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Approved By	Brendan McKenna
Position	Director
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Purpose

Brendan McKenna Earthmoving is committed to constructing storm water manholes safely, efficiently and in accordance with engineering, environmental and quality requirements.

This procedure establishes the requirements for planning, setting out, constructing and completing concrete manholes to protect workers, underground services, surrounding infrastructure and the environment while ensuring completed structures meet approved project specifications.

This procedure supports compliance with the Work Health and Safety Act 2011 (Qld), Work Health and Safety Regulation 2011 (Qld), Environmental Protection Act 1994 (Qld) and Brendan McKenna Earthmoving's Integrated Management System (IMS).

Scope

This procedure applies to all Brendan McKenna Earthmoving employees and contractors undertaking the construction of storm water manholes at company worksites.

It applies to activities including:

- Survey and set-out.
- Concrete ordering.
- Formwork installation.
- Concrete placement.
- Backfilling.
- Finishing.
- Removal of forms.
- Completion of manhole structures.

Responsibilities

Role	Responsibilities
Director	Ensure adequate resources, plant and systems are available to safely undertake manhole construction.
Operations Manager	Plan manhole construction activities, verify project specifications and ensure this procedure is implemented.
Supervisors / Site Managers	Coordinate manhole construction, verify compliance with this procedure, monitor safety, quality and environmental controls and ensure work is completed in accordance with project specifications.
Health & Safety Representative (HSR)	Participate in worker consultation, assist with hazard identification and support continual improvement of manhole construction activities where required.
Employees / Plant Operators	Operate plant safely, comply with this procedure, report hazards and equipment defects and maintain environmental controls.
Dogger / Spotter (where required)	Assist with lifting operations, guide suspended loads and ensure lifting activities are completed safely in accordance with company procedures.

Procedure

Brendan McKenna Earthmoving shall ensure all manhole construction activities are undertaken using suitable plant, competent personnel and approved engineering controls to achieve safe, compliant and durable drainage infrastructure.

1. Planning and Site Preparation

Prior to commencing manhole construction, personnel shall ensure all planning activities have been completed and the work area has been assessed.

This shall include:

- Completing all required site inductions.
- Participating in the daily pre-start meeting.
- Completing a Personal Risk Assessment (Take 5) where required.
- Reviewing the relevant Safe Work Method Statement (SWMS) where applicable.
- Completing a **Dial Before You Dig (1100) / Before You Dig Australia (BYDA)** enquiry and identifying underground and overhead services in accordance with service plans and site investigations.
- Clearly demarcating and delineating the approved work area.
- Reviewing approved construction drawings and confirming the invert level and finished height of the manhole structure.
- Any discrepancies between approved drawings and site conditions shall be reported to the Site Manager before construction proceeds.
- Confirming all required materials, formwork, reinforcing, drainage rock and concrete have been organised prior to commencing work.
- Confirming survey control points and access routes.

No person shall enter the work area unless authorised by the Site Manager.

Only trained, competent and authorised personnel shall undertake manhole construction.

2. Manhole Construction

Manholes shall be constructed in accordance with approved engineering drawings and project specifications.

The following construction sequence shall be followed:

- Confirm the invert level and overall structure height from the approved construction drawings.
- Order the required concrete quantity. As a guide, a standard 1050 mm diameter manhole requires approximately 1 cubic metre of concrete for every 700 mm of structure height.
- Set the manhole box into position using GPS/UTS survey equipment to confirm the correct location.
- Position the manhole approximately 80 mm behind the lip of the kerb, unless project drawings specify otherwise.
- Install the pour boards securely on top of the pit.
- Use the concrete agitator to place concrete onto the pour boards and around the base of the formwork.
- Ensure the concrete surrounding the formwork remains a minimum of 200 mm thick throughout construction.
- As the structure height increases, progressively backfill around the outside of the manhole using 5 mm drainage rock to reduce the volume of concrete required.
- Continue construction until the required finished height, alignment and concrete thickness have been achieved.

Personnel shall continually monitor:

- Concrete placement.
- Concrete quality and consistency during placement.
- Formwork stability.
- Excavation stability.
- Plant interaction.
- Exclusion zones.
- Underground services.
- Environmental controls.

