

RIICWM402E

SUPERVISE CIVIL WORKS CONTRACTORS

THEORY EXAM

Participant name	
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FOR THE PARTICIPANT

Instructions

- You will complete written questions as outlined on the following pages. You must attempt all questions and provide enough detail in your responses to demonstrate your knowledge.
- It is anticipated that you should complete this assessment within two (2) hours, but additional time may be allowed upon negotiation with the Assessor.
- You must complete all questions unsisted by the Assessor or other personnel but may refer to reference material as needed. All questions must be answered correctly for a 'Satisfactory' assessment outcome to be awarded.
- An oral examination may be allowed under certain circumstances, whereby your answers will be documented by another party.
 - Any written questions that are incomplete, or not answered satisfactorily will need to be completed again after further training support.
- If you answer a question incorrectly but modify your response, put your initials next to the written change (or the Assessor must initial a verbal change).

Resources required

Pen

FOR THE ASSESSOR

Instructions

- Where oral examination has occurred, ensure that this is acknowledged in writing (e.g. FT001 and Assessor Comments)
- All questions must be satisfactorily demonstrated by the Participant for a Satisfactory determination (indicated by an Assessor tick to the right of the question).
- Assessors are to complete marking in pen of a different colour to the Participant.
- If the Participant verbally modifies their response, write in the modified response verbatim and put your initials next to the written change.

ASSESSOR COMMENTS

As necessary, outline:

- Details on reattempts, alternative arrangements or reasonable adjustments made.
- Where a Participant is deemed 'Not Satisfactory', provide recommendations for future training.

Q1. What preparation is required to determine a job plan for a contractor?**Answer**

Should reflect discussion related to: Determining and confirming human resources including competence of operators and workers to meet scope requirements. Determine scope of work and subdivide each major activity into a number of operations using a work breakdown structure to determine resources required for tasks. Schedule and coordinate tasks according to job specifications. Determine WHS, risk assessment and environmental requirements accessing relevant acts, regulations, local authority requirements, using lessons learned, past documents for similar tasks, SWMS and JSEAs. Confirm sampling, testing and reporting requirements for inclusion in job schedule according to specifications. Include material requirements and materials delivery schedule to job plan. Confirm material procurement and delivery to approved locations using approved suppliers. Confirm site travel routes and exclusion zones from TMP. Include contractor in all team meetings e.g. pre-start meetings. Read contractor contract and communication with contractor to confirm availability and competence of workers. Ensure site induction for contractors and sub-contractors has been or will be conducted prior to work commencement. Confirm plant and equipment required for tasks availability, whether contractor provides own plant and how safety requirements are met. Confirm manufacturer/ supplier product procedures/ guidelines. Record the job plan including schedule in a bar/Gantt chart. Determine and document contingency planning and ensure all possible hold ups are planned for. Apply estimating principles to estimate material, labour, plant and machinery and time required to complete work tasks. Read site data to determine specific information relevant to tasks including geological data, hydrological data, meteorological data, drainage design and the impact of other work on site relative to own team outcomes and access.

Q2. How will you share emergency response information relevant to the site and various tasks with sub-contractors?

Answer

Should reflect: All contractors are treated as members of the team, emergency response training is provided with other members of the work team, during site induction and reinforced during pre-start meetings, according to workplace and site policies and procedures. training is provided to ensure understanding of evacuations, location of emergency equipment, first aid and how to safely shut down machinery. Training is provided that clarifies requirements and responsibilities relevant to fire, explosion, medical emergency, rescues, incidents with hazardous chemicals, bomb threats, armed confrontations and natural disasters. worker responsibility, responsible persons, first person on scene responsibilities, communication protocol; key elements and location of emergency plans.



Q3. Which on-going risk management procedures do you follow and access when supervising civil work contractors and how do these link to legislative requirements?

Answer

Should reflect but is not limited to: Contractors must be supervised as with other workers, the contractor cannot be held responsible for management of risks and hazards at the site, this continues to be the overall responsibility of the principal contractor who must supervise consistently to monitor how risks are being managed and that safety procedures and policies are being upheld. This includes adherence to policies related to risk management including financial risks (material procurement and handling), quality risks (testing and scheduling) and safety risks. WHS risk management includes following policies and procedures related to SWMS, JSA/JSEA and personal risk assessment.



