

**HOW TO PREPARE GUIDE**

**FOR THE**

**ENGINEERING ASSISTANT I - 20111**

**WRITTEN EXAMINATION**

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## I. INTRODUCTION

The purpose of these instructions is to help you prepare for the written examination for Engineering Assistant I (EA I). This booklet contains information about the EA I written examination.

- Specific suggestions on how to prepare for the written examination.
- A description of the eight sections that make up the written examination.
- Hints on how to prepare for the written examination.
- Hints on how to answer questions when taking the written examination.
- A description of how the exam will be given.
- Some specific guidelines that you must follow during the written examination.
- Information on what you need to bring to the written examination.

The EA I written examination is the exam that you are taking in order to be eligible to be hired as an EA I.

Again, **this information is designed to help you prepare to take the written examination to become an EA I.** It is very important that you sit down in a quiet place and review the material in this book. You should also set aside time to practice doing the things that are suggested in this booklet to prepare for the examination. Please remember that the material in this booklet is designed to help you prepare for the exam. Therefore, you will not be allowed to carry this booklet into the exam session. Later in this booklet, we will instruct you on what you are **allowed** to bring to the exam session and what you **must** bring to the exam session.

## II. JOB ANALYSIS RESULTS

An analysis of the EA I job in the Alabama Department of Transportation indicated that a number of knowledges, skills, and abilities (KSAs) were very important and needed from the moment a person becomes an EA I and before he/she receives any training. The KSAs for the EA I classification that met these requirements are listed at the end of this booklet in Appendix One. Because it is not possible to measure all of these KSAs with a written examination, not all will be measured by the written exam. The KSAs that will be measured in exam are listed in the “Sample Test Questions” section of this booklet.

When preparing for the exam and reviewing the KSAs listed in the “Sample Test Questions” section of this booklet, the reader should note that the examples shown in each statement of how the KSA is used is not always intended to be completely inclusive. In other words, there may be questions on the exam which cover areas not directly mentioned as an example in the KSA.

### III. EXAMINATION DESCRIPTION

In an attempt to provide an opportunity for each candidate to demonstrate his/her possession of the knowledges and abilities that are listed in the "Sample Test Questions" section of this booklet, a multiple-choice, written examination was developed. The written exam will consist of approximately 100 questions and you will be allowed three hours in which to complete the exam. Your answers will be marked on a Scantron sheet using a #2 pencil. You must provide your own pencils.

The written examination is divided into eight sections. The eight sections of the written examination are:

- Section 1: Filing
- Section 2: Basic Math
- Section 3: Math Word Problems
- Section 4: Fractions & Percentages
- Section 5: Area, Volume, and Perimeter Calculations
- Section 6: Measurement & Temperature Reading
- Section 7: Reading Comprehension
- Section 8: Map Reading

There are several different types of questions in the exam. The questions in Section One will ask you questions regarding numerical, chronological, or alphabetical order of items provided on the examination. The questions in Section Two are basic addition, subtraction, multiplication, or division problems that you must solve. The questions in Section Three are word problems where you will need to read the question and determine the proper mathematical procedure to arrive at the correct answer. In Section Four, you will be asked the same type of mathematical problems in Section Two, but the problems are expressed in fractional units or percentages instead of whole numbers. In Section Five, you will be required to calculate the area, volume, or perimeter of geometrical shapes provided on the examination. Section Six will contain pictures of measuring tapes or thermometers and you will be required to read the measurements of items using these pictures. Section Seven is a reading comprehension section where you will have to read a memo or excerpts from different manuals used at ALDOT and then answer questions taken from the passage that you read. In Section Eight of the examination, you will be provided with maps and asked questions regarding the location of items on the maps.

### IV. TEST SCHEDULING

If you are interested in applying for an EA I position, you must **first file an application with the State Personnel Department**. It is the applicant's responsibility to ensure the application arrives at State Personnel. Tests are given periodically throughout the year. Do not wait for an official announcement from State Personnel or ALDOT about test dates or application cutoff dates. Instead, if you are interested in applying, you should do so immediately.

Once your application is received, it will be reviewed to ensure you have the minimum qualifications required to qualify for the job. If you meet the minimum qualifications, you will be sent a scheduling card that will contain your Written Test's dates, times, and locations.

## V. PREPARING FOR THE WRITTEN EXAMINATION

Here are some suggestions regarding what to do before the exam, arriving at the exam location at the correct date and time, and the items to take to the exam.

