2024

BRICS SKILLS COMPETITION

(BRICS FUTURE SKILLS & TECHNOLOGY CHALLENGE)

Digital Application of Highway Construction and Maintenance

BRICS-FS-48

Technical Description

(International Final)

August, 2024

DIRECTORY

1 Introduction to the competition project

1.1 Name and Description of Skills Competition

1.1.1 Name of Skill Competition

Digital Application of Highway Construction and Maintenance.

Competition Project No：BRICS-FS-48。

1.1.2 Skills Competition Description

2024 BRICS SKILLS COMPETITION of the Highway Construction and Maintenance is based on the highway construction and maintenance assessment platform, it covers three major subjects: theoretical knowledge assessment, roadbed and pavement construction and maintenance, and bridge construction and maintenance. This competition is based on real road and bridge engineering cases, comprehensively evaluating the abilities of participants in construction technology mastery, test and inspection execution, and maintenance operation techniques. At the same time, it combines the entire process of project construction management to test the abilities of participants in construction organization and management, aiming to comprehensively enhance their professional abilities and innovative thinking. The competition is a doubles event.

In the competition, theoretical knowledge assessment is conducted through online computer-based answering methods, while operational assessments for roadbed and pavement construction and maintenance, as well as bridge construction and maintenance, are implemented through a

virtual simulation competition platform for highway construction and maintenance. The main purpose of the assessment is to test whether the contestants possess the following job skills

(1) Be able to comprehensively understand and master the construction technology, testing and inspection, maintenance techniques and other knowledge of highway construction and maintenance engineering, and be familiar with operating norms and safety standards. Verify theoretical level through online exams.

(2) Be able to master the construction process and process management of roadbed and pavement, familiar with the process and methods of pavement technical condition evaluation, and have the ability to apply corresponding maintenance technical measures for roadbed and pavement damage.

(3) Be able to master the construction process and process management of bridges, understand the process and methods of evaluating the technical condition of bridges, and have the ability to apply corresponding maintenance technical measures for bridge and structural damage.

1.2 Competition Target

By thoroughly implementing the important directives of President Xi Jinping regarding skilled talents, vigorously promoting the spirit of model workers, the spirit of labor, and the craftsmanship spirit, fostering a large number of high-quality laborers and technical-skilled talents in the transportation industry, promoting the supply-side structural reform of

vocational education, and advancing the innovation of applied and skilled talent cultivation models, we aim to achieve the following objectives:

(1) Promote learning, teaching, and construction through competition

Through competitions, we aim to enhance students' enthusiasm for learning, master professional core technologies proficiently, improve industry awareness and sense of professional honor, promote the integration of college curriculum with job capabilities, integrate teaching content and resources with practical project cases of highway maintenance, restore the real work scenarios and practical operations of engineering enterprises, solve the "three highs and three difficulties" problems of high investment, high loss, high risk, and difficult implementation, observation, and reproduction in engineering vocational education, and empower the high-quality development of modern vocational education.

(2) Promote the construction of a dual teacher team and the improvement of teachers' teaching abilities

Professional teachers not only need to master the theories and methods of education and teaching, but also have rich professional knowledge, work processes, and operational skills, and other related professional abilities, balancing "doing" and "teaching". By organizing competitions, on one hand, participants' practical operational skills can be improved, and on the other hand, teachers' teaching design abilities in implementing teaching objectives, teaching content, teaching process, teaching evaluation, and other aspects of teaching projects can also be enhanced.

(3) Strengthen school enterprise cooperation, promote industry exchange

and development

Through this competition, we have further attracted the attention of enterprises to the teaching of highway maintenance courses in vocational colleges, showcased the style of vocational education, deepened school enterprise cooperation, and provided a platform for relevant professional players to showcase their talents and learn from each other. This is conducive to strengthening industry cooperation and communication, improving the overall level and competitiveness of the industry.

