

Report Date: 15 Nov 2013

**Summary Report for Individual Task
052-243-1541
Produce Civil Engineering Drawings
Status: Approved**

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

DESTRUCTION NOTICE: None

Condition: Given a computer system with Terramodel software installed, points file, design specifications, Terramodel user guide, and Field Manual (FM) 5-430-00-1. This task should not be trained in MOPP.

Standard: Produce civil engineering drawings in accordance with design specifications that include a site plan, plan & profile drawings, cross section drawings, an earthwork report, and a mass haul analysis.

Special Condition: None

Safety Level: Low

MOPP: Never

Task Statements

Cue: None

DANGER

None

WARNING

None

CAUTION

None

Remarks: None

Notes: None

Performance Steps

1. Power on the computer and start the Terramodel software.
2. Develop a new project file.
 - a. Create a new project.
 - b. Import the points file from the instrument or a saved location on the computer.
 - c. Load the Roadsteps workspace.
3. Produce the Horizontal Alignment (HAL).
 - a. Establish the HAL by designating specific points as the HAL.
 - b. Draw the HAL.
 - c. Create horizontal curves on the HAL design.
 - d. Produce a Coordinate Geometry (COGO) report.
 - e. Set the active alignment.
 - f. Register the HAL in the HAL manager.
 - g. Select the Road Cross Section lines (X-lines).
 - h. Draw the Road Cross Section lines (X-lines).
4. Establish existing and proposed profiles.
 - a. Create the existing vertical profile along the HAL.
 - b. Set the layer to the vertical alignment (VAL).
 - c. Create the proposed VAL.
 - d. Create vertical curves on the profile.
 - e. Produce a profile report.
 - f. Register the VAL in the VAL manager.
5. Establish the road job and roadway surfaces.
 - a. Create the road job and the road settings in the Road job manager.
 - b. Create roadway surfaces in the Surface manager.
 - c. Import the road template.

- d. View the road job.
6. Calculate earthwork and balance cut & fill reports
- a. Calculate the earthwork.
 - b. Generate digital-terrain model (DTM) points from the roadway design.
 - c. Generate earthwork report.
 - d. Generate the mass haul analysis.
7. Prepare project information for the Automated Sheet Assembly Plan (ASAP) program.
- a. Input project general information.
 - b. Prepare the HAL and the VAL for plotting.
 - (1) Label the HAL with stations and curve data using the Horizontal Alignment Labeling manager.
 - (2) Label the VAL with stations and elevations using the Vertical Alignment Labeling manager.
 - c. Prepare the PlanSet.
 - (1) Develop the Cover Sheet.
 - (2) Develop Master sheets.
 - (a) Develop the Site Plan master.
 - (b) Develop the Plan & Profile master.
 - (c) Develop the Cross Section master.
 - (3) Develop Insertion Point Markers to designate the locations of each drawing in the PlanSet.
8. Create the drawings.
- a. Create the Site Plan drawing to include the North Arrow and Scale.
 - b. Create the Plan & Profile drawings.
 - c. Create the Cross Section sheets.
9. Plot the drawings as needed.

(Asterisks indicates a leader performance step.)

Evaluation Guidance: Score the Soldier GO if all steps are passed (P). Score the Soldier NO-GO if any step is failed (F). If the Soldier fails any step, show them how to do it correctly.

Evaluation Preparation: Setup: Provide the Soldier with the items that are listed in the condition statement. Ensure that all safety precautions are followed. Prepare the testing site and equipment in advance to ensure that the task standard can be met.

Briefing: Give the Soldier a safety briefing and read the task, condition, and standard before starting the test.

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Turned on the computer and started the Terramodel software.			
2. Developed a new project file.			
3. Produced the HAL.			
4. Established existing and proposed profiles.			
5. Established the road job and the roadway surfaces.			
6. Calculated earthwork and balance cut & fill reports.			
7. Prepared project information for the Automated Sheet Assembly Plan (ASAP) program.			
8. Created the drawings.			
9. Plotted the drawings as needed.			

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	FM 5-430-00-1	Planning and Design of Roads, Airfields, and Heliports in the Theater of Operations - Road Design	No	No

Environment: Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to FM 3-34.5 Environmental Considerations and GTA 05-08-002 ENVIRONMENTAL-RELATED RISK ASSESSMENT. Conduct an Environmental Risk Assessment IAW FM 3-100.4. The assessment should be recorded on the Risk Management Worksheet found in Appendix F of FM 3-100.4. During the assessment, be on the lookout for environmental hazards, Environmental hazards include all activities that may pollute, create negative noise-related effect, degrade archaeological, cultural resources, negatively affect threatened or endangered species' habitats.

Safety: In a training environment, leaders must perform a risk assessment in accordance with FM 5-19, Risk Management. Leaders will complete a DA Form 7566 COMPOSITE RISK MANAGEMENT WORKSHEET during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection, FM 3-11.5, Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination. All operations will be performed to protect and preserve Army personnel and property against accidental loss. Procedures will provide for public safety incidental to Army operations and activities and safe and healthful work places, procedures, and equipment.

Prerequisite Individual Tasks : None

Supporting Individual Tasks :

Task Number	Title	Proponent	Status
052-243-1241	Prepare a Utility/Plan Drawing	052 - Engineer (Individual)	Analysis
052-243-1237	Prepare a Building Elevation Drawing	052 - Engineer (Individual)	Analysis
052-243-1240	Prepare a Detail Drawing	052 - Engineer (Individual)	Analysis
052-243-1558	Determine Earthwork Volumes	052 - Engineer (Individual)	Analysis
052-243-1607	Prepare a Plot Plan for General Construction	052 - Engineer (Individual)	Analysis
052-243-1239	Prepare a Sectional-View Drawing	052 - Engineer (Individual)	Analysis
052-243-1236	Prepare a Foundation Drawing	052 - Engineer (Individual)	Analysis

Supported Individual Tasks :

Task Number	Title	Proponent	Status
052-243-1607	Prepare a Plot Plan for General Construction	052 - Engineer (Individual)	Analysis
052-243-3412	Determine Drainage Requirements	052 - Engineer (Individual)	Analysis
052-243-1513	Perform Layout of a Construction Project	052 - Engineer (Individual)	Approved
052-243-3419	Design Roadway Geometry	052 - Engineer (Individual)	Analysis
052-243-1558	Determine Earthwork Volumes	052 - Engineer (Individual)	Analysis

Supported Collective Tasks :

Task Number	Title	Proponent	Status
05-3-5102	Created from Template: Construct Roads	05 - Engineers (Collective)	Analysis
05-3-5102	Construct Roads	05 - Engineers (Collective)	Approved
05-3-5113	Created from Template: Conduct Cut/Fill Operations	05 - Engineers (Collective)	Analysis
05-3-5113	Conduct Cut/Fill Operations	05 - Engineers (Collective)	Approved

ICTL Data :

ICTL Title	Personnel Type	MOS Data
12T10, Technical Engineer Specialist, Skill Level 1	Enlisted	MOS: 12T, Skill Level: SL1, Duty Pos: KIR