Indiana Geospatial Coordinate System (InGCS)

InGCS Metadata, Geodetic Datum, Map Projection Zone Definitions & Grid Coordinate Validation Points

GEODETIC DATUM: NAD 83

RESPONSIBLE AGENCY: Indiana Department of Transportation (INDOT), Land & Aerial Survey Division

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APPROVED BY: The InGCS Technical Development Team

APPROVED DATE: 2015/03/26

DATE ADOPTED BY INDOT: 2015/07/28

SCOPE (USAGE): Engineering Survey

AREA OF USE: The designed area of use for these map projections lie within the State of Indiana, USA.

GEODETIC DATUM: The Indiana Geospatial Coordinate System (InGCS) is referenced to the latest realization of the National Spatial Reference System (NSRS), which is currently defined geometrically as NAD 83(2011). For projects based upon the InGCS, the burden of identifying the datum tag (realization) in metadata will be upon the practitioner.

For agencies, groups, proprietary geospatial software providers, etc. preparing to include the InGCS in their respective geodetic parameter datasets, coordinate system libraries, etc., it is recommended that they minimally include the current realization of NAD 83, i.e. NAD 83(2011) and any subsequent realizations. Please note that there have been “double-correction” issues in the magnitude of approximately two meters (three-dimensionally) identified with certain commercially available field system's software when using Real Time (GNSS) Networks (RTN) and other projected coordinate systems, such as State Plane, when attempting to correctly position respective to NAD 83(2011). End users of the InGCS should measure the success of their proprietary geospatial software by the ability to unambiguously perform geodetic computations and repeatedly observe undisturbed geodetic survey marks published by the National Geodetic Survey bearing NAD 83(2011) (and any future realizations) values within industry-acceptable tolerances for the work being performed, regardless of the global positioning method employed (RTN, RTK, PPP, Static, etc.).

PROJECTION METHOD: All InGCS Zones are based upon the Transverse Mercator projection method.

DESIGNATION OF ZONES: Zones within the InGCS were designated the names of the corresponding Indiana Counties for the sake of simplicity and intuitive use by end users. Indiana has 92 Counties. Therefore, the InGCS has 92 zones. A certain zone may or may not have the identical projection parameters of an adjacent zone(s). When comparing the projection parameters of the InGCS' 92 distinct zones, there are 57 separate groups yielding identical parameters. These groups are numbered and listed below for use by the European Petroleum Survey Group (EPSG) for abbreviation purposes within their Dataset. It is requested that proprietary geospatial software providers include the official 92 named zones via 92 separate entries.

ANGULAR UNITS: The Degrees, Minutes and Seconds (DMS) values listed below define the corresponding Central Meridians and Latitudes of Grid Origins. These DMS values were assigned at intervals of three minutes so as to keep decimal conversions as "clean" as practical, while not sacrificing the intended map distortion objectives of the System. By assigning the DMS values at intervals of three minutes, decimal conversions round evenly at two decimal places. For applications that require decimal degree input rather than DMS, it is strongly recommended users validate that their decimal degree conversions have not yielded non-zero values after the second decimal place. If non-zero values have occurred after the second decimal place, the conversions have been computed erroneously.

LINEAR UNITS: The False Eastings and False Northings listed below are in meters, which is the defining linear unit for these parameters. The provided Validation Points are also listed in meters. The "working" linear unit for end users in Indiana will be the "United States Survey Foot" definition (1 meter = 39.37 inches).

VALIDATION POINTS: All grid coordinate values listed below for the Validation Points are based upon the same position of latitude and longitude of **42° North** and **85° West**. This position lies approximately 31 kilometers northwest of the northeast corner of Indiana. This single, common geodetic position yields positive grid values in all Zones listed herein.

