



**CITY OF  
GALLUP**

City of Gallup, New Mexico  
Purchasing Division  
P.O. Box 1270  
Gallup, New Mexico 87305-1270  
Office: (505) 863-1232  
Fax: (505) 722-5133  
*gallupnm.gov/purchasing*

**INVITATION TO BID  
FORMAL BID NO NO. 1911**

**REDI-MIX CONCRETE**  
**(Multi-Term Contract)**

**ISSUE DATE: May 24, 2019**  
**BID OPENING DATE: June 13, 2019**  
**BID OPENING TIME: 2:00 pm (local time)**

**Vendor Name:**

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**Vendor Address:**

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**Notes:**

**F.O.B. Point: Destination**

**Payment Terms: Net 30, unless otherwise stated**

**Quantities may be increased or decreased within  
reasonable amounts**

**ACKNOWLEDGMENT OF RECEIPT OF BID**  
Formal Bid No. 1911  
**Redi-Mix Concrete (Multi-Term Contract)**

In acknowledgment of receipt of this Formal Bid the undersigned agrees that they have received a complete copy of the bid consisting of 16 pages.

The acknowledgment of receipt should be signed and returned to the Purchasing Office as soon as possible but no later than 5:00 P.M. local time on June 4, 2019. **Only potential bidders who elect to return this form completed with the indicated intention of submitting a proposal will receive copies of all written questions and the City's written responses to those questions, as well as copies of Amendments, if any are issued.**

FIRM: **DOES** **DOES NOT** (Circle one) intend to respond to this Formal Bid.

FIRM NAME: \_\_\_\_\_

REPRESENTED BY: \_\_\_\_\_

TITLE: \_\_\_\_\_ PHONE NO.: \_\_\_\_\_

FAX NO.: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP CODE  
: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

DATE: \_\_\_\_\_

EMAIL: \_\_\_\_\_

The above name and address will be used for all correspondence related to this Formal Bid.

Return this form to: City of Gallup Purchasing Department  
Frances Rodriguez  
P.O. Box 1270  
Gallup, New Mexico 87305  
(505) 863-1334  
(505) 722-5133 Fax  
Email: [fr Rodriguez@gallupnm.gov](mailto:fr Rodriguez@gallupnm.gov)

**Please return this form via fax, email or regular mail by: June 4, 2019**

**CITY OF GALLUP  
GENERAL CONDITIONS  
FORMAL BID NO. 1911**

**SEALED BIDS:** All bids must be submitted in a sealed envelope and shall not be opened and considered if they are not received at the City of Gallup Purchasing Department, Municipal Building, 110 West Aztec, Gallup, New Mexico 87301 (mailing address: City of Gallup Purchasing Department; Municipal Building; P.O. Box 1270; Gallup, New Mexico 87305) prior to the time specified for the Bid Opening. All sealed bids must be submitted on the Bid Document Originals or Forms, or reasonable facsimile, furnished by the City of Gallup. All bids must be signed by a responsible and authorized person for the bidding firm. Each bidder must also fill-in areas for Delivery Date and Payment Terms; failure to do so may result in disqualification of their respective bid. NOTE: Fax or electronically transmitted Bids are NOT accepted on the City of Gallup **Formal Bids**. Bids submitted after the Bid Opening date and time will not be considered and will be returned unopened. Bids will be opened in the Purchasing Department Conference Room.

Physical Address  
City of Gallup Municipal Building  
Purchasing Department  
110 West Aztec  
Gallup, NM 87301

Mailing Address  
City of Gallup Municipal Building  
Purchasing Department  
P.O. Box 1270  
Gallup, NM 87305

**BID OPENING DATE AND TIME:** Bids shall be received until **June 13, 2019** at 2:00 P.M. Local Time

**MAILING:** Bidder to utilize the City's self-addressed label on their return mailing envelope or package. If sent by overnight method (Federal-Express, UPS Next Day Air etc.) please **note bid number on exterior of envelope**. Failure to do so will not constitute a liability on the City if the Bid is misplaced or lost.

**Please return two sets of the Invitation to Bid packages to the Purchasing Department, the original and a photo copy.**

**INDEFINITE QUANTITY CONTRACT:** This is an Indefinite Quantity Contract. Quantities listed are estimates of the City's needs for the term of the contract. The City does not guarantee the purchase of any specific minimum quantities and actual usage may increase or decrease. The City reserves the right to solicit bids for any quantities when it is in the best interests of the City to do so, and to add or delete items from the contract.

**SPECIFICATIONS/SCOPE OF WORK:** Specifications or Scope of Work, as included in this bid, are intended to indicate the requirements of the City of Gallup and give an accurate description of minimum standards acceptable. All services equal or equivalent to these requirements and standards will be considered, except where otherwise noted.

**BUSINESS LICENSE:** Bidder's are advised that they must have or obtain a Current City of Gallup Business License for the type of material or services required under this contract before work commences or a Purchase Order issued.

**MINOR MODIFICATIONS, DEVIATIONS OR IRREGULARITIES:** The City reserves the right to accept **minor** modifications to or deviations from any specification, except where otherwise noted, as long as the proposed material meets the intent of the specifications. The City will be the sole entity to determine the acceptance or non-acceptance of any such modifications or deviations.

Therefore, exceptions may be accepted if they are minor, equal, or superior to that which is specified, and provided that they are listed and fully explained on a separate page entitled, "Exceptions to Specifications". The exceptions shall refer to the specification page and paragraph number. The Purchaser shall determine which (if any) exceptions are acceptable and this determination shall be final.

**F.O.B. POINT:** All material shall be quoted F.O.B. **DESTINATION/JOBSITE to locations within the Gallup City Limits**, Freight Prepaid. Bidders are cautioned that quoting material other than F.O.B. Destination/Jobsite may result in a finding of their bids as Non-responsive. City of Gallup Ordinances and State Law do not allow the City to own tangible goods or for services prior to receiving if said good or prior to service being rendered. All price(s) bid shall be Freight Prepaid. The City of Gallup will not pay freight charges.

Where delivery is to be made outside the City Limits, mileage (which include related charges, e.g. driver labor, travel tons) shall be paid at the bid rate. Contractor's plant shall be located within a thirty-five (35) mile radius of the City of Gallup City Limits.

**COMPETENCY OF BIDDER:** Bids will be considered only from firms which are regularly engaged in providing the type of materials described in the bid and who can provide evidence that they have established a satisfactory record of performance to insure they can execute the requirements as stated herein. Any determination as to competency shall be made by appropriate City staff.

**PAYMENT OR ACCEPTANCE NOT CONCLUSIVE:** Vendor will supply the City with invoice for payment. No payment under this contract shall be conclusive evidence of the performance of this contract, either wholly or in part, and that no payment made for the delivery of the items or performance of work, in whole or in part shall be construed as an acceptance of defective work or improper materials, nor relieve the bidder from corrections of the defects. The final acceptance shall not be binding upon the City, nor conclusive, should it subsequently develop the bidder has furnished inferior items or had departed from the specifications and/or the terms of the contract. Should such conditions become evident, the City shall have the right, notwithstanding final acceptance and payment, to cause the item(s) to be properly furnished in accordance with the specifications (and drawings, if any) at the cost and expense of the bidder.

**PRICE TERMS:** Bidder agrees that the prices bid shall remain in effect for 45 days from the date of the Bid Opening and subject to acceptance by the City of Gallup within that period. Acceptance period may be extended with the mutual agreement of the City and the Bidder.

**CANCELLATION:** The City reserves the right to cancel any contract resulting from this request for convenience by giving written notice to the vendor. The City shall be liable to the vendor for any services provided or material ordered and accepted prior to termination.

If the vendor fails to fulfill any obligation resulting from this contract in a timely and responsive manner,

or if the vendor violates any of the terms of this contract, the City shall have the right to cancel the contract by giving written notice of cancellation to the vendor and recover from the vendor any damages resulting from vendor's failure to perform

**NON-CONFORMING MATERIAL:** If the City of Gallup issues a Purchase Order and upon receipt the material does not meet the specifications, the City will return the material freight collect, and at its option cancel the order and recover from the vendor any damages suffered.

**TOTAL ALL OR NONE:** Services on this bid will be awarded on a "TOTAL ALL OR NONE" basis where indicated. If no responsive all or none offers are received, the City reserves the right to award the bid in whatever it deems to be in its best interest.

**TAXES:** Taxes shall not be included in Contractor's Bid Proposal. Contractor will tax the City on each invoice submitted.

**PAYMENTS TO CONTRACTORS:** Payments for the work to be done under this contract will be not less than fifteen days (15) days after receipt of invoice. Prompt payment discounts will not be a factor in the award of this bid, but may be taken into account after award.

**TICKETS:** Each load of concrete shall indicate the address of the load/loads where delivered or indicate if load/loads are picked up at plant. In additions, **EACH TICKET MUST** have the signature of a City employee, and a Purchase Order Number. The City **will not** process payment for any ticket that does not comply with the procedures.

**AWARD OF CONTRACT - MULTIPLE AWARDS:** The City reserves the right to make multiple awards as a result of this request if doing so may be advantageous to the City. Multiple awards may be given to Bidders based on lowest responsive bids.

If an awarded Bidder is unable to fulfill an order the City reserves the right to cancel the request and order from the best available source.

**PERMITS AND LICENSES:** Contractor shall be licensed for the work required, and shall obtain all necessary permits and additional licenses required, and pay any fees. Bidders are notified that a City of Gallup Business License is required.

**EXPERIENCE:** Bidder must be a firm with not less than three (3) years experience in the type of service called for in this project.

**APPROPRIATIONS:** The terms of this Agreement are contingent upon sufficient monies being made available by the City of Gallup for the performance of this Agreement. If sufficient appropriations and authorizations are not made by the City of Gallup, this Agreement shall terminate upon written notice being given by the City to the Contractor. The City's decision as to whether sufficient appropriations are available shall be accepted by the Contractor and shall be final.

