



TITLE: Construction Plant & Vehicle Management	STANDARD:	208
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Definitions (in relation to this Standard)

Competent	Trained, experienced and qualified
Construction Plant	All operated mechanical powered plant which includes, but not limited to, dozers, lightweight tractors (JCB's / backhoes), medium and heavy wheeled tractors (FEL's), motorized graders, wheeled or tracked excavators, dumpers, cranes, articulating boom platforms (Man-lifts / MEWP's), augers, fixed or mobile generators, compressors, pumps, tunnel boring machines (including HDD), concrete mixers, pumps and vibrating pokers (internal and external), vibratory rollers, plate compactors, line-painters, surface layers, tar macadam plants, heaters and boilers.
Vehicles	Including but not limited to, all light, medium and heavy goods vehicles both rigid and articulated, all buses, personnel carriers, pick-ups, cars and all water-borne vessels (boats & barges).
Greenman, Redman, Deadman	Royal Commission provided training package that is mandatory for every single person on the contractors project site to undertake as part of their new worker orientation. Workers are either classified as <i>Greenman</i> or <i>Redman</i> . The principles of the training are to keep workers a safe distance from equipment and vehicles to prevent accidents. Only highly trained <i>Redman</i> are permitted within the working zone of equipment/vehicles, and then, only when the equipment/vehicle has stopped working.

Cross-References

- Attachment B – Special Condition 18 – Temporary Access and haul roads
- Attachment B – Special Condition 40 – Permits
- Attachment B – Special Condition 45 – Worksite transportation
- Attachment B – Special Condition 55 – Maintenance of traffic flow
- Attachment C – General Conditions - Article 22 – Interface with Traffic
- Attachment C – General Conditions - Article 23 – Extraordinary Traffic & Special Loads
- Attachment C – General Conditions - Article 45 – Plant, Temporary Works and materials
- Standard 200 – Site Preparation

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- Standard 222 – Lifting Operations (Mobile & Tower Crane)

Standard

General

1. Pre-mobilization, the contractor must submit a Traffic Management Plan to Royal Commission for approval before any vehicle or plant operations are permitted to take place.
2. In Traffic Management plan, contractor shall try to avoid vehicle routes from hazards like excavations, edges of structures, fuel and chemical storage areas.
3. Contractor management (Project manager, Construction manager & Safety Manager) are to conduct a weekly ES&H audit of the work locations that should include a focus on at-risk/desired behaviors around vehicles and worker interface. Actions are to be assigned specific owners and tracked for closure.
4. Job Hazard Analysis (JHA) & risk assessments are to be conducted where the use of flagmen is considered, and must be signed by contractor management to confirm that other measure (without people) cannot be used.
5. JHAs and STARRT cards to have a section that addresses vehicle movements and the hazard mitigation measures. See STARRT card at Appendix 3.
6. The contractor is to conduct a risk assessment when multiple employees are to be transported to or from the project to the camp/living facilities.
7. All engines will be turned off when refueling. Funnels and drip trays shall be used.
8. Where required, wheel wash facilities shall be provided by the contractor to prevent mud being dragged on to public/private roadways.
9. All vehicles and equipment will have daytime running lights, no additional window tinting.
10. Contractors must establish a rule where all drivers are instructed never to pass a stopped bus, or multi passenger vehicle.
11. Driver must yield to pedestrians at dedicated crossing points or other areas as indicated by signs.
12. Drivers must set a parking brake when leaving a vehicle unattended. Where the plant or equipment is fitted with hydraulically operated apparatus such as buckets, blades, rippers or bowls such apparatus is to be lowered to the ground. Engines should be switched off, and keys removed from ignition.
13. Contractor shall conduct a detailed check on every construction plant or equipment by a competent mechanic with an ES&H staff at the start of the project, before using it for the first time on the project and then shall continue these checks at every quarter using the form

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given in Appendix 5. All vehicles and heavy equipment must be maintained according to the manufacturer's instruction. Records shall be provided to Royal Commission upon request.

