non-residential occupancies will bring ventilation air to where it is needed, i.e. to seating areas or workers or visitors. Percent of ventilation air reaching work surfaces, as indicated by an analysis of proposed HVAC system and room characteristics. Reference x, y and z Non-residential Occupancies. Review of contract documents and mechanical system by an outside mechanical engineer a	(ad		en)	
Indicato Information source: Applicable project typ Assessment method	In mechanically-ventilated non-residential occupancies will bring ventilation air to where it is needed, i.e. to seating areas or workers or visitors. Percent of ventilation air reaching work surfaces, as indicated by an analysis of proposed HVAC system and room characteristics. Reference x, y and z Non-residential Occupancies. Review of contract documents and mechanical system by an outside mechanical engineer a	(ad		en)	
Indicato Information source: Applicable project typ Assessment method	In mechanically-ventilated non-residential occupancies will bring ventilation air to where it is needed, i.e. to seating areas or workers or visitors. Percent of ventilation air reaching work surfaces, as indicated by an analysis of proposed HVAC system and room characteristics. Reference x, y and z Non-residential Occupancies. Review of contract documents and mechanical system by an outside mechanical engineer a b c	(ad		en)	
Indicato Information source: Applicable project typ Assessment methor Applicable Standard Information Submittal Occupancy	In mechanically-ventilated non-residential occupancies will bring ventilation air to where it is needed, i.e. to seating areas or workers or visitors. Percent of ventilation air reaching work surfaces, as indicated by an analysis of proposed HVAC system and room characteristics. Reference x, y and z Non-residential Occupancies. Review of contract documents and mechanical system by an outside mechanical engineer a b c	(ad	Eac	Ops. Ops.	Values proposed by JMH
Indicato Information source Applicable project typ Assessment methor Applicable Standard Information Submittal Occupancy	In mechanically-ventilated non-residential occupancies will bring ventilation air to where it is needed, i.e. to seating areas or workers or visitors. Percent of ventilation air reaching work surfaces, as indicated by an analysis of proposed HVAC system and room characteristics. Reference x, y and z Non-residential Occupancies. Review of contract documents and mechanical system by an outside mechanical engineer a b c c d e f Small Industrial An analysis of proposed HVAC system and room characteristics in mechanically ventilater	(ad Dsn r. On d areas of	ctive if gree	Ops.	Values proposed by JMH 80%
Indicato Information source Applicable project typ Assessment methor Applicable Standard Information Submittal Occupancy	In mechanically-ventilated non-residential occupancies will bring ventilation air to where it is needed, i.e. to seating areas or workers or visitors. Percent of ventilation air reaching work surfaces, as indicated by an analysis of proposed HVAC system and room characteristics. Non-residential Occupancies. Review of contract documents and mechanical system by an outside mechanical engineer a b c c d e f f Small Industrial An analysis of proposed HVAC system and room characteristics in mechanically ventilater	(ad Dsn r. On d areas of	Eac 80%	Ops. Ops. Score	80%
Indicato Information source Applicable project typ Assessment method Applicable Standard Information Submittal Occupancy Negativ Acceptable practice	In mechanically-ventilated non-residential occupancies will bring ventilation air to where it is needed, i.e. to seating areas or workers or visitors. Percent of ventilation air reaching work surfaces, as indicated by an analysis of proposed HVAC system and room characteristics. Reference x, y and z Non-residential Occupancies. Review of contract documents and mechanical system by an outside mechanical engineer a b c c d e f Small Industrial An analysis of proposed HVAC system and room characteristics in mechanically ventilater the occupancy indicates that the air change effectiveness (Eac), as determined by ASHRP	(ad Dsn r. On d areas of	Eac 80%	Ops. Ops. Score -1 0	80% 80%
Indicato Information source Applicable project typ Assessment methor Applicable Standard Information Submittal Occupancy Negativ Acceptable praction Good Practici	In mechanically-ventilated non-residential occupancies will bring ventilation air to where it is needed, i.e. to seating areas or workers or visitors. Percent of ventilation air reaching work surfaces, as indicated by an analysis of proposed HVAC system and room characteristics. Non-residential Occupancies. Review of contract documents and mechanical system by an outside mechanical engineer a b c d d e f f Small Industrial An analysis of proposed HVAC system and room characteristics in mechanically ventilater the occupancy indicates that the air change effectiveness (Eac), as determined by ASHR4 -1997 or equivalent CIBSE or other standard, of :	(ad Dsn r. On d areas of	Eac 80% 89%	Ops. Ops. Score -1 0 3	80% <mark>80%</mark> 89%
Indicato Information source: Applicable project typ Assessment method Applicable Standard Information Submittal Occupancy - Negativ Acceptable practico Best Practico Docupancy - Negativ	In mechanically-ventilated non-residential occupancies will bring ventilation air to where it is needed, i.e. to seating areas or workers or visitors. Percent of ventilation air reaching work surfaces, as indicated by an analysis of proposed HVAC system and room characteristics. Reference x, y and z Non-residential Occupancies. Review of contract documents and mechanical system by an outside mechanical engineer a b c d e f f Small Industrial An analysis of proposed HVAC system and room characteristics in mechanically ventilater the occupancy indicates that the air change effectiveness (Eac), as determined by ASHRA –1997 or equivalent CIBSE or other standard, of :	(ad Dsn r. on d areas of AE 129 On	Eac 80% 89% Eac 80%	Ops. Ops. Score -1 0 3 5 Score -1	80% 80% 95% Values proposed by JMH 80%
Indicato Information source: Applicable project typ Assessment method Applicable Standard Information Submittal Occupancy - Negativ Acceptable practico Best Practico Docupancy - Negativ	In mechanically-ventilated non-residential occupancies will bring ventilation air to where it is needed, i.e. to seating areas or workers or visitors. Percent of ventilation air reaching work surfaces, as indicated by an analysis of proposed HVAC system and room characteristics. Reference x, y and z Non-residential Occupancies. Review of contract documents and mechanical system by an outside mechanical engineer a b c d d e f f Small Industrial An analysis of proposed HVAC system and room characteristics in mechanically ventilated the occupancy indicates that the air change effectiveness (Eac), as determined by ASHR/ –1997 or equivalent CIBSE or other standard, of : Office	(ad Dsn r. on d areas of AE 129 on d areas of	Eac 80% 89% 95% Eac	Ops. Ops. Score -1 0 3 5 Score	80% 80% 89% 95% Values proposed by JMH

Source o.k. with proposal o.k. with proposal

Benchmarks D for designated occupancies in BigTown, Europe			ω Ö	Small Inde Office	ustrial						
		Europe		in C	0						
New	Construction	Design Phase		Gen	eric	•					
D3	Air Tempera	ture and Relative Humidity									
D3.1	Air temperature	and relative humidity in mechanically heated occupa	incies								
	Intent	To ensure acceptable temperature and humidity control within established ranges climate zone, and to provide on-going monitoring of thermal comfort performance effectiveness of humidflication and/or dehumidflication system.			licable phaticable if greater						
	Indicator	Compliance of mechanical ventilation systems with recognized design standards ASHRAE or CIBSE.	such as	Dsn		Ops.					
	Information sources	Reference x, y and z									
	Applicable project type	All mechanically ventilated occupancies.									
	#REF!	Review of contract documents and mechanical system by an outside mechanical	enginee	r.							
		text to be revised									
	Applicable Standards										
		d									
	Information Submittals	e									
	Occupancy 1	' Small Industrial			on	Score	Values proposed by JMH	instead of	Source		
	Negative	The mechanical system design does not comply with ASHRAE 55-1992, or other CIBSE, or the variation from setpoints exceeds 5 deg. C:	similar s	tandard suc	ch as	-1	≥ 19°C				
The mechanical system design complies with ASHRAE 55-1992, or complies with other Acceptable practice as CIBSE. Temperature variation from setpoints does not exceed 3 deg. C.			other si	milar stand	ard such	0	≥ 21°C	< 3°C	RGPT		
	Good Practice as CIBSE. Temperature variation from setpoints does not exceed 2 deg. C.			milar stand	ard such	3	≥ 23°C	< 2°C	intermediate value between neighboor ones		
	Best Practice	The mechanical system design complies with ASHRAE 55-1992, or complies with as CIBSE. A permanent monitoring system provides feedback on temperature ar Temperature variation from setpoints does not exceed 1 deg. C.				5	≤ 25°C	< 1°C	smallest PPD as possible		
D3.2	Air temperature	and relative humidity in mechanically cooled occupa	ncies								
	Intent	To ensure acceptable temperature within established ranges per climate zone in naturally ventilated occupancies.			licable phaticable if gree						
	Indicator	Predicted ability of natural ventilation systems to maintain temperatures within an acceptable range, as indicated by drawings and specifications.		Dsn		Ops.					
	Information sources	ASHRAE 55-1992, Addenda 1995 or equivalent CIBSE or other recognized stand	ard.								
	Applicable project type	Total project									
	Assessment method	Review of contract documents and mechanical system by an outside mechanical natural ventilation issues.	enginee	r with speci	fic knowle	dge of					
		a									
	Applicable Standards	text to be revised									
		d									
	Information Submittals	e f									
	Total project Total Project			Score	Values proposed by JMH	instead of	Source				
	Negative	According to recognized predictive techniques, the temperature in primary occupa for more than 90% of occupied hours, within a swing range (+ or -) of 6 deg. C.	ancy area	as can NOT	Г be kept,	-1	≤ 28°C	90% in range of 6°C	ASHRAE		
	Acceptable practice	According to recognized predictive techniques, the temperature in primary occurrence	ancy area	as can be k	ept, for	0	≤ 24°C	90% in range of 4°C	RGPT		
	Good Practice	According to recognized predictive techniques, the temperature in primary occups more than 90% of occupied hours, within a swing range (+ or -) of 3 deg. C.	ancy area	as can be k	ept, for	3	≤ 22°C	90% in range of 3°C	intermediate value between neighboor ones		
	Best Practice	According to recognized predictive techniques, the temperature in primary occups more than 90% of occupied hours, within a swing range (+ or -) of 2 deg. C.	ancy area	as can be k	ept, for	5	≤ 20°C	90% in range of 2°C	smallest PPD as possible		

Benchmarks [D for designated occupancies in BigTown,	Small Inc Office 0	lustrial	Ī			
	Europe	U inc					
New Construction	Design Phase	Generic					
D3.3 Time lag and d	lecrement factor			I			
Inten	To ensure acceptable temperature within established ranges per climate zone in naturally ventilated occupancies.	Applicable ph (active if gre					
Indicator	Predicted ability of natural ventilation systems to maintain temperatures within an acceptable range, as indicated by drawings and specifications.	Dsn	Ops.				
Information sources	ASHRAE 55-1992, Addenda 1995 or equivalent CIBSE or other recognized standard.						
Applicable project type	Total project						
Assessment method	Review of contract documents and mechanical system by an outside mechanical engineer natural ventilation issues.	with specific knowle	edge of				
	a						
Applicable Standards	text to be revised			-			
	d						
Information Submittals	se						
Total project	Total Project		Score	Values proposed by JMH	instead of	Source	
Negative	According to recognized predictive techniques, the temperature in primary occupancy are for more than 90% of occupied hours, within a swing range (+ or -) of 6 deg. C.	as can NOT be kept	-1	6°C	90% in range of 6°C	o.k. with proposal and confirmed other values	
Acceptable practice	According to recognized predictive techniques, the temperature in primary occupancy area more than 90% of occupied hours, within a swing range (+ or -) of 4 deg. C.	as can be kept, for	0	4°C	90% in range of 4°C	RGPT : 20 to 24°C	
Good Practice	According to recognized predictive techniques, the temperature in primary occupancy area more than 90% of occupied hours, within a swing range (+ or -) of 3 deg. C.	as can be kept, for	3	3°C	3°C 90% in range of 3°C intermediate value between neighborr		
Best Practice	According to recognized predictive techniques, the temperature in primary occupancy area more than 90% of occupied hours, within a swing range (+ or -) of 2 deg. C.	as can be kept, for	5	2°C 90% in range of 2°C NEN 13 779			
D3.4 Air temperature	I e in naturally ventilated occupancies.						
Inten	To ansura accentable temperature within established ranges per climate zone in	Applicable ph					
intern	naturally ventilated occupancies.	(active if gre	en)				
Indicator	Predicted ability of natural ventilation systems to maintain temperatures within an acceptable range, as indicated by drawings and specifications.	Dsn	Ops.				
Information sources	ASHRAE 55-1992, Addenda 1995 or equivalent CIBSE or other recognized standard.						
Applicable project type	Total project]			
Assessment method	Review of contract documents and mechanical system by an outside mechanical engineer natural ventilation issues.	r with specific knowle	edge of				
Applicable Standards	a			-			
	c						
Information Submittals	d						
mormation oubmittais	f						
Total project	Total Project		Score	Values proposed by JMH	instead of	Source	
Negative	According to recognized predictive techniques, the temperature in primary occupancy area for more than 90% of occupied hours, within a swing range (+ or -) of 6 deg. C.	as can NOT be kept	-1	6°C	90% in range of 6°C	o.k. with proposal and confirmed other values	
Acceptable practice	According to recognized predictive techniques, the temperature in primary occupancy area more than 90% of occupied hours, within a swing range (+ or -) of 4 deg. C.	as can be kept, for	0	4°C	90% in range of 4°C	RGPT : 20 to 24°C	
Good Practice	According to recognized predictive techniques, the temperature in primary occupancy area more than 90% of occupied hours, within a swing range (+ or -) of 3 deg. C.	as can be kept, for	3	3°C	90% in range of 3°C	intermediate value between neighboor ones	
Best Practice	According to recognized predictive techniques, the temperature in primary occupancy area more than 90% of occupied hours, within a swing range (+ or -) of 2 deg. C.	as can be kept, for	5	2°C	90% in range of 2°C	NEN 13 779	

Benchma	arks I	s D for designated occupancies in BigTown, Europe						
				0				
New Construc	ction	Design Phase	Ger	neric	•			
D4 Dayligh	hting	and Illumination						
D4.1 Daylighti	ing in p	primary occupancy areas.						
	Inten	To ensure an adequate level of daylighting in all primary occupied spaces.	App (a	plicable ph ctive if gre	ases en)			
	Indicato	The predicted Daylight Factor in a typical occupancy area located on the ground floor of the building, as indicated by drawings and specifications.	Dsn		Ops.			
Informatio	on sources	s x						
Applicable pr	roject type	By separate occupancies						
Assessmer	nt method	Review of contract documents by an illumination specialist.						
		a						
Applicable	Standards	sb						
		c						
Information S	Submittals	e						
		f						
Occ	cupancy 1	Small Industrial	М	DF	Score	Values proposed by JMH	instead of	Source: littérature
	Negative			1.8%	-1	1.0%	1.6%	circulation areas
Acceptabl		The predicted Daylight Factor in a typical workspace located on the ground floor of the oc as indicated by drawings and specifications.	cupancy,	2.0%	0	2.0%	2.0%	standard workshop
	d Practice	as indicated by drawings and specifications.		2.6%	3	3.0%	2.4%	(intermediate value)
	st Practice			3.0%	5	5.0%	3.0%	for precise tasks
Occ	cupancy 2	Office	on	DF	Score	Values proposed by JMH	instead of	
	Negative			0.0%	-1	1.0%	0.0%	circulation areas
Acceptabl	le practice		cupancy,	0.0%	0	2.0%	0.0%	standard office
	st Practice			0.0%	3 5	3.0% 5.0%	0.0%	(intermediate value) drawing office
					5	0.078		diawing onice
D4.2 Glare In	non-re	sidential occupancies.						
	Inten	To ensure that glare conditions are minimized in main occupancy areas during periods of maximum exterior brightness, through the use of exterior or interior shading.		#REF!	-			
	Indicato	The predicted maximum ratio of contrast in illuminance between windows and adjacent wall areas in a typical occupancy area, as indicated by design characteristics.	Dsn		Ops.			
Informatio	on sources	Glare shall be measured by the contrast between window areas and adjacent wall are	as, as seei	n from the	nterior.			
Applicable pr	roject type	Non-residential occupancies						
Assessme	nt method	Review of contract documents by an illumination specialist.						
		a						
Applicable	Standards							
		c						
Information S	0	d -						
mormation s	Submittals							
Ocr	cupancy 1	Small Industrial	on	Ratio	Score	Values proposed by JMH	instead of	Source
000	Negative			59	-1	40	59	223/00
Acceptabl	-		all aress	50	0	20	50	"Médecine et risque du travail"
	d Practice	The predicted maximum rate of contrast in mannance between windows and adjacent w		23	3	10	23	(Ed. Elsevier, 2003)
Bes	st Practice			5	5	3	5	1
Occ	cupancy 2	Office	on	Ratio	Score	Values proposed by JMH	instead of	Source
	Negative	3		59	-1	40	59	
Acceptabl	le practice		all areas	50	0	20	50	"Médecine et risque du travail"
Good	d Practice	in a typical occupancy area, as indicated by design characteristics is :		23	3	10	23	(Ed. Elsevier, 2003)
Bes	st Practice			5	5	3	5	

				-		T
В	enchmarks [D for designated occupancies in BigTown,	sed	Small Ind	ustrial	
			Uses included	Office		
		Europe	Ē	0		
New	Construction	Design Phase	Ger	neric	-	
D4.3	Illumination lev	els and quality of lighting.				
	Intent	To ensure that lighting systems provide adequate illumination and quality levels in public and work areas; and that there is a capability to support the provision of suitable task lighting in work areas.		blicable ph ctive if gre		
	Indicator	Appropriateness of illumination levels and lighting quality to planned tasks, in Lux, as indicated by design characteristics.	Dsn		Ops.	
	Information sources	Acceptable values range from 30 to 500 Lux for normal tasks, and up to 10,000 Lux for demanding tasks.	٠	٠	٠	20 to 500, up to 2 000 lux
	Applicable project type	Non-residential Occupancies, all sizes.				
	Assessment method	Review of contract documents, especially lighting plans and specs, by an illumination spe	cialist.			
	Applicable Standards	a				
	Applicable Glariualus	с с				
		d				
	Information Submittals	e				
		f				
	Occupancy 2	Office		on	Score	
	Negative	The design indicates that illumination levels and quality of lighting will not be appropriate to the occupancy, and no provision is made for task lighting.	o planned	tasks in	-1	
	Acceptable practice	The design indicates that ambient illumination systems will provide illumination levels appr the occupancy, and provision is made for task lighting.	opriate to	tasks in	0	
	Good Practice	The design indicates that ambient illumination systems will provide illumination levels appr the occupancy, dimmable ballasts are provided, and provision is made for task lighting in e zone.	opriate to each 15 m	tasks in 2 work	3	
	Best Practice	The design indicates that ambient illumination systems will provide illumination levels appr the occupancy, dimmable ballasts are provided, and provision is made for task lighting in e zone.			5	
D5	Noise and A	coustics				
D5.1	Noise attenuati	on through the exterior envelope.				
	Intent	Ensure that noise attenuation through the wall facing the noisiest site boundary is adequate to provide interior noise levels that will not interfere with normal tasks.		blicable ph ctive if gre		
	Indicator	The predicted noise attenuation performance of the exterior wall most exposed to potential sources of noise, as indicated by design characteristics.	Dsn		Ops.	
	Information sources	http://greenbuildings.santa-monica.org/envelope/envventilation.html				
	Applicable project type	Total Project				
	Assessment method	Review of design team analysis by a noise specialist.				
		a				
	Applicable Standards b					
	c					
	d					
	Information Submittals	ef				
	Total project	Total Project		STC	Score	Values proposed by JMH
	Negative Acceptable practice			29.7	-1	26.0
			most of :	27.5	0	29.0
	Good Practice			34.1	3 5	34.0
4	Best Practice			38.5	5	41.0

