Carisbrook Stadium Develpoment ESD Rating System Worksheet **Project Template Carisbrook Stadium Development - Issued as part of the Masterplan and Feasibility Study**

Guideline / Name	Procedures	Point Range	Point Status			Applicability			
		Recommended	Pursued	Achieved	Variance	Remarks	Primary Responsibility	First Cost	Operating Cost
Performance Management									
P.1 - Guideline Management	Track compliance, define a method of variances and collect information to measure outcomes leading to continual improvement of the Environmental Substainable Design Guidelines. Required Performance Criteria • Follow process for guideline management. In lieu of specific agency process, see Guideline Management Process. (See Supporting Information.) In either case, the following elements are required at the end of each phase and annually during operations: o Complete forms verifying compliance (for required guidelines) and indicate use of guidelines that are being used voluntarily. o Complete (update) outcome documentation (P-B.) • Use Agency variance process or follow Variance Review Process, when appropriate (see Supporting Information.) The agency variance process must include at least the elements shown in the Variance Review Process.						Guideline Leader (Coordinator of Work Team Compliance)		
P.2 - Planning for Construction	Maximize utilization of facilities and modify them less over time by careful analysis of needs and resources. Required Performance Criteria • Evaluate the assumptions to build, expand or remodel facilities based on these questions. o Can the current facilities be shared or better utilized to reduce or eliminate the need for additional space? o Can the current space be reconfigured within its shell to meet the need? o If not, can an existing building be reconfigured within its shell to meet the need? o If not, would an addition to the current space or another existing building meet the need? o If not, how can new space be optimized (including shared use of some facilities) and the building footprint be minimized? o For all options, how can the space be configured best for future use and adaptability? • Document process showing that a thorough review of "building less" (or "utilize more") options was completed with explanation of how the project is proceeding and why this path was chosen. Refer to Materials and Waste2 and Energy3 for calculation tools. o The analysis requires that the design team evaluate the environmental and economic impacts regarding reuse of an existing building versus building a new building as well as an analysis of how the space use needs could be most efficient. o Measure the resource reuse gained when reusing a building against the materials needed to build a new building. Also measure the savings gained because less energy is used in a smaller building. Base the energy savings on typical energy usage for the building type and base on total building square footage. • Establish sqm. areas for the various baselines used to calculated the above: Planning Baseline, Programming Baseline, and Design Baseline. (See P.4 Supporting Information for more on these baselines.)						BECA		
P.3 - Integrated Design Process	Create an integrated approach to the design process by involving key design team members, users, occupants and operators. This approach is associated with successful outcomes on lower cost buildings with improved occupant productivity. Required Performance Criteria • Facilitate communication and the process for an interdisciplinary design and stakeholder team as outlined in the Integrated Design Process Overview. (See Supporting Information.) • Conduct an organization/kick-off meeting including the team. • Create a plan of meetings and team updates at each phase indicating who will attend, performance responsibilities, and submit documentation of decisions.						HOK Sport / JASMAX		
P.4 - Design and Construction Commissioning	Ensure and verify that the building is constructed and calibrated to meet the design intent as represented in contract documents (which includes meeting performance criteria of the Agency, including MSBG as represented in the contract documents.) Required Performance Criteria • Provide funding to a minimum of 1.5% of the total construction cost for verification prior to and through the end of the correction period. • Verify that the design is compatible with the Operations Commissioning Plan. (See P.5 Operations Commissioning.) • Use Agency Commissioning Process. If no Agency Commissioning Process exists, use Design and Construction Commissioning Process Summary (see Supporting Information.) In either case, the elements in the Design and Construction Commissioning Process Summary must be included as well as the following elements: • Scope of items to be commissioned o Systems Commissioning: Mechanical HVAC system including testing, adjusting and balance, energy, (including renewable) systems, power and electrical systems, including lighting and daylighting controls; indoor air quality elements and systems. See Supporting Information for more details on requirements under Design and Construction Commissioning Plan. o Indoor air quality procedures during construction and correction period According to Construction Air Quality Management Plan and Correction Period Air Quality Management Plan. (See Supporting Information.) o Construction waste management procedures during construction according to the Construction Waste Management Plan. See Supporting Information and Guideline M.3 Waste Reduction and Management for criteria that the plan must meet. o User Comfort and Satisfaction Assessment as one indicator of overall IEQ performance. See details under Supporting Information. • Design elements for measurement and verification: o Provide separate circuits and panels for power, lighting, HVAC and plumbing systems and equipment with high power and/or water use to facilitate monitoring. o Provide separate energy (electric, gas, other) meters for each building and sub-meters depending on project size to meet requirements of P.5 Operations Commissioning. o Provide separate water meters for each building, and separately meter building water use for irrigation and process water uses. o Include design elements needed to enable measurement and verification for site, water, energy, IEQ, materials, and waste sections of P.5.						BECA		

	Guideline / Name	Procedures	Point Range		Point Status			Applicability			
				Recommended	Pursued	Achieved	Variance	Remarks	Primary Responsibility	First Cost	Operating Cost