Zone Name	Indiana 2-Digit County Code	Projection Group Abbreviation Code	*(North Latitude)* Latitude of Grid Origin			*(WestLongitude)* Central Meridian			Central Meridian Scale Factor	False Easting (X) (meters)	False Northing (Y) (meters)	Validation Point	
			Deg.	Min.	Sec.	Deg.	Min.	Sec.				Easting (X) (meters)	Northing (Y) (meters)
Adams	01	01	40	33	00	84	57	00	1.000034	240,000	36,000	235,857.321	197,042.576
Allen	02	02	40	54	00	85	03	00	1.000031	240,000	36,000	244,142.667	158,173.879
Bartholomew	03	03	39	00	00	85	51	00	1.000026	240,000	36,000	310,425.254	369,491.117
Benton	04	04	40	27	00	87	18	00	1.000029	240,000	36,000	430,567.721	210,705.421
Blackford	05	05-18	40	03	00	85	24	00	1.000038	240,000	36,000	273,141.593	252,641.732
Boone	06	06-32	39	36	00	86	30	00	1.000036	240,000	36,000	364,282.128	303,618.467
Brown	07	07	39	00	00	86	18	00	1.000030	240,000	36,000	347,710.206	369,960.596
Carroll	08	08	40	24	00	86	39	00	1.000026	240,000	36,000	376,709.323	215,014.436
Cass	09	09	40	33	00	86	24	00	1.000028	240,000	36,000	355,995.543	197,988.761
Clark	10	10-22-72	38	09	00	85	36	00	1.000021	240,000	36,000	289,711.598	463,672.324
Clay	11	11	39	09	00	87	09	00	1.000024	240,000	36,000	418,137.860	354,724.927
Clinton	12	12	40	09	00	86	36	00	1.000032	240,000	36,000	372,567.295	242,697.736
Crawford	13	13-47-59	38	06	00	86	30	00	1.000025	240,000	36,000	364,280.761	470,138.638
Daviess	14	14-28	38	27	00	87	06	00	1.000018	240,000	36,000	413,993.876	432,329.722
Dearborn	15	15-58-78	38	39	00	84	54	00	1.000029	240,000	36,000	231,714.683	408,002.771
Decatur	16	16-70	39	06	00	85	39	00	1.000036	240,000	36,000	293,855.057	358,247.257
DeKalb	17	17	41	15	00	84	57	00	1.000036	240,000	36,000	235,857.313	119,303.715
Delaware	18	05-18	40	03	00	85	24	00	1.000038	240,000	36,000	273,141.593	252,641.732
Dubois	19	19-51	38	12	00	86	57	00	1.000020	240,000	36,000	401,565.536	459,787.679
Elkhart	20	20-43-85	40	39	00	85	51	00	1.000033	240,000	36,000	310,425.747	186,285.784
Fayette	21	21-24-81	39	15	00	85	03	00	1.000038	240,000	36,000	244,142.696	341,391.242
Floyd	22	10-22-72	38	09	00	85	36	00	1.000021	240,000	36,000	289,711.598	463,672.324
Fountain	23	23-86	39	57	00	87	18	00	1.000025	240,000	36,000	430,566.959	266,225.351
Franklin	24	21-24-81	39	15	00	85	03	00	1.000038	240,000	36,000	244,142.696	341,391.242
Fulton	25	25-50-71	40	54	00	86	18	00	1.000031	240,000	36,000	347,710.313	158,990.378
Gibson	26	26	38	09	00	87	39	00	1.000013	240,000	36,000	459,565.693	466,893.589
Grant	27	27	40	21	00	85	42	00	1.000034	240,000	36,000	297,997.659	219,487.851
Greene	28	14-28	38	27	00	87	06	00	1.000018	240,000	36,000	413,993.876	432,329.722
Hamilton	29	29-80	39	54	00	86	00	00	1.000034	240,000	36,000	322,854.027	269,702.978
Hancock	30	30-48	39	39	00	85	48	00	1.000036	240,000	36,000	306,283.225	297,287.836
Harrison	31	31-88	37	57	00	86	09	00	1.000027	240,000	36,000	335,281.630	486,340.679
Hendricks	32	06-32	39	36	00	86	30	00	1.000036	240,000	36,000	364,282.128	303,618.467
Henry	33	33	39	45	00	85	27	00	1.000043	240,000	36,000	277,284.487	285,974.624
Howard	34	34-52	40	21	00	86	09	00	1.000031	240,000	36,000	335,282.011	219,890.110
Huntington	35	35-92	40	39	00	85	30	00	1.000034	240,000	36,000	281,426.845	186,057.323
Jackson	36	36	38	42	00	85	57	00	1.000022	240,000	36,000	318,710.339	402,881.394
Jasper	37	37-64	40	42	00	87	06	00	1.000027	240,000	36,000	413,995.442	182,516.908
Jay	38	38	40	18	00	85	00	00	1.000038	240,000	36,000	240,000.000	224,803.768
Jefferson	39	39	38	33	00	85	21	00	1.000028	240,000	36,000	268,998.598	419,157.924
Jennings	40	40	38	48	00	85	48	00	1.000025	240,000	36,000	306,282.496	391,654.136
Johnson	41	41-49	39	18	00	86	09	00	1.000031	240,000	36,000	335,282.011	336,476.565
Knox	42	42	38	24	00	87	27	00	1.000015	240,000	36,000	442,993.988	438,649.761
Kosciusko	43	20-43-85	40	39	00	85	51	00	1.000033	240,000	36,000	310,425.747	186,285.784
LaGrange	44	44-57	41	15	00	85	27	00	1.000037	240,000	36,000	277,284.263	119,400.561
Lake	45	45-56	40	42	00	87	24	00	1.000026	240,000	36,000	438,853.181	183,170.285
LaPorte	46	46-66-75	40	54	00	86	45	00	1.000027	240,000	36,000	384,995.147	159,654.089
Lawrence	47	13-47-59	38	06	00	86	30	00	1.000025	240,000	36,000	364,280.761	470,138.638
Madison	48	30-48	39	39	00	85	48	00	1.000036	240,000	36,000	306,283.225	297,287.836
Marion	49	41-49	39	18	00	86	09	00	1.000031	240,000	36,000	335,282.011	336,476.565
Marshall	50	25-50-71	40	54	00	86	18	00	1.000031	240,000	36,000	347,710.313	158,990.378
Martin	51	19-51	38	12	00	86	57	00	1.000020	240,000	36,000	401,565.536	459,787.679
Miami	52	34-52	40	21	00	86	09	00	1.000031	240,000	36,000	335,282.011	219,890.110
Monroe	53	53-55	38	57	00	86	30	00	1.000028	240,000	36,000	364,281.134	375,781.826
Montgomery	54	54-67	39	27	00	86	57	00	1.000031	240,000	36,000	401,567.313	321,022.846
Morgan	55	53-55	38	57	00	86	30	00	1.000028	240,000	36,000	364,281.134	375,781.826
Newton	56	45-56	40	42	00	87	24	00	1.000026	240,000	36,000	438,853.181	183,170.285
Noble	57	44-57	41	15	00	85	27	00	1.000037	240,000	36,000	277,284.263	119,400.561
Ohio	58	15-58-78	38	39	00	84	54	00	1.000029	240,000	36,000	231,714.683	408,002.771
Orange	59	13-47-59	38	06	00	86	30	00	1.000025	240,000	36,000	364,280.761	470,138.638
Owen	60	60	39	09	00	86	54	00	1.000026	240,000	36,000	397,423.611	354,235.478
Parke	61	61-83	39	36	00	87	21	00	1.000022	240,000	36,000	434,709.379	305,198.679