Q4. What are (1) the objectives of the Environmental Management Plan (EMP) and (2) why should you read this EMP as part of planning the job?

Answer

1. Should reflect but is not limited to: EMP provides a framework that onsite management can use to satisfy the requirements of the Environmental Protection Act and those of relevant local council, heritage and or cultural authority; EMP describes key environmental, cultural and heritage responsibilities for the site.



2. EMP environmental responsibilities for the site include erosion and sediment control; air, dust, noise, waste and vibration controls (which may include hours of operation to be planned) and waterway protection requirements. Cultural and heritage protection requirements and procedures to be followed. Informs supervisor of relevant protective tasks, materials and waste disposal requirements relevant to the site.

Q5. In the general principles of surveying, what is the importance of 'working from the whole to the part' (1) when surveying and (2) how this is achieved?

Answer

1. Should discuss: the importance of working from whole to part is "to localise the errors and to control the accumulation of errors". The first principle of engineering surveying, the whole survey area is first enclosed by main stations and main survey lines.



2. The main survey lines are measured very accurately with precise survey instruments. The area is then divided into a number of divisions by forming well-conditioned triangles. The purpose of this method of working is to control accumulation of errors. During measurement, if there is any error, then it will not affect the whole work, but if the reverse process is followed then the minor error in measurement will be magnified.

Q6. Why is it important to coordinate tasks with other work supervisors and schedule contractor activities?

Answer

Should reflect but is not limited to: Strategies must be agreed upon by team leaders/supervisors. Overlapping projects and tasks can create conflicting demands; .Appraisal of all tasks to know exactly which of them must be completed before the next can begin. Ascertaining distinct tasks allocated to each team and contractors to allocate to job plan and schedule. Avoiding conflicting priorities; Confirm coordination against strategic plans; Ensuring task resources are available at appropriate times, monitoring project milestones and work progress. Confirming and adjusting as necessary work flow.



Q7. What processes must you follow to acquire and confirm the acquisition of, required resources at your workplace?

Answer

Should reflect discussion related to all or any of: consult with applicable personnel and contractors to ensure availability at scheduled times; compile a list of resources required using approved suppliers OR gaining approval to use non-approved suppliers; verifying the availability, quality and delivery of the resources, apply the organisations purchase order procedure, keep a record of the purchase order, forward a copy of the purchase order to accounts payable, inspect the goods on arrival and verify that they are correct and suitable for purpose, organise the correct storage and handling of the items, advise accounts payable of the receipt of the goods and authorise payment.



Q8. How do you communicate site safety requirements to ensure contractors wear PPE suited to the site and task?

Answer

Should reflect but is not limited to: Site safety requirements are shared during company induction, site induction; specific PPE requirements for the site are shared on site entry fencing; additional work area fencing as required. Supervisors wear/apply PPE as required to provide an example to workers and contractors. Supervisors monitor teams for adherence to site safety requirements and that all required PPE is worn. This may be reinforced during tool box meetings or during daily pre-start meetings.



Q9. What is the 'rule of thumb' basis for matching a machine to a job?

Answer

Should reflect: A table showing the zoning used based on knowledge of the operational distances best suited to each type of machine. Zone 1 indicates machines of high power where speed is low, because the operational distance is generally less than 150m. In the remaining zones, the machines sacrifice power but speed becomes important. The machines listed in Zone 4 are designed for transporting materials at higher speeds.



Q10. Supervisors must have knowledge of factors affecting plant performance. What are four (4) factors that can affect plant performance and output and why must supervisors monitor each of these?

Answer

1. Should reflect four (4) of: inexperienced operators – check for competencies, watch for poor workmanship
2. plant not suitable for the task, material type, weather, site conditions, poor scheduling, machine must be matched to task
3. no pre or post operational checks, lack of plant maintenance
lack of sufficient safety guidelines. Plant handling must be monitored to
4. avoid costly delays caused by any of these performance issues.



Q11. How do you confirm that the contractor has a job plan available that meets task requirements?

Answer

Should reflect but is not limited to: Provide the contractor with the job plan, meeting to discuss requirements and confirm understanding and compliance. Confirm contractor adherence to the job plan, discussing and accepting feedback for consideration and changes required.

