

**C7554 – Supplementary Conditions of Contract for Road Planning and Design Projects**

**Prequalified Consultants for Engineering Projects**

**November 2021**

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## 1 Definitions

In these conditions and in the Contract Documents, all words and expressions shall have the meaning assigned to them in the *General Conditions of Contract (C7545)*, and the following words and expressions shall have the meanings assigned to them here, except where the context otherwise requires:

**"best for project"** means a collaborative approach to maximising project benefits by putting the project foremost in the delivery process ahead of individual project parties wants.

**"BIM"** means Building Information Modelling.

**"Concept Phase"** means that part of the process where the Project Proposal, Options Analysis and Business Case Templates are prepared and documented. Also see Clause 2.1.

**"Constructability"** means ensuring the infrastructure can be constructed using the available level of technology at the site concerned (knowledge, skills, materials and equipment) within specified constraints, for example, maintaining specified traffic requirements during the construction period.

**"Department"** means the Queensland Department of Transport and Main Roads.

**"Design Criteria"** means the relevant design information set out in the Functional Specification. The Functional Specification templates can be accessed from the department's Engineering consultants webpage: [Engineering Consultants](#) webpage.

**"Design Development Report"** is the record of design considerations, assumptions, decisions, and details documented in Design Development Report (Large Projects) or Design Development Report (Small Projects). Its application is across the project management concept and development phases and is a companion to the stage approval documents, of project proposal, options analysis, business case, preliminary design and detail design together with a Planning Report, as relevant. (Refer Figure 3.1 of Chapter 3 of the department's *Preconstruction Processes Manual*). The Design Development Report templates can be accessed from the department's Road planning and design manual webpage: [Road planning and design manual](#) webpage.

**"Detailed Design"** means that part of the Development Phase where the design details (including Engineering Drawings, Other Engineering Documents, Detailed Estimate and Project Plan) of the preferred design solution are completed and documented for construction purposes.

**"Design Information"** means that general information that is used to assist in preparation of the Contract Materials as set out in the Functional Specification.

**"Design Works elements"** means those elements to be designed as set out in the Functional Specification.

**"Development Phase"** means that part of the delivery process where the design solution is developed to provide a preliminary design and a detailed design for construction purposes are carried out.

**"Development Phase Construction Standards"** includes those documents that shall be used in conjunction with the Design Criteria in determining acceptable detailed dimensions, procedures, materials, and so on, that are used for design and construction of the various Design / Works elements as set out in the Functional Specification.

These standards may be supplemented by Supplementary Design and Construction Specifications developed by the Consultant and approved by the Principal.

**“Delivery Methods”** means how the project is to be delivered to best manage the risks, for example, traditional (design and then construct as separate contracts, design and construct as a single contract, alliance contract, public private partnership [PPP]), and so on.

**“Engineering Drawings”** means those Contract Materials that are to be provided by the Consultant for use during construction and includes but is not limited to drawings indicated in the Functional Specification.

**“Other Engineering Documents”** means those Contract Materials to be provided by the Consultant relating to various aspects of the construction of the proposed works as indicated in the Functional Specification.

**“Outcome Specification”** means the Service Requirement specified by the Principal together with the associated project performance requirements as set out in the Functional Specification.

**“Planning Information”** means that general information that is used to assist in preparation of the Contract Materials as set out in the Functional Specification.

**“Preliminary Design”** means that part of the Development Phase where all of the geometric design elements, including a preliminary estimate of the preferred design solution are documented for input to the Detailed Design Stage.

**“Service Requirement”** means the operational performance required to satisfy the identified deficiency or opportunity as set out in the Proposal.

**“Support Disciplines”** is the specialised elements of the consultant services that are performed by other party or parties under the control of the Consultant, for example, sub-consultant.

**“Work Package”** is a clearly identified piece of work (an activity or group of activities) that is usually procured by a contract (consultant service) or assigned to a team or a team member, as required.

## **2 Nature of the Consultant services**

### **2.1 Transport infrastructure project delivery framework**

The Principal delivers its projects using a project management methodology that standardises its approach for the delivery of road infrastructure preconstruction projects. This methodology is briefly described below in the form of phase, steps and deliverables to provide the context for Consultant Services deliverables.

