

SPECIFICATIONS  
AND  
CONTRACT DOCUMENTS  
FOR

**NAVAJO GALLUP WATER SUPPLY PROJECT  
REACH 13**

**CITY OF GALLUP, NEW MEXICO  
Gallup Joint Utilities**

**FUNDED BY THE WATER TRUST BOARD THROUGH THE NEW MEXICO  
FINANCE AUTHORITY, WTB #247**

**And  
U.S. BUREAU OF RECLAMATION COOPERATIVE  
AGREEMENT NO. R11AC40002**

**And  
CITY OF GALLUP**

**Formal Bid No. 1402**

Mayor: Jackie McKinney

CITY COUNCIL

Cecil Garcia Linda Garcia  
Alan Landavazo Yogash Kumar

March, 2014



**Prepared By:**

**DePAULI ENGINEERING AND SURVEYING, LLC  
307 SOUTH 4<sup>TH</sup> STREET  
GALLUP, NM 87301**

Set No. 14

## INDEX

## PAGE

ADVERTISEMENT FOR BIDS .....	1-2
INFORMATION FOR BIDDERS .....	I-1 - I-14
BID PROPOSAL .....	BP-1 - BP-10
SUBCONTRACTOR LISTING .....	S-1
NOTICE OF EXTENDED PAYMENT PROVISION.....	N-1
BID BOND .....	BB-1, BB-2
CONTRACT .....	C-1, C-2
PERFORMANCE BOND .....	PB-1, PB-2
PAYMENT BOND.....	PY-1, PY-2
NOTICE OF AWARD .....	NOA-1 – NOA-2
NOTICE TO PROCEED .....	NTP
GENERAL CONDITIONS .....	GC-1 - GC-12
SPECIAL CONDITIONS.....	SC-1 - SC-18

## TECHNICAL SPECIFICATIONS

### INDEX

### SECTION

#### **SUBMITTALS AND PROGRESS SCHEDULE.....PART 100**

101	Submittal Procedures.....	101-1 to 101-6
102	Progress Schedule.....	102-1 to 102-2

#### **EARTHWORK.....PART 200**

201	General Earthwork.....	201-1 to 201-4
202	Clearing and Grubbing.....	202-1 to 202-2
203	Trenching, Excavation, and Backfilling.....	203-1 to 203-7
204	Fill Materials.....	204-1 to 204-4
205	Wire Enclosed Rip-Rap.....	205-1 to 205-4

#### **CONCRETE.....PART 300**

301	Cast-in-Place Concrete .....	301-1 to 301-7
302	Concrete Formwork.....	302-1 to 302-3
303	Curb & Gutter, Sidewalks, Drive Pad & Concrete Pavement Construction .....	303-1 to 303-3
304	Concrete Reinforcing Steel.....	304-1 to 304-2



<b>STREETS AND RELATED WORK.....</b>	<b>PART 400</b>
401 Asphalt Street Patch.....	401-1 to 401-5
402 Gravel Roads and Driveways.....	402-1 to 402-2
<b>WATER AND DRAIN LINES.....</b>	<b>PART 500</b>
501 Water Lines and Appurtenances.....	501-1 to 501-11
503 Corrugated Metal Pipe.....	503-1 to 503-2
504 Station Valves, Piping, Appurtenances, and Associated Painting....	504-1 to 504-7
<b>STRUCTURES.....</b>	<b>PART 600</b>
601 Fencing.....	601-1 to 601-3
602 Station Buildings.....	602-1 to 602-8
<b>ELECTRICAL AND CONTROL SYSTEMS.....</b>	<b>PART 700</b>
701 Electrical - General.....	701-1 to 701-13
703 SCADA System.....	703-1 to 703-8
<b>MISCELLANEOUS.....</b>	<b>PART 800</b>
801 Demolition .....	801-1 to 801-5
802 Traffic Control.....	802-1 to 802-3
803 Protected Species.....	803-1 to 803-2
804 Preservation of Historical and Archaeological Data.....	804-1 to 804-4
805 Storm Water Pollution Prevention Plan.....	805-1 to 805-6
806 Water Pollution Control.....	806-1 to 806-8
<b>DESIGN CODES AND REFERENCES.....</b>	<b>PART 900</b>
901 Design Codes and References.....	901-1 to 901-5

## APPENDICIES

- A. EPA FORMS (NPDES)
  - NOTICE OF INTENT
  - NOTICE OF TERMINATION
- B. NEW MEXICO WAGE RATES
- C. S.C.A.D.A. AND ELECTRICAL COST ESTIMATES
  - 1. SKM, INC. S.C.A.D.A. COST ESTIMATE
  - 2. DOWN GUY RELOCATIONS
- D. GEOTECHNICAL REPORT
- E. HIGHWAY PERMITS
  - HIGHWAY 491 UTILITY PERMIT – 30” PARALLEL LINE & CROSSING
  - HIGHWAY 491 UTILITY PERMIT – 18” CROSSING LINE
  - WORK PERMIT FORM
- F. 404 & 401 PERMITS
  - DEPARTMENT OF THE ARMY ALBUQUERQUE DISTRICT CORPS OF ENGINEERS
    - ACTION NUMBER SPA-2012-00254-ABQ, USBR NAVAJO-GALLUP WATER SUPPLY PROJECT, REACHES 13 & 27.5 (404 PERMIT)
  - NEW MEXICO ENVIRONMENT DEPARTMENT SURFACE WATER QUALITY BUREAU
    - CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION UNITED STATES ARMY CORPS OF ENGINEERS 2012 NATIONWIDE PERMITS

**ADVERTISEMENT FOR BIDS**

**CITY OF GALLUP, NEW MEXICO**

**NAVAJO GALLUP WATER SUPPLY PROJECT, REACH 13**

**FUNDED BY THE WATER TRUST BOARD THROUGH THE NEW MEXICO  
FINANCE AUTHORITY, GRANT NO. NMWTB #247  
and  
U.S. BUREAU OF RECLAMATION COOPERATIVE  
AGREEMENT NO. R11AC40002**

**Formal Bid No. 1402**

Notice is hereby given that the City of Gallup, New Mexico will receive sealed proposals for construction of NAVAJO GALLUP WATER SUPPLY PROJECT, REACH 13 until the hour of 2:00 P.M., local time, April 8, 2014 at the office of the Procurement Manager 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:

**Yah-Tah-Hey Pump Station Connection, 6± Miles North of Gallup:**

1. 1,745' of 18" Ductile Iron Pipeline.
2. A 305' Jack and Bore Crossing of U.S. Highway 491 with 18" Ductile Iron Carrier Pipe in a 28" Steel Casing.
3. 172' of 8" Well Collector Line Removal and Relocation.
4. Construction of Flow Control Station with 40' of Yard Piping.

**Reach 13 Waterline 3± - 6± Miles North of Gallup:**

1. 16,315' of 30" Ductile Iron Pipe.
2. A 230' Jack and Bore Crossing of U.S. Highway 491 with 30" Ductile Iron Carrier Pipe in a 40" Steel Casing.
3. A 188' Crossing of a 30" Gas Transmission Line with 30" Ductile Iron Carrier Pipe in a 42" HDPE Casing.
4. Several Drainage Crossings with Grade Control Structures.
5. Connections to an Existing 30" Waterline (Reach 27.5), Several Water Services, an Existing Well and future 36" Waterline (Reach 12B).

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 Joint Utilities at City Hall. You can also find more information on the project at [www.gallupnm.gov/bids](http://www.gallupnm.gov/bids).

A Pre-Bid viewing for all plan holders to be held March 25, 2014 at 9:00 A.M. Attendees to assemble at DePauli Engineering & Surveying, LLC prior to leaving in caravan form to the sites.

Plans, Specifications and Bidding Documents may be obtained from DePauli Engineering and Surveying, LLC., 307 South 4<sup>th</sup> Street, Gallup, NM 87301, 505-863-5440, upon deposit of \$400.00, all of which will be refunded upon return of the documents within ten (10) days after bid opening.

/s/ Jackie McKinney

Date

Mayor

March 8, 2014

**BIDDING REQUIREMENTS  
INFORMATION FOR BIDDERS**

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

**Yah-Tah-Hey Pump Station Connection, 6± Miles North of Gallup:**

1. 1,745' of 18" Ductile Iron Pipeline.
2. A 305' Jack and Bore Crossing of U.S. Highway 491 with 18" Ductile Iron Carrier Pipe in a 28" Steel Casing.
3. 172' of 8" Well Collector Line Removal and Relocation.
4. Construction of Flow Control Station with 40' of Yard Piping.

**Reach 13 Waterline 3± - 6± Miles North of Gallup:**

1. 16,315' of 30" Ductile Iron Pipe.
2. A 230' Jack and Bore Crossing of U.S. Highway 491 with 30" Ductile Iron Carrier Pipe in a 40" Steel Casing.
3. A 188' Crossing of a 30" Gas Transmission Line with 30" Ductile Iron Carrier Pipe in a 42" HDPE Casing.
4. Several Drainage Crossings with Grade Control Structures.
5. Connections to an Existing 30" Waterline (Reach 27.5), Several Water Services, an Existing Well and Future 36" Waterline (Reach 12B).

ACCESS: Suggested accesses to projects are as follows:

(a) Yah-Tah-Hey Pump Station Connection:

Take US Highway 491 approximately 6 miles north of Gallup to a West side turnout to Pump Station or East side turnout to Flow Control Station

(b) Reach 13 Waterline:

Take US Highway 491 approximately 6 miles north of Gallup to an East side turnout to North end of waterline. Waterline alignment extends 3± miles to the south.

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 April 8, 2014 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 South 4<sup>th</sup> 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](http://www.depauliengineering.com) upon deposit of \$400.00, 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 April 1, 2014 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 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 has 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 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 three hundred sixty five (365) 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 they 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.

Any proposal which is incomplete, irregular, or accompanied by an insufficient bond may be rejected. The City of Gallup 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 cashier's 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 file the surety bonds and enter into a contract for the work within 15 days after notice of award of contract to him. 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 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:** Bidders 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 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 contract documents. If owner, after due investigation, has reasonable objection to any subcontractor, other person or organization proposed by contractor after the notice of award, contractor shall submit an acceptable substitute and the contract price shall be increased or decreased by the difference in cost occasioned by such substitution and an appropriate change order shall be issued. Contractor shall not be required to employ any subcontractor, other person or organization against whom 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.

SUBCONTRACTORS: The listing threshold for subcontractors for this project is \$29,900, 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 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 is available at [www.dws.state.nm.us/](http://www.dws.state.nm.us/)

21. SEQUENCE OF WORK: 18", 30", and 8" waterlines must be completed and tested prior to tie-in at Yah-Tah-Hey Pump Station. All construction activities shall be scheduled to minimize the time Yah-Tah-Hey Pump Station is unable to deliver water to the City of Gallup and protect existing water system infrastructure, and maintain a reliable source of water to the City of Gallup.

Waterline flushing and testing shall be completed from north to south with water from Yah-Tah-Hey Pump Station. All flushing and testing water shall meet New Mexico water quality standards before being discharged. Contractor shall provide all de-chlorination equipment and chemicals. De-chlorination shall be considered incidental to waterline testing. Contractor is responsible for obtaining 402 Permits of the Clean Water Act. Please note that permits may take up to six (6) months to obtain.

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.

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 one hundred twenty (120) 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 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 the total of all lots (excluding taxes). That is the most advantageous to the public. Bidder must submit bids for all items – or their bid will be found non responsive.

The City reserves 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 reserves 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.

31. 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.
32. 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.
33. 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.
34. 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. .
35. CODE COMPLIANCE: Complete installation must meet federal, state, and local laws, codes and regulations.
36. 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.
37. 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.
38. BUY AMERICAN PROVISIONS: Not Required.
39. PREFERENCES: Resident NM Contractor's Preference & NM Veterans Contractor Preference do not apply.

40. LABOR ENFORCEMENT FUND: (Detailed information on following pages)

## **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.



**U.S. BUREAU OF RECLAMATION COOPERATIVE AGREEMENT NO.**  
**R11AC40002 CONTRACTUAL CONDITIONS:**

Funding for this procurement is from the Water Trust Board through the New Mexico Finance Authority, Grant No. WTB #247 and U.S. Bureau of Reclamation Cooperative Agreement No. R11AC40002. The following Federal Contract provisions are incorporated by reference and made a part of the contract documents.

- Compliance with Executive Order 11246 (dated 9-24-1965), "Equal Employment Opportunity"; as amended by Executive Order 11375 (dated 10-13-1967) and as supplemented in Department of Labor regulations (41 CFR Chapter 60)

Equal Employment Opportunity – All contracts shall contain a provision requiring compliance with E.O. 11246, "Equal Employment Opportunity," as amended by E.O. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and as supplemented by regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

- Compliance with Copeland "Anti-Kickback Act (18 U.S.C. 874) as supplemented in Department of Labor Regulations (29 CFR Part 3)

Copeland "Anti-Kickback" Act (18 U.S.C. 874 and 40 U.S.C. 276c) – All contracts and sub-grants in excess of \$2000 for construction or repair awarded by recipients and sub-recipients shall include a provision for compliance with the Copeland "Anti-Kickback" Act (18 U.S.C. 874) as supplemented by Department of Labor Regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or Part by Loans or Grants from the United States"). The Act provides that each contractor or sub-recipient shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he is otherwise entitled. The recipient shall report all suspected or reported violations to the Federal awarding agency.

- Compliance with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330) as supplemented by Department of Labor regulations (29 CFR Part 5) Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333) – Where applicable, all contracts awarded by recipients in excess of \$2000 for construction contracts and in excess of \$2500 for other contracts that involve the employment of mechanics or laborers shall include a provision for compliance with Sections 102 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333), as supplemented by Department of Labor regulations (29 CFR part 5). Under Section 102 of the Act, each contractor shall be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours.



Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than 1 ½ times the basic rate of pay for all hours worked in excess of 40 hours in the work week. Section 107 of the Act is applicable to construction work and provides that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

- All rights to inventions and materials generated under this contract are subject to regulations issued by the Office of Federal Procurement Policy and the sponsor of the Federal Grant under which the contract is executed.

Rights to Inventions Made Under a Contract or Agreement – Contracts or agreements for the performance of experimental, developmental, or research work shall provide for the rights of the Federal Government and the recipient in any resulting invention in accordance with 37 CFR part 401, “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency.

- Contractor shall maintain an acceptable cost accounting system. Contractor agrees to maintain all books, records and reports required under this contract for not less than three years after final payment is made. Contractor agrees to provide access to the Sponsor, the Office of Federal Procurement Policy and the Comptroller General of the United States or their duly authorized representatives’ access to any books, documents, papers and records of the Contractor which are directly pertinent to the specific contract for purposes of making audit, examination excerpts and transcriptions. Retention of all required records for three years after grantees or sub-grantees make final payments and all pending matters are closed.
- Compliance with all applicable standards, orders, or requirements issued under Section 306 of the Clean Air Act (42 U.S.C. 1857(h), Section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protections Agency regulations (40 C.F.R. Part 15.)
- Mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Publication L. 94-163, 89 Stat. 871)
- Debarment and Suspension (E.O.s 12549 and 12689) – No contract shall be made to parties listed on the General Services Administration’s List of Parties Excluded from Federal Procurement or Non-Procurement Programs in accordance with

E.O.s 12549 and 12689, "Debarment and Suspension." This list contains the names of parties debarred, suspended, or otherwise excluded by agencies, and contractors declared ineligible under statutory or regulatory authority other than E.O. 12549. Contractors with awards that exceed the small purchase threshold shall provide the required certification regarding its exclusion status that of its principal employees.

**Contracting with Small & Minority Firms, Women's Business Enterprise & Labor Surplus Area Firms**

Per the Bureau of Reclamation and City of Gallup Cooperative Agreement R11AC40002, Item Number 3 Procurement Standards, letter (e):

*(e) Contracting with small and minority firms, women's business enterprise and labor surplus area firms.* (1) The grantee and subgrantee will take all necessary affirmative steps to assure that minority firms, women's business enterprises, and labor surplus area firms are used when possible.

(2) Affirmative steps shall include:

- (i) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
- (ii) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
- (iii) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority business, and women's business enterprises;
- (iv) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority business, and women's business enterprises;
- (v) Using the services and assistance of the Small Business Administration, and the Minority Business Development Agency of the Department of Commerce; and
- (vi) Requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed in paragraphs (e)(2) (i) through (v) of this section.

**Note: The purpose is to ensure that these entities are aware of the opportunities to Subcontract. There are no minority firms, women's business enterprise or DBE goals or percentages that need to be met.**

# BID PROPOSAL

## CITY OF GALLUP

NAVAJO GALLUP WATER SUPPLY PROJECT, REACH 13  
FUNDED BY THE WATER TRUST BOARD THROUGH THE NEW MEXICO FINANCE  
AUTHORITY, GRANT NO. NMWTB #247 AND  
U.S. BUREAU OF RECLAMATION COOPERATIVE AGREEMENT NO. R11AC40002  
FORMAL BID NO. 1402

April 8, 2014

Gentlemen:

The undersigned Bidder, in compliance with your invitation for bids for NAVAJO GALLUP WATER SUPPLY PROJECT - REACH 13, 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. 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 three hundred sixty five (365) consecutive calendar days thereafter, including weather delays. The Bidder also agrees to meet other scheduling requirements of these contract documents.

### Lot 1 -18" WATERLINE

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
1	For 18" CL. 350 DIP waterline with called for horizontal and vertical fittings, granular bedding and native backfill complete and in place for the <b>Unit Price per Linear Foot of:</b>	1750 LF	\$ _____	\$ _____
2	For US Hwy. 491 waterline crossing Sta. 4+59.95 to Sta. 7+64.95 with 28" (Sch 20 - 1/2" wall) steel casing and 18" Cl. 350 restrained joint ductile iron carrier pipe by jacking and boring complete in place for the <b>Lump Sum Price of:</b>	LS	\$ _____	\$ _____
3	For 18" AWWA C515 resilient wedge gate valves with bypass and valve boxes complete and in place for the <b>Unit Price per Each of:</b>	4 EA	\$ _____	\$ _____
4	For Type 2 air release station installation on 18" waterline complete and in place for the <b>Unit Price per Each of:</b>	1 EA	\$ _____	\$ _____
5	For metering manhole construction complete and in place for <b>Unit Price per Each of:</b>	1 EA	\$ _____	\$ _____
6	For Tie-in "A" at Sta 0+06 to existing 18" waterline including 22' of 18" waterline as detailed complete and in place for the <b>Lump Sum Price of:</b>	LS	\$ _____	\$ _____
7	For removal of existing meter vault, concrete pad, 6" piping, 18" valve and 18" pipe at Tie-in 'A' as called for, for the <b>Lump Sum Price of:</b>	LS	\$ _____	\$ _____

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 -18" WATERLINE

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
8	For lowering existing 14" well collection line including 14" waterline, fittings, and 14" Type 2 air release station complete and in place for the <b>Lump Sum Price of:</b>	LS	\$ _____	\$ _____
9	For fire hydrant assembly on 18" water main complete and in place for the <b>Unit Price per Each of:</b>	1 EA	\$ _____	\$ _____
10	For concrete drive pad complete and in place for the <b>Unit Price per Cubic Yard of:</b>	5 CY	\$ _____	\$ _____
11	For removal and replacement of gravel surfacing placed 4" thick within driveways, roads, and parking lots complete and in place for the <b>Unit Price per Square Yard of:</b>	1500 SY	\$ _____	\$ _____
12	For removal and replacement of chain link fence complete and in place for the <b>Unit Price per Linear Foot of:</b>	80 LF	\$ _____	\$ _____
13	For removal and replacement of wrought iron fence complete and in place for the <b>Unit Price per Linear Foot of:</b>	100 LF	\$ _____	\$ _____
14	For removal and replacement of wire fence complete and in place for the <b>Unit Price per Linear Foot of:</b>	700 LF	\$ _____	\$ _____
15	For traffic control work within US Hwy. 491 right of way. Partial payments shall be made in accordance with percentage of 18" waterline complete and in place within the right of way for the <b>Lump Sum Price of:</b>	LS	\$ _____	\$ _____
16	For the electrical and control wiring of new mag meter as required including, 30' of 1 1/2" electrical conduit, connection to existing 1 1/4" GRC conduit outside of building and pulling cable complete and in place for the <b>Lump Sum Price of:</b>	LS	\$ _____	\$ _____
17	For materials testing by an independent lab (soil, concrete, base course, and PMBP). This amount to be used for totaling bid.	LS	\$10,000.00	\$10,000.00

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 -30" WATERLINE

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
1	For 30" CL. 350 DIP waterline with called for horizontal and vertical fittings, granular bedding and native backfill complete and in place for the <b>Unit Price per Linear Foot of:</b>	5780 LF	\$ _____	\$ _____
2	For 30" CL. 250 DIP waterline with called for horizontal and vertical fittings, granular bedding and native backfill complete and in place for the <b>Unit Price per Linear Foot of:</b>	9000 LF	\$ _____	\$ _____
3	For 30" CL. 250 DIP waterline with called for horizontal and vertical fittings, granular bedding and granular backfill complete and in place for the <b>Unit Price per Linear Foot of:</b>	1850 LF	\$ _____	\$ _____
4	For US Hwy. 491 waterline crossing Sta. 70+10.31 to Sta. 72+40.31 with 40" (XHY - 1/2" wall) steel casing and 30" Cl. 250 restrained joint ductile iron carrier pipe by jacking boring complete and in place for the <b>Lump Sum Price of:</b>	LS	\$ _____	\$ _____
5	For Transwestern gas line waterline crossing Sta. 165+07.50 to Sta. 166+95 with 42" ductile iron pipe size DR-21 AWWA C906 HDPE casing with 30" Cl. 250 restrained joint ductile iron carrier pipe and cathodic mitigation work from station 161+00 to station 171+00 complete and in place for the <b>Lump Sum Price of:</b>	LS	\$ _____	\$ _____
6	For horizontal 30" AWWA C515 resilient wedge gate valves with bypass and valve boxes complete and in place for the <b>Unit Price per Each of:</b>	9 EA	\$ _____	\$ _____
7	For Type 2A air release station installation on 30" waterline complete and in place for the <b>Unit Price per Each of:</b>	20 EA	\$ _____	\$ _____
8	For Tie-in 'B' at Sta. 120+85.84 to existing well discharge line including 6" waterline, 6" cross and 6" valves as detailed complete and in place for the <b>Lump Sum Price of:</b>	LS	\$ _____	\$ _____
9	For Tie-in "C" at Sta. 179+66 to existing 30" DIP waterline as detailed complete and in place for the <b>Lump Sum Price Bid of:</b>	LS	\$ _____	\$ _____

**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 -30" WATERLINE

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
10	For tie-in to Reach 12B at Sta. 12+36.46 to future 36" x 30" flanged waterline connection and a cathodic mitigation type 2 test station as detailed complete and in place for the <b>Lump Sum Price Bid of:</b>	LS	\$ _____	\$ _____
11	For existing water service connection to 30" waterline at Sta. 87+25 (tie-in D) including 6" waterline, and 6" gate valve as detailed complete and in place for the <b>Lump Sum Price of:</b>	LS	\$ _____	\$ _____
12	For main flush piping on 30" water main complete and in place for the <b>Unit Price per Each of:</b>	5 EA	\$ _____	\$ _____
13	For vertical 30" - 11 1/4° Ells as required during construction, complete and in place for the <b>Unit Price per Each of:</b>	6 EA	\$ _____	\$ _____
14	For Type "A" rock excavation and disposal for the <b>Unit Price per Cubic Yard of:</b>	1400 CY	\$ _____	\$ _____
15	For Type "B" rock excavation and disposal for the <b>Unit Price per Cubic Yard of:</b>	4000 CY	\$ _____	\$ _____
16	For removal and replacement of pavement (6" PMBP on 8" base course) in roads and driveways complete and in place for the <b>Unit Price per Square Yard of:</b>	310 SY	\$ _____	\$ _____
17	For removal and replacement of gravel surfacing placed 4" thick within driveways, roads, and parking lots complete and in place for the <b>Unit Price per Square Yard of:</b>	350 SY	\$ _____	\$ _____
18	For relocation of existing power poles, downguys and installation of guy poles as required by the City of Gallup. The amounts shown are for totalizing bid. Actual amounts based on approved final invoices for all locations.	LS	\$14,305.77	\$14,305.77
19	For archaeological fencing as shown complete and in place for the <b>Unit Price per Linear Foot of:</b>	715 LF	\$ _____	\$ _____
20	For removal and replacement of wire fence complete and in place for the <b>Unit Price per Linear Foot of:</b>	280 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 -30" WATERLINE

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
21	For traffic control work within US Hwy. 491 right of way. Partial payments shall be made in accordance with percentage of 30" waterline complete and in place within the right of way for the <b>Lump Sum Price of:</b>	LS	\$ _____	\$ _____
22	For gabion grade control structure at Sta. 60+65 complete and in place for the <b>Unit Price per Cubic Yard of:</b>	60 CY	\$ _____	\$ _____
23	For gabion grade control structure at Sta. 106+90 complete and in place for the <b>Unit Price per Cubic Yard of:</b>	200 CY	\$ _____	\$ _____
24	For gabion grade control structure at Sta. 130+49 complete and in place for the <b>Unit Price per Cubic Yard of:</b>	21 CY	\$ _____	\$ _____
25	For gabion grade control structure at Sta. 136+19 complete and in place for the <b>Unit Price per Cubic Yard of:</b>	160 CY	\$ _____	\$ _____
26	For gabion grade control structure at Sta. 145+76 complete and in place for the <b>Unit Price per Cubic Yard of:</b>	18 CY	\$ _____	\$ _____
27	For gabion grade control structure at Sta. 147+37 complete and in place for the <b>Unit Price per Cubic Yard of:</b>	117 CY	\$ _____	\$ _____
28	For gabion grade control structure at Sta. 151+62 complete and in place for the <b>Unit Price per Cubic Yard of:</b>	32 CY	\$ _____	\$ _____
29	For gabion grade control structure at Sta. 162+17 complete and in place for the <b>Unit Price per Cubic Yard of:</b>	44 CY	\$ _____	\$ _____
30	For gabion grade control structure at Sta. 169+63 complete and in place for the <b>Unit Price per Cubic Yard of:</b>	40 CY	\$ _____	\$ _____
31	For gabion grade control structure at Sta. 173+41 complete and in place for the <b>Unit Price per Cubic Yard of:</b>	100 CY	\$ _____	\$ _____
32	For materials testing by an independent lab (soil, concrete, base course, and PMBP). This amount to be used for totaling bid.	LS	\$27,500.00	\$27,500.00
33	For down time caused by unexpected encounters with historical or archaeological items for the <b>Unit Price per Hour of:</b>	60 HRS	\$ _____	\$ _____

**LOT 2 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 3 -Flow Control Station - Service Line

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
1	For Flow Control Station including earthwork, building, piping, valves, electrical chain link fencing, and 8" well collector line connection complete and in place for the <b>Lump Sum Price of:</b>	LS	\$ _____	\$ _____
2	For removing and relocating existing 8" well collection lines as shown on contract drawings including new 8" waterline, fittings, 8" gate valves, and 8" Type 2 air release station complete and in place for the <b>Lump Sum Price of:</b>	LS	\$ _____	\$ _____
3	For 6" C900-07 CL 305 (DR-14) PVC service line with called for 6" gate valve, horizontal and vertical fittings, granular bedding and native backfill complete and in place for the <b>Unit Price per Linear Foot of:</b>	450 LF	\$ _____	\$ _____
4	For service line fire hydrant assembly, service line Tie-in 'E' and service line Tie-in 'F' to existing 18" waterline and existing service line piping including 18"x6" tee, 10' of 18" waterline, 18" and 6" solid sleeves as required, as detailed complete and in place for the <b>Lump Sum Price of:</b>	LS	\$ _____	\$ _____
5	For abandonment of existing 6" well collector line in place as detailed complete and in place for the <b>Lump Sum Price of:</b>	LS	\$ _____	\$ _____
6	For gravel surfacing placed 4" thick within driveways, roads, and parking lot complete and in place for the <b>Unit Price per Square Yard of:</b>	150 SY	\$ _____	\$ _____
7	For removal and replacement of wire fence complete and in place for the <b>Unit Price per Linear Foot of:</b>	100 LF	\$ _____	\$ _____
8	For installation of single phase electrical service connection including transformer on existing power pole by the City for the <b>Lump Sum Price of:</b> This amount to be used for totaling bid. No charge by the City. No payment will be made:	LS	\$0.00	\$0.00

**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 3 -Flow Control Station - Service Line

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
9	For furnishing equipment and programming by SKM Inc. as required to make flow control station a functional and compatible part of the City's SCADA system. This amount shall be used to totalize bid.	LS	\$10,000.00	\$10,000.00
10	For materials testing by an independent lab (soil, concrete, base course, and PMBP). This amount to be used for totaling bid.	LS	\$8,000.00	\$8,000.00

**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 - 18" WATERLINE SUBTOTAL:** \$ \_\_\_\_\_.

**LOT 2 - 30" WATERLINE SUBTOTAL:** \$ \_\_\_\_\_.

**LOT 3 - FLOW CONTROL STATION - SERVICE LINE SUBTOTAL:** \$ \_\_\_\_\_.

---

**LOT 1 - 3 SUBTOTAL:** \$ \_\_\_\_\_.

**TAX @ 8.3125%:** \$ \_\_\_\_\_.

**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 informailities 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 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: \_\_\_\_\_

\_\_\_\_\_  
Company Name:

RESPECTFULLY SUBMITTED:

\_\_\_\_\_  
Signature:

\_\_\_\_\_  
Printed Name:

\_\_\_\_\_  
Title

\_\_\_\_\_  
Business Address

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

\_\_\_\_\_  
e-mail address

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 Receipt of Amendments (If any)
- Notice of Extended Payment Provision
- Current I.R.S. Form W-9

**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 – Reach 13, Formal Bid No 1402  
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:
  - 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  
NAVAJO GALLUP WATER SUPPLY PROJECT, REACH 13  
FUNDED BY THE WATER TRUST BOARD THROUGH THE NEW MEXICO FINANCE AUTHORITY,  
GRANT NO. WTB # 247 and  
U.S. BUREAU OF RECLAMATION COOPERATIVE AGREEMENT NO. R11AC40002  
**Formal Bid No. 1402**

The Subcontractor Listing Threshold For This Project Is \$29,900.00, 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: \_\_\_\_\_, 2014**

## 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 **three hundred and sixty five (365)** 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.**

IN WITNESS WHEREOF, the parties to these presents have executed this Contract in three (3) counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

(SEAL)  
ATTEST: \_\_\_\_\_

\_\_\_\_\_  
OWNER  
BY:

\_\_\_\_\_  
TITLE

(CORPORATE SEAL)

\_\_\_\_\_  
CONTRACTOR  
BY:

\_\_\_\_\_  
TITLE

## 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 Purchasing Division  
Ronald M. Caviggia, Director

## NOTICE OF AWARD

Dated: \_\_\_\_\_

TO: \_\_\_\_\_  
(BIDDER)

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

Contract: Navajo Gallup Water Supply Project, Reach 13  
(Insert name of Contract as it appears in the Bidding Documents)

Project: Navajo Gallup Water Supply Project, Reach 13

OWNER's Contract No. City of Gallup, Formal Bid No. 1402

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

Navajo Gallup Water Supply Project, Reach 13. Funded by the Water Trust Board

Through the New Mexico Finance Authority, WTB #247 and U.S. Bureau of Reclamation Cooperative Agreement No. R11AC40002 and City of Gallup.

(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<sup>1</sup>: \_\_\_\_\_

Contract: Navajo Gallup Water Supply Project, Reach 13

(Insert name of Contract as it appears in the Bidding Documents)

Project: Navajo Gallup Water Supply Project, Reach 13, Funded by the Water Trust Board through the New Mexico Finance Authority, WTB #247 and U.S. Bureau of Reclamation Cooperative Agreement No. R11AC40002 and City of Gallup

OWNER's Contract No. Formal Bid No. 1402

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)

NTP

## GENERAL CONDITIONS

### INDEX

TITLE	PARAGRAPH
DEFINITIONS .....	1
THE CONTRACTOR .....	2
THE ENGINEER.....	3
INSURANCE .....	4
INDEMNIFICATION OF OWNER.....	5
PRE-CONSTRUCTION MEETING AND NOTICE TO PROCEED .....	6
LIQUIDATED DAMAGES .....	7
RELEASE OF LIABILITY .....	8
SUPERVISION AND INSPECTION .....	9
WORKMANSHIP AND SUPERINTENDENCE.....	10
DELAYS AND EXTENSION OF TIME.....	11
ADDITIONAL, OMITTED OR CHANGED WORK .....	12
SUSPENSION OF WORK.....	13
OWNER'S RIGHT TO DO WORK .....	14
PAYMENT TO THE CONTRACTORS.....	15
PAYMENT WITHHELD FROM CONTRACTOR .....	16
ACCEPTANCE AND FINAL PAYMENT .....	17
CONSTRUCTION SCHEDULE.....	18
WATER, GAS AND ELECTRICITY .....	19
CHARGES FOR ENGINEERING AND INSPECTION .....	20
OWNER'S RIGHT TO TERMINATE CONTRACT.....	21
TESTING.....	22
SUBMITTALS, SHOP AND ERECTION DRAWINGS .....	23
COMPLETED WORK REQUIRED .....	24
SECURITY .....	25
CLEANING.....	26

## 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 Employer's Liability	Statutory \$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 Paragraph 13 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, NMED-Construction Programs Bureau, & RECLAMATION 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 qualifications, if any, as stated and the balance found to be due. Required submittals to 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 the Engineer for his approval, five (5) copies of all Manufacturer's data and literature and shop and erection drawings for all material required for the work. Submittal data shall include the storm water pollution plan, construction schedule and traffic control plans. A submittal registry shall be provided to identify date of material submittal. Submittals shall be provided in a timely manner. Two (2) copies of submittal literature will be returned to the Contractor with the Engineer's approval or disapproval noted thereon.
24. COMPLETED WORK REQUIRED: The plans and specifications for the work to be carried out under this contract are intended to include all components of the total job and to show all information and detail for completion of a workable facility, notwithstanding that each and every item of work may or may not be shown or detailed. It shall be the responsibility of the Contractor to complete the improvement and turn over to the Owner a good and workable facility.
25. SECURITY: The City does not assume any responsibility, at any time, for the protection of or loss of materials from the time that contract operations have commenced until the final acceptance of the work by the project manager.
26. CLEANING: The contractor shall keep the premises clean of all rubbish and debris generated by the work involved. All surplus material, rubbish, debris shall be disposed of by the contractor at the contractor's expense. The City will not be responsible for theft or damage to the contractors property. It shall be the contractors responsibility to at all times maintain a safe working environment. All possible safety hazards to workers or the public shall be corrected immediately and the premises left in a safe condition at the end of each work day.

## **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 City of Gallup 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 waterline construction, waterline testing or earthwork shall be taken from a 2" hydrant at the Yah-Tah-Hey Pump Station of a City fire hydrant designated by the City. 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 three hundred sixty five (365) calendar days thereafter. The bidder must agree, also to pay as liquidated damages, the sum of one thousand dollars (\$1000) 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 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.

It is suggested that the Contractor's construction sequences should be such that the amount of the project that could be damaged by runoff from summer rains at any one time, is held to a minimum. Water that collects in the work area from

runoff or damaged utility lines shall be removed by pumping or providing drainage routes immediately

SC-14 SUBMITTALS: Complete submittal data including shop drawings shall be furnished for approval on all materials and items to be supplied for the project. All calculations shall be included in the submittals. Traffic control plan for minor operations shall also be submitted to the City and Engineer for approval.

SC-15 CONSTRUCTION STAKING: The Engineer will provide the following construction staking:

- A. Waterlines: Centerline or offset stakes at approximately 200 ft., P.I.S. and appurtenances, control for grade stakes where grade is called for.
- B. Site Grading: Stakes for major structures with cuts and fills. Basic site control and bench mark.

Occasional stake replacement required when stakes are unavoidably lost due to construction will be replaced by the Engineer, provided however, that the cost of stake replacement due to carelessness or inattentive construction around survey control will be deducted from payment to the Contractor. Random bench marks will be established for use by the Contractor. The Contractor will be responsible for bluetop, staking for subgrade and basecourse. Detailed measurements and elevations for structures, drainage flow lines and pipelines shall be the responsibility of the Contractor with occasional checks by the Engineer. Measurement for determination of quantities shall be accomplished mutually by the Engineer and Contractor.

SC-16 STORM WATER POLLUTION PREVENTION: It shall be the responsibility of the Contractor to formulate plans, implement plans, obtain permits, and file Notices of Intent and Notices of Termination in regard to Storm Water Pollution Prevention. Work on this item shall be considered incidental to the project. Section 805 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 SECTION 404/401 PERMITS: This project entails work within or across five (5) drainages, identified in project drawings, that are subject to U.S. Army Corps of Engineers Nationwide Permits NWP 12 and NWP 13. The Contractor shall ensure that all permit requirements are satisfied prior to and upon completion of all work within the identified drainages. The permits have been included in Appendix "F" of these project documents.

SC-18 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.



SC-19 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-20 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:

<u>Sieve Size</u>	<u>Percent Passing</u>
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, the City stockpile is located west of HWY 491, visible from the BNSF overpass in Gallup. There is no charge for the material but the City Superintendent, John Jackson 505-726-2041, 505-863-1237, must be notified. Stockpile is intended for City projects on a first come first serve basis. In the event the stockpile is depleted, Contractor must be prepared to excavate material from the Puerco River, from locations approved by the City Public Works Director, haul material to jobsite and properly process for backfill. Locations will be in the vicinity of the area between Highway 491 overpass and the Allison Rio Puerco crossing.

SC-21 COMPACTION: Material shall be compacted to the designated percentage of Standard Proctor, or Modified Proctor as called for.

SC-22 SEQUENCE OF CONSTRUCTION: Work shall progress according to the sequence of construction provided within Information to Bidders paragraph 21.

SC-23 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-24 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 in the City while on duty.

SC-25 TRENCH SAFETY: The Contractor shall be solely responsible for safety on the project however; the City 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-26 PERMITS: The Bidder should inform himself as to additional permits required, such as NMDOT Utility Work Permit. Contractor is responsible for obtaining all work permits.

Note: Contractor to provide insurance as required by NMDOT for work within Right of Way.

