AGRICULTURAL CONSTRUCTION AND MAINTENANCE

CAREER DEVELOPMENT EVENT

RULES AND REGULATIONS

TEAM COMPETITION

ALABAMA FFA ASSOCIATION

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Alabama State Department of Education, Dr. Eric G. Mackey, State Superintendent of Education

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Agricultural Construction and Maintenance CDE

AGRICULTURAL CONSTRUCTION AND MAINTENANCE CAREER DEVELOPMENT EVENT

PURPOSE

This event is designed to provide students of Agriscience Education and members of the FFA an opportunity to compete and demonstrate their skills, abilities and competencies in Agricultural Construction and Maintenance.

ELIGIBILITY AND REGULATIONS

- For specific Eligibility Rules and Regulations, refer to the Contests and Awards Booklet.
- Only district eliminations will be held prior to the state event.
- The top four winners in the North, Central and South districts will compete in the state finals.
- If a cell phone or smart watch is seen or heard in the possession of a competitor, that individual student will be disqualified from competition and receive a score of zero.
- Competitors must enter their **first and last name** as well as their **chapter number and name** on the scorecard or they will receive a score of zero. Judges will not attempt to figure out who the card belongs to.
- Scantrons cards that are incorrectly completed (i.e. chapter numbers are not correctly shaded in, stray marks, etc.) will not be scored thus receiving a score of zero.
- The team will consist of a maximum of four FFA members, grades 7-12. The team's total written test score will be based on the sum of the points earned by the three highest scoring participants on the team.

DISCLAIMER

In the event that contests (CDE, LDE, TDE's) cannot be held in person, a virtual option may be conducted. Contest rules and guidelines are subject to change to meet the needs of a virtual experience.

DRESS CODE

Participants must wear closed toed shoes/boots (no sandals, crocs or slides) and long pants (jeans with no holes/ khakis/dress pants) or skirts (for religious reasons) that cover the knees if not in official dress. Leggings, jogging pants, yoga, lycra, are not permitted. Shirts should be long enough to be tucked in (no crop tops or midriff showing) and not contain vulgar or suggestive material or language. Contest where oral reasons are given should respect the professionalism of the event, and dress aligning with the profession is preferred. Official FFA

Dress is an allowable **form of dress for all events. Consequences for not being in dress code will result in disqualification, and the participant will not be allowed to compete.**

ALTERNATE POLICY

For district level events, if a chapter brings alternates there will be no more than two alternates allowed per team. Alternates will use a copy of the scan form (not an original) for those events scored via judgingcard.com. If more than four official scan forms are turned in for a chapter in one event, the highest score(s) for that team will be disqualified and deleted until the chapter only has four team members in the scoring system. Alternates must not be in groups with official team members.

For state level events, alternates are not allowed.

INSTRUCTIONAL AREA

The event will be based on the subject matter found in the state approved Course of Study and the Course Outline for Agricultural Construction and Maintenance.

Each participant will compete in all phases of the event.

DISTRICT EVENT

1. Will be held at regular district eliminations.
2. Event will consist of two (2) phases and will be conducted by qualified personnel.

   Written Examination - This phase will consist of 75 multiple choice questions. [One (1) point per question, for a possible 75 points.]

   Problem Solving - This phase will consist of identifying materials or solving problems. Each participant will solve 25 problems. [Three (3) points per problem, for a possible 75 points.]

   NOTE: Members of the same team may not sit next to each other during the written exam or problem-solving phases. Talking is not allowed unless you have a question that needs to be answered by the person in charge.

   *The problem-solving portion of the contest will be reviewed by at least 2 state staff and/or district improvement specialists and/or industry representatives prior to the contests in order to ensure that answers are correct and properly aligned with the questions.

3. The participant will have 40 minutes to complete the written exam and 40 minutes to complete the problem solving.

4. Electronic calculators are allowed. Calculators that can store data are not allowed.

5. District awards for the Agricultural Construction and Maintenance Event will be the same as other team events.

6. In the event of a tie, the team with the highest combined score in the problem-solving phase will be placed highest. The second tie breaker will be the team that has the highest score on written exam. The third tie breaker will be the high individual in the problem solving. (new)

7. High scoring individual will be determined by the combined scores of the written exam and problem-solving phases. In the event of a tie, the individual with the highest score in the problem-solving phase will be the winner. If a tie is still present, then the individual on highest placing team will be the winner.

STATE EVENT

1. The state event will be held during the State FFA Convention. The team will consist of a maximum of 4 members in all phases of the contest. Only the top three individual scores of each team on the written exam and problem-solving phases will be added to the team's mechanical skills score for the final team score.

2. State event will consist of three (2) phases and will be conducted by qualified personnel.

   Problem Solving – This phase will consist of identifying materials or solving problems. Each participant will solve 25 problems. [Three (3) points per problem, for a possible 75 points.] Participants will be given 40 minutes to complete this part of the test.

   NOTE: Members of the same team may not sit next to each other during the written exam or problem-solving phases. Talking is not allowed unless you have a question that needs to be answered by the person in charge.

