SPECIFICATIONS AND CONTRACT DOCUMENTS
FOR THE CONSTRUCTION OF

CITY OF ALAMOGORDO
LAS LOMAS ROAD DRAINAGE IMPROVEMENTS
EN2001

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CITY OF ALAMOGORDO, NEW MEXICO
PUBLIC WORKS BID No. 2019-006

August 2019

The technical material and data contained in these Specifications were prepared under the supervision and direction of the undersigned, whose seal, as a Professional Engineer licensed to practice in the State of New Mexico, is affixed below.

Paul J. Pompeo, P.E.

11490 — NMPE Number

08/14/2019 — Date

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GENERAL SPECIFICATIONS

SECTION 2 - INSTRUCTIONS TO BIDDERS

1.0 DEFINED TERMS

Terms used in these Instructions to BIDDERS which are defined in the General Conditions of the Construction Contract have the meanings assigned to them in the General Conditions. The term "BIDDER" means one who submits a Bid directly to OWNER, as distinct from a sub-bidder, who submits a Bid to a Bidder. The term "Successful BIDDER" means the lowest, qualified, responsible and responsive BIDDER to whom OWNER (on the basis of OWNER's evaluation as hereinafter provided) makes an Award. The term "Bidding Documents" includes the Advertisement or Invitation to Bid, Instructions to BIDDERS, the Bid Schedule, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

2.0 EXAMINATION OF CONTRACT DOCUMENTS AND PROJECT SITE

Before submitting a Bid, each BIDDER must:

A. Examine and study the Project Plans and Contract Documents thoroughly.

B. Visit the site to become familiar with local conditions that may in any manner affect performance of the Work.

Before submitting a Bid, each BIDDER may, at BIDDER's own expense, make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (surface, subsurface and underground facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work and which BIDDER deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Contract Documents.

Any explorations or tests that each BIDDER deems necessary for submission of the Bid shall be coordinated and performed with the prior approval of the City of Alamogordo. Any work of this nature will be done in strict compliance with all applicable permits, requirements and regulations.

C. Be familiar with federal, state and local laws, ordinances, rules and regulations, affecting performance of the work and employment of labor.

D. Carefully correlate any observations with the requirements of the Contract Documents.

E. Notify ENGINEER of all conflicts, errors or discrepancies in the Contract Documents.

F. Note that information and data reflected in the Contract Documents with respect to Underground Facilities at or contiguous to the site is based upon information and data furnished to OWNER and ENGINEER by owners of such Underground Facilities or others, and neither the ENGINEER nor the OWNER assumes responsibility for the accuracy or completeness thereof. It shall be the CONTRACTOR's sole responsibility to locate all utilities before any work commences.

The submission of a bid will constitute an incontrovertible representation by BIDDER that BIDDER has complied with all requirements contained herein, that without exception the Bid is premised upon performing and furnishing the Work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

3.0 INTERPRETATIONS AND ADDENDA

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 4:00 p.m. on the September 12, 2019 will not be answered.** Submitted questions will be answered by formal written addenda and will be binding. Oral clarification will not be binding.

Each Addenda shall be made part of the Contract Documents to the same extent as though contained in the original documents and itemized listings thereof. On the Bid Proposal, each BIDDER shall acknowledge receipt of each Addenda.

4.0 CONTRACT TIME

The number of calendar days within which, or the dates by which, the Work is to be substantially completed and ready for Final Payment (the Contract Time) as set forth in the AGREEMENT, Section 8. This time may be defined as a specified fixed date or a given number of calendar days. The Contract Time may be amended by mutual written Agreement to include authorized time extensions as the performance of the Contract requires.

5.0 LIQUIDATED DAMAGES

Provisions for liquidated damages are set forth in the AGREEMENT, Section 8.

6.0 SUBSTITUTE OR "OR-EQUAL" ITEMS

The Contract, if Awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitutes or "or-equal" items. Whenever it is indicated in the Drawings or in the Specifications that a substitute or an "or-equal" item of material or equipment may be furnished or used by the CONTRACTOR, if acceptable to ENGINEER, application for acceptance will not be considered by ENGINEER until after the Effective Date of the AGREEMENT. The procedure for the submission of any such application by the CONTRACTOR for consideration by the ENGINEER is set forth in the General Conditions.

7.0 SUBCONTRACTORS

BIDDERS will submit to OWNER a list of all Subcontractors and other persons and organizations proposed for those portions of the Work whose value in services is $5,000.00 or more. **SUCH LIST WILL BE COMPLETED AND SUBMITTED WITH THE BID AND SHALL INCLUDE THE NAME AND ADDRESS OF EACH SUBCONTRACTOR AND THE NATURE OF THE WORK TO BE PERFORMED**. If OWNER or ENGINEER, after due investigation, has reasonable objection to any proposed Subcontractor, other person, or organization, they may before giving the Notice of Award, request the Apparent Low BIDDER to submit an acceptable

substitute Subcontractor. The Contract Price shall be increased or decreased by the difference in cost occasioned by such substitution and an appropriate Change Order shall be issued. If the Apparent Low Bidder declines to make any such substitution, he will not thereby sacrifice his Bid Security. Any Subcontractor, other person, or organization so listed and to whom OWNER or ENGINEER does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to OWNER and ENGINEER.

The CONTRACTOR shall not be required to employ any Subcontractor, other person, or organization against whom CONTRACTOR has reasonable objection.

The BIDDER is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract must be acceptable to the OWNER.

8.0 WAGE RATES

The BIDDER's attention is directed to the fact that the prevailing State Wage Rate Decision listed by the New Mexico Department of Workforce Solutions and contained in Section 12, herein, shall also be made a part of the Contract. It shall be the BIDDER'S responsibility to be thoroughly informed of all state, federal and local laws and statutes pertaining to the employment and shall strictly adhere to such laws and regulations.

9.0 COLLUSION - GENUINE BID

The BIDDER, by submitting a Bid, certifies that the Bid is genuine and is not a sham or collusive, or made in the interest, or in the behalf of any person not named as BIDDER, and that the BIDDER has not directly or indirectly induced or solicited any other BIDDER to put in a sham Bid, or any other person, firm or corporation to refrain from bidding, and that the BIDDER has not in any manner sought by collusion to secure himself an advantage over any other BIDDER.

10.0 QUANTITIES

The quantities set forth in the Bid Schedule are estimated quantities. Payment will be made at the unit price bid amounts for the Work actually performed. The City reserves the right to increase or decrease quantities. The CONTRACTOR shall not be paid for any portion of the Project built beyond plan dimensions and thickness. The OWNER has the right (and BIDDER by submission of a Bid, agrees OWNER has this right) to increase or reduce the quantities shown in the Bid Schedule up to twenty-five (25) percent before the CONTRACTOR can present a claim to adjust the unit bid prices.

11.0 EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this contract, the CONTRACTOR agrees as follows:

The CONTRACTOR will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The CONTRACTOR will take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training.

The CONTRACTOR agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

12.0 GROSS RECEIPTS SURETY BOND

Effective July 1, 1975, New Mexico House Bill 262 added Section 7-1-55, NMSA 1978 to the Tax Administration Act, Subsection A, provides for any person engaged in the construction business, as defined in Section 7-9-3, NMSA 1978, who does not have its principal place of business in New Mexico and enters into a prime construction contract to be performed in this state, at the time such contract is entered into, to furnish the Commissioner of Revenue or an authorized delegate with a surety bond, or other acceptable security, in a sum equivalent to the gross receipts to be paid under the contract, multiplied by the sum of the applicable rate of the gross receipts tax imposed by Section 7-9-4, NMSA 1978, plus the rate of tax imposed by the local option gross receipts tax. Upon receipt of a surety bond, or other acceptable security, the Commissioner, or the delegate, shall issue a certificate stating that the requirements of this section have been met.

13.0 SAFETY STANDARDS AND ACCIDENT PREVENTION

With respect to all Work performed under this Contract, the CONTRACTOR shall:

A. Comply with the safety standards provisions of applicable laws, building and construction codes, the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596).

B. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.

C. Maintain in the Project Office or other well known place at the job site, all articles necessary for giving first aid to the injured, and shall make standing arrangements for the immediate removal to a hospital or a doctor's care of persons (including employees), who may be injured on the job site. In no case shall employees be permitted to work at a job site before the employer has made a standing arrangement for removal of injured persons to a hospital or a doctor's care.

14.0 WORK ON OR ADJACENT TO PRIVATE PROPERTY

The CONTRACTOR shall be required to provide access for the residents and businesses along the construction route to the satisfaction of the ENGINEER. In addition, any private improvements that exist shall be preserved against damage from the CONTRACTOR's activities. The CONTRACTOR shall be required to remove and rebuild any improvements damaged during construction at his sole expense. These improvements include but are not limited to: buildings, fences, sidewalks, structures, walls, driveways, and landscaping. The CONTRACTOR shall not be allowed to make a claim for additional Time or expense due to rebuilding improvements damaged by construction activities.

Except as specified otherwise, in the execution of work on private property, the CONTRACTOR shall make all arrangements with the private property owners to the satisfaction of both the private owner and the ENGINEER before proceeding with the Work. Items removed on private

property to facilitate access to the Work shall be replaced to a condition satisfactory to both the private property owner and the ENGINEER at the cost of the CONTRACTOR.

15.0 TWELVE (12) HOUR CALL-OUT NOTICE

The CONTRACTOR shall be required to maintain a clean, safe work site as well as adequate, safe access for all residents and businesses along the construction routes, to the satisfaction of the ENGINEER. This Work shall include any measures necessary to keep the site clean and safe, and provide access, including but not limited to routine sweeping, treatment to prevent blowing soil, complete removal of mud, grading, temporary driveways, and import of dry suitable material to form temporary driving surfaces.

Upon verbal notification by the ENGINEER, the CONTRACTOR shall perform whatever measures necessary to provide the required cleanup for adequate and safe site conditions and access to adjacent property. The CONTRACTOR shall have twelve (12) hours to respond and begin the work required to clean up the work site or provide said access.

Failure by CONTRACTOR to respond and begin corrective Work within twelve (12) hours will cause OWNER to hire an independent CONTRACTOR to perform the Work required, as determined solely on the ENGINEER's opinion, and withhold all expenses incurred from the CONTRACTOR's Payment for the Project. The CONTRACTOR, by submission of a Bid, agrees to the above stated conditions and is required to sign the Call Out Notice Acknowledgment in Section 3 - Bid Schedule.

16.0 COPIES OF BIDDING DOCUMENTS

"Specifications and Drawings will be available to BIDDERS on the **City Website through Vendor Registration and Bid Notification System** or by CD. Requests for the CD may be faxed to (575) 439-4117 or emailed to cquairoli@ci.alamogordo.nm.us. The CD will be provided at no charge. If the CD is to be mailed, the requestor shall supply the Purchasing Department with a pre-paid mailing account and the appropriate information required for delivery".

Complete sets of Bidding Documents must be used in preparing Bids. Neither OWNER nor the ENGINEER assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

OWNER and ENGINEER in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

17.0 SUBMISSION OF BIDS

The following bid documents are to be submitted as your Bid:

Section 3 - Bid Schedule
Section 4 - Subcontractor's Fair Practice Act Compliance
Section 5 - Bid Bond
Section 6 - Statement of Bidders Qualifications
Section 7 - Campaign Contribution Disclosure Form,
Resident Business Certificate (if applicable),
Resident Veterans Preference Certification (if applicable)

- Copy of State of New Mexico, Regulation and Licensing Department, Construction Industries Division License(s)
- Copy of New Mexico Department Workforce Solutions, Certificate of Public Works Registration

and any other information that may be required.

Prices shall be filled in for all items on the Bid Schedule (Section 3). The Bid Schedule must be completed in ink or by typewriter.

Bids by corporations must be executed in the corporate name by the president or vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal shall be affixed to the Bid and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature. Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature, and the official address of the partnership must be shown below the signature.

All names must be typed or printed below the signature.

The Bid shall contain an Acknowledgment of Receipt of all Addenda (the numbers of which shall be filled in on the Bid Schedule), and acknowledgment of the Twelve (12) Hour Call-Out Notice.

Bids shall be submitted before the time and place stated herein. Bids received after the Bid Opening time will be returned unopened. Faxed bids will not be accepted.

The address and telephone number for communications regarding the Bid must be shown.

Alterations to Bid amounts by erasures or by interlineations shall be initialed by the signer of the Bid. Any Bid not duly signed will not be considered. All Bids shall be submitted and received with the understanding that the BIDDER accepts the terms and conditions as set forth herein.

Each Bid, accompanied by the Bid Security and all other required documents shall be placed in a sealed opaque envelope marked with the words "Bid Proposal", the Project title, the Public Works Bid Number (shown on the title sheet of the Specification book), Attn: Engineering Department, and the name and address of the BIDDER.

18.0 QUALIFICATIONS OF BIDDERS

To demonstrate qualifications to perform the Work, each BIDDER must submit with their Bid, the "Statement of Bidder's Qualifications" contained in Section 6 herein. The City of Alamogordo reserves the right to require additional information and to reject any and all bids from BIDDERS that OWNER determines not to be qualified to carry out the obligations of the Contract and complete the Project.

19.0 BID SECURITY

Bid Security in the amount of five (5) percent of the amount of the Bid shall accompany the Bid documents. This Bid Security must be in the form of a certified or bank cashier's check, payable without condition or recourse, to the OWNER or it may be a Bid Bond issued by a surety licensed to conduct business in the State of New Mexico and be named in the current list of the Insurance Division, State Corporation Commission, Santa Fe, New Mexico.

The attached Bid Security is to become the property of the OWNER in the event the AGREEMENT and Bonds are not executed within the time specified in these Instructions to Bidders, as liquidated damages for the delay and additional expenses caused to the OWNER. The Bid Security is submitted as a guarantee that the BIDDER, if Awarded the Contract, will Execute such Contract in accordance with the Bid Schedule - Section 3, and in the manner and form required by the Contract Documents.

The Bid Security of the three (3) lowest Bidders will be retained until the Contract is Awarded or other disposition is made. Bid Proposals submitted without the required Bid Security will not be considered. Attorneys-in-fact who sign the Bid Security must file a certified and effective dated copy of their power of attorney.

The Bid Security of the successful BIDDER will be retained until such BIDDER has Executed the Agreement and furnished the required Contract security. If the successful BIDDER fails to Execute and deliver the Agreement and to furnish the required Contract Security within ten (10) days after the Notice of Award, OWNER may annul the Notice of Award and the Bid Security of that BIDDER will be forfeited. The Bid Security of other BIDDERS whom OWNER believes to have a reasonable chance of receiving the Award may be retained by OWNER until the earlier of the seventh (7th) day after the Effective Date of the Executed AGREEMENT or the sixty-first (61st) day after the Bid Opening.

20.0 GROSS RECEIPTS TAXES, PERMITS AND LICENSES

Prices stated in the Bid Schedule shall not include applicable State gross receipts or applicable local option taxes. Taxes shall be added to the subtotal Bid amount. The CONTRACTOR will be reimbursed for the actual gross receipts tax liability incurred during construction. The CONTRACTOR will be responsible for all permits and licenses required to perform the Work.

21.0 OPENING OF BIDS

BIDDERS are invited to be present at the Bid Opening. The person reading the Bids will utilize the following procedure prior to reading the amount of the Bid:

A. Read name of BIDDER and BIDDER's New Mexico contractor's license number and classification.

B. Check for list of Subcontractors to be utilized on the Project.

C. Verify that the proper Bid Security is enclosed.

D. Verify receipt of the Statement of Bidder's Qualifications.

E. Verify Bidder's Acknowledgment of each Addendum issued, if any.

F. Verify Bidder's Acknowledgment of the Twelve (12) Hour Call-Out Notice.

G. Determine whether the Bid Schedule is signed.

H. Verify receipt of State of New Mexico, Regulation and Licensing Department, Construction Industries Division License.

I. Verify receipt of New Mexico Department Workforce Solutions, Certificate of Public Works Registration.

J. Verify receipt of Campaign Contribution Disclosure Form.

K. Verify receipt of Resident Veterans Preference Certification.

L. Verify any other information that may be required from other funding sources. (If this is a federally funded project, federal "pink sheets" must be completed and signed.)

M. Proceed with reading the Bid amounts.

If any of the requirements of the Contract Documents have not been met, the Bid shall be subject to rejection based solely on the OWNER'S discretion.

22.0 BIDS TO REMAIN SUBJECT TO ACCEPTANCE

The OWNER will require time to study and canvass each Bid to determine which Bid is in the best interest of the OWNER. In consideration thereof, no Bid Proposal may be withdrawn after the scheduled closing time for receipt of Bids, for a period of sixty (60) days. The OWNER may return any or all Bids along with the Bid Security prior to that date.

23.0 AWARD OF CONTRACT

The OWNER reserves the right to reject any and all Bids, to waive any and all formalities. Also, OWNER reserves the right to reject the Bid of any BIDDER if OWNER believes that it would not be in the best interest of the OWNER to make an Award to that BIDDER.

In evaluating Bids, the OWNER will consider the qualifications of the BIDDERs as well as other prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Schedule or by the OWNER prior to the Notice of Award.

The OWNER may consider the qualifications and experience of the CONTRACTOR, Subcontractors, suppliers, and other persons and organizations proposed in evaluating the Bids. The OWNER may also consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.

The OWNER may conduct such investigations as deemed necessary in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of each BIDDER,

proposed Subcontractors, suppliers and other persons and organizations to perform and furnish the Work. If requested by the OWNER, the BIDDER shall provide a certified statement of financial condition.

The Contract will be Awarded to the BIDDER whose evaluation by the OWNER indicates that said Award will be in the best interests of the City.

If the Contract is to be Awarded, OWNER will give the Successful BIDDER a Notice of Award within seventy-five (75) days after the day of the Bid Opening. BIDDERS are hereby notified that, if Awarded the Contract, they **MAY NOT** assign payments due under the Award without permission of the OWNER. Further, BIDDERS are notified that consent to such assignments will be rarely granted.

24.0 PERFORMANCE BOND, LABOR AND MATERIAL PAYMENT BOND, AND CERTIFICATE OF INSURANCE BOND

Upon receipt of Notice of Award, the BIDDER will Execute the formal Contract Documents within ten (10) days and deliver the Performance Bond, Labor and Material Bond and Certificate of Insurance as required herein, naming the OWNER as co-insured. Each Surety Bond shall be in the amount of one hundred (100) percent of the total Contract Price as security for the faithful performance of the Contract and for the payment of all labor and materials. The sureties on such bonds shall be duly authorized to conduct business in the State of New Mexico and acceptable to the OWNER and shall otherwise meet the requirements set forth in the Contract Documents. Attorneys-in-fact who sign Payment and Performance Bonds must file with each bond a certified and effective dated copy of their power of attorney. Sureties must also identify a service agent in the State of New Mexico.

OWNER reserves the right to require that any Bond furnished pursuant to the Contract Documents be in a form acceptable to OWNER. OWNER may reject any Bond which is not acceptable. CONTRACTOR'S inability to provide a Bond acceptable to OWNER may serve to render the Bid non-responsive.

25.0 EXECUTION OF CONTRACT

The Contract Agreement shall be Executed in two (2) counterparts, any one of which shall be deemed to be an original, and shall be distributed as follows:

CONTRACTOR	1 original
OWNER	1 original

26.0 CONSTRUCTION SCHEDULE

The CONTRACTOR shall submit to the OWNER a proposed construction schedule in accordance with Article 2.8 of the General Conditions, Section 13. The CONTRACTOR is required to schedule the Work so as to minimize disturbance to the local residents and businesses. Allowable days for the contract are described in Section 8, Article 3, Contract Agreement.

27.0 MAJOR EQUIPMENT

Upon the Execution of the Contract Documents, the CONTRACTOR shall immediately place orders for all equipment and materials to be used on the Project. It is recommended that the CONTRACTOR place tentative orders, subject to cancellation for failure to complete the Contract Documents upon Notification of Award, for all equipment and materials with critical delivery dates.

28.0 SHOP DRAWINGS

Shop Drawings, descriptive literature and calculations as required covering all materials and equipment proposed for the job shall be submitted in three (3) copies by the CONTRACTOR to the ENGINEER for approval. The purpose of the Shop Drawings is to show the ENGINEER that the CONTRACTOR understands the design concept, demonstrating CONTRACTOR's understanding by indicating which equipment and material CONTRACTOR intends to furnish and install, and by detailing the fabrication and installation CONTRACTOR intends to use.

All data submitted shall be complete, including type, size, number required, etc., as called for in the Contract, Project Plans, and Specifications. If material or equipment other than that specified is submitted for approval, the submittal data shall clearly show and point out any differences with adequate information to determine its equality.

The approval of the Shop Drawings by the ENGINEER shall not be construed as a complete check, but will indicate that the general method of construction is satisfactory. Approval of the Shop Drawings will not relieve the CONTRACTOR of the responsibility for any errors or omissions which may exist. The CONTRACTOR will be responsible for the satisfactory construction of all Work covered under this Contract. If deviations, discrepancies or conflicts between Shop Drawings and Specifications are discovered either prior to, or after, Shop Drawing submittals are processed by the ENGINEER, the Design Drawings and Specifications shall control and shall be followed.

All data shall be submitted in strict accordance with the following procedures:

A. Submit to the ENGINEER within fifteen (15) days after the Notice of Award.

B. Submittals shall be made in groups of items which are related to facilitate cross checking and coordination.

C. Each submittal shall be accompanied by a letter giving the CONTRACTOR's name, the Project name and an itemized list of the submittal data.

Should this procedure not be followed, the CONTRACTOR shall make no claim for loss of time or money as a result of delay in receiving approved submittal data. Material fabricated or equipment delivered to the site before the approved submittals have been returned to the CONTRACTOR shall be subject to rejection by the ENGINEER.

OWNER shall review each submittal and provide written acceptance or rejection within ten (10) working days after receipt.

29.0 WORK GUARANTEE

The CONTRACTOR shall guarantee in writing all Work constructed under this Contract against defective materials and workmanship as follows:

All items of Work shall be guaranteed for a period of one (1) year, unless stated otherwise in these Specifications.

The Performance Bond shall guarantee claims for damages due to the workmanship for the same period as stated above. The Guarantee Period begins on the date of Substantial Completion of the Work as determined by the OWNER. All corrective work satisfying the Guarantee Periods shall be accomplished at no cost to the OWNER. Emergency repairs performed by forces of or on the behalf of the OWNER will be billed to the CONTRACTOR. The Labor and Materials Payment Bond shall guarantee payment for all equipment, equipment rental, labor and materials for a period of one (1) year after Substantial Completion of the Work.

30.0 BID EVALUATION CRITERION FOR AREA

Effective March 15, 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.

31.0 PRE-BID MEETING

A Non-Mandatory Pre-Bid Meeting will be held at **2:00 pm, September 9, 2019,** in the Commission Chambers at 1376 E. Ninth Street, Alamogordo, New Mexico.

32.0 Construction Industries Division (CID) Project Classification Determination

Construction Industries Division (CID) Project Classification Determination is **GA-1 or GA-98 for roadway work and GF-9 or GF-98 for waterline work** as regulated by Construction Industries Division, 2550 Cerrillos Road, Santa Fe, NM 87505. In accordance with the provisions of the New Mexico Construction Industries Licensing Act, all project work must be performed by properly licensed contractors and subcontractors with active licenses in good standing as of the date and time specified for Bid Opening. The City has determined that the Contractor shall possess a valid license classification as specified above or other appropriate license classification under the Construction Industries Licensing Act at the time the contract is Bid. Any work outside the scope of the Prime Contractor's classification(s) must be subcontracted. Any work subcontracted by a Prime Contractor must be performed by an entity that is validly licensed in the classification(s) of the work that is to be subcontracted as of the date and time

specified for Bid Opening. Bids that do not satisfy applicable licensing requirements will be considered non-responsive.

33.0 IN-STATE 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 (5%) lower than the Bid actually submitted.

For information on obtaining a resident contractor certificate, the potential Bidder should contact the State of New Mexico Taxation and Revenue Department, P.O. Box 5373, Santa Fe, New Mexico 87502-5374, telephone (505) 827-0951 or on the web at

http://www.tax.newmexico.gov/forms-and-publications/pages/recently-updated.aspx

34.0 RESIDENT VETERANS PREFERENCE

To receive a Resident Veterans Preference pursuant to Section 13-1-21 and 13-1-22 NMSA 1978, a resident veterans business shall submit with its Bid a copy of a valid "Resident Veterans Preference Certification" issued by the taxation and revenue department (TRD). For the purpose of Awarding, the SPD Policy Memo FY13-001 contained in Section 7 shall apply to a Bid submitted by a resident veteran business.

For information on obtaining a resident contractor certificate, the potential Bidder should contact the State of New Mexico Taxation and Revenue Department, P.O. Box 5373, Santa Fe, New Mexico 87502-5374, telephone (505) 827-0951.

Local Business Preference, In-State Preference and Resident Veteran Business Preference cannot be cumulative. The Bidder will only be credited one of the preferences.

LAS LOMAS ROAD DRAINAGE IMPROVEMENTS
Public Works Bid No. 2019-006
September 19, 2019

ITEM NO.	APPROX. QTY.	CONSTRUCTION ITEMS Items with unit or lump sum bid prices should be written in numerals on the blank lines.	UNIT BID PRICE	AMOUNT OF BID
1	1	Lump Sum (LS) **Mobilization**	$_____	$_____
2	1	Lump Sum (LS) **Clearing and Grubbing**	$_____	$_____
3	270	Cubic Yard (CY) **Unclassified Excavation**	$_____	$_____
4	360	Square Yard (SY) **Subgrade Preparation**	$_____	$_____
5	80	Cubic Yard (CY) **Base Course**	$_____	$_____
6	330	Linear Feet (LF) **Sealing Concrete Pavement Joints**	$_____	$_____
7	110	Cubic Yard (CY) **Structural Concrete, Class AA**	$_____	$_____
8	4910	Pounds (LB) **Reinforcing Bars, Grade 60**	$_____	$_____
9	370	Square Yard (SY) **Removal of Surfacing**	$_____	$_____
10	35	Cubic Yards (CY) **Riprap, Class B**	$_____	$_____

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ITEM NO.	APPROX. QTY.	CONSTRUCTION ITEMS Items with unit or lump sum bid prices should be written in numerals on the blank lines.	UNIT BID PRICE	AMOUNT OF BID
11	1	Lump Sum (LS) **Waterline Lowering,** including 6" PVC, bends, joints, thrust block and all appurtenances necessary for installation, and accepted by the City.	$_____	$_____
12	1	Lump Sum (LS) **Construction Staking by the Contractor**	$_____	$_____
13	4	Each (EA) **Object Marker, Type 3**	$_____	$_____
14	1	Lump Sum (LS) **Traffic Control,** including devices, implementation, maintenance, and supervision	$_____	$_____
15	40	Square Foot (SF) **Panel Signs**	$_____	$_____
16	110	Linear Feet (LF) **Steel Post and Base Post for Aluminum Panel Signs**	$_____	$_____
17	1	Allowance (ALLOW) **Post Construction As-Built Plans**	$1,000.00	$1,000.00

BID TOTAL $_____

NOTE: Gross receipts tax shall be paid with each pay request as it is submitted at the current tax rate for Alamogordo, New Mexico (Alamogordo – 8.000%)

To the City of Alamogordo, New Mexico (hereinafter called "OWNER"), the undersigned, (hereinafter called "BIDDER"), in compliance with your invitation for bids for the construction of **LAS LOMAS ROAD DRAINAGE IMPROVEMENTS - Public Works Bid No. 2019-006**, having carefully examined the Contract Documents and the site of the proposed Work, and being familiar with all of the conditions surrounding the

construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the Project in accordance with the Contract Documents, within the time set forth herein, and at the unit prices stated above. These prices are to cover all expenses incurred in performing the Work required under the Contract Documents of which this Bid Schedule is a part. Quantities shown in this Bid Schedule are estimated and actual payment will be made on the basis of the unit bid prices for confirmed quantities as constructed.
BIDDER acknowledges receipt of the following addenda:

_____

CALLOUT NOTICE ACKNOWLEDGMENT:

_____
Authorized Signature of Bidder

_____
Business Name of Bidder

_____
Authorized Signature of Bidder

_____
Printed Name and Title of Authorized Signature

_____
BIDDER'S New Mexico Contractor's License No. & Classification, Federal Employee ID#

_____
Address

_____ _____ _____
Telephone Fax Email

(SEAL) If Bid Proposal is submitted by a corporation.

SECTION 4 - SUBCONTRACTOR'S FAIR PRACTICE ACT COMPLIANCE

This Project is subject to the provisions of the State of New Mexico Subcontractor's Fair Practice Act.

Listing Threshold	$5,000.00 or one-half (1/2) of one percent (1%) of the engineer's or architect's estimate of the total Project cost, whichever is greater.

For each category of the Project list all Subcontractors, sub-Subcontractors, other organizations, and/or persons which the BIDDER will be subcontracting, for an amount exceeding the listing threshold indicated above, the BIDDER shall define the subcontracting categories and list only one Subcontractor, sub-Subcontractor, other organization, and/or person for each category. The listing shall be in the format indicated on the following page, and shall be completed and submitted with the Bid.

No CONTRACTOR whose Bid is accepted shall sublet or subcontract any portion of the Work of the Project in an amount exceeding the threshold amount given above, where the original Bid amount did not designate a subcontract, unless 1) the CONTRACTOR received no bid for that category (note: the BIDDER must designate on the list of Subcontractors that "no bid was received"), or 2) the Work is pursuant to a change order that causes changes or deviations from the original Contract.

No CONTRACTOR whose Bid is accepted shall substitute any Subcontractor in place of the Subcontractor listed in the Bid except as provided for in the Subcontractor's Fair Practice Act.

Contractor and Subcontractors will register with the New Mexico Workforce Solutions on-line database exchange system at *<www.dws.state.nm.us/Public-Works>*

LIST OF PROJECT SUBCONTRACTORS FOR
AMOUNTS EXCEEDING THE LISTING THRESHOLD
(THIS FORM MUST BE FILLED OUT AND SUBMITTED WITH BID)

Subcontractor's Business Name _____
Principal Place of Business _____
Telephone No. _____
Business Email Address _____
NM Contractor's License No. _____
Type of Work _____
Amount $ _____
Federal Employer ID# _____

Subcontractor's Business Name _____
Principal Place of Business _____
Telephone No. _____
Business Email Address _____
NM Contractor's License No. _____
Type of Work _____
Amount $ _____
Federal Employer ID# _____

Subcontractor's Business Name _____
Principal Place of Business _____
Telephone No. _____
Business Email Address _____
NM Contractor's License No. _____
Type of Work _____
Amount $ _____
Federal Employer ID# _____

_____ _____
Signature of Authorized Representative for BIDDER Date

Duplicate, complete, and submit additional sheets as required.

SECTION 5 - BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we the undersigned, _____, as PRINCIPAL, and _____, as SURETY are held and firmly bound unto The City of Alamogordo, New Mexico, hereinafter called the OWNER, in the penal sum of _____ dollars, ($_____) lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrator, successors, personal representatives, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the PRINCIPAL has submitted the accompanying Bid, dated _____, 20____, for _____

_____.

NOW, THEREFORE, if the PRINCIPAL shall not withdraw said Bid within the period therein specified after the Opening of the same or, if no period be specified, within sixty (60) days after the said Opening, and shall within the period specified therefore, or if no period be specified, within fifteen (15) days after the prescribed forms are presented to PRINCIPAL for signature, enter into a written Contract with the OWNER in accordance with the Bid as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such Contract, or in the event of the withdrawal of said Bid within the period specified, or the failure to enter into such Contract and give such bond within the time specified, the PRINCIPAL shall pay the OWNER the difference between the amount specified in said Bid and the amount for which the OWNER may procure the required Work or supplies or both, if the latter be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above bounded parties have executed this instrument under their several seals this _____ day of _____, 20___, the name and corporate seal of each corporate party being hereto affixed and these presents signed by its undersigned representative, pursuant to authority of its governing body.

In presence of:

_____

[Individual PRINCIPAL] [SEAL]

_____

[Business Address]

_____ _____

[Partnership] [SEAL]

_____ _____

[Business Address]

Attest: _____ By: _____

[Corporate PRINCIPAL]

_____

[Business Address]

By: _____Affix Corporate Seal

_____ _____

Attest: _____ _____

[Corporate SURETY]

By: _____Affix Corporate Seal

Countersigned

By: _____

Attorney-in-Fact[1], State of _____

_____

[1]Power-of-attorney for person signing for Surety Company must be attached to bond and must indicate availability for service in the State of New Mexico and a current mailing address.

SECTION 6 - STATEMENT OF BIDDER'S QUALIFICATIONS
(TO BE SUBMITTED BY THE BIDDER AND INCLUDED WITH BID)

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The BIDDER may submit additional information.

1. Name of Bidder and N.M. Contractor's License Number.

2. Permanent main office address.

3. When organized.

4. If a corporation, where incorporated.

5. How many years have you been engaged in the contracting business under your present firm or trade name?

6. Contracts on hand. (Schedule these, showing amount of each contract and the approximate anticipated dates of completion.)

7. General character of work performed by your company.

8. Have you ever failed to complete any work awarded to you? If so, where and why?

9. Have you ever defaulted on a contract? If so, where and why?

10. List the more important projects recently completed by your company, stating the approximate cost for each and the month and year completed.

11. List your major equipment available for this Contract.

12. Experience in construction work similar in importance to this project.

13. Background and experience of the principal members of your organization, including the officers.

14. Credit available: $_____.

15. Give bank reference:

---

16. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the OWNER?

17. The undersigned hereby authorizes any person, firm, or corporation to furnish any information requested by the OWNER in verification of the recitals comprising this statement of BIDDER'S Qualifications. This _____ day of _____, 20_____, dated at _____.

_____
Name of BIDDER

By:_____

Title:_____

State of_____)
)ss.
County of _____)

_____, the _____ of
Name Position

_____ being duly sworn,
Company Name

deposes and says that the answers to the foregoing questions and all statements therein contained are true and correct.

Subscribed and sworn to before me this _____ day of _____, 20____.

_____
Notary Public

My Commission expires _____, 20___.

SECTION 7- 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 for professional services, a design and build project delivery system, or the design and installation of measures the primary purpose of which is to conserve natural resources must file this form with that state agency or local public body. This form must be filed even if the contract qualifies as a small purchase or a sole source contract. 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 (2) 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 (2) 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 (2) year period.

Furthermore, the state agency or local public body shall void an executed contract or cancel a solicitation or proposed award for a proposed contract if: 1) a prospective contractor, a family member of the prospective contractor, or a representative of the prospective contractor gives a campaign contribution or other thing of value to an applicable public official or the applicable public official's employees during the pendency of the procurement process or 2) a prospective contractor fails to submit a fully completed disclosure statement pursuant to the law.

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)

Susana Martinez
New Mexico Governor

Ed Burckle
Cabinet Secretary
General Services Department

Lawrence O. Maxwell
State Purchasing Agent

STATE OF NEW MEXICO

GENERAL SERVICES DEPARTMENT
PURCHASING DIVISION

Administrative Services Division
(505) 827-0620
Building Services Division
(505) 476-2425
Property Control Division
(505) 827-2141
Purchasing Division
(505) 827-0472
Risk Management Division
(505) 827-0442
State Printing & Graphic Services Bureau
(505) 476-1950
Transportation Services Division
(505) 476-1902

July 1, 2012

SPD POLICY MEMO FY13-001

Application of Veterans Preference

In accordance with Sections 13-1-21 and 13-1-22 NMSA 1978 resident veterans businesses are to receive the following preferences:

1. Resident veterans businesses with annual revenues of $1M or less are to receive a 10% preference discount on their bids and proposals.

2. Resident veterans businesses with annual revenues of more than $1M but less than $5M are to receive an 8% preference discount on their bids and proposals.

3. Resident veterans businesses with annual revenues of more than $5M are to receive a 7% preference discount on their bids and proposals.