#### **2.1.1 Concept phase requirements**

The Proposal shall include:

- A clear understanding of the problem.
- The expected outcome, including an understanding of how the problem might be solved in a “Fitness for Purpose” approach.
- An estimate of cost to deliver options analysis and business case.
- Establish services for the delivery of various work packages necessary to effectively perform the options analysis, and

- Recommendation for a planning project to be included on the Queensland Transport and Roads Investment Program (QTRIP).

The Options Analysis shall include:

- Identified potential options to solve the problem (may or may not be an infrastructure solution), and
- Preferred option.

The Business Case shall include:

- Preferred option developed to the point where all major risks are identified, understood and addressed to deliver the concept estimate to within  $\pm 20\%$
- Concept Estimate
- Electronic model of preferred option (string based and/or object based models)
- Road safety audit (shall include a road geometric specialist)
- National Highway Planning report (if relevant)
- Bridge fixing
- Method of project delivery, and
- Draft Project Plan.

### **2.1.2 Development phase deliverables**

Preliminary Design deliverables shall include:

- Approved Project plan
- Preliminary Design
- Preliminary Estimate
- Electronic 3D string based and 3D object based models of the project in native file and Industry Foundation Class open file formats together with a relevant contour plot of finished project surfaces
- Road safety audit
- Bridge design
- Reviewed method of delivery
- Planning report, and
- Right of way (ROW) requirements, for example, resumption drawings, native title suppression details, and other clearance requirements.

Detailed Design deliverables shall include:

- Final electronic 3D string based and 3D object based models of the project in native file and Industry Foundation Class open file formats
- Final design review
- Construction drawings

- Detailed estimate
- Design report
- Acquired ROW requirements
- Confirmed method of delivery, and
- Construction contract documentation.

### **2.1.3 Procurement of work packages**

Where the consultant is required to deliver work packages using internal resources or sub-consultants, then the relevant output reports from the work packages shall include a listing of issues that need to be considered by the designer during the design development process. These issues are to be included in the Design Development Report (Large Projects) or Design Development Report (Small Projects) as individual Project Considerations.

Where sub-consultants are used to deliver work packages their engagement and use shall use the management principles documented in Clause 6.

## **2.2 Concept phase**

Where the Consultant Services requires:

### **2.2.1 An Options Analysis**

The Consultant shall first review the Project Proposal (refer to the department's [OnQ Project Management](#) site for templates.) and complete the Options Analysis requirements.

### **2.2.2 A Business Case**

The Consultant shall first review the Project Proposal and the Options Analysis and then complete the Business Case requirements.

## **2.3 Development phase**

Where the Consultant Services requires:

### **2.3.1 Preliminary Design**

The Consultant shall first review the concept phase documentation and then finalise the project plan and the preliminary design before preparing the Preliminary Design deliverables of the preferred solution for the Design Works elements, in accordance with:

- Planning Information
- Design Criteria
- Concept Phase / Construction Standards

to achieve:

- the Expected Functional Outcomes (Operations) (See the Project Proposal)

generally following:

- the department's Management Procedures and Templates / Forms (Clause 6 and *Annexure A to Supplementary Conditions of Contract (C7554.1)*)

and suitable for use as input to:



- the Detailed Design Stage.

### **2.3.2 Detailed Design**

The consultant shall first review the concept phase documentation together with the Preliminary Design and the Project Plan before preparing the Detailed Design deliverables, including certified Engineering Drawings, for:

- The Design Works elements  
in accordance with:
  - Design Information
  - Design Criteria
  - Development Phase / Construction Standards  
(see the Functional Specification for the above)to achieve:
  - the Expected Functional Outcomes (Operations) (see the Project Proposal)  
generally following:
    - the department's Management Procedures and Forms (Clause 6 and *Annexure A to Supplementary Conditions of Contract (C7554.1)*).

