

CHAPTER 8

EARTHWORK AND QUANTITY CALCULATION PROCESSES

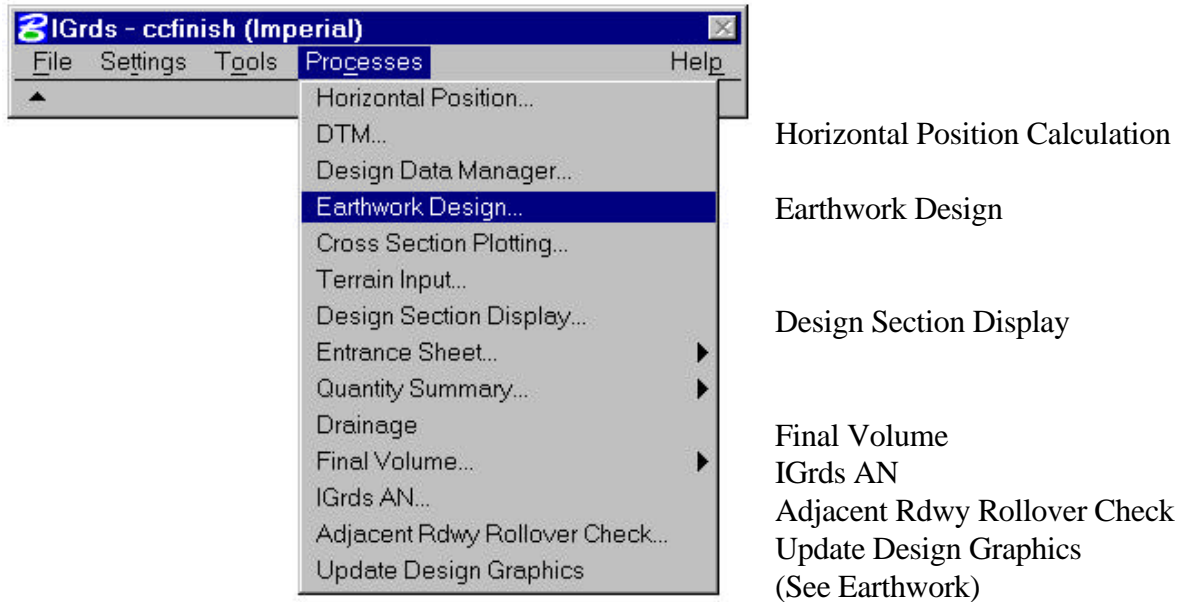


Figure 8-1
Earthwork and Quantity Calculation Process

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INTRODUCTION

This chapter discusses the processes which combine the data described in previous chapters with terrain data to generate design cross sections and compute earthwork quantities. Production of a variety of earthwork reports, Final Volume Calculations and AN Input are also discussed. Processes are

Horizontal Position Calculation

This process computes the distance from baseline to design roadway alignments for use in generating design cross sections.

Earthwork Process

This process provides for specifying data and requesting generation of design cross section and producing earthwork outputs.

Design Section Display

This process provides for display and listing all data used to create a design section at any baseline station.

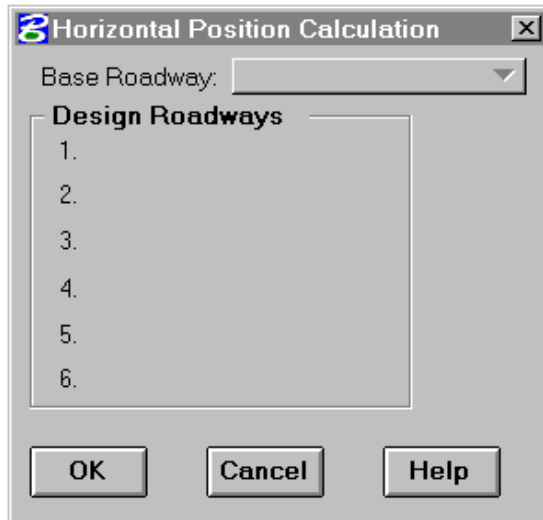
Final Volumes

These processes provide for computing Final Volumes.

IGrds AN Process

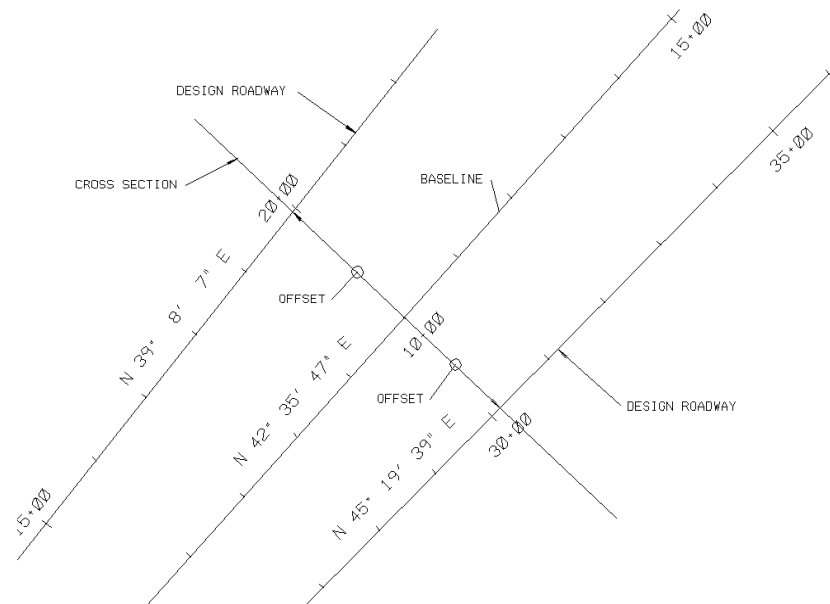
This process provides for executing the AN process.

