



**PRODUCTION QUALITY
PLAN FOR CONCRETE**
生產質量計劃書（混凝土）

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2.0 DETAILS OF REVISION

Rev. No.	Rev. Date	Section	Amendment
A	2022-1-1	1.0 to 19.0	First Version



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3.0 INTRODUCTION

- 3.1 This Quality Plan has been designed specifically for implementation of production and supply of a range of concrete mixes at 马海科技有限公司。
- 3.2 Concrete produced by the Plant is solely used in casting of precast concrete products at the 马海科技有限公司（海南省澄迈县老城镇南一环兴路海建产业化股份有限公司） on where the aforesaid Batching Plant is located.
- 3.3 Each type of concrete mixes to be produced at this Plant is designed and verified by competent consultant for compliance in accordance with specified requirements of specifications of the concrete for manufacturing of the particular type of precast concrete products.
- 3.4 The purpose of this Quality Plan is to define specifically how procedures described in the Company's Quality Manual, Procedures are implemented or amended for satisfying the requirements of Specifications and Quality Scheme for the Production and Supply of Concrete (QSPSC) published by HKQAA on 2014 version.
- 3.5 This document was prepared as part of the implementation of the Quality Procedure - Process Control.
- 3.6 The procedures described in this Quality Plan are applicable to production of normal concrete.
- 3.7 This Quality Plan will be reviewed as part of:
- audit follow up procedure
 - yearly review by the QA Manager, Production Manager and General Manager, results of which are identified in Section 2.0, Details of Revision, whenever changes are made.

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4.0 MANAGEMENT RESOURCES FOR MANUFACTURING

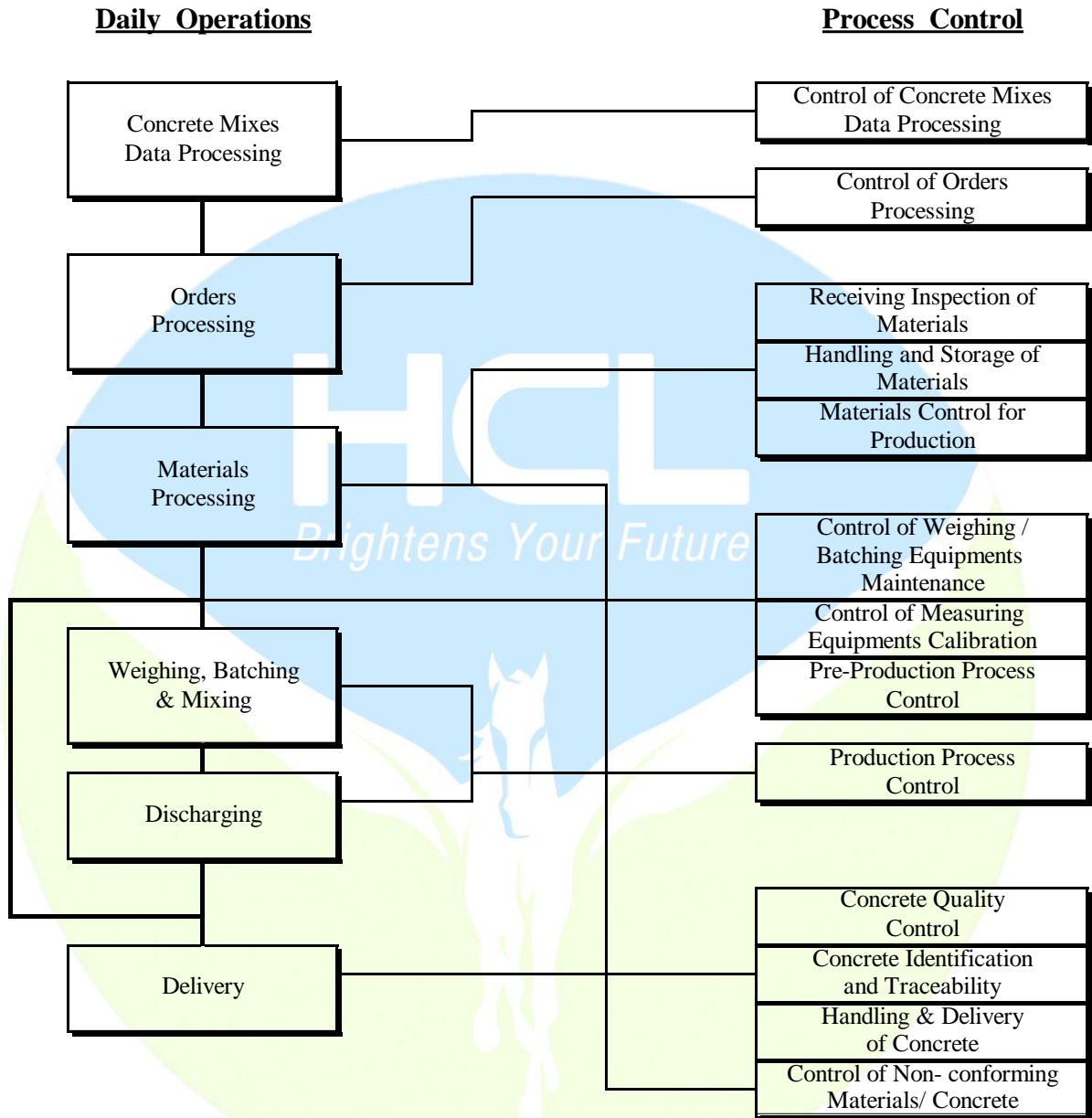
4.1 The management resources of the Company shown as below are allocated for implementation of operations specified in this Quality Plan :-

