

A

HOW TO PREPARE GUIDE

FOR THE

ENGINEERING ASSISTANT, III – 20118

WRITTEN EXAMINATION

State of Alabama Personnel Department
64 North Union Street
P.O. Box 304100
Montgomery, Alabama 36130-4100

TABLE OF CONTENTS

I.	INTRODUCTION.....	3
II.	JOB ANALYSIS RESULTS.....	3
III.	EXAMINATION DESCRIPTION	4
IV.	TEST SCHEDULING	4
V.	PREPARING FOR THE WRITTEN EXAMINATION.....	5
VI.	DURING THE WRITTEN EXAMINATION	6
VII.	SAMPLE TEST QUESTIONS	8
	Section One – Plan Reading	
	Section Two – Reading Comprehension	
	Section Three – Math	
	Section Four – Written Communication	
	Section Five – Situational Judgment	
VIII.	HOW TO STUDY FOR THE EA III EXAMINATION.....	15
IX.	WHAT TO BRING TO THE EA III EXAMINATION.....	16
X.	ADMINISTRATION INFORMATION.....	17
	Administration Contact	
	Reasonable Accommodations	
	Administrative Questions	
	Test Results	
	Reminders	
	 APPENDICES	
	Appendix A - EA III Surviving Knowledges, Skills, and Abilities	
	Appendix B - Math Formulas	

I. INTRODUCTION

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

- Specific suggestions on how to prepare for the written examination.
- A description of the five 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 III written examination is the exam that you are taking in order to be eligible to be hired as an EA III

Again, **this information is designed to help you prepare to take the written examination to become an EA III**. It is very important that you sit 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 III classification in the Alabama Department of Transportation (ALDOT) indicated that a number of knowledges, skills, and abilities (KSAs) were very important and needed from the moment a person becomes an EA III and before he/she receives any training. The KSAs for the EA III classification that met these requirements are listed at the end of this booklet in Appendix A. These KSAs are grouped into nine categories: Problem Solving/Analysis, Math, Reading Comprehension, Technical, Oral Communication, Written Communication, Interpersonal, Planning/Coordination, and Miscellaneous. 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 KSA categories that will be measured in the exam are listed in the "Sample Test Questions" section of this booklet.

When preparing for the exam and reviewing the KSAs listed in Appendix A 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 KSAs included in the KSA categories 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 80 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.

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

- Section 1: Plan Reading
- Section 2: Reading Comprehension
- Section 3: Math
- Section 4: Written Communication
- Section 5: Situational Judgment

There are several different types of questions in the exam. The questions in Section One will ask you to find information in a partial set of plans. Section Two is a reading comprehension section where you will have to read excerpts from different manuals used at ALDOT and then answer questions taken from the passage that you read. In Section Three, you will be required to perform calculations with information provided to you, review calculations that have already been performed, and perform calculations based on information from a plan sheet. The questions in Section Four will ask you questions regarding grammar, punctuation, and logical sentence order. In Section Five, you will be provided with situations an EA III may encounter, and you are to provide the best response to the situation.

IV. TEST SCHEDULING

If you are interested in applying for an EA III 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 postcard that will contain your Written Test date, time, and location.

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 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. If you are late, you will **NOT** be admitted to the examination site.
- 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.
- Approximately 8 to 10 days prior to the exam, the State Personnel Department will mail you a POSTCARD identifying the date, time, and location that you have been scheduled to take the examination. You must bring this POSTCARD 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. You will **not be allowed** to enter the exam location nor take the EA III exam without your PICTURE IDENTIFICATION.
- During registration, you will be asked to verify 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.
- Do not bring your own calculator. You will be provided with a small solar powered or battery operated calculator that performs basic functions such as addition, subtraction, multiplication, division, and percentages.
- You will be provided with the pencils you will need to mark your Scantron sheet.
- Do not bring cell phones, two-way radios, beepers, or any other noise producing devices with you to the test room. If you 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, like an actress or actor about to go out on stage for a performance.