This preference is separate from the current instate preference and is not cumulative with that preference. However, veteran businesses will still receive the in state preference once the veteran's preference cap is exceeded. This law applies to all departments, commissions, councils, boards, committees, institutions, legislative bodies, agencies, government corporations, educational institutions or officials of the executive, legislative or judicial branches of the government of the state or political subdivisions of the state and agencies, instrumentalities and institutions thereof, including two-year post-secondary educational institutions, school districts, local school boards and all municipalities, including home-rule municipalities.

The Taxation and Revenue Department (TRD) will be issuing a three (3) year certificate to each qualified business. Businesses are required to reapply to TRD every three (3) years with the proper documentation to renew their certificate.

All public solicitations must contain the attached "Resident Veterans Preference Certification".

All requests for proposals (RFP's) must contain the following statement in the Evaluation and Points Summary:

New Mexico Business Preference

Points will be awarded based on Offerors ability to provide a copy of a current Resident Business Certificate or Resident Veterans Certificate.

In addition, the attached certification form must accompany any RFP and any business wishing to receive a resident veteran's preference must complete and sign the form.

RFP's are to be evaluated on preference as follows:

In addition to the total points on an RFP, 10% must be added for preference award. For example; an RFP has a total value of 1000 points. Five proposals are received; one from a resident business, one from a resident veterans business with an 8% preference and three non-resident businesses.
The two preference businesses would receive 50 points and 80 points to their already evaluated score, making it possible for the highest score total 1080.

"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.

This policy is effective July 1, 2012. Procurements involving federal funds are excluded from in state preference laws.

Lawrence O. Maxwell

State Purchasing Agent

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 1ending 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 1ending 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.

SECTION 8 - CONTRACT AGREEMENT

This AGREEMENT is dated as of the _____ day of _____ in the year **2019** by and between the City of Alamogordo, a New Mexico municipal corporation ("OWNER") and _____**,** a New Mexico corporation ("CONTRACTOR").

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1 CONTRACT DOCUMENTS

The Contract Documents which comprise the entire AGREEMENT between OWNER and CONTRACTOR concerning the work consist of the following:

- This AGREEMENT.
- Exhibits to this AGREEMENT.
- All required Bonds.
- Notice of Award.
- Conditions of the Contract (General, Supplementary, and Other Conditions).
- Project Specifications.
- Drawings with each sheet bearing the following general title:

LAS LOMAS ROAD DRAINAGE IMPROVEMENTS
PUBLIC WORKS BID No. 2019-006

- Notice to Proceed.
- Bid Documents and CONTRACTOR'S ***Bid Schedule***
- Certificate of Insurance.
- All Addenda Issued Prior to, and all Modifications Issued after, Execution of this AGREEMENT.

These documents form the Contract, and all are as fully a part of the Contract, as if attached to this AGREEMENT, or repeated herein.

There are no Contract Documents other than those listed above in the Article 1. The Contract Documents may only be amended, modified or supplemented as provided in Section 13, General Conditions.

ARTICLE 2 WORK

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

LAS LOMAS ROAD DRAINAGE IMPROVEMENTS
PUBLIC WORKS BID No. 2019-006

consisting of the following: See attached ***Exhibit A***.

ARTICLE 3 TIME OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

The date of commencement of the Work is the date established in the NOTICE TO PROCEED AS ISSUED BY THE OWNER. Substantial Completion shall be achieved in **60 calendar days**, after the date of written "Notice to Proceed", except as hereafter extended by valid written Change Order, by the OWNER. Final Completion shall be achieved not later than **thirty (30)** calendar days after the date of Substantial Completion.

Should the CONTRACTOR neglect, refuse, or otherwise fail to complete the Work within the time specified in this article, the CONTRACTOR agrees, in partial consideration for the award of this Contract, to pay to the OWNER the amount of **Three Hundred Dollars ($300.00)** per consecutive calendar day, not as a penalty, but as liquidated damages for such breach of this Contract.

ARTICLE 4 CONTRACT PRICE

OWNER shall pay CONTRACTOR in current funds for performance of the Work, subject to additions and deductions by Change Order as provided in the Contract Documents, the Contract Price determined as follows:

See CONTRACTOR'S ***Bid Schedule***, attached hereto as ***Exhibit B*** and incorporated by reference.

ARTICLE 5 PROGRESS PAYMENTS

Based upon Applications for Payment submitted in accordance with Article 14 of the General Conditions, the OWNER shall make progress payments on account of the Contract Price to the CONTRACTOR as provided in the Contract Documents for the period ending the last day of the month as follows:

Not later than twenty-one (21) days following receipt by the OWNER, of the undisputed Application, for Payment, one hundred percent (100%) of the portion of the Contract Price properly allocable to labor, materials, and equipment incorporated in the Work, and one hundred percent (100%) of the portion of the Contract Price properly allocable to materials and equipment suitably stored at the site or some other location agreed upon in writing for the period covered by the Application for Payment, less the aggregate of previous payments made by the OWNER; and upon Substantial Completion of the entire Work, a sum sufficient to increase the total payments to one hundred percent (100%) of the Contract Price, less such amounts as the Engineer shall determine for all incomplete Work and unsettled claims as provided in the Contract Documents, which shall be paid in accordance in Article 6 of this Contract.

Valid, undisputed payments, due and unpaid, under the Contract Documents shall bear interest from the date payment is due, at the legal rate established by Laws of 2001, Chapter 68, Section 5. Section 13-4-28, NMSA 1978.

ARTICLE 6 FINAL PAYMENT

Final payment, constituting the entire undisputed, unpaid balance of the Contract Price, shall be paid by the OWNER to the CONTRACTOR within ten (10) days after notification of the OWNER, by the Architect/Engineer that all incomplete and unacceptable Work that was noted during the Substantial Completion Inspection, and listed on the attachment to the Certificate of Substantial Completion has been corrected, and provided the Contract has been fully performed, and a final Certificate for Payment has been issued by the Architect/Engineer. In addition, the CONTRACTOR shall provide to the OWNER a certified statement of Release of Liens (AIA Document G706A or approved form) and Consent of Surety.

ARTICLE 7 CONTRACTOR'S REPRESENTATIONS

CONTRACTOR makes the following representations:

CONTRACTOR has studied and become familiar with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

CONTRACTOR has studied carefully all reports of explorations and tests of subsurface conditions and drawings of physical conditions as provided in Section 13, General Conditions, and accepts the determination of the extent of the technical data contained in such reports and drawings upon which CONTRACTOR is entitled to reply.

CONTRACTOR has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports and studies (in addition to or to supplement those referred above) which pertain to the subsurface or physical conditions at or contiguous to the site or otherwise may affect the cost, progress, performance or furnishing of the Work as CONTRACTOR considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of Section 13, General Conditions; and no additional examinations, investigations, explorations, tests, reports, studies or similar information or data are or will be required by CONTRACTOR for such purposes.

CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for carefully locating said Underground Facilities. No additional examinations, investigations, explorations, tests, reports, studies or similar information or data with respect to said Underground Facilities are or will be required by CONTRACTOR in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of Section 13, General Conditions.

CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

CONTRACTOR has given OWNER’s Representative all conflicts, errors or discrepancies that CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by OWNER's Representative is acceptable to CONTRACTOR.

ARTICLE 8 GENERAL AND SPECIAL PROVISIONS

The OWNER's Representative is Nancy Beshaler, Project Manager for the City of Alamogordo, New Mexico, who is hereinafter called OWNER's Representative and who is to act as OWNER's Representative, assume all duties and responsibilities and have the rights and authority assigned to OWNER's Representative in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

This AGREEMENT shall be governed exclusively by the provisions hereof, and by the laws of the State of New Mexico, as the same from time to time exist.

Terms used in this AGREEMENT, which are defined in the Conditions of the Contract, shall have the meanings designated in those Conditions.

As between the parties to this AGREEMENT: As to all acts or failures to act by either party to this AGREEMENT, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the relevant Date of Substantial Completion of the Work; and as to any acts or failures to act occurring after the relevant Date of Substantial Completion, not later than the date of the OWNER’s approval of the Final Certificate of Payment.

The CONTRACTOR shall hold harmless and indemnify the OWNER against any and all injury, loss, or damage, including cost of defense - including but not limited to court costs and attorneys' fees - arising out of the negligent acts, errors, or omissions of the CONTRACTOR.

This AGREEMENT shall not become effective until it is signed by all parties which are required to sign this AGREEMENT.

The CONTRACTOR and his agents and employees are independent CONTRACTORs, and are not employees of the City of Alamogordo. The CONTRACTOR and his agents and employees shall not accrue leave, retirement, insurance, bonding, use of City vehicles, or any other benefits afforded to employees of the City of Alamogordo, as a result of this AGREEMENT.

The CONTRACTOR, upon final payment of the amounts due under this AGREEMENT, releases the OWNER, his officers and employees, and the City of Alamogordo from all liabilities and obligations arising from or under this AGREEMENT, including but not limited to all damages, losses, costs, liability, and expenses, including but not limited to attorneys' fees and costs of litigation that the CONTRACTOR may incur.

The CONTRACTOR agrees not to purport to bind the City of Alamogordo to any obligation not assumed herein by the City of Alamogordo unless the CONTRACTOR has express written authority to do so, and then only within the strict limits of that authority.

Notices
All notices herein provided to be given, or which may be given, by either party to the other shall be deemed to have been fully given when made in writing and deposited in the United States mail, postage prepaid - in the instance of notice of termination of work also by certified mail - and addressed as follows:

THE OWNER:

City of Alamogordo
Engineering Department
1376 E. Ninth Street
Alamogordo, NM 88310

THE CONTRACTOR:

Nothing herein contained shall preclude the giving of any such written notice by personal service. The address to which notices shall be mailed to either party may be changed by written notice given by such party to the other as here in above provided.

Gender, Singular/Plural. Words of any gender used in this AGREEMENT shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, unless the context requires otherwise.

Captions and Section Headings. The captions and section headings contained in this AGREEMENT are for convenience of reference only, and in no way limit, define, or enlarge the terms, scope, and conditions of this AGREEMENT.

Certificates and Documents Incorporated. All certificates and documentation required by the provisions of this AGREEMENT shall be attached to this AGREEMENT at the time of Execution and are hereby incorporated by reference as though set forth in full in this AGREEMENT to the extent they are consistent with its conditions and terms.

Severability. If any clause or provision of this AGREEMENT is illegal, invalid, or unenforceable under present or future laws effective during the term of this AGREEMENT, then and in that event it is the intention of the parties hereto that the remainder of this AGREEMENT shall not be affected thereby.

Waiver. No provision of this AGREEMENT shall be deemed to have been waived by either party unless such waiver be in writing signed by the party making the waiver and addressed to the other party; nor shall any custom or practice which may evolve between the parties in the administration of

the terms hereof be accordance with the terms hereof. Further, the waiver by any party of a breach by the other party of any term, covenant, or condition hereof shall not operate as a waiver of any subsequent breach of the same or any other term, covenant, or condition thereof.

Entire AGREEMENT. This AGREEMENT represents the entire contract between the parties and, except as otherwise provided herein, may not be amended, changed, modified, or altered without the written consent of the parties hereto. This AGREEMENT incorporates all of the conditions, agreements, and understandings between the parties concerning the subject matter of this AGREEMENT, and all such conditions, understandings, and agreements have been merged into this written AGREEMENT. No prior condition, agreement, or understanding, verbal or otherwise, of the parties or their agents shall be valid or enforceable unless embodied in this written AGREEMENT.

Interchangeable Terms. For purposes of all provisions within this AGREEMENT and all attachments hereto, the terms "AGREEMENT" and "Contract" shall have the same meaning and shall be interchangeable.

Words and Phrases. Words, phrases, and abbreviations, which have well-known technical or trade meanings used in the Contract Documents shall be used according to such recognized meanings. In the event of a conflict, the more stringent meaning shall govern.

Relationship of Contract Documents. The Contract Documents are complementary, and any requirement of one contract document shall be as binding as if required by all.

Pursuant to Section 13-1-191, NMSA 1978, reference is hereby made to the Criminal Laws of New Mexico (including Sections 30-24-1 through 30-24-3, NMSA 1978, and 30-41-1 through 30-41-3, NMSA 1978), which prohibit bribes, kickbacks, and gratuities, violations of which constitutes a felony. Further, the Procurement Code (Sections 13-1-28 through 13-1-199, NMSA 1978) imposes civil and criminal penalties for its violation.

A potential CONTRACTOR, or the CONTRACTOR, agrees to comply with state laws and rules pertaining to worker’s compensation insurance coverage for its employees. If CONTRACTOR fails to comply with the Worker’s Compensation Act, and applicable rules when required to do so, the contract may be canceled effective immediately.

OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have Executed two (2) originals of this AGREEMENT. One counterpart each has been delivered to CONTRACTOR and OWNER's Representative. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by OWNER's Representative on their behalf.

CONTRACTOR

By: _____

NM Taxpayer Identification Number: _____

Federal Taxpayer Identification Number: _____

OWNER
CITY OF ALAMOGORDO, NEW MEXICO
a New Mexico municipal corporation

By:_____
Brian Cesar, Interim City Manager

ATTEST:

_____
Rachel Hughs, City Clerk

APPROVED AS TO FORM:

_____
Petria Bengoechea, City Attorney

EXHIBIT A

The Work will consist of construction of a low water crossing and lowering of a waterline, within the city limits of Alamogordo, New Mexico.

SECTION 9 - PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT, [*Insert the name or legal title of the CONTRACTOR]* _____as Principal, herein after called the CONTRACTOR, and *[Insert the legal title of the surety and address*]

_____

_____ a corporation organized and existing under and by virtue of the laws of the State of _____ and authorized to do business in the State of New Mexico, hereinafter called the Surety, are held and firmly bound unto *[Insert the name or legal title and address of the OWNER*)

_____

_____ as Obligee, hereinafter called the OWNER, in the amount of _____Dollars ($_____), for the payment whereof CONTRACTOR and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, CONTRACTOR has by written agreement dated _____, _____, entered into a contract described as follows:

_____

_____

_____

which contract is by reference made a part hereof and is hereinafter referred to as the Contract.

NOW, THEREFORE, the condition of this obligation is such that, if CONTRACTOR shall faithfully perform and complete said Contract according to its terms and comply with all requirements of law, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the OWNER.

Whenever the CONTRACTOR shall be, and shall be declared by the OWNER to be, in default under the said Contract, the OWNER having performed its obligations hereunder, the Surety may promptly remedy the default or shall promptly:

1. Complete the Contract in accordance with its terms and conditions, or

2. At OWNER's option, obtain a bid or bids for submission to the OWNER for completing said Contract in accordance with its terms and conditions and, upon determination by the OWNER and Surety of the lowest responsible BIDDER, arrange for a contract between such

BIDDER and the OWNER and make available as Work progresses (even though there should be a default or a succession of defaults under the Contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Price but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract Price", as used in this paragraph shall mean the total amount payable by the OWNER to the CONTRACTOR under the Contract and any amendments thereto less the amount previously paid by the OWNER to the CONTRACTOR.

The Surety acknowledges that said Contract may contain express guarantees and agrees that said guarantees, if any, are covered by the Surety's obligation hereunder.

Right of action with respect to any express guarantees in the Contract shall accrue from the date of completion and formal acceptance of the Work under the Contract.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the OWNER named herein or its successors or assigns.

SIGNED AND SEALED _____, _____.

_____
Contractor-Principal]

In presence of:

_____

By:_____

Title:_____[Surety]

Approved as to form:

_____

By:_____
Attorney for the OWNER

Title:_____

\
Countersigned:

_____
Surety's Authorized New Mexico Agent for Service

SECTION 10 - LABOR AND MATERIAL PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT, [*Insert the name or legal title and address of the CONTRACTOR]*

_____

_____, as PRINCIPAL, hereinafter called the CONTRACTOR, and [*Insert the legal title of the surety and address*]

_____

_____, a corporation organized and existing under and by virtue of the laws of the State of _____ and authorized to do business in the State of New Mexico, hereinafter called the Surety, as held and firmly bound unto [*Insert the name or legal title and address of the OWNER]*

_____

_____as Obligee, hereinafter called the OWNER and supplier of labor, material or supplies as joint obligees, in the amount of _____dollars ($_____), for the payment whereof CONTRACTOR and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally firmly by these presents.

WHEREAS, CONTRACTOR has by written agreement dated _____, 20_____ entered into a contract described as follows:

_____

_____

_____

_____

which contract is by reference made a part hereof and is hereinafter referred to as the Contract.

NOW, THEREFORE, the condition of this obligation is such that, if the CONTRACTOR shall pay as they become due all just claims for labor performed and materials and supplies furnished upon or for the Work under the Contract, whether said labor be performed and materials and supplies be furnished under the original Contract or any contract there-under, then this

obligation shall be null and void; otherwise it shall remain in full force and effect, subject, however, to the following conditions.

The right to sue on this bond accrues only to the OWNER and the parties to whom the right is granted pursuant to Section 13-4-1 et. seq., NMSA 1978 (1988 repl. pamp.) and New Mexico Law; and any such right shall be exercised only in accordance with the provisions and limitations of said statutes.

SIGNED AND SEALED ON _____, _____

_____
[CONTRACTOR - PRINCIPAL]

In presence of:

_____

By _____

Title:_____

_____
[Surety]

Approved as to form:

_____ By:_____
Attorney for the OWNER

Title:_____

Countersigned:

_____
Surety's Authorized New Mexico Agent for Service

This bond is issued simultaneously with performance bond in favor of OWNER and suppliers of labor, materials or supplies for the faithful performance of the Contract.

PLEASE ATTACH AN INSURANCE CERTIFICATE FROM A NEW MEXICO LICENSED INSURANCE AGENT PER THE GENERAL CONDITIONS, SECTION 13 ARTICLE 5

SECTION 12 - WAGE RATES

Wage Rates do not pertain to
Projects under $60,000.00

You are hereby advised that where differences exist between the minimum wage rates shown, the higher wage rates shall govern, if applicable.

LABOR RELATIONS DIVISION **WWW.DWS.STATE.NM.US**

401 Broadway NE
Albuquerque, NM 87102
Phone: 505-841-4400
Fax: 505-841-4424

226 South Alameda Blvd
Las Cruces, NM 88005
Phone: 575-524-6195
Fax: 575-524-6194

1596 Pacheco St, Suite 103
Santa Fe, NM 87505
Phone: 505-827-6817
Fax: 505-827-9676

Wage Decision Approval Summary

1) Project Title: Las Lomas Road Drainage Improvements
Requested Date: 08/05/2019
Approved Date: 08/06/2019
Approved Wage Decision Number: OT-19-1440-A

Wage Decision Expiration Date for Bids: 12/04/2019

2) Physical Location of Jobsite for Project:
Job Site Address: 1663 Las Lomas
Job Site City: Alamogordo
Job Site County: Otero

3) Contracting Agency Name (Department or Bureau): City of Alamogordo
Contracting Agency Contact's Name: Nancy Beshaler
Contracting Agency Contact's Phone: (575) 439-4235 Ext. 1

4) Estimated Contract Award Date: 09/24/2019

5) Estimated total project cost: $170,000.00
a. Are any federal funds involved?: No
b. Does this project involve a building?: No
c. Is this part of a larger plan for construction on or appurtenant to the property that is subject to this project?: No
d. Are there any other Public Works Wage Decisions related to this project?: No
e. What is the ultimate purpose or functional use of the construction once it is completed?: drainage

6) Classifications of Construction:

Classification Type and Cost Total	Description
Highway/Utilities (A) **Cost:** $170,000.00	construct low water crossing for drainage

TYPE "A" - STREET, HIGHWAY, UTILITY & LIGHT ENGINEERING

Effective January 1, 2019

Trade Classification	Base Rate	Fringe Rate
Bricklayer/Blocklayer/Stonemason	23.78	9.08
Carpenter/Lather	24.08	10.84
Cement Mason	17.42	6.61
Ironworker	26.50	16.20
Painter (Brush/Roller/Spray)	17.00	6.78
Plumber/Pipefitter	29.45	12.37
Electricians (outside)		
Groundman	22.81	11.93
Equipment Operator	32.73	14.51
Lineman/Wireman or Tech	38.51	16.02
Cable Splicer	42.36	17.01
Laborers		
Group I	11.81	5.88
Group II	12.11	5.88
Group III	12.51	5.88
Group IV	12.76	5.88
Operators		
Group I	18.60	5.94
Group II	19.52	5.94
Group III	19.62	5.94
Group IV	19.73	5.94
Group V	19.83	5.94
Group VI	20.01	5.94
Group VII	20.17	5.94
Group VIII	20.46	5.94
Group IX	27.88	5.94
Group X	31.10	5.94
Truck Drivers		
Group I	16.15	7.52
Group II	16.15	7.52
Group III	16.15	7.52
Group IV	16.15	7.52
Group V	16.15	7.52
Group VI	16.15	7.52
Group VII	16.15	7.52
Group VIII	16.21	7.52
Group IX	18.15	7.52

NOTE: All contractors are required to pay SUBSISTENCE, ZONE AND INCENTIVE PAY according to the particular trade. Details are located in a PDF attachment at WWW.DWS.STATE.NM.US. Search Labor Relations/Labor Information/Public Works/Prevailing Wage Rates.

LABOR RELATIONS DIVISION
121 Tijeras Ave NE, Suite 3000
Albuquerque, NM 87102
Phone: 505-841-4400
Fax: 505-841-4424

PUBLIC WORKS PROJECT REQUIREMENTS

As a participant in a Public Works project valued at more than $60,000 in the state of New Mexico, the following list addresses many of the responsibilities that are defined by statute or regulation to each project stakeholder.

Contracting Agency

- Ensure that all contractors wishing to bid on a Public Works project when the project is $60,000 or more are actively registered with the Public Works and Apprenticeship Application (PWAA) website: http://www.dws.state.nm.us/pwaa (Contractor Registration) prior to bidding.
- Please submit Notice of Award (NOA) and Subcontractor List(s) to the PWAA website promptly after the project is awarded.
- Please update the Subcontractor List(s) on the PWAA website whenever changes occur.
- All sub-contractors and tiers (excluding professional services) regardless of contract amount must be listed on the Subcontractor List and must adhere to the Public Works Minimum Wage Act.
- Ninety days after project completion please go into the PWAA system and close the project. Only contracting agencies are allowed to close the project. Agents or contractors are not allowed to close projects.

General Contractor

- Provide a complete Subcontractor List and Statements of Intent (SOI) to Pay Prevailing Wages for all contractors, regardless of amount of work, to the contracting agency within 3 (three) days of award.
- Ensure that all subcontractors wishing to bid on a Public Works project have an active Contractor Registration with the Public Works and Apprenticeship Application (PWAA) website: http://www.dws.state.nm.us/pwaa prior to bidding when their bid will exceed $60,000.
- Make certain the Public Works Apprentice and Training Act contributions are paid either to an approved Apprenticeship Program or to the Public Works Apprentice and Training Fund.
- Confirm the Wage Rate poster, provided in PWAA, is displayed at the job site in an easily accessible place.
- When the project has been completed, make sure the Affidavits of Wages Paid (AWP) are sent to the contracting agency.
- All subcontractors and tiers (excluding professional services) regardless of contract amount must pay prevailing wages, be listed on the Subcontractor List, and adhere to the Public Works Minimum Wage Act.

Subcontractor

- Ensure that all subcontractors wishing to bid on a Public Works project have an active Contractor Registration with the Public Works and Apprenticeship Application (PWAA) website: http://www.dws.state.nm.us/pwaa prior to bidding when their bid will exceed $60,000.
- Make certain the Public Works Apprentice and Training Act contributions are paid either to an approved Apprenticeship Program or to the Public Works Apprentice and Training Fund.
- All subcontractors and tiers (excluding professional services) regardless of contract amount must pay prevailing wages, be listed on the Subcontractor List, and adhere to the Public Works Minimum Wage Act.

Additional Information

Reference material and forms may be found in the New Mexico Department of Workforce Solutions Public Works web pages at: https://www.dws.state.nm.us/Labor-Relations/Labor-Information/Public-Works.

CONTACT INFORMATION

Contact the Labor Relations Division for any questions relating to Public Works projects by email at public.works@state.nm.us or call (505) 841-4400.

SECTION 13 - GENERAL CONDITIONS

ARTICLE 1 DEFINITIONS AND TERMS

Wherever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

AGREEMENT - The written agreement which constitutes a contract between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are part of the AGREEMENT

Application for Payment - The form furnished by ENGINEER which is to be used by CONTRACTOR in requesting progress payments and a CONTRACTOR affidavit stating that progress payments theretofore received on account of the Work have been applied by CONTRACTOR to discharge in full all of CONTRACTOR's obligations reflected in prior Applications for Payment

ARCHITECT - The person or firm designated by OWNER, who may or may not be an employee, who is responsible for providing architectural services under this AGREEMENT

Bid - The offer or proposal of the BIDDER submitted on the prescribed form setting forth the prices for the Work to be performed

BIDDER - Any person, firm, or corporation submitting a responsive BID for the Work

Bonds - BID, performance and payment bonds, and other instruments of security furnished by CONTRACTOR or SUBCONTRACTOR and CONTRACTOR's or SUBCONTRACTOR's surety in accordance with the Contract Documents

Change Order - A written order to CONTRACTOR signed by OWNER authorizing an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Time issued after execution of the AGREEMENT

City Commission - The governing body of the City of Alamogordo

Contract Documents - The written AGREEMENT between the CONTRACTOR and the OWNER setting forth the obligations of the parties there under, including but not limited to the performance of the Work and the Basis of Payment. The Contract Documents include: the Advertisement for Bids, Addenda (whether issued prior to the opening of Bids or the execution of the Agreement), Instructions to BIDDERs, CONTRACTOR's Bid, the Performance Bonds and Labor and Payment Bond (for both CONTRACTOR and SUBCONTRACTOR, if applicable to SUBCONTRACTOR), the Certificate of Insurance, the Statement of BIDDER's Qualifications, the Campaign Contribution Disclosure Form, the Notice of Award, the Notice to Proceed, these General Conditions, the Contract Specifications, any Special Conditions, any referenced Specifications or Standards, Drawings and Plans, and all Modifications to the above, including Change Orders and extensions of Contract Time, all of which constitute one instrument

Contract Price - The total monies payable to CONTRACTOR under the Contract Documents

Contract Time - The time specified in the AGREEMENT for completion of the Project. This time may be defined as a specified fixed date or a given number of calendar days. The Contract

Time may be amended by mutual written Agreement to include authorized time extensions as the performance of the Contract requires.

CONTRACTOR - The person, firm, or corporation with whom OWNER has executed the Agreement

Day - A calendar day of twenty-four (24) hours measured from midnight to the next midnight

DESIGNER - The person or firm designated by OWNER, who may or may not be an employee, who is responsible for providing engineering services

Drawings or Plans - The drawings which show the character and scope of the WORK to be performed and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents

ENGINEER – The City of Alamogordo's City Engineer or authorized representative.

Engineer of Record – Professional Engineer, licensed in the State of New Mexico, that stamps the design (plans). Can be either the City Engineer or a consultant

Field Order - A written order issued by ENGINEER which clarifies or interprets the Contract Documents in accordance with paragraph 9.3 or orders minor changes in the Work in accordance with paragraph 10.2

General Conditions - This document

Modification - (a) A written amendment to the Contract Documents signed by both parties; (b) a Change Order; (c) a written clarification or interpretation issued by ENGINEER in accordance with paragraph 9.3; or (d) a written order for a minor change or alteration in the Work issued by ENGINEER pursuant to paragraph 10.2. A Modification may only be issued after execution of the AGREEMENT

Notice of Award - The written notice by OWNER to the apparent successful BIDDER stating that, upon compliance with the conditions precedent to be fulfilled by CONTRACTOR within the time specified

Notice to Proceed - A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform the obligations set forth in the Contract Documents

OWNER - The City of Alamogordo, New Mexico, a New Mexico municipal corporation. The term "City" may be used interchangeably with the term "OWNER"

Project - The entire construction to be performed as provided in the Contract Documents

Project Manager – The OWNER's representative who is delegated the responsibility for administration of the PROJECT and who is the primary point of contact for the CONTRACTOR

Project Close Out Documents - Project Close Out Documents consist of as-built drawings of the Project; waiver of lien certificates from all Subcontractors, material suppliers, or service

companies involved in the construction of the project; affidavit of release of liens that the lien releases or waivers attached include all parties above and any others who have lien rights; consent of surety for final payment prior to release of final payment; CONTRACTOR's certificate of completion that Project is complete in conformance with the Contract Drawings and specifications; written warranty (one year period) in accordance with Article 13.1 of these General Conditions.

Public Works Inspector - An authorized representative of ENGINEER who is assigned to inspect the technical aspects of the Project or any part thereof

Reference Specifications, Test Methods, and Applicable Codes - All standard specifications and test methods of any society, association, or organization referred to herein are hereby made a part of these Contract Documents the same as if written in full. (Any reference to a paragraph or subparagraph within an article or section shall include all general provisions of the article or section to which reference is made.) References to such standards refer to the latest published issues as of the date of the Invitation to Bid, unless otherwise specified. References to local or state codes and laws shall mean the latest adopted and published codes as of the date of the Invitation to Bid, unless otherwise specified

Service Connections - Service Connections shall be construed to mean all or any portion of the pipe, conduit, cable, or duct which connects a utility main or distribution line to a building, home, residence, or property

Shop Drawings - All drawings, diagrams, illustrations, brochures, schedules, and other data which are prepared by CONTRACTOR, a SUBCONTRACTOR, manufacturer, supplier, or distributor which have been approved by ENGINEER and which illustrate the equipment, material, or some portion of the Work

Special Conditions - Conditions which modify any article or paragraph of these General Conditions

Specifications (also Technical Specifications) - Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work

Subcontractor - An individual, firm or corporation having a direct contract with CONTRACTOR or with any other SUBCONTRACTOR for the performance of a part of the WORK

Substantial Completion - Date, as certified by ENGINEER, when construction of the Project or a specified part thereof is sufficiently completed, in accordance with the Contract Documents, so that the Project or a specified part thereof can be utilized for the purposes for which it was intended; or, if there be no such certification, the date when final payment is due in accordance with paragraph 14.13

Utility - Overhead or underground wires, pipes, conduits, ducts, or structures, operated and maintained in or across a public right-of-way or easement or private easement operated and maintained to supply such commodities as water, gas, power, telephone, cable television, or sewer.

A. Public Utility - Owned and operated by a municipality or another political subdivision of the State

B. Private Utility - Owned and operated by a private company or corporation

Work - Any and all obligations, duties, and responsibilities necessary to the successful completion of the Project assigned to or undertaken by CONTRACTOR under the CONTRACT DOCUMENTS, including all labor, materials, equipment, incidentals, and the furnishing and installation thereof

ARTICLE 2 PRELIMINARY MATTERS

Execution of AGREEMENT

2.1. At least two (2) counterparts of the Agreement and such other Contract Documents as are required to be executed will be executed and delivered by CONTRACTOR to OWNER within ten (10) days of the Notice of Award; and OWNER will execute and deliver one counterpart to CONTRACTOR within ten (10) days of receipt of the executed Agreement from CONTRACTOR.

Delivery of Bonds and Insurance

2.2. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds and Certificates of Insurance as CONTRACTOR and SUBCONTRACTORS may be required to furnish in accordance with Article 5 of these General Conditions.

Copies of Documents

2.3. OWNER shall furnish to CONTRACTOR one (1) complete set of the Contract Documents

CONTRACTOR's Pre-Start Representations

2.4. CONTRACTOR represents that CONTRACTOR is familiar with and assumes full responsibility for becoming familiar with the nature and extent of the Contract Documents, Work and locality; and with all local conditions and federal, state, and local laws, ordinances, rules, and regulations that may in any manner affect performance of the Work. CONTRACTOR represents that CONTRACTOR has correlated CONTRACTOR's study and observations with the requirements of the Contract Documents. CONTRACTOR also represents that CONTRACTOR has studied all surveys and investigation reports of subsurface and latent physical conditions referred to in the Specifications, that CONTRACTOR has made such additional surveys and investigations as CONTRACTOR deems necessary for the performance of the Work at the Contract Price in accordance with the requirements of the Contract Documents, and that CONTRACTOR has correlated the results of all such data with the requirements of the Contract Documents.

Commencement of Contract Time; Notice to Proceed

2.5. The Contract Time will commence to run on the day indicated in a written Notice to Proceed is given, on the day indicated in the Notice to Proceed is issued by the OWNER. A Notice to Proceed may be given at any time within 30 days after the day on which OWNER delivers the executed Agreement to CONTRACTOR.

Starting the Project

2.6. CONTRACTOR may start to perform the WORK ONLY AFTER RECEIVING A WRITTEN Notice to Proceed.

Before Starting Construction

2.7. Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents, and check and verify pertinent figures shown thereon, and check and verify all applicable field measurements. CONTRACTOR shall at once report in writing to ENGINEER any conflict, error or discrepancy which CONTRACTOR may discover; however, CONTRACTOR shall not be liable to OWNER for failure to discover any conflict, error, or discrepancy in the Drawings or Specifications.

2.8. The CONTRACTOR, within twenty-one (21) calendar days after being Awarded the Contract unless agreed otherwise by the OWNER, shall prepare and submit for the ENGINEER's approval, a CONTRACTOR's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be approved by CONTRACTOR's sureties, if any, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. The construction schedule may be significantly modified only upon prior written agreement of the CONTRACTOR and its sureties, if any, and the ENGINEER. CONTRACTOR shall conform to the most recently approved schedules and shall not be entitled to an extension of the Contract Time or an increase in the Contract Price for the time that may be required to obtain any Surety's approval.

2.9. Before starting the Work at the site, CONTRACTOR shall furnish OWNER certificates of insurance as required by Article 5 of these General Conditions. Within twenty (20) days after delivery of the executed Agreement by OWNER to CONTRACTOR, but before starting the Work at the site, a conference will be held to review the above schedules; to establish procedures for the handling of Shop Drawings and other submissions and the processing of Applications for Payment; and to establish a working understanding between the parties as to the Project. The conference will be attended by the OWNER, ENGINEER, and CONTRACTOR.

ARTICLE 3 CORRELATION, INTERPRETATION, AND INTENT OF CONTRACT DOCUMENTS

3.1. The parties intend that the Specifications and Drawings describe a complete Project to be constructed in accordance with the Contract Documents. The Contract Documents comprise the entire Agreement between OWNER and CONTRACTOR. They may be altered only by a Contract Modification.

3.2. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. If CONTRACTOR finds a conflict, error, or discrepancy in the Contract Documents, CONTRACTOR shall call it to ENGINEER's attention in writing at once and before proceeding with the Work affected thereby; however, CONTRACTOR shall not be liable to OWNER for failure to discover any conflict, error, or discrepancy in the Specifications or Drawings. In resolving such conflicts, errors, and discrepancies, the documents shall be given precedence in the following order: Contract Modification(s), Agreement, Addenda, Special Conditions, Instructions to BIDDERs, General Conditions, Specifications, and Drawings. Figure dimensions on Drawings shall govern over scale dimensions, and Detailed Drawings shall govern over General Drawings. Any Work that may reasonably be inferred from the Contract Documents as being required to produce the intended result shall be supplied whether or not it is specifically called for. Work, materials or equipment described in words which so applied have a well-known technical or trade meaning shall be deemed to refer to such recognized standards.

Reference to Standard Specifications, manuals or codes of any technical society, organization or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the most current Standard Specification, manual, code or laws or regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated.

ARTICLE 4 AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; REFERENCE POINTS

Availability of Lands

4.1. OWNER shall furnish, as indicated in the Contract Documents and not later than the date when needed by CONTRACTOR, the lands upon which the Work is to be done, rights-of-way for access thereto, and any other lands designated for use by CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER unless otherwise specified in the Contract Documents. If CONTRACTOR believes that any delay in OWNER furnishing these lands or easements entitles CONTRACTOR to an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in Article 12 of these General Conditions. CONTRACTOR shall provide for any additional lands and access that may be required for temporary construction facilities or storage of materials and equipment at their expense.

Physical Conditions-Surveys and Reports

4.2 The OWNER will, upon request, furnish to the CONTRACTOR copies of all relevant boundary surveys and other pertinent reports and material which are readily available in OWNER's office. OWNER has not made tests of subsurface conditions and makes no warranties or statements to CONTRACTOR as to the presence or absence of difficult excavation conditions.

