**Concrete Subcontractor Quality Plan Template**

 **(also called) QMP 2.5b – Concrete Subcontractor Quality Plan Template – ACI 121 2023-01-09**

The purpose of this Concrete Subcontractor Quality Plan Template – to providea framework for the concrete subcontractor such that they can produce a Quality Plan for their organization including reference to contractual requirements that provide quality management requirements.

This “Concrete Subcontractor Quality Plan Template” is part of ACI-CloudQM, and ACI Committee 121 Quality Plan Template,

The Quality Plan Template uses numbered Quality Management Procedures (QMPs) for repetitive elements. QMP 2.5 Subcontractor Quality Requirements is an existing QMP for most non-concrete related subtrade Quality Plans. This QMP 2.5b Concrete Subcontractor Quality Plan provides a template for achieving concrete subcontractor quality requirements.

**Specification references are** **populated during the writing of this concrete subcontractor quality plan** **template for a** **specific project and must be based on the specific contract documents.**

**Limit of Liability:** **NO GUARANTEE IS MADE FOR THIS TEMPLATE. The authors of this documented procedure, shall not be liable for any errors or omissions resulting in loss or injury of any kind from use of this document. The user shall make changes to reflect how they plan and perform these processes and shall submit any changes to the authority having jurisdiction prior to use of this document. Ownership of this document resides with the document user.**

The objective of this Subcontractor Quality Plan Template, is to provide planning, implementation, and documentation activities and processes performed by Concrete Subcontractor who is writing a quality plan for their organization. The scope includes meeting all quality management requirements including best practices – prior to, during, and after installation of its scope of work to meet ACI 301, ACI 117 and other contract requirements that may be required by the General Contractor or the Designer.

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|  | **Scope is Per Master Format numbering system, 03 00 00 – Concrete (including reference to trades such as concrete testing, supply, formwork, rebar)** |  | Items that are not documented are deleted below. Add reference as they apply to your organization. |  |
| **Section** | **Description** | **Exhibit** | **Specification Reference (examples that are contract dependent, and therefore may change with each contract)** |  |
| **1** | **Project Information** |  |  |  |
| **2** | **Scope of Work** |  |  |  |
| **3** | **Personnel Assignment(s) – Roles and Responsibilities** |  | ~~01 4000 1.6.A~~ |  |
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| **5** | **Organizational Chart** |  | ~~01 4000 1.6.A~~ |  |
| **6** | **Quality Statement and Philosophy** |  | ~~01 4000 1.5.C~~ |  |
| **7** | **Pre-Installation** |  |  |  |
|  | Document Control | A | ~~SOW (Scope of Work) I.A.8~~ |  |
|  | Requests for Information- RFIs | B | ~~SOW I.A-16, SOW I.D.9~~ |  |
|  | Project Submittals | C | ~~SOW I.A-22~~~~SOW C.7~~ |  |
|  | Building Information Modeling – BIM  | D | ~~SOW II.B.11~~ ~~SOW II.B.24~~ |  |
|  | Mock-ups | E | ~~01 4000 1.2.D~~ |  |
|  | Pre-Construction Quality Meetings | F | ~~SOW I.A-40~~~~03 3000 1.5.H~~ |  |
| **8** | **Installation** |  |  |  |
|  | Establish, Maintain, & Communicate Control Lines | G | ~~SOW I.A-41~~ ~~SOW II.B.10~~ |  |
|  | Pre-pour Inspections | H | ~~03 3000 3.6.A~~ |  |
|  | 3rd Party Testing Verification | I | ~~SOW I.D.2&3~~ ~~SOW II.B.26 & 27~~~~01 4000 1.9 & 1.10~~ |  |
|  | Hot Weather Concreting | J | ~~03 3000 3.6.G~~ |  |
|  | Cold Weather Concreting | K | ~~03 3000 3.6.F~~ |  |
|  | Mass Concrete (if required) | L1 |  |  |
|  | Concrete curing (if required) | L2 |  |  |
| **9** | **Post-Installation** |  |  |  |
|  | Post-Pour Inspections | M | ~~03 3000 3.9~~ |  |
|  | Project As-Built(s) | N | ~~SOW I.C.5~~~~SOW II.B.11~~~~03 1000 1.5.F~~~~03 3000 3.9~~ |  |
|  | Repairs and Corrections |  |  |  |
|  | Typical Rub and Patch Procedure | O | ~~03 3000 3.10~~ |  |
|  | Non-Compliance Tracking and Resolution | P | ~~SOW I.D.9~~ |  |
|  | Procedure for A-Typical Repair | Q | ~~03 3000 3.10~~ |  |
|  | OFI – Opportunities for Improvement | R | ~~SOW I.D.9~~ |  |
| **10** | **Project Specific Quality Requirements** | S |  |  |