HORIZONTAL POSITION CALCULATION

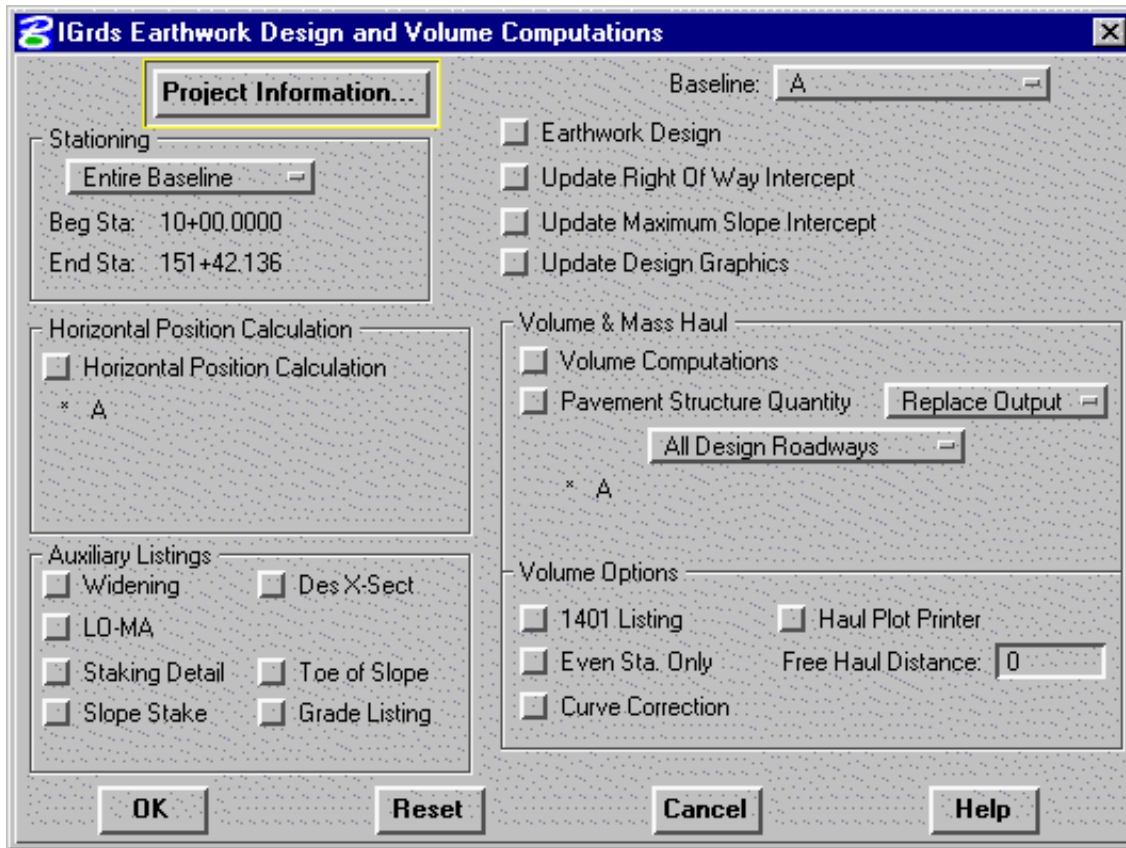


This process computes the distance from the baseline roadway to each design roadway (see Figure below). The distance is computed and stored at each baseline roadway cross section for each design roadway. A report is generated and placed in the .tmp file. This process is now generated automatically when needed. Horizontal Position Calculation can also be requested on the Earthwork Design Dialog.

Base Roadway	Select desired baseline roadway.
Design Roadways	The design roadway associated with the baseline are displayed. (Design Roadways are established using the Set Baseline command from the Settings Menu.)
OK	Click to complete the computation.
Cancel	Click to cancel the process.



EARTHWORK PROCESS



This process is used to request generation of design cross sections, computation of earthwork quantities and reports, and computation of pavement structure quantities and reports. All generated reports are placed in the work_fileew.lis file (where work_file is the current working file name), except there is an additional ASCII pavement structure data summary file also created with a .pav extension.


Project Information	Click to display the Project Information dialog (see page 8-8).
Baseline	Select desired baseline.
Stationing	Select option. Entire Baseline Sta/Sta (Enter or select station)
Horizontal Position Calculation	Push to request calculation.
Earthwork Design	Push to request design. This results in the generation of design cross sections and end areas, but not volumes.
Update ROW/Max	Push to request.

<p>Update Design Graphics</p>	<p>Push to automatically update all design graphics for any roadways associated with the active baseline when the design computations are complete. The design graphics consists of any previously displayed crown, catch, or ditch lines; Geometry chains created by the Send to DTM command; Ditch Profiles displayed in design roadway reference lines and DXM cross sections.</p>
<p>Volume & Mass Haul & Pavement Structure Quantity</p> <p>Volume Computation</p> <p>Pavement Structure Quantity Computation</p> <p>Replace/Append Output</p> <p>Options</p> <p>Free Haul Distance</p> <p>Volume Options</p>	<p>Push to request volume computations. If volume computations are desired without redesign, press this button <u>without</u> requesting earthwork design.</p> <p>Push to request pavement structure quantity computations. If quantity computations are desired without redesign, press the button <u>without</u> requesting earthwork design. Pavement structure quantity computations may be performed alone or in addition to the earthwork volume computations.</p> <p>Select desired option for pavement structure quantity output that is placed in .lis and .pav output data files.</p> <p>Select desired option</p> <ul style="list-style-type: none"> • All roadways • Select design roadways <p>Enter distance if haul computations/plots are being requested.</p> <p>Push desired options to generate desired reports or plots.</p>

Auxiliary Listings	
Widening	Push to generate the Widening report.
LO-MA	Push to generate the LO-MA report.
Staking Detail	Push to generate the Staking Detail report.
Slope Stake List	Push to generate the Slope Stake List. The Surfaces button displays. Push this button to select the desired surfaces to include in the report.
Des X-Sect List	Push to generate the Cross Section List. The Surfaces button displays. Push this button to select the desired surfaces to include in the report.
Toe of Slope	Push to generate the Toe of Slope report.
Grade Listing	Push to generate the Grade Listing.
OK	Click to execute requests.
Reset	Click to reset to the values in effect when the process was selected.
Cancel	Click to cancel the process.
Help	Click to display help for this command.

Note: When Earthwork Design requests are made, IGrds will suspend operation until the computations are finished. During this pause, an hour glass icon will appear.

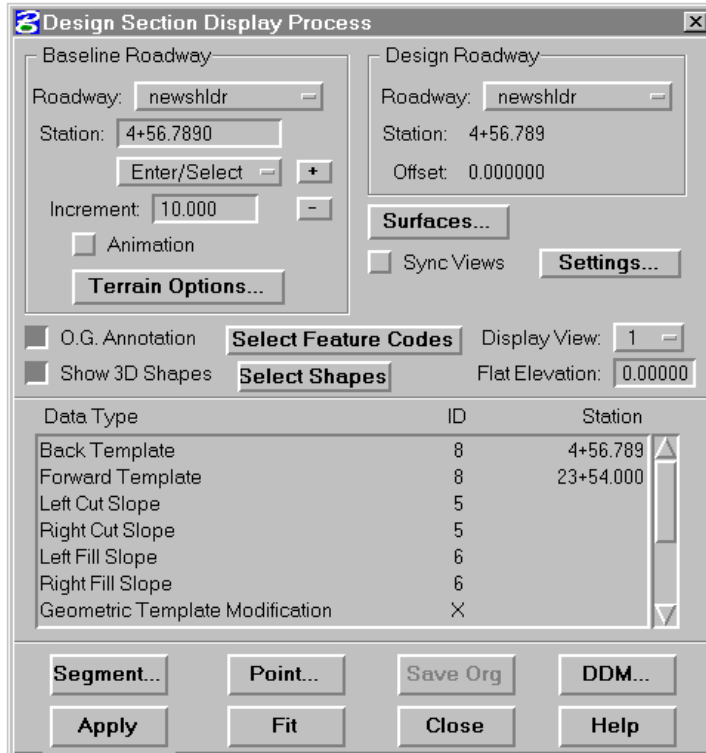
PROJECT INFORMATION



This dialog displays Project Information to be placed on all reports and Cross Section plots.

Project ID	Project Identification (up to 3 characters).
Prefix	Earthwork output file prefix
Project Name	Project Name.
Date	The system date (&date) will be displayed. Enter a different date if desired.
OK	Click to use displayed data.
Cancel	Click to cancel dialog.
Help	Click to display help for this dialog.

DESIGN SECTION DISPLAY



The Design Section Display provides the capability to interactively view IGrds proposed design cross sections and all of the component data used to build the section (i.e., templates, slopes, superelevation, etc.). It also provides the ability to edit any of the component data and immediately see the change in the proposed cross section.

This process will display a design section at any location along the baseline with a list of all data types and recall numbers used to create the design section, and either display a scan line on the roadway's plan display for a 2D design file, or display the OG surface at the station in 3D space for a 3D design file. The Design Data Manager's shape

builder and design roadway's data can be accessed and revised through this dialog box and the section redisplayed to view changes.