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 help 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 five sections that make up the EA III written examination.

- You must not leave your seat 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 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 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.
- Please do not talk during the exam and 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 other materials (e.g., pencil, calculator) needed for the examination will be provided.
- As indicated above, the EA III Written Examination is made up of five sections. You will take all five sections on the same day.

SAMPLE TEST QUESTIONS BEGIN ON THE FOLLOWING PAGE

VII. SAMPLE TEST QUESTIONS

SECTION ONE – PLAN READING

Section One of the EA III Qualifying Examination consists of questions that require you to find information from a partial set of plans. It also contains questions asking you to simply identify the type of plan sheet you see. These questions are designed to measure KSAs in the following KSA categories:

- Problem Solving/Analysis
- Reading Comprehension
- Technical

The types of plan sheets you will need to be familiar with for the examination are:

- Title Sheet
- Plans Legend
- Typical Sheet
- Project Notes
- Summary of Quantities Sheet
- Plan Sheet
- Profile Sheet
- Detail Cross-Section Sheet

Here is some helpful information you will need in order to answer questions these questions.

- You will need to be able to look at a plan set and find information such as the beginning and ending station number of a project, the net length of the project, length and location of bridges, and/or the total stationing of the project.
- You will need to be able to look at a plan set and locate such things as the existing right-of-way, the construction limits, and/or the construction centerline.
- You will need to be able to look at a plan profile and determine proposed elevation at a given station.
- You will need to be able to determine the length of in-place or proposed features such as bridges.
- You will need to be able to look at a map or profile sheet and determine which direction is north and locate certain roadways, towns, and/or cities.
- You will need to be able to identify the types of sheets included in the plan set given.
- You will need to determine distances between points using station numbers.
 - Points along the project are designated by station numbers. An example might be 1050+00. There are 100 feet between each whole station number. For example, there are 100 feet between station number 1050+00 and 1051+00.
- You will need to review a typical section sheet and determine the width of a proposed roadway and determine the structural design of the roadway.

SECTION TWO – READING COMPREHENSION

Section Two of the EA III Qualifying Examination consists of questions that require you to read an excerpt from a manual used at ALDOT and then answer questions based on that information. These questions are designed to measure KSAs in the following KSA categories:

- Problem Solving/Analysis
- Reading Comprehension
- Technical
- Written Communication

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

Sample Reading Passage

SUBJECT: SPECIAL PURPOSE WARNING SIGN CONSTRUCTION WARNING SIGN (W21-4A)
“UTILITY WORK AHEAD”

Authority to establish a special warning sign by the State of Alabama Highway Department is provided under Section 2C-41 “Other Warning Signs,” MUTCD 1978.

Section 6B-23, MUTCD 1978 describes the Worker Sign (W-21-1A) and defines the intended use as being for minor maintenance and public utility operations for the protection of works in or near the roadway. On low-speed urban areas the worker sign is intended for use at limited obstruction sites which are adequately marked and clearly visible, such as an open manhole with a fence around it. This sign should continue to be used on low-speed urban areas as defined.

Section 6B-26 Road Work Sign, (W21-4) or Utility Work Ahead (W21-4A), 1 meter x 1 meter is intended for use in advance of maintenance or minor reconstruction operations in the roadway. The use of this sign should be limited to operations that are generally of longer duration and may include the closing and channelizing of traffic from one or more lanes. In addition to warning the motorists of impending construction along the roadway, the sign (W21-4A) also informs the motorists as to the type of construction underway, that is, utility vs. State or other governmental agencies.

In summary, utility or utility contractors have a specific need for both the working sign and Utility Work Ahead. The selection of the sign to be used for a particular operation should be determined by the Engineer consistent with the type of public utility operations, minor low-speed urban at limited obstruction sites or in advance of minor utility reconstruction operations in the roadway.

Sample Item 1:

What section of the MUTCD 1978 gives ALDOT the authority to establish special warning signs?

