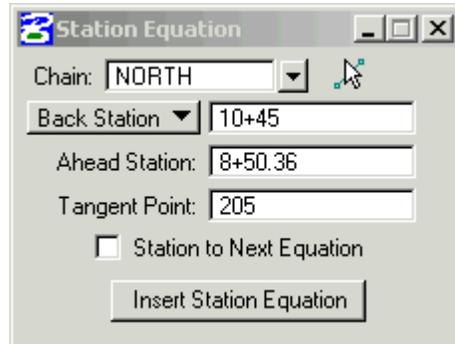


Station Equation Tool

Station Equation

The Station Equation tool stores station equations on the chain by:

- Equating the back station to the ahead station.
- Equating the point of a curve (i.e., PC, PT) to the ahead station.



The **Back Station** can be specified via a station value or a Label Point (e.g., PC, PT, SC, TS, or CS).

If the station equation is located on a tangent, a point number must be supplied in order to segment the tangent. If the station equation is located on a curve, the curve will be automatically segmented into two new curves named with "1 " and "-2" appended to the original curve name (e.g., CURVE 10 becomes CURVE 10-1 and CURVE 10-2). In this case, the specified Tangent Point will be placed at the P.C. of curve 10-2. If the Label Point option is utilized, a Tangent Point is not needed when the initial label point (P.C. or S.C.) is selected. If an ending label point is utilized (P.T. or C.S.), the Tangent Point must be specified. The command does not support station equations on spirals. When the equation is stored at a point along the circular curve of a SCS curve, the curve is segmented as above, but the SCS curve is converted to SPIRAL-CURVE-CURVE-SPIRAL as four independent elements.

Optional "Station To Next Equation"

Without the Station To Next Equation option, the chain is restationed from the newly inserted station to the end of the chain. Any previously created station equations are expunged.

With the Station To Next Equation option, the chain is restationed from the newly inserted station equation to the next station equation. The back station at the previously stored station equation is changed while the ahead station is not altered.

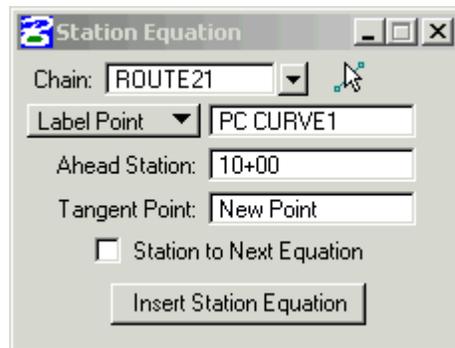
When the dialog is completed, click Insert Station Equation to commence the procedure.

Station Equation Tool

Addition Points about the Station Equation Tool

The **Tangent Point** represents a “new point” that is added to the chain when storing an equation. It is used any time you need to store an equation either on a tangent section of your chain or at the PT of a curve (beginning of the tangent). The only time you will not need this option is when the equation occurs between the PC and PT of a circular curve. In that instance, GeoPak will segment the curve, creating two new curves. The first curve from the PC to the equation station, and the second from the equation to the PT.

Note that if your equation occurs at the PC or PT of a curve, use the **Label Point** option and call out the PC or PT and curve name to force the equation to occur exactly at the control point.



Only use the Back Station option when the equation occurs in the middle of a tangent section or curve.

Original Chain ROUTE21 contains:
400 CUR CURVE1 401

Beginning chain ROUTE21 description

=====
Point 400 X 494,780.6211 Y 603,382.3968 Sta 0+00.00

Course from 400 to PC CURVE1 N 62° 21' 25.92" E Dist 824.5303

Curve Data

Curve CURVE1				
P.I. Station	19+71.06	X	496,526.6973	Y 604,296.8847
Delta	= 59° 38' 53.46"	(RT)		
Degree	= 2° 51' 53.24"			
Tangent	= 1,146.5278			
Length	= 2,082.1143			
Radius	= 2,000.0000			
External	= 305.3256			
Long Chord	= 1,989.3551			
Mid. Ord.	= 264.8872			
P.C. Station	8+24.53	X	495,511.0373	Y 603,764.9441
P.T. Station	29+06.64	X	497,498.9509	Y 603,689.2262
C.C.		X	496,438.9530	Y 601,993.2296
Back	= N 62° 21' 25.92"	E		
Ahead	= S 57° 59' 40.62"	E		
Chord Bear	= S 87° 49' 07.35"	E		

Station Equation Tool

Below is an example of inserting an Equation at the **PC** of the Curve.

```
<*      94      Store EQN CHA ROUTE21 PC CURVE1 = STA 10+00 500
```

WARNING : Given point 500 is not used.

