Santa Ana River Calibration Base Line

The Santa Ana River Calibration Base Line was established in 1972 and is maintained by the Orange County Surveyor. It is located on the east bank of the Santa Ana River between Lincoln Avenue and Ball Road, in the city of Orange. It was designed for calibration of EDM equipment and is available to the private and public companies and agencies without charge.

In cooperation with the National Geodetic Survey (NGS), the SAR calibration base line is now part of the NGS EDMI Calibration Base Lines. The base line was re-measured in June 2006 by the G/LIS Geodetic Unit after being trained by the NGS in using their equipment and procedures.

This package includes a map showing the monument locations and reduction sheets for each of the different point to point measurements. Follow the steps necessary to reduce your measured slope distances to horizontal distances and then compare this to the record distance to compute your EDM difference.

Any questions, please contact the Geodetic Unit @ (714) 834-4589 or (714) 834-6797

MONUMENT LOCATIONS & DESCRIPTIONS

A - Found punched 2 1/2" brass O.C.F.C.D. disk stamped "BASE LINE" down 1.4' in 12" diameter corrugated metal pipe with lid, set in concrete, located from the intersection of Ball Road and the Santa Ana River, proceed northerly along the bike trail on the easterly side of the Santa Ana River 400' +/- to said monument located along the hinge point of the concrete lining of the river.

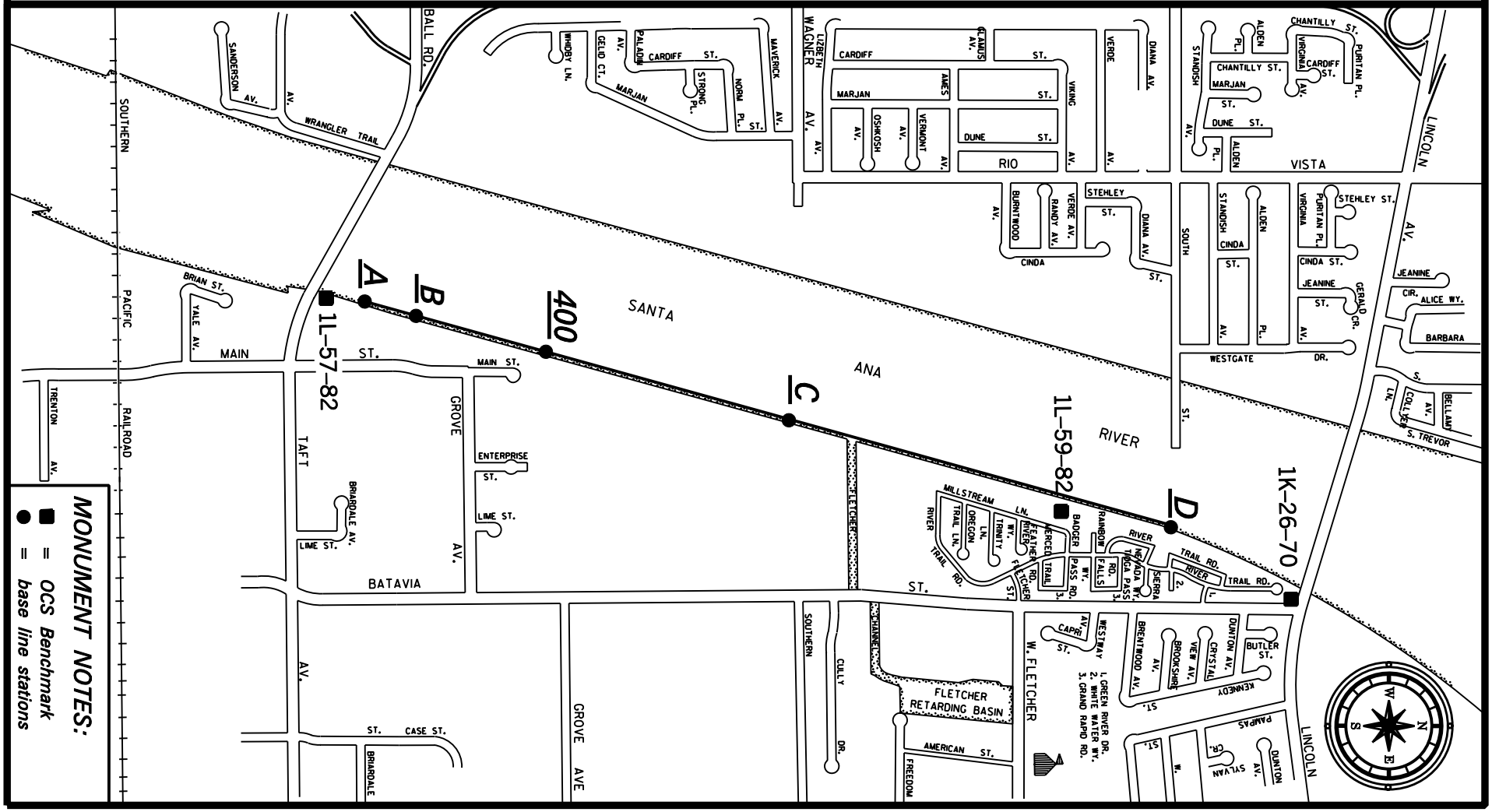
B - Found punched 2 1/2" brass O.C.F.C.D. disk stamped "BASE LINE" down 1.4' in 12" diameter corrugated metal pipe with lid, set in concrete, located from the intersection of Ball Road and the Santa Ana River, proceed northerly along the bike trail on the easterly side of the Santa Ana River 770' +/- to said monument located along the hinge point of the concrete lining of the river.

