SPECIFICATIONS
AND
CONTRACT DOCUMENTS
FOR

GALLUP-RURAL NAVAJO WATER SUPPLY PROJECT, PROJECT 4

CITY OF GALLUP, NEW MEXICO
Gallup Joint Utilities

FUNDED BY THE WATER TRUST BOARD THROUGH THE NEW MEXICO FINANCE AUTHORITY, WTB # 111

Formal Bid No. 1318

Mayor: Jackie McKinney

CITY COUNCIL

Cecil Garcia Linda Garcia
Alan Landavazo Yogash Kumar

November, 2013

Prepared By:

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307 SOUTH 4TH STREET
GALLUP, NM 87301

Set No. 24

INDEX

PAGE

TECHNICAL SPECIFICATIONS

SECTION

INDEX

APPENDICIES

A. EPA FORMS (NPDES)
   -NOTICE OF INTENT
   -NOTICE OF TERMINATION

B. NEW MEXICO WAGE RATES

C. NTUA TAP PERMIT

D. ELECTRICAL LINE EXTENSIONS & SERVICE CONNECTS COST ESTIMATES
   1. TWIN LAKE TANK CONTROL BUILDING

E. GEOTECHNICAL REPORT

F. HIGHWAY PERMITS
   1 - UTILITY FACILITIES WITHIN PUBLIC RIGHT OF WAY
   2 - TRAFFIC CONTROL/ROADWAY WORK PERMIT

ADVERTISEMENT FOR BIDS

CITY OF GALLUP, NEW MEXICO

GALLUP-RURAL NAVAJO WATER SUPPLY PROJECT, PROJECT 4

FUNDED BY THE WATER TRUST BOARD THROUGH THE NEW MEXICO FINANCE AUTHORITY, WTB # 111

Formal Bid No. 1318

Notice is hereby given that the City of Gallup, New Mexico will receive sealed proposals for construction of GALLUP-RURAL NAVAJO WATER SUPPLY PROJECT, PROJECT 4 until the hour of 2:00 P.M. local time, December 10, 2013 at the office of the Purchasing Department at City Hall, 110 West Aztec Avenue, Gallup, New Mexico. Bids will be opened, read and tabulated at that time. No bids will be received or considered if received after the time stated above.

Project consists of the following main items:

Twin Lakes 10" Distribution Waterline, 7-9 Miles ± North of Gallup:

1. 8445' of 10" PVC Pipeline.
2. 205' Jack and Bore Crossing of US Hwy 491 with 10" Ductile Iron waterline in a 18" steel casing.
3. Two tie-ins to the existing NTUA Twin Lakes Water System.

Twin Lakes Tank Site Construction, 7 Miles± North of Gallup:

1. Construct one (1) 0.3 MG Glass-Fused Bolted Steel Reservoir.
2. Control Station Building.
3. Site Grading and Fencing.
4. Miscellaneous Yard Piping and Valving.
5. Drain Line Piping.
6. Miscellaneous Station Building Piping.

Water Loading Station Improvement, In Gallup immediately north of Interstate 40 Exit 22 and County Road 43:

1. Pervious Concrete Slab.
2. Surface water collection and storage system with associated plastic piping.
3. Block wall construction and site grading improvements.
4. Exterior station piping improvements.

The project also includes installation of gate valves, construction of air release stations, manholes, trenching, backfilling, traffic control, and the removal and replacement of pavement and permitting.

Plans, Specifications and Bidding Documents may be examined at the office of the Gallup of Gallup Purchasing Agent, 110 West Aztec, Gallup, NM 87301. Information is also available at www.gallupnm.gov/bids .

A Pre-Bid viewing for all plan holders to be held December 3, 2013 at 9:00 A.M. Attendees to assemble at DePauli Engineering & Surveying, LLC (307 S. 4th St.) prior to leaving in caravan form to the sites.

Plans, Specifications and Bidding Documents may be obtained from DePauli Engineering and Surveying, LLC., 307 S. 4th Steet, Gallup, NM 87301, upon deposit of $300.00, all of which will be refunded upon return of the documents within ten (10) days after bid opening.

/s/ Jackie McKinney

Mayor

Date:

November 16, 2013

BIDDING REQUIREMENTS
INFORMATION FOR BIDDERS

1. LOCATION AND CHARACTER OF WORK: The project consists of the following main items:

Twin Lakes 10" Distribution Waterline, 7-9 Miles ± North of Gallup:

1. 8445' of 10" PVC Pipeline.
2. 205' Jack and Bore Crossing of US Hwy 491 with 10" Ductile Iron waterline in a 18" steel casing.
3. Two tie-ins to the existing NTUA Twin Lakes Water System.

Twin Lakes Tank Site, 7 Miles± North of Gallup:

1. Construct one (1) 0.3 MG Glass-Fused Bolted Steel Reservoir.
2. Control and Chlorination Station
3. Site Grading and Fencing.
4. Miscellaneous Yard Piping and Valving.
5. Drain Line Piping.
6. Miscellaneous Station Building Piping.

Water Loading Station Improvement, in Gallup immediately of North of Interstate 40 Exit 22 and County Road 43:

1. Pervious Concrete Slab.
2. Surface water collection and storage system with associated plastic piping.
3. Block wall construction and site grading improvements.
4. Exterior station piping improvements.

ACCESS: Suggested accesses to projects are as follows:

(a) Twin Lakes 10" Distribution Waterline:
Take US Highway 491 approximately 7-9 miles north of Gallup. Work to be performed along U.S. Highway 491.

(b) Twin Lakes Tank Site:
Take US Highway 491 approximately 7 miles north of Gallup to a turnout to the west.

(c) Water Loading Station Modifications:
Immediately north of I-40 Exit 22.

2. SUBMISSION OF PROPOSALS: Formal bids must be submitted in a sealed envelope and shall not be opened and considered if they are not received by the purchasing department prior to the time specified for the bid opening. All sealed bids must be submitted on the documents original forms, or reasonable facsimile, furnished by the City of Gallup. All proposals must be signed by a responsible and authorized person for the bidding firm. Failure to do so may result in

disqualification of their respective bid. Note that fax or electronically transmitted bids are not accepted by the City of Gallup as formal bids. Bids submitted after the bid opening date and time will not be considered and will be returned unopened. Bids will be opened in the purchasing department conference room.

Bids will be accepted until 2:00 pm local time on December 10, 2013 at the City of Gallup Purchasing Office; 110 West Aztec (87301); P.O. Box 1270; Gallup, New Mexico 87305.

Bidder shall utilize the formal bid number on their return mailing envelope or package. If sent by overnight method (Fed-Express, UPS Next Day Air etc.) Please note the formal bid number on carriers receipt. Failure to do so will not constitute a liability on the City if the bid is misplaced or lost.

3. COPIES OF PLANS, SPECIFICATIONS, AND BIDDING DOCUMENTS: Plans, Specifications and Bidding Documents may be viewed at the office of DePauli Engineering and Surveying, LLC. 307 S. 4th Street, Gallup, NM 87301, and The City of Gallup Joint Utilities at 230 South Second Street , Gallup, NM 87301. Plans, Specifications and Bidding Documents may be obtained from DePauli Engineering and Surveying, LLC. at the above address, (505) 863-5440, www.depauliengineering.com upon deposit of $300.00, all of which will be refunded upon return of the documents within ten (10) days after bid opening.

4. INFORMATION: If clarification is needed on any part of the Instructions to Bidders, contact the City of Gallup Purchasing Office: Ronald Caviggia; 505-863-1235. Questions regarding the plans, specifications and scope of work should be directed to DePauli Engineering & Surveying, LLC at (505) 863-5440. Questions submitted less than 5 working days prior to bid opening, or after December 3, 2013 may not be addressed.

5. SPECIFICATIONS: Specifications, as included in this bid and the plans, are intended to indicate the requirements of the City of Gallup (City) and Navajo Tribal Utility Authority (NTUA) and give an accurate description of minimum standards acceptable. All items equal or equivalent to these requirements and standards will be considered, except where otherwise noted. All materials used and incorporated into this project shall be new unless otherwise agreed upon.

6. PREFERENCES: The City and NTUA have no preference for any brand of equipment, kind of material or type of process and will consider all proposals for use of other materials or equipment, if they are, in fact, equal to that specified. The City and NTUA will be the sole judge as to whether materials, equipment or process offered is, in fact, equal to that specified.

7. EXAMINATION OF PROPOSED WORK: Bidders must satisfy themselves, by personal investigation or by any means they deem necessary or desirable, as to

location of and conditions affecting proposed work and resulting costs thereof.

8. PROJECT ERRORS: Bidders will promptly notify the City of Gallup of any ambiguity, inconsistency or error they may discover upon examination of the project documents or the site and local conditions.

9. TIME OF COMPLETION: The Bidder must agree to commence work on a date to be specified in a written "Notice to Proceed" issued by the Engineer and to fully complete the project within one hundred fifty (150) calendar days thereafter, including weather delays.

10. BIDDERS QUALIFICATIONS: Bids will be considered only from firms who can provide evidence that they have established a satisfactory record of performance and integrity to insure the can execute the requirements as stated herein. The City may make such investigation it deems necessary to determine the ability of the bidder to perform the work. Any determination as to competency shall be made by appropriate City staff and NTUA.

    Any proposal which is incomplete, irregular, or accompanied by an insufficient bond may be rejected. The City of Gallup and NTUA also reserves the right to reject the proposal of a bidder who has previously failed to perform properly, including inferior materials, workmanship, or attempts to use substandard equipment, excessive inspection caused to the project to insure good workmanship, or poor construction methods, or failure to complete on time a contract of similar nature, or the proposal of a bidder who is not in a position to perform the work governed by the contract.

11. BID GUARANTY: A bid bond shall be submitted with the bid and made payable to the owner in the amount of five percent (5%) of the bid sum. Security shall be by a certified or cashiers check, or a bid bond prepared on a form acceptable to the owner, issued by a surety licensed to do business in the state where the project is located. The owner will retain these securities until a contract has been entered into. The bidder shall filed the surety bonds and enter into a contract for the work within 15 days after notice of award of contract. Should the low bidder refuse to enter into a contract, the owner will retain his security as liquidated damages, not as a penalty. If the lowest bidder fails to enter into a contract, then the next lowest bidder will be considered as the lowest bidder.

12. BONDS: Within fifteen (15) days from award of contract, the Contractor shall furnish to the Owner, the Surety Bonds as hereinafter described. The Bonds shall be executed substantially in the forms as contained herein and shall be referenced or attachment made to make the Contract Documents a part thereof. All provisions of the Bond shall be complete and in full accordance with statutory requirements. The Bonds shall be executed by the proper sureties through a company licensed and qualified to operate in the State and approved by the

Owner. The Bonds shall be signed by an agent resident in the State, and the date of the Bonds shall be the date of execution of the contract. If any time during the continuance of the contract, the surety on the Contractor's bonds becomes irresponsible, the Owner shall have the right to require additional and sufficient sureties which the Contractor shall furnish to the satisfaction of the Owner within ten (10) days after notice to do so. In default thereof, the contract may be suspended with all payments or money due the Contractor withheld and the contract completed as hereinafter provided.

The Contractor shall furnish a Performance Bond and a Payment Bond each in 100% of the contract amount. The Performance Bond shall also provide for a 1 year guarantee for materials and workmanship once contractor is considered substantially complete.

Additional Bonds and Insurance: 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 insurances are specified by written instructions given prior to opening of bid, the premiums shall be paid by the contractor; if subsequent thereto, they shall be paid by the owner.

13. PUBLIC WORKS: This solicitation is for a City of Gallup and NTUA Project and subject to the Public Works Statutes of the State of New Mexico(13-4-1 to 13-4-43 NMSA 1978); Construction Industries Licensing Act (60-13-1 et seq. NMSA 1978); CID rules and regulations; applicable federal, state and local statutes and laws; and the City of Gallup Ordinances.

14. WARRANTY: All labor and work done by the contractor shall be warranted for a period of **one year**.

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

16. DESCRIPTION OF BID ITEMS AND BASIS OF PAYMENT: A description of the work included in each bid item together with method of measurement and payment for items is contained in the Special Conditions.

17. FORM COMPLETION: All forms submitted must be typewritten or written in ink. All forms submitted must be typewritten or written legibly in ink. Any alterations to the bid amounts by erasures or by interlineations shall be initialed by the signer of the bid form.

18. SUBCONTRACTORS: Contractor shall not employ any subcontractor or other person or organization (including those who are to furnish the principal items of

material or equipment), whether initially or as a substitute, against whom owner 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 shall not constitute a waiver of any right of owner to reject defective work or work not in conformance with the contact 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 he 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.

19. LIST OF SUBCONTRACTORS: The bidder shall list the subcontractors he proposes to use for all trades or items. If awarded the contract, the bidder shall use the firm listed. Changes or substitutions to this list must be approved by the Engineer. A list of subcontractors for this project must accompany the bid proposal submittal.

The listing threshold for subcontractors for this project is $12,210.00 and must be attached to the bid in compliance with 13-4-32 thru 13-4-43 NMSA 1978. The name and the city or county where each subcontractor is located shall also be listed. There shall be only one subcontractor listed for each classification. The general contractor shall not list himself as the subcontractor unless he represents that he is licensed and can perform such work satisfactorily. If subcontractors change according to bid options/additive alternatives accepted then list the subcontractors and the bid lots where they are to be used. The owner reserves the right to disqualify subcontractors and suppliers in accordance with the conditions of the contract. Subcontracted work exceeding $125,000.00 must be bonded separately by the subcontractor.

The Contractor shall, as soon as practicable after the signing of the contract, notify both the Owner and the Engineer in writing of the names of subcontractors proposed for the work and shall not employ anyone the Owner or the Engineer may, within a reasonable time, object to as incompetent or unfit.

The Contractor agrees that he is fully responsible to the Owner for the acts and omissions of his subcontractors and or persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

The Contractor may be required to establish the reliability and responsibility of the proposed subcontractors or of any manufacturer to furnish and perform the work in accordance with the contract documents and completion schedule, and may also be required to require performance and payment bonds of some or all subcontractors in conformance with Sec. 13-4-37 NMSA 1978.

Nothing contained in the Contract Documents shall create any contractual relation between any subcontractor and the Owner. No officer, agent or employee of the Owner, including the Engineer, shall have any power or authority to bind the Owner or incur any obligation in its behalf to any subcontractor, material supplier, or other person in any manner whatsoever.

20. MINIMUM WAGE RATES: There shall be no discrimination because of race, creed, color, sex, national origin or political affiliation in the employment of persons qualified by training and experience for work carried out under this contract.

A minimum wage schedule is bound in the documents and shall apply to all labor used in constructing the project. Each employee engaged in constructing the project shall be paid a wage not less than the minimum specified in the Minimum Wage Rate Schedule published by the New Mexico Department of Work Force Solutions and made a part of these contract documents. Compliance with minimum wage rates shall apply equally to all Contractors and subcontractors engaged on the project. The Contractor shall post at appropriate places on the job site, copies of the Minimum Wage Schedule made a part of the Contract Documents.

It shall be the responsibility of the Contractor to furnish certified copies of payrolls to the Engineer (biweekly) and the New Mexico Department of Work Force Solutions when requested, or an interested party such as Contractors, contracting agencies, labor organizations and Contractor associations to ensure compliance with the New Mexico Public Work Minimum Wage Act.

Bidders are advised that all tiers of Contractors (including subcontractors) bidding more than $60,000 on a public works contract must be registered with the Labor and Industrial Division of the State of New Mexico Department of Work Force Solutions prior to submitting a bid per NMSA 13-4-13.1. A labor enforcement fund form available at www.dws.state.nm.us/

21. SEQUENCE OF WORK: The Twin Lakes 10" Distribution line and yard piping will need to be completed prior to filling the new Twin Lakes reservoir to have water available at tank site.

22. LICENSES, LEGAL RESTRICTIONS, PERMITS AND REGULATIONS: The contractor shall have a license issued by the Construction Industries Division

(CID) of the New Mexico Regulation and Licensing Department. The licenses shall be properly classified for the work to be performed under this contract and be in active status. All subcontractors shall also meet these criteria.

Additionally, the Contractor shall at his own expense, procure all necessary licenses and permits of a temporary nature and shall give due and adequate notices to those in control of all properties which may be affected by this operation. Permits, licenses and easements for permanent structures or permanent changes in existing facilities, shall be provided by the Owner unless otherwise specified. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn or specified.

A New Mexico Department of Transportation (NMDOT) Utility permit for this project has been obtained by the City, and is contained herein. Contractor shall obtain a NMDOT work permit. Work permit will require the NMDOT required insurance and a storm water pollution prevention plan. An NTUA tap permit is also required. Permit application forms and requirements are included in Appendices "C" and "F".

23. ROYALTIES AND PATENTS: It is agreed that all royalties for patents or patent infringement claims, whether such patents are for processes or devices, that might be involved in the construction or use of the work, shall be included in the contract amount and the Contractor shall satisfy all demands that may be made at any time for such, be liable for any damages or claims for patent infringements; and, at his own expense, defend any and all suits or proceedings that may be instituted any time against the Purchaser for infringement or alleged infringement of any patent or patents involved in the work and in case of an award of damages, the said Contractor shall pay such award. Final payment to the Contractor by the Owner will not be made while any such suits or claims remain unsettled.

24. TAXES: The Contractor and he alone, shall be liable for the cost of taxes and shall protect the Owner against liability by reason of municipal, state or federal laws or regulations. Contracts solicited by competitive sealed bids shall require that the bid amount exclude the applicable state gross receipts taxes or applicable local option tax, but that the Owner shall be required to pay the applicable tax including any increase in the applicable tax becoming effective after the date the contract is entered into. The applicable gross receipt tax or applicable local option tax shall be shown as a separate amount on each billing or request for payment made under the contract.

25. COLLUSION: Collusion among bidders or an interest in more than one bid under a different name or firm shall be cause for rejection of bid(s).

26. COMMENCEMENT AND COMPLETION: The Contractor shall commence

work on the date specified in the Owner's written notice to proceed and shall complete the work in its entirety within the time specified in the Contract Documents.

27. TIME REQUIRED FOR CONSIDERATION OF BID: Time will be required for tabulation of bids and consideration of the proposals by the Owner. Therefore, the owner shall have ninety (90) days in which to make an award of contract.

28. UNIT PRICE DISCREPANCIES: Typographical errors, errors in extending unit prices, arithmetic errors, or errors clearly evident on the face of the bid document may be corrected in accordance with the procurement ordinance and procurement regulations. Discrepancies involving the incorrect extension of unit prices shall be resolved in favor of unit prices.

29. REQUIRED PROVISIONS DEEMED INCLUDED: Each and every provision of law and clause required by law to be included in this contract shall be deemed to be included herein and the contract shall be read and enforced as though it were included herein. If through mistake or otherwise any such provision is not included or is not correctly included then upon the application of either party, the contract shall forthwith be physically amended to make such inclusion or correction.

The City of Gallup and NTUA does not discriminate on the basis of race, color, national origin, sex, religion, age or disability in the employment or the provision of services. Contractors shall be in compliance with with all Federal, State and Local Laws and Ordinances regarding employment practices and the A.D.A. requirements.

30. AWARD OF CONTRACT: The award, if made shall be made to the lowest responsible bidder based on total bid (excluding taxes) for all lots, submitting a responsive bid that is most advantageous to the public. Bidder must submit bids for all items – in all lots or their bid will be found non responsive.

The City and NTUA reserve the right to reject any or all bids. Bids may be rejected for the following, among other reasons:

- Bids containing any irregularities.
- Unbalanced value of any items.
- Reason for believing collusion exists among the bidders.
- The bidder being interested in any litigation against the City.
- The bidder being in arrears on or having defaulted on a previous contract; or within the past three years been formally debarred in the State of New Mexico or any other jurisdiction; or whose license has been suspended or revoked by the appropriate licensing authority.

- Lack of responsibility as may be revealed by a financial statement, experience and equipment, questionnaires, etc.

- Uncompleted work which in the judgment of the city will prevent or hinder the prompt completion of additional work if awarded.

The City of Gallup and NTUA reserve the right to reject any or all bids in whole or in part, to cancel the bid, to waive technicalities and to accept the proposal it deems to be in the best interest of The City and NTUA.

31. PROCUREMENT CODE AND RESIDENT CONTRACTOR PREFERENCE: State of New Mexico statutes shall apply. New Mexico grants a preference to those contractors who have been certified by the State of New Mexico Department of Taxation and Revenue as a resident contractor or a resident veterans contractor at the time bids are opened, pursuant to 13-1-22 & 13-4-2 (NMSA 1978). The New Mexico resident contractor's preference or resident veteran contractor shall be the only preference that applies. **Contractor must submit a copy of their New Mexico resident contractor's certificate or New Mexico resident veteran contractors certificate with their bid in order to be considered for the preference as per 13-1-22 (a) NMSA 1978 .**

The applicable State of New Mexico resident contractor's or resident veteran contractor's preference will be factored into bid prices where applicable. However, the preferences are not cumulative and bidders will only be entitled to receive one preference.

For information on New Mexico resident contractor certification please call 505-827-0951 or to download applications, go to: www.tax.newmexico.gov , select "forms and publications" and click on "recently updated".

32. AMENDMENTS: If any questions or responses require revision to the solicitation as originally published, such revisions will be by formal written amendment only and issued to plan holders of record. If the solicitation includes a contact person for technical information, offerors are cautioned that any oral or written representations made by this or any person that appear to change materially any portion of the solicitation shall not be relied upon unless subsequently ratified by a written amendment to this solicitation issued by the purchasing office. For a determination as to whether any representation made requires that an amendment be issued, contact the purchasing office.

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

34. PROCUREMENT CODE VIOLATIONS: The procurement code imposes civil and criminal penalties for its violation. In addition, the New Mexico criminal statutes impose felony penalties for illegal bribes, gratuities, and kick-backs.

35. GOVERNING LAW: The bid, terms and conditions, and the contract documents shall be governed by the laws of the state of New Mexico, and in accordance with 57-28A-1 NMSA 1978. .

36. CODE COMPLIANCE: Complete installation must meet federal, state, and local laws, codes and regulations.

37. EXTENDED PAYMENT PROVISION: This construction contract specifically provides for a payment later than twenty-one days after submission of an undisputed request for payment. Owner will make payment within forty-five days after submission of an undisputed request for payment.

38. NMDOT WORK PERMITS: Contractor shall obtain insurance in the amount of $1,000,000, per occurrence, naming the NMDOT as insured prior to obtaining a Work Permit for works within Highway Right-of-Way.

39. LABOR ENFORCEMENT FUND: (Detailed information on following page)

LABOR ENFORCEMENT FUND

(STRICTLY ENFORCED)

13-4-13.1 Public works contracts; registration of contractors and subcontractors.

A. Except as otherwise provided in this subsection, in order to submit a bid valued at more than sixty thousand dollars ($60,000) in order to respond to a request for proposals or to be considered for award of any portion of a public works project greater than sixty thousand dollars ($60,000) for a public works project that is subject to the Public Works Minimum Wage Act [13-4-10 NMSA 1978], the contractor, serving as a prime contractor or not, shall be registered with the labor and industrial division of the labor department. Bidding documents issued or released by a state agency or political subdivision of the state shall include a clear notification that each contractor, prime contractor or subcontractor is required to be registered pursuant to this subsection. The provisions of this section do not apply to vocational classes in public schools or public post-secondary educational institutions.

B. The state or any political subdivision of the state shall not accept a bid on a public works project subject to the Public Works Minimum Wage Act from a prime contractor that does not provide proof or required registration for itself.

C. Contractors and subcontractors may register with the division on a form provided by the division and in accordance with labor department rules. The division shall charge an annual registration fee of two hundred dollars ($200). The division shall issue to the applicant a certificate of registration within fifteen days after receiving from the applicant the completed registration form and the registration fee.

D. Registration fees collected by the division shall be deposited in the labor enforcement fund.

13-4-14.1 Labor enforcement fund; creation; use.

The "labor enforcement fund" is created in the state treasury. The fund shall consist of contractor and subcontractor registration fees collected by the labor and industrial division of the labor department and all investment and interest income from the fund. The fund shall be administered by the division and money in the fund is appropriated to the division for administration and enforcement of the Public Works Minimum Wage Act [13-4-10 NMSA 1978]. Money in the fund shall not revert to the general fund at the end
of a fiscal year.

13-4-14.2 Registration cancellation, revocation, suspension; injunctive relief.

The director of the labor and industrial division of the labor department may:

A. cancel, revoke or suspend with conditions, including probation, the registration of any party required to be registered pursuant to the Public Works Minimum Wage Act [13-4-10 NMSA 1978] for failure to comply with the registration provisions or for good cause, subject to appeal pursuant to Section 13-4-15 NMSA 1978; and

B. seek injunctive relief in district court for failure to comply with the registration provisions of the Public Works Minimum Wage Act.

NOTICE TO BIDDERS

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

As of July 1, 2012 a New Mexico Resident Veteran Contractors preference number may be obtained from the New Mexico Department Taxation and Revenue Department for those contractors who qualify.

It will be the sole responsibility of Bidders requesting consideration for the New Mexico Resident Contractors Preference or the New Mexico Resident Veteran Contractors Preference to obtain approval and a certification from the New Mexico Department of Taxation & Revenue prior to the bid opening date. You must submit a copy of the Resident Contractors Certificate or Resident Veteran Contractor's Certificate with your bid in order to be considered for the in-state preference as per Section 13-1-22 (A) NMSA 1978.

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

For additional information please call 505-827-0951, or to download applications log on at:
WWW.TAX.NEWMEXICO.GOV , select "Forms and Publications" and click on "Recently updated".

BID PROPOSAL

CITY OF GALLUP
GALLUP-RURAL NAVAJO WATER SUPPLY PROJECT
PROJECT 4
FORMAL BID NO. 1318

NOVEMBER, 2013

Gentlemen:
The undersigned Bidder, in compliance with your invitation for bids for GALLUP-RURAL NAVAJO WATER SUPPLY PROJECT-PROJECT 4, having examined the Plans, Specifications and related documents, sites and conditions of the proposed work and being fully advised as to the materials, supplies, equipment and labor required for the construction of the project, and the time and method of payment for work performed, hereby proposes to furnish all labor, materials and supplies, and to construct the project in accordance with terms of the contract documents, within the time set forth therein, for the prices stated below. The prices are to cover all expenses incurred in completing the work under contract.

The Bidder agrees to commence work under this contract on or before the date specified in a written "Notice to Proceed" issued by the Owner or his representatives and to fully complete the project within one hundred fifty (150) consecutive calendar days thereafter, including weather delays. The Bidder also agrees to meet other scheduling requirements of these contract documents.

LOT 1: TWIN LAKES 10" DISTRIBUTION WATERLINE

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
1	For 10" Cl. 235 C900-07 PVC Waterline with granular bedding and rock free native backfill complete in place for the **Unit Price per Linear Foot of:**	6075 LF	$_____.__	$_____.__
2	For 10" Cl. 235 C900-07 PVC Waterline with granular bedding and imported backfill complete in place for the **Unit Price per Linear Foot of:**	2130 LF	$_____.__	$_____.__
3	For jack and bore crossing of US Highway 491 (L=210') with 10" Cl. 350 Ductile Iron Waterline in an 18" Steel Casing complete and in place for the **Lump Sum price of:**	LS	$_____.__	$_____.__
4	For 10" Cl. 235 C900-07 PVC Waterline with granular bedding and rockfree native backfill through highway cuts from Sta. 72+50 to Sta. 76+75 with depths exceeding 8' complete and in place for the **Unit Price per Linear Foot of:**	430 LF	$_____.__	$_____.__
5	For 10" AWWA C509 resilient wedge gate valves and valve boxes complete in place for the **Unit Price per Each of:**	8 EA	$_____.__	$_____.__
6	For Type 2 air release valve (2" size) assembly on 10" line and manhole complete in place for the **Unit Price per Each of:**	9 EA	$_____.__	$_____.__
7	For Vertical 10" - 11 1/4° Ells as conditions require during construction, complete in place for the **Unit Price per Each of:**	8 EA	$_____.__	$_____.__

NOTICE OF EXTENDED PAYMENT PROVISION In accordance with New Mexico State Statute 57-28-5 (B) (NMSA 1978), this contract allows the owner to make payment within forty-five (45) days after submission of an undisputed request for payment.

LOT 1: TWIN LAKES 10" DISTRIBUTION WATERLINE

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
8	For grading, slope reconfiguration, rock excavation and drainage ditch reconfiguration along pipeline Sta. 10+90 to Sta. 11+56 and Sta. 16+30 to Sta. 19+00 as shown complete and in place for the **Lump Sum Price of**:	LS	$_____.__	$_____.__
9	For imported material needed to achieve grades shown for drainage reconfiguration for Item 7 for the **Unit Price per Ton of**:	200 Tons	$_____.__	$_____.__
10	For Type 'A' waterline rock excavation and disposal for **Unit Price per Cubic Yard of:**	350 CY	$_____.__	$_____.__
11	For Type 'B' waterline rock excavation and disposal for the **Unit Price per Cubic Yard of:**	1400 CY	$_____.__	$_____.__
12	For installation of rip-rap (12" thick) as shown on project complete and in place for the **Unit Price per Square Yard of**:	540 SY	$_____.__	$_____.__
13	For Tie-in "B" to existing NTUA system including 4" piping, 4" valves, fittings, sleeves required but not 10" valves for the **Lump Sum Price of:**	LS	$_____.__	$_____.__
14	For Tie-in "C" to existing NTUA system including piping, fittings, sleeves for the **Lump Sum Price of**:	LS	$_____.__	$_____.__
15	For materials testing by independent lab (soil, concrete, base course, etc.). This amount to be used for totaling bid. Actual amount paid to be based on approved invoice.	LS	$20,000.00	$20,000.00
16	For traffic control, partial payments to be made in accordance with percent of waterline completed for the **Lump Sum Amount of:**	LS	$_____.__	$_____.__
17	For reseeding areas after construction as directed that have been cleared and grubbed. Seed mix planted shall be BLM No. 3 at the **Unit Price per Square Yard of:**	14,600 SY	$_____.__	$_____.__

NOTICE OF EXTENDED PAYMENT PROVISION In accordance with New Mexico State Statute 57-28-5 (B) (NMSA 1978), this contract allows the owner to make payment within forty-five (45) days after submission of an undisputed request for payment.

LOT 1: TWIN LAKES 10" DISTRIBUTION WATERLINE

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
18	For non-barbed wire fencing at historical sites as detailed complete and in place for the **Unit Price per Linear Foot of:**	331 LF	$_____.__	$_____.__
19	For down time caused by unexpected encounters with historical or archaeological items for the **Unit Price per Hour of:**	40 HRS	$_____.__	$_____.__
20	For removal and replacement of gravel surfacing in existing driveways complete in place for the **Unit Price per Square Yard of:**	30 SY	$_____.__	$_____.__
21	For removal and replacement of pavement in existing driveways complete in place for the **Unit Price per Square Yard of:**	170 SY	$_____.__	$_____.__

Lot 1 Subtotal: $_____.__

NOTICE OF EXTENDED PAYMENT PROVISION In accordance with New Mexico State Statute 57-28-5 (B) (NMSA 1978), this contract allows the owner to make payment within forty-five (45) days after submission of an undisputed request for payment.

LOT 2: TWIN LAKES RESERVOIR SITE CONSTRUCTION

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
1	For site grading, rock removal, embankment (site pad) construction and associated earthwork for the **Lump Sum Price of:**	LS	$_____,__	$_____,__
2	For the two (2) 10" tank inlet/outlet and 6" drain stub-outs as detailed to 5' outside of tank complete and in place for the **Lump Sum Price of:**	LS	$_____,__	$_____,__
3	For construction of 0.3 MG AWWA D103 glass-fused bolted steel reservoir including all appurtenances, aluminum geodesic dome roof and connections to ductile iron stub outs complete for the **Lump Sum Price of:**	LS	$_____,__	$_____,__
4	For reservoir site control building including piping, and mechanical equipment for the **Lump Sum Price of:**	LS	$_____,__	$_____,__
5	For reservoir site control building electrical and underground electrical service from service pole to station, this item includes powering all SCADA, chlorination, and mechanical equipment to be supplied under other items including pumps, beaters, fans, displays, and electrical equipment, complete and in place for the **Lump Sum Price of:**	LS	$_____,__	$_____,__
6	For reservoir site control building SCADA wiring including PLC/RTU, sensing device wiring (cables, wiring, and conduit), transducer, displays, radios, step down transformer, and signal splitters (Programming of SCADA equipment and all equipment associated with chlorination is not included in this item) complete and in place for the **Lump Sum Price of:**	LS	$_____,__	$_____,__
7	For reservoir site control building chlorination equipment complete and in place for the **Lump Sum Price of:**	LS	$_____,__	$_____,__
8	For 12" Cl 350 DIP yard piping with granular bedding and rock free backfill to tank stub outs complete in place for the **Unit Price per Linear Foot of:**	155 LF	$_____,__	$_____,__
9	For 10" Cl 350 DIP Yard Piping with granular bedding and rock free backfill to tank stub outs complete in place for the **Unit Price per Linear Foot of:**	165 LF	$_____,__	$_____,__

NOTICE OF EXTENDED PAYMENT PROVISION In accordance with New Mexico State Statute 57-28-5 (B) (NMSA 1978), this contract allows the owner to make payment within forty-five (45) days after submission of an undisputed request for payment.

LOT 2: TWIN LAKES RESERVOIR SITE CONSTRUCTION

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
10	For 12" AWWA C509 gate valves complete and in place for the **Unit Price per Each of:**	2 EA	$_____,__	$_____,__
11	For 10" AWWA C509 gate valves complete and in place for the **Unit Price per Each of:**	3 EA	$_____,__	$_____,__
12	For inlet/outlet 10" check valve pit including check valve manhole, piping and all appurtenances complete in place for the **Unit Price per Each of:**	2 EA	$_____,__	$_____,__
13	For 6" DIP overflow/drain line constructed on grade with granular bedding and rock free backfill complete in place for the **Unit Price per Linear Foot of:**	110 LF	$_____,__	$_____,__
14	For Type "C" drainage manholes as called for complete and in place for the **Unit Price per Each of:**	2 EA	$_____,__	$_____,__
15	For the new drain pad including piping, flap gate, connections and 4" plus stone complete in place for the **Lump Sum Price Bid of:**	LS	$_____,__	$_____,__
16	For 2" SDR 21 PVC sensor line and chlorination line including 2" gate valve as detailed from reservoir drain or outlet piping to control building complete and in place for the **Lump Sum Price of:**	LS	$_____,__	$_____,__
17	For 2" SDR 21 PVC drain line including 2" clean out as detailed from control building to drain manhole #1 complete and in place for the **Lump Sum Price of:**	LS	$_____,__	$_____,__
18	For 6' high chain link fencing with security wires, gates and other appurtenances as detailed for the **Unit Price per Linear Foot of:**	626 LF	$_____,__	$_____,__
19	For 4" thick gravel (NMDOT Type 2, crushed aggregate base course) for general reservoir site surfacing complete and in place for the **Unit Price per Square Yard of:**	2400 SY	$_____,__	$_____,__

NOTICE OF EXTENDED PAYMENT PROVISION In accordance with New Mexico State Statute 57-28-5 (B) (NMSA 1978), this contract allows the owner to make payment within forty-five (45) days after submission of an undisputed request for payment.

LOT 2: TWIN LAKES RESERVOIR SITE CONSTRUCTION

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
20	For construction of access road including grading, bar ditches, 4" of crushed aggregate surfacing (NMDOT Type 2 base course) and 30' of 18" CMP with end flares at County Road complete and in place for the **Lump Sum Price of:**	LS	$_____.__	$_____.__
21	For single phase electric power line extension and service connection by Continental Divide Electrical Company. This amount to be used for totaling bid. Actual amount paid to be based on actual approved invoice.	LS	$_____.__	$_____.__
22	For Type 'A' rock excavation and disposal for reservoir site for the **Unit Price per Cubic Yard of:**	20 CY	$_____.__	$_____.__
23	For Type 'B' rock excavation and disposal for reservoir site for the **Unit Price per Cubic Yard of:**	60 CY	$_____.__	$_____.__
24	For materials testing by independent lab (soil, concrete, base course, welding, etc.). This amount to be used for totaling bid. Actual amount paid to be based on approved invoice.	LS	$30,000.00	$30,000.00
25	For non-barbed wire fencing at cultural sites as detailed complete and in place for the **Unit Price per Linear Foot of:**	331 LF	$_____.__	$_____.__
			Lot 2 Subtotal:	$_____.__

LOT 3: City of Gallup Water Loading Station Site & Building Modifications

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
1	For Water Loading Station site improvements including demolition, disposal, earthwork, grading, block wall construction, and handrails and fencing complete and in place for the **Lump Sum Price of:**	LS	$_____,__	$_____,__
2	For Water Loading Station drainage system including 12" HDPE piping, 4" HDPE piping, drain basins, cistern, inline drains, clean gravel, non-woven geo-fabric, and connection into existing Type "C" drainage inlet complete and in-place for the **Lump Sum Price of:**	LS	$_____,__	$_____,__
3	For Station loading arm flange correction complete and in place for the **Lump Price of:**	LS	$_____,__	$_____,__
4	For 12" thick Pervious Concrete paving complete and in place for the **Unit Price per Square Yard of:**	1340 SY	$_____,__	$_____,__
5	For 8" thick 3' wide concrete valley gutter complete and in place for the **Unit Price per Linear Foot of:**	58 LF	$_____,__	$_____,__
6	For asphaltic pavement (6" PMBP on 8" base course) complete and in place for the **Unit Price per Square Yard of:**	90 SY	$_____,__	$_____,__
7	For 4" thick concrete sidewalk on 4" granular pad complete and in place for the **Unit Price per Square Yard of:**	10 SY	$_____,__	$_____,__
8	For crushed aggregate base course, NMDOT Type 2, 4" thick for station site surfacing replacement complete and in place for the **Unit Price per Square Yard of:**	100 SY	$_____,__	$_____,__
9	For traffic control, partial payments to be made in accordance with percent of station completed for the **Lump Sum Price of:**	LS	$_____,__	$_____,__
10	For materials testing by independent lab (soil, concrete, welding, base course, etc.). This amount to be used for totaling bid. Actual amount paid to be based on approved invoice.	LS	$16,000.00	$16,000.00

Lot 3 Subtotal: $_____,__

NOTICE OF EXTENDED PAYMENT PROVISION In accordance with New Mexico State Statute 57-28-5 (B) (NMSA 1978), this contract allows the owner to make payment within forty-five (45) days after submission of an undisputed request for payment.

BID SUMMARY:

LOT 1 - Twin Lakes 10" Distribution Waterline Subtotal: $_____,_____

LOT 2 - Twin Lakes Reservoir Site Construction Subtotal: $_____,_____

LOT 3 -City of Gallup Water Loading Station Site & Building Modifications Subtotal: $_____,_____

LOTS 1-3 SUBTOTAL: $_____,_____

NMGRT Tax @ 8.3125%: $_____,_____

Navajo Nation Tax @ 5%: $_____,_____

TOTAL AMOUNT BID ALL LOTS: $_____,_____

The undersigned Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

The undersigned Bidder agrees to enter into a contract for completion of the project within fifteen (15) days from the date of acceptance of this proposal. Upon receipt of written notice of acceptance of his bid, Bidder will execute the formal contract documents attached within fifteen (15) days & deliver the Surety Bond as required. The Bid Bond attached hereto is to become the property of the Owner in the event the Contract and Bond are not executed within the time above set forth, as liquidated damages for the delay and expense incurred by the Owner

RECEIPT OF THE FOLLOWING ADDENDA
NO'S IS HEREBY ACKNOWLEDGED:

Addendum No. 1:_____ Date:_____

Addendum No. 2:_____ Date:_____

Addendum No. 3:_____ Date:_____

_____

RESPECTFULLY SUBMITTED:

_____

By:

_____

Title

Business Address

_____

_____

City State Zip Code

CONTRACTOR'S LICENSE NO. & CLASSIFICATION _____

NEW MEXICO DEPARTMENT OF WORKFORCE SOLUTIONS NO. _____

Bidders Checklist of Submittal Documents

- Bidder's Qualification Statement (2 Pages)
- Subcontractor's Listing (1 Page, attach additional pages if needed)
- Price Proposal Forms
- Bid Bond (5%) (2 Pages)
- Acknowledge Reciept of Amendments (If any)
- Notice of Extended Payment Provision
- Current I.R.S. Form W-9
- NM Resident Contractors Certificate or Resident Vetererans Contractor Preference Certificate

NOTICE OF EXTENDED PAYMENT PROVISION In accordance with New Mexico State Statute 57-28-5 (B) (NMSA 1978), this contract allows the owner to make payment within forty-five (45) days after submission of an undisputed request for payment.

BIDDERS QUALIFICATION STATEMENT

PROJECT TITLE: Gallup Rural Navajo Water Supply Project - Project 4

SUBMITTED BY: _____

(Print or Type Name of Bidder)

ADDRESS: _____

The undersigned certifies the truth and correctness of all statements and of all answers to questions made hereinafter:

1. How many years has your organization been in business under its present name?

   _____

2. If a corporation, answer the following:

   a. Date of Incorporation: _____

   b. State of Incorporation: _____

3. If individual or partnership, answer the following:

   a. Date of Organization: _____

4. If other than corporation or partnership, describe organization and name principals:

5. Has any construction contract to which you have been a party been terminated by the owner; have you ever terminated work on a project prior to its completion for any reason; has any surety which issued a performance bond on your behalf ever completed the work in its own name or financed such completion on your behalf; has any surety expended any monies in connection with the contract for which they furnished a bond on your behalf? If the answer to any portion of this question is "yes", please furnish details of all such occurrences including name of owner, architect or engineer, and surety, and name and date of project:

6. Has any officer or partner of your organization ever been an officer or partner of another organization that had any construction contract terminated by the owner; terminated work on a project prior to its completion for any reason; had any surety which issued a performance bond complete the work in its own name or financed such completion; or had any surety expend any monies in connection with a contract for which they furnished a bond? If the answer to any portion of this question is "yes", please furnish details of all such occurrences, including name of owner, architect or engineer, and surety, and name and date of project.

7. List projects, contract amount, percent complete and scheduled completion of the construction projects your organization has in process on this date:

   a. List the projects competed by your firm within the past 3 years, with the final cost of the project, and project contact information:

NOTICE OF EXTENDED PAYMENT PROVISION In accordance with New Mexico State Statute 57-28-5 (B) (NMSA 1978), this contract allows the owner to make payment within forty-five (45) days after submission of an undisputed request for payment.

b. List your construction experience in projects similar to this project:

8. List name and construction experience of the principals in your organization, including officers:

9. List the states and categories of construction in which you organization is legally qualified to do business:

10. List name, address, and telephone number of an individual who represents each of the following and who may be contacted for a financial reference:

a. A surety: _____

_____

_____

b. A bank: _____

CREDIT AVAILABLE: $_____

c. A major material supplier: _____

_____

_____

Dated this _____ day of _____ 20_____

Bidder: _____
(Print or Type Name of Bidder)

By: _____

Title: _____

Seal of

Corporation

NOTICE OF EXTENDED PAYMENT PROVISION In accordance with New Mexico State Statute 57-28-5 (B) (NMSA 1978), this contract allows the owner to make payment within forty-five (45) days after submission of an undisputed request for payment.

CITY OF GALLUP

SUBCONTRACTOR LISTING

GALLUP-RURAL NAVAJO WATER SUPPLY PROJECT, PROJECT 4

FUNDED BY THE WATER TRUST BOARD THROUGH THE NEW MEXICO FINANCE AUTHORITY, WTB # 111

Formal Bid No. 1318

The Subcontractor Listing Threshold For This Project Is $12,210.00, And Attached To The Bid In Compliance With 13-4-32 Thru 13-4-43 NMSA 1978, Together With The City Or County Location Of Their Place Of Business Listed. The Following Subcontractors Will Work On The Construction Of The Project If My Proposal Is Accepted. List only one entry for each category of work as defined by Contractor.

Bidder Represents That He Is Licensed And Qualified To Perform 100% Of The Category Of Work For Which No Subcontractor Is Listed. D.W.S. Registration Number Required If Amount Of Work Exceeds $60,000.

Company Name:____________________
Address:____________________
City/County:_______________ State:____
Work to be Performed:____________________
Amount ($): ____________________
License No.: ____________________
DWS Registration No. ________________

Company Name:____________________
Address:____________________
City/County:_______________ State:____
Work to be Performed:____________________
Amount ($): ____________________
License No.: ____________________
DWS Registration No. ________________

Company Name:____________________
Address:____________________
City/County:_______________ State:____
Work to be Performed:____________________
Amount ($): ____________________
License No.: ____________________
DWS Registration No. ________________

Company Name:____________________
Address:____________________
City/County:_______________ State:____
Work to be Performed:____________________
Amount ($): ____________________
License No.: ____________________
DWS Registration No. ________________

Company Name:____________________
Address:____________________
City/County:_______________ State:____
Work to be Performed:____________________
Amount ($): ____________________
License No.: ____________________
DWS Registration No. ________________

Company Name:____________________
Address:____________________
City/County:_______________ State:____
Work to be Performed:____________________
Amount ($): ____________________
License No.: ____________________
DWS Registration No. ________________

Company Name:____________________
Address:____________________
City/County:_______________ State:____
Work to be Performed:____________________
Amount ($): ____________________
License No.: ____________________
DWS Registration No. ________________

Company Name:____________________
Address:____________________
City/County:_______________ State:____
Work to be Performed:____________________
Amount ($): ____________________
License No.: ____________________
DWS Registration No. ________________

-No Contractor whose Proposal is accepted shall permit any subcontract to be voluntarily assigned or transferred or allow it to be performed by anyone other than the original subcontractor listed in the original Proposal without the consent of the using agency.

-No Contractor whose Proposal is accepted, other than in the performance of change orders causing changes or deviations from the original contract, shall sublet or subcontract any portion of the work in excess of the listing threshold as to which his original Proposal did not designate a Subcontractor unless:

(1) the Contractor fails to receive a Proposal from a category of work. Under such circumstances, the contractor may subcontract. The Contractor shall designate on the listing form that **no Proposal was received** or;

(2) the Contractor fails to receive more than one Proposal for a category of work. Under such circumstances, the Contractor may subcontract. The Contractor shall state on the listing form that **only one Subcontractor's Proposal was received**, together with the name of the Subcontractor. This designation shall not occur more than one time on the Subcontractor list.

ADDITIONAL COPIES MAY BE MADE IF NECESSARY

NOTICE OF EXTENDED PAYMENT PROVISION

57-28-5 (NMSA 1978) Payments; prompt pay required; withholding prohibited. (2007)

B. A local public body may make payment within forty-five days after submission of an undisputed request for payment when grant money is a source of funding, if:

(1) the construction contract specifically provides in a clear and conspicuous manner for a payment later than twenty-one days after submission of an undisputed request for payment; and

(2) the following legend or substantially similar language setting forth the specified number of days appears in clear and conspicuous type on each page of the plans, including bid plans and construction plans:

"Notice of Extended Payment Provision

This contract allows the owner to make payment within Forty-Five (45) days after submission of an undisputed request for payment."

In accordance with the above Statute, this contract is subject to the extended payment provisions of the above Statute.

By signing below Contractor expressly acknowledges that he has read and understands the above provision.

Company Name: _____

Authorized Signature: _____

Name (Printed or typed): _____

Date: _____**, 2013**

BID BOND

KNOW ALL MEN BY THESE PRESENT, that we, the undersigned, _____ _____ as Principal and _____ as Surety, are hereby held firmly bound unto _____ as owner in the penal sum of _____ for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

Signed, this _____day of _____, 20 __.

The condition of the above obligation is such that whereas the Principal has submitted to _____a certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing for the _____ _____.

NOW THEREFORE,

(a) If said Bid shall be rejected, or in the alternate,

(b) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the

Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS HEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____
Principal

By:_____

_____
Surety

By:_____

SEAL

CONTRACT

THIS AGREEMENT, made this day of _____, 20__, by and between _____, hereinafter called the "OWNER" and _____, hereinafter called the "CONTRACTOR".

WITNESSETH: That for and in consideration of the payment and agreements hereinafter mentioned, to be made and performed by the OWNER, the CONTRACTOR hereby agrees with the OWNER to commence and complete the construction described as follows:

_____

hereinafter called the project, for the sum of:

_____

Dollars ($_____) and all extra work in connection therewith, under the terms as stated in the Special and General Conditions of the Contract; and at his (its or their) own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, labor, insurance and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, the Special and General Conditions of the Contract, the plans, specifications and contract documents herefore as prepared by DePAULI ENGINEERING & SURVEYING, LLC, herein called the "ENGINEER", all of which are made a part hereof and collectively constitute the Contract.

The Contractor hereby agrees to commence work under this Contract on or before a date to be specified in a written "*Notice to Proceed*" of the OWNER and to fully complete the project within **one hundred fifty (150)** consecutive calendar days thereafter. The CONTRACTOR further agrees to pay, as liquidated damages, the sum of _____ Dollars ($_____) for each consecutive calendar day thereafter as hereinafter provided in the Special and General Conditions.

