CHAPTER 26

Survey Transmittal

NOTE: This chapter is currently being re-written and its content will be included in Chapter 106 in the future.

Design Memorandum	Revision Date	Sections Affected
13-16	Aug. 2013	26-1.01
13-17	Aug. 2013	26-2.0, Figure 26-2D
17-22	Oct. 2017	26-1.01
23-18	Nov. 2023	All sections

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26-3A Location Control Route Survey Plat Example [Rev. Nov. 2023]

CHAPTER 26

SURVEY TRANSMITTAL

This Chapter provides the requirements and specifications for all surveying work performed for the Indiana Department of Transportation (INDOT). It is intended to provide uniform procedures for transmitting survey data to assure quality and continuity in the design and construction of the transportation infrastructure within Indiana. Ensure all work is in accordance with Indiana Administrative Code 865.

Regardless of the survey method, each submission of electronic survey data must be in a format that is compatible with current version of INDOT's survey and design software. To exchange electronic information effectively and efficiently, INDOT requires standardized file formats that provide compatibility between data collectors, data processors, and data users; and which allow for future reuse of the data by INDOT or its consultants.

26-1.0 SOFTWARE [REV. NOV. 2023]

Each submission must be compatible with the current software application. For any DGN-based deliverable, INDOT seed files are required to maintain consistency of unitary measurement and design file working areas. The current INDOT workspace content files should be used during the generation of survey content.

1. Current Software Application. INDOT has adopted `OpenRoads Designer (ORD)` as its standard survey and design software application. The current version is listed on the INDOT CAD Support webpage – CAD Links – Current Versions. Surveys should not be submitted in a version newer than that shown.

   Standard resource files such as design templates (seed files) and survey-data processing `(.dgnlib)` files are available from the INDOT CAD Support webpage – CAD Links – Downloads & Information – INDOT OpenRoads Designer Workspace.

2. Previous Software Applications. Where a project or circumstance necessitates the use of previously accepted data-submittal format, written approval to collect and transmit electronic survey data in a format other than the current version of survey and design software is required from the appropriate `district Survey Operation Manager`. The request must be routed through the appropriate designer and INDOT project manager. Approval will be required prior to the start of field work.

3. Consultant CADD Software. If the survey submittal is for a design consultant's CADD system, the files may be transmitted in a format compatible with the consultant's design application. A submittal of the survey data must also be provided to INDOT in a format compatible with INDOT's current software application.

26-2.0 SURVEY DELIVERABLES [REV. NOV. 2023]

The following sections describe the procedure for submitting survey deliverables, file naming conventions, and file requirements.

26-2.01 Submitting Survey Data [Add. Nov. 2023]

All survey data and supporting documents must be submitted in an electronic format to ProjectWise under the appropriate Des. number. See the *INDOT CAD Consultant Quick Start Guide* for instructions to create a project/folder for a Des. number. The guide is available from the INDOT CAD Support ProjectWise webpage.

26-2.02 File Naming Convention [Add. Nov. 2023]

INDOT has established a standard naming convention for all survey files to make the data more portable so that all users can easily recognize and use the files created by others. Standardized naming also provides information on file contents at a glance. Name each file using the following format.

[Des#]_[SRxx] [Name].[extension]
Example: 1234567_ US52 Topo.dgn

Where:

Des# = designation number for project as provided by INDOT

SRxx = route number of project, for example: SR37, SR162, I64, US150

Name = descriptive name of information in file, for example: Topo, LCRS Plat

Extension = file extension name, for example, .dgn, .pdf

26-2.03 Ground Survey File Requirements [Add. Nov. 2023]

The following files are required for each survey. Each file requires, at a minimum, the data described below. The *INDOTWise ORD Plans Production Guide* (PPG) includes instructions for creating the required survey and design files. The manual is available from the INDOT CAD

Support webpage – CAD Links – Downloads & Information – INDOT OpenRoads Designer Workspace.

File Description (File Format)	File Naming Convention
2D Project Seed File (DGN)	[Des #]_[SRxx] Seed 2D.dgn
3D Project Seed File (DGN)	[Des #]_[SRxx] Seed 3D.dgn
Survey Fieldbook (DGN)	[Des #]_[SRxx] Survey Fieldbook.dgn
Survey Book (PDF)	[Des #]_[SRxx] Survey Book.pdf
Survey Alignment (DGN)	[Des #]_SRxx] Survey Alignment.dgn
Location Control Route Survey Plat (DGN)	[Des #]_[SRxx] LCRS Plat.dgn
Location Control Route Survey Plat (PDF)	[Des #]_[SRxx] LCRS Plat.pdf

1. 2D Project Seed File (DGN). The 2D seed file must be geo-coordinated using the appropriate county coordinate system. The file sets the coordinate system for every ORD-based file in the project and contains a Default model in 2D. The creation of this file, together with the 3D file below, allows for any CAD files based on the created seed file to be instantly consumed by the ESRI ArcGIS Products and made available for a variety of other uses. With OpenRoads, changes to document handling and civil information, files for both 2D and 3D will be created. (PPG Section 2.2-1)

2. 3D Project Seed File (DGN). The 3D seed file must be geo-coordinated using the appropriate county coordinate system. The file sets the coordinate system for every ORD-based file in the project and contains a Default model in 3D. (PPG Section 2.2-1)

3. Survey Fieldbook (DGN). The seed file must be geo-coordinated using the appropriate county coordinate system. This file is created from a 3D seed file. It contains field book information for TOPO and Control Points in the OpenRoads format (survey fieldbook) along with the existing terrain model. Alignments and civil geometry are not created in this file. See item 5., Survey Alignment. (PPG Section 2.2-2)

   This file includes centerline points, a partial list of fly stations (random control points), benchmarks, and United States Public Land Survey (USPLS) subdivision corners, including corners of properties not within USPLS areas, necessary to describe acquisition parcels. Supplemental files imported to create the Survey Fieldbook should be submitted as separate files.

a. Centerline Points. All centerline points of each survey line within the survey must be included in this file.

(1) The code for centerline points must be "PSSA".