- Be well rested. Get a good night's sleep for several nights in a row before the exam.
- Allow plenty of time to get to the exam. If you are rushed and running late, you will be upset when you arrive. Plan to arrive at the scheduled time for check-in.
- Come to the exam dressed comfortably. You will be there for about *3 hours* to take the actual exam plus additional time for registration and distributing and picking up examination materials.
- Do not bring this booklet to the exam location. You will not be permitted to bring it into the testing site.
- Do not bring any of your study materials to the exam. This includes notes and any resources that you may have used to prepare for the exam.
- You should read and study this booklet. You should practice the kinds of things that this booklet suggests that you practice.
- The State Personnel Department will mail you a SCHEDULING CARD identifying the date, time, and location you are scheduled to take the examination. You **must** bring this SCHEDULING CARD with you to the exam site.
- You **must** also bring a PICTURE IDENTIFICATION to the exam location. This picture identification may be a valid driver's license, a military identification card, or a passport. You only need to have one form of PICTURE IDENTIFICATION. During registration, you will be asked to verify the last four digits of your Social Security number. You will **not be allowed** to enter the exam location nor take the EA I exam without your PICTURE IDENTIFICATION and verification of the last four digits of your Social Security number.
- If you want to keep track of time during the examination, you should bring a watch or a small clock to the exam.
- Bring your own basic function calculator. You will **NOT** be provided with a calculator. **Calculators that are a feature of a cell phone are not permitted.**
- Bring at least two #2 sharpened pencils with you. You will **NOT** be provided with the pencils you will need to mark your Scantron sheet.
- Do not bring cell phones, two-way radios or any other noise producing devices with you to the test room. If you do bring them into the test room, you will be required to turn them off before the exam begins.

## VI. DURING THE WRITTEN EXAMINATION

### General Guidelines

Some people are nervous when they take exams. Up to a point, there is nothing wrong with being nervous. Whenever you are going to do something important, it is good to feel a bit keyed up. It is nature's way of getting you warmed up and ready.

However, it is not good to be so nervous that all you can think about is how nervous you are. You need to keep your mind on the exam questions, and not on your feelings. You will find the ideas in this booklet on how to study and prepare for the exam useful for improving your ability to focus on the exam. **The more prepared you are, the more comfortable and less nervous you will feel during the exam.**

Don't pay attention to other people who are taking the exam. You **do not** want to waste your time. You **do want** to concentrate on your exam.

There are two things you can do that will make you feel more comfortable taking the exam.

- Follow the guidelines presented in this booklet on how to prepare for the exam.
- Become familiar with the kinds of questions used in the sections that make up the exam.

### Specific Guidelines

We are now going to review some very specific guidelines that you will be expected to follow when you come to take the eight sections that make up the EA I written examination.

- You must not leave your seats while the exam is being given (except to use the restroom). There will be exam monitors in the room in which you are being tested. They will be available to assist you if you have any problems. They will not provide any information related to the examination questions. If you do leave your seat, you **will not** be provided with any additional time to take the rest of your examination.
- Exam monitors will not interpret exam questions for you.
- Except for using the restrooms, you will not be allowed to leave the room during any of the sections of the exam. Be sure to use the restroom before the exam starts. The test will not stop while you are using the restroom. Therefore, if you do need to use the restroom during the test, you will lose some of the time given to answer the questions.
- You are not allowed to open any exam booklets nor begin working on the exam until you are instructed to do so.
- You may not smoke or eat in the exam room.
- You may not refer to any outside materials during the exam.

- No talking is allowed during the exam and you must keep your eyes on your own exam papers and materials. Candidates making any disturbances or caught cheating will be disqualified from the exam.
- The total time for the entire examination is 3 hours. This does not include the time for registration or distributing and picking up examination materials.
- You will be asked to fill in your answers on a Scantron answer sheet. Make sure any erasures that you make are made completely. Also, do not make any extraneous marks on the answer sheet.
- All materials needed for the examination, with the exception of a calculator and pencils, will be provided.
- As indicated above, the EA I Written Examination is made up of eight sections. You will take all eight sections on the same day.

**SAMPLE TEST QUESTIONS BEGIN ON THE FOLLOWING PAGE**

## VII. SAMPLE TEST QUESTIONS

### SECTION ONE – FILING

Section One of the EA I Qualifying Examination consist of questions that require you to place numerical, chronological, or alphabetical information in order according to the number, date, or alphabet. These questions are designed to measure the following KSAs:

- Ability to file correspondence or project information such as contracts and plans numerically, chronologically, or alphabetically to ensure easy retrieval.

Three sample items for this section are shown with the correct answers marked with an asterisk:

#### **Sample Item 1:**

If the plan sets B4-578, B2-976, A5-352, and B4-679 were arranged for filing in alphabetical then numerical order, the position of the underlined number would be \_\_\_\_\_.

- (A) First
- (B) Second
- \* (C) Third
- (D) Fourth

#### **Sample Item 2:**

If the following departmental letters were filed in chronological order, which would be filed first?

- \* (A) September 9, 2010
- (B) July 22, 2011
- (C) October 16, 2010
- (D) August 24, 2011

#### **Sample Item 3:**

<b>Project A</b> Project Number: CD-1987 County: Calvary Completion Date: August 28, 2011	<b>Project B</b> Project Number: SE-8971 County: Lubbock Completion Date: January 10, 2010
<b>Project C</b> Project Number: FX-6797 County: Ferguson Completion Date: April 15, 2009	<b>Project D</b> Project Number: WS-2843 County: Boone Completion Date: October 11, 2010

If the following project documents were filed alphabetically by county, which would be filed first?

