



*City of Alamogordo*

Purchasing Department 2600 N Florida Avenue Alamogordo NM 88310 (575) 439-4115 Fax (575) 439-4117

February 2, 2020

To Whom It May Concern:

The City of Alamogordo is requesting sealed bids for providing the City with Concrete as per attached specifications.

**REQUIREMENTS;**

1. This will be a Multi-Term contract for one year, with an option to renew for three additional years. You must bid a firm price for all contract years which will be subject to the escalator provision contained in the Instructions and Conditions. Contract renewal must be agreeable between both parties at the end of each year. The first period of performance is March 23, 2020 through March 23, 2021.
2. The City reserves the right to reject any or all offers and to waive informalities and minor irregularities in bids received.
3. The specifications of acceptable products are not intended to be comprehensive specifications, or in any order of preference. The bidder may offer any products that comply with the governing specifications that are considered equivalent to that which are indicated or specified.
4. Prices shall be filled in for all items on the Bid Schedule. The Bid Schedule must be completed in ink. The address and telephone number must be completed. Any Bid not duly signed will be considered non-responsive. The Non-Collusion Affidavit (Attachment "A") and Campaign Contribution Disclosure form (Attachment "B") must be submitted with the bid proposal. Failure to submit either of these forms with the bid proposal may result in disqualification of the bid. The Resident Veterans Preference Certification and form (Attachment "C") shall be submitted if the bidder intends to invoke said preference.

Sealed bids will be received no later than 2:00 p.m., February, 19, 2020 at the Office of the Purchasing Manager located at 2600 N. Florida Avenue, Alamogordo, NM 88310. The City Commission at their regularly scheduled meeting will make an award of the bid. Please mark clearly on the outside of your sealed bid "IFB# 2020-02, Concrete".

**CITY OF ALAMOGORDO**  
**INSTRUCTIONS AND CONDITIONS**

These Instructions and Conditions are meant to coincide with bids. Several bids have individual requirements. Where there is no mention of specific requirements, these Instructions and Conditions shall govern.

**1. PREPARATION OF BID**

- A. Unit prices for each unit offered shall be shown unless otherwise specified. In case of a discrepancy between a unit price and an extended price, the unit price will prevail.
- B. Bidders must state a definite time for delivery of supplies or performance of services, unless otherwise specified in the bid. Time, if stated in number of days, will include Saturdays, Sundays, and holidays.
- C. Specifications within this IFB are not meant to exclude any bidder or manufacturer. Where a product characteristic of a sole manufacturer, or where a "Brand Name" is indicated, it will be defined to mean "Acceptable Level" or "Quality Required" by the City of Alamogordo, unless "No Substitute" is indicated.

**2. AMENDMENTS OR CHANGES TO BIDS**

- A. Any explanation desired by a bidder regarding the meaning or interpretation of a bid, specifications, etc., must be requested in writing, and with sufficient time allowed for a reply to reach the bidder before the opening date. Verbal explanations or instructions given prior to opening of the bid will not be binding.
- B. Occasionally, the City will issue amendments to IFB's after they are mailed to vendors. The amendment will become part of the IFB, and must be attached to the bid proposal.

**3. SUBMISSION OF BIDS**

- A. Bids must be mailed or hand carried to the City Purchasing Department, 2600 N. Florida Ave., Alamogordo, NM 88310. The envelope must be sealed with the name of bidder, IFB number, and date of opening shown on the outside.
- B. The City of Alamogordo will not be responsible for bids which are mailed in. Bids faxed to the Purchasing Department will not be accepted as a sealed bid.
- C. Every effort will be made to begin reading bids at exactly the time specified. However, since it is impossible to begin on the exact second, bids will be accepted until the first envelope is opened. Bids received after the opening of the first envelope will not be considered, and will be returned unopened to the bidder.

D. Bidder must submit name of manufacturer, model name or number, specifications, and applicable guarantees to the City of Alamogordo Purchasing Department, 2600 N. Florida Ave., Alamogordo, NM 88310.

E. Prices shall be filled in for all items on the Bid Schedule. The Bid Schedule must be completed in ink. The address and telephone number must be completed. Any Bid not duly signed will be considered non-responsive.

F. The following Bid documents are to be submitted. (If Applicable):

1. Bid Schedule
2. **Manufacturer, Model Name or Number with Submittals**
3. Campaign Contribution Form – Signed (Attachment A)
  
4. If Claiming Preference (If Applicable)
  - a. New Mexico Resident Veterans - Form (Attachment B) and Certificate
  - b. New Mexico In-State Business - Certificate
  - c. Local Business Preference – Business License

#### 4. MODIFICATION OR WITHDRAWAL OF BID

- A. Bidders may modify or withdraw their bids by written or telegraphic notice prior to the date and time of the bid opening.
- B. A bid may be withdrawn in person at any time before the bid opening provided a receipt is signed by the bidder or his authorized representative.

#### 5. AWARD OF BID

- A. This IFB will be awarded to the responsible vendor whose bid is the most advantageous to the City of Alamogordo, price and other factors considered.
- B. The City of Alamogordo reserves the right to reject any or all bids and to waive informalities and minor irregularities in bids received.
- C. This IFB and award is contingent upon available funding.
- D. The City may accept any item or group of items of any bid, unless the bidder qualifies its bid by specific limitations.
- E. Tax exemption certificates will be provided, if necessary, by the Purchasing Department.
- F. In case of default by the bidder, the City shall have the right to cancel and to repurchase from other sources, and will take recourse as provided by law.

- G. A notice of award and/or purchase order mailed, or otherwise provided to the successful bidder will result in a binding contract without further action by either party.
- H. The bidder, if its bid is accepted, hereby expressly binds itself to defend, indemnify, and save harmless the City, its agents, servants, and employees from all claims, suits, and actions of every nature and description brought against the City or its agents. This pledge to indemnify applies to providing materials, equipment, supplies, services, contractual construction, or contractual demolition done by the bidder pursuant to the IFB or by reason of any act or omission, misfeasance of the bidder, its agents, servants, or employees. This paragraph shall equally apply to injuries to bidder's employees.

**IN ADDITION TO THE INSTRUCTIONS AND INFORMATION STATED, THE LINES MARKED BELOW ARE APPLICABLE TO THIS IFB:**

Each bid MUST be accompanied by a cashier's check, certified check, or bid bond in the amount of five percent (5%) of the total amount bid. This is a guarantee that the bidder, if awarded the contract, will furnish the material as bid. If a cashier's check, certified check, or bid bond is not provided as required, the bid will be rejected.

Successful bidder will be required to submit a performance bond in the amount of 100% of the total amount bid after notification of award.

XX Your bid must be a firm price for the quantities and/or time specified.

Successful bidder will be required to submit a payment bond in the amount of 50% of the total bid.

## SPECIAL CONDITIONS

1. All orders are F.O.B.: City of Alamogordo, Central Receiving, 2600 N. Florida Ave., Alamogordo, NM 88310, unless otherwise specified in the IFB.
2. Cost of freight will be incurred by the vendor and will therefore be reflected in the bid amount(s) quoted. All items will be F.O.B. location cited in bid or quote. Failure to include freight costs may result in rejection of the bid or quote.
3. Deliveries to 2600 N. Florida Avenue may be made between the hours of 8:00 a.m. to 12:00 a.m., and 1:00 p.m. to 3:00 p.m.
4. No partial deliveries will be accepted on any one item; deliver complete.
5. City purchase order numbers and vendor stock numbers shall appear on all invoices, packing slips, and the outside of all inventory shipping containers (boxes, pallets, or tag the material itself).
6. Bids will be awarded by unit of issue, not by packaging, or casing of vendor. Exceptions will be made by Central Receiving personnel, who will have the option to accept or reject any or all items.
7. Packing slips must accompany all shipments and indicate the purchase order number.
8. Vendor will provide current copies of all manufacturer specifications and warranties. Failure to include such information may result in rejection of the bid or quotation.
9. Include any written manufacturer guarantees and warranties. Also, include any written guarantees or warranties from the bidder.
10. Bid the closest unit manufacturer's quantity unit pack without breaking the manufacturer's standard pack. Indicate the difference in your bid by circling our quantities being changed and placing your bid to the left of our quantity.