Unforeseen Physical Conditions

4.3. CONTRACTOR shall promptly notify ENGINEER in writing of any subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents.

ENGINEER will promptly investigate those conditions and determine if further surveys or subsurface tests are necessary. ENGINEER shall obtain any necessary additional surveys and tests and furnish copies to CONTRACTOR. If appropriate, a Change Order shall be issued incorporating the necessary revisions.

The CONTRACTOR is responsible for locating and protecting underground and aerial utilities and constructions.

Reference Points

4.4. ENGINEER shall provide engineering surveys for construction to establish reference points which, in OWNER's judgment, are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for surveying and laying out the Work (unless otherwise agreed) and shall protect and preserve the established reference points. CONTRACTOR shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to OWNER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

Physical Conditions - Underground Facilities

4.5. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities are based on information and data furnished to OWNER by the owners of such Underground Facilities or by others. Unless it is otherwise expressly agreed:

4.5.1. OWNER shall not be responsible for the accuracy or completeness of any such information or data; and,

4.5.2. CONTRACTOR shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Facilities shown or indicated in the Contract Documents, for coordination of the Work with the owners of such Underground Facilities during construction, for the safety and protection thereof, for repairing any damage thereto resulting from the Work, and for the cost; all of which will be considered as having been included in the Contract Price.

4.6. Not Shown or Indicated: If an Underground Facility is uncovered or revealed which was not shown or indicated in the Contract Documents and of which CONTRACTOR could not reasonably have been expected to be aware, CONTRACTOR shall promptly identify the owner of such Underground Facility and give written notice thereof to OWNER. OWNER will promptly review the Underground Facility to determine the extent to which the Contract Documents should be modified to reflect the new condition, and the Contract Documents will be amended or supplemented to the extent necessary. During the interim, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility. If the parties are unable to agree as to the amount or length of the appropriate adjustment, CONTRACTOR may make a claim therefor as provided in this Agreement.

ARTICLE 5 BONDS AND INSURANCE

Performance, Payment, and Other Bonds

5.1. CONTRACTOR and CONTRACTOR's SUBCONTRACTORS [if Subcontractors' contract for work to be performed on the Project is one hundred twenty-five thousand dollars ($125,000) or more] shall furnish performance and payment Bonds as security for the faithful performance of this Contract and for payment of all the CONTRACTOR's and CONTRACTOR's SUBCONTRACTORS' obligations under the Contract Documents. These Bonds shall be in amounts at least equal to the Contract Price and shall be in a form acceptable to OWNER and issued by sureties which are licensed to conduct business in the State of New Mexico and which are named in the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Federal Register by the Audit Staff Bureau of Accounts, U. S. Treasury Department. The Performance Bond shall include coverage for the Guarantee Period. Notwithstanding the obligation of any other party, person or entity to notify CONTRACTOR's and CONTRACTOR's Subcontractors' sureties, CONTRACTOR and CONTRACTOR's Subcontractors shall give immediate written notice to its sureties of any change in the Contract Sum, Contract Time, Scope of Work or any other event for which failure to give said sureties notice would operate to discharge a surety's liability. The Surety on the performance bond shall furnish a waiver by which it consents to progress or partial payments to the CONTRACTOR in accordance with this Contract. Surety shall further agree that such payment shall not preclude or stop the OWNER from showing the true character and quantity of the materials furnished or from recovering from the CONTRACTOR or Subcontractor or CONTRACTOR'S or Subcontractors' sureties such damages as the OWNER may sustain by reason of any deficiency in quantity of the materials with respect to which a progress payment was made.

If the surety on any Bond furnished by CONTRACTOR or SUNCONTRACTOR is declared bankrupt or becomes insolvent, or if its right to do business is terminated in any state where any part of the Project is located, CONTRACTOR or SUBCONTRACTOR shall within five days thereafter substitute another Bond and surety, both of which shall be acceptable to OWNER.

Insurance Requirements

5.2. Until final acceptance by the OWNER of the Work, the CONTRACTOR shall procure and maintain at CONTRACTOR's own expense insurance of the kinds and in the amounts herein provided. This insurance shall be provided by insurance companies authorized to do business in New Mexico and shall cover all operations under the Contract, whether performed by the CONTRACTOR, CONTRACTOR's agents or employees or by Subcontractors. All insurance provided shall remain in full force and effect for the entire period of the Work, up to and including final acceptance, and the removal of all equipment and employees, agents and SUBCONTRACTORS there from.

I. Public Liability and Automobile Liability Insurance

A. **General Liability:** Bodily Injury Liability and Property Damage Liability insurance applicable in full to the subject project shall be provided in the following minimum amounts:

Bodily Injury Liability:
$500,000 each occurrence

$1,000,000 aggregate

Property Damage Liability:
$500,000 each occurrence
$1,000,000 aggregate

1. The policy to provide this insurance is to be written on a Comprehensive General Liability form which must include the following:

a. Coverage for liability arising out of the operation of independent Contractors.

b. Completed Operations Coverage.

c. Attachment of the Broad Form Comprehensive General Liability Endorsement.

2. In the event that any use of explosives is a required part of the Contract, the CONTRACTOR's insurance must include coverage for injury to or destruction of property arising out of blasting or explosion.

3. In the event that any form of work next to an existing building or structure is a required part of the Contract, the CONTRACTOR's insurance must include coverage for injury to or destruction of property arising out of:

The collapse of or structural injury to any building or structure due to excavation, including borrowing, filling or backfilling in connection therewith, or to tunneling, cofferdam work or caisson work or to moving, shoring, underpinning, raising or demolition of any building or structure or removal or rebuilding of any structural support thereof.

4. Coverage must be included for injury to or destruction of any property arising out of injury to or destruction of wires, conduits, pipes, mains, sewers or other similar property or any apparatus in connection therewith below the surface of the ground, if such injury or destruction is caused by or occurs during the use of mechanical equipment for the purpose of excavating, digging or drilling, or to injury to or destruction of property at any time resulting there from.

A. Automobile Liability Insurance coverage for the CONTRACTOR (whether included in the policy providing General Liability insurance or in a separate policy) must provide liability for the ownership, operation and maintenance of owned, non-owned and hired cars. The limits of liability for Automobile Liability insurance shall be provided in the following amounts:

Bodily Injury Liability:
$500,000 each person
$1,000,000 each occurrence

Property Damage Liability:
$1,000,000 each occurrence

II. Workers' Compensation Insurance

The CONTRACTOR shall also carry Workers' Compensation Insurance or otherwise fully comply with the provisions of the New Mexico Workmen's Compensation Act and Occupational Disease Disablement Law.

III. Owners' Protective Liability Insurance

The CONTRACTOR shall purchase Standard Form Owners' Protective Liability insurance naming the OWNER as the name insured, with limits of liability applicable in full to the subject project as follows:

Bodily Injury Liability:
$500,000 each occurrence

Property Damage Liability:
$100,000 each occurrence

Property Damage and Bodily Injury Combined:
$1,000,000 aggregate

IV. Certificate of Insurance

The CONTRACTOR being Awarded the Contract shall furnish evidence of CONTRACTOR's insurance coverage by a Certificate of Insurance executed on a form acceptable to the OWNER, to be made a part of the Contract and included with the Contract Documents prior to signing the Contract. Such certificate shall indicate compliance with these specifications and shall certify that the coverage shall not be changed, canceled or allowed to lapse without giving the OWNER thirty (30) days written notice. Also, a Certificate of Insurance shall be furnished to the OWNER on renewal of a policy or policies as necessary during the terms of the Contract. The OWNER shall not issue a Notice to Proceed until such time as the above requirements have been met.

V. Umbrella Coverage

The insurance limits cited in the above paragraphs are minimum limits. This specification is in no way intended to define what constitutes adequate insurance coverage for the individual CONTRACTOR. The OWNER will recognize excess coverage (Umbrella) as meeting the requirements of Subsection I of this Section should such insurance otherwise meet all the requirements of such Subsection.

VI. Optimal Insurance

The CONTRACTOR shall procure and maintain, when required by the OWNER, forms and types of Bailee insurance such as, but not limited to, Builder's Risk Insurance, which should include, but is not limited to, theft, vandalism, weather conditions and acts of God, CONTRACTOR's Equipment Insurance, Rigger's Liability Property Insurance, etc. in amounts necessary to protect the OWNER against claims, losses and expenses arising from the damage, disappearance or destruction of property of others in the care, custody or control of the

CONTRACTOR, including property of others being installed, erected or worked upon by the CONTRACTOR, CONTRACTOR's agents or Subcontractors.

VII. Railroad Insurance

In the event that railroad property is affected by the subject Contract, the CONTRACTOR is advised that, in addition to the above requirements, CONTRACTOR shall be required to furnish a Railroad Protective Liability policy in the name of the railroad company involved. In addition, on those rails that are used by the National Railroad Passenger Corporation (NRPC), the CONTRACTOR will also obtain a Railroad Protective Liability policy in the name of NRPC.

The limits of liability for the Railroad Protective Liability policy (or policies) must be negotiated with the railroad company on a hazard and risk basis. In no event will the limits exceed the following:

Bodily Injury Liability, Property Damage Liability:
$2,000,000 each occurrence

Liability and Physical Damage to Property:
$6,000,000 aggregate

The limits of liability stated above apply to the coverage as set forth in the Railroad Protective Liability Endorsement Form, subject to the terms, conditions and exclusions found in the Form.

The policy must afford coverage as provided for in the standard Railroad Protective Liability Endorsement (AASHTO Form).

Additional Bonds and Insurance

5.3. Prior to delivery of the executed Agreement by OWNER to CONTRACTOR, OWNER may require CONTRACTOR to furnish such other Bonds and such additional insurance, in such form and with such sureties or insurers, as OWNER may require. If such other Bonds or such other insurance are specified by written instructions given prior to opening of Bids, the premiums shall be paid by CONTRACTOR; if subsequent thereto, they shall be paid by OWNER (except as otherwise provided in paragraphs 6.7 and 6.7.1).

ARTICLE 6 CONTRACTOR'S RESPONSIBILITIES

Registration

6.1 CONTRACTOR must be registered with the Industrial Division of the Department of Labor.

Supervision and Superintendence

6.2. CONTRACTOR shall supervise and direct the Work efficiently and with CONTRACTOR's best skill and attention. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction; but shall not be solely responsible for the negligence of others in the design or selection of a specific mean, method, technique, sequence, or procedure of construction which is indicated in and required by

the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

6.3. CONTRACTOR shall keep on the Work at all times during its progress a competent resident Superintendent, who shall not be replaced without written notice to ENGINEER (written notice only, NOT consent) except under extraordinary circumstances. The Superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the Superintendent shall be as binding as if given to CONTRACTOR.

Labor, Materials, and Equipment

6.4. CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site.

6.5. CONTRACTOR shall furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water and sanitary facilities, and all other facilities and incidentals necessary for the execution, testing, initial operation, and completion of the Work.

6.6. All materials and equipment shall be new, except as otherwise provided in the Contract Documents. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

6.7. All materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, or processors, except as otherwise provided in the Contract Documents or directed by the ENGINEER.

6.7.1. CONTRACTOR shall assign to OWNER all express and implied warranties and Contract rights for materials and equipment installed in the Project and for which OWNER has paid CONTRACTOR.

Substitute Materials or Equipment

6.8. If the Specifications, laws, ordinances, or applicable rules or regulations permit CONTRACTOR to furnish or use a substitute that is equal to any material or equipment specified, and if CONTRACTOR wishes to furnish or use a proposed substitute, CONTRACTOR shall, prior to the conference called for by paragraph 2.9, make written application to ENGINEER for approval of such a substitute, certifying in writing that the proposed substitute will perform adequately the functions called for by the general design, be similar and of equal substance to that specified, and be suited to the same use and capable of performing the same function as that specified; stating whether or not its incorporation in or use in connection with the Project is subject to the payment of any license fee or royalty; and identifying all variations of the proposed substitute from that specified and indicating available maintenance service. No substitute shall be ordered or installed without the written approval of ENGINEER, who will be the judge of equality and who may require CONTRACTOR to furnish such other data about the proposed substitute as ENGINEER considers pertinent. No substitute shall be ordered or installed without such performance guarantee and bonds as OWNER may require which shall be furnished at CONTRACTOR's expense.

Subcontractors

6.9. CONTRACTOR shall not employ any Subcontractor or other person or organization (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. A Subcontractor or other person or organization identified in writing to OWNER by CONTRACTOR prior to the Notice of Award and not objected to in writing by OWNER prior to the Notice of Award will be deemed acceptable to OWNER. Acceptance of any Subcontractor, other person, or organization by OWNER or ENGINEER shall not constitute a waiver of any right of OWNER to reject defective Work or Work not in conformance with the Contract Documents.

If OWNER, after due investigation, has reasonable objection to any Subcontractor, other person, or organization proposed by CONTRACTOR after the Notice of Award, CONTRACTOR shall submit an acceptable substitute and the Contract Price shall be increased or decreased by the difference in cost occasioned by such substitution and an appropriate Change Order shall be issued. CONTRACTOR shall not be required to employ any Subcontractor, other person, or organization against whom CONTRACTOR has reasonable objection. CONTRACTOR shall not, without the consent of OWNER, make any substitution for any Subcontractor, other person, or organization who has been accepted by OWNER unless OWNER determines that there is good cause for doing so.

6.10. CONTRACTOR shall be fully responsible for all acts and omissions of CONTRACTOR's Subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that CONTRACTOR is responsible for the acts and omissions of persons directly employed by CONTRACTOR. Nothing in the Contract Documents shall create any contractual relationship between OWNER and any Subcontractor or other person or organization having a direct contract with CONTRACTOR, nor shall it create any obligation on the part of OWNER to pay or to see to the payment of any monies due any Subcontractor or other person or organization, except as may otherwise be required by law. OWNER may furnish to any Subcontractor or other person or organization, to the extent practicable, evidence of amounts paid to CONTRACTOR on account of specific Work done in accordance with the schedule of values.

6.11. The sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or delineating the Work to be performed by any specific trade. All work shall be performed by persons licensed to perform such work by New Mexico Construction Industries Division.

6.12. CONTRACTOR agrees to bind specifically every Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of OWNER.

Patent Fees and Royalties

6.13. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of OWNER, its use is subject to patent

rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. CONTRACTOR shall indemnify and hold harmless OWNER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses, and expenses, including attorneys' fees, arising out of any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents and shall defend all such claims in connection with any alleged infringement of such rights.

Permits

6.14. CONTRACTOR shall obtain and pay for all construction permits and licenses and shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of CONTRACTOR's Bid. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall also pay all public utility charges.

Laws and Regulations

6.15. CONTRACTOR shall give all notices and comply with all laws, ordinances, rules, and regulations applicable to the Work. If CONTRACTOR observes that the Specifications or Drawings are at variance therewith, CONTRACTOR shall give ENGINEER prompt written notice thereof; and any necessary changes shall be adjusted by an appropriate Modification. If CONTRACTOR performs any Work knowing it to be contrary to such laws, ordinances, rules, and regulations and without such notice to ENGINEER, CONTRACTOR shall bear all costs arising there-from; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with such laws, ordinances, rules, and regulations.

Taxes

6.16. CONTRACTOR shall pay all New Mexico gross receipts, sales, consumer, use, and other similar taxes required to be paid by CONTRACTOR in accordance with the law of the place where the Work is to be performed.

Use of Premises

6.17. CONTRACTOR shall confine CONTRACTOR's equipment, the storage of materials and equipment, and the operations of CONTRACTOR's workmen to areas permitted by law, ordinances, permits, or the requirements of the Contract Documents and shall not unreasonably encumber the premises with materials or equipment.

6.18. CONTRACTOR shall not load nor permit any part of any structure to be loaded with weights that will endanger the structure, nor shall CONTRACTOR subject any part of the Work to stresses or pressures that will endanger it.

Record Drawings

6.19. CONTRACTOR shall keep one record copy of all Specifications, Drawings, Addenda, Modifications and Shop Drawings at the site in good order and currently annotated to show all

changes made during the construction process. These shall be available to ENGINEER and shall be delivered in good condition to OWNER upon completion of the Project.

Safety and Protection

6.20. CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of and shall provide the necessary protection to prevent damage, injury, or loss to:

6.20.1. All employees on the Work and other persons who may be affected thereby;

6.20.2. All the Work and materials or equipment to be incorporated therein, whether in storage on or off the site; and

6.20.3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation, or replacement in the course of construction.

6.20.4. All personal property that may be affected by the work.

The CONTRACTOR shall conduct construction operations in a manner which will minimize interference with the normal use of property adjacent to the construction Work and shall give owners of such property at least twenty-four (24) hours notice of the commencement of Work in the area abutting their property. CONTRACTOR shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss. CONTRACTOR shall erect and maintain, as required by the conditions and progress of the Work, all necessary safeguards for its safety and protection. CONTRACTOR shall notify owners of adjacent utilities at least forty-eight (48) hours in advance when prosecution of the Work may affect them. All damage, injury, or loss to any property referred to in subparagraphs 18.4.1 and 18.4.2 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR, except for damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of DESIGNER or anyone employed by OWNER or anyone for whose acts OWNER may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR. CONTRACTOR's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that Work is acceptable.

6.21. CONTRACTOR shall designate a responsible member of CONTRACTOR’s organization at the site whose duty shall be the prevention of accidents. This person shall be CONTRACTOR's superintendent, unless otherwise designated in writing by CONTRACTOR to OWNER.

Emergencies

6.22. In emergencies affecting the safety of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from ENGINEER

or OWNER, is obligated to act, on self discretion, to prevent threatened damage, injury, or loss. CONTRACTOR shall give ENGINEER prompt written notice of any significant changes in the Work or deviations from the Contract Documents caused thereby; and a Change Order shall thereupon be issued covering the changes and deviations involved. If CONTRACTOR believes that additional work done in an emergency which arose from causes beyond CONTRACTOR's control entitles an increase in the Contract Price or an extension of the Contract Time, CONTRACTOR may make a claim as provided in Articles 11 and 12 of these General Conditions.

Shop Drawings and Samples

6.23. After checking and verifying all field measurements, CONTRACTOR shall submit to ENGINEER for approval, in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.9), three copies (or, at ENGINEER's option, one reproducible copy) of all Shop Drawings which shall have been checked by and stamped with the approval of CONTRACTOR and identified as ENGINEER may require. The data shown on the Shop Drawings will be complete with respect to dimensions, design criteria, materials of construction, and the like to enable ENGINEER to review the information as required.

6.24. CONTRACTOR shall also submit to ENGINEER for approval, with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and stamped with the approval of CONTRACTOR, identified clearly as to material, manufacturer, and pertinent catalog numbers and the use for which intended.

6.25. At the time of each submission, CONTRACTOR shall in writing call ENGINEER's attention to any deviations that the Shop Drawings or sample may have from the requirements of the Contract Documents.

6.26. ENGINEER will review and approve with reasonable promptness Shop Drawings and samples, but ENGINEER's review and approval shall be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents. The approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make any corrections required by ENGINEER and shall return the required number of corrected copies of Shop Drawings and resubmit new samples until approved. CONTRACTOR shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections called for by ENGINEER on previous submissions. CONTRACTOR's stamp of approval on any Shop Drawing or sample shall constitute a representation to ENGINEER that CONTRACTOR has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data or assumes full responsibility for doing so and that CONTRACTOR has reviewed or coordinated each Shop Drawing or sample with the requirements of the Work and the Contract Documents.

6.27. Where a Shop Drawing or sample submission is required by the Specifications, no related Work shall be commenced until the submission has been approved by ENGINEER. A copy of each approved Shop Drawing and each approved sample shall be kept in good order by CONTRACTOR at the site and shall be available to ENGINEER.

6.28. ENGINEER's approval of Shop Drawings or samples shall not relieve CONTRACTOR from CONTRACTOR's responsibility for any deviations from the requirements of the Contract

Documents unless CONTRACTOR has in writing called ENGINEER's attention to such deviation at the time of submission and ENGINEER has given written approval to the specific deviation, nor shall any approval by ENGINEER relieve CONTRACTOR from responsibility for errors or omissions in the Shop Drawings.

Cleanup

6.29. CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish, and other debris resulting from the Work; and at the completion of the Work, CONTRACTOR shall remove all waste materials, rubbish, and debris from and about the premises, as well as all tools, construction equipment and machinery, and surplus materials and shall leave the site clean and ready for occupancy by OWNER. CONTRACTOR shall restore to their original condition those portions of the site not designated for alteration by the Contract Documents.

Indemnification

6.30. CONTRACTOR shall indemnify and hold harmless OWNER and its agents and employees from and against all claims, damages, losses, and expenses including attorneys' fees arising out of or resulting from the performance of the Work by the CONTRACTOR, provided that any such claim, damage, loss, or expense (a) is attributable to bodily injury, sickness, disease, or death or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting there from and (b) is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

6.31. In any and all claims against OWNER or any of its agents or employees by any employees of CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Agreement shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for CONTRACTOR or any Subcontractor under workmen's compensation acts, disability benefit acts, or other employee benefit acts.

6.32. The obligations of CONTRACTOR under this Agreement shall not extend to the liability of OWNER, OWNER’s agents, or employees arising out of (a) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs, or Specifications or (b) the giving of or the failure to give directions or instructions by OWNER, OWNER’s agents, or employees provided such giving or failure to give is the primary cause of injury or damage.

Notice to Surety

6.33. In all cases involving changes in the Work, the CONTRACTOR shall be obligated to promptly notify its Sureties, if any, of any change in Contract Price, scope of the Work or Contract Time which might operate to discharge the Sureties if notice were not provided. No obligation to notify a Surety or actual notice to a Surety by any other person or party shall operate to relieve CONTRACTOR of its obligation to notify a Surety.

Documents, Records and Correspondence

6.34. The CONTRACTOR shall maintain the following documents and records and, upon request by the OWNER, shall promptly make the records or legible copies thereof available to OWNER: Bid estimates, site observation reports, material and equipment invoices, payment records, payroll records, approved shop drawings, job meeting minutes, daily reports, logs and diaries, and photographs pertaining to the Work. The CONTRACTOR shall furnish copies of all correspondence pertaining to the Work to the OWNER upon request.

ARTICLE 7 WORK BY OTHERS

7.1. OWNER may itself perform additional Work related to the Project or it may let other direct contracts therefore which shall contain General Conditions similar to these. CONTRACTOR shall afford the other contractors who are parties to such direct contracts (or OWNER, if performing the additional work directly) reasonable opportunity for the introduction and storage of materials and equipment and for the execution of work and shall properly connect and coordinate CONTRACTOR's Work with theirs.

7.2. If any part of CONTRACTOR's Work depends for proper execution or results upon the work of any such other contractor (or OWNER), CONTRACTOR shall inspect and promptly report to ENGINEER in writing any defects or deficiencies in such work that render it unsuitable for such proper execution and results. CONTRACTOR's failure to report shall constitute an acceptance of the work as fit and proper for the relationship of CONTRACTOR's Work except as to defects and deficiencies which may appear in the other work after the execution of CONTRACTOR's Work.

7.3. CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and fit it to receive or be received by such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of OWNER and of the other contractors whose work will be affected.

7.4. If the performance of additional work by other contractors or OWNER is not noted in the Contract Documents prior to the execution of the Contract, written notice thereof shall be given to CONTRACTOR prior to starting any such additional work. If CONTRACTOR believes that the performance of such additional work by OWNER or others involves additional expense or warrants an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12 of these General Conditions.

7.5. Work by the CONTRACTOR and work by others shall be coordinated and expedited by the OWNER to prevent time delays and additional cost to the CONTRACTOR. Any extension of time and/or additional costs caused by other contractors may be claimed as provided in Articles 11 and 12 of these General Conditions.

ARTICLE 8 OWNER'S RESPONSIBILITIES

8.1. OWNER shall issue all official communications to CONTRACTOR through ENGINEER, in writing.

8.2. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer whose status under the Contract Documents shall be that of the former ENGINEER.

8.3. OWNER shall furnish the data required of OWNER under the Contract Documents promptly and shall make payments to CONTRACTOR promptly after they are due as provided in paragraphs 14.4 and 14.13.

8.4. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4.

8.5. In connection with OWNER's rights to request changes in the Work in accordance with Article 10 of these General Conditions, OWNER (especially in certain instances as provided in paragraph 10.4) is obligated to execute Change Orders.

8.6. OWNER's responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.2.

8.7. In connection with OWNER's right to stop Work or suspend Work, see paragraphs 13.11 and 15.1. Paragraph 15.2 deals with OWNER's right to terminate services of CONTRACTOR.

ARTICLE 9 ENGINEER'S STATUS DURING CONSTRUCTION

OWNER's Representative

9.1. ENGINEER will be OWNER's representative during the construction period for the purpose of inspecting and approving the WORK.

Visits to Site

9.2. ENGINEER will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER shall exercise reasonable skill and diligence to ensure that the completed Work will conform to the Contract Documents.

Clarifications and Interpretations

9.3. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If CONTRACTOR believes that a written clarification or interpretation justifies an increase in the Contract Price or Contract Time, CONTRACTOR may make a claim therefor as provided in Article 11 or Article 12 of these General Conditions.

Rejecting Defective Work

9.4. ENGINEER will have authority to disapprove or reject Work which is defective and will also have authority to require special inspection or testing of the Work as provided in paragraph 13.7, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments

9.5. In connection with ENGINEER's responsibility for Shop Drawings and samples, see paragraphs 6.23 through 6.28 inclusive.

9.6. In connection with ENGINEER's responsibilities as to Change Orders, see Articles 10, 11 and 12 of these General Conditions.

9.7. In connection with ENGINEER's responsibilities in respect of Applications for Payment, etc., see Article 14 of these General Conditions.

Project Representation

9.8. The ENGINEER may designate a Project Representative to assist ENGINEER in observing the performance of the Work. The duties, responsibilities and limitations of authority of any such Project Representative and assistants will be as delegated by the ENGINEER.

Decisions on Disagreements

9.9. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work there-under. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the execution and progress of the Work shall be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph, which ENGINEER will render in writing within a reasonable time, unless ENGINEER advises CONTRACTOR that additional time is needed in which to ascertain more accurate data.

9.10. The rendering of a decision by ENGINEER pursuant to paragraph 9.9 with respect to any claim, dispute or other matter will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or at law in respect of that claim, dispute or other matter.

Limitations on ENGINEER's Responsibilities

9.11. Neither ENGINEER's authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of ENGINEER to CONTRACTOR, any Subcontractor, any manufacturer, fabricator, supplier or distributor, or any of their agents or employees or any other person performing any of the Work.

9.12. Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed" or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper" or "satisfactory" or adjectives of like effect or import are used, to describe requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective never indicates that ENGINEER shall have authority to supervise or direct performance of the Work or authority to undertake responsibility contrary to the provisions of paragraphs 9.13 or 9.14.

9.13. ENGINEER will not be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and ENGINEER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

9.14. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, or of the agents or employees of any CONTRACTOR or Subcontractor, or of any other persons at the site or otherwise performing any of the Work.

ARTICLE 10 CHANGES IN THE WORK

Change Order:

10.1. Without invalidating the Agreement, OWNER may, at any time order additions, deletions or revisions in the Work; these will be authorized by written Change Orders. Upon receipt of a signed Change Order, CONTRACTOR shall proceed with the Work involved. All such Work shall be executed under the applicable conditions of the Contract Documents. If any Change Order causes an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, an equitable adjustment may be made as provided in Article 11 or Article 12 of these General Conditions on the basis of a claim made by either party.

Field Order:

10.2. ENGINEER may authorize minor changes in the Work not involving an adjustment in the Contract Price or the Contract Time and which are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order and shall be binding on OWNER and CONTRACTOR, who shall perform the change promptly. If CONTRACTOR believes that a Field Order justifies an increase in the Contract Price or Contract Time, CONTRACTOR may make a claim therefor as provided in Article 11 or Article 12 of these General Conditions.

10.3. Additional Work performed without authorization of a written and executed Change Order will not entitle CONTRACTOR to an increase in the Contract Price or to an extension of the Contract Time, except in the case of an emergency as provided in paragraph 6.22 and except as provided in paragraphs 10.2, 11.9 and 13.10.

10.4. OWNER shall execute appropriate Change Orders prepared by ENGINEER covering changes in the Work which are required by OWNER or which are required because of emergencies or as provided in Article 7 of these General Conditions or as provided in paragraph 11.9, or because of any other valid claim of CONTRACTOR for a change in the Contract Time or the Contract Price which is recommended by ENGINEER and accepted by the OWNER.

10.5. If notice of any change affecting the general scope of the Work or change in the Contract Price is required by the provisions of any Bond to be given to the Surety, it will be CONTRACTOR's responsibility to so notify the Surety, and the amount of each applicable Bond shall be adjusted accordingly. CONTRACTOR shall furnish proof of such adjustment to OWNER.

10.6. CONTRACTOR shall not be entitled to receive damages or additional cost for delay reasonably caused by the OWNER, OWNER'S consultants, agents and employees. In such event, however, CONTRACTOR may be entitled to an extension of the Contract Time.

10.7. Changes in the Work which represent less than twenty-five percent (25%) of the value of the Work shall not be considered to change the scope of the Work provided that the operations and methods required to perform the change are not significantly different from those contemplated by the original Work.

ARTICLE 11 CHANGE OF CONTRACT PRICE

11.1. The Contract Price constitutes the total compensation payable to CONTRACTOR for performing the Work. All duties, responsibilities, and obligations assigned to or undertaken by CONTRACTOR shall be at CONTRACTOR's expense without change in the Contract Price.

11.2. The Contract Price may only be changed by a Change Order. Any claim for an increase in the Contract Price shall be based on written notice delivered to OWNER within fifteen (15) days of the occurrence of the event giving rise to the claim but before the CONTRACTOR has incurred additional expenses except in the case of emergencies, under paragraph 6.22. Notice of the amount of the claim with supporting data and written explanation of the basis for the claim shall be delivered within seven (7) days of such occurrence unless ENGINEER allows an additional period of time to ascertain accurate cost data. All claims for adjustments in the Contract Price shall be determined by OWNER. Any change in the Contract Price resulting from any such claim shall be incorporated in a Change Order. OWNER may grant CONTRACTOR an extension of the Contract Time for resolving a claim for adjustment but in no case shall CONTRACTOR be entitled to damages for delay.

11.3. The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

11.3.1. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved.

11.3.2. By mutual acceptance of a lump sum or unit prices.

11.3.3. On the basis of the Cost of the Work, plus a CONTRACTOR's Fee for supervision, overhead, bond, profit and any other general expenses, fee shall not exceed fifteen percent (15%) of the actual Cost of Work.

11.3.4. If the CONTRACTOR subcontracts all or part of the Work and the subcontract is to be paid on the basis of the Cost of Work plus a Fee, the Total Fee for the subcontracted Work and the CONTRACTOR's Fee shall not exceed fifteen percent (15%) of the actual cost of Work, as determined in accordance with paragraphs 11.4 and 11.5, unless otherwise as determined or agreed to by OWNER. The Cost of Work and Fee shall be identified individually in the Change Order back-up provided to the OWNER by the CONTRACTOR, in a format acceptable to the OWNER.

Cost of the Work

11.4. The term Cost of the Work means the sum of all costs necessarily incurred and paid by the CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed in writing by OWNER; such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in paragraph 11.5:

11.4.1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workmen's compensation, health and retirement benefits, sick leave, vacation and holiday pay applicable thereto. Employees shall include superintendents and foremen at the site. The expenses of performing work after regular working hours, on Sunday or legal holidays shall be included in the above to the extent authorized by OWNER.

11.4.2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and manufacturers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds, and all returns from sale of surplus materials and equipment shall accrue to OWNER and CONTRACTOR shall make provisions so that they may be obtained.

11.4.3. Payments made by CONTRACTOR to the Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive Bids from Subcontractors acceptable to CONTRACTOR and shall deliver such Bids to OWNER who will then determine which Bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a Fee, the Cost of the Work shall be determined in accordance with paragraphs 11.4 and 11.5. The Total Fee for Subcontractor’s Fee and CONTRACTOR’s Fee combined shall not exceed fifteen percent (15%) of the actual Cost of Work, unless otherwise determined or agreed to by OWNER. Fee includes compensation for supervision, overhead, bond, profit and any other general expenses. All subcontracts shall be subject to the other conditions of the Contract Documents insofar as applicable.

11.4.4. Costs of special consultants (including, but not limited to, engineers, architects, testing laboratories, surveyors, lawyers, and accountants) employed for services specifically related to the Work to the extent authorized in advance by OWNER.

11.4.5. Supplemental costs including the following:

11.4.5.1. The proportion of necessary transportation, traveling, and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

11.4.5.2. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site, and hand tools not owned by the workmen, which are consumed in the performance of the Work; and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

11.4.5.3. Rentals of all construction equipment and machinery and parts thereof, whether rented by CONTRACTOR or others in accordance with rental agreements approved by OWNER, and the costs of transportation, loading, unloading, installation, dismantling, and removal thereof -- all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work; if rental is not timely ceased, OWNER shall incur no cost beyond that absolutely required for the Work.

11.4.5.4. Sales, use, or similar taxes related to the Work and for which CONTRACTOR is liable, imposed by any governmental authority.

11.4.5.5. Deposits lost for causes other than CONTRACTOR's negligence, royalty payments, and fees for permits and licenses.

11.4.5.6. Losses, damages and expenses not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the execution of and to the Work, provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's Fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for the services a fee proportionate to that stated in paragraph 11.6.2.

11.4.5.7. The cost of utilities, fuel and sanitary facilities at the site.

11.4.5.8. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

11.5. The term Cost of the Work shall not include any of the following:

11.5.1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR’s principal or a branch office for general administration of the Work and not specifically included in the schedule referred to in paragraph 11.4.1 -- all of which are to be considered administrative costs covered by the CONTRACTOR's Fee.

11.5.2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR’s office at the site.

11.5.3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payment.

11.5.4. Cost of premiums for all bonds and for all insurance policies whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same.

11.5.5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective work, disposal of materials or equipment wrongly supplied and making good any damage to property.

11.5.6. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

CONTRACTOR's Fee

11.6. The CONTRACTOR's Fee that is allowed to CONTRACTOR for overhead and profit shall be determined as follows:

11.6.1. A mutually acceptable fixed fee; or if none can be agreed upon,

11.6.2. An amount determined by the OWNER to be reasonable.

11.6.2.1. No fee shall be payable on the basis of costs itemized under paragraphs 11.4.4, 11.4.5, and 11.5.

11.6.3. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a Fee, the Cost of the Work shall be determined in accordance with paragraphs 11.4 and 11.5. The Total Fee for Subcontractor’s Fee and Contractor’s Fee combined shall not exceed fifteen percent (15%) of the actual Cost of Work, unless otherwise determined or agreed to by OWNER. Fee includes compensation for supervision, overhead, bond, profit and any other general expenses

11.7. The amount of credit to be allowed by CONTRACTOR to OWNER for any change in contract price which results in a net decrease in cost will be the amount of the actual net decrease plus an allowance for overhead and administration. When both additions and credits are involved in any one change, the combined overhead and profit shall be figured on the basis of the net increase or decrease.

11.8. Whenever the cost of any Work is to be determined pursuant to paragraphs 11.4 and 11.5, CONTRACTOR will submit in the form prescribed by OWNER an itemized cost breakdown together with supporting data.

ARTICLE 12 CHANGE OF THE CONTRACT TIME

12.1. The Contract Time may only be changed by written approval from the OWNER. Any claim for an extension in the Contract Time shall be based on written notice delivered to OWNER within seven (7) days of the occurrence of the event giving rise to the claim for contract time extension and shall be accompanied by supporting data unless OWNER allows an additional period of time to ascertain more accurate data. All claims for adjustment in the Contract Time shall be determined by OWNER.

