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Project Construction Civil Works Procedure

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1.0 PURPOSE

This procedure identifies the minimum controls, timing of exchange, and responsible parties necessary to ensure the quality and documentation requirements for the work operations associated with Civil Construction Works.

This procedure applies to works performed under all Government construction projects executed throughout the Kingdom of Saudi Arabia.

For the purposes of the Construction Management Procedures the Project Management Company is the EPMO (Entity Project Management Organization) appointed by the Entity and references prefixed with "Site", such as Site Construction Department, Site Engineering Department, represent the Project Management Company at Project level, on construction sites.

2.0 SCOPE

This procedure includes various elements of Civil Construction Works, including:

1. Utility Avoidance
2. Excavation
3. Backfill
4. Concrete Placement, Grouting
5. Structural Steel
6. Architectural Finishes

This procedure does not cover all civil construction operations and activities. For those operations and activities that are not covered, the same principles for control of planning and execution will still apply. Procedures to cover any operation or activity that is not covered in this procedure, can be produced where there is a specific requirement.

Construction Contractor shall develop, as a minimum, specific procedures, in compliance with the specifications of all local government laws and regulations, to cover the following topics as applicable:

1. Utility Avoidance
2. Excavation
3. Backfill
4. Concrete Placement
5. Grouting
6. Drilled-In Anchors
7. Structural Steel (Fabrication, Erection and Site Modification)
8. Building Works such as but not limited to block work, plastering, painting and coating, tiling, false ceiling, etc.

3.0 DEFINITIONS

Definitions	Description
Ground Penetrating Radar (GPR)	This is a tool for determining locations of buried underground utilities or embedded items inside concrete walls, such as rebar by non-invasive reflected energy means. Radar used to measure changes in the dielectric properties of subsurface materials.
Architect/Engineer (A/E) Design Consultant	Design consultant undertaking part or the whole of the design for a project.
Entity Project Management Organization (EPMO)	An Entity Project Management Organization, this is an integrated team that comprises the Entity and its PMC responsible for managing all the Entity's projects.
Change Order	A contractual notice advising the Contractor of a potential compensable change

Definitions	Description
Design Change Notice (DCN)	A set of technical documents intended to be either added to a conformed contract or to replace specified parts of a conformed contract. All DCNs are initiated by the Project Management Company Engineering Department and executed by a Design Contractor, referred to as Architect/Engineer A/E.
Field Change Document (FCD)	A document used to make a change to an issued design document at site. Once approved, it is a valid design document.
Non-Conforming Items (Non-Conformance Report, NCR)	A deficiency in characteristic, documentation, or procedure that renders the quality of an item or activity unacceptable or indeterminate.
Technical Queries (TQ)	A document used to request formal clarification of contract documents, design documents, or design intentions. A TQ may not be used to change design, schedule, or cost.
Site Contracts Department	Department within the Project Management Company that is responsible for administering Contracts
Site Construction Department	Department within the Project Management Company that is responsible for Construction activities / operations
Site Engineering Department	Department within the Project Management Company that is responsible for Engineering or design activities / operations
Competent Person	The Competent Person is the individual on the construction team who is capable of identifying existing and predictable hazards in the surroundings, or working conditions that are unsanitary, hazardous or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them.

4.0 REFERENCES

1. EPM-KCE-PR-000007 - Project Construction As-Built Drawings Procedure
2. EPM-KCE-PR-000006 - Project Construction Temporary Works Procedure
3. EPM-KCC-PR-000002 - Project Construction Field Works Activities Procedure
4. EPM-KCE-PR-000003 - Project Construction Field Change Document Procedure.

5.0 RESPONSIBILITIES

5.1 Construction Contractor

The Construction Contractor is responsible for the development of procedures necessary to execute the Civil portion of the Works, planning and executing the works in accordance with the contract requirement and specifications

5.2 Site Construction Department

The Site Construction Department shall be responsible for coordinating all site-based construction support, monitor the work and the management of the Construction Contractor.

6.0 PROCESS

6.1 General

The Construction Contractor shall plan and execute the works in accordance with EPM-KCC-PR-000002 Project Construction Field Work Activities Procedure.

The Construction Contractor shall prepare a Construction Civil Work Plan which will describe the methods of installation for the Construction Civil Works and will also provide a tracking tool for the identification of components and installation progress of the Civil Work.

6.2 Utilities Avoidance

Underground utility strikes pose a serious threat to the safety of the workers, the public, and cause damage to equipment and property. Every effort should be made to ascertain and verify the location, depth and construction of any underground utilities in or adjacent to the area of the construction site.

The Construction Contractor is responsible to verify the location of all Utilities prior to any mobilization and construction activities by:

1. Visual walkdown
2. Where possible, Ground Penetrating Radar (GPR) or similar subsurface utility tracing technique
3. Physical excavation of hand digging trial-holes

The Construction Contractor shall ensure that all utilities identified as part of the Works are recorded on the As-Built Drawings in accordance with EPM-KCE-PR-000007: Project Construction As Built Drawings Procedures.