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Q12. What methods can you apply to confirm contractors have communicated instructions to team members and others involved?

Answer

Should reflect but is not limited to: Check with HR that all contractors and team members have attended site inductions to be provided with site requirements including traffic management, site safety and PPE requirements. Facilitate daily pre-start meetings and ensure that contractors and team members and all involved in the daily task/s are present and that each member has read and signed the SWMS relevant to the task/s.

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Q13. What is required when setting out for work tasks?

Answer

Should reflect but is not limited to: Identify survey pegs or physical markers and work individually or with the surveyor to locate the boundaries of the construction. Set out offsets and confirm compliance with plans, specifications and regulations. Read applicable engineering and informational surveys. to obtain data concerning topography, drainage and man-made features of the area. co-ordination with other trades, and direction of work sequence so subcontractors can complete their work in accordance with contract documents

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Q14. What is the importance of the survey pegs during the road set out?

Answer

should reflect but is not limited to: survey pegs usually show the level and the centre-line of the road in flat terrain and only the level on hillsides.

That reference pegs show the chainage of the road and are placed outside the road formation.

That the ground height at level pegs shows the future level of the road unless cut or fill instructions are written on the peg. When such instructions are written on the peg, start measuring from the top of the peg. Place your pegs at regular intervals (maximum 20 metres) and remember that more pegs will facilitate not only your supervision work but also the work of the labourers as they can clearly see what will have to be done.



Q15. What methods do you apply when monitoring civil works to ensure the required outcomes or met on a daily basis?

Answer

Should reflect but is not limited to description of: physical observation of operational competencies and that these meet task requirements; checking that work completed and work underway meet the requirements of job plan Checking work against work schedule; Information is collected by communicating with team members, calculating total quantities used, hours worked by members and plant as well as a brief description of the works performed on that day. This information should be recorded in the daily works diary or daily job sheet and submitted to the relevant supervisor. This information can then be used to calculate costs and compared to the current Bar or Gantt chart to gauge the actual progress to the forecasted progress



Q16. Name and explain the purpose for three (3) of the different test results the supervisor must be able to read and understand at different hold or witness points of a project.

Answer

1. Should reflect discussion of purpose for but is not limited to three (3).of:



- soil tests (moisture, plasticity, permeability etc)

- concrete slump tests

2. • concrete compression tests

- compaction tests

- test for suitability of conforming materials

3. • water quality tests

- sub-grade and sub-base tests

- rock mass tests.

Q17. What is the purpose of road surface drainage and what are four (4) elements used to achieve this effectively?

Answer

Purpose Should reflect discussion of purpose for road surface drainage and related elements but is not limited to four (4).of:



kerb and channel

edge and median drainage

Element table drains and blocks

1. diversion drains and blocks

2. batter drains

3. catch drains and banks

4. drainage pits

pipe networks.

Q18. What are the effects of inappropriate road drainage infrastructure?**Answer**

Should reflect but is not limited to discussion of Inappropriate road drainage infrastructure, can change the characteristics of a waterway by altering: flooding patterns, including flow distribution, flood heights, peak water levels, water velocities, especially through bridges and culverts. can change the duration of inundation, erosion and sedimentation patterns, fauna transfer and terrestrial and aquatic fauna habitats. These changes may affect service and cause issues that require additional unplanned investment to address things such as flood mitigation works, erosion and sedimentation problems, reductions in adjoining land valuations, salinity issues and /or increases in pollutant levels.

**Q19. What are the three (3) main parts of roadway design and the importance of these features?****Answer**

1. Should reflect description of alignment, profile, and cross-section. example:
The emphasis of the geometric design is to address the requirement of the driver and the vehicle such as safety, comfort, efficiency, etc. The features normally considered are the cross section elements, sight distance
 2. consideration, horizontal curvature, gradients, and intersection. The design of these features is to a great extent influenced by driver behaviour and psychology, vehicle characteristics, traffic characteristics such as speed and volume. The objective of geometric design is to provide optimum
 3. efficiency in traffic operation and maximum safety at reasonable cost
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Q20. What are four (4) events that might occur on a normal working day that may significantly affect progress of civil works tasks and force the use of contingency plans.