2 The abilities that contestants need to possess

PART		Proportion(%)
1	**Theoretical knowledge assessment**	
	Contestants need to understand and comprehend: – Public basic knowledge of highway construction and maintenance, covering basic concepts and principles, construction techniques, maintenance strategies, as well as relevant laws, regulations, rules, and normative documents; – Methods and principles for testing and inspecting materials and structures used in roadbed, pavement, and bridge construction; – Basic knowledge of roadbed, pavement, and bridge maintenance and management techniques; – Master the construction and maintenance techniques of roads and bridges, and be able to accurately interpret construction drawings and process flow charts; – Professional ethics and standards in the highway construction and maintenance industry.	20

	Contestants should be able to: – Complete theoretical knowledge tests through online exam answering platforms; – Understand and analyze common problems in road and bridge construction and maintenance, and propose reasonable solutions; – Apply theoretical knowledge to evaluate and optimize maintenance measures for roadbed, pavement, and bridges.	
2	**Construction and maintenance of roadbed and pavement**	
	Contestants need to understand and comprehend: – The basic process and key steps of roadbed and pavement construction; – Construction technology and characteristics of asphalt pavement; – Accurate identification and scientific evaluation methods for common diseases of asphalt pavement; – Treatment methods and strategies for asphalt pavement crack diseases; – Method for determining the length of road maintenance work area and laying out safety facilities.	50
	Contestants should be able to: – Proficient in the construction process of asphalt mixture surface layer to ensure construction quality; – Accurately identify the types of asphalt pavement diseases and scientifically evaluate their technical conditions; – Reasonably select appropriate maintenance techniques for effective treatment of crack diseases on asphalt pavement; – Determine the scope of road maintenance and work areas, and reasonably arrange safety facilities in the work areas.	
3	**Bridge construction and maintenance**	
	Contestants need to understand and comprehend: – Bridge structural characteristics, especially the design and construction techniques of prefabricated bridges; – Construction, transportation, installation process and details of	30

	prefabricated bridge components; – Basic principles and implementation steps of bridge load testing; – The process flow for replacing and maintaining bridge bearings.	
	Contestants should be able to: – Proficient in the technical points and specifications for the construction, transportation, and installation of prefabricated bridge components; – Accurately conduct bridge load tests and scientifically evaluate the load-bearing and structural performance of bridges; – Proficient in the technical requirements for replacing and maintaining bridge bearings to ensure construction quality and safety.	

3 Participants

The regional selection competition for the digital application of highway construction and maintenance in the 2024 BRICS Vocational Skills Competition (BRICS Future Skills and Technology Challenge) (event number: BRICS-FS-48) has been held. Based on the results and recognition rewards of each participating team in the selection competition, the "2024 BRICS Vocational Skills Competition Digital Application of Highway Construction and Maintenance International Finals Promotion List" (referred to as the "Promotion List") announced after review can participate in the international finals. Teams and units not included in the promotion list are not allowed to participate.

4 Competition Questions

4.1 Competition question format/framework

The competition for digital applications in highway construction and maintenance includes three relatively independent yet interconnected modules: Please refer to the sample questions of the International Finals for details.

Subject 1: Theoretical Knowledge Assessment

This module is the theoretical knowledge quiz assessment section, where individuals answer independently and teams score, accounting for 20% of the total score. The main assessment is the mastery of theoretical knowledge in highway construction and maintenance by the contestants. Through the form of Single choice question and multiple choice of topics, the contestants' comprehensive knowledge of highway construction and maintenance, construction technology, engineering map reading, test detection, highway maintenance and other professional knowledge, as well as the professional quality of highway construction and maintenance technicians and other comprehensive knowledge are thoroughly assessed.

Subject 2: Construction and Maintenance of Roadbeds and Pavements

This module is a practical assessment of virtual simulation application for roadbed and pavement construction and maintenance engineering technology. Individuals operate independently and teams score, accounting for 50% of the total score. The main assessment is the mastery of the practical application of roadbed and pavement construction and maintenance engineering technology by the contestants.

Subject 3: Bridge Construction and Maintenance

This module is a practical assessment of virtual simulation application for bridge construction and maintenance engineering technology, with individual independent operation and team scoring, accounting for 30% of the total score. The main assessment is the mastery of the practical application of bridge construction and maintenance engineering technology by the contestants.

