

Project Controls

Master Specification

PC-EDM4 Construction Verification

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PC-EDM4 Construction Verification

1 General

- 1.1 This Part specifies the requirements for undertaking the **Independent** Construction Verification of the Construction Works and activities.
- 1.2 The Contractor is responsible for undertaking all Work under the Contract, unless specified otherwise.
- 1.3 Unless expressly defined otherwise in this Contract, words and expressions which have a defined meaning in the following documents have the same meaning in this Contract:
- a) the Contract Scope and Contract Requirements;
 - b) the DPTI Master Specification for Transport Infrastructure available from: https://www.dpti.sa.gov.au/contractor_documents/masterspecifications; or
 - c) AS9000 Quality management systems—Fundamentals and vocabulary
- 1.4 The following definitions apply to terms used in this Part:

Term	Definition
Assessment	A review of an elements quality records to confirm the quality inspections demonstrate the quality checks have been undertaken to check compliance the design documentation. Where appropriate the assessments shall include “spot check” inspections of the element using a risk based approach to confirm.
Audit	Review of quality records and documentation plans to review and endorse the implementation of quality safety and environmental management by the Alliance.
Construction Verification Team	The team established by the Contractor to undertake verification of the construction activities and provide a Construction Verification Certificate.
Inspection	The inspection of an element, at the nominated Hold Point including inspection and assessments of the elements compliance to the design documentation, review of testing information and review and endorsement of quality records, prior to further works proceeding on the element.
Surveillance	The ongoing full time observation of an activity including examination, assessment, inspection, monitoring and / or analysis of the Contractor’s construction work under the Contract (including provision of Records) to verify compliance with the requirements specified in the Contract.

2 Obligations of the Construction Verification Team

- 2.1 The Construction Verification Team must be Independent of the parties to the Contract and have no pecuniary interest in any Design organisation that has developed the Design documents.
- 2.2 In performing its obligations under this Contract, the Construction Verification Team must act:
- a) impartially, honestly, diligently and reasonably;
 - b) with the degree of professional, knowledge, skill, expertise, experience and care which would be reasonably expected of an expert professional providing services similar to those required under the Contract;
 - c) independently of the Principal, Designer’s and / or Contractor’s organisation, and
 - d) within any timeframe specified in this Contract.
- 2.3 The Construction Verification Team acknowledges that the Principal is relying upon the knowledge, skill, expertise and experience of the Construction Verification Team in the performance of its obligations and is entitled to rely on any certificate or other document signed or given by the Construction Verification Team pursuant to this Contract.

3 Obligations of the Contractor

- 3.1 The Contractor must not hinder or restrict the Construction Verification Team to complete its obligations under its Contract. The Contractor must:
- a) not interfere with or attempt to improperly influence the Construction Verification Team in the performance of any of its services;
 - b) give the Construction Verification Team access to the Site and to all documentation that is reasonably necessary for the Construction Verification Team to carry out its activities; and
 - c) co-operate with, and not impede, the Construction Verification Team in the performance of its duties.

4 Delegation of Authority

- 4.1 The powers, duties, discretions and authorities vested in the Minister, Minister's Representative, Principal's Authorised Person or Principal under the clauses listed in the Contract and DPTI Master Specification may be delegated to the Construction Verification team.
- 4.2 The Principal shall confirm in writing the delegation of Authority in accordance with the Contract.
- 4.3 Where the Construction Verifier identifies any ambiguity in the delegation of authority under this clause the Construction verifier shall write to the Principle's Representative to clarify the ambiguity
- 4.4 Provision of the information required under this clause shall constitute a **Hold Point**.

5 Selection of the Construction Verification Teams

- 5.1 The selection of the Construction Verification team is to be as detailed within the project procurement plan and / or project scope.
- 5.2 Where the Construction Verification is to be engaged as a tripartite agreement or directly by the Contractor, within 10 Business Days of the Date of Contract, the Contractor must submit to the Principal's Representative the preferred Construction Verification Team that the Contractor considers are suitable to undertake the Construction Certification for the Contract.
- 5.3 Provision of the proposed Construction Verification team shall constitute a **Hold Point**. The Principal will review the proposed Construction Verification and accept or otherwise.
- 5.4 Where the Construction Verification is to be engaged directly by the Principal the Principal shall advise the Contractor of the preferred Construction Verification Team within 10 Business Days of the Date of Contract.

