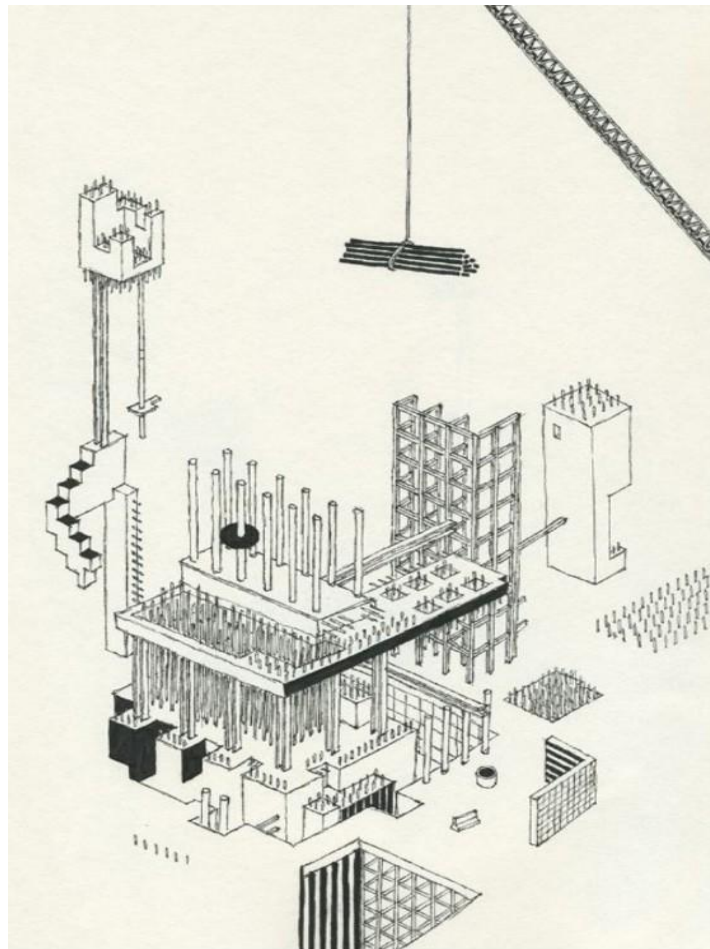




# Code of Practice Structural Concrete



# EKO ATLANTIC CITY

## **CODE OF PRACTICE** **Structural Concrete**

Issued by:

**EKO ATLANTIC CITY MANAGEMENT LIMITED**

**(Issue 01 – January 2026)**

**Copyright © 2026, Eko Atlantic City Management Limited**

**All Rights Reserved**



<b>CHAPTER 4: REINFORCEMENT SAMPLES AND TESTING</b>	<b>124</b>
4.1 Scope	124
4.2 Objective	124
4.3 Sampling of Steel Bars	125
4.4 Supervision by EACML	125
4.5 Tensile Test	126
4.6 Bending and Re-bending	131
4.7 Chemical Composition	132
4.8 Identification	133
4.9 Marking of the Samples and Site Report	134
Appendix 4A – Site Report Template	135
Appendix 4B – Tensile Test Report Template	136
Appendix 4C – Bending and Re-bending Test Report Template	137
<b>CHAPTER 5: REINFORCEMENT DETAILING GUIDELINES</b>	<b>138</b>
5.1 Introduction	139
5.2 List of Applicable Codes and Standards	140
5.3 The Three Golden Rules for Pouring Concrete on Site	141
5.4 General Rules for Bending of Reinforcing Bars	143
5.5 Concrete Cover	147
5.6 Bar Spacing and Bundled Bars	148
5.7 Tying Bars	151
5.8 Spacers and Chairs	155
5.9 Constructive Details	165
5.10 Staircase Constructive Details	202
5.11 Openings in Slabs	204
<b>CHAPTER 6: POST-TENSIONING</b>	<b>208</b>
6.1 Applicable Codes	209
6.2 Post-Tensioning System	210
6.3 Post Tensioning Materials	219
6.4 Post-Tensioning Design	233
6.5 Post-Tensioning Installation	239
6.6 Concreting	249
6.7 Quality Control and Safety	254
6.8 Documentation and Handover	255
6.9 Calibration Certificates and Others	256
6.10 Prequalification of Post-Tensioning Specialists	257

