



Central Portal for
Philippine Government
Procurement Opportunities

Bid Notice Abstract

Invitation to Bid (ITB)

Reference Number 11268031
Procuring Entity BAGUIO WATER DISTRICT - BAGUIO CITY
Title 1 lot Surface Restoration / Paving Works along Richgate Square Phase-3 Subdivision, Camp 7, Baguio City
Area of Delivery Benguet

Solicitation Number:	09-JO-212	Status	Pending
Trade Agreement:	Implementing Rules and Regulations		
Procurement Mode:	Public Bidding	Associated Components	1
Classification:	Civil Works		
Category:	Construction Projects	Bid Supplements	0
Approved Budget for the Contract:	PHP 709,792.43		
Delivery Period:	9 Day/s	Document Request List	0
Client Agency:			
Contact Person:	Ma. Luisa C Tenedero Chairperson, Bids and Awards Committee BWD Compound, Utility Road Baguio City Benguet Philippines 2600 63-74-4423456 63-74-4424858 bwd.bac2021@gmail.com	Date Published	20/09/2024
		Last Updated / Time	19/09/2024 08:30 AM
		Closing Date / Time	08/10/2024 13:30 PM

Description

1 lot Surface Restoration / Paving Works along Richgate Square Phase-3 Subdivision, Camp 7, Baguio City

Scope of Work:

- Ready Mix Concrete Pouring, 3500psi @ 7 days (including asphalt sealant) = 70.00 cu m
- Testing of Materials (Compression Test of Concrete Cylinders, and Flexural Test of Concrete Beams = 1.00 lot

Please refer to the attached Terms of Reference (TOR) for details.

Duration: 9 Working Days

Approved Budget Cost: ₱709,792.43 / lot
x x x x x

This is a two (2) envelope system:

Documents Comprising the Bid

The first envelope (Technical Proposal) shall contain the following:

I.
CLASS "A" DOCUMENTS

A. LEGAL DOCUMENTS

1. Registration certificate from the Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives.
2. Mayor's/Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas.
 - In cases of recently expired Mayor's/Business permits, it shall be accepted together with the official receipt as proof that the bidder has applied for renewal within the period prescribed by the concerned local government unit: Provided, That the renewed permit shall be submitted as a postqualification requirement in accordance with Section 34.2 of the IRR of RA 9184.
3. Tax clearance per Executive Order No.398, series of 2005, as finally reviewed and approved by BIR.

B. TECHNICAL DOCUMENTS

1. PhilGEPS Certificate of Registration and membership in accordance with Section 8.5.2 of the IRR of RA 9184, except for foreign bidders participating in the procurement by a Philippines Foreign Service Office or Post, which shall submit their eligibility documents under Section 23.1 of this IRR: Provided, that the winning bidder shall register with the PHILGEPS in accordance with Section 37.1.4 of the IRR of RA9184.
2. Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid within the relevant period as provided in the Bidding Documents. The statement shall include, for each contract, the following:
 - a) name of the contract
 - b) date of the contract
 - c) contract duration
 - d) owner's name and address
 - e) nature of work
 - f) contractor's role (whether sole contractor or partner in a JV) and percentage of participation
 - g) total contract value at award
 - h) date of completion or estimated completion time
 - i) total contract value at completion, if applicable;
 - j) Percentages of planned and actual accomplishments, if applicable;
 - k) value of outstanding works, if applicable;
 - l) the statement shall be supported by the notices of award and/or notices to proceed issued by the owners; and
 - m) the statement shall be supported by the Constructors Performance Evaluation System (CPES) rating sheets, and/or certificates of completion and owner's acceptance, if applicable;
3. Valid Philippine Contractors Accreditation Board (PCAB) license or Special PCAB License in case of Joint Ventures, and registration for the type and cost of the contract to be bid.
4. An SLCC that is similar to the contract to be bid, and whose value, adjusted to current prices using the Philippine Statistics Authority (PSA) consumer price indices, must be at least fifty percent (50%) of the ABC. Provided, however, that contractors under Small A and Small B categories without similar experience on the contract to be bid may be allowed to bid if the cost of such contract is not more than the Allowable Range of Contract Cost (ARCC) of their registration based on the guidelines as prescribed by the PCAB.

