# Florida Department of Transportation District 4 



# Surveying and Mapping Guidelines \& General Information 

Resources:<br>R/W Mapping Handbook - January 2003<br>Surveying Handbook - October 31, 2003<br>CADD Production Criteria Handbook (Chapter 9) - January 27, 2010

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## BASELINE OF SURVEY

Note: See District 4 Required Submittal Deliverables.

The Baseline of Survey must be retraced and its historical position determined. The best evidence of its original geometry and its original position is the existing Right of Way Map(s). As with any retracement survey, the difficulty lies with error in the previous surveying and mapping, as well as the lack of original monumentation. As a result, the retraced Baseline of Survey will never exactly match the previous data. Bearing in mind that real property rights have previously been acquired based on the Historical Baseline geometry and position, the Department's view is that there is, was, and always will be, just one Baseline of Survey and one physical position for it. The apparent differences that remain between the original and the retracement are usually caused by the random accumulation of error created by the previous surveyors and mappers' inability to precisely measure and compute (when compared to today's advanced technologies). This requires the proportional distribution of angular and linear error for the entire alignment. In cases where blunders or scrivener’s errors exist in previous Right of Way Map(s), the errors must be identified and repaired where they occurred, not distributed.

When performing the analysis necessary to retrace the Baseline of Survey and present your solution for Baseline Approval by the Department, the following steps shall be followed:

1. Prepare a worksheet showing the retraced (proposed) Baseline of Survey geometry and include comparisons to all prior existing Right of Way Maps. (See Figure...)

Show the following:
a. The current, adjusted version of the stationing, as derived from the existing Right of Way Map(s). (The Department will probably assign new stationing as the final step in the approval process.) Add "new vs. old" station comparisons where necessary.
b. Tangent lengths to aid with comparing the record alignment to the proposed, retraced alignment. Add the record length for comparison, just above the current, adjusted distance being proposed.
c. Curve data for the proposed, retraced alignment, shown side-by-side with same from the existing Right of Way Map(s).
2. Display all section and quarter section corners within $1 / 2$ mile of the baseline, at a minimum. This means, not just left and right of the baseline, but also before and after the Job Limits. If lack of evidence or uncertainty require going beyond a $1 / 2$ mile to the next $1 / 2$ mile, then that's what must be done. The data is to include the land lines connecting said corners, and ties to the baseline including station where it intersects the baseline, as determined during the current survey, and include comparisons to the existing Right of Way Map(s).

Show the following:
a. Relevant section, township, and range identifiers.
b. Corner descriptions, 83/90 state plane coordinates per the current survey, coordinates from the existing Right of Way Map(s), and coordinates published by the County Engineering Division.
c. Section ties to the current, retraced Baseline of Survey and their comparatives from the existing Right of Way Map(s).
3. Display all survey monuments found along the corridor and within the plats, including along the side streets. Clearly indicate those monuments found on the current survey that exactly match those shown on the existing Right of Way Map(s). This determination must be based on the monument described being of exactly the same size and material, and its location being essentially the same. Distinguish between these and all other monuments, as most are likely re-survey monuments, set by private surveyors, and may not help with the retracement.
4. The Baseline of Survey must be stationed as follows:
a. Major tick marks and station numbers are to be shown at 500 -foot intervals. The secondary tick marks are to be shown at 100 -foot intervals, without numbers.
b. Provide full station values where both State Road and/or County Road Baselines intersect.

Baseline alignments and section corner locations will be reviewed and approved by the Surveying and Mapping Unit prior to starting work on the Control Survey Map. The Consultant will schedule a meeting with the Surveying and Mapping Section Leader (see Required Submittal Deliverables as furnished by District 4 Surveying and Mapping).

