Materials and Resources (MR o MR IMaterials and subassemblies can be considered "products" for certification purposes. The C2C products are products circulated in closed loops that are different from cradle-to-grave products that accepts disposal as part of a product's life cycle. One important fact about C2C certification is that it does not address any performance measures as it only defines quality statement. Closed loop lifecycles are allowing the product to be waste-free without any damage to the environment. There are 5 levels of certifications which are; Basic, Bronze, Silver, Gold, and Platinum. The minimum level of achievement in any of the five categories ultimately determines the final certification level. The product and its certification level along with the final scorecard will be listed on the Cradle to Cradle Products Innovation Institute's website (http://c2ccertified.org). 2. Environemental Product declaration (EPD) Environmental Product Declaration (EPD) is an independently verified and registered document that communicates transparent and comparable information about the life-cycle environmental impact of products associated with raw material extraction, energy use, chemical makeup, waste generation, and emission to air, soil, and water. EPDs can help in transforming the market for building products and materials for which life-cycle information is available and encourage manufacturers that have verified their environmental performance. The data collected in the Life Cycle Assessment (LCA) can be summarized in an Environmental Product Declaration (EPD). It reports environmental data of products based on Life Cycle Assessment (LCA), in accordance with the international standard ISO 14025 (Type III Environmental Declarations). A product category rule (PCR) defines the rules and requirements for EPDs of a certain product category. The PCR defines scope, boundaries, measurement procedures, impact measures and other technical requirements. PCR development is the responsibility of the EPD Program Operator and is often organized through standards organizations or industry associations or sponsored by private or government organizations. PCRs are vital for the concept of environmental declarations according to ISO 14025 as they enable transparency and comparability between different EPDs based on the same PCR. EPD Process A) Product Category Rule (PCR): Project teams should find the PCR that is related to the product required. If there isn't any PCR related, then a program operator should develop a specific one for the desired product type. B) Life Cycle Assessment: Goals and targets to be developed for the specific type of product. Data gathered are checked and validated. Product is assessed as per the environmental properties to make sure it meets the PCR requirements. C) Create, Verify, & Publish EPD: Utilize the LCA findings to develop an EPD for your product, according to ISO 14025 standard for Type III Environmental Declarations. A Program Operator will verify and register it, and will be made publicly available via the Program Operator's website. 3. Corporate Sustainability Reports Corporate sustainability reports (CSR) are third-party verified reports which include environmental impacts of extraction, activities associated with the manufacturer's product, and the product's supply chain. It describes practices that are focused on social and environmental characteristics. It also employs strategies to establish a process that fosters continuity through transparency. 03 MR | Selecting Environmental Materials LEED Acceptable CSR frameworks include the following: - Global Reporting Initiative (GRI) Sustainability Report. - Organization for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises. - U.N. Global Compact: Communication of Progress. - ISO 26000: 2010 Guidance on

Social Responsibility. 4. Health Product Declaration (HPD) Health Product Declaration (HPD) is an ISO standardized and LCA based tool for publically reporting product ingredients and their associated health hazards. Manufacturers that use HPD provide more transparency about the information they have provided and whether it meets the project LEED requirements or no. LEED requires documentation of chemical inventory through one of the acceptable documents that includes Health Product Declaration. 5. Locally produced materials To reduce the greenhouse gases associated with extraction, manufacturing, and transportation of materials, and to support local economy, LEED added a criteria for extracting, manufacturing, and producing materials locally. The acceptable criteria for Local products is 100 miles (160 kilometers) radius of the project measured as the crow flies. Regional materials and Products that qualify for location valuation factor are valued at 200% of their cos 6. Certified Wood Certified wood is Wood material that has been issued a certificate from an independent 3rd party organization with proven standards of sustainable forest management. Responsible forest management encompasses practices that are environmentally appropriate, socially beneficial and economically viable. Forest Stewardship Council (FSC), Established in 1993, is an independent, non-profit organization, open, membership-led organization that protects forests for future generations and sets standards under which forests and companies are certified Forest Stewardship Council certification gives customers the option to choose forest products like paper and wood that has been sourced in a viable manner. FSC certification is proven by Chain of Custody (CoC) Chain of Custody (COC) FSC Chain of Custody certification is awarded to companies that can track and document FSC certified material through the production process, from the forest extraction process to the consumer, including all successive stages of procurement, processing, manufacturing, distribution and sale of certified goods. Wood-based materials include, but are not limited to, the following materials when made from wood, engineered wood products, or wood-based panel products: a. Rough, Finish and miscellaneous carpentry. b. Timber construction. c. Wood decking. d. Architectural woodwork. e. Wood paneling, Veneering and covering. f. Wood flooring. g. Wood lockers and cabinets. i. Furniture. For calculating contribution to credit achievement, the wood product must be itemized on the vendor's invoice determining how much certified wood included in the product. The categories are FSC 100% (FSC Pure), FSC Mix Credit, and FSC Mix [NN] %. The requirement threshold is met by achieving a certain percentage of certified wood by cost. 7. Recycled Materials Materials and product assemblies that contain recycled content reduce the need for virgin materials and can use other materials that were diverted from landfills. Recycling can save money and also conserve energy, as well as reducing solid and liquid wastes. LEED rewards projects that use materials that contain recycled content, because they reduce the negative environmental impacts and economically viable. The recycled content value of a material assembly shall be determined by weight then the contribution to credit achievement is determined by cost of the complying percentage. Recycled content is calculated such that the sum of post-consumer recycled content plus 1/2 of the pre consumer content compiles the total recycled content included in the product. Mechanical, electrical and plumbing components and specialty items such as elevators and equipment shall not be included in this calculations. Excluded is reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it. Recycled content