	P.5 - Operations Commissioning	Ensure (verify) the building is operated to meet the design intent as represented in contract documents (which includes meeting performance criteria of the Agency, including MSBG.) Required Performance Criteria Use Agency Operations Management Process. If there is no established Agency Operations Management Process, use Operations Commissioning Process Summary. (See Supporting Information.) In either case, the elements of the Operations Commissioning Process Summary must be included as well as the following: • Evaluate performance over time according to the Measurement and Verification Plan for the following scope: (More detail on requirements is under Supporting Information.) o Water device and system level measurement and verification o Water whole building measurement and verification o Energy device and system level measurement and verification o Energy whole building measurement and verification based on metering and calibrated energy simulation: o Indoor environmental quality (IEQ) measurement and verification: Air quality, thermal comfort, quality of lighting o Waste measurement and verification o User complaint/ work request logs related to user comfort and satisfaction as an indicator of ongoing IEQ performance • Implement Operations and Maintenance Practices and annual evaluation according to the Maintenance Plan: (More detail on requirements is under Supporting Information.)							EPTB		
	P.6 - Lowest Life Cycle Cost	Determine the lowest life cycle cost when comparing design alternatives. Required Performance Criteria • Apply Life Cycle Cost methods to compare at least three alternatives for "lowest possible lifetime cost." either through use of the NIST's BLCC computer model or comparable discounted cash flow analysis. Perform this analysis at least twice in the design process: once before the end of Schematic Design Phase and once before the end of the Construction Document Phase.						Must Analyse at Scheme and Detailed Design Stage	HOK Sport / JASMAX		
	P.7 - Process Documentation for Performance Management	Planning for Conservation and Commissioning in order to improve Guidelines over time. Required Performance Criteria • Complete P-A Compliance Summary Form at the end of each phase to document progress towards compliance for those portions of the guidelines required or recommended but being pursued. • Complete Process Documentation Forms at the end of each phase to document key process and project reference information relevant to the reported phase of the project. See Form P-B.							BECA		

Size (sq.ft.)	Metering	with Submetering	Calibrated Simulation (annual Energy Use)
<10,000	Required	Recommended	Recommended
10-50,000	Required	Required	Recommended
>50,000	Required	Required	Required

Site and Water

	S.1 - Avoid Critical Sites	Avoid development or minimize the impacts of development on portions of sites whose natural features and functions are particularly valuable to the larger community; avoid development on sites where soil, water, and flora/fauna indicators are in a fragile condition because of surrounding development or the natural state of the site. Required Performance Criteria Avoid or minimize the impact of development on portions of sites that meet any one of the following criteria: • Land of national, regional, or local natural resource and biological/ecological significance as identified in national, regional, or local natural resources inventories, assessments and biological surveys. • Pulic open land. • Land whose elevation is lower than 1.5m above the elevation of the 100-year flood level • Land which provides habitat for any animal or plant species on the National threatened or endangered list. • Land which prior to acquisition for the project was public parkland, unless land of equal or greater value as parkland is accepted in trade by the public landowner							Appropriated Agency		
	S.2 - Appropriate Location and Density	Direct development, where appropriate, to existing urban, suburban, or rural areas with in-place infrastructure to reduce development pressure on undeveloped land or Greenfield sites; to conserve natural resources, reduce energy use and pollution contributions related to transportation requirements; and to promote a sense of increased community interaction. Required Performance Criteria Avoid low density, undeveloped sites, unless no other site is available. If no appropriate site is available, then compare existing and planned land use and zoning requirements for specific site types. Select a site which presents the most comprehensively positive impact for environmental, economic, community, and human benefits. In this analysis consider the following scenarios: • Urban and suburban locations: Select sites which reuse existing urban/suburban and industrial sites; are located near mass transit and public amenities to encourage walking to services instead of driving; and can utilize existing infrastructure such as utilities, roadways, services, etc. Select sites that support Regional Development Strategies and Local Comprehensive Plans.							Appropriated Agency		
*	S.3 - Brownfield Redevelopment	Redevelop damaged or contaminated sites to reduce development pressure on undeveloped land and utilize existing investments in infrastructure, conserve natural resources, and promote new sense of community renewal, identity, and revitalization.							Appropriated Agency		
	S.4 - Erosion and Sedimentation Control	Reduce the loss of soil and sediment during construction and occupancy by reducing the impacts of wind and water on the soil and to reduce the amount of soil and sediment entering streams causing downstream impacts. Required Performance Criteria • Design, specific to site, a sediment and erosion control plan that prevents sedimentation within acceptable limits as set by local authority or watershed district having jurisdiction, whichever is more stringent. • The plan shall meet the following objectives: o Prevent sedimentation of storm sewer. o Prevent soil erosion before, during, and after construction by controlling stormwater runoff and wind erosion.1 o Protect hillsides using erosion control measures.2 o Prevent air pollution due to dust and particulate matter.							HOK Sport / JASMAX		

	Guideline / Name	Procedures	Point Range		Point Status			Applicability			
				Recommended	Pursued	Achieved	Variance	Remarks	Primary Responsibility	First Cost	Operating Cost