## 11. TRADE NAMES OR EQUALS:

Whenever in the specifications, any particular materials, process and/or equipment is indicated or specified by patent, proprietary, or brand name, or by name of manufacturer, such wording shall be deemed to be used for the purpose of facilitating description of the material, process, and/or equipment desired, and shall be deemed to be followed by the words "or equal". The lists of acceptable material are not intended to be comprehensive lists, or in any order of preference. The bidder may offer any material, process, and/or equipment which comply with the governing specifications which the bidder considers to be equivalent to that which is indicated or specified.

12. The City of Alamogordo reserves the right to award in total or by group of items, on the basis of individual items, or any combination of these which is in the best interest of the City.
13. Delivery is requested within 30-45 days after the receipt of the purchase order, unless otherwise stated in the IFB.
14. Notify Central Receiving at (575) 439-4242, at least one working day prior to delivery.
15. All questions about the meaning or intent of the Contract Documents shall be submitted via fax (575) 439-4117 or e-mail bpyeatt@ci.alamogordo.nm.us. **Questions received after 12:00 p.m. on February 12, 2020 will not be answered.** Submitted questions will be answered by formal written addenda and will be binding. Oral clarification will not be binding.
16. Any contract over \$20,000.00 "for the construction, alteration, improvement or repair of any public building, structure or highway, or for any public work" requires the furnishing of a labor and materialman's payment bond under Section 13-4-18 NMSA 1978, the "Little Miller Act".
17. If this bid involves the employment of mechanics or laborers, and no bids under \$60,000.00 are received, the project will be re-bid under the New Mexico Public Works Minimum Wage Act.

## CAMPAIGN CONTRIBUTION DISCLOSURE FORM

Pursuant to Chapter 81, Laws of 2006, any prospective contractor seeking to enter into a contract with any state agency or local public body must file this form with that state agency or local public body. The prospective contractor must disclose whether they, a family member or a representative of the prospective contractor has made a campaign contribution to an applicable public official of the state or local public body during the two years prior to the date on which the contractor submits a proposal or, in the case of a sole source or small purchase contract, the two years prior to the date the contractor signs the contract, if the aggregate total of contributions given by the prospective contractor, a family member or a representative of the prospective contractor to the public official exceeds two hundred and fifty dollars (\$250) over the two year period.

THIS FORM MUST BE FILED BY ANY PROSPECTIVE CONTRACTOR WHETHER OR NOT THEY, THEIR FAMILY MEMBER, OR THEIR REPRESENTATIVE HAS MADE ANY CONTRIBUTIONS SUBJECT TO DISCLOSURE.

The following definitions apply:

**"Applicable public official"** means a person elected to an office or a person appointed to complete a term of an elected office, who has the authority to award or influence the award of the contract for which the prospective contractor is submitting a competitive sealed proposal or who has the authority to negotiate a sole source or small purchase contract that may be awarded without submission of a sealed competitive proposal.

**"Campaign Contribution"** means a gift, subscription, loan, advance or deposit of money or other thing of value, including the estimated value of an in-kind contribution, that is made to or received by an applicable public official or any person authorized to raise, collect or expend contributions on that official's behalf for the purpose of electing the official to either statewide or local office. "Campaign Contribution" includes the payment of a debt incurred in an election campaign, but does not include the value of services provided without compensation or un-reimbursed travel or other personal expenses of individuals who volunteer a portion or all of their time on behalf of a candidate or political committee, nor does it include the administrative or solicitation expenses of a political committee that are paid by an organization that sponsors the committee.

**"Contract"** means any agreement for the procurement of items of tangible personal property, services, professional services, or construction.

**"Family member"** means spouse, father, mother, child, father-in-law, mother-in-law, daughter-in-law or son-in-law.

**"Pendency of the procurement process"** means the time period commencing with the public notice of the request for proposals and ending with the award of the contract or the cancellation of the request for proposals.

**"Person"** means any corporation, partnership, individual, joint venture, association or any other private legal entity.

**“Prospective contractor”** means a person who is subject to the competitive sealed proposal process set forth in the Procurement Codes or is not required to submit a competitive sealed proposal because that person qualifies for a sole source or a small purchase contract.

**“Representative of a prospective contractor”** means an officer or director of a corporation, a member or manager of a limited liability corporation, a partner of a partnership or a trustee of a trust of the prospective contractor.

DISCLOSURE OF CONTRIBUTIONS:

Contribution Made By: \_\_\_\_\_  
Relation to Prospective Contractor: \_\_\_\_\_  
Name of Applicable Public Official: \_\_\_\_\_  
Date Contribution(s) Made: \_\_\_\_\_  
Amount(s) of Contribution(s): \_\_\_\_\_  
Nature of Contribution(s): \_\_\_\_\_  
Purpose of Contributions(s): \_\_\_\_\_

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title (position)

**--OR--**

**NO CONTRIBUTIONS IN THE AGGREGATE TOTAL OVER TWO HUNDRED FIFTY DOLLARS (\$250) WERE MADE** to an applicable public official by me, a family member or representative.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title (Position)



## **Bidder Preferences**

### **Resident Veterans Preference**

To receive a Veterans Preference pursuant to Section 13-1-21 and 13-1-22 NMSA 1978, a resident veteran's business shall submit with its bid a copy of a valid "Resident Veterans Preference Certification" issued by the Taxation and Revenue Department. For the purpose of awarding, the State of New Mexico General Services Department Purchasing Division Policy Memo FY13-001 shall apply to a bid submitted by a resident veterans business. For information on obtaining a Resident Veterans Preference Certificate, the bidder should contact the State of New Mexico Taxation and Revenue Department, P.O. Box 5373, Santa Fe, NM 87502-5374, telephone (505) 827-0951.

#### **Certificate and Attachment "B" Must accompany submitted Bid Documents**

**Is Veterans Preference being claimed? \_\_\_\_\_ YES      \_\_\_\_\_ NO**

### **In State Contractor Preference**

To receive a resident contractor preference pursuant to Section 13-4-2 NMSA 1978, a contractor shall submit with its bid a copy of a valid resident contractor certificate issued by the taxation and revenue department. For the purpose of awarding, a bid submitted by a resident contractor shall be deemed to be five percent lower than the bid actually submitted. Revenue Department, P.O. Box 5373, Santa Fe, NM 87502-5374, telephone (505) 827- 0951.

#### **Certificate Must accompany submitted Bid Documents**

**Is In-State Contractor Preference being claimed? \_\_\_\_\_ YES      \_\_\_\_\_ NO**

### **Residential Preference**

Effective March 20, 2015, the Alamogordo City Commission adopted Ordinance No. 1490 establishing Bid evaluation criterion for area businesses. Any business licensed in New Mexico, with a current business registration from the City of Alamogordo, with fixed offices or distribution points within fifteen (15) miles of the city limits of Alamogordo and able to furnish evidence of payment of New Mexico Gross Receipts tax shall qualify. If the Bid from the local business multiplied by 0.90 is less than or equal to the lowest responsible BIDDER, who does not qualify as a local business, the Contract will be offered to the local business at the same price as the lowest Bid. Acceptance of the offer is optional for the local business. If the area business rejects the offer, the Contract will be Awarded to the lowest responsible BIDDER.