12.2. The Contract Time may be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if CONTRACTOR makes a claim therefor as provided in paragraph 12.1. Such delays shall include, but not be restricted to, acts or neglect by any separate contractor employed by OWNER, fires, floods, labor disputes, epidemics, weather conditions, or acts of God. If the CONTRACTOR has worked less than four (4) hours in a day, and is forced to suspend work due to weather conditions, CONTRACTOR shall receive credit for one (1) day. The CONTRACTOR shall deliver to the OWNER, a written request within seven (7) days of each occurrence, regarding the credit day(s). The OWNER shall make the final determination as to the validity of each request.

12.3. All time limits stated in the Contract Documents are of the essence of the Agreement. The conditions of this Article 12 shall not exclude recovery for damages (including compensation for additional professional services) for delay by either party; except that CONTRACTOR shall be entitled only to an extension of the Contract Time, and not for other damages, resulting from OWNER's decision to delay the Work either prior to the time for commencement of the Work or during performance of the Work.

ARTICLE 13 WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

Warranty and Guarantee

13.1. CONTRACTOR warrants and guarantees to OWNER that all materials and equipment will be new unless otherwise specified and that all Work will be of good quality, will be free from faults or defects, and will be in accordance with the requirements of the Contract Documents and of any inspections, tests, or approvals referred to in paragraph 13.2. All unsatisfactory Work, all faulty or defective Work, and all Work not conforming to the requirements of the Contract Documents or of such inspections, tests or approvals, shall be considered defective. Prompt notice of all defects shall be given to CONTRACTOR. All defective Work, equipment and materials whether or not in place, may be rejected, corrected or accepted as provided in this Article 13.

Tests and Inspections

13.2. If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any Work to specifically be inspected, tested or approved by some public body, CONTRACTOR shall assume full responsibility therefore, shall pay all costs in connection therewith and shall furnish OWNER the required certificates of inspection, testing or approval.

Quality Assurance Materials Testing (Geotechnical)

13.3 A material testing laboratory shall be retained by the OWNER for Quality Assurance testing. The frequency of the Quality Assurance testing shall be as determined by the OWNER. The CONTRACTOR shall notify the testing laboratory, the OWNER and the ENGINEER when CONTRACTOR is ready for each Quality Assurance test and shall cooperate fully in making way for the laboratory technician to make the tests. If any Work fails to meet the standards specified, the CONTRACTOR shall correct such failures in a manner acceptable to the ENGINEER. The CONTRACTOR shall pay for the cost of all Quality Assurance retesting necessary due to failure to meet specification requirements on the initial Quality Assurance testing. If the CONTRACTOR requests the testing laboratory to obtain density tests and the area to be tested is not ready when the technician arrives at the job site, the CONTRACTOR shall pay for all trip charges or stand by time assessed. All cost for retesting, standby time and other charges associated with a failed QA test will be deducted from the amount due on the Contract.

13.4 CONTRACTOR shall be responsible for providing to the OWNER the Proctor, Gradation and Liquid Limits of the Sub-Grade material and Base Course material.

13.5 Material testing as referenced in this article is for the OWNER's Quality Assurance. The CONTRACTOR is responsible for Quality Control of material, process and method.

13.6. CONTRACTOR shall give OWNER, ENGINEER, INSPECTING AGENCY and GEOTECHNICAL TESTING LAB a minimum of twenty-four (24) hours notice of readiness of the Work for all inspections, tests or approvals. All requests for QA testing shall be made in writing or e-mail to the ENGINEER, OWNER AND Testing Laboratory and by phone to the testing laboratory. If any such Work required so to be inspected, tested or approved is covered without written approval of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation; and such uncovering shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover such Work and ENGINEER has not acted with reasonable promptness in response to such notice.

13.7. Neither observations by ENGINEER nor inspections, tests or approvals by persons other than CONTRACTOR shall relieve CONTRACTOR from CONTRACTOR's obligations to perform the Work in accordance with the requirements of the Contract Documents. Refer to Technical Specifications, Article 01-002.1, Section 4, Quality Assurance Materials Testing.

Access to Work

13.8. ENGINEER and ENGINEER'S representatives and other representatives of OWNER will have access to the Work at reasonable times. CONTRACTOR shall provide proper and safe facilities for such access and observation of the Work and also for any inspection or testing thereof by others.

Uncovering Work

13.9. If any Work is covered contrary to the request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and the cover replaced in compliance with the Contract Documents at CONTRACTOR's expense.

13.10. If any Work has been covered which ENGINEER has not specifically requested to observe prior to its being covered or if ENGINEER considers it necessary or advisable that covered Work be inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover or otherwise make available for observation, inspection or testing as ENGINEER may require that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, CONTRACTOR shall bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including compensation for additional professional services; and an appropriate deductive Change Order shall be issued. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction if CONTRACTOR makes a claim therefor as provided in Articles 11 and 12 of these General Conditions.

OWNER May Stop the Work

13.11. If the Work is defective or CONTRACTOR fails to supply sufficient skilled workmen or suitable materials or equipment, when an imminent hazard condition is known to exist, when the CONTRACTOR either delays in correcting or permits repeated occurrences of a hazardous condition, or if CONTRACTOR fails to make prompt payments to Subcontractors or for labor, materials or equipment, OWNER may order CONTRACTOR to stop the Work or any portion thereof until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any other party. This authority to suspend Work does not relieve the CONTRACTOR of the legal responsibility for safety at the jobsite.

Correction or Removal of Defective Work

13.12. If required by ENGINEER prior to approval of final payment, CONTRACTOR shall promptly (as determined by ENGINEER), without cost to OWNER and as specified by ENGINEER, either correct any defective Work, whether or not fabricated, installed, or completed or, if the Work has been rejected by ENGINEER, remove it from the site and replace it with non-defective Work. If CONTRACTOR does not correct such defective Work or remove and replace such rejected Work within a reasonable time as determined by ENGINEER, all as specified in a written notice from ENGINEER, OWNER may have the deficiency corrected or the rejected Work removed and replaced. All direct or indirect costs of such correction or removal and replacement, including compensation for additional professional services, shall be paid by

CONTRACTOR and an appropriate deductive Change Order shall be issued. CONTRACTOR shall also bear the expenses of making good all Work of others destroyed or damaged by such correction, removal, or replacement of CONTRACTOR's defective Work.

One Year Correction Period

13.13. If, after the approval of final payment and prior to the expiration of one year after the date of FINAL ACCEPTANCE provided by letter by OWNER or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents, any Work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instruction, either correct such defective Work or, if it has been rejected by OWNER, remove it from the site and replace it with non-defective Work. If CONTRACTOR does not promptly comply with the terms of such instructions, OWNER may have the defective Work corrected or the rejected Work removed and replaced and all direct and indirect cost of such removal and replacement, including compensation for additional professional services, shall be paid by CONTRACTOR.

Acceptance of Defective Work

13.14. The OWNER may elect to accept defective work instead of requiring correction or removal and replacement of the defective Work. In such case, if acceptance occurs prior to approval of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Price; or, if the acceptance occurs after approval of final payment, an appropriate amount shall be paid by CONTRACTOR to OWNER.

Neglected Work by CONTRACTOR

13.15. If CONTRACTOR shall fail to prosecute the Work in accordance with the Contract Documents, including any requirements of the progress schedule, OWNER, after seven (7) days written notice to CONTRACTOR may, without prejudice to any other remedy OWNER may have, make good any deficiencies and the cost thereof, including compensation for additional professional services, shall be charged against CONTRACTOR if ENGINEER approves such action, in which case a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including an appropriate reduction in the Contract Price. If the payments then or thereafter due CONTRACTOR are not sufficient to cover such amount, CONTRACTOR shall pay the difference to OWNER.

ARTICLE 14 PAYMENTS TO CONTRACTOR AND COMPLETION

Schedules

14.1. Prior to commencement of the Work, CONTRACTOR shall submit to OWNER a Project schedule and a final schedule of Shop Drawing submission. The schedule shall be approved in writing by CONTRACTOR's Sureties and shall be satisfactory in form and substance to OWNER.

Application for Progress Payment

14.2. No later than the first day of each month, CONTRACTOR shall submit to OWNER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents and also as OWNER may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the Work, but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by such data, satisfactory to OWNER, as will establish OWNER's title to the material and equipment and protect OWNER's interest therein, including applicable insurance. **Each subsequent Application for Payment shall include an affidavit of CONTRACTOR stating that all previous progress payments received on account of the Work have been applied to discharge in full all of CONTRACTOR's obligations reflected in prior Applications for Payment**.

CONTRACTOR'S Warranty of Title

14.3. CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER at the time of payment free and clear of all liens, claims, security interests and encumbrances (hereafter in these General Conditions referred to as "Liens").

Review of Applications for Progress Payment

14.4. OWNER will, within seven (7) days after receipt of each Application for Payment, except as submitted the Application for Payment or return the Application to CONTRACTOR indicating in writing the reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application. OWNER shall pay CONTRACTOR the amount recommended by ENGINEER, within twenty-one (21) days of the Application for Payment.

14.5. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's on-site observations of the Work in progress as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules that the Work has progressed to the point indicated; that, to the best of ENGINEER's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning Project upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents and any qualifications stated in the recommendation) and that CONTRACTOR is entitled to payment of the amount recommended. However, by recommending any such payment ENGINEER will not thereby be deemed to have represented that exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work, or that the means, methods, techniques, sequences and procedures of construction have been reviewed or that any examination has been made to ascertain how or for what purpose CONTRACTOR has used the monies paid or to be paid to CONTRACTOR on account of the Contract Price, or that title to any Work, materials or equipment has passed to OWNER free and clear of any Liens.

14.6. ENGINEER's recommendation of final payment will constitute an additional representation by ENGINEER to OWNER that the conditions precedent to CONTRACTOR's being entitled to final payment as set forth in paragraph 14.13 have been fulfilled.

14.7. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make such representations to OWNER. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

14.7.1. The Work is defective, or completed Work has been damaged requiring correction or replacement,

14.7.2. Written claims have been made against OWNER in connection with the Work,

14.7.3. The Contract Price has been reduced because of Modifications,

14.7.4. OWNER has been required to correct defective Work or complete the Work in accordance with paragraph 13.9,

14.7.5. Of CONTRACTOR's unsatisfactory prosecution of the Work in accordance with the Contract Documents, or

14.7.6. Of CONTRACTOR's failure to make payment to Subcontractors, or for labor, materials or equipment.

Substantial Completion

14.8. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall, in writing to OWNER, certify that the entire Work is substantially complete and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER, CONTRACTOR and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving his reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion and acceptance. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment.

14.9. OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

Partial Utilization

14.10. Use by OWNER of any completed portion of the Work may be accomplished prior to Substantial Completion of all Work subject to the following:

14.10.1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any part of the Work which OWNER believes to be substantially

complete and which may be so used without significant interference with construction of the other parts of the Work. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER that said part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Prior to the OWNER using that portion of work, OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, ENGINEER will execute and deliver to OWNER and CONTRACTOR a certificate to that effect, fixing the date of Substantial Completion as to that part of the Work, attaching thereto a tentative list of items to be completed or corrected before final acceptance and payment. Prior to issuing a certificate of Substantial Completion as to part of the Work, ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to the division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, utilities and insurance for that part of the Work, which shall become binding upon OWNER and CONTRACTOR at the time of issuing the definitive certificate of Substantial Completion as to that part of the Work unless OWNER and CONTRACTOR shall have otherwise agreed in writing and so informed ENGINEER. OWNER shall have the right to exclude CONTRACTOR from any part of the Work which ENGINEER has so certified to be substantially complete, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

14.10.2. In lieu of the issuance of a certificate of Substantial Completion as to part of the Work, OWNER may take over operation of a facility constituting part of the Work whether or not it is substantially complete if such facility is functionally and separately usable; provided that prior to any such takeover, OWNER and CONTRACTOR have agreed as to the division of responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, correction period, heat, utilities and insurance with respect to such facility.

Final Inspection

14.11. Upon written notice from CONTRACTOR that the Work is complete, ENGINEER will make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.

Final Application for Payment

14.12. After CONTRACTOR has completed all deficiency corrections to the satisfaction of ENGINEER and delivered all maintenance and operating instructions, schedules, warranty assignments, guarantees, Bonds, certificates of inspection, marked-up record documents and other documents, all as required by the Contract Documents, and after ENGINEER has indicated that the Work is acceptable (subject to the provisions of paragraph 14.15), CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents (to include all Project Close Out Documents as defined in Article

12 of these General Conditions), and such other data and schedules as ENGINEER may reasonably require. CONTRACTOR shall also furnish an affidavit of CONTRACTOR to the effect that the labor, services, material and equipment charges have been satisfied in full; and that all payrolls, material and equipment bills, and other indebtedness connected with the Work have been paid or otherwise satisfied; and consent of the Surety, if any, to final payment.

Final Payment and Acceptance

14.13. If, on the basis of ENGINEER's observation of the Work during construction and final inspection and ENGINEER's review of the final Application for Payment and accompanying documentation--all as required by the Contract Documents--ENGINEER is satisfied that the Work has been completed and CONTRACTOR has fulfilled all of CONTRACTOR's obligations under the Contract Documents (to include all Project Close Out Documents as defined in Article 12 of these General Conditions), ENGINEER will, within seven (7) days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application to OWNER for payment. Thereupon ENGINEER will give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.15. Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application. If the Application and accompanying documentation are satisfactory and complete in form and substance, OWNER shall, within twenty-one (21) days after receipt thereof, pay CONTRACTOR the amount recommended by ENGINEER.

CONTRACTOR's Continuing Obligation

14.14. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by ENGINEER, nor the existence of an unresolved claim, nor the issuance of a certificate of Substantial Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by OWNER, nor any act of acceptance by OWNER nor any failure to do so, nor the issuance of a notice of acceptability by ENGINEER pursuant to paragraph 14.13, nor any correction of defective Work by OWNER shall constitute an acceptance of Work not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents.

Waiver of Claims

14.15. The making and acceptance of final payment shall constitute:

14.15.1. A waiver of all claims by OWNER against CONTRACTOR, except claims arising from defective Work appearing after final inspection pursuant to paragraph 14.11 or from any failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it shall not constitute a waiver by OWNER of any rights in respect of CONTRACTOR's continuing obligations under the Contract Documents; and

14.15.2. A waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

ARTICLE 15 SUSPENSION OF WORK AND TERMINATION

OWNER May Suspend Work

15.1. OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety (90) days by notice in writing to CONTRACTOR and fix the date on which Work shall be resumed. CONTRACTOR shall resume the Work on the date so fixed unless CONTRACTOR and OWNER agree otherwise. CONTRACTOR will be allowed an extension of the Contract Time directly attributable to any suspension if CONTRACTOR makes a claim therefor as provided in Article 12 of these General Conditions, but shall not be entitled to an increase in the Contract Price or to any sums in damages.

OWNER May Terminate

15.2. If CONTRACTOR is adjudged bankrupt or insolvent; makes a general assignment for the benefit of creditors; or if a trustee or receiver is appointed for CONTRACTOR or for any of CONTRACTOR's property; or if CONTRACTOR files a petition to take advantage of any debtor's act or to reorganize under the bankruptcy or similar laws; repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment; repeatedly fails to make prompt payments to Subcontractors for labor, materials, or equipment; disregards laws, ordinances, rules, regulations, or orders of any public body having jurisdiction; disregards the authority of ENGINEER; or violates any provision of the Contract Documents, then OWNER may, without prejudice to any other right or remedy and after giving CONTRACTOR and CONTRACTOR's Surety seven days' written notice, terminate the services of CONTRACTOR and take possession of the Project and of all materials, equipment, tools, construction equipment and machinery thereon owned by CONTRACTOR and make demand upon CONTRACTOR's Surety to finish the Work. If Surety fails to make satisfactory arrangements within twenty-one days for completion of the Work, OWNER may finish the Work by whatever means it may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Project, including compensation for additional professional services, such excess shall be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER shall be determined by OWNER and incorporated in a Change Order.

15.3. Where CONTRACTOR's services have been so terminated by OWNER, said termination shall not affect any rights of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of monies by OWNER due CONTRACTOR will not release CONTRACTOR from liability.

15.4. If the OWNER, which is a public entity, makes a good faith determination that such action is in the best interests of the entity, OWNER may terminate the Work or the Project upon seven days' written notice to CONTRACTOR for any reason which is within the legitimate purview of OWNER.

If OWNER terminates the Work under this provision, CONTRACTOR shall be entitled to payment for all portions of the Work completed and materials on hand at the date of termination and for expenses reasonably resulting from termination.

15.4.1. If, after notice of termination of the CONTRACTOR's right to proceed under the provisions of this clause, it is determined for any reason that the CONTRACTOR was not in default under the provisions of this clause, or that the delay was excusable under the provisions of this clause, the rights and obligations of the parties shall, if the Contract contains a clause providing for termination for convenience of the OWNER, be the same as if the notice of termination had been issued pursuant to such clause. If, in the foregoing circumstances, this Contract does contain a clause providing for termination for convenience of the OWNER, the Contract shall be equitably adjusted to compensate for such termination and the Contract modified accordingly.

CONTRACTOR May Stop Work or Terminate

15.5. If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety (90) days by OWNER or under an order of court or other public authority, or if ENGINEER fails to act on any Application for Payment within thirty days after it is submitted, or if OWNER fails to pay CONTRACTOR any sum approved by ENGINEER within thirty (30) days of its approval and presentation, then CONTRACTOR may, upon seven (7) days written notice to OWNER, terminate the Agreement and recover from OWNER payment for all Work executed and any expense sustained. In addition and in lieu of terminating the Agreement, if ENGINEER has failed to act on an Application for Payment or OWNER has failed to make any payment as aforesaid, CONTRACTOR may, upon seven (7) days notice to OWNER, stop the Work until payment is made.

ARTICLE 16 FORMAL DISPUTE

16.1. Prior to seeking judicial relief in a court of law, and in addition and prior to arbitration, the interested parties shall endeavor to settle disputes by mediation under the requirements of Sections 13-4C-1 through 13-4C-11 NMSA 1978. Mediation shall commence within the time limits stipulated in the Act. Such time limits shall then be extended for arbitration by ten days (Chapter 63, Laws of 1992.)

16.2. All persons or entities whose interests or responsibilities in the dispute are substantial may be joined, and claims and disputes may be consolidated, in accordance with the law.

16.3. CONTRACTOR will carry on the Work and maintain the progress schedule during any dispute resolution proceedings, unless otherwise agreed by CONTRACTOR and OWNER in writing.

ARTICLE 17 MISCELLANEOUS

Giving Notice

17.1. Whenever any provision of the Contract Documents requires the giving of written notice, it shall be deemed to have been validly given on the date delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended or three days after sent by certified mail, postage prepaid and return receipt requested, to the last business address known to the person who gives the notice.

Computation of Time

17.2. When any period of time is referred to in the Contract Documents by days, it shall be computed to include the first and the last day of such period.

General

17.3. All monies not paid when due hereunder shall bear interest at the maximum rate allowed by law at the place of the Project.

17.4. All Specifications, Drawings and copies thereof furnished by OWNER shall remain the property of OWNER. They shall not be used on another Project and, with the exception of those sets which have been signed in connection with the execution of the Agreement, shall be returned on request upon completion of the Project.

17.5. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder and, in particular but without limitation, the warranties, guarantees, and obligations imposed upon CONTRACTOR by paragraphs 6.29, 13.1, 13.10, and 14.3 and the rights and remedies available to OWNER there-under shall be in addition to and shall not be construed in any way as a limitation of any rights and remedies available to them which are otherwise imposed or available by law, by special guarantee or by other provisions of the Contract Documents.

17.6. Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission or act of the other or of any of the other's employees or agents or others for whose acts the non-injured party is legally liable, claim shall be made in writing to the other party within a reasonable time of the first observance of such injury or damage.

17.7. The Contract Documents shall be governed by the laws of the State of New Mexico.

Minimum Wages

17.8. The CONTRACTOR and any Subcontractor performing Work under this Contract shall comply fully with the "Public Works Minimum Wage Act", Section 13-4-11 through 13-4-17 NMSA 1978 (1988 Repl.), and all amendments thereto, which provides in part that “the CONTRACTOR shall pay all mechanics and laborers employed on the site of the project unconditionally and not less often than once a week, and without subsequent unlawful deduction or rebate on any account, the full amounts accrued at time of payment, computed at wage rates not less than those stated in the advertised specifications.”

The minimum hourly rate of wage which may be paid to workmen in each trade or occupation required for the Work under the Contract employed in the performance of the Contract either by the CONTRACTOR or Subcontractor or by other persons doing or contracting to do the whole or part of the Work contemplated by the Contract shall be as set forth in the schedule of Minimum Wage Rates appearing in the State Wage Rates, and the workmen employed in the performance of the Contract shall be paid not less than the applicable specified minimum hourly rate of wage as such is set forth in said schedule.

The scale of wages to be paid shall be posted by the CONTRACTOR in a prominent and easily accessible place at the site of the work; and it is further provided that there may be withheld

from the CONTRACTOR so much of accrued payments as may be considered necessary by the OWNER to pay to laborers and mechanics employed by the CONTRACTOR or Subcontractor on the Work, the difference between the rates of wages required by the Contract to be paid laborers and mechanics on the Work and the rates of wages received by such laborers and mechanics and not refunded to the CONTRACTOR, Subcontractors, or their agents.

The attention of the CONTRACTOR and any Subcontractor performing work under this Contract is directed to Section 13-4-12 NMSA 1978 (1988 Repl.) which reads in part, as follows:

"A. As used in Section 13-4-11 NMSA 1978, 'wages', 'scale of wages', 'wage rates', 'minimum wages', and 'prevailing wages' include:

(1) The basic hourly rate of pay, and

(2) The amount of:

(a) The rate of contribution irrevocably made by a CONTRACTOR or Subcontractor to a trustee or a third person pursuant to a fund, plan, or program; and

(b) The rate of costs to a CONTRACTOR or Subcontractor which reasonably may be anticipated in providing benefits to laborers and mechanics pursuant to an enforceable commitment to carry out a financially responsible plan or program which was communicated in writing to the laborers and mechanics affected for: 1) medical or hospital care, 2) pensions on retirement or death, 3) compensation for injuries or illness resulting from occupational activity, or 4) insurance to provide for any of the foregoing, and for 5) employment benefits, 6) life insurance, 7) disability and sickness insurance, 8) accident insurance, 9) vacation and holiday pay, 10) costs of apprenticeship or other similar programs, or for 11) other bona fide fringe benefits, but only where the CONTRACTOR or Subcontractor is not required by other federal, state, or local law to provide any of the foregoing or similar benefits."

However, the obligation of a CONTRACTOR or Subcontractor to make payment in accordance with the prevailing wage determinations of the State Labor Commissioner [Director of the Labor and Industrial Division of the Department of Labor], insofar as Section 13-4-11 NMSA 1978, or other sections or legislative acts incorporating Section 13-4-11 NMSA 1978 are concerned may be discharged by:

(1) The making of payments in cash;

(2) The making of contributions of a type referred to in (2a) above; or

(3) The assumption of an enforceable commitment to bear the costs of a plan or program of a type referred to in (2b) above or any combination thereof, where the aggregate of any payments or contributions and costs therefor is not less than the rate of pay described in Section 13-4-11 NMSA 1978, plus the amount referred to in this section."

In the event it is found by the State Labor Commissioner that any laborer or mechanic employed by the CONTRACTOR or Subcontractor on the site of the Project covered by the Contract has been or is being paid as a result of a willful violation of a rate of wages less than the rate of wages required by the Contract, the OWNER may, by written notice to the CONTRACTOR and CONTRACTOR's Subcontractor, if the violation involves the Subcontractor, terminate their right to proceed with the work or such part of the Work as to which there has been a willful failure to pay the required wages; and the OWNER may prosecute the Work to completion by Contract or otherwise, and the CONTRACTOR and CONTRACTOR's sureties shall be liable to the State of New Mexico for any excess costs occasioned thereby. Any party receiving notice of termination of a contract or subcontract under the provisions of this section may appeal the finding of the State Labor Commissioner as provided in the Public Works Minimum Wage Act.

There is no representation on the part of the OWNER that labor can be obtained at the hourly rates shown in the General Conditions. It is the responsibility of BIDDERs to inform themselves as to local labor conditions and prospective changes or adjustments of wage rates. No increase in the Contract Price shall be allowed or authorized on account of the payment of wage rates in excess of those listed. The CONTRACTOR and any Subcontractor performing work under this Contract shall submit one certified copy of weekly payrolls to the State Labor and Industrial Commission not later than five working days after close of any payroll period that occurs during the month of June. One certified copy of <u>all</u> payrolls shall be submitted to the ENGINEER not later than five (5) working days after the close of any payroll. The scale of wages must be posted by the CONTRACTOR at the project site. The weekly payrolls shall conform to the following:

(1) Form and Content: Any particular form may be used for CONTRACTOR or Subcontractor payrolls, provided all payrolls contain the following information:

(a) The employee's full name, address, and social security number.

(i) The employee's full name and social security number need only appear on the first payroll on which employee's name appears.

(ii) The employee's address need be shown only on the first submitted payroll on which employee's name appears, unless a change of address necessitates an additional submittal to reflect the new address.

(b) The employee's classification (or classifications).

(c) The employee's hourly wage rate (or rates); and, where applicable, employee's overtime hourly wage rate (or rates).

(d) The daily and weekly hours worked in each classification, including actual overtime hours worked (not adjusted).

(e) The itemized deductions made.

(f) The net wages paid.

(2) Numbering Payrolls: All payrolls shall be numbered starting with number one (1) for the first payroll at the beginning of the job and continuing in numerical order until the job is completed.

(3) Certification of Payrolls: The CONTRACTOR and each Subcontractor shall submit a weekly statement of compliance in the following form:

Date _____

I, _____, _____ do hereby state:

1. That I pay or supervise the payment of the persons employed by _____ on the _____ that during the payroll period commencing on the _____ day of _____, 20___, and ending the _____ day of _____, 20___, all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said _____ from the full weekly wages earned by any person and that no deductions have been made either directly or indirectly from the full wages earned by any person other than deductions permitted by law.

2. That any payrolls under this Contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the applicable wage rates incorporated into the Contract; that the classifications set forth therein for each laborer or mechanic conform with the work employee performed.

3. That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a state apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor.

17.8.1. Minimum Wages (Federal) - In the event that any work under this Contract involved Federal Funds, then the prevailing area Wage Rate Decision listed by the U.S. Department of Labor shall be made a part of this Contract. Whenever a conflict exists between the State and Federal Minimum Hourly Wage Rates, the higher of the conflicting wages rates shall govern.

Archaeological Salvage and Reports

17.9. Where objects of historical, archaeological, and paleontological value, including ruins, sites, buildings, artifacts, fossils and other objects of antiquity are encountered within the areas on which the CONTRACTOR's operations are performed, the CONTRACTOR shall postpone operations in the area, shall preserve such objects from disturbance or damage, and shall immediately notify the ENGINEER of their existence and location.

Upon receipt of such notification, the ENGINEER will arrange for the disposition of the objects or for the recording of data relative thereto and will notify the CONTRACTOR when it is proper to proceed with the Work in the affected area. In this regard, the ENGINEER may consult the Museum of New Mexico or other appropriate agency as to the nature and disposition of such objects. If the CONTRACTOR is directed by the ENGINEER to perform any Work in salvaging

said objects, the CONTRACTOR shall do so in accordance with the "Changes in the Work" provision of Article 10.

Measurement

17.10. Measurement of Quantities for Unit Price Work: Unless otherwise specified, linear or area quantities of Work, such as grading, landscaping, paving, curb, gutter, sidewalk, drive apron, and other Work of a similar nature, shall be determined from measurements or dimensions of such Work and computed in horizontal planes. However, linear quantities of underground cable, fencing, piling, and timber shall be considered as being the true length measured along the longitudinal axis thereof. For pipe Work see related technical specifications; but if the method of measurement for pipe Work is not stated therein, it shall be measured along the longitudinal axis of the pipe in place from center of fitting to center of fitting. A station, when used as a definition or term of measurement, will be one hundred (100) linear feet.

Method of Measurement

17.11. Materials and items of Work which are to be paid for on the basis of measurement shall be measured in accordance with the methods stipulated in the particular articles herein covering materials or types of Work.
When material is to be paid for on a volume basis and it would be impracticable to determine a volume by the specified method of measurement or when requested by the CONTRACTOR and approved by the ENGINEER, the material will be weighed in accordance with the requirements specified for weight measurement and such weights will be converted to volume measurement for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the ENGINEER. Unless otherwise provided, when mineral aggregate or roadway material is being paid for by weight, deductions from pay quantities will be made for the weight of water in excess of three percent (3%) if the material is to be treated with bitumen and six percent (6%) if the material is to be water bound.

Units of Measurement

17.12. Measurements shall be in accordance with U.S. Standard Measures. A pound shall be avoirdupois. A ton shall be two thousand (2,000) pounds. The unit of liquid measure shall be the U.S. gallon.

Certified Weights

17.13. All materials to be paid for at a Contract unit price per ton shall be weighed on platform scales furnished by the CONTRACTOR or the supplier of the material at the CONTRACTOR's expense, or such materials may be weighed on certified public scales at the CONTRACTOR's expense. All scales shall be of adequate size to permit the entire vehicle to rest on the scale platform while being weighed. Scales furnished by the CONTRACTOR shall be installed on beams, piers, or foundations of sufficient strength and bearing to prevent the weighing mechanism supporting the scale platform from settling. The weighing facilities shall include a weatherproof scale house with a minimum floor area of thirty-two (32) square feet and equipped with adequate heat and light.

ARTICLE 18 UTILITIES

Policy on the proximity of water and sewer lines

18.1. Whenever possible, it is desirable to lay parallel water and sewer lines at least ten (10) feet apart horizontally, and the water line should be a higher elevation than the sewer. If this is not possible, separate trenches will be required in all cases (this shall be effective even though one line has been installed prior to the other), and the water line shall be at least two (2) feet above the sewer. When water and sewer lines cross each other, the water line shall be at least three (3) feet above the sewer; otherwise the sewer shall be of cast iron pipe, or equivalent, for ten (10) feet on each side of the water line.

18.2. Existing House Sewer Lateral or Water Service Connections, and Replacement of Mains.

18.2.1. Where house service line connections to existing sewer mains and water mains are encountered, the CONTRACTOR shall insure that the service line will not be disturbed or damaged. Should any service line connection be broken during the construction of the new line, it shall be replaced by the CONTRACTOR with new pipe, appropriate for the application, as determined by the ENGINEER. No extra compensation will be allowed the CONTRACTOR for this item.

18.2.2. Where the horizontal alignment of the new sanitary sewer line coincides with the alignment of an existing sanitary sewer line and the grade of the new line is approximately at the same grade as the existing line or lower, then the existing line shall be removed or dealt with as ordered by the ENGINEER. The cost of this work when applicable shall be paid for under the appropriate item in the Bid Proposal. The ENGINEER shall determine if it is necessary to pump sewage around the replacement work, or if it is possible to temporarily plug the sewer line during the replacement operation. In the case of by-pass pumping, it will be paid for as indicated in the Bid Proposal.

18.3. Operation of the Existing Water System

18.3.1 All shutoffs shall be done by the OWNER. The CONTRACTOR shall notify the OWNER forty-eight (48) hours prior to the date of required shutoff. The OWNER shall make a "trial shutoff" of the system within the project limits prior to issuance of Notice to Proceed, in order to preclude delay of emergency and required shutoffs. If valves cannot be located or are not in operating condition, the OWNER shall notify the CONTRACTOR as soon as possible. The OWNER's personnel will locate the valves, make the necessary repairs, or determine an alternate method of making the shutoff.

18.3.2. The CONTRACTOR shall notify each household, office or other affected water user that a shutoff will be made, giving full details by personal contact if possible or by leaving a door knob hanger notification. CONTRACTOR shall also notify the media, i.e. radio stations and newspaper, the City Water Shop, (575) 439-4244, and the ENGINEER giving full details of the date, time and location of the shutoff. Notifications shall be given at least twenty-four (24) hours in advance of a shutoff.

18.3.3. The CONTRACTOR shall notify the Fire Department when fire hydrants are taken out of service and returned to service.

18.3.4. The OWNER shall be responsible for the actual operation of the valves.

18.3.5. EMERGENCY BREAKS: The Water Division, (575) 439-4244, shall be notified immediately so that it may perform the shutoff.

18.4. Protection and Restoration of Property

18.4.1. The CONTRACTOR shall never unnecessarily interfere with or interrupt the services of any public utility having property within or adjacent to the streets, alleys and easements involved in the Work and shall take all necessary precaution and effort to locate and protect all underground conduit, cables, pipes, water mains, sewers, structures, gas lines, trees, monuments, power lines, telephone and telegraph lines, traffic control devices and other structures, both below and above ground. CONTRACTOR shall give all Public Utility Companies a reasonable notice in writing, but in no event less than forty-eight (48) hours, for any work that CONTRACTOR contemplates which would interfere in any way whatsoever with the service of any existing public utility and City-owned facilities. If such public utility does not cooperate for the protection of its services, the CONTRACTOR shall notify the ENGINEER. Utility lines shall be located by the CONTRACTOR far enough in advance of construction work in order that the owner of such lines may raise, lower, realign or remove lines and structures, if necessary, and in order that the ENGINEER may make any line and grade changes necessary should the existing utility lines conflict with the Work under construction providing such adjustments do not materially affect the Work. The CONTRACTOR shall immediately report any damages to property or plant of public utility companies and City property to the company or owner involved, and to the ENGINEER.

18.4.2. The CONTRACTOR shall restore at CONTRACTOR’s own expense any public, City-owned, or private property damage for which CONTRACTOR is directly or indirectly responsible to a condition equal to that existing before damage. The CONTRACTOR shall promptly notify CONTRACTOR’s insurance carrier of the alleged damage, and if CONTRACTOR refuses to do so upon notice or if CONTRACTOR otherwise fails to make a restoration for which CONTRACTOR is responsible, the OWNER may cause such restoration and deduct cost from monies due, or which may become due, the CONTRACTOR.

18.4.3. The CONTRACTOR shall not remove, realign, or adjust any official City traffic control device. CONTRACTOR shall give the ENGINEER forty-eight (48) hours notice of any official City traffic control devices that need to be moved. The OWNER shall move all traffic control devices as soon as practical thereafter.

18.5. Abandoned Utilities

18.5.1. Unless otherwise specified, the CONTRACTOR shall remove all interfering portions of utilities which are shown on the drawings as "abandoned" or "to be abandoned in place" and which interfere with the construction of the project. All abandoned water mains shown on the drawings as "abandoned" or "abandoned in

place" or found during construction shall be removed or capped at a minimum, unless otherwise specified. All costs involved in said removals shall be included in the prices Bid for the various items of Work. All such abandoned utilities removed by the CONTRACTOR shall be stored on the site where directed and shall remain the property of the OWNER utility company or contracting agency as determined by the ENGINEER.

18.5.2. Where utilities are shown on the drawings as "abandoned" or "to be abandoned in place," it shall be the CONTRACTOR's responsibility to contact the utility company involved within forty-eight (48) hours prior to excavating around such utilities to ascertain that the abandonment of the utility has been completed.

18.6. Location of Existing Utilities

18.6.1. The public utilities shall be responsible to locate their utilities and provide information stating the horizontal and vertical alignments of same. If field verification excavations are required, the public utility will provide same in a timely manner.

18.6.2. Utilities which upon exploration are found to interfere with the permanent project Work, or which are within the trenching prism as defined by OSHA, will be relocated, altered or reconstructed by others or the ENGINEER may order changes in location, line or grade of structures being built in order to avoid the utilities. The cost of such changes will be paid for under applicable Bid Items.

18.7. Unknown Utilities Disclosed by the CONTRACTOR or by Others During the Contract Work.

18.7.1. In the event that a utility is disclosed subsequent to the award of the Contract, such utility not being indicated on the drawings, or in the event that an existing utility is found to be in a materially different location than shown on the drawings and thus requires additional work on the part of the CONTRACTOR for its maintenance, relocation or support, the necessary alteration, relocation, proper support and protection shall be done and paid for as follows:

When said utility is found to occupy the space within the trenching prism as defined by OSHA, or the permanent works to be constructed, it shall be relocated or the CONTRACTOR shall be paid extra for its support.