## CONTROL SURVEY MAP

Note: See District 4 Required Submittal Deliverables.
5. The consultant will adhere to the Department's Right of Way file naming convention as found in the CADD Production Criteria Handbook (Chapter 9).
6. In the upper right-hand corner of each sheet, show the north arrow. The section, township and range must be shown in the same area. The typical Mapping scales are 1" $=400$ ' for key sheet map and $1 "=40^{\prime}$ for detail sheet maps. (See Figure...)
7. Show state plane coordinates to three (3) decimal places using Northing and Easting at the following locations:
a. At begin and end survey flags.
b. At non-curve tangent intersection.
c. All Section, Quarter Section, and Center of Section corners.
8. Baseline curve tables must show the following data:

9. Intersecting State/County/City highways/roadways must conform to the following:
(See Figure...)
a. Display the baseline station where the side street baseline intersects the project Baseline of Survey.
b. For State/County highways, provide the most recent project number in its existing right of way corridor.
10. Intersecting platted side streets must conform to the following. (See Figure...)
a. Name as it appears on the street sign and plat name if different.
b. Baseline survey station tie.
c. Bearing.
d. Corridor width.
11. Public land lines (sectional data) must be calculated then plotted in the MicroStation file using the Design and Computation Manager in GEOPAK, and the lines must be represented as follows: (See Figure...)
a. Show and label all section and quarter section lines (fractions shall be non-stacked) that were surveyed as part of the official public land surveys and re-surveys. Do not show arrows when distances fall on separate sheets, label distance with a description.
b. Place bearings and distances along the section and quarter section lines. Add leading zero to degree value in single digits, ex: $\mathrm{N} 02^{\circ}$ not $\mathrm{N} 2^{\circ}$.
c. Show the baseline station along the line that intersects the baseline, and show the distance to said section corner in each direction.
d. Use our standard cells for section and quarter section corners. Show type, size, material, stamping, identification number and state plane coordinates. Use proper cell for Found \& Not Found section corners.
12. Show all found property corner monuments. (See Figure...)
a. Describe if found or not found, type, size, material, stamping and identification number (use cell PRWM).
b. Include full stations and offsets for:
i. Monuments along the main corridor include station and offsets from Baseline of Survey.
ii. Monuments found beyond returns or corner clips include station and offsets from side street baselines.
13. All calculated lines will be placed using the Design and Computation Manager in GEOPAK.
14. City limits must be shown with the prescribed custom by-level. Place the label for the line on the same side of the line in which the city is located.
a. Near the upper and lower edge of each sheet, show the name of the city in large, bold print.
b. In unincorporated areas, show the name of the county in large bold print near the upper and lower edges of each sheet.
15. Plats
a. Plat boundaries with interior block lines must be shown for plats that lie along the right of way corridor.
b. The street name should be shown on the map as it appears on the street sign, as well as, the platted street name if it differs. (See Figure...)
c. Found control for the plats, such as Permanent Reference Monuments, survey monuments marking block and lot corners, etc., must be shown.
d. If a plat has been re-platted do not show the underlying plat.
e. Use delimiter arrows to show the limits of the plat. (See Figure...)
i. Place the plat name above the delimiter arrow. The spelling, punctuation, etc., must be the same as it appears on the original plat.
ii. Below the delimiter arrow, show the plat book and page (first page only) as recorded in the county records. Do not show the county name unless the plat was recorded in a different county.
16. Revise Title Block as follows: (Do not drop cell status to edit.) (See Figure...)
a. If the project does not have a Federal Aid number or an Item/Segment number show "N/A". NOTE: The contract financial management number is not the item segment number.
b. In the data field for "STATE ROAD NO." show Number and Local Name.
c. In the data field for project limits show FROM and TO only.
17. Cover Sheet - See Cover Sheet examples of Control Survey Map provided by District 4 Surveying and Mapping. (See Figure...)
18. Key Map - See Key Map examples of Control Survey Map provided by District 4 Surveying and Mapping. (See Figure...)
19. Detail Sheets - As a general rule use a minimum of 1" overlap when clipping sheets. Leave a 1 " clear space at the beginning and end. Also, leave a 3 " clear space on the top and bottom of each sheet. These spaces can be used later for elements that need to be placed in the detail sheets. (See Figure...)
20. Do not show the following on the Control Survey Map:

- Topography.
- Property Line symbols and "Z-bars".
- Internal lot lines and platted text.
- Bearings and distances for platted information or existing right of way lines.
- Easements.
- Graphic depiction of P.I. location for curves.
- Bar Scale.