SC-27 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 – 18” WATERLINE**

ITEM 1: This item of work consists of furnishing all materials, plant, equipment and labor required for installing 18” CL. 350 ductile iron pipe waterline including horizontal and vertical fittings, specials, trenching, bedding, and native backfill. Restrained joints and two (2) layers of V-Bio Enhanced polyethylene wrap (AWWA C105) around pipe are also included in this item. Pavement and gravel removal and replacement or rock excavation is not included in this item. The required cutting of pipe to provide required joint distance from sewer or water line crossings shall be considered incidental to this item. All construction operations required to keep existing utilities (water, sewer, gas, and communication lines) operational at crossings shall be included in this item. Damaged utilities that were accurately located by the utility owner shall be repaired as required at the contractor’s expense and are not included in this item. “Potholing” to gather information on existing utilities at crossings shall be incidental to this item. Measurement will be by the linear foot along centerline of the pipe through valves, manholes, and fittings without correction for slope. Payment for this item will be for actual linear feet of pipe installed at the **Contract Unit Price Bid per Linear Foot.**

ITEM 2: This item of work consists of furnishing all materials, plant, equipment and labor required for completing the U.S. Highway 491 waterline crossing from

Station 4+59.95 to Station 7+64.95 (L=305'). The item consists of installing an 18" CL. 350 restrained joint ductile iron carrier pipe in a 28" Sch. 20 (1/2" wall) steel casing by jack and bore methods. This item includes end seals, spacers, and bore pit excavation and backfill. Payment for this item will be made at the **Contract Lump Sum Price Bid**. "Potholing" to gather information on existing utilities at crossings shall be incidental to this item.

ITEM 3: This item of work consists of furnishing all materials, plant, equipment and labor required for installing 18" AWWA C515 resilient wedge, epoxy coated gate valves as specified complete with bevel gear, bypasses, concrete supports, cast iron valve boxes, and concrete collars as shown on project drawings. Payment for this item will be for the actual number of valve assemblies installed at the **Contract Unit Price Bid per Each**.

ITEM 4: This item of work consists of furnishing all materials, plant, equipment and labor required for installing Type 2 air release stations on an 18" waterline complete including vault, vent piping, piping and fittings from line to air release valve, air and vacuum devices, mainline tee, protection bollards, excavation and backfill. Item does not include mainline pipe. Payment for this item will be made at the **Contract Unit Price Bid per Each**.

ITEM 5: This item of work consists of furnishing all materials, plant, equipment and labor required for constructing meter manhole complete including 10" meter, 10" ductile iron pipe, reducers, flange adapter, remote amplifier/display, cable, and concrete vault as shown on contract drawings. Payment for this item will be made at the **Contract Unit Price Bid per Each**.

ITEM 6: This item of work consists of furnishing all materials, plant, equipment and labor required for completing Tie-in "A" at Station 0+06 to existing 18" waterline as shown on contract drawings. The connection shall include 22' of 18" CL. 350 ductile iron pipe, fittings, specials, concrete blocking, trenching, bedding and backfilling. This item does not include valves, removal of piping or structures, pavement or gravel removal and replacement, and rock excavation. "Megalug" restraining glands (or equal) shall be provided for the M.J. fittings and two (2) layers of V-Bio Enhanced polyethylene wrap (AWWA C105) around pipe and fittings shall be considered incidental to this item. All coordination required with City shall be included in this item. Payment for this item will be made at **Contract Lump Sum Price Bid**.

ITEM 7: This item of work consists of furnishing all materials, plant, equipment and labor required for demolition, removal and disposal of existing meter vault, concrete pad, 18" and 6" piping and 18" valve as shown at tie-in 'A' on project drawing. This item includes all operations required to minimally affect the Yah-tah-Hey Pump Station building, surfacing, fencing, and concrete slabs. Excavation and backfill as required is included in this item. All coordination

required with City shall be included in this item. Payment for this item will be made at **Contract Lump Sum Price Bid.**

ITEM 8: This item of work consists of furnishing all materials, plant, equipment and labor required for removal and relocation of existing 14" well collector line. This item includes demolition, removal and disposal of existing 14" well collector line and the lowering of the line with new 14" CL. 350 ductile iron pipe and installation of Type 2 air release station on 14" main including piping, fittings, vaults, vent piping, specials, concrete blocking, trenching, bedding and backfilling. This item does not include valves, pavement or gravel removal and replacement, and rock excavation. "Megalug" restraining glands (or equal) shall be provided for the M.J. fittings and two (2) layers of V-Bio Enhanced polyethylene wrap (AWWA C105) around pipe and fittings shall be considered incidental to this item. All coordination required with City shall be included in this item. Payment for this item will be made at **Contract Lump Sum Price Bid.**

ITEM 9: This item of work consists of furnishing all materials, plant, equipment and labor required for the installing a fire hydrant assembly, including up to 15' of 6" C1350 ductile iron pipe, 6" gate valve, 18"x 6" tee, two (2) bollards, and hydrant. This item also includes fittings, specials, trenching, bedding, backfilling, 2 layers of V-Bio Enhanced polyethylene encasement, joint restraints, and concrete blocking. Payment for this item will be for the actual number of assemblies complete and in place at the **Contract Unit Price Bid per Each.**

ITEM 10: This item of work consists of furnishing all materials, plant, equipment, and labor required to place concrete drive pad. Including earthwork, grading, and forming complete and in place. Payment for this item will be made at the **Contract Unit Price per Cubic Yard** of concrete.

ITEM 11: This item of work consists of furnishing all materials, plant, equipment and labor required for removal and replacement of existing gravel surfacing with 4" of gravel (NMDOT base course) surfacing in access roads, driveways, and station yards complete and in place. Payment for this item will made at the **Contract Unit Price per Square Yard.**

ITEM 12: This item of work consists of furnishing all materials, plant, equipment and labor required for removal and replacement of existing chain link fencing by furnishing and installing new chain link fencing of like construction including security wires, bracing, top rails, tension wire, gates (personnel and vehicle) and all appurtenances complete and in place. Payment for this item will made at the **Contract Unit Price per Linear Foot Installed.**

ITEM 13: This item of work consists of furnishing all materials, plant, equipment and labor required for removal and replacement of existing wrought iron fencing by furnishing and installing wrought iron fencing matching existing fence construction complete and in place. Contractor may reuse existing wrought iron

fencing on new posts anchored in concrete provided that fencing is carefully removed and not bent or damaged. Payment for this item will be made at the **Contract Unit Price per Linear Foot Installed.**

**ITEM 14:** This item of work consists of furnishing all materials, plant, equipment and labor required for removal and replacement of existing wire fencing (woven wire and/or barbed) by furnishing and installing new wire fencing including wires, bracing, pull and corner posts and all appurtenances complete and in place. Payment for this item will be made at the **Contract Unit Price per Linear Foot Installed.**

**ITEM 15:** This item of work consists of furnishing all materials, plant, equipment and labor required for the implementation, and maintenance of traffic control and safety devices including temporary fencing, signs, barrels, barricades, alteration of signs, as required for installation of 18" waterline and 28" steel casing within U.S. Highway 491 Right of Way. Traffic control shall conform to MUTCD and NMDOT standards. Traffic control plan shall be approved by the engineer and NMDOT. Partial payments shall be made equal to the percentage of waterline complete and in place. Payment for this item will be made per the **Contract Lump Sum Price Bid.**

**ITEM 16:** This item of work consists of furnishing all materials, plant, equipment and labor required for installation of electrical and control wiring of new water meter. This item includes installation 30' of 1 1/2" electrical PVC conduit and connection to existing 1 1/4" GRC conduit outside of building, pulling meter cable, mounting meter remote amplifier/display and landing wiring complete in place and functional. Furnishing of meter, remote amplifier/display, and cable are not included in this item. Payment for this item will be made per the **Contract Lump Sum Price Bid.**

**ITEM 17:** This item of work is for material testing (PMBP, soils, base course, and concrete) by an approved independent testing lab employed by the Contractor. Cost for excessive testing indicating non-compliance shall be borne by the contractor. Testing labs and personnel shall be approved by the City. 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 charges.**

## **LOT 2 – 30" WATERLINE**

**ITEM 1:** This item of work consists of furnishing all materials, plant, equipment and labor required for installing 30" CL. 350 ductile iron pipe waterline including horizontal and vertical fittings designated on project drawings, specials, trenching, bedding, and native backfill. Restrained joints and two (2) layers of V-Bio Enhanced polyethylene wrap (AWWA C105) around pipe are also included in this item. Pavement and gravel removal and replacement or rock excavation is



not included in this item. The required cutting of pipe to provide required joint distance from sewer or water line crossings shall be considered incidental to this item. All construction operations required to keep existing utilities (water, sewer, gas, and communication lines) operational at crossings shall be included in this item. Damaged utilities that were accurately located by the utility owner shall be repaired as required at the contractor's expense and are not included in this item. "Potholing" to gather information on existing utilities 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. Measurement will be by the linear foot along centerline of the pipe through valves, manholes, and fittings without correction for slope. Payment for this item will be for actual linear feet of pipe installed at the **Contract Unit Price Bid per Linear Foot.**

ITEM 2: This item of work consists of furnishing all materials, plant, equipment and labor required for installing 30" CL. 250 ductile iron pipe waterline including horizontal and vertical fittings designated on project drawings, specials, trenching, bedding, and native backfill. Restrained joints and two (2) layers of V-Bio Enhanced polyethylene wrap (AWWA C105) around pipe are also included in this item. Pavement and gravel removal and replacement or rock excavation is not included in this item. The required cutting of pipe to provide required joint distance from sewer or water line crossings shall be considered incidental to this item. All construction operations required to keep existing utilities (water, sewer, gas, and communication lines) operational at crossings shall be included in this item. Damaged utilities that were accurately located by the utility owner shall be repaired as required at the contractor's expense and are not included in this item. "Potholing" to gather information on existing utilities 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. Measurement will be by the linear foot along centerline of the pipe through valves, manholes, and fittings without correction for slope. Payment for this item will be for actual linear feet of pipe installed at the **Contract Unit Price Bid per Linear Foot.**

ITEM 3: This item of work consists of furnishing all materials, plant, equipment and labor required for installing 30" CL. 250 ductile iron pipe waterline in NMDOT Right of Way from Station 70+10.31 to Station 89+00 and areas of rock excavation (if required) including horizontal and vertical fittings designated on project drawings, specials, trenching, bedding, and granular backfill. Restrained joints and two (2) layers of V-Bio Enhanced polyethylene wrap (AWWA C105) around pipe are also included in this item. Pavement and gravel removal and replacement or rock excavation is not included in this item. The required cutting of pipe to provide required joint distance from sewer or water line crossings shall be considered incidental to this item. All construction operations required to keep existing utilities (water, sewer, gas, and communication lines) operational at crossings shall be included in this item. Damaged utilities that were accurately

located by the utility owner shall be repaired as required at the contractor's expense and are not included in this item. "Potholing" to gather information on existing utilities 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. Measurement will be by the linear foot along centerline of the pipe through valves, manholes, and fittings without correction for slope. Payment for this item will be for actual linear feet of pipe installed at the **Contract Unit Price Bid per Linear Foot.**

ITEM 4: This item of work consists of furnishing all materials, plant, equipment and labor required for completing the U.S. Highway 491 waterline crossing from Station 70+10.31 to Station 72+40.31 (L=230'). The item consists installing a 30" CL. 250 restrained joint ductile iron carrier pipe in a 40" XHY (1/2" wall) steel casing by jack and bore methods. This item includes end seals, spacers, and bore pit excavation and backfill. Payment for this item will be made at the **Contract Lump Sum Price Bid.** "Potholing" to gather information on existing utilities at crossings shall be incidental to this item.

ITEM 5: This item of work consists of furnishing all materials, plant, equipment and labor required for completing the Transwestern 30" Gas line crossing from Station 165+07.50 to Station 166+95 (L=192.5') and installation of all cathodic mitigation devices from station 161+00 to station 171+00 (L=1,000'). The item consists installing a 30" CL. 250 restrained joint ductile iron carrier pipe in a 42" ductile iron pipe size DR-21 AWWA C906 HDPE casing steel casing by open trench or jack and bore methods. The item includes fusion welding and "smoothing" of HDPE casing joints. This item includes end seals, spacers, and trenching, bedding, and backfill or bore pit excavation and backfill. Cathodic mitigation devices include bonding of all pipe, and fitting joints, two (2) Type 1 test stations and two (2) type 2 test stations as designated on contract drawings. Cathodic mitigation bonded joints on Transwestern gas line crossing carrier pipe and buried piping for air release station at station 164+50 are also included in this item. Payment for this item will made at the **Contract Lump Sum Price Bid.** "Potholing" to gather information on existing utilities at crossings shall be incidental to this item.

ITEM 6: This item of work consists of furnishing all materials, plant, equipment and labor required for installing 30" AWWA C515 resilient wedge, epoxy coated gate valves as specified complete with bevel gear, bypasses, concrete supports, cast iron valve boxes, and concrete collars as shown on project drawings. Payment for this item will be for the actual number of valve assemblies installed at the **Contract Unit Price Bid per Each.**

ITEM 7: This item of work consists of furnishing all materials, plant, equipment and labor required for installing Type 2A air release stations on a 30" waterline complete including vault, vent piping, piping from line to air release valve, air and vacuum devices, protection bollards, excavation and backfill. Item does not

include mainline pipe or tee. Payment for this item will be made at the **Contract Unit Price Bid per Each.**

ITEM 8: This item of work consists of furnishing all materials, plant, equipment and labor required for completing Tie-in "B" at Station 120+85.84 to existing 6" well discharge line as shown on contract drawings. The connection shall include 20' of 6" AWWA C900-07 CI 235 (DR-18) PVC waterline, two (2) 6" resilient wedge gate valves, 6" cross, fittings, specials, concrete blocking, trenching, bedding and backfilling. The removal and disposal of 6" waterline (L=200') required for 30" waterline and tie-in construction is included in this item. A 6" M.J. cap and concrete blocking and end of existing 6" waterline left in place at Station 122+57± are also included. This item does not include pavement or gravel removal and replacement, and rock excavation. "Megalug" restraining glands (or equal) shall be provided for the M.J. fittings and two (2) layers of V-Bio Enhanced polyethylene wrap (AWWA C105) around valve and fittings shall be considered incidental to this item. All coordination required with City shall be included in this item. Payment for this item will be made at **Contract Lump Sum Price Bid.**

ITEM 9: This item of work consists of furnishing all materials, plant, equipment and labor required for completing Tie-in "C" at Station 179+66 to existing 30" waterline as shown on contract drawings. The connection shall include 30" fittings, specials, concrete blocking, trenching, bedding and backfilling. This item does not include valves, pavement or gravel removal and replacement, and rock excavation. "Megalug" restraining glands (or equal) shall be provided for the M.J. fittings and two (2) layers of V-Bio Enhanced polyethylene wrap (AWWA C105) around pipe and fittings shall be considered incidental to this item. All coordination required with City shall be included in this item. Payment for this item will be made at **Contract Lump Sum Price Bid.**

ITEM 10: This item of work consists of furnishing all materials, plant, equipment and labor required for completing future Reach 12B Tie-in at Station 12+36.46 to future reach 12B 36"x30" reducer waterline as shown on contract drawings. The connection shall include 30" blind flange, 30" flanged by plain end ductile iron pipe, 30" isolation gasket kit, one (1) cathodic mitigation type 2 test station, fittings, specials, concrete blocking, trenching, bedding and backfilling. This item does not include valves, pavement or gravel removal and replacement, and rock excavation. "Megalug" restraining glands (or equal) shall be provided for the M.J. fittings and two (2) layers of V-Bio Enhanced polyethylene wrap (AWWA C105) around pipe and fittings shall be considered incidental to this item. All coordination required with City shall be included in this item. Payment for this item will be made at **Contract Lump Sum Price Bid.**

ITEM 11: This item of work consists of furnishing all materials, plant, equipment and labor required to connect existing 4" water service to 30" waterline at station 87+25 (tie-in D) as shown on contract drawings. The connection shall include 6"

PVC AWWA C900-07 CL. 235 (DR-18) waterline, 6" resilient wedge gate valve, fittings, specials, concrete blocking, trenching, bedding and backfilling. This item does not pavement or gravel removal and replacement, and rock excavation. "Megalug" restraining glands (or equal) shall be provided for the M.J. fittings and two (2) layers of V-Bio Enhanced polyethylene wrap (AWWA C105) around pipe and fittings shall be considered incidental to this item. All coordination required with City shall be included in this item. Payment for this item will be made at **Contract Lump Sum Price Bid.**

ITEM 12: This item of work consists of furnishing all materials, plant, equipment and labor required for the installation of flushing apparatus including valve and piping berm and subsequent removal of ell, discharge piping, and placement of flowable fill on 30" water main. 12" valve to remain. This item does not include main line fittings. Payment for this item will be made at **the Contract Unit Price Bid per Each apparatus completed** at specified locations. This item shall include all costs associated with discharging water in accordance with N.M.W.Q.C.C. standards and the Clean Water Act, including de-chlorination, 402 permits and/or inclusion in the project S.W.P.P.P. are required.

ITEM 13: This item of work consists of furnishing all materials, plant, equipment and labor required in installing 30" 11 1/4° vertical ells including restraints as required during construction, but not identified on the project drawings. "Megalug" restraining glands (or equal) shall be provided for the M.J. fittings and two (2) layers of V-Bio Enhanced polyethylene wrap (AWWA C105) around pipe and fittings shall be considered incidental to this item. Payment for this item will be made at the **Contract Unit Price per Each installed.**

ITEM 14: This item of work consists of furnishing all materials, plant, equipment and labor required in the excavation of Type "A" rock for waterline construction. Removal and disposal of rock is included in this item. 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 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 15: This item of work consists of furnishing all materials, plant, equipment and labor required in the excavation of Type "B" rock for waterline construction. Removal and disposal of rock is included in this item. 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 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 16: This item of work consists of furnishing all materials, plant, equipment and labor required for removal and replacement of pavement patch required for waterline construction in paved driveways, roads and parking lots. Patch shall be 6" of PMBP on 8" of base course. Required say cuts and edge tacking are included in the item. Additionally this item requires pavement patch be topped out with base course and maintained in the interim prior to placing PMBP. Payment will be made at the **Contract Unit Price Bid per Square Yard.**

ITEM 17: This item of work consists of furnishing all materials, plant, equipment and labor required for removal and replacement of existing gravel surfacing with 4" of gravel (NMDOT Base Course) surfacing in access roads, driveways, and station yards complete and in place. Payment for this item will made at the **Contract Unit Price per Square Yard.**

ITEM 18: This item of work consists of furnishing all materials, plant, equipment and labor required in the relocation of existing power poles, down guys and installation of guy poles as required by the City of Gallup as shown on contract drawings complete and in place. Coordination with the City of Gallup is also included in this item. **(Payment will be made on approved invoice charges).**

ITEM 19: This item of work consists of furnishing all materials, plant, equipment and labor required to construct archaeological fencing, including wires, bracing, pull and corner posts, and all appurtenance and locations shown in project drawings complete and in place. Payment for this item will be made at the **Contract Unit Price per Linear Foot.**

ITEM 20: This item of work consists of furnishing all materials, plant, equipment and labor required for removal and replacement of existing wire fencing (woven wire and/or barbed) by furnishing and installing new wire fencing including security wires, bracing, pull and corner posts and all appurtenances complete and in place. Payment for this item will made at the **Contract Unit Price per Linear Foot Installed.**

ITEM 21: This item of work consists of furnishing all materials, plant, equipment and labor required for the implementation, and maintenance of traffic control and safety devices including temporary fencing, signs, barrels, barricades, alteration of signs, as required for installation of 30" waterline and 40" steel casing within U.S. Highway 491 Right of Way from Sta. 70+10 to 88+75. Traffic control shall conform to MUTCD and NMDOT standards. Traffic control plan shall be approved by the engineer and NMDOT. Partial payments shall be made equal to the percentage of waterline complete and in place. Payment for this item will be made per the **Contract Lump Sum Price Bid.**

ITEM 22: This item of work consists of furnishing all materials, plant, equipment and labor required to install grade control structure at Station 60+65 as shown on



contract drawing complete and in-place. This item includes excavation, backfill, grading, stone fill, wire baskets, wire mesh, basket ties, and appurtenances. Payment for this item will be made at the **Contract Unit Price per Cubic Yard Installed**.

ITEM 23: This item of work consists of furnishing all materials, plant, equipment and labor required to install grade control structure at Station 106+90 as shown on contract drawing complete and in-place. This item includes excavation, backfill, grading, stone fill, wire baskets, wire mesh, basket ties, slope blanket and appurtenances. The removal and replacement of up to 16 feet of existing 6' (72") CMP culvert including appurtenances for waterline and grade control structure construction is also included in this item. Payment for this item will be made at the **Contract Unit Price per Cubic Yard Installed**.

ITEM 24: This item of work consists of furnishing all materials, plant, equipment and labor required to install grade control structure at Station 130+49 as shown on contract drawing complete and in-place. This item includes excavation, backfill, grading, stone fill, wire baskets, wire mesh, basket ties, and appurtenances. Payment for this item will be made at the **Contract Unit Price per Cubic Yard Installed**.

ITEM 25: This item of work consists of furnishing all materials, plant, equipment and labor required to install grade control structure at Station 136+19 as shown on contract drawing complete and in-place. This item includes excavation, backfill, grading, stone fill, wire baskets, wire mesh, basket ties, and appurtenances. Payment for this item will be made at the **Contract Unit Price per Cubic Yard Installed**.

ITEM 26: This item of work consists of furnishing all materials, plant, equipment and labor required to install grade control structure at Station 145+76 as shown on contract drawing complete and in-place. This item includes excavation, backfill, grading, stone fill, wire baskets, wire mesh, basket ties, and appurtenances. Payment for this item will be made at the **Contract Unit Price per Cubic Yard Installed**.

ITEM 27: This item of work consists of furnishing all materials, plant, equipment and labor required to install grade control structure at Station 147+37 as shown on contract drawing complete and in-place. This item includes excavation, backfill, grading, stone fill, wire baskets, wire mesh, basket ties, and appurtenances. Payment for this item will be made at the **Contract Unit Price per Cubic Yard Installed**.

ITEM 28: This item of work consists of furnishing all materials, plant, equipment and labor required to install grade control structure at Station 151+62 as shown on contract drawing complete and in-place. This item includes excavation, backfill, grading, stone fill, wire baskets, wire mesh, basket ties, and appurtenances.

Payment for this item will be made at the **Contract Unit Price per Cubic Yard Installed.**

ITEM 29: This item of work consists of furnishing all materials, plant, equipment and labor required to install grade control structure at Station 162+17 as shown on contract drawing complete and in-place. This item includes excavation, backfill, grading, stone fill, wire baskets, wire mesh, basket ties, and appurtenances. Payment for this item will be made at the **Contract Unit Price per Cubic Yard Installed.**

ITEM 30: This item of work consists of furnishing all materials, plant, equipment and labor required to install grade control structure at Station 169+63 as shown on contract drawing complete and in-place. This item includes excavation, backfill, grading, stone fill, wire baskets, wire mesh, basket ties, and appurtenances. Payment for this item will be made at the **Contract Unit Price per Cubic Yard Installed.**

ITEM 31: This item of work consists of furnishing all materials, plant, equipment and labor required to install grade control structure at Station 173+41 as shown on contract drawing complete and in-place. This item includes excavation, backfill, grading, stone fill, wire baskets, wire mesh, basket ties, and appurtenances. Payment for this item will be made at the **Contract Unit Price per Cubic Yard Installed.**

ITEM 32: This item of work is for material testing (PMBP, soils, base course, and concrete) by an approved independent testing lab employed by the Contractor. Cost for excessive testing indicating non-compliance shall be borne by the contractor. Testing labs and personnel shall be approved by the City. 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 charges.**

ITEM 33: 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 a different ("Leap Frog") location. Such a new location will be determined after communication between the Archeologist, Engineer, and Contractor. Notice to resume work to be verbal followed in writing. The contractor is to be aware that certain auxiliary operations may continue after shutdown 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 the 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 will be adjusted in accordance with provisions in the general conditions. Payment for this item will be made at the **Contract Unit Price Bid per Hour of Shutdown**. Archaeological or cultural monitoring personnel will be provided by the Engineer.

### **LOT 3 – FLOW CONTROL STATION- SERVICE LINE**

**ITEM 1:** This item of work consists of furnishing all materials, plant, equipment and labor required for flow control station construction, complete and in place including earthwork, piping, valves, fitting, specials, electrical, conduit, control wiring, SCADA wiring, chain link fencing with gates, and appurtenances. 8" yard piping, buried 8" gate valve tie-ins to 30" and relocated 8" well collector are included in this item. (Note: Furnishing and programming of SCADA equipment are not included in this item). Payment for this item will be made at the **Contract Lump Sum Price Bid**.

**ITEM 2:** This item of work consists of furnishing all materials, plant, equipment and labor required for removal and relocation of existing 8" well collector lines. This item includes demolition, removal and disposal of existing 8" well collector lines and the lowering the lines with new 8" AWWA C900-07 Cl. 305 (DR-14) PVC Pipe, installation of Type 2 air release station on 8" main, and 8" valves including piping, fittings, vaults, vent piping, specials, concrete blocking, trenching, bedding and backfilling. This item does not include pavement or gravel removal and replacement, and rock excavation. "Megalug" restraining glands (or equal) shall be provided for the M.J. fittings and two (2) layers of V-Bio Enhanced polyethylene wrap (AWWA C105) around ductile iron pipe and fittings shall be considered incidental to this item. All coordination required with City shall be included in this item. Payment for this item will be made at **Contract Lump Sum Price Bid**.

**ITEM 3:** This item of work consists of furnishing all materials, plant, equipment and labor required for installing 6" AWWA C900-07 Cl. 350 (DR-18) PVC service waterline including horizontal and vertical fittings, 6" resilient wedge gate valve, specials, trenching, bedding, and native backfill. Pavement and gravel removal and replacement or rock excavation is not included in this item. The required cutting of pipe to provide required joint distance from sewer or water line crossings shall be considered incidental to this item. All construction operations required to keep existing utilities (water, sewer, gas, and communication lines) operational at crossings shall be included in this item. Damaged utilities that were accurately located by the utility owner shall be repaired as required at the contractor's expense and are not included in this item. "Potholing" to gather information on existing utilities at crossings shall be incidental to this item. All fittings, valves, and specials shall be wrapped in two (2) layers of V-Bio Enhanced polyethylene encasement and be installed with restraining glands. Measurement will be by the linear foot along centerline of the pipe through valves, manholes, and fittings without correction for slope. Payment

for this item will be for actual linear feet of pipe installed at the **Contract Unit Price Bid per Linear Foot.**

ITEM 4: This item of work consists of furnishing all materials, plant, equipment and labor required for completing service line Tie-in "A" and service line Tie-in "B" to existing ductile iron 18" waterline and service line piping and installing fire hydrant assembly at Station 3+90 as shown on contract drawings. The connection shall include 10' of 18" CL. 350 ductile iron pipe, fittings, specials, concrete blocking, trenching, bedding and backfilling. Fire hydrant assembly includes  $\pm$  15 feet of 6" ductile iron pipe, 6" resilient wedge gate valve, 6" tee, and hydrant. This item does not include valves, pavement or gravel removal and replacement, and rock excavation. "Megalug" restraining glands (or equal) shall be provided for the M.J. fittings and two (2) layers of V-Bio Enhanced polyethylene wrap (AWWA C105) around ductile iron pipe and fittings shall be considered incidental to this item. All coordination required with City shall be included in this item. Removal of existing 18" ductile iron waterline and fire hydrant assembly is included in this item. Payment for this item will be made at **Contract Lump Sum Price Bid.**

ITEM 5: This item of work consists of furnishing all materials, plant, equipment and labor required to abandon existing 6" PVC well collector line in place at approximately N 1673362, E 2444179 as shown on contract drawings. This item includes two (2) -6" caps, concrete blocking, trenching, bedding and backfilling. This item does not include valves, pavement or gravel removal and replacement, and rock excavation. "Megalug" restraining glands (or equal) shall be provided for the M.J. fittings and two (2) layers of V- Bio Enhanced polyethylene wrap (AWWA C105) around ductile iron pipe and fittings shall be considered incidental to this item. All coordination required with City shall be included in this item. Removal of existing 6" PVC well collector line is included in this item. Payment for this item will be made at **Contract Lump Sum Price Bid.**

ITEM 6: This item of work consists of furnishing all materials, plant, equipment and labor required to install 4" of gravel (NMDOT base course) surfacing in access road, driveway, and station yard as shown on contract drawings complete and in place. Payment for this item will made at the **Contract Unit Price per Square Yard.**

ITEM 7: This item of work consists of furnishing all materials, plant, equipment and labor required for removal and replacement of existing wire fencing (woven wire and/or barbed) by furnishing and installing new wire fencing including security wires, bracing, pull and corner posts and all appurtenances complete and in place. Payment for this item will made at the **Contract Unit Price per Linear Foot Installed.**

ITEM 8: This item of work consists of furnishing all materials, plant, equipment and labor required construction of single phase power extension and service

connection including new transformer by the City of Gallup. **No charge by the City. No payment will be made.**

ITEM 9: This item of work consists of furnishing all materials, plant, equipment and labor required for furnishing and programming SCADA equipment by City Contractor, SKM Inc., as required to incorporate the flow control station into existing City of Gallup SCADA System. This item includes furnishing SCADA equipment (including antennas) and making final connections at or within SCADA equipment. This installation of associated control wiring runs is not included in this item. Coordination with electricians and general contractor is included. **Payment will be made on an approved invoice charges.**

ITEM 10: This item of work is for material testing (PMBP, soils, base course, and concrete) by an approved independent testing lab employed by the Contractor. Cost for excessive testing indicating non-compliance shall be borne by the contractor. Testing labs and personnel shall be approved by the City. 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 charges.**



## **TECHNICAL SPECIFICATIONS TABLE OF CONTENTS**

### **PART 100 – SUBMITTALS AND PROGRESS SCHEDULE**

<b>Section</b>	<b>Title</b>	
101	Submittal Procedures.....	101-1 to 101-6
102	Progress Schedule.....	102-1 to 102-2

### **PART 200 – EARTHWORK**

<b>Section</b>	<b>Title</b>	
201	General Earthwork.....	201-1 to 201-4
202	Clearing and Grubbing.....	202-1 to 202-2
203	Trenching, Excavation, and Backfilling.....	203-1 to 203-7
204	Fill Materials.....	204-1 to 204-4
205	Wire Enclosed Rip-Rap.....	205-1 to 205-4

### **PART 300 – CONCRETE**

<b>Section</b>	<b>Title</b>	
301	Cast-in-Place Concrete .....	301-1 to 301-7
302	Concrete Formwork.....	302-1 to 302-3
303	Curb & Gutter, Sidewalks, Drive Pad & Concrete Pavement Construction.....	303-1 to 303-3
304	Concrete Reinforcing Steel.....	304-1 to 304-2

### **PART 400 – STREETS AND RELATED WORK**

<b>Section</b>	<b>Title</b>	
401	Asphalt Street Patch.....	401-1 to 401-5
402	Gravel Roads and Driveways.....	402-1 to 402-2

### **PART 500 – WATER AND DRAIN LINES**

<b>Section</b>	<b>Title</b>	
501	Water Lines and Appurtenances.....	501-1 to 501-11
503	Corrugated Metal Pipe.....	503-1 to 503-2
504	Station Valves, Piping, Appurtenances, and Associated Painting....	504-1 to 504-7

### **PART 600 - STRUCTURES**

<b>Section</b>	<b>Title</b>	
601	Fencing.....	601-1 to 601-3
602	Station Buildings.....	602-1 to 602-8

### **PART 700 – ELECTRICAL AND CONTROL SYSTEMS**

<b>Section</b>	<b>Title</b>	
701	Electrical - General.....	701-1 to 701-13
703	SCADA System.....	703-1 to 703-8

## **TABLE OF CONTENTS, CONTINUED**

### **PART 800 – MISCELLANEOUS**

<b>Section</b>	<b>Title</b>	
801	Demolition .....	801-1 to 801-5
802	Traffic Control.....	802-1 to 802-3
803	Protected Species.....	803-1 to 803-2
804	Preservation of Historical and Archaeological Data.....	804-1 to 804-4
805	Storm Water Pollution Prevention.....	805-1 to 805-6
806	Water Pollution Control.....	806-1 to 806-8

### **PART 900 – DESIGN CODES & REFERENCES**

<b>Section</b>	<b>Title</b>	
901	Design Codes and References.....	901-1 to 901-5

## APPENDICIES

- A. EPA FORMS (NPDES)
  - NOTICE OF INTENT
  - NOTICE OF TERMINATION
- B. NEW MEXICO WAGE RATES
- C. S.C.A.D.A. AND ELECTRICAL COST ESTIMATES
  - 1. SKM, INC. S.C.A.D.A. COST ESTIMATE
  - 2. DOWN GUY RELOCATIONS
- D. GEOTECHNICAL REPORT
- E. HIGHWAY PERMITS
  - HIGHWAY 491 UTILITY PERMIT – 30” PARALLEL LINE & CROSSING
  - HIGHWAY 491 UTILITY PERMIT – 18” CROSSING LINE
  - WORK PERMIT FORM
- F. 404 & 401 PERMITS
  - DEPARTMENT OF THE ARMY ALBUQUERQUE DISTRICT CORPS OF ENGINEERS
    - ACTION NUMBER SPA-2012-00254-ABQ, USBR NAVAJO-GALLUP WATER SUPPLY PROJECT, REACHES 13 & 27.5 (404 PERMIT)
  - NEW MEXICO ENVIRONMENT DEPARTMENT SURFACE WATER QUALITY BUREAU
    - CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION UNITED STATES ARMY CORPS OF ENGINEERS 2012 NATIONWIDE PERMITS

## **101 SUBMITTAL PROCEDURES - INDEX**

### **101.1 DEFINITIONS**

#### **101.1.1 Submittal**

#### **101.1.2 Types of Submittals**

### **101.2 SUBMITTAL IDENTIFICATION**

### **101.3 FORMAT OF SUBMITTALS**

#### **101.3.1 Transmittal Form**

#### **101.3.2 Identifying Submittals**

#### **101.3.3 Format for Shop Drawings**

#### **101.3.4 Format of Product Data**

#### **101.3.5 Format of Operation and Maintenance (O&M) Data**

### **101.4 QUANTITY OF SUBMITTALS**

#### **101.4.1 Number of Copies of Shop Drawings**

#### **101.4.2 Number of Copies of Product Data**

#### **101.4.3 Number of Copies of Operation and Maintenance Data**

### **101.5 APPROVED SUBMITTALS**

### **101.6 DISAPPROVED SUBMITTALS**

### **101.7 GENERAL**

### **101.8 SUBMITTAL PROCEDURES**

#### **101.8.1 Procedures**

### **101.9 CONTROL OF SUBMITTALS**

## **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 when 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**

### **102.1 EXECUTION**

#### **102.1.1 CONSTRUCTION PROGRESS CHART**



## **102 PROGRESS 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**

### **201.1 LAWS AND REGULATORY REQUIREMENTS**

### **201.2 SUBMITALS**

### **201.3 MATERIALS**

#### **201.3.1 Backfill**

#### **201.3.2 Timber**

### **201.4 PREPARATION**

#### **201.4.1 Test Pits**

#### **201.4.2 Dewatering and Drainage Systems**

### **201.5 GENERAL EXCAVATION**

#### **201.5.1 Rock Excavation**

### **201.6 EXCAVATION SUPPORT**

#### **201.6.1 Bracing and Sheeting**

### **201.7 BACKFILL PROCEDURES**

### **201.8 DISPOSAL OF SURPLUS MATERIAL**

### **201.9 MEASUREMENT AND PAYMENT**

## **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 Sheet piling:** 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**

202.1   DESCRIPTION

202.2   GENERAL

202.3   REMOVAL AND DISPOSAL OF MATERIAL

202.4 MEASUREMENT AND PAYMENT

## **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**

203.1 DESCRIPTION

203.2 TRENCHING FOR PIPE

203.3 ROCK EXCAVATION

203.4 BRACING AND SHEETING

203.5 EXCAVATION FOR APPURTENANCES

203.6 BACKFILLING

203.6.1 Conventional Backfill

203.7 GRANULAR MATERIAL

203.7.1 Flowable Backfill

203.8 PAVEMENT CUT AND PATCHES

203.9 EXISTING UTILITIES

203.10 DEWATERING

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

202.12 MEASUREMENT AND PAYMENT

## **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, facilities, structures, and appurtenances complete in strict accordance with provisions of this section of the specifications and applicable drawings. Workmanship and materials for required earthwork shall conform to the NMDOT Standard Specifications for Highway and Bridge Construction, 2007 Edition provided however, that the specifications, and measurement and payment methods contained therein, or the Special Conditions shall apply.

### **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 pipe 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:

<b>Sieve Size</b>	<b>Percent Passing</b>
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 NMDOT 516.2.10..

Cement shall be low alkali type I or II.

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

<b>Sieve Size</b>	<b>Percent Passing</b>
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	8" - 10"
Compressive Strength	50 PSI

### **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.

## **204 FILL MATERIALS – INDEX**

204.1 SUBMITTALS

204.2 GRANULAR FILL

204.3 NATIVE ROCK FREE FILL

204.4 FLOWABLE FILL MIX DESIGN

204.4.1 CEMENT

204.4.2 FLOWABLE FILL AGGREGATE

204.5 NATIVE ROCK UTILIZATION

204.5.1 SLOPE COVER

204.5.2 ROCK FILL

204.6 PLACING FLOWABLE FILL

204.7 PLACING SLOPE COVER ROCK

204.8 PLACING ROCK FOR FILL

204.9 MEASUREMENT AND PAYMENT

## **204 FILL MATERIALS**

### **204.1 SUBMITTALS**

Certification: Engineer's Approval

Granular Fill: Contractor to provide certified test reports made by an independent testing laboratory indicating that material meets or exceeds the requirements of these specifications. The term "granular fill" shall apply to granular fill, granular backfill or granular embankment.

Native Rock Free Fill: Contractor to provide certified test reports made by an independent testing laboratory indicating that materials meet or exceed the requirements of these specifications. The term "native rock free fill" shall apply to native rock free fill, native rock free backfill or native rock free embankment.