CONTRACTOR shall be paid within 45 days after submission of an undisputed request for payment as per 57-28-5 NMSA 1978.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That we, the undersigned _____ _____ hereinafter called the "Principal" and _____ _____ hereinafter called the "Surety", a corporation authorized under the laws of State of _____ and authorized to transact business in the State of New Mexico, are held and firmly bound unto _____ _____ hereinafter called the "Owner" in the penal sum of _____ _____ Dollars ($_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that: Whereas, the Principal entered into a written contract with the Owner, dated the _____day of _____, 20 ___, a copy of which is hereto attached and made a part of hereof for the construction of:

_____

NOW, THEREFORE, if the Principal shall truly and faithfully perform its duties, all the undertakings, covenants, terms and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the Owner with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all default, and if the said principal shall for a period of one (1) year from and immediately following the completion of said contract and acceptance thereof by the Owner guarantee all work performed under the contract against faulty or defective materials and workmanship at his own expense and at no cost to the Owner, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDE FURTHER, that the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation or this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the specifications.

PROVIDED FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF: this instrument is executed in three (3) counterparts, each one of which shall be deemed an original, this the _____ day of _____ 20___.

ATTEST:

_____
(Principal) Secretary

_____
Principal

By:_____

_____
Address

_____
City State Zip

SEAL

_____
Witness as to Principal

_____
Address

_____
City State Zip

ATTEST:

_____
(Surety) Secretary

_____
Surety

By: _____
Attorney-in-Fact

_____
Address

_____
City State Zip

SEAL

_____
Witness as to Surety

_____
Address

_____
City State Zip

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That we, the undersigned _____ _____hereinafter called "Principal" and _____ _____hereinafter called the "Surety", a corporation authorized under the laws of the State of _____ and authorized under the laws of the State of New Mexico, are held and firmly bound unto _____ _____ hereinafter called the "Owner" in the penal sum of _____ _____Dollars ($_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that: Whereas, the Principal entered into a written contract with the Owner, dated the _____day of_____, 20 ___, a copy of which is hereto attached and made a part hereof for the construction of:

_____

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED FURTHER, that the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way effect its obligation or this bond, and it does hereby waive notice of any such change, extension of time, alteration or extension of time, alteration or addition to the terms of the contract or to the specifications.

PROVIDED FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in three (3) counterparts, each one of which shall be deemed an original, this the _____ day of _____, 20__.

ATTEST:

_____ _____

(Principal) Secretary Principal

By: _____

_____

Address

_____

City State Zip

SEAL

_____

Witness as to Principal

_____

Address

_____

City State Zip

ATTEST:

_____ _____

(Surety) Secretary Surety

By: _____

Attorney-in-Fact

_____

Address

_____

City State Zip

SEAL

_____

Witness as to Surety

_____

Address

_____

City State Zip

CITY OF GALLUP

City Purchasing Division
Ronald M. Caviggia, Director

NOTICE OF AWARD

Dated: _____

TO: _____
(BIDDER)

ADDRESS: _____

_____

Contract: Gallup-Rural Navajo Water Supply Project, Project 4
(Insert name of Contract as it appears in the Bidding Documents)

Project: Gallup-Rural Navajo Water Supply Project, Project 4

OWNER's Contract No. City of Gallup, Formal Bid No. 1318

You are notified that your Bid dated _____ for the above Contract has been considered. You are the apparent Successful Bidder and have been awarded a Contract for

Gallup-Rural Navajo Water Supply Project, Project 4. Funded by the Water Trust Board

Through the New Mexico Finance Authority, WTB #111
(Indicate total Work, alternates or sections or Work awarded)

The Contract Price of your Contract is _____

There are _____ copies of each of the proposed Contract Documents (except Drawings) accompany this Notice of Award. Also, _____ sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within _____ days of the date of this Notice of Award, that is by _____

1. Deliver to the OWNER ____ fully executed counterparts of the Contract Documents. Each of the Contract Documents must bear your signature
2. Deliver with the executed Contract Documents the Contract security (Performance and Payment Bonds) as specified in the General Conditions
3. Before you may start any Work at the Site, the General Conditions provides that you must each deliver to the OWNER (with copies to Engineer and other identified additional insured's) certificates of insurance which you are required to purchase and maintain in accordance with the Contract Documents.
4. Before starting work, have or obtain a valid City of Gallup Business License
5. Furnish a current IRS form W-9 bearing an original signature
6. Furnish a copy of the Statement of Intent to Pay Prevailing Wages **from your firm and from all subcontractors, to the City of Gallup.**

Failure to comply with these conditions within the time specified will entitle OWNER to consider your Bid in default, to annul this Notice of Award and to declare your Bid security forfeited.

Within ten days after you comply with the above conditions, OWNER will return to you one fully executed counterpart of the Contract Documents.

City of Gallup
(OWNER)

By: _____
(AUTHORIZED SIGNATURE)

_____
(TITLE)

NOTICE TO PROCEED

Dated: _____

TO: _____
(CONTRACTOR)

ADDRESS[1]: _____

_____

_____

Contract: Gallup-Rural Navajo Water Supply Project, Project 4
(Insert name of Contract as it appears in the Bidding Documents)

Project: Gallup-Rural Navajo Water Supply Project, Project 4

OWNER's Contract No. Formal Bid No. 1318

You are notified that the Contract Times under the above contract will commence to run on _____.
By that date, you are to start performing your obligations under the Contract Documents.

Also, before you may start any Work at the Site, you must
(add other requirements)

_____
(OWNER)

By: _____
(AUTHORIZED SIGNATURE)

_____
(TITLE)

GENERAL CONDITIONS

INDEX

GENERAL CONDITIONS

These General Conditions are a part of the project contract documents and shall be binding upon the parties to the contract unless specifically modified, revised or deleted by supplemental Special Conditions or Agreements:

1. DEFINITIONS: The meaning and intent of the following terms or words, as used in the specifications or other contract documents, shall be interpreted as follows:

   a. "Owner": PARTY OF THE FIRST PART, whether an individual, partnership, corporation, municipality, or division of State or Federal Government, acting through its legally authorized officials.

   b. "Engineer": The Engineer in charge for the Owner.

   c. "Contractor": PARTY OF THE SECOND PART, whether an individual, partnership, or corporation entering into contract for performance of the work covered by this contract and authorized agents or legal representatives.

   d. "Contract Documents": Shall be considered to include the following:

   - Information for Bidders
   - Proposal
   - Contract
   - Performance Bond
   - Payment Bond
   - General Conditions
   - Special Conditions
   - Technical Specifications
   - Drawings
   - Addenda

   e. "Date of Contract": Shall mean the date upon which the successful bidder's proposal is accepted by the Owner.

   f. "Day": Unless specifically defined elsewhere in the documents, shall mean a calendar day.

   g. "The Work": Shall mean the work to be done and the equipment, supplies and materials to be furnished under this contract.

   h. "Plans and Drawings": The approved plans, working drawings or exact reproduction, showing location, character and extent of the work to be done.

   i. "Change Order": A supplementary document to the contract, setting forth the

description and value of the changes, increases or decreases in the work ordered by the Owner and agreed to by the Contractor.

j. "Interpretation of Terms": Whenever the words "as ordered", "as directed", "as required", "as permitted", "as allowed", or words or phrases of like import are used, it shall be understood the order, direction, requirement, permission or allowance of the Owner and Engineer is intended: similarly, the words "approved", "acceptable", "satisfactory", "suitable" or words of like effect and import shall mean approved, reasonable, acceptable, satisfactory or suitable in the judgment or opinion of the Owner and the Engineer.

k. "Or Equal": Whenever a material or article required is specified or shown on the plans by using the name of the proprietary product or of a particular manufacturer of vendor, any material or article which will perform adequately and duties imposed by the general design, will be considered equal and satisfactory, provided the material or article so proposed is of equal substance and function in the Owner's and Engineer's opinion.

2. THE CONTRACTOR: It is understood and agreed that the Contractor has, by careful examination, satisfied himself as to the nature and location of the work, the conformation of the ground, the character of the equipment and facilities needed preliminary to and during the performance of the work, the general local conditions, and all other matters which can in any way affect an agent or employee of the Owner, either before or after the execution of the contract in the time and in the manner prescribed.

3. THE ENGINEER: The Engineer shall have general supervision of the work as the representative of the Owner. He shall have authority to direct the programming of the construction in so far as the proper execution of the contract is affected and to the extent that the forces of labor may be increased or decreased by his order to insure the execution of the contract in the time and in the manner prescribed.

All work performed under this contract shall be done in a first-class workmanship manner, and done to the satisfaction of the Engineer. The Engineer shall in all cases determine the amount, quality, acceptability and fitness of the several kinds of work and material herein specified. He shall decide all questions which may arise as to the fulfillment of the terms of the contract by the Contractor, or as to the intent or purpose of the contract.

The Engineer shall, within a reasonable time after presentation, make decisions in writing on claims arising between the principals of the contract and shall make interpretations of the Plans and Specifications. Such decisions and interpretations shall be regarded as final.

4. INSURANCE: The Contractor or his subcontractor shall not commence work under this contract until he or his subcontractors have obtained the insurance required under this paragraph, and certificates of insurance coverage have been filed with and approved by the Owner. All certificates of insurance required herein shall state that *ten (10) days written notice will be given* the Owner before the policy is canceled or changed. Extent of insurance carried and minimum coverage shall be as follows:

a. Worker's Compensation Insurance: The Contractor shall obtain and keep in force during the life of the contract, Worker's Compensation Insurance covering all his employees engaged in work under this contract; and if any portion of the work is sublet, the subcontractor shall carry similar coverage for all its employees engaged in the project. Worker's Compensation Insurance shall provide coverage for not less than the following amounts or greater where required by law:

Workers' Compensation	Statutory
Employer's Liability	$1,000,000.00

b. Comprehensive General Liability Insurance: The Contractor and his subcontractor shall obtain and maintain in effect during the life of the contract, Comprehensive General Liability Insurance including premise/operations; explosion, collapse and underground property damage; products/completed operations, broad form contractual independent contractors, broad form property damage and personal injury liabilities:

Bodily Injury:	$1,000,000.00 each occurrence $1,000,000.00 annual aggregate
Property Damage:	$1,000,000.00 each occurrence $1,000,000.00 annual aggregate
Personal injury, with Employment exclusion deleted:	$1,000,000.00 annual aggregate

c. Comprehensive Automobile Liability Insurance: The Contractor and his subcontractors shall obtain and maintain in effect during the life of the contract comprehensive automobile liability insurance including all owned (private and others) hired and non owned vehicles:

Bodily Injury:	$1,000,000.00 each person $1,000,000.00 each accident
Property Damage:	$1,000,000.00 each occurrence

5. INDEMNIFICATION OF OWNER: The Contractor hereby expressly binds himself to defend, indemnify and save harmless the Owner, his agents and employees, from all suits and actions of every nature and description brought against them, on account of the

construction of this work or by reason of any act of omissions, or malfeasance of the Contractor, his employees or agents, or any subcontractor or his agents or employees. The Contractor's responsibility under this paragraph applies equally to injuries to the Contractor's employees, sub-contractor employees, and bystanders. The contractor is responsible for protection of life and property from harm, damage and injury.

6. PRE-CONSTRUCTION MEETING AND NOTICE TO PROCEED: A pre-construction meeting shall be held within fifteen (15) calendar days of receipt of contract documents. A Notice to Proceed will be issued within seven (7) days after the pre-construction meeting.

7. LIQUIDATED DAMAGES: It is mutually understood and agreed by and between the parties of this contract, in the execution of the same that time is of the essence of the contract. In the event that the Contractor shall fail to complete the work to be performed under this contract by and at the completion time stated in the proposal, the Contractor shall pay unto the Owner as and for the liquidated damages, and not as a penalty, the sum of money specified in the Special Conditions for each and every calendar day that the Contractor shall be in default. Extensions of time granted by the Owner in accordance with the provisions of Paragraph10 shall not operate to the contrary, unless such extensions granted by the Owner specifically provide for the waiving of liquidated damages during and over such period of time extension.

   Liquidated damages will be waived for and during the extent of any delay caused by the inability of the Contractor to obtain materials or equipment by reason of Federal Embargoes, priority order or other restrictions imposed by the United States government, provided that adequate evidence is presented by the Contractor to prove such delay and to enable the Owner to determine with exactness the extent and duration of such delay for each item of material and equipment involved.

   The Owner shall have the right to deduct said liquidated damages from any monies in his hands, otherwise due, or to become due to said contractors, or to claim for and recover compensation for damages for non-performance of this contract at the time stipulated herein and provided for.

8. RELEASE OF LIABILITY: The acceptance by the Contractor of the last payment shall operate as, and be a release to, the Owner and every officer and agent thereof, from all claims and liability to the Contractor for anything done or furnished for, or relating to the work, or for any act of neglect of the Owner, or any person relating to or affecting the work.

9. SUPERVISION AND INSPECTION: All materials used and all work done shall at all times be subject to the inspection, tests and approval of the Engineer and his authorized representatives.

The Contractor shall furnish samples for testing purposes of any material required by the Engineer and any information required concerning the nature or source of any material which he proposes to use. Detailed requirements concerning the making of laboratory tests and the payment therefore are included in the Detailed Specifications.

Inspectors may be appointed by the Engineer or the Owner, whose duty it shall be to see that the work is done properly and in accordance with the plans and specifications. Inspectors shall have authority, subject to the final decision of the Engineers, to condemn and reject any defective work or material and to suspend the work when the same is not being properly done.

Inspectors shall have no authority to permit any deviation from the plans and specifications except on written order from the Engineer. The Contractor will be liable for any deviation except on such written order.

All condemned work shall be promptly taken out and replaced by satisfactory work, and all condemned materials shall be promptly removed from the vicinity of the work. Should the Contractor fail or refuse to comply with instructions in this respect, the Owner may, upon certification by Engineer, withhold payment or proceed to terminate contracts as herein provided.

Any defective material or workmanship may be rejected by the Engineer at any time before the final acceptance of the work, even though the same have been previously overlooked and estimated for payment.

The Engineer and all duly authorized representatives shall at all times have the right to inspect the work for compliance with the plans and specifications. It shall be the responsibility of the Contractor to furnish reasonable facilities for the Engineers use in determining the progress and manner of the work, and in evaluating the quality of materials.

10. WORKMANSHIP AND SUPERINTENDENCE: The Contractor shall keep on his work, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Engineer. The superintendent shall represent the Contractor in his absence, and directions given to him shall be as binding as if given to the Contractor.

The Contractor shall provide tools and equipment and the services of all workmen, mechanics, tradesmen and other employees necessary in the construction and execution of the work contemplated and outlined herein. The employees of the Contractor shall be competent and willing to perform satisfactorily the work required of them. Any employee who is disorderly, intemperate or incompetent or who neglects or refuses to perform his work in a satisfactory manner, shall upon request of the Engineer, be promptly discharged and shall not be re-employed except with the Engineer's consent.

It is called particularly to the Contractor's attention that only first-class workmanship will

be acceptable.

11. DELAYS AND EXTENSIONS OF TIME: The Contractor expressly covenants and agrees that in undertaking to complete the work and having made allowances for all of the ordinary delays and hindrances incident to such work whether growing out of delays in securing materials, workmen or otherwise. Should the Contractor, however, be delayed in the prosecution and completion of the work by reason of delayed shipment orders, or by any changes, additions or omissions therein ordered in writing by the Owner or by the abandonment of the work by men engaged hereon through no fault of the Contractor, or by embargoes, etc. which would effect the fabrication or delivery of materials and/or equipment to the work, or by delays caused by court proceedings, the Contractor shall have no claims for damages for any cause or delay, but he shall in such cases, be entitled to such extension of the time specified for the completion of the work as the Owner shall award in writing on account of such delays, provided however, that claim for such extension of time is made by the Contractor to the Owner in writing within one week from the time when any such alleged cause for delay shall occur.

12. ADDITIONAL, OMITTED OR CHANGED WORK: Additional work shall be done as ordered in writing by the owner, stating the location, character and amount of the work authorized. Additional work shall be subject to the same inspection and tests as though therein included.

Additions or deductions to quantities on items included in the proposal shall be adjusted as provided therefore.

Additional, omitted or changed work on which no unit price is provided shall be known as Unclassified Work, and compensation for the same shall be adjusted as follows:

a. Unit bid prices previously approved.

b. An agreed lump sum or unit prices.

c. The actual cost of: (1) Labor, including foremen (2) Materials entering permanently into the work (3) The Ownership or rental cost of construction plant and equipment during the time of use on the extra work (4) Power and consumable supplies for the operation of power equipment (5) Insurance (6) Social Security and old age and unemployment contributions.

To the cost under (c) there shall be added a fixed fee to be agreed upon but not to exceed fifteen percent (15%) unless stated otherwise in the Bid Proposal of the actual cost of the work. The fee shall be compensation to cover the cost of supervision, overhead, bond, profit and any other general expenses. To the charge for extra work under (c) the Contractor may add applicable Local and State Gross Receipts Taxes.

Changed work shall be adjusted as mentioned, considering separately the parts of work

and material omitted and parts of work and material added. Prior to the issuance of a change order for unclassified work, the Contractor shall furnish the Owner with an itemized list of cost for the proposed unclassified work.

Unclassified work bills shall be rendered by the Contractor no later than fifteen (15) days after the completion of each assignment of additional work, and if found correct, will be recommended for approval by the Engineer and presented for payment with the next regular monthly estimate. An itemized statement of the cost of the work, together with such material and labor bills as may be required, shall be filled with all Unclassified Work bills.

Unclassified Work bills for work omitted from plans shall be estimated at the time omission of the work is authorized and the estimated cost therefore is deducted from subsequent monthly estimates.

If the Contractor claims compensation for additional work not ordered as aforesaid, or for damages sustained, he shall make a written statement of claims for compensation of damages to the Engineer, which shall be in the hands of the Engineer within such time as will allow a full consideration of the basis for such claim, and in no case later than fifteen (15) days after the work has been completed or damages sustained. The Contractor shall furnish, if required, any accounts, bills, and vouchers relating thereto. Unless such claims are made as required they shall be considered forfeited and invalid.

The Owner reserves the right to contract with any person or firm other than the Contractor for any or all extra work. The Contractor's attention is especially called to the fact that he shall be entitled to no claim for damages for anticipated profits on any portion of the work that may be omitted.

Change orders will be submitted to NMFA & WTB for review and approval.

13. SUSPENSION OF WORK: The Owner may at any time suspend the work, or any part thereof for a period not to exceed ninety (90) days by notice to the Contractor in writing. The work shall be resumed by the Contractor within ten (10) days after the date fixed in the written notice from the Owner to the Contractor to do so.

But if the work, or any part thereof, shall be stopped by the notice in writing aforesaid, and if the Owner does not give notice in writing to the Contractor to resume work at a date within ninety (90) days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work so suspended, and he will be entitled to the estimate and payments for all work done on the portions so abandoned.

14. OWNER'S RIGHT TO DO WORK: If the Contractor should neglect to perform the work properly or fail to perform any provision of this contract, the Owner may, without prejudice to any other remedy, make good such deficiencies and deduct the thereof from the payment then or thereafter due the Contractor.

15. PAYMENT TO CONTRACTORS: On or about the 25th day of each month, the Engineer will make an approximate estimate of the value of work done and unused materials delivered and stored on the site of the work during the previous calendar month. After each such estimate has been approved by the Owner, the Owner shall pay to the Contractor up to one hundred (100%) percent of the amount of the work completed less previous partial payments. **Payments to the contractor will be made within 45 days of receipt of undisputed amount of any pay request based on work completed as per 57-28-5 NMSA 1978.**

16. PAYMENT WITHHELD FROM CONTRACTOR: The Owner may withhold or nullify the whole or a part of any certificate, on account of subsequently discovered evidence, to such extent any may be necessary to protect himself from loss on account of:

a. Defective work not remedied.

b. Claims filed or reasonable evidence indicating probable filing of claims.

c. Failure of the Contractor to make payments properly to subcontractors or for material or labor.

d. A reasonable doubt that the contract can be completed for the unpaid portion of the contract amount.

e. Damage to another Contractor.

f. Failure to maintain traffic control, Storm Water Pollution Prevention and dust control

g. Any other violation of, or failure to comply with the provisions of this contract.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

17. ACCEPTANCE AND FINAL PAYMENT: The Contractor shall not be entitled to demand or receive payment for any portion of the work except in the manner and amount and in accordance with terms and provisions of this agreement. Payment of the final amount due under the contract shall release the Owner from all liability to the Contractor and his subcontractors and suppliers on the project; provided that such payment and acceptance shall not relieve the Owner or the Contractor from the duty of complying with all applicable state statutes and laws and rules and regulations.

As soon as the work has been substantially and satisfactorily completed, the Engineer will make a final estimate stating that the work provided for under this contract, has been completed and is accepted by him under the terms and conditions thereof, with

receive final payment include Certification of Labor Standards Compliance, Release of Liens, Written Consent of Surety, Manufacturers O&M Manuals, Final Pay Request and Change Order. Prior to filing of the final estimate, the Contractor shall file with the Engineer, a receipt in full from each manufacturer, subcontractor and dealer for all equipment and materials used on the work and a complete release on all liens which may have arisen from this contract. In lieu, thereof, the Contractor shall file statements showing balance due on all accounts.

The making and acceptance of the final payment shall not constitute a waiver of claims by the Owner for faulty work or materials appearing or discovered after final payment, or to relieve the Contractor of his obligations under provisions of the Contract Surety Bond.

The as-built drawings, final adjusting change order, and release of lien from surety, subcontractors, suppliers and property owners shall be provided to the Owner before final payment will be made.

18. CONSTRUCTION SCHEDULE: Upon award of the contract and prior to the Pre-Construction Meeting, the Contractor shall submit to the Owner a progress schedule satisfactory to the Owner, showing the Notice to Proceed date and completion of major subdivisions of the work. The Contractor must agree to start work on the date indicated in the Notice to Proceed and complete the work within the prescribed contract time, including monthly anticipated adverse weather days.

Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
6	4	3	2	3	3	8	9	4	3	2	7

Time Extensions for Unusually Severe Weather - Time extensions for unusually severe weather shall be considered provided the following conditions are present:

1. The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.
2. The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without fault or negligence of the Contractor. The following schedule of monthly anticipated adverse weather delays due to precipitation and temperature is based on National Oceanic and Atmospheric Administration (NOAA) data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities. Wind is not considered in the Monthly Anticipated Adverse Weather Calendar Cay Schedule.
Monthly Anticipated Adverse Weather Delay

Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the Contractor's scheduled work day. If the number of days anticipated above is exceeded, the Contractor will be given full consideration for equivalent fair weather work days and issue a change order at the conclusion of the contract.

19. WATER, GAS AND ELECTRICITY: All water, gas, electricity or other facilities required to complete the project shall be provided by the Contractor at his expense, unless specifically modified in other portions of the Contract Documents.

20. CHARGES FOR ENGINEERING AND INSPECTION: Should completion of the work extend beyond the time allowed by the Contract Documents or supplements thereto, it is expressly understood that in addition to any other penalty or damage suffered by the Owner, the Engineering inspection cost, caused by virtue of the delay, may be charged to the Contractor and be deducted from monies due the Contractor. This cost is included in the liquid damages as specified in the special conditions.

21. OWNER'S RIGHT TO TERMINATE CONTRACT: In the event that any of the provisions of this contract are violated by the Contractor, or by any of his subcontractors, the Owner may serve written notice upon the Contractor and the surety of his intention to terminate the contract. Such notices are to contain the reasons for intention to terminate the contract and unless within ten (10) days after the serving of such notice upon the Contractor, such violation or delay shall cease and satisfactory arrangement of correction be made, the contract shall, upon the expiration of said ten (10) days, cease and terminate. In the event of any such termination, the Owner shall immediately serve notice thereof upon the Surety and the Contractor, and the Surety shall have the right to take over and perform the contract; provided, however, that if the Surety does not commence performance thereof within ten (10) days from the date of the mailing to such surety of notice of termination, the Owner may take over the work and prosecute the same to completion by contract or by force account for the account and at the expense of the Contractor. The Contractor and his Surety shall be liable to the Owner for any excess cost occasioned the Owner thereby, and in such event the Owner may take possession of and utilize in completing the work such materials, appliances and plant as may be on the site of the work and necessary therefore.

TERMINATION FOR CONVENIENCE: Upon written notice to contractor owner may, without cause and without prejudice to any other right or remedy, elect to terminate the agreement. In such case, the Contractor shall be paid for all work executed and any reasonable expense sustained.

22. TESTING: All materials, supplies, equipment and soil to be incorporated into the work under this contract, shall be tested as specified in the technical specifications. Test results shall be furnished to the Engineer as soon as possible after completion of tests.

23. SUBMITTALS, SHOP AND ERECTION DRAWINGS: The Contractor shall submit to

SPECIAL CONDITIONS

SC-1 SPECIAL CONDITIONS: If any conflict is found between the Special Conditions and other portions of these specifications, the Special Conditions shall govern.

SC-2 INTERPRETATION OF DRAWINGS AND DOCUMENTS: Any interpretation of the documents by the owner will be made by addendum issued by the Engineer.

SC-3 DRAWINGS: The project drawings are hereby made a part of the Contract Documents.

SC-4 SAFETY: The Contractor shall, at all times, exercise reasonable precautions for the safety of employees on the work, bystanders or observers of the project, engineering personnel, inspectors and shall comply with all applicable provisions of the State and Municipal Safety Laws and Building Construction Codes. The Contractor shall be solely responsible for safety on the project.

SC-5 USE OF EXPLOSIVES: Use of explosives is not permitted on this project.

SC-6 BID QUANTITIES: The quantities set forth in the Bid Proposal are estimated quantities required to complete the work shown on the drawings. Payment will be made for the actual work performed. The Owner reserves the right to increase or decrease quantities any reasonable amount as required to complete the work and as best serves its interest.

SC-7 INSURANCE: The Contractor will be required to carry insurance coverage as specified in Section 4 of the General Conditions. Insurance certificates naming the NTUA as a certificate holder shall be provided.

SC-8 EXISTING UTILITIES: The location, size and depth of existing buried utility lines shown on the drawings are based on information available from the Owners of the utilities but in some locations are not accurately known. The Contractor shall make a diligent effort to locate all existing utilities in the construction area and to protect them from damage as a result of his construction activity. Any utility damaged through the Contractors negligence and failure to use due caution in carrying out his work shall be repaired at his cost to the utility Owners satisfaction.

SC-9 WATER FOR CONSTRUCTION: Water for tank, building, and line construction shall be potable and may be taken from an existing waterline of the Navajo Tribal Utility Authority (NTUA) in an approved facility installed by the Contractor. Water hauling shall be in clean, potable water tankers. Contractor shall coordinate with NTUA water personnel as required to access water facilities. Contact NTUA for access and payment. Water for all other construction shall be

taken from the east plant water loading station. Contact Gallup Joint Utilities for access and payment.

SC-10 TIME OF COMPLETION AND LIQUIDATION DAMAGES: The Bidder must agree to commence work on a date to be specified in a written Notice to Proceed issued by the Engineer and to fully complete the project within one hundred and fifty (150) calendar days thereafter. The bidder must agree, also to pay as liquidated damages, the sum of five hundred dollars ($500.00) for each consecutive day thereafter as provided in the General Conditions.

SC-11 WASTE DISPOSAL: All waste materials from this project shall be disposed of in an environmentally acceptable manner. Private entities located near the City of Gallup limits, accepts recyclable material. Bidders should make themselves aware of the location of these entities.

The Contractor shall be responsible for locating acceptable sites for placing waste soil or rock.

SC-12 TRAFFIC CONTROL: The Contractor shall provide warning signs, barricades, night time flashers and other devices as required to adequately warn the public and protect the workmen involved for all work in adjacent streets.

The Contractor will be responsible for setting up, revising and relocating while maintaining traffic control devices for the numerous construction sequences of the project. Daily requirements for minor changes for special situations shall be the responsibility of the Contractor.

SC-13 PROJECT CONDITIONS DURING CONSTRUCTION: The Contractor shall maintain the project site as orderly and secure as possible during construction. The amount of open trench at any time shall be held to a minimum, with backfill complete at the end of each work day. Streets and detour routes shall be maintained so as to be passable and safe. Access to businesses, residences, utilities and public facilities shall be protected from the effects of storm runoff that may become greater due to construction activities. Gravel (base course) shall be placed as required for temporary or permanent access to businesses or residences. Brooming and dust suppression shall be carried out as required. The work site shall be secured at days end and to a greater extent on weekends. The Contractor shall provide local personnel, available on 24 hour call to check conditions and handle weekend emergencies in connection with the project.

All streets and intersections shall be open to traffic each weekend.

The Contractor shall protect shrubs, grass and decorative landscape to the extent possible. When removal of such is required for construction, replacement shall be with equal or better items.

Prevention. Work on this item shall be considered incidental to the project. Section 508 of the Technical Specifications is contained herein to provide information for the Contractor in regard to requirements that may apply to this item.

SC-17 TESTING COSTS: Testing for soil densities, concrete strength, welding, and asphalt quality shall be performed by an approved independent testing lab and paid for by the Contractor. The Contractor will be reimbursed his invoice cost excluding tax plus 10%.

SC-18 CLEANUP AND RESTORATION OF PROPERTY: Prior to preparation of the final pay estimate, the Contractor shall remove from the site of the work, all rubbish, unused material, temporary buildings, excess earth or pavement rubble, and shall leave the premises in good order and condition, subject to approval of the Owner.

SC-19 IMPORTED GRANULAR MATERIAL: This material may be furnished from any suitable source chosen by the Contractor. The material shall be sandy in nature, friable with no clods or clay balls and exhibit minimal "pumping" characteristics when compacted at moisture content slightly below optimum. In addition, material shall meet the following general gradation requirements:

Sieve Size	Percent Passing
1"	100
No. 4	40-100
No. 200	less than 35

PI<12

Acceptable sources on past projects include the following locations:

1. Crusher fines from local aggregate companies

2. Rio Puerco from locations approved by the City of Gallup Public Works Director. Locations will be in the vicinity of the area between Highway 491 overpass and the Allison Rio Puerco crossing.

SC-20 COMPACTION: Material shall be compacted to the designated percentage of Standard Proctor, or Modified Proctor as called for.

SC-21 SEQUENCE OF CONSTRUCTION: Work shall progress according to the sequence of construction provided within project drawings.

SC-22 WEATHER EFFECTS: Typical intense rains and/or rapid snow melt will cause substantial runoff. Contractor shall take precaution as required to keep water (runoff) away from new concrete construction including subgrade and basecourse

and utility trenches. Private and public property shall be protected from ponding and accompanying diversions that would cause damage.

SC-23 WEEKEND PERSONNEL: The Contractor shall provide personnel for handling emergencies and maintaining traffic control during weekends and holidays when the normal crews are not available. Personnel shall be readily accessible by phone on a 24 hour basis and shall be living nearby while on duty.

SC-24 TRENCH SAFETY: The Contractor shall be solely responsible for safety on the project however; NTUA will expect that all project operations proceed in a planned, safety conscious manner. The Contractor will be expected to use shoring, sloped ditch banks, moveable boxes of various combinations of these and other techniques per state and local requirements to achieve a safe project. Bidders should be thoroughly familiar with requirements of CFR 29 prior to bidding.

SC-25 PERMITS: The Bidder should inform himself as to permits required, such as NMDOT Utility Work Permit including NMDOT required insurance and Storm Water Pollution Prevention Plan and an NTUA Tap Permit. Contractor is responsible for obtaining all work permits. Permit Applications are provided in Appendicies "C" and "F".

SC-26 DESCRIPTION OF BID ITEMS AND BASIS OF PAYMENT: A description of the work included in each bid item together with method of measurement and payment for items of work follows:

LOT 1 – TWIN LAKE 10" DISTRIBUTION WATERLINE:

Note: Items for this lot consist of furnishing all materials, plant, equipment and labor to install or construct items described herein.

ITEM 1: This item of work is for installing 10" Cl. 235 AWWA C900-07 PVC waterline complete including horizontal and vertical main line fittings designated on the project drawings and specials, trenching, granular bedding and native backfill, but does not include pavement removal and replacement or rock excavation. Restrained joint fittings with 8 mil min. poly wrap and thrust blocks are included in this item. Measurement will be by the linear foot along the centerline of the pipe through valves, manholes, and fittings without correction for slope. The required cutting of pipe to provide required joint distance from sewer service or mains shall be considered incidental to these items. Required repair of damaged items that were accurately located by the utility owner, such as existing services that are crossed and all operations required to maintain service to the fullest extent possible shall be included in the Unit Price Bid. "Potholing" to gather information on existing facilities at crossings shall be incidental to this item. Vertical fittings that are required because of conditions encountered during construction will be paid for under a separate item. Payment will be for the actual

linear feet of pipe actually installed at the **Contract Unit Price Bid per Linear Foot.**

ITEM 2: This item of work is for installing 10" Cl. 235 AWWA C900-07 PVC waterline complete including horizontal and vertical main line fittings designated on the project drawings and specials, trenching, granular bedding and imported granular backfill, but does not include pavement removal and replacement or rock excavation. Restrained joint fitting with 8 mil min. poly wrap and thrust block are included in this items. Measurement will be by the linear foot along the centerline of the pipe through valves, manholes, and fittings without correction for slope. The required cutting of pipe to provide required joint distance from sewer service or mains shall be considered incidental to these items. Required repair of damaged items that were accurately located by the utility owner, such as existing services that are crossed and all operations required to maintain service to the fullest extent possible shall be included in the Unit Price Bid. "Potholing" to gather information on existing facilities at crossings shall be incidental to this item. Vertical fittings that are required because of conditions encountered during construction will be paid for under a separate item. Payment will be for the actual linear feet of pipe actually installed at the **Contract Unit Price Bid per Linear Foot.**

ITEM 3: This item of work is for the jack and bore crossing of U.S. Highway 491 (L=210') with 10" Cl. 350 ductile iron waterline with flexible restrained joints using ductile iron locking segments in a 18" Std. Steel Casing. This item includes polyethylene casing spacers, end seals, and vents. Payment will be made at the **Contract Lump Sum Price Bid.**

ITEM 4: This item of work is for installing 10" Cl. 235 AWWA C900-07 PVC waterline complete including horizontal and vertical main line fitting designated on the project drawings and specials, trenching, granular bedding and native backfill through the highway cut from Sta. 72+50 to Sta. 76+75 with depths exceeding 8 feet. Restrained joint fittings with 8 mil min. poly wrap and thrust blocks are included in this item. The item does not include pavement removal and replacement or rock excavation. Measurement will be by the linear foot along the center of the pipe through valves, manholes, and fittings without correction for slope. Required repair of damaged items that were accurately located by the utility owner, such as existing services that are crossed and all operations required to maintain service to the fullest extent possible shall be included in the Unit Price Bid. "Potholing" to gather information on existing facilities at crossing shall be incidental to this item. Vertical fittings that are required because of conditions encountered during construction will be paid for under separate item. Payment will be for the actual amount of linear feet of pipe actually installed at the **Contract Unit Price Bid per Linear Foot.**

ITEM 5: This item of work consists of installing 10" AWWA C509 resilient wedge, epoxy coated gate valves as specified complete with concrete collar,

concrete support and cast iron valve box as shown on the project drawings. Payment will be for actual number of valves installed at the **Contract Unit Price Bid per Each.**

ITEM 6: This item is for Type 2 air release stations (2" size) on 10" waterline complete including vaults, vent piping, air and vacuum devices, and protection bollards, excavation and backfill but not mainline pipe or tee. Payment will be made at the **Contract Unit Price per each assembly.**

ITEM 7: These items of work consist of installing 10" - 11¼° vertical ells including restraints as required during construction, but not designated on the project drawings. Payment will be made for each ell properly installed at the **Contract Unit Price Bid per Each.**

ITEM 8: This item of work is for grading, clearing & grubbing, tree removal, slope reconfiguration, and drainage ditch reconfiguration along 10" waterline as indicated on contract drawings, Stas. 10+90 to 11+56 and 16+30 to 19+00. Rock excavation and earthwork at tank site is not included in this item. Rock and soil removed/excavated during slope reconfiguration shall be used to fill drainage ditches as called for. This item includes demolition, removal, and proper disposal of trash and debris. Contractor shall anticipate that regraded slopes are 80-90 percent rock. No additional payment for rock removal will be made under Items 9 and 10. Trenching for waterlines, or rip-rap are not included in this item. Payment will be made at the **Contract Lump Sum Amount Bid.**

ITEM 9: This item of work is for imported material needed to achieve grades shown for drainage ditch reconfiguration required for Item 7. This includes hauling, placing, and compacting material to 90% standard proctor. Payment will be made at the **Contract Unit Price Bid per Ton.**

ITEM 10: This item of work is for the excavation of Type "A" rock for waterline construction. Removal and disposal of rock is included in this item. Rock may be disposed of in drainage ditches that are to be filled as part of this project. Measurement for rock shall be by the Engineer with the Contractors' representative present when trench is open. Rock type definitions are contained in the technical specifications and rock type samples are available in the office of the Engineer. The use of equipment such as manual or machine operated jack hammers on Type 'B' rock does not mean payment will be made at the Type 'A' rate. This item does not include payment for rock removal during reconfiguration of slopes (Item 7). Payment for this item will be made at the **Contract Unit Price Bid per Cubic Yard**.

ITEM 11: This item of work is for the excavation of Type 'B' rock for waterline construction. Removal and disposal of rock is included in this item. Rock may be disposed of in drainage ditches that are to be filled as part of this project. Measurement for rock shall be by the Engineer with the Contractors'

representative present when trench is open. Rock type definitions are contained in the technical specifications and rock type samples are available in the office of the Engineer. The use of equipment such as manual or machine operated jack hammers on Type 'B' rock does not mean payment will be made at the Type 'A' rate. This item does not include payment for rock removal during reconfiguration of slopes (Item 7). Payment for this item will be made at the **Contract Unit Price Bid per Cubic Yard.**

ITEM 12: This item of work is for 12" wire enclosed rip-rap complete in place. Payment will be made at the **Contract Unit Price Bid per Square Yard.**

ITEM 13: This item of work is for Tie-in "B" connecting the existing NTUA water lines to new water main at the designated location. The connections shall include up to 16' of piping (4" and 10"), 4" valves with valve can and concrete collar, fittings, specials, concrete blocking and trenching and backfilling, but does not include 10" valves, pavement removal and replacement and rock excavation. "Megalug" restraining glands (or equal) shall be provided for the M.J. fittings and shall be considered incidental to the tie-ins. All coordination required with NTUA and notification of areas effected by outage shall be included. Payment will be made at the **Contract Lump Sum Price Bid.**

ITEM 14: This item of work is for Tie-in "C" connecting the existing NTUA water lines to new water main at the designated location. The connections shall include up to 10' of piping, fittings, specials, concrete blocking and trenching and backfilling, but does not include valves, pavement removal and replacement and rock excavation. "Megalug" restraining glands (or equal) shall be provided for the M.J. fittings and shall be considered incidental to the tie-ins. All coordination required with NTUA and notification of areas effected by outage shall be included. Payment will be made at the **Contract Lump Sum Price Bid.**

ITEM 15: This item of work is for materials testing (PMBP, soils, base course, and concrete) by an approved independent testing lab employed by the Contractor. Costs for excessive testing indicating non-compliance shall be borne by the Contractor. Note: testing labs and personnel to be approved by the Engineer. Lab distances from the project, and required travel times will be a major consideration for approval. Travel time, per diem, and mileage will not be reimbursable. **Payment will be made on an approved invoice charge.**

ITEM 16: This item of work is for providing traffic control and safety including temporary fencing, signs, the alteration of signs, and sign maintenance, as required throughout the project. Traffic control plans shall conform to MUTCD standards and be approved by the Engineer for all phases of work. Partial payments shall be made equal to the percentage of waterline complete in place. Payment for this item will be made per the **Contract Lump Sum Price Bid.**

ITEM 17: This item of work is for reseeding areas within project rights-of-way or easements that have been cleared and grubbed for construction (i.e. slope reconfiguration). Contractor will be directed by the Engineer to reseed only certain areas. Areas outside of designated rights-of-way or easements that have been cleared with permission of the land owners and that need reseeding, shall be the responsibility of the Contractor. Payment will be made for seeding with BLM mix No. 3 (Section 508.6) per the current edition of the NMDOT Standard Specifications for Highway and Bridge Construction at the **Contract Unit Price Bid per Square Yard.**

ITEM 18: This item of work is for wire (non-barbed) fencing at historical sites with posts (pull, corner, and in-line), bracing, and all appurtenances complete and in place. Payment will be made at the **Contract Unit Price Bid per Linear Foot installed.**

ITEM 19: This item is for down time caused by unexpected encounters with historical or archaeological items. The down time begins after the encounter and when the Archaeologist (Government or Engineers) is notified. The down time ends when trenching or pipe laying resumes, either at the location of the encounter or at the different ("leap frog") location. Such a new location will be determined after communication between the Archaeologist, Engineer and Contractor. Notice to resume work to be verbal, followed by written. The Contractor is to be aware that certain auxiliary operations may continue after shut down such as backfilling, imported material hauling, water hauling, backfill processing, and other related operations. The Contractor is to consider the net effect of all of the items above to compute the cost during down time

Holidays, weekends and after hour work hours are not included in this item.

If unknowns encountered are such that major design revisions are required and that there is no other location to direct construction to utilizing the equipment operating prior to shutdown; then the contract price to be adjusted in accordance with provisions in the General Conditions. Payment will be made at the **Contract Unit Price per hour of shutdown.**

ITEM 20: This item of work is for removing existing gravel surfacing and installing 4" of gravel (Type 2, NMDOT crushed aggregate base course) surfacing in driveways. Gravel shall be compacted and graded smooth. Haul tickets that clearly indicate the job and specific site for application, delivered to the Engineers inspector on site will be required for payment. Payment will be made at the **Contract Unit Price Bid per Square Yard**.

ITEM 21: This item of work is for removing existing asphaltic surfacing and installing 6" of PMBP on 8" Type 2, NMDOT crushed aggregate base course in driveways. Existing pavement shall be saw cut before removal. PMBP and base course shall be compacted and graded smooth. Haul tickets for PMBP and base

course that clearly indicate the job and specific site for application, delivered to the Engineers inspector on site will be required for payment. Payment will be made at the **Contract Unit Price Bid per Square Yard.**

LOT 2 – TWIN LAKES RESERVOIR SITE CONSTRUCTION

Note: Items for this lot consist of furnishing all materials, plant, equipment and labor to install or construct items described herein.

ITEM 1: This item of work is for site grading, clearing,grubbing, proper disposal of trash and debris, tree removal and embankment (site pad) construction. Rock and soil excavation under reservoirs and pads are included in this item. This item also includes hauling importing granular material, and compacting tank and station site pad to 95% standard proctor. Trenching for waterlines, appurtenance and reservoir ringwalls is not included in this item. Payment will be made at the **Contract Lump Sum Amount Bid.**

ITEM 2: This item of work is for one (1) 6" ductile iron drain, two (2) 10" inlet and outlet stubouts of the diameters designated (average length = 10') in 2 layers of 8 mil. Polyethylene wrap or sleeves and flowable fill complete in place. Payment will be made at the **Contract Lump Sum Amount Bid.**

ITEM 3: This item of work is for construction of the 0.3 MG AWWA D103 glass fused steel reservoir complete with all appurtenances, protective coatings connections to stubout piping and aluminum geodesic dome roof. This item includes ringwall foundation and concrete floor construction and excavation with a four (4) inch thick 1" clean gravel pad and non-woven geofabric underlayment. This item also includes inspection and reporting by personnel properly certified for bolted glass fused steel tanks. Payment will be made at the **Contract Lump Sum Amount Bid.**

ITEM 4: This item of work is for Reservoir Site Control Building construction complete and in place including piping, stand plumbing, chlorination equipment, piping, mechanical equipment, and appurtenances complete and inplace as shown on the contract drawings. Furnishing, installing and programming of electrical, SCADA and chlorination equipment (wiring, cabinets, conduit, sensors, pumps, scales and etc.) is not included in this item. Coordination with electricians, programmers and equipment suppliers are included in this item. Payment will be made at the **Contract Lump Sum Amount Bid.**

ITEM 5: This item of work is for reservoir site control building electrical complete and in place including underground electrical service from service pole to station building, lighting, electric conduit and wiring, mechanical equipment power, SCADA and sensing device power, and chlorination equipment power. The furnishing, mounting, programming of mechanical, SCADA, sensing, and

chlorination equipment is not included in this item. Coordination between Contractor, electrician, suppliers and NTUA SCADA personnel (for programming) is included in this item. Payment will be made at the **Contract Lump Sum Amount Bid.**

ITEM 6: This item of work is for reservoir site control building SCADA system complete and in place including PLC/RTU components, radios, antennas, cabinets, transducers, displays, and SCADA conduit, cables, and wiring required control station flow and chlorination system and display and relay information as specified. The furnishing and mounting of mechanical and chlorination equipment is not included in this item. The programming of SCADA system shall be completed by NTUA personnel and is not included in this item. However, the calibration all sensing equipment (i.e. transducer) and coordination between contractor, electrician, suppliers and NTUA SCADA personnel (for programming) are included in this item. Payment will be made at the **Contract Lump Sum Amount Bid.**

ITEM 7: This item of work is for reservoir site control building chlorination system complete and in place including chlorinators, process control units, chlorination pumps, chlorine residual monitor, chlorine gas detection system, ejectors, injectors, scales, displays, piping, cables and appurtenances. The furnishing and mounting of electrical, mechanical and SCADA equipment is not included in this item. The programming of the SCADA system shall be completed by NTUA personnel and is not included in this item. However, the calibration, all chlorination equipment (i.e. process control units, and pump) and coordination between contractor, electrician, suppliers and NTUA SCADA personnel (for programming) for chlorination system operation are included in this item. Payment will be made at the **Contract Lump Sum Amount Bid.**

ITEM 8: This item is for installing 12" Cl. 350 ductile iron pipe yard piping complete and in place including horizontal and designated vertical main line fittings, 2 layers of 8 mil polyethylene wrap or sleeves, joint restraints, and thrust blocks specials, trenching, granular bedding and imported granular backfill, but does not include rock excavation. Measurement will be by the linear foot along the centerline of the pipe through valves and fittings without correction for slope. Payment will be for the actual linear feet of pipe actually installed at the **Contract Unit Price Bid per Linear Foot.**

ITEM 9: This item is for installing 10" Cl. 350 ductile iron pipe yard piping complete and in place including horizontal and designated vertical main line fittings, 2 layers of 8 mil polyethylene wrap or sleeves, joint restraint, specials, trenching, granular bedding and imported granular backfill, but does not include rock excavation. Measurement will be by the linear foot along the centerline of the pipe through valves and fittings without correction for slope. The 10" pipe through the check valve pits is included in this item. Payment will be for the

actual linear feet of pipe actually installed at the **Contract Unit Price Bid per Linear Foot.**

ITEM 10: This item of work consists of furnishing and installing 12" AWWA C509 resilient wedge, epoxy coated gate valves as specified complete with concrete collar, concrete support and cast iron valve box as shown on the project drawings. Payment will be for the actual number of valves installed at the **Contract Unit Price Bid per Each.**

ITEM 11: This item of work consists of furnishing and installing 10" AWWA C509 resilient wedge, epoxy coated gate valves as specified complete with concrete collar, concrete support and cast iron valve box as shown on the project drawings. Payment will be for the actual number of valves installed at the **Contract Unit Price Bid per Each.**

ITEM 12: This item of work is for construction of the inlet and outlet 10" check valve pits including check valves, manholes, rim, cover, concrete collar, and appurtenances. Payment will be made at the **Contract Unit Price Bid per Each.**

ITEM 13: This item is for installing 6" Cl. 350 ductile iron tank drain and overflow line on grade complete and in place including 2 layers of 8 mil polyethylene wrap or sleeves, specials and trenching, bedding and backfill, but does not include rock excavation. Measurement will be by the linear foot along the centerline of the pipe through manholes and fittings without correction for slope. Payment will be for the actual linear feet of pipe actually installed at the **Contract Unit Price Bid per Linear Foot.**

ITEM 14: This item of work is for construction of the Type "C" drainage manholes including traffic grade rims, cover, and appurtenances. Payment will be made at the **Contract Unit Price Bid per Each.**

ITEM 15: This item is for construction of new drain pad complete in place including piping, flap gate, connections, and 4" diameter stone. Payment will be made at the **Contract Lump Sum Amount Bid.**

ITEM 16: This item of work is for 2" SDR 21 PVC (blue) sensor line and chlorination line as detailed from Reservoir to 5' outside of control building, two (2) 2" valves, connection to 6" drain line and connection to 10" waterline as called for are included in this item. Payment will be made at the **Contract Lump Sum Amount Bid.**

ITEM 17: This item of work is for 2" SDR 21 PVC (green) drain line as detailed from drain manhole #1 to 5' outside of control building, the 2" cleanout with bronze cover with bronze collar and concrete collar are included in this item. Payment will be made at the **Contract Lump Sum Amount Bid.**

ITEM 18: This item of work is for 6' 0" chain link fencing with security wires, bracing, top rails, tension wires, personnel gates, vehicle gates and all appurtenances complete and in place. Payment will be made at the **Contract Unit Price Bid per Linear Foot installed.**

ITEM 19: This item of work is for 4" thick gravel (NMDOT, Type II crushed aggregate base course) for general reservoir site surfacing complete and in place. Base course to be compacted and graded smooth. Haul tickets that clearly indicate the job and specific site for application, delivered to the Engineers inspector on site will be required for payment. Payment will be made at the **Contract Unit Price Bid per Square Yard.**

ITEM 20: This item of work is for access road construction including bar ditches, earthwork, grading, 4" of gravel (NMDOT, Type II crushed aggregate base course), and 18" CMP culvert with end flares (L=30') per NMDOT Detail Standard 570-02-1/2 at county road complete and in place. Base course to be compacted and accurately graded. Payment will be made at the **Contract Lump Sum Amount Bid.**

ITEM 21: This item of work is for construction of single phase electric power extension and service connection by Continental Divide Electrical Company. **Payment will be made on an improved invoice charge.**

ITEM 22: This item of work is for the excavation of Type "A" rock for waterline construction. Removal and disposal of rock is included in this item. Rock may be disposed of on site in drainage ditches that are to be reconfigured as part of this project. Measurement for rock shall be by the Engineer with the Contractors' representative present when trench is open. Rock type definitions are contained in the technical specifications and rock type samples are available in the office of the Engineer. The use of equipment such as manual or machine operated jack hammers on Type 'B' rock does not mean payment will be made at the Type 'A' rate. Payment for this item will be made at the **Contract Unit Price Bid per Cubic Yard.**

ITEM 23: This item of work is for the excavation of Type 'B' rock for waterline and drain line construction. Removal and disposal of rock is included in this item. Rock may be disposed of in drainage ditches that are to be filled as part of this project. Measurement for rock shall be by the Engineer with the Contractors' representative present when trench is open. Rock type definitions are contained in the technical specifications and rock type samples are available in the office of the Engineer. The use of equipment such as manual or machine operated jack hammers on Type 'B' rock does not mean payment will be made at the Type 'A' rate. Payment for this item will be made at the **Contract Unit Price Bid per Cubic Yard.**

ITEM 24: This item of work is for materials testing (PMBP, soils, base course, and concrete) by an approved independent testing lab employed by the Contractor. Costs for excessive testing indicating non-compliance shall be borne by the Contractor. Note: testing labs and personnel to be approved by the Engineer. Lab distances from the project, and required travel times will be a major consideration for approval. Travel time, per diem, and mileage will not be reimbursable. **Payment will be made on an approved invoice charge**.

