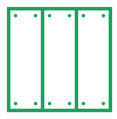
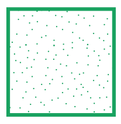
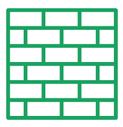
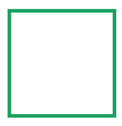
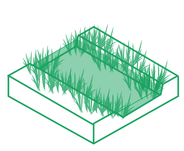
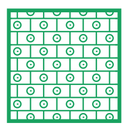
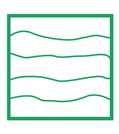
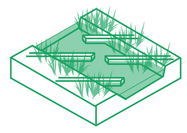
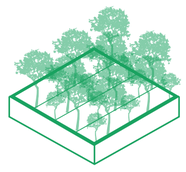
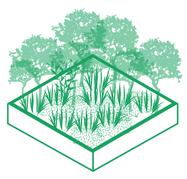
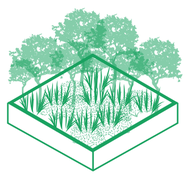
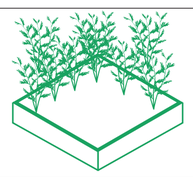
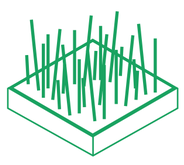
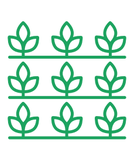
CLIMATE POSITIVE DESIGN TOOLKIT

REDUCE EMBODIED CARBON IN MATERIALS

		USE AS SUBSTITUTE FOR	DESCRIPTION / USE	CO2 BENEFITS & CO-BENEFITS
PATHWAYS				
WOOD BOARDWALK/DECKING		CONCRETE, STONE, CONCRETE UNIT PAVERS	MINIMIZE AMOUNT OF CONCRETE AND STEEL SUPPORTS/FOOTINGS. DO NOT SPECIFY TROPICAL HARDWOODS TO PROTECT OUR CARBON RICH RAINFORESTS. SPECIFY LOCAL SOURCE IF POSSIBLE.	CO2 IS STORED IN WOOD AND REMAINS THERE AS LONG AS ITS INTEGRITY IS MAINTAINED.
DECOMPOSED GRANITE		CONCRETE, STONE, CONCRETE UNIT PAVERS	SPECIFY ECO-FRIENDLY OR ORGANIC BINDER.	LOWER EMBODIED CARBON THAN OTHER PAVING MATERIALS. PERMEABILITY OF WATER THROUGH THE SURFACE IF NO BINDER IS USED.
ASPHALT		CONCRETE, STONE, CONCRETE UNIT PAVERS	SPECIFY LOCAL OR RECYCLED AGGREGATE.	LOWER EMBODIED CARBON THAN OTHER PAVING MATERIALS.
CHIP SEAL		CONCRETE, STONE, CONCRETE UNIT PAVERS	SPECIFY LOCAL OR RECYCLED AGGREGATE FOR BASE AND TOP COAT.	LOWER EMBODIED CARBON THAN OTHER PAVING MATERIALS.
CO2 SEQUESTERING CONCRETE		CONCRETE (TYP. W/ PORTLAND CEMENT), CONCRETE UNIT PAVERS		CO2 IS CAPTURED FROM FACTORIES AND REMAINS IN THE CONCRETE.
CONCRETE WITH CEMENT SUBSTITUTIONS		CONCRETE (TYP. W/ PORTLAND CEMENT), CONCRETE UNIT PAVERS	SPECIFY MAXIMUM ALLOWABLE PERCENTAGE OF CEMENTITIOUS SUBSTITUTIONS SUCH AS SLAG, FLY ASH, GLASS POZZOLAN, OR SILICA FUME.	LOWER EMBODIED CARBON THAN TRADITIONAL CONCRETE WITH PORTLAND CEMENT.
RECYCLED-CONTENT UNIT PAVERS		CONCRETE UNIT PAVERS	SPECIFY HIGH % RECYCLED CONTENT	REDUCE HARVESTING OF VIRGIN MATERIALS.
ENGINEERED WOOD FIBER (EWF)		RUBBER SURFACING	PLAY AREAS	WATER INFILTRATION. LOWER EMBODIED CARBON THAN WOOD CHIPS. PROVIDE END-OF-LIFE BENEFIT FOR WOOD RE-USE.