Test Reports: Engineer's Approval

Flowable Fill Mix Design

Filter Aggregate

### **204.2 GRANULAR FILL**

Granular fill material shall be unfrozen gravel, sandy gravel or gravelly sand free of organic material, loam, trash, snow, ice or other objectionable material and shall have a plasticity index of less than or equal to 12 (per ASTM D4318) and shall conform to the following gradation limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
1 inch	100
No. 4	40-100
No. 200	35

### **204.3 NATIVE ROCK FREE FILL**

Native fill shall not contain rocks, broken concrete, masonry rubble, asphalt pavement, or any material larger than 6 inches in any one direction. Native fill shall have a plasticity index of less than 20 and shall conform to the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
No. 200	15-70



## 204.4 FLOWABLE FILL MIX DESIGN

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

Strength	50 – 150 psi as described above per ASTM D4832 (except that in some cases additional strength may be requested to accelerate or increase strength.)
Cement	50 - 94 lb/CY as required to meet strength requirement above (except that in some cases additional cement may be requested to accelerate or increase strength.
Fly Ash	Class F fly ash shall be at least 15% of the total cementitious material by weight.
Aggregate	1500 - 3000 lbs/CY
Slump	5" - 8"
Water	Water shall be potable water from municipal or other approved source

**204.4.1 Cement:** Cement shall comply with Section 10, Cast in Place Concrete and shall be low alkali type I or II.

**204.4.2 Flowable Fill Aggregate:** Flowable aggregate shall conform to the following requirements:

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

Sieve Size	Percent Passing
3/8 inch	95-100
No. 3	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

## 204.5 NATIVE ROCK UTILIZATION

**204.5.1 Slope Cover:** Rock excavated from proposed site development to be placed in designated areas as a means of proper disposal and for the prevention of erosion of slopes. Rock

to be the more competent of the rock encountered exhibiting reasonably sharp corners when fractured. Rock dust and fines to be held to a minimum. Rock size to range from 6" to 24". Trees to remain amongst the rock placement to the extent possible.

**204.5.2 Rock Fill:** Rock excavated from proposed site material may be placed in areas requiring fill when approved by the Engineer. The rock may be contained in a mixture of soil and rock dust fines. The rock fill shall not encroach on any portion of what is designated as a pipeline trench.

#### **204.6 PLACING FLOWABLE FILL**

The flowable fill shall be placed in a uniform manner that will prevent voids or segregation of the bedding and filling material. Culvert or pipe shall be secured from movement. The flowable fill shall be placed by direct discharge from a ready mix truck, pumping or other approved method. Flowable fill shall have a placed minimum thickness of 6". It shall not be placed in standing water and shall be protected from flooding for at least 24 hours after placement. The flowable fill shall not be placed on frozen ground nor during rain.

Newly placed flowable fill shall be undisturbed by construction activities for at least 24 hours after placement or as required to support subsequent construction activities. Backfill material shall not be placed over newly placed flowable fill until initial set has been reached as determined by ASTM D6024-07, ASTM D1558, or approved by Engineer. All testing must be done in the presence of an Engineer.

#### **204.7 PLACING SLOPE COVER ROCK**

Rock to be placed by hand and machine to a depth not to exceed 24". Finished slope cover to have the appearance of having been "placed," rather than dumped.

#### **204.8 PLACING ROCK FOR FILL**

Excavated rock to be used in areas approved for fill to be placed in uniform layers not to exceed 24" and "walked in" with heavy equipment. When soil or rock dust is the dominant component, water shall be added and processed to aid in compaction. The finished surface to be suitable for dressing to site grading requirements.

#### **204.9 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.

## **205 WIRE ENCLOSED RIP-RAP -- INDEX**

### **205.1 SUBMITTALS**

205.1.1 SAMPLES

205.1.2 CERTIFICATIONS

### **205.2 MATERIALS**

205.2.1 STONE FOR RIP-RAP

205.2.2 WIRE

205.2.2 STAKES

205.2.3 DRAINAGE GEOTEXTILE

### **205.3 EXECUTION**

205.3.1 SITE PREPARATION

205.3.2 FABRIC PLACEMENT

205.3.3 RIP-RAP PLACEMENT

### **205.4 MEASUREMENT AND PAYMENT**

## **205 WIRE ENCLOSED RIP-RAP**

### **205.1 SUBMITTALS**

#### **205.1.1 Samples:**

Rip-Rap: (Class A wire enclosed) as per NMSHTD Section 602: Engineers Approval  
Sample of stone for rip-rap shall be submitted prior to delivery

Stakes: Engineers approval. Description of stake to be used shall be submitted prior to delivery.

#### **205.1.2 Certifications:**

Wire mesh: Engineers approval. Contractor to provide certified test reports made by an independent testing laboratory indicating that material meets or exceeds the requirements of these specifications.

Geotextile Fabric: Engineer approval. Contractor to provide certified test reports made by an independent testing laboratory indicating that material meets or exceeds the requirements of these specifications.

### **205.2 MATERIALS**

**205.2.1 Stone for Rip-Rap:** Stone used for rip-rap shall be rocks or rough quarry stone with a percent wear of not more than sixty (60) as determined by AASHTO T96 and a soundness loss of not more than twenty one (21) as determined by AASHTO T104 using a magnesium sulfate solution with a test duration of five (5) cycles. Stone shall be durable and of suitable quality to ensure permanence in the structure and climate in which it is to be used.

**205.2.2 Wire:** The wire mesh shall be fabricated so as to be non-raveling and furnished in such lengths and widths so that the number of splices is kept to a minimum. The composite wire mesh shall be in conformance with the NMSHTD specification Section 602.35 wire mesh testing and certification.

Wire shall conform to the requirements of ASTM A641 and shall have a Class 3 zinc coating. Zinc coating shall be determined in accordance with ASTM A90. Wire shall be 11 ¼ gauge or larger. Wire mesh openings shall be uniform in size with opening size no more than 4 ¾ inches in the largest dimension, but must have at least one dimension of 3 ¼ inches or less.

**205.2.3 Stakes:** Stakes shall be steel railroad rails, standard weight galvanized steel pipe or steel angles.

- Steel railroad rails shall have a unit weight of at least thirty (30) pounds per yard.
- Standard weight galvanized steel pipe shall be four (4) inches in outside diameter.
- Steel angles shall be 4 X 4 X length called for in inches in dimension.

**205.2.4 Drainage Geotextile:** Geotextile fabric, including threads, shall be resistant to chemical attack, mildew, rot, acids, and alkalines within the PH range of three (3) to thirteen (13) and shall

be non-biogradable. Fabric shall be woven or non-woven produced by heat bonding, by use of external adhesives or by needle-punching. Geotextile fabric material will be considered in accordance with ASTM D4759. Fabric construction shall consist of long chain synthetic polymers, composed of at least 35 percent by weight of polypropylene, polyvinylidene chloride, nylon or polyester. Materials are to conform to the following:

<u>Property</u>	<u>Required Value</u>	<u>Test Method</u>
Tensile strength, lbs., min.	200	ASTM D4632
Puncture strength, lbs., min.	75	ASTM D4833
Trapezoid tear, lbs., min.	75	ASTM D4533
Apparent opening size, min.	70	ASTM D4751
Permittivity, gal/min/sf min.	30	ASTM D4491
Ultraviolet degradation retained strength @ 150 hrs. min	70	ASTM D4355

### 205.3 EXECUTION

**205.3.1 Site Preparation:** Area to receive fabric shall be cleared and graded as required within the contract drawings. Contractor is to remove all large, sharp objects which include but are not limited to rocks, cut trees, shrubs, glass, etc., which may damage fabric. Contractor is to ensure that all areas to be covered are stable and compacted to that indicated on the Contract Drawings.

**205.3.2 Fabric Placement:** Fabric shall be placed as smooth as possible on the prepared subgrade. Fabric may be held in place by utilizing pins, staples or rocks. On curves, the fabric may be folded or cut to conform to the curve. The fold or overlap shall be in the direction of construction. Fabric shall be overlapped a minimum of 30 inches.

**205.3.3 Rip-Rap Placement:** The stones in Class A (wire enclosed) rip-rap shall be enclosed on all sides with wire mesh and shall be constructed in accordance with the details shown in the Contract Documents. Rip-rap stones shall be placed to form a continuous blanket of the minimum thickness indicated on the Contract Drawings. Stones shall be placed with their long axis parallel to the toe of the slope and shall have a stable bearing upon the underlying soil or stones. Stone sizes are to be no less than 4 inches in the shortest dimensions and are to be between 1/6 – 2/3 cubic feet by volume. The joints between larger stones shall be close as practical and shall be filled with smaller slope. The contractor shall use extreme care in placing stones on the geotextile fabric so not to tear or otherwise damage the fabric. The Contractor is to ensure that a layer of fabric is placed at the interface between the sloped and stone surfaces as shown on the Contract Drawings.

The wire mesh shall be drawn tightly against the stones on all sides. Edges of wire mesh shall be connected using lacing wire (13 ½ GA or larger) and shall be double loop woven at adjacent edges to ensure that the strength and flexibility at the point of connection is equal to or greater than that of the mesh.

Lacing shall be continuous as far as practicable and shall pass through each mesh opening.

Galvanized tie wire (9 GA or larger) shall be provided at 2 feet on center each way and

#### **205.4 MEASUREMENT AND PAYMENT**

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



## **301 CAST-IN-PLACE CONCRETE – INDEX**

### **301.1 SUBMITTALS**

301.1.1 CERTIFICATIONS

301.1.2 TEST REPORTS

301.1.3 PRODUCT DATA

### **301.2 MATERIALS**

301.2.1 CEMENT

301.2.2 AIR-ENTRAINED ADMIXTURE FOR CONCRETE

301.2.3 CHEMICAL ADMIXTURE

301.2.4 SHEET CURING MATERIAL FOR CURING CONCRETE

301.2.5 LIQUID CURING COMPOUND FOR CURING CONCRETE

301.2.6 WATER

301.2.7 AGGREGATES

301.2.8 FINE AGGREGATE

301.2.9 COURSE AGGREGATE

301.2.10 FLY ASH

301.2.11 CONCRETE MIX

### **301.3 FORMWORK INSTALLATION**

### **301.4 CONCRETE PLACEMENT**

### **301.5 CONSOLIDATION**

### **301.6 COLD WEATHER REQUIREMENTS**

### **301.7 HOT WEATHER PLACEMENT**

### **301.8 EXPANSION AND CONTRACTION JOINTS**

### **301.9 FINISHES**

301.9.1 FINISHING FORMED SURFACES

301.9.1.1 RUBBED SURFACE

301.9.2 FINISHING SLAB SURFACES

301.9.2.1 FLOAT FINISH

301.9.2.2 BROOM FINISH

301.9.2.3 SMOOTH TROWLED FINISH

### **301.10 CURING AND PROTECTION**

### **301.11 MEASUREMENT AND PAYMENT**

## **301 CAST-IN-PLACE CONCRETE**

### **301.1 SUBMITTALS**

**301.1.1 Certifications:** Certify admixtures used in the same concrete mix are compatible with each other and the aggregates.

**301.1.2 Test Reports:** The following test reports shall be less than twelve (12) months old.

- Fine Aggregates - sieve analysis, physical properties, ASR resistance and deleterious substances.
- Coarse aggregates - sieve analysis, physical properties, ASR resistance and deleterious substances.
- Cements - chemical analysis and physical properties.
- Fly Ash - chemical analysis and physical properties.
- Proposed Concrete Mixes - compressive strength, slump, air content, admixtures, material sources, physical properties, and mixture proportions. Field test data meeting ACI 301.4.2.3.2.a or compressive strength test results on three (3) 6-inch cylinders at seven (7), Fourteen (14) and 28 days shall be provided upon request.

### **301.1.3 Product Data:**

- Sources of cement, fly ash and aggregates
- Material safety data sheets (MSDS) for all concrete components and admixtures.
- Air Entrainment Admixture. Product data including catalogue cuts, technical data, storage requirements, product life, recommended dosage, temperature considerations and conformity to ASTM standards.
- High range water reducing admixture (plasticizer). Product data including catalogue cuts, technical data, storage requirements, product lift, recommended dosage, temperature considerations, retarding effects, slump range, and conformity to ASTM standards. Identify proposed location of use.
- Concrete mix for each formulation of concrete proposed for use including constituent quantities per cubic yard, water-cementitious materials ratio versus cylinder strength for each formulation of concrete proposed based on laboratory tests. The cylinder strength shall be the average of the 28-day cylinder strength test result for each mix. Provide results of 7 and 14 day tests if available.
- Sheet curing material. Product data including catalogue cuts, technical data.
- Liquid curing compound. Product data including catalogue cuts, technical data, storage requirements, product life, application rate.

### **301.2 MATERIALS**

**301.2.1 Cement:** shall comply with ASTM C150. Cement is to be low-alkali type I or II.

**301.2.2 Air-entrained admixture for concrete:** shall conform to the requirements of AASHTO M154.

**301.2.3 Chemical admixture:** shall conform to the requirements of AASHTO M194.

**301.2.4 Sheet curing material for curing concrete:** shall meet the requirements of AASHTO M171, except that only white reflective type shall be permitted.

**301.2.5 Liquid curing compound for curing concrete:** shall conform to the requirements of Type 1 or Type 2, AASHTO M148.

**301.2.6 Water:** shall be potable water meeting ASTM C 1602, including Table 2, from a municipal or other approved source.

**301.2.7 Aggregates:** The following items are required for concrete aggregate.

1. Assure aggregates are not deleteriously alkali-silica reactive (ASR).
2. Test for potential of deleterious alkali-silica reaction of coarse and fine aggregate shall be made in accordance with ASTM C 1260.
  - a. If expansion at 16-days does not exceed 0.10 percent, the coarse or fine aggregates will be acceptable.
  - b. If expansion at 16-days is greater than 0.10 percent, but less than 0.20 percent, aggregates are acceptable if petro-graphic examination shows the expansion is not due to ASR.
    - i. Otherwise, test specimens according to ASTM C 1567 using all components (e.g. coarse aggregate, fine aggregate, cementitious materials, and/or specific reactivity reducing chemicals) in the proportions proposed for the mixture design and retest.
    - ii. For mixtures using lithium admixtures, use test procedure CRD-C662.
    - iii. Expansion of the proposed mixture design test specimens, tested in accordance with ASTM C1567 does not exceed 0.10 percent at 16-days from casting, the aggregates will be acceptable.
    - iv. Expansion of the proposed mixture design test specimens is greater than 0.10 percent at 16-days, the aggregates will not be acceptable unless adjustments to the mixture design can reduce the expansion to less than 0.10 percent at 16-days, or new aggregates shall be evaluated and tested, or testing by ASTM C 1293 indicates the aggregates will not experience deleterious expansion.
  - c. If expansion at 16-days is greater than 0.20 percent, the aggregate will not be acceptable unless a combination of cement, aggregate, and supplemental cementitious materials is found to effectively mitigate the expansion using ASTM C 1567.
  - d. Substitution of ASTM C 1293 test results for ASTM C 1260 test results is acceptable; however, the average concrete prism expansion shall be less than 0.04 percent at one (1) year.

**301.2.8 Fine aggregate:** shall consist of natural sand or other inert materials with similar characteristics conforming to the following gradation:

<b>Sieve Size</b>	<b>Percent Passing</b>
□	100
No. 4	95-100
No. 16	45-80
No. 50	5-30
No. 100	0-10
No. 200	0-3

**301.2.9 Course aggregate:** shall consist of crushed stone, crushed gravel or natural washed gravel conforming to the following gradation:

<b>Sieve Size</b>	<b>Percent Passing</b>
1 ½ inches	100
1 inch	95-100
½ inch	25-60
No. 4	0-10
No. 8	0-5
No. 200	0-1

**301.2.10 Fly ash:** Class C fly ash shall not be utilized. Class F fly ash should be required in the range of 15 percent – 25 percent replacement of the total cementitious material, by weight. The Environmental Protection Agency (EPA) requires that all federally funded projects use at least 15 percent recovered materials, such as fly ash.

1. ASTM C 618, Class F, except;
  - a. Sulfur trioxide; maximum of 4.0 percent.
  - b. Calcium oxide; maximum of 8.0 percent.
  - c. Loss on ignition; maximum of 2.5 percent.
  - d. Test for effectiveness in controlling alkali-silica reaction under supplementary optional physical requirements in Table three (3) of ASTM C 618. Use low-alkali cement for test.
  - e. Does not decrease sulfate resistance of concrete by use of pozzolan.
    - i. Demonstrate pozzolan will have an "R" factor less than 2.5.
    - ii.  $R = (C-5)/F$ .
    - iii. C: Calcium oxide content of pozzolan, in percent, determined in accordance with ASTM C 114.
    - iv. F: Ferric oxide content of pozzolan, in percent, determined in accordance with ASTM C 114.

**301.2.11 Concrete Mix:** Concrete mix shall produce a compressive strength,  $f_c'$ , of a minimum 4500 PSI at 28-days with 4.5% - 7.5% entrained air. The maximum allowable slump shall not be in excess of 4 inches, and/or the water cement ratio shall not exceed 0.45. The strength of the concrete will be considered satisfactory so long as the average of all sets of the three consecutive test results equals or exceeds the specified compressive strength,  $f_c'$ , and no individual test result falls below the specified strength,  $f_c'$ , by more than 500 PSI. Correcting/replacing of deficient concrete will be done at contractor's expense.

### **301.3 FORMWORK INSTALLATION**

Forms shall be properly aligned, adequately supported and mortar tight. The form surface shall be smooth and free from irregularities, dents, sags, or holes when used for permanently exposed faces. All exposed joints and edges shall be chamfered, unless otherwise indicated.

### **301.4 CONCRETE PLACEMENT**

The measuring, mixing, manufacture, transporting and placing of concrete shall comply with ACI 304 and ASTM C94 and as specified. All concrete shall be placed in the presence of the Engineer. Aluminum pipe and chutes shall not be used in concrete placement.

Water shall only be added to batched concrete on site if the water to cement ratio of the mix design is not exceeded and the addition is approved by the Engineer. Additional water shall be added before the concrete is discharged from the truck. Concrete shall be mixed for a minimum of 20 revolutions of the mixer drum at mixing speed before concrete is discharged. Additional water shall be recorded on batch ticket to the nearest gallon. No water shall be added to the concrete after discharge to aid in the finishing of concrete. Concrete that has become so stiff it cannot be placed or finished shall not be used.

The Contractor will only be allowed to add air entraining admixtures to the batched concrete once at the site, as approved by the Engineer. After the admixture is added, the concrete shall be re-mixed for a minimum of 20 revolutions of the mixer drum, at mixing speed. Contractor quality testing and City of Gallup's quality assurance tests will be taken after the addition, and additional revolutions. Additional air entraining admixture should be recorded on the batch ticket, to the nearest ounce.

Concrete Placement shall not be permitted when weather conditions prevent proper placement and consolidation when concrete is mixed and/or delivered by a truck mixer. The concrete shall be delivered to the site of the work and discharge shall be completed within 1½ hours when temperatures are less than 90°. Discharge shall be completed in one hour when temperatures are above 90°. Concrete shall be placed from the mixer to the forms as rapidly as practicable by methods which prevent segregation or loss of ingredients. Concrete shall be in place and consolidated within 15 minutes after discharge from the mixer. Concrete shall be deposited as close as possible to its final position in the forms and be so regulated that it may be effectively consolidated in horizontal layers 18 inches or less in thickness with a minimum of lateral movement. The placement shall be carried on at such a rate that the formation of cold joints will be prevented.

### **301.5 CONSOLIDATION**

Each layer of concrete shall be consolidated by internal vibrating equipment. Internal vibration shall be systematically accomplished by inserting the vibrator through fresh concrete in the layer below at a uniform spacing over the entire area of placement. The distance between insertions shall be approximately 1.5 times the radius of action of the vibrator and overlay the adjacent, just vibrated area by approximately a few inches. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the layer below, if such a layer exists. It should be held stationary until the concrete is consolidated and then withdrawn slowly at a rate of about 3 inches per second.

### **301.6 COLD WEATHER REQUIREMENTS**

No concrete placement shall be made when the ambient temperature is below 35 degrees F or if the ambient temperature is below 40 degrees F and falling. Suitable covering and other means as approved shall be provided for maintaining the concrete at a temperature of at least 50 degrees F for not less than 72 hours after placing and at a temperature above freezing for the remainder of the curing period. Cold weather concrete to be placed in accordance with ACI 306.1 as appropriate. Any concrete damaged by freezing shall be removed and replaced at the expense of the Contractor.

### **301.7 HOT WEATHER PLACEMENT**

When the rate of evaporation of surface moisture, as determined by use of figure 1 of ACI 38, is expected to exceed 0.2 pounds per square foot per hour, provisions for windbreak, shading, fog spraying or covering with a light-colored material shall be made in advance of placement and such protective measures shall be taken as quickly as finishing operations will allow. Contractor to pour and finish slabs in the cool morning hours to the extent possible in hot weather. Hot weather concrete to be placed in accordance with ACI 306.1 as appropriate.

### **301.8 EXPANSION AND CONTRACTION JOINTS**

Expansion and contraction joints shall be in accordance with the details shown or as otherwise specified provided ½ inch thick transverse expansion joint where new work abuts existing concrete.

### **301.9 FINISHES**

No finishing or repair will be done when either the concrete or the ambient temperature is below 40 degrees F.

**301.9.1 Finishing Formed Surfaces:** All fine and loose materials shall be removed and surface defects including tie holes shall be filled. All honeycomb areas and other defects shall be repaired. All unsound concrete shall be removed from areas to be repaired. Surface defects greater than ½ inch in diameter and hole left by removal of tie rods and other surfaces not to receive additional concrete shall be reamed or chipped and filled with dry-pack mortar. The



prepared area shall be brush-coated with an approved epoxy, resin or latex bonding compound or with a neat cement grout after dampening and filling with mortar or concrete. The cement used in mortar or concrete for repairs to all surfaces permanently exposed to view shall be a blend of Portland Cement and white cement so that the final color when cured will be the same as the adjacent concrete.

**301.9.1.1 Rubbed Surface:** Provide a “rubbed” surface finish when called for. Surface shall be rubbed with an abrasive stone and a watery grout mixture to produce a sand like finish. The finished surface is to be etched into the concrete face rather than a plastered layer.

**301.9.2 Finishing Slab Surfaces:** All slab surfaces not to be covered by additional concrete or backfill shall be float finished to elevations shown. Surfaces shall be sloped for drainage unless otherwise shown. Joints shall be carefully made using a jointing tool of min. 3/4” depth. Edges to be rounded with a small radius tool. Slab surfaces shall be finished to a tolerance of 1/8” inches for a float finish as determined by a 10 foot straightedge placed on surfaces shown on the plans to be level or having a constant slope. No water or cement shall be added to the surface during finishing.

**301.9.2.1 Float Finish:** Surfaces to be float finished shall be screeded or hand floated and bullfloated to eliminate the ridges and to fill in the voids left by the screed. In addition, the bullfloat shall fill all surface voids and only slightly embed the coarse aggregate below the surface of the fresh concrete. Floating should remove slight imperfections, humps, and voids to produce a plane surface.

**301.9.2.2 Broom Finish:** A broom finish shall be applied to all exterior flat work. Flat work is to be finished as mentioned above, and trowled with a steel tool. After surface moisture disappears, the surface shall be brushed or broomed with a broom or fiber bristle brush in a direction transverse to that of foot or vehicular traffic.

**301.9.2.3 Smooth Troweled Finish:** Interior building slabs to have a smooth troweled finish unless otherwise noted.

## **301.10 CURING AND PROTECTION**

Beginning immediately after placement and continuing for 7 days, all concrete shall be cured and protected from the elements. All materials required for adequate curing and protection shall be present on site at the location of concrete placement prior to the start of the placement. Preservation of moisture within concrete not in contact with the forms shall be accomplished by the application of membrane forming compound conforming to these specifications or by covering with plastic.

## **301.11 MEASUREMENT AND PAYMENT**

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

## **302 CONCRETE FORMWORK - INDEX**

### **302.1 CERTIFICATION**

### **302.2 FORMS**

#### **302.2.1 WALL FORMS**

#### **302.2.2 FORM RELEASE AGENT**

#### **302.2.3 FORM TIES**

### **302.3 EXECUTION OF FORMS**

### **302.4 FORM TOLERANCES**

#### **302.4.1 FORMED SURFACES EXPOSED TO VIEW**

#### **302.4.2 FORM PREPARATION**

### **302.5 INSPECTION**

## **302 CONCRETE FORMWORK**

### **302.1 CERTIFICATION**

Forming material: Engineer approved

Manufacturer's data including literature describing form materials, accessories and form releasing agent.

Form release agents: Engineer approved

Manufacturer's recommendation on method and rate of application of form release agents.  
Certification for the design of the formwork

Design analysis and calculations for form design and methodology used in design.

Sequence of concrete placement. Indicate locations of form joints, panel sizes and patterns.

NOTE: Review of the sequence of concrete placement, form system and panel layout shall be for appearance and strength of the completed structure only. Approval of forming plans or procedures shall not relieve the contractor of responsibility for the strength, safety or correctness of methods used, the adequacy of equipment or from carrying out the work in full compliance with the requirements of the drawings and as specified herein.

### **302.2 FORMS**

Forms for cast-in-place concrete shall be made of wood, metal, or other approved materials. Wood forms for the project shall be nearly new. Wood forms shall be constructed utilizing sound lumber and plywood of suitable dimensions and free of knotholes and loose knots. Where used for exposed surfaces, dress and match boards, and fit adjacent panels with tight joints. Metal forms may be used if approved by the Engineer and shall be appropriate type and class. All forms shall be designed and constructed to provide a flat, uniform concrete surface with minimal finishing and/or repair.

**302.2.1 Wall Forms:** Forms for all concrete walls shall be in good condition. Exterior grade plywood panels manufactured in compliance with the APA and bearing the trademark of that group, or equal acceptable to the Engineer. Provide B grade or better veneer on all faces to be placed against concrete during forming. The class of material and grades of interior plies shall be of sufficient strength and stiffness to provide flat, uniform concrete surface requiring minimal finishing and grinding. All joints or gaps in forms shall be taped, gasketed, plugged and/or caulked with an approved material so that the joint will remain watertight and will not bulge outward under pressure or create surface patterns.

**302.2.2 Form Release Agent:** Coat all forming surfaces in contact with concrete using an effective, non-shrinking, non-residual, water based, bond breaking, form coating unless otherwise noted.

**302.2.3 Form Ties:** Form ties encased in concrete shall have no metal within 1½ inch of the face of the concrete after eyelet has been removed. The part of the tie to be removed shall be at least ½ inch in diameter and be provided with a plastic cone at least ½ in. in diameter and 1½ in. long.

### **302.3 EXECUTION OF FORMS**

Forms shall be used for all cast-in-place concrete including sides of footings. Forms shall be constructed and placed so that the resulting concrete will be the shape, lines, dimensions and appearance as shown on the drawings. Forms for walls shall have removable panels at the bottom for cleaning. Tremies and hoppers for placing concrete shall be used to prevent segregation and accumulation of hardened concrete on forms and reinforcing steel above fresh concrete. Chamfer strips shall be provided on all exposed concrete edges and shall produce a ¾ in chamfer. Forms are to be sufficiently rigid to withstand construction loads and vibration and to prevent displacement or sagging between supports. During form removal, contractor shall insure concrete is not damaged. The Contractor shall be responsible for the adequacy of the forming system. Forming material is to be thoroughly cleaned prior to reuse. All protrusions shall be removed and forms to be smoothed prior to reuse.

### **302.4 FORM TOLERANCES**

**302.4.1 Formed Surfaces Exposed to View:** Edges of all form panels in contact with concrete shall be flush within 1/8 in. in 5 ft. The maximum deviation of the finish wall surface at any point shall not exceed ¼ in. from the intended surface as shown on the drawings.

**302.4.2 Form Preparation:** All wood forms in contact with the concrete shall be coated with an effective, approved, releasing agent prior to form setting. Steel forms shall be thoroughly cleaned and all mill scale and other ferrous deposits shall be sandblasted and removed from the contact surface.

### **302.5 INSPECTION**

The Engineer shall be notified 24 hrs. prior to proposed concrete placement. Failure of the forms to comply with the requirements specified herein or to produce concrete complying with the requirements of this section shall be grounds for rejection of that portion of the concrete work. Rejected work shall be replaced or repaired as directed by the Engineer at no additional cost to the Owner. Such repairs or replacement shall be subject to the requirements of this section and approved by the Engineer.

**303 CURB & GUTTER, SIDEWALKS, DRIVE PAD, AND CONCRETE PAVEMENT  
CONSTRUCTION – INDEX**

303.1 DESCRIPTION

303.2 CONCRETE

303.3 CURB AND GUTTER

303.4 SIDEWALKS AND DRIVE PADS

303.5 CONCRETE PAVEMENT

303.6 SUBGRADE PREPARATION

303.7 CONCRETE CUTS

303.8 MEASUREMENT AND PAYMENT

### **303 CURB & GUTTER, SIDEWALKS, DRIVE PAD, AND CONCRETE PAVEMENT CONSTRUCTION**

#### **303.1 DESCRIPTION**

This section of the specifications covers concrete materials and construction methods for curb & gutter, sidewalks, drive pads and other concrete construction.

#### **303.2 CONCRETE**

Provisions of Section 608 of SSHBC specifications shall apply with the modifications contained herein.

Concrete shall be 4500 PSI (28 day) with 4½% - 7½% entrained air poured with max. 4" slump. Limited excess water shall be added to facilitate finishing. Contractor shall consider the effects of hot weather in planning the amount of concrete to be poured at one time. Contractor shall pour in early morning hours to the extent possible if hot weather is a problem. Concrete slabs shall be cured with liberal coatings of curing compound or covered with plastic. Concrete that has been rained on or walked on will not be accepted. The Contractor will be responsible for posting guards around concrete that has not firmly set. Test cylinder sets shall be taken at random, as approved by the Engineer. Minimum strength shall be 4500 psi at 28 days under lab curing conditions. Class F fly ash shall be in the range of 15 – 25 percent of the total cementitious material by weight.

#### **303.3 CURB AND GUTTER**

Curb and gutter shall conform to the dimensions shown on the project drawings and shall be placed by workmen practiced in their trade. Stones shall be max. 10 ft. length with expansion joints at a max. of 50 ft. Joints shall coincide with template locations. In locations where scored or sawed joints are required and there are no templates, the depth of joint shall be a min. of 2¼". Curb and gutter shall be given a light broom finish. Curing compound shall be applied to flat surfaces and formed areas when the forms are removed.

Curb and gutter forms and/or string lines shall be accurately set and sighted to prevent ponding or uneven grades.

#### **303.4 SIDEWALKS AND DRIVEPADS**

These items shall conform to dimensions shown on the project drawings and shall be placed by a skilled workman. Expansion joints shall be placed at a max. 50 ft. intervals and dummy joints at 5 ft. intervals on sidewalk and as directed on drive pads. Sidewalk and drive pad joints to match C & G joints where possible. Dummy joints in sidewalks shall be scored to a min. depth of 1" and dummy joints in drive pads to be scored a min. depth of 2". Sidewalks and drive pads shall be given a light broom finish and shall be edged all around prior to brooming. Reinforcement shall be discontinued at expansion and contraction joints or as called for.



### **303.5 CONCRETE PAVEMENT**

Concrete pavement for trench patch shall be 4500 PSI (28 day) with 4½% to 7½% entrained air. concrete placed at the thickness called for. Joint pattern is to match existing pavement. Pavement is to be finished by transverse brooming with a coarse broom.

Silicone joint sealer will not be required between curb and sidewalk or in sidewalk joints.

### **303.6 SUBGRADE PREPARATION**

Areas over trench construction shall not be formed for concrete construction until density tests indicate compaction is adequate. Subgrade shall be accurately graded and tamped prior to setting forms. No backfilling shall be performed after forms are set. All loose dirt shall be removed prior to pouring. Subgrade preparation shall also conform to Section 203 of these specifications.

Subgrade composed of rock chunks or clay that cannot be adequately tamped or graded shall be replaced with granular fill.

### **303.7 CONCRETE CUTS**

Saw cuts shall be provided where partial concrete removal is required in existing slabs with no nearby joints. Cuts shall be of adequate depth to produce a clean vertical break with no undercut.

### **303.8 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.

## **304 CONCRETE REINFORCING STEEL**

304.1 DEFORMED REINFORCING STEEL

304.2 REINFORCING STEEL PLACEMENT

304.3 REINFORCING STEEL COVER

304.4 REINFORCING BAR BENDING

304.5 REINFORCING BAR CLEANING

304.6 REINFORCING BAR STORAGE

304.7 BUNDLING AND TAGGING

304.8 MEASUREMENT AND PAYMENT

### **304.1 REFORMED REINFORCING STEEL**

Reinforcing steel to conform to provisions of ASTM A615, Grades 40 or 60 as designated.

### **304.2 REINFORCING STEEL PLACEMENT**

Steel placement to conform to NM SSHBC (07) 540.3.1.4.1 and 540.3.1.4.2.

### **304.3 REINFORCING STEEL COVER**

Steel cover to conform to ACI 318-08 7.7.

### **304.4 REINFORCING BAR BENDING**

Bar bending to conform to NM SSHBC (07) Table 540.3.1.2:1

### **304.5 REINFORCING BAR CLEANING**

Cleaning of reinforcing bars to conform to NM SSHBC (07) Section 540.3.1.5.

### **304.6 REINFORCING BAR STORAGE**

Bars shall not be stored on the ground – NM SSHBC (07) 540.3.1.

### **304.7 BUNDLING AND TAGGING**

Tag and marks reinforcing bars in accordance with CSRI's Code of Standard Practice.

### **304.8 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.

## **401 ASPHALT STREET PATCH – INDEX**

401.1 DESCRIPTION

401.2 PAVEMENT CUT

401.3 SUBGRADE PREPARATION

401.4 BASE COURSE

401.5 ASPHALT TREATED BASE COURSE

401.6 ASPHALTIC SURFACE COURSE

401.7 EDGE PREPARATION

401.8 PATCH SCHEDULING

401.9 MEASUREMENT AND PAYMENT

## **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:

<u>Sieve Size</u>	<u>Percent Passing</u> <u>Type 1 B</u>	<u>Percent Passing</u> <u>Type II B</u>
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.

<u>Sieve Size</u>	<u>Percent Passing</u> <u>Type B</u>	<u>Percent Passing</u> <u>Type C</u>
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  $3/8" \pm$  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**

402.1 DESCRIPTION

402.2 GENERAL

402.3 MATERIAL REQUIREMENTS

402.4 MEASUREMENT AND PAYMENT

## **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 base course with gradation characteristics as listed below:

<b>Sieve Size</b>	<b>Percent Passing</b>
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**

### **501.1 DESCRIPTION**

### **501.2 MATERIALS**

#### **501.2.1 PIPE AND FITTINGS**

- 501.2.1.1 DUCTILE IRON PIPE
- 501.2.1.2 FITTINGS FOR PIPE
- 501.2.1.3 PVC WATER PIPE
- 501.2.1.4 POLYETHYLENE PIPE
- 501.2.1.5 SLEEVES
- 501.2.1.6 PLASTIC ENCASEMENT
- 501.2.1.7 STEEL PIPE

#### **501.2.2 GATE VALVES**

#### **501.2.3 AIR VACUUM VALVES**

#### **501.2.4 FIRE HYDRANT ASSEMBLY**

#### **501.2.5 SANITARY FREEZE PROOF YARD HYDRANTS**

#### **501.2.6 METERS**

#### **501.2.7 BUTTERFLY VALVES**

### **501.3 INSTALLATION OF PIPE, VALVES, FITTINGS, AND SPECIALS**

#### **501.3.1 GENERAL**

#### **501.3.2 POLYETHYLENE ENCASEMENT OF DUCTILE IRON PIPE**

### **501.4 TESTING OF PIPE LINES**

### **501.5 DISINFECTION OF WATER LINES**

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

### **501.7 PRECAST MANHOLES AND VAULTS**

#### **501.7.1 DESCRIPTION**

#### **501.7.2 MANHOLES AND VAULTS**

#### **501.7.3 MATERIALS**

#### **501.7.4 CONSTRUCTION**

501.8 HYDRAULIC VALVE OPERATOR

501.8.1 DESCRIPTION

501.8.2 ELECTRONIC TURN COUNTER

501.8.3 TORQUE CONTROL

501.8.4 HYDRAULIC HOSE PIGTAILS

501.8.5 OR EQUAL PRODUCT

501.9 MEASUREMENT AND PAYMENT



## **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 (DIP):** 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, C111 and C151. Joints for ductile iron pipe shall be rubber gasket push-on type or mechanical joint as called for on the drawings. Restrained pipe joints called for in bore casing shall have push on joints with ductile iron locking elements independent of gaskets and be US pipe TR flex or equal.

**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/or C110, provided however, that ductile iron mechanical joint fittings as U.S. Pipe Trim Tyte conforming to AWWA C153 (in sizes available) or equal are acceptable. Mechanical joint restraining 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 Pipe of IPS sizes 1.5" to 3.0" with "slip-on" connections to conform to ASTM D2241 with the DR (dimension ratio) called for.

**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. Sleeves shall be long bodied when called for on project documents. Painted or galvanized carbon steel components including nuts, bolts and washers are not permitted.

**501.2.1.6 Plastic Encasement:** shall be V-Bio Enhanced polyethylene plastic conforming to AWWA C105. Two layers shall be installed on all ductile iron pipe, valves 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:** Buried Gate valves 2 inches and larger shall be NRS resilient wedge type conforming to AWWA C509 (and AWWA C515 when larger than 12") with 10 mil. min. epoxy coating (3 coat or fusion bond system), interior and exterior, conforming to AWWA C550. Valves shall be mechanical joint or flanged by MJ as called for. Buried valves to have a 2" AWWA operating nut while station valves are equipped with operator hand wheels. Buried 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. Valve body fasteners shall be Type 316 stainless steel. 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 or less, working pressure with line flow in either direction. Valve to be clockwise to open.

Note: See section 504.2.4 for additional information on Station Gate Valves.

Buried gate valves to be installed in the horizontal position when so designated. Valves 16" 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
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 VM-15A, as called for.

Combination single body valves to be Val-Matic Models 202 C.2 - 2", dual body 154S/38.5 - 4" 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 250 PSI.

All air valves with outlets not directly connected to piping shall be supplied with hoods, and stainless steel screens. Cross contamination and security protection by valve manufacturer shall be provided on air release valves, installed in vaults, 4" and larger.

**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:**

- **2 Inch Meters and Smaller:**  
Meters shall be AWWA C700 positive displacement meters utilizing nutating disc measuring chamber and a floating chamber design. Meter shall register in cubic feet via a magnetic drive, low torque register, be Automatic Meter Reading (AMR) capable and be easily upgrade from direct read registers to an absolute encoder register. Meters shall be Neptune T-10 with R900i pit interface units complete with lithium ion batteries. Meter must be proven compatible with the City's Neptune meter reading system.
- **3 Inch Meters and Larger:**  
Meters shall be AWWA C701 turbine type meters with a magnetic drive, low torque register and have a bronze case. Meter shall register in cubic feet, be Automatic Meter Reading (AMR) capable and be easily upgradeable from direct read registers to an absolute encoder register. Meters shall be Neptune High Performance Turbine Meter with R900i pit interface units complete with lithium ion batteries. Meter must be proven compatible with the City's Neptune meter reading system.
- **Magnetic Flow Meters as Called For:**  
The meters shall be electromagnetic flow type meters, based on Faraday's law of induction, accurate to  $\pm 1.0\%$  of flow. Meter shall be NSF approved for potable drinking water, rated for 250 psi, and have flanged connections. Meter shall include a remote

display/amplifier with 32 bit signal processor with digital and analog outputs for SCADA system. Meter shall be powered by 120 VAC. Display shall have a large, four line by 20 character LCD remote display with backlight. Meter interior and exterior coatings shall meet Section 504.3 of this specification. Meters shall be Badger M-Series Meter with Remote M2000 amplifier/Display and cable as required or equal.

