

As Introduced

136th General Assembly

Regular Session

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S. B. No. 465

Senator Schaffer

To amend, for the purpose of adopting new section
numbers as indicated in parentheses, sections
157.04 (157.06), 157.05 (157.07), 157.07
(157.08), 157.08 (157.09), and 157.09 (157.10);
to enact new sections 157.01, 157.02, 157.03,
157.04, 157.05, and 157.11 and section 157.021;
and to repeal sections 157.01, 157.02, 157.03,
157.04, 157.05, 157.06, 157.07, 157.08, 157.09,
157.10, and 157.11 of the Revised Code to update
the Ohio Coordinate System to adhere to the
National Spatial Reference System.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF OHIO:

Section 1. That sections 157.04 (157.06), 157.05 (157.07),
157.07 (157.08), 157.08 (157.09), and 157.09 (157.10) be amended
for the purpose of adopting new section numbers as indicated in
parentheses and new sections 157.01, 157.02, 157.03, 157.04,
157.05, and 157.11 and section 157.021 of the Revised Code be
enacted to read as follows:

Sec. 157.01. As used in this chapter:

(A)

"Conversions" means the relationship between metric units

<u>and foot units:</u>	21
<u>(1) "International foot" means a distance equal to exactly</u>	22
<u>0.3048 meters.</u>	23
<u>(2) "U.S. survey foot" means a distance equal to 1200/3937</u>	24
<u>meters.</u>	25
<u>(B) "Height" means the coordinate value of the vertical</u>	26
<u>elements of the NSRS expressed as feet or meters and identified</u>	27
<u>as ellipsoid height, orthometric height, or dynamic height:</u>	28
<u>(1) "Dynamic height" means the vertical distance of a</u>	29
<u>point proportional to the value of geopotential energy along a</u>	30
<u>surface.</u>	31
<u>(2) "Ellipsoid height" means the distance from a point on</u>	32
<u>the earth's surface to a reference ellipsoid, measured along a</u>	33
<u>line perpendicular to the ellipsoid's surface, derived directly</u>	34
<u>from global navigation satellite system receivers, which use the</u>	35
<u>ellipsoid as a simple mathematical model to approximate the</u>	36
<u>earth's shape.</u>	37
<u>(3) "Orthometric height" means the vertical distance of a</u>	38
<u>point above the geoid, which is the irregular surface of mean</u>	39
<u>sea level extended under the continents, measured along a plumb</u>	40
<u>line, perpendicular to the geoid, which is approximately</u>	41
<u>equivalent to the height above mean sea level.</u>	42
<u>(C) "Metadata" means a set of data that describes and</u>	43
<u>gives information about other data. "Metadata" includes the</u>	44
<u>geodetic reference system utilized, applicable epoch, statement</u>	45
<u>of positional accuracy of coordinates, methodology, and date of</u>	46
<u>observation.</u>	47
<u>(D) "National geodetic survey" means the agency located</u>	48

within the national ocean service of the national oceanic and 49
atmospheric administration under the United States department of 50
commerce or its successor agency. 51

(E) "NSRS" means the national spatial reference system or 52
its successor. 53

Sec. 157.02. The system of plane coordinates known as the 54
state plane coordinate system 2022, or its successors, that has 55
been established by the national geodetic survey for defining 56
and stating the horizontal positions or locations of points on, 57
above, or below the surface of the earth within this state shall 58
be known as the Ohio coordinate system. 59

(A) The Ohio coordinate system shall consist of the 60
following two layers of zones as defined by the national 61
geodetic survey as part of the NSRS: 62

(1) A single, statewide zone with full coverage of this 63
state; 64

(2) A set of smaller low-distortion projection zones based 65
on county boundaries, that together provide the same coverage as 66
the single statewide zone. 67

(B) The defining parameters of the Ohio coordinate system, 68
including zone definitions, are defined and published by the 69
national geodetic survey or its successors as part of the NSRS. 70

Sec. 157.021. Geodetic coordinates include latitude, 71
longitude, and ellipsoid height. The official geodetic datums to 72
which geodetic coordinates are referenced within this state 73
shall be defined by the NSRS, including latitude, longitude, 74
ellipsoid height, orthometric height, and dynamic height. 75

Sec. 157.03. (A) Pursuant to applicable geodetic standards 76

and in alignment with the directives of the national geodetic 77
survey, the North American Pacific geopotential datum 2022, or 78
the most current official vertical datum established by the 79
national geodetic survey, shall be utilized for the 80
determination of orthometric heights of terrestrial points 81
within this state. 82

(B) Legacy vertical datums, including the North American 83
vertical datum of 1988 and the national geodetic vertical datum 84
of 1929, may be retained solely for the purpose of maintaining 85
historical or legacy datasets. In such cases, the responsible 86
data custodian shall provide accurate and documented conversions 87
from the legacy datum to the currently adopted vertical datum. 88

Sec. 157.04. (A) The plane coordinates of a point on the 89
earth's surface, to be used in expressing the position or 90
location of the point in the appropriate zone of the Ohio 91
coordinate system, shall consist of the following two distances, 92
expressed in feet and decimals of a foot or meters and decimals 93
of a meter, along with the metadata of the observations used to 94
determine the coordinates: 95

(1) The east or x-coordinate shall give the distance east 96
of the Y axis. The Y axis of any zone shall be parallel with the 97
central meridian of that zone. 98

(2) The north or y-coordinate shall give the distance 99
north of the X axis. The X axis of any zone shall be at right 100
angles to the central meridian of that zone. 101

