

12_07 Centerline Coordinate List - Begin Station Accuracy

Question:

When generating the centerline coordinate list, why does the Northing and Easting coordinates in COGO sometimes not match the printout for the same station?

Answer:

The problem was created when the chain was first stored in COGO. While we normally report stations to two (2) decimal places for English projects and three (3) decimal places for Metric projects, it is inconsistent to the coordinate readout accuracy, which is to four (4) decimal places.

Describing chain -RPBY8- yields two different beginning stations depending on the set station accuracy.

Beginning chain RPBY8 description				
Point 17020	N	629.468.3056 E	2.463.036.6600 Sta	4+35.12

Beginning chain RPBY8 description				
Point 17020	N	629.468.3056 E	2.463.036.6600 Sta	4+35.1174

Note a difference of 0.0026 ft.

Because the Centerline Coordinate List program depends heavily on the beginning station (double precision, 16 decimal places!) and the increment distance to report each coordinate point along the chain, by the time a desired even beginning station to start the report is reached, the coordinates and station may not match what is in COGO and the printout.

Here is the comparison at station 10+00.00 of the same chain, -RPBY8-.

COGO Coordinates				
F.C. Station	4+35.1174	N	629.468.3056 E	2.463.036.6600
P.T. Station	10+00.0000	N	629.996.7013 E	2.462.838.6284
C.C.		N	630.973.3505 E	2.466.248.5207

Coordinate List

Point #	Chain	Station	Northing (Y)	Easting (X)
1	RPBY8	10+00.00	629996.6988	2462838.6291
2	RPBY8	11+00.00	630093.1483	2462812.2262
3	RPBY8	12+00.00	630189.9670	2462787.1851

Note a difference of 0.0027 ft in the Northing.

A simple fix is to store the beginning of the chain accurately, e.g. 4+35.12. In this case, since the beginning station for -RPBY8- is actually 10+00.00, simply restore and restation chain -RPBY8- starting at station

10+00.00. I have made a copy of the RDY GPK and recreated a chain -RPBY8REV-.

NCDOT Roadway Coordinate Report

Job No: oak

Chain: RPBY8RE

Inc: 100 ft

Beg Sta: 10+00.00

End Sta: 33+74.31

Report: CL Coordinate

Buttons: HELP, Create

Processing the Centerline Coordinate List program with the revised chain, the coordinates in COGO should match the printout.

Point	North	East	Station
CS	629,996.7013	2,462,838.6284	10+00.00

Point #	Chain	Station	Northing (Y)	Easting (X)
1	RPBY8RE	10+00.00	629996.7013	2462838.6284
2	RPBY8RE	11+00.00	630093.1508	2462812.2255
3	RPBY8RE	12+00.00	630189.9615	2462787.1811