6 Construction Verification Personnel

- 6.1 The Construction Verification team must include personnel with a sufficient degree of knowledge, skill, expertise and experience to perform its obligations under this Contract.
- 6.2 The Construction Verification team personnel must:
- a) meet the requirements for qualifications, and competency;
 - b) perform the services required of their respective positions;
 - c) be available for consultation as any party may reasonably require from time to time.
- 6.3 Key Construction Verification team personnel must not be removed without the prior written consent of the Principal (which consent must not be unreasonably withheld) and if any of the people are removed:
- a) they must be replaced by people of at least equivalent qualifications, knowledge, skill, expertise and experience; and

- b) prior to removal and replacement, there must be a proper and adequate handover to ensure that the new personnel have a reasonable understanding of the Project and the Services.
- 6.4 The Principal may direct the Construction Verification team to remove from the performance of the Services any of Construction Verification personnel. The Construction Verification team must comply with any such direction.

Construction Verification Team's Representatives

- 6.5 Authorised representatives and their delegated authority within the organisation to make decisions or sign certificates on behalf of the Construction Verification team.
- 6.6 The Construction Verification team must notify the Principal's Representative and Contractor in writing of the names of the person or persons that are authorised to sign the certificates and documents referred to in this Contract on behalf of the Construction Verifier.
- 6.7 The Construction Verification Manager must ensure that these certificates and documents are signed by the person or persons so notified.
- 6.8 Provision of the information required under this clause shall constitute a **Hold Point**.

Competency

- 6.9 The Contractor and Independent Design Verifier shall undertake, assessment and provide evidence on the competency assessment of all personnel engaged to undertake Design Verification works.
- 6.10 Competency assessment of the Independent Design Verifier's personnel shall constitute a **Hold Point**.

7 Release of Hold Points

- 7.1 The Contract and Construction Specifications specify Hold Points in the construction process.
- 7.2 The authority and responsibility for release of these Hold Points resides with the Principal. The Principal will delegate authority for the release of (a selection of) Hold Points to the Construction Verification Team in accordance with clause 3 Delegation of Authority.
- 7.3 Where the Contractor notifies the Construction Verification team that a Hold Point has been reached, the Construction Verification Team must:
- a) undertake all necessary monitoring, observation and review of documentation in relation to the Hold Point;
 - b) attend to the Hold Point release as soon as practicable and in any case within the time specified in the PS&TR; and
 - c) examine all relevant information and documentation regarding the Hold Point.
- 7.4 Where the Hold Point release is delegated to the Construction Verification Team, the Construction Verification Team must either:
- a) release the Hold Point; or
 - b) advise the Contractor why the Hold Point cannot be released, and what is required to enable the Hold Point to be released.
- 7.5 Where the Hold Point release is not delegated to the Construction Verification Team and is to be released by the Principal's Representative:
- a) the Construction Verification Team must provide a written recommendation to the Principal's Representative as soon as practicable (and in sufficient time for the Principal's Representative to review the recommendation and comply with the Contract) regarding the release of the Hold Point.
 - b) the Principal's Representative will be relying upon the advice and expertise of the Construction Verification Team in making a determination whether to release a Hold Point.