(2) Notes for each "PSSA" must include location (e.g., POT, PC, POST, etc.) stationing, line letter, PI information (delta angle, degree of curve or radius length, tangent length, arc length, and external length), description of monument, if any, and location of top of monument relative to ground surface or pavement surface.

b. Fly station. All fly stations used during establishment or reestablishment of survey lines, must be included in this file.

The code for fly station must be "FLY". Notes for "FLY" must include the description of the monument and location of top of monument relative to ground surface or pavement surface for each point.

c. Benchmarks. Those used for survey data collection must be included in this file.

(1) Monuments must be coded in accordance with the `.dgnlib` files provided by INDOT.

(2) Benchmark notes must include the name and description of each monument, a description of the structure that the monument is placed in or on, the station and offset from the survey line, and the survey-line letters.

Examples: TBM#1, Boat Spike in root of 21-in. oak tree, 125 ft left of Station 123+45, Line "A". INDOT BM 19 V 1030, disc in north end of concrete headwall, 55 ft right of Station 35+25, Line "S-1-A".

d. USPLS Corners. These, or corners of properties not within USPLS areas, necessary to describe acquisition parcels, must be included in this file.

(1) Monuments must be coded in accordance with the `.dgnlib` files provided by INDOT.

(2) Notes for monuments must include the location of the corner.

Example for area within USPLS: "N ¼ Corner of Section 34, T2N, R2W". Example for area not within USPLS: "NE Corner of Division "C" of the Vincennes Commons Lands".

(3) Notes must include a description and location of each monument relative to the ground surface or pavement surface.

4. Survey Book (PDF). This file includes all supplemental survey information not found in other files. The requirements are as follows.

a. front page notations, i.e., Des No., Route No., Terminal Points of Project, County, brief description of each line;

b. title page and completed Table of Contents;

c. dates of survey start and survey completion;

d. names of survey crew members;

e. Des number and page numbers at top of each page;

f. Surveyor's Report, in accordance with IAC-865, as a minimum requirement;

g. start and end of each line shown with equations and cross references to other surveys;

h. control points labeled, with location (e.g., POT, PC, POST, etc.), stationing, line letters, location relative to surface (e.g. flush, 0.1' below ground level, etc.), and coordinates shown; alignment data shown and checked;

i. references shown and checked, if LCRS not prepared. If an LCRS was prepared, this information will be on the recorded LCRS;

j. source of bearings described;

k. utility ownerships within limits of survey, with mailing addresses, with a notation of utilities not within limits;

l. Underground Utility Reference Number placed on Utilities page;

m. high-water elevation and date, with source and date of information;

n. source of level datum;

o. benchmark descriptions completed;

p. level notes for all benchmarks used for survey;

q. legal flow-line elevations of county ditches; and

r. level equations with other surveys shown and explained.

5. Survey Alignment (DGN). This file contains the survey alignment(s) in the OpenRoads format (horizontal geometry). This file will be created from the geo-coordinated 2D seed file. When creating the geometry, name the survey alignment appropriately, for example, Line A or Line S-1-A, and apply the correct stationing. Station equations should be applied, where appropriate. (PPG Section 2.2-5)

6. Location Control Route Survey Plat (DGN). This file must include multiple models of the following. (PPG Section 2.2-3) See 26-3.0 for LCRS Plat sheet guidance.

a. The LCRS used to generate that for recording with the County Recorder. This must be provided for design reference and use.

b. Survey control points and references, which include the following:

(1) description of point along alignment (e.g., POT, PC, POST, etc.);

(2) stationing of survey-line point (e.g., 123+45.67, etc.);

(3) line letter (e.g., "A", "S-1-A", etc.);

(4) description of monument (e.g., 5/8 in. rebar with cap stamped INDOT 0005, Mag Nail with washer stamped INDOT 0005, etc.);

(5) location of top of monument relative to ground surface (e.g., Flush with surface, 0.1 ft below ground surface, protruding 0.4 ft above ground surface, etc.);

(6) description of reference monument (e.g., Nail in Bottle Cap in 15-in. Maple, Nail in Bottle Cap in Corner Fence Post, X Cut in Concrete Headwall, etc.); and

(7) azimuth to nearest degree, and distance to nearest 0.01 ft, from control monument to reference monument.

c. USPLS corners, or corners within areas not part of the USPLS, and references, including, at a minimum, the following:

(1) descriptions of USPLS corners (e.g., W ¼ Corner of Section 24, T3N, R5W);

(2) descriptions of monuments not within USPLS areas (e.g., NE Corner of Division "C" of the Vincennes Commons Lands);

(3) description of monument (e.g., 9" x 6" stone with "S 24 W ¼" cut on side of stone);

(4) location of top of monument relative to ground surface (e.g., Flush with surface, 1.5 ft below ground surface, protruding 0.7 ft above ground surface, etc.);

(5) description of reference monument (e.g., Nail in Bottle Cap in 15-in. Maple, Nail in Bottle Cap in Corner Fence Post, X Cut in Concrete Headwall, etc); and

(6) Azimuth, to the nearest degree, and distance, to the nearest 0.01 ft, from control monument to reference monument.

7. Location Control Route Survey Plat (PDF). This file is a copy of the Location Control Route Survey Plat (LCRS) as recorded in the County Recorder's office, for the survey project. This copy must have the seal and signature of the Licensed Land Surveyor in responsible charge and all recording information placed on the LCRS by the County Recorder.

26-2.04 Aerial/LiDAR Survey File Requirements [Add. Nov. 2023]

File requirements for aerial and LiDAR surveys are the same as those described in 26-2.03 for ground surveys, except as follows.

1. The file naming convention should include the suffix "_Aerial" appended at the end of the file name, prior to the file extension.

   Example: 1234567_ US52 Topo_**Aerial**.dgn

2. If a combination of aerial/LiDAR and ground surveys is submitted, they must be combined into a single terrain model of the survey surface.

   For LiDAR data, the point cloud should be submitted in an ORD-compatible format, e.g., .las, .e57, etc. Points should be classified using predefined classification schemes defined by the American Society for Photogrammetry and Remote Sensing (ASPRS) for the desired data category.