All unplanned contact with underground utilities must be documented using the Project Construction Utility Strike Investigation Report Form Template (Sample) as shown in Attachment 1.

Table 6.2.1 below is a sample provided to identify the limitations of detection methods and to assist the Construction Contractor select a method of detection that best suits the application.

Table 6.2.1

Method	Type of material Locatable	Type of material Not Locatable	Effective Locating Depth	Depth Estimation	Soil or Backfill Effects	Discrimination Multiple Material in Same Trench
Ground Penetrating Radar	Metallic, plastic, concrete	Effectiveness depends on size versus depth	Metal: 1" (2.54 cm) diameter for each foot; depth; 6" (15.24 cm) diameter for each foot over 12 ft (3.65 m).	Yes Variable: depends on soil homogeneity	Yes. Wet sandy soils best; saturated clay soils limit depth penetration	Very good discrimination of multiple targets unless stacked
EM-61 Metal Detector	Metallic or pipes with metallic reinforcement	Nonmetallic	3" (7.62 cm) diameter pipe at 6.5 ft. (1.95 m) depth; up to 12 ft. (3.6M) for larger diameter pipes	Yes. Accuracy +15% under ideal conditions	None unless backfill contains metallic debris	Poor discrimination of multiple targets
Metrotech 810 Radio Frequency (83 kHz) Conductive and Inductive Tracing Radio Detection DL- 400-2 (Audio Frequency 0.5 kHz, 8 kHz, 33 kHz) Conductive and Inductive Tracing	Copper: excellent Aluminum: very good Steel: good Cast Iron: poor Conductive better than inductive	Nonconductive*	Inductive: 10ft, (3.04m) under ideal conditions Conductive: 10 ft. (3.04m) under ideal conditions Location depth affected by conductor and soil type	Yes. Accuracy + 10% under ideal conditions to depths of 3 feet (.91m)	Yes. Moist compact soils best; poor tracing in dry sandy soils or alkaline high iron content soils	Good discrimination of multiple targets in conductive mode
Metrotech 50/60 Hz Locator	Underground power lines/ E&I cables	Pipes without flowing electric current	10mA current at 3 ft. (.91m) depth for 50% meter deflection; 6 ft. (1.82m) maximum effective locating depth	None	Yes. Same as Metrotech 810	Poor discrimination; affected by nearby conductors and most nearby metal structures

6.3 Excavation

6.3.1 Site Survey

Prior to the start of site excavation and backfill work operations, a site topographic survey will be undertaken to ascertain the contours and physical features of the original ground surface. The Construction Contractor, should review this survey and if any questions or concerns arise, the Construction Contractor should contact the Site Construction Department for further clarification.

6.3.2 Preplanning

A Site Geotechnical or Subsurface Investigation Report will be issued by the responsible A/E Design Consultant. The report provides the Construction Contractor with information for use in determining dewatering needs, slope stability, shoring and ground support system requirements, soil classification, rock hardness, suitability of materials for excavation equipment ripping, guidelines for trenching, equipment selection, ground pressures guidelines by excavation depth, estimated swelling adjusting factor, and other related issues to support site earthwork activities.

Note: That, in some instances, it may be necessary for the Construction Contractor to perform additional borings or subsurface investigations to identify underground obstructions and soil conditions.

The Construction Contractor shall investigate geotechnical conditions and if required shall procure trenching and deep excavation ground support systems. The Construction Contractor shall work with the Site Construction Department, the responsible A/E Design Consultant and trench system manufacturer to understand soil conditions, investigate expected ground pressures and then document and procure ground support systems.

The Construction Contractor shall appoint a Competent Person (or Company) to oversee the Excavation and Backfill operations.

The Construction Contractor shall prepare an Excavation and Backfill procedure for all Excavation and Backfill Activities, include all testing requirements per the specifications and drawings, and include an excavation and backfill permit system. The excavation/backfill permit system provides a method of ensuring a systematic review of all aspects of a proposed excavation and backfill by all parties involved. This excavation and backfill procedure should also indicate any known utilities in the specific area. When the excavation site is in an area controlled by others, an Excavation/Backfill Permit by others may also be required.

Each permit shall be signed-off by the Competent Person for Excavation prior to any activity commencing and shall require a review of ground conditions, existing utilities and a temporary works design for any temporary trench support or shoring in accordance with EPM-KCE-PR-000006 Project Construction Temporary Works Procedure.

6.3.3 Construction Water

A reliable source of construction water is essential for all earthwork activities and shall be identified during the proposal stage and/or before construction begins. Water is required to control moisture in backfill operations, but is also frequently needed to control dust arising during excavation and throughout the entire construction process.

