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Impact of Spatial Factors on Bricklaying Ergonomics

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The construction industry has historically led manufacturing and other major industrial classifications in the overall rate of serious, nonfatal injuries and illnesses (BLS, 1996). Bricklayers, for example, are consistently exposed to awkward and extreme postures as a result of their work. The construction of a brick wall consists of repetitive, short cycles that involve a wide range of working postures for the mason. The degree of discomfort experienced by the bricklayer is affected by such spatial factors as how "high" or "low" the bricklaying is done. This paper addresses the ergonomic implications of the bricklaying workplace. An extensive survey was designed to investigate the following: prevalence of musculoskeletal problems among masons; masons' perceived degree of discomfort at different heights of a brick wall; masons' perceived productivity at different heights of a brick wall, and; preferences of masons for the workplace layout. Initial results show that musculoskeletal problems are most pronounced in the low back (81.3%), shoulders (56.3%), elbows (52.1%), and knees (41.7%). Masons rated their perceived speed and comfort levels as being highest in the "Wrists/Hands to Elbows" zone of the workface (brick wall), where minimal bending and extension of the back and minimal motion of the arms is required. When asked about the material layout, 87.2% answered that it made a difference to them how high the brick supply is stacked on the scaffold. When given the option to specify how high they wanted the materials supply located on the scaffold, 66.7% chose the "Wrists/Hands" level, 18.5% chose the "Knees" level, and 7.4% chose the "Elbows" level.