

## DESIGN MANAGEMENT

### What do I need to know?

This procedure outlines how all externally produced designs are managed by McGee. The activities outlined must be carried out as per the process below, and any deviations are to be directed through the IMS Manager for approval.

<b>Design Management Process</b>	Generic Process of Design Management, which can be adapted to be task and project specific.
<b>External Design Review Process</b>	This is process of how we review construction and engineering information from external Consultants and Parties. This will enable a easier construction process. Through proper design management we are able to protect our reputation and ability to win future work. Delivering buildings which are safe and protect us from litigation. Finally it will be of commercial benefit by eliminating the need for re-work and consequent project overrun and snagging.
<b>Project Organogram</b>	Illustrates the project and contractual structure of the project team. This should be used to communicate the flow of information between different Parties.
<b>Change Control Process</b>	This procedure in an integral part of design management, and set out the way design change should be managed on a project. This covers changes requested by the Client, McGee or change as a result of design evolution.
<b>Design Information Exchange Protocol</b>	When the Structural Engineer is Novated to McGee, the following communication lines and flow of design information must be adhered to. This will prevent the design changing/evolving without McGee's knowledge which can be detrimental effect on the overall project. It also enables the Employers Agent to have control and be able to manage the design team.
<b>Design Procedure</b>	This is the internal procedure the CET follow to produce, review and check design information.
<b>McGee Plan Of Work</b>	This document aims to communicate how we measure the risk and opportunity during the design process. This is set of deliverables aligned with the RIBA and IStructE Plan of Work, these are intended to be measurable points to show how we determine where the risk and opportunity is. This is also to make clear to the Design Team and the Client, what activities need to be carried out in order for them to demonstrate the design is suitably mature.
<b>Engineering Design Project Checklist</b>	This document aims to help assess the quality and level of detail in a design. It also provides the topics for discussion at design team meetings and write the "Narrative of the Technical Solution".
<b>CDP Definitions Document</b>	This documents apportions the design responsibility and specific deliverables when it comes to Contractor Design Portions/Items, to avoid any confusion and communicate the DRM in more granular detail.
<b>IRS</b>	Information Required Schedule – tracker for RFI and CP's

<b>TIDP</b>	If BIM project refer to BIM Procedure
<b>DRM</b>	Design Responsibilities Matrix details who is responsible for what on a project. This will help to highlight scope overlaps, gaps and possibly highlight issues in responsibility e.g. a design we are not able to complete do to issues of insurance or warranty.
<b>TQ</b>	Technical Query – Exclusive for the Tender Phase
<b>Technical Submittal</b>	This is the form which accompanies the information to be reviewed/approved by the Client/Consultant etc. As required in the Project documentation and specifications.
<b>RFI</b>	Request for Information. Formal question asked to another party within the main works contract.
<b>EDB</b>	An Engineering Design Brief is the form used to communicate requirements from site to designers.
<b>CDE</b>	Common Data Environment is the virtual platform, and cloud based storage environment, to store, track and manage documents on a project.

### What is my Responsibility?

<b>Job</b>	<b>Responsibility</b>
<b>Designer</b>	Responsible for producing and delivering information to a brief. Can be external or internal.
<b>Head of Construction Engineering</b>	Is Accountable for ensuring that this procedure is updated and communicated to the CET and Project Site Teams.
<b>Design Manager</b>	<p>PM to assign the responsibilities of the Design Manager (DM) to a suitably competent person within the project team.</p> <p>The DM is responsible for co-ordinating Structural Works Designers and the Client Design Team. Managing the designers using commercial, contractual, programme and technical know-how.</p> <p>Communicating Technical Submittals. Progressing CDP and ensuring correct approvals are gained.</p> <p>Capturing Design Change through correct communication channels and change control procedures.</p>
<b>Project Engineer</b>	Responsible for the implementation and co-ordination of design onsite.
<b>Document Controller</b>	The person in McGee authorised to assign unique design document numbers, and if project is BIM, operating the CDE alongside the BIM co-ordinator.

