US Army Corps of Engineers
Headquarters

SUBJECT: Green Building Program for Military Construction

August 1997

BACKGROUND. Green Building was required by Executive Order (EO) 12873, dated 20 October 1993. In early 1994, USACE requested funding from ACS(IM) to develop and update technical guidance and criteria for Green Building design and construction of Army facilities.

EXECUTIVE ORDER REQUIREMENT. EO 12873 requires that agencies "comply with executive branch policies for the acquisition and use of "environmentally preferable" products and services and implement cost-effective procurement preference programs favoring the purchase of these products and services." The EO defines environmentally preferable products or services as those which have lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal of the product or service. Green Building can be summarized as careful design, construction, operation, maintenance, and/or reuse/removal of a constructed facility in an environmentally and energy efficient manner.

GREEN BUILDING IN THE CORPS. The Corps of Engineers has taken a comprehensive and methodical approach to Green Building technology in military construction. While some Government agencies have concentrated on constructing individual Green demonstration projects, the Corps' philosophy has been to effect a fundamental and permanent change in the way all military projects are designed and constructed as opposed to a project-by-project basis. This approach required revision of the current construction guide specifications which are used to design and construct all military projects for the Army and Air Force. Green Building is still a new and emerging field for which not many standards or criteria have been developed. For this reason, the Corps decided to embark on a two-phase program for incorporating Green Building technology into its construction program. To accomplish this, we identified a number of Green Building "champions" throughout the organization, and together with the Civil Engineering Research Foundation (CERF), we developed the Green Building Program. Phase I, which began in January 1996, focuses on technology and/or materials readily available for incorporation into USACE guidance documents. Phase II began in FY97 and focuses on areas where limited research, testing, demonstration and validation, or criteria development is needed before concepts can be adopted.

PRODUCTS TO DATE. We currently have completed, or are finalizing, nearly 50 construction guide specifications, and approximately 20 technical/engineering manuals, engineering technical letters and instructions, covering Green Building design and construction. Together, these provide a solid basis for incorporating a wide range of Green construction products and services into Corps projects, including:

- Floors, carpets, walls, doors, ceilings and roofing systems, including insulation and painting--Assessment of reusability, solid waste generation, and indoor air quality.
- Masonry, stucco, lathing and plastering--Environmental characteristics of recycled and composite materials.
- Metal studs in load-bearing walls as a substitute for wood.
- Scrap tire chips and cement and asphaltic concrete in pavements--Elimination and use of waste materials.
- Bottom ash used as fill, and waste materials in pavements--reusing construction waste materials.
- Recycled plastic composite railroad ties.
- Recycled site furnishings and playground equipment.
- Energy efficient HVAC controls, radiant heating systems and desiccant cooling systems.
- Water and energy conserving plumbing fixtures.

In addition, new criteria developed for Heat Recovery Incinerators (HRI) will provide the Army with the ability to design and construct showcase recycling centers, and save millions of dollars in recovered heat and energy costs.

FUTURE DEVELOPMENTS. The funding provided for this effort is sufficient for revising current criteria documents, or developing new ones, to incorporate Green Building where industry standards have been developed, or where commercial sources are matured and materials are readily available. Under the Corps' Green Building Program, a limited amount of applied research and testing is also being performed. However, the present level of funding does not allow a full scale program which is needed in order to fully develop performance standards, testing procedures and technology transfer for new environmentally friendly materials and procedures.

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