Chain ROUTE21 redefined

Station equation 10+00.00 is stored in chain ROUTE21

Chain ROUTE21 contains:
400 CUR CURVE1 401

Beginning chain ROUTE21 description

```
Point 400          X      494,780.6211 Y      603,382.3968 Sta      0+00.00
```

Course from 400 to PC CURVE1 N 62° 21' 25.92" E Dist 824.5303

Equation: Sta 8+24.53 (BK) = Sta 10+00.00 (AH)

End Region 1

Begin Region 2

Curve Data

```
Curve CURVE1
P.I. Station      21+46.53 X      496,526.6973 Y      604,296.8847
Delta      =      59° 38' 53.46" (RT)
Degree      =      2° 51' 53.24"
Tangent      =      1,146.5278
Length      =      2,082.1143
Radius      =      2,000.0000
External      =      305.3256
Long Chord      =      1,989.3551
Mid. Ord.      =      264.8872
P.C. Station      10+00.00 X      495,511.0373 Y      603,764.9441
P.T. Station      30+82.11 X      497,498.9509 Y      603,689.2262
C.C.          X      496,438.9530 Y      601,993.2296
Back          = N 62° 21' 25.92" E
Ahead         = S 57° 59' 40.62" E
Chord Bear    = S 87° 49' 07.35" E
```

Course from PT CURVE1 to 401 S 57° 59' 40.62" E Dist 710.8997

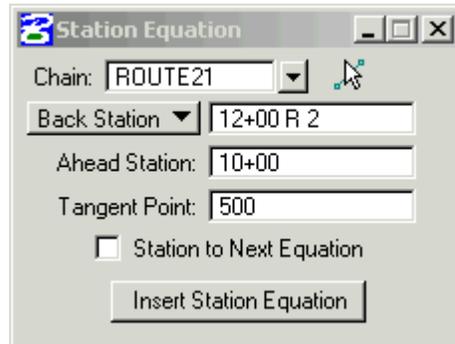
```
Point 401          X      498,101.7927 Y      603,312.4501 Sta      37+93.01
```

Ending chain ROUTE21 description

Station Equation Tool

Below is an example of inserting an Equation between the **PC** and **PT** of the Curve.

Remember that the the curve will be automatically segmented into two new curves named with "-1 " and "-2" appended to the original curve name.



```
<*      96      Store EQN CHA ROUTE21 STA 12+00 R 2 = STA 10+00 500
```

WARNING : Given point 500 is not used.

Chain ROUTE21 redefined

Station equation 10+00.00 is stored in chain ROUTE21

Chain ROUTE21 contains:

400 CUR CURVE1-1 CUR CURVE1-2 401

Beginning chain ROUTE21 description

=====

Point 400 X 494,780.6211 Y 603,382.3968 Sta 0+00.00

Course from 400 to PC CURVE1-1 N 62° 21' 25.92" E Dist 824.5303

Equation: Sta 8+24.53 (BK) = Sta 10+00.00 (AH)	End Region 1 ----- Begin Region 2
--	--

Curve Data

Curve CURVE1-1

P.I. Station	11+00.08	X	495,599.6969	Y	603,811.3786
Delta	= 5° 43' 46.48"		(RT)		
Degree	= 2° 51' 53.24"				
Tangent	= 100.0834				
Length	= 200.0000				
Radius	= 2,000.0000				
External	= 2.5026				
Long Chord	= 199.9167				
Mid. Ord.	= 2.4995				
P.C. Station	10+00.00	X	495,511.0373	Y	603,764.9441
P.T. Station	12+00.00	X	495,692.5493	Y	603,848.7299
C.C.		X	496,438.9530	Y	601,993.2296
Back	= N 62° 21' 25.92" E				
Ahead	= N 68° 05' 12.40" E				

Station Equation Tool

Chord Bear = N 65° 13' 19.16" E

Equation: Sta 12+00.00 (BK) = Sta 10+00.00 (AH)