Source

standard value of STC acoustic glass 2 glasses + 10 cm space between them

instead of

29.7 27.5

34.1 38.5

Benchmarks I	D for designated occupancies in BigTown, Europe	Uses included	Small Inde Office 0	ustrial			
New Construction	Design Phase	Ger	neric	•			
D5.2 Transmission of	of facility equipment noise to primary occupancies.						
Inten	To ensure that HVAC systems and equipment rooms are designed to minimize noise transmission to primary occupancies.		olicable pha ctive if gre				
Indicato	Noise Reduction Criteria ratings of mechanical equipment and equipment rooms, as indicated by design characteristics.	Dsn		Ops.			
Information sources	Reference x, y and z."						
Applicable project type	Total project						
Assessment method	Review of contract documents and mechanical system by an outside mechanical enginee	r.					
	a						
Applicable Standards							
	d						
Information Submittals	e						
	f		1				
	Total Project		NRC	Score	Values proposed by JMH	instead of	Source: Belgian acoustic standard
Negative			37.0	-1	37.0	37.0	
Acceptable practice	Poduction Criteria (NDC) of a	Noise	35.0	0	29.0	35.0	normal acoustic comfort
Good Practice Best Practice			29.0 25.0	3 5	34.0 41.0	29.0 25.0	intermediate value superior acoustic comfort
	1 · · · ·		25.0	5	41.0	23.0	superior acoustic contion
D5.3 Noise attenuat	ion between primary occupancy areas.	1					
Inten	To ensure that measures have been taken to reduce noise impacts between all tenancies and occupancy types.		olicable pha ctive if gree				
Indicato	Minimum Sound Transmission Class of partitions between primary occupancy areas, as indicated by design characteristics.	Dsn		Ops.			
Information sources	Reference x, y and z."						
Applicable project type	Total project						
Assessment method	Review of design team analysis.						
	a						
Applicable Standards	sb						
	c						
	d						
Information Submittals	5e F						
Total project	' Total Project		STC	Score	Values proposed by JMH	instead of	Source: Belgian acoustic standard
Negative	a		23.0	-1	50.0	23.0	
Acceptable practice	Design documents indicate that the Minimum Sound Transmission Class of partitions betw	veen	25.0	0	54.0	25.0	standard: normal comfort
Good Practice	and an		31.0	3	59.0	31.0	
Best Practice			35.0	5	62.0	35.0	standard: superior comfort

Benchmarks	D for designated occupancies in BigTown, Europe	Uses included	Small Inde Office 0	ustrial	T
New Construction	Design Phase	Ger	neric		
D5.4 Acoustic perfo	rmance within primary occupancy areas.				
Inter	To ensure that primary occupancies are designed to ensure a satisfactory level of acoustic performance.		blicable pha ctive if gree		
Indicato	Predicted reverberation time in seconds, as indicated by design characteristics.	Dsn		Ops.	
Information sources	Although acoustics is a complex science, only reverbation time is dealt with here.				
Applicable project type	Non-residential occupancies, all sizes				
Assessment method	Where needed, review of design team analysis by an acoustic specialist.				
	a				
Applicable Standard	sb 				
	d				
Information Submittal	se				
	f				
Occupancy	Small Industrial		on	Score	
Negative	Design documents indicate that reverberation time in primary occupancy areas will be n or less than 0.5 second.	nore than 3.5	seconds	-1	
Acceptable practice	and 0.5 second.			0	
Good Practice	i second.			3	
Best Practice	Design documents indicate that reverberation time in primary occupancy areas will be t and 1.5 second.	between 2.5 s	econds	5	
Occupancy 2			on	Score	
Negative	Design documents indicate that reverberation time in primary occupancy areas will be n or less than 0.5 second.	more than 3.5	seconds	-1	
Acceptable practice	Design documents indicate that reverberation time in primary occupancy areas will be t and 0.5 second.	between 3.5 s	econds	0	
Good Practice	Design documents indicate that reverberation time in primary occupancy areas will be to a second.	between 3 se	conds and	3	
Best Practice	Design documents indicate that reverberation time in primary occupancy areas will be t and 1.5 second.	between 2.5 s	econds	5	
D6 Control of e	lectromagnetic emissions				"magnetic" instead of "electromagnetic"
Inter	To ensure that electro-magnetic emissions are kept to a level that does not harm human health.		licable ph ctive if gre		
Indicato	ſ	Dsn		Ops.	
Information source:	The report shown below states that there is no certain standard for EMF.				
mormation source.	Environmental Health Perspectives				
Applicable project type	Total Building, all sizes.				
Assessment methor					
	text to be revised				
	a				
Applicable Standard					
	c				
Information Submittals					
	f				
Total projec	t Total Project			Score	
Negative	XXXa.			-1	
Acceptable practice	XXXs			0	
Good Practice	XXXd.			3	
Best Practice	XXXg.			5	

Benchmarks E	for designated occupancies in BigTown, Europe	ss dec	Small Indu Office 0	ustrial			
New Construction	Design Phase	Ger	Generic				
E Service Q	Service Quality						

Ben	ichmarks E	for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	ustrial	
New C	onstruction	Design Phase	Gei	neric		
	utomation fficiency	of building systems to maximize operational	•			
	#REF!	To encourage the commissioning of building systems with critical functions.		olicable pha ctive if gree		
	#REF!	The development of a commissioning plan and the range of systems to be commissioned.	Dsn	C&C.	Ops.	
	#REF!	It is strongly recommended that the architects and engineers should be involved in the commissioning process, to ensure that the design intent is respected. Costs are estimated as ranging from 0.5% to 1.5%, with specialized facilities much higher.	•	•		
٩ţ	pplicable project type	Total building where total net area is more than threshold area.	Thresho	d area, m2	10 000	Not applicable to Crealys context
	#REF!	Review of commissioning management plan.				
,	Applicable Standards	Revise text				
In	formation Submittals	ef				
	#REF!	Total project			Score	
	Negative	No commissioning plan has been developed and no commissioning activities are planned	d.		-1	
	Acceptable practice	A commissioning plan has been developed and some building systems with critical functi commissioned, including life safety systems, central HVAC systems and electrical system		be	0	
	Good Practice	A commissioning plan has been developed and all building systems with critical functions commissioned, including life safety systems, central HVAC systems, lighting, building cor systems.			3	
	Best Practice	A commissioning plan has been developed and all building systems with critical functions commissioned, including life safety systems, central HVAC systems, lighting, building cor systems and the building envelope.			5	

Benchmarks E	for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	ustrial
New Construction	Design Phase	Ger	neric	
E2 Ability to mo	odify facility technical systems.			
#REF!	To encourage the commissioning of building systems with critical functions.		blicable pha	
#REF!	The development of a commissioning plan and the range of systems to be commissioned.	Dsn	C&C.	Ops.
#REF!	It is strongly recommended that the architects and engineers should be involved in the commissioning process, to ensure that the design intent is respected. Costs are estimated as ranging from 0.5% to 1.5%, with specialized facilities much higher.	٠	•	
Applicable project type	Total building where total net area is more than threshold area.	Threshol	d area, m2	0
#REF!	Review of commissioning management plan.			
Applicable Standards				
#REF!	f Total project			Score
	No commissioning plan has been developed and no commissioning activities are planned	1.		-1
Acceptable practice	A commissioning plan has been developed and some building systems with critical function commissioned, including life safety systems, central HVAC systems and electrical system		be	0
Good Practice	A commissioning plan has been developed and all building systems with critical functions commissioned, including life safety systems, central HVAC systems, lighting, building cor systems.			3
Best Practice	A commissioning plan has been developed and all building systems with critical functions commissioned, including life safety systems, central HVAC systems, lighting, building cor systems and the building envelope.			5

Benchmarks E	E for designated occupancies in BigTown, Europe	Uses included	Small Indu Office	ustrial	
New Construction	Design Phase		o neric		
E3 Commissior	ning of facility systems				
Intent	To encourage the commissioning of building systems with critical functions.		licable pha ctive if gree		
Indicator	The development of a commissioning plan and the range of systems to be commissioned.	Dsn	C&C.	Ops.	
Information sources	It is strongly recommended that the architects and engineers should be involved in the commissioning process, to ensure that the design intent is respected. Costs are estimated as ranging from 0.5% to 1.5%, with specialized facilities much higher.	•	•		
Applicable project type	Total building where total net area is more than threshold area.	Threshold	d area, m2	10 000	Not applicable to Crealys context
#REF!	Review of commissioning management plan.				
Applicable Standards	a b c d				
Information Submittals					
#REF!	f Total project			Score	
Negative	No commissioning plan has been developed and no commissioning activities are planned	ł.		-1	
Acceptable practice	A commissioning plan has been developed and some building systems with critical functi commissioned, including life safety systems, central HVAC systems and electrical system		be	0	
Good Practice	A commissioning plan has been developed and all building systems with critical functions commissioned, including life safety systems, central HVAC systems, lighting, building cor systems.			3	
Best Practice	A commissioning plan has been developed and all building systems with critical functions commissioned, including life safety systems, central HVAC systems, lighting, building cor systems and the building envelope.			5	

В	enchmarks E	for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	ustrial
New	Construction	Design Phase	Ger	neric	•
E4	Maintenance	e of Operating Performance			
E4.1	Maintenance of	f building envelope performance.			
	Intent	To ensure that detailed design minimizes the risk of moisture accumulating in the building envelope, where it is likely to shortn the lifespan of building elements, especially if constructed of wood in areas where temperatures can fall to below 0 deg.C.		licable pha ctive if gree	
	Indicator	In areas where applicable, the existence of a report that describes and details the measures taken to ensure long-term integrity of the building envelope.	Dsn		Ops.
	Information sources	0			
	Applicable project type	Any occupancy type where winter design temperatures fall below 0 deg. C.			
	Assessment method	Review of contract documents and engineering analysis of performance during winter cor	iditions.		
		a			
	Applicable Standards				
		c d			
	Information Submittals	e			
		f			
	#REF!	Total Project			Score
	Negative	Envelope detailing and construction does not follow industry good practice.			-1
	Acceptable practice	Envelope detailing and construction follows industry good practice.			0
	Good Practice	Envelope detailing and construction follows best practices, and at least one air-depressur out.	ization test	t is carried	3
	Best Practice	Envelope detailing and construction follows best practices, and air-depressurization tests before and after interior finishes are applied.	are carried	d out	5

Benchmarks E	for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	ustrial	
New Construction	Design Phase	Ger	neric		
E4.2 Development a	nd implementation of a maintenance management plan.				
Intent	To ensure the availability and implementation of a plan for the long-term maintenance and efficient operation of the facility.		olicable pha ctive if gree		
Indicator	The availability of a comprehensive and long-term plan at the end of Design phase, and evidence of its implementation during Operations phase.	Dsn		Ops.	
Information sources	0				
Applicable project type	Total project, where gross area exceeds threshold area.	Threshol	d area, m2	10 000	Not applicable to Crealys context
#REF!	Review of operations and maintenance management plan.				
Applicable Standards	c				
Information Submittals	e				
#REF!	f Total Project			Score	
	No explicit plan exists for future maintenance and efficient operation of the facility.			-1	
Acceptable practice	An explicit plan exists for future maintenance and efficient operation of the facility, but it is and is not long term.	s not comp	rehensive	0	
Good Practice	An explicit plan exists for future maintenance and efficient operation of the facility, coverin systems, and providing performance targets, system maintenance and replacement guida 10-year period.			3	
Best Practice	An explicit plan exists for future maintenance and efficient operation of the facility, coverin systems, and providing performance targets, system maintenance and replacement guida period.			5	

Benchmarks E	Benchmarks E for designated occupancies in BigTown,						
New Construction	Design Phase Generic						
E4.3 On-going moni	toring and verification of performance.						
Intent	To ensure the ongoing optimization of building energy and water consumption Applicable phase (Active if green)						
Indicator	The provision of energy sub-metering systems and water consumption monitoring systems, according to design documentation.	Dsn		Ops.			
Information sources	0						
Applicable project type	0						
Assessment method	Review of contract documentation, with special emphasis on the capability of the computerized building management system to manage the gathering and analysis of data from many dispersed locations.						
Applicable Standards	a b c						
Information Submittals	d e f						
#REF!	Total Project			Score			
Negative	According to design documentation, no sub-metering of energy use will be provided for m	ajor occup	ancies.	-1			
Acceptable practice	According to design documentation, an energy submetering system is provided for a few	major occu	pancies.	0			
Good Practice	According to design documentation, an energy and water submetering system will be pro occupancy, occasional air quality tests will be carried out, and a reporting system will be		ne	3			
Best Practice	According to design documentation an energy and water submetering system linked to a management system will be provided for the occupancy, regular air quality tests will be ca reporting system will be provided.		and a	5			

Benchmarks E	Benchmarks E for designated occupancies in BigTown, Europe									
New Construction	New Construction Design Phase									
E4.4 Retention of as-built drawings and documentation.										
Ensure that as-built architectural, mechanical and electrical drawings, and Intent equipment manuals are available to operating staff and owners, so that they will be able to operate the building efficiently.										
Indicator	Indicator The scope and quality of design documentation retained for use by building operators, according to design documentation.									
Information sources	0									
Applicable project type	0									
Applicable Standards	a b c									
Information Submittals	d e f									
#REF!	Total Project			Score						
Negative	Operations and maintenance manuals have not been provided, or are deficient. operation do not provide for recording, reporting and documentation protocol for will be inconsistent with the size and complexity of the building.		nce, or it	-1						
Acceptable practice	A full set of systems manuals and complete as-built drawings will be been provic partial recording, reporting and documentation protocol for maintenance, but sor inconsistent with the size and complexity of the building.		e will be a	0						
Good Practice	A full set of operations and maintenance documentation, including a full set of sy complete as-built drawings and an operations and maintenance guide will be pro		anuals,	3						
Best Practice	A full set of operations and maintenance documentation, including a full set of sy complete as-built drawings and an operations and maintenance guide will be pro copy and electronic forms.			5						

Benchmarks E	Uses included	Small Inde Office 0	ustrial					
New Construction	Design Phase	Ger	neric					
E4.5 Provision and maintenance of a building log.								
Intent	Assess whether operating events, such as significant events, occupancy density, operating schedule, energy and water consumption, renovations and equipment changes, etc., are all recorded in a building log for future analysis and reference.		blicable pha ctive if gre					
Indicator	The maintenance of a building log, of varying degrees of comprehensiveness.	Dsn		Ops.				
Information sources	0							
Applicable project type	0							
Applicable Standards	a b c							
Information Submittals	d e f							
#REF!	Total Project			Score				
Negative	A building log is not maintained, or it is only sporadically maintained.			-1				
Acceptable practice	A building log is continuously maintained, but only a few key parameters are cov energy and water consumption.	ered, suc	h as	0				
Good Practice	Good Practice A building log is continuously maintained, and contents include all key operating parameters, as well as most relevant supporting data.							
Best Practice	A building log is continuously maintained, and contents include all key operating well as most relevant supporting data. The log is maintained in a software form operating data from the BMS system.			5				

Benchmarks E	for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	ustrial					
New Construction	Design Phase	Ger	neric						
E4.6 Skills and know	E4.6 Skills and knowledge of operating staff.								
Intent	To increase the probability that tenants and occupants will operate building systems under their control in an efficient manner. This probability will be increased if incentives are built into sales or lease agreements.								
Indicator	Indicator The presence of sales agreements or leases that will incent owners or tenants to operate the facilities efficiently.								
Information sources	0								
Applicable project type	All occupancies								
Assessment method	ient method Review of proposed lease agreements to ascertain incentives and disincentives for efficient day-to-day management.								
Applicable Standards	a b c								
Information Submittals	d								
	f								
#REF!	Total Project			Score					
Negative	Sales agreements or leases will contain no information relating to efficient building operat cooling and power costs are paid by the building owner.	ions and h	eating,	-1					
Acceptable practice	Planned leases will require tenants to pay directly for heating, cooling and electric power	usage.		0					
Good Practice	Planned leases will require tenants to pay directly for heating, cooling and electric power or information is provided about performance requirements and recommended practices.	usage and		3					
Best Practice	Planned leases will require tenants to pay directly for heating, cooling and electric power or provided about performance requirements and recommended practices and performance provided.			5					

Benchmarks F for designated occupancies in BigTown,						
New Co	onstruction					
F S	ocial and					
F1 Sc	ocial Aspe	cts				rejected in Glasgow, because considered as mandatory
F1.1 Mi	nimization of	construction accidents.				
	Intent	ases en)				
	Indicator	Target rate for accidents on the jobsite requiring hospitalization per 100,000 hours worked.		Ops.		
h	nformation sources	0				
Арр	olicable project type	0				
A	ssessment method	Review of construction management plans by specialist in construction safety.				
		a				
Ap	oplicable Standards	b				
		d				
Info	ormation Submittals					
-		f				
	Total project					
	Negative			0.60	-1	
ŀ	Acceptable practice	Target rate for accidents on the jobsite requiring hospitalization per 100,000 hours worker				
	Good Practice					
	Best Practice			0.00	5	

Benchmarks F	⁻ for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	ustrial
New Construction	Design Phase	Ger	neric	
F1.2 Access for phy	sically handicapped persons.			
Intent	To assess the relative ease of access and use of facilities for persons with physical handicaps.		licable pha ctive if gre	
Indicator	The scope and quality of design measures planned to facilitate access and use of building facilities by handicapped persons.	Dsn		Ops.
Information sources	0			
Applicable project type	By separate occupancies			
Assessment method	Review of construction documents by a specialist in universal access design.			
Applicable Standards	a b c c			
	d			
Information Submittals	e			
Occupancy 1	f Small Industrial		On	Score
	Design documentation indicates that not all key facilities in the occupancy, including entry washrooms and vertical circulation systems, are accessible to wheelchair users and visua persons.			-1
Acceptable practice	Design documentation indicates that all key facilities in the occupancy, including entry poi and vertical circulation systems, are accessible to wheelchair users and visually impaired		rooms	0
Good Practice	Design documentation indicates that all key facilities in the occupancy, including entry poi vertical circulation systems and support facilities, are accessible to wheelchair users and persons.			3
Best Practice	Same as Good Practice.			5
Occupancy 2	Office		on	Score
Negative	Design documentation indicates that not all key facilities in the occupancy, including entry washrooms and vertical circulation systems, are accessible to wheelchair users and visua persons.		ed	-1
Acceptable practice	Design documentation indicates that all key facilities in the occupancy, including entry poi and vertical circulation systems, are accessible to wheelchair users and visually impaired		rooms	0
Good Practice	Design documentation indicates that all key facilities in the occupancy, including entry poi vertical circulation systems and support facilities, are accessible to wheelchair users and persons.			3
	Same as Good Practice.			5