18.8. Responsibility of the CONTRACTOR

18.8.1. The CONTRACTOR shall be responsible for all costs for the repair of any and all damage to the Contract Work or to any utility (which is previously known and disclosed to CONTRACTOR by the utility) as may be caused by CONTRACTOR’s operations. Utilities which are relocated by others in order to avoid interference with structures and which cross the project Work shall be maintained in their relocated positions by the CONTRACTOR. All costs for such work shall be absorbed or included in the prices bid for the various items of Work.

18.9. Delays Caused by Failure to Relocate Utilities

18.9.1. Where parties other than the CONTRACTOR are responsible for the relocation of utilities and a delay in the CONTRACTOR's Work is caused by the failure on the part of said parties to remove or relocate such utilities in time to prevent such delay, or by any action or lack of action on the part of the Contracting Agency, the CONTRACTOR shall be entitled to an extension of the Contract Time as determined by the ENGINEER.

18.9.2. In order to minimize delays to the CONTRACTOR caused by the failure of other parties to relocate utilities which interfere with structures, the CONTRACTOR may upon request to the ENGINEER, be permitted to temporarily omit the portion of the Work affected by the utility. The portion thus omitted shall be constructed by the CONTRACTOR immediately following the relocation of the utility involved. The CONTRACTOR shall be paid mobilization and demobilization to construct the omitted portion.

ARTICLE 19 TRAFFIC CONTROL

19.1. CONTRACTOR shall perform all signing, barricading and channelization required for the project in accordance with current edition of the Manual on Uniform Traffic Control Devices, latest edition. All signs, barricades and channelizing devices used at night shall be reflectorized with retroreflective sheeting (both orange and white). All advance warning signs used at night shall be equipped with flashing warning lights; all channelizing devices used at night shall be equipped with steady burning warning lights.

19.2. Traffic control to be used on the Project shall be pre-approved by the OWNER.

ARTICLE 20 DIGITAL VIDEO RECORDING (Does not apply to this project)

20.1 Prior to initiating construction operations, CONTRACTOR, shall perform digital video recording of the entire project, its full length and width. The CONTRACTOR, shall also include or add as necessary, any areas to be disturbed for material storage, employee parking or equipment storage.

The video documentation shall be completed in digital format; it shall be a minimum resolution of 1920 x 1080 pixels, at 60 fps (frame per second) and in color. The video documentation shall be performed between 10:00 a.m. and 2:00 p.m. during periods of full sun exposure. The actual date of recording shall be date-stamped within each frame of the video. Approval of the video must be obtained from the ENGINEER prior to the commencement of any clearing and grubbing operations.

A DVD copy of the video recording shall be submitted to the ENGINEER, in the format compatible with standard DVD players.

All cost associated with the video recording specified in this article shall be considered incidental to other related items of work and no separate payment will be made unless specifically indicated elsewhere in the Special Provisions.

TECHNICAL SPECIFICATIONS

This project shall be built in accordance with the New Mexico State Department of Transportation Standard Specifications for Highway and Bridge Construction State Construction Bureau, Current Edition and all applicable Supplemental Specifications and Revisions to the New Mexico State Department of Transportation Standard Specifications for Highway and Bridge Construction State Construction Bureau, as published by the New Mexico Department of Transportation except as modified by the City of Alamogordo "Specifications," and "Special Provisions to the Contract Documents."

The Contract Documents will govern in the following order of importance:

1. City of Alamogordo Front End Documents, Section 1 thru Section 13
2. City of Alamogordo Specification Standards
3. Project Plan Drawings
4. NMDOT Standard Specifications, Division 200 thru Division 900
5. NMDOT Supplemental Specifications
6. NMDOT Standard Drawings

CITY OF ALAMOGORDO
SPECIFICATION STANDARDS

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Article 01-002.1 GENERAL REQUIREMENTS

1.0 DEFINITIONS AND TERMS

Abbreviations

AASHTO ..	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGC	Associated General Contractors of America, Inc.
ANSI	American National Standards Institute
APWA	American Public Works Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
BM	Bench Mark
FH	Fire Hydrant
G	Gas Line
ID	Inside Diameter
Inv.	Invert
MH	Manhole
mg/l	Milligrams per Liter
MUTCD	Manual on Uniform Traffic Control Devices
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NMDOT ..	New Mexico Department of Transportation
NMSA	New Mexico Statutes Annotated--1978 Compilation as Amended
OHP	Overhead Power
OHP&T ...	Overhead Power & Telephone

OHT ..... Overhead Telephone

OSHA..... Occupational Safety and Health Association

PC ..... Point of Curvature

ppm ..... Parts per Million

PRC ..... Point of Reverse Curvature

psf ..... Pounds per Square Foot

psi ..... Pounds per Square Inch

PT ..... Point of Tangency

PVC ..... Polyvinyl chloride Pipe

Pvmt. ... Pavement

Q ..... Rate of Flow

RCP ..... Reinforced Concrete Pipe

SCCP .... Steel Cylinder Concrete Pipe

Sec ..... Section

Sta. .... Station

Std. .... Standard

UGT ..... Underground Telephone

UL ..... Underwriters' Laboratories, Inc.

V ..... Velocity

Definitions

Alley – A minor public way intended for secondary service access to the rear side of a lot or piece of property.

City - The City of Alamogordo and all assigned representatives.

City Engineer – The City of Alamogordo's Engineer.

Contract Documents - The written AGREEMENT between the CONTRACTOR and the OWNER setting forth the obligations of the parties thereunder, including but not limited to the performance of the Work and the Basis of Payment. The Contract Documents

include: the Advertisement for Bids, Addenda, Instructions to BIDDERs, CONTRACTOR's Bid, the Performance Bonds and Labor and Payment Bond (for both CONTRACTOR and SUBCONTRACTOR, if applicable to SUBCONTRACTOR), the Certificate of Insurance, the Statement of BIDDER's Qualifications, the Campaign Contribution Disclosure Form, the Notice of Award, the Notice to Proceed, these General Conditions, the Contract Specifications, any Special Conditions, any referenced Specifications or Standards, Drawings and Plans, and all Modifications to the above, including Change Orders and extensions of Contract Time, all of which constitute one instrument.

CONTRACTOR - The person, firm, or corporation with whom an owner has executed the AGREEMENT.

Cul-De-Sac – A local street with only one (1) outlet having an appropriate terminus for the safe and convenient reversal of traffic movement.

Drawings or Plans - The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by an ENGINEER and are referred to in the Contract Documents.

Driveway, Private – A vehicular way not serving more than one (1) lot or parcel of land.

Driveway, Common – A vehicular way serving more than one (1) lot or parcel of land.

ENGINEER - The person or firm designated by an owner, who is responsible for providing engineering services.

Easement, Private – A right-of-use granted for the limited use of private land owners and where general use and maintenance of such area is governed by an agreement which runs with the land. This easement is serviceable only by mutual consent of all of the parties that benefit from the Easement.

Easement, Public – An easement dedicated for use by the public, which is included within the dimensions or areas of lots or parcels of land.

Field Order - A written order issued by an ENGINEER or Public Works Inspector which clarifies or interprets the Plans and Specifications. See Section 12, General Conditions.

Frontage Road – Used to relieve Major Arterial streets of side traffic.

Grade – The slope of any surface specified in percentage terms or in terms of elevation.

Grading – Any disturbance of the surface of the land with earth moving equipment.

Intersection – the location where two (2) or more streets cross at grade.

Median – A strip that separates the opposing flows of traffic on a street.

OWNER – The City of Alamogordo, New Mexico, a New Mexico municipal corporation. The term "City" may be used interchangeably with the term "OWNER".

Pedestrian Way – A specifically designated place, means, or way by which pedestrians shall be provided safe, adequate and usable circulation; normally provides access through the interior of a property or development. Does not include street or vehicular easement or right-of-way or required sidewalk along a street or vehicular way.

Property Line – The line(s) of record bounding a lot or other parcel of land.

Project - The entire construction to be performed as provided in the Contract Documents.

Project Manager – The OWNER's representative who is delegated the responsibility for administration of the Project and who is the primary point of contact for the CONTRACTOR.

Public Works Inspector – An authorized representative of OWNER who is assigned to inspect the Project or any part thereof.

Reference Specifications, Test Methods, and Applicable Codes - All Standard Specifications and test methods of any society, association, or organization, referred to herein, are hereby made a part of these Technical Standards the same as if written in full. (Any reference to a paragraph or subparagraph within an article shall include all general provisions of the article to which reference is made.) References to such Standards refer to the latest published issues as of the date of the Invitation to Bid, unless otherwise specified. Reference to local or state codes and laws shall mean the latest adopted and published codes as of the date of the Invitation to Bid, unless otherwise specified.

Service Connections - Service Connections shall be construed to mean all or any portion of the pipe, conduit, cable, or duct which connects a utility main or distribution line to a building, home, residence, or property.

Shop Drawings - All drawings, diagrams, illustrations, brochures, schedules, and other data which are prepared by CONTRACTOR, a Subcontractor, manufacturer, Supplier, or distributor which have been approved by OWNER and/or the City Engineer and which illustrate the equipment, material, or some portion of the Work.

Special Conditions - Conditions which modify any article or paragraph of these Technical Standards.

Specifications (also Technical Specifications) – Those portions of the Contract Documents consisting of written technical description of materials, equipment, construction systems, standards and workmanship as applied to the Work.

Street – A right-of-way dedicated to the use of the public by which vehicles and pedestrians shall have lawful and usable ingress and egress, which has been accepted for maintenance and control by the City, County or State. See Section 3 of the Detail Drawings for street classifications.

Street, Stub – A street that has been designed to allow for the future extension of the street through subsequent developments.

Subcontractor - An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site, and who has a current City of Alamogordo Business Registration.

Utility - Overhead or underground wires, pipes, conduits, ducts, or structures, operated and maintained in or across a public right-of-way or easement or private easement operated and maintained to supply such commodities as water, gas, power, telephone, cable television, or sewer.

A. Public Utility - Owned and operated by a municipality or another political subdivision of the state.

B. Private Utility - Owned and operated by a private company or corporation.

Work - Any and all obligations, duties, and responsibilities necessary to the successful completion of the Project assigned to or undertaken by CONTRACTOR, including all labor, materials, equipment, incidentals, and the furnishing and installation thereof.

1.1 DESCRIPTION

The Work will consist of construction of a new right turn lane, realigning the parking lot entrance on the north side of Panorama Boulevard to line up with Hamilton Road, installation of new street lights, milling and overlaying the roadway, installing new striping, and installing conduit for a future signal, all within the city limits of Alamogordo, New Mexico.

The CONTRACTOR is required to locate all existing utilities prior to commencing Work on the Project. It shall be the CONTRACTOR's sole financial and legal responsibility to field verify locations and depths of all existing utilities and coordinate any relocation Work required.

The CONTRACTOR shall be required to maintain adequate temporary access for the private residences and the businesses and facilities within the construction area, to the satisfaction of the City Engineer and/or Public Works Inspector.

At the end of each Work day, or as required during each day, or as required due to weather conditions, the CONTRACTOR shall perform grading, shaping, and cleanup, to maintain an acceptable site condition, as determined by the ENGINEER.

2.0 WORKMANSHIP AND MATERIALS

These standards are prepared with the intention that only first-class workmanship and materials of the best quality will be provided. Materials and workmanship of less than best quality will not be acceptable. In the event that these Standards may not completely describe each and every part, item and detail, it will not relieve the CONTRACTOR of the full responsibility for providing the necessary part, item or Work necessary to complete the Project satisfactorily for proper operation, as intended.

The materials and equipment specified are considered the minimum standard of quality necessary to produce a satisfactory Project. Substitutions for the materials and

equipment that have been specified will not be permitted except on written approval of the City Engineer.

Any materials that are found to be damaged either before or after installation shall be removed promptly and replaced with new materials. The Public Works Inspector's inspection of the materials before they are installed shall not relieve the CONTRACTOR from any responsibility to furnish and install good quality materials, totally undamaged.

3.0 WATER FOR CONSTRUCTION

The use of reclaimed water is required on the Project. The CONTRACTOR will be responsible for purchasing all of the reclaimed water needed for construction from the City of Alamogordo. The cost will be determined in accordance with the current reclaimed water rates. Contact City of Alamogordo Water Billing Department at 575-439-4260. It shall be the CONTRACTOR's responsibility to transport and apply the reclaimed water as specified or as ordered by the ENGINEER.

Reclaimed (Purple) Hydrant Locations

1. Pivot Hydrant - at the extreme south Airport property – 3500 Airport Rd. - Only for Airport Projects. *(Must obtain special access permission)*
2. Airport Hydrant – approximately 850 feet north of the Airport on Airport Rd (address 3500 Airport Rd)
3. La Velle Hydrant/Fill Stand – approximately 1500 feet south of First Street on La Velle Rd. @ Booster Station; 223 La Velle Rd.
4. Michel St. Hydrant – approximately 250 feet west of Hwy 54 south on Michel St. (north of address 2150 US Hwy 54 south)
5. Civic Center Automated Fill Stand – off of S. Florida at 800 E. First Street, south side of the Sgt. Willie Estrada Memorial Civic Center
6. 26th Street Hydrant - Puerto Rico Av. @ 26th. Street (address 2518 Puerto Rico Ave)
7. Travis C. Hooser Ballfield Complex at 2143 S. Walker Ave. (2 Hydrants) – approximately 175 feet south of James St. on S. Walker Road

The CONTRACTOR shall meter the reclaimed water used at the hydrant from which the reclaimed water is taken. The CONTRACTOR shall furnish the meter or obtain a meter from the City for which he will have to pay a deposit, to be refunded when the meter is returned in good working order.

The CONTRACTOR shall furnish and maintain the piping and/or equipment necessary to connect to the reclaimed water source and to convey the reclaimed water into the CONTRACTOR's reclaimed water tank. CONTRACTOR shall not allow reclaimed water to go to waste during the tank filling operations, and he shall not allow his piping and equipment to leak water.

The tank filling equipment shall be placed and maintained in such a way as to provide prevention against accidents of any nature to CONTRACTOR personnel or the public in general.

The CONTRACTOR is required to connect the fill stand or fill equipment to the hydrant, and leave the hydrant valve open. CONTRACTOR shall install a valve in the fill stand piping to control the water flow.

The hydrant valve shall not be closed except when water will not be needed over a weekend or a period of two (2) or more days.

4.0 QUALITY ASSURANCE MATERIALS TESTING (GEOTECHNICAL)

A materials testing laboratory shall be retained by the City for Quality Assurance testing. The frequency of the Quality Assurance testing shall be as determined by the OWNER. The CONTRACTOR shall notify the testing laboratory and the Public Works Inspector when ready for each Quality Assurance test and cooperate fully in making way for the laboratory technician to make the required tests. If any of the Work fails to meet the standards specified, the CONTRACTOR shall correct such failures in a manner acceptable to the ENGINEER and/or the Public Works Inspector. The CONTRACTOR shall pay for the cost of all Quality Assurance re-testing necessary due to failure to meet Specification requirements on previous Quality Assurance testing. If the CONTRACTOR requests the testing laboratory to obtain density tests and the area to be tested is not ready when the technician arrives at the job site, the CONTRACTOR shall pay for all trip charges or stand-by time assessed. All cost for failed test and stand-by time will be deducted from the amount due on the Contract.

CONTRACTOR shall give Geotechnical Testing Lab a minimum of twenty-four (24) hours notice of readiness of the Work for Quality Control tests.

CONTRACTOR shall be responsible for providing to the OWNER the Proctor, Gradation and Liquid Limits of Subgrade material and Base Course material before testing of materials is required.

Material testing as referenced in this Section is for the OWNER's, Quality Assurance. The CONTRACTOR is responsible for Quality Control of material, process and method. Neither observations by ENGINEER nor inspections, tests or approvals by persons other than CONTRACTOR shall relieve CONTRACTOR from CONTRACTOR's obligations to perform the Work in accordance with the requirements of the Contract Documents

5.0 SURVEYING AND STAKING

The CONTRACTOR shall be responsible for all horizontal and vertical control required to build the Project, basic survey control will be provided by the City of Alamogordo. Any field adjustments made by the ENGINER will be accepted as if incorporated herein and shall not make any claims for additional surveying or surveying expenses resulting therefrom.

6.0 SANITARY FACILITIES

The CONTRACTOR shall provide the necessary number of sanitary toilet units for all of the workers on the work site. The chemical toilets shall be moved along the Project routes so that they will be convenient for the workers.

Adequate potable drinking water shall be provided on the work site as well as drinking cups, for the benefit of all employees.

7.0 TRUCK BED COVERS

All trucks or other conveyances hauling any loose materials, including hot-mix bituminous materials, on public streets, highways and detours shall be of an approved type, and shall be covered in such a manner as to prevent such materials from dropping, sifting, leaking, or otherwise escaping therefrom. Coverings for trucks or other conveyances hauling loose materials as herein provided shall be securely fastened so as to prevent said covering or load from becoming loose, detached, or in any manner a hazard to public traffic. Any vehicles in violation of this provision will not be permitted to operate.

8.0 METHOD OF BIDDING

The Bid Schedule has been prepared for a Unit Price Contract procedure. All of the quantities shown in the Bid Schedule are estimated, and are not purported to be exactly correct. CONTRACTOR shall be required to furnish more or less of each estimated quantity that may be required to satisfactorily complete all of the Work. The CONTRACTOR will be paid on the unit basis for all of the material that is actually furnished and installed in the construction of the Project to plan dimensions. In no case shall the CONTRACTOR claim extra compensation for building any portion of the Project beyond plan dimensions.

9.0 UNDERGROUND AND OVERHEAD UTILITIES

Any interference with, or damage to, either underground or overhead utilities of any nature shall be the CONTRACTOR's legal and financial responsibility, saving the OWNER harmless from any or all claims resulting from damage to these utilities by reasons of his operations.

The CONTRACTOR shall contact New Mexico One-Call at 1-800-321-2537 or by cell phone at 811 to request field utility locates forty-eight (48) hours prior to digging

10.0 CONTRACTOR COMMUNICATIONS

The CONTRACTOR shall contact the OWNER, ENGINEER and the Department of Public Safety to provide information related to traffic control impacts, as well as to obtain any new requirements or restrictions for traffic control procedures.

11.0 SEQUENCE OF WORK

The Work shall be carried out with the intent of causing as little disruption as possible to the public. The CONTRACTOR shall perform clean up operations on a continuous basis. Any area requested to be cleaned up by the OWNER, ENGINEER and/or Public Works Inspector shall be cleaned immediately.

CONTRACTOR shall be responsible for advising the businesses, residents and occupants along each street as to when Work will be done in that particular area. CONTRACTOR will notify the businesses, residents and occupants not less than two (2)

days in advance of doing the Work. CONTRACTOR will request businesses, residents and occupants to move their vehicles out of the way of construction if required. If a problem develops with any resident or occupant, the CONTRACTOR shall report it to the OWNER and ENGINEER. The OWNER will assist in solving the resolution.

12.0 AUTHORITY AND DUTIES OF PUBLIC WORKS INSPECTOR(S)

Certified Inspectors representing the City of Alamogordo shall be authorized to inspect all Work done and all materials furnished. Such inspection may extend to all or any part of the Work and to the preparation, fabrication or manufacture of the materials to be used. The Public Works Inspector (Inspector) is not authorized to revoke, alter, or waive any requirements of the Specifications. The Public Works Inspector is authorized to call to the attention of the CONTRACTOR any failure of the Work or materials to conform to the Technical Standards and/or the Plans and Specifications, whichever is more strict. The Public Works Inspector shall have the authority to suspend the Work when an imminent hazard condition is known to exist, or when the CONTRACTOR either delays in correcting or permits repeated occurrences of a hazardous condition. This authority to suspend Work does not relieve the CONTRACTOR of the legal responsibility for safety at the jobsite.

The Public Works Inspector shall have the authority to suspend Work due to rejected materials or rejected Work only at the direction of the City Engineer or Project Manager. Any questions at issue as to quality of materials and/or Work installed may be referred to the OWNER and/or ENGINEER. If the CONTRACTOR refuses to suspend operations on verbal order, the Inspector shall issue a written order giving the reason for suspending the Work. After placing the order in the hands of the CONTRACTOR's person-in-charge, the Inspector shall immediately leave the job. Work done during the absence of the Inspector will not be accepted.

The Public Works Inspector shall in no case act as foreman or perform other duties for the CONTRACTOR, nor interfere with the management of the Work by the CONTRACTOR. Any advice which the Inspector may give the CONTACTOR shall not be construed as binding the City in any way or releasing the CONTRACTOR from fulfilling all of the required Contract terms.

13.0 SANITARY LANDFILL

All waste and recyclable materials shall be disposed of or stockpiled in approved locations per EPA regulations.

14.0 SIGN REMOVAL AND REPLACEMENT

The CONTRACTOR shall be responsible for removing and replacing all existing signs that are in the way of the Project construction. The existing sign location and height shall be indexed before removal. Removed signs shall be properly and adequately stored. When replaced, signs shall be in existing or better condition, in all respects, than before removal. The CONTRACTOR shall replace any signs that are damaged due to negligence, mishandling, or inadequate storage.

15.0 PROTECTING THE WORK

The CONTRACTOR shall be responsible for protecting all portions of the Work against any and all damage including but not limited to: vandalism, accidents and weather conditions, until accepted. No additional payment will be allowed for rebuilding any portion of the Project caused by such damage.

16.0 FENCING

The CONTRACTOR shall be responsible for removing and rebuilding any and all existing fencing that is damaged or is in the way of the Project construction. This Work shall be considered incidental to the Project and no payment will be allowed for this Work.

17.0 EXISTING WATER VALVE BOXES

The CONTRACTOR shall reference the location of all existing water valve boxes within the construction areas. Any valve boxes that are damaged during construction shall be replaced with no addition Payment. After the new PMPB has been installed and approved, the CONTRACTOR shall neatly saw-cut a two (2) foot by two (2) foot square opening in the new pavement, centered on the valve, and the CONTRACTOR shall install a new reinforced concrete collar, as provided in the Contract Documents.

18.0 EXISTING MANHOLES

The CONTRACTOR shall reference the location and carefully remove and store manhole rings and lids within the construction areas. Any manhole rings and lids damaged shall be replaced by the CONTRACTOR. The top portion of the manhole shall be removed to a depth below the limits of Work, and a steel plate covering over the manhole shall be provided. After the new PMBP has been installed and approved, the CONTRACTOR shall neatly saw cut a four (4) foot by four (4) foot square opening in the new pavement, centered on the manhole.

The CONTRACTOR shall provide concrete adjustment rings as required to reconstruct the top of the manhole to the proper elevation so that the manhole frame and lid are flush with the new PMBP surface. Each manhole shall receive a new reinforced concrete collar, as provided in the Contract Documents.

19.0 WATER SHUT-OFFS

All water shut-offs shall be done by the City. The CONTRACTOR shall notify the City Water Shop forty-eight (48) hours prior to the time of the required shut-off. The CONTRACTOR shall also notify, at least twenty-four (24) hours in advance, each household, office, business and/or other affected water user that a shut-off will be made.

END OF ARTICLE 01-002.1

Article 01-002.2 TRAFFIC CONTROL AND MANAGEMENT

1.0 DESCRIPTION

This Work shall consist of providing Traffic Control and Traffic Control management in accordance with the Contract and the Manual on Uniform Traffic Control Devices (MUTCD), current edition, including supervision of personnel and the installation, inspection, and maintenance of all traffic control devices on the Project.

Complex traffic control Plans shall be development and stamped by a registered professional Engineer prior to submittal to the Project Manager;

2.0 REQUIREMENTS

The Contractor may assign more than one (1) traffic control supervisor (TCS) to provide traffic control management for the Project provided that a schedule is submitted to the ENGINEER and PROJECT MANAGER.

If assigning more than one (1) TCS to provide traffic control management, submit to the Project Manager a weekly schedule identifying who shall be in charge of providing traffic control management each Day.

The TCS shall possess, at all times, a set of APPROVED traffic control plans and a current copy of the MUTCD.

Traffic Control shall be required when construction interferes with thoroughfare traffic. Traffic Control shall also be required to prevent through-traffic, where new development meets existing streets, until all utilities, new streets, and infrastructure have been completed.

Where more than one contractor is working in an area requiring Traffic Control, the CONTRACTOR shall coordinate all Traffic Control operations.

If the CONTRACTOR is using a subcontractor to provide traffic control management, the CONTRACTOR shall ensure that the TCS is in accordance with the Contract.

The Contractor may assign one (1) or more traffic control technician (TCT) to assist the TCS in inspection and maintenance of traffic control devices.

2.1 CERTIFICATION

Before commencing Work that requires traffic control management, submit to the Project Manager a copy of the “Work Zone Safety Supervisor” certificate for the TCS (wallet size card) issued by the American Traffic Safety Services Association (ATSSA), the Associated Contractors of New Mexico (ACNM), or an agency or firm approved by the Department.

The Department will accept the TCS certification by ATSSA, ACNM, or any agency or firm only if the following requirements are met:

1. Successful completion of a Department-approved Work-zone traffic control course;

2. Passing a written examination on a Work-zone traffic control course;

3. At least one (1) year of full-time field experience, verified by the agency or firm, in Work zone traffic control; the Department may verify the experience at its discretion.

   The TCT must only satisfy requirements 1 and 2, above.

Before commencing Work that requires flagger traffic control, submit a copy of the "Flagger Training" certificate (wallet sized card) issued by ATSSA, ACNM, FHWA, or an agency or firm approved by the Department.

2.2 RE-CERTIFICATION

Renew the TCS's certification every four (4) years through the ATSSA, ACNM, or a Department-approved agency or firm.

Re-certify in the fourth year, before the expiration date of the current certification.

Flaggers must obtain refresher training which meets the requirements of ATSSA, ACNM, FHWA, or agency or firm approved by the Department prior to the fourth anniversary date shown on the current certificate.

2.3 DUTIES

The TCS's only responsibility is traffic control management. The ENGINEER and/or OWNER may allow exceptions to this rule if the Project is small and requires limited traffic control. The Project Manager and the City Engineer will determine approval of the exception at the preconstruction conference.

The TCS's primary duties include the following:

1. Providing management and supervision services at the Project site;

2. Preparing revisions requested by the Contractor to the traffic control plan in the Contract and submitting the new traffic control plan, in CAD format or hand drafted on a 11-inch x 17-inch piece of 20-pound paper using current drafting standards, to the Project Manager for approval. Complex traffic control Plans shall be development and stamped by a registered professional Engineer prior to submittal to the Project Manager;

3. Coordinating the flagging and signing personnel training;

4. Supervising the flagging and signing personnel;

5. Coordinating traffic control operations for the duration of the Contract, including those of Subcontractors, utility companies, and Suppliers, to ensure that traffic control is in place and fully operational before the commencement of Work. When dealing with utility companies, the TCS shall coordinate concurrent utility traffic control with other construction traffic control to avoid conflicts;

6. Coordinating, in writing, Project activities with the appropriate individual traffic control, law enforcement, and fire control agencies;

7. Preparing and submitting statements concerning Road closures, Delays, and other Project activities to the news media, as necessary. Before submittal to the news media, the Contractor shall submit news releases to the Project Manager for review and approval;

8. Notifying the Project Manager of accidents related to the Project traffic control;

9. Recording time and date of accident notification in accordance with Section 2.4, “TRAFFIC CONTROL DIARY”.

10. Attending the preconstruction conference;

11. Maintaining, cleaning, and replacing traffic control devices in use per the current traffic control plan during working and non-working hours

The TCS(s) shall provide management and supervision services at the Project site.

The City recognizes that the CONTRACTOR does not have direct control over the Traffic Control operations of the utility companies. The coordination provided by the TCS when dealing with utility companies is for the purpose of coordinating concurrent utility Traffic Control with any other construction Traffic Control to avoid conflicts.

The TCS(s) shall coordinate all Project activities with the appropriate individual Traffic Control law enforcement, fire control agencies and emergency service providers (Police, Fire and Ambulance).

The TCS(s) shall prepare and submit statements concerning road closures, delays, and other Project activities to the news media, as necessary. News releases shall be submitted to the ENGINEER and/or OWNER for review and approval prior to the CONTRACTOR’s submittal to the news media.

The TCS(s) shall be responsible for notifying the ENGINEER of all accidents related to the Project. The time and date of any accidents shall be documented, as well as any other pertinent information.

2.4 TRAFFIC CONTROL DIARY

The TCS shall maintain a Project traffic control diary in a bound book. Obtain the diary from the ACNM.

The TCS shall keep the traffic control diary current each Day and sign each daily entry.

The TCS shall make entries in ink, in a format approved by the Project Manager, without erasures or white-outs. The TCS shall strike out unacceptable entries and replace with acceptable ones. The TCS may use photographs to supplement the written text.

Ensure that the traffic control diary is available for inspection by the Project Manager at all times and submit a copy of the diary to the Project Manager at the end of each week.

The traffic control diary will become the property of the Department at the completion of the Project. If the Contractor fails to submit the diary, the Department may withhold final payment until it is submitted.

2.5 INSPECTION OF TRAFFIC CONTROL

The TCS shall inspect traffic control devices every Day that traffic control devices are in use at least once a week during nighttime periods. The TCS shall provide for the immediate cleaning, repair, or replacement of traffic control devices that are not functioning as required to ensure the safety of the motorists and construction personnel.

The TCS shall conduct inspections of the traffic control devices at the beginning and end of each Day that traffic control devices are in use, and as scheduled or directed by the Project Manager during the Work Day.

The TCS shall inspect the traffic control devices during working and non-working hours on a schedule approved in writing by the Project Manager.

The TCT shall inspect Traffic Control devices and shall provide for the immediate repair, cleaning, or replacement of Traffic Control devices not functioning as required or not meeting MUTCD Standards to ensure the safety of the public and construction personnel.

2.6 AVAILABILITY OF TCS

Provide traffic control management under the supervision and direction of the TCS on a 24-hour-per-day basis throughout the duration of the Project.

The TCS shall be on the Project whenever Work is in progress, and available by telephone to be on the Project within 1 hour at all other times.

The provisions for availability of the TCS will also apply during times of Partial or full Project Suspension.

3.0 COMPLIANCE

3.1 FAILURE TO COMPLY

If the Contractor fails to comply with the approved traffic control plan or fails to immediately correct unsafe traffic conditions after written notification of the problem, the Project Manager may suspend all or part of the Contractor’s operations.

In the event that the Contractor does not take appropriate action to bring the deficient Traffic Control into compliance with the approved Traffic Control Plan – or to correct the unsafe traffic conditions – the City may proceed with the corrective action and charge the Contractor for the additional cost incurred

If the City suspends the Contractor's operations, the City will include the period necessary to correct these unsafe conditions and traffic control deficiencies in the normal assessment of Contract Time.

The City will not relieve the Contractor of the responsibility to provide traffic control safety to the traveling public, if the City fully or Partially Suspends the Project.

If the City suspends the Project due to the Contractor's failure to comply with this Section, or the Contract is in liquidated damages, the Contractor shall continue to provide traffic control management at no additional cost to the City.

If the Contractor requests full or Partial Suspensions, the Contractor shall perform the additional traffic control management at no additional cost to the City.

3.2 ENGINEER MODIFICATION

The provisions included in the Plans and Specifications for handling and controlling traffic during construction may be changed by the ENGINEER due to actual field conditions encountered. Such changes will be made by written instruction to the CONTRACTOR and shall be considered an amendment to the Plans and Specifications as of the date of change and at no additional cost to the City.

4.0 METHOD OF MEASUREMENT (REFER TO SECTION 3, BID SCHEDULE FOR MEASUREMENT)

Traffic Control shall be measured by the Lump Sum. A Lump Sum Breakdown shall be provided to the ENGINEER at the Pre-construction Conference.

No separate measure shall be made for Traffic Control. Traffic Control shall be incidental to the project.

5.0 BASIS OF PAYMENT (REFER TO SECTION 3, BID SCHEDULE FOR PAYMENT)

Payment for accepted Traffic Control shall be paid for by the Lump Sum. A Lump Sum Breakdown shall be provided to the ENGINEER at the Pre-construction Conference.

No separate payment will be made for Traffic Control. Payment for Traffic Control shall be made under the item with which it is associated.

The Department will negotiate payment for additional traffic control management resulting from an increase in Work beyond the scope of the Project. Do not start Work until agreement on payment for additional Traffic Control Management.

For normal increases in Contract Items resulting in extensions of the Contract Time, the Department will increase the original Lump sum amount based on the ratio of actual additional Days used to the original Contract Time.

Article 01-002.3 CLEANUP

1.0 DESCRIPTION

This Work shall consist of cleanup, in accordance with this Specification, the Project Plans, and all applicable specification items in these documents. CONTRACTOR shall furnish all the labor, equipment and materials necessary to perform all of the Work required.

2.0 PROJECT CLEANUP

Cleanup of debris, trash and waste materials shall be performed on a continuous basis by the CONTRACTOR in such a way that will keep the work site(s) clean and neat at all times.

The CONTRACTOR shall be responsible for cleaning up the Project. All areas disturbed shall be left in excellent condition, free of any debris, trash, and the like. All trees that were limbed during construction shall be neatly and properly coated with the approved coating so as to protect the cut face, in accordance with good tree surgery practices.

All areas disturbed shall be graded smooth and shall be free of ruts and uneven places.

All excess materials, trash, dirt and rocks shall be disposed of at an approved site or at a place approved by the New Mexico Environment Department.

3.0 FINAL INSPECTION CLEANUP

Immediately before the final inspection tour is to be conducted, the CONTRACTOR shall cleanup the Project site in its entirety, removing all debris, waste, trash, excess materials and equipment. CONTRACTOR shall review the entire Project before the final inspection and shall have it neat and clean in appearance.

4.0 METHOD OF MEASUREMENT (REFER TO SECTION 3, BID SCHEDULE FOR MEASUREMENT)

No separate measure shall be made for Project Cleanup. Project Cleanup shall be considered incidental to the Project Work.

5.0 BASIS OF PAYMENT (REFER TO SECTION 3, BID SCHEDULE FOR PAYMENT)

No separate payment will be made for Project Cleanup. Payment for Project Cleanup shall be considered incidental to the Project Work.

END OF ARTICLE 01-002.3

Article 01-002.4 - **PRODUCT OPTIONS**

PART 1 – GENERAL

1.1 SUMMARY

A. This section includes requirements for product options and substitution procedures.

1.2 PRODUCT OPTIONS

A. For products specified by reference standards or by description only, provide products meeting those standards or description as approved by the Engineer/Owner.

B. For products specified by naming one or more manufacturers with the designation that no substitutions are allowed, provide only named products.

C. For products specified by naming one or more manufacturers, provide named products or approved substitute products.

1. Requests to use unspecified products shall be made in accordance with the “Substitution Request Procedures” as specified herein

1.3 SUBSTITUTION REQUESTS

A. Where products are specified by naming specific products of one or more manufacturers, these products shall establish a minimum acceptable level of quality and performance.

B. Prior Approval: The Engineer/Owner will consider requests made during bidding to use unspecified products only when indicated in individual specification sections.

1. When substitution requests are allowed during bidding by individual specification sections, requests shall be made in accordance with the “Substitution Request Procedures” as specified herein.

2. If product is acceptable, Engineer/Owner will provide approval by addendum issued to known recipients of Bidding Documents

C. After signing of Agreement between Owner and Contractor, Engineer/Owner will consider written requests for substitutions.

1. Requests shall be made in accordance with “Substitution Request Procedures” as specified herein.

2. Engineer/Owner will determine acceptability of proposed substitutions and notify Contractor of decision in writing.

3. Substitutions will not be considered when indicated or implied on shop drawings and product data submittals.

D. Request for substitution and use of approved substitution shall constitute representation that Contractor.

1. Has investigated product and determined it meets or exceeds quality level of specified product.

2. Will provide same warranty for substitution as for specified product.

3. Will coordinate installation and make changes to other work required to accommodate accepted substitution and complete Work.