26-2.05 Additional Survey Information [Add. Nov. 2023]

A complete survey transmittal includes other survey information relevant to the project. The following additional information is required as noted. This information should be submitted to ProjectWise under the appropriate Des. number. See 26-2.01 for submitting survey data and additional information.

1. Digital Photographs. Digital photographs may be provided to illustrate and document relevant features.

2. Property Deeds. Property deeds that are within the survey limits and those deeds which appear necessary for other reasons must be obtained by the survey party. Copies of the property deeds must be submitted with the field survey and forwarded to the Real Estate Division.

3. Subdivision Plat. Include copies of the subdivision plats and town plats, if applicable, should be included.

4. LCRS. A Location Control Route Survey (LCRS) and the associated LCRS plat are required for an INDOT project that includes the purchase of right-of-way. A copy of the recorded LCRS plat is required for use by the Real Estate Division. See 26-3.0 for LCRS and LCRS plat requirements.

5. Recorded Plats. Include a copy of the recorded surveys that were obtained from the recorder's office and related section corner references obtained from County Surveyors Offices.

6. Plans. Include copies of plans that have been obtained from the Central Office, district office, or other sources.

26-3.0 LOCATION CONTROL ROUTE SURVEY PLAT [ADD. NOV. 2023]

A Location Control Route Survey (LCRS) and the associated LCRS plat are required for an INDOT project that requires the purchase of right-of-way. The LCRS must, at a minimum, comply with the requirements established by Indiana Administrative Code (IAC) 865 when conducting a route survey. The following guidelines are intended to aid in developing an LCRS to satisfy IAC 865 but are not intended to replace the surveyor's judgment as to what should appear in the survey. The LCRS plat border is provided as part of the ORD workspace. See Figure 26-3A for an example Location Control Route Survey Plat.

1. Title Block Information. Include all title block information known at the time the plat is transmitted to the Real Estate Division.

2. Size. The LCRS plat size may be reduced to satisfy specific requirements for recordation. The reduction should be considered in choosing font sizes and line thickness for the original-sized version.

3. Scale. Indicate the scale along with a graphical representation of the scale. A standard engineering scale should be utilized. Ensure legibility at reduced scale that may be required for recordation.

4. Project Location. Indicate the location of the project by identifying all roads on the plat. If no intersecting roads are within the project limits, include a description for the location in the surveyor's report.

5. Units. Units must be in US Survey feet. The U.S. Survey foot is defined based on 1 m = 39.37 in. Use the following conversion factor:

1 meter = 3.280833333 U.S. Survey feet

6. Apparent Right-of-Way. Show all edges of pavement, fences, centerline points found or set, approximate locations of apparent property lines, buildings, etc. INDOT uses a separate plat for the LCRS and the Right-of-Way plat. For the LCRS, showing the right of way is not required. Only physical evidence of right-of-way is shown. The property lines shown on the field plat are for graphical representation only. They are not intended for a property retracement and may not be to scale.

7. Points. Indicate all centerline points, random control points, and reference baseline points that are set.
   a. The stationing used on the centerline should be shown and the basis of the stationing indicated in the surveyor's report.
   b. Section corners should be graphically indicated on the plat where feasible due to scale considerations.
   c. All points should have references drawn according to the type of monument (e.g., centerline, section corner, subdivision corner, survey marker, etc.).
   d. The arrow for a centerline point indicates the direction of the alignment. For a section corner, the arrow indicates the direction for north. This should be shown in the reference boxes.

8. Monuments. Show the monuments listed below on the LCRS plat with both InGCS (Indiana Geospatial Coordinate System) and State Plane Coordinates (SPC).
   a. PLSS corner monuments;
   b. survey alignment monuments;
   c. monuments that appear to locate property ownership;
   d. monuments located along roadway used to collect topographic details for the survey.

9. Monument Description. Indicate whether the monument was found or set and include a description in the Surveyor's Report. This should include the size, type of monument, vertical description (e.g., flush, buried, protruding), location to physical features around the monument, origin (if known), uncertainty, etc.

10. Monument Location. The location of the monument can be identified with an angle and distance, station and offset, or a coordinate system.

a. Coordinates must be reproducible with the information contained on the LCRS. Include all necessary information so that this may be accomplished.

b. INDOT uses the InGCS (Indiana Geospatial Coordinate System) for individual counties. The metadata required and identified in 865 IAC Rule 12 in referencing state plane coordinates or utilizing Global Positioning System (GPS) must be included. The InGCS Handbook/User guide is available on INDOT's *InGCS-Indiana Geospatial Coordinate System* webpage www.in.gov/indot/InGCS.htm.

11. Existing Plans. Copies of all road and/or bridge plans, both INDOT and local, within the area of the survey being conducted, should be obtained prior to the start of the survey.

a. If there are existing plans for the area, the survey alignment shown on said plans must be reestablished and used for the survey being conducted.

b. If plans are not available, a survey alignment must be established in a close approximation of the center of present roadway.

c. If a new roadway is proposed, the survey alignment must be established based upon project location scope and corridor requirements. A statement regarding the surveyor's opinion of cause and amount (in feet) of uncertainty associated with the reestablished survey alignment and stationing must be provided on the LCRS plat.

12. Bearings. The basis of bearings must be on InGCS grid bearings. InGCS coordinates must be used for survey alignment data, topography, PLSS corners, and basis of all distances shown on the LCRS plat.

13. Coordinates. Show the following information on the recorded LCRS plat:

a. the point number with both InGCS and SPC coordinates;

b. the name, datum tag, and epoch date [for example, NAD83(2011) epoch 2010.00] used for GNSS data acquisition.