The SLCC shall be supported by an Owner's Certificate of Final Acceptance issued by the project owner other than the contractor or a final rating of at least Satisfactory in the Constructors Performance Evaluation System (CPES). In case of contracts with the private sector, an equivalent document shall be submitted.

5. Bid security in any of the following:

Form of Bid Security = Amount of Bid Security (Not less than the required percentage of the ABC)

Cash or cashier's/manager's check, issued by a Universal or Commercial bank = 2%

Bank draft/guarantee or irrevocable letter of credit issued by a Universal or Commercial Bank: Provided, however, that it shall be confirmed or authenticated by a Universal or Commercial Bank, if issued by a foreign bank. = 2%

Surety bond callable upon demand issued by a surety or insurance company duly certified by the insurance company duly certified by the Insurance Commission as authorized to issue such security. = 5%

OR Bid Securing Declaration, which states, among others, that the bidder, shall enter into a Contract with the procuring entity and furnish the required performance security within ten (10) calendar days, or less, as indicated in the bidding documents, from the receipt of the Notice of Award, and committing to pay the corresponding fine and be suspended for a period of time from being disqualified to participate in any government procurement activity in the

event it violates any of the conditions stated therein as required in the guidelines issued by the Government Procurement Policy Board (GPPB).

6. Omnibus sworn statement in accordance with Section 25.3 of the IRR of RA 9184 which shall be executed by the prospective bidder or its duly authorized representative

7. Project Requirements:

- ☐ Organizational chart for the contract to be bid;
- ☐ List of contractor's personnel (viz: Project Manager, Project, Engineers, Safety Officers, Materials Engineers, and Foremen, etc.), to be assigned to the contract to be bid, with their complete qualifications and experience data; and
- ☐ List of contractor's equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership or certification of availability of equipment from the equipment lessor/vendor for the duration of the project, as the case may be. The contractor shall have the following equipment:
 1. cargo / dump truck,
 2. rotary driller with bit,
 3. generator set, and
 4. concrete vibrator

8. Proof of payment of bidding documents in the amount of ₱1,000.00

9. Statement of Compliance to all provisions of the Terms of Reference (manner of implementation, qualification, requirements of suppliers / installers, technical specifications)

C. FINANCIAL DOCUMENTS

1. Audited financial statements, showing, among others, the prospective bidder's total and current assets and liabilities stamped "received" by the Bureau of Internal Revenue (BIR) or its duly accredited and authorized institutions, for the preceding calendar year, which should not be earlier than two (2) years from bid submission.

2. The prospective bidder's computation of Net Financial Contracting Capacity (NFCC).

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CLASS "B" DOCUMENT

If applicable, the joint venture bidders shall submit a Joint Venture Agreement in accordance with RA 4566 and its IRR. Each partner of the joint venture shall submit his or her respective PHILGEPS Certificates of Registration in accordance with Section 8.5.2 of the IRR of RA 9184. The submission of technical and financial eligibility documents by any of the joint venture partners constitutes compliance: Provided, that the partner responsible to submit the NFCC shall likewise submit the Statement of all its ongoing contracts and Audited Financial Statements.

The second envelope (Financial Proposal) shall contain the following:

- a) Bid Form, which includes bid prices and bill of quantities
- b) Detailed estimates including a summary sheet indicating the unit prices of construction materials, labor rates and equipment rentals used in coming up with the bid
- c) Cash flow by the quarter and payments schedule

All Financial Proposals that exceed the ABC shall be rejected.

Created by Ma. Luisa C Tenedero

Date Created 19/09/2024

The PhilGEPS team is not responsible for any typographical errors or misinformation presented in the system. PhilGEPS only displays information provided for by its clients, and any queries regarding the postings should be directed to the contact person/s of the concerned party.

