



Skill India
कौशल भारत - कुशल भारत



Test project

Concrete Construction Works

Category: Construction and Building Technology

Contents

Section A: Skill Explained

Section B: Test Project

Section C: Marking Scheme

Section D: Infrastructure List (Tool and equipment including raw material)

Section E: Instruction for Competitors

Section F: Health, Safety and Environment

Section A: Skill Explained

A Concrete construction works technician own a multiskilling 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 a 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, leveling and finishing RCC in various structural elements.

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

Section B: Test Projects

Total Duration: 22 hours– 3 days

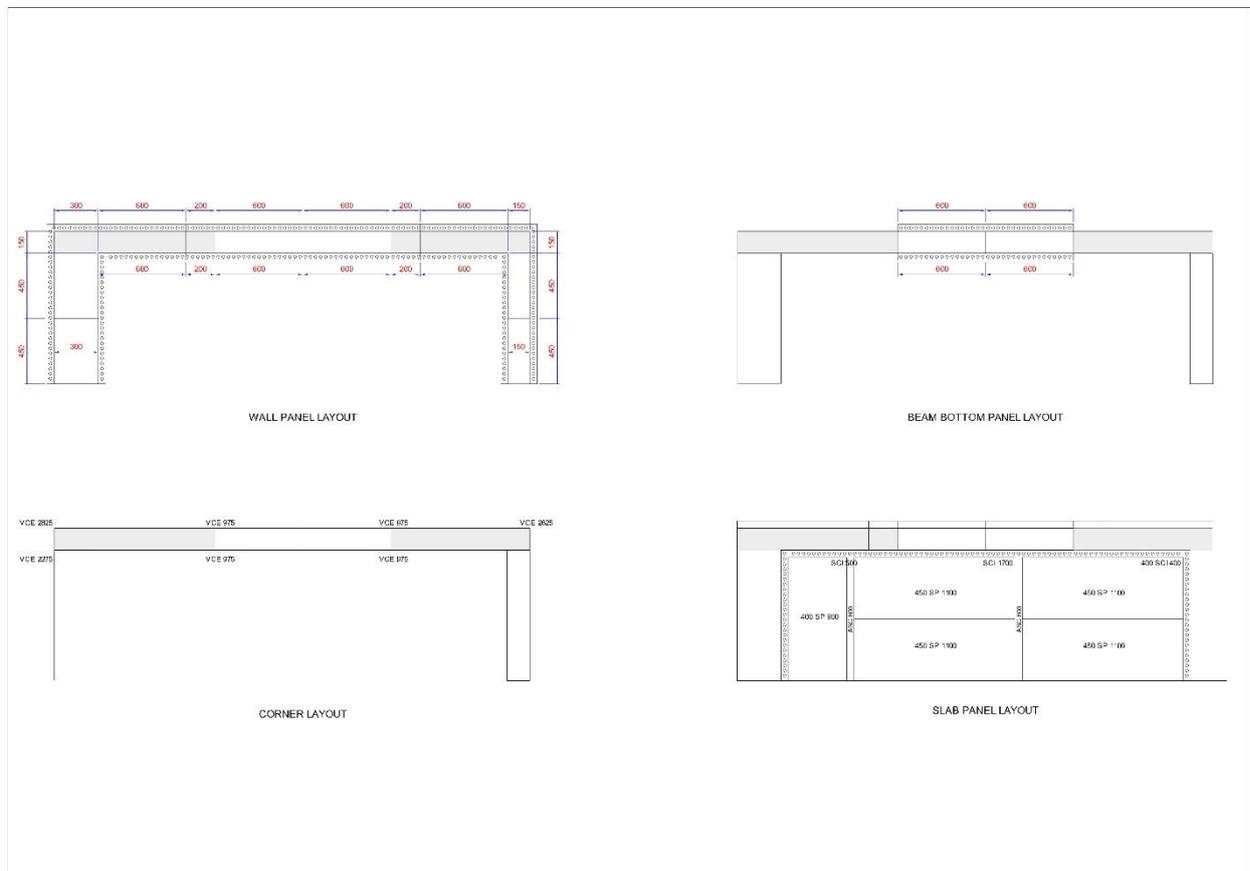
BRIEF ABOUT THE PROJECT

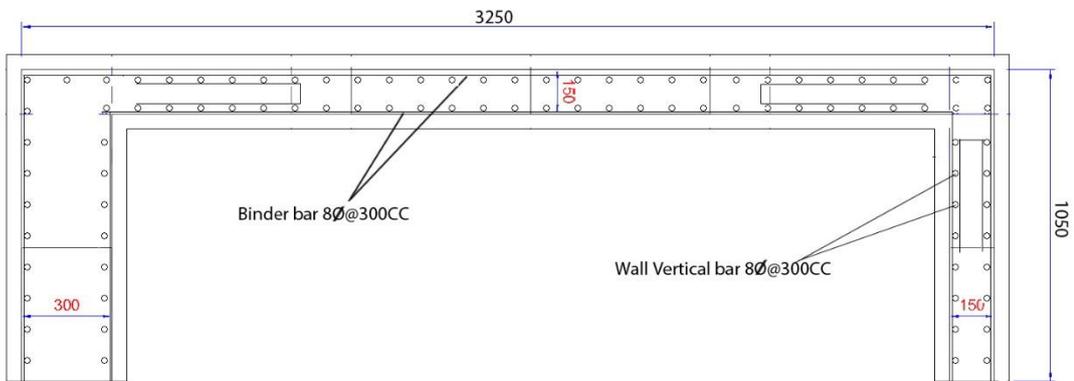
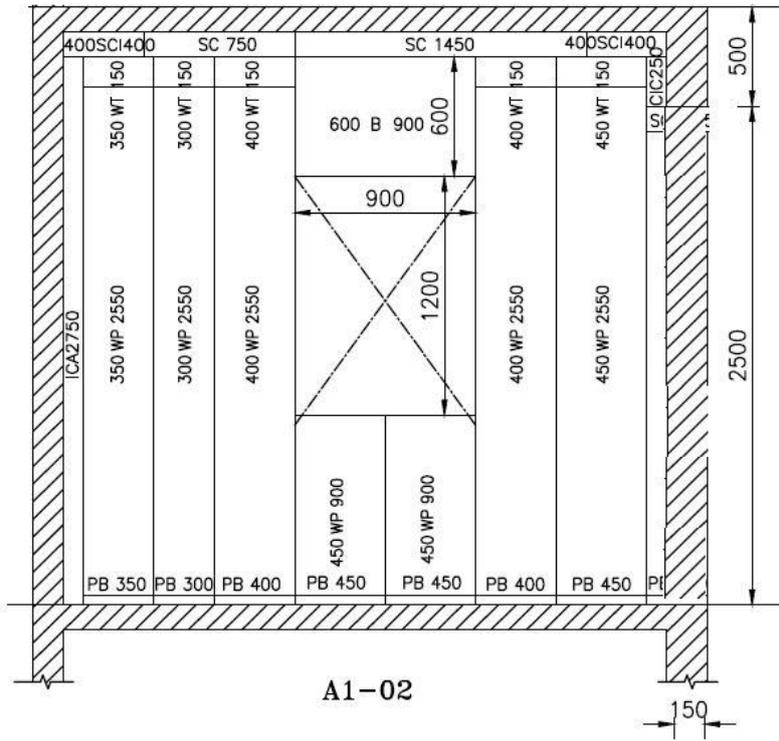
Your assignment is to plan and erect Aluminium Formwork “L Wall” structure and Structural Beam Form on the basis of given drawing details.

Aluminum Formwork:- Here only everybody to show skill about aluminum formwork wall structures making 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)

Drawings: Aluminium Formwork





Section 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 $(3+3+2)/9 * 1 = 0.89$ marks for that aspect out of 1 mark.