	S.5 - Stormwater Management	Minimize negative impacts on the natural site hydrologic cycle as much as possible by reducing downstream impacts, improving the overall water quality and clarity, and recharging groundwater through infiltration. Required Performance Criteria • Achieve no net decrease in the rate and quantity of on-site water recharge from existing to developed conditions; OR, if existing imperviousness is greater than 25%, implement an infiltration or storage plan that results in a 25% increase in the rate and quantity of on-site water recharge. • Provide treatment systems designed to remove solids and pollutants for on-site water recharge to comply with water quality standards of Local Government. It is the intent of these Guidelines to updat tools and criteria such as Best Management Practices on an ongoing basis, to include the most comprehensive, stringent and consistent approach as possible for compliance. • Achieve no net increase in the rate and quantity of stormwater runoff from existing to developed conditions; OR, if existing imperviousness is greater than 25%, implement a stormwater management plan that results in a 25% decrease in the rate and quantity of stormwater runoff. • Provide treatment systems designed to remove 80% of the average annual post development total suspended solids (TSS), and 40% of the average annual post development total phosphorous.							Civil Engineer		
	S.6 - Reduce Site Disturbance and Restore Site	Conserve existing site features during planning and construction to promote biodiversity on the site and to restore natural areas damaged by construction so the site can sustain its water, oil, and plant cover functions. Required Performance Criteria • Maintain or improve natural site functions and biodiversity for 50% of site area (excluding the stadium) in accordance with existing conditions and surrounding site context. Determine spatially by area measurement, not including building footprint. • Limit site disturbance including earthwork and clearing of vegetation to 12m beyond the building perimeter, 1.5m beyond primary roadway curbs, walkways, and main utility branch trenches, 1.5m beyond tree driplines and the edges of site areas identified for protection and 7.5m beyond pervious paving areas and stormwater management features that require additional staging areas in order to limit compaction in the constructed areas. • Provide a minimum of 75% of all species planted on the site from stock identified as native to the local area and as identified in resources listed at the end of this guideline. In addition, a minimum of 75% of all trees and shrubs, by quantity, are to be native material.							Landscape Architect		
*	S.7 - Restorative Design	Go beyond guideline S.6 to further conserve existing site features during planning and construction, to promote biodiversity on the site and restore natural areas damaged by construction so the site can sustain its water, soil, and plant cover functions. Recommended Performance Criteria This criterion is recommended but not required by these guidelines: • On previously developed sites: maintain or improve natural site functions and biodiversity for 75% of site area in accordance with existing conditions and surrounding site context. Determine spatially by area measurement, not including building footprint.							Landscape Architect		
	S.8 - Reduce Site Water Use for Plant Materials	Limit, reduce, or eliminate potable water demand for maintaining plants and lawn areas. Required Performance Criteria • Use native plantings that do not require maintenance irrigation after 1 to 2 year establishment period. • In areas where the use of native plant materials has not reduced or eliminated the need for additional maintenance irrigation, use high efficiency irrigation technology, AND/OR use captured rain or recycled site water and building gray water, to reduce potable water consumption for irrigation by 50% over conventional means. Recommended Performance Criteria • Recommendation for additional performance: Increase the percentage of native plantings on site, or use only captured rain or recycled building or site water for an additional 50% reduction (100% total reduction) of potable water for site irrigation needs, AND/OR, do not install permanent landscaped irrigation systems.							Landscape Architect		
	S.9 - Reduce Light Pollution	Eliminate light trespass from the site, improve night sky access, and reduce development impact on nocturnal environments. Reduce contribution of sport and site lighting to overall electrical use through appropriate selection of type, sizing and operation of fixtures. Required Performance Criteria • Do not exceed light spill criteria as set out in the Resource Consent Approval. • Reduce electrical use for site lighting to assist in achieving overall building energy use reduction of 30% beyond code requirements. Recommended Performance Criteria • Use lamps with broader color spectrum which appear closer to daylight color temperatures in areas of safety/security (i.e. main walking routes through large parking lots, isolated areas), at building entrances, and locations where identification of objects or individuals is essential						Stands contain light pollutioon within the stadium. Sports lights are located under the roof of the north and souths stand and are directed away from surrounding neighbourhoods. The building is not floodlit but uses borrowed light and background lighting to create facade lighting.	Electrical Engineer		
	S.10 - Reduce Noise Pollution	Eliminate / reduce noise trespass from the site, improve acoustic environment for the local neighbourhood and reduce the impact on nocturnal environments. Reduce contribution of noise trespass from the PA system through appropriate location and selection of type, sizing and operation of fixtures. Required Performance Criteria: • Do not exceed noise spill criteria as set out in the Resource Consent Approval. Recommended Performance Criteria: • Develop a distributed PA system under the roof of the stadium avoiding direct line of sight to surrounding neighbourhood.						Stands and roof contain noise pollution inside the stadium.	Acoustic Engineer		
*	S.11 - Reduce Heat Island Effect	Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat. Recommended Performance Criteria This criterion is recommended but not required by these guidelines. • Construct a minimum of 30% of non-roof impervious surface with high-albedo materials, OR • Construct open-grid pavement system (less than 50% impervious) for a minimum of 50% of the parking lot area., OR • Construct a minimum of 30% of non-roof impervious surface to be shaded within 5 years, OR • Place a minimum of 50% of parking spaces underground or in a structured parking facility which reduces overall impervious surface coverage by 50%. • Use high-reflectance AND high emissivity roofing for a minimum of 75% of the roof surface; OR, install a "green" (vegetated) roof for at least 50% of the roof area.						Only some variance requested	HOK Sport / JASMAX		

