APPENDIX A

STATIONING AND EQUATIONS

IGrds uses a conventional scheme to designate stations on an alignment. Discontinuities in stationing, usually caused by constraints such as the necessity to meet the stationing of an existing road or because of shortening or lengthening due to realignment, are equations. There are two types of equations (refer to Figures A-1 and A-2):

- Gap equations are defined as equations for which the ahead station has a larger number than the back station number, such as 10+00BK=11+00AH; i.e., a portion of the stationing is dropped out; there is a gap.

- Overlapping equations are defined as equations for which the ahead station has a smaller number than the back station, such as 10+00BK=7+50AH; i.e., a portion of the stationing is reused; some station numbers refer to two physical locations.

Gap equations do not need to be modified in any way since there is no ambiguity about the correspondence of station numbers to physical locations. All IGrds needs to do is record the location and size of the gap.

Because an overlap equation introduces ambiguity about the correspondence of stations to locations, the station numbers must be modified. For Imperial unit projects, the horizontal alignment calculation process eliminates overlapping equations by adding 10,000 (1,000,000 feet) to the station numbers each time an overlapping equation is passed. For Metric unit projects, 100,000 meters are added to the station numbers. (Metric unit projects have three decimal (millimeter) precision.) For computational purposes, this converts an overlap equation into a gap equation which can be treated as above. The first digit of the station number becomes an overlap equation number.

Nine overlapping equations are allowed in this scheme. A total of 20 gap and overlap equations is allowed per roadway. The new stationing is shown on the horizontal alignment output and must be used in all subsequent references to the alignment or data entries.

The horizontal alignment process automatically defines and stores equation data. The use of offset data in place of the horizontal alignment process requires that equation data be entered by the user.

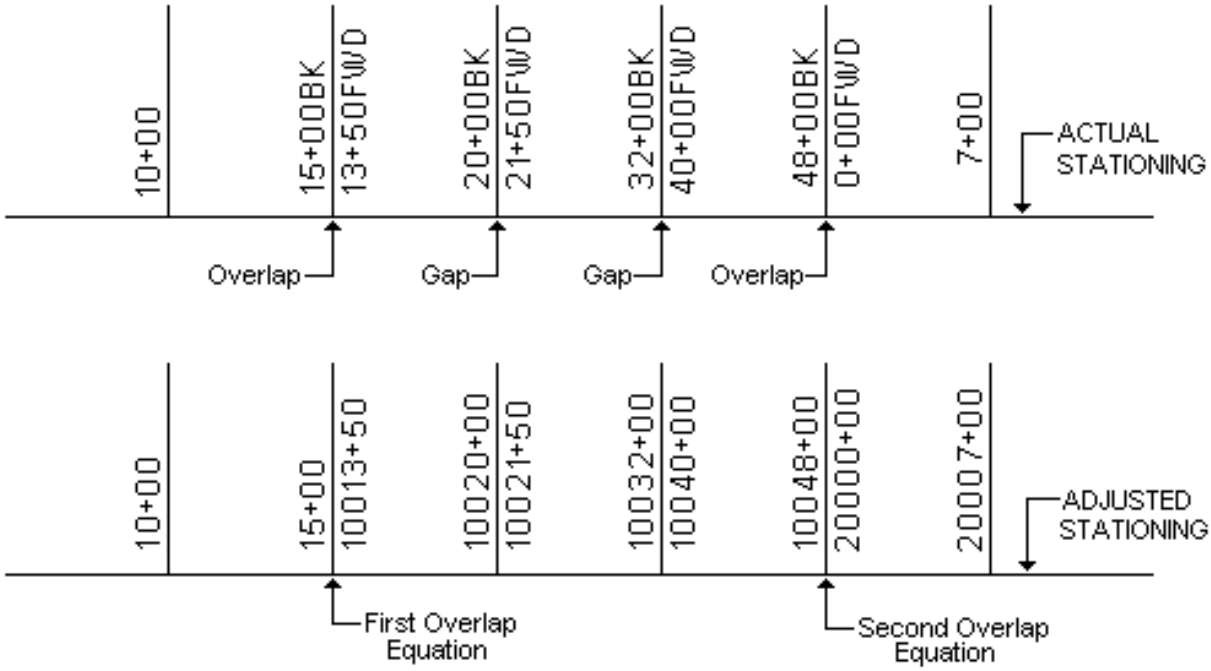


Figure A-1 - Examples of Equation Numbering and Stationing Scheme - Imperial Units