   - The problem-solving portion of the contest will be reviewed by at least 2 state staff and/or district improvement specialists and/or industry representatives prior to the contests in order to ensure that answers are correct and properly aligned with the questions.

   Mechanical Skills - will be tested as a team activity consisting of all four (4) individuals. System areas/skills that will be needed for the state project will be announced after all District eliminations have been completed so that State Teams can prepare appropriately. The team activity will begin after everyone has finished the problem-solving phases. All teams will start this activity at the same time. All judges must meet and agree on the top four placings before leaving the contest site. The skills level portion will not exceed four hours in length.

   GRADING SYSTEM FOR MECHANICAL SKILLS PHASE-

   Option 1: Judges will divide up the building phases among themselves so that the same judges grade the same phase of construction for all teams competing.

   Option 2: All judges will work together on all phases, one team at a time, if they choose to do so.

3. Electronic calculators are allowed. Calculators that can store data are not allowed.

4. In the event of a tie, the team with the highest combined score in the problem-solving phase will be placed highest. The second tie breaker will be the team that

has the highest score in the team activity. The third tie breaker will be the high individual in the problem solving.

5. All individual safety equipment will be furnished by the participant for the state event. Hard hat, safety glasses, and closed toe shoes will be always required during the Mechanical Skills phase.

6. Most materials will be furnished for the event. Participants may be asked to bring tools and equipment.

7. Teams must have their work area clean before they leave the contest site. Leaving an uncleaned area may result in disqualification. Please check with the contest official to avoid disqualification.

EVENT SCORING (State Event)

The following is an outline of the event scoring for each individual team member and team activity:

1. Problem Solving - 25 questions @ 3 points per question = 75 points

2. Mechanical Skills will be judged as a group activity. Points possible will be determined by the extent of the activities required.

Problem Solving Examples: District and/or State Contest

Problem Solving could include, but is not limited to the following:

1. Calculating and applying Area:

Formula: **L x W = Square Feet of a rectangle or square**

Formula: **½ Base x Height = Square Feet of a Triangle**

Ex: What is the square footage of a room 14 feet by 20 feet?
14 x 20 = 280 square feet

Ex: How many sheets of 4 x 8 sheathing would be needed to cover an exterior wall that measured 32' long and 8' tall?
32 x 8 = 256 square feet for the wall 4 x 8 = 32 square feet per sheet
256/32 = 8 sheets needed to cover the wall

2. Calculating Volume:

Formula: **L x W x H = cubic inches (could be cubic feet, cubic meters, etc.)**

Ex: What is the volume of a 12-inch cube?
12 x 12 x 12 = 1,728 cubic inches

3. Calculating Board Feet and applying board feet calculations:

Formula: **Thickness" x Width" x Length' = Board Feet**

12

Ex: How many board feet in a 2" x 6" x 12'?
2 x 6 x 12 = 12 board feet
12

Ex: What would the price of 10 pieces 2 x 4 x 12 be if the price of lumber is $450/mbdft?

2 x 4 x 12 = 8 board feet x 10 pieces = 80 board feet x $0.45 per board foot = $36
12

4. Calculating and applying Concrete Volume:

Formula: **Thickness' x Width' x Length' = cubic yards**
27

Ex: How many yards of concrete would be needed for a driveway that is 30 feet wide, 20 feet long, and 6 inches thick?

0.5 x 30 x 18 = 10 cubic yards
27

Ex: What would be the cost of the concrete needed in the previous example if the cost was $95 a cubic yard?
10 x 95 = $950

5. Using Ohm's Law:

Formula: **Watts = Volts x Amps**

Ex: 100 watts and 120 volts, how many Amps?
100/120 = 0.83 Amps

Ex: 1 amp and 115 watts, how many Volts?
115/1 = 115 Volts

Ex: 120 volts and 2.5 amps, how many watts?
120 x 2.5 = 300 Watts

6. Calculating Rafter Length using Pythagorean Theorem:

Formula: **A squared + B squared = C squared**

Ex: What is the line length of a rafter when the span is 24 feet, and the slope (pitch) is 5/12?
Span: 24'
Slope (Pitch): 5/12
Run: 12' (half the span)
Rise: 5' (5 in 12 OR calculate by multiplying first number in slope by the # of feet in run)
Line Length: 12 squared + 5 squared = LL squared
144 + 25 = 169
Line Length = 13'

* Could add overhang and total length using the same formula.

* Could solve for Run, Rise, Line Length, or Total Length

7. **Other Problem-Solving Components could include:**
   - Tool Identification
   - Wall or Floor component identification
   - Adding Fractions
   - Estimating Materials needed, estimating billing, etc.
   - Transit part ID and/or calculating the slope of a plot of land.

TOOLS NEEDED

The list of tools that will be needed to be brought to the STATE event, will be emailed to you after all district contests have been held. Email communications will be sent to advisors prior to the state competition.

SUBJECT MATTER CONTENT

The following is a list of the subject matter areas along with specific skills, abilities, understandings, and suggested references. The skills noted with the asterisks (*) indicate specific activities that are suitable for skills or "hands-on" activities of the event. References listed are suggested guides for study in preparation for the event. Examination questions and problem-solving activities will be selected from the references listed and Agribusiness Performance Based Curriculum Guides.