## What is the Process?

Activity	Actions Required	Document Reference
<b>Opportunity</b>		
<b>Permanent Works Design Appraisal: to build Risk profile</b>	<p>Review information against deliverables in McGee Plan of Work. This will help to ascertain what information is included/missing and the level of maturity of the design. This part is wholistic and needs the whole design team pack of information.</p> <p>Complete Engineering Design Project Checklist, to produce an overall rating of the quality of the engineering. This is a focus on the engineering design and is intended to help define the design risk.</p>	<p><u>DM-SF-001-McGee Plan of Work</u></p> <p><u>DM-SF-002-Engineering Design Checklist</u></p>
<b>Narrative of technical solution</b>	<p>Produce a commentary on the technical proposals from the permanent works engineer and explain the temporary works/sequence of construction currently described by the SE (if available). How they interact, areas for further development, and known gaps.</p> <p>This provides the basis for the TW designer to proceed on.</p>	<u>DM-SF-002-Engineering Design Checklist</u>
<b>Understand Role of External and Internal Parties: DRM and Team Organogram</b>	<p>Populate DRM and Project Organogram.</p> <p>Sometimes a CDP definitions document can be useful to explain the level of detail required in the performance specification, to help illustrate performance specification, design intent and design responsibility. However this may be too detailed at this stage of the process.</p> <p>Once the CDP definitions document is complete it should be shared with the Design Team.</p>	<p><u>DM-SF-003-Design Responsibilities Matrix</u></p> <p><u>DM-SF-004-Design Relationship Organogram</u></p> <p><u>DM-SF-005-Contractor Design Portion Definitions Document</u></p>
<b>TW/CDP Designer Appointments</b>	<p>Competency and capacity assessment to inform whether the McGee CET are to carry out TW design, or is an external consultant required. (Pre-requisites: Technical Narrative and Design Review).</p> <p>Compile list of other sub-consultants which will be required to perform additional design work.</p>	<p><u>DM-SF-007-Meeting Agenda Meeting Minutes</u></p> <p><u>TW-SF-003-Register of Checkers &amp; Authorisers</u></p>
<b>Work Winning</b>		
<b>Develop design programme &amp; IRS (TIDP)</b>	<p>In conjunction with the Master Build Programme, a design programme must be produced to ensure that design information is released with sufficient time to plan, procure and construct the required elements.</p> <p>This should help to populate the Information Required Schedule, which relates to specific drawings as opposed to "packages of information".</p>	<u>DM-SF-006-Information Required Schedule</u>

<b>Chair co-ordination workshop</b>	Co-ordination workshops are necessary to help the Design Manager to understand the level of co-ordination between the designers and maturity of the design; it is also an opportunity for us to impart our knowledge and experience of construction techniques and methodologies appropriate for the job.	<a href="#"><u>DM-SF-007-Meeting Agenda</u></a> <a href="#"><u>Meeting Minutes</u></a>
<b>CDM Workshop</b>	CDM workshop will aim to discuss the hazards and risks,	<a href="#"><u>OPE-SF-002-Project Risk Register</u></a>  <a href="#"><u>HS-PCD-001-CDM</u></a>  <a href="#"><u>DM-SF-007-Meeting Agenda</u></a> <a href="#"><u>Meeting Minutes</u></a>
<b>Submit EDB</b>	Create and compile EDB's and issue to designers.	<a href="#"><u>TW-SF-001-Engineering Design Brief</u></a>
<b>Design Report</b>	Combining the McGee Temporary Works proposals and sequencing, with the Permanent Works design and proposals. This design report aims to explain how the two relate and interact. Include a list of all the documents made available internally and externally.	<a href="#"><u>TW-PCD-002-Temporary Works Design</u></a>
<b>Co-ordinate PW designs</b>	This is a stand back and review exercise to ensure that the PW and TW work in harmony. Run clash detection report if BIM being used.	<a href="#"><u>DM-SF-007-Meeting Agenda</u></a> <a href="#"><u>Meeting Minutes</u></a>  <a href="#"><u>DM-SF-001-McGee Plan of Work</u></a>
<b>Technical submittal</b>	Responsibility of the DM to ensure there is a complete package of information, ensuring that all elements are included and that a cogent design proposal is submitted. Document issue register to be completed.	
<b>PSUM</b>		
<b>Review H&amp;S Pack</b>	Inline with the CDM 2015 regulations we must review preconstruction Health & Safety pack and ensure that H&S risks are considered in our approach to the construction of the design.	<a href="#"><u>HS-PCD-001-CDM</u></a>  <a href="#"><u>OPE-SF-002-Project Risk Register</u></a>  HSE L153  The Construction Design and Management Regulations 2015