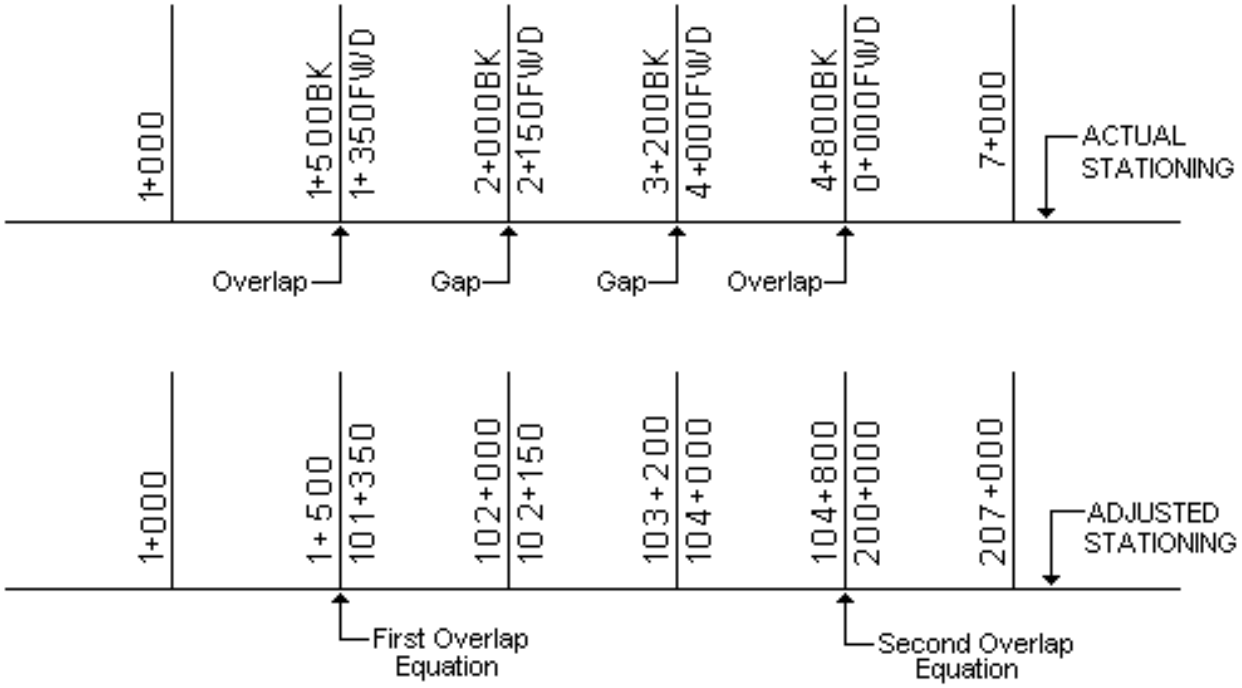
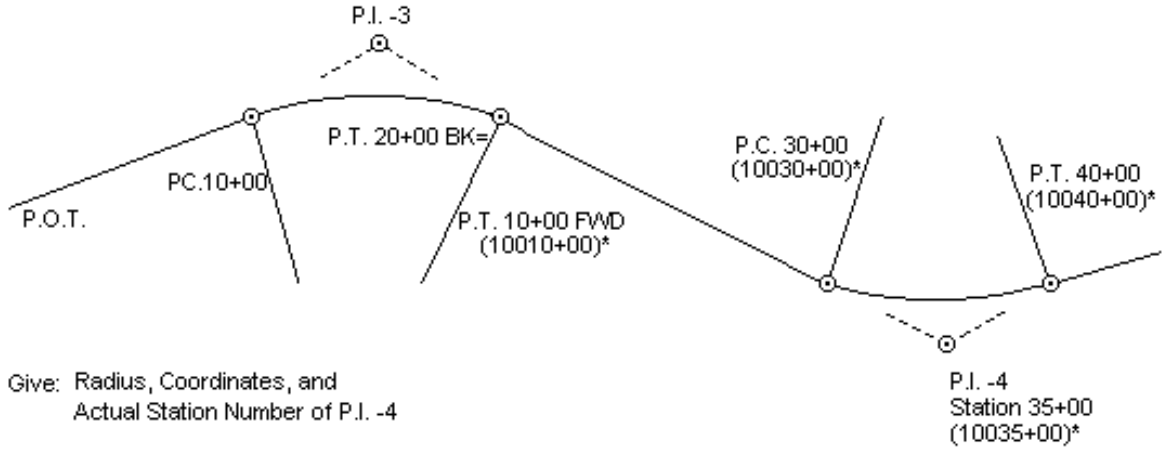
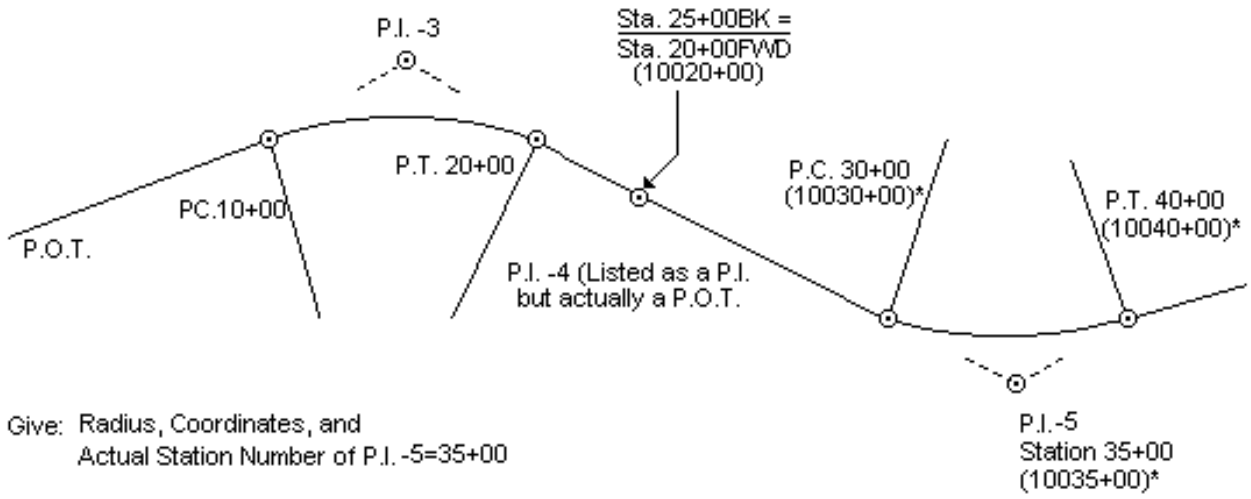


Figure A-2 - Examples of Equation Numbering and Stationing Scheme - Metric Units

Within the IGrds/AN FALO process or within the IGrds/IG process, the equation may be put directly at the PC, PT or POT.



Equation at the PT or ST of a Curve



Equation at a POT Station

Figure A-3- Equations - Imperial Units