Benchmarks F	F for designated occupancies in BigTown, Europe		Small Ind Office 0	ustrial			
New Construction	Design Phase		neric				
F1.3 Access to view	s from work areas.			1			
Intent	To assess the extent to which the distance from a workstation to the exterior and the interior organization of the space does not limit visual access to exterior views.	Applicable phases (Active if green)					
Indicator	Distance of the most remote workstation in a typical primary occupancy from exterior windows; and the extent to which interior organization provides exterior views.	Dsn		Ops.			
Information sources	0						
Applicable project type	For non-residential occupancies, all sizes.						
#REF!	Review of analysis prepared by the design team.						
	a						
Applicable Standards							
	d						
Information Submittals	e						
	f						
Occupancy 1	Small Industrial	on	m.	Score	Values proposed by JMH	instead of	Source
Negative			11	-1		11	
Acceptable practice	The maximum detailed nem are meet to meter to detail in a typical primary occupan	cy to	10	0		10	
Good Practice	exterior windows is :		6	3		6	
Best Practice	2		4	5		4	
Occupancy 2	Office	On	m.	Score	Values proposed by JMH	instead of	Source
Negative			11	-1		11	
Acceptable practice		cy to	10	0		10	
Good Practice Best Practice			6 4	3 5		6	
	primary building function			Ū	rejected in Glasgow	-	1
Intent	To assess the extent to which the primary occupancy function of the project satisfies basic societal needs.		Applicable phases (Active if green)			_	
Indicator	The degree of social relevance of the primary occupancy.	Dsn		Ops.			
Information sources	0						
Applicable project type	All occupancies	•	•				
Assessment method	Review of planned primary occupancy type by expert panel that includes a sociologist a	nd an ecor	nomist.				
Applicable Standards	ab						
	с						
Information Submittals	d e						
Total project	f Total Project			Score			
Negative	The planned primary occupancy serves a function that will work against regiona	l social va	alues or	-1			
Acceptable practice	The planned primary occupancy serves a function that is not likely to have eithe	r a negati	ve or	0			
Good Practice	The planned primary occupancy serves a function that is likely to have a positiv	e impact o	on	3			
Best Practice	The planned primary occupancy serves a function that is likely to have a very poregional social values or stability.	ositive imp	oact on	5			

Benchmarks F for d		^F for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	ustrial																	
New	Construction	Design Phase	Gei	neric																		
F2	Cost and Ec	onomics																				
F2.1	Minimization of	life-cycle cost.																				
	Intent	Intent To assess the level of total Life Cycle Cost of the project (Active if green)																				
	Indicator	Predicted Life Cycle Cost over a 25-year period, with calculations carried out in accordance with recognized procedures.	Dsn		Ops.																	
	Information sources	0																				
	Applicable project type	0																				
	Assessment method	Review of LCC analysis by a qualified cost consultant.																				
		a																				
	Applicable Standards																					
		d																				
	Information Submittals	e																				
		f																				
	Occupancy 1	Small Industrial	on	EUR per m2	Score	Values proposed by JMH	instead of	Source														
	Negative			9 880	-1		9 880															
	Acceptable practice Good Practice	The maximum distance from the most remote work location in a typical primary occupan exterior windows is :	cy to	9 500 8 360	0		9 500 8 360															
	Best Practice			7 600	5		7 600															
	Occupancy 2	Office	on	EUR per	Score	Values proposed by JMH	instead of	Source														
	Negative	Unice	UII	m2 12 840	-1	values proposed by sivil 1		Source														
		The maximum distance from the most remote work location in a typical primary occupan		12 040	-1		12 840 12 000															
	Good Practice	exterior windows is :	cy lo	9 480	3		9 480															
	Best Practice			7 800	5		7 800															
F2.2	Minimization of	construction cost.																				
	Intent	To assess the difference between the capital cost of the Design with that of a reference building designed according to standards of Acceptable Practice.		Applicable phases (Active if green)						Applicable phases (Active if green)												
	Indicator	Predicted construction cost per unit area, according to design documentation.	Dsn		Ops.																	
	Information sources	0																				
	Applicable project type	For individual occupancies, all sizes																				
	Assessment method	Review of cost analysis by a qualified cost consultant.																				
		a																				
	Applicable Standards	ь -																				
	Information Submittals																					
		f																				
	Occupancy 1	Small Industrial	on	EUR/m2	Score	Values proposed by JMH	instead of	Source														
	Negative			2 100	-1		2 100	BEP : ?														
		The maximum distance from the most remote work location in a typical primary occupan	cy to	2 000	0		2 000	BEP : ?														
	Good Practice	exterior windows is :	-	1 700	3		1 700	BEP : ?														
	Best Practice			1 500	5		1 500	BEP : ?														
	Occupancy 2	Office	on	EUR per m2	Score	Values proposed by JMH	instead of	Source														
	Negative			1 120	-1		1 120	BEP : ?														
		The maximum distance from the most remote work location in a typical primary occupan	cy to	1 100	0		1 100	BEP : ?														
	Good Practice	exterior windows is :		1 040	3		1 040	BEP:?														
	Best Practice	1		1 000	5		1 000	BEP : ?														

Benchmarks F	, pe	Small Industrial					
Denominarias r	Uses clude	Office	Office				
	Europe						
New Construction	Design Phase	Ger	neric	-			

				Small Ind	ustrial	1		
Benc	hmarks F	F for designated occupancies in BigTown,		Office	ustriai			
		Europe	Uses included	0				
				-				
New Con	nstruction	Design Phase	Gei	neric				
F2.3 Mini	imization of	operating and maintenance cost.						
	Intent	To assess the difference between the operating cost of the Design with that of a reference building designed according to standards of Acceptable Practice.		plicable pha active if gre				
	Indicator	Operating cost per unit area for energy, water & maintenance, according to design documentation.	Dsn		Ops.			
Inf	formation sources	The operating cost of a high-performance building should be substantially less than Acceptable Practice, primarily because of reduced energy, water and equipment maintenance costs.						
Applie	icable project type	For individual occupancies, all sizes			1			
Ass	sessment method	Review of operating cost projections by a cost consultant and a person knowledgable in	building o	perations.				
Арр	blicable Standards	ab						
		c						
Inform	mation Submittals	e						
		f						
	Occupancy 1	Small Industrial	on	EUR per m2	Score	Values proposed by JMH	instead of	f Source
	Negative			17	-1		17	BEP : ?
Ac	cceptable practice	The maximum distance from the most remote work location in a typical primary occupant	cy to	15	0		15	BEP : ?
	Good Practice	exterior windows is :		11	3		11	BEP : ?
	Best Practice			8	5		8	BEP : ?
	Occupancy 2	Office	on	EUR per m2	Score	Values proposed by JMH	instead of	f Source
	Negative			6	-1		6	BEP : ?
Ac		The maximum distance from the most remote work location in a typical primary occupant exterior windows is :	cy to	5	0		5	BEP:?
	Good Practice Best Practice			3	3 5		3	BEP:? BEP:?
				2	5		2	DEP : ?
F2.5 Sup	oport of Loca	al Economy.						
	Intent	To encourage the purchase of a significant level of construction goods and services within the economic region.		plicable pha ctive if gre		based on cost, construction , labour %		
	Indicator	Prediction of the percentage of construction expenditures for goods and services going to firms with permanent offices in the urban region.	Dsn		Ops.			
Inf	formation sources	0						
Applic	icable project type	For Total Project, all sizes.						
	#REF!	Review of expendture program and sample analysis of material billing to verify costs.						
		a						
Арр	blicable Standards	b						
		c						
		d						
Inform	mation Submittals	e 						
	Total project	Total Project		Percent	Score	Values proposed by JMH	instead of	f Source
	Negative			44%	-1		44%	BEP:?
Ar	cceptable practice	The maximum distance from the most remote work location in a typical primary occupant		50%	0		50%	BEP:?
710		The maximum distance from the most remote work location in a typical primary occupant	<i>:y</i> to	5070	-		0070	
710	Good Practice		cy to	68%	3		68%	BEP : ?

В	enchmarks E	Uses included	Small Indu Office	ustrial								
New	Construction	Ger	o neric									
в	Energy ar											
B1	Total Life Cy											
B1.1	B1.1 Annualized non-renewable primary energy embodied in construction materials.											
	Intent	To minimize the embodied primary energy used in the building, annualized over the estimated lifespan of the building.		licable pha ctive if gree								
	Indicator		Dsn	Ops.								
	Information sources	Note that minimization of embodied energy may not always be optimal. For example, the greater embodied energy associated with high thermal mass will, in most cases, reduce operating energy, and the total net lifecycle energy could then be reduced.		٠	•							
	Applicable project type	All occupancies	Assumed	lifespan in years	50							
	Assessment method	Use an embodied energy estimating system, based on LCA (Life Cycle Assessment). Altrestimating method provided in this system.	ernatively,	use the cru	de							
	Applicable Standards	6 6										
	Information Submittals	d e r										
	Occupancy 1	f Small Industrial	GJ/m2	MJ/m2 per yr.	Score	Data to be received from Italian team						
	Negative		8.6	172	-1							
	Acceptable practice	The predicted embodied energy for materials used in the structure and building envelope, as determined an acceptable LCA-based estimating method :	8.0	160	0							
	Good Practice Best Practice	-	6.2 5.0	124 100	3 5							
	Occupancy 2		GJ/m2	MJ/m2 per yr.	Score	Data to be received from Italian team						
	Negative		12.6	252	-1							
		The predicted embodied energy for materials used in the structure and building envelope, as determined an acceptable LCA-based estimating method :	12.0	240	0							
	Good Practice	, , ,	10.2	204	3							
	Best Practice		9.0	180	5							

Benchmarks	B for designated o Europe	occupancies in BigTown,	Uses	Small Industrial Office				
New Construction		Design Phase	Gen	º eric				
B1.2 Annual non-renewable primary energy used for facility heating								
Inte		enewable energy (not including on-site renewable g operations, commensurate with functional needs.		licable pha ctive if gree				
Indica	or MJ of delivered energy per m2 of by means of an acceptable method	net area, including fuel and electrical use, as predicted of or tool.		Dsn	Ops.			
Information sourc	es See IEA.org for data and case st	idies.	٠	٠	٠			
Applicable project ty	Pe Any occupancy except for Open	Space			м			
Assessment meth	be used. Benchmarks for Ops sh od occupancy of at least one year. N	ening tool may be used, but in later stages an hour-by- ould be derived from operational data for the relevant o tot that benchmarks should be set using Delivered ene lies a conversion factor to these values to convert them	ccupancy ty rgy data, sir	pes, after a	a period of what is			
Applicable Standar	a ds b							
	c d							
Information Submitte	lls e							
Occupancy	f 1 Small Industrial		Elec. MJ/m2 per yr	Total MJ/m2 per yr	Score	Values proposed by JMH	instead of	Source
Negati	ve		540	1460	-1		1 460	
Acceptable practi Good Practi		nergy per m2 of net area used for operations, as able method or tool.	500 380	1300 820	0		1 300 820	
Best Practi			300	500	5	144 MJ/m2	500	IBGE 40 kWh/m2 = 144 MJ/m2
Occupancy	2 Office		Elec. MJ/m2 per yr	MJ/m2 per yr.	Score	Values proposed by JMH	instead of	Source
Negati Acceptable practi			320 300	375 350	-1 0		375 350	
Good Practi	predicted by means of an essent	nergy per m2 of net area used for operations, as able method or tool.	240	275	3		275	
Best Practi	ce		200	225	5	54 MJ/m2	225	IBGE 15 kWh/m2 = 54 MJ/m2
B1.3 Annual non-re	enewable primary energ	y used for facility cooling						
	To minimize the emount of non-	nouchia anarra (not including an aita ranguahia	400	licable pha				
Inte	energy) used annually for building	newable energy (not including on-site renewable g operations, commensurate with functional needs. net area, including fuel and electrical use, as predicted		ctive if gree				
Indica	by means of an acceptable method	od or tool.		Dsn	Ops.			
Information source	es See IEA.org for data and case st	idies.	•	•	•			
Applicable project ty	pe Any occupancy except for Open	Space						
Assessment meth	be used. Benchmarks for Ops sh od occupancy of at least one year. N	ening tool may be used, but in later stages an hour-by- ould be derived from operational data for the relevant o tot that benchmarks should be set using Delivered ene lies a conversion factor to these values to convert them	ccupancy ty rgy data, sir	pes, after a	a period of what is			
Applicable Standar	ds b	Revise text						
	с	Revise lext						
Information Submitta	d							
information outprinte	f							
Occupancy	1 Small Industrial		Elec. MJ/m2 per yr	Total MJ/m2 per yr	Score	Values proposed by JMH	instead of	Source
Negati Acceptable practi			540 500	1460 1300	-1 0		1 460 1 300	
Good Practi	Ce predicted by means of an accept	nergy per m2 of net area used for operations, as able method or tool.	380	820	3		820	
Best Practi	ce		300	500	5	152 MJ:m2	500	IBGE 45 kWh/m2 = 152 MJ/m2
Occupancy			Elec. MJ/m2 per yr	MJ/m2 per yr.	Score	Values proposed by JMH	instead of	Source
Negati Acceptable practi		nergy per m2 of net area used for operations, as	320 300	375 350	-1 0		375 350	
Good Practi		able method or tool.	240	275	3		275	
Best Practi	ce		200	225	5	152 MJ:m2	225	IBGE 45 kWh/m2 = 152 MJ/m2

Benchmarks B for designated occupancies in BigTown, Europe		Uses included	Small Ind Office 0	ustrial				
New Construction	Design Phase		Gen	eric				
B1.4 Annual non-	enewable primary energy used for lighting and equipment							
Ir		To minimize the amount of non-renewable energy (not including on-site renewable energy) used annually for building operations, commensurate with functional needs. (Active if green)						
India	tor by means of an acceptable method or tool.	edicted		Dsn	Ops.			
Information sou	ses See IEA.org for data and case studies.		٠	٠	٠			
Applicable project	VPE Any occupancy except for Open Space				М			
Assessment me	During early design stages a screening tool may be used, but in later stages an h be used. Benchmarks for Ops should be derived from operational data for the rei odoccupancy of at least one year. Note that benchmarks should be set using Delive commonly available. SBTool applies a conversion factor to these values to conver Results.	levant oc red ener	ccupancy ty rgy data, sir	pes, after a	a period of what is			
Applicable Stand	Revise text	_						
	d	-						
Information Subm	f	-						
Occupan	y 1 Small Industrial		Elec. MJ/m2 per yr	Total MJ/m2 per yr	Score	Values proposed by JMH	instead of	Source
Neg			540	1460	-1		1 460	
Good Pra	^{lice} MJ of delivered non-renewable energy per m2 of net area used for operations, as lice predicted by means of an acceptable method or tool.	5	500 380	1300 820	0		1 300 820	
Best Pra	ice		300	500	5		500	IBGE 2 W/m2*1600h/an*3.6/1000=11.5 MJ/m2
	y 2 Office		Elec. MJ/m2 per yr	MJ/m2 per yr.	Score	Values proposed by JMH	instead of	Source
Neg Acceptable pra			320 300	375 350	-1 0		375 350	
Good Pra	and dealed by many of an appointed or the line and about the operations, de	5	240	275	3		275	
Best Pra	ice		200	225	5		225	IBGE 2 W/m2*1600h/an*3.6/1000=11.5 MJ/m2
B2 Electrical	peak demand for facility operations							
Ir	ent To minimize the peak monthly electrical demand for building operations, especial where the grid is near peak capacity.	ly		licable pha ctive if gree				
India	Average of peak monthly electrical demand for one year, W/m2, as predicted by n of an acceptable method or tool.	means		Dsn	Ops.			
Information sou	ces References x, y and z							
Applicable project	vpe Any occupancy except open space							
Assessment me	nod Review of contract documentation and sample equipment specifications by an ou	iside elec	ctrical engir	ieer.				
Applicable Stand	a rdsb							
	c							
Information Subm	ials							
Occupan	f y 1 Small Industrial		on	W/m2	Score	Values proposed by JMH	instead of	Source
Neg			011	6	-1	6	6	o.k. with proposal
Acceptable pra	tice The peak monthly electrical demand for the occupancy, as predicted by means of	f an acce	eptable	5	0	5	5	o.k. with proposal
Good Pra				3	3	3	3	o.k. with proposal
Best Pra			07	2	5	2	2	o.k. with proposal
Occupan	y 2 Office		on	W/m2	Score -1	Values proposed by JMH	instead of	Source BEP:?
Acceptable pra		f an acce	eptable	5	0		0	BEP : ?
Good Pra				0	3		0	BEP:?
Best Pra	lice				5			BEP:?