Section	Works of Quality Control	Person(s) who is responsible for implementation
6.0	Control of Concrete Mixes Data Processing	Production Manager, QA Manager & Laboratory Officer
7.0	Control of Orders Processing	Batching Plant Operator & Batching Plant Supervisor
8.0	Control of Weighing / Batching Equipment Maintenance	Batching Plant Operator & Batching Plant Supervisor
9.0	Control of Measuring Equipment Calibration	Batching Plant Operator, Batching Plant Supervisor, Laboratory Officer & Laboratory Technician
10.0	Receiving Inspection of Materials	QC, Batching Plant Supervisor
11.0	Materials Control for Production	Batching Plant Operator, Batching Plant Supervisor, Laboratory Officer & Laboratory Technician
12.0	Handling and Storage of Materials	QC, Batching Plant Operator & Batching Plant Supervisor
13.0	Pre-Production Process Control	Batching Plant Operator, Batching Plant Supervisor & Production Manager
14.0	Production Process Control	Production Manager, Batching Plant Operator & Batching Plant Supervisor
15.0	Concrete Quality Control	Batching Plant Operator, Batching Plant Supervisor, Laboratory Officer, Laboratory Technician, QA Manager & Production Manager
16.0	Concrete Identification and Traceability	Batching Plant Operator & Batching Plant Supervisor
17.0	Handling & Delivery of Concrete	Batching Plant Operator & Batching Plant Supervisor
18.0	Control of Nonconforming Materials and Concrete	Batching Plant Supervisor, Laboratory Officer, Production Manager & QA Manager
19.0	Management of Quality Records	Batching Plant Operator, Batching Plant Supervisor, QA Engineer & Document Controller

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5.0 OPERATIONS AND PROCESS CONTROL FLOW CHART

5.1 The relationship between the daily operations of production of concrete and the process control for implementation of this Quality Plan is shown in the below chart :-



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6.0 CONTROL OF CONCRETE MIXES DATA PROCESSING

- 6.1 To achieve effectively the procedures of orders processing defined in Section 7.0 of this Quality Plan, the following controlled processes shall be carried out and completed by the Batching Plant Supervisor.
- 6.2 All concrete mixes which have been approved for production or trial mix shall be registered on a list titled "List of Approved Mixes" indicating details of the mixes, such as Mix I.D. Code, effective date, and usage of the concrete.
- 6.3 The list as a type of controlled documents of the Company will be updated whenever new concrete mixes have been approved or any listed mixes have been withdrawn from use.



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7.0 CONTROL OF ORDERS PROCESSING

- 7.1 To ensure that each order of delivery of concrete is processed in accordance with the requirements of the order placed (precast of production department), the following controlled processes shall be carried out and completed by the Batching Plant Supervisor of the Company. (So far our concrete only offer to internal using but not any for outside sales. So we exclude the orders processing.)



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8.0 CONTROL OF WEIGHING / BATCHING EQUIPMENT MAINTENANCE

8.1 To ensure that all weighing and batching equipment in use are regularly inspected, tested and maintained, the Production Manager for completion of the required works of maintenance.

- a) The weighing hoppers and the weighing mechanisms for batch weighing of cementitious materials, aggregates, water and admixtures are maintained in working condition such that materials are capable to be added at a controllable rate and cut off within the weighing tolerances specified below : -

Cementitious materials, aggregates and water	$\pm 2\%$
Admixtures	$\pm 5\%$

- b) The weighing hoppers are freely suspended on the load-measuring devices.
- c) The discharging mechanism of the weighing hoppers is maintained in working condition that the build-up of materials is minimized.
- d) The weighing hoppers are capable of receiving their load without the weighed materials coming into contact with the loading mechanism.
- e) The tare adjustment mechanism is maintained in working condition such that the weight-indicating devices are capable to compensate the weight of build-up materials at hoppers.
- f) The filter fitted on the weighing hopper for weighing cementitious materials is maintained in working condition such that air is vented without emission of excessive dust.
- g) The vibrators fitted on the weighing hoppers are firmly fixed at their position of installation.
- h) The covers fitted upon weighing hoppers and weighing mechanisms are not damaged and firmly fixed at their position of installation.
- i) The labels or markings affixed on control of the batching console and display are firmly fixed and clean enough to be noted.

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9.0 CONTROL OF MEASURING EQUIPMENT CALIBRATION

9.1 To ensure that all measuring equipment in use are regularly calibrated, the Laboratory Officer to completion of the required works of calibration.

9.2 Accuracy of Weight Indicating Devices and flowmeters

a) The accuracy, sensitivity and arrangement of the weighing devices are such as to enable the materials to be batched within the following tolerances : -

Cementitious materials, aggregates	each to within $\pm 2\%$ of the weight in the batch
Water	within $\pm 2\%$ of the amount added to the batch
Admixture	within $\pm 5\%$ of the amount added to the batch

b) At the time of installation, or reconditioning, the accuracy of the indicated weight at any point on the scale is within 0.25% of the full scale reading.

c) At any other time during operation, the accuracy of the indicated weight at any point on the scale is within 0.50% of the full scale reading.