- (A) Project A
- (B) Project B
- (C) Project C
- \* (D) Project D

## **SECTION TWO – BASIC MATH**

Section Two of the EA I Qualifying Examination consists of basic math questions involving addition, subtraction, multiplication, or division. These questions are designed to measure the following KSAs:

- Ability to perform basic math such as addition, subtraction, multiplication, and division.
- Ability to add numbers such as expenses from projects and physical quantities as needed to verify project information and ensure proper payments are made.
- Ability to divide numbers such as total pounds by square yards to obtain final rates of application, to determine the number/amount of material to sample, and to correctly calculate and apply percentages and fractions.
- Ability to multiply numbers such as length, width, and depth of structures such as concrete decks, roadway, and crushed aggregate in order to calculate areas, volumes, and quantities of materials.
- Ability to find the difference between (subtract) numbers such as beginning and ending station numbers and weights of dry and wet samples as needed to obtain distances and determine the amount of moisture removed.
- Ability to use calculators as needed to add, subtract, multiply, and divide.

Four Sample items for this section are shown with the correct answers marked with an asterisk

**Sample Item 1: Solve the following problem:**

$$\begin{array}{r} 167 \\ 178 \\ + 189 \\ \hline \end{array}$$

- (A) 524
- (B) 434
- \*(C) 534**
- (D) 436

**Sample Item 2: Solve the following problem:**

$$\begin{array}{r} 1,032,517 \\ - 15,621 \\ \hline \end{array}$$

- (A) 1,016,996
- (B) 1,006,696
- (C) 1,116,896
- \*(D) 1,016,896**

## **SECTION TWO – BASIC MATH** (Continued)

**Sample Item 3: Solve the following problem:**

$$\begin{array}{r} 81 \\ \times 12 \\ \hline \end{array}$$

- (A) 960
- \*(B) 972**
- (C) 1053
- (D) 1072

**Sample Item 4: Solve the following problem:**

$$84 \div 3$$

- \*(A) 28**
- (B) 42
- (C) 92
- (D) 252

## **SECTION THREE – MATH WORD PROBLEMS**

Section Three of the EA I Qualifying Examination consists of questions that require you to perform a basic mathematical calculation from a question presented in a written format. You will need to read the question and decide the mathematical calculation to be performed and perform it correctly to arrive at the correct answer. These questions are designed to measure the following KSAs:

- Ability to perform basic math such as addition, subtraction, multiplication, and division.
- Ability to find the difference between (subtract) numbers such as beginning and ending station numbers and weights of dry and wet samples as needed to obtain distances and determine the amount of moisture removed.
- Ability to calculate percentages such as quantities of materials for mixes, sizes of particles or other materials, numbers of different types of vehicles, and amounts of water a sample can retain.

Three sample items for this section are shown with the correct answers marked with an asterisk:

**Sample Item 1:**

If 65 pounds of concrete are used per day on a road project, how many pounds of concrete would be used if the project lasted 7 days?

- (A) 72 pounds
- \*(B) 455 pounds**
- (C) 675 pounds
- (D) 770 pounds

### **SECTION THREE – MATH WORD PROBLEMS** (Continued)

**Sample Item 2:**

The central office has 600 employees. Of this number  $\frac{2}{3}$  are on salary,  $\frac{1}{4}$  are paid by the hour, and the remainder work part-time. How many employees are paid by the hour?

- (A) 150
- (B) 200
- (C) 250
- (D) 400

**Sample Item 3:**

The Maintenance Bureau's budget amount for fertilizer last year was \$975,000. If all budget areas are to reduce their budget by 8%, what will be the amount in the budget for fertilizer this year?

- (A) \$78,000.00
- (B) \$780,000.00
- (C) \$897,000.00
- (D) \$877,500.00

### **SECTION FOUR – FRACTIONS & PERCENTAGES**

Section Four of the EA I Qualifying Examination consists of basic math questions involving addition, subtraction, multiplication, or division of fractional numbers instead of whole numbers. Some of the questions in this section will also require you to convert the answer from a fraction to a percentage. These questions are designed to measure the following KSAs:

- Ability to convert fractions to percentages or decimals.
- Ability to calculate percentages such as quantities of materials for mixes, sizes of particles or other materials, numbers of different types of vehicles, and amounts of water a sample can retain.

Four sample items for this section are shown with the correct answers marked with an asterisk:

**Sample Item 1: Solve the following problem:**

$$\frac{1}{2} \times \frac{1}{4} =$$

- (A) .125
- (B) .250
- (C) .375
- (D) .750

**SECTION FOUR – FRACTIONS & PERCENTAGES** (Continued)

**Sample Item 2: Solve the following problem:**

28 is 14% of what number?

- (A) .50
- (B) 3.92
- (C) 140
- \*(D) 200

**Sample Item 3: Solve the following problem:**

What is 15% of 6,000?

- (A) 500.00
- (B) 500.75
- (C) 575.00
- \*(D) 900.00

**Sample Item 4: Solve the following problem:**

Solve the following problem, rounded to the nearest hundredth.

$88.32 \div 16.20 =$

- (A) .18
- \*(B) 5.45
- (C) 275.60
- (D) 430.78

## **SECTION FIVE – AREA, VOLUME, & PERIMETER CALCULATIONS**

Section Five of the EA I Qualifying Examination consists of questions that require you to perform either a volume, perimeter, or a surface area calculation. You will need to read the question and decide the volume, perimeter, or surface area calculation to be performed and perform it correctly to arrive at the correct answer. These questions are designed to measure the following KSAs:

- Ability to use formulas such as square yard and linear feet frequencies or random sampling methods.