Such acceptance by the area business must be in writing and signed by a principal officer of the firm. In addition, the acceptance package must include an affidavit that the area business meets the criterion set forth in the ordinance and an adjusted Bid Schedule such that the grand total is equal to the lowest BIDDER's Price.

An area business is one which:

Is authorized to do and is doing business under the laws of the state;

Possesses a current city business registration;

Maintains fixed offices or distribution points within fifteen (15) miles of the corporate limits of the city. Post office box numbers of residential addresses may not be used solely to establish status as an area business; and

Agrees to furnish evidence, in a form suitable to the city, of its payment of New Mexico gross receipts tax.

In addition to any other criteria that may be used in evaluating a competitive bid, a criterion will be applied for any business that meets the above requirements in awarding a contract for purchase of goods, services, or construction.

Please use link to view complete Ordinance No. 1490 Local Preference.

<http://ci.alamogordo.nm.us/Assets/Ordinance+No.+1490.pdf>

**Is Residential Preference being claimed? \_\_\_\_\_ YES          \_\_\_\_\_ NO**  
**City Registration Number Must be entered.**

City Business Registration No.

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**Attachment B**

**RESIDENT VETERANS PREFERENCE CERTIFICATION**

\_\_\_\_\_(NAME OF CONTRACTOR) hereby certifies the following in regard to application of the resident veterans preference to this procurement:

**Please check one box only**

I declare under penalty of perjury that my business prior year revenue starting January 1 ending December 31 is less than \$1M allowing me the 10% preference discount on this solicitation. I understand that knowingly giving false or misleading information about this fact constitutes a crime.

I declare under penalty of perjury that my business prior year revenue starting January 1 ending December 31 is more than \$1M but less than \$5M allowing me the 8% preference discount on this bid or proposal. I understand that knowingly giving false or misleading information about this fact constitutes a crime.

I declare under penalty of perjury that my business prior year revenue starting January 1 ending December 31 is more than \$5M allowing me the 7% preference discount on this bid or proposal. I understand that knowingly giving false or misleading information about this fact constitutes a crime.

“I agree to submit a report, or reports, to the State Purchasing Division of the General Services Department declaring under penalty of perjury that during the last calendar year starting January 1 and ending on December 31, the following to be true and accurate:

“In conjunction with this procurement and the requirements of this business application for a Resident Veteran Business Preference/Resident Veteran Contractor Preference under Sections 13-1-21 or 13-1-22 NMSA 1978, when awarded a contract which was on the basis of having such veterans preference, I agree to report to the State Purchasing Division of the General Services Department the awarded amount involved. I will indicate in the report the award amount as a purchase from a public body or as a public works contract from a public body as the case may be.

“I understand that knowingly giving false or misleading information on this report constitutes a crime.”

I declare under penalty of perjury that this statement is true to the best of my knowledge. I understand that giving false or misleading statements about material fact regarding this matter constitutes a crime.

\_\_\_\_\_  
(Signature of Business Representative)\*

\_\_\_\_\_  
(Date)

\*Must be an authorized signatory for the Business.

The representations made in checking the boxes constitutes a material representation by the business that is subject to protest and may result in denial of an award or unaward of the procurement involved if the statements are proven to be incorrect.

# **SPECIFICATIONS**

## **PORTLAND CEMENT CONCRETE**

### **1.0 DESCRIPTION**

This Specification consists of furnishing Portland cement concrete in substantial compliance with the Specifications herein.

### **1.1 CLASSIFICATION/DEFINITION**

The following classes of concrete are included in these Specifications.

**Table 03-033-A  
Concrete Classes for Design of Concrete Mixtures**

<b>Class</b>	<b>Use</b>	<b>** Compressive Strength at 28 Days (Production)</b>	<b>Maximum Allowable Design Slump</b>	<b>Percent Air Content</b>
A	Cast-in-Place Structural	3000 psi	4.5 in	6% ±2
AA		4000 psi	4.5 in	
D	Non-Structural	2500 psi	4.5 in	---
E	Slip Form Structural	2500 psi	2.5 in	6% ±2
F		3000 psi	2.5 in	
HPD	Bridge Decks	Submit per Project	-	-

\*\* Maximum over design strength is 50%. Maximum under design strength is 5%.

## **2.0 CONCRETE MIX DESIGN**

### **2.1 MIX DESIGN SUBMITTAL**

A request for substitute concrete mixture design(s) approval shall be submitted to the CITY ENGINEER. Each request shall have the Stamp of the Professional Engineer, who is currently registered by the State of New Mexico, who is principally responsible for the concrete mixture design Work. All substituted concrete mix designs must be submitted for review and re-approval on an annual basis, unless an extension is granted in accordance with the provisions contained herein. The mix design submittal shall accompany the requester's written request for review and approval, and shall include, at a minimum, the following:

1. Comprehensive list of all materials used in the mixtures, and the properties of each of the components, including:
  - a. Aggregates
    - i. Coarse and fine aggregate source name(s)
    - ii. Specific location of coarse and fine aggregate source(s)

- iii. For new sources a complete ASTM C 295 “Petrographic Examination of Aggregates for Concrete” and an ASTM C 294 “Constituents of Natural Mineral Aggregates” for both the coarse and fine aggregate material must be submitted after all processing and manufacturing procedures have been completed and the aggregate is ready for use in a concrete mixture design. The report must include the geologic origin of the material. The analysis is to be performed and certified by an approved petrographer.
  - iv. Soundness loss (coarse and fine aggregates) with calculations
  - v. Percent of fractured faces for the coarse aggregate
  - vi. Gradations for the coarse and fine aggregate, including AASHTO T 11
  - vii. Bulk saturated surface dry (SSD) specific gravities (coarse and fine aggregates)
  - viii. Los Angeles wear abrasion
  - ix. Fineness modulus (fine aggregate)
  - x. Aggregate absorption (coarse and fine aggregate)
  - xi. Aggregate correction factor
  - xii. Sand equivalent of fine aggregate
  - xiii. Dry-rodded unit weight of the coarse aggregate
  - xiv. Clay lumps content of the fine aggregate
  - xv. Organic impurities content, including soft fragments, coal and lignite, flat or elongated pieces and other deleterious substances
- b. Cement
    - i. ASTM C 150 Analysis
    - ii. Chemistry and physical properties of the cement, including the amount of C3S, C2S, C3A, the amount finer than No. 325 sieve and the Blaine Fineness
    - iii. Cube strengths
- c. Fly Ash
    - i. ASTM C618 Analysis
    - ii. Specific gravity
    - iii. Material retained on the No. 325 sieve
    - iv. Moisture content
    - v. Loss on ignition
    - vi. Magnesium oxide content
    - vii. Calcium oxide content
- d. Blended Cement
    - i. ASTM C 595/C 1157 Analysis
    - ii. Chemistry and physical properties of the cement, including the percentage of C3S, C2S, C3A, the amount finer than No. 325 Sieve and the Blaine Fineness