To: _____
(Name of Supplier)

Contact Person: _____

Address: _____

Contact no.: _____

RQ No.: 09 – JO – 212

PR / JO No.: JO – 212

Date of RQ: September 18, 2024

Purpose of RQ:
For the repiping of existing water
distribution line of Richgate Square
Phase-3 Subdivision

NOTE: DATA REQUIRED MUST BE FILLED UP COMPLETELY. FAILURE TO INDICATE THE PRICE VALIDITY, TERMS, WARRANTY PERIOD AND DELIVERY PERIOD SHALL MEAN OUTRIGHT DISQUALIFICATION OF BIDS					
	Qty.	Description		U-Price	Total
<div>VALIDITY DATE: _____ day (30 days minimum)</div> <div>DELIVERY: _____ working days _____ calendar days _____ FOB warehouse</div> <div>WARRANTY _____ calendar days upon acceptance.</div> <div>TERMS:</div>	1 lot	Surface Restoration / Paving Works along Richgate Square Phase-3 Subdivision, Camp 7, Baguio City			
		Scope of Work:			
		• Ready Mix Concrete Pouring, 3500psi @ 7 days (including asphalt sealant)	70.00 cu m		
		• Testing of Materials (Compression Test of Concrete Cylinders, and Flexural Test of Concrete Beams	1.00 lot		
		Please refer to the attached Terms of Reference (TOR) for details.			
		Duration: 9 Working Days			
		Approved Budget Cost: ₱709,792.43 / lot			
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2. Mayor's/Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas.					
• In cases of recently expired Mayor's/Business permits, it shall be accepted together with the official receipt as proof that the bidder has applied for renewal within the period prescribed by the concerned local government unit: <i>Provided</i> , That the renewed permit shall be submitted as a post-qualification requirement in accordance with Section 34.2 of the IRR of RA 9184.					

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REQUEST FOR BIDS/QUOTATION (RQ)

Revision No.	03
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2. rotary driller with bit,
3. generator set, and
4. concrete vibrator

8. Proof of payment of bidding documents in the amount of **₱1,000.00**

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All Financial Proposals that exceed the ABC shall be rejected.

By: Supplier or Authorized Representative:_____ (sign over printed name)

Deadline of submission of bids: **October 8, 2024** Opening of bids: **1:30 pm**

Prepared by: *signed* PAUL TRAJANO
OIC - PURCHASING

signed
Noted by: ATTY. MA. LUISA C. TENEDERO
BAC IN-HOUSE

signed
ENGR. REYNALDO C. JAYCO
BAC-TECHNICAL

**BWD RESERVES THE RIGHT TO REJECT BIDS &/OR DECLARE A FAILURE OF BIDDING
PURSUANT TO THE PERTINENT PROVISIONS OF RA 9184**

BWD DOES NOT ENGAGE IN SOLICITATION OF FUNDS FROM ANY INDIVIDUALS OR ENTITIES, AND WE STRONGLY ADVISE AGAINST RESPONDING TO ANY UNAUTHORIZED REQUESTS CLAIMING ASSOCIATION WITH OUR ORGANIZATION.



BAGUIO WATER DISTRICT
"Serving mankind is serving God"

TERMS OF REFERENCE

**SURFACE RESTORATION / PAVING WORKS ALONG
RICHGATE SQUARE PHASE-3 SUBDIVISION, CAMP 7,
BAGUIO CITY**

TECHNICAL SPECIFICATIONS

TABLE OF CONTENTS

STANDARD TECHNICAL SPECIFICATIONS

DIVISION I – GENERAL REQUIREMENTS

Sections:

- 1.1 Mobilization/Demobilization
- 1.2 Material Testing
- 1.3 Permit and Licenses
- 1.4 Personal Protective Equipment (PPE)
- 1.5 Special Items
- 1.6 Terms of Payment
- 1.7 Liquidated Damages
- 1.8 Warranty
- 1.9 Documents Comprising the Bid

DIVISION II – SURFACE RESTORATION AND PAVING

Sections:

- 2.1 General
- 2.2 Materials of Concrete
- 2.3 Controlled Strength of Materials
- 2.4 Method of Determining Strength Trial Batch
- 2.5 Concrete Proportion and Consistency
- 2.6 Exclusion of Water
- 2.7 Ready-Mixed Concrete
- 2.8 Mixing Concrete
- 2.9 Placing Concrete
- 2.10 Care and Repair of Concrete
- 2.11 Finish of Concrete Surfaces
- 2.12 Test on Concrete

STANDARD TECHNICAL SPECIFICATIONS

This specific provision describes the technical requirements, which is basically the elaboration of work items within the scope of work that forms part of the Contract.

