# TEMPE, ARIZONA SURVEY CONTROL

I Steven A. Good, hereby certify that I am a registered Land Surveyor in the State of Indiana that this map correctly represents a survey made under my supervision during the months of January through March, 1984 and that the survey complies with the minimum standards for land surveys as prescribed by the Indiana Land Surveyors Registration Act and the condition of Second Order Class II horizontal control accuracy. Monuments indicated on this map as "Quarter Section Corners" are such accepted by common usage, or as designated for the purposes of this survey by the City Engineer of Tempe, Arizona.

Certified this 27th day of March, 1984

MID-STATES ENGINEERING CO., INC.

Steven A. Good
Registered Land Surveyor #10334 - Indiana

I, Rudy J. Umbanhowar, hereby certify that I am a registered Land Surveyor in the state of Arizona, and that the data presentation on this map correctly reflects specifications made under my supervision.

Elevations are based on Mean Sea Level N.G.V.D. 1929

All coordinates shown hereon indicate project datum ground coordinates, projected from the Arizona Coordinate System, Central Zone, by a combination scale and sea level factor of 1.0000576 and translated by -500,000 in the X direction, and by -400,000 in the Y direction. Coordinate values hereon are listed in Y-X, or Northing-Easting order. To convert coordinate values shown hereon to their corresponding Arizona Coordinate System values, utilize the following formulas

Y ACS = Y coordinate value on Arizona Coordinate System
X ACS = X coordinate value on Arizona Coordinate System
Y PD = Y project datum coordinates
X PD = X project datum coordinates

$Y_{ACS} = (Y_{PD} + 400{,}000) \div 0.9999428$
$X_{ACS} = (X_{PD} + 500{,}000) \div 0.9999428$

Distances shown hereon indicate ground level (GD) feet (U.S.S.L.) distances converted from sea level datum.

Elevations are referred to grid north of the Arizona Coordinate System, Central Zone.

- Derivation of Combination Factors

In the Central Zone of the Arizona State Plane Coordinate System, the grid distances along this Central Meridian (longitude 111°-55'-00.0"W) differ from the actual distances between the same stations. Because the distance between the actual/polar ground and the grid distance is a function of the elevation, the combination factor is 1.0000576. Average scale factors defined for the City of Tempe are:

0.9999002 ground to grid
1.0000998 grid to ground

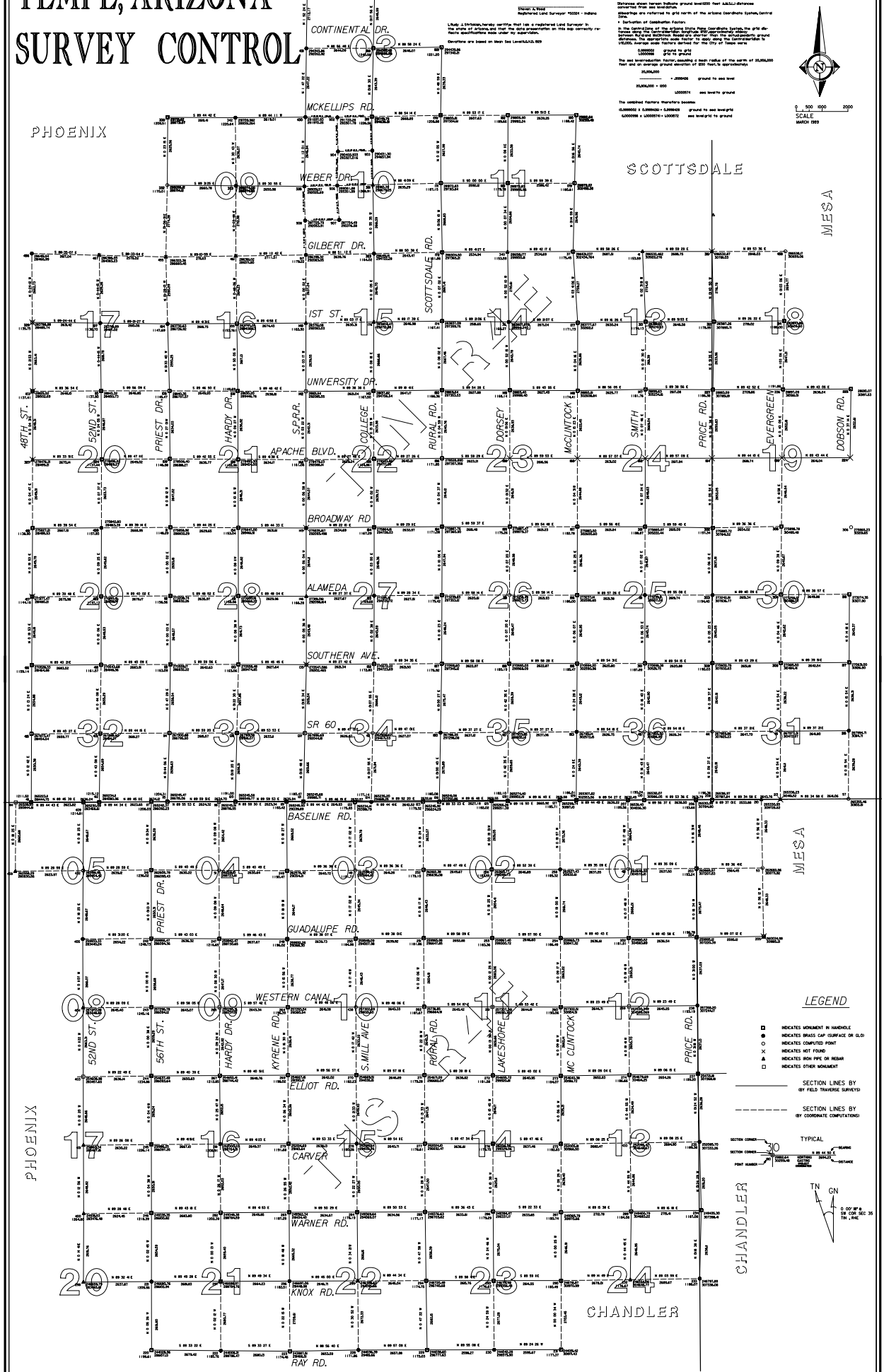
The sea level reduction factor, assuming a mean radius of the earth of 20,906,000 feet and an average ground elevation of 1200 feet, is approximately:

$$\frac{20{,}906{,}000}{20{,}906{,}000 + 1200} = .9999426 \quad \text{ground to sea level}$$

$$1.0000574 \quad \text{sea level to ground}$$

The combined factors therefore become:

0.9999002 X 0.9999426 = 0.9999428 ground to sea level grid
1.0000998 X 1.0000574 = 1.0000572 sea level grid to ground

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PREPARED BY THE CITY OF TEMPE ENGINEERING DIVISION