**PURCHASE ORDER REQUIRED:** Material listed on this Bid will be ordered on an as needed basis. No material may be shipped without a valid City of Gallup Purchase Order.

**LOCAL AND RESIDENT PREFERENCE:** In accordance with City Ordinance, a local preference may be afforded a bidder who qualifies as a City of Gallup resident business as defined by the City of Gallup Procurement Ordinance. Preference factors can be accessed at:  
<http://www.sterlingcodifiers.com/NM/Gallup/index.htm>

The State of New Mexico and the City of Gallup also grant a preference for qualified New Mexico Resident Businesses or Resident Veterans Businesses certified by the State of New Mexico Department of Taxation and Revenue, in accordance with Sections 13-1-21 to 13-1-22 NMSA 1978. **You must furnish a copy of your State of New Mexico Resident Business or Resident Veterans Business Certificate with your bid to be considered for the in-state preference.** For information on State of New Mexico resident business or Resident Veterans Business certification call 505-827-0951 or to download applications, go to: <http://www.tax.newmexico.gov/Businesses/in-state-veteran-preference-certification.aspx>

The applicable City of Gallup Resident Business preference or State of New Mexico Resident Business or Resident Veteran's Business Preference will be factored into bid prices where applicable. However, the preferences are not cumulative and bidders will only be entitled to receive one preference.

**AMENDMENTS:** If any questions or responses require revision to the solicitation as originally published, such revisions will be by Formal Amendment Only. If the solicitation includes a contact person for technical information, Offerors are cautioned that any oral or written representation made by this or any person that appear to change materially any portion of the solicitation shall not be relied upon unless subsequently ratified by a written amendment to this solicitation issued by the Purchasing Office. For a determination as to whether any representation made requires that an amendment be issued, contact Debbie Soto, Contracts Manager, at the Purchasing Office.

**CONTACT INFORMATION:** Questions or clarifications regarding any phase of this solicitation, including specifications, shall be directed to Frances Rodriguez, Purchasing Director, P.O. Box 1270, Gallup, New Mexico 87305; Telephone: (505)863-1334; Fax: (505)722-5133; Email: [frodriquez@gallupnm.gov](mailto:frodriquez@gallupnm.gov) who shall be the sole point of contact of this bid. Questions submitted after June 4, 2019 may not be addressed.

**PROTESTS:** Any bidder or offeror who is aggrieved in connection with a solicitation or award of a contract may protest to the central purchasing office. The protest must be submitted in writing within seven (7) calendar days after knowledge of the facts or occurrences giving rise thereto.

**AWARD:** The award, if made, shall be made to the lowest responsible Bidder submitting a responsive Bid that is most advantageous to the public.

The City reserves the right to reject any or all Bids in whole or in part, to waive technicalities and the accept the proposal it deems to be in the best interests of the City. Bids may be rejected for, among other reasons:

- Bids containing any irregularities.
- Unbalanced value of any items.

- Reason for believing collusion exists among the Bidders.
- The Bidder being interested in any litigation against the City.
- The Bidder being in arrears on any existing contract or having defaulted on a previous contract; or within the past three years been formally debarred in the State of New Mexico or any other jurisdiction; or whose license has been suspended or revoked by the appropriate licensing authority
- Lack of responsibility as may be revealed by a financial statement, experience and equipment, questionnaires, etc.
- Uncompleted work which in the judgment of the City will prevent or hinder the prompt completion of additional work if awarded.

The City may make such investigations it deems necessary to determine the ability of the BIDDER to perform the services and/or supply the items of tangible personal property specified herein. BIDDER shall, within seven (7) calendar days, furnish to the City all such information and data for this purpose as the City may request.

**PROCUREMENT CODE:** The City of Gallup and State of New Mexico Procurement Code shall apply.

**PROCUREMENT CODE VIOLATIONS:** The Procurement Code imposes civil and criminal penalties for its violation. In addition, the New Mexico Criminal Statutes impose felony penalties for illegal bribes, gratuities, and kick-backs.

THE CITY RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS IN WHOLE OR IN PART, TO WAIVE TECHNICALITIES AND TO ACCEPT THE PROPOSAL IT DEEMS TO BE IN THE BEST INTEREST OF THE CITY.

**CITY OF GALLUP**  
**SUPPLEMENTAL CONDITIONS**  
**FORMAL BID NO. 1911**

**ELECTRONIC COMMUNICATIONS:** Communications regarding this procurement, including issuance of any amendments, may be conducted by electronic means (e-mail or fax). However, electronic submittals of the proposal whether by fax or other electronic means are not acceptable as noted in the General Conditions.

**UNIT PRICES:** Typographical errors, errors in extending unit prices, arithmetic errors or errors clearly evident on the face of the bid document may be corrected in accordance with the Procurement Ordinance and Procurement Regulations. Discrepancies involving the incorrect extension of unit prices shall be resolved in favor of unit prices as unit prices cannot be corrected.

**CONTRACT TYPE:** The purpose of this solicitation is to establish an Indefinite Quantity Contract with Firm Fixed Pricing and delivery from which the City may place orders as needed.

**CONTRACT TERM:** The term of this Agreement shall be for an initial two (2) year term from July 1, 2019 through June 30, 2021. This contract may be renewed by the City for an additional two (2) year term through June 30, 2023 at the same terms and conditions.

**QUANTITIES:** This is an indefinite quantity contract from which the City may place orders on an as needed basis. Quantities listed are estimates of the City's need on an annual basis. Actual usage may vary. The City does not guarantee the purchase of any specific minimum quantities, **nor may any material be shipped or delivered without a valid purchase order number issued by the City.**

Concrete will be ordered as needed. When ordered, delivery shall be made within a reasonable amount of time. If a delivery cannot be made within the requested time frame, the City reserves the right to utilize the next best source available for that particular need.

**WAITING TIMES:**

1. Item No. 4 is based on a less than two (2) cubic yard minimum small load charge. This amount **may not be increased above the less than two (2) cubic yard** small load charges. Modification beyond the limit may result in disqualification of the vendor's bid.
2. Vendors **shall allow a minimum waiting period of ten (10) minutes per yard.** Vendor may choose to allow a longer waiting period, or to not charge at all, but in no case may the minimum be reduced. Modification below the minimum may result in disqualification of vendor's bid.
3. Waiting charge shall be based on 1/4 hour past the allowed waiting time. This shall be regarded as minimum and may not be reduced.

**TERMINATION:**

1. This contract may be terminated for convenience on the part of the City upon Fifteen (15) days written



notice to the vendor.

2. In the even the vendor should fail to perform any of the terms or conditions of the contract and should fail to rectify the fault or deficiency within ten (10) days after receipt of written notice from the City of such failure, the City shall have the right to terminate the contract immediately.

**ESCALATION CLAUSE:** An Escalation Clause is used as part of the Bid Proposal in accordance with the terms of the Escalation Clause on Page 10 of this bid.

**EXISTING AGREEMENT:** Under the terms and conditions of this Bid all public bodies allowed by law may procure the goods, supplies or services under this Bid as described herein. The terms and conditions of this Bid shall form a part of each order issued herein, but each public body shall be responsible for their own orders.

**ACKNOWLEDGMENT OF RECEIPT OF BID:** The Acknowledgment of Receipt should be signed and returned to the Purchasing Office as soon as possible but no later than 5:00 P.M. local time on June 4, 2019. **Only potential bidders who elect to return this form completed with the indicated intention of submitting a bid will receive copies of all written questions and the City's written responses to those questions as well as copies of Amendments, if any are issued.**

**BID DOCUMENTS:** Bid documents may be retrieved by accessing the Purchasing page of the City of Gallup website, [www.gallupnm.gov/bids](http://www.gallupnm.gov/bids), by calling (505) 863-1232 or visiting the Central Purchasing Office at 110 West Aztec, Gallup, NM 87301.

The City of Gallup will notify vendors of record of amendments/addenda that are issued. Vendors of record are those vendors that are currently on bid list therefore, if not a vendor of record or if bid is downloaded from City of Gallup website, it shall be the responsibility of the vendor to check website frequently for any addenda/amendments or correspondence concerning solicitation. Failure to acknowledge all addenda could result in a non-responsive bid/proposal. In the case of an inconsistency between information on this site and the Purchasing file document, the file document shall prevail.

**CITY OF GALLUP  
ESCALATION CLAUSE  
FORMAL BID NO. 1911**

Price escalations may be considered only under the following conditions:

- A. Offered prices must be firm for at least ninety (90) calendar days after written notification of contract.
- B. All requests for price increases shall be in writing and accompanied by:
  - 1.) A letter from the Contractor's supplier certifying the price increase to the Contractor; or
  - 2.) Evidence of verifiable market conditions resulting in increased costs such as mandated labor rate increases and significant fuel or energy cost increases.
- C. All invoices of the offered items, from suppliers to the Offeror, shall be subject to auditing by the City and furnished without delay upon request.
- D. The City reserves the right to purchase on the open market, or cancel a contract resulting from this request and solicit a new contract, if the escalated price is above the current open market price for the same material. Cancellation of the contract shall not affect any outstanding orders.
- E. All revisions of the price list shall become effective when they are accepted by the Purchasing Office of the City, provided that they do not conflict with paragraph (F) or (G).
- F. All approved price changes resulting from this escalation clause shall be firm for a period of ninety (90) calendar days after acceptance in writing from the City.
- G. The Offeror shall be limited to a maximum of one (1) price escalations per contract period unless otherwise specified in this request.
- H. The Offeror shall provide to the City written notice of any requested price changes, which shall become effective upon acceptance by the City of Gallup Purchasing Office.
- I. If the Offeror receives any price de-escalations from the supplier of goods sold to the City through a contract resulting from this request, the Offeror is responsible for notifying the City of such de-escalations, and passing those price changes on to the City immediately.

## **NOTICE TO BIDDERS**

As of October 5, 2011 applications for Resident New Mexico in-state bidders will no longer be processed through the State Purchasing Division. All resident business and contractors will have to obtain a new preference number with the New Mexico Department of Taxation and Revenue as of January 1, 2012.