Answer

1. Should reflect but is not limited to discussion relating to four (4) of: inclement weather; natural disaster; plant and vehicle breakdown; Site incident or accident; Test results; Absenteeism; Industrial dispute; material shortage



2. _____

3. _____

4. _____

Q21. What are four (4) contingency plans that may be in place to support a civil construction operational plan?

Answer

1. Should reflect but is not limited to four (4) of: Contracting out or outsourcing human resources and other functions or tasks;



Availability of cheaper raw materials and consumables; recycling and re

2. use;

rental, hire purchase or alternative means of procurement of required materials, equipment and stock;

3. _____

risk identification, assessment and management processes;

4. strategies for reducing costs, wastage, stock or consumables;

Q22. What methods do you apply when monitoring worker and contractor performance for safety and compliance?**Answer**

Should reflect but is not limited to: I, (Supervisor) observe the workers during work tasks to monitor their work performance and safety. I check that their actions are not causing new risks or hazards (e.g. tool placement), I check that workers adhere to all Exclusions Zone requirements. During pre—start meeting I remind workers that all workers have input into safety and that each worker is responsible for their own safety and is aware of reporting hazards. I record observations and all calculations in the diary. . If there is an issue, I (Supervisor) stop the job (Depending on the severity) and make an assessment and rectifies the issues and makes the job safe. Then calls “Toolbox” to address this issue to make sure this compliance remains intact.

Report to Management.

**Q23. What is the relationship between waste management and environmental protection?****Answer**

Should reflect but is not limited to The key provisions of the Waste Reduction and Recycling Act 2011 (Qld) include: a requirement for Queensland Government agencies and local governments to prepare waste management plans, introduction of product stewardship arrangements for any waste products that are identified as a growing problem for landfill in the future and strengthened littering and illegal dumping offences, including public reporting of vehicle-related littering offences. Certain types of waste can contaminate the environment. Bad waste management practices can cause land and air pollution. Proper waste management reduces pollution and helps save energy. and segregated waste is often cheaper to dispose



Q24. Describe why supervisors access each of the following types of data.

Answer



Geological Data:

Should reflect: to determine rock mass, sub-grade and sub-base tests, soil and ground qualities for testing including soil tests for moisture, plasticity, permeability Informs geotechnical engineering requirements.

Hydrological Data:

To address surface water, groundwater, water quality and water use on sites.

Meteorological Data:

Helps with civil construction operations in the area of air pollution, wind and weather. When determining whether or not a task can be completed or whether it may cause an environmental or safety risk. The supervisor should be aware of the data and be able to interpret the findings and apply the recommendations back at the worksite.

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SUPERVISE CIVIL WORKS CONTRACTORS

PRACTICAL ASSESSMENT

Participant name	
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FOR THE PARTICIPANT

Instructions

- The tasks outlined on the following pages will require performance of actual workplace activities, as a result of a structured activity set by an Observer in the workplace or a simulated activity set by your Assessor/Observer.
- The timeframe for these tasks will be established by your Assessor/Observer, in consideration of location conditions and industry requirements.
- You must complete all tasks unassisted by the Assessor or other personnel unless the steps note this assistance.
- You must attempt all tasks (and itemised steps) for a 'Satisfactory' assessment outcome to be awarded.
 - If an observation conducted that is incomplete, or without satisfactory performance, the observation will need to be completed again after further training support.

FOR THE ASSESSOR/OBSERVER

Instructions

- The following observation record should be used to judge and record your observations of the Participant as they complete the task(s) set. You must record your observations of the Participant's performance.
 - For each occasion, indicate the task performed and whether it was a simulation or workplace-based task.
 - Any simulated assessment must ensure the Participant still performs under workplace conditions which reflect industry standards.
 - In the comments, provide clear detail regarding the task that the Participant was required to do (e.g. PPE used, materials handled, attachments connected, plant types).
- All steps must be satisfactorily demonstrated by the Participant for a 'Satisfactory' determination (indicated by an Assessor tick to the right of each itemised step, or an Observer tick to the right of each itemised step, and confirmation by an Assessor in the Assessor Comments).
 - Where you have determined that one or more task steps have not been satisfactorily demonstrated, provide the Participant with additional support and outline details of such assistance in the Assessor/Observer Comments. Allow the Participant two (2) further opportunities to demonstrate the task again to allow an opportunity for a 'Satisfactory' assessment outcome to be achieved.
 - If after three (3) attempts the Assessor determines that the Participant cannot demonstrate the required steps, a 'Not Satisfactory' outcome is to be determined.