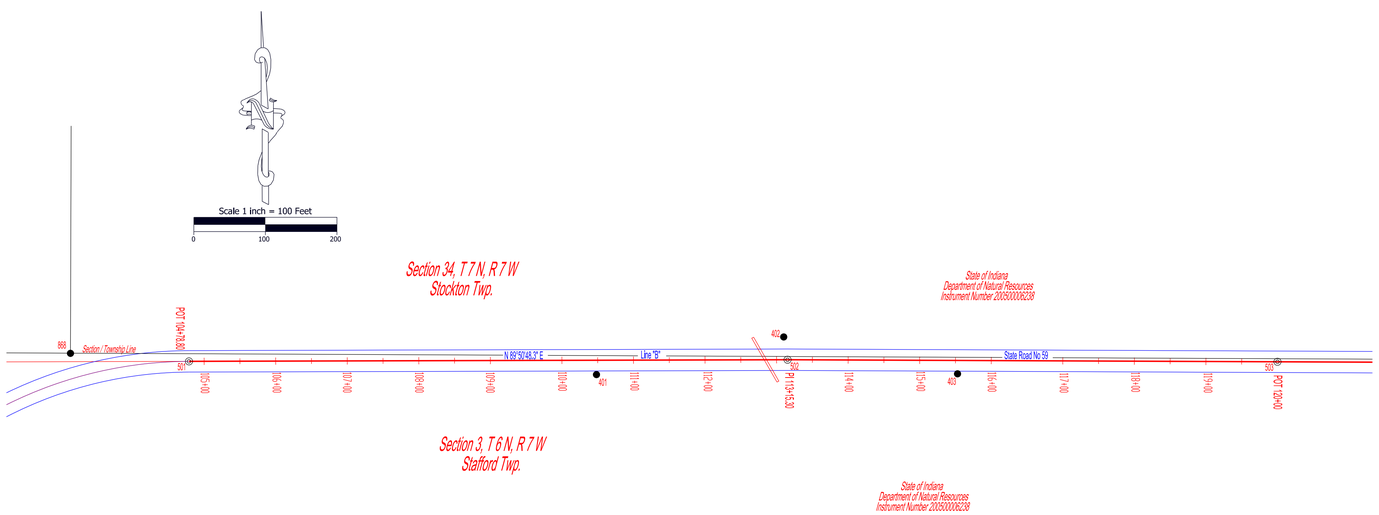
14. Control Monuments. Control monuments (coded "PGPS" for INDOT ORD formatting) must be set in an area near the roadway that would facilitate a direct GNSS observation. An existing found monument, meeting the parameters described herein, may be substituted as a control monument. The established SPC for each control monument, whether set or found, must not be derived from, or based on a traverse. Control monuments must be located outside construction limits at the start of the project and at a similar location beyond the end of the project construction. InGCS coordinates along with SPC for said control monuments must be shown on the LCRS plat.

15. Precision. Precision called for below is not an indication that it can be achieved but only to assist in the conversions or calculations.

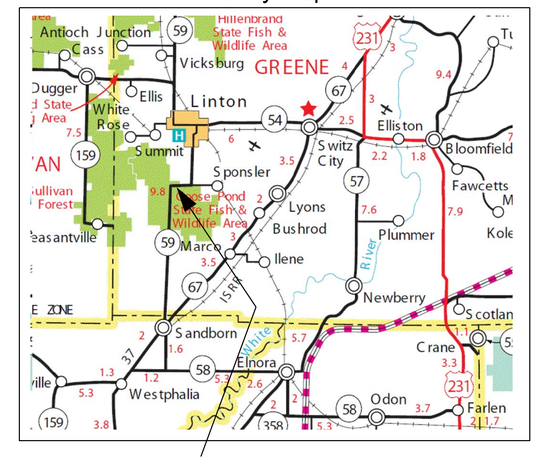
    a. Coordinates must be shown to four (4) digits to the right of the decimal when in US Survey feet, and five (5) digits to the right of the decimal when in meters.

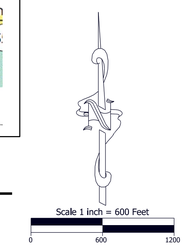
    b. Latitude and Longitude must be shown in degrees, minutes, seconds (DMS) format, with seconds shown to six (6) places to the right of the decimal.

16. Property Owners. Show the property owners' names at the time of the survey on the plat.

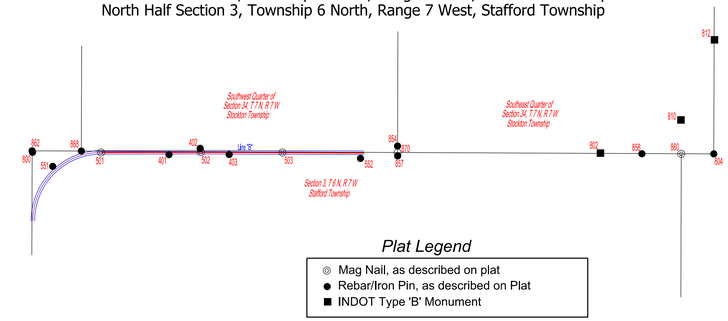


Vicinity Map





South Half Section 34, Township 7 North, Range 7 West, Stockton Township
North Half Section 3, Township 6 North, Range 7 West, Stafford Township



501 — Line "B"
(N.O.R.A.)
POT 104+79.78 "B"
Mag Nail with Washer
Stamped INDOT 0005
(Flush with Roadway Surface)

502 — Line "B"
1/2" Rebar with INDOT TP Cap (0.1' BG)
7° 42' 39"
(N.O.R.A.)
328° 03' 12"
Headwall (Concrete)
PI 113+15.30 "B"
Mag Nail with Washer
Stamped INDOT 0005
(Flush with Roadway Surface)

503 — Line "B"
(N.O.R.A.)
157° 45' 46"
Center of Power Pole (Concrete)
POT 120+00.00 "B"
Mag Nail with Washer
Stamped INDOT 0005
(Flush with Roadway Surface)

551 — North
(N.R.A.)
1/2" Rebar with Cap Stamped
INDOT TP
(0.1' Below Ground Level)

552 — North
18° 62' 43"
Bridge Deck (Concrete)
33° 35' 17"
134° 35' 33"
Center of Post (Wood)
1/2" Rebar with Cap Stamped
INDOT TP
(0.1' Below Ground Level)