9.3 Calibration Methods of Weight Indicating Devices

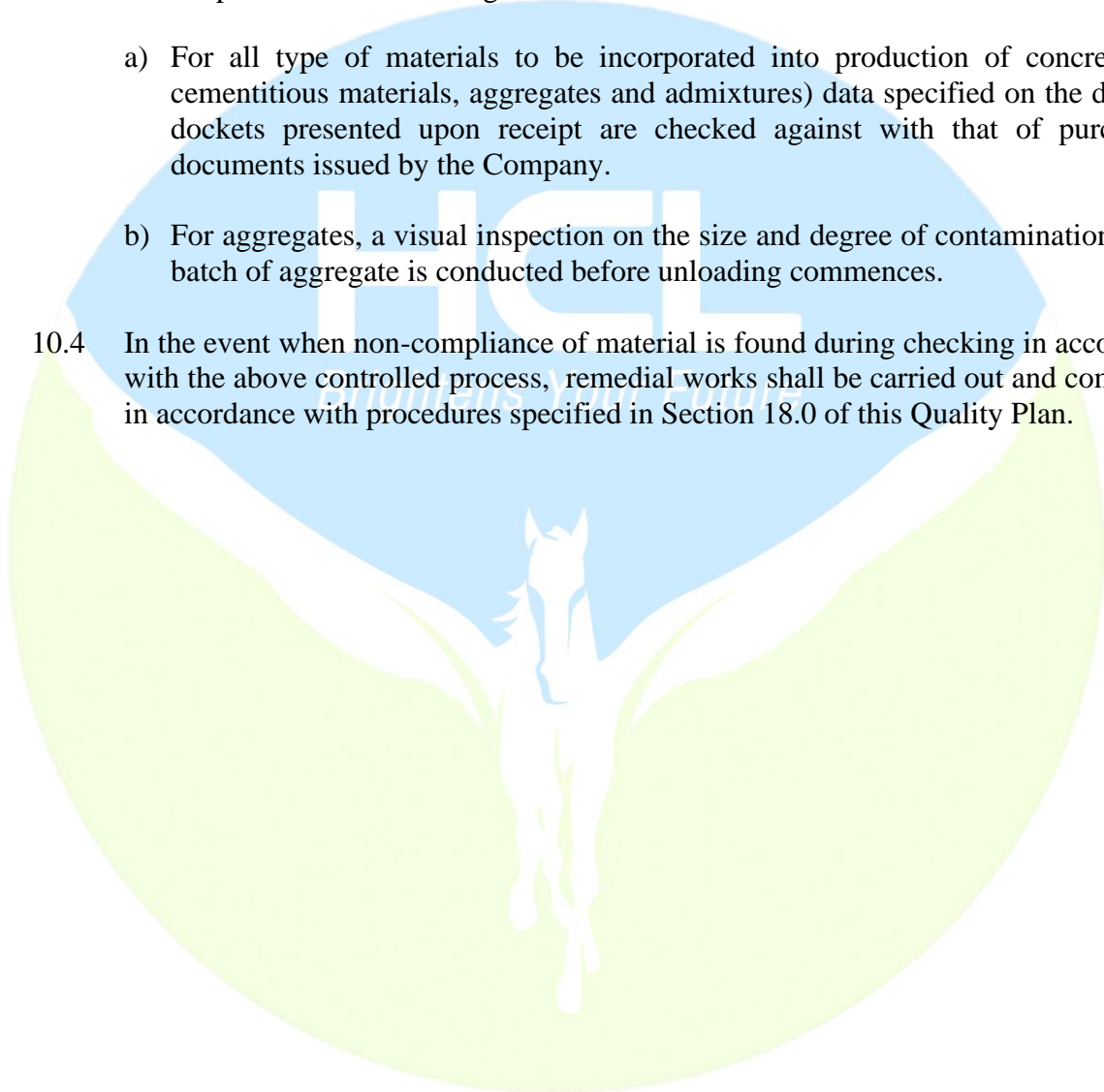
a) All weighing and measuring equipment and the control equipment for monitoring the fully automatic production system is calibrated over its entire working range at least once every three months by an independent specialist.

b) At least two checks of the accuracy of the weighting equipments are made by the Company or external specialist in the internal between the indepartment specialist three monthly check; by verification of the volume of admixture passing through the Flowmeters for admixture and by verification of total weight of Aggregate / cement / water Weigh Scale.

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10.0 RECEIVING INSPECTION OF MATERIALS

- 10.1 Each consignment of materials to be incorporated into production of concrete are subject to receiving inspections upon receipt to ascertain that their quality is acceptable for use.
- 10.2 For each inspection, Standard Form specifying data and results of the inspection to be filled in, as a type of controlled documents of the Company, are provided to the QC for his finishing of the assigned works of inspection and documentation .
- 10.3 The inspections can following below methods : -
- a) For all type of materials to be incorporated into production of concrete (i.e. cementitious materials, aggregates and admixtures) data specified on the delivery dockets presented upon receipt are checked against with that of purchasing documents issued by the Company.
 - b) For aggregates, a visual inspection on the size and degree of contamination of the batch of aggregate is conducted before unloading commences.
- 10.4 In the event when non-compliance of material is found during checking in accordance with the above controlled process, remedial works shall be carried out and completed in accordance with procedures specified in Section 18.0 of this Quality Plan.



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11.0 MATERIALS CONTROL FOR PRODUCTION

- 11.1 To ensure that all materials purchased for and used in the production of concrete conform to the requirements specified in the purchasing documents provided with the Suppliers, the following controlled processes are carried out and the results of testings are used to verify the results of Suppliers' test reports by the Batching Plant Supervisor with the assistance of the Laboratory Officer and the Laboratory Technician.
- 11.2 Suppliers of constituent materials are requested to provide the following test reports in the following specified intervals for verification.
- a) Reports of testing in accordance with BS 4550 or other relevant Standards (CS3) is required to be submitted by the Suppliers of cementations materials once per year.
 - b) Reports of testing in accordance with relevant parts of BS 812 are required to be submitted by the Suppliers of aggregates once per year.
 - c) Report of testing of uniformity is required to be submitted by the Suppliers of admixtures once a month or each delivery.
- 11.3 Samples of the received materials are required to be taken by the Company for testing in accordance with the following methods of testing in the following specified intervals for verification.
- a) Cement from each source used is sampled twice per week and each sample tested in accordance with the test requirements listed in Clause D1.1 of Appendix D for physical properties. Chemical composition test is conducted once a year.
 - b) Other cementitious materials from each source used such as PFA, silica fume, GGBC & PPFAC are sampled and tested as follows:

PFA

 - Physical test - Sample and test once per week or for 1000 cu.m. concrete production using relevant standard.
 - Chemical test – sample and test once per year using relevant standard.