The formulas that you will need to perform these calculations are shown in the table below, followed by three sample items for this section, with the correct answers marked with an asterisk. Please note that needed **FORMULAS WILL BE PROVIDED** in the exam:

Sample Formulas:

- Surface Area of a Square or Rectangle = Length x Width  
(Answers can be in square feet, square inches, square yards, etc.)
- Volume of a Square or Rectangle = Length x Width x Height  
(Answers can be in cubic feet, cubic inches, cubic yards, etc.)
- Perimeter = Side A + Side B + Side C + Side D  
(Perimeter is the distance around an object or shape **OR** the sum of the lengths of the segments that form the sides of a shape.)

### ***Sample Item 1:***

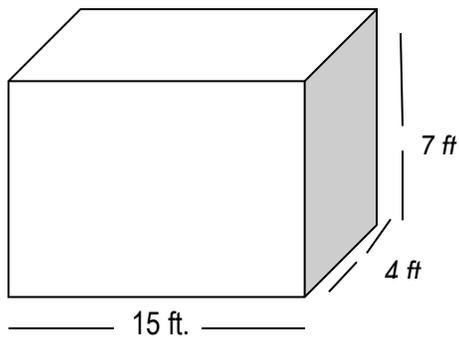
You are measuring a bathroom in a rest area. Two walls are 14 feet long and the other two walls are 17 feet long. How many square feet are in this bathroom?

- (A) 62 square feet
- (B) 98 square feet
- (C) 178 square feet
- \*(D) 238 square feet

**SECTION FIVE – AREA, VOLUME, & PERIMETER CALCULATIONS** (Continued)

**Sample Item 2:**

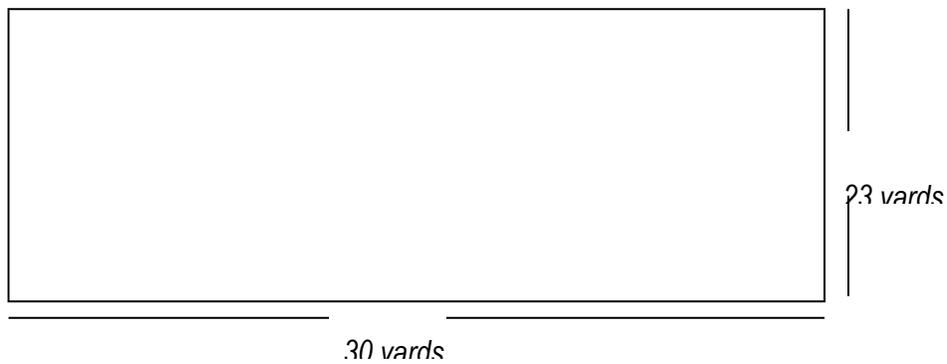
What is the volume of Object A below if:



- (A) 60 cubic feet
- (B) 105 cubic feet
- \*(C) 420 cubic feet
- (D) 476 cubic feet

**Sample Item 3:**

What is the perimeter of the rectangle parking lot shown below?



- (A) 53 yards
- \*(B) 106 yards
- (C) 345 yards
- (D) 690 yards

## **SECTION SIX – MEASUREMENT AND TEMPERATURE READING**

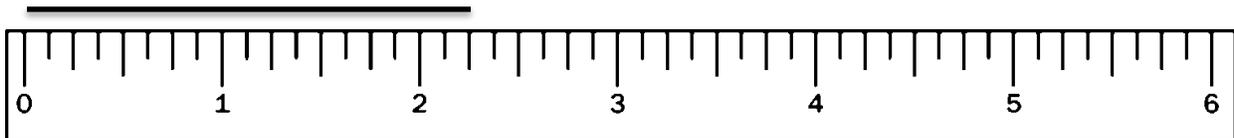
Section Six of the EA I Qualifying Examination consists of questions that require you to read a measuring tape, add inches together to obtain a sum, or read the temperature off of a thermometer. The measuring tape on the examination will be 6 inches in length and each line on it represents 1/8 inch. These questions are designed to measure the following KSAs:

- Ability to use and read a tape measure as needed to measure lengths and distances in order to accurately acquire field information.
- Ability to read thermometers.

Three sample items for this section are shown with the correct answers marked with an asterisk:

### ***Sample Item 1:***

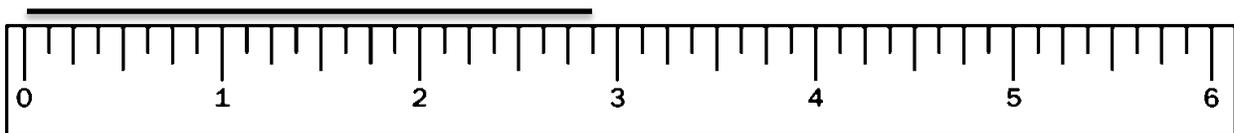
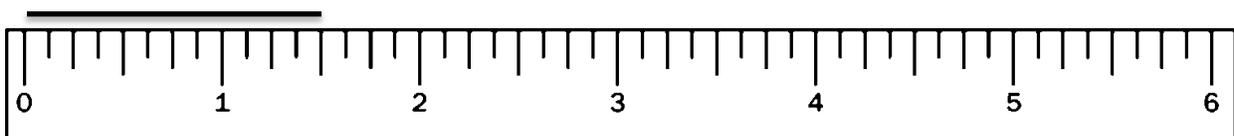
How long is the line below?