Operator Qualification

14. All drivers of heavy goods road transport vehicles, that travel on public roadways at any time, must have a Saudi Arabian Government driver's license for heavy goods vehicles, this includes, but not limited to:

- All Haulage Trucks (including dump-trucks, over 3500kg)
- All Trucks with Hiab's
- All Transporters
- All Tankers (fuel or water)
- All refueling vehicles
- Concrete Mixers
- Concrete Pump Trucks

If any of these vehicles are for use only on site, and do not at any time use or interface with public roadways, then internationally recognized 3rd party training provider certification (must be approved by Royal Commission) is permitted by the Royal Commission. All equipment operators of any equipment used for lifting purpose must have a specific 3rd party certificate, even if they have a Saudi Arabian Government driver's license for heavy goods vehicles.

15. Crane Operators shall:

- Hold a valid and in-date Saudi Arabian Government heavy equipment operator's license, if the crane travels on public roadways at any time.
- Also be trained to operate the specific crane (make and model) by examination and hold a current approved certificate / license from an approved and internationally recognized 3rd party training provider.

16. All operators of heavy construction plant that travel on public roadways at any time must have a Saudi Arabian Government heavy equipment operator's license for the specific equipment that they are operating.

17. All operators of light & heavy construction plant must have a recognized 3rd Party training license / certificate of training for the specific equipment that they are operating, this includes, but not limited to:

- Articulated self-propelled boom platforms (man-lifts / MEWP's)
- Lightweight Dumpers
- Heavy & Medium Vibratory Rollers
- Bitumen layers
- Bobcats
- Heavy, medium & light wheeled tractors (Front end loaders & JCB/backhoes)
- Wheeled or tracked excavators
- Heavy tracked Augers
- Wheeled or tracked excavators

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- Motorized graders
- Bulldozers
- All trucks with Hiabs / articulated boom (in addition to a Saudi Arabian Government driver's license for heavy goods vehicles)
- Concrete pump trucks

18. All drivers of vehicles must have a Saudi Government driving license, this includes, but not limited to:

- Buses / coaches
- cars
- pick-ups
- minibus
- SUV's
- 4 x 4's
- ambulance

Vehicles

19. All vehicles must be registered, licensed, and maintained in a road worthy condition.

20. All vehicles must be operated, and maintained, in a safe manner in accordance with manufacturer's recommendations.

21. All passenger carrying vehicles must be equipped with seat belts. The number of occupants in the vehicle must be limited to the number of seatbelts fitted.

22. All vehicles must have working lights (head, tail, brake, turning indicator, hazard warning).

23. All vehicles must be fitted with rearview mirrors (internal & external).

24. All tires must have visible tread across the whole tire surface.

25. All vehicles must have an audible and operational reversing alarm.

26. All vehicles must carry a spare tire, emergency repair tools and a fire extinguisher.

27. All vehicles that are to be used for highway works are to be fitted with a hazard flashing beacon and reversing alarm.

28. All vehicles must be inspected by the driver before each use and recorded on the form at Appendix 1. At the end of each week, or on the discovery of an urgent repair, a copy of this form must be then forwarded to the Contractor's Transport / Equipment Manager for retention; these shall be made available to the Royal Commission for inspection upon request.

29. In congested or pedestrianized areas vehicles reversing must be controlled by a banks-man (flag-man/Redman) who is to be positioned in front of the vehicle with clear line of sight to the driver. Banks-men must be physically protected by a barrier at all times. All banks-men are

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required to have undergone specific training (Redman), to include hand signals, prior to being allowed on site.