WELDED WIRE FABRIC (WWF) OR TEXTILE- REINFORCED CONCRETE (TRC)		REBAR	SPECIFY LARGE WWF SPACING AND LIGHT GAUGE IF POSSIBLE; SPECIFY GLASS REINFORCED TRC.	LOWER EMBODIED CARBON
NATURAL DRAINAGE SWALES AND BIORETENTION AREAS		HDPE PIPE, CAST, IRON	NATURAL DRAINAGE STRATEGIES THAT MINIMIZE THE USE OF PIPING.	PERMEABILITY OF WATER THROUGH THE SURFACE. HABITAT CREATION IN DRAINAGE WAYS.
LIGHTWEIGHT FILL		FOAM, CELLULAR CONCRETE	USE ON GREEN ROOFS.	LOWER EMBODIED CARBON THAN FOAM OR CELLULAR CONCRETE.
RECYCLED MATERIALS FROM THE SITE - CONCRETE		CONCRETE, ASPHALT	SEATING AREAS, PATHWAYS, TRAILS	PREVENTS CO2 EMITTED FROM OFFHAULING. MINIMAL EMBODIED CARBON DUE TO RE-USE.
RECYCLED MATERIALS FROM THE SITE - ASPHALT		CONCRETE, STONE, ASPHALT	CAN BE GROUND INTO AGGREGATE BASE.	PREVENTS CO2 EMITTED FROM OFFHAULING.
RECYCLED MATERIALS FROM THE SITE - STONE		CONCRETE, ASPHALT	CAN BE GROUND INTO AGGREGATE OR KEPT IN LARGER PIECES FOR PATHWAYS.	MINIMAL EMBODIED CARBON DUE TO RE-USE.
AGGREGATES		CONCRETE, STONE, ASPHALT	SEATING AREAS, PATHWAYS, TRAILS.	LOWER EMBODIED CARBON THAN OTHER PAVING MATERIALS.
WALLS/FENCES/FURNISHINGS				
WOOD		ALUMINUM, STEEL, CONCRETE	MINIMIZE AMOUNT OF CONCRETE FOOTINGS. DO NOT SPECIFY TROPICAL HARDWOODS TO PROTECT OUR CARBON RICH RAINFORESTS. SPECIFY LOCAL SOURCE IF POSSIBLE.	CO2 IS STORED IN WOOD AND REMAINS THERE AS LONG AS ITS INTEGRITY IS MAINTAINED.
RAMMED EARTH		ALUMINUM, STEEL, CONCRETE	MINIMIZE AMOUNT OF CONCRETE FOOTINGS.	
RECYCLED MATERIALS FROM THE SITE - BOULDERS		ALUMINUM, STEEL, CONCRETE	PREVENTS CO2 EMITTED FROM OFFHAULING.	PREVENTS EMBODIED CARBON OF IMPORTED MATERIALS.

INCREASE CARBON SEQUESTRATION

		USE AS SUBSTITUTE FOR	DESCRIPTION / USE	CO2 BENEFITS & CO-BENEFITS
PLANTING STRATEGIES				
AFFORESTATION		REMOVING TREES/DEFORESTATION	DECIDUOUS TREES HAVE A SLIGHTLY HIGHER SEQUESTRATION THAN EVERGREEN TREES. SPECIFY TALL TREES 35+ FEET.	HABITAT, WATER INFILTRATION, BIOPHILIA, BIODIVERSITY
CONSTRUCTED WETLANDS			ONLY CONSTRUCT WHERE NATURAL WATER SOURCE EXISTS.	HABITAT, WATER INFILTRATION, BIOPHILIA, BIODIVERSITY
TINY FORESTS		WIDE TREE AND PLANT SPACING	USE TREE PLANT SPACING THAT EXISTS IN NATURAL FORESTS RATHER THAN TYPICAL PLANT SPACING GUIDELINES.	HABITAT, WATER INFILTRATION, BIOPHILIA, BIODIVERSITY
NATIVE + ADAPTIVE PLANTING/LONG-LIVED TREES, SHRUBS, PLANTS		LAWN, LARGE AREAS OF PAVED OPEN SPACE, HIGH MAINTENANCE LANDSCAPES THAT REQUIRE EQUIPMENT - LAWN, HEDGES	SELECT SPECIES THAT HAVE LONGER GROWING SEASONS IN YOUR REGION.	HABITAT, IRRIGATION REDUCTION, WATER INFILTRATION, BIOPHILIA, BIODIVERSITY
MULTI-LAYERED PLANTING STRATEGIES		SINGLE-LAYER PLANTING	LOWER, UNDER, MID, AND UPPER STORY TREES AND PLANTS	HABITAT, IRRIGATION REDUCTION, WATER INFILTRATION, BIOPHILIA, BIODIVERSITY, POSSIBLY FOOD SOURCES.
