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National
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Transforming the skill landscape

Sample Test Project

Regional Skill Competitions – Level 3

Skill 48 – Concrete Construction Work

Category: Construction and Building Technology

Table of Contents

A. Preface	3
B. Test Project.....	4
C. Marking Scheme.....	6
D. Infrastructure List.....	14
E. Instructions for candidates.....	16
F. Health, Safety, and Environment	17

SAMPLE

Section - A

A. Preface

Skill Explained

A Concrete construction works technician own a multi-skilling job exposure, the required skill sets are directly aligned with the core structural activities of the any concrete infrastructure in Residential, Factories, Commercial, Transportations, Water Supply, Smart Cities projects and major infrastructure developments. Therefore the practitioner has knowledge in Formwork, Bar bending, Scaffolding and concreting experience and also ready to exhibit their competency.

Skill on Formwork: - Shuttering Carpenter is responsible for making shutters and assembling system formwork for R.C.C structures such as columns, beams, slabs, walls and other similar elements. The individual should have good knowledge of safe working practices and also meet works requirements within specified time and tolerance.

Skill on Bar bending: - Reinforcement Fitter is responsible for fabricating and fixing reinforcement for complex structures such as arches, domes, and circular structures in a sequential manner to meet works requirements within specified time and tolerance

Skill on Scaffolding: - Scaffolder - System is responsible for erecting, dismantling and maintaining of various types of scaffold including system scaffold, staircase tower and mobile tower scaffolds at specified heights. The individual should have good knowledge of safe working practices and procedures while working at heights.

Skill on Concreting: - the individual is responsible for placing, levelling and finishing RCC in various structural elements. **(Optional for Level 1 Test Project for State Level Competitions)**

Eligibility Criteria- Competitors born on or after 01 Jan 1997 are only eligible to attend the Competition

Duration of Test project-12 hours

Section - B

B. Test Project

The Test project contains the following:

1. Installation drawing scale 1:10
2. Materials
3. Components
4. Consumables
5. Tools and tackles

Your assignment is to plan and erect Aluminium Formwork “L Wall” structure and Structural Beam Form on the basis of given drawing details.

Aluminium Formwork:- Here only everybody to show skill about aluminium formwork wall structures makings lying with components, materials, tools & tackles and various checking methods to maintain the quality on alignment, line and levels.

Structural Beam Form: - (DOKA Concept) Here only everybody to show skill about core formwork structure erection related with usage of different components, materials, tools & tackles and various checking methods to bring a high quality standards in all three direction X, Y and Z axis (Line, Level and Alignments).

Section – C

C. Marking Scheme

Marking Scheme: The Assessment is done by awarding points by adopting two methods, Measurement and Judgments

- Measurement –One which is measurable
- Judgments-Based on Industry expectations

Aspects are criteria's which are judged for assessment

Assessment and Marking of Test Projects

The maximum marks for each project will be 100. The same will be allocated under the heads of Measurement and Judgment with marks awarded from 3 for each aspect as under;

- 0: performance below industry standard
- 1: performance meets industry standard
- 2: performance meets industry standard
- 3: excellent or outstanding performance

Note: The criteria will be decided by the jury member during the Workshop.

Measurement is used to assess accuracy, precision, and other performance which can be measured in unambiguous way. Mark is awarded in full for a dimension within tolerance and zero when it is out of tolerance.

Judgment is used to assess the quality of performance, about which there may be small differences of opinion.

The scores from 0 to 3 are awarded for conformity with industry standards (score 1 stands for 1/3 and score 2 for 2/3 of the maximum mark allotted for the criterion).

Example-Judgment Marking

If maximum marks for Judgment criteria is 1 and if all 3 Experts (Juries) give 3 points to a candidate, the candidate will get 1 mark for that aspect. If 2 Experts give 3 and 1 Expert gives 2 points, then candidate will get $(3+3+2)/9 \times 1 = 0.89$ marks for that aspect out of 1 mark.

