



# Trees and Sidewalks

Creative solutions to keep the urban tree canopy in place and fix sidewalks in Utah ..... Megan Dettenmaier, Michael Kuhns, and Darren McAvoy

## SITUATION



Mature urban trees often have large root systems. Their roots can break and uplift sidewalks, creating hazards for pedestrians and costing cities money. Removal and replacement of one tree and the associated costs for fixing the sidewalk can range from \$1,000 to \$3,000. However, when urban trees are removed, their benefits are also removed. Trees absorb carbon dioxide and store it long term. Their roots remove excess nutrients and contaminants from soil and water, and they provide shade and reduce energy consumption for cooling during the hot summer.

The average cost to replace a tree and a nearby sidewalk is:

**\$1,000 – \$3,000**

## USU EXTENSION RESPONSE

USU Forestry Extension received two Community Forestry Partnership Grants from the Utah Division of Forestry, Fire and State Lands to test alternative sidewalk materials for sidewalk replacement near trees. Using these alternative sidewalk materials reduces the need for tree removal when sidewalks are damaged as trees age. The materials used in this project were plastic sidewalk tiles and pour-in-place permeable pavement; both are flexible and permeable to air and water. Their flexibility allows them to mold around tree roots while maintaining a smooth surface. We installed flexible sidewalk tiles in Logan, Utah at 10 locations with damaged sidewalks, and we installed permeable pavement in Ogden at two locations with damaged sidewalks. We held a training session for 19 urban and community forestry professionals who were interested in these techniques in Ogden.

- 10** locations with flexible sidewalk tiles installed in Logan
- 2** locations with permeable pavement sidewalks installed in Ogden
- 19** urban and community forestry professionals trained



We measured public acceptability of these techniques in both cities, and found that it increased from 78% to 94% when educational information was distributed before the new sidewalk materials were installed.

## IMPACT

By replacing broken sidewalks with alternative materials we were able to leave 29 large urban trees in place, each providing unique economic, ecological, and societal benefits to the community. The 29 trees preserved in this project have a combined, annual benefit of \$5,548. This calculation is based on the value of stormwater retention, property value increases, energy savings, air pollutant absorption, and carbon sequestration.



urban trees were preserved, with a benefit of **+\$5,548/YR**

**1** healthy urban tree absorbs ~330 LBS. OF CO<sub>2</sub> YEAR

Property values increase **2-15%** when mature trees are nearby.



Access to **TREES & GREEN SPACES** significantly reduces people's anxiety and depression.

## BOTTOM LINE

Alternative sidewalk materials can improve the retention of the mature, urban tree canopy and save cities money. Keeping urban trees in place has many benefits for citizens (both physical and mental) and the environment.