- iii. Total alkalis
    - iv. ASTM C 618 Analysis
      - v. Documentation of percent of fly ash added to cement
  - e. Admixtures
    - i. Documentation of compliance with appropriate ASTM requirements
    - ii. Verification of supply availability
  - f. Water
- 2. Concrete mixture proportions for each class of concrete for which approval is being requested. If the supplier is submitting under the combined gradation provisions, this must be clearly stated on the submittal.
- 3. Water/cementitious ratio for each concrete mixture design
- 4. Type and amount of admixtures used in each mixture design (admixtures must be on the approved materials list).
- 5. Water source and location (including pH, available alkalis, and a full chemical analysis, if the water source is not a certified NMED public potable water supply)
- 6. Material test results documenting the required properties of the fresh and hardened concrete, including:
  - a. Plastic concrete
    - i. Ambient air temperature
    - ii. Concrete temperature
    - iii. Slump (in the case where super-plasticizer is used, the slump before and after addition of the super-plasticizer)
    - iv. Unit weight
    - v. Air content measured in accordance with AASHTO T 152 "Air Content of Freshly Mixed Concrete by the Pressure Method" or AASHTO T 196 "Air Content of Freshly Mixed Concrete by the Volumetric Method" (if super-plasticizer is used, show the measured air content before and after the super-plasticizer has been added)
  - b. Hardened Concrete (for new mixes)
    - i. Compressive strength tests (the average of three cylinders tested at the ages of 7, 28 and 56 days, except for Class E and Class F which will have two cylinders tested at 7, 14, 28 and 56 days)
    - ii. Type of fracture of each cylinder
    - iii. Durability factor (for structural mixes only)
    - iv. Hardened air void analysis (for structural mixes only)
    - v. Rapid chloride penetrability (for structural mixes only)
    - vi. Expansion data from AASHTO T 303
  - c. Hardened concrete (for existing mixes)

- i. Consecutive compressive strength data with individual specimen test results from 7, 28 and 56 days (at least 15 tests required). This data will be presented in chronological order
  - ii. Type of fracture of each cylinder
  - iii. Durability factor (for structural mixes only)
  - iv. Hardened air void analysis (for structural mixes only)
  - v. Rapid chloride penetrability (for structural mixes only)
  - vi. Expansion data from AASHTO T 303
7. Incidental concrete mixes defined as concrete mixes intended for Projects for which less than three hundred (300) cubic yards of each class of concrete is anticipated, but not more than seven hundred fifty (750) cubic yards for all concrete used on the Project:
- a. Compressive strength data (field performance data if the mix has been used within the previous twelve (12) months, or laboratory mix performance data if it has not been used in the field)
  - b. Air content, as measured by the pressure method or the volumetric method. If perplasticizer is used, show the air before and after the superplasticizer has been added

After all of the documentation has been received by the City Engineer, a minimum of ten (10) working days shall be allowed for the review of the mixture design submittal packages. If the documentation verifies compliance with the City's requirements, the designs will be approved for a period of one (1) year from the date of issuance. A minimum of thirty (30) days before the anniversary of an approved mixture design issuance, the Supplier may request that the mixture design(s) be reissued. The Supplier must provide test reports showing that the mixture design(s) met all Specification requirements during the issue period. The ready-mix concrete Supplier may request that existing mixture designs be re-issued for an additional two (2) years, so that the total approval period for any individual mix design does not exceed three (3) years. This approval period will be granted if documentation is provided to prove that:

- 1. All constituent materials and the material's properties remain the same.
- 2. The compressive strength performance criteria described in Section 1.1, "Classification", are satisfied.
- 3. All other fresh and hardened properties are met on all projects that the mixture has previously been used on.
- 4. The coefficient of variation (CV), determined in accordance with ACI 214, for all concrete produced from any production facility used to supply concrete is less than twelve (12) percent. If field performance data shows that the Coefficient of Variation exceeds twelve (12) percent, the supplier must submit a written Comprehensive Operations QC/QA Manual that will reduce the variability of his production process and improve the dependability.

If the constituent materials change, it will be the Supplier's responsibility to provide the necessary documentation to the City Engineer describing resolution to the problem.

Either the Supplier will return the affected material to the approved condition, or a new concrete mixture design package must be submitted for approval. If the compressive strengths do not comply with City requirements, the Supplier will adjust the quality

control system, the concrete mixture proportions, the mixture ingredients, or a combination of the above. A written summary of the Supplier's resolution will be submitted for approval. The subject concrete mixture may not be used until written approval from the City Engineer is received by the Supplier. Simply adding additional cement will not be considered a sufficient explanation or resolution without additional documentation explaining why other measures are not required.

### **3.0 MATERIALS**

All materials shall be tested in accordance with applicable AASHTO and ASTM methods or other test procedures designated by the City Engineer. All questions pertaining to the interpretation of test procedures shall be decided by the City Engineer. Material that is improperly graded or segregated, or fails to meet the requirements herein provided, shall be corrected or removed and disposed of immediately as directed by the CITY REPRESENTATIVE.

The Supplier shall use pre-approved materials. No change in the source or character of the materials shall be made without due notice and written approval from the City Engineer.

### **3.1 PORTLAND CEMENT CONCRETE**

Portland cement concrete shall be "low-alkali" and shall meet the requirements of ASTM C 150 for the type required. Unless otherwise approved Type II, Low-Alkali cement shall be furnished.

Acceptance of Portland cement will be based on certification of approved sources and satisfactory test results on project verification samples. Cement from a particular source or Supplier must be pre-approved by the City Engineer before being used in Portland cement concrete. The request for source approval shall include the following information:

1. The name of the Supplier or company
2. Location of the cement plant
3. Type and capacity of storage facilities
4. Average and maximum production capabilities
5. Production procedures
6. Details regarding the in-house Quality Control Program, including the following:



- a. Routine sampling and testing frequency
  - b. Documentation that the laboratory responsible for the certified ASTM C 150, ASTM C 595, and ASTM C 1157 test results is currently participating in the Cement & Concrete Reference Laboratory (CCRL) proficiency sample and the pozzolanic inspection programs. Additionally, the laboratory shall submit a copy of their letter authorizing CCRL to send a copy of their inspection programs and proficiency result reports directly to the City.
  - c. Measures taken to ensure that cement not meeting Specification requirements is kept separated from other cement meeting these Specifications.
7. Copies of test reports showing results obtained in the Quality Control Program for the previous six (6) months, including at least one (1) comprehensive ASTM C 150 analysis for each month.
  8. Sources approved by the New Mexico Department of Transportation Materials Bureau will be accepted as approved materials.

### **3.1.1 Withdrawal of Source Approval**

Source approval may be revoked for any of the following reasons:

1. If there is a change in equipment or production procedures from those shown in the original request for approval.
2. If a Project sample fails to comply with Specification requirements.
3. If the chemistry and/or physical properties vary more than allowed, per this Specification.
4. If a source becomes inactive for a period of three (3) months or more.

All cement for any given structure shall be manufactured at the same production facility unless otherwise approved by the CITY ENGINEER. Source changes in cement will only be allowed upon written request by the Supplier to the CITY ENGINEER for written approval. Compliance with ASTM C 150 is not sufficient documentation to verify equivalence of the proposed cement. Proof that the proposed cement produces concrete in which all of the hardened properties are equal to, or better than, the original cement must be provided before approval can be issued.

## **3.2 BLENDED PORTLAND FLY ASH CEMENT**

Blended Portland fly ash cement shall meet the requirements of ASTM C 595 and ASTM C 1157 and shall consist of Portland cement uniformly blended with fly ash, either by inter-grinding the Portland cement and fly ash or by blending the Portland cement and the fly ash. The Portland cement and the fly ash shall meet the requirements of their individual respective Specifications. The cement producer shall provide proof that the blended Portland fly ash cement contains a minimum twenty (20) percent and maximum twenty-five (25) percent of fly ash (by weight of the cement only).

### **3.2.2 Approval of Blended Portland Fly Ash Cement Source**

The prospective blended Portland fly ash cement Supplier shall furnish acceptable test data showing that the blended Portland fly ash cement does impart satisfactory strength and durability to the concrete per the requirements of Table 03-033-A and Section 2.0, "Concrete Mix Design".

## **3.3 PACKAGING**

When Portland cement and blended Portland fly ash cement are delivered in packages, the packages shall plainly state the name brand, the source manufacturing facility, and the cement type. When cement is delivered in bulk, the same information shall be contained in the shipping documents accompanying the shipment.

