

CENTRAL SECTION DELIVERY

Construction Certification for Civil Engineering and Station Works Procedure

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Revision	Status / Description of Changes
5.0	Amendment to 6: Procedure reference to MOHS dates. Revised to DCS Dates
4.0	Revised to incorporate process efficiency alterations, changes to the organisation and the phases of works e.g. Architectural fit-out
3.0	Revised to reflect new organisation, job titles and general tidy-up. Includes references to MEP and Systemwide

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Learning Legacy Document

1 Introduction

This document also supports the implementation of Gate 3 assured design which is compliant with the requirements of S1-538 and accepted through the IM(s).

2 Purpose

To define the method for producing the documentary evidence required by the Crossrail Delivery Team to demonstrate to Crossrail, the Infrastructure Maintainers and Sponsors that Crossrail Central Section Structures, Civil Engineering and Station Works (including architectural fit-out) have been constructed and installed in accordance with the Works Information Volume 2B Part 13. This procedure shall also be applied to any civil works carried out by Systemwide Contractors e.g. C644.

3 Scope

Each Sub-construction and Construction Certificate shall include a definition of its scope and refer to its associated Design Certificate (where possible). Sub-construction and Construction Certificates shall be supported by a Construction Certificate Package Listing which identifies the records associated with the Contract Works.

This document supports the implementation of assured Gate 3 design compliant with the requirements of LU Assurance Standard S1-538 for the Crossrail Central Section project. The procedure and process described in this document will maintain the integrity of the assured design through to its implementation.

This procedure does not apply to;

- MEP and System Installation, Testing or Commissioning requirements (refer to CRL1-XRL-O8-GUI-CRG03-50001, or
- *Contractors'* totally removed temporary works (to be agreed with the *Supervisor's Rep* (PFE))

4 Terms & Definitions

Sub-construction Certificate (SCC)	A certificate issued by the <i>Contractor</i> and signed by the <i>Project Manager</i> for a constructed element of the works
Construction Certificate (CC)	A certificate issued by the <i>Contractor</i> and signed by the <i>Project Manager</i> when all agreed Sub-divided activities and Sub-construction certificates for a defined constructed element have been accepted by the <i>Project Manager</i>
Whole Contract Construction Certificate (WCCC)	A certificate issued by the <i>Contractor</i> and signed by the <i>Project Manager</i> when all agreed Contracted Construction works are complete and the Crossrail Employers Completion due diligence process is complete
Sectional Contract Construction Certificate (SCCC)	A certificate issued by the <i>Contractor</i> and signed by Crossrail when all agreed sub-divided activities and Construction Certificates for a defined sectional handover have been accepted by the <i>Project Manager</i>
Construction Certificate Package Listing (PL)	An index of all related deliverable design, construction, test, as-built, operational and maintenance records for the constructed element of works.
Deliverable Record Package	A set of assurance documents/records for a constructed element

	of works e.g. Piling Records
Package Breakdown Structure and Schedule	An outline of all planned Sub and Construction Certificates for the contract and a schedule of planned and actual submission dates
eB	Crossrail’s Electronic Document Management System
<i>Supervisor’s Rep (PFE)</i>	Crossrail Project representative described in NEC3 ECC Contract for the role of <i>Supervisor</i>
<i>Project Manager (PM)</i>	Crossrail Project representative described in the NEC3 ECC Contract for the role of <i>Project Manager</i>
<i>CEG HOD</i>	Crossrail Chief Engineer’s Group Head(s) of Discipline

5 Responsibilities

5.1 Works Contractor

The appointed Works *Contractor* is responsible for;

- The preparation and maintenance of a Package Breakdown Structure and Schedule in line with the construction programme,
- identification, production and contemporaneous submission of deliverable records,
- identification, review and contemporaneous submission of their Sub-Tier Contractor and Supplier deliverable records,
- ensuring that certification milestones are monitored and met

5.2 CRL Certification Manager

The Certification Manager is responsible for;

- Providing training and guidance to the Delivery, Certification and *Contractor* to ensure all certification requirements are understood
- Monitoring the certification performance and reporting to CRL Directorate, Project Teams and Quality Teams
- Identifying and implementing best practice and lessons learnt
- Ensuring any 3rd Party requirements are met

5.3 CRL Certification Team

The Certification Engineers for the assigned contracts are responsible for;

- Meeting with the CRL Delivery Team and *Contractor* each week to go through the progress of the certification process
- Providing feedback on best practices and lessons learnt
- Maintaining the CRL Certification trackers
- Reviewing and reporting progress to the Certification Manager and *Supervisor’s Rep*. This is essential for readiness of certification acceptance.
- Support the Delivery Team by conducting surveillances on the documentation required for acceptance of certification packages.
- Support the Delivery Team in the quality assurance review of package listings.
- Ensuring any Third Party requirements are met