Marking Scheme**Skill Competition****Assessment Criterion :****Subjective Test Module****Competitor Team No****Competitors Name**

Aspect ID	Aspect Type (Measure (M)/ Judge(J))	Aspect of Criterion - Description	Max Marks for Aspect	Result or actual value	Mark Awarded
1 - Health & Safety		Total Marks of Aspect - 15			
1.1	J	No breaches and maintains a tidy workspace. (Any breach of conduct must be confirmed by at least 2 experts and recorded in a skill log book.) - No Breaches and Tidy Workplace = Full marks, No breach but untidy = Half marks, Breach & Untidy = Zero	5		
1.2	J	Competitor has worn all safety gear (safety shoes, safety glasses, long sleeves, gloves - some tasks may require gloves to be taken off) as required for the task. (Any non-compliance of safety gear after one warning to be confirmed and accepted by at least 2 experts and recorded in a skill log book.) - All safety gear used correctly throughout = Full marks, Safety gear taken off during process = Half marks, No safety gear or gear missing or used incorrectly = Zero	5		
1.3	J	Competitor uses the right tools and does not use any tools which are non-standardised, templates or provides an additional edge over other competitors. (Any usage of wrong tools to be confirmed and accepted by at least 2 experts and recorded in a skill log book.) - Uses the right tools in the correct method throughout = Full marks, Uses improper tool or in the wrong method for one instance = Half marks, No proper tools or usage improperly more than once = Zero	5		

2- Method of working		Total Marks of Aspect - 45			
Wall Reinforcement					
1	Spacing of rods	±10mm/ 5 spacing Yes = Full Marks, No = Zero Marks	1		
2	Length of main bar	±2mm Yes = Full Marks, No = Zero Marks	1		
3	Length of distribution bar	±2mm Yes = Full Marks, No = Zero Marks	1		
4	Verticality of main bar	±2mm Yes = Full Marks, No = Zero Marks	2		
Column Reinforcement					
1	Length of Column	±4mm Yes = Full Marks, No = Zero Marks	1		
2	Breadth of Column	±4mm Yes = Full Marks, No = Zero Marks	1		
3	Column rods verticality	±2mm Yes = Full Marks, No = Zero Marks	2		
4	Spacing of column stirrups	±10mm/ 5 spacing Yes = Full Marks, No = Zero Marks	1		
5	Length of stirrups	±4mm Yes = Full Marks, No = Zero Marks	1		
6	Breadth of stirrups	±4mm Yes = Full Marks, No = Zero Marks	1		
7	Diagonal of stirrups	±4mm Yes = Full Marks, No = Zero Marks	1		
8	Spacing of cover block	±10 mm Yes = Full Marks, No = Zero Marks	1		
Aluminum wall formwork					
1	Length	±4mm Yes = Full Marks, No = Zero Marks	1		
2	Breadth	±4mm Yes = Full Marks, No = Zero Marks	1		
3	Diagonal	±4mm Yes = Full Marks, No = Zero Marks	1		
4	Outer side plum	±2mm Yes = Full Marks, No = Zero Marks	2		
5	Inner side plum	±2mm Yes = Full Marks, No = Zero Marks	2		
6	Window and door size	±1mm Yes = Full Marks, No = Zero Marks	2		