(B) The international foot shall be used for all foot 102
distance and coordinate conversions utilizing horizontal 103
coordinate systems tied to the state plane coordinate system 104
2022 or later datums or adjustments. 105

(C) The U.S. survey foot shall be used for all foot 106
distance and coordinate conversions utilizing horizontal 107
coordinate systems tied to datums previous to the state plane 108
coordinate system 2022 datum. 109

(D) The international foot shall be used for all foot 110
distance and coordinate conversions utilizing orthometric 111
heights tied to the North American Pacific geopotential datums 112
2022 or later datums or adjustments. 113

(E) The U.S. survey foot shall be used for all foot 114
distance and coordinate conversions utilizing orthometric 115
heights tied to legacy vertical datums or adjustments. 116

Sec. 157.05. (A) All of the following shall be named in 117
any land description, plat, map, report of survey, or other 118
document in which coordinates based on the Ohio coordinate 119
system are used: 120

(1) The name of the zone as provided by the national 121
geodetic survey; 122

(2) The source geodetic datum, the adjustment date, and 123
the decimal-year epoch date of the survey or coordinate 124
derivation or calculation; 125

(3) The metadata. 126

(B) All of the following shall be named in any land 127
description, plat, map, report of survey, or other document in 128
which orthometric heights are used: 129

(1) The vertical datum and adjustment used; 130

(2) The source of the orthometric height and date of the 131
survey; 132

(3) The metadata.

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Sec. ~~157.04~~ 157.06. Plane ~~co-ordinates~~coordinates, used to
reference and describe land boundary corners and made a part of
the recorded description of such corners, shall be considered
adequate evidence of the location of such corners in the absence
of original physical monuments or other acceptable controlling
evidence of original corner locations. In all instances where
reference has been made to such ~~co-ordinates~~plane coordinates
in land surveys, the scale, sea level, and grid factors must
also be stated for the survey lines used in computing ground
distances and areas.

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Nothing in this chapter shall be construed to require a
purchaser or mortgagee of real property to rely wholly on a land
description, any part of which depends exclusively upon ~~either~~
the Ohio ~~co-ordinate~~coordinate system.

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Sec. ~~157.05~~ 157.07. When any tract of land extends from
one zone into ~~the other the~~the ~~co-ordinate~~coordinate zones
established by section ~~157.01-157.02~~of the Revised Code, the
positions of all points on its boundaries may be referenced to
~~either one of the two~~zones.

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Sec. ~~157.07~~ 157.08. ~~Co-ordinates based on either Ohio co-~~
~~ordinate system and used to describe and locate positions of~~
~~land boundary corners shall be surveyed and determined within a~~
~~maximum positional error of plus or minus 0.05 metres, except~~
~~that it may be less than 0.05 metres if local land survey~~
~~standards of practice for positional errors so dictate, with~~
~~respect to the nearest horizontal control station established in~~
~~conformity with the standards of accuracy and specifications for~~
~~first and second-order geodetic surveying as prepared and~~
~~published by the federal geodetic control committee of the~~

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~~United States department of commerce.~~ The standards and 163
specifications issued by the federal geodetic control committee 164
in force on the date of ~~such a survey conducted to describe and~~ 165
~~locate positions of land boundary corners~~ shall apply. The 166
publication by the United States department of commerce of 167
existing control stations or the acceptance by the department of 168
newly established control stations with intent to publish them 169
shall constitute evidence of adherence to federal geodetic 170
control committee specifications. These limitations may be 171
modified by a duly authorized ~~state government~~ agency to comply 172
with local conditions. 173

Sec. ~~157.08~~ 157.09. Extension of ~~co-ordinate~~ coordinate 174
control by qualified surveyors for local ~~co-ordinate~~ coordinate 175
control densification shall be executed in conformity with 176
standards of accuracy and specifications for first or second- 177
order geodetic surveys as prepared and published by the federal 178
geodetic control committee of the United States department of 179
commerce pursuant to section ~~157.07~~ 157.08 of the Revised Code. 180
Control monumentation for analysis of land boundaries, 181
construction control, engineering design and planning, and 182
photogrammetric survey control for such purposes shall be 183
executed in conformity with the standards of accuracy and 184
specifications for first, second, or third-order geodetic 185
surveys as prepared and published by the federal geodetic 186
control committee in force on the date of such survey. 187

Sec. ~~157.09~~ 157.10. Distances, bearings, and areas 188
computed indirectly from ~~co-ordinates~~ coordinates shall be 189
considered acceptable measurement evidence for land and other 190
surveys if such ~~co-ordinates~~ coordinates have been determined in 191
accordance with sections ~~157.04~~ 157.06, ~~157.07~~ 157.08, and ~~157.08~~ 192
157.09 of the Revised Code. 193

Sec. 157.11. In accordance with sections 157.01 to 157.10 194
of the Revised Code, legacy coordinate systems including the 195
Ohio coordinate system of 1983 and the Ohio coordinate system of 196
1927 shall not be used after December 31, 2033, and the Ohio 197
coordinate system shall be used after that date. Nothing in 198
sections 157.01 to 157.10 of the Revised Code shall be construed 199
to require that land descriptions using the Ohio coordinate 200
system of 1983 and recorded before January 1, 2034, be conformed 201
to the Ohio coordinate system. 202

Section 2. That sections 157.01, 157.02, 157.03, 157.04, 203
157.05, 157.06, 157.07, 157.08, 157.09, 157.10, and 157.11 of 204
the Revised Code are hereby repealed. 205