This process is intended to be a design visualization and editing tool. The design reflects exactly what will be built in the earthwork/design process. The Design Section Display Process does not permanently store the design section; all graphics displays use temporary graphics. An option to save the original ground section at any selected location insures that the desired design section will be built during Earthwork Design. The Plan/Profile View and Sync View option enables you to see the plan view, profile view, and cross section view in three separate windows for a selected design cross section station.

Baseline Roadway

Roadway	Select the desired baseline roadway.
Station	<p>Select Option</p> <ul style="list-style-type: none"> • Enter/Select Enter or select the station where design section is to be built. • Begin The beginning station of the baseline is entered. • End The ending station of the baseline is entered.
Increment	<p>Enter the increment to be added to subtracted from the current plus station when the plus or minus buttons are used.</p> <p style="padding-left: 40px;">+ Enter and applying at a station one increment higher.</p> <p style="padding-left: 40px;">- Enter and applying at a station one increment lower.</p>
Animation	Depress the toggle button to animate the DSD Process. When selected, a time field will replace the Enter/Select option button and the Apply push button will be replaced by a Stop push button. Enter the time in seconds to display each cross section. Use the plus or minus push buttons to begin the animation, and the stop push button to end the animation. Toggle the animation off to return to the normal DSD mode.
Terrain Option	The Terrain Option dialog box is displayed so settings can be revised. (See page 8-13.)

Design Roadway

Roadway	Select the desired design roadway. This option box will contain all roadways (up to six) that make up the design section. When a roadway is selected, its defining design data appears in the List box.
Station	Displays the design roadway station relative to the baseline.
Offset	Displays the offset from the baseline to the design roadway at the active station.
Surface	When selecting the different surfaces an X is placed. Its next selection will remove the X. When applying this dialog all surfaces with an X will be displayed.
Synch Views	Check this box if it is desired to have the Plan and Profile views automatically re-centered as stations are incremented.
Settings	Press this button to access the Synch Plan/Profile View dialog box., See page 2-47.
Display O.G. Annotation	Enable option if original ground feature codes are to be annotated and color coded.
Select Feature Codes	Click the option button to select original ground feature codes for display. See discussion on page 8-15.
Show 3D Shapes	Enable option if selected 3D geometry elements are to be displayed.
Select Shapes	Click the option button to select 3D geometry elements. See discussion on page 8-17.
Display View	Select the MicroStation view to display the design roadway display. The design section will be displayed in this view using temporary graphics.
Flat Elevation	Enter an elevation to revise the flat terrain elevation.
Data Type	<p>A list of all the design data that was used to create the design section is displayed.</p> <p>Double click on a data type will display its the station dialog box for checking or modifying.</p> <p>Shift double click on template, sideslope, or median data type will display its shape dialog box for checking or modifying.</p>

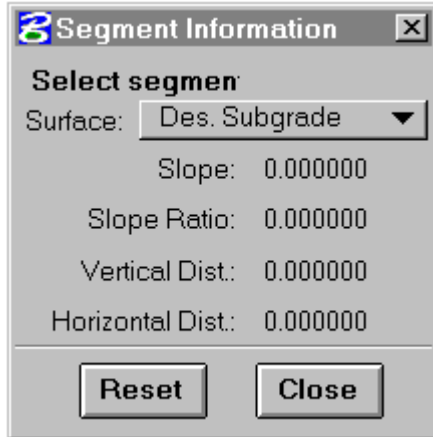
Segment	Select to display the dialog box Segment Information. (See page 8-14)
Point	Select to display the dialog box point information. (See page 8-14)
Apply	Displays the scan line, design section, and the list of all design data used to create the design section.
Save Org.	Select to permanently store the original ground cross section at this station. This will cause a design section to be built and stored at this station during the Earthwork Design process. (If this option is used, be sure to do a Horizontal Position Calculation before Earthwork Design is done.)
Fit	Fits the Design Section Display in the view selected in the Display View command. After doing a fit, any MicroStation view command (i.e., zoom in/out, window area, etc.) can be used.
DDM	Select to display the dialog box Design Data Manager. (See Chapter 6)
Close	Select to end process.

TERRAIN OPTIONS

Three terrain options are available when generating cross sections with Design Section Display. The first option uses a previously selected DTM project and surface (via the SET DTM PROJECT AND SURFACE command) and builds a complete cross section, including all design surfaces and the terrain surface. The second option uses the profile grade elevation biased by an entered elevation, and builds a complete cross section. The third option uses a flat terrain surface of user defined elevation defined by three points using the scan line widths. In this case, the Design Section is built from shoulder to shoulder reflecting any superelevation, widening, geometric template modification, etc.

<p>Terrain</p>	<p>Select the terrain to be used in the Design Section Display. The options are DTM, Profile Grade, or Flat Terrain.</p> <p>If DTM is selected, the DTM must be set before the section can be displayed. (See page 7-6.)</p> <p>If Flat Terrain is selected, only the shoulder to shoulder template will be displayed. The elevation can be changed in order to create a cut or fill condition.</p>
<p>Flat Elevation/ Elevation Bias</p>	<p>For Profile Grade option enter a bias elevation from the profile grade. For Flat Terrain option enter an elevation for the Flat Terrain.</p>
<p>Scan Line Width</p>	<p>Enter the distance left and right of the baseline centerline to specify the terrain cross section width. If Flat Terrain is selected, the Scan Line width is used to determine the flat terrain section using three points (i.e., distance left, elevation; zero, elevation; distance right, elevation).</p>
<p>Scan Line Attributes</p>	<p>Enter or select the color and width of the scan line. The scan line will appear in the plan view at the current section location.</p>

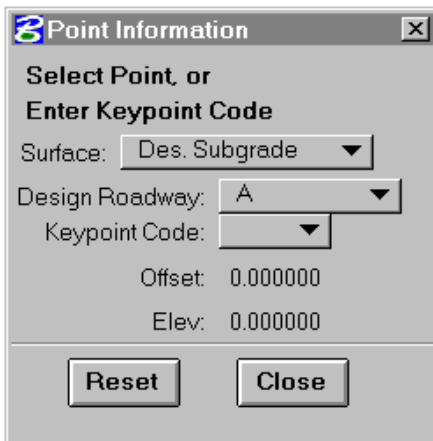
OK	Select OK to set the terrain option and scan line attributes.
Cancel	Select Cancel to exit command without any action.
Help	Display Help for this command.



Segment Information

This process will provide segment information from any segment selected from the design section display.

Surface	Select the surface of the segment to be selected.
Select Segment	When selecting a segment, the Segment Information is displayed.
Reset	Select to make this dialog box active.
Close	Select to end Segment Information.

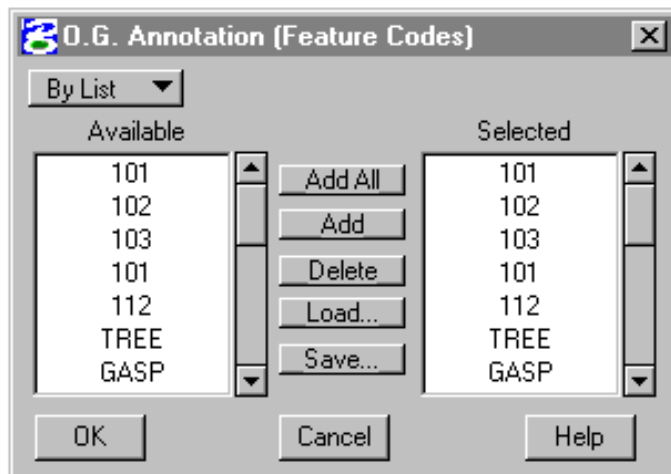


Point Information

This process will provide point information from any point selected from the design section display.