**It will be the sole responsibility of the Bidders requesting consideration for the New Mexico Resident Business Preference to obtain approval and a certification from the New Mexico Department of Taxation & Revenue prior to the bid opening date. You must furnish a copy of the Resident Business Certificate with each bid in order to be considered for the in-state preference as per Sections 13-1-21 and 13-1-22 NMSA 1978.**

**As of July 1, 2012 a New Mexico Resident Veteran's Business preference number may be obtained from the New Mexico Department Taxation and Revenue Department. In order to be considered for the New Mexico Veteran's Contractor preference a copy of the Certificate must be included with each bid as per Sections 13-1-21 and 13-1-22 NMSA 1978.**

For additional information please call 505-827-0951, or to download applications log on at:  
<http://www.tax.newmexico.gov/Businesses/in-state-veteran-preference-certification.aspx>

**SPECIFICATIONS**  
**FORMAL BID NO. 1911**

**SPECIFICATIONS:** Materials and applicable Construction Requirements as defined in the New Mexico Department Of Transportation, Standard Specifications for Highway and Bridge Construction, (SSHBC) 2019 Edition ([http://dot.state.nm.us/content/dam/nmdot/Plans\\_Specs\\_Estimates/2019\\_Specs.pdf](http://dot.state.nm.us/content/dam/nmdot/Plans_Specs_Estimates/2019_Specs.pdf)), shall be adhered to. All reference to "District Engineer", "District Construction Engineer", "Project Manager", "Central Materials Laboratory", shall be replaced by "City Engineer or his designee".

**PLANT LOCATION:** Contractor's plant where materials are produced shall be located within a thirty-five (35) mile radius of the City of Gallup Limits.

**SUBMITTAL:** Concrete mix design submittal for each Portland Cement Concrete mix will be required sixty (60) days after "Notice of Award" and annually thereafter. The submittals shall be provided to the City Engineer for approval.

**BATCH CERTIFICATE:**

Before unloading concrete, furnish the City employee with a legible Weigh-Master's Certificate (Delivery Ticket) containing the following information:

1. Name of batch plant
2. Ticket serial number
3. Date and truck number
4. Job name and location (in the case of deliveries to multiple locations, driver shall note each delivery location on the ticket).
5. Amount of concrete (cubic yards)
6. Time loaded at Batch Plant
7. Water added by the receiver and his initials
8. Amount of cement & fly ash - lb./cu. yd.
9. Total water content by producer
10. Air entertainment, oz./cu. yd. & Brand Name
11. Water reducing admixture, oz./cu. yd. & Brand Name
12. Air temperature at the time of batching

13. A moisture correction sheet will be provided for each day placement over ten (10) cu. yds. To show the corrections in the aggregate due to moisture and the ability to keep the water cementitious ratio less than specified when using 4000 PSI concrete.
14. Batch weights of all components.

### **ADDITIONAL SPECIFICATIONS**

1. Upon "NOTICE OF AWARD" receipt, Vendor shall provide two (2) copies of proposed PCC mixed designs per New Mexico Department of Transportation (NMDOT), Standard Specifications for Highway and Bridge Construction (SSHBC), 2019 Edition, Section 509 (**See Exhibit A**) and provide same to City Engineer for review and approval within sixty (60) calendar days and annually thereafter.
2. Flowable fill proposed mix shall be a flowable mixture of Portland cement, fly ash, aggregates, admixtures, and water per New Mexico Department of Transportation (NMDOT), Standard Specifications for Highway and Bridge Construction (SSHBC), 2019 Edition, Section 516 (**See Exhibit B**); cement mixture shall be per Section 509 (**See Exhibit A**).
3. Supplied product, including all components (materials and applicable construction requirements) shall conform to the New Mexico Department of Transportation, Standard Specifications for Highway and Bridge Construction (SSHBC), 2019 Edition, by reference with certain portions presented herein.
4. All references to "District Engineer", "District Construction Engineer", "Project Manager", "Central Materials Laboratory" shall be replaced by "City Engineer or designee".
5. Revisions to the specifications by NMDOT will be incorporated into this contract by change order.

**CITY OF GALLUP  
 BID PROPOSAL  
 FORMAL BID NO. 1911  
 Page 1 of 2 of Bid Proposal**

Item No.	Description	Unit	Quantity	Unit Price	Amount
1.	Portland Cement Concrete, SSHBC Section 509, Class AA, 1" or 3/4" Aggregate Size	Cubic Yard	4,000	_____	\$ _____
2.	Portland Cement Concrete, SSHBC Section 509, Class F, 1" or 3/4" Aggregate Size	Cubic Yard	200	_____	\$ _____
3.	Flowable Fill, SSHBC Section 516 with No Air Entertainment	Cubic Yard	3,000	_____	\$ _____
4.	<b>Hauling:</b> within Gallup City Limits Less than Two (2) Cubic Yards, Small Load Charge	Loads	50	_____	\$ _____
5.	<b>Waiting Time:</b> Allowed Ten (10) Minutes per Yard, thereafter add charge per 1/4 hour after allowed time	1/4 Hour	100	_____	\$ _____
6.	<b>Overtime:</b> Unit Price per Hour Until Driver Clocks Out, if Truck has not unloaded by <u>4:00</u> P.M.	Hours	20	_____	\$ _____
<b>TOTAL ALL OR NONE ITEMS 1 - 6</b>					\$ _____

Note: SSHBC means New Mexico Department Of Transportation (NMDOT), Standard Specifications for Highway and Bridge Construction, 2019 Edition.

THIS BID WILL BE BASED ON A **"TOTAL ALL OR NONE"** BASIS FOR ITEMS 1 THRU 6.  
 DO NOT INCLUDE TAXES IN YOUR BID PROPOSAL

**CITY OF GALLUP**  
**BID PROPOSAL**  
**FORMAL BID NO. 1911**  
Page 2 of 2 of Bid Proposal

**ADDITIONAL PRICING:**

DELIVERY CHARGE PER MILE TO LOCATIONS  
**OUTSIDE THE CITY LIMITS BUT WITHIN MCKINLEY COUNTY \$ \_\_\_\_\_ PER MILE**

Contractor Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_

F.O.B.: **DESTINATION**  
Delivery Date ARO: \_\_\_\_\_  
Payment Terms: \_\_\_\_\_

Signed By: \_\_\_\_\_  
Name Printed or Typed  
\_\_\_\_\_  
Signature

Fax No.: \_\_\_\_\_  
Email: \_\_\_\_\_  
Telephone No.: \_\_\_\_\_

**AMENDMENTS: BIDDER ACKNOWLEDGES RECEIPT OF THE FOLLOWING AMMENDMENTS:**

AMENDMENT No. \_\_\_\_ Date \_\_\_\_\_ Initials: \_\_\_\_\_  
AMENDMENT No. \_\_\_\_ Date \_\_\_\_\_ Initials: \_\_\_\_\_  
AMENDMENT No. \_\_\_\_ Date \_\_\_\_\_ Initials: \_\_\_\_\_  
AMENDMENT No. \_\_\_\_ Date \_\_\_\_\_ Initials: \_\_\_\_\_  
AMENDMENT No. \_\_\_\_ Date \_\_\_\_\_ Initials: \_\_\_\_\_

Failure to acknowledge receipt as provided above may be sufficient grounds for disqualification of the bidder and rejection of his proposal. It shall be the contractor's responsibility to become fully advised of all addenda prior to submitting a bid.

**Bidder's Checklist of Submittal Documents**

- Bid (Cost) Proposal, Pages 14-15
- Acknowledge Receipt of Amendments (if any), Page 15
- Specification Pages, Page(s) 12-13 & Exhibit A & Exhibit B
- Exceptions to Specifications, Page 16
- Bidders **MUST** include a Copy of their New Mexico Resident Business or New Mexico Resident Veteran's Business Certificate issued by the State Taxation and Revenue Dept. (if applicable), to qualify for application of the State Preference to the bid
- A current IRS Form W-9





EXHIBIT B

**SECTION 516: FLOWABLE FILL**

**516.1 DESCRIPTION**

This Work consists of providing and placing flowable fill.

**516.2 MATERIALS**

**516.2.1 General**

Flowable fill is a flowable mixture of Portland cement, fly ash, aggregates, admixtures and water.

**516.2.2 Mix Design**

The State Materials Bureau is responsible for approving the mix design for flowable fill. Approval of a flowable fill mix design by the State Materials Bureau will be valid for a period of five (5) years unless revoked due to performance problems.

**516.2.3 Cement**

See Section 509, "Portland Cement Concrete Mix Designs."

**516.2.4 Aggregate**

The Contractor shall provide a uniform mixture of fine aggregate or coarse and fine aggregate. The Contractor shall provide coarse and fine aggregate with a gradation in accordance with Table 516.2.4:1, "Aggregate Mixture Gradation Requirements."

**Table 516.2.4:1  
Aggregate Mixture Gradation Requirements**

<b>Sieve size</b>	<b>% passing</b>
One (1) inch	100
3/8 inch	95 – 100
No. 4	80 – 100
No. 8	60 – 95
No. 16	45 – 80
No. 30	25 – 60
No. 50	5 – 45
No. 100	5 – 35
No. 200	0 – 30

**516.2.5 Water**

The Contractor shall provide concrete mix water in accordance with Section 509, "Portland Cement Concrete Mix Designs."

**516.2.6 Air-Entraining Admixture**

The Contractor may use an air-entraining admixture to provide air entrainment no greater than 35% in the flowable fill.

### **516.2.7 Fly Ash**

The Contractor shall provide approved Class F, Class C, or Class C/F blended fly ash in accordance with Section 509, "Portland Cement Concrete Mix Designs."

### **516.2.8 Water-Reducing Admixture**

The Contractor may use a water-reducing admixture.

