MDOT Earthwork Spreadsheet

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General

This document provides guidance for using the MDOT Earthwork Spreadsheet. The MDOT Earthwork Spreadsheet is a macro enabled workbook which allows users to import earthwork end area data generated by Power Geopak SS4 and create volume sheet quantities.

To utilize this spreadsheet, static cross sections and the end area volumes report must be generated utilizing Power Geopak SS4. A companion Earthwork workflow has been developed, and is located at the following location: Workflow - Earthwork Calculations using End Area Volumes. This document details the steps needed to create static cross sections and report earthwork volumes.

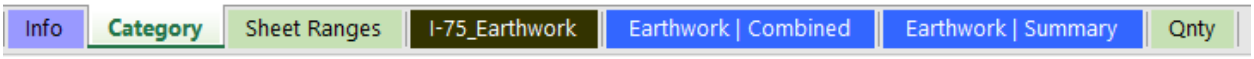
Opening the Earthwork Spreadsheet

When opening the Earthwork Spreadsheet, a security warning may appear. Select "Enable Content" to allow macros within the workbook to run properly.

Using the Earthwork Spreadsheet

Filling Category Information

1. Fill in the required information in the Category tab of the spreadsheet
    a. Information in this tab can be copy/pasted directly from a Project Quantity Spreadsheet (PQS)
    b. For information on the Project Quantity Spreadsheet, see the PQS Guidance Document

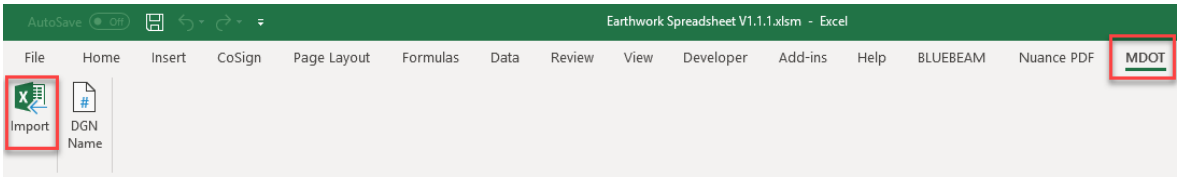


Funding Code	Job No.	Category No.	Category Alt.	Category Description (Road Only)	Structure Number (Bridge Only)	Section Group	Fund Description	Cat Desc
12345 - 0001	12345	0001		Road		1RD	90% Fed, 10% State	Road 90% Fed, 10% State

Importing Earthwork Reports

1. Import the required earthwork report into the spreadsheet by selecting the Import button on the MDOT Ribbon

    a. **Volumes with Replaced Added to Normal Fill** is the only earthwork report that may be imported into the spreadsheet



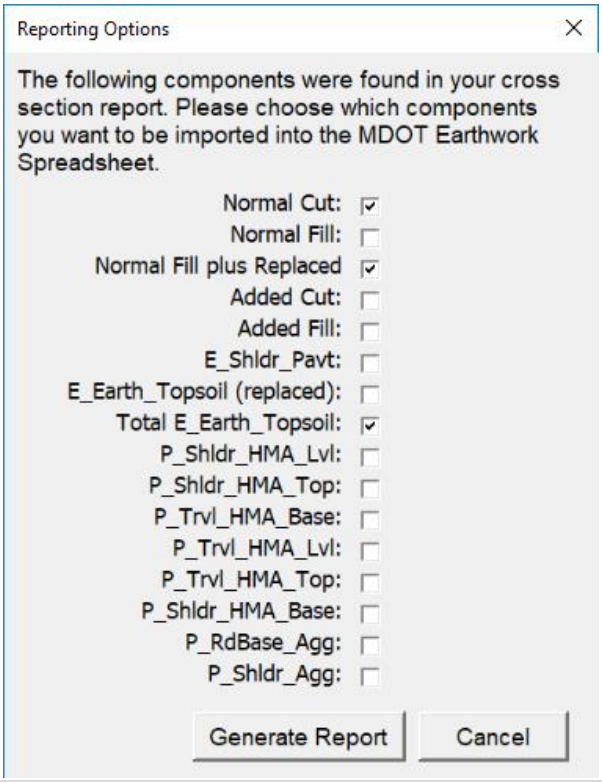
2. Select the components from the earthwork report to be imported into the earthwork spreadsheet

3. Select Generate Report when all desired components have been added

    a. The spreadsheet will read the earthwork report, and only include components that are checked in the dialogue box

    b. The spreadsheet reformats the original report into a table to simplify quantity calculations

    c. Multiple reports can be imported into the same earthwork spreadsheet. Additional tabs will be created for each report that is imported.



Station	Region	DGN Name	Funding Code	Work Item	Distance: Ft
605+00.00	R2	I-75_005	12345 - 0001	EB	0
605+50.00	R2	I-75_005	12345 - 0001	EB	50
606+00.00	R2	I-75_005	12345 - 0001	EB	50
606+50.00	R2	I-75_005	12345 - 0001	EB	50
607+00.00	R2	I-75_005	12345 - 0001	EB	50
607+50.00	R2	I-75_005	12345 - 0001	EB	50

Station – The station of the cross that the cross section was cut

Region – The region of the alignment that the cross section was cut

DGN Name – Using MDOT Guidelines**.** Since this table includes both excavation and embankment the sheet type should not be included in the DGN sheet type (i.e. Rem or Con).