## **3 Consultant's construction obligations**

Where the Consultant completes the Detailed Design Stage, it shall:

- a) Attend the Prestart meeting for any construction contract(s) resulting from the Contract Materials produced during the Consultant Services.
- b) Provide answers to fundamental design queries raised at the Prestart meeting, and
- c) Provide brief clarification of design intent and issues of interpretation – including provision of omitted detail and fixing any errors, with no separate payment applying to these activities (the above activities are deemed to be included in the accepted rates and fixed fees for the Consultant Services) unless a separate Item is included in the Price Schedule.

Payments for activities other than those above that are beyond the reasonable requirements of the Consultant Services will be paid for at agreed rates.

## **4 Purpose of works / design drawings**

### **4.1 Purpose of the works**

The Consultant's planning / design shall ensure, as far as it relates to matters within the Consultant's control, that the planning / design of roadworks (including intersections and service roads), tunnels, ramps, bridges and retaining walls:

- Accommodates predicted road user types and volumes
- Improves or maximises the safety of all road users
- Improves amenity, including access

- Reduces transport costs for industry
- Improves or maximises flood immunity
- Provides a comfortable ride for road users
- Minimises or reduces nuisance to contiguous land owners
- Minimises or reduces maintenance for the design life of the roadworks elements, and
- Minimises environmental impact of the roadworks both during construction and in operation.

These requirements support the expected Service Requirement as set out in the Proposal and the Functional Specification.

#### **4.2 Purpose of Engineering Drawings / Electronic Models / Other Engineering Documents**

Engineering Drawings, Electronic Models and Other Engineering Documents shall include sufficient information to ensure:

- The "constructability" of the designed works has been confirmed by a review team.
- Construction data is accurately presented or able to be readily interpreted.
- XYZ coordinates can be simply determined at specified points or intervals on all control alignments and cross section change points.
- XYZ coordinates can be easily produced for setting out features such as drainage structures, roadside furniture, Public Utility Plant relocations, noise barriers, etcetera, and
- Cross sections can be simply produced at any interval and scale.

### **5 Site verification**

#### **5.1 Design suitable for site**

The Consultant shall be responsible for the Preliminary Design and/or Detailed Design being suitable for the site conditions. The Consultant shall visit the site as frequently as is reasonably necessary during the course of the planning / design and during the course of any additional investigations undertaken to ensure the planning / design is appropriate to the site.

#### **5.2 Authorisation of site visits**

The Consultant shall obtain prior authorisation of such site visits by the Principal by providing notification at least seven working days in advance or such lesser period as determined by the Principal and the Principal shall arrange site access as appropriate.

#### **5.3 Costs of site visits**

No additional payment will be made to the Consultant for any site visits and the Consultant is deemed to have allowed for all and any costs associated with compliance with this clause.

## **6 Managing the delivery of Consultant services**

### **6.1 Mandatory requirements**

Systems and procedures are to be developed and implemented to ensure that the Project is designed in accordance with relevant legislation, Australian Standards and best appropriate practice in relation to:

- Quality (AS/NZS ISO 9001:2016 *Quality Management Systems – Requirements*)
- *Work Health and Safety Act 2011* and AS/NZS ISO 45001:2018 *Occupational Health and Safety Management Systems – Requirements with Guidance for Use*, and
- Environmental Management [*Environmental Protection Act 1994 (Queensland)* and AS/NZS ISO 14001:2004 *Environmental Management Systems – Requirements with guidance for use*].

Provision is to be made for appropriate audits of the systems and procedures of the Consultant and its sub-consultants.

### **6.2 Project management elements**

In addition to the mandatory requirements, the Consultant and its sub-consultants shall have systems and procedures based on the project management elements appropriate to their involvement in the Project including the following:

#### **6.2.1 Project integration**

The Consultant shall effectively coordinate all the management elements, which are is briefly described in the following.

#### **6.2.2 Scope management**

The project scope shall be developed using a risk management approach. The Consultant shall manage the scope of the project so that only those activities needed to successfully complete the project are carried out.

It is equally important to ensure the schedule of quantities covers all the work required to deliver the specified work and where necessary to provide a contingency amount for identified residue scope risks. Also, see the department's *Project Cost Estimating Manual*, specifically Clause 6.2 and Clause 11.