Surface	Select the surface of the point to be selected.
Select Point	When selecting a point, the Point Information is displayed.
Enter Point	When entering a Keypoint Code, the tab has to be used to display the Point Information.
Reset	Select to make this dialog box active.
Close	Select to end Point Information.

OG ANNOTATION FEATURE CODES



This dialog box is activated when the Select Feature Codes option button of the Design Section Display dialog box is clicked. It allows for the annotation of selected featured coded original cross section points retrieved from the DTM.

Feature Selection Options

By List - All feature codes are loaded in the “Available” list box. By default, all feature codes from this list are loaded in the “Selected” List Box. The “Delete” list box option is used to remove unwanted selections (see below).

By Class - All feature code classes are loaded in the Available list box. Selected classes from this list are loaded in the Selected list box.

List Box Options

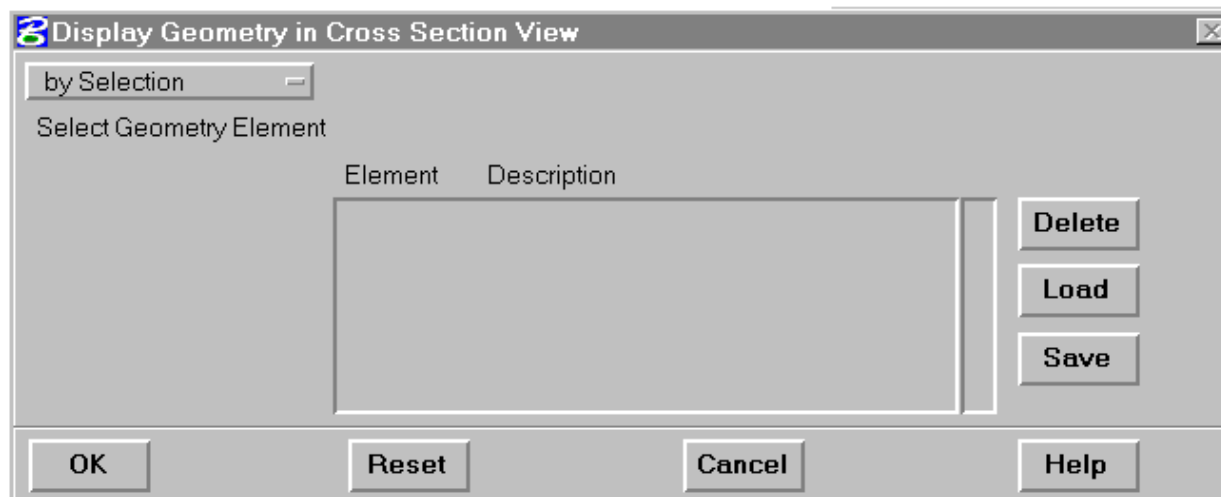
Add All - All feature codes from the Available list are loaded in the Selected list box by clicking the Add All action button. This is done by default when the dialog box is opened.

Add - Select feature codes in the Available list by highlighting, then click the Add action button to load them in the Selected list box.

Delete - Select feature codes in the Selected list box by highlighting, then remove them from the Selected list box by clicking the Delete action button.

Load...	Press this button to display the standard file open dialog to allow loading of previously saved feature codes. The default extension for feature code save files is .tfc. The contents of the .tfc file will be appended to the selected list.
Save...	Press this button to save the contents of the “Selected” list to a .tfc file. A standard file save dialog will appear.
OK	Select OK to set the terrain option and scan line attributes.
Cancel	Select Cancel to exit command without any action.
Help	Display Help for this command.

DISPLAY GEOMETRY IN CROSS SECTION VIEW

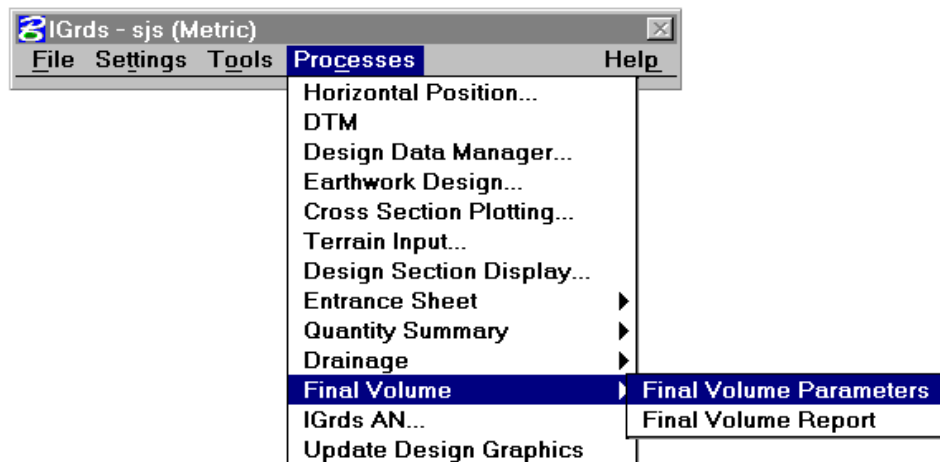


This dialog box is activated when the Select Shapes action button is selected on the Design Section Display dialog box. It allows for the selection of 3D geometry elements to be projected into the cross section view.

Element Selection Options	<p>By Selection - Point of the element in the graphic area. The element is added to the list box upon confirmation.</p> <p>With Fence Block - Define a rectangular area in the graphic area. All elements within the fence are added to the list box.</p> <p>With Fence Shape - Define an irregular fence in the graphic area. All elements within the fence are added to the list box.</p>
List Box Options	
Delete	Click to delete the highlighted record from the Selection List.
Load	Click to load the list box from a saved file. (See Load Geometry Element List from File, page 4-102.)
Save	Click to save the list box elements to a file. (See Save Geometry Element List to File, page 4-102).

Apply	Click to execute command.
Reset	Click to reset values.
Close	Click to dismiss dialog box.
Help	Click to display help for this command.

FINAL VOLUME PROCESS

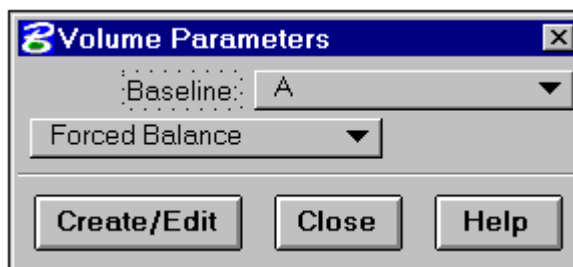


The Final Volume process is used to compute final earthwork volumes. These are the volumes of cut and fill calculated between terrain (original ground) cross sections and final (as-built) cross sections.

The Final Volume process menus are accessed by clicking on Processes on the IGrds menu bar which displays the Process menus. Moving down and clicking on Final Volume will display the names of the two available menus associated with this process. These two menus are Final Volume Parameters and Final Volume Report.

Final Volume Parameters

Before a Final Volume computation can be made, it is necessary to set up the conditions for it. This is done by entering the required calculation parameters through a set of Volume Parameter menus. Selecting Final Volume Parameters from the list mentioned above, brings up the first of these. These Final Volume Parameters are not stored, so once the user gets out of the IGrds session, these parameters are gone. For the same reason, the user will be unable to use Final Volume Parameters from an AN run in an IGrds IG session. This menu is the Volume Parameters menu shown below.