ITEM 25: This item of work is for wire (non-barbed) fencing at cultural site with posts (pull, corner, and in-line), bracing, and all appurtenances complete and in place. Payment will be made at the **Contract Unit Price Bid per Linear Foot installed.**

LOT 3 – CITY OF GALLUP WATER LOADING STATION SITE & BUILDING MODIFICATIONS

Note: Items for this lot consist of furnishing all materials, plant, equipment and labor to install or construct items described herein.

ITEM 1: This item of work is for Water Loading Station site work including, demolition, earthwork, grading, stacked block walls, handrails, chain link fencing, wire fencing, proper disposal of debris and trash, and other miscellaneous items and appurtenances. Saw cutting and removal of existing pavement is included in this item. This item does not include any concrete work, piping, gravel or paving. Payment will be made at the **Contract Lump Sum Amount Bid.**

ITEM 2: This item of work is for Water Loading Station drainage system including, 12" HDPE drain pipe, 4" HDPE drain pipe, drain basins, cistern, inline drains, clean gravel, non-woven geo-fabric, connection to existing Type "C" drainage inlet, trenching, bedding, rock free native backfill and appurtenances complete and in place. This item does not include any concrete work, gravel surfacing or paving. Payment will be made at the **Contract Lump Sum Amount Bid.**

ITEM 3: This item of work is for station loading arm flange correction complete and in place. Payment will be made at the **Contract Lump Sum Price Bid.**

ITEM 4: This item of work is for 12" thick pervious concrete paving including 2 layers of non-woven geo-fabric complete and in place. Payment will be made at the **Contract Unit Price Bid per Square Yard.**

ITEM 5: This item of work is for 8" thick, 3' wide concrete valley gutter complete and in place. Payment will be made at the **Contract Unit Price Bid per Linear Foot.**

ITEM 6: This item of work is for asphaltic pavement, 6" PMBP on 8" base course (NMDOT, Type II crushed aggregate base course) complete and in place. Payment will be made at the **Contract Unit Price Bid per Square Yard.**

ITEM 7: This item of work is for 4" thick concrete sidewalk on 4" granular pad complete and in place. Payment will be made at the **Contract Unit Price Bid per Square Yard.**

ITEM 8: This item of work is for gravel surfacing replacement with NMDOT, Type II crushed aggregate base course). Base course to be 4" thick compacted and accurately graded. Payment will be made at the **Contract Unit Price Bid per Square Yard.**

ITEM 9: This item of work is for traffic control and safety including temporary fencing, signs, the alteration of signs, and sign maintenance, as required throughout the project. Traffic control plans shall conform to MUTCD standards and be approved by the Engineer for all phases of work. Partial payments shall be made equal to the percentage of waterline complete in place. Payment for this item will be made per the **Contract Lump Sum Price Bid.**

ITEM 10: This item of work is for materials testing (PMBP, soils, base course, and concrete) by an approved independent testing lab employed by the Contractor. Costs for excessive testing indicating non-compliance shall be borne by the Contractor. Note: testing labs and personnel to be approved by the Engineer. Lab distances from the project, and required travel times will be a major consideration for approval. Travel time is not reimbursable. **Payment will be made on an approved invoice charge.**

TECHNICAL SPECIFICATIONS TABLE OF CONTENTS

PART 100 – SUBMITTALS AND PROGRESS SCHEDULE

PART 200 – EARTHWORK

PART 300 – CONCRETE

PART 400 – STREETS AND RELATED WORK

PART 500 – WATER AND DRAIN LINES

PART 600 - STRUCTURES

PART 700 – ELECTRICAL AND CONTROL SYSTEMS

PART 800 – MISCELLANEOUS

101 SUBMITTAL PROCEDURES - INDEX

101 SUBMITTAL PROCEDURES

101.1 DEFINITIONS

101.1.1 Submittal: Shop drawings, product data, samples, operation and maintenance data presented for review and approval. Contract General Condition Paragraph 10, Workmanship and Superintendence shall apply to all submittals.

101.1.2 Types of Submittals: All submittals shall be grouped as follows:

Shop drawings: As used in this section, drawings, schedules, diagrams, and other data prepared specifically for this contract, by contractor or through contractor by way of subcontractor, manufacturer, supplier, distributor, or other lower tier contractor, to illustrate portion of work.

Product data: Preprinted material such as illustrations, standard schedules, performance charts, instructions, brochures, diagrams, manufacturer's descriptive literature, catalog data, and other data to illustrate portion of work, but not prepared exclusively for this contract.

Samples: Physical examples of products, materials, equipment, assemblies, or workmanship that are physically identical to portion of work, illustrating portion of work or establishing standards for evaluating appearance of finished work or both.

Operation and Maintenance (O&M) Data: Data that is furnished by the manufacturer, or the system provider, to the equipment operating and maintenance personnel. This data is needed by operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item. The data is to be on hand the item is delivered to the project site.

101.2 SUBMITTAL IDENTIFICATION

Preconstruction Submittals

List of proposed products
Construction Progress Schedule
Submittal register
Environmental protection plan

Shop Drawings

Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work. Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project. Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials or equipment for some portion of the work. Samples of warranty language when the contract requires extended product warranties.

Samples

Physical examples of materials, equipment or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged. Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project. Field samples and mock-ups constructed on the project site establish standards by which the ensuring work can be judged. Includes assemblies or portions of assemblies which are to be incorporated into the project and those which will be removed at conclusion of the work.

Design Data

Calculations, mix designs, analyses or other data pertaining to a part of work.

Test Reports

Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.) Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site. Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation. Investigation reports Daily checklists Final acceptance test and operational test procedure

Certificates

Statements signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project. Document required of Contractor, or of a supplier, installer or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications. Confined space entry permits.

Manufacturer's Instructions

Preprinted material describing installation of a product, system or material, including special notices and Material Safety Data sheets concerning impedances, hazards and safety precautions.

Manufacturer's Field Reports

Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions. Factory test reports.

Operation and Maintenance Data

Data that is furnished by the manufacturer, or the system provider, to the equipment operating and maintenance personnel. This data is needed by operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item.

101.3 FORMAT OF SUBMITTALS

101.3.1 Transmittal Form: Transmit each submittal, except sample installations and sample panels, to the office of the engineer. The transmittal form shall identify the Contractor, indicate date of submittal, and include information prescribed by transmittal form and required in paragraph entitled "Identifying Submittals." Process transmittal forms to record actions regarding sample panels and sample installations.

101.3.2 Identifying Submittals: Identify submittals, except sample panel and sample installation, with the following information permanently adhered to or noted on each separate component of each submittal and noted on transmittal form. Mark each copy of each submittal identically, with the following:

a. Project title and location.

b. Construction contract number.

c. Section number of the specification section by which submittal is required.

d. Submittal description of each component of submittal.

e. When a resubmission is required add alphabetic suffix on submittal section, for example, Section 2A, to indicate resubmission.

f. Name, address, and telephone number of subcontractor, supplier, manufacturer and any other second tier contractor associated with submittal.

g. Product identification and location in project.

101.3.3 Format for Shop Drawings:

a. Shop drawings shall not be less than 8 1/2 by 11 inches nor more than 24 x 36 inches.

b. Present 8 1/2 by 11 inches sized shop drawings as part of the bound volume for submittals required by section. Present larger drawings in sets.

c. Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to information required in paragraph entitled "Identifying Submittals."

d. Dimension drawings, except diagrams and schematic drawings; prepare drawings

demonstrating interface with other trades to scale. Shop drawing dimensions shall be the same unit of measure as indicated on the contract drawings. Identify materials and products for work shown.

101.3.4 Format of Product Data:

a. Present product data submittals for each section as a complete, bound volume. Include table of contents, listing page and catalog item numbers for product data.

b. Indicate, by prominent notation, each product which is being submitted; indicate specification section number and paragraph number to which it pertains.

c. Supplement product data with material prepared for project to satisfy submittal requirements for which product data does not exist. Identify this material as developed

101.3.5 Format of Operation and Maintenance (O&M) Data: O&M Data format shall comply with the requirements specified in the paragraph entitled Operation and Maintenance Data found in each required specification section.

101.4 QUANTITY OF SUBMITTALS

101.4.1 Number of Copies of Shop Drawings: Submit 5 copies of submittals of shop drawings requiring review and approval.

101.4.2 Number of Copies of Product Data: Submit product data in compliance with quantity requirements specified for shop drawings.

101.4.3 Number of Copies of Operation and Maintenance Data: Submit 5 copies of O&M Data to the Engineer for review and approval.

101.5 APPROVED SUBMITTALS

The Engineer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory design, general method of construction, materials, detailing and other information appear to meet the Solicitation and Accepted Proposal. Approval will not relieve the Contractor of the responsibility for any error which may exist. After submittals have been approved by the Engineer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

101.6 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Engineer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. The Contractor shall make all corrections required by the Engineer, and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract General Condition ADDITIONAL, OMITTED OR CHANGED WORK shall be given promptly to the Engineer.

101.7 GENERAL

The Contractor shall make submittals as required by the specifications. The Engineer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor. Submittals shall include items such as: Manhole barrel, cone and ring schedules; Traffic control plans for minor operations; Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Engineer approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

101.8 SUBMITTAL PROCEDURES

101.8.1 Procedures: The Engineer will further discuss detailed submittal procedures with the Contractor at the Preconstruction Conference.

101.9 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made before the Contractor is scheduled to install materials allowing ample time for review and delivery of the approved material.

102 PROGESS SCHEDULE– INDEX

102 PROGESS SCHEDULE

102.1 EXECUTION

102.1.1 Construction Progress Chart: Pursuant to the General Conditions paragraph 18 entitled "Construction Schedule" the contractor shall prepare a schedule of construction utilizing a construction progress chart as described herein. The contractor shall submit a copy of this Construction Progress Chart for review and approval prior to issuing the Notice to Proceed. No progress payments will be made without an approved progress chart. The contractor shall prepare the chart with the following considerations:

A. The contract work shall be divided into definable contract features.

B. As a minimum, the contractor shall address each specification bid item as a principal contract feature.

C. The weighted value (WT.) column should indicate the percentage of the contract for which each principle contract feature accounts.

D. The vertical lines shall be identified by specific time frames, (i.e.,weekly, bi-weekly, monthly) with one space accounting for no more than one month.

E. Identify the date when Notice to Proceed is acknowledged on the chart.

F. Identify the contract completion date on the chart.

The contractor shall place bars on the chart indicating scheduled progress for each feature of work. The contractor shall note the anticipated percentage complete for each item at the end of each month and at the end of each scheduled block. Activities shall be identified by bid items.

Contractor shall submit at the end of each month an updated schedule indicating actual progress verses scheduled.

Note: The progress chart shall reflect the construction sequencing required to maintain water production by the City throughout the project.

201 GENERAL EARTHWORK – INDEX

201 GENERAL EARTHWORK

201.1 LAWS AND REGULATORY REQUIREMENTS

All excavation, trenching, bracing, etc., shall comply with the requirements of OSHA Excavation Safety Standards (29 CFR Part 1926.650 Subpart P) and any state and local requirements. Where conflict between OSHA, state or local regulations exist, the most stringent requirements shall apply.

201.2 SUBMITTALS

Imported material, gradation, unit weight, proctor and PI sample results shall be approved before bedding or backfilling begins.

201.3 MATERIALS

201.3.1 Backfill: Backfill materials designed for use under this section shall be as specified in Section 204 Granular Fill Material or as otherwise called for.

201.3.2 Timber: Timber used for excavation support system shall be pressure treated.

201.4 PREPARATION

201.4.1 Test Pits: In addition to the removal and demolition shown on the drawings, the Contractor shall perform exploratory excavation work, Test Pits, as required in order to verify the location of existing underground utilities and structures prior to excavation activities.

Test pits shall be backfilled as soon as the location of the utilities has been determined. Backfilled locations shall be such that erosion of the area is minimized.

201.4.1 Dewatering and Drainage Systems: Temporary dewatering and drainage systems shall be in place prior to beginning excavation.

201.5 GENERAL EXCAVATION

The Contractor shall perform excavation of every type of material encountered within the limits of the project to the lines, grades and elevation shown . Grading shall be in conformity with the typical cross sections shown. Satisfactory excavated materials shall be stockpiled for use as backfill within the limits of the work. Unsatisfactory materials encountered within the limits of the work shall be excavated and disposed of as stated in "Disposal of Surplus Material". Surplus satisfactory excavated material shall also be disposed of as stated in "Disposal of Surplus Material". During construction, excavation and fill shall be performed in a manner and sequence that will provide proper drainage at all times.

201.4.1 Rock Excavation: Rock excavation shall be broken into two categories as further defined below:

Type "A" Rock - extremely hard rock that is defined as rock which cannot be excavated by means other than those listed:

Drilling and blasting

Drilling and splitting with expandable chemical compound.

Jack hammering.

Adjacent excavation and removal with large earth/rock moving equipment.

Use of any of these methods does not necessarily mean that the rock is 'Type A.'

Type "B" rock - is not as difficult to excavate as Type "A" rock. Type "B" rock can be excavated by any methods stated above or by large backhoes with rock teeth and experienced operators.

Rock that is hard, but ledgy or fractured and can be excavated with large backhoes, will be considered Type "B" rock. Rock that is intermittently layered with shale and that is readily excavated with backhoes will not be considered rock. Hard shale will not be considered as rock excavation. Samples of Type "A" and Type "B" rocks are available at the office of the Engineer for inspection by bidders or project contractors. The samples may be used to settle questions anyone may have in regard to the type of rock being excavated.

201.6 EXCAVATION SUPPORT

The Contractor shall furnish, put in place, and maintain a braced or tied back cofferdam to support the sides of the excavation to prevent movement which could in anyway diminish the width of the excavation below that necessary for proper construction.

201.6.1 Bracing and Sheeting: In congested areas where narrowness or right-of-ways, traffic, other installed utilities line, buildings or structures prevent sloping of banks, the Contractor shall be responsible to install sheet piling or operate a "boat" or caisson to maintain side slope and to protect existing improvements and work personnel. The Contractor will not be compensated for replacement of any improvements damaged due to his failure to provide proper bracing, sheeting or other restraining devices.

201.7 BACKFILL PROCEDURES

Backfilling operations shall commence after concrete has cured for approximately 72 hours. Materials for backfill shall conform to those described in Section 203.

Backfill shall be brought up evenly in maximum 8 inch lifts. Each layer of backfill material shall be thoroughly compacted by rolling, tamping or vibrating with mechanical compacting equipment or hand tamping. Compaction, shall be as called for as a percentage of standard or

modified proctor. If rolling is used, it shall be by use of a suitable roller or tractor and insuring compaction throughout the backfilling area.

When the construction is within the New Mexico State Highway Department Right-Of-Way, the construction practices and compaction densities required in backfill shall comply with the requirements of the New Mexico Highway Commission's "Standard Specifications for Road Bridge Construction" and shall be subject to inspection by personnel of the New Mexico State Highway Department.

The Contractor shall, at his own expense, repair all damages to street, sidewalks, curbs, gutters, paving, utility lines and any other private or public properties caused by excavation settlement or other construction activities within a period of one (1) year after final acceptance of the project by the City.

201.8 DISPOSAL OF SURPLUS MATERIAL

Excavated material may be stockpiled without excessive surcharge on the trench bank, unsuitable waste and surplus excavated material shall be removed and disposed of offsite in accordance with applicable regulations. Contractor may temporarily stockpile in an area within the limits of construction that do not disrupt construction activities, create any nuisance or safety hazards or otherwise restrict access to the work site.

201.9 MEASUREMENT AND PAYMENT

Measurement and payment for items of work covered by this section of the specifications shall be in accordance with provisions of the Special Conditions

202 CLEARING AND GRUBBING – INDEX

202 CLEARING AND GRUBBING

202.1 DESCRIPTION

This work shall consist of clearing, grubbing, removing and disposing of vegetation and debris, trash and rubble in accordance with the contract requirements and in compliance with these specifications. This work shall also include the preservation from damage or defacement of all vegetation and items designated to remain.

202.2 GENERAL

Contractor shall establish right of way lines, property lines and construction lines based on project drawings and Engineer's stakes to determine which trees, shrubs, plants and other items to remain. The Contractor shall preserve all items designated to remain.

Within the construction limits, all surface debris, trees, stumps, roots and other objectionable protruding obstructions shall be cleared and grubbed as required. The Contractor may leave undisturbed stumps and other solid objects provided they are outside the construction limits and do not interfere with construction activities.

Between the right of way lines and construction limits, hazardous objects and unsightly debris shall be removed. Stump holes and other holes within this area shall be backfilled with suitable material. Vegetation outside on designated demolition limits to remain.

202.3 REMOVAL AND DISPOSAL OF MATERIAL

Materials which cannot be safely or adequately buried, may be removed from the limits of the right of way and disposed of off-site at an approved location. Contractor shall arrange for and obtain permission from the property owner on whose property material is to be disposed of.

Burning of material is strictly prohibited.

The roadway and adjacent areas shall be left neat and appear to be finished. Accumulation of debris on adjacent property will not be allowed, unless approved, in writing, by the property owner.

202.4 MEASUREMENT AND PAYMENT

Measurement and payment for items of work covered by this section of the specifications shall be in accordance with provisions of the Special Conditions

203 TRENCHING, EXCAVATION, AND BACKFILLING – INDEX

203 TRENCHING, EXCAVATION, AND BACKFILLING

203.1 DESCRIPTION

This item of work shall consist of trenching, excavation, backfilling, restoration of site and miscellaneous operations pertaining to installation of pipe lines and appurtenances complete in strict accordance with provisions of this section of the specifications and applicable drawings.

203.2 TRENCHING FOR PIPE

Trenching for pipe installation shall commence at such points on the line as approved by the Engineer and in the case of trenching for gravity flow, lines shall progress up-stream. The Contractor shall perform all operations necessary to excavate all substances encountered to the proper installation of the pie with due regard for type of pipe joint used. Normally, trenches shall be excavated with vertical walls opposite the pipe with min. widths 24" wider than pipe O.D. or as required to permit lateral tamping of backfill. Trenches shall have sloping banks above the pipe to meet safety requirements, provided, however, that trench walls may be dug to accommodate a trench box if one is being used. Open pits around manholes or bore pits shall be shored or sloped for safety.

Unless otherwise specified in the Project Technical Specifications or Drawings, all pipe shall be installed on a minimum depth of 4" of the best of excavated material, adequately compacted. The material shall extend to top of the pipe and shall be tamped into place. The material shall be placed over a firm unyielding trench bottom and shall provide uniform support.

Should over-digging occur, the Contractor shall bring the trench bottom back to grade by adding and compacting suitable materials and acceptable work methods. Should wet or otherwise unsuitable soil, incapable of properly supporting the pipe, be encountered in the trench bottom, such soil shall be removed to the depth required and the trench backfilled to invert grade with suitable granular material approved by the Engineer. No extra payment will be allowed for work 6" or less in depth required in placing material except as provided for in the bid proposal.

All excess material from excavation or material deemed unsuitable for backfill by the Engineer shall be removed from the site and disposed of by the Contractor.

Trenching shall be done only far enough in advance of pipe laying as required to expedite the work. Trenching or exploratory digging shall be done far enough in advance of pipe laying to permit the Engineer to make grade changes required by interference with existing utilities.

Preliminary utility locating shall also be done, as indicated on the project drawings and as required prior to tie-ins so that existing pipe diameters and materials can be verified.

203.3 ROCK EXCAVATION

Rock excavation shall be broken into two categories as further defined below.

Type A - Type A rock is extremely hard rock and is defined as rock which cannot be excavated from trenches by means other than those listed below:

1. Drilling and blasting
2. Drilling and splitting with expandable chemical compound
3. Jack-hammering
4. Adjacent excavation and removal with large earth/rock moving equipment
   *Use of any of these methods does not necessarily mean that the rock is type 'A'.

Type B - Type B rock is not as difficult to excavate as Type A rock. Type B rock can be excavated by any of the methods described above or by large backhoes with rock teeth and experienced operators.

Rock that is hard, but ledgy or fractured and that can be dug with large backhoes, will normally be considered Type B rock. Rock that is intermittently layered with shale and that is readily dug with backhoes will normally not be considered rock. Hard shale will not normally be considered as rock excavation. Samples of Type A and Type B rock are available at of office of the Engineer for inspection by bidders or project contractors.

All stone or boulders less than 8 cubic feet in volume will be classified as earth. The Engineer shall, in all cases, be advised if blasting is deemed necessary for removal of material encountered in the trench. Normally blasting will not be permitted in the City limits. That portion of the trench bottom excavated in rock shall be over-excavated minimum of 4" below all pipe elevations and backfilled to trench invert grade with suitable granular material approved by the Engineer.

203.4 BRACING AND SHEETING

In congested areas where narrowness of right-of-ways, traffic, other installed utility lines, buildings or structures prevents sloping of trench banks, it shall be the Contractor's responsibility to install sheet piling or operate a trench box or caisson to maintain trench widths to a minimum to protect existing improvements and work personnel. The contractor will not be compensated for replacement of any improvements damaged due to his failure to provide proper bracing, sheeting or other restraining devices. Sheeting, bracing or other restraining devices shall not be removed after pipe lines are laid until sufficient backfill is in place to protect the pipe or existing improvements from damage by slides or cave-ins. Should it become necessary to leave sheeting or piling in place, it shall be cut-off at least four feet (4') below the ground.

203.5 EXCAVATION FOR APPURTENANCES

Excavation for structures and appurtenances related to the pipe line shall provide safety between outer surfaces and the embankment. Faces of excavation or piling may be used as the outside form of concrete structures, if in the opinion of the Engineer, the excavated faces are satisfactory as to line and grade and satisfactory construction can be obtained utilizing this method.

203.6 BACKFILLING

Backfilling operations shall normally be carried immediately behind the pipe laying operations. Long stretches of open trench will not be permitted. All pits that will require future access for

additional project operations shall be temporarily backfilled. The Contractor shall be prepared at all times to take measures to prevent flood damage to facilities connected with this project, and private or public property.

203.6.1 Conventional Backfill: Bedding material for backfilling from beneath pipe to a point 12" over top of pipe shall be friable, granular, moist material, free of rock, clods or debris. Material lateral to pipe shall be tamped by hand tools in such a manner as to not dislodge the pipe.

Material for completing the trench backfill shall be moist earth free of debris or rocks larger than 6" in diameter. All backfill material shall be compacted to the density called for on the drawings. When native material is judged unsuitable by the Project Engineer, suitable imported material shall be provided. If compaction tests indicate that specified densities are not being achieved, then construction methods shall be altered accordingly. Compaction efforts shall be consistent and performed in workmanlike manner. Density tests shall be performed at all depths with assistance in digging provided by the Contractor. The Contractor shall also assist in scheduling times suitable for performing tests.

203.7 GRANULAR MATERIAL

Granular material, where specified, in these specifications shall meet the following general listed gradation requirements:

Sieve Size	Percent Passing
1 inch	100
No.4	40-100
No. 200	35 or less

The plasticity index (ASTM 4318) of the material shall be 12 or less, provided however, that sandy material from approved areas or crusher fines may be used if approved by the Engineer.

In areas where the natural material encountered in the trench bottom meets the above gradation requirements, over excavation and placing of select material will not be required, but accurate shaping and grading of the trench bottom to provide the above cited pipe support shall be carried out.

203.7.1 Flowable Backfill: Flowable backfill may be composed of sand, crusher fines, fly ash, other suitable materials and Portland Cement. The consistency of the backfill shall be such that all voids are filled with minimum rodding or vibrating but not so wet as to cause excessive shrinkage, prolonged set times or detrimental reduction in strength cured flowable fill shall have compressive strengths greater than compacted soil as specified on the project drawings, yet shall be suitable for future excavation by conventional methods. Test methods to conform to NMSHTD 516.29.

Cement shall be low alkali type I or II.

Fine aggregate shall provide a uniform mixture and have the following gradation characteristics:

Sieve Size	Percent Passing
3/8 inch	95-100
No. 4	80-100
No.8	60-95
No. 16	45-80
No. 30	25-60
No. 50	5-45
No. 100	5-35
No. 200	0-30

Water shall be potable water from municipal or other approved sources. Fly ash shall be either Class F or Class C.

Flowable Fill Mix Design shall be established in accordance with the following limits:

Cement	50 - 94 lb/CY (except that in some cases additional cement may be requested to accelerate or increase strength)
Fly Ash	150 - 300 lbs/CY
Slump	5" - 8"

203.8 PAVEMENT CUT AND PATCHES

Pavement patches and cuts shall conform to applicable Sections of these specifications.

203.9 EXISTING UTILITIES

The Contractor shall call for utility "locates" by the utility companies prior to any construction activities. The Contractor should advise himself of the fees involved for the initial and return "locates". The Contractor shall, in addition, expose certain existing lines which could cause grade, alignment or tie-ins problems for the proposed facilities.

The Contractor shall exercise due care to insure that existing water and sewer laterals and service connections are not disturbed or damaged. Any laterals or service connections damaged as a result of the Contractor's operations shall be replaced with materials of like kind or as specified. Repaired and/or replaced laterals and service connections shall not be covered until inspected and approved by the owner or his representative. The Contractor shall, after locates are provided by City personnel, or others, carefully probe for and locate service lines on the blind side or trench side of existing mains. It is recommended that the Contractor have on hand for the project, an electronic device suitable for locating underground copper or ferrous lines. Contractor shall be responsible for tying in all service lines to new main construction.

Contractor shall work whatever hours are required to repair and place damaged or cut water and sewer services or mains back into operation with a minimum of inconvenience to the user.

Contractor shall use extreme caution when trenching in areas with sewer service lines so that flow from cut service lines does not come near newly laid water pipe. Water pipe that is infiltrated by sewage will be rejected and shall be removed. Workmen shall have available at all times, potable water and soap to wash up after working on sewer lines. Diluted chlorine solution shall also be available at all times to wipe down water pipe and fittings if deemed necessary.

203.10 DE-WATERING

The Contractor shall at his cost furnish all equipment and perform all operations required to remove all water from trenches or other parts of the work and fully protect the work from slides or cave-ins by installation, shoring or other restraining devices. De-watering and/or shoring shall be continued until all work below the water table has been completed and backfilled. Water from de-watering operations shall be disposed of as directed by the Engineer.

203.11 ACCESS TO PUBLIC STREETS, ALLEYS AND RIGHTS OF WAY, RAILROAD AND PRIVATE PROPERTY

Work to be performed under this project shall be carried out in a manner that will cause the least inconvenience to public travel and damage to adjacent private property. In general, the Contractor will not be permitted to completely close off any public or private streets, driveways, alleys or other routes or travel by the public. Closure of any public route of travel will be only after obtaining permission of the City Director of Public Works, Street Superintendent, or County Road Superintendent. Such closure shall be for the minimum period necessary for construction. Where private property is served by two (2) driveways or wide frontage on public rights of way, access will be provided at all times. In some cases it may be necessary that the Contractor construct temporary roads or driveways. Temporary access routes shall be properly constructed and maintained by the Contractor.

Contractor shall place and maintain barricades, warning lights and signs as required to inform and protect the general public and project workmen. Contractor shall be courteous and attempt to work with businesses and residents to the fullest extent possible until the project is complete.

Traffic Routing Plans for work within the City shall be submitted to the City Director of Public Works for approval. The plan shall address each phase of construction. Traffic routing plans for work within NMDOT R/WS will be contained in the Contract Documents.

The Contractor shall water the streets for dust control when requested by the City or by the Engineer. In addition the Contractor shall "broom" the streets as required during the time period between pipe installation and patching.

All work on railroad property shall be done in such a manner as to least interfere with rail traffic, railroad workmen and railroad lessee business operations. All work shall be planned in close coordination with appropriate railroad officials and lessee representatives. No work shall be performed on railroad property unless a permit is obtained.

203.12 MEASUREMENT AND PAYMENT

Measurement and payment for items of work covered by this section of the Specifications shall be as set forth in the Special Conditions.

401 ASPHALT STREET PATCH

401.1 DESCRIPTION

This item of work shall consist of furnishing all materials, supplies, plat and labor required for removal of existing asphalt and construction of new asphalt patch over utility trenches and other excavated areas in accordance with applicable provisions of these specifications and the project drawings.

401.2 PAVEMENT CUT

All paving within the limits of the pipe line trench and appurtenances shall be removed and replaced, unless otherwise noted on the project drawings. Asphalt pavement cuts may be made utilizing hand operated pavement cutters, saws, wheel cutters mounted on motor graders or other approved equipment.

Cuts shall be made along straight chalk line marks which run parallel to the utility alignment. Patches for areas excavated and backfilled for tie-ins shall be "squared up" for neat appearance. Cut edges that are damaged during excavation shall be re-cut in the damaged area. The width of pavement cuts shall be the minimum required to facilitate trenching and excavation operations and such widths shall be arrived at by the Contractor and Project Engineer. Single cuts along curb and gutter edges shall be of sufficient width that excavation operations will not disturb or dis-lodge curb & gutter stones.

Old asphalt paving shall be removed and disposed of by the Contractor. The Contractor should be aware that many areas of the city streets have been overlaid one or more times and that substantial pavement thicknesses could be encountered. Cuts in pavement of substantial thickness shall be deep enough to insure a proper edge upon pavement removal without lifting adjacent paving.

401.3 SUBGRADE PREPARATION

Trench backfill (subgrade) shall be compacted to densities as specified on the project drawings. The subgrade surface shall be to the proper grade in all areas and shall be true and uniform. The surface shall be tamped or rolled at or near optimum moisture content so that it is tight with no loose or uneven material present. Subgrade preparation shall be done immediately prior to base course installation. Subgrade that has become saturated or that has shown evidence of "pumping" shall be removed and replaced with suitable material.

Flowable fill surfaces shall meet the requirements for grade uniformity described above.

401.4 BASE COURSE

Base course thickness shall be as shown on the project drawings. The base course furnished shall be crushed aggregate conforming to NMSHTD specifications with one of the following gradation requirements as called for:

Sieve Size	Percent Passing Type 1 B	Percent Passing Type II B
1 inch	100	100
¾ inch	80-100	85-100
No. 4	30-60	40-70
No. 10	20-45	30-55
No. 200	3-10	4-12

L.A. Abrasion to be 50 or less.

Base course shall be placed at or near optimum moisture content to achieve densities of 92% or better (as called for) of Modified Proctor (AASHTO T-180-95, Method D). Base Course shall be accurately graded so that subsequent asphalt layers will be of proper thickness.

401.5 ASPHALT TREATED BASE COURSE

The treated base aggregate shall be crushed and shall conform to the gradation requirements in 401.4 above. Asphalt content shall range from 4 - 6%. In some cases, such as with a patch, it may be more expedient to use asphaltic surface course in lieu of the asphalt treated base. In either case, the treated base shall be laid uniformly and rolled with the proper combination of vibratory steel roller and pneumatic roller to produce densities of 92% to 97% of Maximum Theoretical Density. Thicknesses shall be constantly checked to insure conformance to project drawings.

401.6 ASPHALTIC SURFACE COURSE

Aggregate for asphaltic surface course shall conform to NMSHTD Specifications and one of the following gradation requirements as called for.

Sieve Size	Percent Passing Type B	Percent Passing Type C
¾ inch	100	
½ inch	80-98	100
¼ inch	70-90	70-100
No. 4	50-65	45-70
No. 10	32-45	30-50
No. 40	10-22	15-25
No. 200	3-8	4-8

L.A. Abrasion to be 40 or less.

The Asphaltic mix shall in general meet the gradation requirements of the gradation listed above, except that the Contractor and the Engineer may, by mutual agreement, increase sand content and asphalt content of the wearing surface course to produce a mix that is "dense" and "closed"

after final rolling. The Contractor may use a previous job mix formula or may establish a new formula for this project.

The asphaltic mix shall be the result of proportioning by a job-mix formula to produce characteristics as follows:

Stability:	1640 lbs. plus
Flow:	16 or less
Sand Equivalent	40 or more

Note: Lime shall be added in accordance with NMSHTD Specs.

Note: When HMA Superpave is designated, mix design to conform to NMDOT 432.2.8 Specifications.

The surface course may be laid immediately on the asphalt treated base unless the base has become contaminated with dust or mud, in which case cleaning and an emulsion tack coat will be required. The surface course shall be laid uniformly and subsequently rolled by experienced workmen with vibratory steel roller and pneumatic rollers to produce densities of 94 to 96% of max. theoretical density. Asphalt mix which falls below density requirements shall be subject to payment reductions in accordance with NMSHTD Specs. Normally, thicknesses shall be checked constantly so that the finished surface is 3/8"± above adjacent edges and crowned in the center of the patch. The finished surface shall be "closed" with no sags which will pond: Surfaces that are "open" upon completion will require a suitable seal coat.

Prior to patch construction, the Contractor shall submit a job-mix formula used on other work or permit sampling and testing of his product currently being used in the area which would indicate compliance with these specifications. Patch material will be subject to testing during the project.

Patches shall be installed only during dry, warm weather (50°F).

401.7 EDGE PREPARATION

All efforts shall be made to bond and seal existing asphalt and concrete edges with new patch. Asphalt edges shall be broomed and scraped to remove all mud, dust and other contaminants. Cleaned edges shall be thoroughly coated with emulsified asphalt immediately prior to installation of surface course. Emulsion that has been repeatedly cut and thinned will not be permitted.

401.8 PATCH SCHEDULING

Patch construction shall be scheduled for shortly after completion of all mains, service lines and appurtenances for a particular area. Backfill levels shall be brought to street grade and maintained during the time between utility installation and patch construction. Trench subgrade material or base course may be used during this temporary period however, areas of heavy traffic may require base course.

401.9 MEASUREMENT AND PAYMENT

Measurement and payment for items of work covered by this Section of the Specifications shall be in accordance with provision of the Special Conditions.

402 GRAVEL ROADS AND DRIVEWAYS – INDEX

402 GRAVEL ROADS AND DRIVEWAYS

402.1 DESCRIPTION

This item of work shall consist of furnishing all material, supplies, plant and labor required for construction of gravel roads and driveways complete in accordance with applicable provisions of these specifications and project drawings.

402.2 GENERAL

Gravel roads, driveways and parking areas shall conform to the dimensions and sections as shown on the project drawings. Gravel shall be placed on firm, compacted, accurately graded subgrade after all utility lines and appurtenances have been installed. Gravel is to be placed at near optimum moisture and rolled to achieve densities of 90% Modified Proctor. The final gravel surface shall be smooth and uniform with accurate lateral and vertical dimensions called for.

402.3 MATERIAL REQUIREMENTS

Gravel provided shall meet requirements for NMSHTD type II-B base course with gradation characteristics as listed below:

Sieve Size	Percent Passing
1 inch	100
¾ inch	85-100
No. 4	40-70
No. 10	30-55
No. 200	4-12

402.4 MEASUREMENT AND PAYMENT

Measurement and payment for items of work covered by this section of the specifications shall be as set forth in the Supplemental Conditions.

501 WATER LINES AND APPURTENANCES – INDEX

501 WATER LINES AND APPURTENANCES

501.1 DESCRIPTION

This item of work shall consist of furnishing all materials, Supplies, plant and labor required for construction of water lines and appurtenances complete in accordance with applicable provisions of these specifications and the project drawings.

501.2 MATERIALS

Water lines, fire hydrants, valves and appurtenances shall be installed at the locations shown on the drawings. All materials incorporated in the work shall be new and unused, of the quality specified herein and shall be installed in accordance with the recommendations of the manufacturer.

501.2.1 Pipe and Fittings: Pipe for water mains shall be of material called for on the project drawings and shall meet specifications below:

501.2.1.1 Ductile Iron Pipe: for water lines unless otherwise specified shall be Class 350. The pipe shall be cement lined and shall meet the requirements of AWWA Specifications C104 and C151. Joints for ductile iron pipe shall be rubber gasket push-on type or mechanical joint as called for on the drawings.

Ductile iron carrier pipe installed through casings and manholes shall be rubber gasketed restrained mechanical or restrained push-on joint conforming to AWWA C111. Gasket shall be of SBR (styrene butadiene rubber). Restrained joints shall be "locked-type" joints with ductile iron locking segments and joint restraint shall be independent of joint gasket. Restrained joints shall be suitable for the specific test pressure. Through bolt, tie-end systems are not approved. Restrained joints shall be US Pipe TR Flex of equal. Carrier pipe shall extend past casing and manhole wall as required for adequate joint restraint.

501.2.1.2 Fittings for pipe: shall be cement lined ductile iron with mechanical joint or flanged joint as called for conforming to the requirements of AWWA Specifications C104 and C110, provided however, that ductile iron mechanical joint fittings as U.S. Pipe Trim Tyte conforming to AWWA C153 or equal are acceptable. Mechanical joint glands shall be Megalug or equal suited for pipe material used.

501.2.1.3 PVC Water Pipe: 4" through 12" diameter shall meet the requirements of AWWA C900, "Standard for Polyvinyl Chloride Pressure Pipe" and shall be furnished with outside diameters equivalent to C.I. pipe with rubber gasket joints as listed in above standard. PVC pipe shall be furnished in the pressure class and DR designation per 2007 definitions as listed on the project drawings. PVC water pipe 14" dia. and larger shall conform to AWWA C-905 specifications. PVC water pipe 2" dia. And smaller shall be SDR 21 with push-on rubber gasketed joints as listed in above standard. Adapter gaskets for transition to C.I. diameter fittings shall be provided as required.

501.2.1.4 Polyethylene Pipe: Pipe to be HDPE conforming to AWWA C901/C906 specifications

501.2.1.5 Sleeves: used to facilitate tie-ins, for leakage repair or for transition (or to adapt) shall be heavy duty MJ ductile iron, wrought iron, or stainless steel. Painted or galvanized carbon steel components including nuts, bolts and washers are not permitted.

501.2.1.6 Plastic Wrap: shall be 8 mil. polyethylene plastic conforming to AWWA C105. Two layers shall be installed on all pipe and fittings for buried service.

501.2.1.7 Steel Pipe: shall be min. schedule as called for with min. yield strength of 35 KSI. Pipe to be coated as called for. Fittings to be weld neck type beveled for welding.

501.2.2 Gate Valves: Gate valves 2 inches and larger shall be NRS resilient wedge type conforming to AWWA C509 (and AWWA C515 when larger than 12") with epoxy coating conforming to AWWA C550. Valves shall be mechanical joint or flanged as called for. Buried valves to have a 2" AWWA operating nut while station valves are equipped with operator hand wheels. Valve body fasteners shall be Type 316 stainless steel.

Gate valves to be installed in the horizontal position when so designated. Valves 18" and larger in size to have bypass lines with valves equipped with 2" operating nuts. Bypass lines and valves to be of the sizes listed below:

Main Valve Size	Bypass Valve Size
16", 18", 20"	2"
24"	2½"
30"	3"

Main valves in the horizontal position to be operated with bevel gearing. Valve boxes with appurtenances as detailed to be installed for all buried valves.

Valve boxes to be approved, two piece adjustable screw type of ductile iron construction with minimum 5¼ inch diameter inside shaft. Valve boxes shall be suitable for finished bury without full extension.

501.2.3 Air Vacuum Valves: Air/Vacuum valves to be Val-Matic Models VM-101, thru VM-104 or equal as called for. Air release valves to be Val-Matic Model 22.9 thru 50 or equal as called for.

Combination single body valves to be Val-Matic Models 201C.2 thru 204C.2 or equal as called for. Inlet and outlet connections shall be threaded or flanged as designated on the project drawings. Threaded inlets to connect to brass nipples. Shut off valves to be stainless steel ball type with brass body. All components of the ARV/Vacuum assembly to be rated for 300 PSI.

501.2.4 Fire Hydrant Assembly: Fire hydrants shall have a 6 inch diameter inlet with mechanical joint connection. The hydrant shall be designed for 150 psi working pressure and

shall be equipped with two 2½ inch standard hose connections and one 4½ inch pumper connection. Hydrants shall be dry-barrel type conforming to AWWA Specification C502 and shall have a minimum 5¼ inch valve opening. Normally, hydrants shall be for 3.5' minimum pipe cover provided however, that grade conditions behind curbs or at fire hydrant locations are sometimes different than in the street and taller fire hydrant barrels may be required.

All fire hydrant bolts and nuts below grade shall be stainless steel. Fire hydrants shall be Mueller Centurion A423.

501.2.5 Sanitary Freeze Proof Yard Hydrants: Hydrants to be Woodford Model S4H or equal with ASSE 1052 double check backflow preventer and reservoir below frost line. The reservoir is emptied when flow occurs through the ¾" hose bib nozzle with no resultant soil contact.

501.2.6 Meters: Turbine meter to be Neptune High Performance with magnetic drive and bronze main case. Register to be direct reading in cubic feet with indication of 10 cubic feet per sweep hand revolution. A cast iron body strainer by Neptune shall be included.

Note: See section 504.2.7 for Magnetic Flow Meters.

501.2.7 Butterfly Valves: Butterfly valves shall conform to ANSI/AWWA C504 standard as Mueller or approved equal.

501.3 INSTALLATION OF PIPE, VALVES, FITTINGS, AND SPECIALS

Trenching and backfilling for water lines and accessories shall be in accordance with provisions of Section 203 of these specifications. Select sand bedding shall be provided in areas of rock excavation or where called for.

The Contractor shall exercise care in unloading and stacking pipe to avoid damage. Each length of pipe shall be carefully cleaned and inspected for cracks or damaged bells before lowering into the trench. Damaged or otherwise unsuitable pipe shall be immediately removed from the job site and replaced with new pipe. Pipe shall be laid with bell end in direction of laying and care taken in excavating bell holes so that the pipe is supported on firm bedding throughout its full length. Spigot ends shall be inserted so that the "Stop Line" is at the edge of bell. Care shall be taken to insure that the insertion depth is not exceeded on previous joints when making up a particular joint. Joint deflections to accommodate vertical or horizontal change in directions shall not exceed the allowable recommended by the pipe manufacturer. Fittings shall be used in making direction changes requiring joint deflections greater than that recommended by the pipe manufacturer. Concrete "thrust blocks" shall be provided at all pipe direction changes in excess of 11¼ degrees. See project drawings for additional requirements for vertical direction changes. "Thrust Blocks" shall be 4000 psi. min. concrete poured against undisturbed trench banks to provide positive restraint for the water line and fittings at the operating pressure plus water hammer. Workmen shall inspect each pipe joint immediately prior to installation to make sure there are no rodents or other undesirable items in the pipe. Pipe ends shall be capped and secured at the end of each days work.

Pipe that is left unprotected and that receives storm runoff water shall be removed, cleaned and approved prior to resuming construction. Pipe that is infiltrated by sewage shall be removed from the project.

Valves and valve boxes shall be installed plumb and to the depth specified, as detailed on the project drawings. Fire hydrants shall be set to such depth as to provide cover for connecting pipe equal to the water main. The bottom flange of fire hydrants shall be above the finished grades as shown on the project drawings. The Contractor shall be responsible for providing Fire Hydrants of proper barrel lengths for job conditions. A minimum of 8 cubic feet of gravel backfill around the base of the hydrant shall be provided for disposing of water from the hydrant barrel. In some areas where drain-back will not be absorbed into surrounding soil, or where it will cause foundation problems, additional gravel pits and piping may be required.

All nuts, bolts and washers below grade or components in the new system that are not stainless steel or brass shall be neatly wrapped in 8 mil. plastic in such a manner to prevent contact with subsequent backfill.

Backfill under service connections shall be in place and compacted to specification requirements prior to connecting new service lines. Backfilling with voids under service lines will not be permitted. Hand work for backfill operations around service connections will be expected. Whenever lead or galvanized service lines are encountered, they shall be replaced between main and meter.

Service line tubing shall be installed on compacted soil, free of kinks and graded to prevent air traps. Tubing ends shall be taped shut during placement in trench to prevent entrance of soil and rocks. Service lines shall be flushed immediately prior to connecting meter cans. Care shall be taken when making taps on the main to insure that the wall of the main is fully penetrated and that the tab is retrieved. The Contractor shall flush completed service line and meter after installation on user side to verify flow and proper meter operation. Evidence of excessive head loss through new service lines may require re-excavating to check tap or removal of meter to check for foreign matter.

Installation of water mains and service lines shall conform to proximity requirements detailed on drawings.

Air Release and Vacuum Valves shall be installed at locations shown on the drawings. Pipe shall be laid to grade up to the valves. Extra pipe line depth may be required so that valves and appurtenances may be installed within the vaults.

Tracer wire for direct bury and warning tape shall be installed along with pipe when called for on the project drawings. Splices shall be suitable for direct bury and shall be held to a minimum. Contractor to provide apparatus as required for continuity verification after installation.

501.4 TESTING OF PIPE LINES

Pipe lines installed under this specification shall be tested in accordance with the following provisions before acceptance by the Owner and subsequent tie-ins. The completed piping system shall be filled with water and subjected to a 2 hour hydrostatic pressure test.

The test pressure at the lower end of the new system shall be 200 psig. The Contractor shall be responsible for setting up all equipment for the test and shall have the option of testing against the new system valves or against temporary caps or plugs if valve leakage is suspected. Provisions shall be made for removing all air from the system.

Methods of conducting the pressure and leakage test shall be in accordance with provisions of AWWA Specification C600 provided that allowable line leakage shall be not more than $NDP \cdot {}^{5}/_{7400}$ gallons/hr where N=number of joints, D=pipe diameter in inches and P=test pressure in psi.

501.5 DISINFECTION OF WATER LINES

All water mains installed under this project shall be disinfected, thoroughly flushed and tested before being placed into service.

Chlorine solution pumped into the line in a manner to prevent air from trapping in the line. Contractor shall provide filling, sampling and air release taps as required. Liquid chlorine concentrate shall be used for chlorine solution. Powder chlorine concentrate will not be permitted. The amounts applied shall be pre-calculated so as to yield initial concentrations in the line of no less than 25 PPM. The detention period in the line shall be 24 hours. After the 24 hour detention period, the line shall be flushed until the residual chlorine concentration is approximately 1 PPM. The line shall then be left to set for 48 hours (full of water). After completion of the 48 hr period, samples shall be taken for bacteriological testing. Samples shall be taken from suitable locations (such as service taps) and placed into commercial sterilized containers furnished by the Contractor. Test results that indicate unacceptable coliform levels will require additional disinfection and successful testing before placing main into service.

A copy of the bacteriological (coliform) test results shall be delivered to the Project Engineer and the City prior to tie-ins.

