

construction had annual growth rates varying from 7 to 13 percent, whereas the nonbuilding categories had growth rates varying from 5 to 8 percent.

A third element boosting the share of material costs for construction in general over the two decades is the increasing use of off-site fabricated materials which in effect shifts labor costs from the construction site to the factory. For example, concrete products rose considerably in importance in State and local construction while its raw materials, cement and rock products, declined in importance. In highway construction specifically, there was a relative increase in the use of ready-mix asphalt, and a decline in the share of bitumens which are mixed on site. Another example involves metal doors, windows and trim, whose share of total State and local construction outlays tripled between 1947 and 1965, as increasing substitution for lumber products took place.

Finally, as in the case of highways, the trend toward higher standards and improved design in other types of construction has also been partly responsible for the increasing relative importance of building materials. Expenditures on electrical equipment, fixtures and wiring devices have been particularly affected. The share of total expenditures for these products has increased more than three times since 1947, rising from 0.7 percent to 2.5 percent. Similarly, the share of plumbing materials almost doubled during the postwar period, reflecting the inclusion of more laboratories and drinking fountains, and the increasing pipe requirements of new buildings resulting from more one-story spreadout designs in such fast growing buildings types as schools and hospitals.

While on an overall basis materials expenditures were increasing their relative importance, some major building materials and products could not maintain their competitive positions during the past 20 years. Thus, in the case of lumber products, usage declined from about 3 to 2 percent of total construction outlays. For education, the largest building category of public construction, lumber usage declined since 1947 from 8 to about 5 percent. This shift was mainly associated with new trends in the design of schools. New designs also explain another important shift, from brick to concrete products in expenditures for schools. Brick usage declined from 5 to 2 percent of school outlays. The greater popularity of concrete products, more than doubling in usage over the years for all types of facilities is associated with the decline in brick and lumber usage. Finally, a slight decline in materials outlays occurred in iron pipe. This reflects a shift to other types of pipe particularly for water facilities construction.

C. FUTURE MATERIAL NEEDS OF PUBLIC WORKS

The projected increase of from 57 to 65 percent in the physical volume of State and local construction in 1975 over 1965⁴ does not involve the same disparity in growth trends between more material and less material intensive types of construction as during the 1947-65 period. The overall materials share in State and local construction of 50 percent will probably not increase by more than a few percentage

⁴ This range relates to the alternate projections of constant dollar State and local construction activity presented in ch. 1.