Baseline Name Button	Click on the Baseline roadway button and hold the cursor button down to reveal all available baseline roadway names. To select a given roadway, move the cursor over the name, and release the cursor button.
Parameter Menu Option Button	Click on the Parameter Menu Option button and hold the cursor button down to reveal all available parameter menus. Move the cursor over the desired menu, and release the cursor button. This action permits the named menu to be displayed when the Create/Edit button is selected. The four menus are: Forced Balance, Compaction Factors, Added Quantities and Volume Exceptions.
Create/Edit	Click on this button when it is desired to display the selected Parameter menu for creation, review or editing.
Close	Click on this button to dismiss the Volume Parameters menu.
Help	Click on this button to display help information about this command.

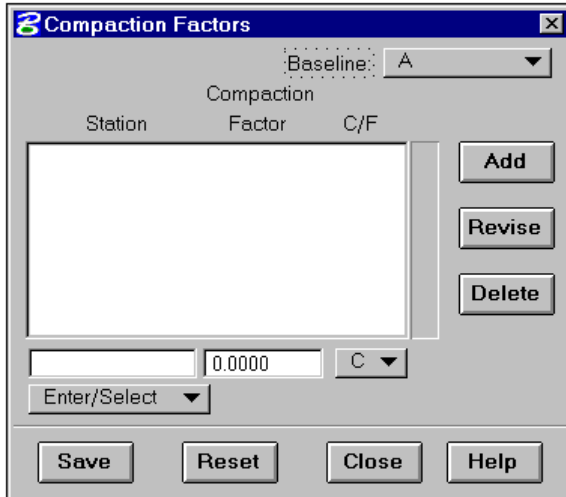
Forced Balance Stations



Selecting Forced Balance on the Volume Parameters menu brings up a display of the Forced Balance Stations menu shown at left. This menu is used to specify the stations along the given baseline at which earthwork balances are to be created.

Baseline Name Button	Click on the Baseline roadway button and hold the cursor button down to reveal all available baseline roadway names. To select a given roadway, move the cursor over the name, and release the cursor button.
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Record Actions	
Add	Click on this button to add a new data record from the edit field below the scrolled area. It will be entered in station order.
Revise	Click on this button to revise the highlighted station in the scrolled area with the station value in the edit field below the scrolled area.
Delete	Click on this button to delete the highlighted station record in the scrolled area.
Record Data	
Station	<p>Select Option</p> <ul style="list-style-type: none"> • Enter/Select Enter a station for a Forced Balance point, or use the cursor to graphically select this station from the plan display. • Begin The beginning station of the given baseline roadway will be displayed. • End The ending station of the given baseline roadway will be displayed.
Save	Click on the Save button to save the data as displayed in the scrolled record area.
Reset	Click on the Reset button to reset all data in the scrolled record area to its status after the last save of this data was made.
Close	Click on the Close button to dismiss this menu. If changes have been made, an opportunity to save them will be given.
Help	Click on the Help button to display help for this process.



Compaction Factors

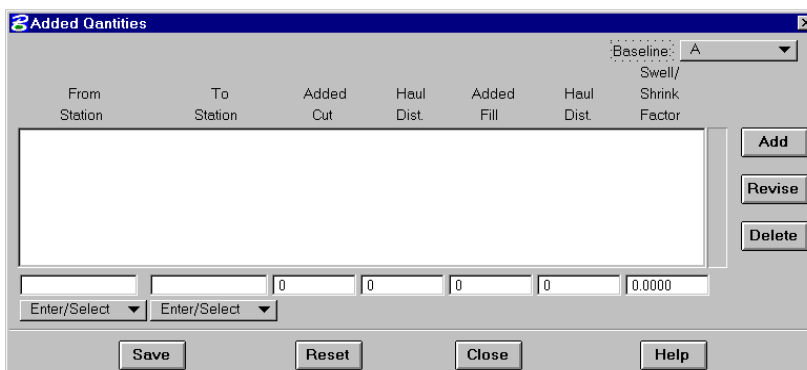
Selecting Compaction Factors on the Volume Parameters menu brings up a display of the Compaction Factors menu shown at left. This menu is used to specify stations on the baseline roadway and the compaction factors to be applied from those stations forward until changed by a like entry at a subsequent station.

Baseline Name Button	Click on the Baseline roadway button and hold the cursor button down to reveal all available baseline roadway names. To select a given roadway, move the cursor over the name, and release the cursor button.
Record Actions	
Add	Click on this button to add a new data record from the edit fields below the scrolled area. It will be entered in station order.
Revise	Click on this button to revise the highlighted record in the scrolled area with the revised values in the edit fields below the scrolled area.
Delete	Click on this button to delete the highlighted record in the scrolled area.
Record Data	
Station	<p>Select Option</p> <ul style="list-style-type: none"> • Enter/Select Enter a station at which a Compaction Factor is to be applied, or use the cursor to graphically select this station from the plan display. • Begin The beginning station of the given baseline roadway will be displayed.

	<ul style="list-style-type: none"> • End The ending station of the given baseline roadway will be displayed.
Compaction Factor	Enter the compaction factor (for either shrinkage or swell) to be applied to the fill or cut volumes from this station forward.
C/F Option Button	Click and hold and select either C or F to indicate whether the compaction factor entered at this station is to apply to Cut or Fill Volumes.
Save	Click on the Save button to save the data as displayed in the scrolled record area.
Reset	Click on the Reset button to reset all data in the scrolled record area to its status after the last save of this data was made.
Close	Click on the Close button to dismiss this menu. If changes have been made, an opportunity to save them will be given.
Help	Click on the Help button to display help for this process.

Added Quantities

Selecting Added Quantities on the Volume Parameters menu brings up a display of the Added Quantities menu shown below. This menu is used to specify the stations along the given baseline at which added volumes of cut or fill are to be applied. Quantities may be added either at a single station, or they may be applied over a specified range of stations. Positive or negative cut or fill volumes may be entered as added quantities, and will be added algebraically to the accumulated cut and fill totals.



Baseline Name Button	Click on the Baseline roadway button and hold the cursor button down to reveal all available baseline roadway names. To select a given roadway, move the cursor over the name, and release the cursor button.
Record Actions	
Add	Click on this button to add a new data record from the edit fields below the scrolled area. It will be entered in station order.
Revise	Click on this button to revise the highlighted record in the scrolled area with the revised values in the edit fields below the scrolled area.
Delete	Click on this button to delete the highlighted record in the scrolled area.
Record Data	
From Station	<p>Select Option</p> <ul style="list-style-type: none"> • Enter/Select Enter a station where an added quantity is to be applied, or the beginning station of a range of stations over which added quantities will be applied. Alternatively, the cursor may be used to graphically select this station from the roadway plan display. • Begin The beginning station of the given baseline roadway will be displayed.
To Station	<p>Select Option</p> <ul style="list-style-type: none"> • Enter/Select Enter the ending station in a range of stations over which added quantities are to be applied. Alternatively, use the cursor to graphically select this station from the plan display. (Do not enter data in this field for a point source application.)