B	enchmarks E	3 for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	ustrial			
New	Construction	Design Phase	Ger	eric				
В3	Renewable I	Energy						
B3.1	Use of off-site	energy that is generated from renewable sources.						
	Intent	To encourage the use of sources that generate power by renewable energy means, e.g. 'green power'.		licable pha ctive if gree				
	Indicator	Percent of annual purchased electricity consumption for the Total Building that is planned to be obtained from sources that generate power by means of renewable energy.		Dsn	Ops.			
	Information sources	NABERS (Australian system) defines Acceptable Practice as 20% and Best Practice as 100%, whereas HK-BEAM equivalents are 4% and 20% and BREEAM specifies a threshold of 10%.	pe	e from grid, r Emission worksheet	0.0%			
	Applicable project type	Any occupancy where renewable sources are available.						
	Assessment method	Review of contract documentation and sample equipment specifications by an ouside ele	ctrical engir	ieer.				
	Applicable Standardsb							
		c						
	d Information Submittalse							
		f						
	Total project	Total project		Percent	Score	Values proposed by JMH	instead of	Source
	Negative	The percent of annual purchased electricity consumption planned to be obtained from sourc		0%	-1	0%	0%	o.k. with proposal
	Acceptable practice	The percent of annual purchased electricity consumption planned to be obtained from sol	urces that	0%	0	0%	0%	o.k. with proposal
	Acceptable practice Good Practice	The percent of annual purchased electricity consumption planned to be obtained from sou generate power by means of renewable energy :	urces that	0% 30%	0 3	<mark>0%</mark> 30%	<mark>0%</mark> 30%	o.k. with proposal o.k. with proposal
		The percent of annual purchased electricity consumption planned to be obtained from sol	urces that					
B3.2	Good Practice Best Practice	The percent of annual purchased electricity consumption planned to be obtained from sol	urces that	30%	3	30%	30%	o.k. with proposal
B3.2	Good Practice Best Practice	site renewable energy systems.	Арр	30%	3 5 ses	30%	30%	o.k. with proposal
B3.2	Good Practice Best Practice Provision of on	site renewable energy systems.	Арр	30% 50%	3 5 ses	30%	30%	o.k. with proposal
B3.2	Good Practice Best Practice Provision of on Intent Indicator	-site renewable energy systems. To encourage the use of on-site renewable energy systems. The amount of energy intended to be contributed by renewable energy systems, in	Арр	30% 50%	3 5 ses m)	30%	30%	o.k. with proposal
B3.2	Good Practice Best Practice Provision of on Intent Indicator	-site renewable energy systems. To encourage the use of on-site renewable energy systems. The amount of energy intended to be contributed by renewable energy systems, in MJ/m2 per year, not including daylighting or Ground Source Heat Pumps (GSHP). We suggest a higher level for Residential and Schools than for Office, because of possibility of using renewable sources for pre-heating Hot Water. E-Benchmark	Арр	30% 50%	3 5 ses m)	30%	30%	o.k. with proposal
B3.2	Good Practice Best Practice Provision of on Intent Indicator		App (A	30% 50% licable pha tive if grees Dsn	3 5 ses m) Ops.	30% 50%	30%	o.k. with proposal
B3.2	Good Practice Best Practice Provision of on Intent Indicator	- Site renewable energy systems. To encourage the use of on-site renewable energy systems. To encourage the use of on-site renewable energy systems. The amount of energy intended to be contributed by renewable energy systems, in MJ/m2 per year, not including daylighting or Ground Source Heat Pumps (GSHP). We suggest a higher level for Residential and Schools than for Office, because of possibility of using renewable sources for pre-heating Hot Water. E-Benchmark suggests a minimum of 10% and LEED ranges from 5% to 20%. Any occupancy except Enclosed Parking and Open Space.	App (A	30% 50% licable pha tive if grees Dsn	3 5 ses m) Ops.	30% 50%	30%	o.k. with proposal
B3.2	Good Practice Best Practice Provision of on Intent Indicator	-site renewable energy systems. To encourage the use of on-site renewable energy systems. The amount of energy intended to be contributed by renewable energy systems, in MJ/m2 per year, not including daylighting or Ground Source Heat Pumps (GSHP). We suggest a higher level for Residential and Schools than for Office, because of possibility of using renewable sources for pre-heating Hot Water. E-Benchmark suggests a minimum of 10% and LEED ranges from 5% to 20%. Any occupancy except Enclosed Parking and Open Space. Review of contract documentation and sample equipment specifications by an ouside ele expertise. a	App (A	30% 50% licable pha tive if grees Dsn	3 5 ses m) Ops.	30% 50%	30%	o.k. with proposal
B3.2	Good Practice Best Practice Provision of on Intent Indicator Information sources Applicable project type Assessment method	-site renewable energy systems. To encourage the use of on-site renewable energy systems. The amount of energy intended to be contributed by renewable energy systems, in MJ/m2 per year, not including daylighting or Ground Source Heat Pumps (GSHP). We suggest a higher level for Residential and Schools than for Office, because of possibility of using renewable sources for pre-heating Hot Water. E-Benchmark suggests a minimum of 10% and LEED ranges from 5% to 20%. Any occupancy except Enclosed Parking and Open Space. Review of contract documentation and sample equipment specifications by an ouside ele expertise. a	App (A	30% 50% licable pha tive if grees Dsn	3 5 ses m) Ops.	30% 50%	30%	o.k. with proposal
B3.2	Good Practice Best Practice Provision of on Intent Indicator Information sources Applicable project type Assessment method Applicable Standards	Site renewable energy systems. To encourage the use of on-site renewable energy systems. To encourage the use of on-site renewable energy systems. The amount of energy intended to be contributed by renewable energy systems, in MJ/m2 per year, not including daylighting or Ground Source Heat Pumps (GSHP). We suggest a higher level for Residential and Schools than for Office, because of possibility of using renewable sources for pre-heating Hot Water. E-Benchmark suggests a minimum of 10% and LEED ranges from 5% to 20%. Any occupancy except Enclosed Parking and Open Space. Review of contract documentation and sample equipment specifications by an ouside ele expertise. a b c d	App (A	30% 50% licable pha tive if grees Dsn	3 5 ses m) Ops.	30% 50%	30%	o.k. with proposal
B3.2	Good Practice Best Practice Provision of on Intent Indicator Information sources Applicable project type Assessment method	Site renewable energy systems. To encourage the use of on-site renewable energy systems. To encourage the use of on-site renewable energy systems. The amount of energy intended to be contributed by renewable energy systems, in MJ/m2 per year, not including daylighting or Ground Source Heat Pumps (GSHP). We suggest a higher level for Residential and Schools than for Office, because of possibility of using renewable sources for pre-heating Hot Water. E-Benchmark suggests a minimum of 10% and LEED ranges from 5% to 20%. Any occupancy except Enclosed Parking and Open Space. Review of contract documentation and sample equipment specifications by an ouside ele expertise. a b c d	App (A	30% 50% licable pha tive if grees Dsn	3 5 ses m) Ops.	30% 50%	30%	o.k. with proposal
B3.2	Good Practice Best Practice Provision of on Intent Indicator Information sources Applicable project type Assessment method Applicable Standards	To encourage the use of on-site renewable energy : Site renewable energy systems. To encourage the use of on-site renewable energy systems. The amount of energy intended to be contributed by renewable energy systems, in MJ/m2 per year, not including daylighting or Ground Source Heat Pumps (GSHP). We suggest a higher level for Residential and Schools than for Office, because of possibility of using renewable sources for pre-heating Hot Water. E-Benchmark suggests a minimum of 10% and LEED ranges from 5% to 20%. Any occupancy except Enclosed Parking and Open Space. Review of contract documentation and sample equipment specifications by an ouside ele expertise. a b c t t t t t t t t t t t t t t t t t t	App (A	30% 50% Iicable pha ctive if greee Dsn ever with research of the second	3 5 ses m) Ops.	30% 50%	30% 50%	o.k. with proposal
B3.2	Good Practice Best Practice Provision of on Intent Indicator Information sources Applicable project type Assessment method Applicable Standards Information Submittals Occupancy 1	Site renewable energy systems. To encourage the use of on-site renewable energy systems. To encourage the use of on-site renewable energy systems. The amount of energy intended to be contributed by renewable energy systems, in MJ/m2 per year, not including daylighting or Ground Source Heat Pumps (GSHP). We suggest a higher level for Residential and Schools than for Office, because of possibility of using renewable sources for pre-heating Hot Water. E-Benchmark suggests a minimum of 10% and LEED ranges from 5% to 20%. Any occupancy except Enclosed Parking and Open Space. Review of contract documentation and sample equipment specifications by an ouside ele expertise. a b c d	App (A	30% 50% Iicable pha tive if gree Dsn Sn Sn Sn Sn Sn Sn Sn Sn Sn Sn Sn Sn Sn	3 5 Ops. Ops.	30% 50%	30% 50%	o.k. with proposal o.k. with proposal
B3.2	Good Practice Best Practice Provision of on Intent Indicator Information sources Applicable project type Assessment method Applicable Standards Information Submittats Occupancy 1 Negative	To encourage the use of on-site renewable energy systems. To encourage the use of on-site renewable energy systems. The amount of energy intended to be contributed by renewable energy systems, in MJ/m2 per year, not including daylighting or Ground Source Heat Pumps (GSHP). We suggest a higher level for Residential and Schools than for Office, because of possibility of using renewable sources for pre-heating Hot Water. E-Benchmark suggests a minimum of 10% and LEED ranges from 5% to 20%. Any occupancy except Enclosed Parking and Open Space. Review of contract documentation and sample equipment specifications by an ouside ele expertise. a b c d f Total project	Appr (Ar	30% 50% Iicable pha ctive if greee Dsn ever with research of the second	3 5 Ops.	30% 50%	30% 50%	o.k. with proposal
B3.2	Good Practice Best Practice Provision of on Intent Indicator Information sources Applicable project type Assessment method Applicable Standards Information Submittats Occupancy 1 Negative	To encourage the use of on-site renewable energy : Site renewable energy systems. To encourage the use of on-site renewable energy systems. The amount of energy intended to be contributed by renewable energy systems, in MJ/m2 per year, not including daylighting or Ground Source Heat Pumps (GSHP). We suggest a higher level for Residential and Schools than for Office, because of possibility of using renewable sources for pre-heating Hot Water. E-Benchmark suggests a minimum of 10% and LEED ranges from 5% to 20%. Any occupancy except Enclosed Parking and Open Space. Review of contract documentation and sample equipment specifications by an ouside ele expertise. a b c t t t t t t t t t t t t t t t t t t	Appr (Ar	30% 50% Iicable pha tive if greee Dsn Sn Sn Sn Sn Sn Sn Sn Sn Sn Sn Sn Sn Sn	3 5 Ops. Ops.	30% 50%	30% 50%	o.k. with proposal o.k. with proposal o.k. with proposal Source o.k. with proposal

В	enchmarks E	3 for designated occupancies in BigTown, Europe	Uses included	Small Inde Office 0	ustrial				
New	Construction	Design Phase	Ger	neric					
В4	Materials								
B4.1	Re-use of suita	ble existing structure(s).							
	Intent	To encourage the re-use of any sound structures that exist on the site, as part of the new project.	App (A	licable pha ctive if gree	ises en)				
	Indicator	The development of an inventory and the percent, by area, of an existing structure that is re-used or recycled, where the structures are in usable condition.	Dsn	C&C.	Ops.				
	Information sources	0							
	Applicable project type	Any occupancy, where an existing structure in usable condition is located on the site.							
	#REF! If there is an existing structure on the site, the basis of assessment should be a report that provides a structural, functiona and economic assessment of the existing structure, carried out by a team of qualified professionals.								
		a							
	Applicable Standards	р с							
		d							
	Information Submittals	e							
		f		Percent		Not applicable in the			
		Total project		by area	Score	context of Cralys			
	Negative Acceptable practice			13% 25%	-1 0				
	Good Practice		rt or the	61%	3				
	Best Practice			85%	5				
B4.2	Use of recycled	d materials from off-site sources.							
	Intent	To encourage the use of recycled materials from off-site sources as part of the new facility, where they are suitable.	App (A	licable pha ctive if gree	ises en)				
	Indicator	The percentage, by cost, of the materials, products, and furnishings in the project are recycled from off-site sources.	Dsn	C&C.	Ops.				
	Information sources	LEED ranges from 25% to 50%.							
	Applicable project type	Total building.							
	#REF!	Review of contract documentation by an outside materials specialist.							
		a							
	Applicable Standards	b							
		c d							
	Information Submittals	e							
	f								
	Total project	Total Project		% by cost	Score	Data to be received from Italian team			
	Negative			7%	-1				
	Acceptable practice	The percentage (by cost) of the materials, products, and furnishings in the project that are	e made	10%	0				
	Good Practice	from materials that recycled from off-site post-consumer sources :		19%	3				
	Best Practice			25%	5				

Benchmarks I	3 for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	strial			
New Construction	Design Phase	Gen	eric				
B4.3 Use of bio-bas	ed products obtained from sustainable sources.						
Inten	To encourage the use of bio-based products that are certified by a recognized certification agency as coming from renewable sources, or the equivalent.		licable phas ctive if gree				
Indicato	The percentage, by cost, of bio-based products used in the building, including wood and agricultural products, that are certified by a recognized certification agency.	Dsn	C&C.	Ops.			
Information sources	0						
Applicable project type	Total building, all sizes.						
Assessment method	Review of contract documentation by an outside materials specialist.						
Applicable Standard	a b						
	cd						
Information Submittal	sef						
Total projec	Total Project		Percent by cost	Score	Data to be received from Italian team	1	
Negative	2		9%	-1			
Acceptable practice	The percentage (by cost) of the wood-based products in the building certified by a recogn certification agency as coming from renewable sources :	ized	10%	0			
Good Practice Best Practice			13%	3 5			
	l supplementing materials in concrete.		1070	5			
Inten	To encourage the use of cement supplementing materials in concrete, such as flyash, steel slag or rice ash, in order to reduce GHG emissions from the use of cement.	App (Ac	licable phas tive if gree	ses n)			
Indicato	The percentage, by volume, of cement substitute used in concrete.	Dsn	C&C.	Ops.			
Information source:	Note that up to 50% of CSM has been used, but curing time increases with volume used. ranges from 15% to 25%.	Typical ind	ustry utilisa	ition			
Applicable project type	20						
Assessment method	Review of contract documentation by an outside concrete specialist.						
Applicable Standard	a						
	c						
Information Submittal	d						
	r						
	Total Project		% by vol.	Score	Values proposed by JMH	instea	
Negative			2%	-1	0%	2%	_
Acceptable practice Good Practice	The percentage, by volume, of an acceptable cement supplementing material used in con	icrete :	10% 34%	0	0% 10%	10% 34%	
Best Practice			50%	5	25%	50%	_

B	onchmarke E	3 for designated occupancies in BigTown,	g	Small Ind	ustrial			
De		Europe	Uses included	Office				
		Europe	. <u>E</u>	0	1			
New	Construction	Design Phase	Ger	neric				
B4.5	Use of material	Is that are locally produced.						
	Intent	To encourage the procurement of high-weight materials such as aggregate, sand, concrete, masonry, steel and glass,from sources within the greater urban region.		blicable pha ctive if gree				
	Indicator	The percentage, by weight, of the aggregate, sand, concrete, masonry, steel and glass used in the project produced within the greater urban region, if local sources of acceptable quality are available.	Dsn	C&C.	Ops.			
	Information sources	LEED specifies specific distances, but we consider that this is not applicable to all areas.						
	Applicable project type	Total building, all sizes.						
	Assessment method Review of contract documentation by an outside materials specialist.							
	a							
	Applicable Standardsb c							
	c d							
	d Information Submittals							
		f		% by				
	Total project	Total Project		% by weight	Score	Values proposed by JMH	instead of	Source
	Negative			42%	-1		42%	
	Acceptable practice	The percentage, by weight, of the aggregate, sand, concrete, masonry, steel and glass up project produced within the greater urban region :	sed in the	50%	0		50%	No law constraint
	Good Practice Best Practice			74%	3 5		74%	
54.0				90%	5		90%	
B4.6	Design for disa	issembly, re-use or recycling.						
	Intent	To encourage a building design that will facilitate the easy dis-assembly of components so that they can be re-used or recycled at the end of the service life of the components.		olicable pha ctive if gree				
	Indicator	Measures taken to facilitate future disassembly and re-use or recycling.	Dsn	C&C.	Ops.			
	Information sources	0						
	Applicable project type	Total building						
	Assessment method	Review of contract documentation by an outside deconstruction specialist.						
		a						
	Applicable Standards	sb						
		c						
		d						
	Information Submittals	e f						
	Total project	Total Project			Score			
	Negative	No measures have been taken to facilitate future disassembly, re-use or recycling.			-1			
	Acceptable practice	Limited measures have been taken to facilitate future disassembly, re-use or recycling, su modular interior partitions and other interior components.	ich as the	use of	0			
	Good Practice	Measures have been taken to facilitate future disassembly, re-use or recycling, such as the interior components and the use of bolted structural or building envelope components.	ie use of m	odular	3			
	Best Practice	Extensive measures have been taken to facilitate future disassembly, re-use or recycling, modular interior components, the use of bolted structural or building envelope component composite or bonded materials.			5			

Benc	chmarks E	3 for designated occupancies in BigTown, Europe	Uses included	Small Inde Office 0	ustrial			
New Cor	onstruction	Design Phase	Ger	neric				
B5 Po	otable Wat	er						
B5.1 Us	e of potable	water for site irrigation.						
	Intent	To discourage the use of potable water for irrigation; and to ensure that any potable water used for irrigation purposes during dry seasons is minimal.		licable pha ctive if gree				
	Indicator	The development of a credible irrigation management plan for areas landscaped with non native species (excluding stored rainwater or greywater used for this purpose).	Dsn	C&C.	Ops.			
Ir	Information sources	0						
Арр	Applicable project type Total project							
As	Assessment method							
		a						
Ар	Applicable Standardsb							
Info	ormation Submittals							
	f							
	Total project	Total Project		M^3/m^2	Score	Values proposed by JMH	instead of	Source
	Negative			4.8	-1	5%	4.8	o.k. with proposal
A		The predicted net annual potable water volume used for irrigation of areas landscaped wi native species (excluding stored rainwater or greywater used for this purpose) :	th non-	4.0 1.6	0	4% 2%	4.0	o.k. with proposal
	Good Practice Best Practice			0.0	5	0%	1.6 0.0	o.k. with proposal o.k. with proposal
B5.2 Us	e of potable	water for building and occupancy needs.						
20.2 00								
	Intent	To minimize the amount of potable water imported to the site and used for occupancy needs, excluding building system uses or irrigation of exterior areas.		licable pha ctive if gree				
	Indicator	Prediction of total potable water use, in L per person per day, based on a credible water management plan for occupancy fixtures and use. Note that the benchmarks are expressed as L / m2 per year in order to allow uses such as indoor parking to be compared to other uses such as office or residential.	Dsn	C&C.	Ops.			
Ir	Information sources	See File C for fixtures and water consumption data for the specific project.	•					
Арр	plicable project type	By separate occupancies, excluding irrigation water for outdoor areas.						
As	Assessment method	Review of contract documentation by a specialist in water use.						
		a						
Ар	pplicable Standards	б С						
		d						
Info	ormation Submittals	e						
		f	-					
	Occupancy 1	Small Industrial	on	L / m2 per year	Score	Values proposed by JMH	instead of	Source
	Negative			1600	-1		1 600	BEP:?
A	Acceptable practice	Based on a credible water management plan, the volume of potable water predi	cted to be	1500	0		1 500	BEP:?
		used for occupancy needs :		1200	3		1 200	BEP:?
	Best Practice			1000	5		1 000	BEP : ?
	Occupancy 2	Office	on	L / m2 per year	Score	Values proposed by JMH	instead of	Source
	Negative			215	-1		215	BEP:?
A	Acceptable practice Good Practice	Based on a credible water management plan, the volume of potable water predi used for occupancy needs:	cted to be		0		200	BEP:?
	Best Practice			155 125	3 5		155 125	BEP:? BEP:?
				.20	, v		.20	

			7	Small Indu	strial	1
В	enchmarks (C for designated occupancies in BigTown,	Uses ncluded	Office		
		Europe	inc	0		
New	Construction	Design Phase	Ger	neric		
С	Environm	ental Loadings				
C1	Greenhouse	e Gas Emissions				
C1.1	Annualized GF	IG emissions embodied in construction materials.				
	Inten	olicable pha ctive if gree				
	Indicator	CO2-equivalent emissions per Kg. per m2 of gross area, as determined by calculations based on design documents and fuel emission values plus process-related emissions related to the region of production, and annualized according to the predicted lifespan of the building.	Dsn		Ops.	Lifespan = 35 years (Glasgow meeting)
	Information sources	Benchmarks for GJ/m2 are the same as those selected for Benchmark B1.1. Values in BREEAM range from about 1000 to 300 kgCO2/m2 for Residential, and 100 to 500 kgCO2/m2f or offices (not annualized).		l lifespan in from Basic worksheet	50	
	Applicable project type	All occupancies		g eCO2 per nbodied GJ	55	
	Assessment method	We recommend that this analysis be carried out only with new projects, since there are li difficulties in obtaining emsission data for materials that are located in an existing building		surmountal	ble	
		a				
	Applicable Standards	b				
		c				
	Information Submittals	u 				
		f				
	Occupancy 1	Small Industrial	GJ/m2	kg/m2 * year	Score	Data to be received from Italian team
	Negative	3	8.6	9.5	-1	
	Acceptable practice	The annualized amount of CO2-equivalent emissions from primary non-renewable	8.0	8.8	0	
	Good Practice	energy used in materials and components for structure and building envelope, based on design documents :	6.2	6.8	3	
	Best Practice		5.0	5.5	5	
	Occupancy 2	Office	GJ/m2	kg/m2 * year	Score	Data to be received from Italian team
	Negative		12.6	13.9	-1	
	Acceptable practice	The annualized amount of CO2-equivalent emissions from primary non-renewable energy used in materials and components for structure and building envelope, based on	12.0	13.2	0	
	Good Practice	design documents :	10.2	11.2	3	
	Best Practice		9.0	9.9	5	