- A. 2C-41*
- B. 6B-23
- C. 6B-26
- D. 1A-21

SECTION TWO – READING COMPREHENSION (Continued)

Sample Item 2:

What size are the “Road Work” and “Utility Work Ahead” signs?

- A. 1yd x 1yd
- B. 10yd x 10yd
- C. 1m x 1m***
- D. 10m x 10m

Sample Item 3:

Who determines the type of sign to be used for utility operations?

- A. the Contractor
- B. the Engineer***
- C. the Utility Company
- D. the City Council

SECTION THREE – MATH

Section Three of the EA III Qualifying Examination consists of questions requiring you to perform calculations with information provided to you, review calculations that have already been performed, and perform calculations based on information from a plan sheet. These questions are designed to measure KSAs in the following KSA categories:

- Problem Solving/Analysis
- Math
- Reading Comprehension
- Technical

Appendix B contains a Math Formula sheet that includes formulas you may need to perform these calculations. This formula sheet **WILL BE PROVIDED** in the exam.

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

Sample Item 1:

A parking lot is 35 feet by 76 feet. What is the area of the parking lot?

- A. 222.00 ft
- B. 2760.23 ft²
- C. 73.99 yd
- D. 295.56 yd²***

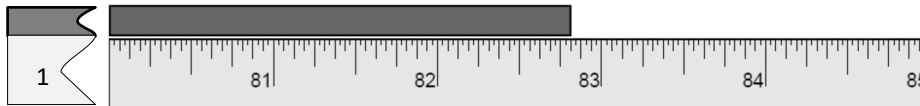
Sample Item 2:

An employee you oversee calculated the sum of the lengths of two pipes as 27 ½ feet. The length of the first pipe is 13 ³/₈. The length of the second pipe is 14 ½. Is the sum calculated correct?

- A. Yes
- B. No***

Sample Item 3:

How long is the bar?



- A. 6' 10 ¹³/₁₆''***
- B. 6' ¹³/₁₆''
- C. 7' 10 ¹³/₁₆''
- D. 7' ¹³/₁₆''

SECTION FOUR – WRITTEN COMMUNICATION

Section Four of the EA III Qualifying Examination consists of questions regarding grammar, punctuation, and logical sentence order. These questions are designed to measure KSAs in the following KSA categories:

- Problem Solving/Analysis
- Reading Comprehension
- Written Communication

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

Sample Item 1:

Choose the correct word needed to complete the sentence.

Charles and _____ were chosen to complete the project.

- A. me
- B. I***
- C. myself
- D. them

Sample Item 2:

Look at the underlined part of the sentence. Choose the answer that shows the correct punctuation for that part.

Samantha must get up because its time to go to work.

- A. it's***
- B. it
- C. its'
- D. Correct as it is

Sample Item 3:

Read the four sentences and choose the answer that shows the BEST order for the sentences.

- 1) If there are expenses incurred, complete report form 103; if there was damage to equipment, complete form 107.
 - 2) If form 107 and form 103 are required, complete form 122 also.
 - 3) Log on to the computer and go to the directory that contains the report forms
 - 4) As an employee, you must complete all paperwork.
- A. 3-2-1-4
 - B. 1-3-4-2
 - C. 2-1-4-3
 - D. 4-3-1-2***

SECTION FIVE – SITUATIONAL JUDGMENT

Section Five of the EA III Qualifying Examination consists of situations that an EA III may encounter, and you are to provide the best response to the situation. These questions are designed to measure KSAs in the following KSA categories:

- Problem Solving/Analysis
- Reading Comprehension
- Oral Communication
- Written Communication
- Interpersonal
- Planning/Coordination

One sample item for this section is shown with the correct answer marked with an asterisk.

Sample Item 1:

One of the employees you oversee tells you that he does not feel he has the technical ability to perform one of his assigned tasks. There is nobody else available to complete this task, and you need it completed as soon as possible. What would you do?

- A. Perform the task yourself.
- B. Offer to assist the employee in completing the task.
- C. Meet with the employee to determine what he needs to successfully perform the task.***
- D. Convince the employee to try harder by explaining that if he does not figure out a way to complete the task, you will have to do it yourself.