<b>CHAPTER 7: BORED PILES</b> .....	<b>282</b>
7.1 Introduction .....	282
7.2 Setting Out a Pile Point using a Total Station .....	283
7.3 Bentonite Quality .....	285
7.4 Flushing of Bored Piles before Casting .....	298
7.5 Deep Bentonite Sampler for Laboratory Testing .....	301
7.6 Pile Reinforcement Details and Steps for Bored Pile Construction ....	303
7.7 Casting Sequence of Bored Pile Construction .....	305
7.8 Allowable Tolerance for Bored Piles in the X,Y direction .....	308
7.9 Pathologies of Failed Bentonite .....	309
7.10 Standards and References .....	310
<b>CHAPTER 8: CFA PILES</b> .....	<b>311</b>
8.1 Introduction .....	311
8.2 Setting Out a Pile Point using a Total Station .....	312
8.3 Drilling Operation .....	314
8.4 Concrete Placement .....	315
8.5 Pile Reinforcement Details and Steps for CFA Pile Construction .....	316
8.6 Pile Head Protection .....	318
8.7 Allowable Tolerances for CFA Piles in the X,Y direction .....	319

## INTRODUCTION

The purpose of this document is to invite Contractors operating in Eko Atlantic City (EAC) to apply certain practices in the scope of concrete and structure, to achieve quality and durability to the structures being built.

The document is composed of the following chapters:

- 1- **Site Practices:** the chapter contains many aspects of the structural works that is met on site and how to address them to comply with the codes, achieve the quality and durability of the structure.
- 2- **Ready-mix Concrete:** this chapter delves into the basic requirement to establish a ready-mix plant in EAC, taking into consideration the calibration the quality of the production and the protection of the environment.
- 3- **Cube Tests:** this chapter explains how to take cube tests in details.
- 4- **Reinforcement Tests:** this chapter explains in detail how to take samples of reinforcement from site and how to test them.
- 5- **Reinforcement Detailing:** this chapter exposes all the good practices to install reinforcement on site. Normally these details are not explicitly shown on the drawings, and can be interpreted differently by contractors. This chapter provides the typical reinforcement detailing that need to be followed.
- 6- **Post-Tensioning:** this chapter provides with all the regulatory and basic technical information needed to use post-tensioning in EAC
- 7- **Bored Piles:** this chapter provides details on how to execute a bored pile and what quality measures need to be taken.
- 8- **CFA Piles:** same as above

# CHAPTER ONE

## SITE PRACTICES FOR GOOD CONCRETING

### 1.1 Handling & Placing

#### 1.1.1 Workability

Workability of concrete is defined as the ease and ability of freshly mixed concrete to be placed, compacted, and finished without segregation or excessive bleeding. It is a crucial property influencing the construction process and the ultimate quality of concrete structures. Workability is primarily determined by factors such as:

- water content,
- mix proportions,
- admixtures
- characteristics of the aggregates used.

Achieving optimal workability is essential for ensuring the successful placement and compaction of concrete during construction activities.

The required concrete workability will normally be determined by the nature of the building element or project in which it is to be placed.

For example, concrete to be placed in thin or narrow forms needs to be quite workable if it is to be placed and compacted satisfactorily. *Mainly for structural elements that have a steel bars congestion area, the concrete slump should have a slump of  $200 \pm 20$  mm, with maximum size of aggregates 10 mm; such concrete mix design will require increased cement content compared to normal concrete of similar grade.*

On the other hand, concrete to be placed in massive sections may have quite low workability. *Example: casting of raft foundations and large pile caps can have a concrete of slump  $130 \pm 20$  mm and a maximum size of aggregates of 40 mm, such concrete has lower cement content compared to normal concrete of similar grade, which helps reducing concrete temperature due to the heat of hydration.*

Consequently, the method chosen to distribute the concrete from the point of delivery to the point of placement in these two situations may be quite different in terms of delivery capacity and delivery process detailed in section 1.1.3 distribution method.