- (A) 3 1/4 inches
- (B) 2 1/2 inches
- \* (C) 2 1/4 inches
- (D) 2 1/8 inches

### ***Sample Item 2:***

If added together, how long are the two lines?

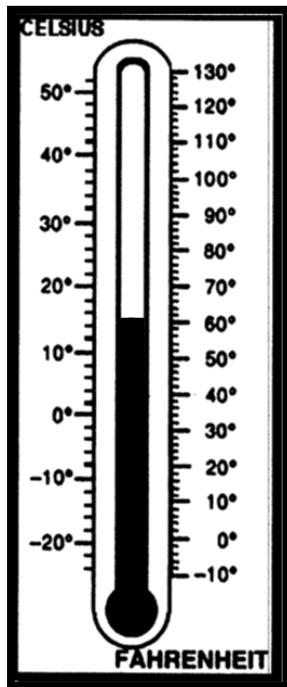


- (A) 3 1/4 inches
- (B) 3 1/2 inches
- (C) 4 1/2 inches
- \* (D) 4 3/8 inches

**SECTION SIX – MEASUREMENT AND TEMPERATURE READING** (Continued)

**Sample Item 3:**

What is the temperature below?



- (A) 15° Fahrenheit
- (B) 20° Fahrenheit
- (C) 50° Fahrenheit
- \*(D) 60° Fahrenheit

## **SECTION SEVEN – READING COMPREHENSION**

Section Seven of the EA I Qualifying Examination consists of questions that require you to read an excerpt from a memo or manual used at ALDOT and then answer questions based on that information. These questions are designed to measure the following KSAs:

- Ability to read and understand manuals used by ALDOT such as the AASHTO Green Book, ALDOT Testing Manual, MUTCD, ALDOT Materials, Sources, and other Devices Manual, and ALDOT Standards and Specifications as needed to look up information and follow the guidelines found in them.
- Ability to read and understand general office correspondence such as letters and memos as needed to give or receive information.
- Ability to read and understand the Standard Specifications for Highway Construction Manual as needed to solve on the job problems.
- Ability to read and understand the Materials, Sources, and Devices Manual as needed to solve on the job problems.
- Ability to read and understand the ALDOT Utility Manual as needed to solve on the job problems.
- Ability to read and understand the ALDOT Construction Manual as needed to solve on the job problems.

Three sample questions are provided following the below sample reading passage.

### ***Sample Reading Passage:***

#### 1:3:B1.12 FIELD DATA BOOKS.

All field notes should be recorded in standard Engineer's Field and Level Books. Surveying field notes are the permanent record of work done in the field. They should be kept with the fact constantly in mind that they are permanent documentary records. If the notes are incomplete, incorrect, or destroyed, much or all of the time spent in making accurate measurements may be lost.

The data in field notes are normally used by office personnel to make computations to determine pay item quantities. Accordingly, it is essential that notes be intelligible to others without verbal explanations. All measurements made should be in keeping with good engineering practice and made in such manner that they may be used for correct computations. Notes, figures, and sketches should be neat and clear, and in sufficient detail to be understood by someone not familiar with the project. All field books should be plainly labeled for identification with the name of owner, project number, type data and year.

Original notes are those taken while measurements are being made. All other sheets are copies and must be marked. Copied notes may not be accepted in court. They are always subject to suspicion because of the possibility of errors and omissions. Note keepers are tempted to scribble notes on scrap sheets of paper for later transference in neat form to the regular field book. This practice will not be tolerated by the Department. The Project Engineer should warn all personnel responsible for note keeping to avoid this practice.

Notes should be lettered with a pencil of at least 3H hardness. Books so prepared will withstand damp weather in the field and still be legible, whereas graphite from a soft pencil will leave an undecipherable smudge under such circumstances. Erasures are not to be permitted in field books. If a number has been recorded incorrectly, a line should be drawn through it without destroying its legibility, and the correct value noted above. The person making the

## **SECTION SEVEN – READING COMPREHENSION** (Continued)

correction should initial it. If an entire page is to be deleted, draw diagonal lines from opposite corners and letter "VOID" prominently on the page.

Advance planning and proper field procedures are necessary to insure clarity of sketches and tabulations, and to make errors and omissions more evident. Note forms appropriate to the particular survey contribute to accuracy, integrity, and legibility.

Four types of notes are kept in practice: (1) sketches, (2) tabulations, (3) descriptions, and (4) a combination of these. The most common type is a combination form, but an experienced recorder selects the version best fitted to the job at hand. In note keeping, this axiom is always pertinent: "When in doubt about the need for any information, include it and make a sketch". Some sample note forms are included herein to aid in preparing uniform and complete records which can be checked quickly.

To permit ready location of desired data, each Field Book must have a table of contents at the beginning, and this should be kept current as data is entered.

### ***Sample Item 1:***

Which of the following is **NOT** true regarding how mistakes in note taking should be corrected?