Silica Fume

 - Performance certificate from supplier for either every 100MT delivery or 3000 cu.m. concrete production.

GGBS

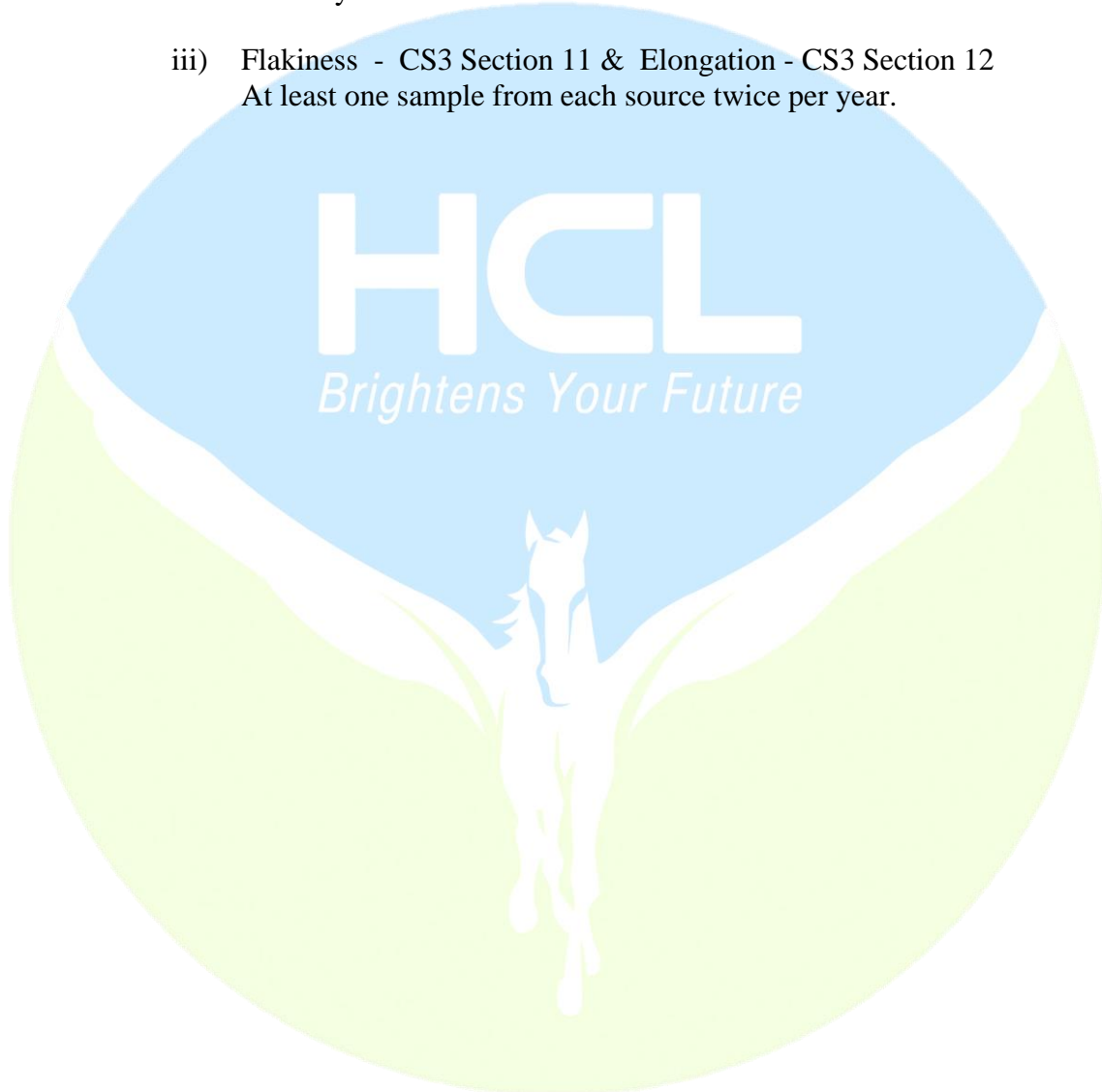
 - Physical test – sample and test once per week or for 1000 cu.m. concrete production using relevant standard.
 - Chemical test – sample and test twice per year using relevant standard.

PPFAC

 - Same testing frequency as OPC in accordance with relevant standards.

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- c) Aggregates are sampled and tested in accordance with the relevant parts of BS 812 for the following properties for compliance with BS 882 or the relevant Standards (CS3).
- i) Grading - CS3 Section 10
At least one sample from each size of aggregate and from each source on each day the material is used.
 - ii) Silt Content - CS3 Section 10
At least one sample from each size of aggregate and from each source on each day the material is used.
 - iii) Flakiness - CS3 Section 11 & Elongation - CS3 Section 12
At least one sample from each source twice per year.



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11.0 MATERIALS CONTROL FOR PRODUCTION (CONT'D)

- 11.3 Samples of the received materials are required to be taken by the Company for testing in accordance with the following methods of testing in the following specified intervals for verification. (CONT'D)
- c) Aggregates are sampled and tested in accordance with the relevant parts of BS 812 for the following properties for compliance with BS 882 or the relevant Standards (CS3). (CONT'D)
- iv) Relative Density - CS3 Section 17
At least one sample from each source twice per year.
- v) Water Absorption - CS3 Section 17
At least one sample from each source twice per year.
- vi) Bulk Density - BS4550:Part3:Section 3.2
At least one sample from each source per year.
- vii) 10% fines - CS3 Section 16
At least one sample from each source per month.
- viii) Alkali Aggregate Interaction
Where new sources of aggregate are proposed, the aggregate is tested before use for potential alkali reactivity in accordance with the test requirement listed in Clause D2.8 of Appendix D (refer to QSPSC:2014) or other recognized testing methods(s) and subsequently monitored in accordance with Appendix E (refer to QSPSC:2014).
Documentation of the routine inspection of aggregates delivered to batching plants (e.g. records of visual checking) should be required and related records should be maintained.
- 11.4 When external services of testing are employed, those tests shall be carried out by a HOKLAS accredited Laboratory.
- 11.5 Taking of samples of materials shall be carried out by trained personnel of the Company.
- 11.6 Received Suppliers' test reports and test reports of samples taken by the Company are checked against all specification requirements or Standards specified in the purchasing documents agreed between the Suppliers and the Company.
- 11.7 In the event when non-compliance is found, remedial works shall be carried out and completed in accordance with procedures specified in Section 18.0 of this Quality Plan.

