

# GEOPAK® Element and File Naming Convention

Design Manual  
 Chapter 20  
 Project Automation Information  
 Originally Issued: 12-20-99  
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## Files

### GEOPAK® File (.gpk)

The file used to store geometry for a project is a GEOPAK® file, which is named *job\*\*\*.gpk*, where \*\*\* is the paren number of a project number. The GEOPAK® file is often referred to as the job number. For example, Project NHSX-020-2(099)--3H-81, would have a GEOPAK® file named job099.gpk.

### Input Files

An input file serves as the history of how an alignment was created. An input file should be created for each roadway or an entire interchange. The input file should contain the horizontal and vertical alignments, as well as edge returns and other alignments which pertain to the roadway or interchange.

A horizontal alignment is either established with the preliminary survey or created by a Designer. In either case the designer must create an input file.

Refer to Section 20E-1 for information about creating an input file.

The input file is named after the roadway or the interchange. The input file must contain the job number and the Designer’s operator code. The job number and operator code are necessary to import an input file into COGO. Table 1 contains operator codes:

**Table 1: Operator Codes**

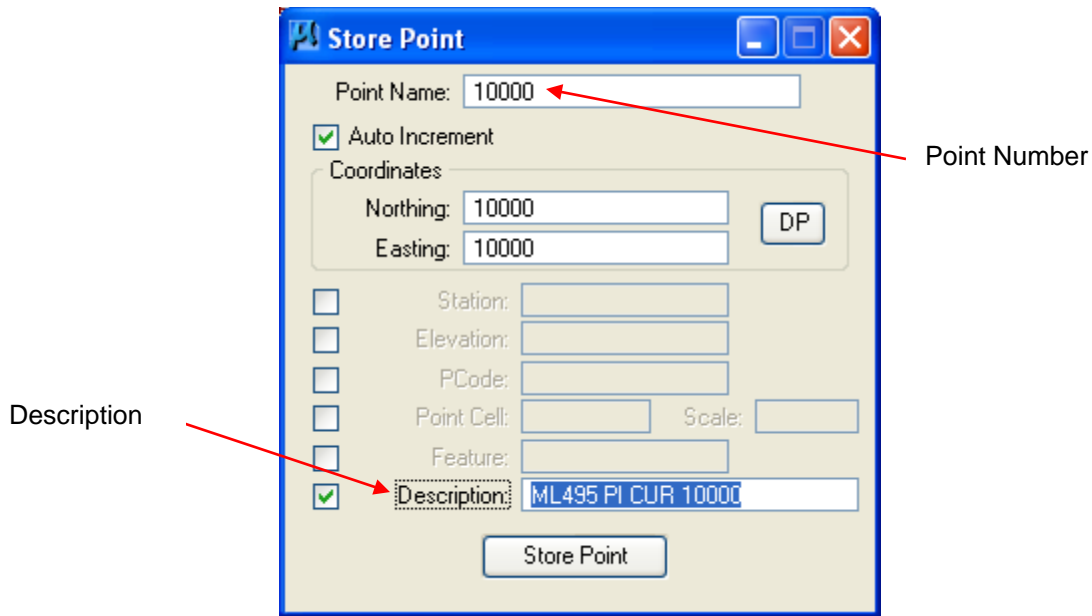
Section	Operator Code
Road 1, Road 2, Road 3, , Road 5	R1, R2, R3, R5
Geometrics	GE
Soils	SO
Photogrammetry	PH
Section or Office	Suggested Operator Code
Roadside Development	RS
Right of Way	RW
Preliminary Bridge and Final Bridge	BR
Consultant	Use 2-letter abbreviation for company

## Elements

### Point Numbers

Point designations should be entirely numeric. This is necessary for coordination with end users of the data generated during design. Table 2 contains a series of point numbers to be used for alignments or by other offices.

A description should be applied to each point. A description is useful for sorting and describing points. The first part of the description should contain the chain name, followed by a description of the point.