### **3.4 STORAGE**

All cement shall be well protected from rain, condensation and all other sources of moisture. Cement of different brands or types, or which comes from different production facilities shall be stored separately. Separate, readily identifiable storage shall be furnished for blended Portland fly ash. Portland cement and Portland fly ash cement shall not be mixed or intermingled.

### **3.5 REJECTION**

All cement which has come in contact with moisture, fly ash or other cements or which has partially set, contains lumps, or fails to meet the specified requirements shall be rejected by the CITY REPRESENTATIVE.

### **3.6 ADMIXTURES**

The total chloride content (both soluble and insoluble) of any admixture or combinations of admixtures shall not exceed one thousand (1000) ppm. All admixtures used must be submitted for approval by the CITY ENGINEER.

Air-entraining admixtures for concrete shall conform to the requirements of AASHTO M 154.

Chemical Admixtures: Water-reducing and set-controlling admixtures (including all normal, middle, and high-range water reducers), set-retarding admixtures, and non-chloride set-accelerating admixtures, or combinations thereof shall conform to the requirements of Paragraph 3.6, "Admixtures" and AASHTO M 194.

### **3.7 AGGREGATE**

The combining of materials from two (2) or more approved material sources to produce aggregate will be permitted as follows:

The blended material meets all requirements, including the gradation requirements.

All aggregates shall be evaluated for reactivity by AASHTO T 303 or by ASTM C 1293. The initial "Proof-of-Reactivity-Potential" test will be performed utilizing standard Rio Grande Type I-II low alkali cement from the Rio Grande Cement Plant located at Tijeras, New Mexico. This cement shall have an alkali content between 0.5% to 0.6%.

Aggregates that exhibit mean mortar bar expansions at fourteen (14) days greater than 0.10% shall be considered potentially reactive. Aggregates will be considered innocuous if their maximum expansion is less than 0.10% at fourteen (14) days unless ASTM C 1293 is used, then the aggregate shall be considered to be innocuous if the average expansion measured at the end of one (1) year is less than 0.04%. A current list of reactive, potentially reactive and non-reactive (innocuous) aggregate sources tested to date may be obtained from the NMDOT Materials Bureau.

Combined Gradation: At the option of the Supplier, the aggregates used in any concrete mixture may be evaluated in accordance with the combined gradation resulting from the addition of specified weights of individual coarse and fine aggregates. The gradation of the combination of all the proposed aggregates shall be evaluated in accordance with the following parameters:

1. Each individual source complies with all material requirements except the gradation;

$$\text{Coarseness Factor (CF)} = Q / (Q + I) \quad \text{Equation (3)}$$

Where:

Q = the percentage of the combined gradation, by weight of total aggregate retained on or above the 3/8 inch sieve; and

I = the percentage of the combined gradation, by weight of total aggregate, passing the 3/8 inch sieve, but retained on the No. 8 sieve.

2. Workability Factor (W) that is defined as the percentage of the combined gradation, by weight of the total aggregate, passing the No. 8 sieve,
3. Mortar Factor that is defined as the percentage of the total volume of the entire concrete mixture occupied by cement, fly ash, water, air, all other pozzolans and W; and
4. Paste Factor that is defined as the percentage of the total volume of the entire concrete mixture occupied by cement, fly ash, water, air and all other pozzolans (W is not included in this factor).

All aggregates shall be graded and/or combined to produce a uniform gradation, from the coarsest to the finest particle sizes. If the combined gradation protocol is chosen, all aggregates used shall be in compliance with the individual physical and chemical properties required below. Only the individual gradation requirements will not apply. Concrete mixtures designed on the combined gradation basis should use a target for the coarseness factor of between fifty-five (55) and sixty-five (65) with a workability factor between thirty-three (33) and thirty-five (35). The gradations for the individual aggregate stockpiles used to achieve these factors should be realistically maintainable in the field so that the Supplier can maintain these designated factors during production.

Coarse Aggregate: Coarse aggregate shall be crushed stone, crushed gravel, or natural washed gravel, conforming to the requirements herein provided. Unless otherwise specified below, or by other special provisions, at least fifty (50) percent by weight of the plus three-eighths (3/8) inch sieve size particles shall have a minimum of one (1) fractured face. A face will be considered fractured when at least one-half (1/2) of the projected particle area exhibits a rough, angular, or broken texture with well defined edges.

Deleterious Substances: The amount of deleterious substances shall not exceed the limits shown in Table 03-033-B when tested in accordance with the procedures shown in Table 03-033-F.

Table 03-033-B

**Coarse Aggregate Deleterious**

<b>Substance Tolerances Substance</b>	<b>Percent by Weight (Maximum)</b>
Soft Fragments	2.0%
Coal and Lignite	0.25%
Clay Lumps	2.5%
Materials Passing No. 200 Sieve	1.0%
Flat and Elongated Pieces	* see note

\*The plus 3/8 inch material shall contain a maximum of 15.0% flat, elongated particles with a dimensional ratio of 3:1 or greater as determined by ASTM D 4791.

Concrete aggregate shall be free from all sticks, roots and other organic matter.

Aggregate contaminated with sticks, roots, and other organic matter shall be rejected.

Fine Aggregate: Fine aggregate shall consist of natural sand or manufactured sand conforming to the requirements herein.

Deleterious Substances: The amount of deleterious substances shall not exceed the limits shown in Table 03-033-C:

Table 03-033-C

**Fine Aggregate Deleterious Substance  
Tolerances**

<b>Substance</b>	<b>Percent by Weight (Maximum)</b>
Soft Fragments	2.0%
Coal and Lignite	1.0%
Clay Lumps	3.0%
Materials Passing 75µm (No. 200) Sieve	1.0%

### 3.8 FLY ASH

Fly ash shall conform to the physical and chemical requirements of ASTM C 618, including the optional requirements for available alkalis and reactivity with cement alkalis, as modified with the exceptions shown in Table 03-033-D. The Supplier shall use Class F fly ash if either the coarse aggregate or the fine aggregate is reactive. If both the coarse aggregate and the fine aggregate are non-reactive, then the Supplier may choose to use a C/F blend fly ash or a Class C fly ash, maximum twenty-five (25) percent by weight of the cement.

**Table 03-033-D  
Fly Ash Requirements**

<b>Characteristic</b>	<b>Class C</b>	<b>Class F</b>
Sum of Al <sub>2</sub> O <sub>3</sub> , SiO <sub>2</sub> , and Fe <sub>2</sub> O <sub>3</sub>	---	> 85%
Moisture Content, Maximum %	1.0	1.0
Loss on Ignition, Maximum %	3.0	3.0
Magnesium Oxide (MgO), Maximum %	5.0	5.0
Available Alkalis, Maximum % *	1.5	1.5
Calcium Oxide (CaO), Maximum % **	50.0	8.0

\*When the autoclave expansion or contraction limit is not exceeded when combined with the cement, an MgO content above five (5.0) percent will be acceptable.

\*\*Fly ash meeting the requirements of ASTM C 618 and containing more than ten (10) percent by weight of bulk CaO may not be used in concrete exposed to sulfate environments or with potentially reactive or known reactive aggregate.

If fly ash is supplied in bags, the bags must be waterproof and the name brand, the manufacturer, type, and source shall be clearly identified thereon. Each fly ash shipment shall be accompanied by a copy of a properly executed certificate of compliance. Source changes in fly ash may be allowed only after a written request by the Supplier is made to the City Engineer for review and written approval once the equivalency of the proposed material has been verified. Compliance with ASTM C 618 is not sufficient documentation to permit a change of sources. Information must be provided verifying the equivalence in performance of the proposed source to the original source. Blending of Class C and Class F fly ash is permitted. However, the blended fly ash must be approved by the City Engineer before its actual use. Blended fly ash shall meet all requirements of ASTM C 618, and may only be used in concrete mixes in which both the coarse and the fine aggregate is non-reactive (innocuous).