VIII. HOW TO STUDY FOR THE EA III EXAMINATION

You should study whatever material you believe will assist you in gaining or improving on the KSAs in the KSA categories listed before the sample questions in each section. If you are 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 calculation of surface area and volume would also be very useful. This mathematical practice can be done with a calculator, because you will be provided with a calculator when taking the exam. Practice reading a tape measure. Practice reviewing a set of plans and ensure you know how to locate items in them. 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 III 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 III written examination should be effective if you try to do the following things:

- Study in a quiet place. Do not study when you are 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 III 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 CONFIRMATION 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.

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

Do not bring your own calculator. Calculators will be provided at the testing facility.

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 III examination 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 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 score 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. 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 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 III WRITTEN EXAMINATION.**

APPENDIX A

ENGINEERING ASSISTANT III SURVIVING KNOWLEDGES, SKILLS, AND ABILITIES

PROBLEM SOLVING/ANALYSIS

- Ability to identify problems and determine their probable causes.
- Ability to gather information needed to resolve problems.
- Ability to make sound decisions based on facts and data.
- Ability to identify discrepant information contained in two or more documents or sources such as conflicts in plan sets.

MATH

- Ability to make accurate measurements to include distance, angles, elevations, and widths of structures.
- Ability to calculate area of a square, triangle, parabola, spandrel shapes, rectangle, circle, and cylinder as needed to calculate material requirements.
- Ability to perform routine mathematical calculations, including addition, subtraction, multiplication, and division with the assistance of a calculator as needed to calculate information such as square yards, cubic yards, convert tons to pounds, calculate acreage, and calculate various lengths on projects
- Ability to make algebraic calculations involving two or more variables, when one variable is unknown as needed to determine optimal size of pipe to accommodate flow of water and calculate sight distance formula.
- Ability to interpret and work with decimals as needed to make measurements, convert measurements to decimals or convert angles to decimals.
- Ability to determine asphalt rates such as amount of asphalt in a given area.
- Ability to convert measurements for lengths, heights, or depths from U.S. Customary to Metric and vice versa.
- Ability to check addition, subtraction, multiplication or division calculations performed by others and make sure they are correct.
- Ability to work with trigonometric functions and applications such as sine, cosine, tangent, and cotangents.
- Ability to read a tape measure as needed to perform duties such as measuring expansive joints, depth of stream bed, and length/width of cracks and elevations.
- Ability to operate a basic function calculator as needed to calculate heights, widths, or lengths.
- Knowledge of geometry as needed to calculate information such as width and length of culverts and pipes, parameter or area of projects, and determine lengths of structural components.

READING COMPREHENSION

- Ability to read, understand and apply information in manuals such as ALDOT Standards and Specification Manual, ALDOT Standard and Special Drawings Book, or the ALDOT Safety Manual in order to solve on the job problems and determine information such as when vendors should be paid, how project should proceed, how to set up filing systems, when jobs should be let, height of guard rail, dimensions of signs, specifications for precast girders, and steel placement.
- Ability to read, understand, and apply information in technical manuals such as the Materials, Sources, and Devices Manual, Standard Specifications for Design of Highway Bridges Manual, ALDOT Construction Manual, ALDOT Utility Manual, or Manual on Uniform Traffic Control Devices as need to solve on the job problems and obtain information such as appropriate vendors for needed products, approved lists of vendors, appropriate contractor payment terms, project inspection procedures, material placement rates, and construction specifications.
- Ability to read, understand, and apply information ALDOT Guidelines of Operations Manual to solve on the job problems.
- Ability to read and follow written instructions.

TECHNICAL

- Ability to read a set of plans in order to set up, traffic control, locate drainage structures and alignments.
- Ability to read a road map as needed to locate bridges or roadway projects and/or travel to job sites.
- Ability to read and interpret plans for projects such as roadway and bridge construction/ maintenance as needed to interpret symbols, determine the dimensions of structures, sequence of construction, quantity of materials needed, rates of material placement, pipe locations, size of pipes, types of signs needed, and permits required.
- Ability to gauge whether the work performed corresponds to the plans in order to ensure compliance with standards and specifications.
- Ability to obtain field samples of materials needed for testing such as silt fence materials, soil, core samples, asphalt, steel, paint or plastic striping.