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			Deg.	Min.	Sec.	Deg.	Min.	Sec.				Easting (X) (meters)	Northing (Y) (meters)
Perry	62	62	37	48	00	86	42	00	1.000020	240,000	36,000	380,851.312	503,745.518
Pike	63	63-87	37	51	00	87	18	00	1.000015	240,000	36,000	430,565.053	499,355.108
Porter	64	37-64	40	42	00	87	06	00	1.000027	240,000	36,000	413,995.442	182,516.908
Posey	65	65	37	45	00	87	57	00	1.000013	240,000	36,000	484,424.394	512,105.909
Pulaski	66	46-66-75	40	54	00	86	45	00	1.000027	240,000	36,000	384,995.147	159,654.089
Putnam	67	54-67	39	27	00	86	57	00	1.000031	240,000	36,000	401,567.313	321,022.846
Randolph	68	68-89	39	42	00	85	03	00	1.000044	240,000	36,000	244,142.720	291,429.823
Ripley	69	69	38	54	00	85	18	00	1.000038	240,000	36,000	264,856.185	380,290.971
Rush	70	16-70	39	06	00	85	39	00	1.000036	240,000	36,000	293,855.057	358,247.257
St. Joseph	71	25-50-71	40	54	00	86	18	00	1.000031	240,000	36,000	347,710.313	158,990.378
Scott	72	10-22-72	38	09	00	85	36	00	1.000021	240,000	36,000	289,711.598	463,672.324
Shelby	73	73	39	18	00	85	54	00	1.000030	240,000	36,000	314,568.249	336,228.284
Spencer	74	74	37	45	00	87	03	00	1.000014	240,000	36,000	409,850.295	509,927.647
Starke	75	46-66-75	40	54	00	86	45	00	1.000027	240,000	36,000	384,995.147	159,654.089
Steuben	76	76	41	30	00	85	00	00	1.000041	240,000	36,000	240,000.000	91,536.493
Sullivan	77	77	38	54	00	87	30	00	1.000017	240,000	36,000	447,137.413	383,265.043
Switzerland	78	15-58-78	38	39	00	84	54	00	1.000029	240,000	36,000	231,714.683	408,002.771
Tippecanoe	79	79-91	40	12	00	86	54	00	1.000026	240,000	36,000	397,423.611	237,652.628
Tipton	80	29-80	39	54	00	86	00	00	1.000034	240,000	36,000	322,854.027	269,702.978
Union	81	21-24-81	39	15	00	85	03	00	1.000038	240,000	36,000	244,142.696	341,391.242
Vanderburgh	82	82	37	48	00	87	33	00	1.000015	240,000	36,000	451,280.026	505,491.860
Vermillion	83	61-83	39	36	00	87	21	00	1.000022	240,000	36,000	434,709.379	305,198.679
Vigo	84	84	39	15	00	87	27	00	1.000020	240,000	36,000	442,995.003	344,289.561
Wabash	85	20-43-85	40	39	00	85	51	00	1.000033	240,000	36,000	310,425.747	186,285.784
Warren	86	23-86	39	57	00	87	18	00	1.000025	240,000	36,000	430,566.959	266,225.351
Warrick	87	63-87	37	51	00	87	18	00	1.000015	240,000	36,000	430,565.053	499,355.108
Washington	88	31-88	37	57	00	86	09	00	1.000027	240,000	36,000	335,281.630	486,340.679
Wayne	89	68-89	39	42	00	85	03	00	1.000044	240,000	36,000	244,142.720	291,429.823
Wells	90	90	40	33	00	85	15	00	1.000034	240,000	36,000	260,713.402	197,071.604
White	91	79-91	40	12	00	86	54	00	1.000026	240,000	36,000	397,423.611	237,652.628
Whitley	92	35-92	40	39	00	85	30	00	1.000034	240,000	36,000	281,426.845	186,057.323