804 — North
Center of 21" Oak (Up 3.0')
265° 66' 54"
R-R Spike (Flush)
40° 3' 80"
Nail in Bottle Cap in Power Pole
75° 36' 25"
Southeast Corner of
Section 34, T-7-N R-7-W
5/8" Rebar with Cap Stamped
Bledsoe Tapp PC 50920004
(Flush with Roadway Surface)

860 — North
246° 66' 33"
151° 36' 48"
4" Wood Post
175° 54' 46"
Nail in Bottle Cap in Power Pole
Telephone Cabinet
Northeast Corner
Section 3, T 6 N, R 7 W
Mag Nail
(Flush with Roadway Surface)

862 — North
Nail in Bottle Cap in Power Pole
232° 74' 12"
138° 34' 42"
188° 12' 8"
6 Inch Wood Post
5/8" Rebar with Unreadable Cap
Northwest Corner of
Section 3, T 6 N, R 7 W
5/8" Rebar, Leaning North
(1.4' below ground level)

868 — North
5/8" Rebar with Witness Cap
234° 48' 44"
98° 34' 82"
139° 80' 35"
5/8" Rebar with Witness Cap
5/8" Rebar with Witness Cap
Southwest Corner of
Section 34, T 7 N, R 7 W
5/8" Rebar with Cap Stamped
Bledsoe Tapp PC 50920004
(0.1' below ground level)

870 — North
5/8" Rebar w/witness cap
360° 54' 04"
179° 28' 52"
5/8" Rebar w/witness cap
South Quarter Corner
Section 34, T-7-N R-7-W
Not Recovered
Position Calculated from References

Right of Way Note:

The existing right of way lines, parcel ownership lines, and ownership information shown on this plat are preliminary and subject to change based on verification/validation of title. This information is shown only to help orient the user of this plat as it relates to project centerlines and is not intended to establish existing right of way lines or ownership lines. The source used to plot existing right of way lines and ownership lines shown on this plat is from last deed of record obtained from County Recorder's Office as well as other sources cited on this plat. The designer/consultant responsible for Right of Way Engineering will complete the final determination of this information.

Easement Note:

Locations of any easements are based on last deed of record available at the Recorder's Office. These deed records were found during initial research, and in no way represent all possible easements that could be recovered by a title search.

Note: "Survey Started" date and "Survey Completed" date shown below indicate date of first field work and date of last field work, respectfully. This does not represent a continuous time span of work for this Project: field work was stopped and re-started as necessary due to work on various other Projects.

Note: See Page 2 of 2 this Location Control Route Survey for Surveyor's Report and a description of Control Points and Monuments located during this Survey. All point numbers on this page having a corresponding point number on Page 2 of 2 refer to the same Point/Monument

SURVEY STARTED		
3/27/2013		
SURVEY COMPLETED		
5/31/2013		
ROUTE PLAT SHEETS		
1	of	2

Indiana Department of Transportation
Vincennes District Office
3650 South US Highway No 41
Vincennes, Indiana 47591-9443

FIELD SURVEYOR STATEMENT

THIS SURVEY, TO THE BEST OF MY KNOWLEDGE AND BELIEF, IS EXECUTED ACCORDING TO THE PROVISIONS OF TITLE 865 I.A.C. 1-12-20 THROUGH 1-12-26 REGARDING ROUTE SURVEYS, EXCEPT THAT ANY DATA SHOWN REGARDING THE LOCATION OR DESCRIPTION OF THE EXISTING PARCELS IS NOT A PART OF THIS SURVEY.

TERRY W. LIVINGSTON REGISTERED No. 200048 STATE OF INDIANA LAND SURVEYOR

I AFFIRM, UNDER THE PENALTIES FOR PERJURY, THAT I HAVE TAKEN REASONABLE CARE TO REDACT EACH SOCIAL SECURITY NUMBER IN THIS DOCUMENT, UNLESS REQUIRED BY LAW.

Prepared by:

REGISTERED LAND SURVEYOR, FIELD DATE

INDIANA
DEPARTMENT OF TRANSPORTATION

LOCATION CONTROL ROUTE SURVEY

HORIZONTAL SCALE	BRIDGE FILE
1 Inch = 100 Feet	
COUNTY	DESIGNATION
Greene	1296544
SURVEY BOOK	SHEETS
	of
CONTRACT	PROJECT

NOTE: This figure has not yet been updated to reflect current CAD Standards related to text styles. Users should consult the current INDOT CAD Standards Manual when producing the Location Control Survey document.

LOCATION CONTROL ROUTE SURVEY PLAT EXAMPLE (PAGE 1 OF 2)
FIGURE 26-3A

Surveyor's Report

Route Survey - Des. No. 1296544

Location: On State Road No 59, at approximately3.51 miles south of Junction with State Road No 54. Located in Stockton Township, Greene County, Indiana, in Section 34, Township 7 North, Range 7 West and Section 3, Township 6 North, Range 7 West.

Purpose: Collect data for a Small structure rehabilitation project at the location listed above. It is not a property retracement survey and any property lines and/or corners shown are based only on physical evidence as collected during the field work.

General Notes:

All monument reference ties are shown on the Location Control Route Survey Plat (herein after referred to as LCRS)

All measurements are in US Survey feet unless otherwise noted. All distances shown on this Location Control Route Survey Plat represent ground measurements.

Should additional USPLS corners be needed where none were found, they should be reestablished and tied into this survey.

Field measurements for this survey were made in accordance with the specifications outlined in Indiana Administrative Code 865 IAC 1-12-20 through 1-12-25. The decimal precision shown on this plat for the measurements and coordinates is for consistency in the mathematical calculations, and not to indicate the precision of the field work conducted for this survey.

Points 551 and 552 as shown in the Control Point Table are positions located using a GPS Rover with Geoid Model 2012A connected to the InCORS Network (INDOT Continuously Operating Reference Stations, NAD83[2011] Epoch 2010.0). InCORS Network corrections (RTCM 3.1) were received via NTRIP (Networked Transport of RTCM via internet) using a cell phone modem. Multiple occupations, with receivers initialized at different locations, were done to verify control point positions. These positions are located in the 1983 State Plane Coordinate system for Indiana, Zone 1302, in the US Survey foot unit. The State Plane Coordinates for these control points were then converted to a Local ground coordinate system by assigning a coordinate value of 40000.0000 North and 40000.000 East for Point Number 551 with a grid bearing of North 88 degrees 30 minutes 58.47 Seconds East to Point Number 552 (40066.8340 North and 42580.2370 East).