#### **6.2.3 Time**

The Consultant shall manage project time, including:

- a) The Consultant Services are to be managed for time and resources using appropriate Project Management software. The Consultant will provide the Principal with time / resource information in monthly progress reports, and
- b) Further to Clause 5.2 of the *General Conditions of Contract (C7545)*, the Consultant shall provide a detailed Contract Program of design activities, design support activities / work packages that indicates the resourcing and timing of all design activities, including the ability to monitor progress and the inter-relationship of the various design activities within two weeks of the Start Date for approval by the Principal. The approved Contract Program shall also form the basis of the regular progress report during the period of the Contract.

#### **6.2.4 Financial management**

The Consultant shall manage financial aspects of the project according to documented procedures. This shall include provision of detailed information on Approved Budget, Cost to Date, Forecast Cost at Completion and Variance on a monthly basis as part of monthly progress reports.

#### **6.2.5 Quality Plan**

As part of its mandatory requirement to manage quality, the Consultant's Quality Plan shall be submitted to the Principal within two weeks after the Date of the Letter of Acceptance for directions as to its suitability. If the Principal notifies the Consultant that the Quality Plan is not suitable (giving reasons) the Consultant shall submit a new or amended Quality Plan for a further direction.

Where the Principal notifies suitability of the Quality Plan, such approval shall not relieve the Consultant of its responsibility for errors, omissions or compliance with the requirements of the Contract.

The Quality Plan aspects dealing with management of design certification shall generally comply with the department's Management Procedures and Forms (*Annexure A to Supplementary Conditions of Contract (C7554.1)*).

#### **6.2.6 Human resource management**

As part of its management of human resources, the Consultant is to arrange for appropriate training for all persons from within the Consultant's organization (including sub-consultants) and from relevant external organisations directly associated with the Project. Such training will include:

- Safety
- Impact Management Plan Induction
- Quality
- Communications, and
- Environmental Issues, and so on.

#### **6.2.7 Communications management**

As part of its management of communications, the Consultant should include the following:

##### **6.2.7.1 General**

- a) The Consultant is to ensure that all of its Team Members, including sub-consultants, use the Consultant's documented system for all communications and documents associated with the Consultant Services. This will include arranging training, and so on, where appropriate.
- b) The Consultant shall develop and implement appropriate procedures to manage interfaces between all persons involved in the Project including external stakeholders. The Consultant shall ensure that such persons are aware of such procedures and ensure that all relevant contracts incorporate appropriate procedures.
- c) The Consultant will oversee the communications interfaces with groups / organisations involved with or affected by the construction and operation of the Project including:
  - Adjacent Land Owners
  - Local Community Groups

- Local Indigenous Communities
  - Road Users
  - Police / Emergency Services
  - Queensland Rail (where applicable)
  - Other Local, State and Federal Government Organisations
  - Other consultants on the same or related projects
  - Media, and
  - Political representatives (local, state and federal).
- d) The Consultant will be responsible for dealings regarding Public Utility Plant (PUP) relocations with the following PUP owners as required:
- Communications – High Band
  - Communications – Low Band
  - Electrical Generation
  - Electrical Distribution
  - Gas
  - Local Government (Sewerage and Water) (where appropriate)
  - Local Government (Stormwater) (where appropriate), and
  - Other.
- e) The Consultant will be responsible for timely advice to the Principal where there are possible:
- Significant differences between the QTRIP amount and current project costs, and
  - Significant scope variations to the agreed project scope.

#### **6.2.7.2 Regular progress meetings**

Further to Clause 2.9 of the *General Conditions of Contract (C7545)*:

- a) Regular progress meetings shall be scheduled between the Principal and the Consultant regarding the Consultant Services. Unless otherwise agreed such meetings shall be held as per Item 1.8.3 of *Invitation for Offer (C7585)*.
- b) The Consultant shall prepare the agenda for all meetings with the Principal (including regular progress meetings). The draft minutes of all meetings and the *Meeting Action Summary (C6945)* shall be prepared by the Consultant and forwarded to the Principal within three days after the meeting for confirmation or correction.