Any unsafe condition shall be reported immediately to the Site Manager.

3. Plant and Equipment Operations

Manhole construction shall be completed using suitable plant and equipment appropriate for the work activity.

Plant and equipment that may be utilised includes:

- Excavator
- Loader
- GPS / UTS Survey Equipment
- Concrete Agitator
- Concrete Finishing Tools

All operators shall hold the appropriate licences, competencies or verified training applicable to the plant or equipment being operated.

The Operations Manager or delegated Supervisor shall ensure operator competencies have been verified prior to commencing work.

Validation of Competency records shall be retained with the operator's training records in accordance with company requirements.

Operators and ground personnel shall maintain continual awareness of suspended loads, surrounding personnel, excavation hazards and mobile plant throughout construction activities.

4. Finishing, Backfilling and Environmental Controls

Manhole construction shall be completed in a manner that achieves the required structural integrity while protecting the surrounding environment and ensuring the work area remains safe.

This shall include:

- Confirming the concrete surrounding the formwork maintains a minimum thickness of 200 mm throughout construction.
- Finishing the top of the manhole using a trowel and spirit level to achieve the required finished level.
- Allowing the concrete to cure for approximately one to two hours, or until sufficient strength has been achieved to safely remove the formwork while the concrete remains green.
- Carefully removing the manhole box using the excavator without damaging the newly constructed concrete.
- Completing any minor finishing work required following removal of the formwork.
- Demarcating the completed manhole using bunting immediately following construction to prevent unauthorised access.
- Installing the steel plate over the completed manhole once the concrete has adequately cured and it is safe to do so.
- Maintaining erosion and sediment controls throughout the duration of the works.
- Reporting environmental incidents, spills or failures of environmental controls immediately to the Site Manager.
- Leaving the work area in a clean, safe and compliant condition.

5. Documentation and Completion

Manhole construction activities shall be documented in accordance with company requirements to demonstrate compliance with engineering specifications, quality requirements and the Integrated Management System.

This shall include:

- Completing Pre-start Inspections for all plant and equipment used.
- Completing a Personal Risk Assessment (Take 5) through the MCK Group App where available.
- Completing paper versions of the Pre-start Inspection and Personal Risk Assessment where mobile coverage is unavailable and forwarding completed records once adequate signal is available.
- Completing a Job Hazard Analysis (JHA) where activities fall outside the scope of this procedure or additional risks have been identified.
- Recording survey verification, inspection and quality control results where required.
- Reporting hazards, incidents, near misses and equipment defects in accordance with company procedures.
- Confirming the completed manhole complies with approved drawings, project specifications and quality requirements before leaving the work area.

Records

The following records may be retained where relevant to manhole construction activities.

Record	Responsibility	Retention Location
Personal Risk Assessments (Take 5)	Employees and Contractors	MCK Group App / Site Records
Plant Pre-start Inspection Records	Plant Operators	Plant Records
Validation of Competency Records	Operations Manager	Training Records
Survey Verification Records	Site Manager	Project Records
Construction Inspection Records	Supervisors	Inspection & Audit Register
Incident and Hazard Reports	Employees and Supervisors	Incident Records
Corrective Actions	Operations Manager	Incident / NCR / Corrective Action Register

Related Information

- HS-PR-001 Risk Assessment Procedure
- HS-PR-003 Personal Risk Assessment (Take 5) Procedure
- HS-PR-005 Incident Investigation & Reporting Procedure
- OP-PR-018 Spill Response & Management Procedure
- HS-SWMS-006 Operating Mobile Plant
- HS-SWMS-005 Working in or Around Trenches & Excavations
- Environmental Management Plan (where applicable)
- Environmental Aspects & Impacts Register
- Inspection & Audit Register
- Training & Competency Register
- Incident / NCR / Corrective Action Register
- MCK Group App
- Before You Dig Australia (BYDA)
- Work Health and Safety Act 2011 (Qld)
- Work Health and Safety Regulation 2011 (Qld)
- Environmental Protection Act 1994 (Qld)

Review and Revision

This procedure shall be reviewed every two years or earlier following legislative changes, organisational changes, incidents, audit findings, changes to work practices or identified improvement opportunities.