4. Waives claims for additional costs or time extensions related to substitutions which later become apparent.

1.4 SUBSTITUTION REQUEST PROCEDURES

A. Submit separate request for each substitution with Form 016213 “Substitution Request Form”.

1. Copy of form follows this Section.

B. Submit 3 copies of request for substitution and Include the following:

1. Complete data substantiating compliance of proposed substitution with Contract Documents.

2. For products:

a. Product identification, including manufacturer's name and address.

b. Manufacturer's literature containing product description, performance and test data, and reference standards.

c. Samples as required.

3. For construction methods:

a. Detailed description of proposed method.

b. Drawings illustrating methods.

4. Itemized comparison of proposed substitution with product specified.

5. Data relating to changes in construction schedule

6. Give cost data comparing proposed substitution with specified product.

7. For substitution requests made after signing Agreement, include proposed changes to Contract Amount and Time if substitution is accepted.

END OF ARTICLE 01-002.4

Article 01-002.5 - **PRODUCT SUBSTITUTIONS**

Read **ARTICLE 01-002.4 "PRODUCT OPTIONS"** prior to submission of this form.

The undersigned requests that the following product be accepted for use in the Project.

Product: _____

Model No: _____

Manufacturer: _____

Address: _____

The above product would be used in lieu of:

Product: _____

Specified in: Section: _____ Paragraph: _____

Reason for substitution request: _____

_____

Attached are the following items:

Product description including specifications, performance and test data, and applicable reference standards

☐ Drawings

☐ Photographs

☐ Samples

☐ Tabulated comparison with specified product

☐ For items requiring color selections, full range of manufacturer's color samples

☐ Documentation of reason for request.

☐ Cost data for comparing proposed substitution with specified product

☐ Other: _____

The undersigned certifies that the following statements are correct. Explanations for all items which are **not** true are attached.

1. Proposed substitution has been thoroughly investigated and function, appearance, and quality meet or exceed that of specified product. True □ False□

2. Same warranty will be provided for substitution as for specified product. True □ False□

3. **No** aspect of Project will require re-design. True □ False□

4. Use of substitution will **not** adversely affect:

   a. Dimensions shown on Drawings. True □ False□

   b. Construction schedule and date of completion. True □ False□

   c. Work of other trades. True □ False□

5. Maintenance service and replacement parts for proposed substitution will be readily available in the New Mexico area. True □ False□

6. Proposed substitution does **not** contain asbestos in any form. True □ False□

7. All changes to Contract Sum related to use of proposed substitution are included in price listed below. Contractor waives claims for additional costs related to acceptance of substitution which may subsequently become apparent. True □ False□

8. Costs of modifying project design caused by use of proposed substitution which subsequently become apparent will be paid for by Contractor. True □ False□

If substitution requested after signing of Agreement between Owner and Contractor is accepted:

Contract Sum will be [decreased] [increased] by $ _____

Contract Time will be [decreased] [increased] by _____ calendar days.

Submitted By: _____

Company: _____

Address: _____

Telephone Number: _____

Name: _____ Date: _____

Signature: _____

END OF ARTICLE 01-002.5

Article 02-022.1 EARTHWORK

1.0 DESCRIPTION

This Work consists of equipment, materials, labor, and performing operations required for excavation, borrow, embankment, and backfill required to bring the existing ground to subgrade elevation.

2.0 TESTING FOR COMPACTION

Compaction testing requirements:

Determine the density of soil in place by use of the sand cone method, ASTM D 1557 or by nuclear methods, ASTM D 2922 and D 3017.

Determine the laboratory moisture-density relationship of soils by ASTM D 698.

Determine the relative density of cohensionless soils by ASTM D 4253 and D 4254.

Sample backfill materials by ASTM D 75.

Compaction tests shall be performed every five hundred (500) feet each lift or a minimum of one (1) location as designated by the Public Works Inspector.

3.0 GENERAL

Work shall consist of excavation, providing borrow, constructing embankment, hauling, disposal, placement and compaction of all materials not covered under some other item which is encountered within the limits of the Work necessary for the construction of the improvements in substantial compliance with the Specifications and the lines, grades, thickness, and typical cross sections shown on the Plans or established by the ENGINEER. All excavation will be classified as "unclassified excavation".

Unclassified Excavation: Unclassified excavation shall consist of the excavation and disposal of all materials of whatever character encountered in the Work.

Borrow: Borrow shall consist of approved material required for the construction of embankments or for other portions of the Work and shall be obtained from approved sources.

Embankment: Embankment shall consist of construction of embankments and miscellaneous fill with suitable materials, containing specified moisture, from unclassified excavation, structure excavation, and borrow, placed and compacted in place.

Backfill: Backfill shall consist of suitable materials from unclassified excavation and borrow, containing specified moisture and placed around or under pipes, culverts, and minor concrete structures to the density specified in the Project Plans or as specified in these Technical Standards, whichever is more strict.

Existing utilities, services, facilities, and pipelines on, above, or under the surface of the area where earthwork operations are to be performed shall be carefully protected from damage.

4.0 CONSTRUCTION REQUIREMENTS

The excavation and embankments for the Project improvements shall be finished to reasonably smooth and uniform surfaces. Excavation operations shall be conducted so that materials outside of the limits of slopes will not be needlessly disturbed.

Prior to beginning excavation, grading, trenching, and embankment operations in any area, all necessary clearing and grubbing in that area shall have been performed.

When the CONTRACTOR's excavating operations encounter remains of prehistoric people's dwelling sites or artifacts of historical or archaeological significance, the operations shall be temporarily discontinued. The City Engineer will contact archeological authorities to determine the handling and disposition thereof. The CONTRACTOR shall cooperate with the archeological authorities in the preservation and removal of such artifacts.

5.0 EXCAVATION

5.1 GENERAL

Excavations shall be made to the lines and grades and at the locations shown on the Plans, in accordance with these Technical Standards and all other applicable specification items. Cut sections resulting from excavation shall be finished to a reasonably smooth and uniform surface. The final surface of excavations which shall serve as subgrade for concrete Work shall not vary more than 0.00 foot above or 0.05 foot below the established grade or elevation. Other areas shall be ±0.1 foot. The CONTRACTOR shall be required to remove unsuitable materials and refill the excavated area to the finished graded section with suitable material. CONTRACTOR shall conduct operations for the removal of such unsuitable material in such a way that the ENGINEER and/or Public Works Inspector can make all necessary observations and measurements to determine the extent of such removal before any suitable material is placed. All unsuitable material shall be properly disposed of.

Excavations shall be performed insofar as practicable in the dry. Proper drainage for the excavated areas shall be maintained to prevent the ponding of water. Excavated areas shall be kept dry by pumping, dikes or other suitable means. Where excavated material which is to be incorporated into the permanent embankment, fill or backfill is found to have excessive moisture content, CCONTRACTOR shall dry such excavation to achieve the proper moisture content before placement.

Sheeting and shoring shall be used when necessary for personnel safety and work protection. Sheeting and shoring shall conform to OSHA requirements.

5.2 PIPES AND CONCRETE STRUCTURES

Excavation for pipes and concrete structures shall be made to the lines, grades, and cross sections shown in the Project Plans.

CONTRACTOR shall provide all trench wall sloping, shoring, sheeting and bracing, and incidentals required to provide safe working conditions, in compliance with OSHA requirements.

The width of excavations shall be sufficient to allow for proper jointing of pipes and for working with forming materials for concrete structures and to the dimensions indicated in the Project Plans and/or the Contract Documents.

Unsuitable foundation material encountered at the bottom of the excavation shall be removed and backfilled with suitable material, compacted at optimum moisture, to ninety-five (95) percent density (ASTM D 1557).

The bottom of the completed excavation shall be firm and smooth for its entire width and length. CONTRACTOR shall notify the ENGINEER when the excavation, or section thereof, is completed and the ENGINEER shall approve the excavation before any bedding material, refill or backfill material is placed.

6.0 BORROW

Borrow shall be obtained from the places indicated in the Project Plans or as approved by the ENGINEER.

Borrow shall consist of approved gravelly material excavated for the purpose of blending and mixing with finer excavated materials to provide suitable material for fill, backfill, and embankment.

7.0 EMBANKMENT AND FILL AREAS

7.1 GENERAL

Prior to the placement of suitable material for embankment or fill areas, all necessary clearing and grubbing, excavation, and installation of pipes and appurtenances shall have been performed, all in accordance with the Project Plans and/or these Technical Standards.

7.2 MATERIAL CLASSIFICATION

Embankment and fill materials shall conform to the following classifications:

The materials used in the embankment and fill shall not be uniformly fine grained materials. The fill materials shall be classified as SC, SM-SC, GC, GM, or GM-GC according to the Unified Soil Classification System. No soils in the embankment material shall have a median grain size (D50) finer than #200 USA Standard Sieve. Proper mixing and blending of materials will be required.

7.2.1 Placement of Embankment and Fill

Areas of natural ground to receive embankment or fill not already at optimum moisture shall be scarified to a depth of eight (8) inches, wetted or dried to bring the moisture content to within plus two percent (+2%) to minus one percent (-1%) of optimum and re-compacted to the specified percent of the maximum density, tested and approved before the first layer of suitable embankment material is placed.

Only suitable material for embankment and fill will be allowed in the permanent Work at locations shown on the Project Plans.

After areas to receive embankment or fill have been properly prepared, suitable material shall be placed and spread in loose eight (8) inch lifts across the entire fill or backfill section. The ENGINEER may authorize roadway fill materials to be placed in layers in excess of eight (8) inches thickness if the CONTRACTOR can demonstrate that the required compaction can be achieved for the full depth of the lift. Lesser thickness shall be used if necessary to achieve specified compacted density. Suitable material shall then be windrowed, disked, or manipulated by other suitable means to achieve a homogeneous mixture of proper moisture content, free of hard lumps of soil or frozen material, and compacted to the required density.

Rocks larger than two and one-half (2-1/2) inches shall not be placed within twelve (12) inches of the subgrade for paving.

Compacting shall begin only after the suitable material has been properly placed and the material to be compacted is at optimum moisture, not to exceed plus two percent (+2%) or minus one percent (-1%) of optimum. All materials used for embankments shall be compacted to a minimum of ninety (90) percent of maximum dry density, modified proctor, (ASTM D 1557). Embankment within eight (8) inches from subgrade shall be compacted to a minimum of ninety-five (95) percent of maximum dry density (ASTM D 1557).

If the suitable material to be compacted contains excessive moisture, such material shall be processed to reduce the moisture to the specified content. If the suitable material has less than the specified moisture content, or is likely to lose enough moisture to bring the moisture content below requirements before completion of compaction, water shall be added and the lift thoroughly mixed before compacting.

Subsequent layers of suitable material for embankment shall be placed as described above in generally horizontal layers of loose thickness not to exceed eight (8) inches, unless otherwise approved, and shall extend across the full width of the embankment area.

After compacting of the material, in place density tests shall be made. If the compacted material fails to meet the density specified, the course shall be reworked as necessary to obtain the specified density.

Embankment, of fill, adjacent to structures such as concrete walls, culverts, boxes or similar structures shall not be compacted with heavy equipment but shall be compacted with hand operated equipment to a distance of four (4) feet or greater, beyond the sides of the structure.

7.2.2 Finishing

The final surface of compacted embankments, berms, or fills shall be carefully trimmed to the cross sections, lines, grades, and elevations indicated on the Project Plans.

Embankment or fill shall not vary more than 0.05 foot below or 0.00 foot above the established plan grades and cross sections where it is to serve as subgrade for concrete Work. Other areas shall be ±0.1 foot.

8.0 METHOD OF MEASUREMENT (REFER TO SECTION 3, BID SCHEDULE FOR MEASUREMENT)

Unclassified Excavation shall be measured by the Cubic Yard for all Work associated with excavation, hauling, and disposal of unsuitable material and surveying for the purpose of payment.

Borrow shall be measured by the Cubic Yard for all Work associated with placement, and compaction of approved material required for construction, embankments, and/or backfill and surveying for the purpose of payment.

No separate measure shall be made for Earthwork, which shall be incidental to the associated item(s).

9.0 BASIS OF PAYMENT (REFER TO SECTION 3, BID SCHEDULE FOR PAYMENT)

Unclassified Excavation shall be paid by the Cubic Yard for all Work associated with excavation, hauling, and disposal of unsuitable material and surveying for the purpose of payment.

Borrow shall be paid by the Cubic Yard for all Work associated with placement, and compaction of approved material required for construction, embankments, and/or backfill required to perform the Work and surveying for the purpose of payment.

No separate payment shall be made for Earthwork, which shall be incidental to the associated item(s).

END OF ARTICLE 02-022.1

Article 02-022.2 TRENCHING AND BACKFILLING

1.0 DESCRIPTION

1.1 General

This work shall consist of the excavation and backfill of trenches for the accommodation of substructures including, but not limited to electrical conduits, telephone conduits, television cable, traffic signal conduits, gas lines, sewer lines, water lines, and storm drains. All trenching within the roadway limits, including private utility trenching, shall conform to these specifications.

The Contractor shall comply with the intent of the pipe material as defined as either rigid or flexible in conformance with the AASHTO LRFD Bridge Design and Construction Specifications and this Section. Special attention shall be given to the sidewall material properties as this section assumes a minimum AASHTO A1 or A3 material. Other sidewall material type shall be given special consideration for minimum trench widths, the use of Controlled Low Strength Materials (CLSM), or other critical processes that would affect the pipe ability to withstand the load and shall also be noted on the plans and specifications for the project.

1.2 Definitions

Foundation: Over-excavation and backfill of the foundation is required only when the native trench bottom does not provide a firm-working platform for placement of the pipe bedding material.

Bedding: In addition to bringing the trench bottom to required grade, the bedding levels out any irregularities and ensures uniform support along the length of the pipe.

Haunch Zone: The backfill under the lower half of the pipe (haunches) distributes the superimposed loadings.

Initial Zone: The backfill from the springline to the top of the pipe zone provides the primary support against lateral pipe deformation for flexible pipe.

Final Zone: Backfill above the pipe zone to the top of subgrade.

1.3 Trench Backfill

The backfilling of the trench differs in each zone due to the complexity of providing a secure support for the pipe as well as ensuring that all voids are filled to prevent nuisance water flow under the pipe. The zones are foundation, bedding, haunch, initial, and final as illustrated in the **UTILTY TRENCH CROSS SECTION (PAVED)** detail.

2.0 MATERIALS

2.1 General

Maximum size of particles in the pipe zone is 3/4 inch.

One of two methods of compaction of the trench pipe zone shall be used and shall be specified in the Construction Documents and approved by the Engineer prior to construction:

Method A: The use of CLSM as defined in this section.

Method B: The use of aggregate materials as described in this section as associated with either Rigid or Flexible designed pipe shall be as specified in this subsection below.

Prior to construction, the materials and method type shall be submitted and approved by the Engineer.

2.2 NATIVE BACKFILL

Native backfill may be used only in trenches outside the roadway area. Trenches within the limits of any roadway must be backfilled with import material conforming to specifications elsewhere in this Section (Tables 3 and 4).

Native backfill shall be of a quality acceptable to the Engineer and shall consist of suitable material from the excavation complying with Tables 1 and 2. It shall be free from sod, frozen earth, organic materials, rubbish, or debris. Material not complying with these Tables shall not be used as backfill material in any area of the project unless specifically approved by the Engineer.

Table 1 – Native Backfill Gradation

Sieve Sizes	Percentage of Weight Passing
6-inch	100
3-inch	80-100
No. 4	35-100

Table 2 – Native Backfill Maximum Plastic Index Requirement

Percentage by Weight Passing No. 200 Sieve	Plasticity Index Maximum
0 - 20.0	12
20.1 - 50.0	10
50.1 - 80.0	8
80.1 - 100.0	6

The liquid limit of the material shall not exceed 50 percent maximum.

Stones or lumps exceeding 3-inches shall not be used within 12-inches of the structure.

2.3 TYPE I AGGREGATE BASE BACKFILL

This aggregate shall conform to the following requirements:

Table 3 – Type I Aggregate Base Gradation and requirements

Sieve Sizes	Percentage of Dry Weight Passing Sieve
2-Inch	100
1-1/2-Inch	90 - 100
1-Inch	70 - 90
No. 4 No. 10	30 – 65 30 - 40
No. 16	15 - 20
No. 200	10 - 20
Plastic Index	12 MAX
Liquid Limit	35 MAX
Fractured Faces	70% Minimum
Total Available Water Soluble Sulfates	Less than 0.3% by dry weight of soil.

2.4 TYPE II AGGREGATE BASE BACKFILL

This aggregate shall conform to the following requirements:

Table 4 – Type II Gradation Acceptance Limits and Requirements

Sieve Sizes	Percentage by Dry Weight Passing Sieve
1-Inch	100
3/4-Inch	85- 95
No. 4	40 - 70
No. 10	35 - 45
No. 16	25 - 35
No. 200	6 - 18
Plastic Index	12 MAX
Liquid Limit	35 MAX
Fractured Faces	70% Minimum
Total Available Water Soluble Sulfates	Less than 0.3% by dry weight of soil.

Type II aggregate base material shall be used for trench backfill as outlines below.

2.5 Foundation

Trench foundation shall be stable prior to placing bedding material. If the Engineer determines that unsuitable materials exist at the trench foundation, the Contractor shall remove and replace the material as directed by the Engineer and as specified in this Specification.

2.6 Pipe Bedding

Except as otherwise provided herein, or elsewhere in the contract documents, or as otherwise shown on the plans, the trench shall be excavated to a depth of 4 inches to 6 inches below the bottom of the pipe barrel and to a depth that will be sufficient to provide 2 to 4 inches of clearance under the pipe bell (where applicable).

Uniform and stable bedding shall be provided for the pipe and any protruding features of its joints and/or fittings. The middle of the bedding equal to 1/3 the pipe outside diameter may be loosely placed (see Figure 1) to allow for the pipe bell and other protruding features. Alternatively, the compacted bedding material may be excavated slighting to allow for continuous lines and grades of the pipe structure.

The material for use as bedding shall be Type II Aggregate Base Backfill or CLSM complying with this section. Bedding shall be backfilled to the required grade of the bottom of the pipe. The compaction shall provide a density minimum equal to 95 percent of the maximum density as determined by test method AASHTO T180 with exception of the middle uncompacted area equal to one-third the pipe diameter.

All pipes shall be placed directly on the compacted bedding material unless otherwise required or approved by the Engineer.

2.7 Haunch Zone Backfill

After the pipe or conduit is laid, the haunch areas shall be backfilled with Type II, Aggregate Base Backfill, or CLSM.

Compaction of the haunching material can best be accomplished by hand with tampers or suitable power compactors for maximum compacted lift thickness of 6 inches. The Contractor shall take care to not disturb the pipe from its line and grade while compacting the backfill. Material suitably distant from the pipe shall be compacted to a minimum of 95 percent of the maximum density as determined by test method AASHTO T180.

While compacting the embedment near the pipe with impact-type tampers, caution shall be taken to not allow direct contact of the equipment with the pipe.

2.8 Initial Backfill Zone

After the pipe or conduit is laid, the initial backfill areas shall be backfilled with Type II Aggregate Base Backfill, or CLSM. Avoid usage of impact tampers directly above the pipe until the full loose layer backfill depth above the pipe is obtained.

Table 5 - Initial Zone Material Depths

Pipe or Conduit	Initial Zone
2-inch or less diameter	6 inches above the top of pipe
Greater than 2-inch diameter	12 inches above top of the pipe

2.9 Final Backfill Zone

The remaining backfill shall consist of Granular, Type I or Type II Aggregate Base Backfill or CLSM shall be used as backfill. The material shall be compacted to a minimum of 95 percent of the maximum density as determined by test method AASHTO T180.

If CLSM is used, CLSM backfill shall be placed from the top of the initial backfill zone to the bottom of the bituminous pavement (replaces aggregate road base in the pavement section over the trench).

CLSM Cap: A CLSM Cap may be required in the upper portion of the Final Zone for all non-residential roadways with a minimum thickness of 12 inches for all minor collectors and 18 inches for all major collectors and arterials.

2.10 Compaction

Compaction shall be performed by mechanical means except in the haunch zone where compaction may be required by hand tamping. Mechanically compacted backfill shall be placed in layers of thickness compatible with the characteristics of the backfill and the type of equipment being used and shall have a maximum lift thickness as indicated in Table 6 – Compaction Lift Thickness. The lifts shall be placed on both sides of the pipe at the same time to reduce pipe movement.

Table 6 - Compaction Lift Thickness

Location	Maximum Compacted Lift Thickness (inches)	Maximum Loose Lift Thickness (inches)
Bedding, Haunch, and Initial Zones	6	8
Final Zone Backfill	8	12

Each layer shall be evenly spread, moistened, and tamped or rolled until the specified relative compaction has been attained.

Compaction minimum shall be 95 percent of the maximum density as determined by test method AASHTO T180.

2.11 Controlled Low Strength Material (CLSM)

CLSM shall consist of a low-strength, self-leveling concrete material composed of various combinations of cement, fly ash, aggregate, water, and chemical admixtures. CLSM shall have a design compressive strength at an age of 28 days within the ranges required below for the specified class:

1. Class I - (50 to 150 psi): Specified where the maximum strength is of primary concern due to the desire to have material that can be excavated in the future with relative ease.

2. Class II – (100 to 300 psi): Specified where the minimum strength is of primary concern for pipe support.

3. Class Special (as shown in project specifications or drawings): Specified where project unique criteria, such as erosion control, are the primary concern.

4. Class I and II CLSM:

    a. The mix shall result in a product having a slump in the range of 6 to 10 inches at the time of placement.

    b. The Source of Contractor shall submit a mix design for approval by the Engineer prior to placement.

    c. The mix design shall be supported by laboratory test data verifying the potential of the mix to comply with the requirements for these specifications.

CLSM shall be proportioned in general compliance with the methods outlined in ACI 211.1-91, reapproved 1997, "Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete." Types of hydraulic cement as defined by ASTM C150, ASTM C595 and ASTM C1157 shall be used. Unless otherwise provided, the cement will be used for all Hydraulic cement concrete, mortar, cement treated base, and cement treated subgrade. The type of cement used shall be as listed in Table 7 with the minimum sack requirements stated in the NMDOT specifications.

Table 7 - Types of Cement

Type of Cement Permitted
Type II & Fly Ash
Type MS & Fly Ash
Type IP (MS)
Type V
Type HS
Type V & Fly Ash
Type HS & Fly Ash

1. Fly ash shall conform to ASTM C618 for Class F with the following exceptions:

   a. The maximum loss of ignition shall be 6 percent.

   b. The sulfate resistance factor, R, shall not exceed 1.5, where

$$R = \frac{(\%\ CaO - 5)}{\%\ Fe_2O_3}$$

A recent Certification that the fly ash used in Portland cement concrete conforms to ASTM C618 shall be provided by the supplier of the fly ash.

2. Water for use with cement concrete curing shall be free from excessive amounts of acids, alkali, oil, and other substances which cause damage to the mixture.

3. Aggregates shall have 100 percent by total weight of the aggregate passing the 1 inch screen and 15 percent or less passing the No. 200 sieve. The aggregate shall meet the plastic limits requirements of Table 5 - Plastic Limits.

4. Chemical admixtures shall comply with ASTM C494 and shall be clearly identified as Type A,B C, D, E, F, or G.

5. Air-entraining admixtures shall conform to ASTM C260.

6. Other admixtures specifically approved for CLSM may be used if approved by the Engineer.

7. All materials proportions shall be measured and the CLSM mixed in accordance with NMDOT specifications.

8. Other proportion measuring and CLSM mixing systems are acceptable, if control can be demonstrated to be satisfactory to the Engineer.

9. These other methods include continuous feed, volumetric measurement of proportions, and pug mill and continuous mixing plants.

If the CLSM mix does not produce a flowable consistency or exhibits excessive bleeding, the mix shall be adjusted.

1 Excessive bleeding is considered to occur when water flows from the CLSM in a manner that causes disturbance or displacement of the exposed surface of the CLSM.

2. Mix adjustments shall include, but not be limited to: aggregate gradation, cementitious material content, admixtures, water content, or a combination of adjustments.

The testing procedures for approval of CLSM mix designs if required shall be as follows:

1. The material Source, which may be the Contractor, shall cast one set of six each 4-inch diameter by 8-inch high specimens in split cylinders.

2. No rodding method shall be used for the placement of the CLSM into the cylinders.

3. All field curing and environmental protection shall conform to AASHTO T23, "Test Methods for Making and Curing Concrete Test Specimens in the Field."

4. The cast specimens shall then be laboratory-cured in a 100 percent humidity, temperature-controlled concrete cure room (cure tanks shall not be used).

5. Compressive strength testing shall be performed in accordance with AASHTO T22 and T23 with samples from each set at the ages of 7, 28, and 90 days.

6. A report of the results shall be submitted to the Engineer.

Class Special: The compressive strength testing procedures shall be as specified in the project specifications or on the project drawings.

2.11 Use of Controlled Low Strength Material (CLSM)

CLSM may be placed in all installations. However, for flexible pipe, in the pipe zone region, either full CLSM or full aggregate backfill is required. A mixture of CSLM and aggregate backfill shall not be applied in the pipe zone due to the different stresses that can occur on the pipe at the interface of both types of products.

CLSM shall be placed directly into the space to be filled. The placement of CLSM shall include "spading" under the pipe haunches and into the corrugations or other difficult areas around a structure. Care shall be taken to prevent flotation or misalignment of the pipe by means of straps, soil anchors or other designed and approved means of restraint as per the manufacturer’s recommendation. Material may be placed in stages equally on both sides of the pipe to prevent movement or flotation of pipe.

3.0 CONSTRUCTION

3.1 Trench Excavation , General

Excavation including the manner of supporting excavation and provisions for access to trenches, shall comply with the current regulations as determined by OSHA. Excavation shall include, without classifications, the removal of all materials of whatever nature encountered, including all obstructions of any nature that would interfere with the proper execution and completion of the work. The removal of said materials shall conform to the lines and grade shown. Excavation for pipe, wire, or conduits shall be by open trench unless otherwise specified or shown on the plans. However, should the Contractor elect to tunnel, jack or bore any portion not so specified, he shall first submit a design by a New Mexico Professional Engineer to and obtain an approval from the Engineer. The Contractor shall furnish, place, and maintain all supports and shoring that may be required for the sides of the excavation, and all pumping, ditching, or other approved measures for

the removal or exclusion of water, including storm water and wastewater reaching the site of the work from any source so as to prevent damage to the work or adjoining property. The Contractor shall be responsible for any damage to persons or property due to interruption or diversion of storm or wastewater because of his operations. The Engineer may require the Contractor to backfill the excavation If left open for more than a reasonable time period as determined by the Engineer to protect the integrity of the excavation foundation. No additional cost to the project will be allowed to re-excavate the site and backfill to the permanent condition following resolution of issues that prevented the excavation from being completed before. This condition is most usually due to delays in delivery of materials but could be for other reasons.

Except as otherwise shown or provided herein, excavation shall be open cut trenches with vertical sides up to the top of the pipe zone.

3.2 Minimum Trench Width

Excavation of pipe trench for flexible and rigid pipe is as required in Table 8. In all cases, the trench width shall be wide enough to allow for the compaction equipment.

Table 8 - Minimum Trench Widths

Flexible Pipe	Minimum shall be not less than 1.5 times the pipe outside diameter plus 12 inches
Rigid Pipe	Minimum shall be not less than the outside diameter plus the outside diameter times 0.33

For pipe backfill using CLSM, the minimum trench width may be reduced to the pipe diameter plus 12 inches and enough room needed to allow for the proper placement of the CLSM using tools to "spade" the material under the pipe haunches

3.3 Maximum Trench Width

The maximum width of the trench shall be determined by the Contractor based on the method and means for the installation. However, trench width shall not exceed the width of a ride-along compactor plus 2 feet when working along side the pipe or culvert.

3.4 Maximum Length of Open Trench

The maximum amount of open trench permitted in any one location shall be 100 feet, or the length necessary to accommodate the amount of pipe installed in a single day, whichever is greater, unless otherwise approved by the Engineer. A trench shall be considered open until backfilled to the top of subgrade.

3.5 Street Crossings

Trenches crossing streets shall be completely backfilled immediately after pipe, wire, or conduit installation and a temporary or permanent asphalt pavement patch or CSLM cap shall be installed as directed by the Engineer to protect the integrity of trenches within the roadway limits from excessive moisture.

Substantial bridging, properly anchored, capable of carrying the vehicle loading, in addition to adequate trench bracing, shall be used to bridge across trenches at street crossings where trench backfill and temporary patches have not been completed during

regular working hours as directed and approved by the Engineer. Safe and convenient passage for pedestrians and access to all properties shall be provided.

3.6 Trench over excavation

Except when otherwise specified or ordered by the Engineer, the bottom of the trench shall be excavated uniformly to the grade or depth indicated on the drawings. Wherever the excavation is made below the grade shown on the drawings, or below the grade ordered by the Engineer, it shall be refilled to the required grade with suitable backfill and bedding material at no additional cost to the Project.

When ordered by the Engineer due to unsuitable materials encountered, trench over-excavation below the specified level of bedding material shown in the plans shall be paid for by field order and an adjustment will be made to the contract price due the Contractor.

3.7 Disposal of Unsuitable Excavated Materials

Excess material and excavated material unsuitable for backfill shall be removed from the site of the work by the end of each working day unless otherwise approved by the Engineer and disposed of by the Contractor in an environmentally responsible manner at no cost to the project.

When unsuitable material is encountered that is not shown in the plans, the Engineer shall order the removal of the material by the Contractor and issue a field order to change the contract price due the Contractor for removal of the material.

3.8 Portable Trench Shield

Portable trench shields or boxes that provide a moveable safe working area for installing pipe may be used for the installation of pipe. After placing the pipe in the trench, backfill material shall be placed in lifts and the shield shall be lifted to allow for the backfill material to be placed for each lift, trench wall to trench wall.

3.9 Minimum Pipe Spacing

If the pipe space between parallel pipes in a single trench is not conducive to mechanical backfill, then CLSM shall be used.

3.10 Transition Installations

When differential conditions of pipe support might occur, such as in transitions from manholes to trench, a transition support region shall be provided to ensure uniform pipe support and preclude the development of shear, or other concentrated loading on the pipe.

3.11 Minimum Depth of Cover

The minimum cover shall be as stated on the plans and/or contract Special Conditions or as directed by the Engineer. Compaction equipment used shall allow realization of the required density without damage to the pipe.

3.12 Testing

Where tests reveal non-compliance with the requirements of the Contract, the Contractor shall bear the costs of subsequent rework and retesting until the required specification compliance is obtained to the satisfaction of the Engineer.

4.0 METHOD OF MEASUREMENT (REFER TO SECTION 3, BID SCHEDULE FOR MEASUREMENT)

No separate measure shall be made for Trenching and Backfill.

Trenching and Backfill shall be included in the item(s) with which it is associated.

5.0 BASIS OF PAYMENT (REFER TO SECTION 3, BID SCHEDULE FOR PAYMENT)

No separate payment will be made for Trenching and Backfill.

Payment for Trenching and Backfill shall be included in the item(s) with which it is associated.

END OF ARTICLE 02-022.2

Article 02-022.3 SUBGRADE PREPARATION

1.0 DESCRIPTION

This Work covered consists of compacting and finishing the subgrade in compliance with the Specifications to the lines, grades, and typical cross-sections shown in the Contract prior to the placement of subbase or base material, pavement, curbs and gutters, driveways, sidewalks, or other structures.

2.0 MATERIALS

Materials shall be free from detrimental quantities of organic material such as leaves, grass, roots and sewage.

3.0 CONSTRUCTION

Subgrade preparation shall consist of preparing native materials by excavations, scarifying, watering and rolling to achieve the required compacted state.

All soft and unstable material and other portions of the subgrade which will not compact readily or serve the intended purposes shall be removed and replaced with suitable material from excavation or borrow or suitable materials shall be added and, by manipulations, be incorporated into the subgrade to produce a material meeting subgrade density requirements.

The top eight (8) inches of embankments and the bottom of excavations which form the subgrade under all paved areas, including the areas under sidewalks, driveways, and curbs and gutters shall be scarified and compacted to not less than ninety-five (95) percent density, modified proctor, as determined by ASTM D 1557.

Subsurface soils below the prepared subgrade thickness shall provide uniform support for the subgrade. Subsurface soils that are found to contain excessive moisture or other unacceptable conditions, as determined by the ENGINEER, shall be completely removed to the required depth and replaced to the satisfaction of the ENGINEER.

No payment will be allowed for removing, replacing, re-handling or manipulating material deemed unsuitable by the ENGINEER.

Subgrade shall not vary more than one-half (1/2) inch per ten (10) foot in any direction from the specified grade and cross section. Variations within the above specified tolerances shall be compensating so that the average grade and cross section specified are met.

4.0 METHOD OF MEASUREMENT (REFER TO SECTION 3, BID SCHEDULE FOR MEASUREMENT)

Subgrade Preparation shall be measured by the Square Yard for accepted Work necessary to compact and finish the subgrade.

No separate measure will be made for Subgrade Preparation, which shall be incidental to the associated item(s).

5.0 BASIS OF PAYMENT (REFER TO SECTION 3, BID SCHEDULE FOR PAYMENT)

Subgrade Preparation shall be paid by the Square Yard for accepted Work necessary to compact and finish the subgrade.

No separate payment will be made for Subgrade Preparation, which shall incidental to associated item(s).

END OF ARTICLE 02-022.3

Article 02-025.1 BASE COURSE

1.0 DESCRIPTION

This Work consists of furnishing and placing base course aggregate in compliance with the specifications and the lines, grades, dimensions and typical sections.

2.0 MATERIALS

Base course aggregate shall be composed of materials consisting of crushed stone, crushed or screened gravel, caliche, sand or a combination of such materials. Base course shall be free from vegetable matter and all other deleterious materials.

Base course aggregate materials shall be combined in such proportions that the resulting composite blend meets the requirements of the following table:

Base Course Classification: Class II-B

SIEVE SIZE	PERCENT PASSING (%)
1”	100
3/4"	85-100
No. 4	40-70
No. 10	30-55
No. 200	4-12

The following requirements must be met:

Soundness	18 or less
L.A. Abrasion	50 or less
L.L.	25 or less

When base course material is produced from pits or quarries, all oversize material up to and including rocks and boulders ten (10) inches in greatest dimension, shall be crushed and mixed with other material.

Fifty (50) percent by weight of all plus No. 4 materials shall have a minimum of two (2) mechanically fractured faces. When base course is to be treated with cement or asphalt, the requirement for mechanically fractured faces shall not apply unless otherwise indicated on the plans.

3.0 CONSTRUCTION

General: The subgrade, sub-base, or base course, upon which base course is to be placed, shall be cleaned of all loose and deleterious materials, shall be free from frozen material, and the top six (6) inches shall have a moisture content not exceeding optimum (plus or minus two (2) percent) as determined by AASHTO T 99 for subgrade and AASHTO T 180 for subbase or base course, Method C or D.

Mixing and Placing: Mixing shall provide a homogenous mixture of un-segregated and uniformly dispersed materials as placed in position for compacting. Plant and equipment shall be adequate in all respects.

Testing: The CONTRACTOR shall spread and compact base course in layers which will permit the required density to be obtained. Density requirements will be determined by ASTM D 1557. Unless otherwise provided, base course shall be compacted to not less than ninety-five (95) percent of the laboratory established density. Field density tests will be performed every five hundred (500) linear feet, each lift, or a minimum of two (2) locations as designated by the Public Works Inspector. Densities will be determined in accordance with AASHTO T 205, or through nuclear methods in accordance with AASHTO T 238 and T 239, or other approved methods. Where compaction tests indicate a failure to meet the specified compaction and the CONTRACTOR chooses not to rework the entire area, the CONTRACTOR will take additional tests every one hundred (100) feet in each direction until the extent of the failing area is identified and will rework the entire area between locations that have passed the tests until the specified compaction has been achieved. No additional compensation shall be made for additional testing required to identify the extent of the failing areas.