## GENESIS MAP

Note: See District 4 Required Submittal Deliverables.
21. To begin your Genesis Map, copy and rename the approved Right of Way Control Survey dgn file in accordance with the CADD Production Criteria Handbook.
22. Show begin and end project flags with full station values (e.g., 25+53.51).
23. The basic requirements - (Sample CADD file to be provided by the Department).
a. Coversheet.
b. Key Map.
c. Detail Sheets.
d. Topography (preferable aerial planimetrics).
e. All platted information (excluding building setback lines).
f. Bearings along the existing right of way.
g. Distances along the existing right of way when not parallel to baseline of survey.
h. Full Station and offsets at breaks along the existing right of way (do not drop status of station and offsets).
i. Canal right of way with names.
j. Recorded right of way and deeds.
k. Condominium boundaries including name and O.R.B. and page number. (See Figure...)
l. State jurisdictional mean high water and bulkhead lines.
m . Corridor width at the beginning and ending of each sheet.
24. T.I.I.T.F. (Trustees of the Internal Improvement Trust Fund) and E.D.D. (Everglades Drainage District) easement, deed number and recording reference book and page as well as Releases thereof need to be shown. (See Figure...)
25. Right of Way Dedications and Easements (See Figure...)
a. When right of way is dedicated to the public for proper purposes by Plat or O.R.B. and Page it is considered to lie within the existing right of way corridor. The original plat line (now inside the existing right of way) must be placed using the correct by-level and the dedication must be labeled. When right of way is dedicated to a governmental agency it must be labeled accordingly.
b. When the plat specifies a roadway easement, this area is considered to be within the existing right of way corridor, if it was dedicated to the Public for roadway purposes. Therefore, the back line of the easement should be depicted with the by-level of the existing Right of Way line. Additionally, the easement should be labeled with the applicable source (e.g., (P) for plat or O.R.B. $\qquad$ Page $\qquad$ ).
c. Easements other than roadway that fall within the first tier of lots or tracts on either side of the existing Right of Way must be identified by use, width and applicable source (e.g., (P) for plat or O.R.B. $\qquad$ Page $\qquad$ ).
26. A "map-in-hand" field review must be jointly conducted by the Department and the Consultant prior to presenting the Final Right of Way Map for acceptance.

## INITIAL RIGHT OF WAY MAP PHASE

Note: See District 4 Required Submittal Deliverables.
27. In addition to 21 through 26 shown above, the following must be shown:
a. Parent Tracts
b. Tabulation Sheets
28. Parent Tracts must show the following:
a. Property line symbols on each line of the property.
b. Deed distances, if shown, should be indicated with (D).
c. Bearings and Distances along property lines.
d. If the property is too large to fit on the standard detail sheet, it can be shown by springing the lines, placing a not-to-scale (N.T.S.) detail on the sheet or if the oversized tracts are numerous, a separate sheet can be made to show the details. There are times when it may be shown on the key map. (If a property must be shown on a different sheet, add a note on the detail sheet identifying where the property can be found.)
e. Show Title Report number and owner's name on by-level "ScratchLevel1". Turn level off prior to printing files for the Department.