501.6 TIE-INS, MAINTAINING EXISTING SERVICE AND SCHEDULING OF WORK

The Contractor shall keep the Project Engineer and affected public informed as to when water outages are to be expected. The Contractor shall inform the public by radio, the newspaper or by handouts and door to door contact, providing adequate lead time. Generally, the outages affecting small areas may be handled by informing residents in person.

All new water line construction shall be done while maintaining water service with the existing systems. If the Contractor is required to place the new main in or near the same locations as the existing main because crowded conditions the Contractor shall provide a temporary main lying

on the ground and connect existing meters to maintain service during construction. The Contractor shall be required to arrange his construction program to maintain continuous service to water users to the fullest extent possible. Temporary mains shall be disinfected in a manner similar to new mains described above.

Tie-ins shall be thoroughly planned prior to beginning construction. Contractor shall familiarize himself with pipe sizes and materials of the existing City system. Contractor shall have required adaptors, pipe, sleeves, pumps, tampers, water trucks, bolts, nuts and other equipment and materials of the size to complete the tie-in, in as short a time as possible.

Reservoir valve replacement will require draining the vessel. This will require extensive planning and coordination with the City Water Production personnel.

The Contractor shall coordinate all construction activities including tie-ins with the City Water Department.

501.7 PRECAST MANHOLES AND VAULTS

501.7.1 DESCRIPTION

This item of work shall consist of furnishing all material, supplies, plant and labor required for construction of manholes, wet wells, and appurtenances complete in accordance with applicable provisions of these specifications and project drawings.

501.7.2 MANHOLES AND VAULTS

Standard manholes shall be built at the locations shown on the drawings or at the location designated by the engineer. Manholes shall be of the size and type shown or required by job conditions.

501.7.3 Materials: Standard manholes and vaults shall be constructed of precast units when called for manufactured in accordance with ASTM C478 Specifications. Bottom slab thickness shall be as designated on project drawings. Top section shall be eccentric cone or flat reinforced slab as designated. All barrel joints between sections shall be tongue and grooved.

Manhole frames and covers shall be traffic model unit conforming to ASTM A48 36C Specifications with or without vent holes as designated. Covers shall have a suitable pattern, recessed lifting bars, and appropriate word for the utility cast in three inch letters. Manhole covers shall be Neenah Foundry or equal.

Seal tongue and groove joints of precast manhole sections with preformed flexible sealant or a rubber "O" ring gasket. Rubber gasket shall conform to ASTM C443. Preformed flexible sealant shall be Ram Nek as manufactured by K.T. Snyder Company or equal.

Step rungs shall be aluminum or steel reinforced polyethylene installed as shown on the project drawings. Steps shall not be installed unless specifically called for on the project drawings.

Pipe connections to manhole shall be as described on the project drawings. If no methods are so described, the following shall apply. For steel or ductile iron pipe, grout pipe in place. Grout shall be non-shrink and water proof as manufactured by Embeco,Waterplug, or equal. For PVC pipe, a tight fitting neoprene gasket shall be placed on the PVC where it will center in the manhole wall to prevent seepage from the manhole along the pipe.

Special aluminum or stainless steel lids with hinged opening shall be provided when designated on the project drawings. Hinged doors to be Halliday or equal rated for H_20 loading.

Reinforced concrete manholes and vaults to be as designated on the project drawings and shall conform to Sections 301 and 302 of these Specifications.

501.7.4 Construction: Manhole bases shall be constructed of firm, compacted, or neat cut subgrade. Cut holes in precast barrel sections for pipe penetrations prior to setting sections in place to prevent jarring and loosening or mortar joints. Precast sections shall be plumb with a ¼ inch out of plumb tolerance. Seal joints with either a rubber "O" ring or preformed flexible joint sealant. Finish joints shall be filled with non-shrink grout and finished flush with the adjoining surfaces. All other penetrations shall be filled with non-shrink grout and/or silicon seal.

Step rungs shall be installed by grouting rungs into preformed holes in riser and cone sections. Rungs to be set at 12 inch centers. Holes shall be 1 1/8 inch diameter and minimum 3 ½ inches deep. Fill space around rung penetrations with a non-shrink grout. Drilling holes for rungs may be used to accommodate field conditions when approved by the Engineer. All rung installations methods shall withstand a pull out resistance of 1500 pounds.

Manhole frames and covers shall be set in a full mortar bed or cast into top slabs as detailed. Utilize precast concrete grade rings on cone sections (12 in. maximum), to ensure frame and cover are set to finished grade. Frame and cover shall be set and held in place with a reinforced concrete collar, as shown on the contract drawings, prior to placement of permanent paving.

501.8 MEASUREMENT AND PAYMENT

Measurement and payment for items of work covered by this Section of the Specifications shall be in accordance with provisions of the Special Conditions.

502 DRAIN LINES – INDEX

502 DRAIN LINES

502.1 DESCRIPTION

This item of work shall consist of furnishing all material, supplies, plant and labor required for construction of sanitary sewer and drain lines, manholes, and appurtenances complete in accordance with applicable provisions of these specifications and project drawings.

502.2 TRENCHING AND BACKFILLING

All excavation and backfilling for sewer and drain lines, manholes and appurtenances shall be carried out in accordance with the applicable provisions of Section 2, Trenching, Excavation and Backfill.

502.3 SEWER LINES

Sewer and drain lines shall be of the size as shown on the drawings and unless otherwise modified herein shall be constructed in accordance with the following provisions:

502.3.1 Materials: All pipe for sanitary sewer mains and laterals shall be either PVC pipe, HDPE pipe or ductile iron pipe as called for on the drawings and in the Bid Proposal.

502.3.1.1 Joints for drain mains and laterals: shall be of the compressed rubber gasket type or fusion weld. Use only if approved by the City.
502.3.1.2 Ductile Iron Pipe: Ductile iron drain pipe shall be minimum class wall thickness as specified on the project drawings. The pipe shall be cement lined and shall meet all requirements of AWWA Specification C104 and C151. Joints shall be bell-spigot utilizing a neoprene ring gasket. Plastic wrap shall be 8 mil polyethylene plastic meeting AWWA C105/A21.5.99.
502.3.1.3 PVC Gravity Drain Pipe: shall meet or exceed all of the requirements of ASTM Specification D3034 with a pipe SDR of 35 or as called for. All pipe shall be suitable for use as a gravity sewer conduit and be green in color. Pipe joint connections shall be bell-spigot with rubber ring. All joints shall be water tight at 15 psi hydrostatic head. The bell shall consist of an integral wall section stiffened with two (2) PVC retainer rings which securely lock the solid cross section rubber ring into position. Standard lengths shall be 20'.

Pipe shall be designed to pass all tests at 73°F (±3°F). Minimum "pipe stiffness", ($F/\Delta y$) at 5% deflection, shall be 46 for all sizes when tested in accordance with ASTM Designation D-4412, External Loading.

502.3.1.4 Polyethylene Pipe: Pipe to be HDPE conforming to AWWA C901/C906 specifications

502.3.2 Installation - General: The pipe shall be laid only on a solid firm soil, which will prevent subsequent misalignment, separation or damage to the pipe. Preparation of the trench

bottom and backfilling around pipe shall be carried out in strict accordance with provisions of Section 2, Trenching, Excavation and Backfill, pipe manufacturers' recommendations and project drawings. All pipe trenches shall be free of water during pipe laying operations.

Contractor shall have utility company markings in place and grade checks made before construction staking by the Engineer. Alignment shown on the project drawings is center line construction. Contractor shall be prepared to make adjustments as required to accommodate unknown conditions as the job progresses.

New mains may be located to one side of existing mains especially where substantial flows are involved. Some mains may need to be replaced in the same location and will require temporary line for gravity or pumped flow. Contractor shall be fully equipped and prepared to plug existing lines and pump flows around work areas as required when this type of construction is deemed necessary. Pumps of adequate capacity, in good working order, with standby units and sufficient lengths of discharge and suction piping shall be required.

Contractor shall be prepared to make "wet" tie-ins in some locations, during low flow periods, which will probably not be during normal working hours.

All pipe shall be protected during handling against damage by impact by equipment and debris. The pipe shall be cleaned of all dirt and debris and carefully inspected for cracks, chips or other damage before lowering into the trench. Laying of pipe shall begin at the downstream end of the line and proceed upstream with the pipe bells pointed in the direction of travel. Joint gaskets shall be properly lubricated, placed and centered on the pipe ends for uniform compression when properly "seated" in the bell of the next pipe.

No part of the joint gasket or sealer shall protrude beyond the inside of the pipe. Small diameter pipe may be "seated" by use of a push bar; suitable mechanical means shall be provided for making up joints or large diameter pipe. Method and equipment used shall be subject to approval of the Engineer.

The furnished line shall be water tight, true to line and grade, with uniform smooth invert and when "lamped" between manholes shall show at least 90% for lengths under 300 ft. and greater than 200 ft. The cross sectional area visible for lengths smaller than 200 ft. shall be 100%.

The light source for lamping shall be sunlight or light from a strong spot light as reflected from a white surface.

Contractor shall have good inventory of pipe, fittings and adaptors for typical Water and Sewer services so that outage time during repairs or tie-ins can be held to a minimum.

502.3.2.1 Installation – Ductile Iron, PVC or HDPE Pipe: The best of excavated material or approved granular material as described in these specifications shall be used to bed and provide haunch and adjacent support for pipe. Backfill in lateral and haunch areas of pipe shall be hand compacted at near optimum moisture content, using care not

to disturb pipe. Heavy compaction equipment shall not be used on initial backfill directly above pipe. Contractor should be prepared to demonstrate that finished pipeline deflections are not above recommended limits (5%) by pulling a gauge of proper size through the line.

Pipe that is encased with concrete or flowable fill shall be held firmly in place during placement of the encasement material.

502.4 SERVICE CONNECTS

Service line connections to main shall utilize molded or cast main line wyes or tees with proper sized laterals or molded/cast wye or tee saddles (material shall be PVC or ductile iron as called for). Saddles shall be gasketed at the connection to the main and shall be held in place by two stainless steel bands. Connections to the main shall be in the top quadrant of the main where lateral grade permits. Lateral drops or direction change to meet main wyes shall utilize 45° or 22½ ° ells.

New lateral service line segments shall be of the material called for may require an adaptor to most service saddles. Connections to existing clay service laterals shall be elastomeric Fernco connections. Extreme caution should be used to insure that the soil is compacted under all service laterals so that subsequent backfill will not displace the new service line and connections. Service line connections are to be inspected prior to backfill. Evidence that would indicate that required compaction under laterals is not being achieved will mean that stiff, flowable fill or mortar will have to be placed under service lines and achieve set prior to backfill.

The lower portion of holes tapped in the main for service saddles shall not protrude into the service flow line and shall be filed smooth so that material does not hang-up on the tapped edge. Workmen shall check each tap to assure this has been done.

Service taps may be done as main construction progresses when hydrostatic testing of the main is not required. When such testing is required, laterals shall remain tied to old mains, taps shall not be made until testing is over or taps shall be made and plugged until testing is over.

502.5 HYDROSTATIC (EXFILTRATION) TESTING

502.5.1 Drain Lines: The Contractor shall furnish all equipment and material required to perform hydrostatic testing on each segment or new sewer line. The line shall be tested without the manhole unless the manhole has been previously tested and been found to be essentially water-tight. One gallon or less lost per 2 hour period with a minimum of 4 ft. of head on the line will be considered acceptable. A greater loss will require locating and repairing the leak and additional testing. Contractor shall utilize potable water for test water.

502.5.2 Manholes: The Contractor shall furnish all equipment and materials required to perform hydrostatic testing on completed manholes. Each manhole shall be tested separately utilizing line plugs inside the manholes. The manhole shall be tested to the top of manhole ring. The maximum loss permitted during a 2 hour period shall be 5 gallons. Leakage in excess of this

amount will mean that the leak must be found, repaired and the manhole retested. Pre-soaking the manhole will be permitted.

Contractor shall utilize potable water for manhole testing.

502.6 ROAD BORES AND BRIDGES

Road crossings will require boring and jacking with steel casing at locations shown on the project drawings. The casing or bridge pipe shall be placed as near as possible to the grade and alignment shown. The fusion weld drain line is to be installed in an accurately placed casing by sliding the drain line on the casing invert. Weld joints on casing interior shall be smooth to prevent abrasion on carrier pipe. The annulus between sewer pipe and casing at each end shall be sealed with acceptable commercial end seals. Misalignment of bored casings in which the sewer line grade cannot be corrected shall be abandoned, filled with flowable fill and a new bore placed at another location.

502.7 GRADE CONTROL

Bidders are advised that diligent care is to be used in the installation of sewer pipe to insure that proper grade is maintained throughout. Individual pipe joints shall be checked to see that slope is maintained and that slope is in the proper direction. Lasers and levels shall be checked to show they are properly calibrated. Portions of sewer line trench that are over-excavated shall be brought to proper grade and compacted to prevent subsequent settlement. Trench bottoms shall be accurately graded for uniform support the entire length of each pipe segment. (Note: Lasers shall be used for basic grade control this project)

502.8 QUALITY CONTROL

Bidders are advised that hydrostatic testing, Mandrel Pulling pressure testing and other quality assurance testing called for on the project drawings and in the project specifications will be adhered to. In addition, the installed drain line will be video-taped by the City of Gallup to determine if there are ponding areas, improper joints, goose-egged pipe, deflected joints or other problems with the installed pipe.

The Contractor may wish to schedule the City to make the video check on certain portions of deep drain line installation before the full depth of backfill is placed at his cost. The City will video for final inspection only at their cost. The Contractor shall be responsible for making such arrangements with adequate lead time in each instance.

502.9 MEASUREMENT AND PAYMENT

Measurement and payment for items of work covered by this section of the specifications shall be as set forth in the Special Conditions.

503 CORRUGATED METAL PIPE – INDEX

504 STATION VALVES, PIPING, APPURTENANCES, AND ASSOCIATED PAINTING –INDEX

504 STATION VALVES, PIPING, APPURTENANCES, AND ASSOCIATED PAINTING

504.1 GENERAL

The Contractor shall provide all labor, materials, equipment and incidentals required to furnish and install all valves, piping and appurtenances for the lift station. Pipe, valve and pump painting is included with this section. The Work includes, but is not necessarily limited to, all types of valves required for buried and exposed piping.

The Contractor shall review installation procedures under other sections and coordinate with the Work which is related to this Section. Related Sections are:

- Section 203, Trenching, Excavation, and Backfilling;
- Section 303, Curb & Gutter, Sidewalks, Drive Pad and Concrete Pavement Construction;
- Section 501, Water Lines and Appurtenances
- Section 602, Station Buildings
- Section 701, Electrical

504.1.1 Manufacture's Qualifications: Manufacturer shall have a minimum of 5 years of experience in the production of substantially similar equipment, and shall show evidence of satisfactory service in at least 5 installations.

Each type of valve shall be the product of one manufacturer.

504.1.2 Shop Drawings: Submit for approval the following:

- Manufacturer's literature, illustrations, specifications, detailed drawings, data and descriptive literature on all valves and appurtenances.
- Deviations from Drawings and Specifications.
- Engineering data including dimensions, materials, size and weight.
- Fabrication, assembly and installation diagrams.

504.1.3 Operation and Maintenance Data: Submit complete manuals including: Copies of all Shop Drawings, test reports, maintenance data and schedules, description of operation, and spare parts information.

504.1.4 Product Delivery, Storage and Handling:

- Handle all valves, piping and appurtenances very carefully. Valves which are cracked, dented or otherwise damaged or dropped will not be acceptable. Damaged pipe will not be accepted.
- Store materials to permit easy access for inspection and identification. Keep steel members off the ground, using pallets, platforms or other supports. Protect steel members and packaged materials from corrosion and deterioration.
- Store all mechanical equipment in covered storage off the ground and prevent condensation.

504.2 MATERIALS

504.2.1 Materials: will in general

1. Conform to the requirements of the project drawings and Bid Proposal.
2. Valves shall have manufacturer's name and working pressure cast in raised letters on valve body.
3. Manual valve operators shall turn clockwise to close unless otherwise specified. Valves shall indicate the direction of operation.
4. Buried valves shall be provided with adjustable two piece valve boxes and covers as shown.
5. All bolts, nuts, and studs on or required to connect buried valves for fire hydrant assemblies shall be Type 304 stainless steel.
6. All bolts, nuts and studs shall, unless otherwise approved, conform to ASTM A307, Grade B; or ASTM A354.
7. Gasket material and installation shall conform to manufacturer's recommendations.

504.2.2 Gate Valves 2 Inches in Diameter and Smaller: Unless otherwise called for, valves shall be bronze threaded ends, solid wedge, non-rising stem, rubber seated screwed bonnet type suitable for 250 psi service. Conforming to AWWA Specifications C500.

- Exposed, manually operated gate valve shall be equipped with hand wheels.
- Product and Manufacturer: Provide one of the following:
  a) Crane Company
  b) Or equal.

504.2.3 Ball Valves 2 Inches in Diameter and Smaller: When called for, ball valves to be bronze body with stainless steel bore ball as Jamesbury valve – line or equal. Or Type 1 PVC compact ball valves NSF approved with 235 psi rating and EPDM o-rings.

504.2.4 Resilient Wedge Gate Valves 2 Inches in Diameter and Larger: Gate valves shall be iron body, bronze mounted, non- rising stem and in conformance with AWWA C509 & C515.

- The sealing mechanism shall consist of a cast iron or ductile iron gate with a resilient wedge bonded or mechanically attached. It shall be designed to seal when unbalanced-balanced pressure is applied to either side of the gate. The sealing mechanism shall provide no leakage at 250 psi, working pressure with line flow in either direction.
- Valve operator shall be 2 inch square operating nut. Clockwise to close.
- Buried gate valves shall be furnished with valve boxes.
- Shop Painting of surfaces of cast iron valves, when called for, shall be painted with two coats of an approved two component epoxy coating applied in accordance with the manufacturer's recommendations. Otherwise, valves to be furnished with epoxy coating conforming to AWWA C550.
- Manufacturer: Provide gate valves of one of the following: a) Mueller Company, b) Clow Company, or equal
- Gate valves to be furnished with (1) operating wrench with "T" handle and socket

to fit 2" square wrench nut for every 8 buried valves installed. The "T" wrench length shall be 8 ft.

- Wheel Operator for exposed valves.

504.2.5 Control Station 6" Flow Control Valve with 3.4" Bore Orifice Plate: provide flow control valve as follows:

- Valve body and cover shall be Ductile ASTM A-536.
- Valve shall be rated for a minimum of 250 psi working pressure.
- Main valve trim: Bronze ASTM B-62
- Valve shall be hydraulically operated, pilot controlled, diaphragm valve with solenoid shut-off valve (de-energized to open)
- Solenoid shall utilize 24v DC power and drain to atmosphere
- Pilot control: Bronze ASTM B-62.
- Pilot trim: stainless steel Type 303.
- Orifice plate shall have a wafer design with a chamfered inlet
- Orifice plate size: 3.4" bore or as required to produce flow range of 230 to 920 gpm
- By pass orifice plate size: 1.8" bore
- Orifice plate Material: stainless steel Type 303 orifice plate with ductile iron plate holder
- Manufacturer: Cla-Val Co., Model 43-01with X52E orifice plate or equal
- Valve shall have indicator stem and limit switches as required for chlorination pump control and SCADA position indicator

504.2.6 Control Station 6" Altitude Valve: provide altitude valve as follows:

- Valve body and cover shall be Ductile ASTM A-536.
- Valve shall be rated for a minimum of 250 psi working pressure.
- Main valve trim: Bronze ASTM B-62
- Valve shall be hydraulically operated, pilot controlled
- Pilot control: Bronze ASTM B-62.
- Pilot trim: stainless steel Type 303.
- Manufacturer: Cla-Val Co., Model 210-01 or equal
- Valve shall have indicator stem and limit switches as required for chlorination pump control and SCADA position indicator

504.2.7 1" Dual Body Combination Air Valve: Provide dual body air valve as follows:

- Valve bodies and covers shall be Ductile ASTM A-536.
- Valve shall be rated for a minimum of 250 psi working pressure.
- Main valve trim: stainless steel Type 316
- Coating: non-stick fusion bonded epoxy
- Connection(s): 1" Threaded (NPT)
- Manufacturer: Val-matic 101S/22.9 or equal.

504.2.8 Miscellaneous Valves for Potable and Process Systems: Provide the following valves as required for potable and process systems:

a) Ball valves,

b) Hose bibs,
c) Needle valve,
d) Check valve
with the following:

- Body: Cat Red Bronze ASTM B-584 Alloy 845
- Threaded ends
- Pressure rating: 250 psi
- Seats: TFE for resilient seating
- Ball and needle valves shall have stainless steel ball or needle and stems

504.2.9 Pressure gages: Pressure gages shall have a white face with black numerals, enclosed in a flangeless aluminum case. Gages shall be accurate to 1 percent of scale.

- Gages shall be installed with an on - off valve
- Gages shall be glycerin filled or Mineral Oil
- Gages on waterline shall have a 3 ½ inch diameter cases
- Ranges shall be as shown, or in not shown, as selected by engineer
- Manufacturer: Helicoid Series 900 by Bristol Babcock, or equal

504.2.10 Ductile Iron Pipe and Fittings: Flanged pipe: Fabricate in accordance with requirements of AWWA C115. Pipe thickness will be Class 350 minimum.

- Flanged pipe to be class 350 fabricated in accordance with AAW C115
- Flanged fittings shall conform to AWWA C110
- Pressure rating to be 250 PSI min.
- Flange gaskets to be 1/8' min. full faced rubber conforming to AWWA C111.
- Coating to conform to one of the called for options in section 504.3

504.2.11 Steel Pipe: shall be ASTM A53 and be furnished with threaded ends, or beveled for welding or plain end.

- Fittings shall be fabricated of the same material as the pipe line of which they are apart
- Galvanized steel pipe shall conform to ASTM A120
- Field paint according to Section 504.3 of this specification

504.2.12 Copper Pipe: Copper pipe and solder joints shall be used for potable and pump seal water.

- Copper piping shall be Type K hard temper with solder joint pressure fittings. Type K copper pipe shall conform to ASTM B88. Fittings shall conform to ANSI B16.22.
- All connections at valves shall be threaded with joint compound or teflon tape.

504.3 PAINTING

Contractor shall provide all labor, materials, equipment and incidentals as required to furnish and install all painting work as listed below unless otherwise noted. The work includes painting and finishing of fittings, piping, and appurtenances. Some items that are factory coated may be designated by the Engineer to not receive additional coatings other than factory supplied touch-up paint. Paint includes all coating material, pretreatment, primers, sealers and finish coats.

- Surface preparation, iron and steel surfaces shall be commercial blast cleaned complying with SSPC-SP6
- Iron and steel surfaces that have been shop coated shall be cleaned of all oil, grease and dirt before painting
- Epoxy coating by Tnemec or equal-Primer plus coats as required for 10 mil min. thickness.
- Alkyd coatings with alkyd primer and two coats of quality enamel by Sherman Williams or equal.
- Color as selected by NTUA.
- Exterior and interior wood surfaces-oil base primer followed by two coats of latex or oil base paint by Sherman Williams or equal.
- Masonry Surfaces- Pro-Mar block filler followed by two coats of latex paint by Sherman Williams or equal.

504.4 TWO INCH AND SMALLER PIPE FASTENING SYSTEM

Piping mounts, spacers and supports shall be provided to securely fasten 2 in. and smaller piping to the interior walls of the station as detailed. All hardware shall be pre-painted or stainless steel.

- Manufacturer – Unistrut (Cush-A-Clamp) or approved equal.

504.5 MEASUREMENT AND PAYMENT

Measurement and payment for items of work covered by this section of the specifications shall be in accordance with provisions of the Special Conditions

505 GLASS FUSED BOLTED STEEL STORAGE TANKS – INDEX

505.8 CLEANING

505.9 TANK MANUFACTURER'S WARRANTY AND FIRST ANNIVERSARY INSPECTION

- 505.9.1 TANK MANUFACTURER'S WARRANTY
- 505.9.2 FIRST ANNIVERSARY INSPECTION

505.10 REFERENCES

- 505.10.1 SSPC SP-10
- 505.10.2 ASTM C633-79
- 505.10.3 ISO 28706-1:2008
- 505.10.4 ISO 2859
- 505.10.5 EN 14430:2004
- 505.10.6 ISO 6370-2

505.11 MEASUREMENT AND PAYMENT

505 GLASS FUSED BOLTED STEEL STORAGE TANKS

505.1 DESCRIPTION

CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown, specified or required to design, fabricate, deliver, erect, test, paint and disinfect a gloss fused to steel storage reservoir (stand pipes) of bolted construction and concrete foundation, including accessories.

Tank CONTRACTOR shall be responsible for coordinating his work with that of the General Contractor. Tank Contractor shall provide General Contractor with detailed plans or sketches of the location of pipe and other items as may be required. Tank Contractor shall keep himself fully informed of the construction where pipe and other items are to be installed.

Related Sections: 501 Water Lines and Appurtenances

505.1.1 Quality Assurance: Manufacturer shall have a minimum of 5 years experience in the completion of substantially similar tanks, and shall show evidence of satisfactory completion in at least 5 installations within the State of New Mexico complete with owners contact information and phone number.

Except as otherwise shown or specified, all design, materials, joints, workmanship and all other aspects of the tank design and fabrication shall conform to the latest publication of AWWA D103.

Contractor shall employ the services of a qualified testing organization approved by the Engineer to perform all tests required by these Specifications.

Reference Standards shall comply with applicable provisions and recommendations in the latest edition of the following except as otherwise shown or specified:

1. AWWA D103, Standard for materials, design, fabrication, and erection of Factory Coated Bolted Steel Tanks for Water Storage.
2. AWWA D103 Section 10.4, Standard for glass fused tank coating system.
3. AWWA D105, Standard for Disinfection of Water Storage Facilities
4. AWWA C652, Standard for Disinfection of Water Storage Facilities
5. ANSI/NSF Additives Standard No. 61 for all wetted tank materials

505.1.2 Submittals

Shop Drawings shall be submitted for approval as follows: a) Five (5) copies of detailed tank drawings, specifications and structural calculations. Drawings shall include all dimensions, sizes, plate thicknesses, anchorage, and piping details and details of all required accessories. Fabrication shall not be started until drawings are approved. b) The tank manufacturer's standard

published warranty shall be included with submittal information. c) The tank manufacturer's standard operation and maintenance manual upon receipt of approved shop drawings.

505.2 TANKS

505.2.1 Size:

	Twin Lakes Tank
Diameter (feet)	49'- 4"
Nominal Capacity (gallons)	0.3 MG
Height from floor to crest of overflow (feet)	21'-6"
Height from floor to roof eave (min.)	22'

505.2.2 Bottom Type: Sloped; A 4" crown shall be provided upward towards the center of tank.

505.2.3 Plates and Sheets:
The minimum thickness of any part of tank structure, except floor plates, shall be the larger of the following: 1/16-inch greater than the minimum values specified in AWWA D103.

505.2.3.1 Design requirements for mild strength steel shall conform to ASTM A1011 Grade 30 with a maximum tensile stress of 14,566 psi.

505.2.3.2 Design requirements for high strength steel shall conform to ASTM A1011 Grade 50 with a maximum tensile stress of 26,000 psi.

505.2.3.3 In no event shall have a yield strength greater than 50,000 psi be used in calculations detailed in AWWA D103, sections 3.4 and 3.5.

505.2.3.4 When multiple vertical bolt line sheets and plates of ASTM A1011 Grade 50 are used the effective net section area shall not be taken as greater than 85% or the gross area.

505.2.4 Rolled Structural Shapes:

505.2.34.1 Material shall conform to minimum standards of ASTM A36 or ASTM A992.

505.2.5 Horizontal Wind Stiffeners:

505.2.5.1 Design requirements for intermediate horizontal wind stiffeners shall be or the "web truss" type with an extended tail creating multiple layers of stiffener, permitting wind loads to be distributed around the tank.

505.2.5.2 Web truss stiffeners shall be of steel with hot dipped galvanized coating.

505.2.5.3 Rolled steel angle stiffeners are not permitted for use as intermediate horizontal

wind stiffeners.

505.2.6 Bolt Fasteners:

505.2.6.1 Bolt used in tank lap joints shall be ½" – 13 UNC-2A rolled thread, and shall meet the minimum requirements or AWWA D103, Section 2.2.

505.2.6.2 Bolt Material:

505.2.6.2.1 SAE J429 Grade 2 (1" bolt length)

505.2.6.2.1.1 Tensile strength – 74,000 psi Min.
505.2.6.2.1.2 Proof Load – 55,000 psi Min.
505.2.6.2.1.3 Allowable shear stress with threads excluded from the shear plane – 18,163 psi Min.

505.2.6.2.2 SAE J429 Grade 5 (1 ¼" bolt length)

505.2.6.2.2.1 Tensile strength – 120,000 psi Min.
505.2.6.2.2.2 Proof Load – 85,000 psi Min.
505.2.6.2.2.3 Allowable shear stress with threads excluded from the shear plane – 29,454 psi Min.

505.2.6.2.3 SAE J429 Grade 8 (>1 ¼" bolt length)

505.2.6.2.3.1 Tensile strength – 150,000 psi Min.
505.2.6.2.3.2 Proof Load – 120,000 psi Min.
505.2.6.2.3.3 Allowable shear stress with threads excluded from the shear plane – 36,818 psi Min.

505.2.6.3 Bolt Finish shall be zinc mechanically deposited with 2.0 mils (0.002 inches) minimum under bolt.

505.2.6.4 Bolt Head Encapsulation:

505.2.6.4.1 High impact polypropylene copolymer encapsulation of entire bolt head up to the splines on the shank.

505.2.6.4.2 Resin shall be stabilized with an ultraviolet light resistant material such that color shall appear black.

505.2.6.4.3 The bolt head encapsulation shall be certified to meet the ANSI/NSF Standard 61 for indirect additives.

505.2.6.4.4 All bolts on the vertical tank wall shall be installed such that the head portion is located inside the tank, and the washer and nut are on the exterior.

505.2.6.4.5 All lap joint bolts shall be properly selected such that threaded portions of the bolts will not be exposed to the "shear plane" between tank sheets.

505.2.6.4.6 Bolt lengths shall be sized to achieve a neat and uniform appearance. Excessive treads extending beyond the nut after torqueing will not be permitted.

505.2.6.4.7 All lap joint bolts shall include a minimum of 4 splines on the underside of the bolt head at the shank in order to resist rotation during torqueing.

505.2.7 Sealants:

505.2.7.1 The lap joint sealant shall be a one component, moisture cured, polyurethane compound. The sealant shall be suitable for contact with potable water and shall be certified to meet ANSI/NSF Additives Standard 61 for indirect additives.

505.2.7.2 The sealant shall be used to seal lap joints and bolt connections and edge fillets for sheet notches and starter sheets. The sealant shall cure to a rubber-like consistency, have excellent adhesion to the glass coating, low shrinkage, and be suitable for interior and exterior use.

505.2.7.3 Sealant curing rate a 73° F and 50% RH.

505.2.7.4 Tack free time: 6 to 8 hours.

505.2.7.5 Final cure time: 10 to 12 days.

505.2.7.6 Neoprene gaskets and tape type sealer shall not be used.

505.3 GLASS COATING SYSTEM

505.3.1 Surface Preparation:

505.3.1.1 Sheets shall be steel grit-blasted on both sides to the equivalent of SSPC-10 (Near-White Metal Blast). Sand blasting and chemical pickling of steel sheets is not acceptable.

505.3.1.2 The surface anchor pattern shall be not less than 1.0 mil (0.001 inches).

505.3.2 Sheet Edges: After initial sheet preparation, all full height vertical wall sheets and all rectangular floor sheets shall be beveled. An "edge coat" or metal coating or of 316 stainless steel shall be thermally bonded on these edges by an ARC thermal spray of 1.5 to 5 mils (0.0012 to 0.005 inches). The coating shall have a tensile strength greater than 1500 psi (per ASTM C633-79). An alternative to providing "edge coat" is manually or mechanically bevel or grind all sheet edges to provide a rounded edge for coating to adhere at sheet edge.

505.3.3 Cleaning:

505.3.3.1 After fabrication and prior to application of the coating system, all sheets shall be thoroughly cleaned by a caustic wash and hot rinse process followed immediately by hot air drying.

505.3.3.2 Inspection of the sheets shall be made for traces of foreign matter, soil particles, grease or rust.

505.3.4 Coating:

505.3.4.1 A base coat of glass frit containing nickel oxide shall be applied to both sides of the sheet.

505.3.4.2 A second coat of milled cobalt blue glass shall be applied to both sides of the sheets.

505.3.4.3 A third coat of glass shall be applied to all interior sidewall and floor sheet surfaces which must be a titanium dioxide reinforced mixture, white glass. The specified coating shall be an Aquastore Vitrium of equal. Only three coat processes will be allowed.

505.3.4.4 The same glass coating as applied to the exterior sheet surfaces shall be applied to the exposed edges.

505.3.4.5 The sheets shall then be fired at a minimum temperature of 1500°F in strict accordance with the manufacture's ISO 9001 quality control procedures, including firing time, furnace humidity, temperature control, etcetera.

505.3.4.6 The interior coating process for sidewall sheets and floor shall be a 3 coat process, with a final color of white. The exterior coating process shall be a 2 coat process with finished color from manufactures standard exterior color samples. Exterior color shall be selected by NTUA.

505.3.4.7 The dry film thickness of interior coating shall be 10.0 to 18.0 mils (0.010 to 0.018 inches).

505.3.4.8 The dry film thickness of exterior coating shall be 7.0 to 15.0 mils (0.07 to 0.015 inches).

505.3.5 Factory Inspection: The manufacturer's quality system shall be ISO 9001 certified and refer to ISO (International Organization for Standardization) for the following procedures:

505.3.5.1 Chemical Resistance of Glass Coating:

505.3.5.1.1 Frits shall be individually tested in accordance with pertinent sections of ISO 28706-1:2008

505.3.5.2 Factory Holiday Test:

505.3.5.2.1 A dry volt test using a minimum of 1100 volts is required.
505.3.5.2.2 Frequency of test shall be every sheet. Any wall sheet registering a discontinuity on the interior or exterior surface of floor shall be rejected.

505.3.5.3 Measurement of Glass Thickness:

505.3.5.3.1 Glass thickness shall be measured using an electronic dry film thickness gage (magnetic induction type). The thickness gauge shall have a valid calibration record.

505.3.5.4 Measurement of Color:

505.3.5.4.1 The exterior color of the sheets shall be measured using an colorimeter the colorimeter shall have a valid calibration record.
505.3.5.4.2 The color must fall within the tolerance specified by the manufacture's standard; else the panel shall be rejected.

505.3.5.5 Impact Adherence Test:

505.3.5.5.1 The adherence of the glass tank coating system to steel shall be tested in accordance with ISO standards. Any sheet that has poor adherence shall be rejected.

505.3.5.6 Fishscale Test:

505.3.5.6.1 The glass coating shall be tested in-house for fishscale be placing the full size production sheets in an oven at 400°F for one hour the sheets will then be examined for signs of fishscale. Any sheet exhibiting fishscale shall be rejected and all sheets from that gage lot will be similarly tested.

505.3.6 Packaging:

505.3.6.1 All sheets that pass Factory Inspection and Quality Control checks shall be protected from damage prior to packing for shipment.

505.3.6.2 Heavy paper or plastic foam sheets shall be placed between each panel to eliminate sheet to sheet abrasion during shipment.

505.3.6.3 Individual stacks of panels will be wrapped in heavy mil plastic and steel banded to special wood pallets built to maintain the roll-radius or the tank panels and minimize contact or movement of finished panels during shipment.

505.3.6.4 Shipment from the factory will be by truck, hauling the tank components exclusively.

505.4 ERECTION

505.4.1 Foundation:

505.4.1.1 The tank foundation is a part or this contract and shall be installed by contractor. A ring wall foundation has been included in the project drawing. The tank contractor may at his expense provide a site specific foundation design conforming to the submitted tank manufactures standards.

505.4.1.2 Site specific foundation shall be stamped by Licensed Professional Engineer (PE) in the State of New Mexico and be based on attached soils report and geotechnical analysis by GEOMAT Inc.

505.4.1.3 Tank contractor shall ensure that the include ring wall foundation conforms to manufactures' standards meet the dead and live loading including seismic for tank design under AWWA D103 for tank geographic location, elevation, and height.

505.4.1.4 Slot mount concrete footings are not acceptable.

505.4.1.5 Embedded starter ring shall be a minimum of 19" or as determined by the manufacturer.

505.4.2 Tank Floor

505.4.2.1 Reinforced Concrete Floor

505.4.2.2 The floor design is reinforced concrete with an embedded glass coated steel starter sheet per the manufacturer's design and in accordance with AWWA D103 latest edition, Sec 11.4. Slot mount style foundation is not acceptable. Concrete floor shall be placed on a 4 inch thick bed of 1 inch clean gravel. Gravel bedding shall be spread and "screeded" over a non-woven geotextile fabric underlayment. Bedding shall be crowed as called for at tank center. Care shall be taken during placement of concrete floor so that gravel is not disturbed.

505.4.2.3 Leveling of starter ring shall be required and the maximum differential elevation within the ring shall not exceed 1/8 inch, nor 1/16 inch within any 10 feet of length.

505.4.2.4 A leveling plate assembly consisting of two anchor rods and a slotted plate shall be used to secure the starter ring, prior to encasement in concrete. Installation of the starter ring on concrete blocks or bricks, using shims for adjustment is not permitted.

505.4.2.5 Place one butyl rubber elastomer (gray) water seal stripe on the inside surface of the starter ring below concrete floor line. Place one bentonite impregnated water seal strip below butyl rubber seal. The materials shall be installed in accordance with tank manufacturer's instructions.

505.4.3 Sidewall Structure

505.4.3.1 Field erection of the glass coated, bolted steel tanks shall be in strict accordance with procedures outlined in the manufacture's erection manual, and performed by an authorized dealer of the tank manufacturer, regularly engaged in erection of these tanks, using factory trained erectors.

505.4.3.2 Specialized erection jacks and building equipment called for by the tank manufacturer shall be used to erect tanks.

505.4.3.3 Particular care shall be taken in handling and bolting of the panels, structural members, and appurtenances to avoid abrasion of the coating system. Prior to a liquid test, all surface areas shall be visually inspected by the Engineer.

505.4.3.4 No backfill shall be placed against the tank sidewall without prior written approval by the tank manufacturer. Any backfill allowed shall be placed according to the strict instructions of tank manufacturer.

505.4.4 Roof (Aluminum Geodesic Dome)

505.4.4.1 Roof shall be constructed of non-corrugated triangular aluminum panels which are sealed and firmly clamped in an interlocking manner to a fully triangulated aluminum space truss system of wide flange extrusions, thus forming a dome structure.

505.4.4.1.1 The Dome shall be clear span and designed to be self-supporting from the periphery structure with primary horizontal thrust contained by and integral tension ring.

505.4.4.1.2 The Dome and tank shall be designed to act as an integral unit. The tank shall be designed to support an aluminum dome rood including all associated live loads.

505.4.4.1.3 Materials:

505.4.4.1.3.1 Triangulated dome frame struts: 6061-T6 aluminum.
505.4.4.1.3.2 Structural frame node plates: 0.375 inch nominal thickness, 6061-T6 aluminum.
505.4.4.1.3.3 Triangular dome panels: 0.050 inch nominal thickness, 3003-H16 aluminum sheet.
505.4.4.1.3.4 Triangular skylight panels shall not be utilized.

505.4.4.1.3.5 Perimeter tension/compression ring: 6061-T6 aluminum.

505.4.4.1.3.6 Fasteners: 7075-T73 anodized aluminum of Series 300 stainless steel as required by the manufactures design.

505.4.4.1.3.7 Sealant: Silicone

505.4.4.1.3.8 Gaskets: Silicone

505.4.4.1.3.9 Dormers, doors, and hatches: 6061-T6, 5086-H34 or 5052-H36 aluminum, 0.090 inches nominal thickness. Roof doors or hatches shall conform to requirements of AWWA D103. Cover shall be arranged to provide an insect-tight closure. Cover for hatch shall also be furnished with hasp to permit locking. Roof doors or hatches to overlap 4" curb 2".

505.4.4.1.4 Roof Vent

505.4.4.1.4.1 Vent shall be of the sized indicated on the project drawings and in accordance with AWWA D103. Vent shall be installed above the maximum water level of tank.

505.4.4.1.4.2 The overflow pipe shall not be considered to be a tank vent.

505.4.4.1.4.3 The vent shall be constructed of aluminum.

505.4.4.1.4.4 The vent shall be so designed and constructed to prevent the entrance of birds and or animals by including an expanded aluminum screen (1/2 inch) opening. An insect screen of 23 to 25 mesh polyester monofilament shall be provided and designed to open should the screen become plugged by ice formation.

505.5 APPURTENANCES (per AWWA D103, Section 5)

505.5.1 Piping Connections: Provide inflow, outflow and drain piping connections and floor penetrations as detailed on project drawings.

505.5.1.1 Pipe shall be steel piping of the schedule or wall thickness called for with mechanical connection to gate or butterfly valves 5' outside of tank ring wall.

505.5.1.2 Piping connections penetrating the concrete floor shall be field located and no field cutting shall be allowed. The floor section shall be thickened and reinforced as called on project drawings and consist of water stop and two (2) each butyl rubber elastomer water seal strip and lower bentonite impregnanted water seal strip. One (1) each of the seal strips shall be mounted above and below the water stop. All water stops and seal strips shall be located below concrete floor line.

505.5.1.3 Exposed/buried steel piping shall be painted as follows:

Exterior:

- Blast clean in accordance with SSPC-SP6/NACE3. Surface preparation shall be completed at factory or shop.
- Prime Coat: 2.5 - 3.5 mils. of a NSF61 approved zinc rich primer, Tnemec Series 91-H20 Hydro-Zinc primer or equal. Prime coat shall be factory or shop applied.

- Final Coats: Two (2) 8-10 mil coats of a NSF61 approved polyamide epoxy, Tnemec Series 20 or equal. The color of two coats shall be similar but distinguishable.
- All steel piping below thickened concrete floor shall be wrapped in layers of tapecoat (20 mil PVC).

Interior:

- Blast clean in accordance with SSPC-SP10/NACE3. Surface preparation shall be completed at factory or shop.
- Prime Coat: 2.5 – 3.5 mils. of a NSF61 approved zinc rich primer, Tnemec Series 91-H20 Hydro-Zinc primer or equal. Prime coats shall be factory or shop applied.
- Final Coats: Two (2) 8-10 mil coats of a NSF61 approved polyamide epoxy, Tnemec Series 20 or equal. The color of two coats shall be similar but distinguishable. Final coats shall be factory or shop applied.

505.5.2 Overflow:

505.5.2.1 Internal Weir box shall be of aluminum construction. Weir shall be sized as detailed and attached to tank according tank manufacturer at the elevation indicated on the project drawings.

505.5.2.2 Overflow piping shall be seamless aluminum tubing of the diameter shown on project drawings. The piping shall be mounted to the tank according to tank manufacturer. Buried aluminum tubing shall be wrapped in two layers of tape wrap to 6" above finished grade. Provide transition gaskets as required to connect to ductile iron mechanical joint piping.

505.5.3 Ladders:

505.5.3.1 Provide an outside vertical aluminum ladder with grooved skid resistant rungs. Ladder rungs shall not be less than ¾ inch round, spaced 12 inches apart on center. Ladder shall extend from about 7 feet above the ground to tank roof with safety cage.

505.5.3.2 Safety cage and step-off platforms shall be fabricated with galvanized steel with spacing between side rails not less than 16 inches. The safety cage shall extend a minimum 3' -6" above top of the steel reservoir and attach to the top railing. External ladder and safety cage shall include a lockable trap door.

505.5.3.3 Provide an inside vertical aluminum ladder from tank bottom to access hatch. Ladder shall be same as specified for outside ladder. Attach ladders to tank shell and roof per manufacturer's recommendation.

505.5.4 Shell Manways/Access Doors: Install in bottom ring of tank at locations selected by Engineer, two (2) circular manholes with cover hinged to shell. Manways shall be 30 inches and 36 inches in diameter as shown.

505.5.4.1 Manway shall be provided as shown on the submittal drawings in accordance with AWWA D103.

505.5.4.2 The manway and tank shell reinforcing shall comply with latest edition of AWWA D103, Section 5.1.

505.5.5: Ladder Safety Device: Provide fall prevention system in the following locations: a) Vertical exterior ladder; b) Vertical interior ladder.

Fall prevention system shall consist of a safety belt, which snaps to a safety sleeve that slides on a galvanized steel or aluminum carrier rail. System shall be Saf-T-Climb as manufactured by Air Space Devices, Inc., Paramount, California.

Furnish one safety belt. Finish one safety sleeve. Carrier shall be securely attached to ladders. Carrier rail for exterior vertical ladder shall extend above roof and shall be arranged to permit climber to land on roof without unsnapping his safety belt. Include provisions to secure a safety sleeve to carrier rail at top of the vertical ladder so that it will not slide down rail when safety belt is unsnapped.

505.5.6 Level Indicator: There shall be provided a liquid level indicator consisting of an indicator board, stainless steel wire float guides and float cable, foam glass float with stainless steel jacket, sheave elbows and red octagonal target. Construction of the level indicator shall meet the sanitary requirements of the New Mexico Environmental Department. Level indicator shall have a double throw target. Level indicator and access ladder to be located as directed for preferred viewing angles.

505.5.7 Safety Hand-Railing, non-slip surfacing and Safety Cable Tie-off System:

505.3.7.1 There shall be a 1½ in. dia. rail safety railing surrounding the roof hatch and level indicator mechanism as shown. The railing shall be securely fastened to the roof and existing ladder safety cage which will be extended to the level of the railing. Railing shall also be provided for hatches at other locations as shown.

505.3.7.2 A 2 foot wide non-slip surfacing shall be provided from access hatches to crown of tank.

505.3.7.3 An OSHA compliant safety cable tie-off system will run along non-slip surfacing between roof access hatches. The tie-off system may be used during construction; however, the safety cable must be replaced with a new cable at conclusion of tank construction.

505.5.8 Cathodic Protection: Provide inflow, outflow, and drain piping connections and floor penetrations as detailed on project drawings.

505.5.8.1 A passive cathodic protection system shall be designed and supplied by the tank manufacturer as required for the specified warranty.

505.6 FIELD TESTING

505.6.1 Hydrostatic

505.6.1.1 Following completion of erection and cleaning of the tank, the structure shall be tested for liquid tightness by filling the tank to its overflow elevation.

505.6.1.2 Any leaks disclosed by this test shall be corrected by the authorized dealer in accordance with the manufacturer's recommendations.

505.6.1.3 Water required for testing shall be furnished by the Owner at the time of tank erection completion, and at no charge to the tank erector. Disposal of test water may utilize the drain piping. Contractor shall take precautions to protect the county road and limit erosion.

505.6.1.4 Labor and equipment necessary for hydrostatic tank testing is to be included in the price of the tank.

505.7 DISINFECTION

505.7.1 Standards

505.7.1.1 The tank structure shall be disinfected at the time of testing by chlorination in accordance with AWWA Standard C652-02 "Disinfection of Water Storage Facilities".

505.7.1.2 Disinfection shall not take place until tank sealant is fully cured.

505.7.1.3 Acceptable forms of chlorine for disinfection shall be:

505.7.1.3.1 Liquid Chlorine as specified in AWWA C652-02.
505.7.1.3.2 Sodium hypochlorite as specified in AWWA C652-02.

505.7.1.4 Acceptable Methods of chlorination shall be:

505.7.1.4.1 Chlorination method one (1) as outlined in AWWA C652-02 Section 4.3.
505.7.1.4.2 Chlorination method two (2) as outlined in AWWA C652-02 Section 4.3.
505.7.1.4.3 Chlorination method three (3) as outlined in AWWA C652-02 Section 4.3.

505.7.1.5 Acceptable application methods shall be:

505.7.1.5.2 Chemical feed pump.
505.7.1.5.2 Spraying, brushing, or painting of all water-contact surfaces.

505.7.1.6 Owner will furnish water for initial disinfection. Contractor shall furnish all of chlorine required. Contractor shall be responsible for obtaining proper disinfection as determined by bacteriological tests made. If additional disinfection is required, Contractor shall pay Owner for additional water required at a cost to be computed from Owner's current rate schedule. Such additional disinfection shall be carried out until bacterial free samples are disinfection obtained.

505.8 CLEANING

Exposed concrete surfaces shall be protected from blemishes and stains during tank construction. If discoloration of exposed concrete results from painting, rusting or any other aspects or tank construction, it shall be removed to the satisfaction of Engineer.

505.9 TANK MANUFACTURER'S WARRANTY AND FIRST ANNIVERSARY INSPECTION

505.9.1 Tank Manufacturer's Warranty

The tank manufacturer shall include a warranty for the tank materials and coating. As a minimum, this warranty shall provide assurance against defects from workmanship and materials under normal and proper use, maintenance and operation, during the period of one (1) year after tank is disinfected.

The manufacturer shall further warrant that glass coated interior surfaces of tank will not corrode, under normal and proper use, maintenance and operation, during the period expiring ten (10) years after tank is disinfected.