Surface Tolerance: The top surface of base course shall not deviate in excess of three-eighths (3/8th) inch when tested with a ten (10) foot straight-edge in any direction. All deviations from this tolerance shall be corrected by the CONTRACTOR. No additional compensation shall be made for Work necessary to correct the surface tolerance.

4.0 METHOD OF MEASUREMENT (REFER TO SECTION 3, BID SCHEDULE FOR MEASUREMENT)

Base Course shall be measured by the Square Yard of Base Course used in the accepted Work.

No separate measure shall be made for Base Course.

Base Course shall be included with the item with which it is associated.

5.0 BASIS OF PAYMENT (REFER TO SECTION 3, BID SCHEDULE FOR PAYMENT)

Base Course shall be paid for by the Square Yard of Base Course used in the accepted Work.

No separate payment will be made for Base Course.

Payment for Base Course shall be made under the item with which it is associated.

END OF ARTICLE 02-025.1

Article 02-026.1 WATER SUPPLY SYSTEMS

1.0 DESCRIPTION

This Work consists of furnishing all of equipment, materials and labor to perform all operations in connection with the installation of potable and reclaimed water lines and appurtenances. This section defines required characteristics and properties of Poly Vinyl Chloride (PVC), High Density Polyethylene (HDPE), and Ductile Iron Pipe (DIP), valves, valve boxes, adapters, couplings, fire hydrants, materials, fittings, appurtenances and construction practices.

CONTRACTOR shall provide, in place, all valves, adapters, couplings, and appurtenances necessary to meet the requirements of this Project, whether shown in the Project Plans or not.

At all times, the new main shall be isolated from the active distribution system by physical separation until disinfecting water has been flushed out and satisfactory bacteriological testing has been completed in accordance with AWWA standard C651. Water needed to fill the new main for testing and flushing purposes shall only be potable City water supplied through a temporary connection protected by a backflow device.

The backflow device must be tested and certified after installation on-site. A copy of the Certification shall be given to the ENGINEER and a copy shall be kept on-site with the device. Testing must be completed by a certified testing facility.

2.0 MATERIALS

2.1 GENERAL

Pipe and accessories shall be new and unused. Pipe shall be color-coded (blue for potable water, green for sanitary sewer, purple for reclaimed water). Detectable Marking Tape shall be installed as provided in the Contract Documents.

When PVC pipe is stored outside and exposed to prolonged periods of sunlight, an obvious discoloration of the pipe can occur. This is an indication of reduced pipe impact strength, and any particular length of pipe that is discolored will be rejected. All pipe rejected will be removed from the job site.

2.2 PVC PIPE

PVC pipe four (4) inches through twelve (12) inches shall be not less than DR18, Class 235 and in conformance with AWWA C900, latest revision. Pressure class of PVC pipe shall be as required by Appendix A of AWWA C900. PVC pipe over twelve (12) inches shall be no less than DR25, Class 165 and in conformance with AWWA C905, latest revision.

All PVC pipe shall be approved for use in potable water systems by an agency such as NSF Testing Laboratory.

Joints: For pipe six (6) inches through twelve (12) inches, elastomeric gasket bell push-on type ends shall be used in accordance with ASTM F 477.

Specials and Fittings: For pipe six (6) inches through twelve (12) inches, specials and fittings for PVC pipe shall conform to the requirements of AWWA C153 and shall be cement mortar lined in accordance with AWWA C04. Fitting types shall include restrained mechanical joints and concrete thrust block where required. Restraining, standard mechanical joints, and fittings shall be submitted for ENGINEER approval.

2.3 DUCTILE IRON PIPE

Ductile iron pipe shall be in accordance with ANSI/AWWA C151/A21.51 and Federal Specification WW-P-421d, latest revision. All ductile iron pipe shall be minimum class 150, unless otherwise indicated in the Contract Documents. Ductile iron pipe fittings shall be pressure rated at three hundred fifty (350) psi and be in accordance with ANSI/AWWA C153/A21.53 and ANSI/AWWA C111/A21.11.

All ductile iron pipe and fittings shall be internally mortar lined in accordance with ANSI A21.4, latest revision, and shall have an exterior coating in accordance with ANSI A21.6, A21.8, or A21.51.

All ductile iron pipe and ductile iron fittings shall have a polyethylene encasement in accordance with ANSI/AWWA C105/A2 1.5, latest revision.

The ductile iron pipe shall be push-on type joints, unless indicated otherwise on the plans, and the fittings shall conform to the requirements of AWWA C153 and shall be cement mortar lined in accordance with AWWA C104. Fitting types shall include standard flange fittings and mechanical joints.

2.4 HIGH DENSITY POLYETHYLENE PIPE (HDPE)

HDPE pipe shall not be less than DR11.0, Class 160 and in conformance with AWWA C901 or AWWA C906.

Joints: Pipe shall be joined together by heat fusion method and shall be performed as per manufacturer’s safety instructions.

Specials and Fittings: Specials and Fittings for HDPE shall conform to the requirements of AWWA C906 and used in accordance with ASTM D 3350, and F 714. Fitting types shall include restrained mechanical joints where required. Transition gaskets for HDPE pipe shall be used when mechanical joints are used. Restraining, standard mechanical joints, and fittings shall be submitted for ENGINEER approval.

2.5 ADAPTERS AND COUPLINGS

All adapters, pipe couplings, tap and sleeves, or mechanical type couplings required for any of the piping systems shall be of the type manufactured for the specific purpose of the use intended, and shall be installed in strict compliance with the manufacturer's specifications, and to the satisfaction of the ENGINEER and/or Public Works Inspector. Factory-made adapters shall be furnished for connecting transition material to the mechanical joint fittings and valves, where required, including plastic to steel and plastic to DIP.

Mechanical and/or flexible couplings shall be manufactured by Romac, or approved equal, and shall be sized and styled in accordance with the requirement for the particular coupling, and used in accordance with the manufacturer's recommendations for the diameter, thickness and type of pipe to be connected. The mechanical and/or flexible couplings shall be provided with an acceptable joint harness to prevent separation of the joint where required due to pressure or change in direction of fittings. Couplings shall be polyethylene wrapped.

2.6 GATE VALVES: FOUR (4) INCH AND LARGER

All gate valves shall be resilient seated gate valves conforming to AWWA C515 rated for one hundred fifty (150) psi working pressure. Valves shall have a standard two (2) inch operating nut that opens counter clockwise. The wedge shall be constructed of ductile iron and shall be fully encapsulated in synthetic rubber except for the guide and wedge nut areas. The wedge shall seat against seating surfaces that are inclined to the vertical at a minimum angle of thirty-two (32) degrees when stem is in vertical position to eliminate abrasive wear. The non-rising stem shall be sealed by at least two (2) O-rings. The waterway shall be smooth and shall have no depressions or cavities. The valve body and bonnet shall be epoxy coated, inside and out, and wrapped with polyethylene sheet encasement. Joints shall be restrained mechanical joint ends. Valve shall be as manufactured by Waterous Company, or approved equal.

2.7 VALVE BOXES

Valve boxes shall be deep skirted, adjustable cast iron two (2) piece screw type, Series 6850 as manufactured by Tyler Pipe, Tyler Corporation, or approved equal. The valve boxes shall be five and one-quarter (5-1/4) inch diameter and the two (2) pieces shall overlap at least six (6) inches. The drop lid shall have a depth of two (2) inches, shall weigh thirteen (13) pounds, and shall have the word "WATER" embossed on top.

2.8 FIRE HYDRANTS

Fire hydrants and extensions shall be in accordance with AWWA C502, traffic type, Fire hydrants shall have two (2) two and one-half (2-1/2) inch hose nozzle connections, and one (1) four and one-half (4-1/2) inch steamer nozzle. All nozzle connections shall be National Standard Fire Hose Coupling screw threads. Fire hydrants shall have a bronze or cast iron pentagon operating nut. The main inlet shall be six (6) inch restricted mechanical joint type. All fire hydrants shall be rated for one hundred fifty (150) psi working pressure. Any marks or scratches on new fire hydrants shall be corrected to the satisfaction of the City Engineer and/or Public Works Inspector. Extensions will be used, when required, to bring the bottom of the break-off flange three (3) to six (6) inches above the top of the surrounding finished grade. All fire hydrants shall be American Darling Model 62B or 84B, Mueller Centurion Model A-423, Clow - Medallion, or pre-approved equal. All fire hydrants shall be fire engine red.

2.9 WATER SERVICES

Polyethylene Service Lines: Polyethylene water service line tubing shall be fabricated from new polyethylene, PE 3406, SDR-9, 200 psi, manufactured in accordance with ASTM D 2737, latest revision, and be the size called for in the Project Plans.

Water Meter: Water meter shall be positive displacement (compound), reading in cubic feet (cf) and acceptable for use with **ZENNER STEALTH READER SYSTEM (NO SUBSITITUTIONS)**. It is the sole responsibility of the Contractor to verify compatibility of the water meters with the **ZENNER STEALTH READER SYSTEM.**

Prior approval is a part of these specifications and any bidder or manufacturer wishing to obtain approval to use unspecified products shall submit a written request. The request shall be received, by the ENGINEER, not later than **seven (7) days** prior to the bid opening date.

Request shall clearly describe the product for which approval is asked, including all data necessary to demonstrate acceptability. If the product is acceptable, the ENGINEER will approve it in an Addendum issued to all plan holders. Otherwise, the specified product or item shall be used. The burden of proof is the sole responsibility of the Contractor.

Meters shall comply with **AWWA C700 Standard** for Cold-Water Meters, Displacement Type, Bronze Main Case, of the latest revision. Meters shall also comply with the Safe Drinking Water Act and ANSI/NSF 61 requirements.

Meter Register housing and lid shall be plastic and the main case, bottom, shall be non-breakable plastic.

The size, model, and direction of flow through the meter shall be cast permanently into the outer case of the meter. The manufacturer's meter serial number shall be imprinted on the outer case and lid.

The meter connections shall be; 5/8" x 3/4" or the size called for in the Project Plans or Contract Documents, and shall have standard male meter thread. Meter connections 1-1/2" and larger shall have flanged ends.

Registers shall be an Encoder-Type register for use in AMR, drive-by or fixed network systems. They shall meet the requirements of the **AWWA C707 Standard,** for Encoder-Type remote registers, of the latest revision. The encoded register shall be preassembled to the meter and supplied with a wire assembly, at least 16-inches in length. The wire assembly connections to the register will be sealed to prevent any water/moisture damage. The pigtail supplied must have enough leads to interface with **ZENNER STEALTH READER SYSTEM** unit. Each encoded register must have its own unique identification number, either external or internal.

All encoded registers will have a 6 wheel odometer.

A letter of certification from the meter manufacturer, certifying that the product supplied will work properly with the **ZENNER STEALTH READER SYSTEM** units.

Existing water meters will be salvaged to OWNER.

Service (Tapping) Saddles: Service (tapping) saddles shall be pre-approved by City. Acceptable saddles shall have two (2) double straps or one (1) large, wide, single strap secured by four (4) bolts and shall be the size called for in the Project Plans.

Corporation Stops: Corporation stops shall be ball valve type, rated for 150 p.s.i. (minimum) working pressure. Corporation stops shall be per the size called for in the Project Plans or Contract Documents, CC or IP threaded inlet with compression fitting or Mueller Insta-Tite connection, or pre-approved equal.

Curb stop: Curb stop shall be ball valve type, rated for 150 p.s.i. (minimum) working pressure. Corporation stops shall be per the size called for in the Project Plans or Contract Documents.

Copper meter resetters (meter yoke): Copper meter resetters (meter yoke) shall be pre-approved by City. Acceptable coppersetters shall be 5/8" x 3/4" copper or the size called for in the Project Plans or Contract Documents, with a lock wing and angle dual check backflow preventers/device.

Existing copper meter resetters (meter yoke) will be salvaged to OWNER.

Water Meter Cans: All water meter cans for this Project shall be the size called for in the Project Plans or Contract Documents. The diameter and height for each installation shall be as shown in the Project Plans. Cutouts for the water service lines shall be neatly cut and trimmed to allow one (1) inch clearance on all sides of the water service line.

Specification is based on use of "DFW PLASTICS, INC." by DFW Plastics, Inc., 901 E Industrial Avenue, Saginaw TX 76131, with attributes as described below. Equal products of other water meter can manufacturers may be acceptable when pre-approved by OWNER. Pre-Approved equal, Substitutions under Article 01-002.4.

This product is designed to withstand loading in non-deliberate and incidental traffic. Not to be installed in roadway. Meter pit lid shall be BLACK and constructed out of modified polyethylene material for maximum durability and corrosion resistance. The BLACK material is for maximum UV protection. The BLACK material shall be uniform throughout the meter pit lid for maximum longevity and **not have** a foaming agent that creates air pockets within the polymer lid.

Vertical and Lateral Load Rating:

- Compliant with AASHTO, Design Load of H-10; ASTM C857-16, Design Load of A-8, 8,000 lbs. transferred through a 10" x 10" steel plate centered in the cover and body.
- Compliant with AASHTO, Design Load of H-20; ASTM C857-16, Design Load of A-16, 16,000 lbs. transferred through a 10" x 20" steel plate centered on the cover and body.
- This product is designed to withstand H-10 and H-20 loading in non-deliberate or incidental traffic areas.

NOT INTENDED TO BE INSTALLED IN ROADWAYS.

Polymer Lid

- The polymer lid shall have a molded key hole and Plastic Lock underneath lid - *as illustrated.*
- The polymer lid shall have one (1) molded slide mount for placement of AMR/AMI device - *as illustrated.*
- The polymer lid shall seat securely and evenly inside the meter pit and shall not overlap the top edge of the meter pit.
- The polymer lid shall have molded tread-pattern for skid resistance - tread dimensions shall be 0.188" x 0.938" x 0.150" deep.
- The polymer lid shall have "WATER METER" molded into the lid - Font shall be Std Fadal CNC Font with 1" characters x 0.150" deep.
- The polymer lid shall be BLACK and have a molded recycled emblem with a minimum of 50% Post Consumer Recycled and 50% Post Industrial/ Pre Consumer Recycled Content- Verified with a **Leed Product Documentation.**

Polymer Body

- The polymer body shall be BLACK and have a **minimum** of 3/8" wall thickness - *as illustrated.*
- The polymer body shall have **minimum** inside working room of (23-1/4") - *as illustrated.*
- The polymer body shall have crush resistant ribbing along the outside of the box with 1-5/8" base footing located at the bottom of the meter pit to help eliminate sinking or floating once installed.
- The polymer body shall have a straight wall design and not be flared as to allow for adjustment to grade after installation.
- The polymer body shall have one pipe slot molded on each end of the body that measures (3" x 5-3/4").
- The polymer body shall have a molded recycled emblem with a minimum of 35% Post Industrial/ Pre Consumer Recycled Content - Verified with a **Leed Product Documentation.**

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.

Temporary Service: CONTRACTOR shall maintain service to all connections during construction to minimize time water will be unavailable. CONTRACTOR shall complete Work on new services and testing and disinfecting of new waterlines prior to removing service from existing waterline. CONTRACTOR shall submit a plan for temporary service for City approval prior to construction of new waterline.

2.10 STAINLESS STEEL TAPPING SLEEVE

Body: 18-8 Type 304 Stainless Steel. All welds shall be fully passivated to restore stainless characteristics.

Bolts: 18-8 Type 304 Stainless Steel. Heavy hex nuts and washer are coated to prevent galling.

Flange: 18-8 Type 304 Stainless Steel Flange with recess per MSS-SP60 to accept standard tapping valve. Flange conforms to AWWA C207 Class D ANSI 150 lb. drilling.

Outlet: 18-8 Type 304 Stainless Steel. Scheduled 10 for 3" and 4" outlets. Scheduled 5 for all outlets larger than 4".

Test Plug: 18-8 Type 304 Stainless Steel in test outlet.

Gasket: Sleeve shall have a full wide gasket of Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000 with hydromechanical activated lip, captured in a recessed groove around the outlet. Gasket shall be suitable for water, salt solutions, mild acids, bases, and sewage.

Service Rating: 2"-12" outlets: 175 p.s.i.

2.11 DETECTABLE (UNDERGROUND) WARNING TAPE

Detectable warning tape shall be 6" wide, 5 mil overall thickness, with a .35 mil solid foil coil. A.P.W.A. Color coded with imprint of underground utility installed.

Wire shall be 14 Ga. Solid copper tracer wire fro non-metal pipe, A.P.W.A. color code.

3.0 CONSTRUCTION REQUIREMENTS

3.1. TRENCH EXCAVATION

Pipe trenches shall be excavated along straight lines to the dimensions shown in the Project Plans. All trenching Work shall be done in a safe manner, and the trenches shall be rendered safe for the workmen by complying with the applicable safety standards, and by practicing safety measures consistent with good construction methods.

All excavations shall be adequately barricaded and secured in accordance with current New Mexico Department of Transportation Standards.

Unless trench banks are cut back on a stable slope, sheet and brace the trenches as necessary to prevent caving or sliding, to provide protection for the workmen and the pipe. All trenching Work shall comply with OSHA safety requirements.

If over excavation occurs the area shall be refilled with suitable material at optimum moisture and compacted to ninety (90) percent density per ASTM D 1557 in unpaved areas and ninety-five (95) percent density in paved areas.

Access shall be maintained for all residences within the Project area. CONTRACTOR shall submit a construction plan that presents the sequence of construction that will allow for residential access to the ENGINEER for approval before beginning construction.

3.2. BEDDING

Trenches shall be excavated to the depth indicated in the Project Plans. The trench bottom shall be smooth and hand graded uniformly throughout. If rock or other unyielding material is encountered or if the trench is over excavated, pipe bedding material complying with Technical Specification, ARTICLE 02-022.2., TRENCHING AND BACKFILL shall be added, compacted, and graded to a smooth uniform surface. The compacted bedding shall support the pipe throughout its entire length, except at bells or couplings which shall not rest on the bedding. After the bell or coupling holes are excavated and after the pipe pieces are connected and properly aligned and graded, successive layers of backfill material complying with Technical Specification, ARTICLE 02-022.2., TRENCHING AND BACKFILL shall be placed and compacted, until the pipe is covered, as shown in the Contract Documents. CONTRACTOR shall use due care to maintain proper alignment and grade during the bedding process. Any bent, cracked, chipped or damaged pieces of pipe shall be removed and replaced at CONTRACTOR's expense. Compaction tests on the pipe bedding will be required.

3.3 PIPE LAYING

Pipe shall be laid true to the line and grade indicated in the Project Plans or as established by the ENGINEER.

The pipe shall be protected during handling against impact shocks and free fall. Do not permit hooks, chains, cables, or handling equipment to come in contact with the pre-molded or pre-formed end surfaces.

Handle the pipe having pre-molded end surfaces or pre-formed end surfaces so that no weight, including the weight of the pipe itself, will bear on or be supported by the jointing material or surfaces. Do not drag the end of the pipe on the ground or allow them to be damaged by contact with gravel, crushed stone, or any other hard objects.

No damaged or deformed pipe will be incorporated in the Work.

The interior of the pipelines shall be kept free from dirt and other foreign material as the Work progresses and shall be clean upon its completion. Tight stoppers or bulkheads shall be securely placed in the ends of all pipelines when the Work is stopped temporarily, or at the end of the work day.

Immediately prior to jointing, both pipe ends shall be thoroughly cleaned and a lubricant shall be applied according to the manufacturer's recommendations. For push-on type joints, sufficient pressure shall be applied in making up joints to insure proper seating of the joints.

The full length of each section of pipe shall rest solidly upon the bed, with recesses excavated to accommodate bells and joints. Any pipe that has the grade or joint disturbed after laying shall be taken up and re-laid. Pipe shall not be laid in water or when trench or weather conditions are unsuitable for the Work except by permission of the ENGINEER. Minimum depth of cover over top of pipe shall be three feet, unless otherwise approved by the ENGINEER.

All nuts and bolts utilized in underground pipe connections shall be stainless steel, high strength cast iron or high strength wrought iron. Carbon steel nuts and bolts may be

used except that they shall be protected by “cocoon” type protective coating of coal-tar and felt in accordance with AWWA Standard C 203.

Where connections are made between new work and existing lines, the connections shall be made using specials and fittings as recommended by pipe manufacturer and approved by the ENGINEER. Couplings may be either cast iron or steel with bolts as stated above. If steel couplings are used, they will be cocoon wrapped as specified herein.

Water lines shall not be laid closer along horizontal dimensions than TEN (10) feet from sewer lines, and with the water line at a higher elevation than the sewer. If this is not possible, and if concurrence from the ENGINEER is obtained by the CONTRACTOR, separate trenches will be required and the water line shall be at least two (2) feet above the sewer or concrete encased. When water and sewer lines cross each other, the water line shall be at least two (2) feet above the sewer or concrete encased, with no joint closer than three (3) feet of the crossing.

Water lines shall not be constructed under walkways, sidewalks, curbs and gutters, drive pads, or similar concrete structures by tunneling underneath. The CONTRACTOR will cut these concrete structures by using a concrete saw to the closest control joint or, at his option, may remove the section of the concrete structure to the nearest full expansion joint or edge.

Encasement shall be performed as shown in the Contract Documents at shallow crossings or other instances in which piping may be exposed or susceptible to excessive surface loading. DIP shall be used for these crossings with push-on or M.J. type connections, blocked with curved / conforming cinder blocks underneath, installed in prepared trench of adequate width to house pipe diameter and encasement. Trench excavation shall have ninety-five (95) percent relative compaction or shall be in freshly excavated native material, and as approved by the ENGINEER may suffice with adequate dimensions to omit use of form Work for encasement concrete placement. Encasement concrete shall be aggregate and Type II cement meeting or exceeding 3000 psi compressive strength. Rebar shall be placed as shown in the Contract Documents, shall be new and unused, and tied with minimum six (6) inch lap distances, with minimum two (2) inches of concrete cover on outside dimensions.

All valves shall be set true, level, vertical and plumb. All valves shall have and be supported by a concrete thrust block, have retainer rods, and shall comply with the details shown in the Project Plans. Backfill shall be compacted to ninety-five (95) percent density under pavement, ninety (90) percent in unpaved areas, ASTM D 1557.

The CONTRACTOR shall remove the valve box from all existing valves that are to be abandoned. The resulting excavation shall be backfilled and compacted to ninety-five (95) percent density, ASTM D 1557. The top six (6) inches of the excavation shall receive new base course placed to the above stated density. The pavement shall be sawcut to form a square opening. The cut faces of the existing asphalt shall be thoroughly coated with prime coat and new asphalt pavement shall be placed and densified to ninety-five (95) percent density, ASTM D 1557.

Cast iron valve boxes shall be set vertical and plumb centered over the operating nut. All valve boxes shall be adjusted to proper elevation, providing the minimum overlap of six (6) inches of the two (2) pieces, and a concrete collar shall be built around the top of

each valve box. The concrete collar shall be of the size, shape, and dimensions shown in the Detail Drawings. The concrete shall be 3000 psi at twenty-eight (28) days with one (1) inch aggregate and finished with a light broom finish. All concrete shall be removed from the top of the valve box and lid while it is still wet and they shall be left clean. Backfill shall be compacted to ninety-five (95) percent density under pavement, ninety (90) percent in unpaved areas, ASTM D 1557.

Adapters and couplings shall be installed in strict compliance with the manufacturer's recommendations. CONTRACTOR shall provide, in place, all additional straps, rods, and harness required to make a secure water-tight connection.

Fire Hydrants within the project, there are existing fire hydrants to be removed and salvaged. The existing fire hydrant valve and lateral shall be abandoned in place. The existing valve box shall be removed and the resulting excavation backfilled. There will be new fire hydrants installed at places shown on the Project Plans. The existing sidewalk, curb and gutter shall be removed and replaced to facilitate installation and insure proper compaction. The edges of the sidewalk, curb and gutter, to be removed, shall be saw-cut, along pre-marked lines. In no case shall the CONTRACTOR be allowed to tunnel under the existing curb and gutter or sidewalk (if applicable)

The ENGINEER and/or Public Works Inspector shall have the privilege of checking the pipe for line and grade by any method that he wants to use after the pipe is laid, and before backfilling begins. The ENGINEER and/or Public Works Inspector shall also have the privilege of checking each pipe joint with a gauge or by any means that he deems necessary in order to be assured that the gaskets are in place and properly seated. Any run of pipe that is found to be appreciably off of line or grade shall be removed from the trench, the trench bedding shall be re-graded and compacted, and the pipe shall then be laid accurately on line and grade. Any joint that is found to be improperly gasketed and/or seated shall be un-jointed and correctly reassembled. If any gasket is found to be damaged, the entire pipe section containing the damaged gasket shall be replaced with a new one.

CONTRACTOR shall furnish any tools, gauges, and all items required for the checking of the gaskets and joints, and he shall check every joint to be sure that the gaskets are seated and located in the correct place to avoid leakage at the joints.

3.4 THRUST BLOCKS

Thrust blocks shall be poured at all bends, valves, tees, reducers and fittings, where changes in pipe diameter, alignment or grade occur, and as indicated in the Contract Documents or as required by ENGINEER. The minimum size of concrete thrust blocks shall be as shown in the Contract Documents or as directed by the ENGINEER. The material of thrust blocks shall be concrete composed of concrete aggregates and shall have a compressive strength of no less than two thousand five hundred (2,500) psi in twenty eight (28) days for standard cement Type II and shall be placed between solid, undisturbed ground and the fitting to be anchored. The area of bearing on the fitting and on the ground shall in each instance be that required by the ENGINEER. Unless otherwise directed by the ENGINEER the thrust blocks shall be placed so that the pipe and fitting joints will be accessible for repair. Metal harness or tie rods, of the size and type shown in the Project Plans, shall be used.

3.5 BACKFILLING TRENCHES

After the pipe has been laid and bedded, it shall be inspected and approved by the ENGINEER and/or Public Works Inspector. Refer to Technical Specification ARTICLE 02-022.2, TRENCHING AND BACKFILL.

4.0 FLUSHING AND DISINFECTION

4.1 DESCRIPTION

This Work includes materials and procedures for flushing and disinfection of water mains by the continuous feed method and by the slug method. The tablet method to disinfect pipelines shall not be used. Disinfect piping in accordance with AWWA C651 as modified below.

At all times, the new main shall be isolated from the active distribution system by physical separation until disinfecting water has been flushed out and satisfactory bacteriological testing has been completed in accordance with AWWA Standard C651. Water needed to fill the new main for testing and flushing purposes shall only be potable City water supplied through a temporary connection protected by a backflow device.

The backflow device must be tested and certified after installation on-site. A copy of the certification shall be given to the ENGINEER and a copy shall be kept on-site with the device. Testing must be completed by a certified testing facility.

4.2 JOB CONDITIONS

Disposal of the chlorinated disinfection water and the flushing water is the CONTRACTOR's responsibility. The chlorinated disinfection water shall be properly disposed of by either pumping the water into a tank truck or directly into the sewer system. An air gap of two (2) times the hose diameter must be provided to prevent cross contamination. The CONTRACTOR shall notify Public Works and the Waste Water Treatment Plant twenty-four (24) hours prior to disposal into the sewer system. Schedule the rate of flow and locations of discharges in advance to permit review and coordination with the City. Use potable water for chlorination. Submit request for use of water from waterline of the City forty-eight (48) hours in advance.

4.3 MATERIALS

Liquid Chlorine: Inject with a solution feed chlorinator and a water booster pump. Use an experienced operator and follow the instructions of the chlorinator manufacturer.

Calcium Hypochlorite (Dry): Dissolve in water to a known concentration in a drum and pump into the pipeline at a metered rate.

Sodium Hypochlorite (Solution): Further dilute in water to desired concentration and pump into the pipeline at a metered rate.

Chlorine Residual Test Kit: For measuring chlorine concentration, supply and use a medium range, drop count, titration kit or an orthotolidine indicator comparator with wide range color discs. Products: Hach Chemical or Helliege. Maintain kits in good working order available for immediate test of residuals at point of sampling.

4.4 EXECUTION

Continuous Feed Method for Pipelines: Introduce potable water into the pipeline at a constant measured rate. Feed the chlorine solution into the same water at a measured rate. Proportion the two rates so that the chlorine concentration in the pipeline is maintained at a minimum concentration of 50 mg/1. Check the concentration at points downstream during the filling to ascertain that sufficient chlorine is being added.

Slug Method for Pipelines: Introduce the water in the pipeline at a constant measured rate. At the start of the test section, feed the chlorine solution into the pipeline at a measured rate so that the chlorine concentration created in the pipeline is three hundred (300) mg/1. Feed the chlorine for a sufficient period to develop a solid column or "slug" of chlorinated water that will, as it passes along the line, expose all interior surfaces to a concentration of at least three hundred (300) mg/1 for at least three (3) hours.

Disinfection of Valves and Appurtenances: During the period that the chlorine solution or slug is in the section of pipeline, pen and close valves to obtain a chlorine residual at hydrants and other pipeline appurtenances.

Disinfection of Connections to Existing Pipelines: Disinfect per AWWA C651, Section 9. Flush with potable water until discolored water, mud, and debris are eliminated. Swab interior of pipe and fittings with a one (1) percent sodium hypochlorite solution. After disinfection, flush with potable water again until water is free of chlorine odor.

After the chlorine solution applied by the continuous feed method has been retained in the pipeline for twenty-four (24) hours. Confirm that a chlorine residual of fifty (50) mg/1 minimum exists along the pipeline by sampling at air valves and other points of access.

With the slug method, confirm by sampling as the slug passes each access point and as it leaves the pipeline. After confirming the chlorine residual, flush the excess chlorine solution from the pipeline until the chlorine concentration in the water leaving the pipe is within 0.5 mg/1 of the existing potable water system.

Pipeline Flushing: After confirming the chlorine residual, flush the excess chlorine solution from the pipeline until the chlorine concentration in the water leaving the pipe is within 0.5 mg/l of the replacement water.

Bacteriologic Tests: Collect two (2) samples, deliver to a certified laboratory within six (6) hours of obtaining the samples, and obtain a bacteriologic quality test to demonstrate the absence of coliform organisms in each separate section of the pipeline after chlorination and refilling. The Public Works Inspector shall observe while samples are taken.

Repetition of Procedure: If the initial chlorination fails to produce required residuals and bacteriologic tests, repeat the chlorination and retesting until satisfactory results are obtained.

Test Facility Removal: After satisfactory disinfection, replace air valves, restore the pipe coating, and complete the pipeline where temporary disinfection or test facilities were installed.

5.0 HYDROSTATIC TESTS

The CONTRACTOR shall be required to test all piping and other lines and appurtenances in the presence of the Public Works Inspector. Test reports shall be required for each test and submitted to the Public Works Inspector. Testing of lines shall be done without being connected to existing lines. If such connections are allowed it is with the understanding that the CONTRACTOR assumes any and all responsibility in case of damage, failure and/or contamination to the existing system. The new water pipe will be tested before the backfilling is done. After the pipe is laid, earth cover shall be placed over the middle of the pipe joints, leaving the corp stops, valves, service taps and laterals uncovered. The pipe will be filled with water, and the pressure in the pipeline shall be raised by means of a motor-driven water pump to a hydrostatic pressure of one hundred fifty (150) psi at the lower end of the pipe section. This pressure shall be maintained for a period of at least two (2) hours for pipe sizes up to eight (8) inches, four (4) hours for pipe sizes ten (10) inches to twenty (20) inches, pipe sizes above twenty (20) inches shall be determined by the ENGINEER. If any leaks appear in the pipe they shall be repaired to the satisfaction of the Public Works Inspector, and the test shall be performed until the pipe holds the prescribed pressure. As an alternative, the CONTRACTOR may opt to test the pipeline in sections between mainline valves or as approved by the ENGINEER.

All testing shall be conducted in accordance with AWWA Standard C600 and those portions of the above standard related to hydrostatic tests shall apply to any type of water main construction. Test pressure shall be one hundred fifty (150) psi.

All taps, gauges and necessary equipment shall be provided by the CONTRACTOR; however, the Public Works Inspector may utilize gauges provided by the City at his discretion.

Leakage Defined: Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within five (5) psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. If the pressure drops more than five (5) pounds in thirty (30) minutes, the pipe has failed to pass the test. If the pressure drop is less than five (5) pounds in thirty (30) minutes, water shall be added to the pipe section to maintain the one hundred fifty (150) psi test pressure and the volume of water added shall be duly recorded. This procedure shall be repeated at each thirty (30) minute interval for the test period. The total volume of water added to the pipe section to maintain the one hundred fifty (150) psi test pressure shall represent the total leakage during the test

Allowable leakage: No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{ND\sqrt{P}}{7400}$$

where L is the allowable leakage, in gallons per hour, N is the number of rubber gasketed joints in the test section; D is the nominal diameter of the pipe, in inches, and P is the average test pressure during the leakage test, in pounds per square inch gauge.

When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gal/h/in. (0.0012 L/h/mm) of nominal valve size shall be allowed.

When hydrants are in the test section, the test shall be made against the closed hydrant.

Acceptance of Installations: Acceptance shall be determined on the basis of allowable leakage. If any test of pipe laid disclosed leakage greater than specified the CONTRACTOR shall, at the CONTRACTOR's expense, locate and make repairs as necessary until the leakage is within the specified allowance.

All visible leaks are to be repaired regardless of the amount of leakage.

The CONTRACTOR shall be notified of any leaks that may occur during the two (2) year warranty period, and shall make immediate arrangements after he is notified to return to the job site and repair any leaks that may develop in the pipeline.

6.0 METHOD OF MEASUREMENT (REFER TO SECTION 3, BID SCHEDULE FOR MEASUREMENT)

Valves not associated with new fire hydrants and waterline connections as called for in the Project Plans shall be measured per Each, in place, including valve box and concrete collar.

All existing valves to be abandoned shall be measured. The removal shall be measured per Each of the existing valve box and concrete collar.

New fire hydrants shall be measured per Each, in place, including removal and replacement of the sidewalk, curb and gutter, valves, valve box, concrete collar, pavement patching, pipe, fittings, appurtenances, and couplings.

Existing fire hydrants to be removed shall be measured per Each including valve, valve box, concrete collar and the required patch.

No separate measurement shall be made for adapters, fittings, or couplings, which shall be incidental to the associated item(s).

7.0 BASIS OF PAYMENT (REFER TO SECTION 3, BID SCHEDULE FOR PAYMENT)

Valves not associated with new fire hydrants and waterline connections as called for in the Project Plans shall be paid per Each, in place, including valve box and concrete collar.

All existing valves to be abandoned shall be paid per Each. The removal of the existing valve boxes, including the required pavement patch, shall be considered incidental to the associated item(s).

New fire hydrants shall be paid per Each, in place, including removal and replacement of the sidewalk, curb and gutter, valve, valve box, concrete collar, pipe fitting, appurtenances and couplings.

Existing fire hydrants to be removed shall be paid per Each including valve, valve box, concrete collar and the required patch.

No separate payment shall be made for adapters, fittings or couplings, which shall be incidental to the associated item(s).

END OF ARTICLE 02-026.1

Article 03-032.1 STEEL REINFORCEMENT

1.0 DESCRIPTION

This Work consists of furnishing all equipment, materials and labor and performing all operations required for the providing and placing all steel reinforcement in substantial compliance with these Specifications and all other applicable specification items.

2.0 MATERIALS

All steel reinforcement shall conform to the requirements herein provided.

2.1 BAR REINFORCMENT

Shop Bending: Bent bar reinforcement shall be cold shop bent around a pin to the shapes shown on the Project Plans. Unless otherwise provided, bends shall have a radius measured on the inside of the bar of not less than two and one-half (2 ½) bar diameters.

Bundling and Tagging: Bar reinforcement shall be shipped in standard bundles, tagged, and marked in accordance with the Code of Standard Practice of the Concrete Reinforcement Steel Institute. The CONTRACTOR shall furnish, from the fabricator, a certificate of compliance. Two (2) copies shall accompany all shipments of reinforcing steel to the Project. The certificates of compliance shall show the name of the manufacturer, pounds shipped, heat numbers, laboratory test report numbers, and grade of steel.

Bar reinforcement shall be deformed bars of Grade 60 and shall conform to the requirements of ASTM A 615. Field bending of Grade 60 bars will not be permitted.