6.3.4 Clearing and Grubbing Operations

The Construction Contractor shall ensure that:

1. Any required permits are in place prior to the start of clearing and grubbing work operations.
2. Any required plan for permanent site survey monument protection and "as built records" of these monuments are in place and transmitted to the Site Construction Department.
3. Site layout and survey staking is complete prior to the start of clearing and grubbing work operations, in accordance with EPM-KCE-PR-000005 Project Construction Surveying Procedure.

4. During clearing and grubbing operation, ensure there is compliance with environmental requirements such as silt fencing, run-off protection, or dust limitations.

6.3.5 Start of Excavation

The Competent Person shall identify hazards through daily inspections and shall document any hazardous conditions in a Construction Contractors Daily Trench Safety Report included in the Civil Work Plan prepared by the Construction Contractor. This Daily Safety Report will be submitted to the Site Contracts Department as noted.

The Competent Person inspects the excavation and adjacent areas:

1. For possible cave in, failure of protective systems and equipment (in accordance with EPM-KCE-PR-000006 Project Construction Temporary Works Procedure, hazardous atmosphere or other hazardous conditions
2. Including inspections during and/or following rainstorms or any other adverse weather related action
3. Ensure the excavation has suitable means of access and egress in the form of ramps, stairways, and/or ladders.

If the excavation has the potential for encountering underground utilities, the Competent Person (or Company) ensures the precautions laid out in the Utilities Avoidance section of this procedure are used to verify and expose the utilities locations before equipment is used to excavate in the area.

If hazardous materials, unknown materials, unexpected item(s) of archaeological interest and/or underground utilities are suspected/encountered, the Construction Contractor shall stop the work and contact the Site Construction Department who will contact the relevant parties to evaluate its significance and provide further directions.

Upon reaching the bottom elevation, the Construction Contractor will prepare the formation in accordance with the specification and drawings and then contact the Site Construction Department who will inspect and evaluate the condition of the grade, identifying loose material that needs to be compacted and ensure unsuitable material is removed and replaced with suitable fill material or concrete as required by the design documents.

The Construction Contractor shall have any testing completed and accepted prior to backfilling operations per the specification and drawings.

Any change to the design shall be submitted and approved by the Site Construction Department and the A/E Consultant. This shall be documented by Field Change Documents in accordance with EPM-KCE-PR-000003 - Project Construction Field Change Document Procedure.

6.3.6 Backfill Material

Whenever possible, material produced from excavation operations (stockpile areas) should be used as backfill material. This may require treatment of the materials, such as crushing and screening, in order to make these site materials suitable for use in the permanent works. However, it is often necessary to import backfill material from another offsite source, subject to the same specification requirements.

The Construction Contractor shall confirm that the material for backfill operations (onsite stockpile areas or imported) meet project specifications for the various classifications of fill material required on the project by providing the test reports from the Construction Contractors Testing Service.

The Construction Contractor shall coordinate sampling and appropriate testing of backfill material (e.g., gradation and optimum moisture determination) to ensure that import materials conform to specification requirements and has approval to continue from the Site Construction Department.

The sampling and testing of imported materials for backfilling operation may continue over a period of time to ensure consistency of the source material. Where backfill material is to be stored, the Construction

Contractor shall make allowance for proper segregation of the materials to avoid cross-contamination or water-contamination.

6.4 Backfill

The Construction Contractor shall submit for approval to the Site Construction Department, the applicable procedure for backfill activities which shall be in accordance with the specification requirements, particularly in respect of type of material, loose layer thickness, type and size of compaction equipment to be used, the number of passes of the compaction equipment and the method of testing of the compacted material.

The Construction Contractor's backfill procedure shall have a permit system process to ensure that all structures and utilities affected by the backfill activity have been inspected, tested as required, and accepted.

Particular attention should be drawn to the compaction of backfill material in close proximity to structures, in particular:

1. Selection of Engineered fill
2. Restricting the size of compaction equipment
3. Strength gain for concrete structures

Inspection of excavation and backfill activities shall be in accordance with the contract specifications and drawings, however the procedure, shall at a minimum cover the items identified in the Project Construction Inspection and Test Plan for Excavation and Backfill Activities Template (Sample) as shown in Attachment 2.

6.5 Reinforced Concrete

6.5.1 Materials Approvals

All permanent materials shall be in accordance with design requirements and the specifications.

The Construction Contractor ensures that a concrete supplier is evaluated and selected considering the following factors:

1. Supplier quality program
2. Batch plant production capacity
3. Transport distance
4. Availability of concrete making materials
5. Availability of equipment to support the project schedule
6. Facility's ability to protect sand and aggregates during cold weather
7. Condition/number of trucks

The Construction Contractor identifies any special batching requirements based on anticipated site climatic conditions, considering chilled water or ice facilities for batching during hot weather conditions.