- 30. There should be no visible leaks of fuel, oil or hydraulic systems from any vehicle.
- 31. All loads on trailers must be secured and evenly distributed.
- 32. All loads must be secured by a minimum of two straps.
- 33. All vehicles are to be reverse parked, where it is possible to do so.
- 34. All oversized loads, hazardous loads or otherwise abnormal loads must comply with Royal commission and Kingdom permitting requirements prior to any movement or travel. All permits must be in place, signed by the appropriate entity and made available to the Royal Commission on request.
- 35. No vehicles shall be overloaded that the maximum allowable gross vehicle weight is exceeded. A procedure for inspecting vehicle loads (to avoid overloading and improper loading) before they enter/exit site is to be developed and used by the contactor.
- 36. When loads extend beyond the sides, rear or front of a vehicle trailer, red flags must be placed on these "extensions".
- 37. Ground conditions must be a firm level surface for all trucks involved in tipping operations. No trucks must travel whilst the load carrier is in the elevated position.

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- 38. All Construction Plant shall be fit for purpose and maintained in a safe manner as per manufacturer's recommendations.
- 39. All concrete pump machines are to be 3rd party certified, and the operator is to hold a valid 3rd party certification for the make/model used.
- 40. All excavators used for lifting are to be 3rd party certified for such purposes. Only dedicated lifting points to be used as described in the manufacturers operating procedure/manual.
- 41. Provided safety equipment fitted to construction plant shall not be removed; this includes protective cabs and rollover protection.
- 42. Mobile construction plant shall be fitted with a hazard flashing beacon and audible reversing alarm.
- 43. For all mobile construction plant operations where a banks-man is required, the banks-man must be positioned in front of the equipment with clear line of sight to the operator. All banks-men/flagmen are required to have undergone specific training (Redman), and issued with a specified sticker (or other methods) to indicate they have been trained.
- 44. All construction plant in a mobile role must have an audible and operational reversing alarm.

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45. All mobile construction plant must be equipped with either seat belts or other restraint device. The number of occupants in the equipment must be limited to the number of seatbelts / restraint devices fitted.
46. Adequate consideration shall be given to the location and ground conditions when setting up construction plant.
47. Exhaust fumes shall be vented to atmosphere in a safe area.
48. Fuel tanks, when not an integral part of the plant, shall be positioned in a safe area. All fuel tanks must be banded to prevent damage to the environment through fuel and oil spills.
49. All construction plant shall be operated in accordance with manufacturer's operation manual.
50. All Construction Plant shall have a copy of the manufacturer's operating manual either in the vehicle or at the contractors' site office.
51. All generators, including lighting towers and electric welding sets, must be grounded / earthed.
52. All construction plant must be inspected by the operator before each use and recorded on the form at Appendix 2. At the end of each week, or on the discovery of an urgent repair, a copy of this form must be then forwarded to the Contractor's Transport / Equipment Manager for retention; these shall be made available to the Royal Commission for inspection.
53. Spinner knobs on steering wheels are prohibited.

Operating Procedures

54. Contractor is to develop a set of project specific driving & plant operating rules, including a procedure for restricting / revoking project drivers and operators that disobey site rules, which is to be included in the Contractor's ES&H Program. Driving rules are to be signed by all drivers and operators, indicating they will abide by all project driving requirements, before being permitted to operate. Records to be kept.
55. Contractor is to provide traffic management details within the Construction Phase ES&H Plan. Whenever construction site operations interfere with public highways / roads, a separate traffic management plan shall be submitted for approval from Royal Commission Roads Department and must comply with all applicable Saudi Arabian laws, and Royal Commission road safety codes and standards.
56. Contractor to establish a breakdown procedure to eliminate the need for the driver to leave the cab in the event of a breakdown, until the areas is made safe him to do so.
57. Seat belts (where fitted for e.g. buses may or may not have passenger seat belts) must be worn at all times.
58. No driving / operating shall be allowed when using a mobile phone, reading, eating or drinking.