**Figure 1: GEOPAK® Pallet for Storing a Point**

- \* 1 \$ PARCLO B
  - \* 2 \$ LOOP B
  - \* 3 SET DESCRIPTION ADD "US34B LOOP B Geometrics"
  - \* 4 SET FEATURE ADD "CP"
  - \* 5 LOCATE 55550 CHA ML STA 100+00 OFFSET 58
  - \* 6 LOCATE 55551 CHA SR STA 1100+00 OFFSET 22
  - \* 7 ALI PARCLO\_B\_B INC
- Command line to add a description when using an incomplete alignment

**Table 2: Point Numbers**

Preliminary survey control points	1–999
Bridge	1,000–1,499
District survey crews	1,500–3,499
<b>Right-of-Way Design and District Right-of-Way</b>	
centerline points not numbered by Design	3,500–3,999
existing ROW points	4,000–4,999
new ROW points	5,000–5,999
temporary easement points	6,000–6,999
property points	7,000–7,999
section corners, lot corners, etc.	8,000–8,999
<b>Design and Location Section</b>	
miscellaneous	9,000–9,999
detour alignments	10,000–19,999
major roadway 1	20,000–20,999
major roadway 2	21,000–21,999
major roadway ...	22,000–22,999
minor roadway 1	30,000–39,999
minor roadway 2	40,000–49,999
minor roadway 3	50,000–59,999
minor roadway ...	60,000–69,999

## Major Roadways

Major roadways are roadways classified as Interstates, US Highways, or State Highways.

## Minor Roadways

Minor roadways are non-major roadways that intersect a major roadway.

## Intersecting Roadways

Intersecting roadways are roadways that intersect a minor roadway such as a ramp, entrance to a property, or an intersecting minor roadway.

Intersecting roadways should have point numbers that relate to the minor roadway. Refer to Table 3 for an example:

**Table 3: Point Numbers for Intersecting Roadways**

minor roadway	30,000-30,999
intersecting minor roadway 1	31,000-31,999
intersecting minor roadway 2	32,000-32,999
intersecting minor roadway ...	33,000-33,999
ramp a	34,000-34,999
ramp b	35,000-35,999
ramp c	36,000-36,999
ramp d	37,000-37,999

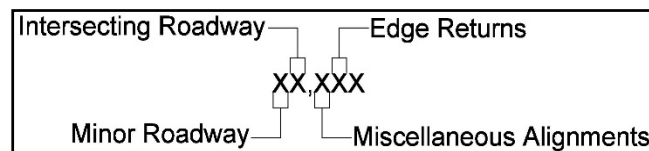
## Edge Returns

Point numbers for edge returns should relate to the point numbers of the intersecting roadway. Refer to Figure 3 for an example of numbering edge returns.

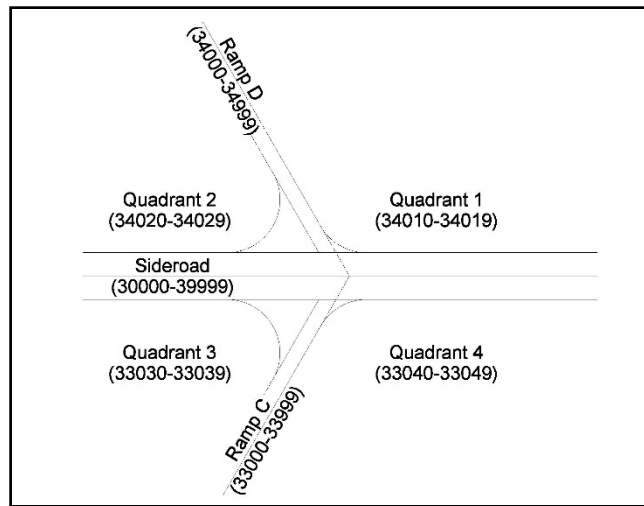
The preference is to station an edge return in relation to the quadrant in which the edge return is located. For example, an edge return in quadrant 2 would begin with Station 20+00.00.

## Miscellaneous

Point numbers for miscellaneous alignments such as, retaining walls, noise walls, channel shaping, or other alignments should relate to the point numbers of the adjacent roadway. For example, a retaining wall adjacent to Ramp D would use the 36,100 point series.