End Region 2

Begin Region 3

Curve Data

Curve CURVE1-2

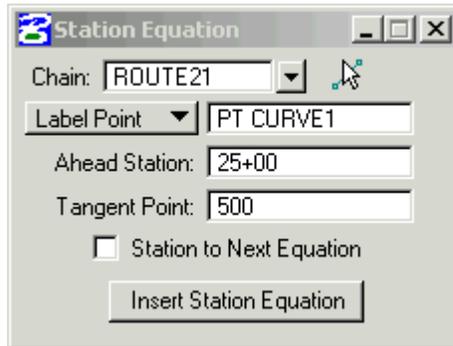
P.I. Station	20+17.26	X	496,636.3144	Y	604,228.3740
Delta	= 53° 55' 06.97"	(RT)			
Degree	= 2° 51' 53.24"				
Tangent	= 1,017.2621				
Length	= 1,882.1143				
Radius	= 2,000.0000				
External	= 243.8409				
Long Chord	= 1,813.4300				
Mid. Ord.	= 217.3424				
P.C. Station	10+00.00	X	495,692.5493	Y	603,848.7299
P.T. Station	28+82.11	X	497,498.9509	Y	603,689.2262
C.C.		X	496,438.9530	Y	601,993.2296
Back	= N 68° 05' 12.40"	E			
Ahead	= S 57° 59' 40.62"	E			
Chord Bear	= S 84° 57' 14.11"	E			

Course from PT CURVE1-2 to 401 S 57° 59' 40.62" E Dist 710.8997

Point 401 X 498,101.7927 Y 603,312.4501 Sta 35+93.01

=====
Ending chain ROUTE21 description

Below is an example of inserting an Equation at the **PT** of the Curve.



<* 98 Store EQN CHA ROUTE21 PT CURVE1 = STA 25+00 500

Chain ROUTE21 redefined

Station equation 25+00.00 is stored in chain ROUTE21

Station Equation Tool

Chain ROUTE21 contains:
400 CUR CURVE1-1 CUR CURVE1-2 500 401

Beginning chain ROUTE21 description

Point 400 X 494,780.6211 Y 603,382.3968 Sta 0+00.00

Course from 400 to PC CURVE1-1 N 62° 21' 25.92" E Dist 824.5303

Equation: Sta 8+24.53 (BK) = Sta 10+00.00 (AH) End Region 1

Begin Region 2

Curve Data

Curve CURVE1-1
P.I. Station 11+00.08 X 495,599.6969 Y 603,811.3786
Delta = 5° 43' 46.48" (RT)
Degree = 2° 51' 53.24"
Tangent = 100.0834
Length = 200.0000
Radius = 2,000.0000
External = 2.5026
Long Chord = 199.9167
Mid. Ord. = 2.4995
P.C. Station 10+00.00 X 495,511.0373 Y 603,764.9441
P.T. Station 12+00.00 X 495,692.5493 Y 603,848.7299
C.C. X 496,438.9530 Y 601,993.2296
Back = N 62° 21' 25.92" E
Ahead = N 68° 05' 12.40" E
Chord Bear = N 65° 13' 19.16" E

Equation: Sta 12+00.00 (BK) = Sta 10+00.00 (AH) End Region 2

Begin Region 3

Curve Data

Curve CURVE1-2
P.I. Station 20+17.26 X 496,636.3144 Y 604,228.3740
Delta = 53° 55' 06.97" (RT)
Degree = 2° 51' 53.24"
Tangent = 1,017.2621
Length = 1,882.1143
Radius = 2,000.0000
External = 243.8409
Long Chord = 1,813.4300
Mid. Ord. = 217.3424
P.C. Station 10+00.00 X 495,692.5493 Y 603,848.7299
P.T. Station 28+82.11 X 497,498.9509 Y 603,689.2262
C.C. X 496,438.9530 Y 601,993.2296
Back = N 68° 05' 12.40" E
Ahead = S 57° 59' 40.62" E
Chord Bear = S 84° 57' 14.11" E

Equation: Sta 28+82.11 (BK) = Sta 25+00.00 (AH) End Region 3

Begin Region 4

Point 500 X 497,498.9509 Y 603,689.2262 Sta 25+00.00

Course from 500 to 401 S 57° 59' 40.62" E Dist 710.8997

Point 401 X 498,101.7927 Y 603,312.4501 Sta 32+10.90

Ending chain ROUTE21 description