400 - Found punched 2 1/2" brass ORANGE COUNTY SURVEYOR disk stamped "400 METER BASE LINE" in a 2" iron pipe, down 1.4' in OCS well monument, located from the intersection of Ball Road and the Santa Ana River, proceed northerly along the bike trail on the easterly side of the Santa Ana River 0.3 miles +/- to said monument located along the westerly bike lane.

C - Found punched 2 1/2" brass O.C.F.C.D. disk stamped "BASE LINE" down 1.5' in OCS well monument, located from the intersection of Ball Road and the Santa Ana River, proceed northerly along the bike trail on the easterly side of the Santa Ana River 0.7 miles +/- to said monument located along the hinge point of the concrete lining of the river.

D - Found punched 2 1/2" brass O.C.F.C.D. disk stamped "BASE LINE" down 1.4' in 12" diameter corrugated metal pipe with lid, set in concrete, located from the intersection of Lincoln Avenue and the Santa Ana River, proceed southerly along the bike trail on the easterly side of the Santa Ana River 1050' +/- to said monument located along the hinge point of the river and 35' +/- south of a concrete drop structure.

Santa Ana River - Calibration Base Line Monument Locations



County of Orange Geomatics/Land Information Systems Division

Santa Ana River Calibration Base Line - Reduction Sheet - U.S. Survey Feet

Name: _____ Date: _____ Equipment Used: _____ Temperature: _____

Company: _____ Time: _____ _____ Barometric Pressure: _____

Phone # _____ _____

Station A to Station B

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

A - B Mean Slope Distance: _____

Elev. A: 184.051 ft + H.I. = _____

Elev. B: 185.016 ft + H.I. = _____

A - B Difference in Elevation: _____

Station B to Station A

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

B - A Mean Slope Distance: _____

Elev.B: 185.016 ft + H.I. = _____

Elev. A: 184.051 ft + H.I. = _____

B - A Difference in Elevation: _____

Calculate Horizontal Distance by: $(\text{horiz dist})^2 = (\text{slope dist})^2 - (\text{diff in elev})^2$

A - B Calculated Horizontal Distance: _____

B - A Calculated Horizontal Distance: _____

Mean Calculated Horizontal Distance: =

OCS Horizontal Distance: = 371.957 ft

Difference: =

County of Orange Geomatics/Land Information Systems Division

Santa Ana River Calibration Base Line - Reduction Sheet - U.S. Survey Feet

Name: _____ Date: _____ Equipment Used: _____ Temperature: _____

Company: _____ Time: _____ _____ Barometric Pressure: _____

Phone # _____ _____

Station A to Station 400

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

A - 400 Mean Slope Distance: _____

Elev. A: 184.051 ft + H.I. = _____

Elev. 400: 186.981 ft + H.I. = _____

A - 400 Difference in Elevation: _____

Station 400 to Station A

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

400 - A Mean Slope Distance: _____

Elev. 400: 186.981 ft + H.I. = _____

Elev. A: 184.051 ft + H.I. = _____

400 - A Difference in Elevation: _____

Calculate Horizontal Distance by: $(\text{horiz dist})^2 = (\text{slope dist})^2 - (\text{diff in elev})^2$