## RIGHT OF WAY MAP FINAL PHASE

Note: See District 4 Required Submittal Deliverables.
29. In addition to 21 through 29 shown above, the following must be shown.
a. Right of Way requirements to include easements and/or licenses
b. Parcel Bubbles
c. Field surveyed building ties
d. Tab sheet completed
30. Right of Way requirements must show the following:
a. Label the new Right of Way line as "R/W LINE"
b. Full stations and offsets, relative to the Baseline of Survey, at all breaks in the new Right of Way line.
c. Widths of easements and/or licenses
d. Full stations only (no offsets) for temporary easements and licenses
31. Please observe the following for Right of Way Parcels:
a. Parcel numbers will be assigned sequentially, from the beginning to the end of the project. Start on the left side of baseline then continue on the right side.
b. Assign parcel numbers according to the Department's parcel numbering convention as follows:
i. Series 100 through 699 is used for parcels acquired as Fee Simple
ii. Series 700 through 799 is used for Temporary Easements (T.E.)
iii. Series 800 through 899 is used for Perpetual Easements (P.E.), including T.I.I.T.F. and E.D.D. parcels
iv. Series 900 through 999 is used for Licenses
c. Once a parcel number is assigned and transmitted to the Office of Right of Way it may not be reused or reactivated if voided.
d. If any of the lines of a parcel are formed by the arc of a curve, the delta, length, radius, and chord bearing must be shown, for non-tangent curves show the tangent bearing.
e. The bearings and distances must be clearly shown.
f. Occupational Permit (O.P.) parcels are listed last. Place "N/A" in the columns for area taken and in the columns for remainders. For example: show as "O.P.1" in a round bubble.
32. When showing buildings and improvements, please observe the following:
a. If a structure is within 25 feet of the required Right of Way Line, show a distance (building tie) from the nearest corner of the building or structure to the required Right of Way Line.
b. If structure is within 5 feet, distance needs to be field surveyed and shown to the nearest tenth. Structures more than 5 feet can be measured using microstation and distance shown to the nearest foot.
c. If the required Right of Way Line is cutting through a building, the map must show detailed distances of the portion of the structure that is being taken and for the portion that is remaining.
33. The Table of Ownership / Tab Sheet must be completed, including the parcel numbers, sheet number(s) where each parcel can be found, names of property owners, parcel area taken, parent tract remainders (left and right of the baseline), and all necessary entries in the "Comments" column. (See Figure...)
a. Areas less than one half acre will be shown to the nearest square foot.
b. Areas over one half acre will be shown to the thousandth of an acre.
34. If the project involves the acquisition of Limited Access Right of Way you must check for possible landlocked parcels. The full station and offset must be shown at the beginning and at the end of any portion of the Limited Access Line: (See Figure...)
a. BEGIN L/A R/W LINE
b. END L/A R/W LINE
35. For areas encumbered by a T.I.I.T.F. roadway reservation, the jurisdictional agency is the Department of Environmental Protection (D.E.P.)
a. The Department does not acquire property in fee simple from T.I.I.T.F. However, if design requirements mandate acquisition of either a fee simple parcel or a perpetual easement parcel within an area encumbered by a T.I.I.T.F., the area must be released from T.I.I.T.F. in the form of a perpetual easement.
b. If design requirements mandate a temporary easement parcel in an area encumbered by a T.I.I.T.F., the Department will acquire as a temporary easement from the property owner(s).
36. For areas encumbered by an E.D.D. roadway reservation, the jurisdictional agency is South Florida Water Management District (S.F.W.M.D.)
a. The Department does not acquire property in fee simple from S.F.W.M.D. However, if design requirements mandate acquisition of either a fee simple parcel or a perpetual easement parcel within an area encumbered by an E.D.D., the Department will utilize this area with no formal release from S.F.W.M.D.
37. LEGAL DESCRIPTIONS of the parcels of land required for the project will be prepared in accordance with the Department's Right of way Mapping Handbook, Chapter 4, and they must conform to the standards and conventions in use at District 4 Surveying and Mapping. The legal descriptions for each parcel must be provided as an electronic word processing file compatible with Microsoft Word. See examples provided by the Department.

## RIGHT OF WAY MAP FINAL PHASE APPROVAL

Note: See District 4 Required Submittal Deliverables.
38. A "map-in-hand" field review must be jointly conducted by the Department and the Consultant prior to presenting the Final Right of Way Map for acceptance.
39. Prior to acceptance, the Final Right of Way Map must be thoroughly re-checked for the following:
a. New Plats
b. Any instruments of conveyance creating additional rights of way for the benefit of the General Public, often created as corner clips, bus bays, turning lanes, etc., by the City or the County.
c. Vacations and abandonments of roads, streets, alleys, etc., by the City or County.

# DISTRICT 4 <br> Required Submittal Deliverables for Mapping Purposes 

Original: January 20, 2006 (Update Version 4/26/11)

## Notice to Proceed:

QA/QC Plan

## Baseline Review Meetings:

$\square$ Copies of all prior r/w maps (FDOT and/or County)
$\square$ Certified corner records
$\square$ County section corner coordinates (sheets)
$\square$ Copy of xyz printout with point descriptions or file
$\square$ Copy of Station/offset report or file to found Monumentation
$\square$ Copy of Baseline chain printout or file (geometry w/stationing)
$\square$ Surveyor's Report
$\square$ Copies of all plats ( 11 "x 17 " size preferable)
$\square$ Worksheet - (re-established historic baseline, section lines \& section corners with bearing/angle and distance comparisons between all record data, field measured and calculated)
$\square$ County Section maps (most current)
$\square$ Microstation r-file.dgn (main CADD file)
$\square$ Geopak .gpk file
$\square$ Copies of field books or survey database (archive, i.e., .dsn or .arc file)
$\square$ Copy of email from Survey Unit approving GPS Baseline control points