505.9.2 First Anniversary Inspection

Inside and outside surfaces of tank shall be inspected by Owner and Contractor approximately eleven (11) months after the tank has been completed. Inspection, remedial work, if required, and report shall all be as required by AWWA D103.

505.10 REFERENCES

505.10.1 **SSPC SP-10 –** Surface Preparation Standard, Near-White Metal Blast Cleaning

505.10.2 **ASTM C633-79** – Standard Test Method for Adhesion of Cohesive Strength of Flame-Sprayed Coatings

505.10.3 **ISO 28706-1:2008** – Vitreous and Porcelain Enamels – Determination of Resistance to Chemical Corrosion.

505.10.4 **ISO 2859** – Sampling Procedures for Inspection by Attributes

505.10.5 **EN 14430:2004** – Vitreous and Porcelain Enamels – High Voltage Test

505.10.6 **ISO 6370-2** – Vitreous and Porcelain Enamels – Determination of Resistance to Abrasion.

505.11 MEASUREMENT AND PAYMENT

Measurement and payment for items of work covered by this section of the specifications shall be as set forth in the Supplemental Conditions.

506 CHLORINATION EQUIPMENT – INDEX

506 CHLORINATION EQUIPMENT

506.1 DESCRIPTION

The Contractor shall furnish all labor, materials, equipment, and incidentals required to provide a gas vacuum chlorination system and appurtenances as specified herein and as shown on the project drawings. Gas vacuum chlorination system components include, but are not limited to the following:

- Vacuum regulators, automatic switchovers and header assemblies
- Chlorinators
- Chlorine injectors
- Chlorine ejectors
- Chlorine Leak Detector
- Chlorine residual analyzers
- Chlorination pumps
- Weight Scales
- Wall mounting brackets, panels, and other accessories
- Chlorine gas and solution piping and tubing

506.2 REFERENCE SPECIFICATIONS

Reference standards shall comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

- Standards of the Hydraulic Institute
- National Electric Code
- Standards of National Electrical Manufacturers Association
- Institute of Electrical and Electronic Engineers
- American National Standards Institute
- Standards of American Water Works Association
- Chlorine Institute Standards

506.3 SUBMITTALS

Submit for approval the following:

506.3.1 Manufacturer's Literature, Illustrations, Specifications, and Engineering Data: including dimensions, materials, size, weight, performance data and parts list for each component of the chlorination system.

506.3.2 Shop Drawings: showing fabrication, assembly, installation and plumbing and wiring diagrams. Drawings shall contain complete wiring, plumbing and schematic diagrams and any other details required to demonstrate that the system has been coordinated and will properly function as a unit. Drawings shall show proposed layout and anchorage or equipment and appurtenances, clearances for maintenance and operations.

506.3.3 Operation and Maintenance Manuals: Copies of proposed operation and maintenance manuals to be submitted for approval, two copies to be returned with required changes noted prior to fin submittal.

506.3.4 Test Results: Performance test reports in booklet form showing all field tests performed to adjust each component and all field tests performed to prove compliance with the specified performance criteria, upon completion and testing of the installed system. Each test report shall indicate the final position of controls.

506.4 OPERATION AND MAINTENANCE DATA

Five copies of operation and five copies of maintenance manuals for the equipment furnished. One complete set prior to performance testing and the remainder upon acceptance. Operation manuals shall detail the step-by-step procedures required for system start up, operation and shut down. Operation manuals shall include the manufacturer's name, model number, parts list, and a brief description of all equipment and their basic operating features. Maintenance manuals shall list routine maintenance procedures, possible breakdowns and repairs and troubleshooting guides. Maintenance manuals shall include piping and equipment layout and simplified wiring and control diagrams of the system as installed. Manuals shall be approved prior to acceptance.

506.5 GENERAL CHLORINATION SYSTEM

506.5.1 Chlorination System Requirements: The gas chlorination system shall be remote vacuum feed system designed to draw the pressurized chlorine gas from 150 pound cylinders into the twin lakes flow control station supply line as noted below:

a. Number of Systems	two (one as standby or trim chlorinator)
b. Location	chlorine storage room and chlorination feed room)
c. Station Design Flow	
• Minimum	230 GPM
• Maximum	920 GPM
d. Chlorine Dose	
• Minimum	0.5 ppm (0.5 mg/L)
• Average	1.2 ppm (1.2 mg/L)
• Maximum	4.0 ppm (4.0 mg/L)
e. Design Temperature	1 to 20 °C
f. Discharge Pressure	15 psi

506.5.2 Chlorination System General Equipment:

a. Two (2) vacuum feed chlorinators w/ process control units, injectors and vacuum regulators with automatic switchovers.
b. One (1) chlorine gas leak detector with two (2) sensor probes.
c. One (1) chlorine residual analyzer.
d. Two (2) chlorination pumps
e. Three (3) dual 150 pound chlorine cylinder weigh scales.
f. Other appurtenances as specified herein and as shown on project drawing.

506.5.1 Chlorination System Signals: The signals from the future flow meter and chlorine residual analyzer at the Tohlakia Pump Station (not part of this project) will be used for automated control of Twin Lakes Chlorination System. The SCADA system will relay flow and chlorine residual via 4 to 20 ma signals to the chlorination systems process control unit (PCU) for automated control. The SCADA System will also deliver and 24v digital signal to (PCU) to control chlorination system for modes of operation (shutdown, manual, and operation).

506.6 EQUIPMENT

506.6.1 Chlorinators: The chlorination system shall be the solution feed, remote vacuum type, wall mounted, consisting of two (2) gas feed chlorinators. Each chlorinator shall be sized to feed 75 lb/day of gas chlorine with maximum capacity of 200 lb/day. The accuracy of the chlorinators shall be within ±4% of the indicated feed rate of 75 lb/day and have operating ranges of 20:1 for manual and 10:1 for automatic.

The gas chlorinators shall be of the v-notch control type and consist of the following:

- **a.** A 10" glass rotameter.
- **b.** Direct acting diaphragm type vacuum gauge
- **c.** V-notch orifice with differential regulating valve
- **d.** Vacuum Regulators
- **e.** Chlorine injectors
- **f.** Automatic positioner, operated via 4 -20 mA signal from PCU
- **g.** Dedicated process control unit
- **h.** Operate on 120 V AC, 60 Hz power.

All the gas control components shall be constructed of chemical resistant plastics and shall be wall on the wall. The V-notch orifice shall consist of a 3-inch long v-grooved PVC plug which slides in a TFE annular seat. The rotameter tubes shall be constructed of glass and the rotator of approved chlorine resistant material. Chlorinators will be installed in chlorination feed room.

Chlorinators shall be Wallace and Tiernan V10 gas feed chlorinators or equal.

506.6.1.1 Vacuum Regulators: Two (2) vacuum regulators mounted on a three (3) 150 lb. cylinder manifold and shall be of the spring actuated type and shall be able to reduce the pressure of gas without venting and maintain a the flow constant for any given setting or the feed rate, regardless of changes in container and or manifold pressure. Each regulator shall be complete with a built in local vent valve, and a separate header valve.

Housing for regulators shall be constructed of PVC. The inlet header shall be made of copper and be capable of mounting directly to 150 pound chlorine cylinder and three (3) cylinder manifold with a chlorine institute type yoke connection. The three (3) 150 lb. cylinder manifold shall and vacuum regulators shall be installed in the chlorine storage room.

Vacuum regulators shall be Wallace and Tiernan model 510M/S or equals.

506.6.1.2 Injectors: Two (2) identical injectors, one for each chlorinator, shall be ¾" fixed throat deferential type injectors. Injectors shall receive chlorine gas and "supply" water and discharge the resulting chlorine solution through ¾" piping to the point of application. Maximum water pressure for the injector shall be 300 psi at 100° F. Injectors will be installed in chlorination feed room.

Injectors shall be Wallace and Tiernan ¾" V10 Chlorinator injectors or equal.

506.6.1.3 Automatic Positioner: For automatic control, this positioner shall use a reversible motor which shall position the V-notch plug over a 3" travel in precise response to an input 4 – 20 mA analog signal. The positioner shall have the following features:

1. NEMA 4X enclosure
2. Manual override via a knob to disengage the drive motor
3. Three (3) sits of operator contacts for system interface:
    - Manual Override
    - Maximum Position
    - Minimum Position

506.6.1.4 Ejector/Diffuser: The ejector shall be a ¾"standard brass body retractable corporation stop with PVC wetted diffuser ejector to the middle of pipe.

Chemical Ejector/Diffuser Assembly

1. Rating 150 psi.
2. Type: Insertion type PVC injection quill with 45° beveled end style
3. Connection: Brass or stainless steel corporation stop with threaded connection to tapped boss on control piping tee.
4. Construction: Chemical ejector assembly shall come complete with corporation stop, solution tube, solution tube adapter, packing nut, safety chain and threaded inlet connection. Solution tube shall be of a sufficient length to extend into the process pipe to between one third and one half the pipeline diameter. Injector should allow for rodding in place. Connection must include an acceptable safety device to prevent accidental withdrawal of injection solution tube while under pressure and/or surge conditions. All wetted components shall be compatible with the chemical services.
5. Manufacturer: Inyo Process or equal.

506.6.2 Chlorination Pumps: The chlorination pumps shall be non-self-priming, compact horizontal multistage centrifugal pump fitted with a motor including an extended motor/pump

shaft. All part in contact with water shall be made of 316 stainless steel. Pump bearing shall be self-lubricated by the water.

The pump shall have a maintenance-free mechanical shaft seal. The seal shall be a 16 mm, unbalance shaft seal.

The compact pump unit shall have small physical dimension and an end suction type axial suction port and a radial discharge port. The sleeve shall be of 316 stainless steel sheet and have a threaded hole with priming plug at top and a threaded hole with drain plug at the bottom.

506.6.2.1 Chlorination Pump Characteristics: Two (2) pumps shall be supplied

Pump No.	Capacity (GPM)	TDH (feet)	Min. Efficiency (%)	Max. (HP)
#1 & #2	6	37.5	35	1/2
	12	31	45	
	18	16	41	

TDH Points be within 1.5 feet of values listed. Max HP not to be exceeded at any point on the curve.

506.6.2.2 Pump Connections:

- Axial Suction Port 1" NPT
- Radial Discharge Port 1" NPT

Provide adapters as required to chlorination supply piping.

506.6.2.3 Motors: The motor shall be a totally enclosed, fan-cooled squirrel cage motor coupled to the pump with following characteristics.

- Enclosure Class: TEFC
- Insulation Class: F
- Voltage: 1 phase; 115 V; 60 Hz
- Speed: 3400 RPM
- Sound-Pressure Level: $\leq$ 70 dB (A)

506.6.2.4 Chlorination Pump Materials:

Description	Materials	AISI/ASTM
Pump Sleeve	Stainless Steel	316
Intermediate Chamber/ Guide Vanes	Stainless Steel	316
Impeller	Stainless Steel	316
Suction Interconnector	Stainless Steel	316
Spline Shaft	Stainless Steel	316

Cover Plate	Stainless Steel	316
Shaft Seal Faces	BUBE or BUBV	
Base Plate	Painted Steel Plate	
Motor Flange	Cast Iron	
O-rings	EPDM or FKM	

506.6.2.5 Control and Operation**:** Chlorination pumps shall be controlled or operated with three (3) switches in a series arrangement. The first is a limit switch located on indication stem of flow control valve. Note that the flow control valve position is controlled via valve mounted solenoid switch and the SCADA System. The second switch is also a limit switch located on the altitude valve. The third with switch is a manual toggle switch mounted on wall in front of pump pedestal. Both pumps shall utilize a common limit switch on each control valve. A separate toggle switch shall be provided for each pump. Both pumps shall "turn on" if both control valves are open and associated toggle switch is in the "on" position. Both pumps shall turn "turn off" if either or both control valves are closed or associated toggle switch is in the "off" position.

506.6.2.6 Variations and Exceptions**:** Variations from the above specifications will be considered providing the bidder calls particular attention to such exceptions.

506.6.2.7 Start-Up and Test**:** Prior to acceptance, an operational test of all pumps, drives, and controls systems shall be performed to determine if the installed equipment meets the purpose and intent of the specifications. Tests shall demonstrate that the equipment is not electrically, mechanically, structurally or otherwise is defective; is in safe and satisfactory operating condition; and conforms to the specified operating characteristics. Tests shall include checks for excessive vibration, leaks in all pipes and seals, correct operation of control systems and equipment, proper alignment, excessive noise levels and power consumption. Any deficiencies found during the testing will be corrected and retested.

506.6.2.8 Manufacturer/Model: Grundfos CHI 2-10 or approved equal

506.6.3 Process Control Units (PCU): Two (2) process control units shall be supplied; one (1) for each chlorinator. The process control unit shall be specifically designed for automatic control of potable water disinfection systems. The PCU shall be a set-point controller of the chlorinator systems automatic positioner allowing for accurate control of gas feed equipment.

506.6.3.1 PCU Operation Range & Features: The PCU shall be a wall mounted unit with an operating range of 0 – 5 ppm (0 – 5 mg/L) of chlorine matching the chlorine residual analyzers and have the following features

- Continuous feedback control
- 4 control modes
- Selectable alphanumeric LCD display of parameters as well as output bar-graph.
- Menu driven electronics
- Isolated 4-20mA output

- RS-232 interface
- Four user-configurable alarm relays
- NEMA 4X enclosure
- Auto self-test and diagnostics menu
- Bumpless transfer when changing control modes

506.6.3.2 Control Modes: The PCU shall be capable of the following three (3) control modes for automatically controlling a V-notch actuator on a chlorinator:

- Manual
- Compound Loop with auto-tuning control technology that adapts the controller action to provide a quick response with minimal deviation for the setpoint.
- Direct Residual
- Flow Proportional

506.6.3.3 Input/Output:

506.6.3.2.1 Inputs

- Power 120 V ac

- Three 3 Analog Inputs
  - Flow Input Signal 4 – 20 mA
  - Residual Input Signal 4 – 20 mA
  - Spare Analog Input 4 – 20 mA

- Two (2) Digital Inputs initiated by 24 V DC SCADA contact
  - Input A – selectable for manual, shutdown, output driven to 0, 100% or 200%.
  - Input B – selectable for pre-programmed jobs 1 & 2

506.6.3.2.2 Outputs

- Control Output Increase/Decrease to Actuator
- Configurable Output 4 – 20 mA
  - Control Out/Actuator Position
  - Input Flow
  - Input Residual
- Four Alarm Relays Configurable as:
  - High Residual
  - Low Residual
  - High Flow
  - Low Flow
  - High Control Out
  - Low Control Out
  - Manual Mode

- Shutdown
- Power On
- Loss of residual
- Loss of flow

506.6.3.4 Manufacturer/Model: Wallace & Tiernan SFC PC Process Controller or equal.

506.6.4 Weigh Scales: Two (2) electronic scales capable of weighing three (3) 150 lb. chlorine cylinders to the 0.22 lb. (0.1 kg) shall be supplied.

506.6.4.1 Features: The scale(s) shall have the following features:

- One (1) Remote mounting digital display/indicator capable of displaying weights for individual cylinders as well as "bank total"
- 4 – 20 mA signal for each cylinder and the bank
- Cable lengths as required for run from display/indicator to platform assemblies
- Three (3) independent Load Cell platforms

506.6.4.2 Construction: The scale(s) shall be constructed as follows:

- Three (3) independent loads cell(s) in corrosion resistant low profile PVC platform assemblies, with three (3) chaining brackets/tool racks
- Utilize corrosion resistant fasteners and fitting.
- Load Cell(s) shall have no moving parts including levers and mechanical links that are susceptible to corrosion, bending or breaking

506.6.4.3 Indicator: Indicator(s) shall carry the CE marking and be housed in a NEMA 4X, UL approved enclosure. Indicator(s) shall independently monitor 3 scales/load cells. Indicator digital display shall be powered by 110 V AV and have a two (2) line, 16 character per line, backlit alphanumeric LCD display equipped with a 10 key numeric pad with tactile feedback for input of tare and level alarm values.

All indicator operations shall be menu prompted for ease of operation. Operation shall be able to monitor chemical by weight, volume, or percent full. Indicator shall be equipped with an Auto-Load function that automatically compensates for tank tare weight during tank change. Indicator shall be equipped with at least 3 channels (one for each load cell platform with a user selectable two (2) digit "Scale ID" number and display the following:

- Net Remaining
- Feed Rate
- Daily Usage
- Total Amount Used
- Days Until Empty
- Gross Weight
- Tare Weight

A data log functions shall store the Daily Usage for each of the previous 10 days. Full scale accuracy shall be better than ¼ of 1%. Each channel shall have an independent, adjustable 4 – 20 mA output signal for Net Weight or Feed Rate.

506.6.4.4 Manufacturer/Model: Wallace & Tiernan Electronic Chlor-Scale 150 model DR 150-3 with Force Flow Equipment Wizard 4000 Indicator/Display or equal.

506.6.5 Chlorine Residual Analyzer: One (1) chlorine residual analyzer shall be supplied.

506.6.5.1 Features: The Analyzer shall have the following features:

- Continuously measure free chlorine in drinking water applications with a range of 0 – 5 ppm (0 – 5 mg/l).
- Utilize proven and universally accepted amperometric technology to provide reliable and stable measurement of chlorine residuals.
- Perform chlorine residual measurement without the use of reagents.
- Provide a 4-20 mA output signal for control or recording.

506.6.5.2 Flow Cell: The flow cell shall feature a bare-electrode type cell for free chlorine. The flow cell shall utilize a three (3) electrode technology. To ensure a stable, representative measurement of chlorine residual the flow cell shall maintain a constant sample flow rate.

506.6.5.2.1 Flow Cell Technical Data

Range (scale):	0 – 5 ppm (0 – 5 mg/l) free chlorine
Accuracy:	± 2% of full scale
Sensitivity:	± 1% of full scale
Repeatability:	± 2% of full scale
Stability:	± 2% of full scale under standard conditions
Response Time:	90% change < 20 seconds
Sample Temperature:	41° to 122° F
Sample Flow:	Constant 10gal/hr ± 18%
Inlet Pressure:	2 – 60 psi
Outlet Pressure:	0 psi
Sensor Cable:	length as required

506.6.5.3 Display and Electronics: The display electronics shall be housed in a NEMA 4X enclosure and have the following characteristics:

- Power Requirements: 115 V AC, 60 Hz
- Readout: 16-character, 2 line backlit LCD display
- Output Signal: 4 -20 mA isolated signal for chlorine residual
- External Alarms: 2 user configurable electromechanical relays.

506.6.5.4 Manufacturer/Model: Wallace & Tiernan Depolox 3 Plus Residual Analyzer with Bare Electrode Type Cell or equal.

506.6.6 Chlorine Leak Detection System: One (1) self-testing dual point chlorine gas detection system shall be supplied. The detection system shall be of a modular design consisting of sensor/transmitters and receiver/display modules.

506.6.6.1 System Technical Data: The Analyzer shall have the following characteristics:

- Chlorine Gas Detection Range: 0 – 10 ppm
- Power Requirements: 120 V AC, 60Hz
- Gas Alarm Setpoints: 2 independent setpoints (warning and alarm)
- Gas Concentration Output Signal: One (1) 4 – 20 mA signal for both monitoring points.
- Alarm Indicators: High intensity LED bar & Audible Horn
- Alarm Relays Three (3) assignable alarm relays, 120 V AC

506.6.6.2 Receiver: One (1) Dual Point Receiver with power supply module and battery back-up system shall be installed. The receiver shall be installed in the Chlorination Feed Room on the Control (North) Wall.

The receiver shall take sensor/transmitter signals and display the chlorine gas concentrations on a 4-digit LED Display for each of the monitored locations. The receiver shall also relay the gas concentrations for each monitored locations via an isloted 4 – 20 mA signal.

The receiver module shall power both sensor transmitters and be supplied with cabling to run from receiver to sensor/transmitter as required. The receiver shall be switch programmable for the full scale range. A single switch on the front panel shall provide alarm acknowledgment, reset functions, alarm relay inhibition, and system testing. Monitor shall contain alarm horn and LED light bar.

506.6.6.3 Sensor/Transmitter: Two (2) sensor/transmitter units shall be installed. The Sensors shall be installed as follows:

- One (1) Chlorine Storage Room – North Wall
- One (1) Chlorination Feed Room – Chlorination (South) Wall

Electrochemical Gas sensor shall attach directly to transmitter boxes with a water-tight seal. A short sensor cable plugs into the transmitter circuit board. All sensor/transmitter components shall be housed in a NEMA 4X enclosure

The Receiver module shall provide power to the Sensor/Transmitter modules through a two-conductor cable, which is also used to transmit the signal back to the Receiver. The Sensor/Transmitter may not be used with a separate power source.

506.6.5.4 Manufacturer/Model: Wallace & Tiernan Acutec 35 Dual Point Chlorine Gas Detection System or equal.

506.6.7 Piping and Fittings: Supply all pipes, fittings and connections as required for water supply, gas supply, solution delivery, drains, vents, and other appurtenances for complete installation of the chlorinator systems.

506.6.7.1 Rigid Piping, Fittings and Specials: All rigid piping, fittings, valves and specials for gas vacuum lines, supply lines and solution lines shall be schedule 80 PVC having a minimum pressure rating of 150 PSI. Joints shall be socket type unless otherwise called for.

506.6.7.2 Flexible Tubing: All flexible tubing shall be polyethylene tubing of the size called for on the project drawings.

506.6.7.3 Gas Manifolds: Gas manifolds shall connect three (3) 150 lb supply cylinders to a vacuum regulator and be wall mounted. Manifold shall have 5/8" female straight thread inlets and a 3/4" female straight thread outlet. Vacuum regulator shall connect to manifold with Chlorine Institute type yoke connection. Adapt gas supply lines as required.

506.6.7.4 Auxiliary Cylinder Valve: Auxiliary cylinder valves shall be Chlorine Institute yoke style valves.

506.6.8 Safety Equipment:

506.6.8.1 Emergency Repair Kit

One emergency repair kit, Chlorine Institute Emergency Kit "A", for 150 lb. chlorine cylinders complete with carrying case and an OSHA approved portable eye wash station shall be supplied to the Chlorine Storage Room.

506.6.8.2 Personnel Protective Equipment

The following shall be supplied within a wall mounted cabinet in the Chlorination Feed Room. Locate as directed by Engineer.

- Complete suit of PVC protective clothing.
- One pair of acid resistant gloves
- One pair of Protective boots
- Two set of air masks.

506.6.9 Spare Parts:

The following spare parts shall be provided:

- 10" Rotometer
- Compatible Vacuum Regulator

506.12 INSTALLATION

Chlorination equipment and appurtenances shall be installed as shown in the contract drawings and in accordance with the manufacturer's written instruction. All appurtenances required for a complete and operating chlorination system shall be provided, including such items as chlorinators, pumps, analyzers, gas monitors, piping, conduit, valves, wall sleeves, and controls.

Pumps and motors shall be thoroughly cleaned, primed and given two finish coats at the factory I accordance with the recommendations of the manufacturer. Field painting is required to "touch up" nicks and scrapes that may occur during installation. Machined, polished and non-ferrous surfaces shall be coated with corrosion prevention compound.

Chlorinators shall shop tested before being installed. Installation shall be in complete accordance with manufacturer's instructions and recommendations.

506.13 START-UP AND TEST

Prior to acceptance, an operational test of all chlorination equipment and accessories shall be performed to determine if the installed equipment meets the purpose and intent of the specifications. Tests shall demonstrate that the equipment is not electrically, mechanically, structurally or otherwise is defective; is in safe and satisfactory operating condition; and conforms to the specified operating characteristics. Any deficiencies found, during the testing, will be corrected and retested.

Contractor shall verify that structures, pipes, and equipment are compatible. Contractor shall make adjustments required to place system in proper operating condition.

A manufacturer's representative shall check and approve the installation before operation. The Manufacturer shall test operate the system in the presence of the Engineer and verify that the chlorination system conforms to requirements, and instruct station personnel on care and maintenance of the equipment. The Manufacturer shall revisit the job site as often as necessary until all trouble is corrected and the installation is entirely satisfactory.

A field training course shall be provided for designated operating and maintenance staff members. Training shall provide for a total period of four hours at normal working time and shall start after the system is functionally complete, but prior to final acceptance test. Field training shall cover all of the items contained in the operating and maintenance manuals.

601 FENCING - INDEX

601 FENCING

601.1 DESCRIPTION

The work covered by this section of the specifications consists of furnishing all plant, labor, equipment, appliances and materials in installing site fencing complete with gates and appurtenances.

Fencing complete with top rail, tension wire, gates and appurtenances shall be installed at the locations shown on the drawings.

601.2 MATERIALS AND INSTALLATION

601.2.1 Chain Link Fencing

- Fencing shall be 6' high with 3 strands of security barbed wire above fence fabric and gates.
- Wire fabric for fence and gates shall be 2" mesh #9 gauge open hearth steel, hot dipped galvanized after fabrication.
- Line posts shall be 1 7/8" O.D. galvanized structural steel pipe, min. Schd. 40.
- Corner posts shall be 3" O.D. galvanized structural steel pipe, min. Schd. 40.
- Gate post for gate openings of less than 4' width shall be 3" O.D. and for openings over 4' and less than 16' width shall be 4" O.D. galvanized structural steel pipe, min. Schd. 40.
- Gates shall be constructed of 2" O.D. galvanized pipe frames covered with fabric same as that specified for fencing.
- Fittings shall be galvanized malleable iron.
- Barbed wire shall be composed of two strands of 12½ gauge galvanized wire with barbs.
- All fence and gate posts shall be set in concrete to a depth recommended by the manufacturer, but not less than 30". Posts shall be set plumb and tops graded to present smooth, pleasing lines. Fabric shall be pulled tight and attached to post, top rail and tension wire with galvanized wire or wire clips. Gates shall have provisions for padlocking and open-close stops. Post spacing shall not exceed 10'. Line posts that are in a circular layout may need to be increased in size and depth of setting to prevent inward leaning when fence fabric is tensioned.
- Top rails to be nominal 1 5/8" O.D.

601.2.1Wire Fencing

- Fencing shall be 4' high with
    a) 2 strands of barbed wire above NMDOT approved woven wire fencing mesh.
    b) 5 strands of barbed wire
    c) 3 strands of non-barbed wire
- Line posts shall be 7' T-posts.
- Corner posts and pull post shall be constructed of 2 ½"x2 ½"x1/4" angle.
- Barbed wire shall be 12½ gauge galvanized wire with barbs.
- Non-Barbed wire shall be 12½ gauge galvanized wire.

- All corner, pull gate posts shall be set in concrete to the specified depth, Posts shall be set plumb and tops graded to present smooth, pleasing lines. Fabric and/or wire shall be pulled tight and attached to post with galvanized wire or wire clips. Post spacing shall not exceed 10'. Line posts that are in a circular layout may need to be increased in size and depth of setting to prevent inward leaning when fence fabric is tensioned.

601.3 MEASUREMENT AND PAYMENT

Measurement and payment for items of work covered by this section of specifications shall be in accordance with provisions of the Special Conditions.

602 STATION BUILDINGS - INDEX

602 STATION BUILDINGS

602.1 DESCRIPTION

This item of work shall consist of furnishing all materials, supplies, plant and labor required for construction of Metering Station, Pressure Reducing Staton, and Water Loading Station Buildings and accessories complete in accordance with applicable provisions of these specifications and the project drawings.

602.2 WALL CONSTRUCTION

Building to be of concrete block construction conforming to applicable provisions of ASTM C90 and to details shown on the project drawings. Block to have architectural features on exterior walls when called for. Concrete block courses to be reinforced every other course with "Dura-Wall" with proper lap. All exposed mortar joints to be "tooled". All block voids to be filled with concrete. Anchor bolts to be installed as shown in cap beam around top of building walls.

Reinforcing steel for dowels and walls shall be at locations shown with a minimum lap of 24 bar diameters or as shown. Concrete for wall voids and cap beams shall be 4000PSI at 28 days as cured in laboratory conditions.

The Contractor shall coordinate and plan as required to insure that wall openings in masonry units are of proper size for doors, exhaust fans, pipe sleeves and other appurtenances.

Wall exteriors shall be stuccoed when so designated with a scratch coat, brown coat and sand finish color coat when so designated. Stucco netting to be installed for the scratch coat. The color for the final coat shall be selected by the City.

Exterior walls to be split faced block when so designated. Both interior and exterior joints shall be tooled. All other appurtenances of this section apply. Block color shall be selected by the city. Exposed concrete to be given a 'rubbed' finish.

602.3 ROOF SYSTEM

The roof structural system shall be composed of 2" x 12" fir-hemlock beams (rafters) on 16" centers unless otherwise noted. Outside framing or facia members shall be pine. Each rafter to be secured at each end with galvanized framing brackets, nailed to wall plates. Framing brackets and joist hangers to be Simpson products or equal. Station ceiling to consist of ½" exterior plywood. Ceiling joints to be trimmed with screen door molding strips. Roof sheeting to the 5/8" CDX plywood.

R-19 Fiberglass Batts shall be placed between rafters as shown on the project drawings. ½" min. plywood with continuous insect screen ventilation strip shall be used for soffit construction.

Metal roof shall be "Pro-Panel" or equal. Fascia shall be trimmed with metal compatible to roof panels and shall include gutter on the low side of roof. Down spouts and splash pads shall be provided.

602.4 SLAB

The ground level slab shall be reinforced concrete (4000 PSI in 28 days) as shown on the project drawings. Equipment pads and pump bases shall be accurately located prior to pouring. Weld plates and anchor bolts shall be placed in the slab during the pour at locations called for. All exposed edges shall be chamfered ¾". (Note: The outside stemwall edge is to be chamfered 3/4 ".) The Contractor shall coordinate and plan for the location of sleeves in or below the slab as required for passage of electrical and control conduit. The number, location and size of these sleeves shall be submitted for approval prior to pouring.

The exposed edges of the floor slab shall be given a rubbed finish. The slab shall be given a smooth trowel finish.

602.5 DOORS

Doors shall be heavy duty doors meeting the dimensional and operational requirements as shown on the project drawings. Doors shall be designated as Level 2, Physical Performance Level B, Model 1 with an insulated core per SDI/DOOR A250.8. Insulated core shall have a U-factor of 0.48 in accordance with SDI/DOOR 113. For pairs of exterior steel doors provide an overlapping steel astragal with the doors.

Frames shall meet the dimensional and operational requirements as shown on the project drawing and conform to SDI/DOOR A250.8. Frame faces shall be continuously welded at corner joints and have mechanical interlock or continuously welded stops and rabbits. Frames shall be welded in accordance with the Structural Welding Code Section 1 to 6, AWS D1.1/D1.1M and in accordance the practice specified by the producer of the metal being welded. Anchors to secure frame to adjoining construction shall be provided. Anchors shall be steel, zinc-coated or painted with rust inhibitive paint, and be no lighter than 18 gage. A minimum of three anchors shall be provide for each jamb. Frames higher than 7.5 feet shall require an additional anchor at each jamb for every additional 2.5 feet or fraction thereof. Frames attached to masonry construction shall be fully grouted and anchored with corrugated or perforated steel straps.

Provide minimum hardware reinforcing gages as specified in SDI/DOOR A250.6. Prepare doors and frames for hardware in accordance with the applicable requirements of SDO/DOOR A250.8 and SDI/DOOR A250.6. Hardware shall be located in accordance with the requirements of SDI/DOOR A250.8, as applicable. Drill and tap for surface-applied hardware onsite. Additional reinforcing for surface-applied hardware shall be built into the door at the factory. Door frames shall be punched to receive a minimum of two rubber or vinyl door silencers on lock side of single doors and one silencer at the head of each leaf of double doors.

All surfaces of doors and frames shall be thoroughly cleaned, chemically treated and factory primed with a rust inhibiting coating as specified in SDI/DOOR A250.8. Where coating is removed by welding, apply a touchup of factory primer.

Frames shall be installed in accordance with SDI/DOOR A250.11. Plumb, align, and brace frames securely until permanent anchors are set. Bottoms of frames shall be anchored with expansion bolts or powder-actuated fasteners. Build in or secure anchors to adjoining construction. Frames shall be backfilled with mortar and the interiors shall be coated with corrosion inhibiting bituminous material.

Doors shall be installed in accordance with SDI/DOOR A250.8. After erection clean and adjust hardware.

Finished doors and frames shall be strong and rigid, neat in appearance, and free from defects, waves, scratches, cuts, dents, ridges, holes, warp, and buckle. Molded members shall be clean cut, straight, and true, with joints coped or mitered, well formed, and in true alignment. Dress exposed welded of soldered joints smooth. Door frame sections shall be designed for use with wall construction indicated. Corner joints shall be well formed and in true alignment. Conceal fastenings where practicable. On wrap around frames provide a throat opening 1/8 inch larger than the actual masonry thickness. Design frames for exposed masonry walls to allow sufficient space between the inside back or trim and masonry to receive caulking compound.

602.6 DOOR HARDWARE

Promptly furnish template information or templates to door and frame manufacturers. Conform to BHMA A 156.7 for template hinges. Coordinate hardware items to prevent interference with other hardware.

Clearly and permanently mark with manufacturer's name or trademark, hinges, pivots, locks, latches, exit devices, bolts and closers where the identifying mark will be visible after the item is installed. For closers with covers, the name or trademark may be beneath the cover.

602.6.1 Hinges: Hinges shall conform to BHMA A156.1, and be 4 ½ by 4 ½ inch unless otherwise indicated. Construct loose pin hinges for exterior doors so that pins will be nonremovable when door is closed. Other antifriction bearing hinges may be provided in lieu of ball-bearing hinges.

602.6.2 Mortise Locks and Latches: Mortise locks and latches shall conform to BHMA A156.13, and be Series 1000, Operational Grade 1, Security Grade 2. Provide mortise locks with escutcheons not less than 7 by 2 1/4 inch with bushing at least 1/4 inch long. Cut escutcheons to suit cylinders and provide trim items with straight, beveled, or smoothly rounded sides, corners, and edges. Install knobs and roses of mortise locks with screwless shanks and no exposed screws.

602.6.3 Exit Devices: Exit devices shall conform to BHMA A156.3, and be Grade 1. Provide adjustable strikes for mortise type and vertical rod devices. Provide open back strikes for pairs

of doors with mortise and vertical rod devices. Provide escutcheons, not less than 7 by 2 1/4 inch.

602.6.4 Horizontal Actuating Bar Device Exi: Exit devices with horizontal actuating bar shall conform to BHMA A156.3, with full-width horizontal actuating bar for single doors. Provide full width push pad type actuating bar for pairs of doors with mortise and vertical rod devices. Provide escutcheons, not less than 7 by 2¼ inch.

602.6.5 Keying System: Provide a great master keying system, as directed to match other water department locks.

602.6.6 Lock Trim: Lock trim shall be cast, forged, or heavy wrought construction and commercial plain design.

602.6.7 Knobs and Roses: Shall conform to the minimum test requirements of BHMA A156.2 and BHMA A156.13 for knobs, roses, and escutcheons. For reinforced knobs, roses, and escutcheons, provide outer shell of 0.035 inch thickness, and combined thickness of 0.070 inch, except for knob shanks, which are 0.060 inch thick.

602.6.8 Lever Handles: Provide lever handles in lieu of knobs where indicated. Conform to the minimum requirements of BHMA A156.13 for mortise locks of lever handles for exit devices. Provide lever handle locks with a breakaway feature (such as a weakened spindle or a shear key) to prevent irreparable damage to the lock when force in excess of that specified in BHMA A 156.13 is applied to the lever handle. Provide lever handles return to within ½ inch of the door face.

602.6.9 Keys: Furnish one file key, on duplicate key, and one working key for each key change and for each master keying system. Furnish one additional working key for each lock of each keyed-alike group. Stamp each key with appropriate key control symbol and "Do Not Duplicate." Door shall be keyed as directed to match other NTUA water department locks.

602.6.10 Door Bolts: Door bolts shall conform to BHMA A156.16. Provide dustproof strikes for bottom bolts, except for doors having metal thresholds. Automatic latching flush bolts: BHMA A156.3, Type 25

602.6.11 Closers: Closers shall conform to BHMA A156.4, and be Series C02000, Grade 1, with PT 4C. Provide with brackets, arms, mounting devices, fasteners, full size covers, and other features necessary for the particular application. Size closers in accordance with manufacturer's recommendations. Provide manufacture's 10 year warranty

Engrave each closer with manufacturer's name or trademark, date of manufacture, and manufacturer's size designation located to be visible after installation.

602.6.12 Overhead Holders: Overhead holders shall conform to BHMA A 156.8.

602.6.13 Closer Holder-Release Devices: Closer Holder-Release Devices shall conform to BHMA A156.15.

602.6.14 Door Protection Plates: Door Protection Plates shall conform to BHMA A156.6.

Kick Plates shall be 2 inch less than door width for single doors; on inch less than door width for pairs of doors. Provide 10 inch kick plates for flush doors.

602.6.15 Door Stops and Silencers: Door Stops and Silencers shall meet BHMA A156.16, and be Silencers Type L03011. Provide three silencers for each single door, two for each pair.

602.6.16 Padlocks: Padlocks shall conform to ASTM F883.

602.6.17 Thresholds: Thresholds shall conform to BHMA A156.21. Use J35100, with vinyl or silicone rubber insert in face of stop, for exterior doors opening out unless specified otherwise.

602.6.18 Weather Stripping Gasketing: Weather Stripping Gasketing shall meet BHMA A156.22. Provide a set to include head and jamb seals, sweep strips, and for pairs of doors, astragals. Air leakage of weather stripped doors not to exceed 1025 cubic feet per minute of air per square foot of door area when tested in accordance with ASTM E283. Provide weather stripping with one of the following.

Extruded aluminum retainers not less than 0.050 inch wall thickness with vinyl, neoprene, silicone rubber, or polyurethane inserts. Provide clear (natural anodized aluminum.

602.6.19 Spring Tension Type: Springs shall be stainless steel not less than 0.008 inch thick.

602.6.20 Rain Drips: Rain Drips shall be Extruded aluminum, not less than 0.08 inch thick, clear anodized. Set drips in sealant and fasten with stainless steel screws.

602.6.21 Door Rain Drips: Door rain drips shall be approximately 1 ½ inch high by 5/8 inch projection. Align bottom with bottom edge of door.

Overhead Rain Drips shall be approximately 1 ½ inch high by 2 ½ inch projection, with length equal to overall width of door frame. Align bottom with door frame rabbet.

602.6.22 Special Tools: Provide special tools, such as spanner and socket wrenches, required to service and adjust hardware items.

602.6.23 Fasteners: Provide fasteners of proper type, quality, size, quantity, and finish with hardware. Provide stainless steel or nonferrous metal fasteners that are exposed to weather. Provide fasteners of type necessary to accomplish a permanent installation.

602.6.24 Finishes: Finishes shall conform to BHMA A156.18. Provide hardware in BHMA 630 finish (satin stainless steel), unless specified otherwise. Provide items not manufactured in stainless steel in BHMA 626 finish (satin chromium plated) over brass or bronze, except BHMA

652 finish (satin chromium plated) for steel hinges. Proved hinges for exterior doors in stainless steel with BHMA 630 finish or chromium plated brass or bronze with BHMA 626 finish. Furnish exit devices in BHMA 626 finish in lieu of BHMA 630 finish. Match exposed parts of concealed closers to lock and door trim.

Install hardware in accordance with manufacturers' printed installation instructions. Provide machine screws set in expansion shields for fastening hardware to solid concrete and masonry surfaces. Provide toggle bolts where required for fastening to hollow core construction. Provide through bolts where necessary for satisfactory installation.

602.7 PAINT

All wood shall be primed with oil based paint and then painted with 2 coats of quality exterior alkyd enamel.

All steel (except galvanized) shall be primed in the shop. Field welds shall be thoroughly brushed and primed. Primed steel items to receive 2 coats of gloss enamel alkyd paint as Bar-Ox 452 by Devoe or approved equal. Many manufactured products such as electrical cabinets, air compressors and motors may not need painting if suitable in color and if approved by the Engineer. If touch-up of these items is required, it shall be with paint furnished by the manufacturer.

Interior CMU's shall be sealed with Sherman Williams Pro Mar Block Filler or equal and painted with two coats of quality exterior latex paint.

All painting shall be done by experienced workmen to produce a professional looking finished station. The Contractor shall furnish color charts for color selection by the City.

602.8 SUBMITTALS

The Contractor shall submit shop drawings and other information as required to verify compliance with the specifications for fabricated and manufactured items for the Station Buildings.

602.9 MEASUREMENT AND PAYMENT

Measurement and payment shall be in accordance with provisions of the Special Conditions.

701 ELECTRICAL – GENERAL - INDEX

701.4.12 LOCATION OF EQUIPMENT AND OUTLETS
701.4.13 IDENTIFICATION AND SIGNS
701.4.14 PROTECTION OF MATERIALS AND EQUIPMENT
701.4.15 CUTTING AND REPAIRING
701.4.16 EXCAVATION AND BACKFILLING
701.4.17 WARRANTY
701.4.18 PRODUCT HANDLING

701.5 MEASUREMENT AND PAYMENT

801 DEMOLITION – INDEX

801 DEMOLITION

801.1 GENERAL

801.1.1 References: The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

- AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
- AASHTO M 145 (1991; R 2000) Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
- AASHTO T 180 (2001; R 2004) Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and an 457-mm (18-in) Drop
- AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
- ANSI A10.6 (1990; R 1998) Safety Requirements for Demolition Operations

801.1.2 General Requirements: Do not begin demolition until authorization is received from the City. Remove rubbish and debris from the project site daily do not allow accumulations outside the existing dwelling.

801.1.3 Submittals: The following shall be submitted in accordance with Section 101 SUBMITTAL PROCEDURES:

- SD-01 Preconstruction Submittals
- Existing Conditions
- SD-07 Certificates
- Demolition Plan
- Notifications
- Notification of Demolition and Renovation forms
- Proposed Demolition And Removal Procedures For Approval Before Work Is Started.
- SD-11 Closeout Submittals
- Receipts
- Receipts or bills of laden, as specified.

801.1.4 Regulatory And Safety Requirements: Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the "Contract Clauses," conform to the safety requirements contained in ANSI A10.6.

Furnish timely notification of demolition activities to local residents.

Complete and submit Notice of Intent (NOI) to State authorities and Engineer delivered at least ten working days prior to commencement of work

801.1.5 Dust And Debris Control: Prevent the spread of dust and debris to existing dwellings and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or

pollution. Sweep pavements as often as necessary to control the spread of debris that may result in objectionable accumulation of debris and dirt.

801.1.6 Protection

801.1.6.1 Traffic Control Signs: Where pedestrian and driver safety is endangered in the area of removal work, use traffic barricades with flashing lights. Anchor barricades in a manner to prevent displacement by wind. Notify the local police and fire department prior to beginning such work.

801.1.6.2 Existing Conditions Documentation: Before beginning any demolition work, survey the site and examine the drawings and specifications to determine the extent of the work. Record existing conditions in the presence of the Engineer showing the condition of structures and other facilities adjacent to areas of alteration or removal. Photographs sized 4 inch will be acceptable as a record of existing conditions. Include in the record the elevation of the top of foundation walls, finish floor elevations, possible conflicting electrical conduits, plumbing lines, the location and extent of existing cracks and other damage and description of surface conditions that exist prior to before starting work. It is the

It is the Contractor's responsibility to verify and document all required outages which will be required during the course of work, and to note these outages on the record document.

801.1.6.3 Items to Remain in Place: Take necessary precautions to avoid damage to existing items to remain in place, Repair or replace damaged items as approved by the Engineer. Coordinate the work of this section with all other work indicated. Construct and maintain shoring, bracing, and supports as required.

801.1.6.4 Existing Construction Limits and Protection: Do not disturb existing construction beyond the extent indicated or necessary for installation of new construction. Provide temporary shoring and bracing for support of building components to prevent settlement or other movement. Provide protective measures to control accumulation and migration of dust and dirt in all work areas. Remove snow, dust, dirt, and debris from work areas daily.

801.1.6.5 Trees: Protect trees within the project site, which might be damaged during demolition and are indicated to be left in place with a 6 foot high fence. Erect and secure fence a minimum of 5 feet from the trunk of individual trees or follow the outer perimeter of branches or clumps of trees. Replace any tree designated to remain that is damaged during the work under this contract with like-kind or as approved by the Engineer.

801.1.6.6 Utility Service: Maintain existing utilities indicated to stay in service and protect from damage during demolition operations.

801.1.6.7 Facilities: Protect electrical and mechanical services and utilities. Where removal of existing utilities and pavement is specified or indicated, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities.

801.1.6.8 Protection of Local Residents: Before, during and after the demolition work the Contractor shall continuously evaluate the condition of the structures being

demolished and take immediate action to protect all personnel working in and around the project site.

801.2 BURNING

The use of burning at the project site for the disposal of refuse and debris will not be permitted.

801.3 RELOCATIONS

Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Items to be relocated which are damaged by the Contractor shall be repaired or replaced with new undamaged items as approved by the Engineer.

801.4 REQUIRED DATA

Prepare a Demolition Plan. Include in the plan procedures for careful removal and disposition of materials specified to be salvaged, coordination with other work in progress. A detailed description of methods and equipment to be used for each operation shall be provided.

801.5 ENVIRONMENTAL PROTECTION

Comply with the Environmental Protection Agency requirements specified.

801.6 EXISTING STRUCTURES TO BE REMOVED

Inspect and evaluate existing structures on site.

801.6.1 Structures: Remove existing structures indicated to be removed in its entirety. Remove sidewalks, curbs, gutters and retaining walls as indicated.

Demolish concrete and masonry walls in small sections.

801.6.2 Concrete: Saw concrete along straight lines to a depth of a minimum 2 inch. Make each cut in walls perpendicular to the face and in alignment with the cut in the opposite face. Break out the remainder of the concrete provided that the broken area is concealed in the finished work, and the remaining concrete is sound. At locations where the broken face cannot be concealed, grind smooth or saw cut entirely through the concrete.

801.6.3 Patching: Where removals leave holes and damaged surfaces exposed in the finished work, patch and repair these holes and damaged surfaces to match adjacent finished surfaces, using on-site materials when available. Where new work is to be applied to existing surfaces, perform removals and patching in a manner to produce surfaces suitable for receiving new work. Finished surfaces of patched area shall be flush with the adjacent existing surface and shall match the existing adjacent surface as closely as possible as to texture and finish. Patching shall be as specified and indicated, and shall include:

Concrete and Masonry: Completely fill holes and depressions, caused by previous physical damage or left as a result of removals in existing masonry walls to remain, with an approved masonry patching material, applied in accordance with the manufacturer's printed instructions.

801.7 CLEANUP

Remove debris and rubbish from excavated areas. Remove and transport the in a manner that prevents spillage on streets or adjacent areas. Apply local regulations regarding hauling and disposal.

801.8 DISPOSAL OF REMOVED MATERIALS

Dispose of debris, rubbish, scrap, and other non-salvageable materials resulting from removal operations with all applicable federal, state and local regulations as contractually specified. If disposal is to be on private property, a letter from the property owner shall be presented to the Engineer prior to proceeding with this activity. A Storm Water Discharge Plan shall accompany the letter. In addition, the contractor shall obtain a Release of Lien from the property owner.

801.8.1 Burning on Site: Burning of materials removed from demolished and deconstructed structures will not be permitted.

801.9 MEASUREMENT AND PAYMENT

Measurement and payment shall be in accordance with provisions of the Special Conditions.

802 TRAFFIC CONTROL - INDEX

802 TRAFFIC CONTROL

802.1 DESCRIPTION

Traffic control shall consist of traffic control devices and flagmen or pilot cars. All traffic control devices, the application of traffic control measures, and traffic regulation in these specifications are to supplement and are not intended to delete any of theprovisions of the Contracting Agency's Traffic Barricade Manual, the Uniform Manual on Traffic Control Devices or any agency's Supplements to these Uniform Standard Specifications.

802.2 TRAFFIC CONTROL DEVICES

Traffic control devices shall consist of providing, erecting, and maintaining necessary and adequate devices for the protection of the work, the workmen and the traveling public as approved by the Engineer.

- Temporary traffic control devices shall be used to guide traffic through construction areas. They include traffic cones to channelize traffic, portable barricades for warning, vertical panel channelizing devices to divert traffic, and lighting devices between the hours of sunset and sunrise.
- Advance warning devices shall be used to alert the motorist of an obstruction in the roadway. They include diamond-shaped signs, flags, and flasher type high level warning devices mounted 8 feet above the roadway.
- Contractor to provide traffic control as designated on the project drawings for specific locations.

802.3 FLAGMEN OR PILOT CARS

Flagmen or pilot cars shall consist of providing sufficient flagmen, uniformed off-duty law enforcement officers or pilot cars to expedite the safe passage of traffic.

802.4 TRAFFIC CONTROL MEASURES

The application of all traffic control measures shall be based primarily upon the conditions existing at the time that such measures are deemed necessary. Prior to the start of any work that would interrupt the normal flow of traffic, sufficient and adequate devices and measures shall be provided and erected as directed by the Engineer. These devices shall be immediately removed when no longer needed.