This gives a starting bearing of North 89 Degrees 50 Minutes 48.3 Seconds East from Control Point Number 501 to Control Point Number 502, and is the Basis of Bearing for all bearings shown on this Survey.

A combined scale factor (CSF) of 1.0000498379 (Grid distance multiplied by CSF equals ground distance) was used for all locations collected in State Plane Coordinates, converted to ground coordinates, and translated to the Local coordinate system used for this survey.
All translations were done holding control Point 551 as the fixed origin.

The State Plane Coordinate locations for the primary control points (551 and 552) and metadata regarding the combined scale factor used for this survey is provided to enable reestablishment of survey line if monuments on the survey line have been destroyed.

All coordinates in the Local ground coordinate system used for this project can be converted to State Plane Coordinate position (Grid) using the following formula:

Northing = Local Northing **SPC Northing** = Northing in State Plane Coordinate in Indiana Zone 1302
Easting = Local Easting **SPC Easting** = Easting in State Plane Coordinate in Indiana Zone 1302

1364436.3450- [(40000 – **Northing**) (.9999501646)] = **SPC Northing**

2923567.3900- [(40000 – **Easting**) (.9999501646)] = **SPC Easting**

Survey on SR 59 south of Linton, in an area known locally as "Goose Pond", is for replacement of small structure under SR 59. This survey alignment, Line "B", is a reestablishment of Line "A" of Project No 725 Sec. "A" (1941), year 1940.

Alignment:

No original monuments set during the 1940 survey were recovered; therefore the existing center line locations in the area between 1940 planned locations of approximately Station 103+00 to Station 126+00 were taken. The 1940 plans show a PI location at Station 113+51.3 with no curve run. This PI was re-located by measuring the plan distance (curve tangent of 573.3 feet plus tangent distance of 837.89 feet = 1411.19 feet) from an alignment previously established for the north end of Des No 0600634 and centered in the existing roadway. Once the PI 113+15.3 was established, its' location was used as the basis for stationing. This resulted in a POT Station of 104+78.80 "B" for the start of this alignment with the Planned Stationing being 104+77.41 "A" (difference of 1.39 feet). Center line location of Bridge Structure at approximate station 126+85 ahead of this re-established PI was used for the forward tangent location. This created a delta angle 0°23'16" Right vs. a Plan delta angle of 0°28' Right. The existing center line is within +/- 1.0 feet of this re-established alignment

Estimated uncertainty of alignment location is 1.0 feet left or right along reestablished 1940 survey.

Stationing:

Stationing was established by using the re-established PI location with stationing of 113+51.3 "B" representing Station 113+51.3 "A" on the 1940 Plans.

Estimated uncertainty of stationing on 1940 survey is 1.5 feet.

Right of Way Note:

The existing right of way lines, parcel ownership lines, and ownership information shown on this plat are preliminary and subject to change based on verification/validation of title. This information is shown only to help orient the user of this plat as it relates to project centerlines and is not intended to establish existing right of way lines or ownership lines. The source used to plot existing right of way lines and ownership lines shown on this plat is from last deed of record obtained from County Recorder's Office as well as other sources cited on this plat. The designer/consultant responsible for Right of Way Engineering will complete the final determination of this information.

Note: "Survey Started" date and "Survey Completed" date shown below indicate date of first field work and date of last field work, respectfully. This does not represent a continuous time span of work for this Project; field work was stopped and re-started as necessary due to work on various other Projects.

Control Points

501.
POT Station 104+78.80 "B" - Mag Nail with washer stamped "INDOT 0005", set flush with the Roadway surface.

502.
PI Station 113+15.30 "B" – Mag Nail with washer stamped "INDOT 0005", set flush with the Roadway surface.

503.
PI Station 120+00.00 "B" – Mag Nail with washer stamped "INDOT 0005", set flush with the Roadway surface.

551.
1/2 Inch rebar with cap stamped "INDOT TP", 0.1 foot below ground level.

State Plane Coordinates - U.S. Survey Foot - SPC (1302 Indiana West Zone)

1364436.3450 Northing US Survey Foot
2923567.3900 Easting US Survey Foot

Latitude = 38°59'39.885019" N
W. Longitude = 87°11'09.634459" W

Position based on GPS Observations utilizing the InCORS Network. This point was held fixed and used in all translations and rotations to local system. See section under General Notes in Surveyor's report for metadata

552.
1/2 Inch rebar with cap stamped "INDOT TP", 0.1 foot below ground level.

State Plane Coordinates - U.S. Survey Foot - SPC (1302 Indiana West Zone)

1364503.1760 Northing US Survey Foot
2926147.4990 Easting US Survey Foot

Latitude = 38°59'40.573087" N
W. Longitude = 87°10'36.955046" W

Position based on GPS Observations utilizing the InCORS Network.
Uncertainty of Location for all control points is considered to be negligible

USPLS Corners

804.
Southeast Corner of Section 34, T 7 N, R 7 W

Section corner records for Greene County indicate a 5/8 inch rebar with cap set at this location, as per a section corner record work done by Bledsoe, Tapp & Riggert, Inc. A 5/8 rebar with a cap stamped "Bledsoe Tapp PC 50920004" was recovered at this location, flush with the roadway surface. A railroad spike, 0.1 feet below the roadway surface, was found N 31°30'28" E, a distance of 3.90 feet from said rebar. The recovered capped rebar was held as located in the field for the purposes of this survey. Estimated uncertainty of corner location is 5 feet.

860.
Northeast Corner of Section 3, T 6 N, R 7 W

A Mag nail, flush with the roadway surface, was recovered at this location. This monument is referenced during a survey by CB & M Surveys, Inc. for the Wilder Corporation of Delaware. (Copy furnished by CB & M Surveys). It was held as located in the field for the purposes of this survey. Estimated uncertainty of corner location is 5 feet.