Benchmarks (C for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	strial	
New Construction	Design Phase	Ger	neric		
C1.2 Annual GHG e	missions from all energy used for facility heating.				
Intent	To minimize the amount of CO2-equivalent emissions from all energy used for annual building operations.		olicable pha ctive if gree		
Indicator	Annual CO2-equivalent emissions per Kg. per m2 of net area, as determined by an hour- by-hour simulation program and calculations based on regional fuel emission values.	Dsn		Ops.	
	Values in the UK BREEAM system range from 167 to 30 kgCO2/m2 for Residential, 250 about 48 to 17 kgCO2/m2 for Schools.	to 20 kgCO	2/m2 for Of	fice and	
Information sources	Emissions for Residential taken from average Canadian building stock values for 1999 (NRCan data).		CO2 per GJ, all Industrial	55.0	
	Emissions for Commercial taken from average Canadian building stock values for 1999 (NRCan data).	Est. kg C	CO2 per GJ, Office	55.0	
	0	Est. kg C	CO2 per GJ, 0	55.0	
Applicable project type	All occupancies except open space	Values be B1.2 in B	elow are ba mkB	ased on	
Assessment method	The use of an hour-by-hour simulation tool, as required for B1.2, will produce annual ene data are combined by SBTool with emission data (see Emissions worksheet) to produce emissions.			s. These	
Applicable Standards	ah				
	C				
Information Submittals	d e				
	f		T		
Occupancy 1	Small Industrial	М	kg/m2 per yr.	Score	Values proposed by JMH
Negative			80	-1	
Acceptable practice	Based on the results of an hour-by-hour simulation program and regional fuel emission va amount of CO2-equivalent emissions from primary non-renewable energy used for annua		72	0	
Good Practice			45	3	
Best Practice		r	28	5	
Occupancy 2	Office	М	kg/m2 per yr.	Score	Values proposed by JMH
Negative			21	-1	
Acceptable practice	Based on the results of an hour-by-hour simulation program and regional fuel emission va amount of CO2-equivalent emissions from primary non-renewable energy used for annua		19	0	
Good Practice			15	3	
Best Practice			12	5	

instead of

Source

Source

Benchmarks (C for designated occupancies in Europe	BigTown,	Uses included	Small Indu Office 0	strial
New Construction	Design Phase		Ger	neric	
.3 Annual GHG e	missions from all energy used for facility	cooling.			·
Intent	To minimize the amount of CO2-equivalent emissions from all building operations.	energy used for annual		olicable pha ctive if gree	
Indicator	Annual CO2-equivalent emissions per Kg. per m2 of net area, by-hour simulation program and calculations based on regiona		Dsn		Ops.
	Values in the UK BREEAM system range from 167 to 30 kgCC about 48 to 17 kgCO2/m2 for Schools.	D2/m2 for Residential, 250 t	to 20 kgCO	2/m2 for Off	fice and
Information sources	Emissions for Residential taken from average Canadian buildin (NRCan data).	ng stock values for 1999		:O2 per GJ, all Industrial	55.0
	Emissions for Commercial taken from average Canadian build (NRCan data).	ling stock values for 1999		:O2 per GJ, g/m2 per yr.	55.0
	0		Est. kg C	:O2 per GJ, 0	55.0
Applicable project type	All occupancies except open space		Values be B1.2 in B	elow are ba mkB	ased on
Assessment method	The use of an hour-by-hour simulation tool, as required for B1 data are combined by SBTool with emission data (see Emissic emissions.				s. These
Applicable Standards	e				
Information Submittals	d e f				
Occupancy 1	Small Industrial		М	kg/m2 per yr.	Score
Negative				80	-1
Acceptable practice	Based on the results of an hour-by-hour simulation program ar amount of CO2-equivalent emissions from primary non-renews			72	0
Good Practice				45	3
Best Practice				28	5
Occupancy 2			М	kg/m2 per yr.	Score
Negative				21	-1
	Based on the results of an hour-by-hour simulation program an amount of CO2-equivalent emissions from primary non-renewa			19	0
Good Practice Best Practice				15 12	3 5
Dest Fidulue				12	э

instead of

Source

Source

Benchmarks (C for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	strial		
New Construction	Design Phase	Ger	neric			
C1.4 Annual GHG e	missions from all energy used for lighting and equipment.					
Inter	To minimize the amount of CO2-equivalent emissions from all energy used for annual building operations.		blicable phas ctive if gree			
Indicato	Annual CO2-equivalent emissions per Kg. per m2 of net area, as determined by an hour- by-hour simulation program and calculations based on regional fuel emission values.	Dsn		Ops.		
	Values in the UK BREEAM system range from 167 to 30 kgCO2/m2 for Residential, 250 t about 48 to 17 kgCO2/m2 for Schools.	o 20 kgCO	2/m2 for Off	fice and		
Information source	Emissions for Residential taken from average Canadian building stock values for 1999 (NRCan data).		:O2 per GJ, all Industrial	55.0		
	Emissions for Commercial taken from average Canadian building stock values for 1999 (NRCan data).		:O2 per GJ, g/m2 per yr.	55.0		
	0	CO2 per GJ, 20.625 55.0				
Applicable project type	All occupancies except open space	Values below are based on B1.2 in BmkB				
Assessment metho	The use of an hour-by-hour simulation tool, as required for B1.2, will produce annual ener data are combined by SBTool with emission data (see Emissions worksheet) to produce e emissions.		s. These			
Applicable Standard	[∗] Text to be					
Information Submittal	d					
Occupancy 7	Small Industrial	М	kg/m2 per yr.	Score	Values proposed by JMH	
Negativ			80	-1		
Acceptable practice	Based on the results of an hour-by-hour simulation program and regional fuel emission va amount of CO2-equivalent emissions from primary non-renewable energy used for annua		72	0		
Good Practice	operations of the occupancy is predicted to be :		45	3		
Best Practice	3	0	28	5		
Occupancy 2	Office	М	kg/m2 per yr.	Score	Values proposed by JMH	
Negative			21	-1		
	Based on the results of an hour-by-hour simulation program and regional fuel emission va amount of CO2-equivalent emissions from primary non-renewable energy used for annua	lues, the	19	0		
Good Practice			15	3		
Best Practice	2		12	5		

instead of

Source

Source

Benchr	enchmarks C for designated occupancies in BigTown,			Small Indu	strial			
Denemi		Europe	Uses included	Office				
		Ediopo	. 	0				
New Constr	ruction	Design Phase	Ger	neric				
C2 Other	r Atmos	spheric Emissions						
C2.1 Emissi	ions of a	cidifying emissions during facility operations.						
	Intent	To minimize the production of atmospheric emissions from building operations that may result in acidification.	App (A	licable pha ctive if gree	ses n)	SO2 (not emitted anymore) replaced by NOx		
	Indicator	SO2 Equiv. per year in kg. per unit net area	Dsn		Ops.			
Informa	ation sources	References x, y and z			М			
Applicable	e project type	Total project						
	#REF!	Review of contract documents and equipment specifications.						
		a						
Applicab	ole Standards	b						
		c						
	Information Submittals e							
Informatio	on Submittals	e						
				Kg. / m2				
	Total project	Total Project		per yr.	Score	Values proposed by JMH	instead of	Source
	Negative	The predicted emission of SO2 equivalent per year in kg. per unit area net, based on the results of		0.45	-1		0.45	
	table practice Good Practice	an acceptable hour-by-hour simulation program and taking into account the characteristic		0.40 0.25	0		0.40	
	Best Practice	available fuels :		0.25	5		0.25	
C2.2 Emissi	ions lead	ling to photo-oxidants during facility operations.						
	Intent	To minimize the production of atmospheric emissions from building operations that may result in photo-oxidants.		plicable phases Active if green)				
	Indicator	Ethene equiv. per year in gm per net unit area	Dsn		Ops.			
Informa	ation sources	References x, y and z						
Applicable	e project type	Total project						
Assess	ment method	Review of contract documents and equipment specifications.						
		a						
Applicab	ole Standards	b						
		с						
		d						
Informatio	on Submittals	e +						
	Total project	' Total Project		gm./m2 per yr.	Score	Values proposed by JMH	instead of	Source
	Negative			0.278	-1		0.278	
Accept	table practice			0.250	0		0.250	
G	Good Practice	of an acceptable hour-by-hour simulation program, and taking into account the characteria available fuels :	stics of	0.166	3		0.166	
1	Best Practice			0.110	5		0.110	

Bench	nmarks (C for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	strial			
New Cons	struction	Design Phase	Ger	neric				
C3 Soli	id Waste	S						
C3.1 Solid	d waste res	sulting from the construction and demolition process.						
	Intent	To minimize the amount of waste off the site by encouraging the development and implementation of a construction waste management program, with sorting, re-use and recycling measures.		licable pha ctive if gree				
	Indicator	The development of a credible construction waste management plan and the percentage, by weight, of construction waste to be re-used (on or off the site) or re- cycled, as predicted in the plan.	Dsn	C&C.	Ops.			
Info	ormation sources	It is assumed that a construction waste management plan is developed, and construction amounts recorded.	waste is so	orted, with s	pecific			
Applic	able project type	Total Project						
Asse	Assessment method Review of construction management plan by an outside party with construction and solid waste management expertise.							
		a						
Appli	icable Standards	b с						
	d							
Inform	Information Submittals							
		f		_	_			-
		Total Project		Percent	Score	Values proposed by JMH	instead of	Source
Acc	Negative ceptable practice	The percentage, by weight, of construction waste to be rejused (on or off the site) or rejective	iclod as	-7% 10%	-1 0		-7% 10%	
	Good Practice	The percentage, by weight, of construction waste to be re-used (on or off the site) or re-cy predicted in the construction waste management plan :		61%	3		61%	
	Best Practice			95%	5		95%	
C3.2 Solid	d waste res	sulting from facility operations.						
	Intent	To encourage the provision of facilities for storage of waste on each floor or each major work area, and space for the central sorting and storage of waste, with access to a truck loading area.		licable pha ctive if gree				
	Indicator	Facilities provided in the design for the storage and sorting of solid wastes in both dispersed and central locations.	Dsn		Ops.			
Info	ormation sources	We specify storage areas per dwelling and per work group, and assume that the central s	torage area	a will be size	ed to suit.			
Applic	able project type	Separate criteria for residential and non-residential; NA for parking or open space						
Ass	essment method	Review of construction documents by an outside party with solid waste management exp	ertise.					
		a						
Appli	icable Standards	Б С						
		d						
Inform	nation Submittals	e						
		f						
	Occupancy 1	Small Industrial	on	percent	Score	Values proposed by JMH	instead of	Source
	Negative			70%	-1		70%	
Acc		A central sorting and storage area is located close to a truck loading area, and storage ha provided sufficient for all wastes that may accumulate over a period of one week. It is est	is been iimated	75%	0		75%	
		that the percentage of total waste that can be sorted and		89%	3		89%	
	Best Practice	Office		98%	5	Maluar and the second	98%	0
	Occupancy 2		on	percent	Score	Values proposed by JMH	instead of	Source
٨٥	Negative	A central sorting and storage area is located close to a truck loading area, and storage ha	is been	70% 75%	-1 0		70% 75%	
Acc	Good Practice	provided sufficient for all wastes that may accumulate over a period of one week. It is est that the percentage of total waste that can be sorted and	limated	90%	3		90%	
	Best Practice			100%	5		100%	

Benchmarks C	Uses cluded	Small Indu Office	strial	
New Construction	Europe Design Phase	⊆ Ger	o neric	

		q	Small Industrial				
Benchmarks	C for designated occupancies in BigTown,	Uses included	Office				
	Europe	inc U	0				
New Construction	Design Phase	Ger	neric				
New Construction	Design Fhase	001		·			
C4 Rainwater,	Stormwater and Wastewater						
C4.1 Liquid effluents	s from facility operations sent off the site.						
Inten	To minimize the volume of waste water, including effluent, sent off the site to be treated.		licable pha ctive if gree				
Indicato	The volume of liquid waste per person per day that is sent off the site for treatment.	Dsn		Ops.			
Information sources	The default (0) volume is assumed to be 95% of the potable water consumption with no on-site treatment, as per BmkA 5.2 (see cells at right)	1425	190	0			
Applicable project type	By separate occupancies.						
Assessment method	Review of contract documents.						
	a						
Applicable Standard							
	d						
Information Submittal	se						
	f						-
Occupancy 1	Small Industrial	on	L / m2 * yr.	Score	Values proposed by JMH	instead of	Source
Negative	3		1520	-1		1 520	
Acceptable practice	The predicted volume of liquid waste per m2 per year to be sent off the site for tr	eatment	1425	0		1 425	
Good Practice Best Practice			1140	3		1 140	
			950 L/m2*	5		950	
Occupancy 2		on	yr.	Score	Values proposed by JMH	instead of	Source
Negative			204	-1		204	
Acceptable practice Good Practice	The predicted volume of liquid waste per m2 per year to be sent off the site for tr	eatment	190 147	0		190 147	
Best Practice			119	5		119	
C4.2 Retention of ra	inwater for later re-use.			-			
		Apr	licable pha	202			
Inten	To encourage the retention of rainwater on the site for later re-use.		ctive if gree				
Indicato	The percent of annual rainwater falling on the site that is planned to be retained on the site for future use on the site or in the building in holding ponds or tanks.	Dsn		Ops.			
Information sources	References x, y and z						
Applicable project type	Total project						
Assessment method	Review of contract documents and landscaping plans by a person with experience in this	field.					
	a						
Applicable Standard	sb						
	c						
Information Submittal							
mormation Submittal	۲ <u>۰</u> ۴						
Total projec	rotal Project		Percent	Score	Values proposed by JMH	instead of	Source
Negative			0%	-1		0%	
Acceptable practice	The percent of annual rainwater falling on the site that is predicted to be retained on the s	site for	0%	0		0%	
Good Practice			45%	3		45%	
Best Practice			75%	5		75%	

Be	enchmarks (C for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	strial			
New	Construction	Design Phase	Ger	neric				
C4.3	Untreated store	mwater retained on the site.						
	Intent	To minimize the volume of stormwater sent off the site.	App (A	olicable pha ctive if gree	ses n)			
	Indicator	Percent of stormwater that is retained on the site.	Dsn		Ops.			
	Information sources	References x, y and z						
	Applicable project type	By separate occupancies.						
	Assessment method	Review of contract documents and landscaping plans by a person with experience in this	field.					
		a						
	Applicable Standards	C						
		d						
	Information Submittals	e						
		Total Project		Percent	Score	Values proposed by JMH	instead of	Source
	Negative Acceptable practice			10% 25%	-1 0		10% 25%	
	Good Practice	The percent of stormwater retained on the site, on an annualized basis:		70%	3		70%	
	Best Practice			100%	5		100%	
N.A.	N.A.							
N.A.	N.A.							
	N.A.	N.A.	App (A	olicable pha ctive if gree	ses n)			
	N.A.	N.A.	Dsn	C&C.	Ops.			
	N.A.	N.A.						
	N.A.	N.A.						
	N.A.	N.A.						
		N.A.						
		N.A.						
		N.A.						
		N.A						
		N.A.						
		N.A.			Score			
		N.A.			-1			
	N.A.	NA.			0			
	N.A.	NA.			3			
	N.A.	N.A.			5			

Benchmarks (C for designated occupancies in BigTown, Europe	Uses included	Small Indu Office	strial
New Construction	Design Phase		o neric	
N.A. N.A.				
N.A.	N.A.	App (A	olicable pha active if gree	ses n)
N.A.	N.A.	Dsn	C&C.	Ops.
N.A.	N.A.			
N.A.	N.A.			1
N.A.	N.A.			Score
N.A.	NA.			-1
N.A.	N.A.			0
N.A.	N.A.			3
N.A.	N.A.			5
N.A. N.A.				
N.A.	N.A.	App (A	olicable pha otive if gree	ses n)
N.A.	N.A.	Dsn	C&C.	Ops.
N.A.	N.A.			1
N.A.	N.A.			
	N.A.			
N.A.	N.A.			Score
N.A.	N.A.			-1
N.A.	N.A.			0
N.A.	N.A.			3
N.A.	N.A.			5

Benchmarks	C for designated occupancies in BigTown, Europe	Uses included	Small Indu Office	strial	
New Construction	Design Phase		neric		
N.A. N.A.					
N.A	N.A.		olicable pha ctive if gree		
N.A	- N.A.	Dsn		Ops.	
N.A	- N.A.	٠			
N.A	. N.A.				
N.A	N.A.				
N.A	. N.A.				
N.A					
N.A N.A					
N.A					
N.A	. N.A.				
N.A	N.A.			Score	
N.A	. N.A.			-1	
N.A	. N.A.			0	
N.A	. N.A.			3	
N.A	. N.A.			5	
C6 Other Local	and Regional Impacts				Not applicable (decided in Glasgow)
C6.1 Cumulative the	ermal changes to lake water or sub-surface aquifers.				
Inter	To ensure that building operations involving ground-source or ground-water heat pumps t do not change the average annual temperature of sub-surface aquifers, nor affect the water quality of such aquifers.		blicable pha ctive if gree		
Indicato	Predictions of changes in the average annual temperature of sub-surface aquifers, determined by simulation studies.	Dsn		Ops.	
Information source	s References x, y and z				
Applicable project typ	e For Total Project if a water-source or ground-source heat pumps (GSHP) is being used.				
#REF	Review of mechanical drawings, specifications and equipment by geophysical engineer.				
	a				
Applicable Standard	s b				
	d				
Information Submittal					
	f				
	t Total Project		Deg. C	Score	
Negativ Acceptable practic			1.8	-1 0	
Good Practic		je the	1.5 0.6	3	
Best Practic	e		0.0	5	

Benchmarks (Uses included	Small Indu Office 0	strial			
New Construction						
C6.2 Heat Island Eff	ect - landscaping and paved areas.				Not applicable to Crealys context	
Intent	To ensure that open areas of the site are either landscaped, or are paved with reflective materials, to minimize infrared re-radiation to the atmosphere that would increase the urban heat island effect.		olicable pha ctive if gree			
Indicator	Reflectance and area of paved and landscaped areas, as indicated by drawings and specifications.	Dsn		Ops.		
Information sources	References x, y and z					
Applicable project type	Total Project					
Assessment method	Review of landscaping plans and design team analysis.					
Analisahla Otan darida	a 					
Applicable Standards	c					
	d					
Information Submittals	e					
Total project	t Total Project		Percent	Score		
Negative			40%	-1		
Acceptable practice	Drawings and specifications indicate that the area of landscaped open area plus paved a		50%	0		
Good Practice	surface reflectance of 60% or greater, as a percentage of total open area (site area minus	s building	80%	3		
Best Practice			100%	5		
C6.3 Heat Island Eff	ect - roofing.				Not applicable to Crealys context	
Intent	To encourage the use of roofing systems with high reflectance or a landscaped or green roof, or a combination of these, so that reflected infrared radiation to the atmosphere is minimized.		olicable pha ctive if gree			
Indicator	Reflectance and area of roofing material; or the use of a green roof, as indicated by drawings and specifications.	Dsn		Ops.		
Information sources	References x, y and z					
Applicable project type	Total Project					
Assessment method	Review of roofing specifications.					
	a					
Applicable Standards	b					
	c					
Information Submittals	d Information Submittals a					
	f					
Total project	Total Project		Percent	Score		
Negative			0%	-1		
Acceptable practice		a Green	0%	0		
Good Practice	roof or a roofing system with a surface reflectance of 60%, or a combination of these, is :		60%	3		
Best Practice			100%	5	l	