1. **Project Information**
	1. Project Name:
	2. Project Address:
	3. Owner:
	4. Architecture Firm:
	5. Engineering Firm:
	6. Inspection Agency:
	7. General Contractor:
		1. GC Project Manager:
		2. GC Project Engineer:
		3. GC Project Superintendent:
		4. GC Quality Manager
2. **Scope of Work - Example:**
	1. Concrete scope of work includes all items addressed in the contract. This generally includes furnish and install formwork, reinforcing, concrete for foundations, superstructure including installing sleeves and embedded items that are furnished by others. Work includes the following elements - example:
		1. Foundations: Pier Caps, Mats, spread footings, foundation walls, grade beams, slab on grade, thickened slabs, concrete topping slabs, concrete ramps, etc.
		2. Superstructure: Columns, walls, shear walls, tie beams, rakers, conventionally reinforced beam / slab and drop panel structural deck slabs, metal deck slabs, toppings, curbs, etc.
		3. Ancillary work: loading dock, structural stairs, water stops, concrete curbs, recessed and depressed slabs, coupling beams, box outs if noted on structural drawings, etc.
3. **Project Personnel Assignments – Roles and Quality Specific Responsibilities**
	1. Project Co-worker – examples:
		1. Sub-contractorProject Manager – Responsible for promoting quality and implementing quality related responsibilities at the project level, primarily with office staff. Facilitates changes in office resource allocation, when necessary, to appropriately address quality concerns. Name: Phone #: email:
		2. Sub-contractor Project Superintendent – Responsible for construction and managing the implementation of field related quality in conjunction with the Sub-contractor Project Manager, Sub-contractor Line & Grade Coordinator, and Sub-con tractor Quality Manager Name: Phone #: email:
		3. Sub-contractor Project Engineer – Responsible for executing elements of the Project Quality plan and assisting the Sub-contractor Project Superintendent, Sub-contractor Project Manager, Sub-contractor Line & Grade Coordinator, and Sub-contractor Quality Manager, as needed. Name: Phone #, email:
		4. Sub-contractor Quality Manager – Responsible for verifying the quality of the work, as well as coordinating, administering, and implementing the Quality Plan. Including review of documents related to quality, attending quality meetings, interacting with the client and associated companies on quality related items, and confirming compliance with the client’s quality program. Name: Phone #, email:
		5. Sub-contractor Line & Grade Party Chief – Responsible for daily management of project specific layout for location and elevation, review of project drawings and specifications, collection of as-built data, and implementation of associated standard operating procedures. Name: Phone #, email:
		6. Sub-contractor Safety Representative – Responsible for verifying compliance with safety program and coordinating, administering, and implementing the safety program. Name: Phone #, email:

Sub-contractor Foreman – Responsible for managing craft-workers and overall quality of the work being installed. Name: Phone #: email:

* + 1. Sub-contractor Craft-Worker – Responsible for the quality of the work being installed.
	1. Support Co-workers – examples:
		1. Sub-contractor Business Unit Leader – Responsible for promoting regional quality initiatives across regional projects. Name: Phone #: email:
		2. Sub-contractor Operations Manager – Responsible for periodically verifying quality plan implementation on projects in the region. Helps allocate resources to ensure proper implementation of quality programs. Name: Phone #: email:
		3. Sub-contractor BIM Formwork Services Manager – Responsible for coordination of modeling, formwork drawings, and constructability reviews. Works with Project Engineer to generate any necessary RFIs and the Party Chief to coordinate layout points and as-builts. Name: Phone #: email:
		4. Sub-contractor Corporate Quality Director – Responsible for promoting corporate quality initiatives. Participates in Quality Plan development, maintenance, and periodic project reviews.
1. **Sub-contractor Organizational Chart**
2. **Subcontractor Quality Philosophy –** example:

Sub-contractor implements a three-phase control system to ensure the quality of our work. Pre-installation, Installation, and Post-Installation.