- \* (A) Incorrect numbers should be completely blacked out with a pencil
- (B) All corrections should be initialed by the person making the correction
- (C) Diagonal lines should be drawn from opposite corners on an entire page that needs correction
- (D) "VOID" should be written prominently on an entire page that needs correction

### ***Sample Item 2:***

Which of the following is true regarding notes made on scrap paper to be recorded to the field book later?

- (A) They should be attached to the note in the field book
- \* (B) They are not permitted by the Department
- (C) They should be clearly labeled as "supplementary notes"
- (D) They will be used as evidence in court

### ***Sample Item 3:***

Which of the following is **NOT** a type of note found in field data books?

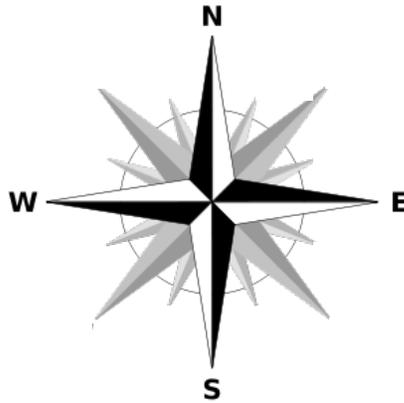
- (A) Descriptions
- (B) Tabulations
- \* (C) Profiles
- (D) Sketches

## **SECTION EIGHT – MAP READING**

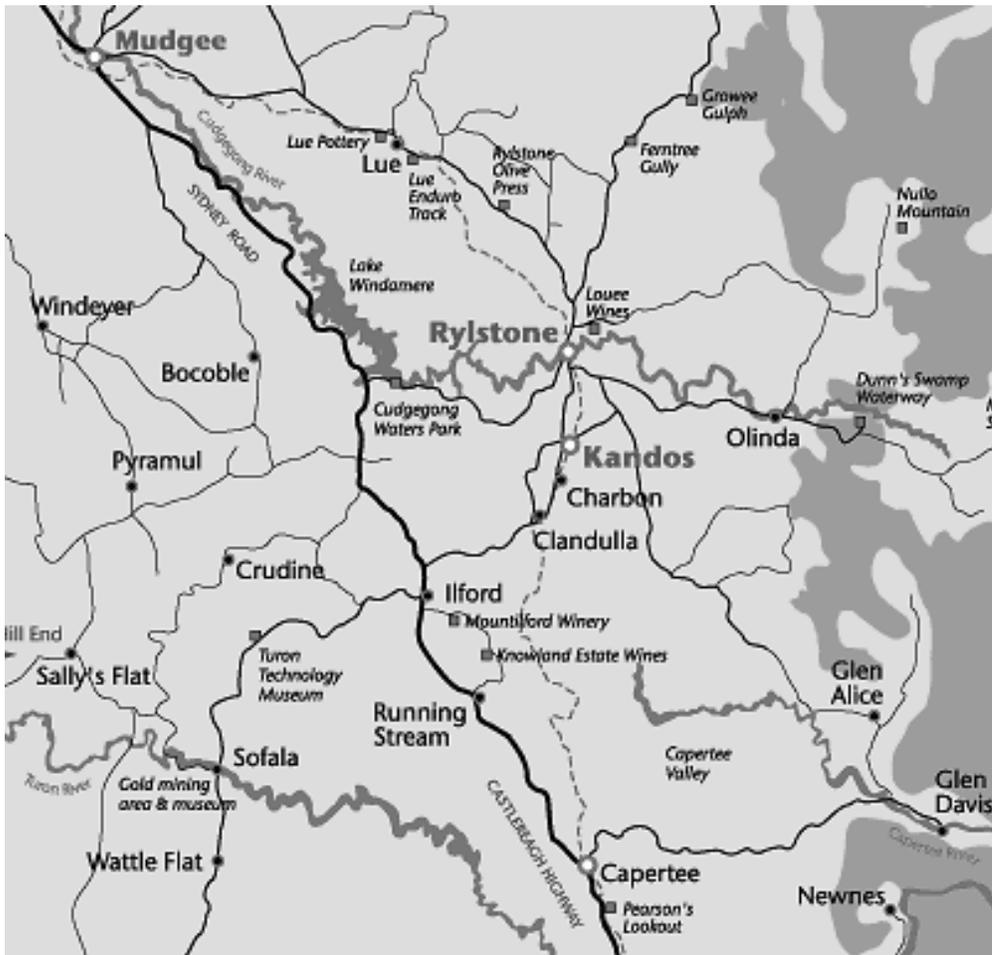
Section Eight of the EA I Qualifying Examination consists of questions that require you to read a map and answer questions regarding the location of items on the map. These questions are designed to measure the following KSAs:

- Knowledge of directions such as North, South, East, and West as needed to perform duties such as locate/prepare/inspect project sites, bridges, buildings, benchmarks, and to set up solar panels to align them in the correct position.
- Ability to read maps such as highway and county maps as needed to locate projects, survey sites, and perform surveys.

Below is a compass indicating the North, South, East, and West directions. On the examination, it will be important that you know your cardinal (North, South, East, and West) and ordinal (Northwest, Southeast, etc.) directions. A basic compass indicating north will be provided on the examination. You will need to know how to read a compass indicating the direction north and find locations on the map in relation to that direction.



On the next page is a sample map. Below the map are three sample questions for this section. The correct answer is marked with an asterisk.