Information to be provided includes:

- Time / resource information
- Financial information
- Risk identification, assessment and management, and
- Other items as applicable.

- c) Corrected Minutes of all meetings shall also be prepared by the Consultant and forwarded to the Principal within three days of receipt of notice from the Principal and will be subject to confirmation at the subsequent regular progress meeting.
- d) Project meetings require specific obligations by both the Principal and the Consultant. It is a requirement that these meetings embrace the concept of “Best for Project” environments and outcomes, and
- e) It is not a requirement nor is it intended for a third party to be engaged to conduct these meetings.

#### **6.2.7.3 Special meetings**

- a) Either party may at any time, by giving at least three days’ notice, or such other time as agreed between the parties, arrange a meeting to discuss an urgent matter.

The party initiating the meeting shall prepare the agenda, the draft minutes, the Meeting Action Summary and corrected minutes as if they were the Consultant in Clauses 6.2.7.2 (b) and (c).

- b) The Principal may, at any time, require the Consultant to prepare an additional report on any aspect of the Consultant Services arising from regular progress meetings, and the Consultant shall comply within a reasonable time, and
- c) Nothing shall prevent the parties from attending informal meetings / liaisons at any time for discussions regarding the Consultant Services.

#### **6.2.8 Risk management**

As part of its risk management:

- a) Where an Impact Assessment Study (IAS) has been carried out that relates to the Consultant Services, the Consultant will develop and implement an Impact Management Plan (IMP) as a tool to manage the project impacts as defined in the IAS, and
- b) The IMP will contain Key Performance Indicators (KPIs) which will be compared with achieved measured values determined on a regular basis.

#### **6.2.9 Procurement**

As part of its management of procurement, the Consultant shall ensure that all contractual documents associated with the supply of the Consultant Services will be made available to the Principal on request.

#### **6.2.10 Stakeholder management**

As part of its management of stakeholders, the Consultant shall identify those external persons, groups or organisations whose interests may be impacted by the Consultant Services. Impacts may be internal and/or external, positive or negative, and may vary during the life of the project (costs, disruptions, temporary arrangements, and so on).

The Consultant shall develop and implement appropriate procedures to manage the interfaces between the Consultant, the Department and all such external stakeholders. The Consultant shall ensure that all identified external stakeholders are aware of and adhere to such procedures.

### **6.3 Managing relationships**

In management of relationships by the parties, the following shall be included, as briefly described below.

#### **6.3.1 Client Leadership**

The management of the project shall be based on the concept of “Client Leadership”.

Client leadership is the process of modelling the way forward to achieve the desired state. The process incorporates the following:

- Strong leadership that seeks to create win-win project environments and outcomes by:
  - Progressively addressing risk throughout the whole process.
  - Holding project meetings that allows the Principal to have the necessary regular input into the decision making process, and
  - Approving solutions as they evolve.
- Making timely decisions and sticking to them.
- Being prepared to take “best for project” risks and judgements to achieve best project outcomes, and
- Communicating trust to the team. The Consultant is required to work together with the Principal using the above principles to achieve value for money and mutually agreed outcomes.

#### **6.3.2 Consultant Services**

The Consultant Services shall be carried out such that the Principal and Consultant:

- Develop and maintain trusting relationships and good communications.
- Work together in a collaborative and supportive manner, and
- Adopt a partnering approach in their relationship.

#### **6.3.3 Key Performance Indicators (KPI's)**

At the Initial Meeting, the parties will establish KPI's relating to the ongoing health of relationships and communications between the parties.

## **7 Project / Design Reviews**

### **7.1 Overview**

Initial Project Review / Preliminary Design / Detailed Design Reports are management reports additional to the regular progress reports (Clause 6.2.7) and are to be submitted by the Consultant to the Principal for:

- Initial Project Review (for Preliminary Design Stage or Development Phase)
- Preliminary Design (for Preliminary Design Stage), and
- Detailed Design (for Detailed Design Stage).