* 1. *Pre-installation Phase* – includes systemic and programmatic processes including writing or updating this *Subcontractor Quality Plan*, Submittals, RFIs, Document Control, Building Modelling, and Mock-ups. These processes are intended to help define and understand the owner’s expectation for the subcontractor scope of work and to clearly communicate this to crews installing the work.
	2. *Installation Phase* – includes project layout control, Inspection Checklist and Work Method Review Meeting for the benefit of crews and Owner’s Rep, Pre-pour Inspections, Notification of concrete pour to applicable parties, 3rd Party Testing Verification, *Hot Weather Concreting Guidelines*, *Cold Weather Concreting Guidelines* and *Mass Concrete guidelines*. The quality controls implemented during the installation phase are intended to help Sub-contractor confirm work is being installed correctly the first time.
	3. *Post-Installation Phase* – includes process such as Post-Pour Inspections, Project As-Built(s), Repairs and Corrections. These are a final check to verify in-place work has been installed per plan and, if not, the process needed to remediate non-compliant work. Subcontract Closeout and Lessons Learned per QMP a10.1.1 - Subcontractor work completion and evaluation and QMP a11.2 - Subcontractor, WM, and-or Checklist Rating Log 2019-08-05 [Library].
1. **Formal Qualification:** Certain duties performed require formal qualifications. When applicable and required by contract these include - examples:
	1. Sub-contractor Direct and Sub-tier Co-workers on Site
		1. Sub-contractor Welder Qualifications – AWS D1.14
		2. Sub-contractor Post Tensioning Crew Leader – PTI Level II Installer or Level II Inspector
		3. Sub-contractor Concrete Finisher – ACI Flatwork Finisher
		4. Sub-contractor Quality Control Manager and/or Inspector – Sub-contractor Pre-Pour Inspector Training
		5. Sub-contractor Field Engineer – Sub-contractor Field Engineering Group Training
		6. Sub-contractor Adhesive Anchor Installers – ACI Adhesive Anchor Installer Program
		7. Sub-contractor Vertical and Horizontal Forming & Shoring Inspectors – Sub-contractor F&S Inspection Program
	2. Supply-Chain Workers – examples:
		1. Test Laboratories / Co-workers – ACI Level 1 Field and Level II Laboratory
		2. Place Finish Subcontractor – ACI Flatwork Finisher Certification
		3. Reinforcing Subcontractor - PTI Level II
		4. Delegated Formwork Designer – Professional Engineer licensed in [State-Province]
		5. Delegated Design Specialist – Reinforcing / PT Detailers, etc. – Contract Documents
		6. Suppliers- Those performing factory acceptance test / inspections – Contract Documents
2. **Pre-Installation Quality- Requirements** are based on controlled project design documents and implementing procedures and forms identified herein. Generating RFIs through formal constructability reviews or informally as identified at the field level is strongly encouraged. Quality assurance shall include functions such as mix design optimization including submittal, and pre-construction meetings.

[Note: Exhibits below are suggested and utilized by the writer and (for the time being are intellectual property and not provided). QMPs are discussed and available through the Quality Plan Template.]