5.4 Supervisor’s Rep (PFE) and Delivery Team

The *Supervisor’s Rep (PFE)* and Delivery Team assigned to a particular contract are responsible for;

- Acting as representative for the *Supervisor*
- reviewing and accepting the Package Breakdown Structure and Schedule,
- Ensuring the *Contractor* meets the requirements of the Works Information and guidance given by CRL,
- reviewing and accepting associated records and certification packages,

- ensuring that certification milestones are monitored and met
- agreeing certification deliverables with any third parties, including Statutory Undertakers and Infrastructure Managers
- The *Supervisor's Rep* shall be supported in this by other members of the site delivery team and support functions including the CEG HOD where required.

Note: The SR PFE for Station, Portal or Shaft contracts is supported by a Field Assurance Engineering Team (FAE) where the Systemwide SR PFE is supported by Site Engineers (SE).

5.5 Project Manager

The Crossrail *Project Manager* (PM) assigned to a particular contract is responsible for;

- Acting on behalf of the *Project Manager*,
- Accepting the Sub-construction, Construction and Whole Contract Construction Certificates
- Assuring any Third Party requirements are understood

6 Procedure

6.1 Package Breakdown Structure and Schedule

The *Contractor* is required to identify how they intend to break-up their scope of works into Construction and Sub-Construction level activities. These are to be in accordance with the construction programme, activity, asset owner, Infrastructure Manager or Subcontractor/trade, and shall be formally agreed by the *Supervisor's Rep* (PFE).

The Package Breakdown Structure and Schedule is a "live" document which is to be maintained and monitored in accordance with the Construction programme. The Schedule shall indicate the planned and actual dates at which certificate packages are to be presented to Crossrail for acceptance, and the current review status.

The requirement in Part 14.3.8.5 of the Works Information is for the dates of planned certification submission to be included in their accepted P6 Programme. Due to the long process for the P6 approval, the Delivery Team and the *Contractor* may come to a local agreement how to deal with this, such as using the Construction Programme. The dates must also align to the key dates on the DCS (Delivery Control Schedule).

6.2 Deliverable Records and Package Listing

6.2.1 Deliverable Records

The *Contractor* shall prepare and submit all deliverable records contemporaneously as the work activity progresses, in accordance with the requirement for progressive assurance in W.I. Part 13.1 and W.I. Part 29.2.1.

It is not necessary to include the records that have been submitted and accepted pre-construction, or PTR documents (e.g. NCRs, RFIs, etc.) as these will already be on eB. Best practice has shown that a signed copy of the Decal sheet for these documents may be added to the packages to assist the owner and reviewer of the files when ensuring all documentation has been accepted at Code 1 or 4.

Upon completion of each activity, these deliverable record packages shall be submitted to Crossrail for acceptance. The CRL FAE/SE may select which records to review based on the VAP risk category of the activity, the first and second instances or a sample check. If records have not been reviewed by CRL, then they shall be accepted Code 4. It is not expected that CRL will review all the documentation submitted by the *Contractor*, but all certification documentation shall be submitted for acceptance. The associated certificate must not be signed until these records have been completed and provided to CRL.

Refer to the Compilation of Certification Packages Process for further details.

Deliverable records for the activity shall be included on the Package Listing template and agreed by the *Supervisor's Rep (PFE)*. The Package Listing is Part 2 of the Sub-construction or Construction Certificate

CRL to provide guidance to each *Contractor* and share best practice/lessons learnt on review and submission process.

6.2.2 Package Listing

A Package Listing, or Records Package Listing, is a standard template provided by CRL for every *Contractor* to use. It is an index of all deliverable records, and their individual eB numbers, that are generated during design through construction/installation for each activity of works.

They shall be populated and submitted with each Sub Construction Certificate and issued under one eB document number using the taxonomy code 'CER' and CMDL filing number C13.006. (SSPs & Depots) or SMDL code S13.011. (Systemwide). If there are new or amended documents since the completion of the Sub-construction certificate, then a Package Listing is required for the related Construction Certificate.

Package Listings that are populated progressively along side the works activities are found to be best practice for being completed accurately and on time. Continuous population of information reduces the impact of one or more parties leaving before the activity is complete. This also applies to the progressive compilation of records in 6.2.1 above and provided a tool for surveillance of ongoing works.

6.3 Review and Acceptance

For the Package Listing three signatures are required by the *Contractor*; to include the person who has collated the information, a competent person responsible for the package of works and the Quality Manager. The Delivery Team first reviewer (where applicable) and *Supervisor's Rep (PFE)* shall sign on behalf of Crossrail.