### **516.2.9 Proportioning and Physical Property Requirements in the Laboratory**

The Contractor shall provide a flowable fill mix design in accordance with the following limits:

1. Cement, maximum 50 lbs/yd<sup>3</sup>.
2. Fly Ash, from 150 lbs/yd<sup>3</sup> to 300 lbs/yd<sup>3</sup>.
3. Air Content, optional.
4. Slump, from eight (8) inch to 11 inch.
5. Water/cement ratio, proportioned by weight to produce a slump within the prescribed limits.
6. Consistent aggregate throughout the concrete mixture.
7. Compressive strength will not exceed 150 psi at 28 Days.
8. Cast the test specimens in four (4) inch × eight (8) inch test cylinders, perforated on the bottom with four (4) 1/4 inch diameter holes for free draining.
9. Keep the test cylinders in a moist environment, but do not cure in a curing tank.
10. Cast six (6) compressive strength test cylinders in the Laboratory. Test two (2) cylinders at seven (7) Days, two (2) at 28 Days, and two (2) at 56 Days.

## **516.3 CONSTRUCTION REQUIREMENTS**

### **516.3.1 Batching, Mixing, and Transporting**

The Contractor shall perform batching, mixing, and transporting in accordance with Section 510, "Portland Cement Concrete."

### **516.3.2 Testing Flowable Fill in the Field**

The Contractor shall obtain the State Materials Bureau's approval of the flowable fill mix properties before using the mix in the field.

For field testing, the Contractor shall use a standard (15 lb) T-post fence driver to drive a #6 reinforcing bar with a flat end into the flowable fill Material 24 h after placement. The Contractor shall lift the driver until the bottom of the driver is even with a mark located six (6) inches below the top of the rebar, and then allow it to fall under its own weight. The Contractor shall remove and replace the flowable fill if fewer than six (6) blows or more than 25 blows are required to drive the rebar 12 inches into the fill. The Contractor shall not use compressive strength test cylinders for field-testing purposes.

### **516.3.3 Pre-Placement Requirements**

Before placing flowable fill, the Contractor shall remove any loose or uncompacted soils from the area to be filled. The Contractor shall ensure that all areas in which soils or

construction Materials have sloughed off or collected are completely cleared. The Contractor shall not place flowable fill against loose or uncompacted surfaces/materials.

The Contractor shall ensure that all pipes or other embedded items which would otherwise float to the top of the flowable fill are adequately secured to prevent their floating out of position.

#### **516.3.4 Placing**

The Contractor shall place flowable fill uniformly to prevent voids in or segregation of the bedding and filling Material. The Contractor shall secure the Culvert or pipe from movement.

The Contractor shall place the flowable fill by direct discharge from a ready mix truck, pumping, or other method approved by the Project Manager. The Contractor shall place the flowable fill in layers no more than 12 ft high. The Contractor shall place the flowable fill in layers no more than four (4) ft high for areas that require forming. The Contractor shall not place the individual layers until flowable fill in a previously placed layer has been in place at least two (2) h.

The Contractor shall submit a written request and obtain written approval from the Assistant District Engineer – Construction before placing the flowable fill in a full depth layer.

The Contractor shall not place the flowable fill on frozen ground or while it is raining. The Contractor shall protect flowable fill from flooding for at least 24 h after placement.

If necessary, the Contractor may place flowable fill in standing water that is positioned to keep the outside water from contaminating or mixing with the flowable fill.

The Contractor shall not allow any embedded items to float or otherwise dislodge. The Contractor shall secure pipe to compensate for buoyancy.

The Contractor shall fill the areas between the walls of the existing CBC and an inserted CMP thoroughly.

The Contractor shall not disturb the flowable fill Material for at least 24 h after placement. The Contractor may reduce this 24-hour period, if the penetration resistance of the Material justifies, as tested in accordance with Section 516.3.2, "Testing Flowable Fill in the Field."

#### **516.3.5 Application of Load**

The Contractor may cover the flowable fill within 24 h after placement, if a person weighing at least 150 lb does not sink into the Material more than one (1) inch, if standing on a four (4) inch × four (4) inch wooden block.

#### **516.3.6 Temperature and Weather Limitations**

The Contractor shall not place flowable fill when the air temperature is lower than 35 °F. The Contractor may begin placement only when weather conditions are favorable and the air temperature is at least 35 °F and rising. If the air temperature at the time of placement is less than 40 °F, the Contractor shall place flowable fill that has a temperature of at least 50 °F.

#### **516.4 METHOD OF MEASUREMENT**

The Department will measure flowable fill using the dimensions shown in the Contract or as approved by the Project Manager. The Department will consider flowable fill used at the

Contractor's option to be Incidental to the associated Bid Item.

**516.5 BASIS OF PAYMENT**

**PAY ITEM**

*Flowable Fill*

**PAY UNIT**

Cubic Yard

**516.5.1 Work Included In Payment**

The following Work will be considered as included in the payment for the main item and will not be measured or paid for separately:

1. When called for in the Contract, or the Contractor proposes its use and is approved by the Project Manager, flowable fill can be used for backfill in Culvert installations; and
2. No measurement or payment will be made for Work and Materials associated with backfilling pipes with flowable fill. This will be included in the Contract unit price per linear foot of Culvert pipe.

**SECTION 509: PORTLAND CEMENT CONCRETE MIX DESIGNS****509.1 DESCRIPTION**

This Work consists of developing, submitting and receiving approval to use Portland Cement Concrete (PCC) mix designs for use on Department Projects.

For the purposes of this Section, the following definitions are used:

1. Supplier: Any individual, partnership, company, firm, corporation, or joint venture that owns the Approved Concrete Mix Design, for concrete that is incorporated into a Department construction Project(s).
2. The terms "mix" and "mixture" are used interchangeably.

**509.2 MATERIALS**

All Materials shall be in accordance with AASHTO and ASTM methods or other test procedures designated by the Department. The State Materials Bureau is the final authority regarding the interpretation of test procedures.

The certifying laboratory or Private Testing Laboratory (PTL) performing the physical and chemical tests for the Supplier is required to participate in the Cement and Concrete Reference Laboratory (CCRL) proficiency sample and the pozzolan inspection programs.

**509.2.1 Reserved****509.2.2 Cementitious Materials**

Unless otherwise specified, the Supplier shall use; (1) a combination of Type II, III, or V Portland cement and supplemental cementitious Materials (SCM), (2) Blended cement, or (3) a combination of blended cement and SCM. Supplemental cementitious Materials used in blended cements shall not be used as a replacement of portland cement for mix design purposes.

**509.2.2.1 Portland and Blended Cements**

Portland cement shall comply with ASTM C150. Types II, III, and V portland cement shall have an alkali content less than 0.60% by mass of alkalis as  $\text{Na}_2\text{O} + 0.658 \text{K}_2\text{O}$  when determined under AASHTO T 105. Types III and V portland cements shall only be used if specified or authorized by the State Concrete Engineer.

Blended cements shall comply with Type IS (S) – portland blast-furnace slag cement, Type IP (MS) – portland-pozzolan cement, or Type IT – Ternary blended cement as specified in ASTM C595, except:

1. Portland cement used in blended cements shall comply with the requirements listed in 509.2.2.1;
2. Class C fly ash shall not be used in blended cements, unless otherwise approved by the State Concrete Engineer;
3. SCM used in blended cements shall meet the requirements of Section 509.2.2.2, "Supplementary Cementitious Materials;"
4. Maximum SCM content shall not exceed 50%; and
5. Blended cement shall be composed of Type II or V portland cement and SCM produced by one of the following methods:

- 5.1. Intergrinding of portland cement clinker and SCM;
- 5.2. Blending of portland cement and SCM; and
- 5.3. Combination of intergrinding and blending of portland cement and SCM.

**509.2.2.2 Supplementary Cementitious Materials**

Each SCM shall be in accordance with the following standards and as modified in Table 509.2.2.2:1, "Supplementary Cementitious Material Requirements:"

1. Portland cement used in blended cements shall comply with the requirements listed in Section 509.2.2.1, "Portland and Blended Cements;"
2. Class C and F fly ashes shall comply with the requirements of ASTM C618:
  - 2.1. Class C fly ash shall not be used in concrete exposed to sulfate environments or with "potentially reactive," or "reactive" aggregate;
3. Ultrafine fly ash (UFFA) shall comply with ASTM C618, Class F;
4. Natural or calcined natural pozzolans shall comply with ASTM C618, Class N;
5. Metakaolin shall comply with ASTM C618, Class N;
6. Ground granulated blast furnace slag (GGBFS) shall comply with ASTM C989, Grade 100 or 120; and
7. Silica fume shall comply with ASTM C1240.