DIVISION I – GENERAL REQUIREMENTS

1.1 Mobilization / Demobilization

Mobilization shall include transportation to the site of Contractor's plant, materials provided by him, equipment, employees, furnishings and temporary facilities as defined in this Section.

Demobilization shall include dismantlement and removal from the site of Contractor's plant, materials and equipment and all temporary facilities. Demobilization shall also include clean up of the site after completion of the Contract Work as approved by the BWD Engineer and transportation from the site of Contractor's employees.

1.2 Materials Testing

An independent testing laboratory will be nominated by the Contractor which will be approved by the BWD Engineer. The approved laboratory shall undertake all testing of sample materials required under the various Sections of this Specification. All tests shall be undertaken with the presence of the BWD Engineer. The cost of all tests required in this Contract shall be borne by the Contractor.

1.3 Permit and Licenses

The procurement of all excavation permits and other permits necessary in the project implementation shall be undertaken by BWD including the Restoration Fee/Deposit, which is refundable after 1 year upon completion of the restoration works, thus, in order to have satisfactory quality of work, the Contractor is required to undertake testing of materials that will be used under this Contract.

1.4 Personal Protective Equipment (PPE)

The Contractor shall provide all his workers with complete sets of PPEs such as but not limited to heavy duty gloves, dust mask, reflectorized vest, ear plug/muff, clear safety glasses, and hard hat.

1.5 Special Items

- i. Water Supply - For all operations required in the execution of the Contract, the Contractor shall be responsible for providing ample water supply under a pressure sufficient for all construction purposes.

- ii. Power and Lighting - The Contractor shall make all necessary applications and arrangements and pay all fees and charges for electrical energy for power and light necessary for the proper completion of this Contract during its entire progress. The Contractor shall provide and pay for all temporary wiring, switches, connections, meters and power bills.

There shall be sufficient electric lighting so that all work may be done in a workmanlike manner when there is no sufficient daylight or during night work.

1.6 Terms of Payment

The Contractor may submit a request for payment for work accomplished. Such request for payment shall be verified and certified by the BWD's Representative.

The BWD shall have the right to deduct from the Contractor's progress billing such amount as may be necessary to cover third party liabilities, as well as uncorrected discovered defects in the project.

Payments shall be adjusted by deducting therefore the amounts for advance payments and retention.

1.7 Liquidated Damages

The Contractor shall pay liquidated damages to BWD for each day that the Completion Date is later than the Intended Completion Date. The applicable liquidated damages is at least one-tenth (1/10) of a percent of the cost of the unperformed portion for every day of delay. The total amount of liquidated damages shall not exceed ten percent (10%) of the amount of the contract. BWD may deduct liquidated damages from payments due to the Contractor. Once the cumulative amount of liquidated damages reaches ten percent (10%) of the amount of this Contract, BWD shall rescind or terminate this Contract, without prejudice to other courses of action and remedies available under the circumstances. Likewise, the Contract shall automatically be taken over by BWD or award the same to a qualified contractor through negotiation and the erring Contractor's performance security shall be forfeited.

1.8 Warranty

The work shall be guaranteed against workmanship defects for a period of one (1) year from BWD's date of acceptance. Defects discovered within the 1-year warranty period shall be repaired by the Contractor at his own expense within seven (7) calendar days upon receipt of the notice to be issued by BWD. The obligation for the warranty shall be covered by either retention money equivalent to at least ten percent (10%) of every progress payment. The said amounts shall only be released after the lapse of the warranty period.

1.11 Documents Comprising the Bid

The bidder shall submit together with the financial proposal the following eligibility and technical components:

A. Legal Documents

1. Registration certificate from the Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives.
2. Mayor's/Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas.