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59. No operating of vehicles or construction plant if medication has been prescribed, unless approved to do so by a physician.
60. All speed limits must be obeyed.
61. There must be no overtaking on site.
62. Headlights must be used at all times.
63. Key to be removed from ignition when operator is away from vehicle/machine more than 10m, or out of sight of vehicle/machine.
64. All dump trucks must be a minimum of 10m apart during tipping operations.

Worksite Layout

65. The site layout shall be addressed by the Contractor during the mobilization stage of each project for both the lay-down area and construction site. The focus must involve the separation of pedestrian and vehicle routes and the use of one-way circuits. Other factors that must be addressed include:
 - Physical barriers between pedestrian and vehicle routes (pin & tape is not sufficient)
 - Safe crossings for pedestrians – highlighted with signage. “Door Frames” should be used at crossing points to make them more visible and guide the pedestrians
 - Site speed limit
 - Adequate and sufficient warning signage in English and the language(s) of the workforce
 - The introduction of speed bumps or other traffic calming measures to reduce traffic speeds.
 - No tight bends or blind spots in the circuit
 - Minimization of reversing operations (turning points)
 - Firm surfaces with adequate drainage
 - sufficient lighting for any night-work or adverse weather
 - Avoidance of excavations, watercourses and structures under construction
 - Site entrance – including separation for pedestrians
 - Parking– including separation for pedestrians. Vehicles must be reverse parked where possible
 - Laydown yard– including separation for pedestrians
 - Separate pedestrian and vehicle gates shall be provided
 - All work locations– including separation for pedestrians
 - Goal posts to be erected where construction plant / vehicles pass under overhead electrical power lines (or other overhead hazards), and adequately sign posted.

Contractors must have a formal/written traffic management plan, plan to be reviewed quarterly and written records kept. Traffic management plans are to be displayed at key

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locations through work site and offices. The Traffic management plan to be discussed as part of new workers orientation.

Pedestrian-only areas – from which vehicles are completely excluded – to be established where necessary.

Pedestrian routes are to be wide enough to safely accommodate the volume of employees likely to use them during peak times. “Door frames” to be provided at crossing points to make them more visible and to guide the pedestrians.

Pedestrian routes to be free from obstructions and have safe and even footing.

Welfare areas (including – shelter, toilets, drinking water) are to be located so that workers are not required to cross road or vehicle activity areas.

General parking areas are to be away from work locations and roadways.

Flagmen to be provided with sufficient lighting of their work area/position for work at night, or in dimly lit areas such as tunnels. Additionally they should be provided with flashlights.

Flagmen are to be provided with suitable shelters to protect them from the elements (sun, wind, rain, etc.) and protected with physical barriers, such as concrete jersey barriers and in an elevated position. Barriers provided must be capable of withstanding any foreseeable impact from a vehicle so as to protect the Flagman.

Buses - Dedicated bus stops are to be provided throughout the work site, suitable means of controlling the workers (crowd barriers) are to be used. Bus stops must be established to prevent workers crossing roadway to reach the bus stop. Bus door must open on to footpaths, not live traffic areas. All passengers must be seated at times the bus is moving. Door of the bus must be closed before the bus moves, and must remain closed until the bus comes to a complete stop. Every passenger must have a seat. Seatbelt requirements must be as per Kingdom driving regulation. All vehicle movements on site are to cease during times when workers are starting/finishing shifts.

Training

66. Toolbox Talks are to include defensive driving techniques which are to be delivered to all project personnel, before being permitted to drive/operate for the first time, then on a minimum of a quarterly basis. The toolbox talk must cover:

- Project driving rules
- Safe driving basics
- Defensive driving techniques
- Accidents and emergencies
- 4-wheel / off-road driving
- Driving in poor visibility or adverse driving conditions
- Causes of Road Traffic Accidents
- Breakdown Procedures
- Driving at night
- Driving off/outside the Project