	Guideline / Name	Procedures	Point Range		Point Status			Applicability			
				Recommended	Pursued	Achieved	Variance	Remarks	Primary Responsibility	First Cost	Operating Cost
*	S.12 - Encourage Efficient Transportation Alternatives	Reduce negative land development and pollution impacts caused by transportation requirements. To reduce dependence on the automobile, reduce the amount of pavement impacting natural systems, and to allow for more ecologically responsive approaches to the site. Recommended Performance Criteria This criterion is recommended but not required by these guidelines. • Locate the building within 1km of a rail / bus station and one or more bus lines, and within 500m of retail and public services. • Provide suitable means and mix for securing bicycles, with convenient changing/shower facilities for use by cyclists, for 5% or more of building occupants or according to local bicycle parking guidelines or zoning requirements, whichever is more stringent. • Size parking capacity not to exceed minimum local zoning requirements; encourage shared parking with adjacent uses, add no new parking for rehabilitation projects; and provide preferred parking for hybrid vehicle owners, carpools or van pools capable of serving 5% of the building occupants. • Locate preferred parking, bicycle parking, pick-up areas, and covered waiting spaces within close proximity of the main building entrances, with markings clearly designating these areas.						Only some variance requested	HOK Sport / JASMAX		
	S.13 - Building Water Efficiency	Minimize potable water use in buildings to conserve water resources and minimize water and wastewater treatment infrastructure cost. Required Performance Criteria • Reduce water use in building.							Mechanical Engineer		
*	S.14 - Use Gray Water to Reduce Wastewater Treatment Impacts	Reduce use of potable water for wastewater systems and decrease the amount of graywater exiting the site. Recommended Performance Criteria This criterion is recommended, but not required by these guidelines. • Use graywater systems to reduce the use of potable water for wastewater on the site and/or within the building and decrease the amount of graywater exiting the site. No specific limits or required reduced amounts are set, because each project's requirements will be site specific, based on soil quality, current runoff volumes, local ordinances, and projected use.							Mechanical Engineer		
*	S.15 - Use Biological Wastewater Treatment System	Reduce wastewater and use of potable water for wastewater systems. Recommended Performance Criteria This criterion is recommended, but not required by these guidelines. • Use a biological waste treatment system to reduce the volume of blackwater entering the municipal system and use of potable water. No specific limits or required reduced amounts are set, because each project's requirements will be site specific, based on soil quality, current runoff volumes, local ordinances, and projected use.							Mechanical Engineer/ Civil Engineer		
	S.16 - Outcome Documentation for Site and Water	Document information that supports an understanding of the economic, human, community and environmental outcomes related to site and water issues for the project. Recommended Performance Criteria • Attach additional documentation, including plant lists, drawings, calculations and related items required to support claims for compliance with guidelines.							Guideline Leader (Coordinator of Work Team Compliance)		
	Energy & Atmosphere										
	E.1 - Reduce Energy use.	Reduce comparable building annual energy costs. A whole building, comparative analysis methodology must be used before the Construction Document phase of the design process to determine the energy conservation solution with the lowest lifetime cost. Required Performance Criteria • Reduce design energy costs compared to the energy cost budget for regulated energy components (electricity and gas). • For each step in the process outlined below, the design team is to provide a concise record of the significant energy related issues discussed, decisions made and action items identified.							Mechanical Engineer (or Energy Consultant)		
	E.2 - Efficient Equipment and Appliances	Reduce energy use associated with electrical loads and process loads in buildings. These energy savings are in addition to those attributed to the building itself which are accounted for in guideline E.1. Required Performance Criteria • Select new equipment and appliances that meet Green / Energy Star criteria.							Appropriated Agency		
	E.3 - Evaluate Renewable and Distributed energy Generation	Encourage the consideration and use of renewable energy sources and cleaner forms of hydrogen and hydrocarbon-based distributed generation systems to reduce atmospheric pollution. This can provide a stimulus to the cities economy through investments in local jobs and materials while reducing the cities expenditures on imported fuel and power. Required Performance Criteria • There is no required amount of renewable or distributed energy generation for city buildings at this time. However, an analysis is required that includes the environmental, economic, and community impacts from supplying a percentage of the building's total energy use with onsite or off-site renewable or cleaner distributed generation systems. The evaluation should assess the benefits for solar, wind, geothermal, or biomass energy systems as well as micro-turbines and fuel cells, as applicable.							Mechanical Engineer		
*	E.4 - Atmospheric Protection	Encourage the investigation and evaluation of refrigerants to reduce environmental impacts harmful to the atmosphere. Energy conservation should be achieved with the lowest reasonable environmen impacts. Recommended Performance Criteria There are no required levels for atmospheric pollution from refrigerants at this time except for CFC reduction which is required. It is recommended that the following three criteria be met. • Achieve an atmospheric Lifetime (AtL) < 33. Atmospheric Lifetime is a measure of the average persistence of the refrigerant if released. A longer lifetime has worse environmental effects. • Achieve an Ozone Depletion Potential (ODP) < 0.034. Ozone Depletion Potential is a normalized indicator based on the ability of a refrigerant to destroy atmospheric ozone, where CFC-11 = 1.00. A higher ODP has worse environmental effects. • Achieve a Global Warming Potential (GWP) < 3500. Global Warming Potential is an indicator of the potency of the refrigerant to warm the planet by action as a greenhouse gas. A higher GWP has worse environmental effects.							Mechanical Engineer		