<p><b>Appoint Principle Designer</b></p>	<p>The Client must appoint a suitably qualified and experienced party to perform the role of PD. This is a legal requirement. The PD must: Plan, manage, monitor and coordinate health and safety in the pre-construction phase. Provide the information designers and contractors need to carry out their duties. Work with any other designers on the project to <b>eliminate</b> foreseeable health and safety risks to anyone affected by the work and, where that is not possible, take steps to <b>reduce or control</b> those risks. Keep McGee informed of any risks that need to be controlled during the construction phase.</p>	<p><u>HS-PCD-001-CDM</u>  HSE L153  The Construction Design and Management Regulations 2015</p>
<p><b>Input into Design consultant appointments</b></p>	<p>One of the key areas of a contract is to clarify design responsibilities and ensure that the scope of the consultants work is aligned and we are satisfied we are to be responsible for work within our areas of expertise. We should also input into agreed fee schedules to ensure that we understand how much consideration and time the consultants should be putting in at a given time. This will give an indication of where the main bulk of design time is allocated.</p>	<p><u>DM-GUI-001-Design Management Guidance</u>  <u>DM-SF-003-Design Responsibilities Matrix</u>  <u>DM-SF-005-Contractor Design Portion Definitions Document</u>  <u>DM-SF-011-Designer Competency Self-assessment</u></p>
<p><b>Detailed Design Workshops</b></p>	<p>Workshops should be held internally with CET, Site Team and Digital Engineering Team, to ensure that designs are progressing in the right direction, in accordance with the brief and with the permanent works design. External workshops should be held with the wider design team to ensure change is captured, and ensure that the design is being co-ordinated.</p>	<p><u>DM-SF-007-Meeting Agenda Meeting Minutes</u>  <u>DM-SF-015-External Design Review Process</u>  <u>TW-SF-002-Simple Record of Review</u></p>
<p><b>Identify &amp; Develop Value Engineering Options</b></p>	<p>The design included in the contract should be evaluated and the design manager will be responsible for gathering input from those within McGee with the technical know-how for what can be done more economically. There are various McGee stakeholders in this, to include CET, Head of Civils and Structures, Site Manager and Project Manager. Each VE option should follow an impact analysis procedure; before being submitted as a Technical Submittal.</p>	<p><u>DM-SF-017-Technical Submittal</u>  <u>DM-SF-018-Technical Submittal Register</u>  <u>DM-SF-009-Request For Information</u></p>

		<u>DM-SF-006-Information Required Schedule</u>
<b>Design Review and establish change control baseline</b>	<p>At this point in the contract a sum should have been agreed thus the design information should be reviewed against what was priced to ensure that change is captured and the price can be adjusted accordingly. The review should also make reference to the McGee Plan of Work, and Engineering Design Project checklist, to enable us to track how developed the design is, for example is the level of detail and co-ordination appropriate for the RIBA design stage?</p> <p>This exercise is important because these documents will form part of the Contract and thus will give McGee a reference point if we need to refer to where the design has changed or developed from.</p>	<u>DM-SF-015-External Design Review Process</u>  <u>DM-SF-013-Change Control Process</u>  <u>OPE-PCD-005-Change Control Procedure</u>  <u>DM-SF-014-Design Decision Log</u>
<b>Prepare New Engineering Design Briefs, Request For Information and Technical Submittals</b>	<p>As required submit new EDB to the Construction Engineering Team or other designers. Requests for Information to the Client Team or Structural Engineer must be formally issued via CDE or other agreed method.</p> <p>Technical Submittals are formal submittals to propose McGee chosen materials, method and/or details; which require comment/approval by the Client or Structural Engineer.</p>	<u>TW-SF-001-Engineering Design Brief</u>  DM-SF-017-Technical Submittal  <u>DM-SF-018-Technical Submittal Register</u>  <u>DM-SF-009-Request For Information</u>  <u>DM-SF-006-Information Required Schedule</u>
<b>Peer Review Workshop</b>	<p>Any temporary works are to be classified in the EDB as Category 1, 2 or 3. This will dictate the review/checking requirements. This workshop is to capture change and discuss the design, taking into consideration the peer review feedback.</p>	<u>DM-GUI-001-Design Management Guidance</u>  <u>DM-SF-015-External Design Review Process</u>  <u>TW-SF-002-Simple Record of Review</u>