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67. All construction plant operators and heavy equipment drivers are to have undergone Redman training before being allowed to operate any vehicle or machine on a Royal Commission project site. All workers required to work near heavy equipment must undergo Redman training. All other workers are to have Greenman training. Redman & Greenman training is to form part of new workers orientation and must be conducted before allowing any worker on site. Redman refresher training should be conducted every six months as a minimum. Training records are to be formally checked each and every month.
68. Lessons learned meeting are to be conducted with all drivers/operators to share information relating to all site driving/operating incidents, and other incidents as shared by the Royal Commission.
69. Contractors are to issue all drivers and operators a 'Project Driving Permit', prior to operation of vehicles/equipment. Project Driving Permits are to be revoked for violations of the site driving rules, or Kingdom driving laws.
70. If not already required as part of local licensing exam, heavy equipment operators must pass an eye chart test (as a minimum by the contractor's site nurse). Records kept on file.
71. Copies of all training records attendance sheets are to be made available to the Royal Commission for inspection on request.
72. Contractor is to provide employees with either a general defensive-driving handbook or a project-specific handbook.
73. Up to date traffic management plan layouts are to be displayed in the safety office and at prominent areas around the site. Changes to the traffic management plan must be communicated to all site personnel.

Inspection, Servicing & Maintenance

74. Inspections, servicing and maintenance schedules shall be carried out in accordance with the manufacturer's recommendations. All servicing and maintenance records shall be kept and made available to the Royal Commission for inspection upon request. Maintenance records to include the detailed inspection and repair procedures carried out for vehicles involved in accidents.
75. Only competent persons are to conduct scheduled maintenance at recognized workshop facilities.
76. Repairs to tires are only to be made by competent persons at recognized workshop facilities; they are not to be performed by the driver / operator at the side of the road. The use of wheel cages is required for this task.

Loading / Unloading

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77. Site layouts should be planned to minimize vehicle operations, avoid unnecessary deliveries and double handling of materials. The location of storage and loading / unloading areas must be carefully considered. Factors that must be addressed include:

- excluding pedestrians as far as reasonably practicable
- one way system
- turning points (to minimize the need for reversing)
- safe entry / exit point
- sufficient room for vehicle maneuvering
- adequate lighting
- adequate warning signage
- manual / mechanical (un)loading of vehicles
- security controlled access points

Defect Reporting

78. Drivers and operators are to be held accountable for reporting defects and completing the checklists on a daily basis.

Accident Reporting

79. All accidents on public roads involving vehicles and /or Construction Plant must be reported in the first instance to the relevant authorities as per Saudi Arabian Government laws and codes.

80. It is Royal Commission Policy that **all** accidents are reported to Royal Commission Security Department on 013 341 7777, and Royal Commission (Construction) ES&H Department on 013 341 4375, within 20 minutes.

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000	May-2009	Original	MS	WG	HS
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Appendix 4

Example Rules for Driving & Operating Heavy Equipment

1. I will not drive under influence of drugs/alcohol.
2. I will always wear my seatbelt and ensure also my passengers while driving.
3. I will **NOT** use mobile phone while driving
4. I will follow site traffic rules and speed limit (20 KPH)
5. I will follow posted speed limit signs on the public roadways
6. I will inspect my equipment/vehicle and document it before use, report any damage found.
7. I will wear my PPE when I leave the cab of my Equipment/Vehicle
8. I will never operate/drive any equipment or vehicle if I don't have certificates, license or authorization
9. I will not leave my vehicle running unattended and will park it in a designated area
10. I will stop if people near to my equipment/vehicle
11. I will follow safe distance (10meter for haulage truck) or safe procedure while tipping.
12. I will lower my dump truck bed before I move
13. I will turn off my vehicle/equipment while refueling
14. I will report all accident/incident
15. I will not put any sunshade on my windshield that cause distraction on my visibility

Note: I accept disciplinary action below if found violating the above rules.

1. Depends on Contractor procedures for penalty

Copy of driver license

Copy of driver third party
certificate