Source Approval and Acceptance: Acceptance of fly ash will be based on certification of approved sources and satisfactory test results on verification samples. Fly ash from a particular source or Supplier must be approved before being used in Portland cement concrete. The request for source approval shall include the following information:

1. The name of Supplier or company
2. Location of the source power plant
3. Coal type and origin
4. Combustion process
5. Storage facilities and capacity
6. Production procedures
7. Details regarding the Supplier's Quality Control Program including the following:
  - a. Routine sampling and testing frequency;

- b. Evidence that the laboratory responsible for the certified ASTM C618 test results is currently participating in the Cement & Concrete Reference Laboratory (CCRL) proficiency sample and pozzolanic inspection programs. Additionally, the laboratory shall submit a copy of their letter authorizing CCRL to send a copy of their inspection and proficiency reports directly to the City.
- c. Measures taken to ensure that fly ash not meeting Specification requirements are kept separated from material meeting the requirements.

Copies of test reports showing results obtained in the quality control program for the previous six months including at least one complete ASTM C 618 analysis for each month.

Sources for fly ash approved by the NMDOT's State Materials Bureau does not allow substitution for an approved source.

### 3.9 FIBROUS CONCRETE

Fibers used in the concrete mix shall be used at a minimum dosage rate of 1.5 lb/yd<sup>3</sup> of concrete. All fibers shall be one hundred (100) percent virgin polypropylene fibrillated fibers, containing no reprocessed olefin materials, and specifically manufactured for use in Portland cement concrete. Fibers shall be added to all concrete used in driveways and alley aprons.

### 3.10 LITHIUM NITRATE

The SUPPLIER may be asked to use lithium nitrate (LiNO<sub>3</sub>) as an admixture to control expansion caused by reactive aggregate. Lithium shall be used in the form of a solution consisting of thirty (30) percent, by weight, lithium nitrate (LiNO<sub>3</sub>). If used, it shall be used at a dosage rate of 0.55 gallon of solution for each pound of sodium equivalent, as determined from the cement mill certificate. For each liter (gallon) of lithium nitrate solution used, 0.2 gallons of water shall be subtracted from the total design water in the concrete mixture design. The lithium solution used shall be certified to comply with the following characteristics as shown in Table 03-033-E:

**Table 03-033-E  
Lithium Solution Requirements**

Characteristics	Requirement
Lithium Nitrate, Weight %	29.5 minimum
NaOH, Weight %	0.1 maximum
Cl, Weight %	0.2 maximum
SO <sub>4</sub> , Weight %	0.1 maximum
Heavy Metals, ppm	250 maximum
Elemental Mercury, ppm	0.8 maximum

### 3.11 AGGREGATE TESTING

Coarse and fine aggregate will be tested in accordance with AASHTO methods as shown in the Table below and such other methods as may be required by the City Engineer. Approval of a concrete mixture design using the designated aggregate source will remain in effect for the duration of the designated approval period as long as the results of tests for specific gravity, absorption, gradation and sand equivalent (for fine aggregate only) performed on representative samples on a semi-annual basis comply with all requirements contained herein.

**Table 03-033-F  
Aggregate Test Methods**

<b>Aggregate Test</b>	<b>Method</b>
Sampling	AASHTO T 2
Clay Lumps	AASHTO T 112
Amount of Material Passing No. 200 Sieve	AASHTO T 11
Sieve Analysis	AASHTO T 27
Soundness with Magnesium Sulfate	AASHTO T 104
Sand Equivalent	AASHTO T 176
Soft Fragments	AASHTO T 112
Flat and Elongated Pieces	ASTM D 4791

**3.12 CONTROL OF ALKALI-SILICA REACTIVITY (ASR)**

If the Supplier elects to use an aggregate source which has been designated as potentially reactive or known reactive, a combination of one (1) or more of the following ASR inhibiting admixtures, per the Table below, shall be used to provide a concrete mixture that meets the maximum expansion requirements below:

**Table 03-033-G  
ASR Inhibiting Admixtures**

Fly Ash (Class F)	Section 3.9
Blended Cement	Section 3.2
Ground Granulated Blast Furnace Slag (GGBFS), Grade 100 and 200	AASHTO M 302
Silica Fume	AASHTO M 307
Lithium Nitrate (LiNO <sub>3</sub> )	Section 3.11
Heavy Metals, ppm	250 maximum
Elemental Mercury, ppm	0.8 maximum

Unless it is determined that a larger dosage is required to properly mitigate ASR, the admixture(s) shall be incorporated into the concrete per the Table below:

**Table 03-033-H  
ARS Mitigation Dosage Rate Requirements**

Fly Ash (Class F)	20 % minimum 25% maximum by weight of cement only for binary blends; 12% minimum by weight for ternary blends as long as the total pozzolan dosage is at least 20%
Blended Cement	20% minimum by weight of cement only
GGBFS	25% to 30% by weight of cement only
Silica Fume	5% to 12% by weight of cement only
Lithium Nitrate	4.6 Liter/meter <sup>3</sup> (0.55 gallons/yard <sup>3</sup> ) of solution for each kg (pound) of cement sodium equivalent

ASR Mitigation Requirements: The effectiveness of the admixture(s) in controlling deleterious expansion shall be determined by mortar bars made and tested in accordance with AASHTO T 303-96 using the cement, fly ash, other mitigating admixtures and the proposed aggregate intended for use in the proposed concrete mixture.

ASR Mitigation Evaluation Criteria: An admixture shall be considered effective in controlling deleterious expansion due to ASR when the mean mortar bar expansion at fourteen (14) days is less than or equal to 0.10%, when tested in accordance with Section 2.0, "Concrete Mix Design". Aggregates that are classified as reactive shall be retested each time the comprehensive mix evaluation is performed to verify the effectiveness of the mitigation measures being exercised. If the Supplier feels that the coarse and the fine aggregates are innocuous although the test results generated from AASHTO T 303 or ASTM C 1293 indicate either potentially reactive or reactive material, the following documentation can be submitted for proof that the coarse and the fine aggregates are innocuous:

1. A letter prepared and signed by a registered Professional Engineer in New Mexico who is familiar with ASR stating that he/she has direct knowledge of ASR and its manifestations in concrete and that the subject aggregates have never been observed to be associated with any ASR deterioration of concrete.
2. At least two (2) core samples shall be obtained from completely different structures, each of which is at least fifteen (15) years old, and which used the subject aggregates in a cement-only mixture (no fly ash). These cores will be submitted to a petrographer for evaluation of the presence of ASR gel.
3. Upon receipt of the stamped letter from the Registered Professional Engineer, if there is no evidence of ASR gel found in either of the cores, then the aggregate sources will be considered as innocuous.

#### **4.0 BATCHING**



Measuring and batching of material shall be done at a batching facility or by continuous volumetric batching in a continuous mixer. Any facilities or equipment used to batch concrete shall comply with the requirements in Chapters 9-11 of AASHTO M 157. If the Coefficient of Variation for the batch facility shown on the mix design submittal exceeds twelve (12) percent, then a comprehensive Plant Operations and Quality Control Manual shall be submitted to and approved by the City Engineer before any facilities and/or equipment can be approved or used on the Project. Methods and equipment for adding air-entraining agent or other admixtures to the batch must be included in the Plant Operations and Quality Control Manual.