shall be defined in accordance with the International Organization of Standards document ISO 14021 –- Environmental labels and declarations –- Self declared environmental claims (Type II environmental labeling). 8. PBTs Source Reduction PTBs are persistent, bio-accumulative, and toxic chemicals associated with the life cycle of building materials. Selecting materials that contain lower PBTs will reduce hazardous waste and lower waste disposal costs. PBTs might also expose cleaning staff to contaminations and endanger their health. For more information about PBTs check EPA website: www.epa.gov/pbt/. Sustainable purchasing will allow for the selection of more environmental friendly materials and products. Fluorescent lamps should contain low mercury content and long lamp life to lowers hazardous waste disposal costs. LEDs are highly recommended to replace high-pressure sodium (HPS) lamps to reduce mercury in buildings. Materials manufactured with lead and cadmium should be substituted with other friendly materials 9. Rapidly Renewable Materials those that regenerate more quickly than their level of demand. natural, non-petroleum-based building materials that meet the Sustainable Agriculture Network Standard. Examples include: cork, bamboo flooring, cotton batt insulation, linoleum flooring, sunflower seed board panels, wheatboard cabinetry, wool carpeting, cork flooring, bio-based paints, geotextile fabrics such as coir and jute, soy based insulation and form-release agent and straw bales. Rapidly Renewable Materials" has been retired and replaced with "Building Product Disclosure and Optimization – Sourcing of Raw Materials".To conserve construction materials and reduce waste, LEED for existing buildings encourages projects to get maintain occupancy rates through tenant commitments MR – Selecting Environmental Materials Selecting Environmental Materials Overview Building materials are having a significant environmental impact internally, locally, and globally from extraction, Manufacturing, transportation, and construction.Some other products have ISO 14000 environmental labels that are considered as an assurance that the material is sustainable Generally, to be able to select proper environmental material, the process should include the following steps: A) Research: This step requires gathering all the technical properties and information of the product or material including test data, warranties, source of raw materials, regional and recycled material content, durability, environmental certifications, and applicability to local and environmental codes and regulations.Reuse Building Structure Elements For existing buildings that will be reoccupied or renovated, project teams should analyze and assess the existing structural elements and confirm whether it can remain or no. The main goal of reusing existing structural elements is to extend the life cycle of existing buildings, conserve resources, and reduce construction waste while reducing environmental impacts of new buildings.Triple bottom line Sustainable: To reduce the amount of raw materials extraction, reduce carbon and greenhouse gas emissions associated with manufacturing and transportation of materials and products, selecting sustainable materials that are certified, badged, labeled, or harvested in a sustainable way.Topics related to Selecting Environmental Materials Cradle to Cradle Certified(TM) C2C Certified Environnemental Product declaration (EPD) Corporate Sustainability Reports Health Product Declaration (HPD) Locally produced materials Certified wood Recycled materials PBTs Source Reduction Bio-based materials 1.Recycled Content Materials 1/2 Pre-Consumer + 1 Post consumer Defined by ISO 14021 Pre-Consumer Post-Consumer – Sawdust – Fly-ash – Wooden Chips – Plastics residues (From industrial processes) – Paper scraps (from industrial processes) like

newspapers or magazine extras.Economical: To reduce the costs associated with extracting, processing, transporting, and manufacturing of raw materials, and benefit from waste management practices to reuse, recycle, or salvage of building waste materials and reduce costs of supplying new materials.Social: To engage all building occupants in awareness sessions about environmental and sustainable practices related to materials and products selection, educate people about waste management practices in the operation period of the building, and contribute to the sustainability and environment.Life cycle assessment (LCA) can be used to select environmental materials as it determines the environmental impacts of products, processes or services, through production, usage, and disposal.Cradle to Cradle Certification(TM) C2C Certified Cradle to Cradle is a beneficial design approach integrating multiple attributes, including safe materials, continuous reclamation and re-use of materials, clean water, renewable energy, and social fairness.- Bricks, Concrete, and cement - Cans - Plastic bottles - Newspapers and magazines - Steel Scraps from demolition and construction - Construction solid waste materials Recycled Materials Any steel material can be recycled and incorporated into manufacturing processes.Materials and Resources Intent - Reduce the amount of materials needed - Use materials with less environmental impact - Reduce and manage waste Concepts and Strategies The MR category uses a set of design strategies that promote the triple bottom line that are addressed through the following topics 1.Waste Management Conservation of Building Materials Overview Conservation of building materials starts from the design as various factors should be considered to reduce the need for virgin and raw materials like extra built roads and asphalt, special types of materials used in design, and large spaces with no functional requirements.Topics related to Conservation of materials Design for adaptability and flexibility Reuse building structure elements Reuse building materials Maintain occupancy rates MR - Conservation of Building Materials and Products 1.2.3.2.3.4.