GREEN ROOFS		TRADITIONAL ROOFS, DARK COLORED ROOFS	COOLING THE FLOOR BELOW AND REDUCING COOLING ENERGY NEEDS BY 50%. EXTENSIVE GREEN ROOFS WITH MINIMAL/NO FOAM AND PAVING ARE IDEAL.	HABITAT, BIOPHILIA, BIODIVERSITY
VINES		ARCHITECTURAL WALLS	USED TO INCREASE SEQUESTRATION IN AREAS WITH LIMITED HORIZONTAL SPACE.	HABITAT, BIOPHILIA, BIODIVERSITY
NO-MOW GRASS, MEADOW		LAWN	SPECIFY NATIVE, DROUGHT-TOLERANT, AND LOW WATER USE WHERE POSSIBLE.	HABITAT, IRRIGATION REDUCTION, WATER INFILTRATION, BIOPHILIA, BIODIVERSITY, POSSIBLY FOOD SOURCES.
BAMBOO		LIMITED OR SHORT PLANTING IN CONSTRAINED AREAS	SUPER SEQUESTERER. AVOID WHERE INVASIVE OR CONTAIN ROOTS. USE AS A REGENERATIVE BUILDING MATERIAL.	BUILDING MATERIAL, HABITAT, WATER INFILTRATION, BIOPHILIA, BIODIVERSITY
HABITAT PROTECTION / RESTORATION				
COASTAL WETLANDS - SALT MARSHES. MANGROVES, SEA GRASSES		REMOVING WILDLANDS, FORMAL LANDSCAPES	ONLY IMPLEMENT IN LOCATIONS/CLIMATES AS APPROPRIATE	HABITAT, WATER INFILTRATION, BIOPHILIA, BIODIVERSITY, SEA LEVEL RISE PROTECTION, STORM WATER AND WASTEWATER FILTRATION.
FORESTS		REMOVING WILDLANDS, FORMAL LANDSCAPES	ONLY IMPLEMENT IN LOCATIONS/CLIMATES AS APPROPRIATE	HABITAT, WATER INFILTRATION, BIOPHILIA, BIODIVERSITY
SOILS				
COMPOST		CHEMICAL FERTILIZERS, ESPECIALLY THOSE INCLUDING NITROUS OXIDE (N2O)	SPREAD OVER THE SOIL, IT WILL IMPROVE SOIL QUALITY BY ADDING CARBON.	NITROUS OXIDE (N2O) COMMONLY FOUND IN TYPICAL FERTILIZERS IS 300 TIMES MORE POTENT THAN CO2. MINIMIZING ITS USE IS EXTREMELY IMPORTANT.
BIOCHAR AMENDMENTS		CHEMICAL FERTILIZERS, ESPECIALLY THOSE INCLUDING NITROUS OXIDE (N2O)	STORE CO2 OF DECOMPOSED BIOMASS. MIXED INTO THE SOIL, IT WILL IMPROVE SOIL QUALITY BY ADDING CARBON.	NITROUS OXIDE (N2O) COMMONLY FOUND IN FERTILIZERS HAS 300 TIMES WORSE GLOBAL WARMING POTENTIAL (GWP) THAN CO2. MINIMIZING ITS USE IS EXTREMELY IMPORTANT. POTENTIALLY REDUCES WASTE PRODUCTION, IMPROVES FERTILITY, SEQUESTERS CARBON. INCREASING THE CARBON IN THE SOIL WILL INCREASE THE QUALITY.