A - 400 Calculated Horizontal Distance: _____

400 - A Calculated Horizontal Distance: _____

Mean Calculated Horizontal Distance: =

OCS Horizontal Distance: = 1,312.334 ft

Difference: =

County of Orange Geomatics/Land Information Systems Division

Santa Ana River Calibration Base Line - Reduction Sheet - U.S. Survey Feet

Name: _____ Date: _____ Equipment Used: _____ Temperature: _____

Company: _____ Time: _____ _____ Barometric Pressure: _____

Phone # _____ _____

Station A to Station C

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

A - C Mean Slope Distance: _____

Elev. A: 184.051 ft + H.I. = _____

Elev. C: 193.340 ft + H.I. = _____

A - C Difference in Elevation: _____

Station C to Station A

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

C - A Mean Slope Distance: _____

Elev. C: 193.340 ft + H.I. = _____

Elev. A: 184.051 ft + H.I. = _____

C - A Difference in Elevation: _____

Calculate Horizontal Distance by: $(\text{horiz dist})^2 = (\text{slope dist})^2 - (\text{diff in elev})^2$

A - C Calculated Horizontal Distance: _____

C - A Calculated Horizontal Distance: _____

Mean Calculated Horizontal Distance: =

OCS Horizontal Distance: = 3,074.547 ft

Difference: =

County of Orange Geomatics/Land Information Systems Division

Santa Ana River Calibration Base Line - Reduction Sheet - U.S. Survey Feet

Name: _____ Date: _____ Equipment Used: _____ Temperature: _____

Company: _____ Time: _____ _____ Barometric Pressure: _____

Phone # _____ _____

Station A to Station D

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

A - D Mean Slope Distance: _____

Elev. A: 184.051 ft + H.I. = _____

Elev. D: 204.252 ft + H.I. = _____

A - D Difference in Elevation: _____

Station D to Station A

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

D - A Mean Slope Distance: _____

Elev. D: 204.252 ft + H.I. = _____

Elev. A: 184.051 ft + H.I. = _____

D - A Difference in Elevation: _____

Calculate Horizontal Distance by: $(\text{horiz dist})^2 = (\text{slope dist})^2 - (\text{diff in elev})^2$

A - D Calculated Horizontal Distance: _____

D - A Calculated Horizontal Distance: _____

Mean Calculated Horizontal Distance: =

OCS Horizontal Distance: = 5,843.721 ft

Difference: =

County of Orange Geomatics/Land Information Systems Division

Santa Ana River Calibration Base Line - Reduction Sheet - U.S. Survey Feet

Name: _____ Date: _____ Equipment Used: _____ Temperature: _____

Company: _____ Time: _____ _____ Barometric Pressure: _____

Phone # _____ _____

Station B to Station 400

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

B - 400 Mean Slope Distance: _____

Elev.B: 185.016 ft + H.I. = _____

Elev. 400: 186.981 ft + H.I. = _____

B - 400 Difference in Elevation: _____

Station 400 to Station B

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

400 - B Mean Slope Distance: _____

Elev. 400: 186.981 ft + H.I. = _____

Elev. B: 185.016 ft + H.I. = _____

400 - B Difference in Elevation: _____

Calculate Horizontal Distance by: $(\text{horiz dist})^2 = (\text{slope dist})^2 - (\text{diff in elev})^2$

400 - B Calculated Horizontal Distance: _____

B - 400 Calculated Horizontal Distance: _____

Mean Calculated Horizontal Distance: =

OCS Horizontal Distance: = 940.377 ft

Difference: =

County of Orange Geomatics/Land Information Systems Division

Santa Ana River Calibration Base Line - Reduction Sheet - U.S. Survey Feet

Name: _____ Date: _____ Equipment Used: _____ Temperature: _____

Company: _____ Time: _____ _____ Barometric Pressure: _____

Phone # _____ _____

Station B to Station C

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

B - C Mean Slope Distance: _____

Elev.B: 185.016 ft + H.I. = _____

Elev. C: 193.340 ft + H.I. = _____

B - C Difference in Elevation: _____

Station C to Station B

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

C - B Mean Slope Distance: _____

Elev. C: 193.340 ft + H.I. = _____

Elev. B: 185.016 ft + H.I. = _____

C - B Difference in Elevation: _____

Calculate Horizontal Distance by: $(\text{horiz dist})^2 = (\text{slope dist})^2 - (\text{diff in elev})^2$

