

Approaches and Associated Costs of Demolition and Deconstruction of Buildings

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Building demolition, deconstruction and preparing the environment for new construction is an important aspect of urban development. As the built environment ages and plans for new developments occur, the opportunities for deconstruction, demolition and renovation emerge. This aspect has taken on great importance with the widespread residential, industrial and commercial property abandonment in certain urban areas such as Detroit, Michigan. The abandoned properties, if left unremoved, cause blight and lead to social decline which threatens the public health and welfare of communities (LaMore & LeBlanc, 2013). Deconstruction and demolition can be implemented using a number of approaches. These approaches vary according to the type of structure, size, equipment required, availability of resources, whether the building was designed using “design for deconstruction” principles, schedule, policy and regulatory requirements, cost versus incentives, disposal facilities, recycling requirements, etc. All the above noted factors will have significant impact on the cost of the operation (Diven & Shaurette, 2010; EPA 2006; Guy & Gibeau, 2003). Demolition, deconstruction and design for deconstruction are major parts of the construction industry in urban areas. While there is a fair amount of varied popular literature and industry publications available, there is a lack of systematic and organized information about the approaches, standard cost databases or standardized cost quantification practices. This is evident from the lack of textbooks and absence of detailed sections on demolition and deconstruction in commonly available building cost databases. Therefore, the objectives of this research are: (a). understand various approaches for demolition and deconstruction, (b). analyze costs associated with each approach and possible quantification process, (c). develop a comparison matrix for demolition and deconstruction, and (d). identify and recommend approaches which are suitable for removal of abandoned properties. The methodology proposed for this research is based on extensive literature review, analysis of existing cost databases, case study site visits, and surveys and industry interviews. This research will provide information regarding technical, management and pricing practices related to demolition and deconstruction of building projects. The results will also include a detailed comparison matrix between demolition and deconstruction. This matrix will provide comparison on various approaches for each method, as well as, economic and environmental implications. In addition, based on understanding of the available governmental policies and incentives in Detroit, Michigan, the removal of abandoned properties will be discussed. This discussion will be presented in a generic fashion in order for it to be applicable to other locales. The proposed research will provide technical, economic, and environmental inputs for the selection of building removal method. This work will have great impact in urban areas such as Detroit, Michigan, where a large number of buildings have been abandoned causing blight. It is envisioned that this research will help promote more environmentally responsible option of deconstruction over demolition and also, will support the concept of “design for deconstruction” for future buildings.

Key Words: Demolition, Deconstruction, Abandonment, Blight, Design for Deconstruction

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