ORGANIC FERTILIZERS		CHEMICAL FERTILIZERS, ESPECIALLY THOSE INCLUDING NITROUS OXIDE (N2O)		
WOOD MULCH		GRAVEL MULCH		SAVES WATER, IMPROVES SOIL QUALITY, COMBATS PESTS, STOPS WEEDS, PREVENTS RELEASE OF N2O INTO THE ATMOSPHERE IF IT ALREADY EXISTS IN THE SOIL.
EXISTING SOIL AMENDED IN PLACE		IMPORT SOIL		PREVENTS CO2 EMITTED FROM REMOVING AND IMPORTING SOIL. MAINTAIN SOIL HABITAT.
COVER CROPS		LEAVING SOIL EXPOSED	PLANT COVER CROPS WHILE SOIL IS EXPOSED WHILE WAITING TO PLANT, INCLUDES LEGUMES, GRASSES, BRASSICAS, AND BUCKWHEAT.	PREVENTS RELEASE OF CARBON FROM SOIL EXPOSURE TO THE AIR. KEEPS CARBON IN THE SOIL, MAINTAINING SOIL QUALITY.
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REDUCE EMISSIONS

		USE AS SUBSTITUTE FOR	DESCRIPTION / USE	CO2 BENEFITS & CO-BENEFITS
COOL ROOFS		DARK COLORED ROOFS	CAN BE AS SIMPLE AS PAINTING A ROOF WHITE.	REFLECTS SOLAR RAYS, COOLING THE FLOOR BELOW AND REDUCING COOLING NEEDS.
LOW MAINTENANCE LANDSCAPES		HIGH MAINTENANCE LANDSCAPES SUCH AS LAWN AND HEDGES	CONSIDER NATIVE AND/OR ADAPTIVE PLANTING STRATEGIES THAT REQUIRE LESS MAINTENANCE AND FERTILIZERS.	HABITAT, LOWER WATER USE, LOWER FERTILIZER AND PESTICIDE USE.
ELECTRIC OR HAND POWERED EQUIPMENT		FOSSIL FUEL POWERED MAINTENANCE EQUIPMENT - MOWERS, BLOWERS, CHAINSAWS, TRIMMERS		LESS FOSSIL FUEL REQUIRED
ORGANIC FERTILIZER		FERTILIZERS WITH NITROUS OXIDE (N20)		NITROUS OXIDE (N20) COMMONLY FOUND IN FERTILIZERS HAS 300 TIMES WORSE GLOBAL WARMING (GWP) THAN CO2. MINIMIZING ITS USE IS EXTREMELY IMPORTANT.
DESIGN STRATEGIES THAT MINIMALLY IMPACT THE SOIL - BOARDWALKS, ELEVATED PATHWAYS FOUND/ EXISTING/ RECYCLED MATERIALS ALREADY ON SITE - RECYCLED CONCRETE, ASPHALT BOULDERS, WOOD ETC.		SOIL DISTURBANCE FROM EXCESSIVE GRADING, NEW MATERIALS THAT MUST BE DELIVERED TO A SITE	MINIMIZING SOIL DISTURBANCE KEEPS CARBON IN THE SOIL. WHEN SOILS ARE DISTURBED, THE ORGANIC MATTER DIES AS IS EXPOSED TO THE AIR. THIS CAUSES THE RELEASE OF CARBON INTO THE ATMOSPHERE WHICH COMBINED WITH OXYGEN FORMS CO2.	WHEN CARBON IS KEPT IN THE SOIL, THE QUALITY IS HIGHER - MORE ORGANIC LIFE EXISTS WITHIN IT.
WOOD RE-USE		REMOVING TREES AND BURNING OR MULCHING	RE-USE WOOD ON SITE FOR EXTERIOR OR FOR INTERIOR USE	PREVENTS CO2 EMITTED FROM OFFHAULING IF INTERIOR, THE AMOUNT OF CARBON SEQUESTERED REMAIN IN THE MATERIAL.
MINIMIZING PRUNING		REMOVING LARGE AMOUNTS OF TREE BIOMASS FROM PRUNING (SPECIFY DISPOSAL AT COGENERATION OR BIOCHAR FACILITY)	CONTINUE TO MAINTAIN SAFETY. MINIMIZE EXCESSIVE PRUNING BEYOND THAT.	CARBON REMAINS IN THE WOOD WHILE IT IS ALIVE OR DECOMPOSITION IS PREVENTED.

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