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12.0 HANDLING AND STORAGE OF MATERIALS

- 12.1 To prevent the deterioration in the quality of accepted packed or non-packed materials within the premises of the Company, Production Supervisor to instruct production staff how to handle and store materials.

12.1.1 Cementitious materials

Separate weatherproof storage silos each with dust filter and discharging systems are provided for the different types of cementitious materials. Different load connectors are used for silo storing different materials. The loading point of each silo is clearly marked to indicate its content. A silo is not allowed to store a different type of cementitious material unless such silo has been fully emptied before it is reloaded and the correct new load connectors are fitted.

12.1.2 Aggregates

- a) Adequately drained and segregated stockpiles or storage silos are provided for each nominal size and type of aggregate so as to avoid contamination and to prevent intermingling with adjacent material.
- b) The method of filling stockpiles or silos is such as to prevent intermingling of different sizes and types.
- c) Handling methods for loading and unloading aggregates are such as to reduce segregation to a minimum.

12.1.3 Admixtures

- a) Tanks or drums containing admixtures are clearly labelled for identification purposes and stored in such a way as to avoid contamination. Admixtures are also stored in accordance with the manufacturers' recommendations and shall not be used after the recommended shelf life has been expired.
- b) Mechanical agitation or access for facilitating manual agitation is provided for liquid admixtures which are not stable solutions.

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- c) The measured dosage is discharged into the water prior to mixing or into the mix at the same time as the water is added or just prior to discharge of the concrete, or as recommended by the manufacturer.

12.1.4 Water

An adequate supply of uncontaminated water is provided together with an accurate means of measurement.



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13.0 PRE-PRODUCTION PROCESS CONTROL

- 13.1 To ensure effectively carrying out of each pre-production operation by the Batching Plant Operator under the supervision of the Batching Plant Supervisor of the Company, the company to provide the training to Batching Plant Operator before assigning the work to the Operator.
- 13.2 The Mix ID code, mix proportion data, mix status and calculated batch weights of constituent materials for different moisture content of each approved mix shall be filled in a Standard Form, as a type of controlled documents of the Company, titled "Batch Card" for carrying out of input mix data into the Batching Computer.
- 13.3 Each filled "Batch Card" (磅料表) shall be reviewed for adequacy and approved by the authorized persons of the Company prior to use.
- 13.4 On the morning of each working day (i.e. before production commences), mix data stored in the Batching Computer of the mixes of concrete to be batched is recalled to the screen of the monitor for checking against the appropriate Batch Card and a duly issued internal document titled "Concrete Mix Adjustment Instruction".
- 13.5 If any discrepancy is found, the discrepancy shall be corrected in accordance with the Batch Card immediately.
- 13.6 On the morning of each working day, check shall be carried out on the stock levels and condition of storage of all constituent materials and completed before commencement of production by the Batching Plant Operator to ensure that sufficient quantities of material are available for production for the day.
- 13.7 The presetting of mixing time, mode of control of loading and acceptable accuracy tolerances for batching (i.e. $\pm 2\%$ for cementitious materials, aggregates and water, $\pm 5\%$ for admixture) shall be recalled to the screen of the monitor for checking against the appropriate settings.
- 13.8 Residual water in the mixer is to be discharged before receiving the first batch of constituent materials for mixing.
- 13.9 At least two moisture content checks of all aggregates in use by using of microwave oven method are required to be carried out on each production day to determine moisture content for finalizing mix formula by the Batching Plant Operator & Laboratory Technician. Test results are recorded in daily batch record. Data are to be entered into the Batching Computer for automatic compensation.

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13.0 PRE-PRODUCTION PROCESS CONTROL (CONT'D)

13.10 Test result of fine aggregate is to be compared the reading of "Individual moisture content tester" of Batching plant for verification of its accuracy. If the "Individual moisture content tester" is accurate, moisture content of fine aggregate will be detected by it feed into Batching Computer for automatic compensation. Otherwise, rectification shall be taken by Production Department.



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14.0 PRODUCTION PROCESS CONTROL

- 14.1 To ensure effective carrying out of each production operation by the Batching Plant Operator under the supervision of the Batching Plant Supervisor of the Company, the following guidance is given to the Batching Plant Operator by means of a Handbook titled "Batching Plant Operator Handbook" as a training material prepared by the Company before assigning the work to the Operator.
- 14.2 In normal operational condition, all batching operation is controlled by the Batching Computer once all production data is completely input into the Computer by the Operator.
- 14.3 In the event of fully automatic batching system breaks down, manual batching is conducted in accordance with the Batch Cards and the required batching tolerances of measured weights.
- 14.4 In the event of printer breaks down, manual recording of batch record is filled in a Standard Form titled Batching Plant Production Daily Record by the Operator.
- 14.5 In the event of materials discharged into weighing hoppers are beyond the acceptable level indicated by the alarm system, manual correction of this batching error is conducted to bring the off-tolerance proportion of materials to the design parameters.
- 14.6 The Operator shall introduce the correct amounts of each material for the required mix and size of batch within the tolerances for each received order.
- 14.7 At all times, the mixer is not allowed to be loaded in excess of the manufacturer's recommended capacity in terms of the volume of the mixed concrete.
- 14.8 After completion of measurement, all materials shall be discharged into the mixer without loss.
- 14.9 Correct mixing times are given in the controlled document, Batching Plant Operator Handbook, These are to be followed at all times.
- 14.10 Prior to discharging, the Batching Plant Operator shall visually inspect the mixed concrete to determine the acceptability of the batch of concrete in term of workability by experience. According to the inspection result, the Batching Plant Operator is authorized to adjust the original moisture content downwards or upwards within the range of 2%.
- 14.11 The Batching Plant Operator shall ensure that all hoppers have been emptied and / or tared and indicated by zero / offset readings or of the weighing mechanism before commencement of another new batching.