Concrete mix designs prepared by the Construction Contractor shall also be submitted to the to the Site Engineering Department (for forwarding to the A/E Design Consultant, if necessary) for review and approval in accordance with design specifications and EPM-KCQ-PR-000005: Project Construction Quality Management System Procedure. The Construction Contractor should submit his proposals in sufficient time for concrete constituent materials (including additives and plastizers) to be tested and subsequent concrete trial mixes to be produce and tested.

The Construction Contractor shall submit the proposed steel reinforcement supplier and types /grades of reinforcing bar and all cast-in-items (anchors, pipework, conduit, etc.) to the Site Engineering Department for approval.

6.5.2 Formwork and Reinforcement

The Construction Contractor shall install any formwork and reinforcement, in accordance with the Issued for Construction (IFC) drawings, specifications and any temporary works design prepared in accordance with EPM-KCE-PR-000006 Project Construction Temporary Works Procedure
Inspection of formwork, reinforcement installations shall be in accordance with the contract specifications and drawing requirements, however the inspection shall, at a minimum, cover the items identified in the Project Inspection and Test Plan for Inspection of Reinforcement, Formwork, and Concrete Activities Template (Sample) as shown in Attachment 3.

6.5.3 Concreting

6.5.3.1 Planning Pre-Placement

The Construction Contractor shall prepare and manage a concrete installation (placement) plan meeting for concrete placements of a difficult nature or of a significant volume. Attendees should include Site Construction Department, Site Engineering Department (A/E Design Consultant if necessary), Construction Contractors, Logistics, Concrete Supplier, Concrete Testing Services, and any other Specialist Subcontractors.

The Pre-Placement meeting should cover those issues listed below as a minimum:

1. Date, Start time and duration Concrete Placement
2. Location of primary batching plant and back up plant, travel turnaround time, number of concrete trucks required
3. Pre-placement checks of formwork, reinforcement, cast-in items (agree go / no go)
4. Access and egress routes through the site (one way travel), Lighting units (spares)
5. Number, size and location of Concrete Pumps, spare pump
6. Location of sampling and testing of concrete deliveries (time since batching, concrete temperature, slump, concrete cylinders for later testing)
7. Identification of individuals and duties for Management and Supervision
8. Number, size and workplace of craft, shift patterns, rest times, food and water deliveries
9. Small plant and tools (vibrators, floats, spares)
10. Agree area(s) where to start placing the concrete, sequence of placing concrete, rate of pumping concrete (maximum pour rate, especially for vertical pours)
11. Pre-placement, during placement and post place dimensional survey check
12. Method of finishing and subsequent curing.

6.5.3.2 Concrete Placement

The Construction Contractor shall undertake the concrete placing works in accordance with the specification requirements (height of pouring to avoid segregation, rate of pouring to avoid formwork movement), best practice and required safety measures and precautions especially if working at height.

The Construction Contractor will ensure that concreting operations will be undertaken by suitably experienced crafts for both the concrete compaction (vibration) and the finishing of the concrete surfaces

6.5.3.3 Inspection

For every concrete placement, the Construction Contractor shall prepare a Concrete Pour Card for each placement and shall perform specified pre-placement inspections and as a minimum include those items indicated on the Project Construction Inspection and Test Plan for Inspection of Formwork, Reinforcement and Concrete Activities as shown in Attachment 3.

The Concrete Pour Card shall identify as a minimum the following:

1. Mix design being used.
2. Design strength.
3. Time of batching, concrete temperature
4. Allowable slump range
5. Allowable air entrainment range.

6. Placing method.
7. Type of finish required.
8. Curing method.

Attachment 8 - EPM-KCE-TP-000020 - Project Construction Concrete Pour Card Template (Sample) provides an example of the concrete pour card

6.5.3.4 Testing

All applicable tests, pertaining to concrete placement shall be performed by the Construction Contractors Test Laboratory:

1. Field sampling of aggregate sources.
2. Batch Plant sampling of concrete and concrete materials.
3. Field sampling and testing of concrete.
4. Laboratory testing of concrete.
5. Laboratory analysis of aggregates and concrete materials.
6. Prepare and furnish test reports.

Note: The Construction Contractor should ensure that survey checks of critical elements of concrete pour, including anchor bolts and other embedded items that interface with other Works, are undertaken before during and after the pouring operation.

If necessary, the Site Construction Department, shall retain a separate testing laboratory for any checking or verifying the Construction Contractors results.

6.6 Structural Steel

The Construction Contractor shall prepare a Construction Steel Erection Work Plan which will describe the methods of installation for the Construction Steel Erection Works and will also provide a tracking tool for the identification of components and installation progress of the erection of the structural steel work.