* 1. No exhibit - Job Start Checklist (per QMP 5.1 - an internal procedure),
	2. No exhibit - Project start up or Kick-off meetings (per QMP 4.1a – Pre-mobilization kickoff agenda), including material submittals such as shop drawings, and quality management submittals such as inspection checklist, work method, and quality plan.
	3. Exhibit A - QMP 5.4.1 - Document Control and communication requirements for Subs, and QMP 8.1Site Record Control
	4. Exhibit B – QMP 5.6 and 5.6.1 RFIs (or suitable alternative)
	5. Exhibit C – QMP 3.1.2 Subcontractor Submittals and QMP 4.1a - Pre-Mobilization Meeting Requirements and agenda
	6. Exhibit D – Building Information Modeling
	7. Exhibit E – Mock-ups - For applicable concrete elements, installation mock ups shall be accepted using a Sub-contractor or General Contractor mock up form. Mock-ups should include various specified form finish / tolerance requirements and the related quality expectations.
	8. Exhibit F – Pre-construction Quality Related Meetings
		1. Roles and Responsibilities – Internal
		2. Layout/Line and Grade Control - Internal
		3. Concrete Place/Finish Plan – Internal,
		4. Inspection Checklists - Div 3 Concrete 03-00-00 7 Checklists [Note these checklists may cover Pre-installation to Post-installation phases.]
		5. Work Method: WM 41 Concrete Slab on Grade- Warehouse– note this WM covers many or most aspects of concrete activities in one document. [Note this WM is not written by the same organization – could be considered as a stand-alone document.]
		6. Concreting Basics – External (drawings and specifications)
		7. Tolerance Coordination – Elevator, Curtain Wall, Surface Finish, Other (See Tolerance BP?) - External
1. **Installation – Requirements** include verification of work being installed prior to and during concrete placement to limit or eliminate deficiencies. Verification processes are aimed to address issues directly and indirectly relating to concrete subcontractor’s scope of work.
	1. No exhibit - Notification of inspection event, subcontractor self-inspection completed – Concrete pour example
	2. Exhibit G – Line & Grade Project Control
	3. Exhibit H – Pre-pour Inspections - installation reviews utilizing inspection checklists shall be performed for each type of concrete element (footings, foundational walls, core wall, columns, and structural decks). All pre-requisite documents (e.g. Rebar shop drawings, Mix design Submittals, Concrete site access plans, if required, RFIs, etc.) and design document revisions shall be verified prior to signing a pre-placement checklist.
	4. Exhibit I – Interface with 3rd Party Inspection & Testing Agencies – Soils Inspection & Testing, Concrete Slump Test, Air, Unit Weight, Concrete Cylinders, PT & Rebar Installation, Concrete Placement Inspections, PT Stressing, Flatness/Levelness, Adhesive anchors, etc.
	5. Exhibit J – SOP Hot Weather Concreting
	6. Exhibit K – SOP Cold Weather Concreting
	7. Exhibit L1 – SOP Mass Concrete
	8. Exhibit L2 – Concrete curing.

1. **Post-Installation – Requirements** include verification of installed work to identify, report, and address items out of tolerance. For continuous improvement in all regions, requirements also include input for best practice reviews.
	1. Exhibit M – SOP - Post-Pour Inspections
	2. Exhibit N – SOP - Project As-Built(s) and Post Pour Compliance Inspections
	3. Repairs and Corrections
		1. Exhibit O – SOP - Typical Rub and Patch Procedure
		2. Exhibit P – SOP - Non-Compliance Tracking and Resolution
		3. Exhibit Q – SOP - Generating a Procedure for A-Typical Repairs
	4. Exhibit R – SOP - Opportunities for Improvement Program - Throughout the project, Opportunities for Improvement (OFI) shall be documented using the ***Sub-contractor OFI Mobility Application.***All co-workers are expected to report OFIs, while the QM will be the lead. The QM shall review and trend all OFIs. Any OFIs determined to be Non-conforming conditions with proposed “uses as is” or “repair” dispositions shall be reported to the General Contractor in accordance with Exhibit B, Writing RFIs and QMP 8.3 Deficiency, Nonconformance Procedure.
2. **Project Specific Quality Requirements (also called Project Specific Quality Parameters)**
	1. Exhibit S - Insert job specific requirements that are not addressed in the Subcontractor Standard Quality Plan and procedural guidance for implementation of those requirements.

**Discussion and possible improvement:**

Work Method is strongly recommended for complex field processes, or medium to high-risk activities as concrete can be. This Concrete Subcontractor Quality Plan does come close to describing “How the subcontractor performs the work”, but does not include those details proposed in section 7 – Pre-installation. Perhaps that information, together with the WM Template is sufficient.

See also Inspection Checklists - Div 3 Concrete 03-00-00 7 Checklists - updated 2022-10-13 [Red font to help remember to link or post where the document can be found.]

The Work Method and Inspection Checklist being offered for consideration to this subject is provided in the ACI 121 OneDrive in a separate folder identified as “WMs and Inspection Checklists”. The WM is titled “WM 41 Concrete Raft Slab on Grade”.

Note: This WM is not meant for use by the organization that originated this Subcontractor Quality Plan. It is an effort to provide a Concrete Subcontractor Quality Plan (template), Work Method (template), and Inspection Checklist (template) for use by other Subcontractors that may have none of these documents.

John Hausfeld, thank you for your assistance, this document is excellent.