	E.5 - Outcome Documentation for Energy and Atmosphere	Calculate and record the community, environmental, and life-cycle economic, impacts related to energy use and generation for the building. These results are inputs for the total building outcome documentation and life cycle cost analysis. Required Performance Criteria • Complete Energy and Atmosphere Outcome Documentation Form at the end of each phase to document design decisions for those portions of the guideline implemented at that time.							Guideline Leader (Coordinator of Work Team Compliance)		

	Guideline / Name	Procedures	Point Range	Point Status			Applicability			
			Recommended	Pursued	Achieved	Variance	Remarks	Primary Responsibility	First Cost	Operating Cost
Indoor Environmental Quality										
	I.1 - Restrict Environmental Tobacco Smoke	Reduce indoor pollutants by eliminating environmental tobacco smoke (ETS) from occupied areas of the building. Required Performance Criteria • Establish a no smoking policy for the building. • Smoking policy will state where smoking outside of building can occur, such that design considerations will not introduce ETS into the building from outdoor sources. • Design documentation must state explicitly that the building was designed assuming that smoking would not occur in the building.							Appropriated Agency		
	I.2 - Indoor Air Quality and Ventilation Baseline	Ensure good indoor air quality as required by the NZBC. Required Performance Criteria • Meet current NZBC requirememts for ventilation rates and other indoor air quality requirements, except when superseded by other sections of these guidelines. (See guidelines I.3 and I.5.)							Mechanical Engineer		
	I.3 - Specify Low-emitting Materials	Reduce indoor chemical pollution in a building by choosing low-emitting materials and furnishings through construction, operations and maintenance. Since material emissions are a factor in the ventilation rate required by the guidelines, lower emitting materials may also reduce the ventilation rate. Required Performance Criteria Comply with requirements of indoor air quality (IAQ) limits for indoor air pollutants, meet or outperform volatile organic compounds(VOC) limits for adhesives, sealants, paints, composite wood products finishes, furnishings, and carpet systems as follows: • Meet or exceed the VOC and chemical component limits of recommendations as set out in AS/NZS XXXX. Materials or products will be evaluated as an assembly when typically installed as such. o Adhesives sealants and fillers must meet or outperform the VOC limits. o Paints and coatings must meet or outperform the VOC and chemical component limits. Paints containing a minimum of 20% recycled content, which may not meet low emission requirements, may be used as a primer in spaces unoccupied for 72 hours after application and covered with final topcoat(s) that meet the requirements. Refer to Guideline M.3 for recycled content recommendations. o Carpet systems must meet or outperform AS/NZS XXXX and comply with the low VOC-emitting requirements. o Composite wood and agrifiber products must contain no added urea-formaldehyde resins. o Furnishings must meet or outperform the VOC and chemical component limits. Products must comply, at a minimum, with the 14 day 'flushing' period, comprised of 14 days conditioning with clean air							HOK Sport / JASMAX		
	I.4 - Ventilation based on Anticipated Pollutants	Ensure good indoor air quality by identifying pollutant concentration target values for use by the design team to calculate ventilation rates for a space. Required Performance Criteria Calculation of ventilation requirements based on pollutant concentrations is required using the Calculation Method in Required Tools/Calculations in the following situations: • Section I.3 - Specify Low-emitting Materials is not followed • Concentrations of pollutants will be present in higher concentrations than listed in the table below due to particular activities in the building or on site • Special pollutants not listed in Table I-1 below are part of the building use or site. Establish target pollutant concentrations for the special pollutants in order to calculate ventilation requirements							Mechanical Engineer		
	I.5 - Ventilation based on Carbon Dioxide Limits	Provide adequate ventilation to control bioeffluents from building occupants, using CO2 concentrations as the indicator of bioeffluents levels. Required Performance Criteria • The CO2 concentration in occupied zones*1 shall not exceed 450 ppm above outdoor concentrations.							Mechanical Engineer		
	I.6 - Moisture Control	Prevent exterior water intrusion, leakage from interior water sources, or other uncontrolled accumulation of water. Required Performance Criteria • Design the building envelope to resist moisture penetration. Since all buildings have potential for moisture penetration, provide drainage planes to the exterior during the heating season and drainage planes to the interior during the cooling season. • Design HVAC systems (and exterior wall/window construction) to hold interior relative humidity (RH) between 20 and 50%. • Design building envelope elements so that surface temperatures remain warm enough to resist indoor condensation. • Specify maximum moisture content of materials used in construction to assure that subsurface layers are dry enough to prevent moisture trapping by surface finish materials. • When exterior water intrusion, leakage from interior water sources, or other uncontrolled accumulation of water occurs, the intrusion, leakage or accumulation shall be corrected because of the potenti for these conditions to cause the growth of mold. Establish maintenance procedures that will identify unintended water intrusion, leakage or accumulation quickly and provide drying or removal of building structure elements within 48 hours of the unintended event. Review past water damaged materials to ensure mold growth has not occurred. Also See Performance Management.							Mechanical Engineer		