For the procurement of the Structural Steel performed by others, the Construction Contractor shall use the furnished specifications, drawings and fabricators shop drawings to, identify those erection activities, including receipt and storage of materials, and provide for a safe erection process.

Where it is the Construction Contractor's responsibility to procure the structural steel, the Construction Contractors fabricator will prepare shop drawings based on the projects specifications and drawings for submission and acceptance to the Construction Contractor for his review and approval. These shop drawings shall also include the requirements for painting and any special coatings as required. The Construction Contractor may submit the shop drawings to the A/E Design Consultant via the Site Engineering Department.

Inspection of structural steel fabrication and erection activities shall be in accordance with the contract requirements and the Steel Erection Plan, however the inspection shall at a minimum cover the items identified in the Project Construction Inspection and Test Plan for Inspection of Structural Steel Activities Template (Sample) as shown in Attachment 4.

6.7 Architectural Finishes

For any significant or major Architectural Works defined by the A/E Design Consultant, the Construction Contractor shall prepare an extensive Architectural Work Plan that will identify all specialty materials and the erection program for the Architectural Works.

The Construction Contractor shall plan the installation of Architectural Finishes and all Building works, according to the project specifications and drawings, such as:

1. Interior Finishes
   - Walls (Gypsum Wallboard, Ceramic Tile Wood Paneling)

- Floor Coverings (Vinyl Flooring, Carpeting, Ceramic Tiles Terrazzo Flooring Hardwood Floors, Parquet Floors, Raised Floor systems)
- Ceilings (Smooth or Textured, Suspended)

2. Exterior Finishes
   - Walls (Metal Siding, Masonry Walls, Stucco, Storefront)
3. Roofing

   - Metal Roofing
   - Built-Up Systems
   - Single ply Membrane
   - Sealing around penetrations, etc.
   - Drains and Downspouts

4. Firewalls and Barriers

   - Doors and Hardware
   - Penetrations

5. Coatings (Paints and Finish Coatings)

All samples/mock-ups shall be provided and accepted by the A/E Design Consultant or other relevant parties prior to any purchasing or installation. The Construction Contractor should allow sufficient time to ensure inspection by the A/E Consultant or relevant parties.

All Building Works and Architectural finishes shall be in compliance with contract documents and with approved samples for color, gauge and texture. All material configurations, size, shape and exposed surfaces of units shall conform to approved samples.

Inspection of Architectural finishes activities shall be in accordance with the contract requirements, specifications and drawings, however the inspection shall at a minimum cover the items identified in the Project Construction Inspection and Test Plans Templates (Samples) as shown in Attachments 5 Project Inspection and Test Plan for the Inspection of Wall, Cladding Panels Activities Template (Sample), Attachment 6 Project Inspection and Test Plan for Inspection of Blockwork Activities Template (Sample) and Attachment 7 Project Inspection and Test Plan for Inspection of Gypsum Plasterboard Activities Templates (Sample).

7.0 ATTACHMENTS

1. EPM-KCE-TP-000011 - Project Construction Utility Strike Investigation Report Form Template
2. EPM-KCE-TP-000012 - Project Construction Inspection and Test Plan for Inspection of Excavation and Backfill Template
3. EPM-KCE-TP-000013 - Project Construction Inspection and Test Plan for Inspection of Reinforcement, Formwork and Concrete Activities Template
4. EPM-KCE-TP-000014 - Project Inspection and Test Plan for Inspection of Structural Steel Activities Template
5. EPM-KCE-TP-000015 - Project Construction Inspection and Test Plan for Inspection of Wall / Cladding Panels Activities Template
6. EPM-KCE-TP-000016 - Project Construction Inspection and Test Plan for Inspection of Blockwork Activities Template
7. EPM-KCE-TP-000017 - Project Construction Inspection and Test Plan for Inspection of Gypsum Plasterboard Activities Template
8. EPM-KCE-TP-000020 - Project Construction Concrete Pour Card Template

Attachment 1 - EPM-KCE-TP-000011 - Project Construction Utility Strike Investigation Report Template

UTILITY STRIKE INVESTIGATION REPORT

(1) JOB INFORMATION			
Date:		Time of incident:	
Location of Incident:		Competent Person Name:	
Name of Contractor:			

(2) INCIDENT INFORMATION			
A.	What is the immediate impact:		
B.	What utilities are impacted?		
	☐ ELECTRIC ☐ GAS ☐ SEWAGE	☐ COMMUNICATIONS ☐ WATER ☐ STORMWATER/DRAINAGE	☐ OTHER:
C.	Depth of utility? (METERS)	D. Size of utility? (DIAMETER IN MM)	
E.	Was the utility in service at the time of the incident?	☐ Yes	☐ No
F.	Utility casing material? (Check all that apply)		
	☐ Concrete ☐ Galvanized ☐ Iron ☐ PVC ☐ Steel ☐ Other:		
G.	Was the utility marked or unmarked?		
	☐ Marked	☐ Unmarked	☐ Unmarked, unidentified on plans
H.	What was the soil type around the utility?		
	☐ Clay ☐ Rock ☐ Sand ☐ Other:		