	<ul style="list-style-type: none"> • End The ending station of the given baseline roadway will be displayed.
Added Cut	Enter the volume of cut to be applied as a point source at the specified station, or on a per station basis if being applied over a range of stations.
Haul Dist.	Enter the haul distance to be applied in conjunction with the added cut quantity.
Added Fill	Enter the volume of fill to be applied as a point source at the specified station, or on a per station basis if being applied over a range of stations.
Haul Dist.	Enter the haul distance to be applied in conjunction with the added fill quantity.
Swell/Shrink Factor	Enter the swell or shrinkage factor to be applied to the added quantity of cut or fill entered.
Save	Click on the Save button to save the data as displayed in the scrolled record area.
Reset	Click on the Reset button to reset all data in the scrolled record area to its status after the last save of this data was made.
Close	Click on the Close button to dismiss this menu. If changes have been made, an opportunity to save them will be given.
Help	Click on the Help button to display help for this process.

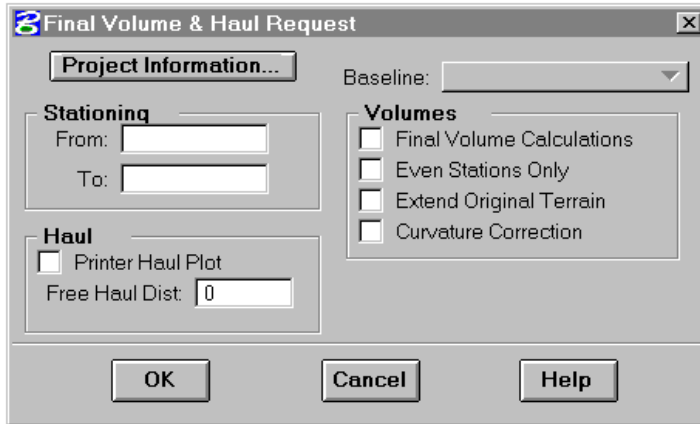
Volume Exceptions

Selecting Volume Exceptions on the Volume Parameters menu brings up a display of the Volume Exceptions menu shown below. Volume Exception data is used to define those areas over which no earthwork calculations are to take place. The beginning and ending of a volume exception may be tapered by giving the stations at the beginning and ending cross sections of the tapers, and the stations having zero end areas. No quantities are calculated between the two zero end areas. If no tapering is to be done, zero end area stations are not given. There must be cross sections at all listed stations.

Baseline Name Button	Click on the Baseline roadway button and hold the cursor button down to reveal all available baseline roadway names. To select a given roadway, move the cursor over the name, and release the cursor button.
Record Actions	
Add	Click on this button to add a new data record from the edit fields below the scrolled area. It will be entered in station order.
Revise	Click on this button to revise the highlighted record in the scrolled area with the station values in the edit fields below the scrolled area.
Delete	Click on this button to delete the highlighted station record in the scrolled area.

Record Data	
Back Station	Option <ul style="list-style-type: none">• Enter/Select Enter the station where a volume exception is to begin or the station where a volume exception taper is to begin. Alternatively, use the cursor to select this station from the plan display.
0.0 Area Station	Option <ul style="list-style-type: none">• Enter/Select Enter the station where a volume exception taper ends with a zero end area. If not tapering, do not enter data. Alternatively, use the cursor to select this station from the plan display.
Ahead Station	Option <ul style="list-style-type: none">• Enter/Select Enter the station where a volume exception is to end or the station where a volume exception forward taper ends in a full section. Alternatively, use the cursor to select this station from the plan display.
Save	Click on the Save button to save the data as displayed in the scrolled record area.
Reset	Click on the Reset button to reset all data in the scrolled record area to its status after the last save of this data was made.
Close	Click on the Close button to dismiss this menu. If changes have been made, an opportunity to save them will be given.
Help	Click on the Help button to display help for this process.

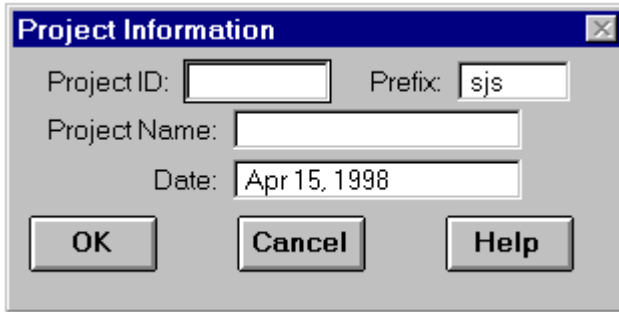
Final Volume Report (Displayed as Final Volume & Haul Request)



After the Final Volume Parameters have been set, a Final Volume & Haul Request can be made. Selecting Final Volume Report from the IGrds Processes pulldown menu list brings up the Final Volume & Haul Request menu shown at the left.

Project Information	Clicking on this button will cause the Project Information sub-menu to be displayed. (This menu is described below.)
Baseline Name Button	Click on the Baseline roadway button and hold the cursor button down to reveal all available baseline roadway names. To select a given roadway, move the cursor over the name, and release the cursor button.
Stationing	
From:	Enter or select the baseline station at which final volume computations are to begin.
To:	Enter or select the baseline station at which final volume computations are to end.
Volumes Option Switches:	
Final Volume Calculations	Depress this switch to produce final volume calculations over the indicated station range.
Even Stations Only	Depress this switch to produce a report where only the even stations (those ending in +00 or +000) volumes are printed.
Extend Original Terrain	Depress this switch to cause a horizontal extension of the last original cross section point if the final cross section extends beyond the bounds of the original section. If this option is not invoked, any cross sections of this type will be skipped in the volume computation process.

Curvature Correction	Depress this switch when it is desired to correct the final volume computations for horizontal curvature. A horizontal alignment must exist for the specified baseline to use this option.
Haul Plots Option Switches:	
Printer Haul Plot	Depress this switch to create a printed haul plot as part of the printed output report produced by this process.
Free Haul	Enter the free haul distance to be used for the haul calculations.
OK	Click on the OK button to execute the final volume computation process.
Cancel	Click on the Cancel button to dismiss this menu without taking any action.
Help	Click on the Help button to display help for this process.

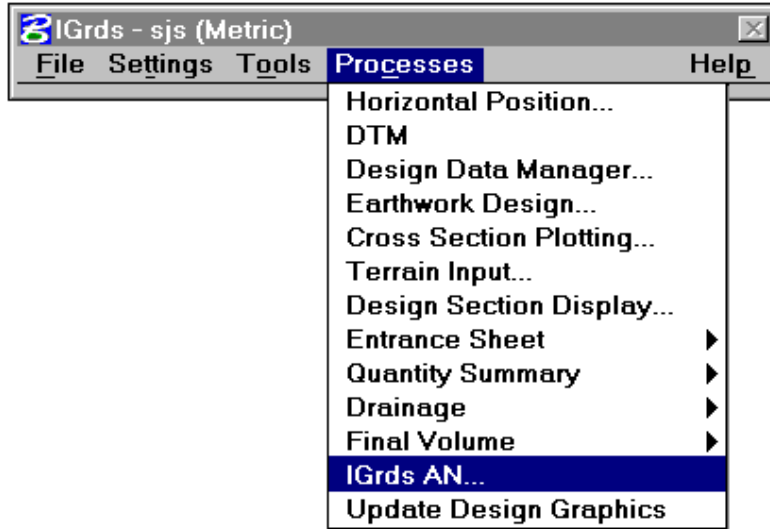


Project Information

The Project Information sub-menu shown at the left is displayed when the Project Information option button is selected on the Final Volume & Haul Request menu described above. The data appearing in the edit boxes of this menu will also appear as the identifying information printed on the final volume output report.