**501.2.7 Butterfly Valves:** Butterfly valves shall conform to ANSI/AWWA C504 standard as Mueller or approved equal. Valves to be class 150 with actuator for buried service and 2" standard AWWA nut, clockwise to close valve body. Valve body fasteners to be 304/316 stainless steel.

**501.2.8 Flap Valves:** Valves to be cast iron body and cover with 10° slope. Seal and disc ring to be machined bronze or brass. Hinge pin and cotter pins to be stainless steel. Valves to be by Troy, M&H, Clow or approved equal.

### **501.2.9**

## **501.3 INSTALLATION OF PIPE, VALVES, FITTINGS, AND SPECIALS**

**501.3.1 General:** 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 and 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 4500 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 V-Bio Enhanced 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 tap 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.

**501.3.2 Polyethylene Encasement of Ductile Iron Pipe:** Installation of two layers of V-Bio Enhanced polyethylene encasement to be in accordance with provisions of methods A, B, and C, AWWA C105, the manufacturers recommendations and with modifications as contained here-in.

- Plastic material to be clean and free of clay lumps, sand, rock, or any foreign material prior to placement. The trench bottom surface of granular material shall be accurately graded with depressions for bell holes. Trench to be free of water.

- Equipment used for lifting or inserting pipe shall be of a material that will not damage the encasement material. Chains are not permitted.
- Layer 1 to utilize tubular plastic as described in methods A or B with required overlaps (min. 1 ft.) and taping of joints with polyethylene adhesive tape. Longitudinal tube overlaps to be taped at the ¼ points. Layer 1 to be snug free of loose, bunched up areas, closed and taped prior to proceeding to layer 2.
- Layer 2 to utilize sheet plastic as described in Method C. Plastic to be in place on trench floor prior to lowering or partially lowering pipe with layer 1 intact. Plastic to be lapped along longitudinal seams, at the top portion of pipe and at the ends which are offset from layer 1 laps. Layer 2 to be snug with taped joints.
- Special shapes such as valves and fittings will require cutting and fitting plastic to conform to the shape of the item. Protrusions that may puncture the plastic to have foam or other material applied adjacent to it or as a cover to lessen the protruding effect. Plastic around special shapes to be well taped.
- The result of a repair of damaged encasement due to installation mishaps or a need to view portions of the installed pipeline, shall be a secure, 2 layer system that is snug fitting and well taped. Mishaps that result in soil material accumulations between the plastic and pipe will require removing that portion of plastic and replacing with new (2 layers).
- Workmanship – Installation of the polyethylene, 2 layer system is crucial to the life of the pipeline. Workmen shall have been trained and/or shall be trained this project for installation of the plastic system. The initial 4 hours of continuous installation shall be in the presence of the Contractor, Contractor's foremen, the Engineer, and his field personnel. The techniques used to enhance quality and production are to be refined during this period. Workmen and laborers that are not trained shall not be allowed to work in the encasement operation.
- Techniques for backfilling and compacting bedding material around encased pipe shall be such as not to disturb or damage the plastic.

#### **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 or vaults 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.

The exterior surface of present manholes and vaults shall receive 2 coats of NSF potable water approval, ASTM D-4479 Type I bituminous material damproofing as Henry HE794 or approved equal. Material to be applied after grouting of horizontal joints and areas around penetrations.

**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 Neks 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 H20 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 of 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 HYDRAULIC VALVE OPERATOR**

**501.8.1 Description:** Hydraulic Valve Operator to be suitable for one man or two man operation. Operator to be capable of generating up to 350 foot pounds of torque. Operator to have key shaft sections, when connected, capable of reaching 2” operating nut at depths of 8ft. below ground level with handles for operating personnel at waist level.

Hydraulic system to be capable of operating with flows of 3.5-10gpm at 1750 to 2250 psi. Operator to be capable of being used as a manual wrench with appropriate locking devices.

**501.8.2 Electronic Turn Counter:** LCD counter to give numeric display of turns to open with reverse count for turns to close. Counter to be self-contained with 7 year lithium battery.

**501.8.3 Torque Control:** Torque control knob and display to allow for torque adjustment from ZERO at no torque to maximum allowed by system hydraulic pressure.

**501.8.4 Hydraulic Hose Pigtails:** Hydraulic connects to be quick disconnect male and female, 3/8” flush face.

**501.8.5 Or Equal Product:** Hydraulic Valve Operator to be the EXERCISER by Transmate, a division of Romac Industries Inc. or equal

## **501.9 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.

## **503 CORRUGATED METAL PIPE – INDEX**

### **503.1 CERTIFICATION**

#### **503.1.1 CORRUGATED METAL PIPE**

#### **503.1.2 COUPLING BAND**

### **503.2 MATERIALS**

#### **503.2.1 CORRUGATED METAL PIPE**

#### **503.2.2 COUPLING BANDS**

#### **503.2.3 END SECTIONS**

### **503.3 INSTALLATION**

#### **503.3.1 PIPE INSTALLATION**

#### **503.3.2 JOINTS**

### **503.4 MEASUREMENT AND PAYMENT**

## **503 CORRUGATED METAL PIPE**

### **503.1 CERTIFICATION**

**503.1.1 Corrugated metal pipe:** Engineer Approved. Provide technical data and catalogue cut from proposed manufacturer.

**503.1.2 Coupling Band:** Engineer Approval. Provide technical data and catalogue cuts from same manufacturer of corrugated metal pipe.

### **503.2 MATERIALS**

**503.2.1 Corrugated Metal Pipe:** shall be plain galvanized conforming to the requirements of AASHTO -M36. Pipe to be of the gauge and diameter called for.

**503.2.2 Coupling Bands:** are to be from the same manufacturer as the corrugated metal pipe. Coupling bands to be hugger type with gasket compatible with pipe ends.

**503.2.3 End Sections:** To be 16 gauge galvanized metal by Contech or equal.

### **503.3 INSTALLATION**

**503.3.1 Pipe Installation:** Pipe shall be placed on firm graded base conforming to alignment and elevation shown on the drawings. Backfilling around pipe shall be tamped in uniform layers in 10 inch loose lifts. Compaction shall be as called for at near optimum moisture. Native material above bedding may be used for backfill provided it is free from organic material, trash, snow, ice, frozen soil or other objectionable materials which may hinder proper compaction. In addition, native backfill shall not contain granite blocks, broken concrete, masonry rubble, asphalt pavement, or any material larger than 6 inches in any dimension.

**503.3.2 Joints:** Before the connecting band is placed around the pipe, the ends of the pipe shall be coated with bituminous mastic to provide for a watertight joint. The band shall be tightened evenly keeping equal tension on the bolts. Contractor shall ensure that prior to covering the joint that the nuts are tested for tightness. Prior to backfilling around joints, the bolts, lugs and nuts shall be given a coating of bituminous mastic.

### **503.4 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.

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

### **504.1 GENERAL**

- 504.1.1 MANUFACTURER'S QUALIFICATION
- 504.1.2 SHOP DRAWINGS
- 504.1.3 OPERATION AND MAINTENANCE DATA
- 504.1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

### **504.2 MATERIALS**

- 504.2.1 MATERIALS IN GENERAL
- 504.2.2 GATE VALVES LESS THAN 2 INCHES IN DIAMETER
- 504.2.3 BALL VALVES ½ TO 2 INCHES IN DIAMETER
- 504.2.4 RESILIENT WEDGE GATE VALVES 2 INCHES IN DIAMETER AND LARGER
- 504.2.5 6 INCH COMBINATION AIR VALVE
- 504.2.6 6 INCH BACKFLOW PREVENTION VALVE
- 504.2.7 6 INCH FLOW CONTROL VALVE AND ORFICE PLATE
- 504.2.8 MISCELLANEOUS VALVES FOR POTABLE AND PROCESS SYSTEMS
- 504.2.9 PRESSURE GAGES
- 504.2.10 DUCTILE IRON PIPE AND FITTINGS
- 504.2.11 STEEL PIPE
- 504.2.12 COPPER PIPE

### **504.3 PAINTING**

### **504.4 TWO INCH AND SMALLER PIPE FASTENING SYSTEM**

### **504.5 MEASUREMENT AND PAYMENT**



## **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 flow control 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
- Section 703, SCADA System

**504.1.1 Manufacturer'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 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 shall be of the type recommended by the manufacturers of valves and other appurtenances for installation.

**504.2.2 Gate Valves Less than 2 Inches in Diameter:** 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 inside station 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 ½ to 2 Inches in Diameter:** When called for, ball valves to be steel body with stainless steel bore ball as Jamesbury valve – line or equal.

**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 not allow any leakage at 250 psi or less, working pressure with line flow in either direction.
- Valve operator shall be handwheel, clockwise to close.
- Valves shall be furnished with an epoxy coating conforming to Section 504.3 of this Specification.
- Manufacturer: Provide gate valves of one of the following: a) Mueller Company, b) Clow Company, or equal
- Station valves to be flanged except where designated otherwise on project drawings.
- Wheel Operator for exposed valves.

## **504.2.5 Combination Air Valves**

### **504.2.5.1 Combination Air Valve 6”:** Provide single body combination air valve as follows:

- Valve body and cover shall be Ductile ASTM A-536. With 6” 125lb flanged connection and threaded (NPT) connection for air release as called for on plans
- Valve shall be rated for a minimum of 250 psi working pressure.
- Float, Guide Shafts, and Bushings: Type 316 stainless steel.
- Two additional NPT connections for testing and draining.
- Resilient seats shall be Buna-N.
- Outlet shall be equipped with a hood and stainless steel screen.
- Manufacturer: Val-Matic Model 206CX or equal.
- Interior and exterior coatings shall be per Section 504.3 of this Specification.
- Valves shall be manufactured and tested in accordance with AWWA C512 and be NSF 61 Certified.

### **504.2.5.2 Combination Air Valve 2”:** Provide dual body combination air valve as follows:

- Valve body and cover shall be ductile iron ASTM A-536.
- 2 threaded (NPT) inlet and 2” and ½” threaded (NPT) outlet connections.
- Valve shall have a minimum of 250 psi working pressure.
- Float, guide shafts and bushings: Type 316 stainless steel
- Resilient seats for low pressure applications
- Manufacturer: Valvmatic Model 102S/22.9
- Interior and exterior coatings shall be per Section 504.3 of this specification
- Valve to be manufactured in accordance with AWWA C512 and be NSF 61 certified.

### **504.2.6 Backflow Prevention:** provide inline double check valve assembly as follows:

- Valve body shall be ductile iron grade 65-45-12.
- Valve shall be rated for a minimum of 175 psi working pressure.
- Valve trim to be bronze with stainless steel spring and EPDM elastomer discs.
- Shut off valves: NRS AWWA C509 resilient wedge gate valves.
- Interior and exterior coatings shall be per Section 504.3 of this Specification.
- Manufacturer: Febco Master Series 850 with flanged 125lb connections.
- Valve shall meet AWWA C510 Standards.

### **504.2.7 Flow Control Valve and Orifice Plate 6”:** Provide flow control valve with solenoid shut off valve as follows:

- Valve body and cover shall be ductile iron ASTM A-536 with flanged connections
- Pressure Rating: 250 PSI working pressure.
- Main Valve: Trim shall be bronze with stainless steel stem, nut and spring with Buna-N rubber disc and diaphragm.
- Pilot System Materials: Control shall be ASTM B-62 Bronze with stainless steel 303 trim and include speed control for opening and closing valve. (Opening and closing time = 120 seconds)

- Position Indication: Valve shall be equipped with a limit switch indicating valve position (open or closed) switch shall close circuit when valve is open and function with SCADA equipment.
- Solenoid: 120V-60Hz AC, energize to open
- Orifice Plate: Orifice plate shall be square edged 302 stainless steel with ductile iron holder and 3/8 inch NPT sensing port.
- Interior and exterior coatings shall be per Section 504.3 of this Specification.
- Orifice plate to have 3.2" bore or nominal flow rate of 450gpm and range of 200 to 800 gpm.
- Manufacturer: Cla-Val Co., Model 43-01 with X52E orifice plate 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

- 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 (ball type).
- Gages shall be glycerine filled or Mineral Oil
- Gages on shall have 3 ½ inch diameter cases
- Ranges shall be as shown, or if 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 AWWA 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 shall conform to Section 504.3 of this specification

**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 a part
- Galvanized steel pipe shall conform to ASTM A120
- Coating shall conform to Section 504.3 of this specification

**504.2.12 Copper Pipe:** Copper pipe and solder joints shall be used where designated.

- 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 paint and finish piping, fittings, and appurtenances as listed below unless otherwise noted on the project drawings. Painting and finishing includes all coating materials, pretreatments, surface preparation, primers, sealers, and finish coats.

- Factory Coated Valves, Meters and Specials: Items that are factory coated shall have a three coat epoxy coating or a single coat fusion bonded epoxy system with minimum dry film thickness (DFT) of 10 mills. Coatings shall be touched up using factory supplied touch-up paint and materials. Touch of work shall be done according to the manufacturer's recommendations. Coating system shall meet AWWA C550 and be approved by NSF-61.
- Ductile Iron Pipe and Fittings:
  - Interior Lining and Coating: Cement-Mortar Lining with asphaltic coating in accordance with ANSI/AWWA C104/A21.4.
  - Exterior Coating
    - Option A
      - Clean and prep exterior pipe surface to primer manufacturers' recommendations. Surface preparation may be completed at the factory.
      - Apply lead and chromate free red phenolic alkyd primer, Tnemec Series 37h – Chem-Prime HS or equal. (2.5 to 3.5 mills DFT) Primer shall be factory applied.
      - Apply two (2) coats of alkyd paint, Tnemec Series 2H – Hi-Build Tnemec Gloss or equal. (2.5 to 3.5 mills DFT per coat). Color to be selected by City.
    - Option B
      - Clean and prep exterior pipe surface to primer manufacturers' recommendations. Surface preparation may be completed at the factory.
      - Apply lead and chromate free red phenolic alkyd primer, Tnemec Series 37h – Chem-Prime HS or equal. (2.5 to 3.5 mills DFT) Primer shall be factory applied.
      - Apply two (2) coats of epoxy paint, Tnemec Series 66 – Hi-Build Epoxoline or equal. (2.5 to 3.5 mills DFT per coat). Color to be selected by City.
- Steel Pipe and Fittings:
  - Interior Coating
    - Surface Preparation shall be by commercial blast cleaned complying with SSPC-SP10. Surface preparation may be completed at the factory or fabrication shop.
    - Apply NSF 61 approved zinc rich primer, Tnemec Series 91 – H<sub>2</sub>O Hydro-Zinc Primer or equal. (2.5 to 3.5 mills DFT) Primer may be factory or shop applied.

- Apply two (2) coats of NSF 61 approved epoxy paint, Tnemec Series N140 – Pota-Pox Plus or equal. (4 to 5 mills DFT per coat). Coating may be factory or shop applied.
  - Exterior Coating
    - Surface preparation shall be by commercial blast cleaned complying with SSPC-SP10. Surface preparation may be completed at the factory or fabrication shop.
      - Option A
        - Apply NSF 61 approved zinc rich primer, Tnemec Series 91 - H2O Hydro-Zinc Primer or equal. (2.5 to 3.5 mills DFT) Primer may be factory or shop applied.
        - Apply two (2) coats of NSF 61 approved epoxy paint, Tnemec Series N140 – Pota-Pox Plus or equal. (3 to 4 mills DFT per coat). Coating may be factory or shop applied. Color to be selected by the City.
      - Option B
        - Fusion bonded epoxy at 6 to 8 mil DFT.
    - Exterior and Interior Wood Surfaces: Wood surfaces shall be primed with an oil-based primer and painted with two (2) coats of latex or oil based paint by Sherman Williams or equal.
    - Masonry Surfaces: Masonry surfaces shall be coated with a Pro-Mar Block Filler followed by two (2) coats of latex paint by Sherman Williams or equal.
- 

#### **504.4 TWO INCH AND SMALLER PIPE FASTENING SYSTEM**

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

- Manufacturer – Unistruct (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



## **601 FENCING - INDEX**

601.1 DESCRIPTION

601.2 MATERIALS AND INSTALLATION

601.3 APPLICABLE REFERENCES

601.4 MEASUREMENT AND PAYMENT

## **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**

- 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.
- Concrete to conform to applicable provisions of Section 301 of these Specifications.

### **601.3 APPLICABLE REFERENCES**

- ASTM A121 Specification for Zinc-Coated (Galvanized) Steel Barbed Wire
- ASTM A392 Specifications for Zinc-Coated Steel Chain Link Fence Fabric
- ASTM F626 Specification for Fence Fittings
- ASTM F1083 Specification for Pipe Steel, Hot Dipped Zinc Coated (Galvanized) Welded, for Fence Structures
- ASTM F900 Specification for Industrial and Commercial Swing Gates.

### **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**

602.1 DESCRIPTION

602.2 WALL CONSTRUCTION

602.3 ROOF SYSTEM

602.4 SLAB

602.5 DOORS

602.6 DOOR HARDWARE

602.6.1 HINGES

602.6.2 MORTISE LOCKS AND LATCHES

602.6.3 EXIT DEVICES

602.6.4 EXIT LOCKS WITH ALARMS

602.6.5 KEYING SYSTEM

602.6.6 LOCK TRIM

602.6.7 KNOBS AND ROSES

602.6.8 LEVER HANDLES

602.6.9 KEYS

602.6.10 DOOR BOLTS

602.6.11 CLOSERS

602.6.12 OVERHEAD HOLDERS

602.6.13 CLOSER HOLDER-RELEASE DEVICES

602.6.14 DOOR PROTECTION PLATES

602.6.15 DOOR STOPS AND SILENCERS

602.6.16 PADLOCKS

602.6.17 THRESHOLDS

602.6.18 WEATHER STRIPPING GASKETING

602.6.19 SPRING TENSION TYPE

602.6.20 RAIN DRIPS

602.6.21 DOOR RAIN DRIPS

602.6.22 SPECIAL TOOLS

602.6.23 FASTENERS

602.6.24 FINISHES

602.7 PAINT

602.8 SUBMITTALS

602.9 MEASUREMENT AND PAYMENT

## **602 STATION BUILDINGS**

### **602.1 DESCRIPTION**

This item of work shall consist of furnishing all materials, supplies, plant and labor required for construction of Pressure Reducing Station, and Control Building and accessories complete in accordance with applicable provisions of the International Building Code, these specifications and the project drawings.

### **602.2 WALL CONSTRUCTION**

Building to be of concrete block construction conforming to applicable provisions of ASTM C33, ASTM C90 and to details shown on the project drawings. Block to be stuccoed or have architectural features on exterior walls as designated. Concrete block courses to be reinforced every other course with "Dura-Wall" or equal with proper lap. Joint reinforcement to conform to ASTM A951 with Class III mill galvanizing and 9 ga. side and cross rods (8" size). 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 30 bar diameters or as shown. Reinforcing steel to conform to provisions of ASTM A615, Grades 40 or 60 as designated. Concrete for wall voids and cap beams shall be 4500PSI at 28 days as cured in laboratory conditions. Mortar to conform to ASTM C270, Type S. Masonry Cement to conform to ASTM C91. Sand to be clean and washed, ASTM C144. Applicable provisions of ACI 530.1 in regard to Field Observation and Inspection, tolerances, workmanship, quality control and construction are made a part of this specification.

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 with a scratch coat, brown coat and sand finish color coat when so designated on the project drawings. Stucco netting (of galvanized 17gd.) 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 on the project drawings. 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" or 2" x 10" as designated fir-hemlock beams (rafters) on 16" centers unless otherwise noted. Outside framing or fascia members shall be pine. Each rafter to be secured at each end with galvanized framing brackets, nailed to wall plates. Framing brackets and panel sheathing clips to be Simpson products or equal. Station ceiling to consist of 1/2" exterior plywood. Ceiling joints to be trimmed with screen door molding strips. Roof sheeting to the 5/8" CDX plywood.

Reference: APA- American Plywood Association, ASTM D24 – Grades and Properties,  
NDS- National Design Specification for Wood Construction, Nailed Connections  
(25.35).

Note: Rafters to be No. 1 or better by visual grading per the National Forest Products  
Association (NFPA)

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 29ga. "Pro-Panel" or equal. Fascia shall be trimmed with metal from the  
same manufacturer of roof panels and shall include gutter on the low side of roof. Down spouts  
and splash pads shall be provided. Roof panels to conform to the following:

ASTM E 455-04	Diaphragm Capac.
ASTM E 283/331	Air & Water Leakage
UL 2218	Class 4 Impact Resistance
ASTM A792	Panel and Accessory Coating

Fasteners and sealing products and installation there of shall be per manufacturers'  
recommendation.

#### **602.4 SLAB**

The ground level slab shall be reinforced concrete (4500 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.

Concrete to conform to applicable provisions of ACI 318-08. Reinforcing steel to conform to  
ASTM A615.

#### **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 or 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 rim 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 Exit Locks with Alarms:** Exit locks with Alarm shall conform to BHMA A156.5, and be Type E0431 with full-width horizontal actuating bar for single doors; Type E0431 with actuating bar or E0471 with actuating bar and top and bottom bolts, both leaves active for pairs of doors, unless otherwise specified. Provide terminals for connection to remote indicating pane.

**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 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 on 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. Provide 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 and water piping) shall be primed in the shop. (See Section 504.3) 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 Devco 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**

### **701.1 GENERAL**

- 701.1.1 RELATED DOCUMENTS
- 701.1.2 DESCRIPTION OF WORK
- 701.1.3 REQUIREMENTS OR REGULATORY AGENCIES AND STANDARDS
- 701.1.4 DRAWINGS
- 701.1.5 SERVICES
- 701.1.6 AS-BUILT DRAWINGS
- 701.1.7 OPERATING INSTRUCTIONS AND MANUALS
- 701.1.8 SITE VISIT
- 701.1.9 FIELD MEANSUREMENTS
- 701.1.10 PERFORMANCE TESTS
- 701.1.11 MISCELLANEOUS ITEMS
- 701.1.12 GUARANTEE

### **701.2 PRODUCTS**

- 701.2.1 STANDARDS OF MATERIAL AND WORKMANSHIP
- 701.2.2 EQUIPMENT REQUIREMENTS

### **701.3 MATERIALS**

- 701.3.1 CONDUITS
- 701.3.2 CONDUIT FITTINGS
- 701.3.3 OUTLET BOXES
- 701.3.4 PULLBOXES
- 701.3.5 WIRES AND CABLES (600 VOLTS)
- 701.3.6 CONNECTORS AND LUGS
- 701.3.7 TAPE
- 701.3.8 STARTERS
- 701.3.9 PROTECTION
- 701.3.10 CHANGES
- 701.3.11 SUBSTITUTIONS
- 701.3.12 SHOP DRAWINGS (5 COPIES REQUIRED)

### **701.4 EXECUTION**

- 701.4.1 EQUIPMENT
- 701.4.2 COORDINATION
- 701.4.3 CONDUIT INSTALLATION
- 701.4.4 CONDUIT SUPPORTS
- 701.4.5 CONDUIT INSTALLATION
- 701.4.6 CONDUIT LOCATION
- 701.4.7 CABLE ENDS
- 701.4.8 BUNDLING
- 701.4.9 CONDUCTOR PULL
- 701.4.10 IDENTIFICATION
- 701.4.11 CONNECTORS AND LUGS

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

## **701 ELECTRICAL – GENERAL**

### **701.1 GENERAL**

**701.1.1 Related Documents:** Drawings and general provisions of the Contract, including General Conditions and the General Requirements, apply to the work specified in this section.

**701.1.2 Description of Work:** Service tools, equipment, etc., which are required for the complete installation of all Electric Work, as indicated on the Drawings and specified herein. Electrical work indicated on the Drawings and/or Specifications covering other trades shall conform to Section 701 of these Specifications.

Work or equipment not indicated or specified, which is necessary for the complete and proper operation of the Electrical system, shall be accomplished with no additional cost to the Owner.

Furnish all labor and materials required for electrical service and control connections to all the various items of equipment requiring electric or wiring service throughout the project shown on the Contract Drawings (even if not shown on the Electrical Drawings). Coordinate with other trades for the installation of required connections and service.

**701.1.3 Requirements Or Regulatory Agencies And Standards:** Installation, materials, equipment and workmanship shall conform to the applicable provisions of the National Electrical Code (NEC), the National Electrical Safety Code (NESC), Occupational Safety and Health Act (OSHA), and all local, state and national codes, ordinances and regulations governing the particular class of work involved and the terms and conditions of the electrical utility and other authorities having lawful jurisdiction pertaining to the work required. All modifications required by these codes, rules, regulations and authorities shall be made by the Contractor without additional charge to the Owner. This Contractor shall secure all permits and licenses required for his work and shall pay all fees in connection with such permits and licenses.

On completion of the various parts of the work, the installation shall be tested by the constituted authorities and approved and, on completion of the work, this Contractor shall obtain and deliver to the Owner, final certificates of acceptance. This Contractor shall furnish copies of each certificate to the Engineer.

All materials, appliances, equipment or devices shall conform to the applicable standards of Underwriter's Laboratories, Inc. where such standards have been established.

The following specifications and standards (current editions) shall form a part of these specifications:

1. National Fire Protection Association Standards (NFPA)
2. National Electrical Code, NFPA 70 (NEC)
3. Life Safety Code, NFPA 101



4. NFPA 72-A
5. Occupational Safety and Health Act (OSHA)
6. National Electrical Safety Code (NESC)
7. Underwriter's Laboratories, Inc. (STANDARDS)
8. American National Standards Institute (ANSI)
9. American Society of Testing and Materials (ASTM)
10. Institute of Electrical and Electronic Engineers (IEEE)
11. Insulated Power Cable Engineer's Association (IPECA)
12. National Electrical Manufacturer's Association (NEMA)
13. Uniform Building Code (UBC)
14. American with Disabilities Act (ADA)

**701.1.4 Drawings:** The electrical drawings show the general arrangement of all conduit, outlets, equipment, etc. and shall be followed as closely as actual building construction and the work of other trades will permit.

Drawings and Specifications shall be considered as complimentary. Work or materials called for by one and not mentioned in the other shall be provided as though treated by both.

In the case of conflict between Drawings and Specifications, the greater or more restrictive requirement shall apply.

**701.1.5 Services:** Requirements of the serving power and telephone utilities and availability of services have been determined as accurately as possible. The Contractor shall verify availability of services and determine actual details pertaining to the exact locations and requirements of utilities before submitting his bid. No consideration for extra cost will be given resulting from failure to comply with these requirements by the Contractor. This Contractor shall immediately notify the serving utilities, that he has the job and furnish information as to the total lighting and power loads for the job. He shall also furnish, at the same time, information as to the established completion date of the job.

This Contractor shall connect to the utility facilities as directed.

This Contractor shall immediately notify the serving utility of the estimated date when service will be desired.

**701.1.6 As-Built Drawings:** During progress of the work, the contractor shall maintain an accurate record of the installation of the system, locating each outlet and noting all circuiting deviations from the contract drawings. Upon completion of the installation, the contractor shall transfer all record data to a single, neat and legible set of blue line prints of the original drawings. These drawings are to be delivered to the Engineer at the completion of the project.

**701.1.7 Operating Instructions and Manuals:** Without additional charge to the Owner, furnish competent instruction to the Owner in the care, adjustment and operation of all parts of the electrical equipment and systems. Upon completion of the work, prepare and deliver to the Owner, five (5) sets of complete operation and maintenance manuals for the systems and major

equipment installed. Include catalog data, shop drawings, wiring diagrams, performance curves and rating data, spare parts lists and manufacturer's operation and maintenance data.

The above requirements are in addition to specific instructions and manuals specified for individual systems or equipment.

**701.1.8 Site Visit:** The Contractor shall visit the site prior to bidding and satisfy himself as to the conditions of the installation. No allowance shall be made, on his behalf, for his failure to make such a visit.

**701.1.9 Field Measurements:** The Contractor shall verify the dimensions covering the work. No extra compensation shall be claimed or allowed due to difference between actual dimensions and those indicated on the drawings. No waiver of responsibility for defective work shall be claimed or allowed due to failure to report unfavorable conditions affecting the work.

**701.1.10 Performance Tests:** Thoroughly test all services and all circuits for proper operating condition and freedom from grounds and short circuits before acceptance is requested. All equipment, appliances and devices shall be operated under load conditions.

**701.1.11 Miscellaneous Items:** Miscellaneous items not covered in the Specifications shall be as indicated on the Drawings, installed and connected in the proper manner and as recommended by the manufacturer.

**701.1.12 Guarantee:** All equipment and workmanship furnished under this contract shall be guaranteed for a period of one year from the date of final acceptance thereof against defective materials, design and workmanship. Upon receipt of notice from the Owner of failure of any part of the guaranteed equipment during the guarantee period, the affected part or parts shall be replaced promptly with new parts by, and at the expense of, the Contractor. The labor incident to the installation of these replacements shall be furnished by the Contractor.

## **701.2 PRODUCTS**

**701.2.1 Standards Of Material And Workmanship:** All material shall be new and shall bear the label of the Underwriter's Laboratories, Inc. or be listed under re-examination service. All material shall be of the best grade and latest pattern of manufacture as specified. All work shall be performed in a neat, workmanlike manner and shall present a neat mechanical appearance when completed.

**701.2.2 Equipment Requirements:** The electrical requirements for equipment specified or indicated on the drawings are based on information available at the time of design. If equipment furnished for installation has electrical requirements other than indicated on the electrical drawings, the Contractor shall make all adjustments to wire and conduit size, controls, overcurrent protection and installation as required to accommodate the equipment supplied without additional charge to the Owner. The complete responsibility and costs for such adjustments shall be assigned to the respective section of these Specifications under which the equipment is furnished.

### **701.3 MATERIALS**

All similar materials and equipment shall be the product of the same manufacturer.

Where no specific materials, apparatus or appliance is mentioned, any first-class product, made by a reputable manufacturer may be used, providing it conforms to the contract requirements and meets the approval of the Engineer.

Materials and equipment shall be the standard products or manufacturers regularly engaged in the production of such material and shall be the manufacturer's current standard design.

Equipment affected by altitude shall perform satisfactorily for the function intended at the altitude of the project site.

**701.3.1 Conduits:** Steel conduits shall be rigid, threaded, thick wall, hot dipped galvanized.

Electrical metallic tubing (EMT) shall be mild steel, zinc coated on the outside and either zinc coated or have an approved corrosion resistant coating on the inside.

Intermediate metal conduit (IMC) shall be rigid, threaded, lightweight steel, zinc coated on the outside and either zinc coated or have an approved corrosion resistant coating on the inside.

Flexible conduit shall be commercial "Greenfield", galvanized steel, with a separate grounding bond wire installed in the conduit in addition to other wires.

Liquid tight flexible conduit shall be flexible galvanized steel tubing with extruded liquid tight PVC outer jacket and a continuous copper bonding conductor wound spirally between the convolutions. Where a separate grounding conductor is installed in the conduit, bonding conductor in the convolutions may be omitted.

Minimum conduit size, 1/2 inch except where specifically approved for equipment connections. Sizes not noted on drawings shall be as required by the NEC. Conduits for #12 THHN wire shall be sized the same as for #12 TW wire.

A code sized equipment ground shall be run in all conduit runs. Ground wires shall be properly terminated as required.

**701.3.2 Conduit Fittings:** Compression type threadless fittings for rigid steel conduit or IMC will not be permitted. EMT couplings and connectors to be malleable iron or diecast "concrete tight" or "raintight" and either the gland and ring compression type or the stainless steel multiple point locking type. Connectors to have insulated throats. EMT fitting using set screws or indentations as a means of attachment will not be permitted.

All conduits shall terminate in bushings or connectors which are insulated type, designed to prevent abrasion or wires without impairing the continuity of the conduit grounding system.

Rigid steel conduit, IMC and EMT fittings to be iron or steel only.

Liquid tight flexible conduit fittings to be complete with threaded grounding cone, a steel, nylon or equal plastic compression ring and a gland for tightening. Either steel or malleable iron only, with insulated throats and male thread and locknut or male bushing with or without "O" ring seat. Each connector shall provide a low resistance ground connection between the flexible conduit and the outlet box, conduit or other equipment to which it is connected.

Flexible conduit fittings shall be either steel or malleable iron only, with insulated throats and shall be one of the following types:

- Wedge and screw type with angular wedge fitting between the convolutions of the conduit.
- Squeeze or clamp type with bearing surface contoured to wrap around the conduit and clamped by one or more screws.
- Steel, multiple point type, for threading into internal wall of the conduit convolutions.

**701.3.3 Outlet Boxes:** Zinc coated or cadmium plated steel boxes, of a class to satisfy the condition, shall be installed at each outlet, except where Unilet or condulet bodies are required. Knockout type, with knockouts removed shall be used only where necessary to accommodate the conduit entering. Square cornered, straight sided gang boxes, 4 inch, octagon, concrete rings and 4 inch, octagon, hung ceiling boxes with bars may be folded type. One piece, deep drawn type for all other boxes.

Size shall be as required to accommodate the required number and sizes of conduits, wires and splices in accordance with NEC requirements, but not to exceed 6" deep except where necessary to permit entrance of conduits into sides of boxes without interference with reinforcing bars. Special purpose boxes shall be sized for the device or application indicated.

Exposed boxes shall be screw joint type, with gasketed weatherproof covers in locations exposed to the weather. Where required to be "raintight", shall be of the continuous drain type.

Wall mounted switch, receptacle and signal boxes, unless otherwise noted or specified, shall be not less than 4" square by 1½" deep for single devices and multi-gang boxes for two or more devices. Boxes for switches and receptacles on unfinished walls may be screw joint type with covers to fit the devices. Provide plaster rings, as required, to provide proper opening for device. Provide a grounding terminal in each box with circuits serving motor driven equipment or receptacles for grounding to a green equipment ground conductor. Grounding terminal shall be green colored washer-in-head machine screw.

**701.3.4 Pullboxes:** Minimum NEC requirements unless larger box is noted. As specified for outlet boxes with blank cover for pullboxes with internal volume not more than 150 cubic inches. As specified for cabinets with internal volume over 150 cubic inches, except covers to have same thickness as box, with corrosion resistant screw or bolt attachment.

**701.3.5 Wires And Cables (600 Volts):** Conform to the applicable UL and IPCEA standards for the use intended. Copper conductors with 600 volt insulation unless otherwise specified or noted on the drawings. Stranded conductors except for terminations at wiring devices such as receptacles and switches.

Type THHN/THWN insulation shall be used for all conductors unless otherwise specified or noted on the Drawings.

Phase, neutral and ground conductors shall be color coded. Connect all conductors of the same color to the same phase conductor. Color coding shall be:

<u>250V or less</u>	<u>480V</u>
Phase A - Black	Brown
Phase B - Red	Orange
Phase C - Blue	Yellow
Neutral - White	Off-white or grey
Ground - Green	Green

Conductors #12 and #10 shall be solid color continued for the entire length. Conductor sizes larger than #10 may be color coded at each termination and in each box or enclosure with six inches of half-lapped 3/4 inch pressure sensitive, plastic tape of respective colors in lieu of solid color compound. The grounding conductor shall be bonded to the outlet box grounding screw with taps to receptacles and equipment.

**701.3.6 Connectors And Lugs:** For copper conductors #6 and smaller use 3M Scotch-Lok or T & B Sta-Kon compression or indent type connectors with integral or separate insulating caps.

For copper conductors larger than #6, use solderless, indent, hex screw or bolt type pressure connector, properly taped or insulated.

**701.3.7 Tape:** Tape shall be plastic, 8.5 mils minimum thickness, 1 megohm minimum insulation resistance, oil resistant vinyl backing, oil resistant acrylic adhesive, incapable of supporting combustion per ASTM D-568 Test Method B.

**701.3.8 Starters:** Each starter shall have a horsepower rating not less than the rating of the motor it controls. Starters and all their related component parts shall be designed and properly coordinated for the rating and characteristics of the motors furnished under the various sections of the Specifications. Motor starters and overcurrent devices shall be ambient temperature compensated.

**701.3.9 Protection:** Provide ambient temperature compensated thermal overload devices in each phase. Provide a suitable reset device for resetting overcurrent trip on the starter front. Overcurrent device ratings shall not exceed code maximums and shall be as recommended by the motor manufacturer for the application. All starters shall be furnished with under voltage and phase loss protection.

**701.3.10 Changes:** No changes shall be made in the electrical work as shown and herein specified, unless such changes are authorized in writing by the Architect and such authorization shall contain a statement covering the amount of the charges or credits involved in the change.

**701.3.11 Substitutions:** On all materials, substitutions will be considered only if requested by letter from the Contractor to the Engineer at least 10 days prior to the bid date and shall be considered as authorized only upon written permission from the Engineer. Where materials are proposed to be substituted in lieu of the items specified, substitutions shall be equal in quality, workmanship and design. The burden of proof of equality of materials shall be placed upon the Contractor. Samples of all materials proposed for substitution shall be submitted to the Engineer, when requested, for examination.

**701.3.12 Shop Drawings (5 Copies Required):** Shop drawings shall be furnished for all equipment and materials. They shall be furnished by the Contractor as required in the Submittal Section. Where equipment will be furnished "as specified", a statement to that effect is sufficient. Where substitutions are proposed, complete data must be furnished, showing performance, quality and dimensions.

The Contractor shall submit to the Engineer, for checking a complete descriptive and technical data list for all items of material furnished under this contract. Complete outlines, dimensions, electrical services, control diagrams, electrical characteristics or special nature or critical to the installation and pertinent data required for installation shall be shown. Failure to submit this information can be the basis for disapproval.

All descriptive and technical data and shop drawings shall bear signed certification that they have been carefully examined and found to be correct with respect to dimension, space available, non-interference with other trades and that the equipment complies with all the requirements of these specifications. Submittals that have not been checked for compliance will not be considered by the Engineer. Only complete submittals will be reviewed. Partial submittals will not be considered.

Contractor shall make submittals on all the following equipment (in addition to any special items indicated elsewhere in the Plans and Specifications):

- Conduit
- Wire
- Panelboards
- Starters
- Motor Control Centers

After receiving approval on the make and the type of materials, the Contractor shall order such materials in sufficient time to prevent any delay or changes on the job.

## **701.4 EXECUTION**

Fabrication, erection and installation of the complete electrical system shall be done in a first class, workmanlike manner by qualified personnel, experienced in such work and shall proceed in an orderly manner so as not to hold up the progress of the project. This contractor shall check all areas and surfaces where electrical equipment is to be installed, removed or relocated and report any unsatisfactory conditions before starting work. Commencement of work signifies the Contractor's acceptance of existing conditions. In the acceptance or rejection of the finished installation, no allowance will be made for lack of skill on the part of the workmen.