## **7.2 Project Reviewers**

The persons nominated by the Consultant in Item 3.1 of *Offer for Consultant Services – Non-Price Component* (C7586) (or subsequently approved by the Principal) to manage obtaining approval for its Initial Project Review Report, Preliminary Design Report and Detailed Design Report, as appropriate, are to work cooperatively with the Principal's delegate(s).

## **7.3 Initial Project Review**

Where the Consultant Services includes the Design Development Phase, the Initial Project Review shall be completed by the Consultant within the nominated time after the Start Date (Item 1.8 of *Invitation for Offer* (C7585)), or such other time as agreed between the parties. This shall include at least four days (or such other time as set out in Item 1.8 of *Invitation for Offer* (C7585)) for discussion with the Principal and a reasonable time for approval of the Consultants' Initial Project Review Report by the Principal. Such discussions are to be held at a time and place nominated by the Principal.

The Initial Project Review Report shall include as a minimum, the matters set out in the Functional Specification.

The Initial Project Review may precede in parallel with the Preliminary Design Review but shall be completed and approved by the Principal before commencement of the Detailed Design Stage.

## **7.4 Development phase – Preliminary Design Stage**

Where the Consultant Services includes the Preliminary Design Stage, the Preliminary Design shall be completed generally in accordance with Clause 2.3.

A road safety audit shall be conducted on the Preliminary Design. A Preliminary Design Review shall be carried out in parallel with the Initial Project Review and include the findings of the road safety audit report.

The Preliminary Design Report shall be completed by the Consultant within the nominated time after the Start Date (Item 1.8 of *Invitation for Offer* (C7585)), or such other time as agreed between the parties. A Preliminary Design Report is to be prepared and submitted by the Consultant to the Principal for approval. The Consultant is to allow at least five days (or such other time as set out in Item 1.8 of *Invitation for Offer* (C7585)) during the period for discussion with and approval of the Consultant's Planning Report by the Principal. Satisfactory completion of this Planning Report (and the Initial Project Review) is a prerequisite for commencement of the Detailed Design Stage.

Matters to be included in the Planning Report are set out in the Functional Specification.

## **7.5 Detailed Design Stage**

Where the Consultant Services includes the Detailed Design Stage, Detailed Design shall be completed generally in accordance with Clause 2.3.

Detailed Design can only be carried out after completion of the Initial Project Review and the Preliminary Design Stage.

Detailed Design shall be completed by the Consultant within the nominated time after the Start Date (Item 1.8 of *Invitation for Offer* (C7585)), or such other time as agreed between the parties.

A Detailed Design Report (together with the Design Development Report) shall be prepared and submitted by the Consultant to the Principal for approval. The Consultant is to allow at least five days



(or such other time as set out in Item 1.8 of *Invitation for Offer* (C7585)) during the period for discussion with and approval of the Consultant's Detailed Design Report by the Principal.

Matters to be included in the Detailed Design Report are set out in the Functional Specification. However, in all circumstances the design intent shall be included.

## **8 Engineering Drawing certification**

### **8.1 Consultant certification of Engineering Drawings**

All Engineering Drawings shall upon completion, be certified by a Professional Engineer (RPEQ) who is also a Principal or Senior Executive Engineer of the Consultant, as named in Item 3.1.1 of *Offer for Consultant Services – Non-Price Component* (C7586) or as subsequently approved in writing by the Principal.

Certification shall be by a signature in the certification area set aside in the title block of the drawings.

#### **8.1.1 Electronic signature policy for engineering drawings**

The use of electronic signatures on all engineering drawings is the department's default position, unless otherwise approved on a project by project basis.

The Consultant's certification of engineering drawings shall be in accordance with the department's Engineering Policy EP172 *Electronic Signature Policy for Engineering Drawings*. This policy can be viewed on the department's [Engineering Policy](#) webpage.