Aluminium Column formwork					
1	Length	±4mm Yes = Full Marks, No = Zero Marks	1		
2	Breadth	±4mm Yes = Full Marks, No = Zero Marks	1		
3	Diagonal	±4mm Yes = Full Marks, No = Zero Marks	1		
4	Height	±4mm Yes = Full Marks, No = Zero Marks	1		
5	Plumb to overall height	±2mm Yes = Full Marks, No = Zero Marks	2		
Aluminium formwork beam, slab & cut out box					
1	Beam - Length	±4mm Yes = Full Marks, No = Zero Marks	1		
2	Beam - Breadth	±4mm Yes = Full Marks, No = Zero Marks	1		
3	Beam - Linear Line	±4mm Yes = Full Marks, No = Zero Marks	1		
4	Slab diagonal	±4mm Yes = Full Marks, No = Zero Marks	1		
5	Level of beam	±2mm Yes = Full Marks, No = Zero Marks	1		
6	Level of slab	±2mm Yes = Full Marks, No = Zero Marks	1		
7	Cut out box position	±5mm Yes = Full Marks, No = Zero Marks	1		
Beam reinforcement					
1	Square ness of the cage	±4mm Yes = Full Marks, No = Zero Marks	1		
2	Level / alignment of cage	±2mm Yes = Full Marks, No = Zero Marks	1		
3	Spacing of stirrups	±10mm/ 5 spacing Yes = Full Marks, No = Zero Marks	1		
4	Verticality of stirrups	±2mm Yes = Full Marks, No = Zero Marks	1		
5	Length of stirrups	±4mm Yes = Full Marks, No = Zero Marks	1		
6	Breadth of stirrups	±4mm Yes = Full Marks, No = Zero Marks	1		
7	Diagonal of	±4mm Yes = Full Marks, No = Zero Marks	1		

	stirrups				
8	Straightness of bars	±2mm Yes = Full Marks, No = Zero Marks	1		
9	Spacing of cover block	±10 mm Yes = Full Marks, No = Zero Marks	1		
3 - Quality of Job					
			Total Marks of Aspect – 20		
Aluminum wall formwork					
1	Shutter cleanness	Yes/No Yes = Full Marks, No = Zero Marks	1		
2	Wall tie wedge and pin at required location	Yes/No Yes = Full Marks, No = Zero Marks	1		
3	Location of electrical switch boxes	Correct/Incorrect Correct = Full Marks, Incorrect = Zero Marks	1		
4	Mortar packing done at bottom of wall panel	Yes/No Yes = Full Marks, No = Zero Marks	1		
Wall Reinforcement					
1	Types of ties	As specified Yes = Full Marks, No = Zero Marks	1		
2	Stability of ties	Tight(no shake of bar) Tight = Full Marks, Shaking = Zero Marks	1		
3	Location of electrical switch boxes	Correct/Incorrect Correct = Full Marks, Incorrect = Zero Marks	1		
Aluminium Column formwork					
1	Shutter cleanness	Yes/No Yes = Full Marks, No = Zero Marks	1		
2	Wedge and pin at required location	Yes/No Yes = Full Marks, No = Zero Marks	1		
Column reinforcement					
1	Type of column ties	As specified Yes = Full Marks, No = Zero Marks	1		

2	Stability of ties	Tight(no shake of bar) Tight = Full Marks, Shaking = Zero Marks	1		
3	Location of cover block	Correct/Incorrect Correct = Full Marks, Incorrect = Zero Marks	1		
Aluminium formwork beam and slab					
1	Wedge and pin at required location	Yes/No Yes = Full Marks, No = Zero Marks	1		
2	Prop location	Correct/Incorrect Correct = Full Marks, Incorrect = Zero Marks	1		
3	Prop stability	Tight(no shake) Tight = Full Marks, Shaking = Zero Marks	1		
4	Cut out box position	Correct/Incorrect Correct = Full Marks, Incorrect = Zero Marks	1		
Beam reinforcement					
1	Types of ties	As specified	1		
2	Stability of ties	Tight(no shake of bar) Tight = Full Marks, Shaking = Zero Marks	1		
3	Straightness of bars	Visibly straight Yes = Full Marks, No = Zero Marks	1		
4	Location of cover block	Correct/Incorrect Correct = Full Marks, Incorrect = Zero Marks	1		
4 - Completion & Handover		Total Marks of Aspect - 12			
4.1	J	Does the job look like the provided drawing / design?	5		
4.2	J	Are all Dimensions as required?	5		
4.3	J	Is the competitor able to explain the Erection Procedure to the enduser?	5		
4.4	J	Is the Job completed in the allocated time?	5		
Total Marks			100		