802.5 GENERAL TRAFFIC REGULATIONS

- A traffic lane shall be a minimum of 10 feet of clear street width with a safe motor vehicle operating speed of at least 25 miles per hour.
- An intersection shall be all of the area within the right of way intersection streets plus 300 feet beyond the edge of the intersected right of way on all legs of the intersection.
- A minimum of two traffic lanes, one for each direction, shall be maintained open to traffic at all times on all major streets.

- Local access shall be maintained to all properties on the project at all possible times. When local access cannot be maintained, the Contractor must notify the affected property owner at least 24 hours in advance and restore access as soon as possible.
- A traffic lane shall not be considered as satisfactorily open to traffic unless it is paved with hot mix or cold mix asphalt paving if surrounded by or adjacent to existing pavement. Where pavement did not previously exist or where all of the existing pavement has been removed, a traffic lane shall not be considered as satisfactorily open to traffic unless it is graded reasonably smooth and maintained dust free as directed by the Engineer.
- Arrangements for partial or complete street closure permits shall be handled through the Engineer on local projects or the Highway Department.
- An advance notice of 48 hours for major streets and 24 hours for local streets and alleys is required from the Contractor.
- The Contractor shall provide and maintain all necessary traffic controls to protect and guide traffic for all work in the construction area.
- The Contractor shall maintain all existing STOP, YIELD, and street name signs erect, clean, and in full view of the intended traffic at all times. If these signs interfere with construction, the Contractor shall temporarily relocate the signs away from construction but still in full view of the intended traffic.
- Existing traffic signs other than STOP, YIELD, and street name signs shall be maintained by the Contractor until such time as construction renders them obsolete. At that time the Contractor shall remove signs and posts without damage and deliver them as directed by the Engineer. The Traffic Engineering Department will reinstall all traffic signs.
- Subject to the approval of the Engineer, the Contractor shall furnish and install the MPH Construction Zone Speed Limit Signs. The Contractor shall maintain the signs erect, clean and in full view of the intended traffic at all times. Should the signs interfere with construction, the Contractor shall relocate the signs as necessary.
- At any time project construction shall require the closure or disruption of traffic in any roadway, alley, or refuse collection easement such that normal refuse collection will be interfered with, the Contractor shall prior to causing such closure or disruption, make arrangements with the Contracting Agency's Sanitation Department in order that refuse collection service can be maintained.

802.6 MEASUREMENT AND PAYMENT

Measurement and payment shall be in accordance with provisions of the Special Conditions.

803 PROTECTED SPECIES - INDEX

803 PROTECTED SPECIES

803.1 PROJECT CONDITIONS

Certain native species in the State of New Mexico are protected plant or animal species under State law(s). The Government has ascertained that endangered Migratory Birds may exist in the areas to be disturbed by construction activities.

This project is designed to comply with the final biological opinion for the Navajo-Gallup Water Supply Project as issued by the U.S. Fish and Wildlife Service on February 26, 2009.

Migratory Birds

1. Between March 15th and August 15th

    a. The Government will retain a qualified wildlife biologist to survey any vegetated area to be disturbed for endangered migratory birds. The evaluation shall be performed no more than 5 days before an area is to be disturbed.

    b. Notify the Contracting Officer Representative (COR) 72 hours before disturbing an area. Contact information to be made available at the Pre-Construction Meeting.

    c. Do not disturb a mating pair of endangered migratory birds with an egg.

        - Avoid the birds directed by the COR

803.2 CONTRACTOR RESPONSIBILITIES

Insert this section in subcontracts which involve performance of work in areas where protected species may occur

803.3 SPECIES REMOVAL

In accordance with State law, the Government may arrange for removal of protected species, and the Contractor shall cooperate with those performing such removal. If these species are not removed, cooperate with and abide by protection plans developed by appropriate State entities to avoid damage to or disturbance of protected species.

803.4 MEASUREMENT AND PAYMENT

Measurement and payment shall be in accordance with provisions of the Special Conditions.

804 PRESERVATION OF HISTORICAL AND ARCHAEOLOGICAL DATA - INDEX

804 PRESERVATION OF HISTORICAL AND ARCHAEOLOGICAL DATA

804.1 GENERAL

Federal legislation provides for protection, preservation, and collection of scientific, prehistoric, historical, and archaeological data, including relics and specimens, which might otherwise be lost due to alteration of terrain as a result of any Federal construction project.

Any person who, without permission, injuries, destroys, excavates, appropriates, or removes any historical or pre-historical artifact, object of antiquity, or archaeological resource on public lands of the United States is subject to arrest and penalty of law.

Comply with State laws when operating on non-Federal and non-Indian lands.

804.2 DEFINITIONS

804.2.1 Cultural Resources: Includes prehistoric, historic, architectural, and traditional cultural properties. These include, but are not limited to, human skeletal remains, archaeological artifacts, records and material remains related to such property.

804.2.2 Cultural Items: Native American cultural items (i.e., funerary objects, sacred objects, objects of cultural patrimony, or human remains) for which protection is prescribed under the Native American Graves Protection and Repatriation Act (NAGPRA) – Public Law 101-601; Stat. 3042, Section 3(d); and 43 CFR Part 10.4.

804.2.3 Human Remains: Physical remains of the body of a person.

804.2.4 Funerary Objects: Native American items that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed intentionally at the time of death or later with or near individual human remains.

804.2.5 Native American: Of, or relating to, a tribe, people, or culture that is indigenous to the United States.

804.2.6 Sacred Objects: Native American items that are specific ceremonial objects needed by traditional Native American religious leaders for the practice of traditional Native American religions by their present-day adherents. These items are specifically limited to objects that were devoted to a traditional Native American religious ceremony or ritual and which have religious significance or function in the continued observance or renewal of such ceremony.

804.2.7 Objects of Cultural Patrimony: Native American items having ongoing historical, traditional, or cultural importance central to the Indian tribe itself, rather than property owned by an individual tribal member. These objects are of such central importance that they may not be alienated, appropriated, or conveyed by any individual tribal member.

805 STORM WATER POLLUTION PREVENTION PLAN - INDEX

805 STORM WATER POLLUTION PREVENTION

805.1 DESCRIPTION

This item of work shall consist of furnishing all material, supplies, plant and labor required for construction, installment and maintenance of temporary erosion control measures to prevent the erosion of cleared and grubbed areas and the sedimentation of rivers, streams and impoundments and pollution of private properties from storm water. The items of work covered in this section are required for implementation of the storm water pollution prevention plan.

Storm Water Pollution Prevention Plan to be prepared by the Contractor for approval by the City, the Bureau of Reclamation and the New Mexico State Highway Department.

805.2 TEMPORARY EROSION AND SEDIMENT CONTROL STRUCTURES

Structures shall consist of (1) fabric silt fences or (2) straw bales. In addition, the contractor must use good construction practices such as constructing low height earthen dikes along the perimeter of open trenches and other excavations to protect them from storm water run-off. The contractor must not clear and grub areas not intended for construction activity. Obvious areas where erosion and sedimentation will occur not included with the pollution prevention plan and delineated on the project drawings must be stabilized with temporary control measures.

805.3 SILT FENCES

The Contractor shall install silt fences as a temporary control structures to minimize erosion and sediment runoff. Silt fences shall be properly installed to effectively retain sediment immediately after completing each phase of work where erosion would occur. Silt fences shall be installed in the locations indicated on the drawings including bar ditches, swells and arroyos. Final removal of silt fence barriers shall be upon approval by the City.

The Contractor may use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction shall have a minimum cross section of 2 inches by 2 inches when oak is used and 4 inches by 4 inches when pine is used, and shall have a minimum length of 5 feet. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 5 foot.

Silt fences shall extend a minimum of 18 inches above the ground surface and shall not exceed 24 inches above the ground surface. Filter fabric shall be from in a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter fabric shall be spliced together at a support post, with a minimum 6 inch overlap, and securely sealed. A trench shall be excavated approximately 4 inches wide and 4 inches deep on the upslope side of the location of the silt fence. The 4 inch by 4 inch trench shall be backfilled and the soil compacted over the filter fabric. Filter fabric shall be securely fastened to posts with staples or wire ties. Silt fences shall be removed upon approval by the City. Manufacturer: American Excelsior Company or Equal.

805.4 STRAW BALES

The Contractor shall provide bales of straw as a temporary control structures to minimize erosion and sediment runoff. Bales shall be properly placed to effectively retain sediment immediately after completing each phase of work. Areas where straw bales are to be used are shown on the drawings. Final removal of straw bales shall be upon approval by the County.

The straw in the bales shall be stalks from oats, wheat, rye, barley or rice, furnished in air dry condition. The bales shall have a standard cross section of 14 inches by 18 inches. All bales shall be either wire-bound or string-tied. The Contractor may use either wooden stakes or steel posts to secure the straw bales to the ground. Wooden stakes utilized for this purpose, shall have a minimum dimensions of 2 inches x 2 inches in cross section and shall have a minimum length of 3 feet. Steel posts (standard "U" or "T" section) utilized for securing straw bales, shall have a minimum wight of 1.33 pounds per linear foot and a minimum length of 3 feet.

Straw bales shall be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. Straw bales shall be installed so that bindings are oriented around the sides rather than along the tops and bottoms of the bales in order to prevent deterioration of the bindings. The barrier shall be entrenched and backfilled. A trench shall be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. After the bales are staked and chinked (gaps filled by wedging with straw), the excavated soil shall be backfilled against the barrier. Backfill soil shall conform to the ground level on the downhill side and shall be built up to 4 inches against the uphill side of the barrier. Loose straw shall be scattered over the area immediately uphill from a straw bale barrier to increase barrier efficiency. Each bale shall be securely anchored by at least two stakes driven through the bale. The first stake or steel post in each bale shall be driven toward the previously laid bale to force the bales together. Stakes or steel pickets shall be driven a minimum 18 inches deep into the ground to securely anchor the bales.

805.5 MAINTENANCE

The Contractor shall maintain the temporary and permanent erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by repair of erosion and sediment control measures and other protective measures. The following procedures shall be followed to maintain the protective measures.

805.5.1 Silt Fabric Fence Maintenance: Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits shall be removed when deposits reach one-third of the height of the barrier. When a silt fence is no longer required, it shall be removed. The immediate area occupied by the fence and any sediment deposits shall be shaped to an acceptable grade.

805.6 RESEEDING

Reseeding to be accomplished only in areas shown on the drawings or as directed.
Areas cleared and grubbed for construction activity shall be returned to their original grade and contour to the extent possible. These areas shall be reseeded within two weeks of final construction.

805.6.1 Seed Mixture: Use the following pure live seed mixture per acre for certified seed, where PLS (Pure Live Seed) = Germination times Purity

The seed mixture shall be BLM Seed Mixture No. 3 as follows:

	Application Lbs. PLS per acre
Fourwing saltbrush (dewinged)	2.0 lbs.
Shadecale	0.5 lbs.
Indian Rice Grass	0.5 lbs.
Alkali Sacaton*	0.5 lbs.
PLS Total	3.5 lbs./acre

* Hand seed this species prior to drilling.

No primary or secondary noxious weeks shall be present in seed mixture.

805.6.2 Application: Compacted areas shall be ripped or scarified to a depth of twelve inches and disked to a depth of six inches before seeding. Seed with a disk type drill with two boxes for various seed sizes. The drill rows shall be eight to ten inches apart. The seed shall be planted at not less than one half inch deep or more than one inch deep. The seeder shall be followed with a drag, packer or roller to ensure uniform coverage of the seed and adequate compaction. Drilling shall be done on the contour where possible, not up and down the slope.

Water for dust control shall be provided during the seeding process.

Seeding shall be accomplished and 100% complete two weeks after project completion.

Labels from each seed bag shall be available for inspection.

805.7 CONSTRUCTION DETAILS

Silt fabric fence and straw bale construction and installation details are attached.

805.8 MEASUREMENT AND PAYMENT

Measurement and payment for items of work covered by this section of the specification shall be incidental to the project costs.

APPENDIX A

EPA FORMS (NPDES)

-NOTICE OF INTENT

-NOTICE OF TERMINATION

This Form Replaces Form 3510-9 (8-98)
Refer to the Following Pages for Instructions

Form Approved OMB Nos. 2040-0188 and 2040-0211

NPDES FORM

United States Environmental Protection Agency
Washington, DC 20460

Notice of Intent (NOI) for Storm Water Discharges Associated with Construction Activity Under an NPDES General Permit

Submission of this Notice of Intent (NOI) constitutes notice that the party identified in Section II of this form requests authorization to discharge pursuant to the NPDES Construction General Permit (CGP) permit number identified in Section I of this form. Submission of this NOI also constitutes notice that the party identified in Section II of this form meets the eligibility requirements of the CGP for the project identified in Section III of this form. Permit coverage is required prior to commencement of construction activity until you are eligible to terminate coverage as detailed in the CGP. To obtain authorization, you must submit a complete and accurate NOI form. Refer to the instructions at the end of this form.

I. Permit Number

II. Operator Information

Name:

IRS Employer Identification Number (EIN): __ - ____

Mailing Address:

Street:

City: State: Zip Code: ____ - ____

Phone: ___ - ___ - ____ Fax (optional): ___ - ___ - ____

E-mail:

III. Project/Site Information

Project/Site Name:

Project Street/Location:

City: State: Zip Code: ____ - ____

County or similar government subdivision:

Latitude/Longitude (Use one of three possible formats, and specify method)

Latitude 1. __ ° __ __ ′ __ __ ″ N (degrees, minutes, seconds)
2. __ __ ° __ __ . __ __ ′ N (degrees, minutes, decimal)
3. __ __ . __ __ __ __ ° N (degrees decimal)

Longitude 1. __ __ __ ° __ __ ′ __ __ ″ W (degrees, minutes, seconds)
2. __ __ __ ° __ __ . __ __ ′ W (degrees, minutes, decimal)
3. __ __ __ . __ __ __ __ ° W (degrees decimal)

Method: ☐ U.S.G.S. topographic map ☐ EPA web site ☐ GPS ☐ Other:

If you used a U.S.G.S. topographic map, what was the scale? _____

Project located in Indian Country? ☐ YES ☐ NO

If yes, name of reservation, or if not part of a reservation, put "Not Applicable:" _____

Estimated Project Start Date: __ / __ / ____ (Month / Day / Year)

Estimated Project Completion Date: __ / __ / ____ (Month / Day / Year)

Estimated Area to be Disturbed (to the nearest quarter acre): ____ . __

IV. SWPPP Information

Has the SWPPP been prepared in advance of filing this NOI? ☐ YES ☐ NO

Location of SWPP for Viewing: ☐ Address in Section II ☐ Address in Section III ☐ Other

If other:

SWPPP Street:

City: State: Zip Code: -

SWPPP Contact Information (if different than that in Section II):

Name:

Phone: - - Fax (optional): - -

E-mail:

V. Discharge Information

Identify the name(s) of waterbodies to which you discharge. _____

_____

Is this discharge consistent with the assumptions and requirements of applicable EPA approved or established TMDL(s)? ☐ YES ☐ NO

VI. Endangered Species Protection

Under which criterion of the permit have you satisfied your ESA eligibility obligations?

☐ A ☐ B ☐ C ☐ D ☐ E ☐ F

If you select criterion F, provide permit tracking number of operator under which you are certifying eligibility:

VII. Certification Information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print Name:

Title:

Signature: _____ Date:

E-mail: _____

NOI Preparer (Complete if NOI was prepared by someone other than the certifier)

Prepared by:

Organization:

Phone: - - Ext. E-mail: _____

Instructions for Completing EPA Form 3510-9

Notice of Intent (NOI) for Storm Water Discharges Associated with Construction Activity Under an NPDES General Permit

NPDES Form Date | This Form Replaces Form 3510-9 (8/98) | Form Approved OMB Nos. 2040-0188 and 2040-0211

Who Must File an NOI Form

Under the provisions of the Clean Water Act, as amended (33 U.S.C. 1251 et. seq.; the Act), federal law prohibits storm water discharges from certain construction activities to waters of the U.S. unless that discharge is covered under a National Pollutant Discharge Elimination System (NPDES) Permit. Operator(s) of construction sites where one or more acres are disturbed, smaller sites that are part of a larger common plan of development or sale where there is a cumulative disturbance of at least one acre, or any other site specifically designated by the Director, must submit an NOI to obtain coverage under an NPDES general permit. Each person, firm, public organization, or any other entity that meets either of the following criteria must file this form: (1) they have operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or (2) they have day-to-day operational control of those activities at the project necessary to ensure compliance with SWPPP requirements or other permit conditions. If you have questions about whether you need an NPDES storm water permit, or if you need information to determine whether EPA or your state agency is the permitting authority, refer to *www.epa.gov/npdes/stormwater/cgp* or telephone the Storm Water Notice Processing Center at (866) 352-7755.

Where to File NOI Form

See the applicable CGP for information on where to send your completed NOI form.

Completing the Form

Obtain and read a copy of the appropriate EPA Storm Water Construction General Permit for your area. To complete this form, type or print uppercase letters, in the appropriate areas only. Please place each character between the marks (abbreviate if necessary to stay within the number of characters allowed for each item). Use one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. If you have any questions on this form, refer to *www.epa.gov/npdes/stormwater/cgp* or telephone the Storm Water Notice Processing Center at (866) 352-7755. Please submit original document with signature in ink . do not send a photocopied signature.

Section I. Permit Number

Provide the number of the permit under which you are applying for coverage (see Appendix B of the general permit for the list of eligible permit numbers).

Section II. Operator Information

Provide the legal name of the person, firm, public organization, or any other entity that operates the project described in this application. An operator of a project is a legal entity that controls at least a portion of site operations and is not necessarily the site manager. Provide the employer identification number (EIN from the Internal Revenue Service; IRS), also commonly referred to as your taxpayer ID. If the applicant does not have an EIN enter "NA" in the space provided. Also provide the operator's mailing address, telephone number, fax number (optional) and e-mail address (to be notified via e-mail of NOI approval when available). Correspondence for the NOI will be sent to this address.

Section III. Project/Site Information

Enter the official or legal name and complete street address, including city, state, zip code, and county or similar government subdivision of the project or site. If the project or site lacks a street address, indicate the general location of the site (e.g., Intersection of State Highways 61 and 34). Complete site information must be provided for permit coverage to be granted.

The applicant must also provide the latitude and longitude of the facility either in degrees, minutes, seconds; degrees, minutes, decimal; or decimal format. The latitude and longitude of your facility can be determined in several different ways, including through the use of global positioning system (GPS) receivers, U.S. Geological Survey (U.S.G.S.) topographic or quadrangle maps, and EPA's web-based siting tools, among others. Refer to *www.epa.gov/npdes/stormwater/cgp* for further guidance on the use of these methodologies. For consistency, EPA requests that measurements be taken from the approximate center of the construction site. Applicants must specify which method they used to determine latitude and longitude. If a U.S.G.S. topographic map is used, applicants are required to specify the scale of the map used.

Indicate whether the project is in Indian country, and if so, provide the name of the Reservation. If the project is in Indian Country Lands that are not part of a Reservation, indicate "not applicable" in the space provided.

Enter the estimated construction start and completion dates using four digits for the year (i.e., 05/27/1998). Enter the estimated area to be disturbed including but not limited to: grubbing, excavation, grading, and utilities and infrastructure installation. Indicate to the nearest quarter acre. Note: 1 acre = 43,560 sq. ft.

Section IV. SWPPP Information

Indicate whether or not the SWPPP was prepared in advance of filing the NOI form. Check the appropriate box for the location where the SWPPP may be viewed. Provide the name, fax number (optional), and e-mail address of the contact person if different than that listed in Section II of the NOI form.

Section V. Discharge Information

Enter the name(s) of receiving waterbodies to which the project's storm water will discharge. These should be the first bodies of water that the discharge will reach. (Note: If you discharge to more than one waterbody, please indicate all such waters in the space provided and attach a separate sheet if necessary.) For example, if the discharge leaves your

site and travels through a roadside swale or a storm sewer and then enters a stream that flows to a river, the stream would be the receiving waterbody. Waters of the U.S. include lakes, streams, creeks, rivers, wetlands, impoundments, estuaries, bays, oceans, and other surface bodies of water within the confines of the U.S. and U.S. coastal waters. Waters of the U.S. do not include man-made structures created solely for the purpose of wastewater treatment. U.S. Geological Survey topographical maps may be used to make this determination. If the map does not provide a name, use a format such as "unnamed tributary to Cross Creek". If you discharge into a municipal separate storm sewer system (MS4), you must identify the waterbody into which that portion of the storm sewer discharges. That information should be readily available from the operator of the MS4.

Indicate whether your storm water discharges from construction activities will be consistent with the assumptions and requirements of applicable EPA approved or established TMDL(s). To answer this question, refer to www.epa.gov/npdes/stormwater/cgp for state- and regional-specific TMDL information related to the construction general permit. You may also have to contact your EPA regional office or state agency. If there are no applicable TMDLs or no related requirements, please check the "yes" box in the NOI form.

Section VI. Endangered Species Information

Indicate for which criterion (i.e., A, B, C, D, E, or F) of the permit the applicant is eligible with regard to protection of federally listed endangered and threatened species, and designated critical habitat. See Part 1.3.C.6 and Appendix C of the permit. If you select criterion F, provide the permit tracking number of the operator under which you are certifying eligibility. The permit tracking number is the number assigned to the operator by the Storm Water Notice Processing Center after EPA acceptance of a complete NOI.

Section VII. Certification Information

All applications, including NOIs, must be signed as follows: *For a corporation:* By a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this Part, a principal executive officer of a federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

Include the name, title, and email address of the person signing the form and the date of signing. An unsigned or undated NOI form will not be considered eligible for permit coverage. If the NOI was prepared by someone other than the certifier (for example, if the NOI was prepared by the facility SWPPP contact or a consultant for the certifier's signature), include the name, organization, phone number and email address of the NOI preparer.

Paperwork Reduction Act Notice

Public reporting burden for this application is estimated to average 3.7 hours. This estimate includes time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding the burden estimate, any other aspect of the collection of information, or suggestions for improving this form, including any suggestions which may increase or reduce this burden to: Chief, Information Policy Branch 2136, U.S. Environmental Protection, Agency, 1200 Pennsylvania Avenue, NW, Washington, D.C. 20460. Include the OMB control number on any correspondence. Do not send the completed form to this address.

Visit this website for mailing instructions:
www.epa.gov/npdes/stormwater/mail

Visit this website for instructions on how to submit electronically:
www.epa.gov/npdes/stormwater/enoi

This Form Replaces Form 3517-7 (8-98)
Refer to the Following Page for Instructions

Form Approved OMB Nos. 2040-0086 and 2040-0211

NPDES FORM

United States Environmental Protection Agency
Washington, DC 20460

Notice of Termination (NOT) of Coverage Under an NPDES General Permit for Stormwater Discharges Associated with Construction Activity

Submission of this Notice of Termination constitutes notice that the party identified in Section II of this form is no longer authorized to discharge stormwater associated with construction activity under the NPDES program from the site identified in Section III of this form. All necessary information must be included on this form. Refer to the instructions at the end of this form.

I. Permit Information

NPDES Stormwater General Permit Tracking Number:

Reason for Termination (Check only one):

- ☐ Final stabilization has been achieved on all portions of the site for which you are responsible.
- ☐ Another operator has assumed control, according to Appendix G, Section 11.C of the CGP, over all areas of the site that have not been finally stabilized.
- ☐ Coverage under an alternative NPDES permit has been obtained.
- ☐ For residential construction only, temporary stabilization has been completed and the residence has been transferred to the homeowner.

II. Operator Information

Name:

IRS Employer Identification Number (EIN): –

Mailing Address:

Street:

City: State: Zip Code: -

Phone: - - Fax (optional): - -

E-mail:

III. Project/Site Information

Project/Site Name:

Project Street/Location:

City: State: Zip Code: -

County or similar government subdivision:

IV. Certification Information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print Name: _____

Print Title: _____

Email: _____

Signature: _____

Date: _____

Instructions for Completing EPA Form 3510-13

Notice of Termination (NOT) of Coverage Under an NPDES General Permit for Stormwater Discharges Associated with Construction Activity

NPDES Form | This Form Replaces Form 3517-7 (8-98) | Form Approved OMB Nos. 2040-0086 and 2040-0211

Who May File an NOT Form

Permittees who are presently covered under the EPA-issued National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction Activity may submit an NOT form when final stabilization has been achieved on all portions of the site for which you are responsible; another operator has assumed control in accordance with Appendix G, Section 11.C of the General Permit over all areas of the site that have not been finally stabilized; coverage under an alternative NPDES permit has been obtained; or for residential construction only, temporary stabilization has been completed and the residence has been transferred to the homeowner.

"Final stabilization" means that all soil disturbing activities at the site have been completed and that a uniform perennial vegetative cover with a density of at least 70% of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed. See "final stabilization" definition in Appendix A of the Construction General Permit for further guidance where background native vegetation covers less than 100 percent of the ground, in arid or semi-arid areas, for individual lots in residential construction, and for construction projects on land used for agricultural purposes.

Completing the Form

Type or print, using uppercase letters, in the appropriate areas only. Please place each character between the marks. Abbreviate if necessary to stay within the number of characters allowed for each item. Use only one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. If you have any questions about this form, refer to *www.epa.gov/npdes/stormwater/cgp* or telephone the Stormwater Notice Processing Center at (866) 352-7755. Please submit original document with signature in ink - do not send a photocopied signature.

Section I. Permit Number

Enter the existing NPDES Stormwater General Permit Tracking Number assigned to the project by EPA's Stormwater Notice Processing Center. If you do not know the permit tracking number, refer to *www.epa.gov/npdes/stormwater/cgp* or contact the Stormwater Notice Processing Center at (866) 352-7755.

Indicate your reason for submitting this Notice of Termination by checking the appropriate box. Check only one:

Final stabilization has been achieved on all portions of the site for which you are responsible.

Another operator has assumed control according to Appendix G, Section 11.C over all areas of the site that have not been finally stabilized.

Coverage under an alternative NPDES permit has been obtained.

For residential construction only, if temporary stabilization has been completed and the residence has been transferred to the homeowner.

Section II. Operator Information

Provide the legal name of the person, firm, public organization, or any other entity that operates the project described in this application and is covered by the permit tracking number identified in Section I. The operator of the project is the legal entity that controls the site operation, rather than the site manager. Provide the employer identification number (EIN from the Internal Revenue Service; IRS). If the applicant does not have an EIN enter "NA" in the space provided. Enter the complete mailing address, telephone number, and email address of the operator. Optional: enter the fax number of the operator.

Section III. Project/Site Information

Enter the official or legal name and complete street address, including city, state, zip code, and county or similar government subdivision of the project or site. If the project or site lacks a street address, indicate the general location of the site (e.g., intersection of State Highways 61 and 34). Complete site information must be provided for termination of permit coverage to be valid.

Section IV. Certification Information

All applications, including NOIs, must be signed as follows:
For a corporation: By a responsible corporate officer. For the purpose of this Part, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy-or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this Part, a principal executive officer of a federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

Include the name, title, and email address of the person signing the form and the date of signing. An unsigned or undated NOT form will not be considered valid termination of permit coverage.

Paperwork Reduction Act Notice

Public reporting burden for this application is estimated to average 0.5 hours per notice, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding the burden estimate, any other aspect of the collection of information, or suggestions for improving this form including any suggestions which may increase or reduce this burden to: Chief, Information Policy Branch, 2136, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460. Include the OMB number on any correspondence. Do not send the completed form to this address.

Visit this website for mailing instruction:
www.epa.gov/npdes/stormwater/mail

Visit this website for instructions on how to submit electronically:
www.epa.gov/npdes/stormwater/enoi

APPENDIX B

NEW MEXICO WAGE RATES

SUSANA MARTINEZ
GOVERNOR

JOHN SANCHEZ
LT. GOVERNOR

CELINA BUSSEY
SECRETARY

STATE OF NEW MEXICO
DEPARTMENT OF WORKFORCE SOLUTIONS
625 Silver Ave SW Suite 410
Albuquerque, NM 87102
Telephone (505) 841-4405
Fax (505) 841-4420

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 assigned by statute to each project stakeholder.

Contracting Agency

- Ensure that all contractors/prime contractors wishing to bid on a Public Works project when the project is $60,000 or more are actively registered with the Labor Relations Division, Labor Enforcement Fund (LEF) prior to bidding.
- Provide completed Notice of Award (NOA) and Sub-Contractor list to Labor Relations Division promptly after the project is awarded.
- Provide updates to the Sub-Contractor list to the Labor Relations Division

General Contractor

- Provide to the Contracting Agency within 3 (Three) days of award a complete sub-contractor list and Statements of Intent (SOI) to pay Prevailing Wages for each contractor.
- Ensure that all sub-contractors wishing to bid on a Public Works project when their portion is over $60,000 are actively registered with the Labor Relations Division prior to bidding.
- Submit bi-weekly certified payrolls to the owner/contracting agency.
- Make certain NM Apprenticeship and Training Fund payments are to be paid either to an approved Apprenticeship program or to the Labor Relations Division.
- Confirm the Wage Rate poster, provided by the Labor Relations Division, is displayed at the job site in an easily accessible place.
- Make sure, when a project has been completed, the Affidavits of Wages Paid (AWP) is sent to the Contracting Agency.

Sub-Contractor

- Ensure that all sub-contractors wishing to bid on a Public Works project when their portion is over $60,000 are actively registered with the Labor Relations Division prior to bidding.
- Submit bi-weekly certified payrolls to the General Contractor(s).
- Make certain NM Apprenticeship and Training Fund payments are to be paid either to an approved Apprenticeship program or to the Labor Relations Division.

Additional Information

Reference material and forms for these requirements are available through the following New Mexico Workforce Solutions Web Link.
www.dws.state.nm.us/new/Labor_Relations/publicworks.html.

Additional Information

Additional information, requirements, and documents on these topics can be found through the Public Works web pages.

- Labor Enforcement Fund (LEF)
- Weekly Certified Payroll
- Public Works Apprenticeship and Training Fund (PWAT)
- Forms: Statement of Intent (SOI), Affidavit of Wages Paid (AWP)
- Prevailing Wage Rates (Base Rates, Fringe, and Apprenticeship Contributions)

CONTACT INFORMATION

Contact us for any questions relating to Public Works Projects.

Kim Kew at kim.kew@state.nm.us or 505-841-4405
Otis Caddy LynnO.Caddy@state.nm.us 505-841-4406
Stacey Lowrey Stacey.Lowrey@state.nm.us 505-841-4412

New Mexico Department of Workforce Solutions
Public Works
625 Silver Ave SW, Suite 410, Albuquerque, NM 87102
Phone: (505)-841-4400 fax to: (505) 841-4423 or Email to: public.works@state.nm.us

Wage Decision # MC-13-1447 A

NOTIFICATION OF AWARD (NOA)

THIS WAGE DESCISION # EXPIRES FOR BIDS ON 02/25/14

***Description and Location of Work*:** Gallup Rural Navajo Water Supply Project, Project 4
Twin Lakes 10" Distribution Waterline, 7-9 Miles ± North of Gallup: 1. 8445' of 10" PVC Pipeline. 2. 205' Jack and Bore Crossing of US Hwy 491 with 10" Ductile Iron waterline in a 18" steel casing. 3. Two tie-ins to the existing NTUA Twin Lakes Water System. Twin Lakes Tank Site Construction, 7 Miles± North of Gallup: 1. Construct one (1) 0.3 MG Glass-Fused Bolted Steel Reservoir. 2. Control Station Building. 3. Site Grading and Fencing. 4. Miscellaneous Yard Piping and Valving. 5. Drain Line Piping. 6. Miscellaneous Station Building Piping. Water Loading Station Improvement, In Gallup immediately north of Interstate 40 Exit 22 and County Road 43: 1. Pervious Concrete Slab. 2. Surface water collection and storage system with associated plastic piping. 3. Block wall construction and site grading improvements. 4. Exterior station piping improvements

City of Gallup | County of McKinley | Twin Lakes and Gallup, NM

REMINDER for Agency Conducting BID Process: **If bids are NOT submitted before new wage rates go into effect, a NEW wage decision WILL be required.**
After the Contracting Agency awards this project the Wage Rate Poster and the Wage Rate Packet, excluding this NOA and Subcontractor List, must be delivered to the ***GENERAL/PRIME CONTRACTOR.*** The Contracting Agency or its agent must complete this form (including the next page listing all of the subcontractors including all tiers of subcontractors) and fax or mail it to the address above. ***If the project is canceled,*** this form must be completed by the Contracting agency conducting the bid process and the wording "Cancelled" written on the form and send to the Labor Relations Division. Failure to submit the NOA in a timely manner is a violation of paragraph 11.1.2.9.B (3) of the Public Works Minimum Wage Act Policy Manual.

General/Prime Contractor Company Name:_____ License#:_____

Address:_____ City:_____ State:_____ Zip:_____

Telephone: _____ Fax:_____

Project Contact's name:_____E-Mail:_____

Approximate Date Work to Start:_____

Estimated Completion Date:_____

Estimated Cost of Project:_____

Bid Opening Date:_____

Note: The General/Prime Contractor **MUST** mail/fax in their Statement of Intent to Pay Prevailing Wages to the Contracting Agency or its agent before beginning work on the project. Each Subcontractor (and all tiers of subcontractors) **MUST** also mail/fax their Statement of Intent to Pay Prevailing Wages to the General/Prime Contractor 3 days after award of project. After work on the project is completed **and before, final payment,** is made to subcontractors and all tiers of subcontractors, the contractor and sub-contractors must mail/fax their Affidavit of Wages paid to the Contracting Agency for final payment.

Signature for Contracting Agency (or agent) _____
Printed Name_____
Email address for Contracting Agency (not agent)_____ **Required Field**
Date _____

SUBCONTRACTOR LIST

DO NOT list suppliers or professional services (such as surveyors)

INCLUDE individual subcontractor dollar amount for project

Email to: public.works@state.nm.us or fax to: (505) 841-4423

Please include **2nd & 3rd Tier** subcontractors. Make extra copies of form if necessary.

Wage Decision. # **MC-13-1447 A**

General Contractor: _____

Company Name: _____
Address: _____ City: _____ State: ____ Zip: _____
E-Mail Address: _____ License No.: _____
Phone No.: _____ Fax No.: _____ Sub ____ 2nd TIER ____ (To Whom) 3rd TIER ____ (To Whom)
Work to be performed: Amount ($):

Company Name: _____
Address: _____ City: _____ State: ____ Zip: _____
E-Mail Address: _____ License No.: _____
Phone No.: _____ Fax No.: _____ Sub ____ 2nd TIER ____ (To Whom) 3rd TIER ____ (To Whom)
Work to be performed: Amount ($):

Company Name: _____
Address: _____ City: _____ State: ____ Zip: _____
E-Mail Address: _____ License No.: _____
Phone No.: _____ Fax No.: _____ Sub ____ 2ne TIER ____ (To Whom) 3rd TIER ____ (To Whom)
Work to be performed: Amount ($):

Company Name: _____
Address: _____ City: _____ State: ____ Zip: _____
E-Mail Address: _____ License No.: _____
Phone No.: _____ Fax No.: _____ Sub ____ 2nd TIER ____ (To Whom) 3rd TIER ____ (To Whom)
Work to be performed: Amount ($):

Company Name: _____
Address: _____ City: _____ State: ____ Zip: _____
E-Mail Address: _____ License No.: _____
Phone No.: _____ Fax No.: _____ Sub ____ 2nd TIER ____ (To Whom) 3rd TIER ____ (To Whom)
Work to be performed: Amount ($):

Company Name: _____
Address: _____ City: _____ State: ____ Zip: _____
E-Mail Address: _____ License No.: _____

Phone No.:_____Fax No.:_____ Sub ____ 2ne TIER ____ 3rd TIER ___
(To Whom) (To Whom)

Work to be performed: Amount ($):

Gallup Rural Navajo Water Supply Project, Project 4: **Wage Decision # MC-13-1447 A**
Twin Lakes 10" Distribution Waterline, 7-9 Miles ± North of Gallup: 1. 8445' of 10" PVC Pipeline. 2. 205' Jack and Bore Crossing of US Hwy 491 with 10" Ductile Iron waterline in a 18" steel casing. 3. Two tie-ins to the existing NTUA Twin Lakes Water System. Twin Lakes Tank Site Construction, 7 Miles± North of Gallup: 1. Construct one (1) 0.3 MG Glass-Fused Bolted Steel Reservoir. 2. Control Station Building. 3. Site Grading and Fencing. 4. Miscellaneous Yard Piping and Valving. 5. Drain Line Piping. 6. Miscellaneous Station Building Piping. Water Loading Station Improvement, In Gallup immediately north of Interstate 40 Exit 22 and County Road 43: 1. Pervious Concrete Slab. 2. Surface water collection and storage system with associated plastic piping. 3. Block wall construction and site grading improvements. 4. Exterior station piping improvements

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

Effective January 1, 2013

Trade Classification	Base Rate	Fringe Rate
Bricklayer/Blocklayer/Stonemason	17.74	0.26
Carpenter/Lather	15.99	0.44
Cement Mason	15.52	0.26
Ironworker	21.77	6.03
Painter (Brush/Roller/Spray)	17.56	0.44
Electricians (outside)		
Groundman	26.79	11.03
Equipment Operator	29.61	11.03
Lineman/Wireman or Tech	30.20	11.03
Cable Splicer	31.38	11.03
Plumber/Pipefitter	28.30	4.07
Laborers		
Group I	13.73	0.35
Group II	14.03	0.35
Group III	14.43	0.35
Operators		
Group I	15.74	0.26
Group II	15.94	0.26
Group III	16.52	0.26
Group IV	16.54	0.26
Group V	16.53	0.26
Group VI	16.69	0.26
Group VII	16.74	0.26
Group VIII	16.89	0.26
Group IX	17.39	0.26
Group X	18.19	0.26
Truck Drivers		
Group I	13.32	0.26
Group II	13.52	0.26
Group III	13.72	0.26

Group IV	13.92	0.26

NOTE: SUBSISTENCE AND INCENTIVE PAY DO NOT APPLY TO TYPE "A" CONSTRUCTION.

APPENDIX C

NTUA TAP PERMIT

PERMISSION TO TAP AN EXISTING NTUA WATER LINE
INSTRUCTIONS

This form is to be filled out in duplicate and submitted at least ten working days prior to the requested date of execution of the tap. The ten working days is to allow for scheduling of an NTUA inspector and in no way implies that a full review with permission to tap being approved or disapproved will be issued in that time period. Please note that permission to tap is contingent upon an approved construction package.

Upon approval, a copy of the approval will be sent to the requestor with NTUA retaining the original copy.

All addresses are to include the Zip Code.

All telephone numbers are to include the Area Code.

1a. Permanent address and telephone number.

1b. Local address and telephone number. If the same as 1a., then write "1a." in the address space.

2. If the agent to coordinate with NTUA is the same as 1a. or 1b., then write the appropriate number and letter in the name space. In most cases, this is the owner or his agent and not a contractor.

3. If the same as 1a., 1b., or 2., then write the appropriate number and letter in the name space. If it is a P.L. 86-121, write "P.L. 86-121", in the name space.

4. Self-explanatory.

5. Self-explanatory.

6. One copy of request, specifications, and drawings is to remain at the receiving office. The original request form and two copies of both the specifications and drawings are to be forwarded to the Operations Manager unless this is a P.L. 86-121 Project.

   If this is a P.L. 86-121 Project, the documents will be sent to the NTUA Headquarters Operation Department. If it is a P.L. 86-121 Project and the drawings have previously been submitted to NTUA Headquarters, an "X" with the NAIHS project number, e.g. "X/80-123", is to be written in the space above "NO". Specification submission on P.L. 86-121 Projects is generally not a requirement. NTUA Headquarters will request P.L. 86-121 specifications when needed.

   If both sewer and water taps are requested and covered in the same set of drawings and specifications, the original copies of the requests and three copies of the drawings and specifications are to be forwarded to the appropriate NTUA Headquarters Department.

   Under any "No" conditions other than P.L. 86-121 Projects, the "X" is written in the "No" space and a note of explanation attached.

Before forwarding the documentation, the drawing will be checked for:

a. the basis of elevation is given by showing the bench-mark identification, location and elevation;

b. a description of the tap point that gives specific ties to existing drawings in NTUA possession;

c. the critical fire hydrant or fire flow supply point is shown and indicated as the critical point;

d. and the portions of the proposed system that is to be transferred to the NTUA for operation and maintenance is indicated.

Item "d" above does not apply to P.L. 86-121 Projects since this is covered in detail in other documents.

7. The type of service as far as domestic, commercial, or industrial and permanent or temporary service, e.g., "permanent domestic", will be stated. If commercial or industrial, then more information is needed.

8. Self-explanatory.

9. Self-explanatory.

10. Hours of the day as well as date(s), are expected entries in this space.

11. Signature of persons in 1, 2, and 3 with date of signature are required. If this is a P.L. 86-121 Project, "P.L. 86-121" will be written in the space for the third signature.

12. Self-explanatory.

13. Self-explanatory.

14. Attach a list of district operational constraints and current operating problems that affect or will be caused by the approval of this permission to tap. If there are no operational constraints or problems, write "NOP" beside the date of the signature.

15. Self-explanatory

16. Hours of the day, as well as date(s), are expected entries in this space.

17. Self-explanatory. A list of restrictions on the approval will be attached unless "NOP" is written beside the date of signature.

PERMISSION TO TAP AN EXISTING NTUA WATER LINE

1. REQUESTER.

NAME : _____
TITLE : _____
ORGANIZATION : _____
a. ADDRESS : _____
_____
_____
TELEPHONE NUMBER : _____
b. ADDRESS : _____
_____
_____
TELEPHONE NUMBER : _____

2. PERSON RESPONSIBLE FOR TAP CONSTRUCTION AND ITS ACCEPTANCE BY NAVAJO TRIBAL UTILITY AUTHORITY.

NAME : _____
TITLE : _____
ORGANIZATION : _____
ADDRESS : _____
_____
_____
TELEPHONE NUMBER : _____

3. PERSON RESPONSIBLE FOR PAYING NAVAJO TRIBAL UTILITY AUTHORITY FOR SERVICE AFTER THE CONSTRUCTION IS COMPLETED AND APPROVED.

NAME : _____
TITLE : _____
ORGANIZATION : _____
ADDRESS : _____
_____
_____
TELEPHONE NUMBER : _____

4. DATE REQUEST IS SUBMITTED TO NAVAJO TRIBAL UTILITY AUTHORITY.

DATE : _____

5. SUBMITTED TO.

NAME : _____
TITLE : _____
NTUA OFFICE : _____

6. SPECIFICATIONS AND DRAWINGS OF PROPOSED CONSTRUCTION ATTACHED.

_____ YES _____ NO

7. ACTUAL SERVICES.

ACTUAL NUMBER : _____
METER SIZE : _____
TYPE OF SERVICE : _____

8. WATER DEMAND/CUSTOMER REQUESTED FLOW AND MINIMUM DELIVERY PRESSURE AT THE METER OUTLET.

NORMAL : _____ gpm
PEAK : _____ gpm
PRESSURE : _____ psi
@ ELEVATION OF : _____ feet above MSL

9. FIRE FLOW DEMAND IS NOT GUARANTEED AND IS ONLY WHAT THE SYSTEM WILL PROVIDE.

FOR NTUA INFORMATION: Flow and minimum delivery pressure at the meter outlet.

	Sprinkler System	Total Fire Hydrant Flow	
QUANTITY :	_____	_____	gpm
DURATION :	_____	_____	minutes
PRESSURE :	_____	_____	psi
SIMULTANEOUS USE :	_____		(YES/NO)

10. REQUESTED TIME(S) AND DATE(S) OF ACTUAL EXECUTION OF THE TAP.

TIME(S)/DATE(S) : _____

11. I AGREE TO THE APPLICATION OF NAVAJO TRIBAL UTILITY AUTHORITY (NTUA) CONSTRUCTION METHODS, MATERIAL STANDARDS, LINE TEST PROCEDURES, DISINFECTION REQUIREMENTS, "CONSTRUCTION WATER" POLICY, AS-BUILT DRAWING REQUIREMENTS, AND TARIFF REQUIREMENTS AS THEY PERTAIN TO TAPPING THE EXISTING NTUA WATER LINE, CONSTRUCTING UTILITIES TO BE TRANSFERRED TO NTUA FOR OPERATIONS AND MAINTENANCE, AND SERVICES PROVIDED BY NTUA THEREAFTER.

_____ SIGNATURE _____ DATE

_____ SIGNATURE _____ DATE

_____ SIGNATURE _____ DATE

12. ASSIGNED NTUA INSPECTOR'S NAME.

INSPECTOR NAME : _____

13. IS THIS SERVICE DOWNSTREAM FROM A PREVIOUSLY MASTER METERED AREA?

_____ YES _____ NO

14. REVIEWED BY.

DISTRICT MANAGER OR: SUB-OFFICE SUPV. _____ NAME _____ DATE

15. SPECIFICATIONS AND PROPOSED CONSTRUCTION DRAWINGS REVIEWED AND APPROVED BY.

_____ SIGNATURE _____ TITLE _____ DATE

16. APPROVED TIME(S) AND DATE(S) OF EXECUTION OF THE TAP.

TIME(S)/DATE(S) : _____

17. PERMISSION TO TAP APPROVED BY.

_____ NTUA OPERATIONS DEPARTMENT _____ DATE

APPENDIX D

ELECTRICAL LINE EXTENSIONS & SERVICE CONNECTS COST ESTIMATES

1. TWIN LAKE TANK CONTROL BUILDING

CONTINENTAL DIVIDE ELECTRIC COOPERATIVE, INC.

200 E. High St. • P.O. Box 1087 • Grants, New Mexico 87020 • (505) 285-6656 • Fax (505) 287-2234

November 5, 2013

NTUA Tohlakai
Yah ta hey, NM

Estimate: WO #

ATTN: Kent Spolar

The Continental Divide Electric Cooperative's field crew was out to the proposed NTUA Tohiakai Facility location in Ya ta hey, NM and has completed the cost estimate. This estimated cost is as follows:

Construct a single phase power starting east of CDEC pole 12604 than north for 235 feet. This includes material and labor. This estimate does not include a Right of Way Survey in which you stated you already had acquired.

You or your client will need to come in to our office and make a formal request for new service.

Total	**$ 4,909.85**

This estimate is good for 90 days from the date of this letter. Scheduling of construction will be done after full payment of the estimate has been received. Understand that this is an estimate only and that actual cost may be different: You will receive a refund if costs are less or you will pay the difference if actual costs are more than the estimate.

If you have any questions regarding this estimate feel free to call our engineering department in Grants at (505) 285-6656.

Sincerely,

Lee A. Maestas
Staking Engineer

APPENDIX E

GEOTECHNICAL REPORT

DePauli Engineering & Surveying, LLC
-Civil Engineering and Land Surveyors-

GEOTECHNICAL ENGINEERING REPORT
GALLUP – RURAL NAVAJO WATER SUPPLY PROJECT
PROJECT 4 – TWIN LAKES
MCKINLEY COUNTY, NEW MEXICO

Submitted To:

Marc A. DePauli, PE/PS
DePauli Engineering & Surveying LLC
102 West Hill Avenue
Gallup, New Mexico 87301

Submitted By:

GEOMAT Inc.
915 Malta Avenue
Farmington, New Mexico 87401

December 14, 2011
GEOMAT Project 112-1431

GEOMAT INC
915 Malta Avenue ◆ Farmington, NM 87401 ◆ Tel (505) 327-7928 ◆ Fax (505) 326-5721

December 14, 2011

Marc A. DePauli, PE/PS
DePauli Engineering & Surveying LLC
102 West Hill Avenue
Gallup, New Mexico 87301

RE: Geotechnical Engineering Study
Gallup – Rural Navajo Water Supply Project
Project 4 – Twin Lakes
McKinley County, New Mexico
GEOMAT Project No. 112-1431

GEOMAT Inc. (GEOMAT) has completed the geotechnical engineering exploration for the Gallup – Rural Navajo Water Supply Project (Project 4) located between the communities of Twin Lakes and Yah-ta-Hey in McKinley County, New Mexico. This study was performed in general accordance with the scope of work described in our Proposal No. 112-11-05 dated November 11, 2011.

The results of our engineering study, including the geotechnical recommendations, site plan, boring records, and laboratory test results are attached. Based on the geotechnical engineering analyses, subsurface exploration and laboratory test results, the proposed new tank could be supported on a ring wall foundation bearing on either formational rock or engineered fill. Other design and construction details, based upon geotechnical conditions, are presented in the report.

We have appreciated being of service to you in the geotechnical engineering phase of this project. If you have any questions concerning this report, please contact us.

Sincerely yours,
GEOMAT Inc.

Donald R. Baldwin

Donald R. Baldwin
Geologist

GEORGE A. MADRID NEW MEXICO 9110 REGISTERED PROFESSIONAL ENGINEER

George A. Madrid, P.E. 12.14.11
President, Principal Engineer

Copies to: Addressee (2)

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

GEOTECHNICAL ENGINEERING REPORT
GALLUP – RURAL NAVAJO WATER SUPPLY PROJECT
PROJECT 4 – TWIN LAKES
MCKINLEY COUNTY, NEW MEXICO
GEOMAT PROJECT NO. 112-1431

INTRODUCTION

This report contains the results of our geotechnical engineering exploration for the Gallup – Rural Navajo Water Supply Project (Project 4) located between the communities of Twin Lakes and Yah-ta-Hey in McKinley County, New Mexico, as shown on the Site Plan in Appendix A of this report.