**701.4.1 Equipment:** Equipment and materials furnished by the Contractor shall fit the spaces allocated for them. Should the equipment which the Contractor proposes to install, require space conditions other than indicated on the drawings, it shall be the Contractor's responsibility to reconcile the available space with the equipment and make any changes required to accommodate the equipment. All required changes shall be made at the Contractor's expense.

All equipment, both Contractor and Owner furnished, shall be installed in accordance with the manufacturer's recommendations.

**701.4.2 Coordination:** The Electrical Plans are diagrammatic but shall be followed as closely as actual construction and the work of other trades will allow. Such minor changes as are necessary to make the electrical work conform to the work of other trades and to the building shall be made without cost to the Owner.

**701.4.3 Conduit Installation:** Conduit shall be provided for all wiring circuits. Materials shall be exposed or concealed as required by the Drawings. Rigid steel conduit, IMC, or EMT unless noted. Install rigid steel conduits where specified and where required by the NEC for mechanical protection, etc. Use flexible conduit only for equipment connections and then only to the extent of minimum lengths required for connections. Install flexible conduit connections at all resiliently mounted equipment. Provide liquid tight flexible conduit in exterior, wet or damp locations and for connections to all motors. Conduit and tubing shall be kept at least 6 inches from parallel runs of hot water or steam pipes. Rigid galvanized steel conduit, IMC, or PVC may be used for runs below grade. AC cable will not be used.

Exposed conduits below the five (5) foot level shall be galvanized rigid conduit.

Install conduit systems concealed where possible unless otherwise noted. Conduit systems may be exposed in unfinished utility areas, ceiling cavities and where specifically approved by the Architect. No conduit shall be run on roof or exposed face of building unless specifically noted on Drawings or approved by the Architect.

Rigid galvanized steel conduit, or IMC shall be utilized for all underground feeders. Steel conduits installed in direct contact with the earth shall be field wrapped with one layer of 3M Scotch 50 plastic tape with a 50% overlap, including all joints or couplings, or shall be coated with a bonded, 20 mil minimum thickness PVC, permanently fused at the factory. Minimum burial depth of conduits or ducts shall be as follows:



*Power: Secondary (below 600 volts), 36"*

In any conduit or EMT run, the number of quarter bends or equivalent between terminations at cabinets or boxes shall not exceed four bends for conduits up to 1¼", three bends for 1½" conduits and two bends for 3" to 4" conduits. Conduit runs between cabinets or boxes shall not exceed 200 feet for straight runs or 100 feet for runs with maximum number of bends. Bends in telephone feeder conduits shall be long radius.

Protect all vertical runs of conduits terminating in the bottoms of boxes or cabinets, etc. from the entrance of foreign material prior to installation of conductors.

Install sealing fittings, where required by NEC, where conduits pass from warm to cold locations and where otherwise indicated or required.

**701.4.4 Conduit Supports:** . Provide supports for horizontal conduits and EMT not more than 8 feet apart with not less than two supports for each 10 foot straight length and one support near each elbow or bend including runs above suspended ceilings and within 3 feet of all junction boxes.

Install one hole pipe straps on conduits 1½" or smaller. Install individual pipe hangers for conduits larger than 1½". Spring steel fasteners with hanger rods may be used in dry locations in lieu of pipe straps.

Fasten pipe straps and hanger rods to concrete by means of inserts or expansion bolts to brickwork by means of expansion bolts and to hollow masonry by means of toggle bolts. Power driven fasteners may be used to attach pipe straps and hanger rods to concrete only where approved by the Engineer.

All conduits not embedded in concrete shall be firmly secured by means of pipe clamps, hangers, etc., equal to Caddy fasteners. Wire wrapped around conduits and supporting members will not be accepted.

**701.4.5 Conduit Installation:** A complete system of conductors shall be installed in the raceway systems. Control wires shall be run in separate conduits or other systems. All conductors of all systems shall be installed in raceway conduit.

When leaving a metal raceway or conduit in a cabinet box, switch enclosure, control enclosure, any similar enclosure or at the end of a terminated conduit, conductors shall be protected by means of insulated bushings or end fittings. These protectors shall be as made by O-Z/Gedney.

**701.4.6 Conduit Location:** The plans do not give exact details as to the elevations at exact locations, etc. of conduits, and do not show all off-sets, bends, junction boxes and other installation details. The Contractor shall carefully lay out his work at the site to conform to details of installation.

**701.4.7 Cable Bends:** Radius of bends not less than 10 times the outer diameter of the cable.

**701.4.8 Bundling:** In cabinets, conductors #10 and smaller shall be neatly and securely bundled and conductors larger than #10 shall be neatly and securely cabled in individual circuits, utilizing marlin twine, two ply lacing or nylon straps.

**701.4.9 Conductor Pull:** Conductors shall not be pulled into conduits until after all plastering or concrete work is completed and all conduits in which moisture has collected have been swabbed out.

**701.4.10 Identification:** Tag circuits in each enclosure with wrap-around circuit designation labels where more than one feeder passes through or terminated in the enclosure.

**701.4.11 Connectors And Lugs:** Install with manufacturer's recommended tools and with the type and quantity of deformations recommended by manufacturer.

**701.4.12 Location Of Equipment And Outlets:** The approximate location of cabinets, panelboards, wiring gutters, power outlets, etc., are indicated on the Drawings. They are not, however, intended to give complete and exact information. Determine the exact location after thoroughly examining the general building plans and by actual measurements during construction, subject to the approval of the Engineer.

Verify, with the Engineer, prior to installation, all locations of conduit, boxes, etc. in the floor.

**701.4.13 Identification And Signs:** Mark each individual motor controller, disconnect switch, transformer and remote control device to identify each item with its respective service. Marking may be stenciled on the enclosure or adjacent surface in utility areas. Provided nameplates in finished areas.

Provide nameplates with engraved lettering (as previously specified) where specified and noted.

Provide warning signs on all equipment or devices operating at 300 volts or more, reading "DANGER - 2400 VOLTS" etc. with white letters on red background of standard code size. Signs may be decals, stencils or nameplates.

Identify panel boards and cabinets by nameplates with descriptions indicated on the drawings together with voltage, phase and location of the feeder overcurrent protection. Install on outside of hinged doors or panel boards and cabinets.

Control and equipment switches shall be identified by engraving the switch plate. Plates shall be stainless steel as herein specified. Engraving shall be 3/16" condensed gothic and shall be filled with black enamel. Nomenclature shall include the area, control or equipment served.

Identify all exposed conduits, junction and pullboxes at maximum intervals of twenty feet and as indicated below. Identify exposed conduits 3/4" or larger in diameter according to the system carried, by means of Brady #B-350 permacode, thin film, pipe markers or approved equal.

Identify junction and pullboxes by painted-on stencils or approved labels. Identification shall be placed at necessary intervals on straight conduit runs, close to all terminations, adjacent to all changes in direction and where conduits pass through wall or floors. Stencils to be painted on with legible contrasting colors with abbreviations.

**701.4.14 Protection Of Materials And Equipment:** This Contractor shall be responsible for the protection of all materials and equipment under this section of the work whether incorporated into the building or not.

The Contractor shall provide protection for all work where necessary and will be responsible for all damage done to property during the construction. The above protection shall be maintained while the work is in progress. In no case shall dirt, grit, etc., be ground into the floor finish or covering.

The Contractor shall provide space for storage of materials and equipment at ground level.

**701.4.15 Cutting And Repairing:** Cutting and repairing shall be the responsibility of the Contractor. Coordinate, to prevent unnecessary cutting and repairing. Lay out and locate equipment, openings and chases. Install sleeves, inserts and supports.

**701.4.16 Excavation And Backfilling:** This Contractor shall do all necessary excavation and backfill for the installation of the systems as may be required. Curb cuts, asphalt and concrete patching, etc., shall be part of this Contractor's responsibility. Any required trenching in the vicinity of existing utilities will be done by hand and all existing utilities avoided. Damage done to existing utilities will be repaired by this Contractor with no additional payment for the work. In addition to the above, trenches shall be backfilled with dirt, free from debris, rocks and other foreign matter. Backfill shall be replaced in the trenches in 6" layers and each 6" layer shall be wetted down adequately and properly tamped. Remove surplus dirt and leave premises clean. In general, backfill and tamp with compaction at least equal to that of the surrounding area.

**701.4.17 Warranty:** Deliver originals of all guarantees and warranties on this portion of the work to the Owner. Warrant all equipment, materials and workmanship for one year in accordance with the terms of this Contract.

**701.4.18 Product Handling:** Use all means necessary to protect electrical materials and equipment before, during and after installation and to protect the installed work of other trades. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner at no extra cost to him.

## **701.5 MEASUREMENT AND PAYMENT**

Measurement and payment shall be in accordance with provisions of the Special Conditions.

## **703 S.C.A.D.A. - INDEX**

### **703.1 GENERAL**

- 703.1.1 RELATED DOCUMENTS
- 703.1.2 DESCRIPTION OF WORK
- 703.1.3 REQUIREMENTS OR REGULATORY AGENCIES AND STANDARDS
- 703.1.4 DRAWINGS
- 703.1.5 AS-BUILT DRAWINGS
- 703.1.6 OPERATING INSTRUCTIONS AND MANUALS
- 703.1.7 SITE VISIT
- 703.1.8 FIELD MEASUREMENTS
- 703.1.9 PERFORMANCE TESTS
- 703.1.10 MISCELLANEOUS ITEMS
- 703.1.11 GUARANTEE

### **703.2 PRODUCTS**

- 703.2.1 STANDARDS OF MATERIAL AND WORKMANSHIP
- 703.2.2 EQUIPMENT REQUIREMENTS

### **703.3 MATERIALS**

- 703.3.1 SENSORY AND CONTROL DEVICES
- 703.3.2 CONDUIT, WIRING, JUNCTION BOXES AND CABINETS
- 703.3.3 RADIOS, ANTENNAS, PROGRAMMABLE LOGIC CONTROLLERS, MODEMS & BATTERY
- 703.3.4 CHANGES
- 703.3.5 SUBSTITUTIONS
- 703.3.6 SHOP DRAWINGS

### **703.4 FUNCTION**

- 703.4.1 GENERAL FUNCTION
  - 703.4.1.1 FLOW CONTROL STATION SCADA SYSTEM

### **703.5 EXECUTION**

- 703.5.1 EQUIPMENT
- 703.5.2 COORDINATION
- 703.5.3 BUNDLING
- 703.5.4 IDENTIFICATION
- 703.5.5 LOCATION OF EQUIPMENT AND SENSORS
- 703.5.6 PROTECTION OF MATERIALS AND EQUIPMENT
- 703.5.7 CUTTING AND REPAIRING
- 703.5.8 WARRANTY
- 703.5.9 PRODUCT HANDLING

### **703.6 MEASUREMENT AND PAYMENT**

## **703 S.C.A.D.A.**

### **703.1 GENERAL**

**703.1.1 Related Documents:** Drawings and general provisions of the Contract, including General Conditions and the General Requirements, apply to the work specified in this section.

**703.1.2 Description of Work:** Service tools, equipment, etc., which are required for the complete installation of all Supervisory Control and Data Acquisition (SCADA) Work, as indicated on the Drawings and specified herein. Electrical and SCADA work indicated on the Drawings and/or Specifications covering other trades shall conform to Section 701, 702 (if included herein), and 703 of these Specifications.

Work or equipment not indicated or specified which is necessary for the complete and proper operation of the SCADA system shall be accomplished with no additional cost to the Owner.

Furnish all labor and materials required for control and sensory connections to all the various items of equipment requiring electric or wiring service throughout the project shown on the Contract Drawings (even if not shown on the Electrical or Control Drawings). Coordinate with other trades for the installation of required connections and service.

**703.1.3 Requirements Or Regulatory Agencies And Standards:** Installation, materials, equipment and workmanship shall conform to the applicable provisions of the National Electrical Code (NEC), the National Electrical Safety Code (NESC), Occupational Safety and Health Act (OSHA), and all local, state and national codes, ordinances and regulations governing the particular class of work involved and the terms and conditions of the electrical utility and other authorities having lawful jurisdiction pertaining to the work required. All modifications required by these codes, rules, regulations and authorities shall be made by the Contractor without additional charge to the Owner. This Contractor shall secure all permits and licenses required for his work and shall pay all fees in connection with such permits and licenses.

On completion of the various parts of the work, the installation shall be tested by the constituted authorities and approved and, on completion of the work, this Contractor shall obtain and deliver to the Owner, final certificates of acceptance. This Contractor shall furnish copies of each certificate to the Engineer.

All materials, appliances, equipment or devices shall conform to the applicable standards of Underwriter's Laboratories, Inc. where such standards have been established.

The following specifications and standards (current editions) shall form a part of these specifications:

1. National Fire Protection Association Standards (NFPA)
2. National Electrical Code, NFPA 70 (NEC)
3. Life Safety Code, NFPA 101
4. NFPA 72-A

5. Occupational Safety and Health Act (OSHA)
6. National Electrical Safety Code (NESC)
7. Underwriter's Laboratories, Inc. (STANDARDS)
8. American National Standards Institute (ANSI)
9. American Society of Testing and Materials (ASTM)
10. Institute of Electrical and Electronic Engineers (IEEE)
11. Insulated Power Cable Engineer's Association (IPECA)
12. National Electrical Manufacturer's Association (NEMA)
13. Uniform Building Code (UBC)
14. American with Disabilities Act (ADA)

**703.1.4 Drawings:** The electrical drawings show the general arrangement of all conduit, outlets, equipment, etc. and shall be followed as closely as actual building construction and the work of other trades will permit.

Drawings and Specifications shall be considered as complimentary. Work or materials called for by one and not mentioned in the other shall be provided as though treated by both.

In the case of conflict between Drawings and Specifications, the greater or more restrictive requirement shall apply.

**703.1.5 As-Built Drawings:** During progress of the work, the contractor shall maintain an accurate record of the installation of the system, identifying each connection and noting all circuiting deviations from the contract drawings. Upon completion of the installation, the contractor shall transfer all record data to a single, neat and legible set of blue line prints of the original drawings. These drawings are to be delivered to the Engineer at the completion of the project.

**703.1.6 Operating Instructions and Manuals:** Without additional charge to the Owner, furnish competent instruction to the Owner in the care, adjustment and operation of all parts of the control equipment and sensory devices. Upon completion of the work, prepare and deliver to the Owner, five (5) sets of complete operation and maintenance manuals for the systems and major equipment installed. Include catalog data, shop drawings, wiring diagrams, and rating data, spare parts lists and manufacturer's operation and maintenance data.

The above requirements are in addition to specific instructions and manuals specified for individual systems or equipment.

**703.1.7 Site Visit:** The Contractor shall visit the site prior to bidding and satisfy himself as to the conditions of the installation. No allowance shall be made, on his behalf, for his failure to make such a visit.

**703.1.8 Field Measurements:** The Contractor shall verify the dimensions covering the work. No extra compensation shall be claimed or allowed due to difference between actual dimensions and those indicated on the drawings. No waiver of responsibility for defective work shall be claimed or allowed due to failure to report unfavorable conditions affecting the work.

**703.1.9 Performance Tests:** Thoroughly test all sensory and control devices and all circuits for proper operating condition and freedom from grounds and short circuits before acceptance is requested. All equipment, appliances and devices shall be operated under load conditions.

**703.1.10 Miscellaneous Items:** Miscellaneous items not covered in the Specifications shall be as indicated on the Drawings, installed and connected in the proper manner and as recommended by the manufacturer.

**703.1.11 Guarantee:** All equipment and workmanship furnished under this contract shall be guaranteed for a period of one year from the date of final acceptance thereof against defective materials, design and workmanship. Upon receipt of notice from the Owner of failure of any part of the guaranteed equipment during the guarantee period, the affected part or parts shall be replaced promptly with new parts by, and at the expense of, the Contractor. The labor incident to the installation of these replacements shall be furnished by the Contractor.

## **703.2 PRODUCTS**

**703.2.1 Standards Of Material And Workmanship:** All material shall be new and shall bear the label of the Underwriter's Laboratories, Inc. or be listed under re-examination service. All material shall be of the best grade and latest pattern of manufacture as specified. All work shall be performed in a neat, workmanlike manner and shall present a neat mechanical appearance when completed.

**703.2.2 Equipment Requirements:** The electrical requirements for equipment specified or indicated on the drawings are based on information available at the time of design. If equipment furnished for installation has electrical requirements other than indicated on the electrical drawings, the Contractor shall make all adjustments to wire and conduit size, controls, overcurrent protection and installation as required to accommodate the equipment supplied without additional charge to the Owner. The complete responsibility and costs for such adjustments shall be assigned to the respective section of these Specifications under which the equipment is furnished.

## **703.3 MATERIALS**

All similar materials and equipment shall be the product of the same manufacturer.

Where no specific materials, apparatus or appliance is mentioned, any first-class product, made by a reputable manufacturer may be used, providing it conforms to the contract requirements and meets the approval of the Engineer.

Materials and equipment shall be the standard products or manufacturers regularly engaged in the production of such material and shall be the manufacturer's current standard design.

Equipment affected by altitude shall perform satisfactorily for the function intended at the altitude of the project site.



**703.3.1 Sensory and Control Devices:** Devices provide for sensory and control shall conform to Sections 701, 702, and 703 of these specifications. Performance requirements for devices are specified in section 702 if required.

**703.3.2 Conduit, Wiring, Junction Boxes, and Cabinets:** All materials used for control system shall conform to Section 701 of these specifications. Cables on sensory and control devices shall be supplied by the manufactures run for device to designated junction box, display or control system. Field splices of cables will not be permitted. Control wiring (gauge and type) and conduit runs shall be provided for the intended use as required by the control system. Coordinate with the City of Gallup Joint Utilities Control Contractor (SKM Inc.)

**703.3.3 Radios, Antennas, Programmable Logic Controllers, Modems, and Battery Backups:** The above shall be compatible with the City of Gallup's existing SCADA system. All SCADA equipment shall be provided by the City of Gallup Joint Utilities Control Contractor (SKM Inc.)

**703.3.4 Changes:** No changes shall be made in the SCADA work as shown and herein specified, unless such changes are authorized in writing by the Engineer and such authorization shall contain a statement covering the amount of the charges or credits involved in the change.

**703.3.5 Substitutions:** On all materials, substitutions will be considered only if requested by letter from the Contractor to the Engineer at least 10 days prior to the bid date and shall be considered as authorized only upon written addenda from the Engineer. Where materials are proposed to be substituted in lieu of the items specified, substitutions shall be equal in quality, workmanship and design. The burden of proof of equality of materials shall be placed upon the Contractor. Samples of all materials proposed for substitution shall be submitted to the Engineer, when requested, for examination.

**703.3.6 Shop Drawings (5 Copies Required):** Shop drawings shall be furnished for all equipment and materials. They shall be furnished by the Contractor as required in the Submittal Section. Where equipment will be furnished "as specified", a statement to that effect is sufficient. Where substitutions are proposed, complete data must be furnished, showing performance, quality and dimensions.

The Contractor shall submit to the Engineer, for checking a complete descriptive and technical data list for all items of material furnished under this contract. Complete outlines, dimensions, electrical services, control diagrams, electrical characteristics or special nature or critical to the installation and pertinent data required for installation shall be shown. Failure to submit this information can be the basis for disapproval.

All descriptive and technical data and shop drawings shall bear signed certification that they have been carefully examined and found to be correct with respect to dimension, space available, non-interference with other trades and that the equipment complies with all the requirements of these specifications. Submittals that have not been checked for compliance will not be

considered by the Engineer. Only complete submittals will be reviewed. Partial submittals will not be considered.

Contractor shall make submittals on all the following equipment (in addition to any special items indicated elsewhere in the Plans and Specifications):

- Conduit
- Wire
- Cabinets
- Sensory and Control Devices

After receiving approval on the make and the type of materials, the Contractor shall order such materials in sufficient time to prevent any delay or changes on the job. All equipment shall be coordinated with the City of Gallup Joint Utilities Control Contractor (SKM Inc.)

## **703.4 FUNCTION**

**703.4.1 General Function:** The City currently utilizes a SCADA system by SKM Inc. for supervisory control and data acquisition of water production facilities. RTU/PLC units are located at facilities and in the well fields with radio communication to two networked computer stations in the city.

This project consists of installing a compatible RTU/PLC unit at each control building designated complete with all appurtenances and hardware to provide functions described below. All sensors, radios, antennas, relays, terminal strips and wiring shall be properly interfaced with pumps, flow meters, transducers, displays and other electrical equipment as required. Required software programming by SKM Inc. shall also be required for functional SCADA systems at the new and modified facilities.

The RTU/PLC units shall contain radio(s), antennas, batteries, a power supply/charger module, modules for digital i/o and an analog module within a NEMA 4, wall mounted enclosure. Modules for 16 digital inputs, 16 digital outputs and 8 analog inputs shall be provided.

The RTU/PLC, radios, antennas, and unit provided shall be provided by SKM Inc.

**703.4.1.1 Flow Control Station SCADA System:** The Flow Control Station SCADA System shall be generally arranged as shown on the project drawing and have the following capabilities.

Supervisory Control:

- Open/Close Flow Control Valve – Energize valve solenoid to open valve/de-energize to close; via an on-site “HOA” switch.

Flow control valve shall be controlled by tank levels at Yah-tah-Hey pump station via the City’s existing S.C.A.D.A. system. The City S.C.A.D.A. system shall operate the valve similar to an existing City well. Valve shall be capable of being

manually added or omitted from well rotation as a source of water with a tank level “on” and a tank level “off”.

Data Acquisition: (to in town facilities as required)

Field	Indication
• Site Power	On - Off
• Security	OK - Breached
• Flow Control Valve Position via Position Transmitter (See Section 504.2.7)	Open-Closed

:

## **703.5 EXECUTION**

Fabrication, erection and installation of the complete electrical system shall be done in as first class, workmanlike manner by qualified personnel, experienced in such work and shall proceed in an orderly manner so as not to hold up the progress of the project. This contractor shall check all areas and surfaces where electrical equipment is to be installed, removed or relocated and report any unsatisfactory conditions before starting work. Commencement of work signifies the Contractor's acceptance of existing conditions. In the acceptance or rejection of the finished installation, no allowance will be made for lack of skill on the part of the workmen.

**703.5.1 Equipment:** Equipment and materials furnished by the Contractor shall fit the spaces allocated for them. Should the equipment which the Contractor proposes to install, require space conditions other than indicated on the drawings, it shall be the Contractor's responsibility to reconcile the available space with the equipment and make any changes required to accommodate the equipment. All required changes shall be made at the Contractor's expense.

The SCADA system and devices shall be calibrated, programmed, and tested to ensure proper function by SKM. Inc. The contractor shall install and pull wire (power and control) for all SCADA system devices. Wiring shall be “landed” by SKM Inc.

All equipment, Contractor and Owner furnished, shall be installed in accordance with the manufacturer's recommendations.

**703.5.2 Coordination:** The Contractor shall coordinate all SCADA work with SKM Inc. The SCADA Plans are diagrammatic but shall be followed as closely as actual construction and the work or other trades will allow. Such minor changes as are necessary to make the electrical work conform to the work of other trades and to the building shall be made without cost to the Owner.

**703.5.3 Bundling:** In cabinets, conductors #10 and smaller shall be neatly and securely bundled and conductors larger than #10 shall be neatly and securely cabled in individual circuits, utilizing marlin twine, two ply lacing or nylon straps.

**703.5.4 Identification:** Tag circuits in each enclosure with wrap-around circuit designation labels where more than one feeder passes through or terminated in the enclosure.

**703.5.5 Location of Equipment and Sensors:** The approximate location of sensors, panels cabinets, display boards, wiring, power outlets, etc., are indicated on the Drawings. They are not, however, intended to give complete and exact information. Determine the exact location after thoroughly examining the general building plans and by actual measurements during construction, subject to the approval of the Engineer.

Verify, with the Engineer, prior to installation, all locations of conduit, boxes, etc. in the floor.

**703.5.6 Protection of Materials and Equipment:** This Contractor shall be responsible for the protection of all materials and equipment under this section of the work whether incorporated into the building or not.

The Contractor shall provide protection for all work where necessary and will be responsible for all damage done to property during the construction. The above protection shall be maintained while the work is in progress. In no case shall dirt, grit, etc., be ground into the floor finish or covering.

The Contractor shall provide space for storage of materials and equipment at ground level.

**703.5.7 Cutting and Repairing:** Cutting and repairing shall be the responsibility of the Contractor. Coordinate, to prevent unnecessary cutting and repairing. Lay out and locate equipment, openings and chases. Install sleeves, inserts and supports.

**703.5.8 Warranty:** Deliver originals of all guarantees and warranties on this portion of the work to the Owner. Warrant all equipment, materials and workmanship for one year in accordance with the terms of this Contract.

**703.5.9 Product Handling:** Use all means necessary to protect electrical materials and equipment before, during and after installation and to protect the installed work of other trades. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner at no extra cost to him.

## **703.6 MEASUREMENT AND PAYMENT**

Measurement and payment shall be in accordance with provisions of the Special Conditions.

## **801 DEMOLITION – INDEX**

### **801.1 GENERAL**

#### **801.1.1 REFERENCES**

#### **801.1.2 GENERAL REQUIREMENTS**

#### **801.1.3 SUBMITTALS**

#### **801.1.4 REGULATORY AND SAFETY REQUIREMENTS**

#### **801.1.5 DUST AND DEBRIS CONTROL**

#### **801.1.6 PROTECTION**

##### **801.1.6.1 TRAFFIC CONTROL SIGNS**

##### **801.1.6.2 EXISTING CONDITIONS DOCUMENTATION**

##### **801.1.6.3 ITEMS TO REMAIN IN PLACE**

##### **801.1.6.4 EXISTING CONSTRUCTION LIMITS AND PROTECTION**

##### **801.1.6.5 TREES**

##### **801.1.6.6 UTILITY SERVICE**

##### **801.1.6.7 FACILITIES**

##### **801.1.6.8 PROTECTION OF LOCAL RESIDENTS**

### **801.2 BURNING**

### **801.3 RELOCATIONS**

### **801.4 REQUIRED DATA**

### **801.5 ENVIRONMENTAL PROTECTION**

### **801.6 EXISTING STRUCTURES TO BE REMOVED**

#### **801.6.1 STRUCTURES**

#### **801.6.2 CONCRETE**

#### **801.6.3 PATCHING**

### **801.7 CLEANUP**

### **801.8 DISPOSAL OF REMOVED MATERIALS**

#### **801.8.1 BURNING ON SITE**

## **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 lading, 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**

802.1 DESCRIPTION

802.2 TRAFFIC CONTROL DEVICES

802.3 FLAGMEN OR PILOT CARS

802.4 TRAFFIC CONTROL MEASURES

802.5 GENERAL TRAFFIC REGULATIONS

802.6 MEASUREMENT

802.7 PAYMENT

## **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 the provisions 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 SITES - INDEX**

**803.1 PROJECT CONDITIONS**

**803.2 CONTRACTOR RESPONSIBILITIES**

**803.3 SPECIES REMOVAL**

**803.4 MEASUREMENT AND PAYMENT**

## **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 15<sup>th</sup> and August 15<sup>th</sup>
  - 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**

### **804.1 GENERAL**

### **804.2 DEFINITIONS**

#### **804.2.1 CULTURAL RESOURCES**

#### **804.2.2 CULTURAL ITEMS**

#### **804.2.3 HUMAN REMAINS**

#### **804.2.4 FUNERARY OBJECTS**

#### **804.2.5 NATIVE AMERICAN**

#### **804.2.6 SACRED OBJECTS**

#### **804.2.7 OBJECTS OF CULTURAL PATRIMONY**

### **804.3 PROJECT CONDITIONS**

### **804.4 DISCOVERY OF RESOURCES**

### **804.5 DELAYS**

### **804.6 ACCESS**

### **804.7 CONTRACTOR RESPONSIBILITIES**

### **804.8 MEASUREMENT AND PAYMENT**

## **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, injures, 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.

### **804.3 PROJECT CONDITIONS**

The project site has been surveyed and potential archaeological sites have been identified.

1. The project crosses areas with cultural resources
  - a. No work shall proceed in between the stations listed for the Exclusion Zones until receipt of a written Notice to Proceed from the Contracting Officer (CO) that includes them.
    1. Exclusion Zones:
      - a. 100+18 to 101+29
      - b. 138+45 to 140+65
      - c. 162+38 to 163+98
  - b. The Government or Engineer will retain an Archaeologist to monitor the work in these areas.
    1. The Contractor shall coordinate all work within these zones with Government or Engineer's Archaeologist.

### **804.4 DISCOVERY OF RESOURCES**

When the Contractor, or any of the Contractor's employees, or parties operating or associated with the Contractor, in performance of this contract discover cultural resources on any lands:

1. Immediate cease work at that location.
2. Provide immediate verbal notification to the CO, giving the location and nature of the findings
3. Provide immediate verbal notification to the USBR staff archaeologist in Durango, Colorado.
4. Follow with written confirmation to the CO within 12 hours.

In addition to notifying the CO; where the discovery occurs on state, tribal, municipal, or private lands, notify the appropriate Law Enforcement officials as prescribed by law or within two days, whichever is more stringent.

Exercise care so as not to disturb or damage cultural resources uncovered during construction activities, and provide such cooperation and assistance as may be necessary to preserve the findings for removal or other disposition by the CO.

Do not resume work in the area of discovery until receipt of written notice to proceed from the CO.

Note: Contact information to be provided at the preconstruction meeting.

#### **804.5 DELAYS**

Where appropriate by reason of discovery, the CO may order delays in time of performance or changes in work, or both. When such delays or changes are ordered, an equitable adjustment will be made in the contract in accordance with applicable clauses of the contract.

#### **804.6 ACCESS**

Coordinate for Government access in arrangements for use of private lands for use areas or borrow sources. Government access to the private land shall be to identify cultural resources and conduct appropriate inspections

#### **804.7 CONTRACTOR RESPONSIBILITIES**

Insert this section in subcontractors which involve performance of work on jobsite terrain.

#### **804.8 MEASUREMENT AND PAYMENT**

Measurement and payment shall be in accordance with provisions of the Special Conditions.

**805 STORM WATER POLLUTION PREVENTION PLAN - INDEX**

**805.1 DESCRIPTION**

**805.2 TEMPORARY EROSION AND SEDIMENT CONTROL STRUCTURES**

**805.3 SILT FENCES**

**805.4 STRAW BALES**

**805.5 MAINTENANCE**

**805.5.1 SILT FABRIC FENCE MAINTENANCE**

**805.6 RESEEDING**

**805.6.1 SEED MIXTURE**

**805.6.2 APPLICATION**

**805.7 CONSTRUCTION DETAILS**

**805.8 MEASUREMENT AND PAYMENT**

## **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 <u>Lbs. PLS per acre</u>
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 weeds 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

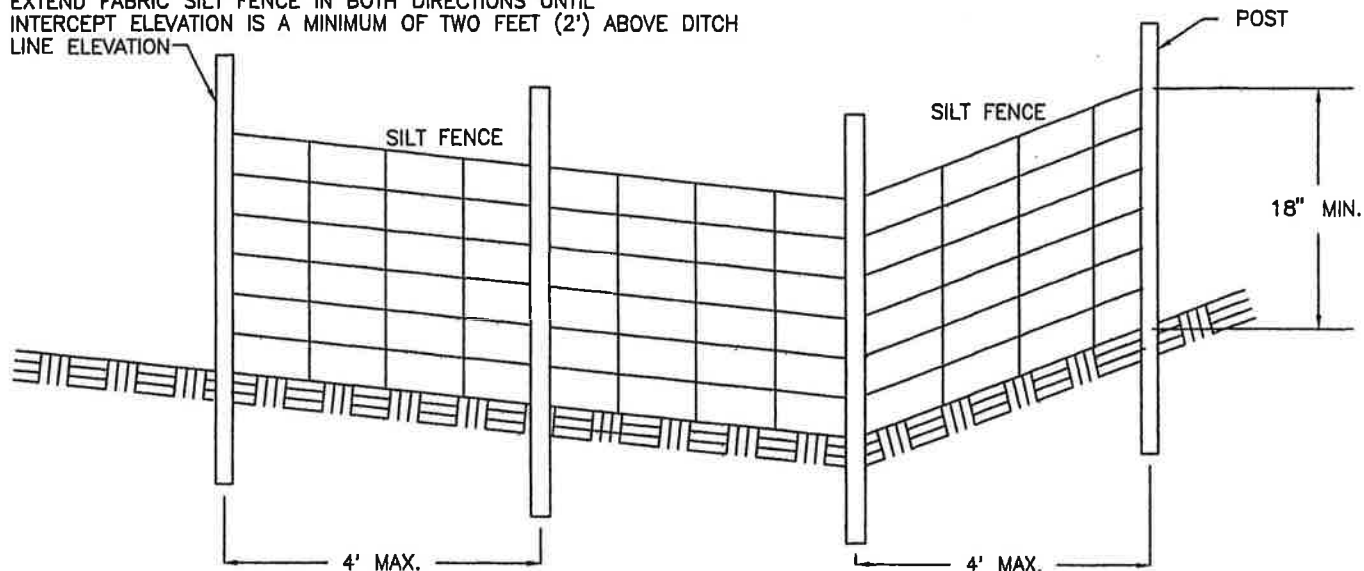
Silt fabric fence and straw bale construction and installation details are attached.

## 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.



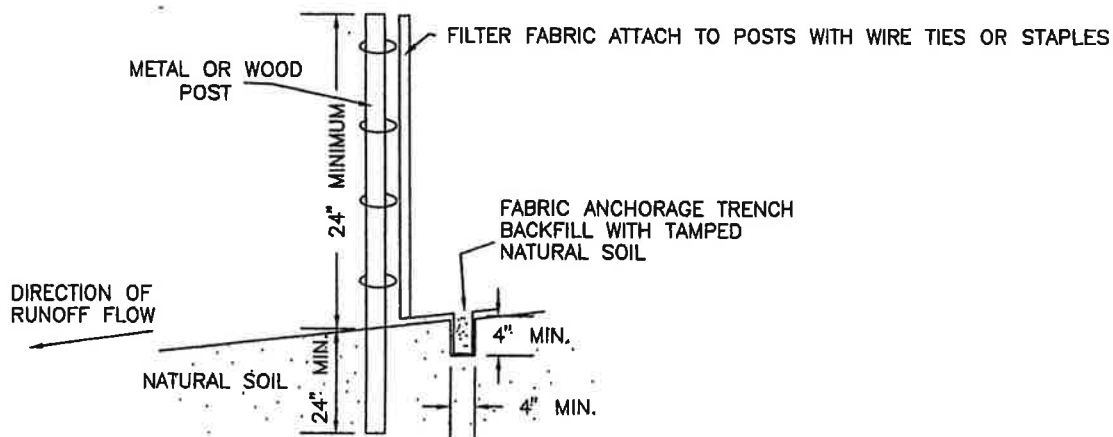
EXTEND FABRIC SILT FENCE IN BOTH DIRECTIONS UNTIL  
INTERCEPT ELEVATION IS A MINIMUM OF TWO FEET (2') ABOVE DITCH  
LINE ELEVATION



ELEVATION  
FABRIC SILT FENCE

FABRIC SILT FENCE NOTES:

1. POST SPACING SHALL BE 4 FT.
2. POSTS SHALL BE 2 INCH SQUARE (OAK) OR 4" SQUARE OTHER WOOD POSTS L = 5' OR STANDARD T OR U SECTION STEEL POSTS WEIGHING NOT LESS THAN 1.33 LB. PER LINEAR FOOT L = 5'.
3. FILTER FABRIC SHALL BE SECURELY FASTENED TO POSTS WITH STAPLES OR WIRE TIES
4. FILTER FABRIC MANUFACTURE: SILT FENCE BY AMERICAN EXCELSIOR COMPANY OR EQUAL.