An authorised person from the *Contractor*, e.g. Project Manager or Construction Manager, is required to sign the Sub-Construction or Construction Certificate, the *Supervisor's Rep (PFE)* and the *Project Manager (PM)* shall sign in acceptance for Crossrail.

Upon completion of the related activities and acceptance of the certificates, the *Contractor* shall confirm any outstanding actions or documents previously identified are now closed and issue the related Construction Certificate.

Once all sub-construction, construction and Testing & Commissioning certificates are accepted and the contractual scope of works is complete the Whole Contract Construction Certificate (WCCC) can be issued. The *Project Manager* and *Supervisor's Rep (PFE)* are to follow the process defined in the Employer's Completion Process (ECP) procedure before signing the WCCC. Any outstanding works and documentation at this stage are added to the agreed Defects List.

6.4 Sectional Completion

Where a section of works, or partial section, is to be handed-over to the Infrastructure Maintainer (IM) then the breakdown structure shall be aligned. Once all the works, sub-construction and construction certificates are submitted and accepted the *Contractor* will issue a Sectional Contract Completion Certificate (SCCC). For further details refer to CRL procedure Sectional Completion and Handover to Third Parties.

6.5 MEP & Systems

For guidance on how MEP and Systemwide T&C certification will meet the requirements of Part 28 of the Works Information, through Installation Release Notices, Pre-Commissioning Certificates, Partial Acceptance Certificates and Acceptance Certificates, refer to the CRL MEP and Systemwide Certification Process.

CRL will provide guidance to each *Contractor* and share best practice/lessons learnt on review and submission process.

6.6 Monitoring

The *Contractor* is expected to monitor their progress of all of their certification packages. Regular updates are to be provided to CRL each week. Scheduled dates for delivery of each package are expected to move as-per the construction programme. Extending planned submission, or planned acceptance dates is not to be made to accommodate issues with resourcing.

The CRL Certification Team will monitor the progress of each Contractor and the performance will be reported each period to the CRL Directorate.

There are two main Key Performance Indicators for Civil & Architectural certification packages;

- A. On-Time Acceptance;
 - >90% of Packages to be accepted within 60 days of the given forecast submission date
- B. Overdue;
 - number and percentage of packages that were forecast for acceptance, did not meet the above KPI and are still not accepted

Each individual certificate (SCC and CC) is to have a forecast submission date from the *Contractor*. This submission date is to be in-line with their construction programme and is the date that the *Contractor* states the works and the information will be complete and ready for review by CRL and other parties. It is for the *Contractor* to liaise with the *Supervisor's Rep PFE* to determine how much time between construction end and submission is required.

The target acceptance date (planned submission + 60 calendar days) is automatically generated, if the acceptance is on or before this date, then the KPI is positive. If the acceptance falls behind programme then the KPI is "overdue". These forecasts need to be adjusted in line with the activity programme.

The *Contractor*, *Supervisor's Rep (PFE)* and Certification Team shall monitor the certification performance with reports generated by the Certification Manager each period. Regular meetings shall be held to review the performance, the status of packages, outstanding issues and to look at the forecast for upcoming submissions in line with the programme. The information from the CRL Certification team may feed the Quality, Testing & Commissioning and Handover Dashboards.

Surveillances of the Deliverable Records shall be carried, where appropriate out to assure the requirements will be met right-first-time and on-time.

7 Reference Documents

Ref:	Document Title	Document Number:
1.	Guidance Note – Compilation of SCL and Tunnel Records	CRL1-XRL-O4-GUI-CR001-50015
2.	Compilation of Construction Certification Packages - Guidance Note	CRL1-XRL-O4-GUI-CR001-50009
3.	Employer’s Completion Process	CRL1-XRL-O4-GPD-CR001-50018
4.	MEP and Systemwide Certification Process	CRL1-XRL-O8-GUI-CRG03-50001

8 Standard Forms / Templates

Ref:	Document Title	Document Number:
A.	Whole Contract Construction Certificate Part 1 of 2	CRL1-XRL-O4-ZTM-CR001-50030
B.	Construction Certificate Part 1 of 2	CRL1-XRL-O4-ZTM-CR001-50029
C.	Sub-Construction Certificate Part 1 of 2	CRL1-XRL-O4-ZTM-CR001-50028
D.	Sub/Construction Certificate Package Listing Part 2 of 2	CRL1-XRL-O4-ZTM-CR001-50027
E.	Sectional Contract Construction Certificate Part 1 of 2	CRL1-XRL-O4-ZFM-CR001-50009