## Control Survey Submittals:

$\square$ The Professional Surveyor and Mapper in responsible charge must certify the field notes, including the Electronic Field Book (E.F.B.) data
$\square$ Copies of all prior r/w maps (FDOT and/or County)
$\square$ Certified corner records
$\square$ County section corner coordinates (sheets)
$\square$ Copy of xyz printout with point descriptions or file
$\square$ Copy of Station/offset report or file to found Monumentation
$\square$ Copy of Baseline chain printout or file (geometry w/stationing)
$\square$ Surveyor's Report
$\square$ Copy of worksheet from baseline review meeting
$\square$ Copies of all plats (11"x17" size preferable)
$\square$ Consultant's QA markup for this submittal
$\square$ Geopak .gpk file
$\square$ Signed Baseline Acceptance letter
$\square$ 24"x36" Paper copy of Control Survey
$\square$ All Microstation CADD files
$\square$ CADD Compliance Report (95\% Adherence)
$\square$ Topogra.dgn file (do not include on survey drawing)
$\square$ Copy of the redi-book sheets (non-picture pages), if current

## Genesis Map Submittals:

$\square$ All Microstation CADD files
$\square$ Copy of R/W reports, if applicable
$\square$ Copy of transmittal to Survey Unit for delivery of Survey database
$\square$ Copies of all prior r/w maps (FDOT and/or County)
$\square$ Copies of all plats (11"x17" size preferable)
$\square$ Consultant's QA markup for this submittal
$\square$ Geopak .gpk file
$\square$ County Section maps (most current)
$\square$ Copy of transmittal to Survey Unit for PNC sheet(s)
$\square$ Copy of any drainage district maps
$\square$ Copy of any railroad r/w maps
$\square$ CADD Compliance Report (95\% Adherence)
$\square$ Original signed and sealed field books

## Initial R/W Map Submittals:

$\square$ All Microstation CADD files
$\square$ Hard copy of Title Search Reports or identify if report is in eTitle
$\square$ Copy of color marked parent track plotting map (redi map or tax map)
$\square$ Copies of all prior r/w maps (FDOT and/or County)
$\square$ Copies of all plats (11"x17" size preferable)
$\square$ Consultant's QA markup for this submittal
$\square$ Geopak .gpk file
$\square$ County Section maps (most current)
$\square$ Copy of any drainage district maps
$\square$ Copy of any railroad r/w maps
$\square$ CADD Compliance Report (95\% Adherence)

## Final R/W Map Submittals:

$\square$ Legal Descriptions (hard copy and Word file)
$\square$ All Microstation CADD files (Including the Limits of Construction dgn file)
$\square$ Copy of Title Search Report cover sheet, with the parcel number written on the report
$\square$ Copies of all prior r/w maps (FDOT and/or County)
$\square$ Copies of all plats (11"x17" size preferable)
$\square$ Consultant's QA markup for this submittal
$\square$ Geopak .gpk file
$\square$ Geopak parcel description report (geometry of parcels)
$\square$ Copy of transmittal to Survey Unit for PNC sheet(s)
$\square$ Copy of transmittal to Survey Unit for delivery of survey database
$\square$ CADD Compliance Report (95\% Adherence)
$\square$ Original signed and sealed field books

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## DEPARTMENT OF TRANSPORTATION

MAPS OF THE
STATE HIGHWAY

## RIGHT OF WAY CONTROL SURVEY

ITEM/SEGMENT NO。N/A<br>STATE PROJECT NO。 9300I-I502<br>\section*{STATE ROAD No. 786 (PGA BOULEVARD)}<br>PALM BEACH COUNTY<br>LENGTH: 1.74 MILES<br>TRAVERSING THRU SECTIONS 1, 2, 11 \& 12 , TOWNSHIP 42 SOUTH, RANGE 42 EAST

GENERAL NOTES:

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