KNOWLEDGE AND SKILLS AREAS

1. Communications through Drawings*
2. Sketching and Drawing*
3. Setting Up and Adjusting the Builder's Level*
4. Setting Up and Adjusting the Transit Level*
5. Boring and Cutting Holes*
6. Driving and Setting Nails*
7. Hand Tools, Their Uses and Care
8. Power Woodworking Tools, Their Uses and Care
9. Safety Rules (In All Areas)
10. Laying Out Building Site with Builder's Level*
11. Laying Out Building Site with Transit Level*
12. Footings and Foundations*
13. Using Plot Plan Data
14. Identifying and Constructing Framing Components*
15. Roof Framing*
16. Scaffolds and Ladders
17. Floor Framing and Subfloors*
18. Roofing Materials*
19. Exterior Wall Finishes
20. Thermal and Sound Insulation*
21. Stair Construction*
22. Interior Walls and Ceiling Finish*
23. Interior Doors and Window Trim*
24. Built-ins and Cabinets*
25. Chimneys and Fire Places*
26. Laying Out and Installing Roofs
27. Installing Prefabricated Siding
28. Use Architectural Engineers Scale
29. Wiring Circuits
30. Using Simple Circuit Schematics
31. Drawing Electrical

REFERENCES

The most current edition of the following references will be used.

CARPENTRY

Modern Carpentry,
Goodheart-Willcox Company
123 West Taft Drive
South Holland, Illinois 60473

Carpentry and Building Construction
Glencoe/McGraw-Hill
6510 Jimmy Carter Boulevard
Norcross, Georgia 35071

Roof Framing, Floor Framing, Wall Framing, and Ceiling Framing
American Association for Vocational Instructional Materials (AAVIM)
745 Gaines School Road
Athens, Georgia 30605

CABINETMAKING

Cabinetmaking and Millwork
Glencoe/McGraw-Hill
6510 Jimmy Carter Boulevard
Norcross, Georgia 35071

BLUEPRINT READING

Residential Print Reading
American Technical Publications and Print
1155 West 175th Street
Homewood, Illinois 60430

ELECTRICITY

Modern Residential Wiring
Goodheart-Willcox Company
123 West Taft Drive
South Holland, Illinois 60473

Electrical Wiring
American Association for Vocational Instructional Materials (AAVIM)
745 Gaines School Road
Birmingham, Alabama 35291-0630

SURVEYING

Elementary Surveying
Agriscience Education
3410 Skyway Drive
Auburn, Alabama 36830-6444

MASONRY

Masonry Skills, 1990 Edition
Delmar Publishers Inc.
Marketing Services
2 Computer Drive, West
Box 15051
Albany, New York 12214-5015

Concrete Transparency Masters
Agriscience Education
3410 Skyway Drive
Auburn, Alabama 36830-6444

Modern Masonry
Goodheart-Willcox Company
123 West Taft Drive
South Holland, Illinois 60473

Mechanics in Agriculture
The Interstate Printers and Publishers
19-27 North Jackson Street
Danville, Illinois 61832

TEAM TABULATION SHEET (District)

AGRICULTURAL CONSTRUCTION & MAINTENANCE
CAREER DEVELOPMENT EVENT

CHAPTER_____

Participant	Participant Number	Event Phase	Participant Score	Participant Total
Name of Participant # 1		**Written Exam** (75 points)		
		Problem Solving (75 points)		
		Participant # 1's Total (Maximum score possible is 150 points.)		
Name of Participant # 2		**Written Exam** (75 points)		
		Problem Solving (75 points)		
		Participant # 2's Total (Maximum score possible is 150 points.)		
Name of Participant # 3		**Written Exam** (75 points)		
		Problem Solving (75 points)		
		Participant # 3's Total (Maximum score possible is 150 points.)		
Name of Participant # 4		**Written Exam** (75 points)		
		Problem Solving (75 points)		
		Participant # 4's Total (Maximum score possible is 150 points.)		
TEAM RANKING		**TOTAL TEAM SCORE** (The three highest individual participant scores will make up the team score. Maximum score possible is 450 points.)		

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TEAM TABULATION SHEET (State)

AGRICULTURAL CONSTRUCTION & MAINTENANCE
CAREER DEVELOPMENT EVENT

CHAPTER_____

Participant	Participant Number	Event Phase	Participant Score	Participant Total
Name of Participant # 1		**Problem Solving** (75 points)		
		Participant # 1's Total (Maximum score possible is 150 points.)		
Name of Participant # 2		**Problem Solving** (75 points)		
		Participant # 2's Total (Maximum score possible is 150 points.)		
Name of Participant # 3		**Problem Solving** (75 points)		
		Participant # 3's Total (Maximum score possible is 150 points.)		
Name of Participant # 4		**Problem Solving** (75 points)		
		Participant # 4's Total (Maximum score possible is 150 points.)		
Team Event		**Points to be determined based on activity**		
TEAM RANKING		**TOTAL TEAM SCORE** (The three highest individual participant scores will make up the team score. Maximum score possible is 450 points.)		

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