The purpose of these services is to provide information and geotechnical engineering recommendations about:

- subsurface soil conditions
- groundwater conditions
- lateral soil pressures
- earthwork
- foundation design and construction
- drainage

The opinions and recommendations contained in this report are based upon the results of field and laboratory testing, engineering analyses, and experience with similar soil conditions, structures, and our understanding of the proposed project as stated below.

PROPOSED CONSTRUCTION

We understand that Project 4 of the Gallup – Rural Navajo Water Supply Project will consist of the construction of one new at-grade, welded-steel water storage tank (Twin Lakes Tank). The tank will be located on the west side of U.S. Highway 491 approximately four miles south of the community of Twin Lakes and one mile north of Yah-ta-Hey in McKinley County, New Mexico.

The Twin Lakes Storage Tank will have a height of 24 feet, a diameter of 48 feet, and a capacity of approximately 300,000 gallons. We understand the tank will be supported by a conventional concrete ring wall foundation with an oiled sand cushion under the tank bottom. We anticipate that cuts and/or fills on the order of two to three feet will be required to construct a level site for the tank.

SITE EXPLORATION

Our scope of services performed for this project included a site reconnaissance by a staff geologist, a subsurface exploration program, laboratory testing and engineering analyses.

Field Exploration:

Subsurface conditions at the site were explored on November 18 and 22, 2011 by drilling two exploratory borings approximately along the perimeter of the proposed tank as shown on the Site Plan in Appendix A. The center of the tank had been staked by DePauli Engineering & Surveying prior to our exploration.

The borings, designated B-1 and B-2, were advanced to depths of approximately 25 and 35 feet, respectively, below existing ground surface using a CME-45 truck-mounted drill rig with a combination of continuous-flight, 4-inch O.D. solid-stem and 8-inch O.D. hollow-stem augers. The borings were continuously monitored by a geologist from our office who examined and classified the subsurface materials encountered, obtained representative samples, observed groundwater conditions, and maintained a continuous log of each boring.

Soil samples were obtained from the borings using a combination of standard 2-inch O.D. split spoon and 3-inch O.D. modified California ring barrel samplers. The samplers were driven using a 140-pound hammer falling 30 inches. The standard penetration resistance was determined by recording the number of hammer blows required to advance the sampler in six-inch increments.

Groundwater evaluations were made in each boring at the time of site exploration. Soils were classified in accordance with the Unified Soil Classification System described in Appendix A. Boring logs were prepared and are presented in Appendix A.

Laboratory Testing:

Samples retrieved during the field exploration were transported to our laboratory for further evaluation. At that time, the field descriptions were confirmed or modified as necessary, and laboratory tests were performed to evaluate the engineering properties of the subsurface materials.

SITE CONDITIONS

The site of the proposed Twin Lakes Storage Tank is located approximately 200 feet west of U.S. Highway 491, approximately one mile north of the intersection of Highway 491 and State Highway 264. The site of the proposed tank is located several hundred feet south of the crest of a hill; the ground surface across the tank site slopes down to the south, with an estimated two to

three feet of vertical relief across the footprint of the tank. The site was vegetated by a sparse to moderate growth of weeds, grasses and brush at the time of our exploration. No evidence of prior structural development was noted at the site of the proposed tank. The following photograph depicts the site at the time of our exploration.

Site of Twin Lakes Water Tank
View to the Northwest

SUBSURFACE CONDITIONS

As presented on Boring Logs B-1 and B-2 in Appendix A, we encountered approximately five to six feet of surficial lean clay soils overlying formational claystone. The surficial soils were generally damp and very stiff to hard, and are likely residuum derived from weathering of the underlying rock.

The claystone was generally moderately to highly weathered and extended to the total depths explored in B-1 and to approximately 34 feet in B-2. Below the claystone in B-2 we encountered highly weathered sandstone to the total depth explored. Although the sandstone was not encountered in boring B-1, it is likely present at similar elevations across the site.

Groundwater was not encountered in the borings to the depths explored. It should be noted that groundwater elevations can fluctuate over time depending upon precipitation, irrigation, and runoff and/or infiltration of surface water. We do not have any information regarding the historical fluctuation of the groundwater level in this vicinity.

Laboratory Test Results:

Laboratory analyses of samples obtained from the proposed tank location indicate the surficial lean clay soils have in-place dry densities ranging from approximately 99 to 110 pounds per cubic foot (pcf), with natural moisture contents between 10 and 16 percent. A representative sample of the lean clay soils had a fines content (silt- and/or clay-sized particles passing the U.S. No. 200 sieve) of 90 percent and a plasticity index of 29.

Fines contents of the claystone ranged from 96 to 99 percent; the fines content of a sample of the sandstone was 44 percent.

Laboratory consolidation/expansion testing was performed on an undisturbed ring sample of the lean clay beneath the proposed tank. Results of this testing indicates that the lean clay undergoes slight compression when subjected to anticipated foundation stresses at the existing moisture content. When subjected to increased moisture conditions at these stresses, it undergoes moderate expansion (swell). The lean clay soils were characterized as expansive.

Due to the relatively stiff to hard consistency of the claystone, it was not possible to obtain undisturbed samples of that material. Therefore, consolidation/expansion testing was not performed on the claystone. Based on our experience with similar materials, the claystone is likely expansive.

Results of all laboratory tests are presented in Appendix B.

OPINIONS AND RECOMMENDATIONS

Geotechnical Considerations:

The site is considered suitable for the proposed water storage tank based on the geotechnical conditions encountered and tested for this report. However, the lean clay soils at the site are potentially compressible and expansive, and are not considered suitable for directly supporting the tank. To provide support for the tank and tank footings, we recommend that the tank and footings bear either directly on the formational rock or on engineered fill. To prevent the potential for differential settlement or flexing that could result from the bottom of a tank bearing on different materials, care should be taken to ensure that the bottoms of the tanks are supported entirely on rock, or entirely on engineered fill, but not both. In no case should the bottom of a tank be supported on a combination of rock and engineered fill.

If there are any significant deviations from the assumed finished elevations, structure locations and/or loads noted at the beginning of this report, the opinions and recommendations of this report should be reviewed and confirmed/modified as necessary to reflect the final planned design conditions.

Foundations:

Based on our understanding of the type of structures to be built and the results of our field subsurface exploration and laboratory testing, the tanks could be supported by conventional ring wall footings bearing on either formational rock or engineered fill.

If the footings are supported on engineered fill, the minimum thickness of engineered fill below the bottoms of the footings should be two (2.0) feet. The engineered fill should extend laterally for a minimum of five (5.0) feet beyond the interior and exterior edges of the footing.

Engineered fill should be provided for a minimum thickness of two (2.0) feet below the bottom of the tank. This two-foot thickness should include an oiled sand cushion under the tank bottom in accordance with Section 12.6 of the American Water Works Association Standard D100-05.

It should be realized that even with the tank bearing on engineered fill, if the soils and/or rock below the engineered fill become wet, they could swell and cause movement and potential damage to the tank. Therefore, good drainage around the tank is very important to prevent water from infiltrating into the subgrade soils.

Materials and compaction criteria for the engineered fill should be as recommended in the **Earthwork** section of this report. Adequate drainage should be provided to prevent the supporting soils from undergoing significant moisture changes.

The recommended design bearing capacities and footing depths are presented in the following table.

Footing Depth[1] (ft)	Allowable Bearing Pressure (psf)	Bearing Soil
2.5[2]	5,000	Formational Rock[3]
2.5[2]	3,500	Engineered Fill

[1]Footing depth referenced below lowest adjacent finished grade. Finished grade is the lowest adjacent grade for perimeter footings.

[2]Minimum footing depth for frost protection.

[3]Claystone

Total and differential settlements resulting from the assumed structural loads are estimated to be on the order of ½ inch or less. Proper drainage should be provided in the final design and during construction and areas adjacent to the structure should be designed to prevent water from ponding or accumulating next to the structure.

Total and differential settlements should not exceed predicted values, provided that:

- Foundations are constructed as recommended, and
- Essentially no changes occur in water contents of foundation soils.

For foundations adjacent to descending slopes, a minimum horizontal setback of five (5) feet should be maintained between the foundation base and slope face. In addition, the setback should be such that an imaginary line extending downward at 45 degrees from the nearest foundation edge does not intersect the slope.

Footings and foundations should be reinforced as necessary to reduce the potential for distress caused by differential foundation movement.

Foundation excavations should be observed by GEOMAT. If the soil conditions encountered differ significantly from those presented in this report, supplemental recommendations will be required.

Seismic Considerations:

Seismic design parameters for the Twin Lakes Tank site were determined in accordance with the procedure in Section 13 of the 2005 American Water Works Association (AWWA) Standard D100-05. These values are based on a Site Class of B, as determined using Table 25.

SEISMIC DESIGN PARAMETERS	
S_S	0.25 g
S_1	0.06 g
S_{MS}	0.25 g
S_{M1}	0.06 g
S_{DS}	0.167 g
S_{D1}	0.040 g

S_S = mapped spectral response acceleration at short periods from Figure 5
S_1 = mapped spectral response acceleration at 1-second period from Figure 6
S_{MS} = maximum considered earthquake spectral response acceleration for short periods
S_{M1} = maximum considered earthquake spectral response acceleration for 1-second period
S_{DS} = five-percent damped design spectral response acceleration at short periods
S_{D1} = five-percent damped design spectral response acceleration at 1-second period
g = gravitational acceleration, approximately 9.8 m/sec^2 or 32.2 ft/sec^2

The site classification per Table 25 is based on the average characteristics of the upper 100 feet of the site profile. Our scope of services for this project did not include any borings to verify the subsurface profile to a depth of 100 feet. The site classification was estimated based on the results of our subsurface exploration, experience with similar projects in the area, and a review of a geologic map of the project area. Additional exploration to greater depths would be required to verify the subsurface conditions below the depth explored for this report.

such as foundations, septic tanks, cesspools, basements and irrigation systems were not encountered during site reconnaissance, such features could exist and might be encountered during construction.

Site Clearing:

1. Strip and remove any existing pavement, fill, debris and other deleterious materials from the proposed tank area. Any existing structures should be completely removed from below any new tank, including foundation elements and any associated development such as underground utilities, septic tanks, etc. All exposed surfaces below footings and slabs should be free of mounds and depressions, which could prevent uniform compaction.

2. If unexpected fills or underground facilities are encountered during site clearing, we should be contacted for further recommendations. All excavations should be observed by GEOMAT prior to backfill placement.

3. Stripped materials consisting of vegetation and organic materials should be removed from the site, or used to re-vegetate exposed slopes after completion of grading operations. If it is necessary to dispose of organic materials on-site, they should be placed in non-structural areas, and in fill sections not exceeding 5 feet in height.

4. Sloping areas steeper than 5:1 (horizontal:vertical) should be benched to reduce the potential for slippage between existing slopes and fills. Benches should be level and wide enough to accommodate compaction and earth moving equipment.

5. All exposed areas which will receive fill (with the exception of formational rock), once properly cleared and benched where necessary, should be scarified to a minimum depth of eight inches, conditioned to near optimum moisture content, and compacted to at least 95% of standard proctor (ASTM D698).

Excavation:

1. We present the following general comments regarding our opinion of the excavation conditions for the designers' information with the understanding that they are opinions based on our boring data. More accurate information regarding the excavation conditions should be evaluated by contractors or other interested parties from test excavations using the equipment that will be used during construction. Based on our subsurface evaluation it appears that shallow excavations in soils at the sites will be possible using standard excavation equipment. Deeper excavations that encounter formational rock are expected to be difficult and may necessitate the use of heavy-duty equipment and/or specialized techniques.

2. On-site soils may pump or become unstable or unworkable at high water contents, especially for excavations near the water table. Dewatering may be necessary to achieve a stable excavation. Workability may be improved by scarifying and drying. Over-excavation of wet zones and replacement with granular materials may be necessary. Lightweight excavation equipment may be required to reduce subgrade pumping.

Foundation Preparation:

Footings should bear on either formational rock or engineered fill as recommended in the **Foundations** section of this report. All loose and/or disturbed soils should either be compacted or removed from the bottoms of footing excavations prior to placement of reinforcing steel and/or concrete.

Fill Materials:

1. The native soils are not suitable for use as structural fill, unless they are treated to reduce their plasticity and expansive potential. Imported soils with low expansive potentials could be used as fill material for the following:
   - general site grading
   - foundation areas
   - foundation backfill

2. Select granular materials should be used as backfill behind walls that retain earth.

3. Imported soils to be used in structural fills should conform to the following:

Gradation	Percent finer by weight (ASTM C136)
3"	100
No. 4 Sieve	50-100
No. 200 Sieve	50 Max
Maximum expansive potential (%)*	1.5

* Measured on a sample compacted to approximately 95 percent of the ASTM D698 maximum dry density at about 3 percent below optimum water content. The sample is confined under a 144-psf surcharge and submerged.

4. Aggregate base should conform to NMDOT specifications.

Placement and Compaction:

1. Place and compact fill in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift.

2. Un-compacted fill lifts should not exceed 10 inches loose thickness.

3. Materials should be compacted to the following:

Material	Minimum Percent (ASTM D698)
Subgrade soils beneath fill areas	95
On-site or imported fill soils beneath footings	95
Miscellaneous backfill	90

4. On-site and imported soils should be compacted at moisture contents near optimum.

Compliance:

Recommendations for foundation elements supported on compacted fills depend upon compliance with **Earthwork** recommendations. To assess compliance, observation and testing should be performed by GEOMAT.

Drainage:

Surface Drainage:

1. Positive drainage should be provided during construction and maintained throughout the life of the proposed project. Infiltration of water into utility or foundation excavations must be prevented during construction. Planters and other surface features that could retain water in areas adjacent to the tank should be sealed or eliminated.

2. In areas where sidewalks or paving do not immediately adjoin the structure, we recommend that protective slopes be provided with a minimum grade of approximately 5 percent for at least 10 feet from perimeter walls. Backfill against footings and in utility trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration.

3. Downspouts, roof drains or scuppers should discharge into splash blocks or extensions when the ground surface beneath such features is not protected by exterior slabs or paving.

Subsurface Drainage:

Free-draining, granular soils containing less than five percent fines (by weight) passing a No. 200 sieve should be placed adjacent to walls which retain earth. A drainage system consisting of either weep holes or perforated drain lines (placed near the base of the wall) should be used to intercept and discharge water which would tend to saturate the backfill. Where used, drain lines should be embedded in a uniformly graded filter material and provided with adequate clean-outs for periodic maintenance. An impervious soil should be used in the upper layer of backfill to reduce the potential for water infiltration.

GENERAL COMMENTS

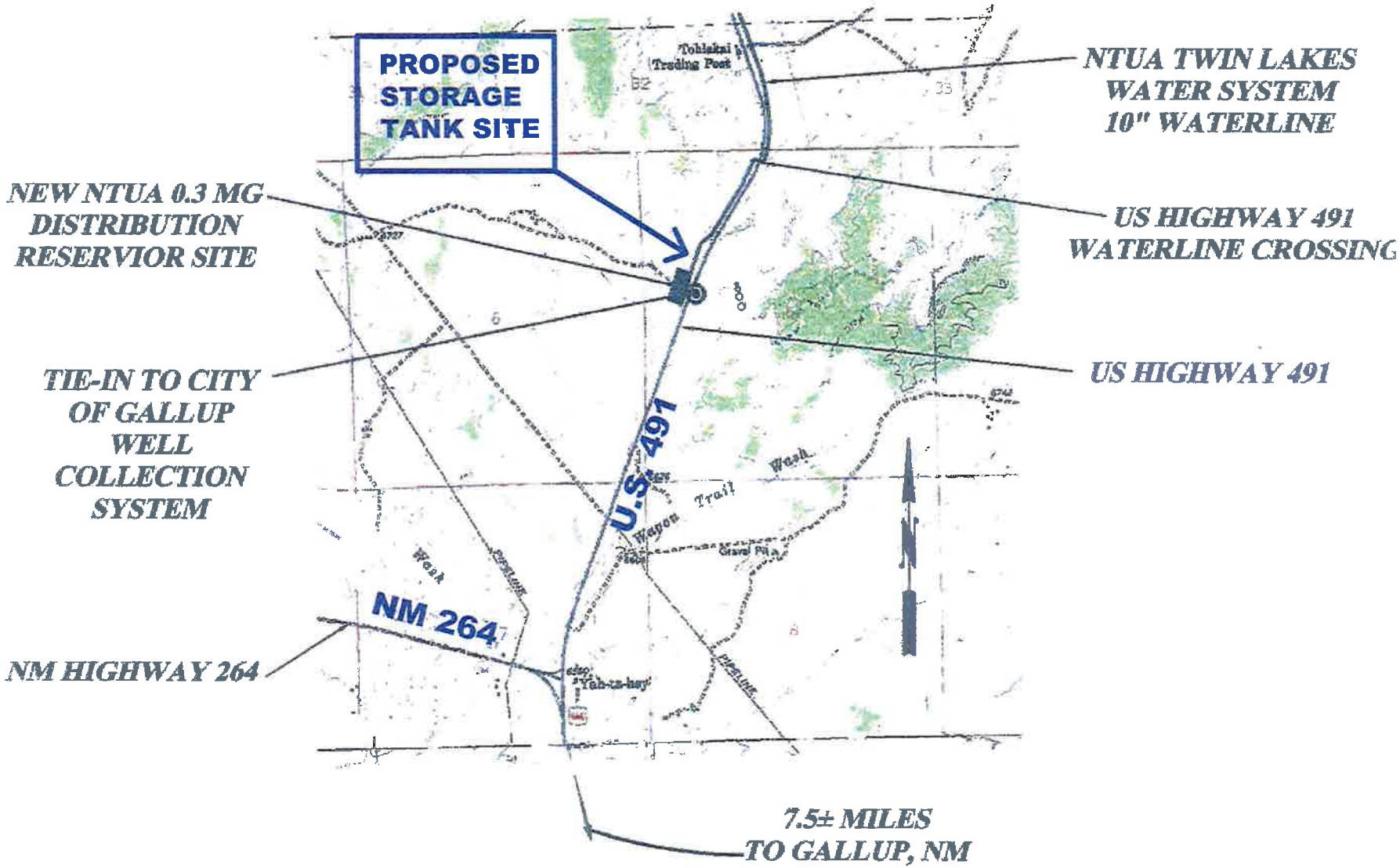
It is recommended that GEOMAT be retained to provide a general review of final design plans and specifications in order to confirm that grading and foundation recommendations in this report have been interpreted and implemented. In the event that any changes of the proposed project are planned, the opinions and recommendations contained in this report should be reviewed and the report modified or supplemented as necessary.

GEOMAT should also be retained to provide services during excavation, grading, foundation, and construction phases of the work. Observation of footing excavations should be performed prior to placement of reinforcing and concrete to confirm that satisfactory bearing materials are present and is considered a necessary part of continuing geotechnical engineering services for the project. Construction testing, including field and laboratory evaluation of fill, backfill, pavement materials, concrete and steel should be performed to determine whether applicable project requirements have been met.

The analyses and recommendations in this report are based in part upon data obtained from the field exploration. The nature and extent of variations beyond the location of test borings may not become evident until construction. If variations then appear evident, it may be necessary to re-evaluate the recommendations of this report.

Our professional services were performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical engineers practicing in this or similar localities at the same time. No warranty, express or implied, is intended or made. We prepared the report as an aid in design of the proposed project. This report is not a bidding document. Any contractor reviewing this report must draw his own conclusions regarding site conditions and specific construction equipment and techniques to be used on this project.

This report is for the exclusive purpose of providing geotechnical engineering and/or testing information and recommendations. The scope of services for this project does not include, either specifically or by implication, any environmental assessment of the site or identification of



TWIN LAKES 0.3 MG DISTRIBUTION RESERVIOR

SCALE: 1"=2000'
APPROXIMATE

Approximate Not to Scale	VICINITY MAP Locations (approximate) GEOMAT Project No. 112-1431	PROJECT Twin Lakes Water Tank Gallup-Rural Navajo Water Supply Project (Project 4) McKinley County, New Mexico

GEOMAT INC

Approximate

Not to Scale

SITE PLAN

Boring Locations (approximate)

GEOMAT Project No. 112-1431
Date of Exploration: 12-18-11 & 12-22-11

PROJECT

Twin Lakes Water Tank
Gallup-Rural Navajo Water Supply Project (Project 4)
McKinley County, New Mexico

GEOMAT INC

GEOMAT INC.
915 Malta Avenue
Farmington, NM 87401
Tel (505) 327-7928
Fax (505) 326-5721

Borehole B-1

Project Name: Gallup - Rural Navajo WSP (Project 4)
Project Number: 112-1431
Client: DePauli Engineering & Surveying
Site Location: McKinley County, New Mexico
Rig Type: CME-45
Drilling Method: 4" O.D. Solid Stem Auger
Sampling Method: Ring and Split spoon samples
Hammer Weight: 140 lbs
Hammer Fall: 30 inches

Date Drilled: 11/18/2011
Latitude: Not Determined
Longitude: Not Determined
Elevation: Not Determined
Boring Location: See Site Plan
Groundwater Depth: None Encountered
Logged By: DB
Remarks: Twin Lakes Tank

Laboratory Results										
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
									1	LEAN CLAY, green-gray, very stiff, damp
	90	29		17-13-10	SS 18		CL		2 3 4 5	
98.7			10.6	15-24-41	MC 18				6	
									7	CLAYSTONE, tan, highly weathered, massive
	99			13-19-22	SS 18				8 9 10 11 12 13 14	brown to gray moderately weathered
				9-16-21	SS 18		RK		15 16 17 18 19	
				10-16-18	SS 18				20 21 22 23 24	dark gray
				13-16-17	SS 18				25 26	
									27 28 29 30 31 32 33 34 35 36 37 38 39 40	Total Depth 26.5 feet

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon HQ = 2.5" Rock Core

GEOMAT 112-1431.GPJ GEOMAT.GDT 12/14/11

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions			Group Symbols	Typical Names
Coarse-Grained Soils More than 50% retained on No. 200 sieve	**Gravels** 50% or more of coarse fraction retained on No. 4 sieve	Clean Gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		Gravels with Fines	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	Sands More than 50% of coarse fraction passes No. 4 sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines
			SP	Poorly graded sands and gravelly sands, little or no fines
		Sands with Fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
Fine-Grained Soils 50% or more passes No. 200 sieve	**Silts and Clays** Liquid Limit 50 or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	Silts and Clays Liquid Limit greater than 50		MH	Inorganic silts, micaceous or diatomaceous free sands or silts, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
Highly Organic Soils			PT	Peat, mucic & other highly organic soils

CONSISTENCY OR RELATIVE DENSITY CRITERIA

Standard Penetration Test
Density of Granular Soils

Penetration Resistance, N (blows/ft.)	Relative Density
0-4	Very Loose
5-10	Loose
11-30	Medium Dense
31-50	Dense
>50	Very Dense

Standard Penetration Test
Density of Granular Soils

Penetration Resistance, N (blows/ft.)	Consistency	Unconfined Compressive Strength (Tons/ft2)
<2	Very Soft	<0.25
2-4	Soft	0.25-0.50
4-8	Firm	0.50-1.00
8-15	Stiff	1.00-2.00
15-30	Very Stiff	2.00-4.00
>30	Hard	>4.0

U.S. Standard Sieve Sizes	3"	3/4"	#4	#10		#40	#200
Unified Soil Classification	Cobbles	Gravel		Sand			Silt or Clay
		coarse	fine	coarse	medium	fine	

MOISTURE CONDITIONS

Dry	Absence of moist, dusty, dry to the touch
Slightly Damp	Below optimum moisture content for compaction
Moist	Near optimum moisture content, will moisten the hand
Very Moist	Above optimum moisture content
Wet	Visible free water, below water table

MATERIAL QUANTITY

trace	0-5%
few	5-10%
little	10-25%
some	25-45%
mostly	50-100%

OTHER SYMBOLS

R Ring Sample
S SPT Sample
B Bulk Sample
▼ Ground Water

BASIC LOG FORMAT:

Group name, Group symbol, (grain size), color, moisture, consistency or relative density. Additional comments: odor, presence of roots, mica, gypsum, coarse particles, etc.

EXAMPLE:

SILTY SAND w/trace silt (SM-SP), Brown, loose to med. Dense, fine to medium grained, damp

UNIFIED SOIL CLASSIFICATION SYSTEM

TEST DRILLING EQUIPMENT & PROCEDURES

Description of Subsurface Exploration Methods

Drilling Equipment – Truck-mounted drill rigs powered with gasoline or diesel engines are used in advancing test borings. Drilling through soil or softer rock is performed with hollow-stem auger or continuous flight auger. Carbide insert teeth are normally used on bits to penetrate soft rock or very strongly cemented soils which require blasting or very heavy equipment for excavation. Where refusal is experienced in auger drilling, the holes are sometimes advanced with tricone gear bits and NX rods using water or air as a drilling fluid.

Sampling Procedures - Dynamically driven tube samples are usually obtained at selected intervals in the borings by the ASTM D1586 test procedure. In most cases, 2" outside diameter, 1 3/8" inside diameter, samplers are used to obtain the standard penetration resistance. "Undisturbed" samples of firmer soils are often obtained with 3" outside diameter samplers lined with 2.42" inside diameter brass rings. The driving energy is generally recorded as the number of blows of a 140-pound, 30-inch free fall drop hammer required to advance the samplers in 6-inch increments. These values are expressed in blows per foot on the boring logs. However, in stratified soils, driving resistance is sometimes recorded in 2- or 3-inch increments so that soil changes and the presence of scattered gravel or cemented layers can be readily detected and the realistic penetration values obtained for consideration in design. "Undisturbed" sampling of softer soils is sometimes performed with thin-walled Shelby tubes (ASTM D1587). Tube samples are labeled and placed in watertight containers to maintain field moisture contents for testing. When necessary for testing, larger bulk samples are taken from auger cuttings. Where samples of rock are required, they are obtained by NX diamond core drilling (ASTM D2113).

Boring Records - Drilling operations are directed by our field engineer or geologist who examines soil recovery and prepares boring logs. Soils are visually classified in accordance with the Unified Soil Classification System (ASTM D2487), with appropriate group symbols being shown on the logs.

APPENDIX B

LAB NO.	BORING NO.	SAMPLE DEPTH (ft)	ASTM D698		MOISTURE CONT. (%)	DENSITY		ATTERBERG LIMITS			SWELL (%)	CONSOL TEST	% PASS #200 SIEVE	CLASSIFICATION
			Density	Moisture		WET (pcf)	DRY (pcf)	LL	PL	PI				
12263	B-1	2.5						47	18	29			90	Lean CLAY (CL)
12264	B-1	5			10.6	109.2	98.7							Lean CLAY (CL)
12265	B-1	10											99	CLAYSTONE
12266	B-2	2.5			15.6	127.6	110.4					Attached		Lean CLAY (CL)
12267	B-2	20											96	CLAYSTONE
12268	B-2	35											44	SANDSTONE

GEOMAT INC.

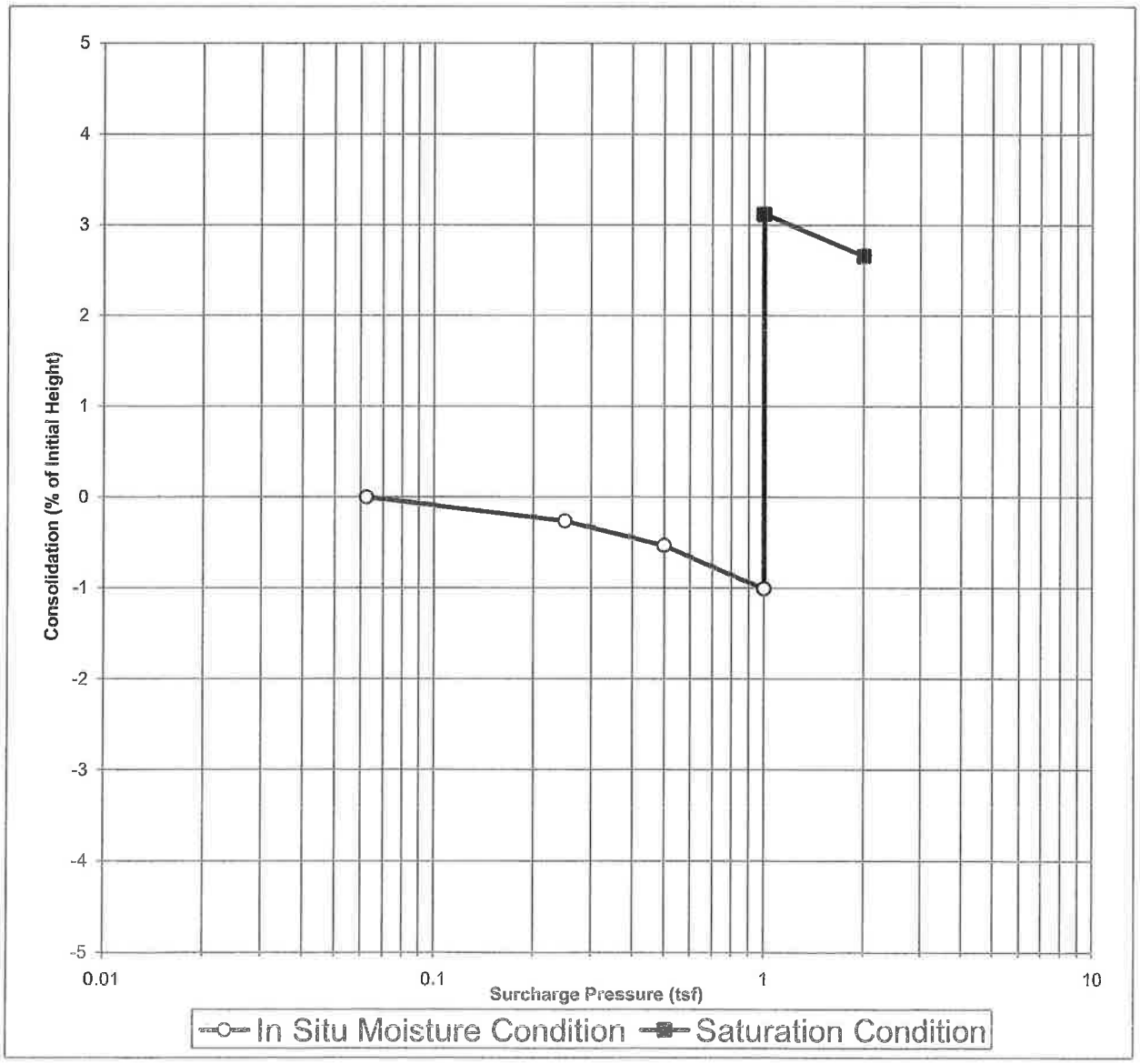
SUMMARY OF SOIL TESTS

Project	Gallup - Rural Navajo Water Supply Project (Project 4)
Job No.	112-1431
Location	McKinley County, New Mexico
Date of Exploration	November 18 & 22, 2011

PROJECT:	Gallup - Rural Navajo Water Supply Project (Project 4)	**JOB NO:**	112-1431
CLIENT:	DePauli Engineering & Surveying	**WORK ORDER NO:**	NA
MATERIAL:	Lean CLAY (CL)	**LAB NO:**	12266
SAMPLE SOURCE:	B-2 @ 2.5'	**DATE SAMPLED:**	11/22/2011
SAMPLE PREP.:	In Situ	**SAMPLED BY:**	DB

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D2435)

INITIAL VOLUME (cu.in)	4.60	FINAL VOLUME (cu.in)	4.73
INITIAL MOISTURE CONTENT	15.6%	FINAL MOISTURE CONTENT	21.5%
INITIAL DRY DENSITY(pcf)	110.4	FINAL DRY DENSITY(pcf)	107.0
INITIAL DEGREE OF SATURATION	59%	FINAL DEGREE OF SATURATION	75%
INITIAL VOID RATIO	0.51	FINAL VOID RATIO	0.55
ESTIMATED SPECIFIC GRAVITY	2.651	SATURATED AT	1 tsf



LABORATORY TESTING PROCEDURES

Consolidation Tests: One-dimensional consolidation tests are performed using "Floating-ring" type consolidometers. The test samples are approximately 2.5 inches in diameter and 1.0 inch high and are usually obtained from test borings using the dynamically-driven ring samplers. Test procedures are generally as outlined in ASTM D2435. Loads are applied in several increments to the upper surface of the test specimen and the resulting deformations are recorded at selected time intervals for each increment. Samples are normally loaded in the in-situ moisture conditions to loads which approximate the stresses which will be experienced by the soils after the project is completed. Samples are usually then submerged to determine the effect of increased moisture contents on the soils. Each load increment is applied until compression/expansion of the sample is essentially complete (normally movements of less than 0.0003 inches/hour). Porous stones are placed on the top and bottom surfaces of the samples to facilitate introduction of the moisture.

Expansion Tests: Tests are performed on either undisturbed or recompacted samples to evaluate the expansive potential of the soils. The test samples are approximately 2.5 inches in diameter and 1.0 inch high. Recompacted samples are typically remolded to densities and moisture contents that will simulate field compaction conditions. Surcharge loads normally simulate those which will be experienced by the soils in the field. Surcharge loads are maintained until the expansion is essentially complete.

Atterberg Limits/Maximum Density/Optimum Moisture Tests: These tests are performed in accordance with the prescribed ASTM test procedures.

APPENDIX F

HIGHWAY PERMITS

1 - UTILITY FACILITIES WITHIN PUBLIC RIGHT OF WAY

2 -TRAFFIC CONTROL/ROADWAY WORK PERMIT

1 - UTILITY FACILITIES WITHIN PUBLIC RIGHT OF WAY

New Mexico Department of
TRANSPORTATION

April 23rd, 2013

City of Gallup
P.O. Box 1270
Gallup, NM, 87305
Attn: Daniella Aretino

RE: Utility Permit 13-6U-016

Dear Ms. Aretino:

Enclosed is a copy of the utility permit. This utility permit has been issued with the following conditions:

1. Traffic control shall be in place before job can commence. All traffic control signs and devices shall be equipped with fluorescent orange sheeting that meets or exceeds type VIII or IX reflectivity.
2. All trenches and pits shall be visibly fenced and protected using OSHA approved methods. Do not leave trenches or pits open overnight unless specifically approved in writing by the district traffic engineer.
3. Cover and compact all pits and trenches per NMDOT standards after completion of work.
4. Re-seed all disturbed areas per NMDOT specifications.
5. Adhere to NMDOT drop-off policy at all times.
6. Work shall not take place in inclement weather unless specifically approved in writing by the district traffic engineer.
7. Before work can commence, contractor shall submit an NMDOT Work Permit Request Form along with liability insurance naming the NMDOT as additional insured and a detailed Traffic Control Plan.

If this utility is not installed within 6 months of the date of this letter, this permit shall be void. If you have any questions please call me at (505) 285-3223.

Sincerely,

Jeffrey Weeker
Traffic Technician

Enclosure

Cc: 46-54
Records
File

Attached to Traffic Section

APPLICATION FOR PERMIT TO INSTALL UTILITY FACILITIES

WITHIN PUBLIC RIGHT OF WAY

TO: NEW MEXICO DEPARTMENT
OF TRANSPORTATION
DISTRICT SIX
P.O. BOX 2160
MILAN, NM 87021

Permit No. 13-64-016

✓ New Installation
____ Renewal Permit
____ Relocation
____ Remain in Place

1. Pursuant to New Mexico Statutes Annotated, 1978 Compilation, Sections 67-8-13 and 69-8-14, the undersigned
City of Gallup

Address: P.O. Box 1270, Gallup, NM 87305

herein makes application to use highway right of way to install:

Size and Type of Facility 10" Waterline

in the following location: NM Project No. SD-666-1(212) State Road No. U.S. HWY 491

Hwy. Station 504+86 to Hwy Station 574+70 Mile Post 8.96 to Mile Post 10.28

County Section McKinley 5 & 32, Township 16N & 17N, Range 18W

2. For the purpose of this application "within" shall be construed as meaning "on, over, under, across, or along".
   a. 'Engineer' shall be construed as meaning the District Engineer of the New Mexico Department of Transportation or his representative.
   b. 'Applicant' shall be construed as meaning the individual, firm, corporation, association, governmental subdivision, or other organization making application, or the successors of any of the above.
   c. Facility' shall be construed as meaning, but not limited to, and publicly, privately, cooperatively, municipally or governmentally owned facility used for carriage, distribution or transmission of water, gas or electricity, oil and products derived therefrom, sewage, steam or other projects carried by means of pipelines, conduits, wires, culverts, ditches, conveyors or other methods.
   d. If application is for a parallel installation, justification as to why private right of way may not be utilized must be furnished.

3. Applicant proposes to relocate, install or leave facility 7.5 +o 60 feet within the East or West right-of-way line. The proposed installation shall be:

Parallel with Crossing (Crossing or Parallel) Subsurface (Subsurface or Overhead) Crossing shall be by Jack / Bore (Boring, Jacking or Pavement Cut)

   a. If applicant requests installation by pavement cut, complete justification therefore shall be submitted by attachment.
   b. Where application for pavement cut is justified, the application may be held in abeyance pending receipt of cash bond in an amount to be fixed by the Engineer.

4. There is attached hereto a diagrammatic dimensioned drawing showing the location of existing and/or proposed installation referenced to roadway and right of way, right of way lines, any access control lines, distance of proposed installation above or below grade, highway stationing, identification of materials to be used and any other pertinent data. If application is for parallel installation, nature of adjacent land use shall be shown. Proposed installation on or in bridge or other structures, or for the installation of any structures, will require detailed structural drawings.

5. Applicant desires this permit to be in affect for 25 years. Permit will not be issued for a period longer than 25 years must be renewed upon expiration and the burden of timely renewal is on the Applicant. The Applicant shall formally notify the Engineer of actual commencement and completion of construction of the installation. The Applicant shall also formally notify the Engineer of removal or abandonment of the facility, or relinquishment of the permit.

6. The signing of the application by the Engineer and returning it to the Applicant shall validate this application as a permit. The granting of this permit shall not be construed as granting any easement or property right.

7. Servicing of facilities will not be permitted within the access control lines on any controlled access project. Should an emergency occur, the Applicant shall notify the Engineer and shall provide such flagmen, flashers, warning or other safety devices as required by the Engineer. All routine maintenance shall be performed from outside any access control lines.

8. The relocation or installation of facilities within public right of way shall be in strict conformance with all provisions of this application, drawing and the instructions for Utility Permits, as they may be modified by the Engineer, and no departure there from may be made without the written consent of the Engineer. All facilities shall be so placed that they will not interfere with nor endanger any roadway features nor other existing facilities. All construction of facilities shall be subject to the inspection and approval of the Engineer. All such work shall be performed so that danger, inconvenience and delay to the traveling public will be held to a minimum. Protection and handling of traffic during the installation are the responsibility of the Applicant, and must be approved by the Engineer.

9. The applicant will, except as otherwise ordered by the Engineer, restore the public right of way, and all bridges or other structures thereon or adjacent thereto which have been altered or affected by facility installation performed hereunder, in accordance with sound construction practices and the Engineer's specifications, and shall cause the work to be done in a workman like manner. If any damage is caused to the highway right of way or to any bridge, structure or improvement thereon or adjacent thereto by reason of the installation, maintenance, alteration or removal of such facilities or other appurtenances, the Applicant will reimburse the Engineer the full amount thereof promptly upon demand by the Engineer; provided, however, that the obligation imposed under this paragraph shall not apply in the event the damage resulted from causes beyond the control of the Applicant. All such facilities located within the right of way shall at all times be kept in such repair so as not to damage the highway, inconvenience or endanger the traveling public and shall be kept free from advertisement, posters and the like.

10. The applicant will at all times indemnify and save harmless the Engineer from any and all claims of every kind of character caused by or incident to the installation, alteration, removal or condition of these facilities in the right of way and will promptly reimburse the Engineer for any and all expenses incurred by the Engineer in resisting any such claim or claims. Nothing herein shall be construed to mean that the Applicant hereunder will indemnify and save harmless the Engineer from any claim caused by or incident to any neglect, carelessness or breach of duty on the part of the Engineer.

11. Should the Applicant at any time fail to promptly and fully perform any of the obligations imposed hereby and after thirty (30) days written notice thereof, the Engineer may at his option (a) cause the obligations to be fully carried out and performed, and the Applicant will promptly reimburse the Engineer for all costs and expenses incident thereto, (b) may summarily order the removal of such facility and if the Applicant fails to comply within a reasonable time, the Engineer may direct the removal of the facility with all costs and expenses thereto to be borne by the Applicant.

12. If by reason of any change in the location, construction, grade or by any other matter affecting the highway upon which any facility is located because of changing traffic conditions or otherwise, it shall become advisable in the opinion of the Engineer that said facility be removed, relocated or otherwise modified, the Applicant, upon written notice from the Engineer, shall remove, relocate or modify such facility without undue delay in such manner as the Engineer may direct or approve, at the Applicant's expense and at no cost to the Engineer. All facilities located on public right of way under the dual jurisdiction of the State and a subordinate governmental entity shall comply with all applicable rules and regulations of such entity properly and lawfully in force and including but not limited to provisions of the local franchises not in conflict with the rules and regulations of the Engineer. The Engineer makes no warranty either express or implied as to the continued existence of any highway in any particular location and expressly assumes no obligation with regard to the facility upon change, vacation or abandonment of any highway portions thereof.

13. Neither the making of this application nor anything herein contained shall constitute a waiver on the part of the Applicant of any rights or claims had or made by some with respect to the occupancy of the streets and highways under the Constitution and Laws of the State of New Mexico, nor shall anything herein contain in anywise prejudice or impair any rights or claims existing independent of this application with respect to the construction, operation and maintenance of the applicants facilities in the State of New Mexico.

14. Each copy of the application must be signed by the Applicant as an individual owner or by any official designated to execute such documents. This application is hereby granted subject to all provisions herein and to the following special provision, changes or amendments:

    a. All work performed on State Right-of-Way shall meet the Standard Specifications for Road and Bridge Construction (2000 Edition).
    b. The State's right of way must be restored to it's original condition or better by the Applicant.
    c. Traffic Control shall be in accordance with the Manual on Uniform Traffic Control Devices. (Current Edition)
    d. The Applicant shall notify the District 6 Traffic Section at least 48 hours prior to the start and 48 hours after completion of said project.
    e. The Special Utility Permit Provisions attached hereto as Attachment One and hereby incorporated by reference.
    f. To the extent required by contract or law, this permit is subject to prior approval by underlying fee owner, further identified "_____"
    g. The utility owner shall provide "as-built" horizontal and vertical utility location information, **within thirty (30) days of completion of the project**, in hard copy and electronic file in AUTOCAD DWG (3D) OR MICROSTATION DGN (3D) format. The standard horizontal datum shall be North American Datum 1983 (NAD 83) and standard projections shall be the New Mexico State Plane Coordinate System 1983 (NMSPCS83). The standard vertical datum shall be North American Vertical Datum 1988 (NAVD88). The preferred media in which this data must be submitted is CD ROM; 3.5" diskette may be used for the data submittal. The utility location information shall be tied to Departmental monuments and referenced to highway mileposts or to highway project construction stationing, and certified by a New Mexico Registered Land Surveyor. Metadata or "data about the data" shall be submitted with each utility's as-built electronic file, preferably as a separate text file on the electronic submittal media, and shall include: 1.) District Utility Permit Number. 2.) Name, address and phone number of the responsible land surveyor. 3.) Date of completion of survey. 4.) Equipment used to conduct the survey. 5.) Horizontal and vertical control marks used to tie the survey to the NMSPC83 and NAVD88. 6.) Ground to Grid combined scale factor used. 7.) Elevations shall be provided every 500 feet and at all survey break points, including all high and low points

Applicant City of Gallup

By Lance Allgood Date 10-3-2012

Title

Approval of this permit is hereby given this 23 day of April 20 13

NEW MEXICO DEPARTMENT OF TRANSPORTATION

By

NNDFW Review No. 12SWCA-04

BIOLOGICAL RESOURCES COMPLIANCE FORM
NAVAJO NATION DEPARTMENT OF FISH AND WILDLIFE
P.O. BOX 1480, WINDOW ROCK, ARIZONA 86515-1480

It is the Department's opinion the project described below, with applicable conditions, is in compliance with Tribal and Federal laws protecting biological resources including the Navajo Endangered Species and Environmental Policy Codes, U.S. Endangered Species, Migratory Bird Treaty, Eagle Protection and National Environmental Policy Acts. This form does not preclude or replace consultation with the U.S. Fish and Wildlife Service if a Federally-listed species is affected.

PROJECT NAME & NO.: Gallup - Rural Navajo Water Supply Project (GRNWSP), Project 4

DESCRIPTION: The proposed project consists of the construction, operation, and maintenance of a 10" waterline, water storage tanks, control building, administration building, and appurtenances.

LOCATION: U.S. Highway 491 ROW (NN Trust & Fee Lands), McKinley County, New Mexico

REPRESENTATIVE: Four Corners Environmental, Inc., Project No. 11091R11

ACTION AGENCY: DePauli Engineering and Surveying, Inc.

B.R. REPORT TITLE / DATE / PREPARER: BE GRNWSP No. 4/11 JUL 2012/Four Corners Environmental, Inc.

SIGNIFICANT BIOLOGICAL RESOURCES FOUND: Area 3.

POTENTIAL IMPACTS

NESL SPECIES POTENTIALLY IMPACTED: NA

FEDERALLY-LISTED SPECIES AFFECTED: NA

OTHER SIGNIFICANT IMPACTS TO BIOLOGICAL RESOURCES: NA

AVOIDANCE / MITIGATION MEASURES: [1] The NNDFW concurs with Section 5.0, Conservation Measures.

CONDITIONS OF COMPLIANCE*: NA

FORM PREPARED BY · DATE: Pamela A. Kyselka/17 SEP 2012

COPIES TO: (add categories as necessary)

☐ ☐

2 NTC § 164 Recommendation:
- ☒ Approval
- ☐ Conditional Approval (with memo)
- ☐ Disapproval (with memo)
- ☐ Categorical Exclusion (with request letter)
- ☐ None (with memo)

Signature

Gloria M. Tom, Director, Navajo Nation Department of Fish and Wildlife

Date 9/18/12

*I understand and accept the conditions of compliance, and acknowledge that lack of signature may be grounds for the Department not recommending the above described project for approval to the Tribal Decision-maker.

Representative's signature

Date 10-1-12

March 30, 2011
Genevieve Head
NMDOT – Cultural Resources Bureau
Environmental Design Division
P.O. Box 1149, Room 213
Santa Fe, NM, 87504-1149

Dear Genevieve,

The following information is being provided to obtain clearance from the Environmental and Cultural Resource Section in order to proceed with the application for utility permits.

1. **Purpose and Nature of Project:** The purpose of the project is to install a 10" water transmission line to improve and upgrade the NTUA – Twin Lakes Water System and enhance regional water supply capabilities. The project is located in McKinley County with the Twin Lake Quadrangle Map.
   The proposed 10" Twin Lakes waterline runs parallel to U.S. Highway 491 and crosses the highway near the township line. The waterline will be installed at minimum depth of 4'. The crossing is 190' long with a minimum depth of 4' and will be completed by jack and bore methods.
2. **Funding Source:** The project is funded by the State of New Mexico Water Trust Board.
3. **Land Status:** NMDOT and Navajo Tribal Trust
4. **Permitting Agencies:** NMDOT and the Navajo Nation
5. **Location(s):**
   The project in located in McKinley County within the Twin Lakes Quadrangle Map (See Attached Vicinity and Location Maps). The proposed 1.32 mile long waterline is located along U.S. Highway 91 (NM Project No. SD-666-1(212) and is situated in Section 5 T16N, R18W and Section 32, T17N, R18W N.M.P.M. The waterline runs north parallel to the Highway on the west side of the right of way from Station 504+86 (Mile Post 8.96) to Station 520+91 (Mile Post 9.26). The waterline then crosses the Highway at Station 520+91 (Mile Post 9.26). The waterline then runs north parallel to Highway on the east side of right of way from 520+91 (Mile Post 9.26) to Station 574+70(Mile Post 10.28).