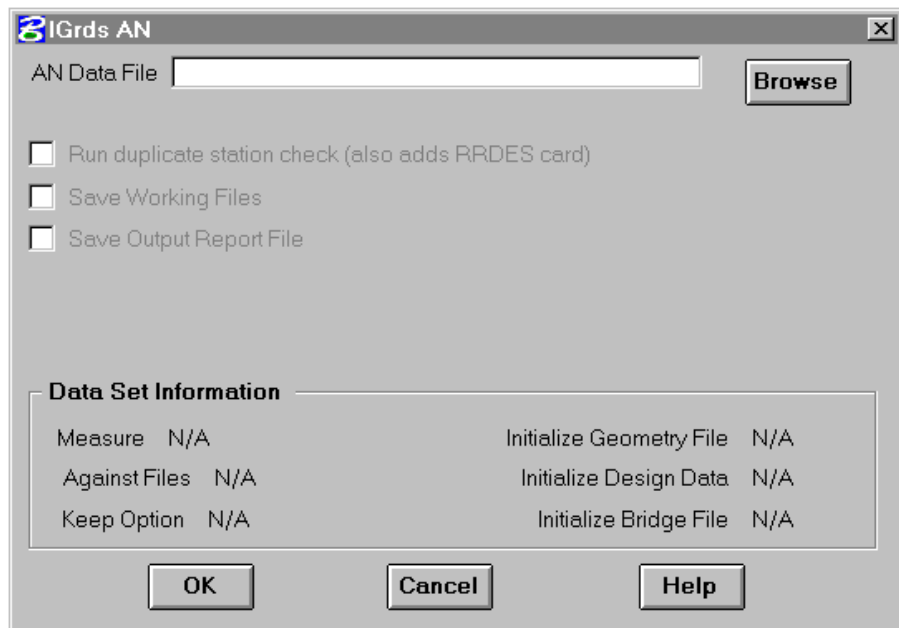
Project ID	Project Identification (up to 3 characters).
Prefix	Earthwork output file prefix.
Project Name	Project Name.
Date	The current date (&date) will be displayed. Enter a different date if desired.
OK	Click on the OK button to commit the data appearing in the edit boxes for use on the output report.
Cancel	Click on the Cancel button to dismiss this menu without making any changes. Current data displayed in the edit fields will appear on the output report.
Help	Click on the Help button to display help for this process.

IGrds AN PROCESS



The IGrds AN process permits the execution of AN data sets without exiting from IG. This command is designed to allow running AN datasets against IG working files only. The AN system card must have the WF option specified.

Access to the process is achieved by clicking on Processes on the IGrds menu bar and then selecting the menu item named IGrds AN... . The dialog box shown below will be displayed as a result of this action.



IGrds AN Option

The IGrds AN option is designed to permit users to input all the information normally required for a similar "batch" type AN data run, without leaving the current IGrds design session.

AN Data File	Enter the name of the data file which is to be used with this AN process run. Enter the name with its full directory path name. As an alternate to keying in the name, use the Browse button to select it. (See Notes at the end of the input instructions for this command.)
Browse	Clicking on the Browse button causes the Select Data File dialog to be displayed. Use this dialog to search for, and select, the desired data file to be used with this process. When found, highlight it in the scrolled area and select the OK button to cause that file name to be inserted in the AN Data File input box. (See Notes below.)
Working File to Run Against	Enter the name of the working file to be used with this process if different from the data file name. (This field only appears when a valid data file name has been input.)
Run Options	Options <ul style="list-style-type: none"> • Run duplicate station check Depress this toggle button to check for duplicate stations and revise an RRDES card image to the data set. • Save Working Files Depress this toggle button if working files are to be saved at the end of this process. (Doing so reveals the Working File Name input box.) • Save Output Report File Depress this toggle button if an output report file is to be saved at the end of this process. (Doing so reveals the Output File Name input box.)

Working File Name	Enter the name to be used for the working files to be saved. (Default name is displayed.)
Output File Name	Enter the name to be used for the output report file to be saved. (Default name is displayed.)
RT34/RT40 Punch File Name	Enter the name to be used for the punch file to be saved. (Default name is displayed.)
Output Directory	Enter the name of the directory where the working, output, and punch files are to be stored at the end of the process. (Default name is displayed.)
Data Set Information	<p>Key items of information pertaining to the data set to be run appear in the "read only" display area.</p> <ul style="list-style-type: none"> • Measure Displays Imperial or Metric. • Against Files Displays Yes or No. • Keep Option Displays Yes or No. • Initialize Geometry File Displays Yes or No. • Initialize Design Data Displays Yes or No. • Initialize Bridge File Displays Yes or No.
OK	Click on the OK button to execute this process with the data specified in the dialog.
Cancel	Click on the Cancel button to dismiss this dialog without taking any action.
Help	Click on the Help button to display help for this process.

Notes: ***The AN process should only be used to bring forward older batch data files.***

*An Alert message, "Data set is not run against working files" will appear if the AN Data File named does not contain the proper specification for this condition. This process requires the data set to be run against working files. Select **OK** or **Cancel** to remove the message and edit the data to correct the condition before attempting to run the process with that data.*

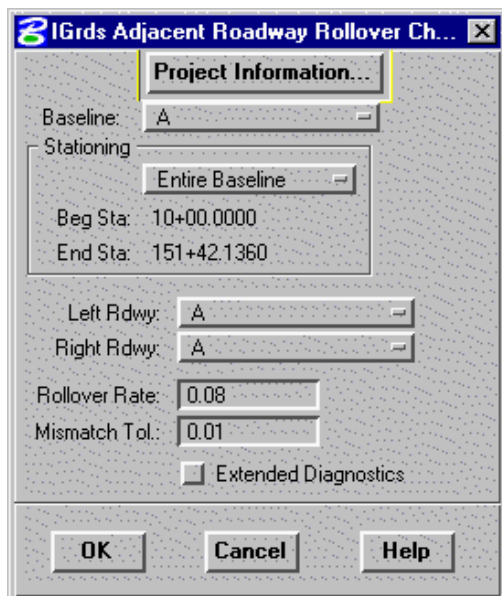
*An Alert message, "Data set is not valid for IGrds AN as it has no SYSTEM card" will appear when the SYSTEM card is not present in the data file. Select **OK** or **Cancel** to remove the message and edit the data to correct the condition before attempting to run the process with that data.*

*An Alert message, "Data set does not have compatible stationing with working files." will appear when the PARAM card in the data set does not have the same stationing value for metric as the working files do. If the working files are set for hundred meter stationing (+NN.), then if the PARAM card is used, column 13 must be blank. If the working files are set for thousand meter stationing (+NNN.), then if the PARAM card is used, column 13 must have an X in it. Select **OK** or **Cancel** to remove the message and edit the data to correct the condition before attempting to run the process with that data.*

*An Alert message, "Data set does not have compatible precision with working files." will appear when the PARAM card in the data set does not have the same precision for metric as the working files do. If the working files are set for 2 decimal places (.NN) for terrain, then if the PARAM card is used, column 14 must be blank. If the working files are set for 3 decimal places (.NNN) for terrain, then if the PARAM card is used, column 14 must have an X in it. Select **OK** or **Cancel** to remove the message and edit the data to correct the condition before attempting to run the process with that data.*

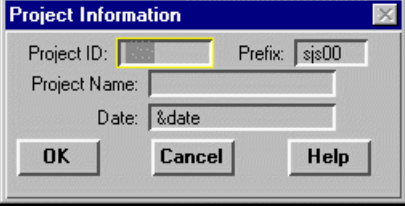
An Alert message, "Data set cannot have plotting cards with it." will appear when there are plotting cards in the data set. No plotting cards are allowed in the data set.