(3) WORK TASK INFORMATION (SET-UP/PREPARATION ACTIVITIES)		
A.	What methodology was used to locate the utility? (DETECTION DEVICES, DRAWING SEARCHES, AS-BUILTS, ETC.)	
B.	Corrective Actions?	
C.	Did the operator receive proper briefing of existing underground interferences prior to the start of work?	☐ Yes ☐ No
	Has current operator been trained and certified by the employer on the equipment used?	☐ Yes ☐ No
D.	Are photographs of the incident attached?	☐ Yes ☐ No
E.	Describe the incident in DETAIL (Injuries, Location, Specific Equipment and/or Property Damage.)	
	Construction Contractor:	**DATE:**
	Site Construction Department:	**DATE:**

Attachment 2 - EPM-KCE-TP-000012 - Project Construction Inspection and Test Plan for Excavation and Backfill Activities Template

Activity No.	Activity Description	Inspection/Test Requirements		Reference Documentation		Method of Verification (see Legend)			Demonstrated Evidence Report/Checklist Reference No.
		Test or Inspection Performed	Stage/ Frequency	Code/ Spec/ Etc.	Acceptance Criteria	Construction Contractor	Site Construction Department	Project	
1.0	**Document review**								
1.1	General	Confirm documents: • Construction drawing • Method statement • Permits • Material Submittals	Prior to commencement	Project Specific	Documents available and latest revision from document management system				
2.0	**Material receiving**								
2.1		Visual inspection for damage, deformity and correct label	Project Specific	Project Specific	Project Specific				Material Receiving Report
3.0	**Storage**								
3.1		Refer to method statement & manufacturer's recommendation	Project Specific	Project Specific	Project Specific				
4.0	**Setting out**								
4.1		Line Control as per the latest setting out points	Prior to commencement	Project Specific	Project Specific				
4.2		All below ground utilities identified and marked-out	Prior to commencement	Project Specific	Project Specific				
5.0	**General Excavation**								
5.1		Temporary drainage installed	Prior to excavation	Project Specific	Project Specific				
5.2		Lines and grade	Project Specific	Project Specific	Project Specific				
5.3		Verify bearing capacity of soil	Project Specific	Project Specific	Project Specific				Soil compaction test report
5.4		Bottom of excavation condition – check for loose material, soft spots, etc.	Project Specific	Project Specific	Project Specific				
6.0	**Backfill & Compaction**								
6.1		Backfill materials layer thickness	Project Specific	Project Specific	Project Specific				
6.2		Compaction of backfill material	Project Specific	Project Specific	Project Specific				
6.3		Moisture content	Project Specific	Project Specific	Project Specific				

Attachment 3 - EPM-KCE-TP-000013 - Project Construction Inspection and Test Plan for Inspection of Reinforcement, Formwork and Concrete Activities Template

Activity No.	Activity Description	Inspection/Test Requirements		Reference Documentation		Method of Verification (see Legend)			Demonstrated Evidence Report/Checklist Reference No.
		Test or Inspection Performed	Stage/ Frequency	Code/ Spec/ Etc.	Acceptance Criteria	Construction Contractor	Site Construction Department	Project	
1.0	**Document review**								
1.1		Confirm documents: • Design drawing • Method statement • Material submittal • Mix design • Concrete order form	Prior to commencement	Project Specific	Documents available and latest revision from document management system				
2.0	**Material receiving**								
2.1		Visual inspection for damage, deformity and correct label	Project Specific	Project Specific	Project Specific				Material Receipt
3.0	**Storage**								
3.1		Refer to method statement & manufacturer's recommendation	Project Specific	Project Specific	Project Specific				
4.0	**Subgrade Preparation, Excavation & Backfill**								
4.1		Refer to Earthworks ITP	Project Specific	Project Specific	Project Specific				
5.0	**Blinding / Mud-mat Line & Grade Check**								
5.1		Check & verify the tolerances of levels prior to start fixing reinforcement or formwork.	Pre-pour	Project Specific	Project Specific				
6.0	**Construction Joint Preparation**								
6.1		Check location against drawings	Pre-pour	Project Specific	Project Specific				Pour card
6.2		Contact face – aggregate exposed as per the spec	Pre-pour	Project Specific	Project Specific				Pour card
6.3		All foreign matter and laitance is removed	Pre-pour	Project Specific	Project Specific				Pour card
6.4		Integrity of continuity elements – rebar, water barrier, vapor barrier, etc.	Pre-pour	Project Specific	Element not damaged				Pour card
7.0	**Formwork - general**								