Sincerely,

Kurt Spolar, PE

Cultural Resources Compliance Form

THE NAVAJO NATION
HISTORIC PRESERVATION DEPARTMENT
PO BOX 4950
WINDOW ROCK, ARIZONA 86515

ROUTING:	COPIES TO
NM	SHPO
	REAL PROPERTY MGT/330
XX	NNAD

NNHPD NO. **HPD-12-076**
OTHER PROJECT NO. **NNAD 11-138**

PROJECT TITLE: A Cultural Resource Inventory on the Proposed Water Line Segment and Water Tank for the Proposed Gallup-Rural Navajo-Water Supply Project 4, Located in Tohlakai, McKinley County, New Mexico for DePauli Engineering and Surveying, LLC

LEAD AGENCY: BIA/NR

SPONSOR: Marc DePauli, Project Engineer, DePauli Engineering & Surveying, LLC, 102 West Hill Avenue, Gallup, New Mexico 87301

PROJECT DESCRIPTION: The proposed undertaking consists of constructing a waterline to provide water to the City of Gallup as well as the surrounding Navajo Nation communities. The waterline consists of 5,400-ft (1.02-miles) in length with a right-of-way width of 70-ft to 100-ft. wide linear corridor comprising 18.41 acres. The majority of the proposed waterline will be constructed within the existing US 491 right-of-way. A water tank is also being proposed. Ground disturbance will be intensive & extensive with the use of heavy equipment.

LAND STATUS: Navajo Tribal Trust, Navajo Fee & Private
CHAPTER: Twin Lakes & Rock Springs
LOCATION:

- T17N; R18W; Sections 32, 5, Unplatted

Twin Lakes & Gallup West Quadrangles, McKinley County, New Mexico NMPM

PROJECT ARCHAEOLOGISTS: Antoinette Kurley-Begay

NAVAJO ANTUQUITIES PERMIT NO.: NTC

DATE INSPECTED: 04/04/11 – 06/16/11
DATE OF REPORT: 01/20/12
TOTAL ACREAGE INSPECTED: 44.93-ac

METHOD OF INVESTIGATION: Class III pedestrian inventory with transects spaced 15 m apart.

LIST OF CULTURAL RESOURCES FOUND:

(15) Sites (NM-Q-18-286, NM-Q-18-287, NM-Q-18-288, NM-Q-18-289, NM-Q-18-290, NM-Q-18-111b, NM-Q-18-112, NM-Q-18-113, NM-Q-18-114, NM-Q-18-115, NM-Q-18-275, NM-Q-18-276, NM-Q-18-277, NM-Q-18-279, NM-Q-18-285 (LA 106371);
(8) Traditional Cultural Properties (TCP)
(9) Isolated Occurrences (IO)

LIST OF ELIGIBLE PROPERTIES:	(9) Sites (NM-Q-18-112, NM-Q-18-113, NM-Q-18-114, NM-Q-18-115, NM-Q-18-276, NM-Q-18-285, NM-Q-18-286, NM-Q-18-287, NM-Q-18-290); (8) TCPs
LIST OF PROPERTIES NOT EVALUATED:	(4) Sites (NM-Q-18-275, NM-Q-18-277, NM-Q-18-279, NM-Q-18-288)
LIST OF NON-ELIGIBLE PROPERTIES:	(2) Sites (NM-Q-18-289, NM-Q-18-111b); (9) IO
LIST OF ARCHAEOLOGICAL RESOURCES:	(12) Sites (NM-Q-18-112, NM-Q-18-113, NM-Q-18-114, NM-Q-18-115, NM-Q-18-275, NM-Q-18-276, NM-Q-18-277, NM-Q-18-279, NM-Q-18-285, NM-Q-18-287, NM-Q-18-288, NM-Q-18-290)
EFFECT/CONDITIONS OF COMPLIANCE:	The proposed undertaking will have a No Adverse Effect on identified cultural resources.

A nature and extent testing plan and/or a data recovery plan will be implemented in consultation with the Navajo Natic Historic Preservation Department and the Bureau of Reclamation for the Navajo/Gallup Waterline Project for the sites liste below. The plans must be consistent with the Navajo Nation Polices & Procedures, and approved by NNHPD.

NM-Q-18-113
NM-Q-18-115
NM-Q-18-275
NM-Q-18-276
NM-Q-18-277
NM-Q-18-279

Sites NM-Q-18-114, NM-Q-18-287, NM-Q-18-112, NM-Q-18-285, NM-Q-18-286, NM-Q-18-288, NM-Q-18-290:
1. Sites boundaries will be flagged & temporarily fenced under the direction of a qualified archaeologist prior to groun disturbing activities.
2. Sites will be avoided by all construction activities by a minimum of 50-ft from the site boundaries.
3. If sites, cannot be avoided, a nature and extent testing plan and/or a data recovery plan will be implemented in consultatic with the Navajo Nation Historic Preservation Department. The plans must be consistent with the Navajo Nation Polices Procedures, and approved by NNHPD.

Sites NM-Q-18-289, NM-Q-18-111b:
No further work is warranted.

TCP's: The TCP's will be avoided by the proposed undertaking.

In the event of a discovery ["*discovery*" means any previously unidentified or incorrectly identified cultural resources includin but not limited to archaeological deposits, human remains, or locations reportedly associated with Native America religious/traditional beliefs or practices], all operations in the immediate vicinity of the discovery must cease, and the Navaj Nation Historic Preservation Department must be notified at (928) 871-7148

FORM PREPARED BY: Tamara Billie
FINALIZED: February 22, 2012

Notification to Proceed Recommended:
YES XX NO___
CONDITIONS:
YES XX NO ___

Navajo Region Approval:
YES X NO ___

Alan S. Downer, Navajo Nation Tribal Historic Preservation Officer — Date 3-6-12

Acting for Bureau of Indian Affairs Navajo Regional Office — Date 4/2/12

Tom 3.30.12

Environmental Design Division
Cultural Resources Bureau

TO: Kurt Spolar, DePauli Engineering & Surveying

PROJECT: US 491, milepost 8.96 to 10.28
10" water transmission line
Jack and bore crossing, milepost 9.26

DATE: June 8, 2011

FROM: Genevieve Head

This memo is an amendment to a previous memo I sent to you April 4, 2011. That memo was in response to a clearance request received in this office March 30, 2011 for the NTUA-Twin Lakes Water System.

No cultural resource inventory survey or environmental survey is required for the portion of your project in NMDOT right of way acquired from private sources. This is the portion on the east side of US 491, between mile markers 9.31 and 9.73, in the east half of Section 32, T17N, R18W.

Land status maps indicate that the remainder of your project is on Navajo Nation land. The New Mexico Department of Transportation does not provide environmental clearance for projects on Tribal lands. NMDOT has easements with the Navajo Nation for right of way on Navajo Nation land and NMDOT does issue permits to work within our easements, but NMDOT cannot speak for the Navajo Nation regarding their environmental requirements.

For cultural and natural resource requirements on Navajo Nation land please contact Ronald Maldonado, CR Compliance Program Manager, at 928-871-7139.

Thank you for notifying the NMDOT Environmental Design Division of this project.
If you have any questions, don't hesitate to contact me at 505-827-5356,
genevieve.head@state.nm.us.

Subject **US 491 - NTUA Twin Lakes**
From: **Head, Genevieve, NMDOT <Genevieve.Head@state.nm.us>**
Sent: **Jun 8, 2011 11:27:18 AM**
To: **daretino@depauliengineering.com**

Daniella,

Please see the attached. This is an amendment to the response I sent in April. It incorporates the fact that not all of the project is on Navajo Nation land.

Don't hesitate to call if you have any questions.

Genevieve

Genevieve N. Head

Cultural Resources Bureau

Environmental Design Division

New Mexico Department of Transportation

(505) 827-5396 phone

(505) 827-1377 fax

Mailing Address

P.O. Box 1149

Santa Fe, NM 87504-1149

Physical Address:

604 West San Mateo, Second Floor

Santa Fe, NM 87505-1842

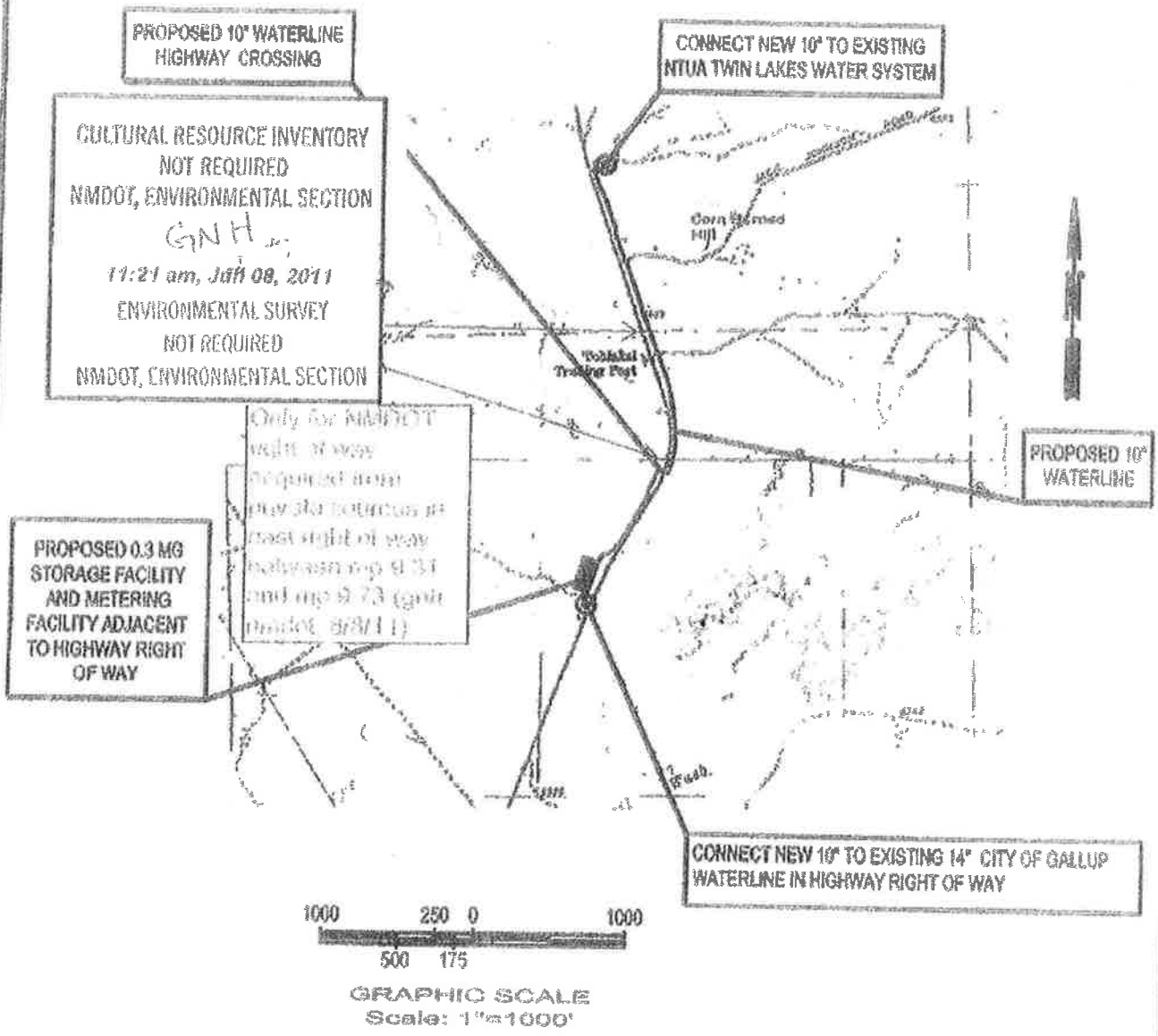
Email address:

genevieve.head@state.nm.us

LOCATION MAP

PROJECT 4 - NTUA TWIN LAKES WATERLINE
GALLUP-RURAL NAVAJO WATER SUPPLY PROJECT

SECTION 5, T16N, R18W AND
SECTION 32, T17N, R18W, N.M.P.M.;
McKINLEY COUNTY, NEW MEXICO



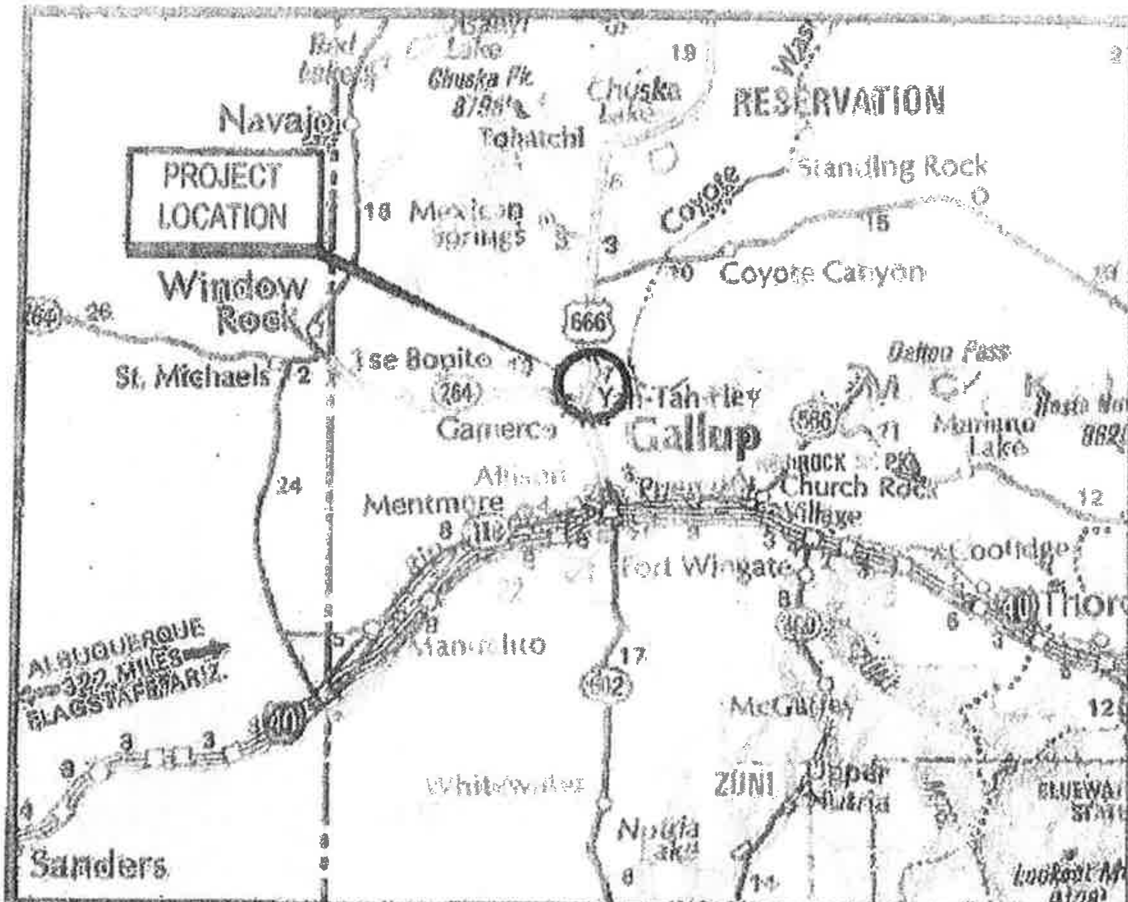
NOTE:
THIS LOCATION MAP WAS ADAPTED FROM THE U.S.G.S. TOPOGRAPHIC MAPS, 7.5 MINUTE SERIES QUADRANGLE FOR: GALLUP WEST, NM

Prepared by:
DePauli Engineering & Surveying LLC
- Civil Engineers and Land Surveyors -
102 West Hill Avenue Gallup, New Mexico 87301
Tel: (505) 863-5440
Fax: (505) 863-1919
des@cnetco.com

VICINITY MAP
PROJECT 4 - NTUA TWIN LAKES WATERLINE
GALLUP-RURAL NAVAJO WATER SUPPLY PROJECT

SECTION 5, T16N, R18W AND
SECTION 32, T17N, R18W, N.M.P.M.;
McKINLEY COUNTY, NEW MEXICO

NOT TO SCALE



NOTE:
THIS LOCATION MAP WAS ADAPTED FROM THE OFFICIAL HIGHWAY MAP OF NEW MEXICO, ISSUED BY: NEW MEXICO STATE HIGHWAY AND TRANSPORTATION DEPARTMENT AND NEW MEXICO DEPARTMENT OF TOURISM

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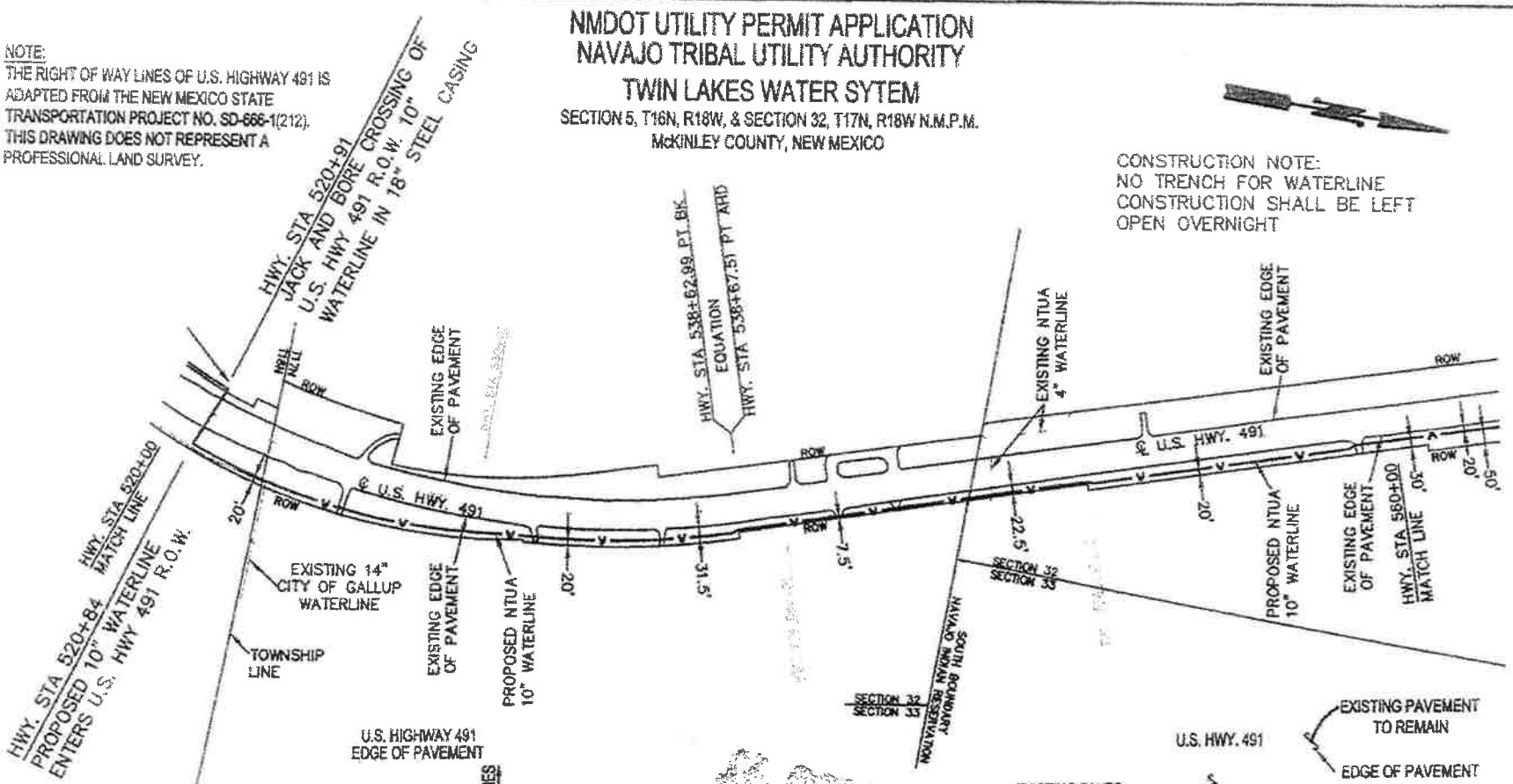
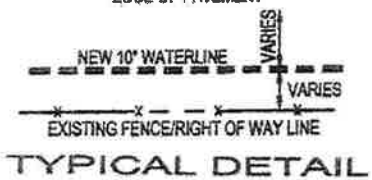
NMDOT UTILITY PERMIT APPLICATION
NAVAJO TRIBAL UTILITY AUTHORITY
TWIN LAKES WATER SYTEM

SECTION 5, T16N, R18W, & SECTION 32, T17N, R18W N.M.P.M.
McKINLEY COUNTY, NEW MEXICO

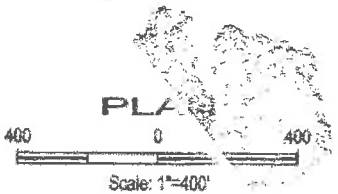
NOTE:
THE RIGHT OF WAY LINES OF U.S. HIGHWAY 491 IS ADAPTED FROM THE NEW MEXICO STATE TRANSPORTATION PROJECT NO. SD-666-1(212). THIS DRAWING DOES NOT REPRESENT A PROFESSIONAL LAND SURVEY.

CONSTRUCTION NOTE:
NO TRENCH FOR WATERLINE CONSTRUCTION SHALL BE LEFT OPEN OVERNIGHT





TYPICAL DETAIL
NOT TO SCALE



PAVEMENT PATCH DETAIL
NOT TO SCALE

DePauli Engineering & Surveying LLC
Civil Engineers and Land Surveyors 102 West Hill Avenue Gallup, NM 87301 Tel: (505)863-5440 Fax: (505)863-1919 des@cnetco.com

REVISED 4/3/13

NMDOT UTILITY PERMIT APPLICATION
NAVAJO TRIBAL UTILITY AUTHORITY
TWIN LAKES WATER SYTEM

SECTION 5, T16N, R18W, & SECTION 32, T17N, R18W N.M.P.M.
McKINLEY COUNTY, NEW MEXICO

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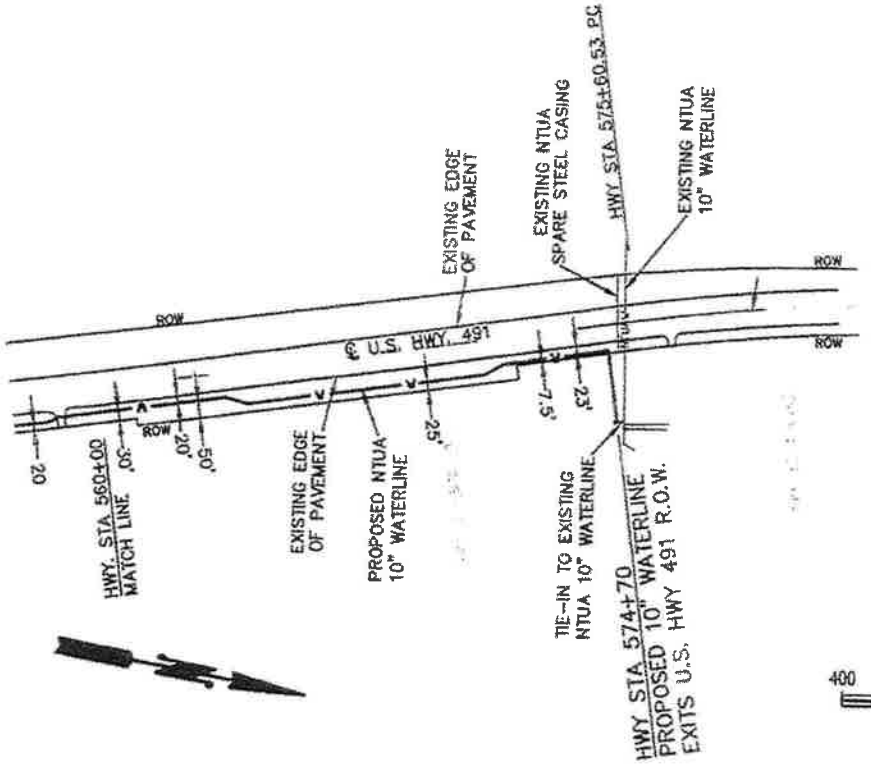
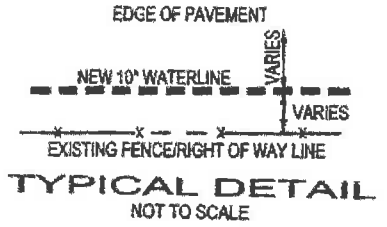




TYPICAL DETAIL
NOT TO SCALE

PLAN
400 0 400
Scale: 1"=400'

DePaull Engineering & Surveying LLC
Civil Engineers and Land Surveyors 102 West Hill Avenue Gallup, NM 87301 Tel: (505)863-5440 Fax: (505)863-1919 des@cnetco.com

REVISED 4/3/13

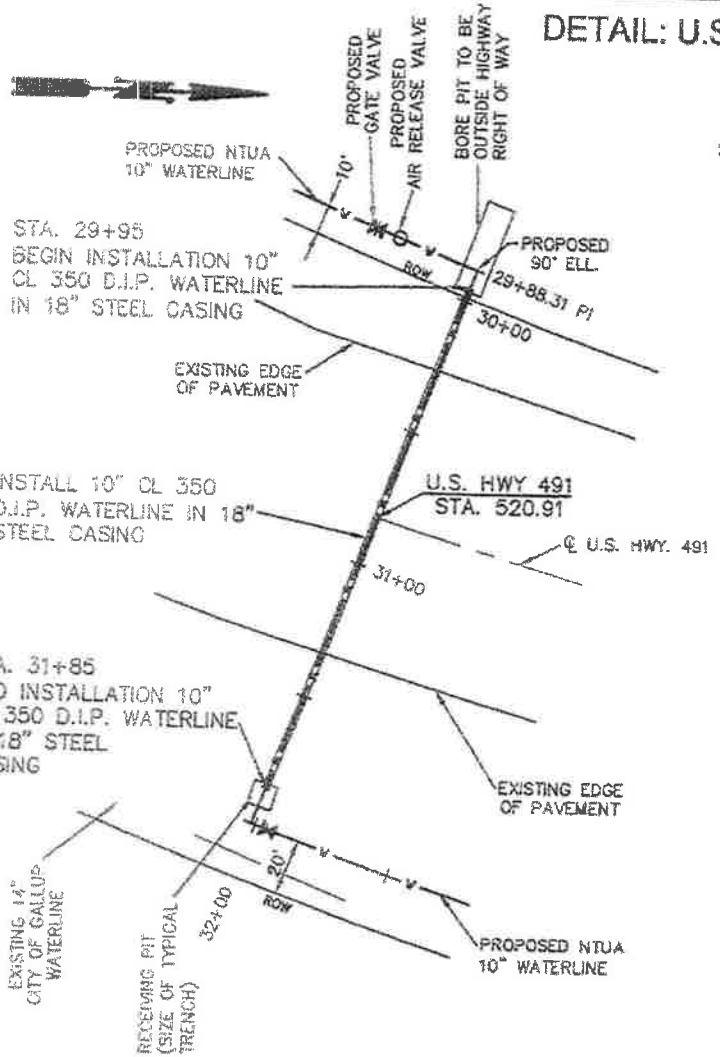
DETAIL: U.S. HIGHWAY 491 WATERLINE CROSSING

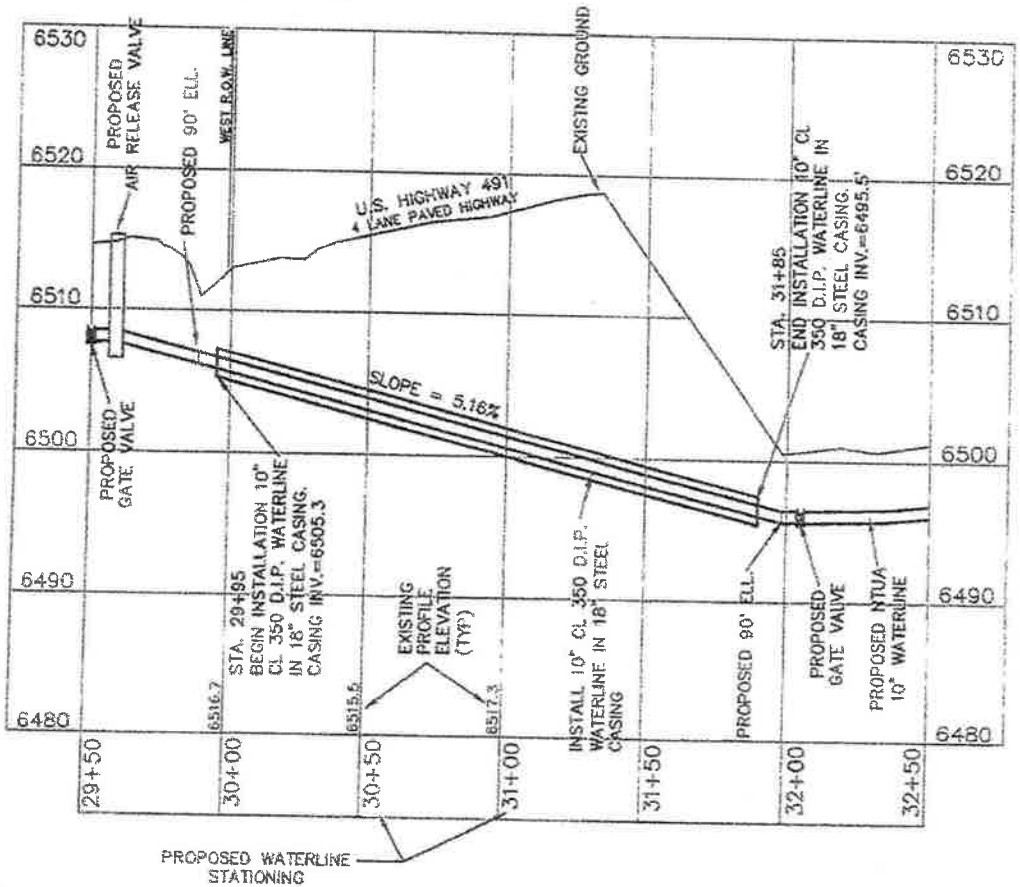
NAVAJO TRIBAL UTILITY AUTHORITY

TWIN LAKES WATER SYTEM

SECTION 5, T16N, R18W, & SECTION 32, T17N, R18W N.M.P.M.
McKINLEY COUNTY, NEW MEXICO

SCALE 1"=50' HOR., 1"=10' VER.





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REVISED 4/3/13

NOTE:
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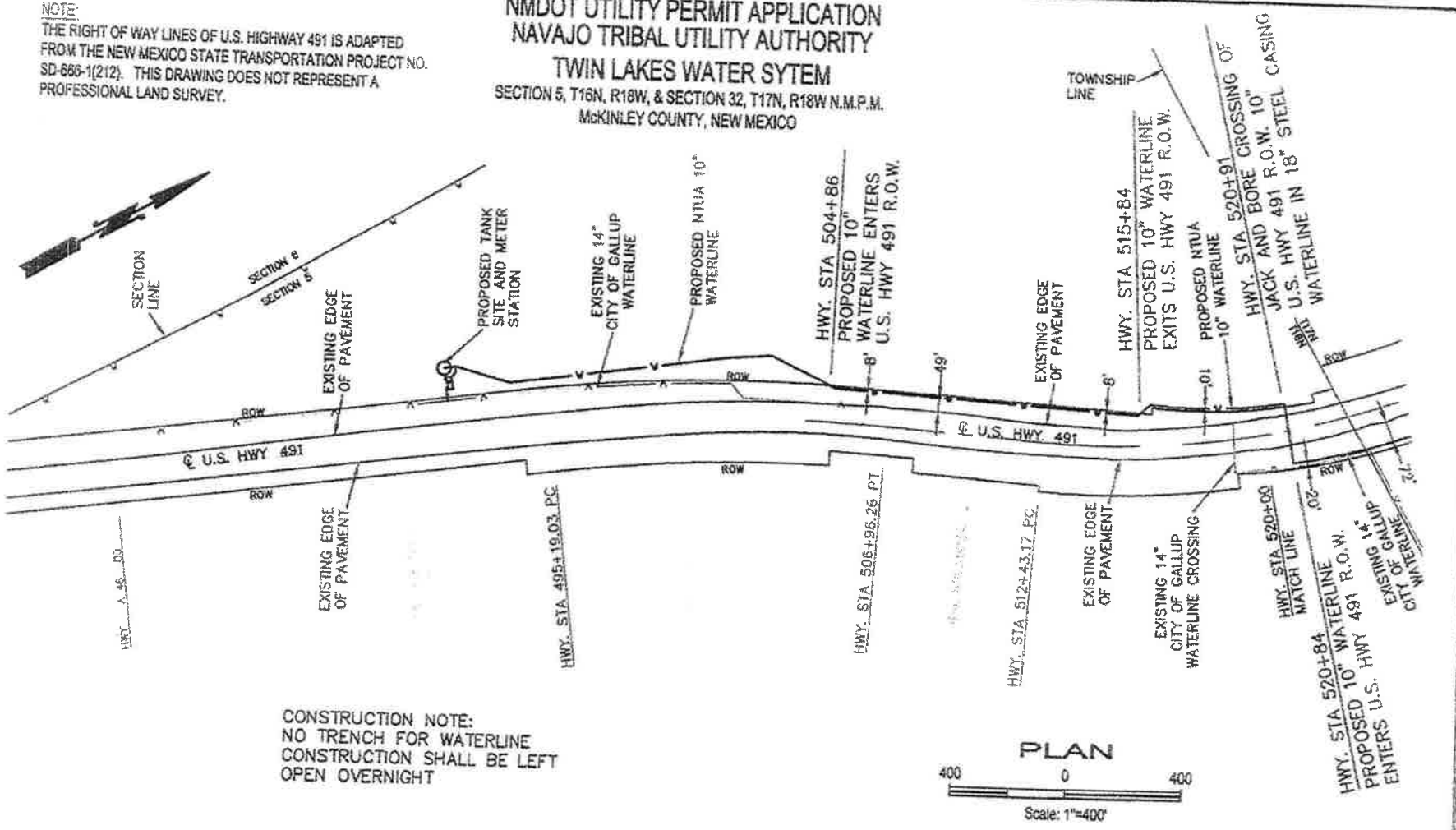
NMDOT UTILITY PERMIT APPLICATION
NAVAJO TRIBAL UTILITY AUTHORITY
TWIN LAKES WATER SYTEM
SECTION 5, T16N, R18W, & SECTION 32, T17N, R18W N.M.P.M.
McKINLEY COUNTY, NEW MEXICO



CONSTRUCTION NOTE:
NO TRENCH FOR WATERLINE CONSTRUCTION SHALL BE LEFT OPEN OVERNIGHT

PLAN
400 0 400
Scale: 1"=400'

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REVISED 4/3/13

SOUTH BOUND TRAFFIC CONTROL PLAN

NAVAJO TRIBAL UTILITY AUTHORITY

TWIN LAKES WATER SYTEM

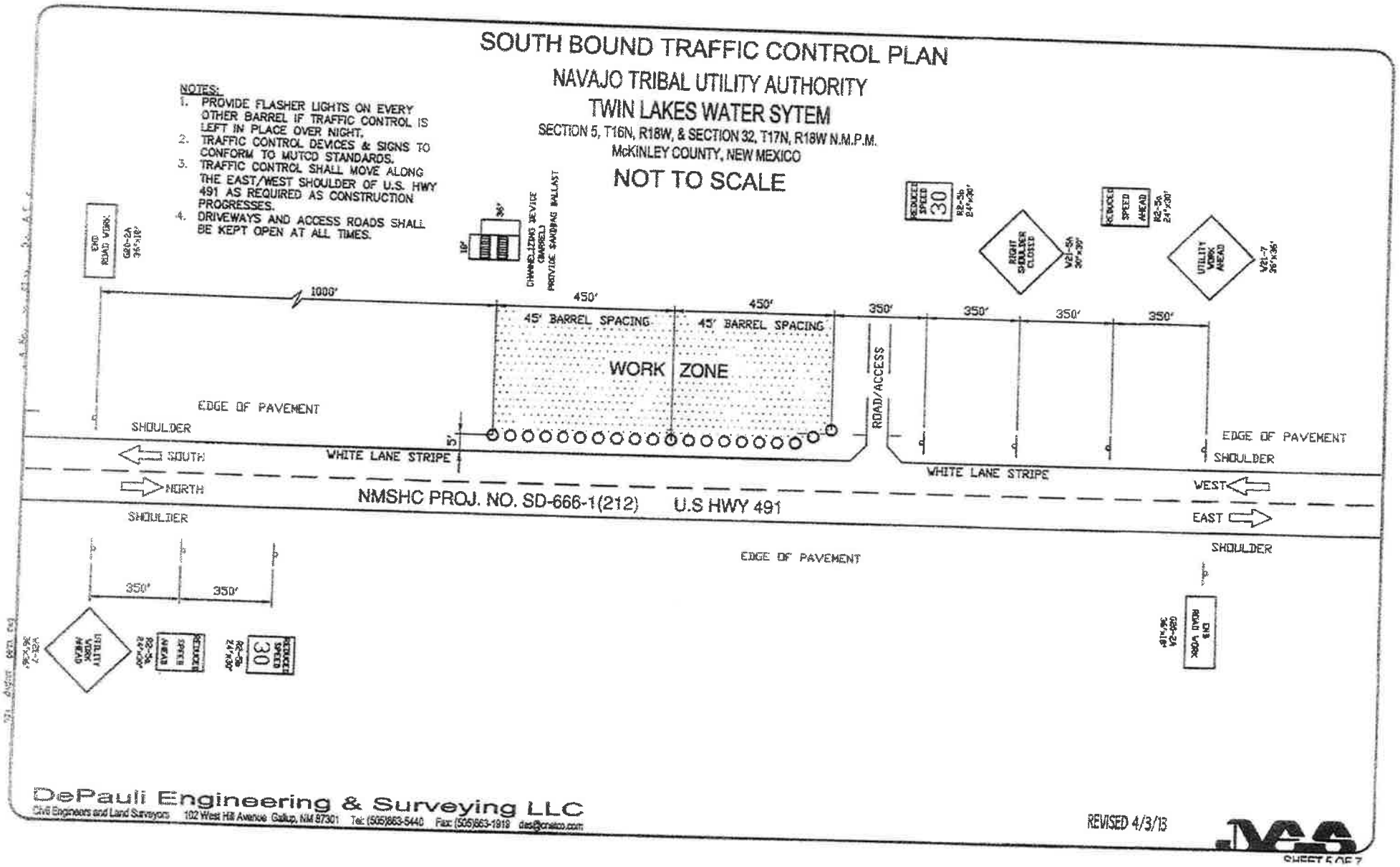
SECTION 5, T16N, R18W, & SECTION 32, T17N, R18W N.M.P.M.

McKINLEY COUNTY, NEW MEXICO

NOT TO SCALE

NOTES:

1. PROVIDE FLASHER LIGHTS ON EVERY OTHER BARREL IF TRAFFIC CONTROL IS LEFT IN PLACE OVER NIGHT.
2. TRAFFIC CONTROL DEVICES & SIGNS TO CONFORM TO MUTCD STANDARDS.
3. TRAFFIC CONTROL SHALL MOVE ALONG THE EAST/WEST SHOULDER OF U.S. HWY 491 AS REQUIRED AS CONSTRUCTION PROGRESSES.
4. DRIVEWAYS AND ACCESS ROADS SHALL BE KEPT OPEN AT ALL TIMES.



DePauli Engineering & Surveying LLC
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REVISED 4/3/13

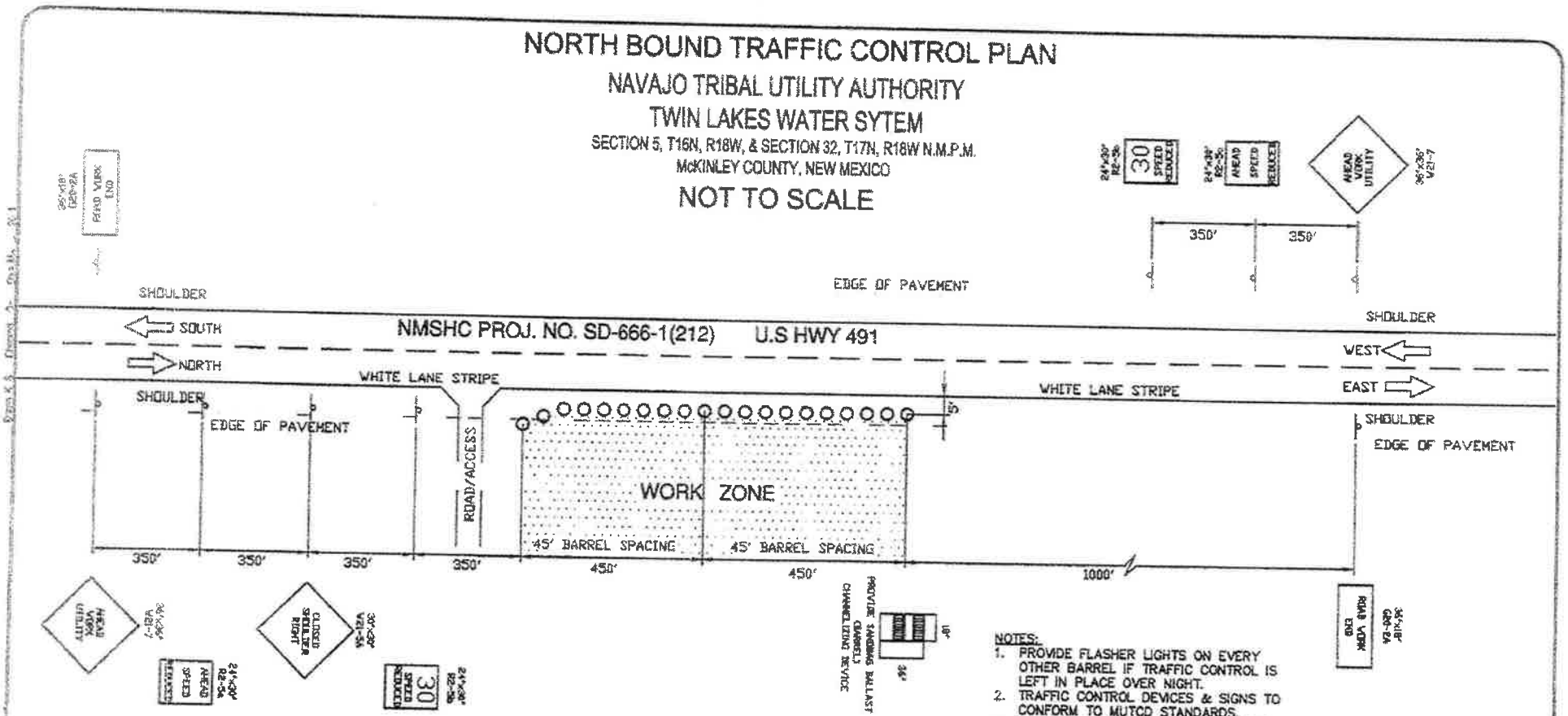
NORTH BOUND TRAFFIC CONTROL PLAN

NAVAJO TRIBAL UTILITY AUTHORITY

TWIN LAKES WATER SYTEM

SECTION 5, T16N, R18W, & SECTION 32, T17N, R18W N.M.P.M.
McKINLEY COUNTY, NEW MEXICO

NOT TO SCALE



NOTES:

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2. TRAFFIC CONTROL DEVICES & SIGNS TO CONFORM TO MUTCD STANDARDS.
3. TRAFFIC CONTROL SHALL MOVE ALONG THE EAST/WEST SHOULDER OF U.S. HWY 491 AS REQUIRED AS CONSTRUCTION PROGRESSES.
4. DRIVEWAYS AND ACCESS ROADS SHALL BE KEPT OPEN AT ALL TIMES.

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REVISED 4/3/13

SHEET 6 OF 7

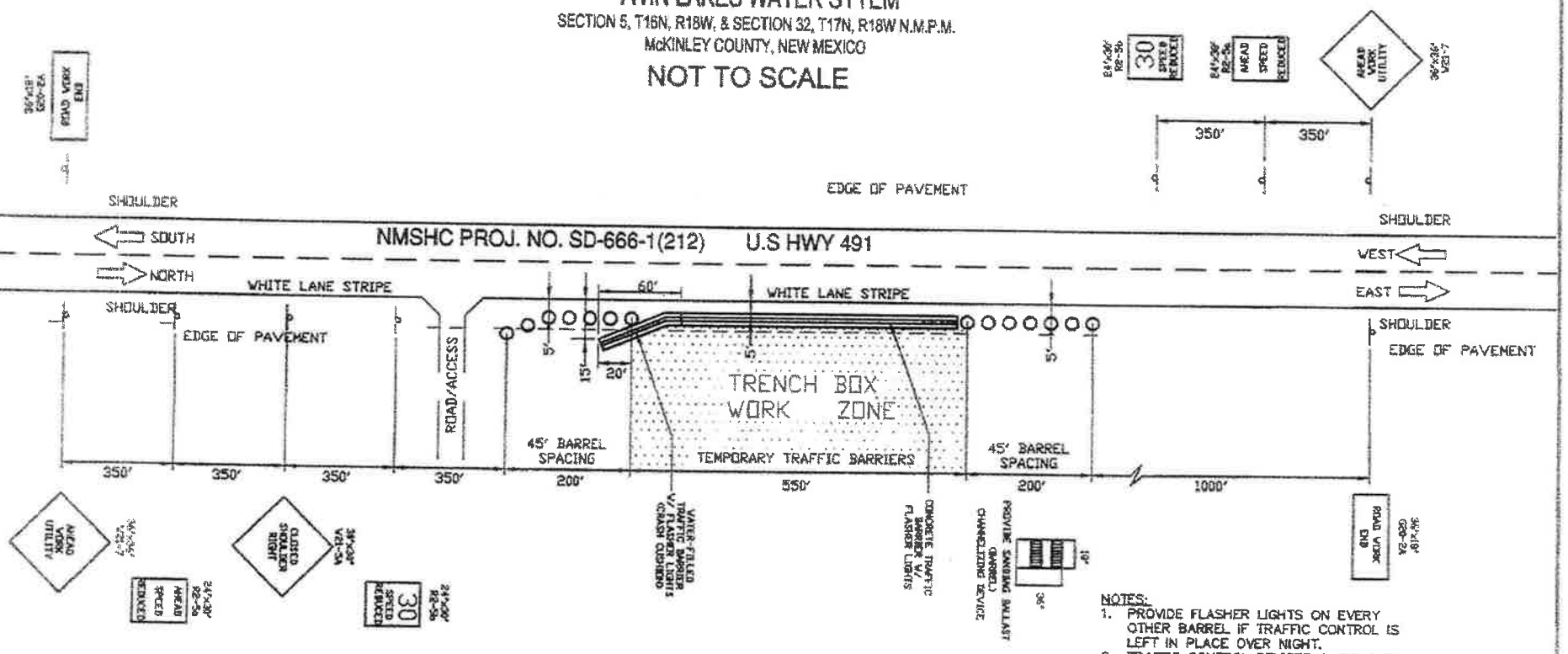
TRENCH BOX TRAFFIC CONTROL PLAN

NAVAJO TRIBAL UTILITY AUTHORITY

TWIN LAKES WATER SYTEM

SECTION 5, T16N, R18W, & SECTION 32, T17N, R18W N.M.P.M.
McKINLEY COUNTY, NEW MEXICO

NOT TO SCALE



NOTES:

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2. TRAFFIC CONTROL DEVICES & SIGNS TO CONFORM TO MUTCD STANDARDS.
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4. DRIVEWAYS AND ACCESS ROADS SHALL BE KEPT OPEN AT ALL TIMES.

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REVISED 4/3/13

2 -TRAFFIC CONTROL/ROADWAY WORK PERMIT

Form TSA 01
Rev. 8/14/2005

NEW MEXICO DEPARTMENT OF TRANSPORTATION
(NMDOT)

TRAFFIC CONTROL/ROADWAY WORK PERMIT

NMDOT Project Number (If applicable):_____ **Control Number:** _____

General Scope of work: _____

_____

Contractor Name: _____

Contact Person: _____

Contact Telephone: (___) _____ Fax: (___) _____

Traffic Control Firm: _____

Contact Person: _____

Contact Telephone: (___) _____ Fax: (___) _____

Work Zone Location Information:

Route: _____

Mile Post: From _____ To: _____

Or Intersection: _____ Intersection: _____

Direction (NB, SB, EB, WB, or both): _____

☐ 2 lane Road ☐ 4 lane Road ☐ 6 lane Road ☐ 8 Lane Road ☐ Divided ☐ Undivided

Existing Speed limit in area: _____ MPH or Ranges from _____ MPH to _____ MPH

Proposed Speed Limit reduction within work zone (If Applicable): _____ MPH

Working Duration:

Start Date: _____ End Date: _____

Daily Start Time: _____ End Time: _____

Purpose of Permit:

☐ Roadway Construction/Rehab. ☐ Shoulder Work
☐ Signal and Lighting Work ☐ Utility work
☐ Drainage/Excavation work ☐ Soil Testing
☐ Signing and Striping Placement
☐ Other: _____

For Official Use:

☐ **Approved** (see conditions below) ☐ **Approved As Amended** ☐ **Not Approved**

☐ Contractor/TCP firm **SHALL** contact Delane Baros at 285-3244 and confirm the actual start dates so that it can be included in the D6 Weekly Traffic Report.

☐ TCP Firm and Contractor must adhere to the attached notes.

Permit Number: _____-_____

Approved By _____

NMDOT District Six Office – Traffic Section

Submitted to Delane Baros, D6 Public Information Officer By: _____ On: ___/___/___