**Table 509.2.2:1  
Supplementary Cementitious Material Requirements**

SCM Type	Material Standard	Properties	Limits		
			N	F	C
<b>Coal Fly Ash, and Raw or Calcined Natural Pozzolans</b>	ASTM C618	Class	N	F	C
		Sum of Al <sub>2</sub> O <sub>3</sub> , SiO <sub>2</sub> , and Fe <sub>2</sub> O <sub>4</sub> , min	75%	85%	50%
		Loss on ignition, max	5.0%	3.0%	3.0%
		Magnesium Oxide (MgO), max	5.0%	5.0%	5.0%
		Sulfur Trioxide (SO <sub>3</sub> ), max	3.0%	3.0%	3.0%
		Available alkalis as Na <sub>2</sub> O + 0.658 K <sub>2</sub> O, max	1.50%	1.50%	1.50%
		Calcium Oxide (CaO), max	As Approved	8.0%	50%

**Table 509.2.2.2:1  
Supplementary Cementitious Material Requirements**

SCM Type	Material Standard	Properties	Limits
<b>Ultra Fine Fly Ash in addition to the requirements for Class F fly ash</b>	AASHTO M 321	Accelerated Pozzolonic Activity Index,	
		<ul style="list-style-type: none"> <li>• 7 day 85%</li> <li>• 28 day 100%</li> </ul>	
<b>Metakaolin</b>	ASTM C618	Silicon dioxide (SiO <sub>2</sub> ) + aluminum oxide (Al <sub>2</sub> O <sub>3</sub> ), min	92%
		Calcium oxide (CaO), max	1.0%
		Sulfur trioxide (SO <sub>3</sub> ) max	1.0%
		Loss on ignition, max	1.2%
		Available alkalis as Na <sub>2</sub> O + 0.658 K <sub>2</sub> O, max)	1.5%
		Accelerated Pozzolonic Activity	

**Table 509.2.2.2:1  
Supplementary Cementitious Material Requirements**

SCM Type	Material Standard	Properties	Limits
		Index, <ul style="list-style-type: none"> <li>• 7 day</li> <li>• 28 day</li> </ul> Fineness, retained on 45 μm wet sieve, max	85% 95% 5.0%
<b>Silica Fume</b>	ASTM 1240	Reduction in mortar bar expansion when used with cement in the proposed mix design, min	80%

**509.2.2.3 Cementitious Materials Source Approval and Acceptance**

The Department will approve individual cementitious Materials based upon compliance with the respective ASTM or AASHTO Standard Specifications and the requirements listed in this Section. The following information shall be included with each cementitious Material approval request submittal:

1. Supplier name and address;
2. Manufacturer name and address;
3. Production facility physical address;
4. Material type;
5. Material source/origin;
6. Raw Material source(s);
7. Production procedures;
8. Description of storage facilities;
9. Quality Control program documentation including the following:
  - 9.1. Certifying Laboratory's accreditation and current participation in the ASTM Cement and Concrete Reference Laboratory Program (CCRL);
  - 9.2. Routine sampling and testing frequency; and
  - 9.3. QC program test reports (mill certs) for each lot tested from the previous six (6) months shall be provided upon request from the Department;
10. Cementitious Materials shall be tested and certified for conformance with the respective Material Specifications below:
  - 10.1. Portland cements: ASTM C150 – Standard Specification for Portland Cement; and



- 10.2. Blended cements: ASTM C595 – Standard Specification for Blended Hydraulic Cements;
  - 10.2.1. Portland cements used in manufacturing blended cements: ASTM C150 – Standard Specification for Portland Cement; and
  - 10.2.2. SCM used in manufacturing blended cements: ASTM C618 – Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; and
- 11. Supplementary Cementitious Materials shall be tested and certified monthly for conformance with the respective Material Specifications listed below:
  - 11.1. Pozzolans: ASTM C618 – Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete;
  - 11.2. Metakaolins: ASTM C618 – Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete;
  - 11.3. GGBFS: ASTM C989 - Standard Specification for Slag Cement for Use in Concrete and Mortars; and
  - 11.4. Silica fume: ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures.

#### **509.2.2.4 Withdrawal of Source Approval**

The State Materials Bureau may withdraw cementitious Material source approval for any of the following reasons:

- 1. A change in Material source or production procedure from that on the original request for approval;
- 2. Failure to comply with Specification requirements;
- 3. The source becomes inactive for a period of three (3) months; or
- 4. The appropriate cementitious Material mill certificates are not received monthly.

#### **509.2.2.5 Packaging**

Cementitious Materials shall be packaged with the name brand, the source manufacturing facility, Material type, date of production and lot number. The Supplier shall provide the same information, as well as quantities, on the shipping documents for bulk cementitious Materials deliveries.

#### **509.2.2.6 Storage**

Different brands of SCM or cements from different production facilities shall be stored in separate, identifiable storage units provided at the production facilities. Each cementitious Material shall be stored separately.

### **509.2.3 Aggregates**

#### **509.2.3.1 Aggregates Testing**

Coarse and fine aggregate shall be tested in accordance with the methods shown in Table 509.2.3.1:1, "Aggregates Test Methods." Concrete mix design approval involving a designated source will remain in effect as long as annual test results for specific gravity, absorption, gradation, and sand equivalent (for fine aggregate only) and annual tests for other requirements (except ASR) demonstrate Material compliance.

**Table 509.2.3.1:1  
Aggregates Test Methods**

Method	Aggregate test	Coarse	
		Aggregates	Fine Aggregates
AASHTO T 2	Sampling	Note <sup>A</sup>	Note <sup>A</sup>
AASHTO T 112	Clay lumps, max	2.5%	3.0%
	Soft fragments, max	2.0%	2.0%
	Coal & lignite, max	0.25%	1.0%
AASHTO T 27	Sieve analysis	Note <sup>B</sup>	Note <sup>C, D</sup>
AASHTO T 11	Passing No. 200, max	2.0% <sup>E</sup>	3.0% <sup>E</sup>
AASHTO M 6	Fineness modulus	NA	2.3 to 3.1 <sup>F</sup>
AASHTO T 85	Coarse aggregate absorption & specific gravity	Report	NA
AASHTO T 84	Absorption & Specific Gravity of Fine Aggregate	NA	Report
AASHTO T 104	Magnesium sulfate soundness, max	15%	12%
ASTM C131	L.A. Abrasion	40%	NA
ASTM D3744	Aggregate Index, min	25	NA
ASTM D4791 TTCP Modified	Flat and elongated pieces, max	15% <sup>G</sup>	NA
ASTM D5821	Fractured faces, min	Report	NA
AASHTO T 176	Sand equivalent, min	NA	75
ASTM C295	Petrographic analysis	Report	Report
AASHTO T303 or ASTM C1293	Alkali-Silica Reactivity	Report	Report

**Notes:**

1. Coarse and fine aggregates shall be sampled in accordance with AASTO T 2.
2. See Table 509.2.3.2.3:1 – Coarse Aggregate Gradation Requirements.
3. See Table 509.2.3.3.3:1 – Fine Aggregate Gradation Requirements.
4. The Department will not approve fine aggregate that has more than 45% passing any sieve and retained on the next finer sieve.
5. The Department may Accept coarse and fine aggregates with more than the maximum percent passing the No. 200 sieve if the combined gradation of the coarse and fine aggregate percent passing the No. 200 sieve does not exceed three percent (3.0%).
6. Ensure that Material larger than 3/8 inch contains no more than 15% flat or elongated particles with a 3:1 or greater dimensional ratio in accordance with TTCP. Add the percentage of flat pieces to the percentage of elongated pieces to determine specification compliance. Count pieces that are both flat and elongated only once.

**509.2.3.2 Coarse Aggregate**

Coarse aggregate shall consist of clean crushed stone, crushed gravel, or natural washed gravel free of trash, debris, organics, and other Deleterious Materials.

**509.2.3.2.1 Coarse Aggregate Gradation Requirements**

When using the combined gradation procedure in Section 509.2.7.5.1, “Combined Gradation;” coarse aggregate gradation requirements are not required with the exception of tolerance for Material passing the No. 200 sieve found in Table 509.2.3.2.1:1, “Coarse Aggregate Gradation Requirements.” Coarse aggregate gradations shall be in accordance with Table 509.2.3.2.1:1, “Coarse Aggregate Gradation Requirements.”

**Table 509.2.3.2.1:1  
Coarse Aggregate Gradation Requirements**

Sieve size	% of aggregate passing sieve			
	1.5 in	1.0 in	3/4 in <sup>A</sup>	1/2 in
2.0 inch	100	—	—	—
1.5 inch	95–100	100	—	—
1.0 inch	—	95–100	100	—
3/4 inch	35–70	—	90–100	100
1/2 inch	—	25–60	—	90–100
3/8 inch	10–30	—	20–55	40–70
No. 4	0–5	0–10	0–10	0–15
No. 8	—	0–5	0–5	0–5
No. 200	0.0–2.0	0.0–2.0	0.0–2.0	0.0–2.0

A. Required for Class G gradation.

**509.2.3.3 Fine Aggregate**

Fine aggregate shall consist of clean and well-graded natural sand, manufactured sand, or combination of both, and free of trash, debris, organics, and other Deleterious Materials.

**509.2.3.3.1 Fine Aggregate**

When using the combined gradation procedure detailed in Section 509.2.7.5.1, “Combined Gradation;” fine aggregate gradation requirements are not required except for the amount of Material passing the No. 200 sieve which shall be within the tolerance listed within Table 509.2.3.3.1:1, “Fine Aggregate Gradation Requirements.”

Fine aggregate shall meet the gradation requirements listed in Table 509.2.3.3.1:1, “Fine Aggregate Gradation Requirements.” The gradation requirements represent the limits that the Department will use to determine source Acceptability.

The Supplier shall use a fineness modulus, calculated in accordance with AASHTO M 6, to determine the degree of uniformity between representative samples. If the combined gradation procedure has not been chosen, the Department may reject fine aggregate from designated sources with variation in fineness modulus greater than 0.20 above or below the fineness modulus shown on the approved concrete mix designs. Variations in excess of these tolerances may be cause for rejection.

**Table 509.2.3.3.1:1  
Fine Aggregate Gradation Requirements**

<b>Sieve size</b>	<b>% Passing</b>
3/8 inch	100
No. 4	90–100
No. 8	70–95
No. 16	45–80
No. 30	25–60
No. 50	5–30
No. 100	0–8
No. 200	0.0–3.0

**509.2.3.4 Aggregate Alkali-Silica Reactivity**

The Supplier shall perform the initial proof-of-reactivity-potential test using standard GCC Type I-II low alkali cement from the GCC Cement plant located at Tijeras, New Mexico. The Department considers aggregates with mean mortar bar expansions of greater than 0.10% at 14 Days when tested in accordance with AASHTO T 303 or ASTM C1260 potentially reactive and those less than 0.10% as non-reactive. Expansions greater than 0.20% are considered "Reactive." If tested using ASTM C1293, the Department will consider aggregate non-reactive if the average expansion at the end of one (1) year is less than 0.04%. Once the State Materials Bureau approved a particular aggregate source is non-reactive, it will not require the source to reevaluate for five (5) years unless concerns arise from possible aggregate source changes.