8 Control of Non-Conformances

- 8.1 The Contractor is required to provide notification to the Principal's Representative and Construction Verification Team of any Non-conformance by the issue of a Non-Conformance Report (NCR).
- 8.2 The Construction Verification Team must review the Contractor's proposed disposition to rectify Non-Conformances and recommend to the Principal's Representative of the suitability or otherwise of the Contractor's proposed disposition.
- 8.3 The Principal's Representative will approve or otherwise the Contractor's proposed disposition.
- 8.4 Acceptance of the Contractor's proposed disposition to the non-conformance by the Principal's Representative shall constitute a **Hold Point**.
- 8.5 Following completion of the disposition the Contractor must re-submit the Non-Conformance Report, together with any necessary supporting evidence for review and approval by the Construction Verification Team.
- 8.6 The Construction Verification Team will release of any subsequent Hold Points related to the Non-conformance.
- 8.7 In the event of a Non-conformance related to the Specification or the Contractor's Quality Management Plan being observed by the Construction Verification Team or the Principal's Representative, and the Contractor does not take appropriate action when informed of the Non-conformance, a Corrective Action Request (CAR) must be issued to the Contractor by the Construction Verification Team.

9 Review of Management Plans

- 9.1 The Construction Verification Team must familiarise itself with all Management Plans submitted by the Contractor for compliance with the Contract requirements.
- 9.2 Where defined within the scope of the Construction Verification activities, the Construction Verifier shall undertake a detailed review of the Contractor for compliance with the Contract requirements.
- 9.3 Outcomes of the Reve of Management plans must be provided to the Contractor identifying any issues or omissions, including what would be considered standard industry practice for the works being undertaken. Hold Points must not be release until all issues have been addressed.

10 Surveillance, Inspections and Assessment

- 10.1 The Construction Verification Team must undertake sufficient Surveillance, Inspections and Assessments to verify that the Contractor's construction activities comply with the Contract in accordance with the Project / Contract Scope and the requirements state herein.

11 Audit of Contactor's Activities

- 11.1 The Construction Verification Team must undertake Audits of the works in accordance with the Construction Audit plan the Project / Contract Scope and the requirements state herein.
- 11.2 When directed by the Principal's Representative the Construction Verification Team must undertake additional Audits of the Contractor's Activities.
- 11.3 Environmental Audits must be in accordance with DPTI environmental auditing guidelines and undertaken on a quarterly basis.
- 11.4 An audit summary is to be provided to the Principal's Representative and the Contractor within 24 hours of the audit concluding. All major Non-Conformances shall be bought to the attention of the Principal's Representative and Contractor immediately.
- 11.5 Audit reports must be provided to the Minister's Representative and the Contractor within 5 business days of the audit.

12 Workforce Participation

- 12.1 Where defined within the scope of the Construction Verification activities, the Construction Verification Team must undertake a review of the Contractor's Workforce Participation Plan and procedures to report on actual participation achieved, including:
- a) methodology to identify of people with barriers to employment and up-skilling;
 - b) tools and Methodology to report on hours and targets; and
 - c) integrating Contractor's and subcontractor's Workforce Participation.

13 Reporting

- 13.1 All advice and comments provided by the Construction Verification Team to the Principal's Representative or Contractor must be in writing.
- 13.2 The Construction Verification Team must prepare a written reports of the surveillance, inspections, assessments and auditing until 8 weeks after the Date of Completion.

Progress Reports

- 13.3 The Construction Verification reports must be provided a monthly progress report to the Principal's Representative and the Contractor by the seventh day of the following month, or as agreed in writing by the Principal's Representative.
- 13.4 The monthly progress report shall containing a status update of the Construction Verification activities including, but not limited to:
- a) executive summary (limited to one pages);
 - b) a list or schedule of Construction Verification activities by the Construction Verification Team during the reporting period;
 - c) a summary of key risks and issues relating to the Works as identified through Construction Verification activities;
 - d) details of any non-conformities raised during the reporting period including details on the verification or the rectification by the Contractor;
 - e) details on the status and nature of responses to any non-conformances and corrective action requests;
 - f) any discrepancies with the Contractor's Quality Assurance system and documents including the assessment of their completeness and accuracy;
 - g) any act, matter or thing which has or is likely to have a material adverse effect on the progress and provision of the Services, together with detailed particulars on how the Construction Verification Team is dealing or proposes to deal with any such act, matter or thing; and
 - h) the Construction Verification team 's current and planned resources and staffing levels.