	I.7 - Thermal Comfort	Provide for occupant thermal comfort through control of ambient temperature, and operative temperature which includes wet bulb, dry bulb and globe temperatures, relative humidity (RH), mean radiant temperature (MRT), and air velocity. Required Performance Criteria • Maintain continuous indoor exposure to Ambient Temperature in permanently occupied spaces less than 27°C and greater than 18°C. • For transition spaces (entries, hallways, exterior walls, concourses) consider letting temperatures fall outside the limits for continuously occupied spaces to save energy. • Maintain the wall, floor, and ceiling surface temperatures within 7°C when taken from all continuously occupied positions OR Maintain no continuous indoor exposure to greater than 0.30 asymmetry in MRT across three body plane hemispheres (front-back, side-side, topbottom) • Maintain air velocity greater than or equal to 0.05 m/sec for continuously occupied spaces. • Maintain interior relative humidity (RH) greater than 20% and less than 50% in continuously occupied workspace.							Mechanical Engineer		
*	I.8 - Daylight	Provide daylight for ambient illumination at levels and conditions known to produce physiological and psychological benefits. Daylight contributes to a perception of a 'bright and cheery' workplace through provision of volumetric brightness (also called "room-surface brightness".) The important qualities of daylight are its inherent variation, power spectrum (color), and the predominantly horizontal component of its illumination vector (direction of illumination.) Required Performance Criteria At least 75% of the floor area of the concourse in the building shall have a minimum daylight factor of 1% when measured without furniture and at 750mm above the floor.							HOK Sport / JASMAX		
	I.9 - Quality Lighting	Provide lighting (natural and artificial) of high quality for visual tasks and preferred interior rendering. The important lighting quality characteristics and effects include: glare-free, good (natural) color rendering, enhanced sense of spaciousness, and attractive rendering of people for social exchanges. Quality lighting enhances effectiveness of social communication and contributes to creating the perception of a 'bright and cheery' workplace through volumetric brightness. Required Performance Criteria A glare index based on Visual Comfort Probability (VCP) or Discomfort Glare Rating (DGR) or Unified Glare Rating (UGR) of no less than 70% in all continuously or intermittently occupied spaces exce storage areas and mechanical rooms.							Electrical Engineer		

	Guideline / Name	Procedures	Point Range		Point Status			Applicability			
				Recommended	Pursued	Achieved	Variance	Remarks	Primary Responsibility	First Cost	Operating Cost
*	I.10 - View Space and Window Access	Provide interior view space or views to the exterior, that possesses preferred and demonstrably beneficial characteristics. The benefits are the ability for focal rest to avoid eyestrain, and access to visua information about changing outside conditions. A view amenity also aids varying attention cycles and relieves the stress of mental work. Recommended Performance Criteria These criteria are recommended but not required by these guidelines: • From every continuously occupied position in spaces there shall be visual access to an external window view that is at least 10 degrees in horizontal visual angle at no greater than the 50th percentile standing average eye height of 1,625mm. • From every assigned and continuously occupied workstation position at seated eye of 1,200mm there shall be available at least a continuous 20 degrees horizontal and 15 degrees vertical view space beginning at not more than 10 degrees from the horizontal that is at least 6m in sight vector length.							HOK		
	I.11 - Eliminate Whole Body Vibration in Buildings	Provide interior conditions that avoid harmful vibration effects produced by wind sway, transmitted outdoor sources, indoor machinery (especially HVAC) and foot traffic. This will avoid prolonged exposure to unhealthy vibration levels, and enable prolonged comfortable work at a workstation. It will also diminish anxiety and stress due to wind sway on upper floors as well as maintain the value of the building. Required Performance Criteria • Return period of greater than 0.5% g horizontal acceleration in top third of building is not less than 6 years. • Floor vibration shall be kept above Splittgerber Minimum Complaint Level (approximately 0.001 A rms,g across 4-8 hz resonant with human body components) or 8 hr reduced comfort level (approximately 0.15m/sec2 across 4-8 hz resonant with human body components) for all continuously occupied spaces, restrooms and meeting rooms. Recommended Performance Criteria • Higher performance is achievable with the following vibration criteria: o Extend floor vibration criterion to all intermittently occupied spaces except storage areas. o Establish a seating bowl vibration criteria.							Structural Engineer		
	I.12 - Effective Acoustics and Positive Soundscapes	Provide interior conditions that avoid harmful noise effects and produces a basis for a positive soundscape acceptable to occupants and appropriate to their tasks. The benefits are avoiding exposure to unhealthy noise levels, the elevated stress which accompanies higher background noise levels and noise distraction impacts on mental work. Effective acoustics enable effective speech communication at normal speaking voice while providing for local speech privacy. Required Performance Criteria • Recurrent background noise from external and internal sources shall not exceed 70 dBA. • All continuously occupied office space shall meet a NC (Noise Curve) of no greater than NC- 50, recommended level is NC-45. • All classroom space (meeting rooms, briefing rooms, conferece rooms) shall meet an NC of no greater than NC-45. • Reverberation time for all continuously occupied space shall be no less than 0.2 sec and no greater than 0.8 sec. The Hz level deemed most appropriate for the activities of the setting shall be met. • Speech Interference Level (SIL) for continuously occupied office spaces shall be no greater than 55 dBa. OR: Articulation Index shall be no less than 0.50 and no greater than 0.70. Recommended Performance Criteria • Higher acoustic performance is achievable with the following criteria: o Reduce NC criterion to NC 45 for continuously occupied spaces and no greater than NC 40 for intermittently occupied meeting spaces like conference rooms and classrooms. o Create a background 'positive soundscape' through introduction of sounds that provide variations similar to benign natural environments. (White noise is generally not a preferred solution for acoustic soundscapes.)							HOK (or Acoustical Consultant)		