C - B Calculated Horizontal Distance: _____

B - C Calculated Horizontal Distance: _____

Mean Calculated Horizontal Distance: =

OCS Horizontal Distance: = 2,702.590 ft

Difference: =

County of Orange Geomatics/Land Information Systems Division

Santa Ana River Calibration Base Line - Reduction Sheet - U.S. Survey Feet

Name: _____ Date: _____ Equipment Used: _____ Temperature: _____

Company: _____ Time: _____ _____ Barometric Pressure: _____

Phone # _____ _____

Station B to Station D

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

B - D Mean Slope Distance: _____

Elev.B: 185.016 ft + H.I. = _____

Elev. D: 204.252 ft + H.I. = _____

B - D Difference in Elevation: _____

Station D to Station B

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

D - B Mean Slope Distance: _____

Elev. D: 204.252 ft + H.I. = _____

Elev. B: 185.016 ft + H.I. = _____

D - B Difference in Elevation: _____

Calculate Horizontal Distance by: $(\text{horiz dist})^2 = (\text{slope dist})^2 - (\text{diff in elev})^2$

D - B Calculated Horizontal Distance: _____

B - D Calculated Horizontal Distance: _____

Mean Calculated Horizontal Distance: =

OCS Horizontal Distance: = 5,471.764 ft

Difference: =

County of Orange Geomatics/Land Information Systems Division

Santa Ana River Calibration Base Line - Reduction Sheet - U.S. Survey Feet

Name: _____ Date: _____ Equipment Used: _____ Temperature: _____

Company: _____ Time: _____ _____ Barometric Pressure: _____

Phone # _____ _____

Station 400 to Station C

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

400 - C Mean Slope Distance: _____

Elev. 400: 186.981 ft + H.I. = _____

Elev. C: 193.340 ft + H.I. = _____

400 - C Difference in Elevation: _____

Station C to Station 400

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

C - 400 Mean Slope Distance: _____

Elev. C: 193.340 ft + H.I. = _____

Elev. 400: 186.981 ft + H.I. = _____

C - 400 Difference in Elevation: _____

Calculate Horizontal Distance by: $(\text{horiz dist})^2 = (\text{slope dist})^2 - (\text{diff in elev})^2$

400 - C Calculated Horizontal Distance: _____

C - 400 Calculated Horizontal Distance: _____

Mean Calculated Horizontal Distance: =

OCS Horizontal Distance: = 1,762.213 ft

Difference: =

County of Orange Geomatics/Land Information Systems Division

Santa Ana River Calibration Base Line - Reduction Sheet - U.S. Survey Feet

Name: _____ Date: _____ Equipment Used: _____ Temperature: _____

Company: _____ Time: _____ _____ Barometric Pressure: _____

Phone # _____ _____

Station 400 to Station D

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

400 - D Mean Slope Distance: _____

Elev. 400: 186.981 ft + H.I. = _____

Elev. D: 204.252 ft + H.I. = _____

400 - D Difference in Elevation: _____

400 - D Calculated Horizontal Distance: _____

Station D to Station 400

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

D - 400 Mean Slope Distance: _____

Elev. D: 204.252 ft + H.I. = _____

Elev. 400: 186.981 ft + H.I. = _____

D - 400 Difference in Elevation: _____

D - 400 Calculated Horizontal Distance: _____

Calculate Horizontal Distance by: $(\text{horiz dist})^2 = (\text{slope dist})^2 - (\text{diff in elev})^2$

Mean Calculated Horizontal Distance: =

OCS Horizontal Distance: = 4,531.387 ft

Difference: =

County of Orange Geomatics/Land Information Systems Division

Santa Ana River Calibration Base Line - Reduction Sheet - U.S. Survey Feet

Name: _____ Date: _____ Equipment Used: _____ Temperature: _____

Company: _____ Time: _____ _____ Barometric Pressure: _____

Phone # _____ _____

Station C to Station D

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

C - D Mean Slope Distance: _____

Elev. C: 193.340 ft + H.I. = _____

Elev. D: 204.252 ft + H.I. = _____

C - D Difference in Elevation: _____

C - D Calculated Horizontal Distance: _____

Station D to Station C

Measured Slope Distances:

Direct 1: _____

Direct 2: _____

Direct Slope Average: _____

Reverse 1: _____

Reverse 2: _____

Reverse Slope Average: _____

D - C Mean Slope Distance: _____

Elev. D: 204.252 ft + H.I. = _____

Elev. C: 193.340 ft + H.I. = _____

D - C Difference in Elevation: _____

D - C Calculated Horizontal Distance: _____

Calculate Horizontal Distance by: $(\text{horiz dist})^2 = (\text{slope dist})^2 - (\text{diff in elev})^2$

Mean Calculated Horizontal Distance: =

OCS Horizontal Distance: = 2,769.174 ft

Difference: =