Benchmarks (Benchmarks C for designated occupancies in BigTown, Europe						
New Construction	Design Phase	Design Phase Generic .					
C6.4 Atmospheric lig	ht pollution.				Not applicable to Crealys context		
Intent	To minimize the spillage of light into the atmosphere from ground-level sources.		licable pha ctive if gree				
Indicator	Percentage of total exterior light output that lies outside a vertical 120 degree cone, as indicated by drawings and specifications.	Dsn		Ops.			
Information sources	0	٠					
Applicable project type	Total Project						
Assessment method	Review of building and site illumination plans and design team analysis.						
	a						
Applicable Standards	b						
	d						
Information Submittals	e						
	f						
Total project	Total project Pe						
Negative		-1 0					
	Acceptable practice The percentage of total exterior light output that lies outside a vertical 120 degree cone, as indicated by drawings and specifications is :						
Good Practice	30%	3					
Best Practice			0%	5			

В	enchmarks [D for designated occupancies in BigTown, Europe	Uses included	Small Indu Office	ustrial	[
New	Construction								
D	Indoor En	door Environmental Quality							
D1	Indoor Air Q								
01.1	Pollutant migra	tion between occupancies.			<u> </u>				
	Intent	Ensure that areas that contain equipment or activities generating chemical pollutants, are separately ventilated and isolated from other occupied spaces. Examples include copier rooms, waste storage areas and janitorial rooms.		blicable pha ctive if gree					
	Indicator	Measures taken to isolate areas or rooms where pollutants may be generated, as indicated by drawings and specifications.	Dsn		Ops.				
	Information sources	0	٠						
	Applicable project type	Separate by occupancy type.							
	#REF!	Review of contract documents and mechanical system by an oustide mechanical engineer	r.						
	Applicable Standard	8							
	Applicable Standards	с							
		d							
	Information Submittals	e							
		f							
	Occupancy 1	Small Industrial		on	Score				
	Negative	Drawings and specifications indicate that some rooms and spaces in this occupancy that o activities generating chemical pollutants are not separately ventilated.	contain eq	uipment or	-1				
	Acceptable practice	Drawings and specifications indicate that all rooms and spaces in this occupancy that con activities generating chemical pollutants, are separately ventilated.			0				
	Good Practice	Drawings and specifications indicate that all rooms and spaces in this occupancy that con activities generating chemical pollutants, are separately ventilated and there is little possib or from other occupied spaces.			3				
	Best Practice	Drawings and specifications indicate that all rooms and spaces in this occupancy that con activities generating chemical pollutants, are separately ventilated and there is NO possibi from other occupied spaces.			5				
	Occupancy 2	Office		on	Score				
	Negative	Drawings and specifications indicate that some rooms and spaces in this occupancy that activities generating chemical pollutants are not separately ventilated.	contain equ	uipment or	-1				
	Acceptable practice	Drawings and specifications indicate that all rooms and spaces in this occupancy that con activities generating chemical pollutants, are separately ventilated.	tain equipr	ment or	0				
	Good Practice	Drawings and specifications indicate that all rooms and spaces in this occupancy that con activities generating chemical pollutants, are separately ventilated and there is little possit or from other occupied spaces.	tain equipr ility of mig	ment or ration to	3				
	Best Practice	Drawings and specifications indicate that all rooms and spaces in this occupancy that con activities generating chemical pollutants, are separately ventilated and there is NO possibi from other occupied spaces.			5				
01.2	CO2 concentra	tions in indoor air.			I				
	Intent	To ensure that carbon dioxide concentrations stay below acceptable levels in typical		plicable pha					
	Intent	primary occupancy areas. Designs for HVAC systems that conform to ASHRAE, CIBSE or other acceptable		ctive if gree	en)				
		protocol. Reference x, y and z	DSN		Ops.				
		Non-residential Occupancies, except for Open Space.							
		Review of contract documents and mechanical system by an outside mechanical engineer	r.						
		a							
	Applicable Standards	0 C							
		d							
	Information Submittals	e f							
	Occupancy 1	Small Industrial	on	ppm	Score	Values proposed by			
	Negative			1160	-1	1 000			
	Acceptable practice	Designs for HVAC systems, carried out in accordance with ASHRAE, CIBSE or other acce standards, predict concentrations of CO2 during operating conditions equal to or less than	eptable	1050	0	800			
	Good Practice			720 500	3 5	700 600			
	Best Practice			000		000			
	Best Practice Occupancy 2	Office	on	ppm	Score	Values proposed by			
		Office	on	ppm 640	Score -1	Values proposed by 1 000			
	Occupancy 2	Designs for HVAC systems, carried out in accordance with ASHRAE, CIBSE or other acc	eptable						
	Occupancy 2 Negative		eptable	640	-1				

Source: EN 13 779

1 200

800

500 350

Source: EN 13 779

1 200

800 500

350

instead of 1 000

800

700 600

instead of

1 000

800 700

600

Benchmarks [Uses ncluded	Small Indu Office	Small Industrial Office								
	Europe		0								
New Construction	Design Phase	Gei	neric	•							
D1.3 IAQ monitoring during project operations.											
Intent	To ensure long-term indoor air quality in non-residential occupancies by installing a permanent carbon dioxide monitoring system to provide objective data on indoor air quality, with monitoring points located in typical primary occupancy areas.										
Indicator	Measures anticipated to ensure adequate monitoring of IAQ quality.	Dsn		Ops.							
Information sources	Reference A, B and C.										
Applicable project type	By separate occupancies except outdoor space.										
Assessment method	Review of contract documents and mechanical system by an outside mechanical engineer	r.									
Applicable Standards	a b										
	c										
	d										
Information Submittals	e										
Occupancy 1	f Small Industrial		0.0	Casta							
Occupancy I	Small Industrial No specific measures are anticipated to ensure adequate and on-going monitoring of IAQ	quality in	on	Score							
Negative	areas.	quality in	public	-1							
Acceptable practice	Annual monitoring is anticipated to assess IAQ quality in public areas.			0							
Good Practice	Quarterly monitoring is anticipated to assess IAQ quality in public areas.			3							
	Daily monitoring is anticipated to assess IAQ quality in public areas.			5							
Occupancy 2		au alitu in	on	Score							
Negative	No specific measures are anticipated to ensure adequate and on-going monitoring of IAQ areas.	quality in	public	-1							
Acceptable practice	Annual monitoring is anticipated to assess IAQ quality in public areas.			0							
	Quarterly monitoring is anticipated to assess IAQ quality in public areas.			3							
Best Practice	Daily monitoring is anticipated to assess IAQ quality in public areas.			5							
D2 Ventilation				•							
D2.1 Effectiveness o	f ventilation in naturally ventilated occupancies.										
Intent	To ensure that the number, placement and type of windows or other openings in a naturally-ventilated building are capable of providing a high level of air quality and ventilation.		plicable pha octive if gree								
Indicator	Area and location of windows that provide natural ventilation.	Dsn		Ops.							
Information sources	Cross-ventilation is defined as spaces where openable windows are located on at least two separate walls.	٠									
Applicable project type	By separate occupancies for buildings under a defined height limit.	Height	limit, floors	16							
Assessment method	Review of contract documents and mechanical system by an outside mechanical engineer natural ventilation issues.	r with spec	cific knowle	dge of							
Applicable Standards	a										
	c										
	d										
Information Submittals	e										
Occupancy 1	f Small Industrial		м	Score							
Negative	The aggregate area of openings from primary occupancy areas to the exterior is less than			-1							
Acceptable practice primary floor area, and less than 50% of all primary spaces have cross-ventilation. Acceptable practice primary floor area, and more than 50% of all primary spaces have cross-ventilation.											
Good Practice	The aggregate area of openings from primary occupancy areas to the exterior is at least 5 primary floor area, and at more than 75% of all primary spaces have cross-ventilation.	i% of the a	iggregate	3							
Best Practice	The aggregate area of openings from primary occupancy areas to the exterior is at least 1 primary floor area, and more than 90% of all primary spaces have cross-ventilation.	0% of the	aggregate	5							
Occupancy 2			М	Score							
Negative	The aggregate area of openings from primary occupancy areas to the exterior is less than aggregate primary floor area, and less than 50% of all primary spaces have cross-ventilati	5% of the		-1							
Acceptable practice	aggregate primary noor area, and rese than 50 % of all primary spaces have cross-ventilation. The aggregate area of openings from primary occupancy areas to the exterior is at least 5 primary floor area, and more than 50% of all primary spaces have cross-ventilation.		iggregate	0							
Good Practice	The aggregate area of openings from primary occupancy areas to the exterior is at least 5 primary floor area, and at more than 75% of all primary spaces have cross-ventilation.	i% of the a	iggregate	3							
Best Practice	The aggregate area of openings from primary occupancy areas to the exterior is at least 1 primary floor area, and more than 90% of all primary spaces have cross-ventilation.	0% of the	aggregate	5							

Benchmarks [D for designated occupancies in BigTown, Europe	Uses included	Small Inde Office 0	ustrial
New Construction	Design Phase	Ger	neric	
D2.2 Air quality and	ventilation in mechanically ventilated occupancies.			
Inten	To ensure that mechanical ventilation and cooling systems are designed in a manner that will ensure a satisfactory level of air quality and ventilation.		olicable pha ctive if gree	
Indicator	Conformance of the design to the requirements of a recognized relevant standard, such as ASHRAE or CIBSE.	Dsn		Ops.
Information sources	Reference x, y and z			
Applicable project type	Any occupancy except Outdoor Area			
Assessment method	Review of contract documents and mechanical system by an outside mechanical enginee	r.		
	a			
Applicable Standards	b c			
	d			
Information Submittals	e f			
Occupancy 1	Small Industrial		М	Score
Negative	Mechanical ventilation in some primary occupancy areas does not fully satisfy the minimu			-1
0.11	ASHRAE 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE c			
Acceptable practice	Mechanical ventilation in some primary occupancy areas meets the minimum requirement 2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE or other stand		RAE 62-	0
Good Practice	Mechanical ventilation in more than 50% of primary occupancy areas exceeds the minimu			3
	ASHRAE 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE of	r other sta	indard.	
Best Practice	Mechanical ventilation in 100% of primary occupancy areas exceeds the minimum require 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE or other sta		ASHRAE	5
Occupancy 2	Office		М	Score
Negative	Mechanical ventilation in some primary occupancy areas does not fully satisfy the minimu ASHRAE 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE c			-1
Acceptable practice	Mechanical ventilation in some primary occupancy areas meets the minimum requirement 2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE or other stand		AE 02-	0
Good Practice	Mechanical ventilation in more than 50% of primary occupancy areas exceeds the minimu ASHRAE 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE of			3
Best Practice	Mechanical ventilation in 100% of primary occupancy areas exceeds the minimum require 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE or other sta		ASHRAE	5
D2.3 Air movement	n mechanically ventilated occupancies.			I
Inten	To ensure that air movement in mechanically ventilated occupancies is sufficient to satisfy requirements for human comfort.		#REF!	
Indicato	Predicted air speed in m/s, as indicated by an analysis of proposed HVAC system	Dsn		Ops.
	characteristics or by post-occupancy monitoring.	DSII		ops.
	Reference x, y and z			
Applicable project type	Total project			
Assessment method	Review of contract documents and mechanical system by an outside mechanical enginee	r.		
Analisable Oberdand	a			
Applicable Standards	c			
	d			
Information Submittals	e			
Occupancy 1	f Small Industrial	on	m/s	Score
Negative			0.0	-1
Acceptable practice	An analysis of proposed HVAC system characteristics indicates that air speed at working	evel	0.0	0
Good Practice	during typical operating conditions is likely to be :		0.0	3
Best Practice	Office	~ "	0.0	5
Occupancy 2		on	m/s 1.2	Score -1
Negative Acceptable practice	An analysis of proposed HVAC system characteristics indicates that air speed at working	evel	1.2	-1 0
Good Practice	denies testestes and the second testestes a		2.4	3
Best Practice			3.0	5

instead of

0.0

0.0

0.0 instead of

1.2 1.5 2.4 3.0 Source

Source

Benchmarks [) for designated occupancies in BigTown, Europe	Uses Included	Small Indu Office 0	Jstrial
New Construction	Ger	neric	•	

Benchmarks [D for designated occupancies in BigTown, Europe	Uses included	Small Inde Office 0	ustrial	
New Construction	Design Phase	Ger	neric		
2.3 Air movement i	in mechanically ventilated occupancies.				
Inten	To ensure that mechanical ventilation and cooling systems are designed in a manner that will ensure a satisfactory level of air quality and ventilation.		ctive if gree		
Indicator	Conformance of the design to the requirements of a recognized relevant standard, such as ASHRAE or CIBSE.	Dsn		Ops.	
Information sources	Reference x, y and z				
Applicable project type	Any occupancy except Outdoor Area				
#REF!	Review of contract documents and mechanical system by an outside mechanical engineer	r.			
Applicable Standards					
Information Submittals	e f				
Occupancy 1	Small Industrial		М	Score	
Negative	Mechanical ventilation in some primary occupancy areas does not fully satisfy the minimu ASHRAE 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE of	im requirer	nents of indard.	-1	
Acceptable practice	Mechanical ventilation in some primary occupancy areas meets the minimum requiremen 2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE or other stand		RAE 62-	0	
Good Practice	Mechanical ventilation in more than 50% of primary occupancy areas exceeds the minimu ASHRAE 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE (3	
Best Practice	Mechanical ventilation in 100% of primary occupancy areas exceeds the minimum require 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE or other st	ements of A andard.	ASHRAE	5	
Occupancy 2	Office		М	Score	
Negative	Mechanical ventilation in some primary occupancy areas does not fully satisfy the minimu ASHRAE 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE of			-1	
Acceptable practice	Mechanical ventilation in some primary occupancy areas meets the minimum requiremen 2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE or other stand		RAE 62-	0	
Good Practice	Mechanical ventilation in more than 50% of primary occupancy areas exceeds the minimu ASHRAE 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE of	um requirer or other sta	ments of indard.	3	
Best Practice	Mechanical ventilation in 100% of primary occupancy areas exceeds the minimum require 62-2001: Ventilation for Acceptable Indoor Air Quality or the equivalent CIBSE or other st		ASHRAE	5	
2.4 Effectiveness of	of ventilation in mechanically ventilated occupancies.				
Inten	Ensure, through the use of appropriate simulation programs, that the ventilation system in mechanically-ventilated non-residential occupancies will bring ventilation air to where it is needed, i.e. to seating areas or workers or visitors.		blicable pha ctive if gree		
Indicator	Percent of ventilation air reaching work surfaces, as indicated by an analysis of proposed HVAC system and room characteristics.	Dsn		Ops.	
Information sources	Reference x, y and z				
Applicable project type	Non-residential Occupancies.				
Assessment method	Review of contract documents and mechanical system by an outside mechanical enginee	r.			
Applicable Standards	ab				
	c				
Information Submittals	d e f				
Occupancy 1	Small Industrial	on	Eac	Score	Values prop
Negative	An analysis of proposed LIVAC system and some abased sisting is maaba to the second	d aross of	80%	-1	8
Acceptable practice Good Practice	An analysis of proposed HVAC system and room characteristics in mechanically ventilate the occupancy indicates that the air change effectiveness (Eac), as determined by ASHR –1997 or equivalent CIBSE or other standard, of :		80% 89%	0	8
Best Practice	tor of equivalent of bot of other standard, UL.		95%	5	9
Occupancy 2	Office	on	Eac	Score	Values prop
Negative			80%	-1	80
Acceptable practice	An analysis of proposed HVAC system and room characteristics in mechanically ventilate the occupancy indicates that the air change effectiveness (Eac), as determined by ASHR.		80%	0	80
Good Practice Best Practice	-1997 or equivalent CIBSE or other standard, of :		89% 95%	3 5	89 95
	L		3070	L Ŭ	55

instead of

80%

80%

89%

95%

instead of

80%

80% 89% 95% Source

o.k. with proposal

o.k. with proposal

o.k. with proposal

o.k. with proposal

Source

o.k. with proposal

o.k. with proposal o.k. with proposal o.k. with proposal

Benchmarl	ks D) for designated occupancies in BigTown, Europe	Uses included	Small In Office 0	dustrial			
New Construction	on	Design Phase		neric				
D3 Air Temp	era	ture and Relative Humidity						
D3.1 Air tempera	ature	and relative humidity in mechanically heated occupancie	s.					
	Intent	To ensure acceptable temperature and humidity control within established ranges per climate zone, and to provide on-going monitoring of thermal comfort performance and t effectiveness of humidification and/or dehumidification system.		plicable pl active if gr				
In	dicator	Compliance of mechanical ventilation systems with recognized design standards such a ASHRAE or CIBSE.	s Dsn		Ops.			
Information se	ources	Reference x, y and z						
Applicable proje	ct type	All mechanically ventilated occupancies.	-					
	#REF!	Review of contract documents and mechanical system by an outside mechanical engin	er.					
Analisable Ota		text to be revised						
Applicable Sta	ndards							
		d						
Information Sub	mittais	f						
Occup	ancy 1	Small Industrial		on	Score	Values proposed by JMH	instead of	Source
Ne	gative	The mechanical system design does not comply with ASHRAE 55-1992, or other simila CIBSE, or the variation from setpoints exceeds 5 deg. C:	standard s	uch as	-1	≥ 19°C	< 5°C	
Acceptable p		The mechanical system design complies with ASHRAE 55-1992, or complies with othe as CIBSE. Temperature variation from setpoints does not exceed 3 deg. C.	similar star	ndard such	0	≥ 21°C	< 3°C	RGPT
Good P		The mechanical system design complies with ASHRAE 55-1992, or complies with othe as CIBSE. Temperature variation from setpoints does not exceed 2 deg. C.	similar star	ndard such	3	≥ 23°C	< 2°C	intermediate value between neighboor ones
Best P	ractice	The mechanical system design complies with ASHRAE 55-1992, or complies with othe as CIBSE. A permanent monitoring system provides feedback on temperature and hur Temperature variation from setpoints does not exceed 1 deg. C.			5	≤ 25°C	< 1°C	smallest PPD as possible
D3.2 Air tempera	ature	and relative humidity in mechanically cooled occupancie	s.					
	Intent	To ensure acceptable temperature within established ranges per climate zone in naturally ventilated occupancies.		plicable pl active if gr				
In		Predicted ability of natural ventilation systems to maintain temperatures within an acceptable range, as indicated by drawings and specifications.	Dsn		Ops.			
Information s	ources	ASHRAE 55-1992, Addenda 1995 or equivalent CIBSE or other recognized standard.						
Applicable proje	ct type	Total project						
Assessment n	nethod	Review of contract documents and mechanical system by an outside mechanical engin natural ventilation issues.	er with spe	cific know	edge of			
Applicable Sta	ndards	a						
	100103	text to be revised						
Information Sub	mittala	d						
mornation out	, initialis	f						
	H	Total Project			Score	Values proposed by JMH	instead of	Source
Ne	gative	According to recognized predictive techniques, the temperature in primary occupancy a for more than 90% of occupied hours, within a swing range (+ or -) of 6 deg. C.	eas can No	OT be kept	· -1	≤ 28°C	90% in range of 6°C	ASHRAE
Acceptable p		According to recognized predictive techniques, the temperature in primary occupancy a more than 90% of occupied hours, within a swing range (+ or -) of 4 deg. C.	eas can be	kept, for	0	≤ 24°C	90% in range of 4°C	RGPT
Good P	ractice	According to recognized predictive techniques, the temperature in primary occupancy a more than 90% of occupied hours, within a swing range (+ or -) of 3 deg. C.	eas can be	kept, for	3	≤ 22°C	90% in range of 3°C	intermediate value between neighboor ones
Best P	ractice	According to recognized predictive techniques, the temperature in primary occupancy a more than 90% of occupied hours, within a swing range (+ or -) of 2 deg. C.	eas can be	kept, for	5	≤ 20°C	90% in range of 2°C	smallest PPD as possible