Delivery		
<b>Communication and Relationships</b>	<p>During the detailed design phase we must engage early with our preferred detailers, suppliers, fabricators and subconsultants.</p> <p>We must issue them with information of suitable standard and detail, to enable suitable design and production of fabrication information.</p> <p>Clear timelines should be detailed and consistent, punctual communications maintained.</p>	<p><u>DM-GUI-001-Design Management Guidance</u></p> <p><u>DM-SF-015-External Design Review Process</u></p> <p><u>DM-SF-014-Design Decision Log</u></p>
<b>Chair prestart design workshop</b>	<p>McGee are a key stakeholder and it is important that we are party to all design conversations involving the Structural Engineer.</p> <p>This first meeting should enable:</p> <p>Clear communication lines, including how the team should discuss design matters. Adapt the Design Information Exchange Protocol</p> <p>Setting the expectations and the tone for how the project will be run. Plan, Do, Check, Act. We will remain professional and communicate clearly, concisely and inclusively.</p>	<p><u>DM-SF-007-Meeting Agenda Meeting Minutes</u></p> <p><u>DM-SF-001-McGee Plan of Work</u></p> <p><u>DM-GUI-002-Design Information Exchange Protocol</u></p>
<b>Prepare EDB</b>	<p>A successful action always starts with a well considered plan. An Engineering Design Brief is a communication tool to ensure that a designer has all the information to produce the design.</p> <p>An EDB is used to brief the CET at McGee, a sub-consultant or a fabricator/supplier; critically those who have design responsibility.</p>	<p><u>TW-SF-001-Engineering Design Brief</u></p>
<b>Co-ordinate design information</b>	<p>A key function of design management is driving co-ordination of our CET, sub-consultants and our specialist suppliers information with the design team. We must ensure the information meets the brief, it's suitably detailed, co-ordinated with others and suits our methodology.</p> <p>We should also have an awareness of the level of co-ordination the structural engineer has with the Architect and M&amp;E engineer. Whilst we do not have a responsibility to co-ordinate this design, we must keep up to date to ensure we understand how the Architect may be evolving the design which may affect the structure; such façade type changes. Having knowledge of the design as a whole is an important part of design management.</p>	<p><u>DM-SF-015-External Design Review Process</u></p> <p><u>DM-GUI-001-Design Management Guidance</u></p> <p><u>TW-SF-002-Simple Record of Review</u></p>
<b>Technical Submittals</b>	<p>Technical Submittals are formal submittals to propose McGee chosen materials, method and/or details; which require comment/approval by the Client or Structural Engineer. This can include CDP items.</p>	<p><u>DM-SF-013-Technical Submittal</u></p>

<b>Identify new TW requirements</b>	<p>Anticipating the requirement for temporary works for a job will help to keep works progressing and avoid unnecessary delay.</p> <p>It is therefore important that the design information is constantly reviewed, with a look-ahead enabling the EDB's to be completed with sufficient time programmed for the design to be carried out.</p>	<u>TW-SF-001-Engineering Design Brief</u>
<b>Approve &amp; Issue construction information</b>	<p>All information produced by McGee and our subcontractors must be collated, and document/drawing registers updated ready to be issued to the team via the CDE.</p>	<u>DM-SF-012-Document Register</u>
<b>Identify residual &amp; design risks</b>	<p>This is relating to commercial and project risk. Through our knowledge of the design and understanding the level of design co-ordination and maturity we are should be able to quantify risk.</p> <p>The risk register must be kept up to date to ensure that risks can be managed and issues and not lost over time. These are grouped in Lifetime project risk, design risk and construction risk.</p>	<u>DM-GUI-001-Design Management Guidance</u>  <u>HS-PCD-001-CDM</u>  HSE L153  The Construction Design and Management Regulations 2015  <u>OPE-SF-002-Project Risk Register</u>
<b>Health &amp; Safety risks</b>	<p>Some H&amp;S hazards are unavoidable due to the nature of the brief and therefore the design may have some residual risks. The design manager must help to identify and communicate risks.</p> <p>During the delivery phase we have a responsibility as a Responsible Contractor to:</p> <p>Plan, manage, monitor and coordinate the entire construction phase.</p> <p>Take account of the health and safety risks to everyone affected by the work (including members of the public), in planning and managing the measures needed to control them.</p> <p>Liaise with the client and principal designer for the duration of the project to ensure that all risks are effectively managed.</p> <p>Prepare a written construction phase plan before the construction phase begins, implement, and then regularly review and revise it to make sure it remains fit for purpose.</p> <p>Have ongoing arrangements in place for managing health and safety throughout the construction phase.</p> <p>Consult and engage with workers about their health, safety and welfare.</p> <p>Ensure suitable welfare facilities are provided from the start and maintained throughout the construction phase.</p>	<u>HS-PCD-001-CDM</u>  HSE L153  The Construction Design and Management Regulations 2015  <u>OPE-SF-002-Project Risk Register</u>