### **8.2 Effect of certification**

Under the consultant contract "Quality Certification" means:

- The design has been produced in compliance with the requirements of the *Professional Engineers Act 2002*.
- Reasonable skill, care and diligence has been exercised by the Consultant in preparing the Engineering Drawings and specifications in accordance with the ethics of the Engineering Profession.
- The Consultant Services conform with the provisions of the Contract Documents.
- The design has been carried out in accordance with the consultant's fully certified Quality System that complies with AS/NZS ISO 9001:2016.
- The Consultant has considered relevant safety aspects of the design.
- The consultant has duly taken into account the relevant environmental issues in the design, including the long-term impact of the constructed works on the environment.
- The Consultant has taken into account the relevant economy of the design, and
- The design and design detailing have been reviewed for constructability appropriateness relevant to the construction site concerned.

## **9 Quality in design, documentation, work item quantity schedules and cost estimating**

### **9.1 Design requirements / standards**

#### **9.1.1 Road design references**

The department's primary design standards are specified in the following manuals:

- Road Planning and Design
- Road Drainage Design
- Drafting and Design Presentation Standards
- Manual of Uniform Traffic Control Devices
- Pavement Rehabilitation
- Pavement Design Supplement
- Design Criteria for Bridges and Other Structures
- Geotechnical Design Standards
- The four Standard Drawings Roads Manuals
- The five categories of Standard Specifications
- The department's Transport Infrastructure Project Delivery System
- Project Cost Estimating, and
- Environmental Management Manuals.

The above manuals can be accessed from the department's Technical Publications webpage:

<https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications>

#### **9.1.2 Design standards**

Designs must fulfil the stated requirements of the brief and comply with the requirements of relevant Codes of Practice and Australian Standards. In addition, the design must comply with the requirements of the department's manuals listed in Clause 9.1.1 and the Brief / Functional Specification.

The long-term maintenance of structures (for example, bridges) and civil works (for example, drainage) are serious issues for the department. The design must incorporate good design practices that minimise the future maintenance requirements of the completed works.

#### **9.1.3 Non-Compliance with design standards**

Aspect of design that does not comply with the requirements of Clause 9.1.2 must be submitted to the Principal for specialist approval before being incorporated into the design.

## **10 Form of Engineering Drawings**

### **10.1 Number of Engineering Drawings**

The Consultant shall provide original and final Engineering Drawings as follows:

- One copy (A3 size), suitable for reproduction for inclusion in construction tender documents, and
- One electronic copy to be supplied via a digital data transfer methodology as agreed with the Principal.

### **10.2 Plan sheet, colour and legibility**

Original certified final Engineering Drawings shall:

- be produced using the Principal's standard plan sheet format
- in difficult situations, include colour where this would enhance readability or understanding of the drawing, and
- be clearly legible when reduced to A3 size.

### **10.3 Project electronic models**

The Consultant shall develop electronic string-based models and 3D object-based models of the Design that meets the following requirements:

- All models are to be delivered to the department in the native file format, 12D ascii, REVIT, and a federated model in an industry standard Industry Foundation Class (IFC) file format.
- The models will accurately represent the design solution.
- All models submitted to the department are to be "clean" (i.e. with all extraneous 2D references and 3D elements stripped from the models).
- The number of authoring software errors in the models must be limited.
- All models submitted are to be compatible and editable (where required) within the native digital model authoring tools.
- Where possible, all design drawings and schedules must be derived from the BIM model environment, and
- Electronic drawings are to be provided in accordance with the department's Drafting and Design Presentation Standards Manual.

The electronic string-based model data must be suitable for direct transfer to the constructors' machine guidance systems and be directly accessible by the department so that data can be viewed, checked or re-used as required. Each component of the project electronic models should contain relevant information only, and any extraneous or unnecessary data must be deleted before delivery to the department.

The Consultant shall adopt the Transport and Main Roads Customisation software as a baseline for the preparation of the design model and drawings.

The electronic models and drawings shall be supplied to the department via a digital data transfer methodology as agreed with the Principal and defined in the Design BIM Execution Plan.

### **10.4 Format specification**

The document, Transport and Main Roads *Surveying Standards* and the *Drafting and Design Presentation Standards* indicate survey specifications and string labelling conventions used in:

- Electronic copies of design and survey information, and

- Electronic copies of Engineering Drawings to be produced by the Consultant.