**509.2.3.4.1 ASR Mitigation Evaluation Criteria**

If the results of the initial proof-of-potential-reactivity test show the aggregate to be "potentially reactive" or "reactive," the Contractor shall repeat the test procedure using the actual cement, and, if desired, any of the ASR inhibiting SCM and admixtures listed in Table 509.2.3.4.1:1, "Option 2 Mix Designs - ASR Mitigation Requirements." The Department will consider an admixture effective if the mean mortar bar expansion at 14 Days is less than or equal to 0.10%, when tested in accordance with AASHTO T 303 (modified to include SCM) or ASTM C1567. The Supplier shall retest aggregates classified as "potential reactive" or "reactive" for ASR mitigation each time the comprehensive mix evaluation is performed. The Contractor shall report the minimum amount of Class F fly ash, and the minimum amount of ASR inhibiting admixture required to provide a maximum expansion at 14 Days that is less than 0.10%. The SCM required for mitigation shall be reported as a percentage of the cement weight. For Option 2 mix designs, the Contractor shall use ASR inhibiting SCMs or admixtures in accordance with Table 509.2.3.4:1, "Option 2 Mix Designs - ASR Mitigation Requirements," unless it is determined that larger dosages are required to control the expansion.

**Table 509.2.3.4:1  
Option 2 Mix Designs - ASR Mitigation Requirements**

<b>SCM</b>	<b>Minimum SCM Content<sup>A, B</sup></b>
Class F	
Binary Blends	20%
Ternary Blends <sup>C</sup>	12%
Blended cement	20%
GGBFS	20%
Silica fume	10%
Lithium nitrate	0.55 gal/yd <sup>3</sup> of solution for each pound of cement sodium equivalent

**Table 509.2.3.4:1**  
**Option 2 Mix Designs - ASR Mitigation Requirements**

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Notes:

1. By total cementitious content.
  2. Or minimum amount required to mitigate ASR expansion, whichever is greater.
  3. 20% combined SCM content or minimum amount required to mitigate ASR expansion, whichever is greater.
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**509.2.4 Admixtures**

Admixtures types and brands are required to be on the Department's APL at the time of mix design submission. Air entraining, and chemical, and lithium nitrate admixtures shall not contain more than 0.1% of soluble and insoluble chlorides. Individual admixtures shall be compatible with each other when multiple admixtures are used in a concrete mixture. Admixtures shall be used in compliance with the manufacturer's written instructions.

**509.2.4.1 Air Entraining Admixtures**

Air-entraining admixtures shall be provided in accordance with ASTM C260.

**509.2.4.2 Chemical Admixtures**

Any of the following chemical admixtures types as defined by and meeting the requirements of ASTM C494 may be used to facilitate concrete mix design:

1. Type A – Water Reducing;
2. Type B – Retarding;
3. Type D – Water Reducing and Retarding;
4. Type F – Water Reducing, High Range; or
5. Type G – Water Reducing, High Range, and Retarding.

The following admixtures may be used if approved by the State Concrete Engineer:

1. Type C – Accelerating;
2. Type E – Water Reducing and Accelerating; or
3. Type S – Specific Performance.

Any of the following chemical admixtures types as defined by and meeting the requirements of ASTM C1017 may be used to facilitate concrete mix design:

1. Type 1 – Plasticizing; or
2. Type 2 – Plasticizing and Retarding.

**509.2.4.3 Lithium Nitrate Chemical Admixture**

Lithium nitrate shall be in an aqueous solution meeting the following:

1. Lithium nitrate as  $\text{LiNO}_3$  shall be 30% by weight;
2. Sulfate as  $\text{SO}_4$  shall be less than 0.1% (1,000 PPM); and
3. Alkalis as  $\text{Na}_2\text{O} + 0.658 \text{K}_2\text{O}$  shall be less than 0.1%.

**509.2.4.4 Pigment Admixtures for Integrally Colored Concrete**

Pigments shall conform to ASTM C979. Pigments shall be lightfast, alkali-resistant, weather resistant, and formulated to give long lasting color to concrete.

#### **509.2.5 Water**

Water shall conform to ASTM C1602. Water shall have a pH between 6.0 and 8.5; sulfate or chloride contents shall not exceed 1,000 ppm, and shall be free of oil, silt, clay, organic matter, or other Deleterious Material.

#### **509.2.6 Fiber Reinforcement**

If specified, steel fibers shall conform to ASTM A820, and synthetic fibers conform to ASTM C1116.

#### **509.2.7 Portland Cement Concrete Mix Design**

Concrete mixtures shall be designed in a PTL approved by the Department, by a Professional Engineer registered in the State of New Mexico with a minimum of three (3) year of experience in testing, proportioning and designing of concrete and is directly responsible for all test results used for design purposes. The laboratory mix design shall only be developed using the proposed Materials.

Only technicians who are currently certified by TTCP - Concrete or ACI Concrete Field Technician, Level I shall determine concrete fresh properties in accordance with the appropriate AASHTO procedures. Laboratories approved by the Department's State Materials Bureau shall determine hardened properties. Technicians performing tests on aggregates and aggregate gradations shall be certified by TTCP or ACI Concrete Laboratory Level I. Those technicians performing strength tests on hardened concrete must be certified as an ACI Level I Laboratory Technician or by TTCP for Compressive Strength Testing of Concrete.

##### **509.2.7.1 Concrete Classifications**

The concrete classes listed below shall be used when specified in the Contract:

1. Class A: Structural, cast-in-place sidewalks, curb/gutter, concrete wall barrier, Bridge Substructures;
2. Class AA: Structural, used for cast-in-place structural, Bridge Superstructure, approach slabs, abutments;
3. Class HPD: Structural, used for Bridge decks, concrete paving, concrete paving repair. Additional requirements: combined gradation protocol, shrinkage ASTM C157 less than 0.04% at 28 days;
4. Class F: Slip formed concrete wall barrier, curb/gutter; compressive strength measured at 14 days;
5. Class G: Below grade applications, caissons, drilled piers (part of Bridge Substructure);
6. Class HES (formerly rapid set): High early strength concrete used for rapid repair applications. Early compressive strengths will be determined on a per Project basis. Cement content will be determined by lab trials. Allowable cements: Type II, III and rapid strength cements;
7. Class P (formerly class F-LS): Concrete paving. Mix design shall include compressive strengths in addition to flexural beams in order to develop a correlation curve. Other additional requirements: combined gradation protocol, shrinkage

ASTM C157 less than 0.04% at 28 days; and

8. Special: The Contract Requirements for the individual Project will address mix design and testing requirements.

**509.2.7.2 Concrete Class Requirements**

Option 1 or Option 2 may be used for mix design development of the Concrete Classes listed in Table 509.2.7.2:1, "Option 1: Concrete Requirements." Mix designs developed using Option 1 shall be approved by the State Concrete Engineer for estimated Project quantities less than those provided in the table below. The Department may consider requests to increase the maximum estimated quantity on a Project specific basis. Mix designs developed using Option 1 do not require ASTM C666 testing, and ASTM C457 hardened air void characteristics.

For Projects with anticipated concrete quantities of 150 CY or less of an individual concrete class, a written request may be submitted to the State Concrete Engineer to issue the a mix design under Section 509.2.7.6.12, "Mixture Design Submittals," bullet 13.3, "Incidental Concrete."

**Table 509.2.7.2:1  
Option 1: Concrete Requirements**

Class	Strength <sup>A</sup> , psi	W:CM Ratio, max	Minimum Cementitious Content, lbs/CY	Maximum Estimated Project, Quantity	Slump <sup>B</sup> , Inches	Air Content <sup>C</sup> , %
A	3,000	0.45	560	1,000 CY	3 - 5"	-
F	3,000 <sup>D</sup>	0.45	575		0.5 - 2"	-
G	3,000	0.44	611		6 - 9"	< 3% <sup>G</sup>
HES	4,000 <sup>F</sup>	0.40	NA	500 CY	Note H	-
P	3,000 <sup>D</sup> and 650 <sup>E</sup> flex	0.35	600	10,000 SY	0.5 - 2"	-
Special	The Contract Requirements for the individual Project will address special mix requirements.					
Notes:						
<ol style="list-style-type: none"> <li>1. Specified strength shall be achieved by 28 days unless otherwise noted.</li> <li>2. As determined by AASHTO T 119.</li> <li>3. Project risk zone requirements apply; see Section 509.2.7.4, "Freeze-Thaw Risk Zones."</li> <li>4. Specified strength shall be achieved by 14 days.</li> <li>5. Specified flexural strength shall be achieved by 28 days.</li> <li>6. Specified strength shall be achieved in 24 hours, and 75% of the specified strength shall be achieved in five (5) hours, unless otherwise stated in the Contract.</li> <li>7. Air entraining admixtures are not allowed.</li> <li>8. Mix design specific for Project specific requirements.</li> </ol>						

For Option 1 mix design development, the minimum SCM in concrete shall comply with one of the following:

1. Any combination of cement and a minimum of one (1) SCM satisfying Equation 1:

Equation 1:

$$\frac{(25 \times UF) + (12 \times FA) + (6 \times SL)}{MC} \geq X$$

Where:

UF = silica fume, metakaolin, or UFFA, including the quantity in blended cement, lb/CY.

FA = Class N natural pozzolan, or Class F fly ash including quantity in blended cement, lb/CY.

SL = GGBFS, including the quantity in blended cement, lb/CY.

MC = minimum cementitious content, lb/CY.

X = 1.8 innocuous aggregate, 3.0 for reactive or potentially reactive aggregates.

Or

2. 25 % Class F fly ash by total weight of cementitious Material.

Option 2 mix designs are required for Project quantities in excess of the maximum quantities provided in Table 509.2.7.2:2, "Option 2: Concrete Requirements."