Final Report

- 13.5 The Construction Verification Final reports must be provided at the completion of Construction verification activities to the Principal's Representative and the Contractor including, but not limited to:
- a) executive summary (limited to two pages);
 - b) summary of all Construction Verification activities undertaken;
 - c) summary of any non-conformities and the rectification by the Contractor;
 - d) review of and statement on the accuracy of:
 - i) final as-constructed Documents;
 - ii) any supplied geometric or GIS models;

- iii) Contractor's completed Quality Assurance documentation;
 - iv) commissioning records; and
 - v) completed environmental management documents.
- e) Construction Verification Certificates.

14 Review of As-built Documentation

- 14.1 The Construction Verification Team must progressively review the Contractor's As-Constructed Documents to assess and advise the Principal's Representative on their accuracy and completeness including:
- a) review the construction records including "red line" marked up documents;
 - b) identify any discrepancies with the Contractor's As-Constructed Documents including the assessment of their completeness and accuracy; and
 - c) identify any discrepancies with the Contractor's maintenance manuals including the assessment of their completeness and accuracy.

15 Construction Verification Certificate

- 15.1 For each "package" of completed work submitted by the Contractor, the Construction Verification Team must provide a signed Construction Verification Certificate, as detailed in Appendix 1: Construction Verification Certificate.
- 15.2 The certificate must be signed as "Construction Verification Team's Representative" and submitted to the Principal's Representative.

16 Scope of Construction Verification Activities

- 16.1 The Construction Verification team shall undertake the Construction Verification in accordance with the Project / Contract Scope and the requirements state herein.
- 16.2 The selection of the scope of the Construction Verification activities is to be determined on a risk based approach.
- 16.3 The risk based approach is to ensure the level of Construction Verification activities is commensurate with risk of non-compliance of the activity to the design documents and project requirements to the Principal, Designer and the Contractor is mitigated "so far as reasonably practical".

Risk Assessment

- 16.4 To confirm the level of Construction Verification is commensurate with the risk of the element, the Construction Verification team must undertake a review of the risk assessment, including consultation with representative of the Principal (including DPTI asset managers & technical specialists) and Contractor.
- 16.5 The risk assessment of Construction Verification activities must review the level of Surveillance, Inspection, Assessments and Audits of the Contractor's construction work to verify the following:
- a) the Works are constructed safely;
 - b) the Works are constructed in accordance with the Issued For Construction Design;
 - c) the Works are constructed in accordance with the Issued For Construction Specification;
 - d) the Records and reporting comply with the PS&TR; and
 - e) the management systems and processes comply with the PS&TR.
- 16.6 In the event the risk assessment identifies any ambiguity and / or a different level of Construction Verification the Construction Verifier shall write to the Principal to confirm the scope of Construction Verification activities.

16.7 Provision of the Construction Verification risk assessment shall constitute a **Hold Point**.

Audits

16.8 The Construction Verifier shall undertake Audits of the Contractor's processes in accordance with Table PC-EDM4 16-1.

Table PC-EDM4 16-1 Audits

Audit	Audit Frequency
Work Health & Safety documentation	Quarterly
Quality Assurance documentation	Quarterly
Environmental Management documentation	Quarterly
Traffic management records for day to day work zone traffic management	Fortnightly
Off-site construction activities – e.g. concrete & asphalt plants & precast facilities;	within two weeks of commencing activity.

Road Elements

16.9 Unless agreed otherwise by the Principal, the minimum level of verification of road elements shall in accordance with Table PC-EDM4 16-2.