Batching plants shall include clearly separated aggregate bins or clearly separated stockpiles, silos for cement and fly ash, weighing hoppers, and scales. They shall also be equipped to proportion aggregates, bulk cement and fly ash by means of properly calibrated weighing devices. Aggregate scales and hoppers may provide for weighing each aggregate on a separate scale or for accumulative weighing on a single scale for all aggregates. If cement is used in bulk, a bin, hopper, and separate scale for cement shall be included. Fly ash may be weighed in the same hopper with the Portland cement, however, the cement shall be weighed first, with the fly ash weighed only after all the cement has been placed onto the scale. The weighing hoppers shall be properly sealed and vented to preclude dusting during operations. The batch plant operator shall have a direct view of each of the individual scales and admixture sight tubes from the normal operating position while preparing each individual batch of concrete. The batch plant shall:

1. Accurately weigh and batch materials for Portland cement or Portland cement/fly ash concrete within the tolerances specified.
2. Provide a means of removing an overload of any one material prior to contamination by any other material when more than one material is weighed in one hopper.
3. Provide scale dials or instrumentation devices for admixture bottles, beam scales and load cells, which are readily visible to both the operator and the inspector, regardless of whether a computer is utilized to prepare the batch.
4. Incorporate weighing hopper or hoppers of sufficient size to contain the material without loss or spillage.
5. Properly combine and re-combine the various mixture components to obtain the required uniformity and consistency.

The weighing hopper or hoppers shall be so designed to efficiently discharge all weighed materials for each batch. The material charging equipment shall deliver the batch to the mixer without loss or spillage of any of the components. Scales for weighing aggregates, cement, water and fly ash shall be inspected and certified annually or each time the scales are relocated. Scales shall be accurate within tolerances prescribed by state law.

#### **4.1 PORTLAND CEMENT AND FLY ASH**

Either sacked cement or bulk cement and fly ash may be used. No fraction of a sack shall be used in a batch of concrete unless the cement or fly ash is weighed. Cement and fly ash shall be measured by weight. Fly ash may be weighed cumulatively with the

Portland cement. However, the cement shall be weighed before the fly ash. All bulk cement and fly ash shall be weighed on an approved weighing device, except when continuous proportioning and mixing equipment is used. The accuracy of batching shall be such that the weight of cement, and the combined weight of cement plus fly ash is within  $\pm 1\%$  of the required weights. All other cementitious materials, such as silica fume, GGBFS, metakaolinite, etc., shall also be weighed within  $\pm 1\%$  of the required weight. If silica fume is used in a slurry form, it shall be properly agitated to insure the mixture has not settled. The dosage of silica fume shall be based on the weight of solids only. The water in the slurry shall be included in the total water amount used to determine water/cementitious ratio. The water in the slurry shall be subtracted from the total water content shown on the approved mix design (along with the water contained in the aggregates) to determine the total amount of free water to be added to the mix. Scales and hoppers shall be used for weighing the cement and fly ash with a device to indicate complete discharge of the batch of cement and fly ash into the mixer. Cement and fly ash supplied in bulk shall be contained in weather tight bins and weighing hoppers. Discharge chutes shall not be suspended from the weighing hoppers and shall be arranged so that cement and fly ash will not lodge in, or leak from them.

#### **4.2 WATER**

Mixing water shall consist of water added to the batch, ice added to the batch, and water occurring as surface moisture on the aggregates. The added water shall be measured by weight or volume such that the maximum amount of total water shown on the approved mix design is not exceeded. Added ice shall be measured by weight. In the case of truck mixers, the wash water shall be completely discharged before loading the next batch of concrete.

#### **4.3 AGGREGATES**

Aggregates for all concrete shall be handled from stockpiles, or other sources, to the batching plant in such a manner as to secure a uniform grading of the material. Aggregates that have become segregated or mixed with earth or other foreign materials shall not be used. Methods of handling aggregates that result in segregation, degradation, contamination or excessive breakage of particles will not be permitted. No aggregate in the form of frozen lumps shall be used in the manufacture of concrete. The gradation of the stockpiles shall be maintained unless the mixes have been approved under the combined gradation protocol. If the mix is approved under the combined gradation protocol, then the on-site gradation of the stockpiles shall be arithmetically combined in the proportions shown on the approved mix design. The coarseness factor must be within  $\pm 4\%$  of the approved coarseness factor shown on the approved mix design, and the workability factor must be within  $\pm 3\%$  of the value shown on the approved mix design. If the concrete mixture being used has been approved under the combined gradation protocols, then at the discretion of the concrete Supplier, the actual gradation of the aggregate stockpiles can be determined immediately before the concrete placement. If the existing gradations cannot be adjusted to re-create the original gradation, those stockpiles shall not be used until the gradations have been corrected sufficiently to provide a combined gradation within the designated tolerances. Fine aggregate and individual sizes of coarse aggregate shall be separately stored and accurately weighed in an adequate hopper or hoppers in the respective amounts required by the approved mixture design. Batching shall be so conducted as to provide the weights of material required, within a tolerance of  $\pm 2\%$ . Aggregates that do not comply with the specified gradations shall be recombined to bring them within the specified limits or they shall be rejected.

#### **4.4 STOCKPILES**

Fine and coarse aggregates from different sources of supply shall not be mixed or stored in the same stockpile or used alternately in the same Work without prior approval. All aggregates shall be stockpiled in such a manner that segregation of coarse and fine particles of each size is avoided. Aggregates from different sources and of different gradings shall not be stockpiled together. The quantity of material in the stockpile shall be adequate to provide all of the concrete required for the section or sections to be constructed during a scheduled operation. The Supplier shall take necessary measures to prevent intermingling of the different sizes of stockpiled aggregates. The Supplier shall take necessary measures to prevent contamination of aggregates by contact with the ground and stockpiled aggregates shall be protected from dust and other foreign matter.

#### **4.5 MOISTURE CONTROL**

The moisture content of the fine aggregate shall be continuously monitored by the Supplier, in the case of an operation which uses moisture sensing equipment, or it shall be checked at least once daily by the Supplier, in the case of a manually operated facility. The moisture content of the coarse aggregate shall be checked by the Supplier at least once per day. Operations which utilize moisture sensing equipment will also have the moisture content of the aggregates measured manually by the supplier at least once per day. This moisture determination shall be performed immediately preceding the preparation of the first load of concrete and compared to the moisture determination made by the moisture sensing equipment. If the moisture content determined by the moisture sensing equipment differs from the manually determined moisture content by more than 0.5%, the computer will be adjusted immediately, and rechecked. A certificate will be prepared by the batch operator and submitted to the City with the first load of concrete showing the following:

1. Pan weight (it is not acceptable to tare out the pan weight on scales equipped to do so),
2. Wet weight of the pan and the sample,
3. First dry weight of the pan and the sample,
4. Second dry weight of the pan and the sample,
5. Third dry weight of the pan and the sample (if necessary),
6. The absolute moisture content of the sample,
7. The actual reading of the moisture probe from the same sample that was actually tested,
8. The calculated difference between the actual moisture content test and the moisture content shown by the moisture sensing equipment.

Moisture content determinations for the purposes of calibrating and/or checking the moisture content of aggregates used in the batching operation shall be performed in accordance with one of the following procedures and shown to the nearest 0.5%:

1. AASHTO T 217 "Determination of Moisture in Soils by means of a Calcium Carbide Gas Pressure Moisture Tester": The shelf life of the calcium carbide is relatively short. The age of the calcium carbide shall be closely monitored, and replaced in strict accordance with the manufacturer's recommendations.
2. AASHTO T 255 "Total Moisture Content of Aggregate by Drying": The hot-plate method may be used for this purpose, as long as no material is lost and the pan is continuously agitated during the drying process.

All aggregates produced or handled by hydraulic methods and washed aggregates shall be stockpiled or binned for draining at least twelve (12) hours before being batched. Rail shipments requiring more than twelve (12) hours will be accepted as adequate binning only if the car bodies permit free drainage. If the aggregates contain high or non-uniform moisture contents, storage or stockpile periods in excess of twelve (12) hours may be required.