Attachment 4 - EPM-KCE-TP-000014 - Project Construction Inspection and Test Plan for Inspection of Structural Steel Activities Template

Activity No.	Activity Description	Inspection/Test Requirements		Reference Documentation		Method of Verification (see Legend)			Demonstrated Evidence Report/Checklist Reference No.
		Test or Inspection Performed	Stage/ Frequency	Code/Spec/ Etc.	Acceptance Criteria	Construction Contractor	Site Construction Department	Project	
1.0	Document review								
1.1		Confirm documents: • Design drawing • Method statement • Material submittal • Weld procedures and weld certs • Erection drawings / plans	Prior to commencement	Project Specific	Documents available and latest revision from document management system				
2.0	Material receiving								
2.1		Visual inspection for damage, deformity and correct label	Project Specific	Project Specific	Project Specific				Material Receipt
3.0	Storage								
3.1		Storage, method statement & manufacturer's recommendation.	Project Specific	Project Specific	Project Specific				
4.0	Shop Fabrication								
4.1		Check fit-up, piece arrangement alignment and dimensions.	Project Specific	Project Specific	Project Specific				
4.2		Welding Process –Document review / Materials receiving.	Project Specific	Project Specific	Project Specific				
4.3		Visual and dimensional check	Project Specific	Project Specific	Project Specific				
5.0	Erection								
5.1		Temporary supports are in place in accordance with the erection sequence.	Project Specific	Project Specific	Project Specific				
5.2		Check arrangement against drawing.	Project Specific	Project Specific	Project Specific				
6.0	Alignment of Steel Work								
6.1		Check for level and verticality as per drawings.	Per Structure Section	Project Specific	Project Specific				
7.0	Bolting								
7.1		Verify bolt torqueing is sequenced, phased and completed as designed.	Project Specific	Project Specific	Project Specific				
8.0	Coating								
8.1		Check surface preparation and cleanliness.	Project Specific	Project Specific	Project Specific				
8.2		Verify adhesion and dry film thickness.	Project Specific	Project Specific	Project Specific				
9.0	As-Built Survey								
9.1		Verify that as build survey is completed.	Project Specific	Project Specific	Project Specific				

Attachment 5 - EPM-KCE-TP-000015 - Project Construction Inspection and Test Plan for Inspection of Wall, Cladding Panels Activities Template

Activity No.	Activity Description	Inspection/Test Requirements		Reference Documentation		Method of Verification (see Legend)			Demonstrated Evidence Report/Checklist Reference No.
		Test or Inspection Performed	Stage/ Frequency	Code/ Spec/ Etc.	Acceptance Criteria	Construction Contractor	Site Construction Department	Project	
1.0	**Document review**								
1.1		Confirm documents: • Design drawing • Method statement • Material submittal Fabrication / assembly sequence drawing	Prior to commencement	Project Specific	Documents available and latest revision from document management system				
2.0	**Material receiving**								
2.1		Visual inspection for damage, deformity and correct label	Project Specific	Project Specific	Project Specific				Materials receipt
3.0	**Storage**								
3.1		Storage, method statement & manufacturer's recommendation	Project Specific	Project Specific	Project Specific				
4.0	**Mock-up**								
4.1		Mock-up of typical corner / interface wall panel to verify aesthetics and detail.	Project Specific	Project Specific	Project Specific				
5.0	**Supports Installation**								
5.1		Substrate are clean, have no sharp edges or substances capable of damaging finished surface / insulation.	Project Specific	Project Specific	Project Specific				
5.2		Visual and dimensional check secondary support structure for level, alignment openings, tolerances & interfaces.	Project Specific	Project Specific	Project Specific				
5.3		All fasteners are in place and secure.							
6.0	**Install Thermal Insulation**								
6.1		Acoustical spacer grid installed.	Project Specific	Project Specific	Project Specific				
6.2		Insulation installed to required thickness.	Project Specific	Project Specific	Project Specific				
6.3		Vapour retarder installed to the warm side of wall.	Project Specific	Project Specific	Project Specific				

Attachment 6 - EPM-KCE-TP-000016 - Project Construction Inspection and Test Plan for Inspection of Blockwork Activities Template