ORAL COMMUNICATION

- Ability to communicate ideas verbally in an appropriate, concise, organized manner.
- Ability to adjust communication style to fit the background of other people to include avoiding use of technical "jargon" with lay people.
- Ability to listen to people to understand what they want and need.
- Ability to keep others informed about progress, problems, or issues regarding projects.
- Ability to obtain information by asking appropriate questions of relevant others.
- Ability to follow verbal instructions from others.
- Ability to communicate information in a respectful and tactful manner.
- Ability to communicate expectations to employees.
- Ability to accurately interpret instructions from supervisor.

WRITTEN COMMUNICATION

- Ability to adjust communication style to fit the background of other people to include avoiding use of technical "jargon" with lay people.
- Ability to keep others informed about progress, problems, or issues regarding projects.
- Ability to express self in writing by using appropriate grammar, spelling, and punctuation.
- Ability to write in a concise and organized way.
- Ability to obtain information by asking appropriate questions of relevant others.
- Ability to compose routine documents such as memos, correspondence, and basic reports in a concise and organized way using appropriate grammar, spelling and punctuation.
- Ability to communicate information in a respectful and tactful manner.
- Ability to communicate expectations to employees.
- Ability to accurately interpret instructions from supervisor.

INTERPERSONAL

- Ability to establish and maintain effective working relationships with a variety of people to include personnel from other departments and bureaus, contractors, property owners, mayors, city/county personnel, utility company employees, general public and other employees in various levels in own unit/department.
- Ability to constructively manage disagreements and inter-personal conflict among crew members.
- Ability to foster a team-oriented environment.
- Ability to resolve conflict by presenting facts and logic in a compelling way to obtain others' agreement and buy-in.
- Ability to establish trust with others such as subordinates, superiors, contractors, city/county personnel, and/or property owners to gain others' confidence and be an effective role model.
- Ability to remain objective and professional and maintain self-control in stressful situations or when confronted by hostile persons.
- Ability to calm hostile individuals such as citizens with complaints, coworkers, and contractors to maintain an environment conducive to good performance and maintain good public relations within the department.
- Ability to focus on tasks or issues while facing constant interruptions.

PLANNING/COORDINATION

- Ability to take responsibility for a job's timeliness and quality.
- Ability to plan and conduct multiple activities in order to assure goals are achieved or deadlines met.
- Ability to identify and include the necessary supplies and equipment needed to complete a given assignment.
- Ability to manage one's own time as needed to ensure work responsibilities are met.
- Ability to remain flexible and make necessary modifications to plans or schedules in response to changing conditions, new information, new assignments, or unanticipated problems and events.

MISCELLANEOUS

- Ability to safely operate motor vehicles such as pick-up trucks and vans in order to transport personnel and equipment.
- Ability to operate a digital camera and associated software as needed to include a photograph in inspection reports.
- Ability to work in diverse conditions such as rain, heat, cold, heavy traffic, water, or confined spaces.
- Ability to drive state-owned vehicles to job location.

Math Formulas

You may need some of the following formulas:

Triangle: $A = \frac{1}{2}bh$

$$P = s_1 + s_2 + s_3$$

Rectangle: $A = lw$

$$P = 2l + 2w$$

Square: $A = s^2$

$$P = 4s$$

Circle: $A = \pi r^2$

$$C = \pi d$$

Rectangular Prism: $V = lwh$

Cylinder: $V = \pi r^2 h$

Pythagorean Theorem: $a^2 + b^2 = c^2$

Rate of application for asphalt or aggregate: $R = 9T/WL$

1 Acre = 43,560 square feet

1 yard = 3 feet

$\pi = 3.14$

1 yard = .9144 meters