Benchmarks I	narks D for designated occupancies in BigTown,					
	Europe	Office 0				
New Construction	Design Phase	Generic				
D3.3 Time lag and d	ecrement factor					
Inten	To ensure acceptable temperature within established ranges per climate zone in naturally ventilated occupancies.	Applicable (active if	phases green)			
Indicato	Predicted ability of natural ventilation systems to maintain temperatures within an acceptable range, as indicated by drawings and specifications.	Dsn	Ops			
Information sources	ASHRAE 55-1992, Addenda 1995 or equivalent CIBSE or other recognized standard.					
Applicable project type	Total project			-		
Assessment method	Review of contract documents and mechanical system by an outside mechanical engineer natural ventilation issues.	with specific kno	wledge of			
Angliachte Oberdend				_		
Applicable Standards	text to be revised			_		
Information Submittals	d					
Total project	r Total Project		Scor	e Values proposed by JMH	instead of	Source
Negative	According to recognized predictive techniques, the temperature in primary occurancy area	as can NOT be ke		6°C	90% in range of 6°C	o.k. with proposal and confirmed other values
Acceptable practice	According to recognized predictive techniques, the temperature in primary occupancy areas can be kept, for more than 90% of occupied hours, within a swing range (+ or -) of 4 deg. C.			4°C	90% in range of 4°C	RGPT : 20 to 24°C
Good Practice	According to recognized predictive techniques, the temperature in primary occupancy area more than 90% of occupied hours, within a swing range (+ or -) of 3 deg. C.	as can be kept, fo	3	3°C	90% in range of 3°C	intermediate value between neighboor ones
Best Practice	According to recognized predictive techniques, the temperature in primary occupancy area more than 90% of occupied hours, within a swing range (+ or -) of 2 deg. C.	as can be kept, fo	5	2°C	90% in range of 2°C	NEN 13 779
D3.4 Air temperatur	e in naturally ventilated occupancies.					
•	To ensure acceptable temperature within established ranges per climate zone in	Applicable	nhases	-		
Inten	naturally ventilated occupancies.	(active if		_		
Indicato	Predicted ability of natural ventilation systems to maintain temperatures within an acceptable range, as indicated by drawings and specifications.	Dsn	Ops			
Information sources	ASHRAE 55-1992, Addenda 1995 or equivalent CIBSE or other recognized standard.					
Applicable project type	Total project					
Assessment method	Review of contract documents and mechanical system by an outside mechanical engineer natural ventilation issues.	with specific kno	wledge of			
Applicable Standards	a			_		
	c					
Information Submittals	d					
mornation Submittais	f			-		
Total project	Total Project		Scor	Values proposed by JMH	instead of	Source
Negative	According to recognized predictive techniques, the temperature in primary occupancy area for more than 90% of occupied hours, within a swing range (+ or -) of 6 deg. C.	as can NOT be ke	^{pt,} -1	6°C	90% in range of 6°C	o.k. with proposal and confirmed other values
Acceptable practice	According to recognized predictive techniques, the temperature in primary occupancy area more than 90% of occupied hours, within a swing range (+ or -) of 4 deg. C.	as can be kept, fo	r 0	4°C	90% in range of 4°C	RGPT : 20 to 24°C
Good Practice	According to recognized predictive techniques, the temperature in primary occupancy area more than 90% of occupied hours, within a swing range (+ or -) of 3 deg. C.	as can be kept, fo	3	3°C	90% in range of 3°C	intermediate value between neighboor ones
Best Practice	According to recognized predictive techniques, the temperature in primary occupancy area more than 90% of occupied hours, within a swing range (+ or -) of 2 deg. C.	as can be kept, fo	5	2°C	90% in range of 2°C	NEN 13 779

Ben	nchmarks [D for designated occupancies in BigTown,	Uses included	Small Indu Office	ustrial			
		Europe	∪ incl	0				
New Co	onstruction	Design Phase	Ger	neric	-			
D4 D	aylighting	and Illumination						
D4.1 Da	aylighting in p	primary occupancy areas.						
	Intent	To ensure an adequate level of daylighting in all primary occupied spaces.	App	blicable pha	ases			
		The predicted Daylight Factor in a typical occupancy area located on the ground floor of	(8	cuve il gree				
	Indicator	the building, as indicated by drawings and specifications.	Dsn		Ops.			
	Information sources	x						
Ap	pplicable project type	By separate occupancies						
,	Assessment method	Review of contract documents by an illumination specialist.						
		a						
A	Applicable Standards	ds b						
		d						
Inf	formation Submittals	e						
		f						
	Occupancy 1	Small Industrial	М	DF	Score	Values proposed by JMH	instead of	Source: littérature
	Negative			1.8%	-1	1.0%	1.6%	circulation areas
	Acceptable practice	The prediced Edylight Factor in a typical workspace resared on the ground neer of the edg	cupancy,	2.0%	0	2.0%	2.0%	standard workshop
	Good Practice Best Practice			2.6%	3 5	3.0%	2.4%	(intermediate value)
		0//				5.0%	3.0%	for precise tasks
	Occupancy 2	Uffice	on	DF	Score	Values proposed by JMH	instead of	
	Negative			0.0%	-1 0	1.0% 2.0%	0.0%	circulation areas
	Acceptable practice Good Practice		cupancy,	0.0%	3	3.0%	0.0%	standard office (intermediate value)
	Best Practice			0.078	5	5.0%	0.078	drawing office
		sidential occupancies.			Ŭ	0.070		
D4.2 G								
	Intent	To ensure that glare conditions are minimized in main occupancy areas during periods of maximum exterior brightness, through the use of exterior or interior shading.		#REF!				
	Indicator	The predicted maximum ratio of contrast in illuminance between windows and adjacent wall areas in a typical occupancy area, as indicated by design characteristics.	Dsn		Ops.			
	Information sources	Glare shall be measured by the contrast between window areas and adjacent wall area	as, as seei	n from the i	nterior.			
Ap	pplicable project type	Non-residential occupancies						
,	Assessment method	Review of contract documents by an illumination specialist.						
		a						
A	Applicable Standards	b						
		c						
		d						
Inf	formation Submittals	e						
	0.0000000000000000000000000000000000000			Dette	0	Mahara and a Mah	laste def	0
		Small Industrial	on	Ratio 50	Score 1	Values proposed by JMH	instead of	Source
	Negative Acceptable practice			59 50	-1 0	40 20	59 50	
	Good Practice	The predicted maximum ratio of contrast in illuminance between windows and adjacent wa in a typical occupancy area, as indicated by design characteristics is :	all areas	23	3	10	23	"Médecine et risque du travail" (Ed. Elsevier, 2003)
	Best Practice			5	5	3	5	
		Office	on	Ratio	Score	Values proposed by JMH	instead of	Source
	Negative			59	-1	40	59	
	Acceptable practice	The predicted maximum ratio of contrast in illuminance between windows and adjacent wa	all areas	50	0	20	50	"Médecine et risque du travail"
	Good Practice	in a typical occupancy area, as indicated by design characteristics is :	0. 000	23	3	10	23	(Ed. Elsevier, 2003)
	Best Practice			5	5	3	5	1

Benchmarks D for designated occupancies in BigTown, Europe		Uses included	Small Inde Office 0	ustrial		
New (Construction	Design Phase	Ger	neric		
D4.3 I	llumination lev	els and quality of lighting.				
	Intent	To ensure that lighting systems provide adequate illumination and quality levels in public and work areas; and that there is a capability to support the provision of suitable task lighting in work areas.		blicable pha ctive if gree		
	Indicator	Appropriateness of illumination levels and lighting quality to planned tasks, in Lux, as indicated by design characteristics.	Dsn		Ops.	
	Information sources	Acceptable values range from 30 to 500 Lux for normal tasks, and up to 10,000 Lux for demanding tasks.	٠	٠	٠	20 to 500, up to 2 000 lux
,	Applicable project type	Non-residential Occupancies, all sizes.				
	Assessment method	Review of contract documents, especially lighting plans and specs, by an illumination spe	cialist.			
	Applicable Standards	ab				
		c				
	Information Submittals	d e				
		f				
	Occupancy 2			on	Score	
	Negative	The design indicates that illumination levels and quality of lighting will not be appropriate to the occupancy, and no provision is made for task lighting.	planned	tasks in	-1	
	Acceptable practice	The design indicates that ambient illumination systems will provide illumination levels appr the occupancy, and provision is made for task lighting.	opriate to	tasks in	0	
	Good Practice	The design indicates that ambient illumination systems will provide illumination levels appr the occupancy, dimmable ballasts are provided, and provision is made for task lighting in e zone.	opriate to each 15 m	tasks in 2 work	3	
	Best Practice	The design indicates that ambient illumination systems will provide illumination levels appr the occupancy, dimmable ballasts are provided, and provision is made for task lighting in e zone.			5	
D5 I	Noise and A	coustics				
D5.1 N	Noise attenuati	ion through the exterior envelope.				
	Intent	Ensure that noise attenuation through the wall facing the noisiest site boundary is adequate to provide interior noise levels that will not interfere with normal tasks.	App (a	blicable pha ctive if gree	ases en)	
	Indicator	The predicted noise attenuation performance of the exterior wall most exposed to potential sources of noise, as indicated by design characteristics.	Dsn		Ops.	
	Information sources	http://greenbuildings.santa-monica.org/envelope/envventilation.html				
,	Applicable project type	Total Project				
	Assessment method	Review of design team analysis by a noise specialist.				
		a				
	Applicable Standards b					
	c d					
	a Information Submittals e					
		f				
	Total project	Total Project		STC	Score	Values proposed by JMH
	Negative			29.7	-1	26.0
	Acceptable practice	Design documents indicate that windows in the exterior wall of the Design exposed to the significant sources of external noise will have a Sound Transmission Class, or equivalent,	most of :	27.5	0	29.0
	Good Practice Best Practice	· · · · · · · · · · · · · · · · · · ·		34.1 38.5	3 5	34.0 41.0
				00.0	. ×	

instead of

29.7 27.5

34.1

38.5

Source

standard value of STC acoustic glass 2 glasses + 10 cm space between them

Benchmarks D for designated occupancies in BigTown,			Small Indu	ustrial			
Benchmarks		Uses included	Office				
	Europe	, c	0				
New Construction	Design Phase	Ger	neric	•			
D5.2 Transmission	of facility equipment noise to primary occupancies.						
Inten	To ensure that HVAC systems and equipment rooms are designed to minimize noise transmission to primary occupancies.		blicable pha ctive if gree				
Indicato	Noise Reduction Criteria ratings of mechanical equipment and equipment rooms, as indicated by design characteristics.	Dsn		Ops.			
Information sources	s Reference x, y and z."						
Applicable project type	e Total project						
Assessment method	Review of contract documents and mechanical system by an outside mechanical enginee	r.					
	a						
Applicable Standard	sb						
Information Submittals							
mornation outsmittal	f						
Total projec	t Total Project		NRC	Score	Values proposed by JMH	instead of	Source: Belgian acoustic standard
Negative	•		37.0	-1	37.0	37.0	
	Design documents indicate that HVAC systems and equipment rooms are designed for a	Noise	35.0	0	29.0	35.0	normal acoustic comfort
Good Practice			29.0	3	34.0	29.0	intermediate value
Best Practice	e		25.0	5	41.0	25.0	superior acoustic comfort
D5.3 Noise attenuat	ion between primary occupancy areas.						
Inten	To ensure that measures have been taken to reduce noise impacts between all tenancies and occupancy types.		blicable pha ctive if gree				
Indicato	Minimum Sound Transmission Class of partitions between primary occupancy areas, as indicated by design characteristics.	Dsn		Ops.			
Information sources	s Reference x, y and z."						
Applicable project type	e Total project						
Assessment method	Review of design team analysis.						
	a						
Applicable Standard	sb						
	c						
	d						
Information Submittals	sie f						
Total project	t Total Project		STC	Score	Values proposed by JMH	instead of	Source: Belgian acoustic standard
Negative	9		23.0	-1	50.0	23.0	
-	PDesign documents indicate that the Minimum Sound Transmission Class of partitions betw	veen	25.0	0	54.0	25.0	standard: normal comfort
Good Practice			31.0	3	59.0	31.0	
Best Practice	9		35.0	5	62.0	35.0	standard: superior comfort

Benchmarks	D for designated occupancies in BigTown, Europe	Uses included	Small Inde Office 0	ustrial	
New Construction	Design Phase	Ge	neric		
D5.4 Acoustic perfo	mance within primary occupancy areas.				
Inter	To ensure that primary occupancies are designed to ensure a satisfactory level of acoustic performance.		plicable phate		
Indicato	Predicted reverberation time in seconds, as indicated by design characteristics.	Dsn	-	Ops.	
	Although acoustics is a complex science, only reverbation time is dealt with here.				
	Non-residential occupancies, all sizes				
Assessment method	Where needed, review of design team analysis by an acoustic specialist.				
	a				
Applicable Standard	sb				
	c				
Information Submittal	а ве				
	f				
Occupancy 7	Small Industrial		on	Score	
Negative	Design documents indicate that reverberation time in primary occupancy areas will be n or less than 0.5 second.	nore than 3.	5 seconds	-1	
Acceptable practice	Design documents indicate that reverberation time in primary occupancy areas will be b and 0.5 second.	etween 3.5	seconds	0	
Good Practice	Design documents indicate that reverberation time in primary occupancy areas will be t 1 second.	etween 3 se	conds and	3	
Best Practice	Design documents indicate that reverberation time in primary occupancy areas will be b and 1.5 second.	etween 2.5	seconds	5	
Occupancy 2	Office		on	Score	
Negative	Design documents indicate that reverberation time in primary occupancy areas will be n or less than 0.5 second.	nore than 3.	5 seconds	-1	
Acceptable practice	Design documents indicate that reverberation time in primary occupancy areas will be b and 0.5 second.	etween 3.5	seconds	0	
Good Practice	Design documents indicate that reverberation time in primary occupancy areas will be to 1 second.	etween 3 se	conds and	3	
Best Practice	Design documents indicate that reverberation time in primary occupancy areas will be b and 1.5 second.	etween 2.5	seconds	5	
D6 Control of e	lectromagnetic emissions				"magnetic" instead of "electromagnetic"
Inter	To ensure that electro-magnetic emissions are kept to a level that does not harm human health.		licable ph ctive if gre		
Indicato	r	Dsn		Ops.	
Information sources	The report shown below states that there is no certain standard for EMF.				
	Environmental Health Perspectives				
Applicable project type	Total Building, all sizes.				
Assessment method					
	text to be revised				
Applicable Standard					
Applicable Standard	c				
	d				
Information Submittals					
Total projec	t Total Project			Score	
Negative	·			-1	
Acceptable practice	xxxs			0	
Good Practice	xxxd.			3	
Best Practice	xxxg.			5	

Benchmarks E	for designated occupancies in BigTown, Europe	ss per	Small Indu Office 0	ustrial		
New Construction	Design Phase	Ger	neric			
E Service Quality						

В	enchmarks E	for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	ustrial	
New	Construction	Design Phase	Ger	neric		
E1	Automation efficiency	of building systems to maximize operational				
	#REF!	To encourage the commissioning of building systems with critical functions.		olicable pha ctive if gree		
	#REF!	The development of a commissioning plan and the range of systems to be commissioned.	Dsn	C&C.	Ops.	
	#REF!	It is strongly recommended that the architects and engineers should be involved in the commissioning process, to ensure that the design intent is respected. Costs are estimated as ranging from 0.5% to 1.5%, with specialized facilities much higher.	٠	•		
	Applicable project type	Total building where total net area is more than threshold area.	Threshol	d area, m2	10 000	Not applicable to Crealys context
	#REF!	Review of commissioning management plan.				
	Applicable Standards	Revise text				
	Information Submittals					
	#REF!	Total project			Score	
	Negative	No commissioning plan has been developed and no commissioning activities are planned	I.		-1	
	Acceptable practice	A commissioning plan has been developed and some building systems with critical function commissioned, including life safety systems, central HVAC systems and electrical system		be	0	
	Good Practice	A commissioning plan has been developed and all building systems with critical functions commissioned, including life safety systems, central HVAC systems, lighting, building cor systems.			3	
	Best Practice	A commissioning plan has been developed and all building systems with critical functions commissioned, including life safety systems, central HVAC systems, lighting, building cor systems and the building envelope.			5	

Benchmarks E	for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	ıstrial
New Construction	Design Phase	Gei	neric	
E2 Ability to mo	odify facility technical systems.			
#REF!	To encourage the commissioning of building systems with critical functions.		plicable pha	
#REF!	The development of a commissioning plan and the range of systems to be commissioned.	Dsn	C&C.	Ops.
#REF!	It is strongly recommended that the architects and engineers should be involved in the commissioning process, to ensure that the design intent is respected. Costs are estimated as ranging from 0.5% to 1.5%, with specialized facilities much higher.	٠	•	
Applicable project type	Total building where total net area is more than threshold area.	Thresho	ld area, m2	0
#REF!	Review of commissioning management plan.			
Applicable Standards				
#REF!	f Total project			Score
	No commissioning plan has been developed and no commissioning activities are planned	1.		-1
Acceptable practice	A commissioning plan has been developed and some building systems with critical functi commissioned, including life safety systems, central HVAC systems and electrical system		be	0
Good Practice	A commissioning plan has been developed and all building systems with critical functions commissioned, including life safety systems, central HVAC systems, lighting, building cor systems.			3
Best Practice	A commissioning plan has been developed and all building systems with critical functions commissioned, including life safety systems, central HVAC systems, lighting, building cor systems and the building envelope.			5

