

*"New portable construction equipment and handtools are increasingly being introduced.*—This equipment, used in all types of building construction to reduce unit labor requirements, job costs, and completion time, includes power trowels, paint and plaster spraying guns, power nailing and stapling machines, and motorized wheelbarrows."

"Improvements in forklift trucks, conveyor belt systems, motorized wheelbarrows, pneumatic pipe systems, and conventional cranes are facilitating the moving and handling of construction materials."

"Another important development in material handling is the tower crane. Especially useful in the construction of tall buildings, tower cranes can be used to deliver material to any part of the top of a tall building—not just near the edge as do conventional crawler cranes—and to hoist material to greater heights. Because tower cranes can be used to deliver material where it is required, labor crews normally needed to shift material about when using conventional cranes are significantly reduced."

*"Significant advances continue to be made in paving.*—Major advances in both asphalt and concrete paving, which are improving the quality of highways and reducing unit labor requirements, construction costs, and completion time of construction jobs, include more portable and automatically controlled mixing plants; larger capacity and higher speed transit mix trucks; and more automatic, electronically controlled grading and paving machines."

"Still another significant advance in concrete paving is the slipform method which eliminates the fixed side forms used in conventional paving. Instead, forms are a part of the paving machine (slip-form paver) and slide forward with it leaving the concrete slab edges unsupported. This method of paving reduces costs by eliminating the need for crews to erect and remove forms."

*"Standardization of dimensions of construction materials and in design (modular coordination) decreases labor and material requirements."*

"This system, utilizing a standard unit of measurement of 4 inches and its multiples, also is gaining in use in commercial construction."

*"The trend toward prefabrication (preassembly of building components in manufacturing plants) will accelerate."*

"Prestressed concrete structural elements used for larger buildings and heavy construction, such as beams, roof and floor slabs, columns, and pilings, may increase by 150 percent between 1964 and 1970."

"Among the major factors contributing to this advancing trend toward prefabrication are the significant savings possible in time, materials, and onsite labor requirements, the higher degree of quality control possible in factories, and the greater opportunities for economies of large-scale production and mass-production techniques in construction. For example, a carpenter can install a complete prefabricated door (prehung in its frame with hardware attached) in about one-tenth to one-sixth of the time usually required to hang a door in the conventional manner."

*"New and improved materials continue to reduce significantly material and labor costs.*—By 1970, new products introduced during the decade of the 1960's are expected to account for a substantial portion of all building products sold in this country, reflecting the continuing advances in plastics, steel, concrete, paints, and other materials."

"Prestressed concrete products, expected to double in sales by 1970 offer considerable labor and other cost savings in many uses. Developments in structural design using high strength steel products can reduce the frame weight of buildings by as much as one-half in some instances, thereby resulting in significant material and labor cost savings."

"New paints require less on-site preparation, flow more smoothly, go on in fewer coats, and last longer, thus reducing costs and substantially reducing maintenance requirements. Adhesives are being more widely used to save time and reduce costs in floor bonding, exterior wall section fabrication, and in drywall erection."

*"Improvements in design are continually being made.*—New concepts of architectural and engineering design make possible cost savings and productivity increases. More than a dozen new structural design concepts—all directed toward the economical utilization of space, materials, and the lowering of costs—have emerged since 1945."

*"New systematic scheduling techniques are gaining acceptance among large contractors on complex projects.*—Techniques such as the program evaluation and review technique (PERT) and the critical path method (CPM), particularly when used in conjunction with electronic computers, significantly improve management's