	<p>Check that anyone they appoint has the skills, knowledge, experience and, where relevant, the organisational capability to carry out their work safely and without risk to health.</p>	
<p><b>Implement Change Control process</b></p>	<p>A change control process ensures that any changes that are made to the design, affecting the build, can be captured as variations to the contract and master programme.</p> <p>The change control process must be strictly adhered to and is the only way formal variation can be issued by the Employers Agent.</p> <p>Requests For Change are a formal request to alter the design to suit our Value Proposition. These will be used in the eventuality that a change to the contract or agreed sum is required, thus it is important this process is followed.</p> <p>The design manager should issue RFC's to the Employers Agent and upload to the CDE.</p>	<p><a href="#"><u>DM-SF-015-External Design Review Process</u></a></p> <p><a href="#"><u>DM-SF-013-Change Control Process</u></a></p> <p><a href="#"><u>OPE-PCD-005-Change Control Procedure</u></a></p> <p><a href="#"><u>DM-SF-014-Design Decision Log</u></a></p> <p><a href="#"><u>DM-GUI-002-Design Information Exchange Protocol</u></a></p> <p><a href="#"><u>DM-SF-009-Request For Information</u></a></p> <p><a href="#"><u>DM-SF-006-Information Required Schedule</u></a></p>
<p><b>Prepare RFI</b></p>	<p>Requests for information are formal questions, which need due consideration within a trackable timeframe. RFI's must be issued to the Employers Agent, and uploaded to the CDE.</p> <p>RFI commonly refer to:</p> <ul style="list-style-type: none"> <li>• Design Clarifications – conflicts, discrepancies, incomplete information or specification</li> <li>• Request for substitution – value engineering, material availability or ease of use</li> <li>• Constructability issues</li> <li>• Differing site conditions than originally anticipated</li> </ul> <p>The Consultant shall then have 5 working days to form a formal response.</p>	<p><a href="#"><u>DM-SF-009-Request For Information</u></a></p> <p><a href="#"><u>DM-SF-006-Information Required Schedule</u></a></p>
<p><b>Upload Information to CDE and manage our internal document filing system</b></p>	<p>All information and document/drawing registers must be uploaded to the CDE via the Employers Agent.</p>	<p><a href="#"><u>DE-PCD-001-BIM Procedure</u></a></p>

<b>Peer Review Workshop</b>	<p>Any temporary works are to be classified in the EDB as Category 1, 2 or 3. This will dictate the review/checking requirements. This workshop is to capture change and discuss the design, taking into consideration the peer review feedback.</p>	<u>TW-PCD-002- Temporary Works Design</u>
<b>CDP information for sign off</b>	<p>Contractor designed elements must be reviewed by the Lead Designer, and the Structural Engineer. Information should be issued to the Employer's Agent via the CDE. Drawings and calculations should be issued and receive a Status A, B or C.</p> <p>A – Approved without comments.        B – Approved to proceed to construction but with specific comments which must be incorporated.        C – Rejected with comments and detailed reasoning.</p> <p>It is important to understand that whilst the Lead Designer or Engineer is approving the drawing, this is in the capacity of a checking role only. They have to do this as a duty of care, but in the eventuality they miss something they are not liable as the responsibility lies with McGee and the subcontractor. Therefore we also need to check and review the information to ensure it meets our criteria.</p>	<u>DM-SF-015- External Design Review Process</u>  <u>DM-GUI-001- Design Management Guidance</u>  <u>TW-SF-002-Simple Record of Review</u>  <u>DM-SF-004- Design Relationship Organogram</u>
<b>Review &amp; Learn</b>		
<b>Lessons Learnt Workshop</b>	<p>Monthly Lessons Learnt Workshop with Construction Engineering Team</p>	<u>DM-SF-016- Lessons Learnt Workshop</u>