Benchmarks E	E for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	ıstrial	
New Construction	Design Phase	Ger	neric		
E3 Commissior	ning of facility systems				
Intent	To encourage the commissioning of building systems with critical functions.		licable pha ctive if gree		
Indicator	The development of a commissioning plan and the range of systems to be commissioned.	Dsn	C&C.	Ops.	
Information sources	It is strongly recommended that the architects and engineers should be involved in the commissioning process, to ensure that the design intent is respected. Costs are estimated as ranging from 0.5% to 1.5%, with specialized facilities much higher.	•	•		
Applicable project type	Total building where total net area is more than threshold area.	Threshol	d area, m2	10 000	Not applicable to Crealys context
#REF!	Review of commissioning management plan.				
Applicable Standards	a b c d				
Information Submittals					
#REF!	f Total project			Score	
Negative	No commissioning plan has been developed and no commissioning activities are planned	1.		-1	
Acceptable practice	A commissioning plan has been developed and some building systems with critical functi commissioned, including life safety systems, central HVAC systems and electrical system		be	0	
Good Practice	A commissioning plan has been developed and all building systems with critical functions commissioned, including life safety systems, central HVAC systems, lighting, building cor systems.			3	
Best Practice	A commissioning plan has been developed and all building systems with critical functions commissioned, including life safety systems, central HVAC systems, lighting, building cor systems and the building envelope.			5	

Be	enchmarks E	for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	ustrial
New	Construction	Design Phase	Ger	neric	
E4	Maintenance	e of Operating Performance			
E4.1	Maintenance of	f building envelope performance.			
	Intent	To ensure that detailed design minimizes the risk of moisture accumulating in the building envelope, where it is likely to shortn the lifespan of building elements, especially if constructed of wood in areas where temperatures can fall to below 0 deg.C.		licable pha ctive if gree	
	Indicator	In areas where applicable, the existence of a report that describes and details the measures taken to ensure long-term integrity of the building envelope.	Dsn		Ops.
	Information sources	0			
	Applicable project type	Any occupancy type where winter design temperatures fall below 0 deg. C.			
	Assessment method	Review of contract documents and engineering analysis of performance during winter cor	nditions.		
		a			
	Applicable Standards	b c			
		d			
	Information Submittals	e			
		f 			
		Total Project			Score
	-	Envelope detailing and construction does not follow industry good practice.			-1 0
Acceptable practice Envelope detailing and construction follows industry good practice. Good Practice Envelope detailing and construction follows best practices, and at least one air-depressurization test is carried out.					
	Best Practice	Envelope detailing and construction follows best practices, and air-depressurization tests before and after interior finishes are applied.	are carried	d out	5

Benchmarks E	for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	ustrial	
New Construction	Design Phase	Ger	neric		
E4.2 Development a	nd implementation of a maintenance management plan.				
Intent	To ensure the availability and implementation of a plan for the long-term maintenance and efficient operation of the facility.		olicable pha ctive if gree		
Indicator	The availability of a comprehensive and long-term plan at the end of Design phase, and evidence of its implementation during Operations phase.	Dsn		Ops.	
Information sources	0				
Applicable project type	Total project, where gross area exceeds threshold area.	Threshol	d area, m2	10 000	Not applicable to Crealys context
#REF!	Review of operations and maintenance management plan.				
Applicable Standards	a b c d				
Information Submittals					
#REF!	f Total Project			Score	
	No explicit plan exists for future maintenance and efficient operation of the facility.			-1	
Acceptable practice	An explicit plan exists for future maintenance and efficient operation of the facility, but it is and is not long term.	s not comp	rehensive	0	
Good Practice	An explicit plan exists for future maintenance and efficient operation of the facility, coverin systems, and providing performance targets, system maintenance and replacement guida 10-year period.			3	
Best Practice	An explicit plan exists for future maintenance and efficient operation of the facility, coverin systems, and providing performance targets, system maintenance and replacement guida period.			5	

Benchmarks E	Benchmarks E for designated occupancies in BigTown,						
New Construction	Design Phase Generic						
E4.3 On-going moni	toring and verification of performance.						
Intent	To ensure the ongoing optimization of building energy and water consumption performance over time. Applicable phase (Active if green)						
Indicator	The provision of energy sub-metering systems and water consumption monitoring systems, according to design documentation.	Dsn		Ops.			
Information sources	0						
Applicable project type	0		•				
Assessment method	Review of contract documentation, with special emphasis on the capability of the compute system to manage the gathering and analysis of data from many dispersed locations.	erized buil	ding manaq	gement			
Applicable Standards	a b c						
Information Submittals	d e f						
#REF!	Total Project			Score			
Negative	According to design documentation, no sub-metering of energy use will be provided for m	ajor occup	ancies.	-1			
Acceptable practice	According to design documentation, an energy submetering system is provided for a few	major occu	pancies.	0			
Good Practice	Good Practice According to design documentation, an energy and water submetering system will be provided for the occupancy, occasional air quality tests will be carried out, and a reporting system will be provided.						
Best Practice	According to design documentation an energy and water submetering system linked to a management system will be provided for the occupancy, regular air quality tests will be ca reporting system will be provided.		and a	5			

Benchmarks E	Benchmarks E for designated occupancies in BigTown,					
	Europe	Uses included	Office 0			
New Construction	Design Phase	Ger				
E4.4 Retention of as-built drawings and documentation.						
Intent	Ensure that as-built architectural, mechanical and electrical drawings, and Intent equipment manuals are available to operating staff and owners, so that they will be able to operate the building efficiently.					
Indicator	The scope and quality of design documentation retained for use by building operators, according to design documentation.	Dsn		Ops.		
Information sources	0					
Applicable project type	Applicable project type 0					
Analiantia Otomianda	a 					
Applicable Standards	c					
	d					
Information Submittals	e					
#REF!	Total Project			Score		
Operations and maintenance manuals have not been provided, or are deficient. Plans for Negative operation do not provide for recording, reporting and documentation protocol for maintenance, or it will be inconsistent with the size and complexity of the building.						
A full set of systems manuals and complete as-built drawings will be been provided. There will be a Acceptable practice partial recording, reporting and documentation protocol for maintenance, but somewhat inconsistent with the size and complexity of the building.						
Good Practice A full set of operations and maintenance documentation, including a full set of systems manuals, complete as-built drawings and an operations and maintenance guide will be provided.						
Best Practice	A full set of operations and maintenance documentation, including a full set of sy complete as-built drawings and an operations and maintenance guide will be pro copy and electronic forms.			5		

Benchmarks E	Benchmarks E for designated occupancies in BigTown, Europe					
New Construction	Design Phase Generic					
E4.5 Provision and r	E4.5 Provision and maintenance of a building log.					
Intent	Assess whether operating events, such as significant events, occupancy density, operating schedule, energy and water consumption, renovations and equipment changes, etc., are all recorded in a building log for future analysis and reference.		licable pha ctive if gre			
Indicator	The maintenance of a building log, of varying degrees of comprehensiveness.	Dsn		Ops.		
Information sources	0					
Applicable project type 0						
Applicable Standards b						
Information Submittals e						
#REF!	Total Project			Score		
Negative	A building log is not maintained, or it is only sporadically maintained.			-1		
A building log is continuously maintained, but only a few key parameters are covered, such as energy and water consumption.						
Good Practice A building log is continuously maintained, and contents include all key operating parameters, as well as most relevant supporting data.						
Best Practice	A building log is continuously maintained, and contents include all key operating well as most relevant supporting data. The log is maintained in a software form operating data from the BMS system.			5		

Benchmarks E	Benchmarks E for designated occupancies in BigTown, Europe					
New Construction	Design Phase	Gen				
E4.6 Skills and know	vledge of operating staff.					
Intent	To increase the probability that tenants and occupants will operate building systems under their control in an efficient manner. This probability will be increased if incentives are built into sales or lease agreements.		licable pha ctive if gree			
Indicator	Indicator The presence of sales agreements or leases that will incent owners or tenants to operate the facilities efficiently.			Ops.		
Information sources	0					
Applicable project type	All occupancies					
Assessment method	Assessment method Review of proposed lease agreements to ascertain incentives and disincentives for efficient day-to-day management					
Applicable Standards	e Standards b c					
	d					
Information Submittals	e					
#REF!	Total Project			Score		
Negative	Sales agreements or leases will contain no information relating to efficient building operat cooling and power costs are paid by the building owner.	ions and he	eating,	-1		
Acceptable practice	Planned leases will require tenants to pay directly for heating, cooling and electric power	usage.		0		
Good Practice	Planned leases will require tenants to pay directly for heating, cooling and electric power or information is provided about performance requirements and recommended practices.	usage and		3		
Best Practice	Planned leases will require tenants to pay directly for heating, cooling and electric power or provided about performance requirements and recommended practices and performance provided.			5		

B	enchmarks F	for designated occupancies in BigTown, Europe	Uses included	Small Indu Office 0	ustrial	
New	Construction	Design Phase	Ger	neric		
F	Social and	d Economic aspects				
F1	Social Aspe	cts				rejected in Glasgow, because considered as mandatory
F1.1	Minimization of	construction accidents.				
	Intent	To minimize accidents causing injury or death to construction workers.		licable pha ctive if gree		
	Indicator	Target rate for accidents on the jobsite requiring hospitalization per 100,000 hours worked.	Dsn		Ops.	
	Information sources	0				
	Applicable project type	0				
	Assessment method	Review of construction management plans by specialist in construction safety.				
		a				
	Applicable Standards	b				
		d				
	Information Submittals	e				
		f				
	Total project	Total Project		Rate	Score	
	Negative			0.60	-1	
	Acceptable practice	Target rate for accidents on the jobsite requiring hospitalization per 100,000 hours worked	d is :	0.50	0	
	Good Practice			0.20	3	
	Best Practice			0.00	5	1

Benchmarks F	F for designated occupancies in BigTown,	s led	Small Indu	ustrial		
Denominaritor	Europe	Uses included	Office 0			
New Construction	Design Phase	Ger	eric			
F1.2 Access for phy	sically handicapped persons.					
Inten	To assess the relative ease of access and use of facilities for persons with physical handicaps.		icable pha tive if gre			
Indicato	The scope and quality of design measures planned to facilitate access and use of building facilities by handicapped persons.	Dsn		Ops.		
Information sources	0					
Applicable project type	By separate occupancies					
Assessment method	nod Review of construction documents by a specialist in universal access design.					
Applicable Standards						
	c					
	d					
Information Submittals	e					
Occupancy 1	Small Industrial		On	Score		
Negative	Design documentation indicates that not all key facilities in the occupancy, including entry washrooms and vertical circulation systems, are accessible to wheelchair users and visuall persons.		ed	-1		
Acceptable practice	Design documentation indicates that all key facilities in the occupancy, including entry poin and vertical circulation systems, are accessible to wheelchair users and visually impaired p		rooms	0		
Good Practice	Design documentation indicates that all key facilities in the occupancy, including entry poin vertical circulation systems and support facilities, are accessible to wheelchair users and vi persons.			3		
Best Practice	Same as Good Practice.			5		
Occupancy 2	Office		on	Score		
Negative	Design documentation indicates that not all key facilities in the occupancy, including entry washrooms and vertical circulation systems, are accessible to wheelchair users and visual persons.		ed	-1		
Acceptable practice Design documentation indicates that all key facilities in the occupancy, including entry points, washrooms and vertical circulation systems, are accessible to wheelchair users and visually impaired persons.						
Good Practice	Design documentation indicates that all key facilities in the occupancy, including entry poin vertical circulation systems and support facilities, are accessible to wheelchair users and vi persons.			3		
	Same as Good Practice.			5		

Benchmarks F	⁻ for designated occupancies in BigTown, Europe	Uses included	Small Ind Office	ustrial			
New Construction	Design Phase		o neric				
F1.3 Access to view	I s from work areas.						
Inten	To assess the extent to which the distance from a workstation to the exterior and the interior organization of the space does not limit visual access to exterior views.		plicable phate				
Indicator	Distance of the most remote workstation in a typical primary occupancy from exterior windows; and the extent to which interior organization provides exterior views.	Dsn		Ops.			
Information sources	0						
Applicable project type	For non-residential occupancies, all sizes.						
#REF	Review of analysis prepared by the design team.						
	a						
Applicable Standards	sb						
	c						
	d						
Information Submittals	e						
	f						
Occupancy 1		on	m.	Score	Values proposed by JMH	instead of	Source
Negative			11	-1		11	
Acceptable practice	international and a second s	cy to	10	0		10	
Good Practice			6	3		6	
Best Practice			4	5		4	
Occupancy 2	Office	On	m.	Score	Values proposed by JMH	instead of	Source
Negative			11	-1		11	
	The maximum distance from the most remote work location in a typical primary occupan	cy to	10	0		10	
Good Practice			6	3		6	
Best Practice			4	5		4	
F1.4 Social utility of	primary building function	T			rejected in Glasgow		
Inten	To assess the extent to which the primary occupancy function of the project satisfies basic societal needs.		Applicable phases (Active if green)				
Indicator	The degree of social relevance of the primary occupancy.	Dsn		Ops.			
Information sources	0						
Applicable project type	All occupancies	L	L	L			
Assessment method	Review of planned primary occupancy type by expert panel that includes a sociologist a	nd an ecor	nomist.				
	a						
Applicable Standards	b						
	c						
	d						
Information Submittals	e						
	f						
Total project	Total project Total Project Score						
Negative	The planned primary occupancy serves a function that will work against regiona stability.	l social va	alues or	-1			
Acceptable practice	The planned primary occupancy serves a function that is not likely to have eithe positive impact on regional social values or stability.	either a negative or 0					
Good Practice	The planned primary occupancy serves a function that is likely to have a positive regional social values or stability.	e impact o	on	3			
Best Practice	The planned primary occupancy serves a function that is likely to have a very por regional social values or stability.	ositive imp	bact on	5			

		r decignated accuracion in RigTown	Small Industrial		ustrial			
B	enchmarks r	F for designated occupancies in BigTown,	Uses included	Office				
		Europe	ind	0				
New	Construction	Design Phase	Gei	neric				
F2	Cost and Ec	onomics						
F2.1	Minimization of	life-cycle cost.						
	Intent	To assess the level of total Life Cycle Cost of the project		olicable pha ctive if gree				
	Indicator	Predicted Life Cycle Cost over a 25-year period, with calculations carried out in accordance with recognized procedures.	Dsn		Ops.			
	Information sources	0						
	Applicable project type	0						
	Assessment method	Review of LCC analysis by a qualified cost consultant.						
		a						
	Applicable Standards							
		d						
	Information Submittals	e						
		f						
	Occupancy 1	Small Industrial	on	EUR per m2	Score	Values proposed by JMH	instead of	Source
	Negative			9 880	-1		9 880	
	Acceptable practice	The maximum distance from the most remote work location in a typical primary occupant	cy to	9 500	0		9 500	
	Good Practice	exterior windows is :		8 360	3		8 360	
	Best Practice			7 600	5		7 600	
	Occupancy 2	Office	on	EUR per m2	Score	Values proposed by JMH	instead of	Source
	Negative			12 840	-1		12 840	
	Acceptable practice	The maximum detailed nem the meet remote were leduler in a typical primary decapara	cy to	12 000	0		12 000	
	Good Practice	exterior windows is :		9 480	3		9 480	
	Best Practice			7 800	5		7 800	
F2.2	Minimization of	construction cost.	[
	Intent	To assess the difference between the capital cost of the Design with that of a reference building designed according to standards of Acceptable Practice.		olicable pha ctive if gree				
	Indicator	Predicted construction cost per unit area, according to design documentation.	Dsn		Ops.			
	Information sources	0						
	Applicable project type	For individual occupancies, all sizes						
	Assessment method	Review of cost analysis by a qualified cost consultant.						
		a						
	Applicable Standards	b						
		c						
	Information Submittals	d						
	Information Submittais	e f						
	Occupancy 1	Small Industrial	on	EUR/m2	Score	Values proposed by JMH	instead of	Source
	Negative			2 100	-1			BEP : ?
	Acceptable practice		cy to	2 000	0		2 000	BEP : ?
	Good Practice	exterior windows is :		1 700	3			BEP : ?
	Best Practice			1 500	5		1 500	BEP : ?
	Occupancy 2	Office	on	EUR per m2	Score	Values proposed by JMH	instead of	Source
	Negative			1 120	-1		-	BEP : ?
		The maximum distance from the most remote work location in a typical primary occupant exterior windows is :	cy to	1 100	0			BEP : ?
	Good Practice			1 040	3			BEP:?
	Best Practice	1		1 000	5		1 000	BEP : ?

Benchmarks F for designated occupancies in BigTown,				ustrial	
Europe			Office		
			0		
New Construction	Design Phase	Ger	neric		

Bonchmarke [F for designated occupancies in BigTown,	, pe	Small Industrial				
Denchinarks r	Europe	Uses included	Office				
	Lalope	⊆	0				
New Construction	Design Phase	Ger	neric				
F2.3 Minimization of	f operating and maintenance cost.						
Inten	To assess the difference between the operating cost of the Design with that of a reference building designed according to standards of Acceptable Practice.		plicable phate				
Indicator	Operating cost per unit area for energy, water & maintenance, according to design documentation.	Dsn		Ops.			
Information sources	The operating cost of a high-performance building should be substantially less than Acceptable Practice, primarily because of reduced energy, water and equipment maintenance costs.						
Applicable project type	For individual occupancies, all sizes	1					
Assessment method	Review of operating cost projections by a cost consultant and a person knowledgable in	building o	perations.				
	a						
Applicable Standards	b						
	c						
Information Submittals	e						
	f						
Occupancy 1	Small Industrial	on	EUR per m2	Score	Values proposed by JMH	instead of	Source
Negative	9		17	-1		17	BEP : ?
Acceptable practice	The maximum distance from the most remote work location in a typical primary occupan	cy to	15	0		15	BEP : ?
Good Practice			11	3		11	BEP : ?
Best Practice	2		8	5		8	BEP : ?
Occupancy 2	Office	on	EUR per m2	Score	Values proposed by JMH	instead of	Source
Negative			6	-1		6	BEP : ?
	The maximum distance from the most remote work location in a typical primary occupan exterior windows is :	cy to	5	0		5	BEP : ?
Good Practice Best Practice			3	3 5		3	BEP:?
	· -		2	5		2	BEP : ?
F2.5 Support of Loc	al Economy.						
Inten	To encourage the purchase of a significant level of construction goods and services within the economic region.		plicable phate		based on cost, construction , labour %		
Indicator	Prediction of the percentage of construction expenditures for goods and services going to firms with permanent offices in the urban region.	Dsn		Ops.			
Information sources	0						
Applicable project type	For Total Project, all sizes.						
#REF	Review of expendture program and sample analysis of material billing to verify costs.						
	a						
Applicable Standards	b						
	c						
	d						
Information Submittals	e +						
Total action	Lotal Project		Deres	C	Voluos areas a hur 1141	instant	Service
	Total Project		Percent	Score -1	Values proposed by JMH	instead of	Source BEP:?
Negative Acceptable practice	The maximum distance from the most remote work location in a typical primary occupan	ev to	44% 50%	-1		44% 50%	BEP:?
Good Practice		0y 10	68%	3		68%	BEP:?
Best Practice			80%	5		80%	BEP : ?