The assessment contents of the three subjects complement each other, aiming to comprehensively evaluate the theoretical knowledge and practical application ability of the contestants, help them improve their skill level and enhance their professional skill competitiveness.

4.2 Time allocation and score weighting for competition questions

Subject	Team Total Score	Duration（min）	Proportion（%）
Subject 1: Theoretical Knowledge Assessment	200	30	20
Subject 2: Construction and Maintenance of Roadbeds and Pavements	200	150	50
Subject 3: Bridge Construction and Maintenance	200	120	30

Subject	Team Total Score	Duration（min）	Proportion（%）
Toal	200 = Subject 1*20%+Subject 2*50%+Subject 3*30%	300	100

4.3 Assessment content and requirements for each module

The competition covers comprehensive theoretical knowledge and professional ethics of highway construction and maintenance, roadbed and pavement construction and maintenance, bridge construction and maintenance, etc. It comprehensively tests the participants' comprehensive abilities in construction organization design, construction technology, testing and inspection, and maintenance operations of highway construction and maintenance technology.

Subject 1 Theoretical Knowledge Assessment: The assessment focuses on comprehensive knowledge of highway construction and maintenance engineering, construction technology, engineering drawing recognition, testing and inspection, maintenance techniques, and professional ethics.

Subject 2: Construction and Maintenance of Roadbeds and Pavements: The assessment includes the construction process and process management of roadbeds and pavements, evaluation methods for pavement technical conditions, and technical measures for roadbed and pavement maintenance.

Subject 3: Bridge Construction and Maintenance: The assessment content includes bridge construction process and process management, bridge technical condition evaluation methods, and bridge and structural maintenance technical measures.

Subject	Module Name	Scope of work
Subject 1	Theoretical Knowledge Assessment	1. Comprehensive knowledge of highway construction and maintenance engineering, construction technology, engineering drawing recognition, testing and inspection, maintenance techniques, and professional ethics; 2. The contestants complete the test paper composed of 85 randomly selected multiple choice questions (70 Single choice question, 15 multiple choice questions) on the theoretical knowledge examination platform.
Subject 2	Construction and Maintenance of Roadbeds and Pavements	1. Construction process of asphalt pavement, identification and evaluation methods of common diseases, safety facilities and length determination of road maintenance work areas, as well as technical measures for the treatment and maintenance of asphalt pavement crack diseases; 2. Participants need to complete relevant assignments on the virtual simulation competition platform and demonstrate their practical operational abilities in roadbed and pavement construction and maintenance.
Subject 3	Bridge Construction and Maintenance	1. Construction, transportation, installation process and process management of prefabricated components for prefabricated bridges, implementation steps for bridge load tests, and process flow for replacement and maintenance of bridge bearings; 2. Participants need to complete relevant assignments on the virtual simulation competition platform to test their

		professional skills in bridge construction and maintenance.

5 Scoring Scheme

5.1 Scoring method

All subjects in this competition will be scored automatically by the computer system. If a player engages in cheating or other violations during the competition, the referee will handle the situation based on the player's violation, and those with serious circumstances will have their scores canceled.

5.2 Scoring rules

(1) Ranking is arranged in descending order of the team's total score.

(2) If the total score is the same, the ranking will be based on the shorter total time spent; If the total score is the same and the total time is the same, the one with higher scores in roadbed and pavement construction and maintenance will rank first. If the scores in roadbed and pavement construction and maintenance are still the same, the one with higher scores in bridge construction and maintenance will rank first.

5.3 Evaluation criteria

（1）Subject 1：Theoretical knowledge assessment

The theoretical standard test paper consists of a total of 85 questions, with a total score of 100 points. Among them, there are 70 Single choice question,

each of which has 4 options, only one of which is the most consistent with the meaning of the question. 1 point for each question, 1 point for right choice and 0 point for wrong choice; There are 15 multiple-choice questions, each with 5 alternative options. At least 2 of them match the meaning of the question. Each question is worth 2 points, with 1 point given for selecting the wrong option and 0 points given for not selecting or selecting incorrectly.