**Figure 2: Point Numbering Association**



**Figure 3: Point Numbering Convention for Edge Returns**

### Simple Curves and Spiral Curve Spiral (SCS)

A simple curve or SCS should be named according to the first control point used to create it. The preference is to locate and then number a simple curve or SCS by the PI or Master PI. For example, if point 10000 is the PI of a simple curve, the name of the simple curve would be 10000.

### Chains and Profiles

Refer to the following tables for naming chains and profiles:

**Table 4: Survey Chains**

<b>Mainline</b>	<i>SURrouteNumber</i> ( For example, SUR520,SUR018,SUR006)
<b>side road</b>	<i>SURsideRoadName</i> ( For example, SUR180th, SURD35)

**Table 5: Construction Chains**

<b>mainline</b>	<i>MLrouteNumber</i> (For example, ML520, ML018, ML006)
<b>side road</b>	<i>SRsideRoadName</i> (For example, SR180th, SRD35)
<b>edge returns</b>	<i>Sideroadchainname_RET_Quadrant</i> (For example, SR180th_RET_1, Sr180th_RET_2)
<b>variable medians</b>	<i>ConstructionChainName_DirectionOfTravel</i> (For example, when the median width becomes variable, the centerline of the traveled roadway is no longer parallel or concentric with the construction centerline. Therefore, if the direction of travel is east on the traveled roadway at a variable median area on a segment of US 520, the chain would be ML520E1. If there are multiple variable median segments, the number would be increased, such as ML520E2, ML520E3, etc.)
<b>ramps</b>	<i>SRsideRoadNameA, SRsideRoadNameB, , etc.</i> (For example, at US 520 (ML520) and County Road D35 (SRD35): SRD35A, SRD35B, etc.)

Note: If the survey and the construction chains are the same, use the survey naming convention. Renaming a survey chain is not necessary.

### Detour Roads

Detour roads may be an on-site runaround, widening unit, crossing, or any surface needed to place traffic during construction. The uniqueness of a detour road makes a standard chain naming convention difficult. Simply naming each detour as DET1, DET2, and DET3 is sufficient for detour roads.

## Miscellaneous Chains

Miscellaneous chains, such as MSE walls, noise walls, or channel shaping alignments are to be named in conjunction with the point series. For example, an MSE wall adjacent to Ramp D would use point series 36,100 and be named 36,100.

## Vertical Alignments

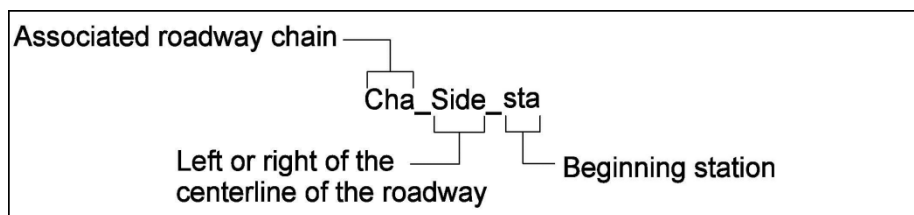
Vertical alignments or profiles are named with the chain name as the prefix and either \_E or \_P as the suffix. The suffix is used to distinguish between the existing profile (\_E) and the proposed profile grade (\_P).

**Table 6: Profile Naming Convention**

<u>Existing Ground</u>	<u>Proposed</u>
<u>chain_E</u>	<u>chain_P</u>

## Ditching

Ditch grades and bench grades should be named as shown in Figure 4:



**Figure 4: Chain Naming Convention for Ditch Chains**

**Table 7: Ditch Grade Side**

<u>Side Options</u>	
<u>DGL</u>	Left Ditch
<u>DGR</u>	Right Ditch
<u>DGM</u>	Median Ditch

For example, the name for the left ditch chain along mainline 520 would be ML520\_DGL\_650.

# Chronology of Changes to Design Manual Section:

## 020D-002 Geopak Element and File Naming Convention

2/9/2017	Revised Removed reference to 20D-1. No such section exists.
9/13/2012	Revised Corrected ramp chain naming conventions. Added guidance for detour roads and ditching profiles. Edited general text for clarity.
12/10/2010	NEW renamed from 21B-45