TASK OUTCOME					
Task	Date	Task Type (Tick)	Location	Task outcome (Tick)	
				Satisfactory	Not Satisfactory
Task 1		☐ Workplace ☐ Simulation		☐	☐
Task 2 (Occasion 1)		☐ Workplace ☐ Simulation		☐	☐
Task 2 (Occasion 2)		☐ Workplace ☐ Simulation		☐	☐

ASSESSOR COMMENTS: GENERAL

As necessary, outline:

- Details on reattempts, alternative arrangements or reasonable adjustments made.
- Where a Participant is deemed 'Not Satisfactory', provide recommendations for future training.

ASSESSOR COMMENTS: PRACTICAL TASK 2: OCCASION 1	
☐ Individual student (as named on cover page) ☐ Multiple students [☐ All from Attendance Report, ☐ Specific students involved – identify students]	
Task	Provide detail
2.1.B.	Specify task to be completed: e.g. earthworks for road construction
2.1.C.	Completed Task 1 meets these requirements:
2.1.E.	Specify tool and method applied to address potential risks, hazards and environmental issues and implement control measures. e.g. SWMS, JSEA and site walk through
2.1.F.	PPE worn/applied (tick or specify): ☐ Hi-viz ☐ Helmet ☐ Gloves ☐ Safety boots ☐ Eye protection ☐ Ear protection ☐ Other (please specify):
2.1.G.	Specify method used to consult with contractors: e.g. meeting to confirm contractor resource requirements
2.1.J.	Specify method applied to confirm resources are available: e.g. confirm human resources with contractor and HR e.g. confirm material and machinery using procurement documents against job plan/ schedule
2.2.L.	Specify new potential hazards recognised and controlled: e.g. work areas exposed, controlled with temporary fencing
2.2.N.	Specify what has been set out: e.g. Earthworks for road construction

ASSESSOR COMMENTS: PRACTICAL TASK 2: OCCASION 1

2.3A.	Specify checks/measurements made: e.g. measures of depth, grade
2.3D.	Communication applied (tick or specify): ☐ Face to face ☐ Marking on pegs ☐ Stringlines ☐ UHF ☐ Hand signals ☐ Whistles ☐ Other (please specify):
2.3G.	Specify adjustments made: e.g. modified works order due to delivery being late
2.4D.	Outline recommendations made: e.g. improvements to coordination of plant for tasks

ASSESSOR COMMENTS: PRACTICAL TASK 2: OCCASION 2

- ☐ Individual student (as named on cover page)
☐ Multiple students [☐ All from Attendance Report, ☐ Specific students involved – identify students]

Task	Provide detail
2.1.B.	Specify task to be completed: e.g. earthworks for road construction
2.1.E.	Specify tool and method applied to address potential risks, hazards and environmental issues and implement control measures: e.g. SWMS, JSEA and site walk through
2.1.F.	PPE worn/applied (tick or specify): ☐ Hi-viz ☐ Helmet ☐ Gloves ☐ Safety boots ☐ Eye protection ☐ Ear protection ☐ Other (please specify):
2.1.G.	Specify method used to consult with contractors: e.g. meeting to confirm contractor resource requirements
2.1.J.	Specify method applied to confirm resources are available: e.g. confirm human resources with contractor and HR e.g. confirm material and machinery using procurement documents against job plan/ schedule
2.2L.	Specify new potential hazards recognised and controlled: e.g. work areas exposed, controlled with temporary fencing
2.2N.	Specify what has been set out: e.g. Earthworks for road construction
2.3A.	Specify checks/measurements made: e.g. measures of depth, grade
2.3D.	Communication applied (tick or specify): ☐ Face to face ☐ Marking on pegs ☐ Stringlines ☐ UHF ☐ Hand signals ☐ Whistles ☐ Other (please specify):
2.3G.	Specify adjustments made: e.g. modified works order due to delivery being late
2.4D.	Outline recommendations made: e.g. improvements to coordination of plant for tasks