（2）Subject 2 and Subject 3：Skill operation assessment

The assessment subjects for roadbed and pavement construction and maintenance, as well as bridge construction and maintenance, each include 5 practical skill application tasks, with each task corresponding to an operating point. Correct operation of tools or equipment in the designated area according to the correct operating sequence and selection can earn points, otherwise no points will be awarded.

6 Competition equipment

6.1 Technical Platform

NO	Platform Name		Amount
1	Player PC		1
2	Server		1
3	Switch/Hub		1
4	Highway Construction and	Highway Construction and Maintenance Theory Knowledge Examination Platform	1
5		Virtual simulation competition platform for	1

	Maintenance Competition Platform	roadbed and pavement construction and maintenance	
6		Virtual simulation competition platform for bridge construction and maintenance	1

6.2 Specification Parameters

NO	Platform Name		Specification Parameters
1	Player PC		System: Windows10/Windows11 system Memory: DDR3 16GB or above CPU: Recommended to use Intel Core i5 5th generation or above Solid state drive: recommended as a system disk Mechanical hard drive: It is recommended to use 40GB or above Graphics card: It is recommended to use a dedicated graphics card GTX1060 with 4GB or more of video memory
2	Server		Server version and above of Windows 2008 Memory: 32GB or above CPU: Intel Xeon E5-2620 v3 (2.4GHz) 4-core 16GB or above Hard drive: Recommended to use 500GB or above Server database: MySQL Other supporting software for the server: none
3	Switch/Hub		Layer 2 switch with 24 or more gigabit ports, configured with a local area network
4	Highway Construction and	Highway Construction and	The web-based online examination system supports single and multiple choice questions for testing, strictly ensuring data security and ensuring

	Maintenance Competition Platform	Maintenance Theory Knowledge Examination Platform	a smooth and efficient examination process.
5		Virtual simulation competition platform for roadbed and pavement construction and maintenance	The platform adopts cutting-edge virtual simulation, human-computer interaction, database, and remote interaction technologies, achieving seamless integration of virtual and reality, theory and practice, and schools and enterprises. The platform includes three major task modules for the construction, testing, and maintenance of roadbed and pavement, covering comprehensive functions such as asphalt mixture surface layer construction, pavement disease identification and technical condition evaluation, and asphalt pavement crack disease treatment. It provides users with a comprehensive and immersive virtual training environment to help improve their skills in roadbed and pavement construction and maintenance.
6		Virtual simulation competition platform for bridge construction and maintenance	The platform adopts cutting-edge virtual simulation, human-computer interaction, database, and remote interaction technologies, achieving seamless integration of virtual and reality, theory and practice, and schools and enterprises. The platform includes three major modules for bridge construction, inspection, and maintenance, covering key skills such as prefabricated box girder construction, bridge load testing, and bridge support replacement and maintenance. It provides users with a comprehensive and realistic virtual operating environment, helping to improve bridge

			construction and maintenance skills.

6.3 Site environment

(1) Necessary areas such as referee area, conference room, player rest area, competition area, technical support area, storage area, etc. shall be set up on the competition site.

（2）The competition venue should be a flat, bright, and ventilated indoor venue.

(3) The competition area provides standard competition equipment for participating teams; Each competition slot in the competition area is marked with a number; Each competition room is equipped with several workstations for placing computers, monitors, and tools on top of the workstations. The referee area is equipped with statistical tools such as computers, large screens, and cameras to record the entire process of each participating team's competition.