**Sample Item 1:**

If you are traveling north on the major highway in “Running Stream”, what is the next city you will come to according to the map?

- (A) Capertee
- \* (B) Ilford
- (C) Sofala
- (D) Crudine

**Sample Item 2:**

Rylstone is \_\_\_\_\_ of the city of Crudine.

- \* (A) Northeast
- (B) Northwest
- (C) Southeast
- (D) Southwest

**Sample Item 3:**

Which of the following towns is located in the furthest Northwest corner of this map?

- (A) Newnes
- (B) Wattle Flat
- \* (C) Mudgee
- (D) Windeyer

## VIII. HOW TO STUDY FOR THE EA I EXAMINATION

You should study whatever material you believe will assist you in gaining or improving the KSAs listed before the sample questions in each section. If you were unable to solve or find the correct answer of any of the sample test questions listed in this booklet, you are encouraged to find other resources or reference material that can help you prepare for this exam. The major area that could benefit from study or practice would be simple mathematical skills. Practicing simple addition, subtraction, multiplication, and division would be very beneficial. Practicing the calculation of surface area and volume would also be very useful. This mathematical practice can be done with a calculator because you will be allowed to use a calculator when taking the exam if you bring one with you. Review various maps and ensure you know how to locate items on them. Practice reading rulers and thermometers. Review reading passages and have someone ask you questions from them.

Some specific ways to study for the exam are given below.

- Set aside certain times when you will be able to study/practice.
- When you do study, keep your mind on what you are doing. Do not try to read where it is noisy or when you are doing something else like watching a child or the television.
- Study or practice frequently in order to ensure that you understand the material completely. Some hints for doing this are:
  - ⇒ Ask someone to quiz you.
  - ⇒ Write down questions for yourself and then answer them. Be sure to check that the answers are correct.
  - ⇒ Have someone else review your answers.
- The more you practice the better off you will be. Practicing all at once right before the exam does not work well. You should space your practice over all the time you have until you take the exam.

We have presented these study guidelines to help you prepare to take the EA I Qualifying Examination. However, these guidelines can be used to help prepare for other examinations you may take. The more you prepare by reading, studying, and practicing, the better you should do.

### Study Suggestions

The studying that you do in preparation for the EA I written examination should be effective if you try to do the following things.

- Study in a quiet place. Do not study when you are also doing something else.
- Prepare for the exam by making up and taking sample items. Remember these ideas.
  - ⇒ Do not talk to anyone else while you are taking the sample items. You can review the items with someone else after you take them.
  - ⇒ Ask others to review your answers. They can help you identify errors that you made. They can also provide an objective opinion as to which areas you may need the most practice.

## **IX. WHAT TO BRING TO THE EA I EXAMINATION**

Allow plenty of time to get to the written test site. Plan to get there at least 15 minutes before the written exam is scheduled to begin.

Bring your PICTURE IDENTIFICATION and SCHEDULING POSTCARD when you come to take the written examination. No photocopied IDs will be accepted. Examples of accepted picture IDs are a valid driver's license, a military identification card, or a student identification card. You will also be asked to verify the last four digits of your Social Security number.

Bring a wristwatch or small clock to help keep track of time. Please turn off any alarm before you get to the testing facility.

Bring at least two #2 sharpened pencils.

Bring a basic function calculator. Calculators that are a feature of cell phone will not be permitted.

Do not bring this booklet or any study materials to the written exam. You will not be permitted to bring them in. Also, do not bring any personal notes or study material that you prepared or used before the exam.

Do not bring cell phones, two-way radios, beepers, pagers, or any other noise producing devices with you to the examination. You will not be allowed to use them.

Do not bring children or any other visitors to the exam. They will not be admitted to the test site.

## **X. ADMINISTRATION INFORMATION**

### Administration Contact

The contact for the Engineering Assistant I examination administration is Matthew Campbell at (334)242-3389.

### Reasonable Accommodation

If you would like to request special testing accommodations or have any questions concerning the written test, the test site, or written testing conditions, please contact us at the phone number above.

### Administrative Questions

You may contact us if you have any administrative questions or concerns about information presented in this booklet. However, exam administrators are not allowed to divulge specific information about the content of the exam.

### Test Results

It is not necessary for you to contact us in order to receive your grade; you should receive notification of your score on the exam by postcard when it is available. You can expect your scores back in four to six weeks after completing the exam.

In addition to your score, you may also obtain your standing, or rank on the register, online at [www.personnel.alabama.gov](http://www.personnel.alabama.gov). From the homepage, you should click on "Applicants" and then "Register Standings", and follow the instructions. For security purposes, you must create an online profile in order to access your standings.

### Reminders

It is the applicant's responsibility to ensure their application arrives at State Personnel. Tests are given periodically throughout the year. Do not wait for an official announcement from State Personnel or ALDOT about test dates or application cutoff dates. Instead, if you are interested in applying, you should do so as soon as you meet the minimum qualifications.

Please remember that you will not need OR be allowed to bring anything other than the items previously mentioned to the written exam.

If you are unable to schedule for this examination or fail to appear at the examination on your scheduled day and time, you will need to submit a new application to State Personnel in order to be scheduled for future administrations.