Example: I-75_001.

Assigning the DGN names can be automated (See Assigning Sheet Breakdowns)

Work Item – Used in the same way as the Project Quantity Spreadsheet

Distance: Ft – The distance between cross sections.

Note: This field will not calculate if there is a station equation in the alignment. The user will have to manually input the distance at the station equation location.

Normal Cut: S	Normal Fill: S	Total E_Earth_Topsoil : Sft	Normal Cut: Cyd	Normal Fill: C	Total E_Earth_Topsoil : Cyd	Excavation, Earth: Cyd	Embankment, CIP: Cyd	Topsoil Stripping: Cyc
4.56	172.88	30.41	0.00	0.00	0.00	0.00	0.00	0.00
9.28	134.71	24.08	12.82	284.81	50.45	69.59	313.29	55.50
11.02	105.63	22.53	18.80	222.54	43.16	68.16	244.79	47.47
19.10	70.72	20.44	27.89	163.29	39.79	74.46	179.62	43.77
29.66	41.92	18.27	45.15	104.30	35.84	89.09	114.73	39.43
43.59	18.20	16.23	67.82	55.67	31.94	109.74	61.23	35.13

Component End Areas | Component Volumes | Final Quantities

Component End Areas – The user should verify the reported end areas against the static cross sections. These fields are editable by the user if Geopak did not create the end area shape properly.

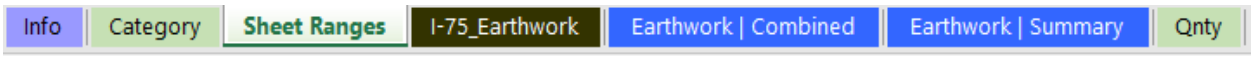
Component Volumes – These fields are not editable by the user. This is a calculated field that uses the end area volume method using other data from this table.

Final Quantities – The user must input formulas into these cells to calculate the final quantities. These formulas should contain contingencies if desired. Note that unsuitable materials (i.e. Topsoil) are not included in the "Normal Cut" end areas or volumes.

Example: Excavation, Earth: Cyd = (Normal Cut: Cyd + Total E_Earth_Topsoil: Cyd) * 1.1

Assigning Sheet Breakdowns

Sheet breakdowns can be assigned after importing an earthwork report using the Sheet Ranges tab.



Alignment	Station Begi	Region Begi	Station End	Region End	DGN1	DGN3	DGN Name
NB_I-75_NL_ALI	580+00.00	R2	585+00.00	R2	I-75	001	I-75_001
NB_I-75_NL_ALI	585+00.00	R2	590+00.00	R2	I-75	002	I-75_002

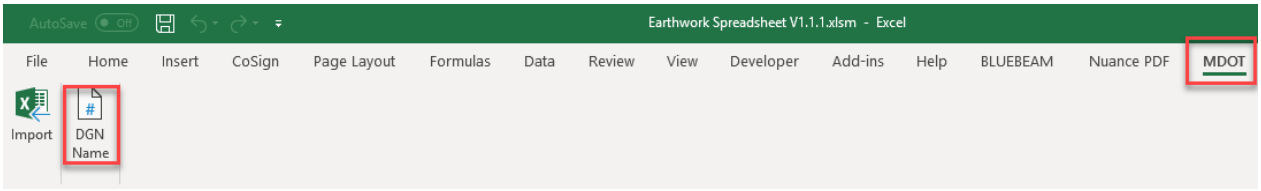
Alignment – This column is a dynamic dropdown. The dropdown is populated by the alignment names found in the header of each imported earthwork report.

Station Begin / Station End – This information represents the station at the beginning and end of a cut plan sheet.

Region Begin / Region End – This information represents the region of the alignment at the beginning and end of a cut plan sheet. This is required even if no station equations are included in the alignment. The format of the region should the same that is shown in the Region column of the imported earthwork report. This field is case sensitive.

DGN1 / DGN3 – This is used to generate quantities by sheet for copying quantities into the Project Quantity Spreadsheet. The format should match the applicable DGN from the PQS in order to be properly imported into the PQS.

After the required information has been filled in, sheet breakdowns can be auto-generated by activating the tab that contains the imported earthwork report and selecting DGN Name from the MDOT Ribbon.



Summarizing Quantities

Earthwork | Combined copies information from each earthwork report that has been imported into the spreadsheet. Multiple reports can be imported into the same earthwork spreadsheet.

Earthwork | Summary summarizes the data in the Earthwork | Combined tab.

Qnty reformats the information in the Earthwork | Summary tab in order to be copied into the project quantity spreadsheet.

All three of these tabs are updated automatically when any of them are opened. The user does not need to fill any information in these tabs.