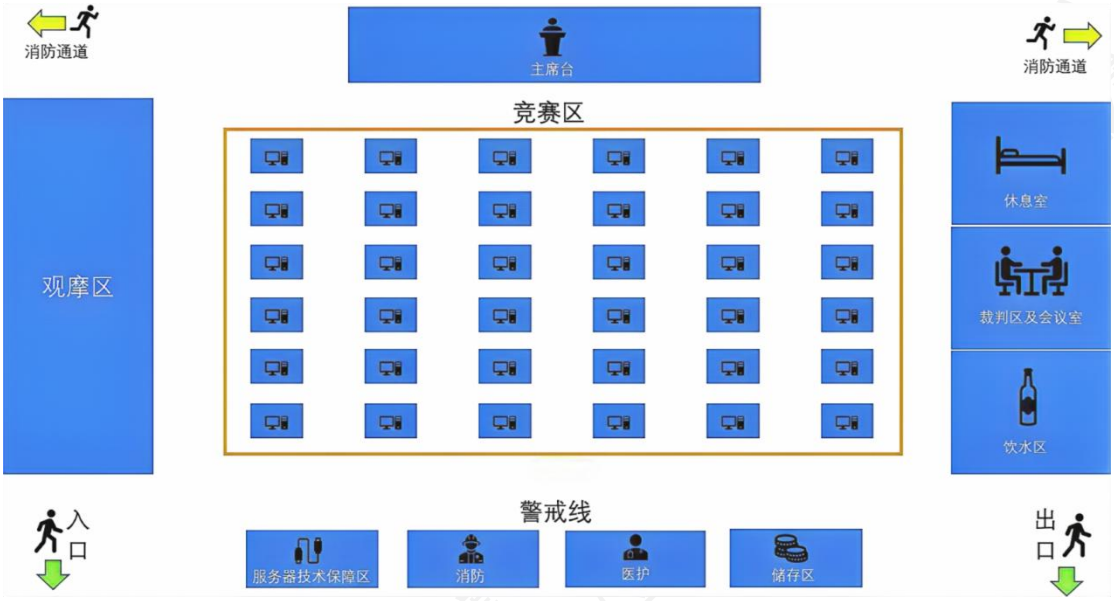
(4) Each participating team has 2 competition spots, and the venues for each participating team are independent of each other to ensure fairness.

(5) Each competition venue should be able to provide independent power supply, with a power load of not less than 1.5kw, and including safe grounding protection.

(6) The service area provides medical and other service guarantees.

(7) The technical support area provides competition related equipment such as PCs and backup platforms for participants

(8) Each work area on the competition site is equipped with single-phase 220V/10A or above AC power supply.



(Refer to the actual layout for reference)

7 Safety Requirements

7.1 Safety Management Organization

(1) A safety management organization should be established for the event to be responsible for all safety work during the preparation and competition period, with the director of the event executive committee as the first person in charge;

(2) Designate one Deputy Director of the Executive Committee to be responsible for the safety of the competition venue. The event executive committee, together with the local fire department and quality supervision

department, will inspect the safety performance of the fire protection facilities and competition equipment at the competition venue one week before the competition, and rectify them according to the opinions of the fire and quality supervision departments. Two days before the competition, the director of the executive committee, together with the event expert group, conducted an acceptance inspection of the venue;

(3) Designate one Deputy Director of the Executive Committee to be responsible for accommodation and food safety. The executive committee, together with the local public security department and food hygiene department, will inspect and accept the safety facilities and food hygiene at the site to ensure the accommodation and food safety of the contestants;

(4) Each province, autonomous region, municipality directly under the central government, and city specifically designated in the state plan must purchase personal accident insurance for participating athletes during the competition period when organizing participating teams. The team leader is the responsible person for traffic safety of the participating team. Responsible for the personal, transportation, and food safety of the contestants from school departure to the end of the competition and back to school.

7.2 Player safety requirements

(1) To enter the arena, one must wear clothing that meets safety requirements. No vest, shorts, or slippers are allowed to enter the competition venue;

(2) Strictly follow the operating procedures and do not switch on or off the power supply without authorization to avoid injury and accidents;

(3) Participants should take good care of the instruments and equipment in the competition venue, and operate them carefully according to the prescribed operating procedures. They should not touch non competition instruments and equipment. If a serious safety accident occurs due to violation of safety operation regulations during operation, the competition qualification will be immediately cancelled;

(4) At the end of the competition, participants must clean and tidy up the competition venue before leaving the field.