862.
Northwest Corner of Section 3, T 6 N, R 7 W

An unmarked 5/8 Inch rebar, bent to the north and 1.4 feet below ground level, was found at this location. This monument is referenced as "1/2 inch rebar found" during the section corner perpetuation work for Greene County by Bledsoe, Tapp, & Riggert, Inc. Its position as recovered during the field work for this survey is consistent with the information listed for the "1/2 inch rebar found" during the above mentioned section corner perpetuation work by Bledsoe, Tapp & Riggert, Inc. A 5/8 inch rebar, with unreadable survey cap and 0.3 feet below the roadway surface was found South 13°11'19" East, a distance of 12.77 feet from this corner location. A survey by CB & M Surveys, Inc. for the Wilder Corporation of Delaware. (Copy furnished by CB & M Surveys) indicates a 5/8 inch rebar with cap stamped "James Tibbett LS80910029" was set to mark this location. The rebar with unreadable cap is assumed to be the one set by James Tibbett during his survey. The unmarked 5/8 inch rebar was held as located in the field for the purposes of this survey. Estimated uncertainty of corner location, due to conflicting survey information, is 15 feet.

868.
Southwest Corner of Section 34, T 7 N, R 7 W

Section corner records for Greene County indicate a Harrison Monument set at this location, as per a section corner record dated 11/30/2002 by Ben E. Bledsoe RLS. No Harrison Monument was recovered during the field work for this project. A 5/8 inch rebar with cap stamped "Bledsoe Tapp 5092004" was recovered at this location. The location of this capped rebar is in agreement with the reference ties shown on the corner record sheet for said Harrison Monument. The found 5/8 inch rebar, as located in the field, was held as representing this corner. Estimated uncertainty of corner location is 5 feet.

870.
South Quarter Corner of Section 34, T 7 N, R 7 W

Section corner records for Greene County indicate a Mag Nail set at this location, as per a section corner record dated 11/30/2002 by Ben E. Bledsoe RLS. No monument was recovered during the field work for this project. Two (2) 5/8 inch rebars with "witness cap" were recovered and used to compute the original corner's position. No monument was set as part of this survey. The recreated coordinate position was used as representing this corner's location. Estimated uncertainty of corner location is 5 feet.

Other Monumentation

800.
5/8 inch rebar with unreadable cap.

A survey by CB & M Surveys, Inc. for the Wilder Corporation of Delaware. (Copy furnished by CB & M Surveys) indicates a 5/8 inch rebar with cap stamped "James Tibbett LS80910029" was set to mark the Northwest corner of Section 3, T 6 N, R 7 W. This rebar with unreadable cap is assumed to be the one set by James Tibbett during his survey. See information for Point Number 862 on this survey.

802.
INDOT Type 'B' monument, 0.3 feet below Roadway Surface.

Road plans for Contract R-10278, Project No 725 'B' required a Type 'B' monument at PC Station 20+00.00 on Line "A". No research or field work was conducted to verify this monument's location. The coordinate position of this monument is listed for informational purposes only.

810.
INDOT Type 'B' monument, 0.4 feet below Roadway Surface.

Road plans for Contract R-10278, Project No 725 'B' required a Type 'B' monument at POC Station 27+50.00 on Line "A". No research or field work was conducted to verify this monument's location. The coordinate position of this monument is listed for informational purposes only.

812.
INDOT Type 'B' monument, 0.4 feet below Roadway Surface.

Road plans for Contract R-10278, Project No 725 'B' required a Type 'B' monument at PT Station 34+98.61 on Line "A". No research or field work was conducted to verify this monument's location. The coordinate position of this monument is listed for informational purposes only.

854.
5/8 Inch rebar with cap stamped "Co Survey Witness", 0.2 feet below ground level.

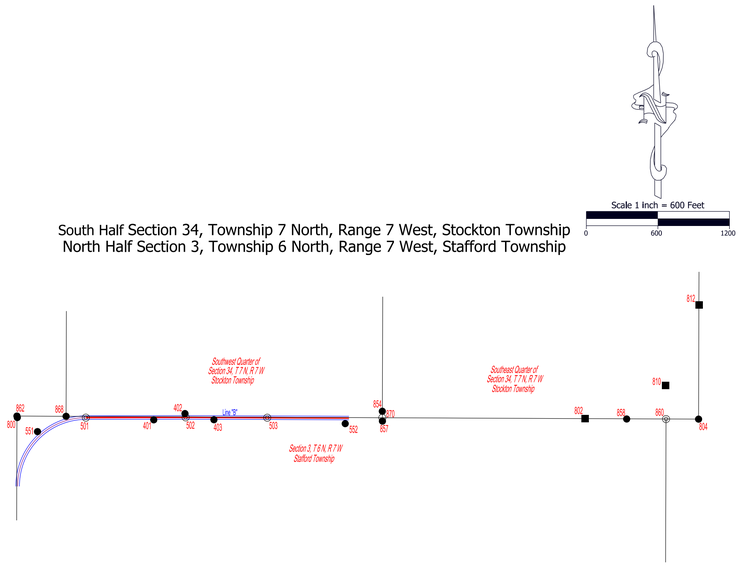
The section corner perpetuation records for Greene County show this monument as a Section corner tie reference for a Mag nail representing the south quarter corner of Section 34, T 7 N, R 7 W (see information for Point Number 870). The coordinate position of this reference tie monument is listed for informational purposes only.

857.
5/8 Inch rebar with cap stamped "Co Survey Witness", 0.4 feet above ground level.

The section corner perpetuation records for Greene County show this monument as a Section corner tie reference for a Mag nail representing the south quarter corner of Section 34, T 7 N, R 7 W (see information for Point Number 870). The coordinate position of this reference tie monument is listed for informational purposes only.

858.
5/8 inch rebar with cap stamped "James Tibbett LS80910029", 0.1 foot below ground level.