Bar mat reinforcement shall conform to the requirements of ASTM A 184, billet steel, Grade 60.

Welded wire fabric shall conform to the requirements of AASHTO M 55.

Metal chairs or other metal supports for reinforcement which contact the exposed surfaces of the concrete shall be galvanized and bond breaker provided between metal chairs and reinforcement.

Wire for reinforcement shall conform to the requirements of AASHTO M 32.

Dowel bars for load transfer in concrete shall: be plain, straight, with ends square, and free from burrs; and shall conform to the requirements of ASTM A 306, Grade 80. Expansion caps for one (1) end of the dowel bars shall be close fitting and shall be a minimum length of three (3) inches. The enclosed end of the expansion cap shall contain a suitable stop to hold the end of the dowel bar one (1) inch from the end of the cap.

3.0 CONSTRUCTION REQUIREMENTS

Before concrete is placed, the reinforcement shall be clean of dirt, mortar, oil, loose rust, loose mill scale and any other analogous material that would reduce or destroy the bond.

Reinforcing bars shall be placed as shown on the Project Plans and shall be securely tied in position with 0.080-inch diameter or 0.0624-inch diameter wire at all intersections, except

where the spacing is less than one (1) foot in either direction. Where the spacing is less than one (1) foot in either direction, alternate intersections shall be tied. Metal spacers, chairs, hangers, and other approved devices of adequate strength to prevent crushing under full load shall be used to hold the reinforcing in position. The use of concrete blocks to support reinforcement will not be permitted, except that dense, rectangular concrete blocks may be used to support the bottom mat of reinforcement in slabs which are cast on earth. Such concrete blocks shall meet the following requirements:

1. Have compressive strength and density equal to or greater than the concrete to be placed,

2. Occupy a small area,

3. Be free from subjection to deterioration,

4. Contain embedded tie wires to provide for the attachment of reinforcement to the block,

5. Reinforcement other than lower mats in slabs cast on earth shall be supported with metal spacers, chairs, or hangers,

6. Wooden spacers or supports shall not be used to hold reinforcing in position.

Bars shall be placed with a variation in spacing between adjacent bars of not to exceed one-half (1/2) inch or one-twenty-fourth (1/24th) of the spacing dimension shown on the Project Plans, whichever is greater. With the exception of slabs cast on earth, the clear coverage of the reinforcement shall not vary more than one-fourth (1/4th) inch or one-eighth (1/8th) of the dimension shown on the Project Plans, whichever is the greater. The clear coverage of reinforcing cast on earth shall not vary more than minus one-fourth (1/4th) inch to plus one-half (1/2) inch from the position shown on the Project Plans.

Reinforcement shall be furnished in the full length indicated on the Project Plans, unless otherwise approved by the ENGINEER. Splicing of bars will not be permitted, except when shown on the Project Plans as allowable. Bars in lapped splices shall be placed and securely tied in a manner to maintain not less than the minimum distance to the surface of the concrete shown on the Project Plans.

Welded wire fabric and bar mat reinforcement shall be lapped as shown on the Project Plans, but not less than two (2) mesh in width, and securely tied at the ends and edges.

Reinforcing steel shall be welded only when shown on the Project Plans or authorized in writing by the ENGINEER. Welding shall conform to the requirements of AWS Specification D12.1-Reinforcing Steel Welding Code.

The minimum cover from the surface of the concrete to the face of any reinforcement bar shall be not less than shown below, unless otherwise shown on the Project Plans.

Minimum cover shall be as follows:

1. Concrete cast against and permanently exposed to earth-two (2) inches.
2. Concrete exposed to earth or weather:

Principal reinforcement – two (2) inches

Stirrups, ties, and spirals - one and one-half (1-1/2) inches

3. Concrete not exposed to weather or in contact with the ground:

   Principal reinforcement - one and one-half (1-1/2) inches

   Stirrups, ties, and spirals – one (1) inch

For bar bundles, minimum concrete cover shall be equal to the lesser of the diameter of a single bar of equivalent area or two (2) inches, but not less than the minimum cover given in item 1 above.

Exposed reinforcing bars, inserts, and plates intended for bonding with future extensions shall be protected from corrosion.

Inspection: No concrete shall be placed until the ENGINEER has inspected the reinforcing steel in place and has authorized the CONTRACTOR to place the concrete. Acceptance of the reinforcing steel will not relieve the CONTRACTOR of responsibility for coverage and position control of the steel.

4.0 METHOD OF MEASUREMENT (SEE SECTION 3 – BID SCHEDULE, FOR MEASUREMENT)

Steel Reinforcement shall be measured by the Pound (Lb.) as specified by a nominal unit weight.

No separate measure will be made for Steel Reinforcement, which shall be incidental to the associated item(s).

5.0 BASIS OF PAYMENT (SEE SECTION 3 – BID SCHEDULE, FOR PAYMENT)

Steel Reinforcement shall be paid by the Pound (Lb.) as specified by a nominal unit weight.

No separate payment will be made for Steel Reinforcement, which shall be incidental to the associated item(s).

END OF ARTICLE 03-032.1

Article 03-033.1 PORTLAND CEMENT CONCRETE

1.0 DESCRIPTION

This Work consists of furnishing and placing Portland cement concrete in substantial compliance with the Specifications and the lines, grades, and dimensions in accordance with the Contract Documents and all other applicable specification items.

1.1 CLASSIFICATION

The following classes of concrete are included in these Specifications and shall be used where required by the Project Plans:

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

Class	Use	** Compressive Strength at 28 Days (Production)	Maximum Allowable Design Slump	Percent Air Content
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%.

1.2 CLASS SUBSTITUTION

Any structural class of concrete approved for a specified compressive strength requirement in excess of that called for in the Project Plans and Specifications may be substituted for a lower strength mixture, as long as the design slump characteristics remain the same (i.e. Class AA for Class A, Class F for Class E). Class A or Class AA shall not be substituted for a Class E or Class F concrete mix.

2.0 CONCRETE MIX DESIGN

2.1 MIX DESIGN SUBMITTAL

A request for concrete mixture design(s) approval shall be submitted to the 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 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 a 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 akalies, 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 ENGINEER and/or Public Works Inspector.

The CONTRACTOR 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 ENGINEER. Source changes in cement will only be allowed upon written request by the Supplier to the 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 ENGINEER and/or Public Works Inspector.

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.

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 CURING MATERIALS

Liquid Membrane Forming Compounds: Unless otherwise specified, liquid membrane-forming compounds for curing concrete shall conform to the requirements of Type 1-D or Type 2 when tested in accordance with AASHTO M 148.

Linseed Oil Emulsion: Linseed oil emulsion-curing agent shall not be used on any Projects.

Sheet materials for curing concrete shall meet the requirements of AASHTO M 171 except that only white reflective type shall be permitted.

Water: Testing of potable water from municipal or other sources approved by the New Mexico Environmental Department (NMED) is not required. Water from other sources must have prior approval from the ENGINEER before incorporating into any Work. Water shall be sampled and tested in accordance with AASHTO T 26. Water used in mixing and curing concrete or for washing concrete aggregates shall be clear and free from injurious amounts of acid, oil, alkali, organic matter, or other deleterious material. Water shall have a pH value of not less than 6.0 or more than 8.5, as determined by AASHTO T 26, prior to its use. The sulfate content and the chloride content each shall not exceed one thousand (1000) ppm. Where a source of water is relatively shallow, the intake shall be enclosed and the level of water shall be maintained at such a depth to exclude silt, clay, vegetable matter and other foreign material. Residual water, wash water, or recycled water generated from any equipment, mixer trucks or central mixers shall not be used as all or any part of the water added to any concrete mixture used.

3.8 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;

   Coarseness Factor (CF) = Q / (Q + I) 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

Substance Tolerances Substance	**Percent by Weight (Maximum)**
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

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

3.9 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

Characteristic	Class C	Class F
Sum of Al_2O_3, SiO_2, and Fe_2O_3	---	> 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.

3.10 FIBROUS CONCRETE REINFORCEMENT

Fibers used in the concrete mix shall be used at a minimum dosage rate of 1.5 lb/yd^3 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.

3.11 LITHIUM NITRATE

The CONTRACTOR may use lithium nitrate ($LiNO_3$) 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 ($LiNO_3$). 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
CI, Weight %	0.2 maximum
SO_4, Weight %	0.1 maximum
Heavy Metals, ppm	250 maximum
Elemental Mercury, ppm	0.8 maximum

3.12 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

Aggregate Test	Method
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 ($LiNO_3$)	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^3 (0.55 gallons/yard^3) 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 CONSTRUCTION REQUIREMENTS

City Engineering Representatives and CONTRACTOR personnel performing field testing of concrete shall be certified by ACI or TTCP as a Concrete Field Testing Technician.

The CONTRACTOR shall be responsible for providing a concrete mixture that has been reviewed and approved by the City Engineer.

If it is found that the approved mixture design will not work, the Testing Laboratory who designed the mixture and the City Engineer will be contacted immediately. The Testing Laboratory will work directly with the City Engineer to determine why the approved mixture design will not work. The Testing Laboratory will make the necessary changes to resolve any problems with the concrete mix design.

4.1 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.

4.3 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 a load of concrete arrives on the Project with a cement or total cementitious weight which exceeds the target weight by more than $\pm$1.0%, the Supplier will be notified immediately of the discrepancy by the Public Works Inspector so that corrective actions can be taken by the Supplier. However, at the discretion of the Public Works Inspector, if this target weight is not exceeded by no more than +2.0% or not less than –1.5%, no more than five (5) individual loads of such out-of-specification concrete may be accepted, regardless of whether the excesses are for the same material or for other

target batch weights. Any subsequent loads, past the five (5) individual loads if they were allowed by the Public Works Inspector, of concrete that exceed the specified target weights for any of the batch constituents shall not be used, and shall be immediately rejected by the Public Works Inspector. 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.

4.4 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.

4.5 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%. If a load of concrete arrives on the Project with a fine aggregate or coarse aggregate weight which exceeds the target weight by more than $\pm$2%, but not more than $\pm$3%, the supplier will be notified of the discrepancy, but the subject load of concrete may be used, at the Public Works Inspector's discretion. However, no more than five (5) individual loads which exceed the maximum allowable batch tolerances for any of the batch constituents, as described

herein will be permitted, regardless of whether the excess are for the same material or for other target batch weights. Any subsequent loads of concrete that exceed the specified target weights for any of the batch constituents shall not be used and shall be immediately rejected by the Public Works Inspector. Any loads that exceed the target aggregate weights by more than ±3% shall be immediately rejected by the Public Works Inspector. Aggregates that do not comply with the specified gradations shall be recombined to bring them within the specified limits or they shall be rejected.

4.6 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.

4.7 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 Project 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.

4.8 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.

4.9 MIXING

Concrete may be mixed at the site of the Work, in a central mix plant, or in agitating truck mixers. The uniformity of the concrete mixture shall be in accordance with the criteria presented in AASHTO M 157 Section 10.2. The mixer shall be of a type and capacity approved by the Public Works Inspector except that the central plant mixer shall have a rated capacity of at least three (3) cubic yards. Continuous mixed concrete shall be mixed at the placement site. Mixers shall be completely cleaned before the start of the Project and at suitable intervals thereafter. The pick-up and throw-over blades in the mixing drum shall be repaired or replaced when worn down 0.75 inches or more. The CONTRACTOR shall provide permanent marks on blades to show points of 0.75 inches wear from the original new conditions. Drilled holes of 0.25 inches diameter near the end and at the midpoint of each blade are recommended.

4.10 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 by the field inspector. 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 not be used.

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 80º 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 80º F or above, the allowable placement time shall not exceed thirty (30) minutes.

4.11 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 35º 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 50º F and not more than 90º 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 150º F. Concrete shall not be placed on frozen ground.

3. Protection of Concrete: After any concrete is placed, the CONTRACTOR shall provide suitable measures to maintain a concrete surface temperature of 40º F or above for a period of not less than twenty-four (24) hours.

4.12 CONCRETE SAMPLING AND TESTING

Slump, unit weight, air content tests and compressive strength test cylinders shall be prepared with concrete obtained from the point at which the concrete is placed by certified personnel. All results for the tests performed in accordance with this unit will be provided to the CONTRACTOR and the concrete Supplier immediately upon completion of the final compressive strength test. If a super-plasticizer is used, the slump shall be measured before and immediately after the addition of the super-plasticizer. The slump specifications defined on the approved mix design shall not be exceeded before introduction of the super-plasticizer. The slump shall not exceed eight (8) inches after the super-plasticizer has been added. Super-plasticized concrete shall be checked for segregation before being placed and during the course of the placement. Segregated concrete shall not be placed. Concrete cylinders for compressive strength tests by the CONTRACTOR's certified personnel are to be molded and cured in accordance with AASHTO T 23 "Making and Curing Concrete Test Specimens in the Field" using four (4) inch by eight (8) inch single use plastic cylinder molds with plastic lids or six (6) inch by twelve (12) inch cylinder molds and air content tests cast from slip-form concrete shall be accomplished with a vibrator. The CONTRACTOR is responsible for providing all vibratory equipment and all equipment required to operate the vibratory equipment. Rodding of slip-form concrete will not be permitted. Responsibility for transporting the test specimens to a certified testing lab shall belong to the party who originally prepared the test specimens.

Concrete Testing: At least one (1) sample shall be taken from each of the first three (3) concrete loads delivered to the Project site. Each of these loads shall be tested for slump, air content, and unit weight. Additionally, a set of compressive strength test cylinders will be cast from one of these three loads, determined on a random basis. Beginning with the fourth (4^{th}) load of concrete delivered to the Project, one (1) randomly selected load from each sub-lot of six (6) trucks. All tests and cylinders shall be tested and handled in accordance with proper procedures.

Concrete Strength: Concrete compressive strength shall be determined from the average of two (2) or more concrete cylinders made from the same sample of concrete and tested at the specified age. The cylinders will be made, handled, and stored in accordance with AASHTO T 23 "Making and Curing Concrete Test Specimens in the Field" and tested in accordance with AASHTO T 22 "Compressive Strength of Cylindrical Concrete Specimens".

Individual Strength Test: Unless otherwise specified, an "individual strength test" will be determined by testing two (2) or more cylinders at twenty-eight (28) days (or at fourteen (14) days for slip-formed concrete). At least four (4) cylinders shall be made for each set. The first cylinder shall be tested at seven (7) days for use as an indicator of the early concrete compressive strength. The second and third cylinders shall be tested to determine the "Individual Strength Test" result. The fourth cylinder shall remain available for testing if the Within-Test-Coefficient-of-Variation (WTCV) exceeds five (5) percent, as determined by ACI 214.3.4.1. If the fourth cylinder is tested, the "Individual Strength Test" result will be the average of all of the cylinders tested at that age, unless one (1) or more of the following conditions exist:

1. There is a visible defect in the cylinder or the capping, and/or orientation of the cylinder with respect to its perpendicularity or the parallelism of the ends.

2. A significant irregularity occurred while loading the test specimen to failure, such as a sudden load burst, cyclic or pulsating loads, or a loading rate not in accordance with AASHTO T 22.

In-Place Concrete Strength Measurements: The CONTRACTOR may request to measure the in-place strength of the concrete for construction-related purposes. The equipment to perform the requested test shall be furnished by the CONTRACTOR. Field-cured cylinders will be tested by the City's Representative. The method of measuring the in-place strength of the concrete shall be one of the following procedures:

1. Core Testing: This method shall be performed in accordance with AASHTO T 24, and as further defined in Subsection 510.514, Investigation of Low Strength Cylinder Test Results.

2. The Maturity Method: This method integrates the heat of hydration and the time since the concrete was batched. It shall be correlated for the specific concrete mix before being used in the field.

3. The Windsor Probe: This method measures the depth of penetration of a specially fabricated probe into the concrete. This method must be calibrated for the specific concrete mix before being used in the field.

4. The Pull-Out Test: This method measures the pull-out resistance of a specially fabricated plug cast into the concrete in question. This method must be calibrated to the specific concrete mix before being used in the field.

5. The Match-Cure Method: This method places additional cylinders into a specially controlled chamber which maintains the temperature to that of the concrete being represented.

6. The Cast-in-Place Cylinder Method: This method tests a cylinder, which is actually cast into the concrete being evaluated. The hole remaining after the cast-in-place-cylinder is removed must be filled with a non-shrink grout or a Type K cement.

7. Field Cured Cylinders: All field cured cylinders shall be cast in accordance with AASHTO T 23, and cured in strict accordance with AASHTO T 23, Section 9.4.1.

The method of measuring in-place strength chosen, with the exception of Method G (Field Cured Cylinders), must be submitted to the City Engineer for approval, with complete supporting documentation before it can be used in the field.

Field cured cylinders will not be considered appropriate measurements of in-place strength for any superstructure considerations. In-place strength measurements for construction related purposes or for acceptance of concrete including, but not limited to removal of forms, post-tensioning, shoring, or vertical supports shall be performed by one of the methods outlined above. Core testing, pull-out test or cast-in place cylinder methods will not be allowed on bridge decks.

Unless less stringent requirements are specified in the Contract, forms may be stripped or traffic permitted on the structure or pavement when the correlated in-place

compressive strength is at least equal to the strength required for the intended application.

Acceptance of Concrete Based on Cylinders: The concrete will be accepted with respect to compressive strength indicated by cylinder tests, when both of the following requirements are met:

1. The running average of three (3) consecutive individual strength tests meets or exceeds the specified strength.

2. No individual strength test falls below the specified strength by more than five hundred (500) psi; and,

When the cylinder based acceptance requirements are not met, the City Engineer will review the strength tests and notify the CONTRACTOR in writing whether the concrete will be accepted, or shall be removed and replaced by the CONTRACTOR. Only that area of concrete represented by the individual strength test failing to meet any one (1) of the cylinder based acceptance requirements, shall be subject to investigation or removal. When the cylinder-based acceptance requirements are not met, steps shall be taken by the CONTRACTOR to resolve the problem. The proposed resolution will be submitted in writing to the City Engineer. The mere addition of extra cement will normally not be considered a sufficient resolution.

Investigation of Low Strength Cylinder Test Results: The CONTRACTOR may use one (1) of the in-place strength test methods outlined in Section 4.12 “In-Place Concrete Strength Measurements” if the normal acceptance tests do not comply with Section 4.12, “Acceptance of Concrete Based on Cylinders”, above. Core tests may not be used for any investigation involving bridge decks.

1. If cores are used to determine the in-place compressive strength, all cores shall be obtained by the CONTRACTOR in accordance with AASHTO T 24 "Obtaining and Testing Drilled Cores and Sawed Beams of Concrete". The cores will be tested in accordance with AASHTO T 22 "Compressive Strength of Cylindrical Concrete Specimens";

    a. If the concrete in the structure will be dry under normal service conditions, the cores will be air dried at a temperature range of 60° F to 80° F, and at a relative humidity of less than sixty (60) percent for seven (7) days before testing. The cores will be tested dry.

    b. If the concrete in the structure will be more than superficially wet under service conditions, the cores will be cured in lime-saturated water for at least forty (40) hours before testing. The cores will then be tested wet.

2. Procedure for Coring of Non-Bridge Structures: If the CONTRACTOR elects to core, the CONTRACTOR must core, within forty-two (42) calendar days of the initial concrete placement. A core-set consisting of at least three (3) cores shall be taken for each individual strength test falling below the specified strength, and a minimum of one (1) core-set will be obtained for each lot of twenty-five hundred square yards (2500 yd^2) for PCCP or for each lot of five hundred cubic yards (500 yd^3) for any other structures. The ENGINEER will determine the locations to be cored.

3. As an alternative to paragraph 2 above, or to investigate any bridge decks, the CONTRACTOR may request in writing to the City Engineer that he be allowed to use

one of the in-place strength test methods described in Section 4.12 “In-Place Concrete Strength Measurements”, to determine the actual in-place strength of the concrete. Approval in writing from the ENGINEER must be received before the requested test method can be used in the field.

4. Acceptance of Concrete Based on Measurement of In-Place Strength: The concrete will be accepted with respect to the compressive strength indicated by core tests, when the average of all core sets is at least eighty-five (85) percent of the specified strength, and if the average of any core set is no less than seventy-five (75) percent of the specified strength. If alternate in-place strength test methods are used, the concrete will be accepted with respect to the compressive strength determined when the average of all tests is equal to or greater than the specified strength, and no individual strength is five hundred (500) psi less than the specified strength.

5.0 METHOD OF MEASUREMENT (SEE SECTION 3– BID SCHEDULE, FOR MEASUREMENT)

No separate measurement shall be made for Portland cement concrete, which shall be incidental to the associated item(s).

6.0 BASIS OF PAYMENT (SEE SECTION 3– BID SCHEDULE, FOR MEASUREMENT)

No separate payment will be made for Portland cement concrete, which shall be incidental to the associated item(s).

END OF ARTICLE 03-033.1

Article 03-033.2 CONCRETE CURBS, GUTTERS, WALKS, DRIVEWAYS, APRONS, CURB RETURNS, FILLETS, VALLEY GUTTERS AND SLOPE PAVING

1.0 DESCRIPTION

This Work consists of new or replaced concrete curbs, gutters, walks, driveway aprons, curb returns, fillets, slope paving, and valley gutters placed on a prepared surface in accordance with these Specifications and in conformance with the lines, grades, thickness and typical cross-sections shown in the Contract Documents.

2.0 GENERAL

Portland cement concrete curbs, walks, gutters, valley gutters, and driveway aprons constructed of concrete having a minimum twenty-eight (28) day compressive strength of 3,000 psi, unless otherwise noted on the Plans.

Subgrade preparation for concrete curbs, gutters, walks, driveways, alleys, intersections, and slope paving shall conform to the requirements of Article 02-022.3.

Unless otherwise specified or indicated on the Plans, the minimum thickness of walks shall be four (4) inches. The minimum thickness of gutters, driveway aprons, and alley intersections shall be six (6) inches unless otherwise shown on the Plans. The height and thickness of the curb section including other details of construction for items in this section will be shown in the Contract Documents.

3.0 FORMS

Form material shall be free from warp, with smooth and straight upper edges and, if used for the face of curb, shall be surfaced on the side against which the concrete is to be placed. Timber forms may be used for forming curved section but shall not be used for straight work unless authorized in writing by the ENGINEER. Metal forms for such work being of a gauge that will provide proper rigidity and strength for the purpose for which they are intended. Wood forms used on curb returns shall be not less than three-quarter (3/4) of an inch in thickness, cut in the length and radius as shown on the Plans and held rigidly in place by the use of metal stakes and clamps. The curb face forms shall be cut to conform exactly with the curb face batter, as well as being cut to the required length and radius. In every case, however, the forms shall be of sufficient rigidity and strength and shall be so supported as to adequately resist springing or deflection as a consequence of the placing and tamping of the concrete.

All curb and combined curb and gutter shall be divided into blocks or stones in lengths of five (5) feet or ten (10) feet long using metal templates not less than one-sixteenth ($1/16^{th}$) inch nor more than one-fourth ($1/4^{th}$) inch thick cut to the same cross section as the curb or curb and gutter being constructed. Templates shall be securely attached to forms to prevent movement during concrete placement.

Form material shall be thoroughly clean at the time it is used and shall be given a coating of light oil or other suitable material immediately prior to the placing of the concrete.

Forms, except curb block planks, shall be set with the upper edges thereof flush with the specified grade of the finished surface of the adjacent portion of the work and shall be not less than a depth equivalent to the full specified depth of thickness of the concrete to be supported thereby.

Back forms shall be held securely in place by means of stakes driven in pairs, one at the front form and one at the back, at intervals not to exceed four (4) feet; clamps, spreaders, and braces being used in connection therewith to such extent as may be necessary to insure proper rigidity of the forms. Forms for walks, gutters, and similar work shall be firmly secured by means of stakes driven flush with the upper edge of the forms at intervals not to exceed five (5) feet. The stakes shall be of sufficient size and shall be so driven as to properly and adequately support the forms.

Form clamps, specifically designed and manufactured for the curb and gutter to be constructed, may be used if, in to opinion of the ENGINEER, they fulfill the requirement herein above specified for curb and gutter forms.

4.0 PLACING CONCRETE

The concrete shall be placed on a thoroughly dampened subgrade sufficiently moist to insure that no moisture will be absorbed from the fresh concrete.

Surfaces of structures in sidewalks, curbs, and gutters shall be adjusted as necessary prior to placing of concrete to meet the contiguous sidewalk surfaces.

Concrete shall be placed in horizontal layers not to exceed six (6) inches each in thickness, each layer being spaded along the forms and thoroughly tamped. However, if the section is more than six (6) inches in depth, the concrete may be placed to provide the thickness shown or specified, if mechanical internal vibrators are used.

After the concrete for walk has been placed between the side forms, a strike-off shall be used to bring the surface to the proper section to be compacted. It shall then be spaded along the form faces and tamped with appropriate tampers not less than two (2) times, in order to assure a dense and compact mass, forcing the larger aggregate into the body thereof and bringing to the surface sufficient free mortar for finishing.

After the concrete has been placed and tamped, the upper surface shall be struck off uniformly smooth and true to the specified grade.

5.0 EXPANSION JOINTS

Expansion joints shall be constructed in curbs, walks, and gutters as hereinafter specified, being filled with pre-molded joint filler strips. No such joints shall, however, be constructed in cross gutters, alley intersection, or driveway aprons.

Unless otherwise shown on the plans, one-half (1/2) inch joints shall be constructed in curbs and gutters at the end of all returns except where cross gutters are being constructed. They shall be at the ends of the cross gutter transitions and also along the line of the Work at regular intervals not to exceed fifty (50) feet, joints in gutter being continuous with those in adjacent curb. No joints shall be constructed in returns. Where continuous curb and gutter is constructed adjacent to cement concrete pavement, weakened plane joints shall be installed continuous with alternate joints installed in the adjacent pavement, in which case expansion joints for sidewalks shall be placed at intervals not to exceed twenty (25) feet with joint filler strips.

Expansion joint filler strips shall be placed in walks at the PT and PC of all walk returns, between walk and a building or structure, in walk returns between the walk and the back of the curb returns, and around all utility poles encountered along the line of the work. Joint

filler strips shall extend the full depth of the concrete being placed. Joint filler strips between walk and curb shall be the full depth of the walk with the top of the filler strip set flush with the top of the concrete. Expansion joint filler strips including those around utility poles shall not be less than one-half (1/2) inch in thickness.

Expansion joint filler strips shall be vertical and shall extend to the full depth and width of the Work in which they are installed, being constructed at right angles or radial to the line of the curb or gutter, as the case may be. The filler strips shall completely fill these joints at least to within one-fourth (1/4th) of an inch of any surface of the concrete that will be exposed upon completion of the Work and must fully extend at least to those surfaces that will not be exposed. However, before the Work will be accepted, any joint filler that protrudes beyond a surface that will not be exposed or beyond one-fourth (1/4th) of an inch below a surface that is exposed shall be trimmed off to the specified dimension in a neat and workmanlike manner. During the placing and tamping of the concrete, the filler strip shall be held rigidly and securely in proper position.

6.0 FINISHING

Surfaces of the various items of Work shall be finished as specified. Edges of concrete at expansion joints shall be rounded to one-fourth (1/4th) inch radius. Upon completion, the finished surface shall be true to line and grade and free from irregularities.

6.1 CURB

The front forms may be stripped as soon as the concrete has set sufficiently but must be removed before the expiration of six (6) hours after pouring. Immediately following the stripping of these forms, mortar, as thinned to the consistency of grout, shall be applied to the curb face. If monolithic curb and gutter is being constructed, this mortar shall be applied to the full-exposed face; otherwise, it shall extend for an additional two (2) inches below the gutter.

The face and top of the curb shall then be carefully troweled to a smooth and even finish, the top being finished to a transverse slope of one-fourth (1/4th) of an inch toward the front, with both edges rounded to a radius of three-fourth (3/4th) of an inch. The troweled surface shall be finished with a fine hair broom parallel with the line of the Work.

Contraction joints or control joints shall not exceed intervals of five (5) feet. Joints shall be made at regular intervals along the line of the Work. On straight work, the joints shall be parallel with and at right angles to the line of the work; at curves the joints shall, in general, be long lines concentric with and radial to the proportion of the work in which they are placed. The markings shall be made with jointed tools that will round the edges of the scoring lines to a radius of one-eighth (1/8th) of an inch, with a depth of not less than one (1) inch. The finished joint opening, excluding of radii, shall not be wider than one-eighth (1/8th) inch. The CONTRACTOR will be required to have a sufficient number of jointed tools on the job to accomplish the above specified requirements.

6.2 WALK

Following the placing of concrete, the surface shall be worked to a true and even grade, free from waves and irregularities. After the preliminary troweling, the initial scoring for the block marking shall be made to a depth of one (1) inch in order to insure the scoring depth required. The Work shall then be carefully troweled to a smooth and even finish, with the edges rounded to a radius of one-half (1/2) inch, the scoring markings made to the required

depth following which it shall be given a fine hair broom finish, applied transversely and remarked when required to insure a new uniform joint. Troweling may be done with a long handled trowel or "Fresno."

Contraction joints or block joints shall not exceed intervals of five (5) feet. Joints shall be made at regular intervals along the line of the Work. On straight work, the joints shall be parallel with and at right angles to the line of the work; at curves the joints shall, in general, be long lines concentric with and radial to the proportion of the work in which they are placed. The markings shall be made with jointed tools that will round the edges of the scoring lines to a radius of one-eighth (1/8th) of an inch, with a depth of not less than one (1) inch. The finished joint opening, excluding of radii, shall not be wider than one-eighth (1/8th) inch. The CONTRACTOR will be required to have a sufficient number of jointed tools on the job to accomplish the above specified requirements.

The side forms shall remain in place after completion of the walk until the concrete is sufficiently set but must be removed before the Work will be accepted.

6.3 GUTTER

After the concrete has been thoroughly tamped in such manner and to such extent as to force the larger aggregates into the body thereof and bringing to the top sufficient free mortar for finishing, the surface shall be worked to a true and even grade by means of a float, troweled with a long handled trowel or "Fresno" and then longitudinally broom finished, following which the flow line of the gutter shall be troweled smooth for a width of approximately three (3) inches and the outer edge rounded to a radius of one-half (1/2) inch.

Side forms shall remain in place until the concrete is sufficiently set, after completion of the gutter, but must be removed before the Work will be accepted.

Reinforcement shall be included as shown on the Plans.

Construction joints and one-half (1/2) inch pre-molded expansion joints and other details of construction shall be as specified in the details. The finished surface shall conform to the required roadway section as to both line and grade. The gutter sections will not be opened to traffic until specimen beams have attained a flexural strength of not less than five hundred (500) pounds per square inch (AASHTO T 97). When such tests are not conducted, the gutter shall not be opened to traffic until determined by the City Engineer.

6.3 SLOPE PAVING

All subgrade preparation required for this item shall be done in accordance with applicable provisions of Article 02-022.1, Earthwork, with the exception that minimum density requirements will be ninety (90) percent of maximum density as determined by ASTM D 1557 in all cases, instead of ninety-five (95) percent of maximum in the top six (6) inches or twelve (12) inches of compacted fill.

Reinforcement shall be included as shown on the Plans.

Thickness of concrete shall be as specified in the Contract Documents. Concrete shall be screeded and finished with wood float or equivalent to a plane surface having no variation when measured with a ten (10) foot straight-edge in excess of one-fourth (1/4th) inch, unless a curvilinear surface is designated for a particular job. All concrete shall be in accordance with Article 03-033.1 Portland Cement Concrete.

7.0 CURING

After the completion of the finishing operations, all curbing shall be sprayed with concrete curing compound. The surface of the concrete shall be kept thoroughly damp between the completion of the finishing operations and the application of the curing compound.

The curing compound shall be applied under pressure, by means of a spray nozzle, in such manner and quantity as to entirely cover all exposed surfaces of the concrete with a uniform film. The preparation so used shall be Type 2 as specified in ASTM C 309.

8.0 DRIVEWAY PAD AT ENTRANCES

Driveway entrances shall be provided in new curbs at all existing driveways along the line of the work and at locations shown on the plans or as directed by the ENGINEER.

The location and construction details for driveways shall conform to the Contract Documents.

Reinforcement shall be included as shown on the Plans.

Where walk is to be constructed across driveway, the thickness of the walk shall be not less than six (6) inches, unless otherwise specified or shown on the Plans.

9.0 MISCELLANEOUS TYPES OF CURB, GUTTERS, SIDEWALKS

Extruded type concrete curb and gutter, precast curb and gutter sections, cut stone curbs, brick sidewalks, flagstone sidewalks, etc. will be permitted where approved by the City Engineer and in accordance with the Contract Documents.

10.0 REPAIRS AND REPLACEMENT

New Work that is found to be defective or damaged prior to the acceptance or existing Work damaged by the CONTRACTOR's operation shall be repaired or replaced by the CONTRACTOR with no additional compensation. Sidewalk that is to be replaced shall be neatly saw-cut to the next control joint on either side of the defective or damaged portion. The minimum size slab that is removed and replaced shall be five (5) feet long and for the full width of the walk. Curb and gutter shall be saw-cut on a neat line at right angles to the face of the curb to the next control joint of curb and/or gutter on either side of defective or damaged portion.

11.0 TESTS

The number of compression test cylinders to be taken shall be three (3) cylinders for the first ten (10) yards poured, and three (3) cylinders for every one hundred (100) cubic yards poured thereafter, minimum.

12.0 BACKFILLING AND CLEANUP

Backfilling to the finished surface of the newly constructed improvement must be completed before acceptance of the Work.

Upon completion of the Work, all earth or burlap covering shall be removed, the surface of the concrete thoroughly cleaned, and the site left in a neat and orderly condition, including disposal of excess materials and earth.

13.0 METHOD OF MEASUREMENT (SEE SECTION 3 – BID SCHEDULE, FOR MEASUREMENT)

Concrete curbs and gutters will be measured by the Linear Foot, in place, for accepted Work.

Concrete sidewalks will be measured by the Square Yard, in place, for accepted Work.

Concrete paving and slope paving will be measured per Square Yard, in place, for accepted Work.

Concrete curb returns with fillets will be measured per Each, in place, for accepted Work.

Accessible ADA corner ramps and drive way aprons will be considered incidental to 6-inch thick concrete with reinforcement measurements.

Detectable warnings will be measured by the Square Foot, in place, for accepted Work.

No separate measure will be made for concrete curbs and gutters. Concrete curbs and gutters shall be included with the item with which it is associated.

No separate measure will be made for concrete sidewalks. Concrete sidewalks shall be included with the item with which it is associated.

No separate measure will be made for concrete paving and slope paving. Concrete paving and slope paving shall be included with the item with which it is associated

No separate measure will be made for concrete curb returns with fillets. Concrete curb returns with fillets shall be included with the item with which it is associated.

14.0 BASIS OF PAYMENT (SEE SECTION 3 – BID SCHEDULE, FOR PAYMENT)

Concrete curbs and gutters will be paid per Linear Foot, in place, for accepted Work.

Concrete sidewalks will be paid per Square Yard, in place, for accepted Work.

Concrete paving and slope paving will be paid per Square Yard, in place, for accepted Work.

Concrete curb returns with fillets will be paid per Each, in place, for accepted Work.

Accessible ADA corner ramps and drive way aprons will be paid per Square Yard, in place, for accepted Work.

Detectable warnings will be paid per Square Foot, in place, for accepted Work.

Such payment shall constitute full compensation for furnishing and placing all materials required to complete the concrete Work, including all grading and subgrade preparation, cleaning of surfaces upon which the concrete is placed, providing forms, equipment, tools, backfilling and cleanup, and labor required to complete the Work in conformity with the Plans and Specifications.

No separate payment will be made for concrete curbs and gutters. Concrete curbs and gutters shall be included with the item with which it is associated.

No separate payment will be made for concrete sidewalks. Concrete sidewalks shall be included with the item with which it is associated.

No separate payment will be made for concrete drive aprons and slope paving. Concrete drive aprons and slope paving shall be included with the item with which it is associated.

No separate payment will be made for concrete curb returns with fillets. Concrete curb returns with fillets shall be included with the item with which it is associated.

END OF ARTICLE 03-033.2