## **11 Form of Other Engineering Documents**

### **11.1 Word processor**

The form of Other Engineering Documents shall be as follows:

- All electronic copies of text reports shall be provided in Microsoft Word (.doc) format; and
- All estimates shall be provided in a 3PCM (.csv file) estimating import template format supplied to the department via a digital data transfer methodology as agreed with the Principal.

### **11.2 Number of copies**

The original and three copies of each final “Other Engineering Document” shall be provided to the Principal.

### **11.3 Costs of conversion**

No separate fee will be paid by the Principal to convert survey information from that provided by the Principal into another format considered more convenient or suitable to the Consultant’s operations or for conversion of the Consultant’s data to the formats suited to the Principal’s systems.

## **12 Pavement repairs following geotechnical investigations**

Where the Consultant Services includes geotechnical investigations of an existing road pavement (including shoulders) which requires pavement excavation or results in damage to the pavement, the Consultant will be responsible for restoring the pavement to the following standards:

- For dense graded asphalt layers, the department’s Technical Specification MRTS30 *Asphalt Pavements* will apply using mix AC14:
  - for AADT's less than 2000 vpd a minimum depth of 50 mm applies, and
  - for AADT's greater than 2000 vpd a minimum depth of 150 mm applies.
- For gravel layers, the department’s Technical Specification MRTS05 *Unbound Pavements* will apply using Gravel Type 2.2 (including 2% cement) for a minimum depth of 350 mm compacted in layers to 100% RDD Standard Compaction, and
- Any remaining depth is to be compacted to 97% RDD Standard Compaction using natural material if compaction is possible.

The Consultant may, at its own cost, engage the maintenance contractor with responsibility for that section of road to carry out such repairs. The Principal can provide information as to the identity of such contractor on request.

## **13 Principal supplied survey information**

### **13.1 Limitations**

Where the Principal provides survey information in an electronic form, the Consultant accepts that such survey has been compiled for the purposes of road design only.

The date of the Terrain / Feature Survey is shown in Item 3.4 of the *Invitation for Offer* (C7585).

Where changes have occurred since the completion of the survey the Consultant is required to advise the Principal who will arrange to update the survey. In this respect, the Consultant should not rely on this survey information but rather should undertake its own investigations with respect to its completeness, accuracy or adequacy.

The Consultant will not be entitled to make a claim in respect of any fact, matter or thing contained in or in respect of or arising out of or in any way connected with the provision of this Additional Information.

The Principal does not in any way warrant, give or make any guarantee nor make any representation with respect to any interpretations, deductions opinions or conclusions set out in the information.

### **13.2 Public utility plant**

The surface components of underground public utility plant, where clearly visible, have been located by field survey. In some cases, the actual extent of the utility plant may not have been apparent from information available in the field.

Where the Consultant is required to establish the location of all public utility plant, potholing for this will be paid for as a variation.

### **13.3 Cadastral boundaries**

The Principal may have included a Digital Cadastral Database (DCDB) as Additional Information.

The status of cadastral boundaries is either:

- a) Boundaries have been fitted to the survey and were correct on the date of the survey. The Consultant shall update the boundaries if necessary. Updating boundaries will be paid for as a variation, or
- b) No boundaries have been plotted or fitted to the survey. If boundaries are required, the Consultant shall plot accurate boundaries using RP plans and fit the boundaries to the survey. This work will be paid for as a variation, or
- c) Where the Consultant is required to plot and fit boundaries to the survey. This work will be paid for as a variation.

## **14 Traffic control**

When carrying out any investigations that require traffic control, the Consultant shall meet the requirements of the department's *Manual of Uniform Traffic Control Devices* and workplace health and safety requirements.

Where it is necessary to affect through traffic flows, the following will apply:

- a) Lane and shoulder closures shall not occur between the following times:
  - 6.00 am – 9.00 pm Monday to Friday
  - Thursday before Easter to the Tuesday after Easter inclusive
  - Any public holiday (excluding show holidays), and
  - Monday prior to Christmas Day to the Friday following New Year's Day inclusive.
- b) Traffic delay to any single vehicle shall not exceed ten (10) minutes.