ADJACENT ROADWAY ROLLOVER CHECK



This process will check the rollover (algebraic difference between adjacent segments) for two adjacent roadways. The cross slope of the rightmost segment of the left roadway is compared with the cross slope of the leftmost segment of the right roadway. Reports are generated by the process to indicate whether the rollover is within an entered rollover rate and a vertical mismatch tolerance.

Baseline	Select the baseline.
Stationing	Select or Enter the stationing you wish to calculate and report the adjacent rollover check.
Left Roadway	Select the left roadway.
Right Roadway	Select the right roadway.
Rollover Rate	Enter the maximum rollover rate between the two adjacent roadways.
Mismatch Tolerance	Enter the maximum vertical segment length between the two adjacent roadways.
Extended Diagnostics	Check the extended Diagnostics Box to create an extended diagnostics listing in adjchk.lis.
OK	Click to execute requests.
Cancel	Click to cancel the process.
Help	Click to display help for the current dialog box.

	
Project Information	Click on to review/change project information.
Project ID	Project Identification (up to 3 characters).
Prefix	Earthwork output file prefix.
Project Name	Project Name.
Date	Date to be shown on reports. “&date” is the current date.
OK	Click to save and use displayed data.
Cancel	Click to cancel dialog box.
Help	Click to display help for this dialog box.

Examples of the Adjacent Roadway Rollover Check Listing (.tmp) and the Extended Diagnostics Listing (adjchk.lis) are on the following pages.

**EARTHWORK AND QUANTITY CALCULATION PROCESSES
ADJACENT ROADWAY ROLLOVER CHECK**

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PAGE 1

ROADWAY DESIGN SYSTEM *** DESIGN DATA ***
ADJACENT ROADWAY ROLLOVER CHECK REPORT

BASELINE ROADWAY 'arl ' , LEFT DESIGN ROADWAY 'arl ' , RIGHT DESIGN ROADWAY 'arr '

BASELINE STATION	VERTICAL SEGMENT	()	EXCEEDS	THE	ACCEPTABLE	LIMIT	()
1+000.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+000.000	ADJACENT ROLLOVER	(-0.200010)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)
1+020.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+020.000	ADJACENT ROLLOVER	(-0.192009)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)
1+040.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+040.000	ADJACENT ROLLOVER	(-0.184008)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)
1+060.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+060.000	ADJACENT ROLLOVER	(-0.176008)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)
1+080.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+080.000	ADJACENT ROLLOVER	(-0.168007)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)
1+100.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+100.000	ADJACENT ROLLOVER	(-0.160006)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)
1+120.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+120.000	ADJACENT ROLLOVER	(-0.152005)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)
1+140.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+140.000	ADJACENT ROLLOVER	(-0.144004)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)
1+160.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+160.000	ADJACENT ROLLOVER	(-0.136004)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)
1+180.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+180.000	ADJACENT ROLLOVER	(-0.128003)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)
1+200.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+200.000	ADJACENT ROLLOVER	(-0.120002)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)
1+220.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+220.000	ADJACENT ROLLOVER	(-0.112001)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)
1+240.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+240.000	ADJACENT ROLLOVER	(-0.104000)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)
1+260.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+260.000	ADJACENT ROLLOVER	(-0.096000)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)
1+280.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+280.000	ADJACENT ROLLOVER	(-0.087999)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)
1+300.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+300.000	ADJACENT ROLLOVER	(-0.079998)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)
1+320.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+320.000	ADJACENT ROLLOVER	(-0.071997)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)
1+340.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+340.000	ADJACENT ROLLOVER	(-0.063996)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)
1+360.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+360.000	ADJACENT ROLLOVER	(-0.055996)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)
1+380.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+380.000	ADJACENT ROLLOVER	(-0.047995)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)
1+400.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+400.000	ADJACENT ROLLOVER	(-0.039994)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)
1+420.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+420.000	ADJACENT ROLLOVER	(-0.031993)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)
1+440.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+440.000	ADJACENT ROLLOVER	(-0.023992)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)
1+460.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+460.000	ADJACENT ROLLOVER	(-0.015992)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)
1+480.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+480.000	ADJACENT ROLLOVER	(-0.007991)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)
1+500.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+500.000	ADJACENT ROLLOVER	(0.000010)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)
1+520.000	VERTICAL SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)
1+520.000	ADJACENT ROLLOVER	(0.192009)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)

**EARTHWORK AND QUANTITY CALCULATION PROCESSES
ADJACENT ROADWAY ROLLOVER CHECK**

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ROADWAY DESIGN SYSTEM *** DESIGN DATA ***
ADJACENT ROADWAY ROLLOVER CHECK REPORT

BASELINE ROADWAY 'arl' ', LEFT DESIGN ROADWAY 'arl' ', RIGHT DESIGN ROADWAY 'arr' '

BASELINE STATION									
1+540.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+540.000	ADJACENT	ROLLOVER	(0.184008)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+560.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+560.000	ADJACENT	ROLLOVER	(0.176008)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+580.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+580.000	ADJACENT	ROLLOVER	(0.168007)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+600.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+600.000	ADJACENT	ROLLOVER	(0.160006)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+620.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+620.000	ADJACENT	ROLLOVER	(0.152005)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+640.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+640.000	ADJACENT	ROLLOVER	(0.144004)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+660.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+660.000	ADJACENT	ROLLOVER	(0.136004)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+680.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+680.000	ADJACENT	ROLLOVER	(0.128003)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+700.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+700.000	ADJACENT	ROLLOVER	(0.120002)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+720.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+720.000	ADJACENT	ROLLOVER	(0.112001)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+740.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+740.000	ADJACENT	ROLLOVER	(0.104000)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+760.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+760.000	ADJACENT	ROLLOVER	(0.096000)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+780.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+780.000	ADJACENT	ROLLOVER	(0.087999)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+800.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+800.000	ADJACENT	ROLLOVER	(0.079998)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+820.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+820.000	ADJACENT	ROLLOVER	(0.071997)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+840.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+840.000	ADJACENT	ROLLOVER	(0.063996)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+860.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+860.000	ADJACENT	ROLLOVER	(0.055996)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+880.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+880.000	ADJACENT	ROLLOVER	(0.047995)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+900.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+900.000	ADJACENT	ROLLOVER	(0.039994)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+920.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+920.000	ADJACENT	ROLLOVER	(0.031993)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+940.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+940.000	ADJACENT	ROLLOVER	(0.023992)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+960.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+960.000	ADJACENT	ROLLOVER	(0.015992)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)	
1+980.000	VERTICAL	SEGMENT	(0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
1+980.000	ADJACENT	ROLLOVER	(0.007991)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)	
2+000.000	VERTICAL	SEGMENT	(-0.020)	EXCEEDS	THE	ACCEPTABLE	LIMIT	(0.010)	
2+000.000	ADJACENT	ROLLOVER	(-0.000010)	WITHIN	THE	ACCEPTABLE	LIMIT	(0.080000)	
2+020.000	ROADWAY 'arl			AND ROADWAY 'arr					' DO NOT EXIST AT THIS AND THE

FOLLOWING STATIONS

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