Property corner location. A survey by CB & M Surveys, Inc. for the Wilder Corporation of Delaware. (Copy furnished by CB & M Surveys) indicates a 5/8 inch rebar with cap stamped "James Tibbett LS80910029" was set to mark the northeast corner of tract number four (4) on their plat of survey. No research or field work was conducted to verify this monument's location. The coordinate position of this monument is listed for informational purposes only.



Plat Legend

- ◎ Mag Nail, as described on plat
- ● Rebar/Iron Pin, as described on Plat
- ■ INDOT Type 'B' Monument

Point No	Local Northing	Local Easting	SPC Northing	SPC Easting	Description
401	40098.6400	40974.7678	1364534.9801	2924542.1092	1/2 inch rebar with plastic cap stamped "INDOT TP" 0.1 foot below ground level.
402	40151.2816	41236.4131	1364587.6191	2924803.7415	1/2 inch rebar with plastic cap stamped "INDOT TP" 0.1 foot below ground level.
403	40099.7122	41479.3545	1364536.0522	2925046.6708	1/2 inch rebar with plastic cap stamped "INDOT TP" 0.1 foot below ground level.
501	40117.1423	40405.2582	1364553.4815	2923972.6280	POT 104+78.80 "B" - Mag nail with washer stamped "INDOT 0005" flush with the Roadway surface.
502	40119.3795	41241.7600	1364555.7186	2924809.0881	PI 113+15.30 "B" - Mag nail with washer stamped "INDOT 0005" flush with the Roadway surface.
503	40116.5759	41926.4497	1364552.9151	2925493.7437	POT 120+00.00 "B" - Mag nail with washer stamped "INDOT 0005" flush with the Roadway surface .
551	40000.0000	40000.0000	1364436.3450	2923567.3900	1/2 inch rebar with plastic cap stamped "INDOT TP" 0.1 foot below ground level.
552	40066.8340	42580.2370	1364503.1757	2926147.4984	1/2 inch rebar with plastic cap stamped "INDOT TP" 0.1 foot below ground level.
800	40118.0480	39830.4990	1364554.3871	2923397.8974	5/8 inch rebar with unreadable cap, see surveyor's report for additional information.
802	40109.7000	44591.4990	1364546.0395	2928158.6602	INDOT Type 'B' Monument, 0.3 feet below the Roadway surface.
804	40104.5810	45543.1380	1364540.9208	2929110.2518	Southeast Corner of Section 34, T 7 N, R 7 W, 5/8 inch rebar with cap stamped "Bledsoe Tapp PC 50920004, flush with the Roadway surface.
810	40388.3750	45266.6410	1364824.7006	2928833.7685	INDOT Type 'B' Monument, 0.4 feet below the Roadway surface.
812	41061.8610	45548.0010	1365498.1531	2929115.1145	INDOT Type 'B' Monument, 0.4 feet below the Roadway surface.
854	40170.5670	42891.2550	1364606.9035	2926458.5009	5/8 inch rebar with cap stamped "Co Survey Witness", reference tie for South Quarter Section 34, T 7 N, R 7 W, 0.2 feet below ground level.
857	40087.9200	42892.2010	1364524.2606	2926459.4469	5/8 inch rebar with cap stamped "witness", reference tie for South Quarter Section 34, T 7 N, R 7 W, protruding 0.4 feet above ground level.
858	40105.7260	44940.3500	1364542.0657	2928507.4938	Property Corner, 5/8 inch rebar with cap stamped "James Tibbett LS80910029", 0.1 foot below ground level.
860	40105.1870	45270.3020	1364541.5268	2928837.4294	Northeast Corner of Section 3, T 6 N, R 7 W, Mag nail flush with the Roadway surface.
862	40130.4830	39827.5850	1364566.8215	2923394.9836	Northwest Corner Section 3, T 6 N, R 7 W, 5/8 inch rebar, leaning north, 1.4 feet below ground level.
868	40128.3700	40239.6640	1364564.7086	2923807.0421	Southwest Corner Section 34, T 7 N, R 7 W, 5/8 inch rebar with cap stamped "Bledsoe Tapp PC 50920004", 0.1 foot below ground level.

Easement Note:

Locations of any easements are based on last deed of record available at the Recorder's Office. These deed records were found during initial research, and in no way represent all possible easements that could be recovered by a title search.

Note: All point numbers on this page having a corresponding point number on Page 1 of 2 refer to the same Point/Monument

SURVEY STARTED		
3/27/2013		
SURVEY COMPLETED		
5/31/2013		
ROUTE PLAT SHEETS		
2	of	2

Indiana Department of Transportation
Vincennes District Office
3650 South US Highway No 41
Vincennes, Indiana 47591-9443

FIELD SURVEYOR STATEMENT

THIS SURVEY, TO THE BEST OF MY KNOWLEDGE AND BELIEF, IS EXECUTED ACCORDING TO THE PROVISIONS OF TITLE 865 I.A.C. 1-12-20 THROUGH 1-12-26 REGARDING ROUTE SURVEYS, EXCEPT THAT ANY DATA SHOWN REGARDING THE LOCATION OR DESCRIPTION OF THE EXISTING PARCELS IS NOT A PART OF THIS SURVEY.

TERRY W. LIVINGSTON REGISTERED No. 200048 STATE OF INDIANA LAND SURVEYOR

I AFFIRM, UNDER THE PENALTIES FOR PERJURY, THAT I HAVE TAKEN REASONABLE CARE TO REDACT EACH SOCIAL SECURITY NUMBER IN THIS DOCUMENT, UNLESS REQUIRED BY LAW.

Prepared by:

REGISTERED LAND SURVEYOR, FIELD DATE

INDIANA DEPARTMENT OF TRANSPORTATION

LOCATION CONTROL ROUTE SURVEY

HORIZONTAL SCALE	BRIDGE FILE
COUNTY	DESIGNATION
Greene	1296544
SURVEY BOOK	SHEETS
	of
CONTRACT	PROJECT

NOTE: This figure has not yet been updated to reflect current CAD Standards related to text styles. Users should consult the current INDOT CAD Standards Manual when producing the Location Control Survey document.

LOCATION CONTROL ROUTE SURVEY PLAT EXAMPLE (PAGE 2 OF 2)
FIGURE 26-3A