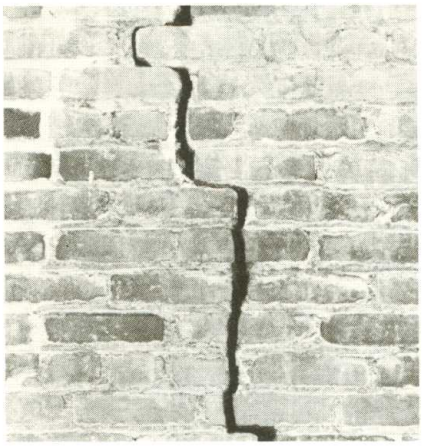
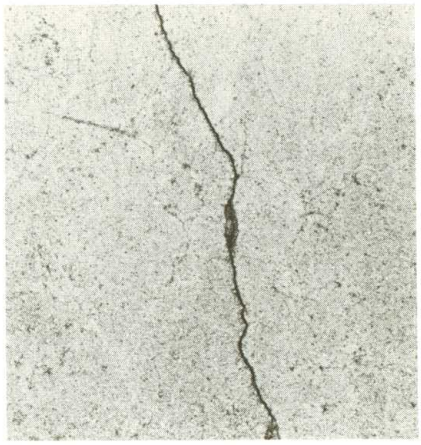
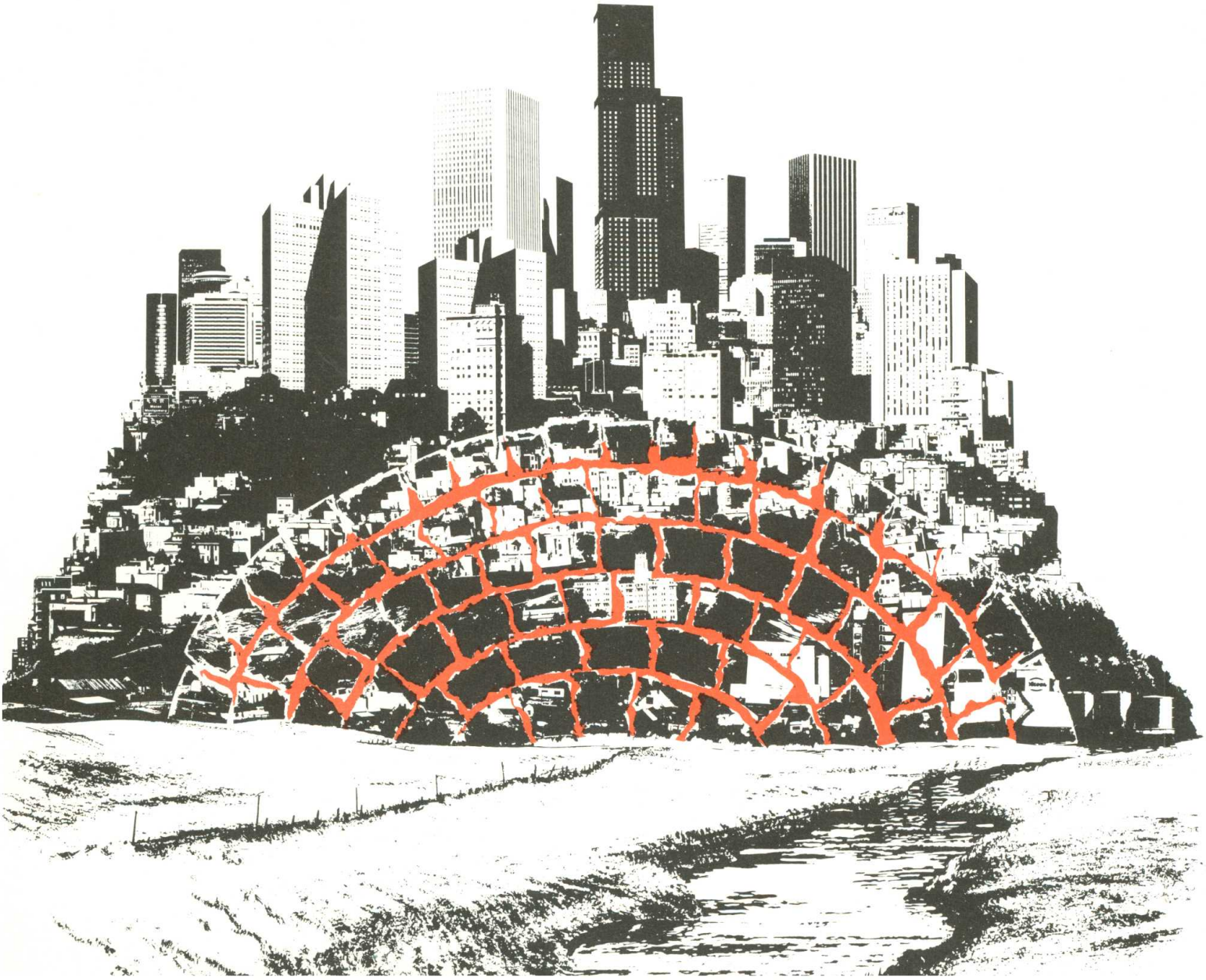
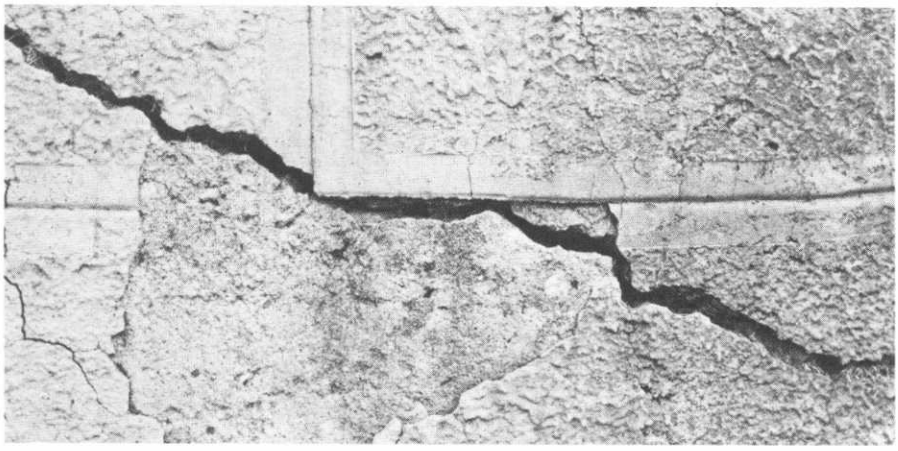
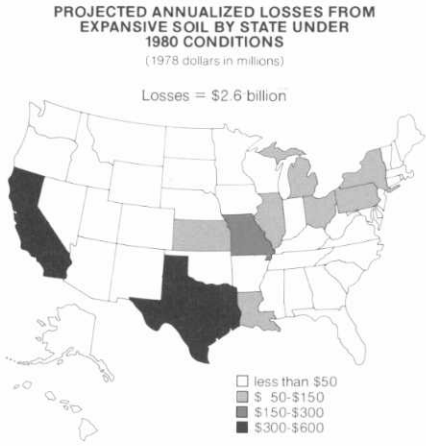
EXPANSIVE SOIL











