PHASE III: ESSAY

In Phase III of the competition, students will complete two (2) writing assignments.

1. A 500 - 700 word Research Essay.
   The Research Essay explores and develops a brief and focused engineering feasibility plan as related to an identified redevelopment land tract within the students’ future city. Plan will include availability of water and sewer utilities, transportation access and soil analysis. The research essay must include several references.

2. A 300 - 500 word City Design Abstract
   The City Design Abstract describes the city’s design features and key attributes.

The team must complete and submit the Essay Form with the Essay and Abstract. Be sure to read the important notes at the end of the Essay section

RESEARCH ESSAY
? “Creating an Engineering Feasibility Plan for a specific redevelopment area in a Future City”

RESEARCH ESSAY QUESTION PROBLEM STATEMENT
Given a five acre rectangular lot in a redevelopment area in a future city, develop a brief and focused engineering feasibility plan that will concentrate on the following elements:
  ▪ Availability of water and sewer utilities,
  ▪ Transportation access, and
  ▪ Soil analysis.

The current property contains an abandoned “strip mall” shopping center, which once consisted of a grocery store, a restaurant and a gas station. Future plans for this property include residential and retail development. The slope of this land is relatively flat with a grade of less than 5%.

THE 500 – 700 WORD ESSAY SHOULD ANSWER THE TOPIC/PROBLEM AND RESPOND TO THE FOLLOWING:
? “Creating an Engineering Feasibility Plan for a specific redevelopment area in a Future City”

KEY POINTS
An engineering feasibility study is performed when a piece of land is being considered for purchase or redevelopment. Specifically for this essay question, the land parcel considered for redevelopment within a future city will include new residential and retail development. Consider any restrictions or conditions that may affect the location of any improvements on the five acre lot, such as wetlands or zoning restrictions.

“The results of the engineering feasibility plan are used to evaluate physical, environmental, regulatory, or other constraints that must be overcome or accommodated in constructing the intended use.”

? For additional information on land surveying and spatial data information field, please visit American Congress on Surveying and Mapping website at: www.acsm.net.
To satisfactorily complete the Research Essay assignment, your team must do the following:

1. Write a brief engineering feasibility plan as related to the identified land tract* within a future city containing the following elements:
   - Availability of water and sewer utilities,
   - Transportation access, and
   - Soil analysis.

2. Within your plan discuss the following items (SELECT 2 items from EACH bullet point listed below):
   - The availability of water and sewer utilities as related to:
     a. Water quality and quantity
     b. Age and condition of existing water mains or wells and sanitary sewer lines
     c. Projected demand of sewage service
     d. On-site disposal issues as related to sewage issues
   - Transportation access will demonstrate the following:
     a. Condition of surrounding roads and pavement
     b. Site access by transportation vehicles – cars, buses, and/or rail
     c. Availability of mass transit and pedestrian access
     d. Newly proposed roads or mass transit
   - Soil analysis will take into account the existing but abandoned gas station on the parcel on land proposed for redevelopment:
     a. Soil identification and characteristics
     b. Evidence of pollution or sedimentation in running and standing water
     c. Existence of vegetation, stones, soil erosion, uprooted or undercut trees
     d. Research into previous uses in order to determine possible underground structures or contaminating conditions

3. Describe the role that one engineering discipline OR surveyor had in designing, developing or completing the project. A listing of engineering and surveying resources can be found in the “Resource” Section of this Handbook. Also visit these websites for additional information:
   - www.futurecity.org
   - www.engineeringk12.org
   - www.surveyingcareer.com

* Five acre rectangular lot, flat with a grade of less than 5%, in a redevelopment area in a future city.

**BACKGROUND**

 Cities of the future must continue to improve the quality of life for their citizens and the efficient use of land within its borders. To accomplish this, city governments will increasingly rely on “redevelopment” projects to develop vacant land or rehabilitation of existing structures. Prime locations for redevelopment include downtowns, transit corridors and locations near employment, shopping, and recreational and cultural amenities.

 City governments will actively promote redevelopment of areas for many reasons including:
   a) Redevelopment reuses properties that may have been underutilized or blighted, helping to catalyze revitalization.
   b) Redevelopment has the potential to boost jobs, purchasing power, and public amenities in neighborhoods and generate tax dollars for local government.
   c) Redevelopment projects can reduce pollution
RESEARCH SUGGESTIONS FOR THE TEACHER-SPONSOR OR ENGINEER-MENTOR
National Association of Environmental Professionals (www.naep.org)
American Society of Civil Engineers (www.asce.org)
Policylink (www.policylink.org)
Cyburbia (www.cyburbia.org)
American Congress on Surveying and Mapping (www.acsm.net)
? For additional information on careers in Surveying – go to wwwsurveyingcareer.com