14.0 PRODUCTION PROCESS CONTROL (CONT'D)

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14.12 In the event of rain, production of concrete shall cease unless the Production Manager instructs otherwise. Appropriate covering materials shall be applied during production.



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15.0 CONCRETE QUALITY CONTROL

15.1 To verify the quality of batches of concrete produced, the following controlled processes shall be carried out and completed by the Laboratory Officer and Laboratory Technician of the Company.

15.2 Taking of Samples of Concrete

- a) For each type of concrete mixes, one sample comprising of 3 concrete cubes stated in as section 15.3 a) is randomly taken at the Plant in compliance with CS 1 each production day.
- b) For each type of concrete mixes, one sample as stated in section 15.3 b) is randomly taken at the Plant in compliance with CS 1 once a month.

15.3 Testings of Samples of Concrete

- a) For daily sample of concrete : -
 - i) One slump test is conducted in accordance with CS 1 and / or modification by the Company Laboratory.
 - ii) One cube from the sample of three is tested for 7-day strength in accordance with CS 1 by the Company.
 - iii) Two cubes are tested for 28-day strength in accordance with CS 1. If Client request, concrete cubes are send to Client and tested by outside HOKLAS accredited Laboratory, concrete cubes are tested by the Company Laboratory.
- b) For monthly sample of concrete, the sample is tested for plastic density by the Company Laboratory.

15.4 Statistical Control on Concrete Cube Test Results

15.4.1 Statistical Control Method

- a) The 8.2 and 8.3 of QSPSC-2014 concrete control system is adopted to be statistical control method of this Batching Plant.
- b) The initial transforming factor for determination of estimated 28-day cube strength results from early cube strength results is taken as 10/7.

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15.0 CONCRETE QUALITY CONTROL (CONT'D)

15.4 Statistical Control on Concrete Cube Test Results (CONT'D)

15.4.2 Principle of the Control Method

- a) The control system aims at carrying out continuous analysis of results from daily cube tests to compare actual concrete strength values with target concrete strength values together with procedures for modifying mix proportions to correct for observed differences.

15.4.3 Indices of the Control Method

- a) Mean concrete strength based on testings of cubes at an early age (i.e. 7 days).
- b) Changes in standard deviation of concrete strength results.
- c) Changes in relationship between early and actual 28-day concrete strength.

15.5 Follow-up Actions to Statistical Analysis Results

15.5.1 For each outcome of analysis results, the corresponding follow-up actions are specified as below.

- a) Mean Strength Control (by counting rule)
If the estimate 28 day strength result is greater than the target mean strength a positive signal is given. If the estimate 28 day strength result is less than the target mean strength a negative signal is given. If 9 (+) or 9 (-) signs have occurred in the group of consecutive 10, the mean strength of a running sample of 10 estimate 28 day results is calculated and compared to the target mean strength. For every 1 MPa difference an increase or decrease of 5 Kg of cement from the content, for a negative or positive signal, is made, respectively.
- b) Change in the Standard Deviation
If the new estimate of S.D. calculated from Sum of 40 ranges differs from the 20% of the existing standard deviation, then the new estimate S.D. will be adopted. The target mean strength is adjusted accordingly.

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15.0 CONCRETE QUALITY CONTROL (CONT'D)

15.5 Follow-up Actions to Statistical Analysis Results (Cont'd)

15.5.1 For each outcome of analysis results, the corresponding follow-up actions are specified as below. (Cont'd)

c) Early 28 day strength relationship (Transforming Factor)

If the estimate 28 day strength is greater than the actual 28 day strength results than a positive sign is given. If the estimate 28 day strength result is less than the actual 28 day strength result than a negative sign is given. If 9 (+) or 9 (-) signs have occurred in the group of consecutive 10, the transforming factor shall be re-calculated by the past value of actual 28 day strength and 7 day strength. The transforming factor is set to be 10/7 for the initial production state of each concrete mix.

15.5.2 The above mentioned follow-up actions (from a to c) are required to be taken on the next production day of the affected concrete mixes.

15.5.3 Instruction of adjustment of cement content to affected concrete mix is required to be forwarded to the Batching Plant Operator via a duly completed internal document titled "Concrete Mix Adjustment Instruction" as a type of controlled documents of the Company.

15.5.4 Downward changes in cementitious content indicated by the control system shall be left to the Production Manger's discretion.