*	I.13 - Personal Control of IEQ Conditions and Impacts	Provide for local occupant control of interior conditions to better support work performance. Personal control will enable immediate improvement of intermittent discomfort and will help indicate personal availability or current work status. It will also allow workers to increase personal comfort in changing organizational contexts. However, occupants shall not be put in recurrent uncomfortable conditions, so that continuous adaptation is necessary to maintain comfort. Recommended Performance Criteria • Provide adjustable task lighting to include 'on', 'off', and intermediate levels. • Demonstrate means of ameliorating direct solar gain at all continuously occupied and assigned positions. • Demonstrate means of mitigating intermittent noise, drafts or low air circulation at all continuously occupied and assigned positions. • Demonstrate means of alleviating building control system malfunctions at all continuously occupied and assigned positions. • Demonstrate access to operable windows at all continuously occupied and assigned positions. • Neck extension for continuously viewing monitors at workstation shall not be greater than 0 degrees vertical. Head rotation for continuous viewing shall not be greater than 10 degrees horizontal. • At keyboard rest, there shall be no continuous deviation from an approximate 0 degree angle in elevation from elbows at sides at rest through wrists to fingertips on keyboard. • Higher performance is achievable with the following personal control criteria: o Increase flexibility of workspace through adoption of standards for ergonomically adjustable and movable furniture elements. (BIFMA Office Furniture Standard, European CEN Workplace Standard, N o Use tools to perform Spatial Syntax and other (e.g. Isovist) analyses that can be used to improve flexibility and habitability of workspace.							Mechanical/ Electrical Engineer		
*	I.14 - Encouraging Healthful Physical Activity	Provide spatial conditions conducive to incidental physical activity. Movement (like walking) between workplace destinations helps maintain cardiovascular fitness, mental alertness, and encourages synergistic staff interactions that improve morale and well-being. Recommended Performance Criteria These criteria are recommended but not required by these guidelines: • All new buildings shall have an 'open' or 'enhanced' stair design connecting the main (entry level) floor with at least the next two floors above it and the first floor beneath it. This encourages and enabl building occupants to safely and conveniently use the stairs to travel between floors in their daily building circulation. • Encourage staff to walk to routinely used building service centers and interior destinations through design of circulation path and its amenities. Features that encourage physical activity include: o Separation of restrooms and service centers (like mailrooms and refreshment dispensers and break rooms) from work areas o Enhanced daylight and views along a circulation path o Different routes to popular interior destinations o Interior circulation paths that allow round trips without reversal of direction. • Interior circulation paths with adjoining meeting niches and nooks that encourage spontaneous staff interaction along the path lengths. • Higher performance toward healthful activity is achievable with the following criteria: o Amenities that encourage such casual and continuous use of stairs include: position of stairs in floor plan, openness of stairway to surrounding interior views, provision of rest and incidental meeting n							HOK Sport / JASMAX		
	I.15 - Outcome Documentation for Indoor Environmental Quality	Establish benchmarks and link IEQ requirements (and chosen recommendations) with measurable occupant benefits. These results are inputs for the total building outcome documentation and life cycle cost analysis. Required Performance Criteria Complete I-A Outcome Documentation Form at the end of each phase to document design decisions for those portions of the guideline implemented at that time.							Guideline Leader (Coordinator of Work Team Compliance)		

Materials and Waste

Guideline / Name	Procedures	Point Range		Point Status			Applicability			
			Recommended	Pursued	Achieved	Variance	Remarks	Primary Responsibility	First Cost	Operating Cost
M.1 - Evaluation of Design for Minimum Resource Use	First, evaluate the benefits of planning for conservation approaches such as designing buildings appropriate to their projected life cycle and minimizing a project's material resource use over that lifecycle. Secondly, evaluate and select building systems taking into account their economic, human, community, and environmental outcomes over the lifecycle of the facility. Required Performance Criteria Planning for Conservation Analysis: • In this guideline, there are no requirements for how to respond to planning for conservation strategies; however, documentation of design decisions is required to evaluate these strategies for their economic, human, community and environmental outcomes. • Base the evaluation on a selected life projected for the building for the following basic systems: Substructure, Exterior Shell, Roofing, Interior Walls, Interior Finishes, Furnishings. If the agency responsible does not set a specific life of the building, use a 50 year minimum life for major structural, shell and cladding components. For interior construction, finishes, and furnishings assume an industry standard model of life cycle for project type and scale. • Evaluate the following recommendations for their benefits towards economic, human, community, and environmental outcomes and document the information as appropriate to the level of detail requi • Design for Less Space: Maximize use of space by sharing space/services, expanding hours of use, or other means to reduce overall square meter requirements from traditional building model for specific project type. Refer to P.2 Planning for Conservation for Implementation. • Design for Building Reuse: Reuse an existing building versus building a new building, to save or minimize material resources. o Design for Less Resource Use: Reuse existing building materials, equipment, finishes, or furnishings versus constructing using new materials, to save or minimize material resources. • Design for Flexibility, Adaptability, and Disassembly: Reduce material resource use through design that: allows for adaptability of space and building components to accommodate new or alternative uses, provides flexibility to accommodate projections of churn, minimizes ongoing