SECTION  
FABRIC SILT FENCE

POLLUTION PREVENTION  
DETAIL FABRIC SILT FENCE

Prepared by:

**DePauli Engineering & Surveying LLC**

- Civil Engineers and Land Surveyors -

307 SOUTH 4th STREET Gallup, New Mexico 87301

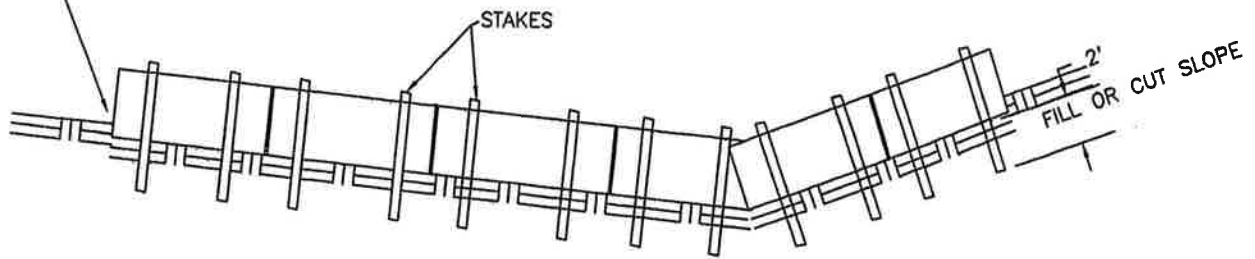
Tel: (505) 863-5440

Fax: (505) 863-1919

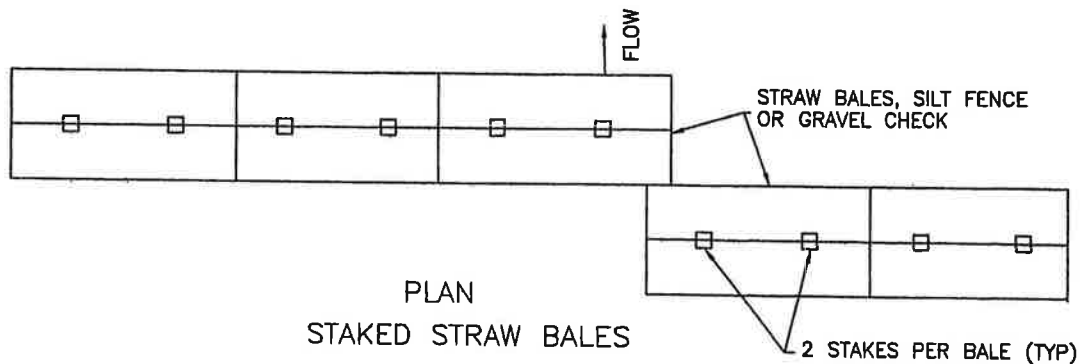
depauliengineering.com



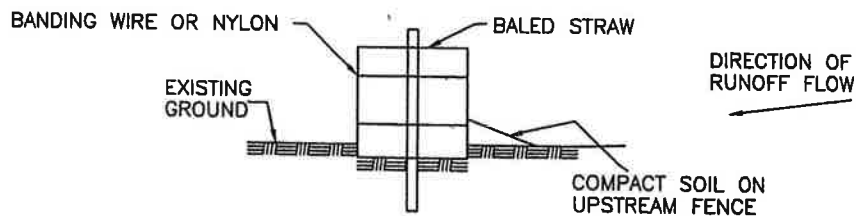
EXTEND BALES, SILT FENCE OR STONE DAM IN BOTH DIRECTIONS UNTIL  
INTERCEPT ELEVATION IS A MINIMUM OF TWO FEET (2') ABOVE DITCH  
LINE ELEVATION



ELEVATION  
STAKED STRAW BALES



PLAN  
STAKED STRAW BALES



SECTION  
STAKED STRAW BALES

STAKED STRAW BALES FILTER DAM NOTES:

1. EMBED BALES 4 INCHES INTO GROUND.
2. BALE SHALL BE PLACED END TO END WITH NO GAPS BETWEEN THE BALES.
3. LOOSE HAY OR STRAW SHALL BE STUFFED BETWEEN BALES TO FILL VOIDS.
4. STAKES SHALL BE 2" X 2" WOOD L = 3' OR STEEL T OR U POSTS (1.33 LBS PER FT.) L = 3' STAKES SHALL BE DRIVEN 1' MIN. INTO THE GROUND

POLLUTION PREVENTION  
DETAIL STAKED STRAW BALES

Prepared by:

DePauli Engineering & Surveying LLC

- Civil Engineers and Land Surveyors -

307 SOUTH 4th STREET Gallup, New Mexico 87301

Tel: (505) 863-5440

Fax: (505) 863-1919

depauliengineering.com



## **806 WATER POLLUTION CONTROL - INDEX**

### **806.1 GENERAL**

- 806.1.1 MEASUREMENT & PAYMENT**
  - 806.1.1.1 COST**

### **806.2 REFERENCE STANDARDS**

- 806.2.1 BUREAU OF RECLAMATION (USBR)**
- 806.2.2 CODE OF FEDERAL REGULATIONS (CFR)**
- 806.2.3 PUBLIC LAW**

### **806.3 SUBMITTALS**

- 806.3.1 SUBMITTAL PROCEDURES**
- 806.3.2 UPDATED SWPPP**
- 806.3.3 SPILL PREVENTION, CONTROL & COUNTERMEASURE (SPCC) PLAN**
  - 806.3.3.1 SPCC PLAN SUBMISSION**
  - 806.3.3.2 SPCC PLAN REVIEW**
  - 806.3.3.3 OIL STORAGE REQUIREMENTS**

### **806.4 REGULATORY REQUIREMENTS**

- 806.4.1 CONSTRUCTION SAFETY STANDARDS**
- 806.4.2 LAWS, REGULATIONS & PERMITS**
- 806.4.3 CONTRACTOR VIOLATIONS**

### **806.5 REQUIRED PERMITS**

- 806.5.1 WASTEWATER DISCHARGE PERMIT**
  - 806.5.1.1 PERMIT**
  - 806.5.1.2 TERMS & CONDITIONS**
  - 806.5.1.3 MONITORING & TREATMENT**
  - 806.5.1.4 SAMPLING**
  - 806.5.1.5 MONITORING RESULTS**
- 806.5.2 DREDGE & FILL PERMIT**
- 806.5.3 STORMWATER DISCHARGE PERMIT ASSOCIATED WITH A CONSTRUCTION SITE**
  - 806.5.3.1 POLLUTION PREVENTION PLAN**
  - 806.5.3.2 MONITORING & WATER TREATMENT**
- 806.5.4 STORMWATER DISCHARGE PERMIT ASSOCIATED WITH INDUSTRIAL ACTIVITY**
  - 806.5.4.1 STORMWATER DISCHARGE PERMIT**
  - 806.5.4.2 NOTICE OF INTENT (NOI)**
  - 806.5.4.3 TERMS & CONDITIONS**
  - 806.5.4.4 MONITORING & WATER TREATMENT**

### **806.6 CONTRACTOR RESPONSIBILITIES**

- 806.6.1 PERMITS**
- 806.6.2 MONITORING**

806.6.3 REPORTING RESULTS

806.6.4 RECORD KEEPING

806.7 EXECUTION

806.7.1 POLLUTION CONTROLS

806.7.1.1 ON SITE CONTROLS

806.7.1.2 SEDIMENT & EROSION CONTROLS

806.7.1.3 WASTEWATER & STORMWATER MANAGEMENT  
CONTROLS

806.7.1.3.1 POLLUTION PREVENTION MEASURES

806.7.1.3.2 TURBIDITY PREVENTION MEASURES

806.7.1.4 CONSTRUCTION SITE MANAGEMENT

806.7.1.4.1 CONTRACTOR CONSTRUCTION OPERATIONS

806.7.1.4.2 STOCKPILED OR DEPOSITED MATERIALS

806.7.1.4.3 PETROLEUM PRODUCT STORAGE TANKS  
MANAGEMENT

## **806.1 GENERAL**

### **806.1.1 MEASUREMENT & PAYMENT**

**806.1.1.1 Cost:** Include in prices offered in the schedule for other items of work or incidental to the project.

### **806.2 REFERENCE STANDARDS**

**806.2.1 Bureau of Reclamation (USBR):** RSHS-2009 Reclamation Safety and Health Standards.

**806.2.2 Code of Federal Regulations (CFR):** 40 CFR, Part 112 Oil Pollution Prevention.

**806.2.3 Public Law:** Sections 311, 402, and 404 Clean Water Act (Public Law 92-500, as amended).

### **806.3 SUBMITTALS**

**806.3.1 Submittal Procedures:** Submit the following in accordance with Section 101 Submittal Procedures.

**806.3.2 Updated Stormwater Pollution Prevention Plan:** As required by the stormwater permit for discharges from construction sites. Include copy of permits.

**806.3.3 Spill Prevention, Control, and Countermeasure (SPCC) Plan:**

**806.3.3.1** Submit when SPCC Plan is required in accordance with 40 CFR, Part 112.

- SPCC Plan is required where release of oil and oil products could reasonably be expected to enter into or upon navigable waters of the United States or adjoining shorelines in quantities that may be harmful (40 CFR, Part 110), and aggregate on site oil storage capacity is over 1,320 gallons. Only containers with capacity of 55 gallons and greater are included in determining on site aggregate storage capacity.

**806.3.3.2** Reviewed and certified by a registered professional engineer in accordance with 40 CFR, Part 112, as required by section 311 of the Clean Water Act (Public Law 92-500 as amended).

**806.3.3.3** Submit a spill prevention plan for oil storage less than 1,320 gallons. The spill prevention plan shall be certified by a professional engineer and include:

- a. Oil storage quantity.
- b. Drawings of containment.
- c. Response plan to spill.

## **806.4 REGULATORY REQUIREMENTS**

**806.4.1 Construction Safety Standards:** All Federal, State and local requirements apply.

**806.4.2 Laws, Regulations, and Permits:** Perform construction operations to comply, and ensure subcontractors comply with:

- Applicable Federal, State, Navajo Nation and local laws, orders, regulations, and Water Quality Standards concerning control and abatement of water pollution; and terms and conditions of applicable permits issued by permit issuing authority.
- If conflict occurs between Federal, State, Navajo Nation and local laws, regulations, and requirements, the most stringent shall apply.

**806.4.3 Contractor Violations:**

- If noncompliance should occur, immediately (verbally) report noncompliance to the City. Submit specific written information within 2 days.
- Violation of applicable Federal, State, or local laws, orders, regulations, or Water Quality Standards may result in the City stopping site activity until compliance is ensured.
- The Contractor shall not be entitled to extension of time, claim for damage, or additional compensation by reason of such a work stoppage.
- Corrective measures required to bring activities into compliance shall be at the Contractor's expense.

## **806.5 REQUIRED PERMITS**

**806.5.1 Wastewater Discharge Permit:**

**806.5.1.1 Permit:**

- Prior to discharging wastewater or other pollutants, Contractor shall secure permit(s) to discharge pollutants as required under section 402 of the Clean Water Act (Public Law 92-500 as amended), and/or The New Mexico Environment Department, Surface Water Quality Bureau and/or the Navajo Nation Environmental Protection Agency.
- Submit permit application(s) to the City, and to USBR for review before submitting to the agencies.

**806.5.1.2 Terms and Conditions:**

- Comply with terms and conditions as stated in the permit.

**806.5.1.3 Monitoring and Treatment:**

- Provide monitoring and water treatment, if necessary, to achieve compliance with permit conditions
- Provide recordkeeping required of the permittee, as stated in the permits.

**806.5.1.4 Sampling:**

- Include sampling in monitoring required of the Contractor to meet section requirements, as well as required laboratory tests to determine effluent characteristics.

**806.5.1.5 Monitoring Results:**

- Provide monitoring results to the appropriate agency as required by the permit.
- Send copies of all information transmitted to the appropriate agency and to the City.

**806.5.2 Dredge and Fill Permit:** The Bureau of Reclamation has made application for a permit to discharge dredged or fill material into waters of the United States (including wetlands) as required under section 404 of the Clean Water Act (Public Law 92-500 as amended).

The Bureau of Reclamation is the section 404 dredge and fill permit holder (permittee), Reclamation will make known the conditions of permit to the Contractor and then may transfer the permit to the Contractor. Nationwide permits are contained in Appendix F.

**806.5.3 Stormwater Discharge Permit Associated with a Construction Site:** The Contractor shall obtain a stormwater general permit to control stormwater discharges from the construction site as required under section 402 of the Clean Water Act (Public Law 92-500, as amended).

**806.5.3.1 Pollution Prevention Plan:**

- The Contractor shall prepare a Pollution Prevention Plan as required by the permit.
- Comply with terms and conditions to obtain and maintain the stormwater discharge permit.

**806.5.3.2 Monitoring and Water Treatment:**

- Provide monitoring and water treatment, if necessary, to achieve compliance with applicable Water Quality Standards.
- Provide the recordkeeping required by the stormwater discharge permit associated with construction activity.

#### **806.5.4 Stormwater Discharge Permit Associated with Industrial Activity**

##### **806.5.4.1 Stormwater Discharge Permit:**

- If construction activities will entail the use of a mobile plant, or nonmetallic borrow areas, a stormwater discharge permit associated with industrial activity may be required.

##### **806.5.4.2 Notice of Intent (NOI):**

- Sign the NOI to obtain coverage under a stormwater general permit to control stormwater discharges from industrial activity at the construction site as required under section 402 of the Clean Water Act (Public Law 92-500, as amended) and/or The New Mexico Environment Department, Surface Water Quality Bureau and/or the Navajo Nation Environmental Protection Agency.

##### **806.5.4.3 Terms and Conditions:**

- Comply with terms and conditions to obtain and maintain the industrial stormwater discharge permit, including the preparation of a Pollution Prevention Plan.

##### **806.5.4.4 Monitoring and Water Treatment:**

- Provide monitoring and water treatment, if necessary, to achieve compliance with applicable Water Quality Standards.
- Provide monitoring results to the appropriate agency as required by the permit.
- Send copies of all information transmitted to the appropriate agency and to the City

#### **806.6 CONTRACTOR RESPONSIBILITIES**

**806.6.1 Permits:** Contractor is responsible for all permits.

**806.6.2 Monitoring:** Conduct monitoring in order to meet the requirements of the permits which may include:

- Sampling,
- Site inspections, and
- Required laboratory tests to determine effluent characteristics.

**806.6.3 Reporting Results:** Provide monitoring results to the appropriate agency as required by the permit. Send copies of all information transmitted to the appropriate agency and to the City.

**806.6.4 Recordkeeping:** Retain records and data for the life of the project or as required



by permits, whichever is longer.

## **806.7 EXECUTION**

### **806.7.1 Pollution Controls**

**806.7.1.1 On Site Controls:** Control pollutants by use of sediment and erosion controls, wastewater and stormwater management controls, construction site management practices, and other controls including State and local control requirements

#### **806.7.1.2 Sediment and Erosion Controls:**

- Establish methods for controlling sediment and erosion which address vegetative practices, structural control, silt fences, straw dikes, sediment controls, and operator controls as appropriate.
- Institute stormwater management measures as required, including velocity dissipators, and solid waste controls which address controls for building materials and offsite tracking of sediment.

#### **806.7.1.3 Wastewater and Stormwater Management Controls:**

##### **806.7.1.3.1 Pollution Prevention Measures:**

- Use methods of dewatering, unwatering, excavating, or stockpiling earth and rock materials which include prevention measures to control silting and erosion, and which will intercept and settle any runoff of sediment-laden waters.
- Prevent wastewater from general construction activities such as drainwater collection, aggregate processing, concrete batching, drilling, grouting, or other construction operations, from entering flowing or dry watercourses without the use of approved turbidity control methods.
- Divert stormwater runoff from upslope areas away from disturbed areas.

##### **806.7.1.3.2 Turbidity Prevention Measures:**

- Use methods for prevention of excess turbidity which include, but are not restricted to, intercepting ditches, settling ponds, gravel filter entrapment dikes, flocculating processes, recirculation, combinations thereof, or other approved methods that are not harmful to aquatic life.
- Wastewaters discharged into surface waters shall meet conditions of the permit(s).

- Do not operate mechanized equipment in water bodies without having first obtained a section 404 permit, and then only as necessary to construct crossings or perform the required construction.

#### **806.7.1.4 Construction Site Management:**

##### **806.7.1.4.1 Contractor Construction Operations:**

- Perform construction activities by methods that will prevent entrance, or accidental spillage, of solid matter, contaminants, debris, or other pollutants or wastes into streams, flowing or dry watercourses, lakes, wetlands, reservoirs, or underground water sources.
  - 1) Pollutants and wastes include, but are not restricted to: refuse, garbage, cement, sanitary waste, industrial waste, hazardous materials, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution.

##### **806.7.1.4.2 Stockpiled or Deposited Materials:**

- Do not stockpile or deposit excavated materials or other construction materials, near or on, stream banks, lake shorelines, or other watercourse perimeters where they can be washed away by high water or storm runoff, or can in any way encroach upon the watercourse.

##### **806.7.1.4.3 Petroleum Product Storage Tanks Management:**

- Place oil or other petroleum product storage tanks at least 50 feet from streams, flowing or dry watercourses, lakes, wetlands, reservoirs, and any other water source.
- Do not use underground storage tanks.
- Construct storage area dikes at least 12 inches high or graded and sloped to permit safe containment of leaks and spills equal to storage tank capacity located in the area plus sufficient freeboard to contain the 25-year rainstorm.
  - 1) Line diked areas with an impermeable barrier at least 50 mils thick.
- Areas for refueling operations: Lined with impermeable barrier at least 10 mils thick covered with 2 to 4 inches of soil.

## **901        DESIGN CODES AND REFERENCES – INDEX**

- 901.1    CAST IN PLACE CONCRETE
- 901.2    REFERENCE STANDARDS
- 901.3    STEEL WATER RESERVOIRS (TANKS)
- 901.4    CHAIN LINK FENCING
- 901.5    SAFETY
- 901.6    ELECTRICAL
- 901.7    DUCTILE IRON PIPE
- 901.8    REGULATORY
- 901.9    VALVES
- 901.10   PIPE INSTALLATION
- 901.11   DISENFECTION
- 901.12   PAINTED SURFACES PREPARATION
- 901.13   INTERIOR TANKS AND OTHER VESSEL COATINGS

## 901.1 CAST IN PLACE CONCRETE:

- **Retaining Walls, Ringwalls, Underground Vaults, Foundations, and Slabs**

ACI 318-08 Building Code Requirements for Structural Concrete

Table 7.2 – Minimum Diameter of Bend

Numbers 3 through 8 –  $6d$  (inside diameter)

7.7.1(a) – Concrete cast against earth min. cover = 3in.

7.12 – Shrinkage and temperature reinforcement min. rebar to concrete ratio = .0020

- **Geotechnical Report – Geomat Inc., Farmington, NM**

Active Soil Pressure 30 PSF/ft.

(37.5 Used for design)

Passive Soil Pressure 250 PSF/ft.

Allowable Bearing Pressure

5000 PSF Sandstone

3500 PSF Engineered Fill

Minimum Footing Depth – 2.5 ft.

- **AASHTO – Standard Specifications for Highway Bridges**

Allowable Stress Design

$F_c = .40 f'_c$

Grade 40 Reinforcement = 20,000 psi

Grade 60 Reinforcement = 24,000 psi

## 901.2 REFERENCE STANDARDS

### A. American Concrete Institute (ACI)

1. ACI 305.R-10

Standard Specification for Hot Weather Concreting

2. ACI 306.1-90(2002)

Standard Specifications for Cold Weather Concreting

### B. ASTM International (ASTM)

1. ASTM A 615/A 615M-09b

Deformed and Plain Bars for Concrete Reinforcement

2. ASTM A 996/A 996M-09b

Rail-Steel and Axle –Steel Deformed Bars for Concrete Reinforcement

3. ASTM C 31/C 31M-10

Making and Curing Concrete Test Specimens in the Field

4. ASTM C33/C 33M-11

Concrete Aggregates

5. ASTM C 39/C 39M-11a	Compressive Strength of Cylindrical Concrete Specimens
6. ASTM C 42/C 42M-10a	Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
7. ASTM C 94/C 94M-11b	Ready-Mixed Concrete
8. ASTM C 114-11b	Chemical Analysis of Hydraulic Cement
9. ASTM C 143/C 143M-10a	Slump of Hydraulic-Cement Concrete
10. ASTM C 150/C 150M-11	Portland Cement
11. ASTM C 171-07	Sheet Materials for Curing Concrete
12. ASTM C 231/C 231-10	Air Content of Freshly Mixed Concrete by the Pressure Method
13. ASTM C 260-10a	Air-Training Admixtures for Concrete
14. ASTM C 309-11a	Liquid Membrane-Forming Compounds for Curing Concrete
15. ASTM C 494/C 494M-11	Chemical Admixtures for Concrete
16. ASTM C 618-08a	Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
17. ASTM C 1017/C 1017M-07	Chemical Admixtures for Use in Producing Flowing Concrete
18. ASTM C 1260-07	Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
19. ASTM C 1293-08b	Determination of Length Change of Concrete Due to Alkali-Silica Reaction
20. ASTM C 1567-11	Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)
21. ASTM C 1602/C 1602M-06	Mixing Water Used in the Production of Hydraulic Cement Concrete

- **Precast Circular Manhole Vaults:**

ASTM C-478 Precast Reinforced Concrete  
AASHTO M-199 Precast Reinforced Concrete  
AASHTO M-198B Flexible Butyl Resin Sealant  
ASTM D-4479 Foundation Coating

### **901.3 STEEL WATER RESERVOIRS (TANKS):**

ANSI/AWWA D100-05 – Welded Carbon Steel Tanks for Water Storage

#### **901.4 CHAIN LINK FENCING:**

ASTM	A121 Specification for Zinc-Coated (Galvanized) Steel Barbed Wire
ASTM	A392 Specification for Zinc-Coated Steel Chain Link Fence Fabric
ASTM	F626 Specification for Fence Fittings
ASTM	F1083 Specification for Pipe, Steel, Hot-Dipped Zinc Coated (Galvanized) Welded, for Fence Structures
ASTM	F900 Specification for Industrial and Commercial Swing Gates

#### **901.5 SAFETY:**

- **OSHA** Construction Standards for Excavations
- **MUTCD** Manual on Uniform Traffic Control Devices for Streets and Highways
- **NM One Call Inc.** Underground Utility Design and Excavation Locates
- **NESC** National Electrical Safety Code

#### **901.6 ELECTRICAL:**

- **NEC** National Electric Code
- **NFPA** National Fire Protection Association Standards
- **IEEE** Institute of Electrical and Electronic Engineers
- **GJU** City of Gallup Joint Utilities- Electrical Line, Meter Disconnect and Service Standards

#### **901.7 DUCTILE IRON PIPE:**

AWWA C104	Cement Mortar Lining for Ductile Iron Pipe
AWWA C105	Polyethylene Encasement for Ductile Iron Pipe
AWWA C110	Ductile Iron and Gray Iron Fittings
AWWA C111	Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings
AWWA C115	Flanged Ductile Iron Pipe with Ductile Iron
AWWA C150	Thucknes Design for Ductile Iron Pipe
AWWA C151	Ductile Iron Pipe Centrifugally Cast, for Water or Other Liquids

#### **901.8 REGULATORY:**

- **NMDWR** New Mexico Drinking Water Regulations

#### **901.9 VALVES:**

AWWA C509	Resilient Wedge Gate Valves for Water Supply (2"–12")
AWWA C515	Resilient Wedge Gate Valves for Water Supply (14"– 48")
AWWA C550	Protective Epoxy Coatings for Values & Hydrants

#### **901.10 PIPE INSTALLATION:**

AWWA C600	Installation of Ductile Iron Water Mains and Appurtenances
-----------	--

### **901.11 DISENFECTION:**

AWWA C651    Standard for Disinfecting Water Mains  
AWWA C652    Standards for Disinfecting Water Storage Facilities

### **901.12 PAINTED SURFACES PREPARATION:**

- **SSPC Steel Structures Painting Council**  
    Steel Structures Painting Manual  
        SSPC-SP10 Neat White Blast Cleaning  
        SSPC-SP6 Commercial Blast Cleaning

### **901.13 INTERIOR TANKS AND OTHER VESSEL COATINGS:**

NSF61    All Welled Materials (Potable Water)

# APPENDIX A

## EPA Forms (NPDES)

Notice of Intent  
Notice of  
Termination



Form Approved OMB Nos. 2040-0188 and 2040-0211



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**

**I. Permit Number**

Name: \_\_\_\_\_

IRS Employer Identification Number (EIN): | | - | | | | |

Street: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_ - \_\_\_\_\_

Phone:    -    -    Fax (optional):    -    -

E-mail: \_\_\_\_\_

[illegible]

Project Street/Location: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_ - \_\_\_\_\_

County or similar government subdivision: | | | | | | | | | | | | | | | | | | | | | |

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 SWPPP 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](http://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](http://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](http://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

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

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](http://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](http://www.epa.gov/npdes/stormwater/mail)

**Visit this website for instructions on how to submit electronically:**

[www.epa.gov/npdes/stormwater/enoi](http://www.epa.gov/npdes/stormwater/enoi)

Form Approved OMB Nos. 2040-0086 and 2040-0211



**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.

## NPDES Stormwater General Permit Tracking Number:

--	--	--	--	--	--	--	--	--

☐ 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.

## Name: \_\_\_\_\_

[illegible]

IRS Employer Identification Number (EIN):

U	-	U	U	U	U	U	U
---	---	---	---	---	---	---	---

**Mailing Address:**

Street:

[illegible]

City:

[illegible]State: 

Zip Code:

$$\begin{array}{|c|c|c|c|} \hline & & & \\ \hline \end{array} = \begin{array}{|c|c|} \hline & \\ \hline \end{array}$$

Phone:

[illegible]

Fax (optional):


-


-


E-mail:

## Project/Site Name:

[illegible]

Project Street/Location:

City:

[illegible]

State: | |

Zip Code:

--	--	--	--	--	--	--	--

County or similar government subdivision:

A horizontal number line with 15 tick marks, labeled from 0 to 14. The line is used for plotting the data points from the frequency table.

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: \_\_\_\_\_



**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](http://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](http://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](http://www.epa.gov/npdes/stormwater/mail)

Visit this website for instructions on how to submit electronically:  
[www.epa.gov/npdes/stormwater/enoi](http://www.epa.gov/npdes/stormwater/enoi)

# APPENDIX B

## New Mexico Wage Rates

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](mailto:public.works@state.nm.us)

Wage Decision # **MC-14-0109 A**  
**NOTIFICATION OF AWARD (NOA)**

THIS WAGE DECISION # EXPIRES FOR BIDS ON **05/23/14**

**Description and Location of Work:** Navajo Gallup Water Supply Project, Reach 13

Yah-ta-Hey Pump Station Connection, 6± Miles North of Gallup: 1. 1,760' of 18" Ductile Iron Pipeline. 2. A 295' jack and bore crossing of U.S. Highway 491 with 18" ductile iron carrier pipe in a 28" steel casing. 3. 172' of 8" well collector line removal and relocation. 4. Construction of flow control station with 40' of yard piping. Reach 13 Waterline 3± - 6± Miles North of Gallup: 1. 16,360' of 30" ductile iron pipe. 2. A 230' jack and bore crossing of U.S. Hwy 491 with 30" ductile iron carrier pipe in a 40" steel casing. 3. A 145' crossing of a 30" gas transmission line with 30" ductile iron carrier pipe in a 42" HDPE casing. 4. Several drainage crossings with grade control structure. 5. Connections to an existing 36" waterline, several water services, and an existing well. 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.

City of Gallup

County of McKinley

Yah-Ta-Hey and North of 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 subcontractors 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** \_\_\_\_\_





Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_ License No.: \_\_\_\_\_

Phone No.: \_\_\_\_\_ Fax No.: \_\_\_\_\_ Sub \_\_\_\_\_ 2<sup>nd</sup> TIER \_\_\_\_\_ 3<sup>rd</sup> TIER \_\_\_\_\_  
(To Whom) (To Whom)

Work to be performed: \_\_\_\_\_ Start Date: \_\_\_\_\_ Amount (\$): \_\_\_\_\_

Revised 8/23/13

Page 2 of 2

## Navajo Gallup Water Supply Project, Reach 13: WAGE DECISION #: MC-14-0109 A

Yah-ta-Hey Pump Station Connection, 6± Miles North of Gallup: 1. 1.760' of 18" Ductile Iron Pipeline. 2. A 295' jack and bore crossing of U.S. Highway 491 with 18" ductile iron carrier pipe in a 28" steel casing. 3. 172' of 8" well collector line removal and relocation. 4. Construction of flow control station with 40' of yard piping. Reach 13 Waterline 3± - 6± Miles North of Gallup: 1. 16,360' of 30" ductile iron pipe. 2. A 230' jack and bore crossing of U.S. Hwy 491 with 30" ductile iron carrier pipe in a 40" steel casing. 3. A 145' crossing of a 30" gas transmission line with 30" ductile iron carrier pipe in a 42" HDPE casing. 4. Several drainage crossings with grade control structure. 5. Connections to an existing 36" waterline, several water services, and an existing well. 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.

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

*Effective January 1, 2014*

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
<b>Electricians (outside)</b>		
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
<b>Laborers</b>		
Group I	13.73	0.35
Group II	14.03	0.35
Group III	14.43	0.35
<b>Operators</b>		
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
<b>Truck Drivers</b>		
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

## S.C.A.D.A. & Electrical Cost Estimates

SKM, Inc.

S.C.A.D.A.

Cost Estimate



533 W. 2600 S., SUITE 100 BOUNTIFUL, UTAH 84010    PHONE: (801) 677-0011 / FAX: (801) 677-0013

## **PROJECT PROPOSAL**

**DATE:**            March 4, 2014

**TO:**             Kurt Spolar

**FROM:**         Mark Jeppsen

**RE:**             Reach 13 Flow Control Station Systems Integration Proposal Revision 0

**CC:**

---

SKM is pleased to provide this proposal to provide Systems Integration for the Reach 13 Flow Control Station for the City of Gallup. The proposal is broken down into three parts:

1. Assumed Systems Integration Criteria
2. Project Tasks / Scope of Work
3. Cost Breakdown

### **1. Assumed Systems Integration Criteria**

The following assumptions have been made for the Systems Integration Criteria in developing the tasks and cost breakdown for this project:

1. SKM will be providing an RTU panel to be located at the Reach 13 Flow Control Station. This control panel will have PLC and Radio Equipment.
2. SKM will provide all antennas and associated radio cabling and lightning protection. The Electrical Contractor will be responsible for installing the antenna mast and any necessary conduit to the RTU panel.
3. The Electrical Contractor will install the RTU panel and all corresponding conduit, wire and instrumentation connections.
4. SKM will be providing the labor to add the Reach 13 Flow Control Station to the overall SCADA System and have it be controlled by the Yah-Ta-Hey Tank Level.

### **2. Project Tasks / Scope of Work**

#### **Task #1 – Equipment**

**1.1** Reach 13 Flow Control Station RTU Panel completely built and assembled which includes the following:

- 36" h x 30" w x 12" d NEMA 12 Enclosure and backpanel
- Control Microsystems SCADAPack 334 Controller
- MDS TransNET radio for communications to the Gamerco Tank
- All necessary antennas, coaxial cabling and lightning arrestors.
- All other necessary panel components



533 W. 2600 S., SUITE 100 BOUNTIFUL, UTAH 84010 PHONE: (801) 677-0011 / FAX: (801) 677-0013

**Task #2 – Labor and Startup**

- 2.1 Reach 13 Flow Control Station RTU Panel Design
- 2.2 PLC and HMI Programming for the Reach 13 Flow Control Station RTU
- 2.3 TransNET network reconfiguration
- 2.4 Startup and Commissioning

**3. Cost Breakdown**

This project will be performed on a fixed fee basis in accordance with the costs shown herein. Invoices will be based on a percentage of completion. I have planned on a two day site visit to complete the work. For this trip I have budgeted for two 10 hour days for one individual with flights, rentals, hotels and travel time. These costs are shown as a line item for each task. The cost breakdown is associated with the tasks described above and with the following rates:

- 1. Project Manager / Professional Engineer - \$115/Hour
- 2. Senior Programmer - \$105/Hour
- 3. Draftsman - \$65/Hour.

Task Information		Hours of Service Required			Equipment	Per Diem	Cost
Task #	Description	PM / Engineer	Senior Programmer	Draftsman			
1	Equipment				\$9,500		\$9,500
2	Labor and Startup	8	40	8	\$100	\$1,000	\$6,740

Total Cost:

**\$16,240**

- END -



# Down Guy Relocations



Date: 2/24/2014

Estimate For : DePauli Engineering

307 S Fourth St  
Gallup, NM 87301

Estimate #: Preliminary

RE: Pole 3840 Pole Stabilization - Approx 2100 ft  
West of Munoz Well

Installation Description	Qty.	Material / Unit	Total	Material	Labor	Equipment
Pole 3840 Stabilization	1	\$540.60 / Unit	\$540.60	\$0.00	\$53.00	\$487.60
Engineering / Office	2	Hrs		\$0.00	\$47.86	\$12.19
City of Gallup Overhead	37%			\$0.00	\$37.32	\$0.00
				\$0.00	\$138.18	\$499.79
		Tax: 8.3125%		\$0.00	\$11.49	\$0.00
				\$0.00	\$149.66	\$499.79
Subtotal :					\$649.45	
Miscellaneous Material, Equipment, and Labor :					\$97.42	
Total Cost of Power Line Project :					\$746.87	

Miscellaneous Material, Equipment, and Labor : 15%

Gross Receipts Tax : 8.3125%

Eric Winkler  
Engineering Tech  
GJU, Utilities Administration

Customer's Signature  
Acknowledging Estimate And  
Authorizing Commencement of Project



Date: 2/24/2014

Estimate For : DePauli Engineering

Estimate #: Preliminary

307 S Fourth St  
Gallup, NM 87301

RE: Pole 3838 Overhead Down Guy Relocation -  
Approx 2000 ft West of Munoz Well

Installation Description	Qty.	Material / Unit	Total	Material	Labor	Equipment
40 ft Class 4 Wood Pole	1	\$823.46 / Unit	\$823.46	\$503.72	\$161.26	\$158.48
Overhead Guy Assembly	1	\$273.77 / Unit	\$273.77	\$155.02	\$64.50	\$54.25
Down Guy Assembly	1	\$260.95 / Unit	\$260.95	\$142.20	\$64.50	\$54.25
Retirement Description	Qty.	Material / Unit	Total	Material	Labor	Equipment
40 ft Class 4 Wood Pole	1	\$319.74 / Unit	\$319.74	\$0.00	\$161.26	\$158.48
Overhead Guy Assembly	1	\$118.75 / Unit	\$118.75	\$0.00	\$64.50	\$54.25
Down Guy Assembly	1	\$118.75 / Unit	\$118.75	\$0.00	\$64.50	\$54.25
Engineering / Office	4	Hrs		\$0.00	\$95.72	\$12.19
City of Gallup Overhead	37%			\$0.00	\$250.21	\$0.00
				\$800.94	\$926.45	\$546.15
		Tax: 8.3125%		\$66.58	\$77.01	\$0.00
				\$867.52	\$1,003.46	\$546.15
Subtotal :				\$2,417.13		
Miscellaneous Material, Equipment, and Labor :				\$362.57		
Total Cost of Power Line Project :				\$2,779.70		

Miscellaneous Material, Equipment, and Labor : 15%

Gross Receipts Tax : 8.3125%

Eric Winkler  
Engineering Tech  
GJU, Utilities Administration

Customer's Signature  
Acknowledging Estimate And  
Authorizing Commencement of Project



Date: 2/24/2014

Estimate For : DePauli Engineering  
307 S Fourth St  
Gallup, NM 87301

Estimate #: Preliminary

RE: Pole 3636 Relocation - Approx 500 ft West of  
Intersect of US 491 and Fransico Pond Rd

Installation Description	Qty.	Material / Unit	Total	Material	Labor	Equipment
40 ft Class 4 Wood Pole	1	\$823.46 / Unit	\$823.46	\$503.72	\$161.26	\$158.48
Shielded Tangent Assembly	1	\$265.81 / Unit	\$265.81	\$88.36	\$87.54	\$89.91
Retirement Description	Qty.	Material / Unit	Total	Material	Labor	Equipment
40 ft Class 4 Wood Pole	1	\$319.74 / Unit	\$319.74	\$0.00	\$161.26	\$158.48
Shielded Tangent Assembly	1	\$177.45 / Unit	\$177.45	\$0.00	\$87.54	\$89.91
Engineering / Office	4	Hrs		\$0.00	\$95.72	\$12.19
City of Gallup Overhead	37%			\$0.00	\$219.53	\$0.00
				\$592.08	\$812.85	\$508.97
		Tax: 8.3125%		\$49.22	\$67.57	\$0.00
				\$641.30	\$880.42	\$508.97
Subtotal :				\$2,030.68		
Miscellaneous Material, Equipment, and Labor :				\$304.60		
Total Cost of Power Line Project :				\$2,335.29		

Miscellaneous Material, Equipment, and Labor : 15%  
Gross Receipts Tax : 8.3125%

  
Eric Winkler  
Engineering Tech  
GJU, Utilities Administration

\_\_\_\_\_  
Customer's Signature  
Acknowledging Estimate And  
Authorizing Commencement of Project



Date: 2/24/2014

Estimate For : DePauli Engineering

Estimate #: Preliminary

307 S Fourth St  
Gallup, NM 87301

RE: Pole 3632 Overhead Down Guy Relocation -  
Approx 150 ft SE of YahTaHey Water Works

Installation Description	Qty.	Material / Unit	Total	Material	Labor	Equipment
40 ft Class 4 Wood Pole	1	\$823.46 / Unit	\$823.46	\$503.72	\$161.26	\$158.48
Overhead Guy Assembly	1	\$273.77 / Unit	\$273.77	\$155.02	\$64.50	\$54.25
Down Guy Assembly	1	\$260.95 / Unit	\$260.95	\$142.20	\$64.50	\$54.25

Retirement Description	Qty.	Material / Unit	Total	Material	Labor	Equipment
35 ft Class 4 Wood Pole	1	\$319.74 / Unit	\$319.74	\$0.00	\$161.26	\$158.48
Overhead Guy Assembly	1	\$118.75 / Unit	\$118.75	\$0.00	\$64.50	\$54.25
Down Guy Assembly	1	\$118.75 / Unit	\$118.75	\$0.00	\$64.50	\$54.25
Engineering / Office	4	Hrs		\$0.00	\$95.72	\$12.19
City of Gallup Overhead	37%			\$0.00	\$250.21	\$0.00
				\$800.94	\$926.45	\$546.15
		Tax: 8.3125%		\$66.58	\$77.01	\$0.00
				\$867.52	\$1,003.46	\$546.15

Subtotal :

\$2,417.13

Miscellaneous Material, Equipment, and Labor :

\$362.57

Total Cost of Power Line Project :

\$2,779.70

Miscellaneous Material, Equipment, and Labor : 15%

Gross Receipts Tax : 8.3125%

Eric Winkler  
Engineering Tech  
GJU, Utilities Administration

Customer's Signature  
Acknowledging Estimate And  
Authorizing Commencement of Project



Date: 2/24/2014

Estimate For : DePauli Engineering

Estimate #: Preliminary

307 S Fourth St  
Gallup, NM 87301

RE: Pole 3631 Pole Stabilization - Approx 185 ft SE  
of YahTaHey Water Works

Installation Description	Qty.	Material / Unit	Total	Material	Labor	Equipment
Pole 3631 Stabilization	1	\$540.60 / Unit	\$540.60	\$0.00	\$53.00	\$487.60
Engineering / Office	2	Hrs		\$0.00	\$47.86	\$12.19
City of Gallup Overhead	37%			\$0.00	\$37.32	\$0.00
				\$0.00	\$138.18	\$499.79
		Tax: 8.3125%		\$0.00	\$11.49	\$0.00
				\$0.00	\$149.66	\$499.79
Subtotal :					\$649.45	
Miscellaneous Material, Equipment, and Labor :					\$97.42	
Total Cost of Power Line Project :					\$746.87	

Miscellaneous Material, Equipment, and Labor : 15%

Gross Receipts Tax : 8.3125%

Eric Winkler  
Engineering Tech  
GJU, Utilities Administration

Customer's Signature  
Acknowledging Estimate And  
Authorizing Commencement of Project



Date: 2/24/2014

Estimate For : DePauli Engineering

Estimate #: Preliminary

307 S Fourth St  
Gallup, NM 87301

RE: Pole 3611 Down Guy Relocation - Approx 520  
ft NW of 516 A US 491.