**THIS CONCLUDES THE INSTRUCTIONS AND NOTES ON "HOW TO PREPARE" AND TAKE THE ENGINEERING ASSISTANT WRITTEN EXAMINATION**

## APPENDIX I

### **ENGINEERING ASSISTANT I (20111) Knowledges, Skills and Abilities (KSAs)**

#### **Basic Math**

Ability to perform basic math such as addition, subtraction, multiplication, and division.

Ability to add numbers such as expenses from projects and physical quantities as needed to verify project information and ensure proper payments are made.

Ability to divide numbers such as total pounds by square yards to obtain final rates of application, to determine the number/amount of material to sample, and to correctly calculate and apply percentages and fractions.

Ability to multiply numbers such as length, width, and depth of structures such as concrete decks, roadway, and crushed aggregate in order to calculate areas, volumes, and quantities of materials.

Ability to find the difference between (subtract) numbers such as beginning and ending station numbers and weights of dry and wet samples as needed to obtain distances and determine the amount of moisture removed.

Ability to use calculators as needed to add, subtract, multiply, and divide.

#### **Fractions & Percentages**

Ability to convert fractions to percentages or decimals.

Ability to calculate percentages such as quantities of materials for mixes, sizes of particles or other materials, numbers of different types of vehicles, and amounts of water a sample can retain.

#### **Math Formulas**

Ability to use formulas such as square yard and linear feet frequencies or random sampling methods.

#### **Measurements**

Ability to use and read a tape measure as needed to measure lengths and distances in order to accurately acquire field information.

Ability to read thermometers.

### **Directions/Map Reading**

Knowledge of directions such as North, South, East, and West as needed to perform duties such as locate/prepare/inspect project sites, bridges, buildings, benchmarks, and to set up solar panels to align them in the correct position.

Ability to read maps such as highway and county maps as needed to locate projects, survey sites, and perform surveys.

Ability to read and understand county milepost maps as needed to locate project sites.

### **Reading Comprehension**

Ability to read and understand manuals used by ALDOT such as the AASHTO Green Book, ALDOT Testing Manual, MUTCD, ALDOT Materials, Sources, and other Devices Manual, and ALDOT Standards and Specifications as needed to look up information and follow the guidelines found in them.

Ability to read and understand general office correspondence such as letters and memos as needed to give or receive information.

Ability to read and understand the Standard Specifications for Highway Construction Manual as needed to solve on the job problems.

Ability to read and understand the Materials, Sources, and Devices Manual as needed to solve on the job problems.

Ability to read and understand the ALDOT Construction Manual as needed to solve on the job problems.

Ability to read and understand the ALDOT Safety Manual as needed to solve on the job problems.

Ability to read and understand the ALDOT Utility Manual as needed to solve on the job problems.

Ability to read and understand the Manual on Uniform Traffic Control Devices (MUTCD) as needed to solve on the job problems.

Ability to read and understand the ALDOT Guidelines for Operations Manual as needed to solve on the job problems.

## **Filing**

Ability to file correspondence or project information such as contracts and plans numerically, chronologically, or alphabetically to ensure easy retrieval.

Ability to file project cards as needed to maintain accurate project records.

Ability to check and compare different types of information such as project numbers and other project data as needed to ensure information is correct and to ensure that actual project conditions such as temperature of asphalt or concrete, percent of air, elevations, curves, and benchmarks are within tolerances of the original plans.

## **Communication**

Ability to legibly write information to daily work reports, daily inspection reports, field books, and forms as needed to document project activities and ensure others can understand written information.

Ability to write data on project cards in order to post information about contracts.

Ability to interact with others by providing and receiving information with county engineers, division engineers, bureau engineers, other ALDOT personnel, Federal and State officials, city/county personnel, utility company personnel, railroad company personnel, law enforcement personnel, and the general public.

Ability to orally communicate information to others accurately as needed to correctly relay instructions, questions, test results, and other project information.

Ability to communicate information in writing as needed to correctly relay instructions, questions, test results, and other project information.

## **Equipment Operation**

Knowledge of vehicle maintenance procedures such as checking fluids and tire pressure as needed to ensure vehicles are safe and ready for operation.

Ability to drive hubs, stakes, capped irons, P.K. nails, hub nails, or railroad spikes into the ground, trees, or pavement for surveying as needed to run survey lines.

Ability to drive light duty trucks as needed to travel to project sites.

Ability to drive vans as needed to travel to job sites and/or obtain roadway event information.

### **Equipment Operation (Continued)**

Ability to use a personal computer as needed to use basic operating system features such as opening and closing programs, saving and retrieving files, and entering and retrieving data.

### **Following Instructions**

Ability to work and learn in difficult situations such as in extreme weather and heavy traffic, while walking and climbing in rough terrain, and while sitting in a vehicle for an extended amount of time as needed to perform project inspections and collect information such as survey data, traffic data, and material samples.

Ability to learn procedures through on-the-job training as needed to perform work duties proficiently and acquire skills needed to perform the job.

Ability to retain information from classroom instruction and on-the-job training in order to learn job skills and pass certification tests.

Ability to follow instructions and set procedures when performing tasks.

Ability to follow verbal instructions and examples from individuals telling and demonstrating how to perform a task.

### **Time Management**

Ability to manage time efficiently as needed to complete work and travel in a timely manner.