**Table 509.2.7.2:2  
Option 2: Concrete Requirements**

Class	Compressive Strength <sup>A</sup> , psi	Slump <sup>B</sup> , Inches	Air Content <sup>C</sup> , %
A	3,000	4.5" – 5.5"	-
AA	4,000	4.5" – 5.5"	-
F	3,000 <sup>D</sup>	0.5 - 2"	-
HES	4,000 <sup>F</sup>	-	-
HPD	4,000	4.5" – 5.5"	-
P	3,000 <sup>D</sup> and 650 <sup>E</sup> flex	0.5 - 2"	-
G	3,000	6-9"	< 3% <sup>G</sup>
Special	The Contract Requirements for the individual Project will address special mix requirements.		
Notes:			
<ol style="list-style-type: none"> <li>1. Min specified strength shall be achieved by 28 days unless otherwise noted.</li> <li>2. As determined by AASHTO T 119.</li> <li>3. Project risk zone requirements apply; see Section 509.2.7.4, "Freeze-Thaw Risk Zones."</li> <li>4. Min specified strength shall be achieved by 14 days.</li> <li>5. Min specified average flexural strength shall be achieved by 28 days when tested in accordance with AASHTO T 97.</li> <li>6. Min specified strength shall be achieved in 24 hours, and 75% of the specified strength shall be achieved in five (5) hours, unless otherwise stated in the Contract.</li> <li>7. Air entraining admixtures are not allowed.</li> </ol>			



For both Options 1 and 2, Class G concrete shall have the following characteristics:

1. Minimum cementitious content of at least 611 lb;
2. Maximum water/cementitious ratio no greater than 0.44;
3. Combined gradation;
4. Maximum sized aggregate no greater than 0.75 in;
5. Class G mix designs using aggregates with fractured faces shall include a viscosity modifying admixture.
6. Sand/aggregate ratio between 40% and 42% by total aggregate volume;
7. Maximum air content no greater than three percent (3.0%);
8. No air entrainment agent;
9. Slump range of seven (7.0) inches  $\pm$  one (1.0) inch, except when placing under a drilling fluid;
10. Slump range of eight (8.0) inches  $\pm$  one (1.0) inch for placement under a drilling fluid; and
11. Adjust admixtures for the job site conditions encountered so that the concrete remains workable and plastic for the two (2) h placement limit.

**509.2.7.3 Details for Tables 509.2.7.2:1 & 2, “Concrete Classes for Laboratory Design of Concrete Mixtures”**

Tables 509.2.7.2:1 & 2, “Concrete Classes for Laboratory Design of Concrete Mixtures” shall be used for designing concrete mixes. Section 510.3.1.4, “Plastic Properties” shall be used to evaluate concrete delivered to Department Projects.

The Contractor shall use the minimum air content shown below in the Laboratory mix:

1. High Risk Zones: 7.0%
2. Medium Risk Zones: 6.5%
3. Low Risk Zones: 6.0%

All new mix designs shall have a minimum over-design compressive strength of 1,200 psi greater than the specified compressive strength. For Class F and Class P the minimum over-design compressive strength shall be 800 psi greater than the specified design strength unless a lower value is calculated using the greater value from either Equation (1) or Equation (2). Class P over-design flexural strength shall be 15% greater than the specified flexural design strength. For Class P, the minimum average flexural strength for three (3) beams cast in the Laboratory shall be 650 psi at 28 Days, when tested in accordance with AASHTO T 97. Option 1 mix designs shall not be adjust based compressive strength statistical analysis.

For Option 2 mix designs, annually the Supplier shall determine the minimum allowable average compressive strength for approved mix designs with 15 or more compressive strength tests, or for similar mix designs mixing from the same facility with the similar air content and compressive strength, and 15 or more compressive strength tests using one (1) of the following equations. The equation that produces the largest value shall be used to determine the minimum allowable compressive strength.

$$f'_{cr} = f'_c + (1.34 \times k \times s) \tag{1}$$

$$f'_{cr} = f'_c + (2.33 \times k \times s) - 500 \tag{2}$$

Where,

- $f'_{cr}$  Minimum Laboratory compressive strength at the specified age.
- $f'_c$  Specified compressive strength.
- $k$  KK-factor from Table 509.2.7.3:1, "k-Factor for Increasing Standard Deviation," for standard deviation increase if the total number of tests is less than 30, but equal to or greater than 15.
- $s$  Standard deviation for the compressive strength tests submitted of the same specified strength.

**Table 509.2.7.3:1  
k-Factor for Increasing Standard Deviation**

Total number of tests	k-Factor
15	1.16
20	1.08
25	1.03
≥30	1.00

The Department will allow linear interpolation for an intermediate number of tests. A mix that was developed from a history of 15 or more test results from the preceding 24 month period is considered an existing mix. A mix developed without historical test results is considered a new mix.

**509.2.7.4 Freeze-Thaw Risk Zones**

The concrete mixture shall be designed for use in the freeze-thaw zone in which the Project is located. One (1) freeze/thaw cycle is defined as a Day in which the lowest recorded temperature is equal to or less than 25 °F as recorded on the Western Regional Climate Center database. The web address is [www.wrcc.dri.edu](http://www.wrcc.dri.edu). The risk levels are defined as follows:

1. **Low-Risk.** The annual average number of freeze/thaw cycles is equal to or less than 30 cycles per year;
2. **Medium-Risk.** The annual average number of freeze/thaw cycles is greater than 30 but less than or equal to 130 cycles per year; and
3. **High-Risk.** The annual average number of freeze/thaw cycles is greater than 130 cycles per year.

Table 509.2.7.4:1, "Statewide Concrete Risk Zones," shall be used to determine the required risk zone.

**Table 509.2.7.4:1  
Statewide Concrete Risk Zones**

District no.	County name	Station name	Concrete risk zone
1	Dona Ana	(County wide)	Low
1	Grant	(County wide)	Low
1	Hidalgo	(County wide)	Low
1	Luna	(County wide)	Low
1	Sierra	(County wide)	Low
1	Socorro	(County wide)	Medium
2	Chaves	(County wide)	Low

**Table 509.2.7.4:1  
Statewide Concrete Risk Zones**

<b>District no.</b>	<b>County name</b>	<b>Station name</b>	<b>Concrete risk zone</b>
2	Curry	(County wide)	Medium
2	De Baca	(County wide)	Medium
2	Eddy	(County wide)	Low
2	Lea	(County wide)	Low
2	Lincoln	(County wide) <sup>a</sup>	Medium
2	Lincoln	Ruidoso	High
2	Otero	(County wide)	Medium
2	Roosevelt	(County wide)	Medium
3	Bernalillo	(County wide) <sup>a</sup>	Medium
3	Bernalillo	Sandia Crest	High
3	Sandoval	(County wide)	Medium
3	Valencia	(County wide)	Medium
4	Colfax	(County wide)	High
4	Guadalupe	(County wide)	Medium
4	Harding	(County wide)	Medium
4	Mora	(County wide)	High
4	Quay	(County wide)	Medium
4	San Miguel	(County wide)	Medium
4	Union	(County wide)	Medium
5	Los Alamos	(County wide)	Medium
5	Rio Arriba	(County wide)	High
5	San Juan	(County wide)	Medium
5	Santa Fe	(County wide)	Medium
5	Taos	(County wide)	High
5	Torrance	(County wide)	Medium
6	Catron	(County wide)	High
6	Cibola	(County wide)	High
6	McKinley	(County wide) <sup>a</sup>	High
6	Sandoval	(County wide)	High

<sup>a</sup>Except as otherwise listed

The minimum allowable air content for mix design submittal purposes is:

1. Six percent (6.0%) for low-risk zones;
2. 6.5% for medium-risk zones; and
3. Seven percent (7.0%) for high-risk zones.

The air content shall be confirmed by the pressure method and the volumetric method in accordance with Section 509.2.7.6, "Mix Design Submittal."

**509.2.7.5 PCC Mixture Development**

**509.2.7.5.1 Combined Gradation**

The combined gradation procedure is required for Class F, Class P and Class HPD, and is optional for all other concrete mixes. The aggregates shall be evaluated for concrete mixtures prepared for the combined gradation procedures in accordance with the following:

1. **Coarseness Factor.** Determine the Coarseness Factor in accordance with the following equation:

$$CF = \frac{Q}{Q+I} \times 100 \tag{3}$$

Where,

*CF* Coarseness Factor.

*Q* Weight of the aggregate retained on or above the 3/8-inch sieve.

*I* Weight of the aggregate passing the 3/8 inch sieve, but retained on the No. 8 sieve

2. **Workability Factor.** The weight of the aggregate passing the No. 8 sieve divided by the weight of the combined gradation, represented as a percent.
3. **Mortar Factor.** The volume of the cement, SCMSCM, water, air, other pozzolans, and aggregate passing the No. 8 sieve divided by the volume of the entire concrete mixture, represented as a percent.
4. **Paste Factor.** The volume of the cement, fly ash, water, air, and other pozzolans divided by the volume of the entire concrete mixture, represented as a percent.

When using the combined gradation protocol, aggregates shall be proportioned using a 0.45 power curve to achieve a dense and uniform gradation. Coarse and fine aggregate gradation requirements do not apply. The suggested targets for the Coarseness and Workability Factors for concrete mixtures designed using combined gradation are provided in Table 509.2.7.5.1:1, "Recommended Workability Factor and Coarseness Factor Targets."