Activity No.	Activity Description	Inspection/Test Requirements		Reference Documentation		Method of Verification (see Legend)			Demonstrated Evidence Report/Checklist Reference No.
		Test or Inspection Performed	Stage/ Frequency	Code/ Spec/ Etc.	Acceptance Criteria	Construction Contractor	Site Construction Department	Project	
1.0	Document review								
1.1		Confirm documents: • Design drawing • Method statement • Material submittal	Prior to commencement	Project Specific	Documents available and latest revision from document management system				
2.0	Material receiving								
2.1		Visual inspection for damage, deformity and correct label	Project Specific	Project Specific	Project Specific				Materials receipt
3.0	Storage								
3.1		Storage method statement & manufacturer's recommendation	Project Specific	Project Specific	Project Specific				
4.0	Mock-up								
4.1		Mock-up of typical corner / interface wall section to verify aesthetics and detail.	Project Specific	Project Specific	Project Specific				
5.0	Pre-construction								
5.1		Foundation surveyed and dimensions verified.	Project Specific	Project Specific	Project Specific				
6.0	Installation								
6.1		Temporary supports in place in accordance with temporary works design.	Project Specific	Project Specific	Project Specific				
6.2		Visual and dimensional check of blockwork for level, alignment openings, tolerances & interfaces.	Project Specific	Project Specific	Project Specific				
6.3		Mortar cubes to be taken and tested for 7day and 28day strength	Project Specific	Project Specific	Project Specific				
6.4		Exposed face of blockwork to be damage and mortar splash free.							
7.0	Lintels, Openings and Framings								

Attachment 7 - EPM-KCE-TP-000017 - Project Construction Inspection and Test Plan for Inspection of Gypsum Plasterboard Wall Activities Template

Activity No.	Activity Description	Inspection/Test Requirements		Reference Documentation		Method of Verification (see Legend)			Demonstrated Evidence Report/Checklist Reference No.
		Test or Inspection Performed	Stage/ Frequency	Code/ Spec/ Etc.	Acceptance Criteria	Construction Contractor	Site Construction Department	Project	
1.0	**Document review**								
1.1		Confirm documents: • Design drawing • Method statement • Material submittal	Prior to commencement	Project Specific	Documents available and latest revision from document management system				
2.0	**Material receiving**								
2.1		Visual inspection for damage, deformity and correct label	Project Specific	Project Specific	Project Specific				Materials receipt
3.0	**Storage**								
3.1		Storage method statement & manufacturer's recommendation	Project Specific	Project Specific	Project Specific				
4.0	**Mock-up**								
4.1		Mock-up of typical corner / interface wall panel to verify aesthetics and detail.	Project Specific	Project Specific	Project Specific				
5.0	**Support Framing**								
5.1		Substrate are clean, have no sharp edges or substances capable of damaging finished surface / insulation.	Project Specific	Project Specific	Project Specific				
5.2		Visual and dimensional check secondary support structure for level, alignment openings, tolerances & interfaces.	Project Specific	Project Specific	Project Specific				
5.3		Firmly fixed and forms a rigid assembly							
6.0	**Gypsum Board Install**								
6.1		Boards / panels are levelled, free from undulations and lipping, with all lines and joints straight and parallel to wall.	Project Specific	Project Specific	Project Specific				
6.2		Check fixings, joints and edges taped and filled accordingly.	Project Specific	Project Specific	Project Specific				

Attachment 8 - EPM-KCE-TP-000020 - Project Construction Concrete Pour Card Template

RECORD No.:		DATE:	
PROJECT NAME:		PROJECT No.:	
CONTRACTOR NAME:	POUR DATE:	TIME OF BATCHING:	
POUR IDENTIFICATION:	POUR QUANTITY:		
SYSTEM:	WORK PACKAGE:		

REFERENCE DOCUMENT No.	REV. No.	REMARKS

MIX DESIGN NUMBER:	ALLOWABLE SLUMP RANGE:
DESIGN STRENGTH:	MAXIMUM AGGREGATE SIZE:
PLACING METHOD:	ALLOWABLE POUR RATE:
CURING METHOD:	FINISH:

PRE-PLACEMENT	RFE INITIAL	FE DATE	SUPT. INITIAL	SUPT. DATE	N/A
1. Subgrade / Construction Joint Preparation					☐
2. Formwork					☐
3. Line and Grade					
4. Reinforcing Steel					☐
5. Embedded Items:					☐
a. Anchors					☐
b. Miscellaneous Steel					☐
c. Piping					☐
d. Electrical					☐
6. Inside Formwork Cleanup					
7. Other (specify):					☐
8. Other (specify):					☐
9. Release for Placement					

RESPONSIBLE FIELD ENGINEER (Print Name):	
RESPONSIBLE FIELD ENGINEER (Signature):	DATE:
Batch Ticket Numbers (attachments are acceptable):	

CONCRETE PLACEMENT	FE INITIAL	FE DATE	SUPT. INITIAL	SUPT. DATE	N/A
1. Adequacy of sub grade, compaction, dry, vapor barrier, capillary stone					☐
2. Formwork bracing, line and grade, cleanliness, chamfers, plumb					☐
3. Rebar installation, ties, splices, clearances, supports					☐
4. Material distortions – embedded items					☐
5. Unauthorized alterations					☐
6. Improper installation methods					☐
CONCRETE PLACEMENT	**FE INITIAL**	**FE DATE**	**SUPT. INITIAL**	**SUPT. DATE**	**N/A**
7. Incorrect material					☐
8. Material damage					☐