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Bank draft/guarantee or irrevocable letter of credit issued by a Universal or Commercial Bank: <i>Provided</i> , however, that it shall be confirmed or authenticated by a Universal or Commercial	2%

Bank, if issued by a foreign bank.	
Surety bond callable upon demand issued by a surety or insurance company duly certified by the insurance company duly certified by the Insurance Commission as authorized to issue such security.	5%
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 - b. List of contractor's personnel (viz: Project Manager, Project Engineers, Safety Officers, Materials Engineers, and Foremen, etc.), to be assigned to the contract to be bid, with their complete qualifications and experience data;
6. Statement of Compliance to all provisions of the Terms and Reference (manner of implementation, qualification, requirements of suppliers / installers, technical specifications).

All Financial Proposals that exceed the ABC shall be rejected.

DIVISION II – SURFACE RESTORATION AND PAVING

2.1 General

The work to be undertaken under this Section shall include all labor, materials, equipment, plant and other facilities and the satisfactory performance of all works necessary to complete all pavement restoration/concreting which shall be provided by the Contractor.

All works under this Section shall comply to the conditions of the Excavation/Digging Permit to be issued by the CEO/DPWH.

The Contractor shall notify BWD three (3) days prior to concrete pouring for the latter to secure a Concrete Pouring Permit from the CEO/DPWH. If the Contractor failed to notify BWD which resulted to failure to secure the Concrete Pouring Permit, the Contractor shall be required to secure again the necessary Excavation/Digging Permit at his own cost in case CEO/DPWH rendered the original as null and void due to the violation.

2.2 Materials of Concrete

a. Cement

Except as may be otherwise provided in these specifications, cement shall conform to the “Standard Specifications for Portland Cement” (ASTM C–150, Latest Revision) and shall be Type I.

b. Concrete–Aggregates

Concrete aggregates shall be well graded, clean, hard particles of gravel or crushed rock conforming to the “Standard Specifications for Concrete Aggregates” (ASTM C–33, Latest Revision).

c. Water

Water used in mixing concrete shall be clean and free from injurious amounts of oils, acids, alkali, organic materials, or other substances that may be deleterious to concrete or steel.

d. Admixture

At the Contractor’s option or at the request of the Engineer, but in either case at the expense of the Contractor, an admixture may be added to the concrete to control the set, effect water reduction, and increase workability. Such admixture may be either a hydroxylated carboxylic and acid type or a hydroxylated polymer type, but shall contain no calcium chloride. The required quantities of cement shall be used in the mix regardless of whether or not any admixture is used. The

quantity of admixture used and the method of mixing shall be in accordance with the manufacturer's instructions. Where the air temperature at the time of placement is expected to be consistently over 26.7°C (80°F), such admixture shall be Super Concrete Emulsion's "Plastiment", "Master Builder's", "Pozzolith 300R", or substitute.

2.3 Controlled Strength of Concrete

Concrete for structural elements such as the road pavement shall develop a 7-days compressive strength of 24.13 MPa (3,500 psi) and a flexural strength of 3.80 MPa (550 psi).

2.4 Method of Determining Strength Trial Batch

The Contractor shall submit design mixes and test results of samples (at least 3 specimens) made in accordance with "Standard Method of making and Curing Concrete Compression and Flexure Test Specimens in the Laboratory" (ASTM C-192, Latest Revision) and "Standard method of Test for Compressive Strength of Molded Concrete Cylinders" (ASTM Designation C-39) for each strength required, stating the proposed slump and the proportional weights of cement, saturated surface dry aggregates, and water. These mixes shall be proved by preliminary tests thirty (30) days before concreting. No substitution shall be made in the materials or mixed without additional tests to show that the quality of concrete is satisfactory. The trial mixes shall be at the expense of the Contractor.

2.5 Concrete Proportion and Consistency

- a. The proportions of aggregate to cement for any concrete shall be such as to produce a mixture which will work readily into the corners and angles of the forms and around reinforcement with the method of placing employed on the work but without permitting the materials to segregate, or excess free water to collect on the surface. The combined aggregates shall be of such composition of sizes that when separated on the Number 4 standard sieve, the weight passing the sieve (fine aggregate) shall not be less than thirty percent (30%) of the total, except that these proportions do not necessarily apply to lightweight aggregates.
- b. Slump test shall be conducted on site before concrete pouring and shall be within the following limits:

Portion of Structure	Slump	
	millimeter	Inches
Road pavement, slabs on grade	50 – 80	2 – 3

Slumps shall be according to "Test of Slump for Portland Cement Concrete" (ASTM C-143).