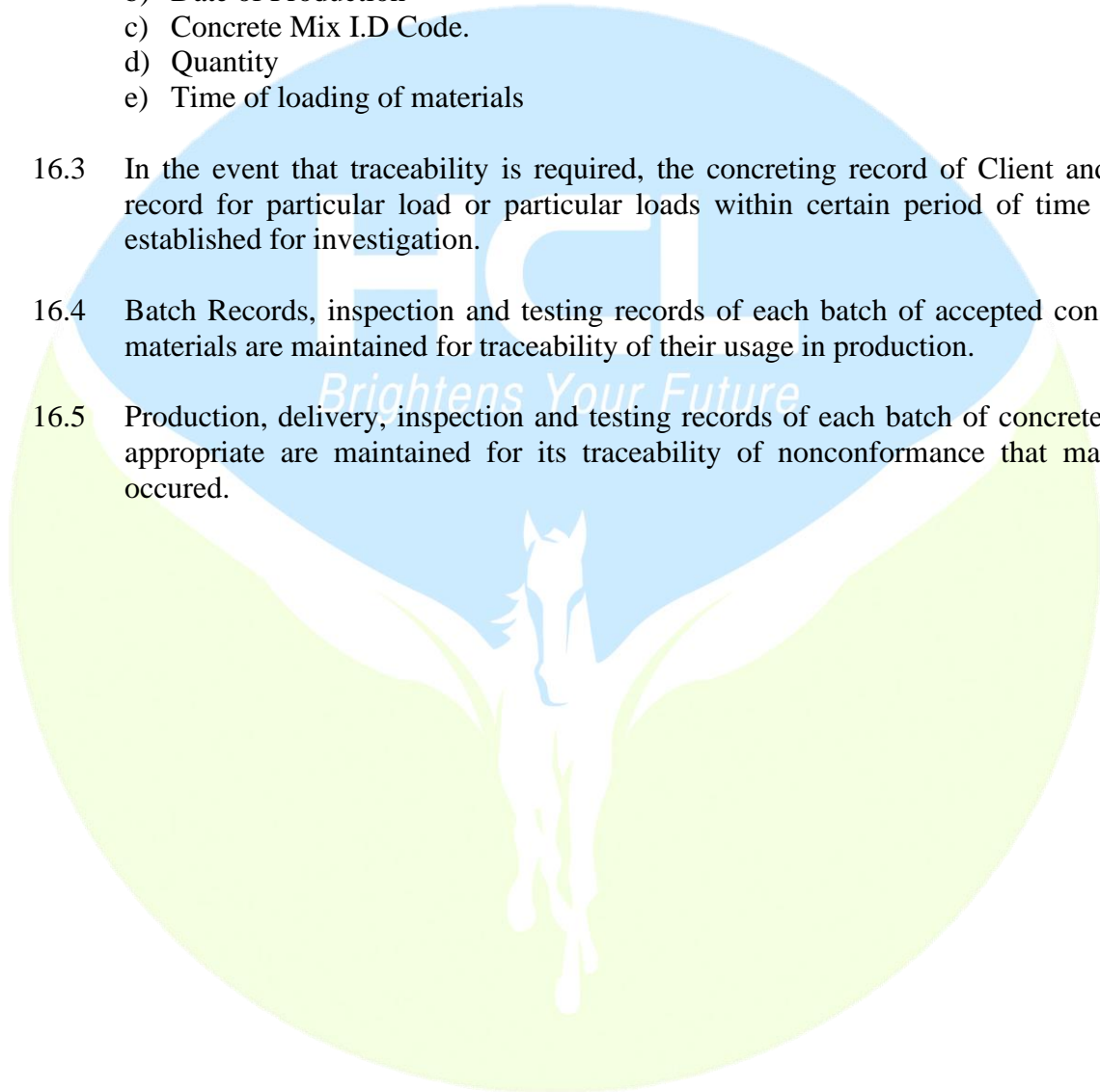
15.6 Remedial Works of Consecutive Adverse Statistical Analysis Results

a) In the event of occurrence of three consecutive increasing adjustment to cement content of one classification of concrete mixes, remedial works shall be carried out and completed in accordance with procedures specified in Section 18.0 of this Quality Plan.

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16.0 CONCRETE IDENTIFICATION AND TRACEABILITY

- 16.1 In consideration of the possibility and ease of traceability of concrete during the entire process of production and to recall nonconforming concrete if necessary, the Company identifies the following specified measures to achieve this objective.
- 16.2 Each load of concrete is provided with a Batch Record with the following information :-
- Batch no.
 - Date of Production
 - Concrete Mix I.D Code.
 - Quantity
 - Time of loading of materials
- 16.3 In the event that traceability is required, the concreting record of Client and batch record for particular load or particular loads within certain period of time can be established for investigation.
- 16.4 Batch Records, inspection and testing records of each batch of accepted constituent materials are maintained for traceability of their usage in production.
- 16.5 Production, delivery, inspection and testing records of each batch of concrete where appropriate are maintained for its traceability of nonconformance that may have occurred.



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17.0 HANDLING & DELIVERY OF CONCRETE