Installation Description	Qty.	Material / Unit	Total	Material	Labor	Equipment
Down Guy Assembly	1	\$260.95 / Unit	\$260.95	\$142.20	\$64.50	\$54.25
Retirement Description	Qty.	Material / Unit	Total	Material	Labor	Equipment
Down Guy Assembly	1	\$118.75 / Unit	\$118.75	\$0.00	\$64.50	\$54.25
Engineering / Office	2	Hrs		\$0.00	\$47.86	\$12.19
City of Gallup Overhead	37%			\$0.00	\$65.44	\$0.00
				\$142.20	\$242.30	\$120.69
		Tax: 8.3125%		\$11.82	\$20.14	\$0.00
				\$154.02	\$262.44	\$120.69
Subtotal :					\$537.15	
Miscellaneous Material, Equipment, and Labor :					\$80.57	
Total Cost of Power Line Project :					\$617.72	

Miscellaneous Material, Equipment, and Labor : 15%

Gross Receipts Tax : 8.3125%

Eric Winkler  
Engineering Tech  
GJU, Utilities Administration

Customer's Signature  
Acknowledging Estimate And  
Authorizing Commencement of Project



Date: 2/24/2014

Estimate For : DePauli Engineering  
307 S Fourth St  
Gallup, NM 87301

Estimate #: Preliminary

RE: Pole 3610 Overhead Down Guy Install -  
Approx 400 ft W of 516 A US 491

Installation Description	Qty.	Material / Unit	Total	Material	Labor	Equipment
40 ft Class 4 Wood Pole	1	\$823.46 / Unit	\$823.46	\$503.72	\$161.26	\$158.48
Overhead Guy Assembly	1	\$273.77 / Unit	\$273.77	\$155.02	\$64.50	\$54.25
Down Guy Assembly	1	\$260.95 / Unit	\$260.95	\$142.20	\$64.50	\$54.25
Retirement Description	Qty.	Material / Unit	Total	Material	Labor	Equipment
Down Guy Assembly	1	\$118.75 / Unit	\$118.75	\$0.00	\$64.50	\$54.25
Engineering / Office	4	Hrs		\$0.00	\$95.72	\$12.19
City of Gallup Overhead	37%			\$0.00	\$166.68	\$0.00
				\$800.94	\$617.16	\$333.42
		Tax: 8.3125%		\$66.58	\$51.30	\$0.00
				\$867.52	\$668.46	\$333.42
Subtotal :				\$1,869.40		
Miscellaneous Material, Equipment, and Labor :				\$280.41		
Total Cost of Power Line Project :				\$2,149.81		

Miscellaneous Material, Equipment, and Labor : 15%  
Gross Receipts Tax : 8.3125%

  
Eric Winkler  
Engineering Tech  
GJU, Utilities Administration

\_\_\_\_\_  
Customer's Signature  
Acknowledging Estimate And  
Authorizing Commencement of Project





# CITY OF GALLUP

Date: 2/24/2014

Estimate For : DePauli Engineering  
307 S Fourth St  
Gallup, NM 87301

Estimate #: Preliminary

**RE: Pole 3578 Overhead Down Guy Install -  
Approx 180 ft W of Intersec of US 491 and China  
Springs Loop**

Installation Description	Qty.	Material / Unit	Total	Material	Labor	Equipment
40 ft Class 4 Wood Pole	1	\$823.46 / Unit	\$823.46	\$503.72	\$161.26	\$158.48
Overhead Guy Assembly	1	\$273.77 / Unit	\$273.77	\$155.02	\$64.50	\$54.25
Down Guy Assembly	1	\$260.95 / Unit	\$260.95	\$142.20	\$64.50	\$54.25
Retirement Description	Qty.	Material / Unit	Total	Material	Labor	Equipment
Down Guy Assembly	1	\$118.75 / Unit	\$118.75	\$0.00	\$64.50	\$54.25
Engineering / Office	4	Hrs		\$0.00	\$95.72	\$12.19
City of Gallup Overhead	37%			\$0.00	\$166.68	\$0.00
				\$800.94	\$617.16	\$333.42
		Tax: 8.3125%		\$66.58	\$51.30	\$0.00
				<b>\$867.52</b>	<b>\$668.46</b>	<b>\$333.42</b>
Subtotal :				\$1,869.40		
Miscellaneous Material, Equipment, and Labor :				\$280.41		
Total Cost of Power Line Project :				\$2,149.81		

Miscellaneous Material, Equipment, and Labor : 15%

Gross Receipts Tax : 8.3125%

Eric Winkler  
Engineering Tech  
GJU, Utilities Administration

Customer's Signature  
Acknowledging Estimate And  
Authorizing Commencement of Project

# APPENDIX D

## Geotechnical Report



***DePauli Engineering & Surveying, LLC***

-Civil Engineering and Land Surveyors-

**GEOTECHNICAL ENGINEERING REPORT  
NAVAJO GALLUP WATER SUPPLY PROJECT  
REACH 13  
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

January 4, 2012  
GEOMAT Project 112-1420



915 Malta Avenue ♦ Farmington, NM 87401 ♦ Tel (505) 327-7928 ♦ Fax (505) 326-5721

January 4, 2012

**Marc A. DePauli, PE/PS**

DePauli Engineering & Surveying LLC

102 West Hill Avenue

Gallup, New Mexico 87301

RE: Geotechnical Engineering Study  
Navajo Gallup Water Supply Project  
Reach 13  
McKinley County, New Mexico  
GEOMAT Project No. 112-1420

GEOMAT Inc. (GEOMAT) has completed the geotechnical engineering exploration for Reach 13 of the proposed Navajo Gallup Water Supply Project to be located between Yah-ta-Hey and Gamarco in McKinley County, New Mexico. This study was performed in general accordance with the scope of work described in our Proposal No. 112-10-04 dated October 20, 2011.

The results of our engineering study, including the geotechnical recommendations, site plan, test pit records, soil resistivity test results, and laboratory test results are attached.

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.

A handwritten signature in cursive script that reads 'Donald R. Baldwin'.

Donald R. Baldwin  
Geologist

Copies to: Addressee (2)



## TABLE OF CONTENTS

	<u>Page No.</u>
<b>INTRODUCTION</b> .....	1
<b>PROPOSED CONSTRUCTION</b> .....	1
<b>SITE EXPLORATION</b> .....	1
Field Exploration .....	2
Laboratory Testing .....	2
<b>SITE CONDITIONS</b> .....	2
<b>SUBSURFACE CONDITIONS</b> .....	3
Soil Conditions .....	3
Groundwater Conditions .....	3
Laboratory Test Result .....	3
Soil Resistivity Results .....	4
Corrosivity Test Results .....	4
<b>OPINIONS AND RECOMMENDATIONS</b> .....	5
Geotechnical Considerations .....	5
Excavation Safety .....	5
Excavation .....	6
Backfilling and Compaction .....	6
<b>GENERAL COMMENTS</b> .....	7
<b>APPENDIX A</b>	
Site Plan	
Logs of Test Pits	
Unified Soil Classification	
Drilling and Exploration Procedures	
<b>APPENDIX B</b>	
Laboratory Test Results	
Laboratory Test Procedures	
<b>APPENDIX C</b>	
Soil Resistivity Test Results	
<b>APPENDIX D</b>	
Photographs	

**GEOTECHNICAL ENGINEERING REPORT  
NAVAJO GALLUP WATER SUPPLY PROJECT  
REACH 13  
MCKINLEY COUNTY, NEW MEXICO  
GEOMAT PROJECT NO. 112-1420**

## **INTRODUCTION**

This report contains the results of our geotechnical engineering exploration for Reach 13 of the proposed Navajo Gallup Water Supply Project to be located between Yah-ta-Hey and Gamerco 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
- soil resistivity
- excavation and pipeline backfill

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 Reach 13 of the Navajo Gallup Water Supply Project will consist of 17,986 lineal feet of 30-inch diameter, Class 250 or 350 ductile iron water line between Yah-ta-Hey on the north and Gamerco on the south. The minimum depth of soil cover over the pipe is understood to be three and one-half feet.

## **SITE EXPLORATION**

Our scope of services performed for this project included a site reconnaissance by a staff geologist, in-situ soil resistivity testing, a subsurface exploration program, laboratory testing and engineering analyses.

### **Field Exploration:**

Eight in-situ soil resistivity tests were performed on November 15 and 16, 2011 at approximately 2,500-foot intervals along the pipeline alignment as shown on the Site Plan. The resistivity tests were performed in general accordance with ASTM G57 (Wenner Four-Electrode Method). The results of the resistivity tests are presented in Appendix C. We understand the test results will be used by others to develop a corrosion prevention plan for the pipeline.

Subsurface conditions along the alignment were explored on December 6 and 7, 2011, by excavating 15 exploratory test pits at the approximate locations shown on the Site Plan in Appendix A. The test pits, designated TP-1 through TP-15, were excavated at roughly 1,200-foot intervals along the alignment using a Case 590 rubber-tire backhoe with an 18-inch wide bucket. The natural moisture content and in-place dry density of the soils were measured in each test pit at a depth of approximately four feet below existing ground surface using a nuclear densometer. The test pits were advanced to depths of approximately ten feet or to practical refusal on formational rock.

The test pits 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 test pit. Photographs of the test pits are presented in Appendix D.

Groundwater evaluations were made in each test pit at the time of site exploration. Soils were classified in accordance with the Unified Soil Classification System described in Appendix A. Test pit 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. Additionally, two soil samples were submitted to an independent analytical laboratory for testing to evaluate their potential to cause corrosion to concrete and/or ferrous metals.

## **SITE CONDITIONS**

The Reach 13 alignment extends generally southward from the Yah-ta-Hey pump station (Station 0+00) to the intersection of U.S. Highway 491 and County Road 7 (Station 179+86) north of Gamerco. The alignment begins near the existing pump station in Yah-ta-Hey, approximately 1,500 feet south of the intersection of Highways 491 and 264. From this point, it crosses Highway 491 and runs eastward for approximately 2,000 feet, where it turns south and follows

an existing pipeline right-of-way for approximately 5,500 feet. It then crosses to the west side of Highway 491 and generally follows the highway south and east to the intersection of Highway 491 and County Road 7.

The northern portion of the alignment, located roughly between Station 0+00 and Station 120+00, is characterized by generally rolling terrain. South of Station 120+00, the terrain is dissected by numerous arroyos. At the time of our exploration, the majority of the alignment was vegetated by a moderate to heavy growth of sage brush, grasses, and weeds, with occasional juniper trees. Sandstone outcrops were observed in the vicinities of test pits TP-5, 6, 11, and 13.

## **SUBSURFACE CONDITIONS**

### **Soil Conditions:**

As presented on the Boring Logs in Appendix A, we encountered generally sandy and clayey surficial soils along the alignment. We encountered formational rock below the surficial soils in the vicinities near test pits TP-3, 4, and 5, 11, and 13 (Stations 20+00 to 45+00 and 124+00 to 148+00). The formational rock consisted of sandstone, siltstone, and shale. The rock was encountered at depths ranging from approximately 1.5 to 8 feet, and was generally moderately to highly weathered. Using a backhoe with an 18-inch wide bucket, it was possible to excavate between approximately one to five feet into the rock before experiencing practical refusal, as noted on the individual test pit logs in Appendix A.

### **Groundwater Conditions:**

Groundwater was not encountered in any of the test pits to the depths explored. 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:**

Sieve analyses, Atterberg Limits determinations, and standard proctor (ASTM D698) tests were performed on representative samples obtained from approximately the 4-foot depth in the test pits. The samples tested had fines contents (silt- and/or clay-sized particles passing the U.S. No. 200 sieve) ranging from approximately 23 percent to 92 percent. Plasticity indices ranged from non-plastic (NP) to 36. Maximum laboratory dry densities based on the proctor tests ranged from approximately 100 to 120 pounds per cubic foot (pcf); optimum moisture contents ranged from approximately 12 to 21 percent.

Results of all laboratory tests are presented in Appendix B.



### Soil Resistivity Results:

In-situ electrical resistivity of the soil/rock was measured at eight locations along the alignment in accordance with ASTM G57 (Wenner Four-Electrode Method). Resistance measurements (in ohms) were performed at ten different electrode spacings at each location (3, 6, 9, 12, 15, 18, 24, 30, 36, and 45 feet). The resistance values were used to calculate the apparent resistivity (in ohm-centimeters) for each measurement. The apparent resistivity values ranged from approximately 345 to 22,000 ohm-centimeters.

The results of all resistivity measurements are presented in Appendix C.

### Corrosivity Test Results:

Four representative samples were tested to help evaluate the potential for the on-site soils to corrode buried metal and/or concrete. The samples were tested for pH, electrical resistivity, and soluble sulfates and chlorides. Results of these tests are presented in the table below and in Appendix B.

Test Pit No.	Depth (ft)	Soluble Sulfate (ppm)	pH	Resistivity (ohm-cm)	Total Chloride (ppm)
TP-1	4	94.0	7.06	3,390	80
TP-9	4	16.0	7.88	5,730	30
TP-16	4	656	7.31	5,730	10
TP-19	4	673	7.71	667	Not Detected

### *Corrosion of Concrete:*

The soluble sulfate contents of the samples tested ranged from 16 to 673 ppm , which is characterized as moderate sulfate exposure according to American Concrete Institute Building Code 318, Table 4.2.1. For this level of sulfate exposure, ACI 318 recommends the use of Type II cement and a maximum water-cementitious material ratio of 0.50. Additionally, it recommends the use of concrete with a minimum 28-day compressive strength of 4,000 psi. All concrete should be designed, mixed, placed, finished, and cured in accordance with the guidelines presented by the Portland Cement Association (PCA) and the American Concrete Institute (ACI).

### *Corrosion of Metals:*

Corrosion of buried ferrous metals can occur when electrical current flows from the metal into the soil. As the resistivity of the soil decreases, the flow of electrical current increases, increasing the potential for corrosion. A commonly accepted correlation between soil resistivity and corrosion of ferrous metals is shown in the following table.

<b>Resistivity (ohm-cm)</b>	<b>Corrosivity</b>
0 to 1,000	Severely Corrosive
1,000 to 2,000	Corrosive
2,000 to 10,000	Moderately Corrosive
>10,000	Mildly Corrosive

Three of the four samples tested had resistivities ranging from 3,390 to 5,730 ohm-cm. Based on these laboratory results and the table above, these soils would be characterized as moderately corrosive toward ferrous metals. The fourth sample had a resistivity of 667 ohm-cm, which would be characterized as severely corrosive toward ferrous metals. The potential for corrosion should be taken into account during the design process.

## **OPINIONS AND RECOMMENDATIONS**

### **Geotechnical Considerations:**

Based on the geotechnical conditions encountered and tested for this report, the site is considered suitable for the proposed pipeline.

Pipe should be installed in accordance with U.S. Bureau of Reclamation (USBOR) guidelines.

Formational rock was encountered in our test pits in some areas along the alignment. Excavation of rock may require heavy-duty equipment and/or specialized techniques.

Underground utilities, including gas, water, and communications, are known to exist in the vicinity of the alignment, and should be expected during construction of the pipeline.

### **Excavation Safety:**

Construction of stable temporary excavations is the responsibility of the contractor. Temporary slopes and excavations should be designed and constructed in accordance with applicable OSHA or USBOR guidelines, as appropriate.

According to OSHA Construction Standards for Excavations, all excavations greater than four feet in depth must be sloped, shored, or braced. Spoils must be placed at least two feet from the edge of the excavation to reduce the potential for sidewall failure due to excessive lateral pressures. All details regarding excavation safety, as described in OSHA and/or USBOR guidelines, shall be followed.

Although no significant caving or sloughing was noted in our test pits, it should be noted that conditions affecting stability of slopes and excavations can change over time depending on variables such as weather, vibration or surcharges due to nearby equipment, etc. The contractor shall be responsible for monitoring and assessing conditions affecting soil stability during construction.

#### **Excavation:**

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 test pit data. Our test pits were excavated using a Case 590 rubber-tire backhoe with an 18-inch wide bucket; the relative ease or difficulty of excavation will likely be significantly different if other types of equipment and techniques are used to excavate the trenches. 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 excavations in the sandy and/or clayey soils along the alignment should be possible using standard excavation equipment. Excavations in areas where sandstone, siltstone, or shale are encountered are expected to be difficult and may necessitate the use of heavy-duty equipment and/or specialized techniques. Earthwork production rates in formational rock will be lower than those in soils.

#### **Backfilling and Compaction:**

Excavations should be backfilled to the planned finished grades using native or imported soils that are free of debris, rubble, frozen soil, organic material, or other deleterious material. Fill material should be free of cobbles or boulders greater than six inches in diameter. Excavated bedrock may not be suitable for use as backfill material.

Backfill material should be compacted to a minimum of 90 percent of maximum dry density as determined by ASTM D698. In areas where the final backfill is located under pavements or other structures, the upper two (2.0) feet of backfill should be compacted to a minimum of 95 percent of the D698 maximum dry density. Soils should be compacted at a moisture content between three (3.0) percent below and one (1.0) percent above optimum.

Backfill material should be placed in horizontal lifts using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. In the case of conflicting moisture and/or density specifications, the criteria specified by the prevailing jurisdiction should govern.

The native soils along the alignment are predominantly fine-grained and are expected to be moisture-sensitive. Different soil types each have an optimum moisture content where compaction is most efficient, i.e., where compaction can be accomplished with the least amount of compactive energy. Fine-grained soils typically have higher optimum moisture contents than coarse-grained soils; efficient compaction of these types of soils is generally more dependent on moisture content than with coarse-grained soils.

As shown on the Summary of Soil Tests table in Appendix B, most of the soils encountered in our test pits had in-place moisture contents lower than the optimum moisture determined by the laboratory proctor tests. Therefore, moisture conditioning of the native soils will likely be required if they are to be used as backfill material over the pipeline. Tilling, blade-rolling, or other methods of processing may be required to uniformly distribute moisture throughout the soil prior to compaction.

The fine-grained native soils may pump or become unstable or unworkable at high water contents. 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.

## **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 earthwork 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 the construction phase of the project. Construction testing, including field and laboratory evaluation of fill and/or backfill materials, should be performed to determine whether applicable project requirements have been met.

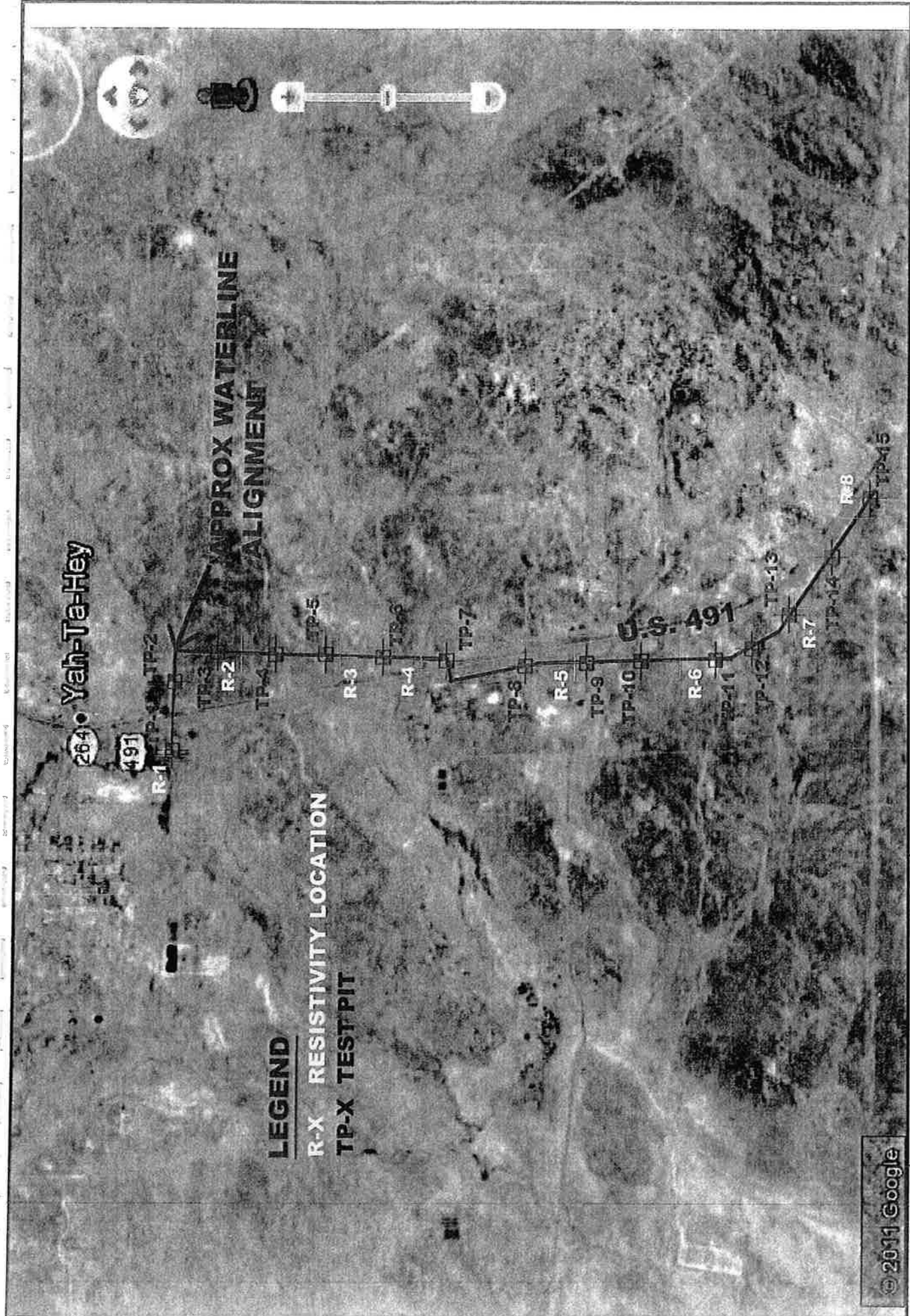
The analyses and recommendations in this report are based in part upon data obtained from the field exploration. The nature and extent of variations beyond the location of test excavations may not become evident until construction. If variations then appear evident, it may be necessary to re-evaluate 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 contaminated or hazardous materials or conditions. If the owner is concerned about the potential for such contamination, other studies should be undertaken. This report has also not addressed any geologic hazards that may exist on or near the site.

This report may be used only by the Client and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on and off site), or other factors may change over time and additional work may be required with the passage of time. Any party, other than the Client, who wishes to use this report, shall notify GEOMAT in writing of such intended use. Based on the intended use of the report, GEOMAT may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements, by the Client or anyone else, will release GEOMAT from any liability resulting from the use of this report by an unauthorized party.

# APPENDIX A



		<b>PROJECT</b>	
<b>Navajo Gallup Water Supply Project</b> Reach 13 McKinley County, New Mexico		<b>SITE PLAN</b>	
Test Pit and Resistivity Locations (approximate)		GEOMAT Project No. 112-1420 Date of Exploration: 12-6-11 & 12-7-11	
 Approximate Not to Scale		© 2011 Google	



915 Malta Avenue  
Farmington, NM 87401  
Tel (505) 327-7928  
Fax (505) 326-5721

# Test Pit TP-1

Page 1 of 1

Project Name: Navajo Gallup Water Supply  
Project Number: 112-1420  
Client: DePauli Engineering & Surveying  
Site Location: McKinley County, New Mexico  
Rig Type: Case 590 Extendahoe  
Drilling Method: 18" Bucket  
Sampling Method: Hand sample  
Hammer Weight: N/A  
Hammer Fall: N/A

Date Drilled: 12/6/2011  
Latitude: 35.62324562  
Longitude: -108.781654  
Elevation: Not Determined  
Boring Location: See Site Plan  
Groundwater Depth: None Encountered  
Logged By: DB  
Remarks: Reach 13 - Sta 3+00

Laboratory Results				In Situ Test	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
	54	12		MD	GRAB		CL		1	SANDY LEAN CLAY, brown, damp to moist  dry density = 79.7 pcf moisture = 19.0%  harder digging
									2	
									3	
									4	
									5	
									6	
									7	
									8	
					GRAB				9	
									10	
									11	Total Depth 10 feet
									12	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon MD = Nuclear Moisture-Density Gauge





915 Malta Avenue  
Farmington, NM 87401  
Tel (505) 327-7928  
Fax (505) 326-5721

# Test Pit TP-2

Page 1 of 1

Project Name: Navajo Gallup Water Supply  
Project Number: 112-1420  
Client: DePauli Engineering & Surveying  
Site Location: McKinley County, New Mexico  
Rig Type: Case 590 Extendahoe  
Drilling Method: 18" Bucket  
Sampling Method: Hand sample  
Hammer Weight: N/A  
Hammer Fall: N/A

Date Drilled: 12/6/2011  
Latitude: 35.62323215  
Longitude: -108.7776426  
Elevation: Not Determined  
Boring Location: See Site Plan  
Groundwater Depth: None Encountered  
Logged By: DB  
Remarks: Reach 13 - Sta 7+50

Laboratory Results				In Situ Test	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
	31	NP			GRAB				1	SILTY SAND, brown, fine-grained, damp, moderate cementation  trace gravel and occasional cobbles (predominantly composed of sandstone fragments)  dry density = 94.6 pcf moisture = 6.2%
									2	
									3	
				MD	GRAB				4	
							SM		5	
									6	
									7	
									8	
									9	
									10	
									11	Total Depth 10 feet
									12	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon MD = Nuclear Moisture-Density Gauge





915 Malta Avenue  
Farmington, NM 87401  
Tel (505) 327-7928  
Fax (505) 326-5721

# Test Pit TP-3

Page 1 of 1

Project Name: Navajo Gallup Water Supply  
Project Number: 112-1420  
Client: DePauli Engineering & Surveying  
Site Location: McKinley County, New Mexico  
Rig Type: Case 590 Extendahoe  
Drilling Method: 18" Bucket  
Sampling Method: Hand sample  
Hammer Weight: N/A  
Hammer Fall: N/A

Date Drilled: 12/6/2011  
Latitude: 35.62123303  
Longitude: -108.7757033  
Elevation: Not Determined  
Boring Location: See Site Plan  
Groundwater Depth: None Encountered  
Logged By: DB  
Remarks: Reach 13 - Sta 20+00

Laboratory Results					In Situ Test	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)								
						GRAB		GC		1	CLAYEY GRAVEL, dark gray, fine- to coarse-grained, damp (composed predominantly of angular shale/siltstone fragments)
								RK		2	SILTSTONE, yellow-brown to gray, slightly weathered, moderately fractured, fractures into platy slabs approximately 1" thick
										3	
										4	
	23	15				GRAB				5	
										6	Test pit terminated at 5 feet due to practical refusal on siltstone Total Depth 5 feet
										7	
										8	
										9	
										10	
										11	
										12	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon MD = Nuclear Moisture-Density Gauge



915 Malta Avenue  
Farmington, NM 87401  
Tel (505) 327-7928  
Fax (505) 326-5721

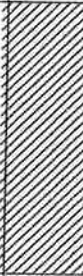

# Test Pit TP-4

Page 1 of 1

Project Name: Navajo Gallup Water Supply  
Project Number: 112-1420  
Client: DePauli Engineering & Surveying  
Site Location: McKinley County, New Mexico  
Rig Type: Case 590 Extendahoe  
Drilling Method: 18" Bucket  
Sampling Method: Hand sample  
Hammer Weight: N/A  
Hammer Fall: N/A

Date Drilled: 12/6/2011  
Latitude: 35.61780034  
Longitude: -108.7757450  
Elevation: Not Determined  
Boring Location: See Site Plan  
Groundwater Depth: None Encountered  
Logged By: DB  
Remarks: Reach 13 - Sta 32+50

## Laboratory Results

Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)	In Situ Test	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					GRAB		CL		1	LEAN CLAY, yellow-brown, damp
									2	
									3	white calcareous veins & nodules
29		NP		MD	GRAB		RK		4	SANDSTONE, light gray, fine-grained, highly weathered
									5	dry density = 96.2 pcf moisture = 7.6%
										slightly weathered
									6	test pit terminated at 5.5 feet due to practical refusal on sandstone
									7	Total Depth 5.5 feet
									8	
									9	
									10	
									11	
									12	



915 Malta Avenue  
Farmington, NM 87401  
Tel (505) 327-7928  
Fax (505) 326-5721

# Test Pit TP-5

Page 1 of 1

Project Name: Navajo Gallup Water Supply  
Project Number: 112-1420  
Client: DePauli Engineering & Surveying  
Site Location: McKinley County, New Mexico  
Rig Type: Case 590 Extendahoe  
Drilling Method: 18" Bucket  
Sampling Method: Hand sample  
Hammer Weight: N/A  
Hammer Fall: N/A

Date Drilled: 12/6/2011  
Latitude: 35.61436777  
Longitude: -108.7757948  
Elevation: Not Determined  
Boring Location: See Site Plan  
Groundwater Depth: None Encountered  
Logged By: DB  
Remarks: Reach 13 - Sta 45+00

Laboratory Results					In Situ Test	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)								
						GRAB		SM		1	SILTY SAND, brown, fine-grained, damp
										2	CLAYEY SAND, brown to gray, fine-grained, damp  dry density = 92.7 pcf moisture = 18.3%
										3	
										4	
										5	
	44	27		MD	GRAB			SC		6	
										7	
										8	
						GRAB		RK		9	SANDSTONE, light gray, fine- to medium-grained, slightly weathered
										10	test pit terminated at 9 feet due to practical refusal on sandstone Total Depth 9 feet
										11	
										12	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon MD = Nuclear Moisture-Density Gauge



915 Malta Avenue  
Farmington, NM 87401  
Tel (505) 327-7928  
Fax (505) 326-5721

# Test Pit TP-6

Page 1 of 1

Project Name: Navajo Gallup Water Supply  
Project Number: 112-1420  
Client: DePauli Engineering & Surveying  
Site Location: McKinley County, New Mexico  
Rig Type: Case 590 Extendahoe  
Drilling Method: 18" Bucket  
Sampling Method: Hand sample  
Hammer Weight: N/A  
Hammer Fall: N/A

Date Drilled: 12/6/2011  
Latitude: 35.61093529  
Longitude: -108.7758552  
Elevation: Not Determined  
Boring Location: See Site Plan  
Groundwater Depth: None Encountered  
Logged By: DB  
Remarks: Reach 13 - Sta 57+50

Laboratory Results					In Situ Test	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)								
								SM		1	SILTY SAND, brown, fine-grained, moist
										2	CLAYEY SAND, gray, fine-grained, slightly damp, strong cementation
										3	
46	13			MD	GRAB					4	green-gray dry density = 88.1 pcf moisture = 7.0%
								SC		5	
										6	
										7	
										8	
										9	
										10	
										11	
										12	Total Depth 11 feet

GEOMAT 112-1420.GPJ GEOMAT.GDT 01/04/12

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon MD = Nuclear Moisture-Density Gauge



915 Malta Avenue  
Farmington, NM 87401  
Tel (505) 327-7928  
Fax (505) 326-5721

# Test Pit TP-7

Page 1 of 1

Project Name: Navajo Gallup Water Supply  
Project Number: 112-1420  
Client: DePauli Engineering & Surveying  
Site Location: McKinley County, New Mexico  
Rig Type: Case 590 Extendahoe  
Drilling Method: 18" Bucket  
Sampling Method: Hand sample  
Hammer Weight: N/A  
Hammer Fall: N/A

Date Drilled: 12/6/2011  
Latitude: 35.60767908  
Longitude: -108.7762909  
Elevation: Not Determined  
Boring Location: See Site Plan  
Groundwater Depth: None Encountered  
Logged By: DB  
Remarks: Reach 13 - Sta 70+00

Laboratory Results				In Situ Test	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
	58	20		MD	GRAB		CL		1	SANDY LEAN CLAY, yellow- brown, damp to moist  white calcareous veins & nodules  dry density = 93.5 pcf moisture = 14.3%
									2	
									3	
									4	
									5	
									6	
									7	
									8	
									9	
									10	
									11	Total Depth 10 feet
									12	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon MD = Nuclear Moisture-Density Gauge



915 Malta Avenue  
Farmington, NM 87401  
Tel (505) 327-7928  
Fax (505) 326-5721

# Test Pit TP-8

Page 1 of 1

Project Name: Navaio Gallup Water Supply  
Project Number: 112-1420  
Client: DePauli Engineering & Surveying  
Site Location: McKinley County, New Mexico  
Rig Type: Case 590 Extendahoe  
Drilling Method: 18" Bucket  
Sampling Method: Hand sample  
Hammer Weight: N/A  
Hammer Fall: N/A

Date Drilled: 12/6/2011  
Latitude: 35.60322598  
Longitude: -108.7762200  
Elevation: Not Determined  
Boring Location: See Site Plan  
Groundwater Depth: None Encountered  
Logged By: DB  
Remarks: Reach 13 - Sta 88+50

Laboratory Results				In Situ Test	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
					GRAB				1	FAT CLAY, brown, moist    dry density = 97.4 pcf moisture = 15.6%  white calcareous veins & nodules  damp, hard, blocky
									2	
									3	
	92	36		MD	GRAB		CH		4	
									5	
									6	
									7	
									8	
									9	
									10	
										Total Depth 10 feet
									11	
									12	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon MD = Nuclear Moisture-Density Gauge



915 Malta Avenue  
Farmington, NM 87401  
Tel (505) 327-7928  
Fax (505) 326-5721

# Test Pit TP-9

Page 1 of 1

Project Name: Navajo Gallup Water Supply  
Project Number: 112-1420  
Client: DePauli Engineering & Surveying  
Site Location: McKinley County, New Mexico  
Rig Type: Case 590 Extendahoe  
Drilling Method: 18" Bucket  
Sampling Method: Hand sample  
Hammer Weight: N/A  
Hammer Fall: N/A

Date Drilled: 12/6/2011  
Latitude: 35.60006791  
Longitude: -108.7762534  
Elevation: Not Determined  
Boring Location: See Site Plan  
Groundwater Depth: None Encountered  
Logged By: DB  
Remarks: Reach 13 - Sta 100+00

Laboratory Results					In Situ Test	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)								
						GRAB				1	CLAYEY SAND, brown, fine-grained, damp  white calcareous veins & nodules  dry density = 94.4 pcf moisture = 5.1%
										2	
										3	
	43	12		MD	GRAB					4	
								SC		5	
										6	
										7	
										8	
										9	
										10	
										11	
										12	Total Depth 11 feet

GEOMAT 112-1420.GPJ GEOMAT.GDT 01/04/12

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon MD = Nuclear Moisture-Density Gauge





915 Malta Avenue  
Farmington, NM 87401  
Tel (505) 327-7928  
Fax (505) 326-5721

# Test Pit TP-10

Page 1 of 1

Project Name: Navajo Gallup Water Supply  
Project Number: 112-1420  
Client: DePauli Engineering & Surveying  
Site Location: McKinley County, New Mexico  
Rig Type: Case 590 Extendahoe  
Drilling Method: 18" Bucket  
Sampling Method: Hand sample  
Hammer Weight: N/A  
Hammer Fall: N/A

Date Drilled: 12/6/2011  
Latitude: 35.59677242  
Longitude: -108.7762715  
Elevation: Not Determined  
Boring Location: See Site Plan  
Groundwater Depth: None Encountered  
Logged By: DB  
Remarks: Reach 13 - Sta 112+00

Laboratory Results				In Situ Test	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
					GRAB				1	CLAYEY SAND, brown, fine-grained, damp  light gray to white calcareous veins & nodules  dry density = 105.2 pcf moisture = 9.9%
					GRAB				2	
									3	
44		13		MD	GRAB				4	
							SC		5	
									6	
									7	
									8	
									9	
									10	
									11	Total Depth 10 feet
									12	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon MD = Nuclear Moisture-Density Gauge



915 Malta Avenue  
Farmington, NM 87401  
Tel (505) 327-7928  
Fax (505) 326-5721

# Test Pit TP-11

Page 1 of 1

Project Name: Navajo Gallup Water Supply  
Project Number: 112-1420  
Client: DePauli Engineering & Surveying  
Site Location: McKinley County, New Mexico  
Rig Type: Case 590 Extendahoe  
Drilling Method: 18" Bucket  
Sampling Method: Hand sample  
Hammer Weight: N/A  
Hammer Fall: N/A

Date Drilled: 12/6/2011  
Latitude: 35.5935417  
Longitude: -108.7760875  
Elevation: Not Determined  
Boring Location: See Site Plan  
Groundwater Depth: None Encountered  
Logged By: DB  
Remarks: Reach 13 - Sta 124+00

Laboratory Results					In Situ Test	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)								
						GRAB				1	LEAN CLAY, yellow-brown, damp
								CL		2	SHALE, yellow-gray, highly weathered, highly fractured
										3	
	30	27			MD	GRAB				4	dry density = 103.7 pcf moisture = 15.2%
										5	
								RK		6	slightly to moderately fractured
										7	
										8	dark gray, slightly weathered
										9	
								RK		10	SANDSTONE, gray, fine-to medium-grained, moderately weathered
										11	Total Depth 10 feet
										12	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon MD = Nuclear Moisture-Density Gauge




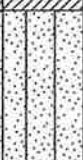

915 Malta Avenue  
Farmington, NM 87401  
Tel (505) 327-7928  
Fax (505) 326-5721

# Test Pit TP-12

Page 1 of 1

Project Name: Navajo Gallup Water Supply  
Project Number: 112-1420  
Client: DePauli Engineering & Surveying  
Site Location: McKinley County, New Mexico  
Rig Type: Case 590 Extendahoe  
Drilling Method: 18" Bucket  
Sampling Method: Hand sample  
Hammer Weight: N/A  
Hammer Fall: N/A

Date Drilled: 12/7/2011  
Latitude: 35.59071248  
Longitude: -108.7752543  
Elevation: Not Determined  
Boring Location: See Site Plan  
Groundwater Depth: None Encountered  
Logged By: DB  
Remarks: Reach 13 - Sta 135+50

Laboratory Results				In Situ Test	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
					GRAB		CL		1	SANDY LEAN CLAY, yellow-brown, moist
									2	
									3	
	31	NP		MD	GRAB		SM		4	SILTY SAND, gray, fine-grained, slightly damp strong calcareous cementation  dry density = 88.1 pcf; moisture = 6.1%
									5	
									6	SANDY LEAN CLAY, yellow-brown, slightly damp, hard, blocky
									7	
									8	
					GRAB		CL		9	
									10	
									11	Total Depth 10 feet
									12	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon MD = Nuclear Moisture-Density Gauge



915 Malta Avenue  
Farmington, NM 87401  
Tel (505) 327-7928  
Fax (505) 326-5721

# Test Pit TP-13

Page 1 of 1

Project Name: Navajo Gallup Water Supply  
Project Number: 112-1420  
Client: DePauli Engineering & Surveying  
Site Location: McKinley County, New Mexico  
Rig Type: Case 590 Extendahoe  
Drilling Method: 18" Bucket  
Sampling Method: Hand sample  
Hammer Weight: N/A  
Hammer Fall: N/A

Date Drilled: 12/7/2011  
Latitude: 35.58867943  
Longitude: -108.7718679  
Elevation: Not Determined  
Boring Location: See Site Plan  
Groundwater Depth: None Encountered  
Logged By: DB  
Remarks: Reach 13 - Sta 148+00

Laboratory Results					In Situ Test	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)								
	86	27		MD	GRAB			SM		1	SILTY SAND with gravel and occasional cobbles, brown, fine-to medium-grained, damp SANDY LEAN CLAY with gravel, cobbles, and occasional boulders, damp
								CL		2	
										3	
										4	
					GRAB			RK		5	SHALE, dark gray, slightly weathered, blocky, moderately fractured  dry density = 103.7 pcf moisture = 11.1%
										6	
										7	
										8	
					GRAB			RK		9	SILTSTONE, yellow-brown, slightly weathered
										10	test pit terminated at 9 feet due to practical refusal on siltstone Total Depth 9 feet
										11	
										12	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon MD = Nuclear Moisture-Density Gauge