Mark Awarded is the Max Mark minus any specified deductions for difference between Requirement and Result

Signature confirming the accuracy of this printed result

Judge Name	
Judge Signature	

**Skill Competition
Summary of Scores
Concrete Construction Works**

**Competitor
Team No**

Competitors Name

Assistant :

	Aspect of Criterion - Description	Maximum Marks	Mark Awarded
1	Health and Safety- Aluminium Formwork	15	
2	Method of working- Aluminium Formwork	45	
3	Quality- Aluminium Formwork	20	
4	Handing Over- Aluminium Formwork	20	
	Total	100	

Skill Competition

Final Score - All Teams

Concrete Construction Works

Serial No.	Team Name	Score Judge 1	Score Judge 2	Score Judge 3	Score Judge 4	Score Judge 5	Total
1	A						0
2	B						0
3	C						0
4	D						0
5	E						0
6	F						0

Skill Competition						
Participants Attendance						
Team Name	Plumbers Name	Aadhaar No.	Signature	Assistant Names	Aadhaar No.	Signature
A						
B						
C						
D						
E						
F						
STBY						
STBY						

Skill Competition		
Judges		
S. N.	Judge Names	Judge Identification
1		1
2		2
3		3
4		4
5		5
6		6
7		7

Section - D

D. Infrastructure List

- **Infrastructure List** Workshop Installation-Tools & Equipment positioned by Organizers
 - Tool Kit-Tool & Equipment allowed to be brought by competitors for competitions
 - In the Competitions all tools and raw material will be supplied by the Organisers
- Tools and Tackles, Material, Consumables and Components**

SI No	Hand Tools
1	Nose Plier
2	Measurement tape
3	Binding Hook
4	Club Hammer
5	Spirit Level
6	Hole Bari
7	Nail Bar
8	Water Level Tube
9	Box Spanner
10	Rubber Mallet
SI No.	Materials and Consumables
1	PVC Cone
2	Nut Bolt and Washer
3	Line Thread
4	PVC sleeve Cover
5	Nails
6	PVC Tube
7	Permanent Marker
8	Pencil
SI No.	Components
1	Alu Span
2	Alu Span Cantilever
3	Horizontal Corner External
4	Beam Soffit bit
5	Beam Soffit
6	Prop Length
7	Beam Prop Head
8	Channel Prop Head
9	Slab Corner
10	Tie Rod
11	Internal corner

12	Slab Panel
13	Starter Block
14	Slab Corner Internal
15	Pivot Block
16	Slab Prop Head
17	Plate Cover
18	Wall Panel
19	Wing Nut
20	Cut Out Box
21	Anchor Nut
22	Stub Pin and Wedges
23	Wall Panel Top
24	Wall Tie
25	Wall clamp
26	External Working Platform

SAMPLE

Section – E

E. Instructions for candidates

- 1- Aware of technical description, rules, safety rules & test project.
- 2- Aware of evaluation criteria & competition time table.
- 3- Work station allotment will be by drawing.
- 4- Marking scheme including assessment criteria and all pre-filled objective and subjective marking forms for the test project.
- 5- Before competition starts, competitors shall have prepare their work place and to become familiar with tools & equipment's also raw material and Processes.
- 6- If any thing missing as per infrastructure list he must inform to expert.
- 7- Before starting the competition every competitor get 15 minutes to discussion.

Section – F

F. Health, Safety, and Environment

1. All accredited participants, and supporting volunteers will abide by rules and regulations with regards to Health, Safety, and Environment of the Competition venue.
2. All participants, technicians and supporting staff will wear the required protective Personnel clothing.
3. All participants will assume liability for all risks of injury and damage to property, loss of property, which might be associated with or result from participation in the event. The organizers will not be liable for any damage, however in case of Injury the competitor will immediately inform the immediate organizer for medical attention.