Few people have ever heard of expansive soil Even fewer realize the magnitude of the damage it causes In most cases, it takes a professional soils engineer to confirm its existence and evaluate its probable behavior

Yet, over one-fifth of the nation's families live on such soil and no state is free of significant amounts of it. What is frequently referred to as "The Hidden Disaster" accounts for over $1.9 billion in building losses during a typical year, under 1970 conditions, based upon 10-year averages

In fact, expansive soil ties with hurricane wind/storm surge for second place among America's most destructive natural hazards, in terms of dollar loss to buildings. Its destructive impact is currently surpassed only by that of riverine flood

Soil Expands 15 Times

Typically, the clay within expansive soil can expand up to 15 times its original dimensions when wet, shrinks when drying, then creates forces of up to 30,000 pounds per square foot when it expands again. Such forces will shatter or break most building materials

The hazard is most dangerous to buildings in states which have clearly delineated wet and dry seasons. California and Texas collectively account for about 35 percent of the nation's expansive soil damage to buildings, but fully half of the states annually suffer building damage in excess of 20 million 1978 dollars from the hazard

Actually, most expansive soil estimates are probably low because buildings which slowly deteriorate over a period of many years from the effects of the hazard usually aren't numbered among its victims

Partially in recognition of this situation, since 1960 the Department of Housing and Urban Development often has required far more stringent construction controls on new homes covered by FHA loans In spite of the policy, however, unless further steps are taken, typical-year building losses from expansive soil will increase to over 4.5 billion in constant dollars by the year 2000.

The primary reasons a computerized model predicts this are the rising value of buildings, current building practices trending toward broader use of slab foundations, and the accelerated rate of population growth into parts of the nation where expansive soil is more prevalent.

If a nation-wide policy requiring only pre-construction soil moisture, soil density and site drainage control was initiated in 1980, by the year 2000, new construction losses from expansive soil could be reduced at least 30 percent and overall building losses, over 10 percent.

$1.5 Billion Savings

A total of $1 5 billion could be saved annually beginning in year 2000 if either soil stabilization prior to construction or stronger foundations became standard across the nation, starting in 1980 This could reduce yearly new construction losses up to 85 percent and overall building losses from expansive soils approximatly 35 percent by the year 2000.

Indications are that if soil stabilization and improved foundations were universally employed in combination, losses from what would otherwise continue to be one of our nation's two most devastating hazards could be brought down to easily manageable proportions.