Table PC-EDM4 16-2 Road Elements

Element	Verification
Proof rolling of pavement sub-grades;	Surveillance
Construction of pavements	Inspection
Construction of kerbing & Temporary pavements	Inspection
Trenching & excavation prior to installation of road drainage	Assessment
Road drainage elements installation (prior to backfilling)	Inspection
Permanent line marking	Inspection
Temporary line marking	Assessment
Street furniture and signage	Assessment
Installation of traffic signals	Inspection
Commissioning of traffic signals	Surveillance
Factory Acceptance Testing (FAT) of ITS equipment	Assessment
Commissioning of ITS equipment	Surveillance
Installation of ITS	Inspection
Installation of traffic street lighting	Inspection
Commissioning of street lighting	Surveillance
Traffic management installation at major traffic management changes	Inspection
Maintenance of traffic management infrastructure	Assessment
Other as determined by the project team	

Structural Elements

16.10 Unless agreed otherwise by the Principal, the minimum level of verification of structural elements shall in accordance with Table PC-EDM4 16-3.

Table PC-EDM4 16-3 Structural Elements

Element	Verification
Piling operations	Surveillance
Erection / installation of temporary structures	Inspection
Reinforcement & formwork, of in-situ structural concrete	Inspection
Formwork, pre-cast structural bridge elements	Assessment
Formwork, of other precast structural concrete	Assessment
Pouring & finishing (inc. curing compounds) of in-situ structural concrete	Surveillance
Reinforcement pouring & finishing of pre-cast structural bridge elements	Inspection
Pouring & finishing of pre-cast structural concrete elements	Assessment
Finish concrete element	Inspection
Installation of precast structural elements	Inspection

Element	Verification
Precast structural drainage elements (e.g. box culverts & headwalls)	Assessment
Bearing testing	Assessment
Bearing installation	Inspection
Installation of bridge fitments & fixings (e.g. barriers, expansion joints, throw screens)	Inspection
Fabrication of structural steelwork	Assessment
Surface treatments of structural steelwork	Assessment
Installation of structural steelwork	Inspection
Installation of reinforced Soil wall panels and structural elements	Inspection
Backfilling of reinforced soil walls	Assessment
Other as determined by the project team	

Electrical Elements

16.11 Unless agreed otherwise by the Principal, the minimum level of verification of electrical elements shall in accordance with Table PC-EDM4 16-4.

Table PC-EDM4 16-4 Electrical Elements

Element	Verification
Commissioning of Electrical Assets	Surveillance
Installation of Electrical Assets	Inspection
Factory Acceptance Testing	Assessment
Supply of Electrical Assets	Assessment
Other as determined by the project team	

Environmental

16.12 Unless agreed otherwise by the Principal, the minimum level of verification of the Contractor's works for the compliance with the environmental requirements shall be in accordance with Table PC-EDM4 16-5.

Table PC-EDM4 16-5 Environmental

Element	Verification
Works around waterways	Surveillance
Works around vegetation	Surveillance
Environmental management of Contractor's activities	Surveillance

17 Hold Points

17.1 The following is a summary of Hold Points referenced in this Part:

Document Ref.	Hold Point	Response Time
4.4	Clarification of any ambiguity in the delegation of authority	10 Working Days
5.3	Provision of the proposed Construction Verification team	10 Working Days
6.8	Provision of signed certifications and documents	10 Working Days
6.10	Competency assessment of the Independent Design Verifier's personnel	10 Working Days
8.4	Acceptance of the Contractor's proposed disposition to the non-conformance by the Principal's Representative	10 Working Days
16.7	Provision of the Construction Verification risk assessment	10 Working Days

18 Appendix 1: Construction Verification Certificate

Project Name:

Certificate Number:

Lot Package:

Lot Number:

Contractor's Quality Assurance Verification

Document number	Quality Record Name
	e.g. Inspection and Test Plan
	e.g. Defects and omissions form
	e.g. test records

I have reviewed the package listed above and confirm the Work complies with the design Drawings and Specifications:

Constructor Quality Representative;

Name:		Qualifications	
Position:		Signed:	
Date:			

Construction Verifier

The Construction Verification team has completed verification and the adequacy of the Works and the Contractor's activities in accordance with the defined in the Scope of Construction Verification activities, and confirm (based in the activities undertaken by the Construction Verifier) the Contractor's Work complies with the Drawings and Specifications:

Construction Verification Team Representative;

Name:		Qualifications	
Position:		Signed:	
Date:			