Marking Scheme

Skill Competition Assessment Criterion : Subjective Test Module

Competitor Team No

Competitors Name

Judgement Marking – Concrete Construction Work

Aspect ID	Aspect of Criterion - Description	Max Marks for Aspect	Mark Awarded
1 - Health & Safety		Total Marks of Aspect - 09	
J1	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	3	
J2	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 through out = Full marks, Safety gear taken off during process = Half marks, No safety gear or gear missing or used incorrectly = Zero	3	
J3	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	3	
Quality of Job			
Aluminum wall formwork			
J4	Shutter cleanness	2	1
J5	Wall tie wedge and pin at required location	2	2
J6	Location of electrical switch boxes	2	3
J7	Mortar packing done at bottom of wall panel	2	4
Wall Reinforcement			
J8	Types of ties	2	

J9	Stability of ties	2	
J10	Location of electrical switch boxes	2	
Aluminium formwork beam and slab			
J11	Wedge and pin at required location	2	
J12	Prop location	2	
J13	Prop stability	2	
Completion & Handover			
J14	Does the job look like the provided drawing / design?	3	
J15	Are all Dimensions as required?	3	
J16	Is the competitor able to explain the Erection Procedure to the enduser?	3	
J17	Is the Job completed in the allocated time?	3	
Total Marks		41	

Measurement Marking – Concrete Construction Work

Marking					
M1	Corner Marking	As per standards	1		
M2	Diagonal Marking	As per standards	1		
Wall Reinforcement					
M3	Spacing of rods	±10mm/ 5 spacing Yes = Full Marks, No = Zero Marks	Point 1	1	
			Point 2	1	
			Point 3	1	
M4	Length of main bar	±2mm Yes = Full Marks, No = Zero Marks	Point 1	1	
			Point 2	1	
M5	Length of distribution bar	±2mm Yes = Full Marks, No = Zero Marks	Point 1	1	
			Point 2	1	
M6	Verticality of main bar	±2mm Yes = Full Marks, No = Zero Marks	Point 1	1	
			Point 2	1	
			Point 3	1	
			Point 4	1	
Aluminum wall formwork					
M7	Length	±4mm Yes = Full Marks, No = Zero Marks	Point 1	1	
			Point 2	1	
			Point 3	1	
M8	Breadth	±4mm Yes = Full Marks, No = Zero Marks	Point 1	1	
			Point 2	1	
			Point 3	1	
M9	Diagonal	±4mm Yes = Full Marks, No = Zero Marks	Point 1	1	
			Point 2	1	

			Point 3	1	
M10	Outer side plumb	±2mm Yes = Full Marks, No = Zero Marks	Point 1	1	
			Point 2	1	
			Point 3	1	
			Point 4	1	
			Point 5	1	
M11	Inner side plumb	±2mm Yes = Full Marks, No = Zero Marks	Point 1	1	
			Point 2	1	
			Point 3	1	
			Point 4	1	
			Point 5	1	
M12	Window size	±1mm Yes = Full Marks, No = Zero Marks	Length	1	
			Width	1	
			Diagonal	1	
Aluminium formwork beam & slab					
M13	Lintel	±4mm Yes = Full Marks, No = Zero Marks	Length	1	
			Width	1	
			Liner Line	1	
M14	Slab diagonal	±4mm Yes = Full Marks, No = Zero Marks	Point 1	1	
			Point 2	1	
			Point 3	1	
M15	Level of slab	±2mm Yes = Full Marks, No = Zero Marks	Point 1	1	
			Point 2	1	
			Point 3	1	
M16	Supports	Props Stability	Point 1	1	
			Point 2	1	
Concrete Assessment					
Pre Placement					
M17	Centre line	As per drawing		1	
M18	Formwork & Staging	As per drawing & in exact plumb		1	
M19	Construction joint location*	As per drawing		1	
During Placement of Concrete					
M20	Surface preparation by mortar bedding	Fresh mortar		1	
M21	Slump testing	As per requirement		1	
M22	Adequacy of vibration	40mm and 60mm needle required		1	
M23	Continuity of operations	No break in between concreting		1	
M24	Segregation of aggregates	Not allowed		1	

Post Concreting				
M25	Observation for honeycombing	Not Allowed	1	
M26	Line and Level	As per drawing	1	
M27	Surface finish	As per drawing	1	
M28	Cracks and air bubbles	Not Allowed	2	
Total Marks			59	

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

Section 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

Section E: Instructions for Competitors

1. All instructions for the Test Project will be given either on previous day or 1 hour before competition. During this hour there will be some information and questions will also be allowed.
2. All the information given is translated beforehand and competitors can use the translation.
3. Read carefully the information given and make your own translation,
4. Extra time of 30 mins will be given at the end of the day for cleaning.

Section 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.
4. Create and maintain an aesthetic display of the materials chosen to keep the working station materials in good quality.