- c. Job mix adjustments on water content shall be allowed only with the Engineer's permission and provided that cement is also added to maintain the original water-cement ratio of the design mix.

2.6 Exclusion of Water

No concrete shall be placed in any structure until all water entering the space to be filled with concrete has been properly cut off or has been diverted by pipes, or other means, and carried out of the forms, clear of the work. No concrete shall be deposited under water without the explicit permission of the Engineer, and then only in strict accordance with his directions; nor shall the Contractor, without explicit permission, allow still water to rise on any concrete until the concrete has attained its initial set. Water shall not be permitted to flow over the surface of any concrete in such a manner and at such velocity as will injure the surface finish of the concrete. Pumping or other necessary dewatering operations for removing ground water, if required, will be subject to the approval of the Engineer.

2.7 Ready-Mixed Concrete

- a. All concrete for structural elements shall be ready-mixed meeting the requirements as to materials, batching, mixing, transporting, and placing as specified herein and in the requirements of the "Specifications for Ready-Mixed Concrete" (ASTM C-94), including the supplementary requirements specified in Subsections (b) through (g) herein.
- b. Ready-mixed concrete shall be delivered to the site of the work, and discharge shall be completed within one hour after the addition of the cement to the aggregates or before the drum has been revolved 250 revolutions, whichever is first. In hot weather, or under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 29.44°C (85°F) or above, the time between the introduction of the cement to the aggregates and discharge shall not exceed forty-five (45) minutes.
- c. Truck mixers shall be equipped with electrically actuated counters by which electrically actuated counters by which the number of revolutions of the drum or blades may be readily verified may readily verify the number of revolutions of the drum or blades. The counter shall be of the resettle, recording type and shall be amounted in the driver's cab. The counters shall be actuated at the time of starting mixers at mixing speeds.
- d. Each batch of concrete shall be mixed in a truck mixer for not less than seventy (70) revolutions of the drum or blades at the rate of rotation designated by the manufacturer of the equipment as agitating speed. All materials including mixing water shall be in the mixer drum before actuating the revolution counter for determining the number of evolutions of mixing.
- e. Truck mixers and their operation must be such that the concrete throughout the mixed batch as discharged is within acceptable limits of uniformity with respect to consistency, mix, and grading. If slump tests taken at approximately the $\frac{1}{4}$ and $\frac{3}{4}$ points of the load during discharge give slumps differing by more than 25 mm (1 in.) when the specified slump is more than 76 mm (3 in.) or less, or if they differ by more than 50 mm (2 in.) when the specified slump is more than 76 mm (3 in.), the mixer shall not be used on the work unless the causing condition is corrected and satisfactory performance is verified by additional slump tests. All

mechanical details of the mixer, such as water measuring and discharge apparatus, condition of the blades, speed rotation, general mechanical condition of the unit, and clearance of the drum, shall be checked before a further attempt to use the unit will be permitted.

- f. Each batch of ready-mixed concrete delivered at the job site shall be accompanied by a ticket furnished to the Engineer and showing volume of concrete, the weight of cement in kilograms (pounds), and total weight of all ingredients in kilograms (pounds). The ticket shall also show the time of day at which the materials were batched.
- g. The use of non-agitating equipment for transporting ready-mixed concrete will not be permitted. Combination truck and trailer equipment for transporting ready-mixed concrete will not be permitted. The quality and quantity of materials used in ready-mixed concrete and in batch aggregates shall be subject to continuous inspection at the batching plant by the BWD Engineer.

2.8 Mixing Concrete

- a. Hand mixing shall only be allowed for non-structural elements such as cradles, unreinforced encasements, thrust blocks, and partition walls.
- b. Re-tempering, i.e., re-mixing with the addition of water to concrete that has been partially hardened will not be permitted.