**Table 509.2.7.5.1:1**  
**Recommended Workability Factor and Coarseness Factor Targets**

Nominal Maximum Aggregate Size	Workability Factor	Coarseness Factor
3/4 inch	32 - 36	65 - 75
1/2 inch	40-42	10-20

**509.2.7.5.2 Concrete Mix Design Requirements**

The concrete mix design shall be proportioned and designed to meet the following requirements:

1. All concrete mix design submittals shall include compressive strengths for the following specified ages:
  - 1.1 3 days;
  - 1.2 7 days;
  - 1.3 14 days; and
  - 1.4 28 days;
2. For concrete classes developed using Option 2, when examined in accordance with

the ASTM C457 linear traverse method, hardened air void system characteristics with the exception of Class G and Class HES, shall meet the following criteria:

- 2.1 A minimum air content of five percent (5.0%);
- 2.2 A specific surface greater than 600 inches<sup>-1</sup>; and
- 2.3 A spacing factor less than 0.008 inch;
3. Ensure that concrete complies with Section 509.2.3.4, "Alkali-Silica Reactivity," and Section 509.2.3.4.1, "ASR Mitigation Evaluation Criteria," as determined by the State Materials Bureau;
4. For all concrete classes, chloride ion permeability at 28 Days tested in accordance with ASTM C1202 shall meet the following:
  - 4.1 Less than or equal to 3,000 coulombs for Low-Risk Zones;
  - 4.2 Less than 2,500 coulombs for Medium-Risk Zones; or
  - 4.3 Less than 2,000 coulombs for High-Risk Zones;
5. For structural concrete classes developed using Option 2, the durability index shall be determined from at least one (1) prism tested at 28 Days for 300 cycles, in accordance with ASTM C666, Method A. The mix designs shall have a minimum durability index of:
  - 5.1 80 for Low-Risk Zones;
  - 5.2 85 for Medium-Risk Zones; and
  - 5.3 90 for High-Risk Zones;
6. Cure prisms tested for durability index and chloride ion permeability by bathing in lime saturated water at a temperature of 73.3 °F ± 3.0 °F for the first seven (7) Days followed by 21 Days in lime saturated water at a temperature of 100.0 °F ± 3.0 °F; and
7. The maximum shrinkage value for Class P and HPD concrete mixtures is 0.04% at 28 Days when tested with three (3) inch x four (4) inch x 16 inch prism or three (3) inch x three (3) inch x ten (10) inch prism and cured in a standard cure for the first seven (7) Days. Following the seven (7) Day initial cure, cure in a relative humidity of 50% and test in accordance with AASHTO T 160. The results shall be reported in the "comments" field of the mix design submittal form.

#### **509.2.7.6 Mixture Design Submittals**

For standard concrete mix designs, complete electronic copy of the NMDOT *Concrete Mix Design Submittal Form* shall be submitted to the Concrete Unit of the State Materials Bureau for review and approval. Special mix designs and mix designs with Project specific shall be submitted to the Project Manager for review and approval by the State Concrete Engineer.

The following information shall be included in the mix design submittal:

1. Mix design Option;
2. Supplier name;
3. Production facility physical address, telephone number and e-mail address;
4. Production facility NRMCA Certification # and expiration date;
5. PTL's name;
6. The New Mexico registration number of the professional Engineer who is responsible for the concrete mixture design Work;
7. A comprehensive Materials list and the properties of each component, including:

- 7.1. Aggregates:
  - 7.1.1. Source names;
  - 7.1.2. Specific source locations;
  - 7.1.3. For new aggregate sources, a complete ASTM C295 "Petrographic Examination of Aggregates for Concrete" and an ASTM C294, *Constituents of Natural Mineral Aggregates* for both the coarse and fine aggregates after completing processing and manufacturing procedures and the aggregate is ready for use shall be submitted. Include the geologic origin of the Material; perform and certify the analysis using a petrographer previously approved by the Department;
  - 7.1.4. AASHTO T 11 - Soundness loss;
  - 7.1.5. AASHTO T 335 - Percent of Fractured Faces for the coarse aggregate;
  - 7.1.6. Gradations, including AASHTO T 11;
  - 7.1.7. AASHTO T 85 - Bulk saturated surface dry specific gravities;
  - 7.1.8. AASHTO T 96 - Los Angeles wear abrasion;
  - 7.1.9. AASHTO M 6 - Fineness modulus;
  - 7.1.10. AASHTO T 84 - Aggregate absorption;
  - 7.1.11. AASHTO T 152 - Aggregate correction factor;
  - 7.1.12. AASHTO T 176 - Sand equivalent of fine aggregate;
  - 7.1.13. AASHTO T 112 - Clay lumps content; and
  - 7.1.14. AASHTO T 21 - Organic impurity content, including soft fragments, coal and lignite, flat or elongated pieces, and other Deleterious substances;
- 7.2. Cement:
  - 7.2.1. Supplier name;
  - 7.2.2. Specific source name; and
  - 7.2.3. Specific cement type;
- 7.3. SCMSCM:
  - 7.3.1. Supplier name;
  - 7.3.2. Specific source name; and
  - 7.3.3. Specific SCM type;
- 7.4. Blended Cement:
  - 7.4.1. Cement supplier name;
  - 7.4.2. Specific cement source name;
  - 7.4.3. Cement type;
  - 7.4.4. SCM supplier name if different than the cement supplier name;
  - 7.4.5. Specific SCM source name;
  - 7.4.6. Specific SCM type; and
  - 7.4.7. Percent SCM;
8. Concrete mixture proportions; state clearly if submitting request under the combined gradation provisions;
9. Water/cementitious ratios;
10. Type and amount of admixtures; use admixtures on the Department's *Approved Products List*;
11. Water source and location; include pH, available alkalis, and a full chemical

- analysis, if the water source is not a certified NMED public potable water supply;
12. Plastic Concrete Properties:
    - 12.1. Air temperature;
    - 12.2. Concrete temperature;
    - 12.3. Slump; when using super-plasticizer, document the slump before and after addition of the super-plasticizer;
    - 12.4. Unit weight;
    - 12.5. Air content measured in accordance with AASHTO T 152 or AASHTO T 121; and
    - 12.6. When using super-plasticizer, document the measured air content before and after adding the super-plasticizer);
  13. Hardened Concrete Properties:
    - 13.1. New Concrete Mixtures:
      - 13.1.1. Compressive strength tests (the average of three (3) cylinders tested at three (3) Days, seven (7) Days, 14 Days and 28 Days);
      - 13.1.2. Type of fracture of each cylinder;
      - 13.1.3. Flexural strength test results for Class P (average of three (3) beams)
      - 13.1.4. Durability index (for structural mixes only);
      - 13.1.5. Hardened air void analysis (for structural mixes only);
      - 13.1.6. Rapid Chloride Permeability (for structural mixes only); and
      - 13.1.7. Expansion data from AASHTO T 303 or ASTM C1260 or C1567;
    - 13.2. Existing Concrete Mixtures:
      - 13.2.1. Resubmit original mix design, updated aggregate properties, and compressive strength statistical data when available in accordance with Section 509.2.7.6, "Mixture Design Submittals;"
    - 13.3. Incidental Concrete Mix Designs (Only for specific Projects) are concrete mixes intended for Projects that anticipate less than 150 CY of each concrete class. Incidental Mix Designs shall be proportioned in accordance with the Section and shall be approved based on the following:
      - 13.3.1. Compressive strength data (field performance data if using the mix within the previous 24 months, or Laboratory mix performance data not using it in the field); and
      - 13.3.2. Air content, as measured by the pressure method or the volumetric method; when using superplasticizer, show the air content before and after adding superplasticizer.

#### **509.2.7.7 Mixture Design Approval**

The Department will require 14 Days to review the submittal packages after receipt by the State Materials Bureau of all required information.

The Department will approve Option 1 mix designs for a period of one (1) year from the date of issuance upon verification of compliance with all requirements. Option 1 designs are required to be fully renewed each year prior to use on NMDOT Projects, or may be resubmitted under Option 2 with the additional testing required for Option 2.

The Department will approve Option 2 mix designs for a period of one (1) year from the date of issuance upon verification of compliance with all requirements. A minimum of 30 Days

before the one (1) year approval expires, the Supplier may request that the mix design be reissued. The Supplier shall provide test reports showing that the mix design met specification requirements during the issue period. Option 2 mix designs may be re-approved for no more than four (4) additional years.

At the discretion of the State Concrete Engineer, a mixture can be adjusted without re-batching by using "cement efficiency" calculations to determine the amount of change to the cement and the total cementitious content that is necessary to achieve the desired level of performance. When this procedure is allowed, the ratio of SCM to cement ratio will remain unchanged, the water content will remain unchanged, and the aggregates will be adjusted without changing the overall gradation to accommodate the changes in volume from changes made to the cement. All changes made by this method shall be approved by the State Concrete Engineer before being implemented in the field.

The approved mix design's constituent Materials shall not be changed without the State Concrete Engineer's written approval. The approved mix design's constituent Materials shall not be changed without the State Concrete Engineer's written approval.

#### **509.2.7.8 Suspension and Revocation of Mix Design Approval**

Mix design approval may be suspended by the State Concrete Engineer at any time during the approval period for any of the following reasons:

1. Unauthorized changes to the constituent Materials or proportions;
2. Conditions of the Supplier's Equipment or Quality Control adversely affects the strength or other properties of the concrete;
3. Drop in the statistical averages of the concrete below the minimums required for Acceptance in accordance with Section 510.3.5, "Acceptance;" and
4. Test cores indicate the mix is not performing as designed or is not meeting the specified design strength as determined in accordance with Section 510.3.5.4.1, "Testing Cores."

If a mix design approval is suspended or revoked, it shall not be Accepted for use on any Department construction Project.

In the event that a mix design approval is suspended for reasons 1 or 2, all of the Supplier's mix designs approvals may be suspended until such time that is demonstrated that the root cause for the suspension has been corrected.

The State Concrete Engineer will only consider a request to reinstate an approval after the Contractor has submitted and implemented a comprehensive "Corrective Action Plan" to address and correct the reason(s) for the suspension.

If the "Corrective Action Plan" fails to adequately address and correct the reason(s) for the suspension, the approval may be permanently revoked by the State Concrete Engineer. The mix design will then be required to be resubmitted in its entirety as a new mix design with updated comprehensive testing.

#### **509.3 CONSTRUCTION REQUIREMENTS**

Concrete or concrete items shall be constructed in accordance with the section of these Standard Specifications for which the concrete is used.

#### **509.4 METHOD OF MEASUREMENT**



The Department will measure concrete or concrete items in accordance with the section of these Standard Specifications for which the concrete is used.

**509.5 BASIS OF PAYMENT**

The Department will pay for concrete or concrete items in accordance with the section of these Standard Specifications for which the concrete is used.