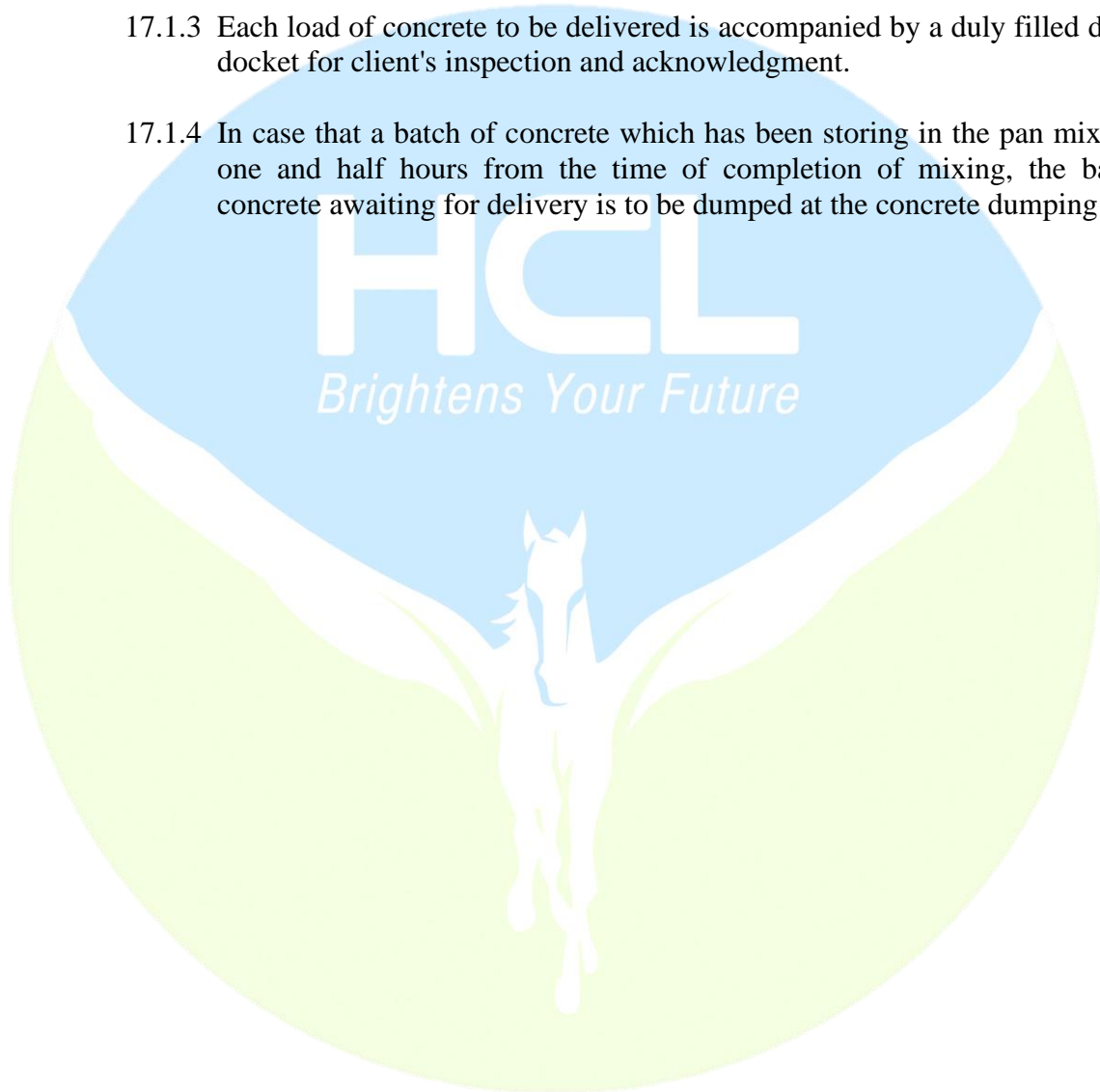
17.1 To ensure effectively carrying out of concrete handling and delivery operations by the Batching Plant Operator and his assistant, to handle and deliver batches of freshly mixed concrete.

17.1.1 Concrete is to be delivered by hoppers equipped with discharging mechanism.

17.1.2 Before loading any concrete hopper with a fresh batch of concrete, any water retained in the hopper shall be discharged.

17.1.3 Each load of concrete to be delivered is accompanied by a duly filled delivery docket for client's inspection and acknowledgment.

17.1.4 In case that a batch of concrete which has been storing in the pan mixer over one and half hours from the time of completion of mixing, the batch of concrete awaiting for delivery is to be dumped at the concrete dumping area.



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18.0 CONTROL OF NONCONFORMING MATERIALS / CONCRETE

18.1 To prevent mis-use of nonconforming materials and concrete, the Company can initially consider the following guidance or determine other appropriate measures before reaching a resolution for each event of occurrence of nonconforming materials and concrete.

18.2 Nonconforming Incoming Raw materials

- a) Whenever nonconformance is detected after completion of receiving inspection of each consignment of incoming raw materials, the whole consignment shall be returned to the Supplier at once.
- b) Whenever nonconformance is detected during production, a record titled "Nonconformance Report" as a Standard Form of the Company is opened to record the detected nonconformance and this record shall be immediately forwarded to the Production Manager for determination of remedial works.
- c) The Nonconformance Report, record of tracing of the usage of the suspected batch(es) of nonconforming materials and all test reports indicating this nonconformance shall be forwarded to the Laboratory Officer / QA Manager / Production Manager for investigation of the causes of nonconformance, evaluation of the consequences of using of the suspected nonconforming materials and determination of immediate corrective action and preventive action.
- d) The results of investigation and evaluation, the determined resolutions of corrective and preventive action, records of follow-up action and modification to the affected mix formula are recorded and maintained as Quality Records.

18.3 Nonconforming Batches of Concrete

- a) Whenever nonconformance is identified in accordance with criteria of determination specified in Section 15.6 of this Quality Plan, a record titled with "Nonconformance Report" as a Standard Form of the Company is opened to record the nonconformance detected and this record shall be immediately forwarded to the Production Manager for determination of remedial works.
- b) The Nonconformance Report, record of tracing of the usage of the suspected batch(es) of nonconforming materials and all test reports indicating this nonconformance shall be forwarded to the Laboratory Officer / QA Manager / Production Manager for investigation of the causes of nonconformance, evaluation of the consequences of using of the suspected nonconforming materials and determination of immediate corrective action and preventive action.

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18.0 CONTROL OF NONCONFORMING MATERIALS / CONCRETE (CONT'D)

18.3 Nonconforming Batches of Concrete (CONT'D)

- c) The results of investigation and evaluation, the determined resolutions of corrective and preventive action, records of follow-up action and modification to the affected mix formula are recorded and maintained as Quality Records.

19.0 MANAGEMENT OF QUALITY RECORDS

- 19.1 To record the effectiveness of the implementation of the Quality System to the satisfaction of the Client and the Company, all records / reports related to the implementation of this Quality Plan are maintained for a period of six years as a minimum.
- 19.2 All such records defined above are stored so that they are readily retrievable for examination by representative of Client.

