

Creating a State Plane Coordinate System with a Grid-to-Ground Scale Factor in J-Field

A new project is created by selecting Collect>Project>Create New Project.

Project Settings

Project Name

Project1

Project Coordinate System

NAD83(2011) / Ohio South | NAVD 88

Background Map

None

Esc

Create

The Project Coordinate System is set as your state plane coordinate system.

To view the coordinate systems in this project, choose Coordinate System from the Collect Prepare or Stake Prepare screen and toggle the top setting to Current Project.

Current Project

All Projects

Default

NAD83(2011) / Ohio South | NAVD 88

Grid System

Name

NAD83(2011) / Ohio South | NAVD 88

Epoch

2010.0000

Geodetic Datum

Semi-major axis

6378137.000m

Inverse flattening

1 / 298.257222101

Prime meridian

00°00'00"

HTDP WGS84(ITRF2008) to NAD83(2011) / NAVD 88 / SPCS83 Ohio South zone

Esc

Select



Click the Additional Actions icon and tap Duplicate to create a copy of this coordinate system. The duplicated system will be created with the date appended to the end of its name.

Current Project ☒ All Projects ☐ Default ☐

Additional actions

Duplicate

Import

Export

Close

Esc Select

Current Project ☒ All Projects ☐ Default ☐

NAD83(2011) / Ohio South | NAVD 88

NAD83(2011) / Ohio South | NAVD 88...

Grid System

Name NAD83(2011) / Ohio South | NAVD 88 2015-12-03 15.52.31

Default name NAD83(2011) / Ohio South | NAVD 88 2010.0000

Epoch

Geodetic Datum

Semi-major axis 6378137.000m

Inverse flattening 1 / 298.257222101

Prime meridian 00°00'00"

HTDP WGS84(ITRF2008) to NAD83(2011) / NAVD 88 / SPCS83

Esc Select

Now highlight the duplicated system and tap the edit icon and choose Adjust Grid-to-Ground & Rename.

NAD83(2011) / Ohio South | NAVD 88 2015-12-03 15.52.31

Adjust Grid-to-Ground & Rename

Grid System

Name NAD83(2011) / Ohio South | NAVD 88 2015-12-03 15.52.31

Default name NAD83(2011) / Ohio South | NAVD 88

Epoch 2010.0000

Geodetic Datum

Semi-major axis 6378137.000m

Inverse flattening 1 / 298.257222101

Prime meridian 00°00'00"

HTDP WGS84(ITRF2008) to NAD83(2011) / NAVD 88 / SPCS83 Ohio South

Esc

Adjust Grid-to-Ground & Rename

Name NAD83(2011) / Ohio South | NAVD 88 2015-12-03 16.40.55

North Origin 0.0 ft East Origin 0.0 ft

North Ground 0.0 ft East Ground 0.0 ft

Rotation 0°0'0.0" Scale Difference 0.0 ppm

North Inclination 0.0 " East Inclination 0.0 "

Vertical Offset 0.0 ft

Cancel OK

Tap the Default button to change the coordinate system name to the default name. Tap the position icon beside East Origin to set origin point in the grid system for the transformation. Here the base station coordinate is chosen from the points List.

Adjust Grid-to-Ground & Rename

Name NAD83(2011) / Ohio South | NAVD 88

North Origin 0.0 ft East Origin 0.0 ft

North Ground 0.0 ft East Ground 0.0 ft

Rotation 0°0'0.0" Scale Difference 0.0 ppm

North Inclination 0.0 " East Inclination 0.0 "

Vertical Offset 0.0 ft

Cancel OK

Get from BaseProject1, Hub, <none>

Survey North, East, Height

Manual 723889.5487ft

List 1784473.7876ft

Map 955.1242ft

Clipboard NAD83(2011) / Ohio South | NAVD 88

Save to Design Clipboard

Cancel OK

By default the ground origin point will be populated with the same coordinate and the Scale Difference is populated with the grid-to-ground scale factor calculated from that point. The scale factor rounded to the nearest part-per-million (ppm) is automatically appended to the coordinate system name. You may also wish to round the scale difference to the nearest ppm by taping its button and entering that value. In this screen options exist to

enter a new factor as a Ratio or Ppm. The Factors button will allow you to use the CoGo Scale Factor function to calculate a new scale factor if desired.

Adjust Grid-to-Ground & Rename

Name	NAD83(2011) / Ohio South NAVD 88 GRD: 50ppm		PROJ	DFLT
North Origin	723889.5487 ft	East Origin	1784473.7876 ft	
North Ground	723889.5487 ft	East Ground	1784473.7876 ft	
Rotation	0°0'0.0"	Scale Difference	49.504 ppm	
North Inclination	0.0 "	East Inclination	0.0 "	
Vertical Offset	0.0 ft			

Cancel
OK

Scale Difference: +50.0 ppm

Factors	7	8	9	
Ratio	4	5	6	1/x
MS	1	2	3	
Esc	Clr	<	+/-	0
				>
				OK

These settings will create an adjusted state plane coordinate system scaled around the base station. The base station coordinate will not change. This is useful for projects that have ground distances as would be measured with a total station and state plane coordinate system bearings since the rotation is set to 0. The coordinates will be very close to the real state plane system so that orthographic imagery and state plane referenced contours or elevation models can be loaded into your CAD drawings. You should be cautious when giving these coordinates to others as they may confuse them for real state plane coordinates. To solve this problem you may wish to subtract 100,000 from the North and East Ground coordinate values to create a (100,000 100,000) offset from the real state plane system. This can be done by tapping the North Ground and East Ground boxes.



Tap the  button to add the current project's name to the beginning of the coordinate system name.

Adjust Grid-to-Ground & Rename

Name Project 1 - NAD83(2011) / Ohio South NAVD 88 GRD: 50ppm			
North Origin	723889.5487 ft	East Origin	1784473.7876 ft
North Ground	723889.5487 ft	East Ground	1784473.7876 ft
Rotation	0°0'0.0"	Scale Difference	50.0 ppm
North Inclination	0.0 "	East Inclination	0.0 "
Vertical Offset	0.0 ft		

Cancel
OK

Press OK and then Apply to create this coordinate system. You can now use this coordinate system as the Project Coordinate System or just for some pages if you choose.