7.3 Security Work requirements

(1) Commanders should have access to information and coordinate their work in case of emergencies, and other personnel should not interfere;

(2) In the event of an emergency, all security personnel must obey orders and commands, prioritize the overall situation, and must not collide, delay or escape temporarily;

(3) When an emergency occurs, all security personnel must stick to their posts, fulfill their duties, and not leave their posts until they receive instructions to withdraw from their posts;

(4) When safety hazards or emergencies are discovered, on-site personnel should immediately report to the security team. After receiving the report, the security team should quickly arrive at the scene of the crime, command and cooperate with public security officers and security personnel to carry out rescue work;

(5) Based on the specific situation of the emergency, report to the higher-level

supervisory department and relevant departments respectively, and immediately activate the 'Zone Security Emergency Response Plan';

(6) When a fire or serious incident occurs, on-site personnel can proactively report to the public security organs and report to the leadership, and immediately organize rescue to avoid delaying the fighter jet; Activate fire emergency broadcasting, notify evacuation routes, stabilize people's minds, and avoid trampling and injuring people;

(7) Security exit personnel, upon receiving instructions, immediately open the exit door and guide the participants to evacuate the scene in an orderly manner.

7.4 Judge safety requirements

(1) When a participant intentionally damages equipment or harms others or oneself, the court referee should immediately stop it, report to the chief referee, and after the chief referee reports to the executive committee and the executive committee agrees, terminate the participant's qualification for the competition;

(2) If the referee discovers any safety hazards in the player's operation during the judging process, they should promptly stop or take emergency remedial measures;

(3) The referee shall immediately notify the presiding judge and report to the executive committee if other safety hazards are discovered during the adjudication process, and the executive committee shall take emergency remedial measures.

7.5 Court Civilization

（1） Personnel entering the venue must strictly obey the commands of the venue staff, abide by the order of the venue, and obey the guidance and arrangements of the venue staff.

（2）Smoking and bringing flammable and explosive materials into the venue are strictly prohibited;

（3）Personnel entering the competition area are requested to take care of all kinds of items on site, protect the public environment, and not post personal information at will;

（4）When encountering problems or unexpected events, please seek help from on-site staff in a timely manner;

（5）In the event of a fire or emergency, obey the command of the venue service personnel, evacuate the scene in an orderly manner, avoid panic, trampling and injuring people;

（6）In case of emergency and overcrowding, one should remain calm and make a brief stop in a relatively safe location. When the crowd is crowded, hold your chest with both hands to prevent internal organs from being squeezed and injured. When accidentally falling in a crowd, one should immediately contract their body and hold their head tightly to minimize injury;

（7）In case of special circumstances, obey the unified command of the

competition；

（8）Set up emergency evacuation diagram for sudden incidents.

7.6 Emergency Management

When an accident occurs during the competition, the discoverer should report to the event executive committee as soon as possible and take measures to prevent the situation from escalating. The event executive committee should immediately initiate a contingency plan to resolve the issue and report to the regional executive committee. Events with significant safety issues can be suspended, and whether to suspend them is decided by the organizing committee of the competition area. Afterwards, the regional executive committee should report detailed information to the competition executive committee.

8 Appeals and Arbitration

8.1 Appeals

（9）Participating teams can file appeals against equipment, tools, software that do not comply with competition regulations, unfair judgments, and violations by staff.

（10）Appeals should be submitted within 2 hours after the end of the competition, and will not be accepted if the deadline is exceeded. When appealing, the team leader of the participating team should submit a written appeal report to the event arbitration working group in accordance with the prescribed procedures. Provide a truthful description of the phenomenon, time

of occurrence, personnel involved, grounds and reasons for the appeal event in the report. Appeals based solely on subjective assumptions and insufficient factual evidence will not be accepted.

（11）After receiving the appeal report, the competition arbitration working group should review it based on the reasons for the appeal and inform the appeal handling result in writing on the same day. If an appeal is accepted, the appellant shall be notified of the time and location of the hearing; If the appeal is not accepted, the reasons must be explained.

（12）The appellant shall not unreasonably refuse the processing results and shall not take extreme actions, otherwise it shall be deemed as giving up the appeal. If the appellant is not satisfied with the arbitration result of the competition, they may apply for reconsideration to the arbitration committee of the competition organizing committee.

8.2 Arbitrate

（1）The organizing committee has set up an arbitration working group responsible for accepting all appeals that arise during the competition and conducting arbitration to ensure the smooth progress of the competition and the fairness and impartiality of the competition results.