#### **4.6 AIR-ENTRANING AND CHEMICAL ADMIXTURES**

Admixtures shall be stored in separate containers and in a manner that will avoid contamination, evaporation, and damage. Liquid admixtures shall be protected from freezing and from temperature changes that adversely affects its characteristics. Methods and equipment for adding air-entraining agent or other admixtures to the batch shall be approved by the City Engineer prior use. For admixtures used in the form of suspensions of non-stable solutions, agitating equipment shall be provided to ensure thorough distribution of the ingredients. Volumetric measures for each batch shall be marked in ounces, and shall be constructed so that the quantity of admixture required can be readily determined before being injected into the batch. All liquid admixtures shall be measured into the mixer within  $\pm 3\%$  of the required amount.

#### **4.7 PRODUCTION REQUIREMENTS**

The production of ready-mixed concrete and the production of site-mixed concrete shall meet the applicable requirements of AASHTO M 157, as well as the following requirements:

1. All production facilities shall be certified to comply with National Ready Mix Concrete Association (NRMCA) criteria for concrete production facilities.
2. Addition of Materials: There shall be no water in the drum before initiating batching of concrete. When initiating batching operations, the batch shall be charged into the drum so that a portion of the mixing water shall enter in advance of the cement and aggregates. Introduction of the unmixed materials (cement, coarse aggregate, fine aggregate, admixtures, and the remainder of the water) shall then be performed by a uniform and simultaneous flow into the mixer, with all water introduced into the drum by the first fifteen (15) seconds of the mixing period. The throat of the drum shall be kept free of such accumulations as may restrict the free flow of materials into the drum. When the concrete is delivered in transit mixers or agitators, additional water may be added to the batch materials and additional mixing performed to increase the slump to meet the specified requirements. Any water added to the concrete in the field shall be noted on the batch ticket and a copy of the ticket made available to the city. The maximum amount of water shown on the approved mix design sheet shall not be exceeded under any circumstances.
3. Slump Requirements: Concrete that is not within the specified slump limits at the time of placement shall be rejected.
4. Mixing Speed: The mixer shall be operated at a drum speed not to exceed the maximum speed shown on the manufacturer's name plate.
5. Mixer Capacity: The volume of concrete mixed per batch shall not exceed the mixer's nominal capacity in cubic feet, as shown on the manufacturer's standard rating plate on the mixer. An overload of up to ten (10) percent above the mixer's nominal capacity may be permitted provided concrete test data for strength, segregation, and

uniform consistency are satisfactory, and provided no spillage of concrete takes place. The volume of concrete mixed or transported shall not be less than one (1.0) cubic yard.

6. **Mixing Time:** For purposes of these Specifications, the term "mixing time" shall be defined as the time elapsed from the time the cement comes in contact with the aggregates until the concrete is deposited in place at the site of the Work. Concrete mixed less than the minimum specified time shall not be used. When the concrete is hauled in truck mixers or truck agitators, the mixing time shall not exceed one and a half (1.5) hours. Under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 80° F or above for all superstructure concrete, or 85° F for all other concrete, the mixing time shall not exceed sixty (60) minutes.

When the concrete is hauled in non-agitating trucks, the time elapsed from initial mixing to completion of the final finish of the concrete at the project shall not exceed forty five (45) minutes. Under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 80° F or above, the allowable placement time shall not exceed thirty (30) minutes.

#### **4.8 TRANSPORTING**

Mixed concrete from a central mix plant may be transported in non-agitating trucks only when the slump is less than two (2) inches. Concrete with a slump in excess of two (2) inches shall only be transported in properly certified revolving-drum mixer trucks. Concrete produced in a dry-batched concrete plant shall only be transported in revolving-drum mixer trucks.

**Non-Agitator Trucks:** Bodies of non-agitating hauling equipment for concrete shall be smooth, mortar-tight metal containers and shall be capable of discharging the concrete at a satisfactory controlled rate without segregation. Covers shall be provided when needed for protection.

**Truck Mixers and Agitators:** All agitator trucks shall be equipped with a plate directly attached to the truck in a readily visible location, designating specific properties regarding that truck, including, but not limited to the designated mixing speed of the drum. The truck mixers or agitators shall have been inspected and found to comply with the National Ready Mix Concrete Association Guidelines within the last twelve (12) months. A copy of the inspection for each unit shall be on file and available for review upon request. When the truck arrives at the Project site, the site tube on the water tank will be immediately checked. If there is any water missing from the tank, the truck will be immediately rejected unless the missing water can be properly accounted for.

**On-Site Mixing:** Upon arrival at the Project site, Agitator Trucks shall re-mix the concrete in accordance with the following criteria:

1. If the concrete was mixed in a central mix plant, the concrete shall be mixed at the designated mixing speed for a minimum of two (2) minutes, before discharging any concrete;
2. If the concrete was mixed inside the Agitator Truck, then the concrete shall be mixed at the designated mixing speed for a minimum of five (5) minutes, before discharging any concrete;

3. If any water, water reducing admixtures, entrained air or other ingredient is added to the concrete, the additional material shall be mixed at the designated mixing speed for at least five (5) minutes before discharging any concrete.

Weather and Temperature Limitations: Concrete shall have a temperature of at least 50° F and not more than 90° F at time of placement.

1. Hot Weather Concrete: When concrete is placed during high ambient temperatures, low humidity, and/or windy conditions precautions shall be taken to reduce the rate of evaporation and control the temperature of the concrete per ACI 305, latest revision.
2. Cold Weather Concrete: When concrete is placed at or below an atmospheric temperature of 35° F, the water or aggregates, or both, shall be heated, and suitable enclosures and heating devices shall be provided. The mixed concrete shall have a temperature of at least 50° F and not more than 90° F at the time of placing. The heating equipment or methods shall be capable of heating the water and aggregates uniformly, and these materials shall not be heated to a temperature exceeding 150° F. Concrete shall not be placed on frozen ground.

#### MISCELLANEOUS MATERIALS REQUIREMENTS

1. If the successful bidder's plant is not operational, due to a plant breakdown or if unable to provide the needed products within the City's time constraints, the City reserves the right to obtain services from the next lowest bidder. The City will make every attempt to provide the vendor with the maximum advance notice of its needs.
2. Concrete – The City reserves the right to have test cylinders pulled by a testing lab of our choice and if found that the material does not pass the required test, the vendor will be required to correct the problem within five (5) working days, load and haul unsatisfactory materials away, and reimburse the City for the test.

# CITY OF ALAMOGORDO

## BID SCHEDULE

Bids will be received by the City Purchasing Manager of the City of Alamogordo until 2:00 p.m., February 19, 2020, for the following item (s)

### Concrete IFB# 2020-02

Item No	Est. Qty.	Description	Unit Price	Total
		<b>Indefinite Quantity Contract</b>		
1	450 CY	Class A, Cast-in-place Structural 3000 PSI	\$_____	\$_____
2	21 EA	Delivery charge for 1.5 Cu. Yds., or less	\$_____	\$_____
3	10 ea	Cost for tying up a truck for more than one hour	\$_____	\$_____
4	300 ea	Fiber per Cu. Yd.	\$_____	\$_____
5	200 ea	Calcium by percent (%) per Cu. Yd.	\$_____	\$_____
		<b>Total</b>	\$_____	\$_____

**Concrete IFB# 2020-02**

The undersigned hereby offers to furnish and deliver the articles or services as specified at the prices and terms there stated and in strict accordance with the specifications and general conditions of bidding, all of which are made a part of this offer.

Name of  
Company \_\_\_\_\_  
Business  
Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone(\_\_\_\_) \_\_\_\_\_

Printed Name- Authorized Representative \_\_\_\_\_

Signature – Authorized Representative \_\_\_\_\_