material requirements associated with renovation or remodeling, and provides capability for disassembling • Design for Appropriate Life of Substructure and Structural Systems, Exterior Cladding and Shell, and Building Systems (Durability): Provide evaluation of building system components that meet agency requirements for life of building. Recommendation, if not specifically determined by client, is for a 50 year life for major building structural components, exclusive of interior construction • After analyzing alternatives, select desired planning for conservation approaches above and incorporate them, updating variables for items such as lifecycle planned for the building, reused building ar Building System Life Cycle Analysis: • Compare at least two alternatives for each of the following building systems: Substructure, Exterior Shell, Roofing, Interior Walls, Interior Finishes, Furnishings. These may be various traditional option • Based on project sustainable goals, evaluate the comparisons and select those systems that offer the most beneficial outcomes for all of the project concerns. • Complete requirements for Outcome Documentation of final building systems selection and evaluation for total material resources used.							HOK		
M.2 - Evaluation of Material Properties for Improved Performance	To determine the value and encourage the use of materials and products that meet specific prescriptive requirements understood to provide improved life cycle performance. Proof of improved life cycle performance will encourage increased demand for these building materials and products and, therefore, increased availability for use. Required Performance Criteria This guideline does not require implementation of any minimum level of materials or products meeting these criteria. However, in most cases a recommended minimum level is suggested and an analysis is recommended that considers the economic, human, community and environmental outcomes from supplying a percentage of the building's total mass with materials and products meeting these criteria. Material properties to be evaluated and documented: • High recycled content • Locally/regionally produced and manufactured. • Made from rapidly renewable agricultural byproducts • Able to be reused, recycled, or that are biodegradable • Maximum durability based on anticipated life of exterior and interior construction, equipment, finishes, and furnishings Evaluate material or product selections based on the following criteria and indicate benefits based on Life Cycle Assessment (LCA) information where available, or anecdotal information in the form of d • Materials that contain, in aggregate, a minimum weighted average of 20% post-consumer recycled content material, OR, a minimum weighted average of 50% post-industrial recycled content material • Materials manufactured regionally within a radius of 250 km of project site to specified qualifications, or are manufactured within Auckalnd Region and contain products from government-sponsored, approved, or acknowledged recycling programs. • Materials locally/regionally produced1 (from within 500 km of the project site, or within New Zealand, or which contain materials from New Zealand recycling programs.) • Wood products (for wood building components, including but not limited to structural framing and general dimensional framing, flooring, finishes, furnishings, and non-rented temporary construction ap o Provide 'chain of custody" for all wood products; o Use 'on-the-ground' performance-oriented evaluation techniques that do not rely only on procedural review; o Do not use a different standard for products obtained from suppliers not owned by the company seeking certification; and o Do not allow 'conversion' of natural forests to plantations. • Materials made from rapidly renewable agricultural byproducts. • Materials made from reusable, recyclable, or biodegradable resources. Materials and products which have more than one recommended characteristic will, in most cases, provide higher cumulative be							HOK		
M.3 - Waste Reduction and Management	Minimize use of resources and negative environmental impacts through careful reduction and management of wastes generated during the construction process and operation of buildings (building occupancy.) Required Performance Criteria • Construction waste: Minimize waste generated from construction, renovation and demolition of buildings through detailing and specifications. Divert construction, demolition, and land clearing debris from landfill disposal. Redirect recyclable material back to the manufacturing process and reuse, recycle, and/or salvage at least 75% (by weight) of construction, demolition, and land clearing waste (per State of Minnesota requirements.) • Packaging waste: Reduce and recycle packaging waste associated with the construction process, and encourage manufacturers to ship their product using reusable, recyclable, returnable, or recycled content packaging. Reuse or return 50% of all packaging material, by weight, to suppliers or manufacturers. • Hazardous waste: Establish a goal of at least a 50% reduction in the use of hazardous materials through project construction and building operation. Appropriately store, handle, and dispose of hazardous waste generated during building construction, operation, and decommissioning. Recommended Performance Criteria • Recommendation for higher achievement on construction waste management: Recycle and/or salvage an additional 15% (90% total by weight) of the construction, demolition, and land clearing waste. • Recommendation for higher achievement on packaging waste management: Return an additional 25% (75% total by weight) of all packaging material to suppliers or manufacturers							HOK		
M.4 - Outcome Documentation for Materials and Waste	Document the environmental, economic, and community impacts related to material use and waste management in buildings. Human benefits to occupants of low-emitting materials are covered and documented under Outcome Documentation for Indoor Environmental Quality. Required Performance Criteria • Complete M-A Outcome Documentation Form at the end of each phase to document design decisions for those portions of the guideline implemented at that time.							Guideline Leader (Coordinator of Work Team Compliance)		

POINT TOTALS - Prerequisites					
Pursued					
Achieved					

Guideline / Name	Procedures	Point Range		Point Status			Applicability			
			Recommended	Pursued	Achieved	Variance	Remarks	Primary Responsibility	First Cost	Operating Cost
	Variance									

Total Points in GMP	