（2）The ruling of the arbitration working group is final, and participating teams shall not suspend the competition or cause trouble due to appeals or dissatisfaction with the handling opinions. Otherwise, it will be treated as a waiver.

9 Competition Information

9.1 Instructions to Participating Teams

（1）Cross school team registration is not accepted for participating teams.

（2）Each participating team consists of 2 players and 2 guiding experts. Contestants must be confirmed after registration and qualification review.

（3）When each participating team reports, please present the personal accident insurance purchased for the contestants during the competition period. If not purchased, registration procedures will not be processed temporarily.

（4）During the competition and in different stages, participating teams are not allowed to change their contestants.

（5）No new team members are allowed to participate during the competition, and team members are allowed to be absent from the competition. Under no circumstances shall a new guidance expert be replaced, and the absence of the guidance expert is allowed.

（6）Participants and guidance experts of the participating teams should have good professional ethics, strictly abide by the rules and discipline of the competition, obey the referees, respect the referees and venue staff, and consciously maintain order on the venue.

9.2 Guidelines for Experts

（1）Each participating team should promote good moral standards, obey commands, obey referees, and not engage in fraud. If fraud is found, the

qualification for participation will be canceled and the ranking will be invalid.

（2）The leaders of each representative team must resolutely implement the various regulations of the competition, strengthen the management of participants, do a good job in pre competition preparation, and urge players to bring their credentials and other competition related materials.

（3）During the competition, except for the contestants, referees, on-site staff, and approved personnel who participate in the on-site competition, the team leader, guidance experts, and other personnel are not allowed to enter the competition venue.

（4）If the participating team has any objections to the competition process, the team leader shall submit a written report to the event arbitration working group within 2 hours after the end of the competition. If the deadline is exceeded, it will not be accepted. The team leader should take the lead in obeying and implementing the arbitration results of the appeal, and do a good job in the athlete's work. Contestants are not allowed to stop the competition due to appeals or dissatisfaction with the handling opinions, otherwise they will be disqualified.

（5）Guidance experts should promptly check the notices and content related to the competition on the dedicated web page, carefully study and master the rules, technical specifications, and requirements of the competition, and guide participants to make all technical and competition preparations before the competition.

（6）The team leader and guidance experts should summarize the competition and work after the game.

9.3 Notice to Contestants

（1）Contestants should truthfully fill in their personal information according to relevant requirements, otherwise their eligibility for the competition will be cancelled.

（2）Contestants must present their uniformly printed entry cards and valid identification documents to participate in the competition, and follow the time, order, and location specified in the competition.

（3）Contestants should carefully study and understand the relevant documents of this competition, consciously abide by the rules of the competition, obey commands, follow arrangements, and participate in the competition in a civilized manner.

（4）The competition must strictly follow the safety operation regulations and civilized production rules, take care of the equipment, instruments, etc. on the competition site, and shall not damage the instruments and equipment artificially. Once a serious safety accident occurs, with the approval of the presiding judge, their eligibility to participate will be immediately canceled.

（5）Participants are prohibited from bringing any electronic devices, communication devices, or other materials into the competition venue.

（6）During the competition, entry into the venue should be checked at the designated location and participants should participate in the competition according to the station number drawn by the competition venue. Operations cannot be started until the start signal is received, and participants cannot participate in the competition after being 5 minutes late.

（7）During the competition, contestants are required to complete the competition at their respective workstations within the specified time. Communication between contestants is prohibited, and they are not allowed to enter other contestants' workstations at will.

（8） After the competition is over, all contestants should stand up and end the operation. Arrange the materials and tools neatly on the operating platform, and only leave the venue after being counted by the staff. No materials are allowed to be taken away when leaving the venue.

（9）During the competition, without the approval of the organizing committee, contestants are not allowed to accept interviews related to the competition content conducted by other units or individuals. Contestants are not allowed to privately disclose information related to the competition.

（10）Each competition team shall submit their competition results in accordance with the requirements of the competition and the competition questions. It is prohibited to make any marks unrelated to the competition on the competition results.