2.9 Placing Concrete

- a. Concrete which upon or before placing is found not to conform with the requirements specified herein shall be rejected and immediately removed from the work. Concrete which is not placed with the accordance with these specifications, or which is of inferior quality, as determined by the Engineer, shall be removed and replaced by and at the expense of the Contractor. No concrete shall be placed except in the presence of a duly authorized representative of the BWD Engineer. Concrete shall not be placed when unsuitable heat or wind conditions will prevent proper placement and curing, as determined by the BWD Engineer. Prior to placing any concrete, the contractor shall give the BWD Engineer twenty-four (24) hours written notice.
- b. Concrete shall be deposited in its final position without segregation, re-handling, or flowing. Placing shall be done preferably with buggies, buckets, or wheelbarrows. No chutes will be allowed except to transfer concrete from hoppers to luggies, wheelbarrows, or buckets in which case, they shall not exceed six (6) meters (20 ft) in aggregate length.
- c. Placing of the concrete with a free drop or fall more than 1.20 meters (4 ft) shall not be allowed, except when approved by the BWD Engineer and when approved sheet metal conduits, pipes, or "elephant trucks" are removed. When employed, these conveyors shall be kept full of concrete and the ends kept buried in the newly placed concrete as pouring progresses.
- d. Concrete in forms shall be deposited in uniform horizontal layers not deeper than 450 mm (18 in) and care shall be taken to avoid inclined layers or inclined

construction joints except where such are required for sloping members. Each layer shall be placed while the previous layer is still soft. The rate of placing concrete in forms shall not exceed 1.5 meters (5 ft) of vertical rise per hour.

2.10 Care and Repair of Concrete

The Contractor shall protect all concrete against injury or damage from excessive heat, lack of moisture, overstress, or any other cause until final acceptance by the owner. Particular care shall be taken to prevent the drying of concrete and to avoid roughening or otherwise damaging the surface. Any concrete to be damaged or which may have been originally defective, or which becomes defective at any time prior to the final acceptance of the complete work, or which departs to the final acceptance of the complete work, or which departs from the established line or grade, or which for any other reason does not conform with the Specifications, shall be satisfactorily repaired or removed and replaced with acceptable concrete at the Contractor's expense.

2.11 Finish of Concrete Surfaces

- a. All finished or formed surfaces shall conform accurately to the shape, alignment, grades and sections as indicated on the plans or as prescribed by the Engineer. Surfaces shall be free from fins, bulges, ridges, offsets, honeycombing, or roughness of any kind, and shall present a finished, smooth, continuous hard surface.
- b. Except as otherwise provided herein, unformed top surfaces of concrete shall be brought to uniform surfaces and worked with suitable tools to a reasonably smooth wood float finish. Excessive floating of surfaces while the concrete is plastic will not be permitted.

2.12 Test on Concrete

- a. At least one (1) set of samples consisting of three (3) concrete cylinders, 150mm x 300mm in size, and three (3) concrete beam specimens shall be taken from each batch of concrete placed each day, and each set to represent not more than 75 cubic meter of concrete.

Samples shall be secured and molded in accordance with "Standard Method of Sampling Fresh Concrete" (ASTM C-172 – Latest Revision) and "Standard Method of Making and Curing Test Specimens in the Field" (ASTM C-31 – Latest Revision). Strength test shall be made in accordance with the "Standard Method of Test for Compressive Strength of Cylindrical Concrete Specimens" (ASTM C-39 – Latest Revision).

The Contractor shall provide the samples to be taken at the place of deposit and as specified by the BWD Engineer and shall also box samples for shipment, packing them to prevent damage from sharp blows. The Contractor together with the BWD Engineer shall transport the test cylinders to a laboratory for testing.

The required compressive strength and flexural strength of the concrete shall be 3,500psi and 550 psi, respectively, at 7-days curing period.

- b. All three (3) specimens of a set of samples shall be subjected to the 7-day test requirement and all must attain the target design strength. If one specimen fails to give the required minimum strength, the BWD shall have the right to order the “remove and replace” of poured concrete.

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