915 Malta Avenue  
Farmington, NM 87401  
Tel (505) 327-7928  
Fax (505) 326-5721

# Test Pit TP-14

Page 1 of 1

Project Name: Navajo Gallup Water Supply  
Project Number: 112-1420  
Client: DePauli Engineering & Surveying  
Site Location: McKinley County, New Mexico  
Rig Type: Case 590 Extendahoe  
Drilling Method: 18" Bucket  
Sampling Method: Hand sample  
Hammer Weight: N/A  
Hammer Fall: N/A

Date Drilled: 12/7/2011  
Latitude: 35.58656496  
Longitude: -108.7683463  
Elevation: Not Determined  
Boring Location: See Site Plan  
Groundwater Depth: None Encountered  
Logged By: DB  
Remarks: Reach 13 - Sta 161+00

## Laboratory Results

Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)	In Situ Test	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
									1	SILTY SAND, brown, fine-grained, slightly damp  dry density = 84.1 pcf moisture = 6.3%
									2	
									3	
	26	NP		MD	GRAB				4	
							SM		5	
									6	
									7	
									8	
									9	
									10	
									11	
									12	Total Depth 11 feet

GEOMAT 112-1420.GPJ GEOMAT.GDT 01/04/12

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon MD = Nuclear Moisture-Density Gauge



915 Malta Avenue  
Farmington, NM 87401  
Tel (505) 327-7928  
Fax (505) 326-5721



# Test Pit TP-15

Page 1 of 1

Project Name: Navajo Gallup Water Supply  
Project Number: 112-1420  
Client: DePauli Engineering & Surveying  
Site Location: McKinley County, New Mexico  
Rig Type: Case 590 Extendahoe  
Drilling Method: 18" Bucket  
Sampling Method: Hand sample  
Hammer Weight: N/A  
Hammer Fall: N/A

Date Drilled: 12/7/2011  
Latitude: 35.58448274  
Longitude: -108.7648787  
Elevation: Not Determined  
Boring Location: See Site Plan  
Groundwater Depth: None Encountered  
Logged By: DB  
Remarks: Reach 13 - Sta 174+00

## Laboratory Results

Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)	In Situ Test	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					GRAB		SM		1	SILTY SAND with trace gravel, yellow-brown, fine-grained, damp
	45	18		MD	GRAB		SC		2	CLAYEY SAND, green-gray, fine-grained, damp
									3	
									4	
									5	dry density = 95.6 pcf moisture = 9.9%
									6	
									7	
									8	
									9	
									10	
									11	Total Depth 10 feet
									12	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon MD = Nuclear Moisture-Density Gauge

Unified Soil Classification	Cobbles	Gravel		Sand			Silt or Clay
		coarse	fine	coarse	medium	fine	

# 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.	TEST PIT	STATION NO.	IN-SITU CONDITIONS		ASTM D698 PROCTOR		SIEVE ANALYSIS, CUMULATIVE PERCENT PASSING											ATTEBERG LIMITS			USCS CLASSIFICATION																					
			MOISTURE (%)	DRY DENSITY (pcf)	MOISTURE (%)	DRY DENSITY (pcf)	1"	3/4"	1/2"	3/8"	No. 4	No. 8	No. 10	No. 16	No. 30	No. 40	No. 50	No. 100	No. 200	LL		PL	PI																			
12306	TP-1	3+00	19.0	79.7	15.5	109.4	100	100	100	100	100	100	100	99	99	98	96	76	54	25	13	12	Sandy Lean CLAY (CL)																			
12307	TP-2	7+50	6.2	94.6	12.6	114.2	100	100	100	100	98	97	96	96	95	95	91	48	31	NLL	NPL	NP	Silty SAND (SM)																			
12308	TP-3	20+00	NT	NT	17.1	108.1	100	99	85	77	63	54	53	50	48	47	45	37	23	32	17	15	SILTSTONE																			
12309	TP-4	32+50	7.6	96.2	17.2	105.7	100	100	100	100	100	99	99	98	97	96	94	55	29	NLL	NPL	NP	SANDSTONE																			
12310	TP-5	45+00	18.3	92.7	18.0	106.7	100	100	100	100	100	100	100	100	99	99	96	69	44	42	15	27	Clayey SAND (SC)																			
12311	TP-6	57+50	7.0	88.1	13.7	115.9	100	100	100	100	100	100	100	99	98	97	93	68	46	26	13	13	Clayey SAND (SC)																			
12312	TP-7	70+00	14.3	93.5	16.8	105.8	100	100	100	100	100	100	100	100	100	99	98	77	58	32	12	20	Sandy Lean CLAY (CL)																			
12313	TP-8	88+50	15.6	97.4	19.3	100.4	100	100	100	100	100	100	100	100	100	99	98	94	92	50	14	36	Fat CLAY (CH)																			
12314	TP-9	100+00	5.1	94.4	16.0	110.5	100	100	100	100	100	100	100	100	99	99	93	61	43	23	11	12	Clayey SAND (SC)																			
12315	TP-10	112+00	9.9	105.2	14.8	113.8	100	100	100	100	99	99	98	97	96	95	85	72	44	24	11	13	Clayey SAND (SC)																			
12316	TP-11	124+00	15.2	103.7	NT	NT	100	100	96	93	81	71	68	62	57	54	52	44	30	41	14	27	SHALE																			
12317	TP-12	135+50	6.1	88.1	11.8	120.4	100	100	100	100	100	100	100	100	100	99	83	43	31	NLL	NPL	NP	Silty SAND (SM)																			
12323	TP-13	148+00	11.1	103.7	20.8	102.0	100	100	100	100	100	99	99	98	97	96	88	86	42	15	27	27	SHALE																			
12324	TP-14	161+00	6.3	84.1	14.8	110.5	100	100	100	100	100	100	100	99	97	95	86	40	26	NLL	NPL	NP	Silty SAND (SM)																			
12318	TP-15	174+00	9.9	95.6	14.5	111.3	100	100	100	99	99	98	98	98	97	95	90	61	45	32	14	18	Clayey SAND (SC)																			
																							NT = Not Tested																			
			<div></div>														SUMMARY OF SOIL TESTS					Project	Navajo Gallup Water Supply Project - Reach 13																			
																						Job No.	112-1420																			
																						Location	McKinley County, New Mexico																			
																						Dates of Exploration	December 6 - 8, 2011																			



**envirotech**  
Analytical Laboratory

## Soluble Sulfate

Client:	Geomat Inc.	Project #:	04001-0002
Sample ID:	TP-1 @ 4'	Date Reported:	12-20-11
Laboratory Number:	60581	Date Sampled:	12-06-11
Chain of Custody:	13048	Date Received:	12-09-11
Sample Matrix:	Soil	Date Extracted:	12-15-11
Preservative:		Date Analyzed:	12-15-11
Condition:	Intact		

Parameter	Analytical Result	Units
Soluble Sulfate	94.0	mg/kg
Soluble Sulfate	0.009	% (m/m)
pH	7.06	
Resistivity	3,390	Ohm-cm
Total Chloride	80	mg/kg

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.  
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.  
ASTM D 516, Standard Test Method for Sulfate Ion in Water.

Comments: **NGWSP**



**envirotech**  
Analytical Laboratory

## Soluble Sulfate

Client:	Geomat Inc.	Project #:	04001-0002
Sample ID:	TP-19 @ 4'	Date Reported:	12-20-11
Laboratory Number:	60584	Date Sampled:	12-06-11
Chain of Custody:	13048	Date Received:	12-09-11
Sample Matrix:	Soil	Date Extracted:	12-15-11
Preservative:		Date Analyzed:	12-15-11
Condition:	Intact		

Parameter	Analytical Result	Units
Soluble Sulfate	673	mg/kg
Soluble Sulfate	0.067	% (m/m)
pH	7.71	
Resistivity	667	Ohm-cm
Total Chloride	ND	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.  
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.  
ASTM D 516, Standard Test Method for Sulfate Ion in Water.

Comments: **NGWSP**

5795 US Highway 66, Farmington, NM 87401

Ph (505) 632-0615 F (800) 362-1879 Fx (505) 632-1865

Review  
lab@envirotech-inc.com envirotech-inc.com

## **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 C

**RESULTS OF IN-SITU SOIL RESISTIVITY TESTING**  
**Navajo Gallup Water Supply Project**  
**GEOMAT Project No. 112-1420**  
**Combined Reaches 13 and 27.5**

Electrode Spacing (ft)	Apparent Resistivity in Ohm-cm										
	Resistivity Test No.										
	R-1	R-2	R-3	R-4	R-5	R-6	R-7	R-8	R-9	R-10	R-11
3	8618	22406	17810	11777	10341	5745	17810	9192	10054	14363	3619
6	5056	21831	16086	8273	5975	4251	16086	7009	4366	17235	2528
9	3964	18959	15167	7066	4998	4309	10513	6205	3447	15167	2241
12	3217	17235	13788	6894	5056	4136	6434	6205	2987	14018	2068
15	3160	16948	13214	6320	4596	3734	4596	5458	2355	10628	1781
18	2447	15167	12409	6549	3792	3792	3447	4826	1482	8618	1344
24	1976	12409	11490	6894	3171	3263	2390	2850	827	6894	1149
30	1896	9767	10341	6894	2413	2815	2011	2815	919	4883	919
36	1448	7583	8962	6894	1930	2895	1448	2551	965	3654	1034
45	1724	3533	6808	5946	1206	2327	1206	2154	345	2327	1120

**NOTES:**

- 1) R-1 through R-8 are located along Reach 13; R-9 through R-11 are located along Reach 27.5
- 2) Spacing in feet between each of four equally-spaced electrodes per ASTM G57 (Wenner 4-Pin Method)
- 3) Apparent resistivity at each electrode spacing = (meter reading in ohms)(spacing in feet)(191.5)

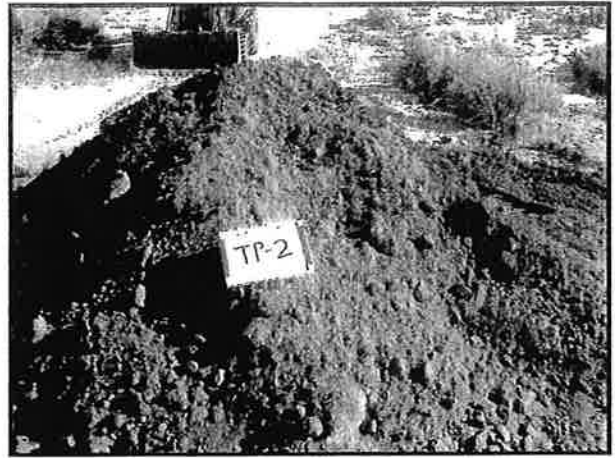
# APPENDIX D



**PHOTOGRAPHS OF TEST PITS – REACH 13**



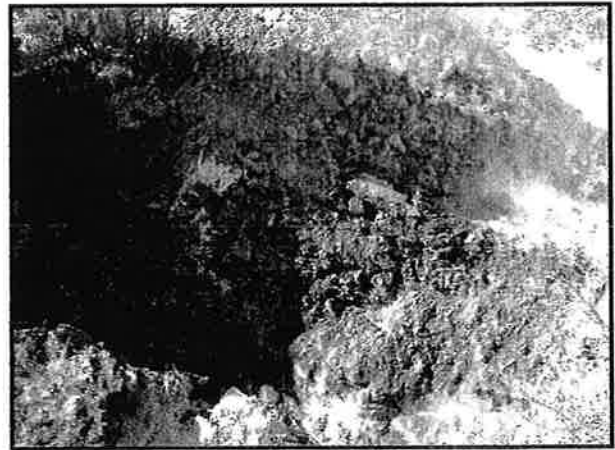
**Test Pit TP-1**



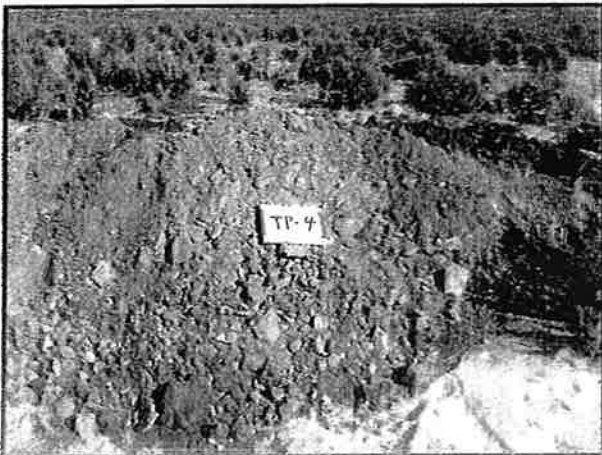
**Test Pit TP-2**



**Test Pit TP-3**



**Test Pit TP-3**



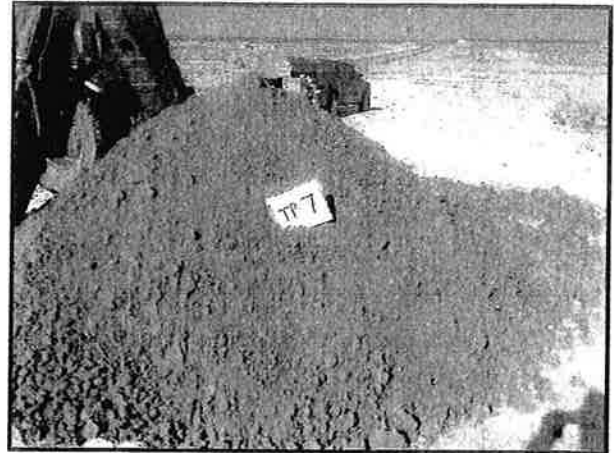
**Test Pit TP-4**



**Test Pit TP-5**



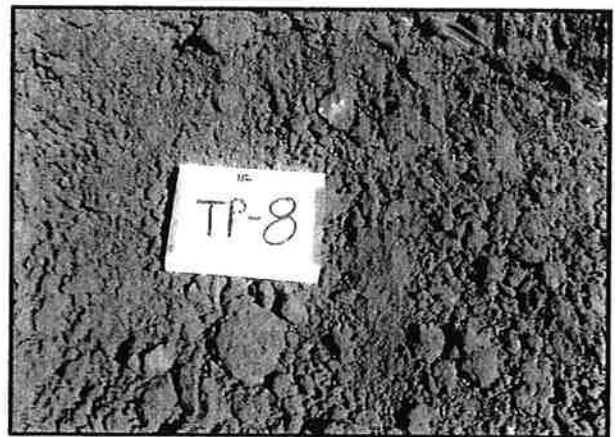
**Test Pit TP-6**



**Test Pit TP-7**



**Test Pit TP-8**



**Test Pit TP-8**



**Test Pit TP-9**



**Test Pit TP-10**



**Test Pit TP-11**



**Test Pit TP-12**



**Test Pit TP-13**



**Test Pit TP-14**



**Test Pit TP-15**

# APPENDIX E

## Highway Permits

Highway 491  
Utility Permit  
30'' Parallel  
Line &  
Crossing

APPLICATION FOR PERMIT TO INSTALL UTILITY FACILITIES  
WITHIN PUBLIC RIGHT OF WAY

TO: NEW MEXICO DEPARTMENT of TRANSPORTATION  
P.O. BOX 1149  
SANTA FE, NEW MEXICO 87504 - 1149

Permit No. \_\_\_\_\_  
\_\_\_\_\_  
Renewal Permit  
\_\_\_\_\_  
Relocation  
\_\_\_\_\_  
Remain in place  
☒   
New Installation

1. Pursuant to New Mexico Statutes Annotated, 1978 Compilation, Sections 67-8-13 and 55-2-7, and 17.4.2 NMAC the undersigned  
City of Gallup

Address: P.O. Box 1270, Gallup, NM 87305

herein makes application to use highway rights of way to install:

Size and Type of Facility 30" Waterline (Parallel) and 30" Waterline in a 40" steel casing (crossing)

in the following location: N.M. Project No. F-03101(43), S.R. No. U.S. HWY 491,

Highway Station / and or GPS/MP MP 5.6 to Highway Station and/or  
GPS/MP MP 5.9,

McKinley County, Section 19, Township 16N, Range 18W

2. For the purpose of this application "within" shall be construed as meaning "on, upon, over, under, across or along."
- "Engineer" shall be construed as meaning the District Engineer of the New Mexico Department of Transportation or the District Engineer's representative.
  - "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.
  - "Facility" shall be construed as meaning, but not limited to any 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, stream or other projects carried by means of pipelines, conduits, wires, culverts, ditches, conveyors or other methods.
  - If application is for a parallel installation, justification as to why private right may not be utilized must be furnished.
3. Applicant proposes to relocate, install or leave facility 18 feet within the  
west right of way line. The proposed installation shall be:
- |                                |                          |   |
|--------------------------------|--------------------------|---|
| <u>Crossing &amp; Parallel</u> | <u>Subsurface</u>        | <u>Jack &amp; Bore Crossing; Open Trench Parallel</u> |
| (Crossing or Parallel)         | (Subsurface or Overhead) | (Boring, Jacking or Pavement Cut)                     |
- If Applicant requests installation by pavement cut, complete justification therefore shall be submitted by attachment.
  - 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 must be shown. Proposed installations on or in bridges or other structures, or for the installation of any structures, shall require detailed structural drawings.
5. Applicant desires this permit to be in affect for 25 years. Permit shall not be issued for a period longer than 25 years, and must be renewed upon expiration. 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. This application shall be validated as a permit upon the signing of the application by the Engineer and returning it to the applicant. The granting of this permit shall not be construed as granting any easement or property right.
7. Servicing of facilities shall 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 **applicable provisions of**



**regulations of the New Mexico Department of Transportation, 17.4.2 NMAC**, all provisions of this application, drawing and the Instructions for Utility Permits, as they may be modified by the Engineer, and no departure therefrom may be made without the written consent of the Engineer. All facilities shall be so placed that they will not interfere with or endanger any roadway features or 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 shall, 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 workmanlike 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 design installation, maintenance, alteration or removal of such facilities or other appurtenances, the Applicant shall 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 or its contractors or its consultants. 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. 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 shall promptly reimburse the Engineer for all costs and expenses incident thereto, or (b) summarily order the removal of such facility and if the Applicant fails to comply with that removal order within a reasonable time, the Engineer may direct the removal of the facility with all costs and expenses thereto to be borne by Applicant.
11. 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 or 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, the New Mexico Department of Transportation or the New Mexico State Transportation Commission. 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 local franchises not in conflict with the rules and regulations of the New Mexico Department of Transportation. The Engineer makes no 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 or portions thereof.
12. 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 contained in any prejudice or impair any rights or claims existing independent of this application with respect to the construction, operation and maintenance of the Applicant's facilities in the State of New Mexico.
13. The utility owner must indemnify and hold harmless the New Mexico Department of Transportation from loss due to any negligent act of the utility, the utility's employees, any agent acting on the utility's behalf, and anyone else engaged by the utility to work on the utility installations, maintenance or relocations of their facilities. Any contractor or subcontractor engaged by the utility to perform utility installations or relocations in conjunction with or prior to highway construction must also indemnify and hold harmless the New Mexico Department of Transportation from loss due to any negligent act of the utility's contractor or subcontractor.
14. Each copy of the application shall be signed by the Applicant as an individual owner or by any official designated to execute such documents.
15. Utility owners shall carry insurance in amounts not less than those below specified and as outlined in 17 NMAC 4.2 and the Standard Specifications for Highway and Bridge Construction, 1994 Edition, (hereinafter, "Specifications"), as may be updated from time to time. In the event of conflict between the specification, and the regulations, owner shall carry the larger amount of insurance. If a utility is self-insured, the utility shall provide an Owner's Protective Liability Insurance Policy, in favor of the Department, in the amounts below specified. **Department as additional named insured:** The utility, its contractor or subcontractor shall have the New Mexico State Highway and Transportation Department added as an additional named insured on the Comprehensive General Liability Form or Commercial General Liability Form furnished by the Utility.

This application is hereby granted subject to all provisions herein and including the following special provisions, changes or amendments:

The utility shall provide "as-built" horizontal and vertical location information in hard copy and electronic file (AutoCAD DWG (3D) or Microstation DGN (3D) format. The standard horizontal datum shall be North American Datum 1983 (NAD83) and the standard projections shall be the New Mexico State Plane

Coordinate System 1983 (NMSPCS83). The standard vertical datum shall be North American Vertical Datum 1988 (NAVD 1988). The preferred media in which this data must be submitted is CD ROM. The utility location information shall be tied to Department monuments and referenced to highway mileposts and/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.

*Note: Highway projects are time sensitive therefore, permit information requested from Authorization to Engineer Letters must be returned by the date indicated within the Authorization to Engineer letter.*

16. Pursuant to: MAP-21; <http://www.fhwa.dot.gov/construction/contracts/buyam-qa.cfm> and (23U.S.C313) Applicant/Utility Owner certifies we are in compliance with Buy America for said facility described in Section 1. of this permit document. Applicant agrees and understands nonadherence will void said permit.

Applicant City of Gallup

By 

Title Chief Engineer

Approval of this permit is hereby given this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_

NEW MEXICO DEPARTMENT of TRANSPORTATION

By \_\_\_\_\_



# TRAFFIC CONTROL PLAN

## GALLUP-RURAL NAVAJO WATER SUPPLY PROJECT

### PROJECT 8

### 30" WATERLINE CONSTRUCTION, CROSSING & PARALLEL

### NMSHC PROJ. NO. F-031-1(43)

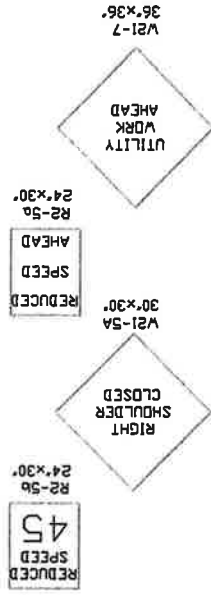
### MILE MARKERS 5.6 TO 5.9, STAS. 330+40.81 TO 346+00.37

SECTION 19, T16N, R18W, N.M.P.M.;  
MCKINLEY COUNTY, NEW MEXICO

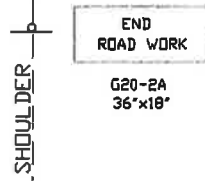
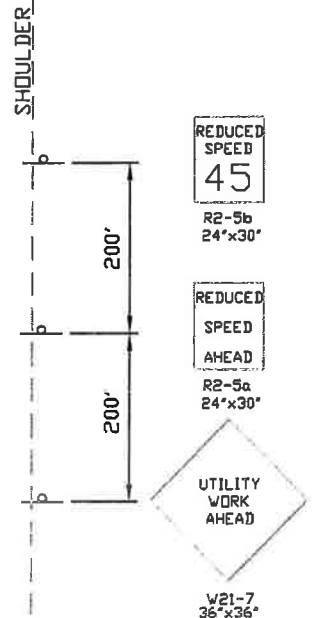
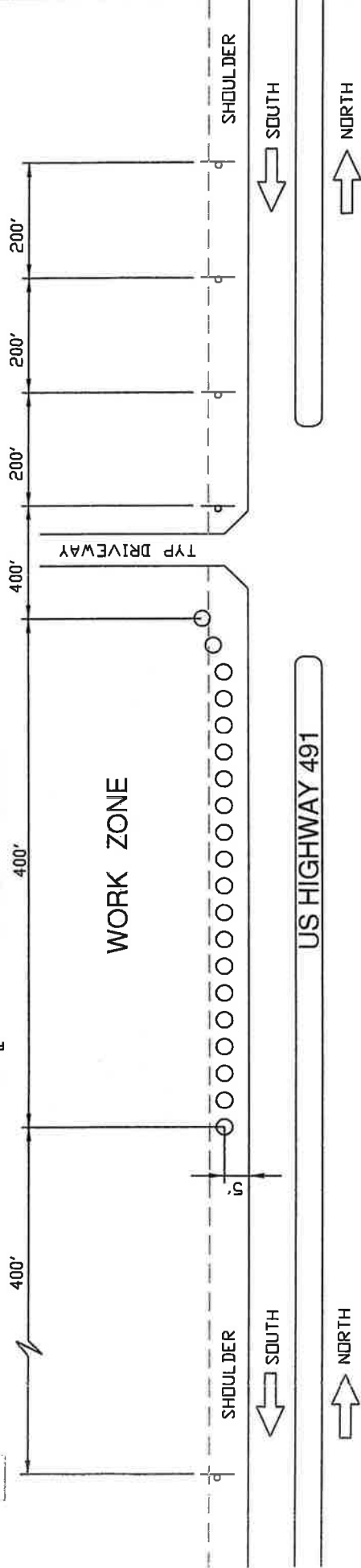
NTS

#### NOTES:

1. PROVIDE FLASHER LIGHTS ON EVERY OTHER BARREL
2. IF TRAFFIC CONTROL IS LEFT IN PLACE OVER NIGHT.
3. MUTCD STANDARDS.
4. DRIVEWAYS AND ACCESS ROADS SHALL BE KEPT OPEN AT ALL TIMES.
5. TRAFFIC CONTROL SHALL MOVE ALONG SHOULDER AS WORK PROGRESSES.



45' BARREL SPACING



**DePAULI ENGINEERING & SURVEYING LLC**  
- CIVIL ENGINEERS AND LAND SURVEYORS -  
307 SOUTH 4th STREET, GALLUP, NM 87301  
TEL: (505) 863-5440 DES@CNETCO.COM



## New Mexico Department of Transportation

### INTRA-DEPARTMENTAL CORRESPONDENCE

---

**TO:** John Whatley  
NMDOT District 5

**Date:** February 21, 2014

**SUBJECT:** San Juan County  
US 491, west side, milepost 5.77 to 5.94  
Crossing Milepost 5.94  
Buried 30-inch water pipeline  
Gallup Rural Navajo Water Supply Project, Project 8, Reach 13

**FROM:** Genevieve Head  
Environmental Development Section

The NMDOT Environmental Development Section has reviewed the documentation provided to this office by DePauli Engineering via electronic mail January 29, 2014. This documentation included the cultural resource report titled *A Class III Archaeological Survey and Cultural Resources Inventory for the Reach 13 Segment of the Navajo-Gallup Water Supply Pipeline Project, McKinley County, New Mexico, prepared by Zuni Cultural Resource Enterprise, Inc.* (NMCRIS #122105). No cultural resources were located within or adjacent to NMDOT right of way acquired from private sources.

The documentation also included Notice to Proceed for Reach 13 from the US Department of Interior, Bureau of Reclamation (Dated December 16, 2013).

The NMDOT Environmental Development Section has no concerns with this project and this memo constitutes environmental clearance for the project to proceed within NMDOT highway right of way.

**cc:** Kurt Spolar, DePauli Engineering, LLC



DePauli Engineering  
& Surveying, LLC.

Civil Engineers and Land Surveyors

Phone: 505-863-5440 • Fax: 505-863-1919 • [www.depauliengineering.com](http://www.depauliengineering.com)

307 South 4<sup>th</sup> Street • Gallup, NM 87301

PO BOX 876 • Gallup, NM 87305

To: Genevieve Head  
NMDOT – Cultural Resource Bureau  
Environmental Design Section  
P.O. Box 1149, Room 213  
Santa Fe, NM 87504-1149

From: Kurt Spolar, DePauli Engineering

Project: US 491, West Side, Milepost 5.77 to 5.94  
Crossing Milepost 5.94  
Buried 30-Inch Water Pipeline  
Gallup Rural Navajo Water Supply Project, Project 8, Reach 13

Date: January 29, 2014

The following is in response to your January 22, 2013 letter. Please see the following attachments:

1. Class III Archeological Survey and Cultural Resources Inventory for the Reach 13 Segment of the Navajo-Gallup Water Supply Pipeline Project, McKinley County, New Mexico by Zuni Cultural Resources Enterprise.
2. The Navajo-Gallup Water Supply Project, End of Fieldwork Testing Report for Sites LA171377(NM-Q-31-47), LA171378, and LA171423 Along Reach 13, McKinley County, New Mexico, Technical Report No. 13-67 by PaleoWest Archeology.
3. Memorandum recommending Notice to Proceed for Reach 13 from Kathryn Leonard, Director of Cultural Resources, Logan Simpson Design to Ernie Rheume, Archeologist, Western Colorado Area Office, Bureau of Reclamation
4. Notice to Proceed for Reach 13 from Janice Richardson, Grants Officer, United States Department of Interior, to Daniel Dible, City Manager, City of Gallup.
5. New Mexico State Historic Preservation Office Reach 13 Testing Results Consultation Concurrence, Dated 11-27-2013, Signed by S. Raymond for JR Estes for Dr. Jeff Pappas, New Mexico State Historic Preservation Officer.

The above documentation identifies the archeological sites along Reach 13 and provides the recommended mitigation procedures for construction adjacent to or through the sites. No archeological sites were identified within or adjacent to the subject Highway 491 right of way.

I have also enclosed the previous correspondence regarding the clearance for the 30" water pipeline construction for your information.

Hopefully, the above will allow NMDOT to complete the review of this project.

If you have any questions or need additional information, please contact me at 505-863-5440 or [kuspolar@depauliengineering.com](mailto:kuspolar@depauliengineering.com)

Sincerely,

A handwritten signature in black ink, appearing to read 'Kurt Spolar', followed by a long horizontal line.

Kurt Spolar, PE  
DePauli Engineering & Surveying, LLC  
KAS/dmta



**ENVIRONMENTAL DEVELOPMENT SECTION**

**To:** Don Sterling, DePauli Engineering

**From:** Genevieve Head

**Project:** US 491, west side, milepost 5.77 to 5.94  
Crossing milepost 5.94  
Buried 30-inch water pipeline  
Gallup Rural Navajo Water Supply Project, Project 8, Reach 13

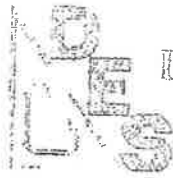
**Date:** January 22, 2013

Based on your project area maps our records indicate that an archaeological site or sites is/are in or adjacent to your project area that is located in NMDOT ROW. NMDOT is not requiring a cultural resources survey or an environmental survey, but NMDOT is requiring that you retain the services of a qualified and permitted archaeologist to assess the site in relation to your project. Updated site (LA) forms will be needed for sites within the ROW along with a report detailing the site relative to the project area and recommendations for how project activities can avoid the site in the ROW. If a cultural resource survey report was written for your project and includes this information, that report and supporting documents can be sent.

Once NMDOT has received this information we will complete the review of your project.

If you have any questions, please contact me at 505-827-5356, [genevieve.head@state.nm.us](mailto:genevieve.head@state.nm.us)

Thank you.



DePauli Engineering  
& Surveying, LLC.  
Civil Engineers and Land Surveyors

Phone: 505-863-5440 • Fax: 505-863-1919 • [des@cnetco.com](mailto:des@cnetco.com)

307 South 4<sup>th</sup> Street • Gallup, NM 87301

P.O. BOX 876 • Gallup, NM 87301

January 9, 2013

Genevieve Head  
NMDOT-Cultural Resource Bureau  
Environmental Design Section  
P.O. Box 1149, Room 213  
Santa Fe, NM 87504-1149

**Re: Gallup-Rural Navajo Water Supply Project-Project 8, Reach 13, Environmental and Cultural Resource Clearance**

Dear Genevieve,

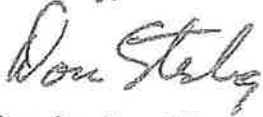
The following information is provided to obtain Environmental and Cultural Resource clearance in order to proceed with the application for utility permits.

1. **Purpose and Nature:** The purpose is to cross US HWY 491 with a 30" waterline by boring and then run parallel inside HWY RW, 18ft from west RW line 1560 ft. The trench (west side of HWY) will be approximately 10ft. wide and 7ft. deep. Construction equipment will include a track excavator, loader, water truck, and compaction equipment.
2. **NMDOT Project ?:** No
3. **Funding Source:** State Water Trust Board and Federal
4. **Land Status:** NMDOT
5. **Permitting Agencies:** NMDOT
6. **County:** McKinley
7. **Highway Number:** 491
8. **BOP and EOP:** Mile Post 5.6 to 5.9
9. **Side of Road:** Near West RW Line & Crossing
10. **Length:** HWY Crossing 220ft, Parallel Pipe 1560ft.
11. **Legal Description:** NE<sup>1</sup>/<sub>4</sub>, Section 19, T16N, R18W, NMPM

**12. USGS Quad Map: Gallup, NM West**

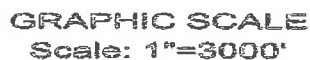
We are enclosing a location map for proposed project. Please call if you have questions.

Sincerely,

A handwritten signature in cursive script, appearing to read "Don Sterling".

Don Sterling, PE  
DS/dmta

**GALLUP-RURAL NAVAJO WATER SUPPLY PROJECT  
PROJECT 8, REACH 13  
30" WATER LINE CROSSING  
30" PARALLEL CONSTRUCTION  
HIGHWAY 491  
NE 1/4, SECTION 19, T16N, R18W MCKINLEY COUNTY, NEW MEXICO**

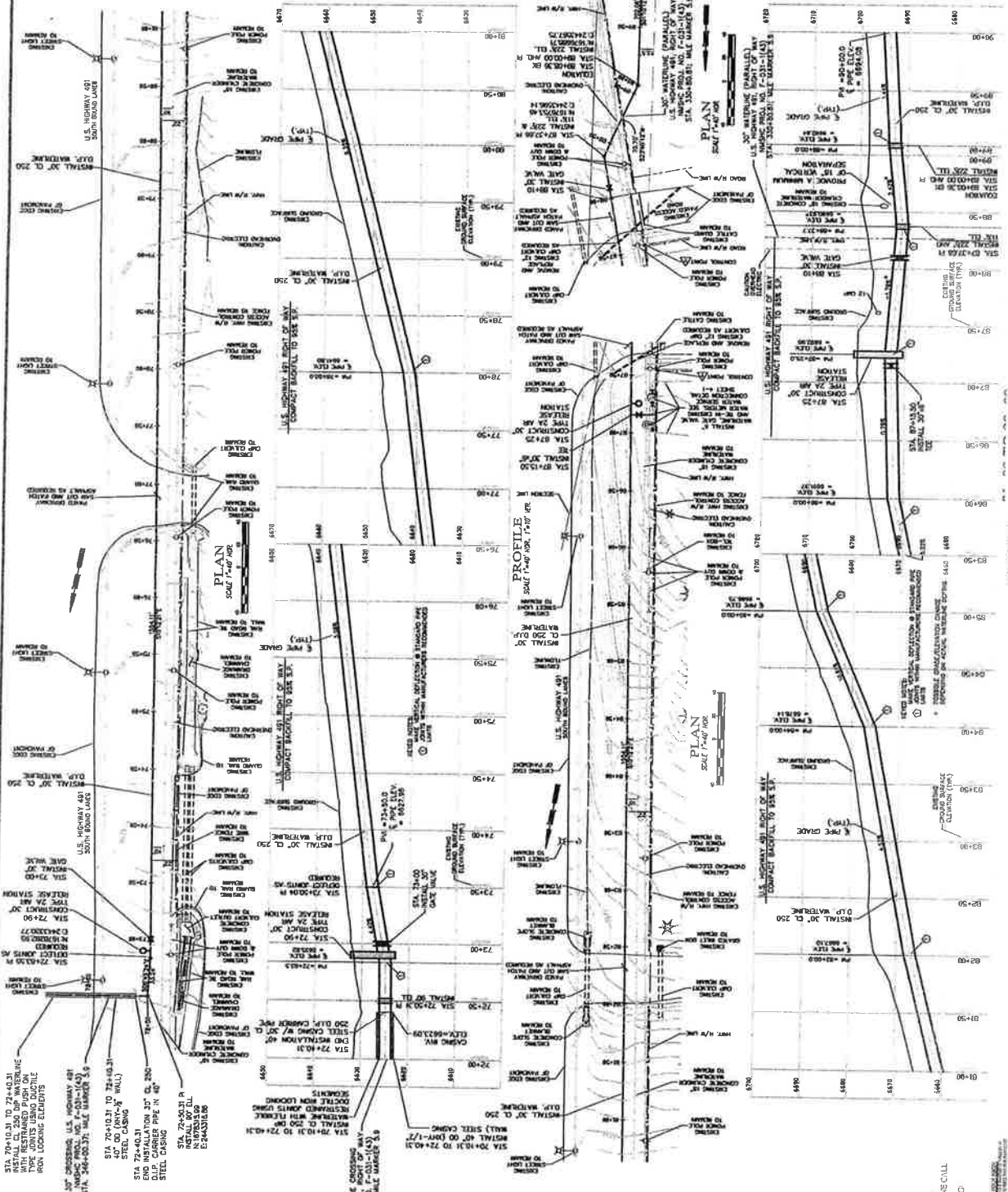


**DePauli Engineering & Surveying LLC**  
- Civil Engineers and Land Surveyors -  
307 South 4th Street, Gallup, New Mexico 87301  
Tel: (505) 863-5440  
Fax: (505) 863-1919  
dee@cnetco.com





**CONSTRUCTION NOTE:**  
 CONSTRUCTION ACTIVITY FROM  
 STA. 72+00 TO STA. 74+00 IS  
 IN CLOSE PROXIMITY TO CITY OF  
 GALLUP MAIN WATER SUPPLY,  
 GALLUP WATER TREATMENT PLANT,  
 SHOW, USE EXTREME CAUTION  
 TO NOT DISTURB PIPE



CALL NEW MEXICO'S CALL  
 BEFORE YOU DIG



**DAPUL ENGINEERING & SURVEYING LLC**  
 11740 STATE ST. GALLUP, NM 87301  
 TEL: (505) 868-0000 FAX: (505) 868-0001

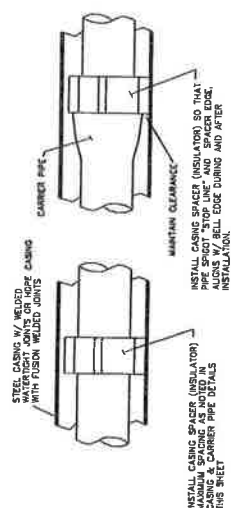
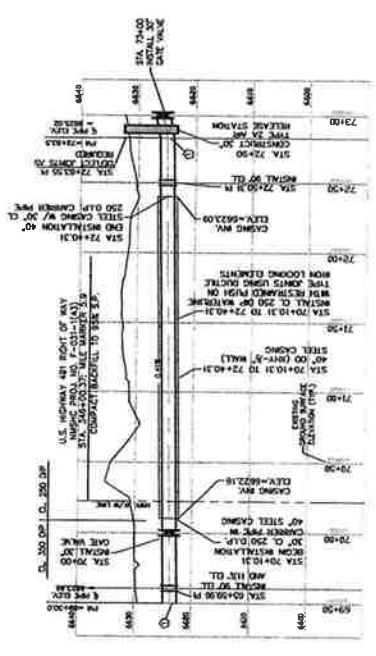
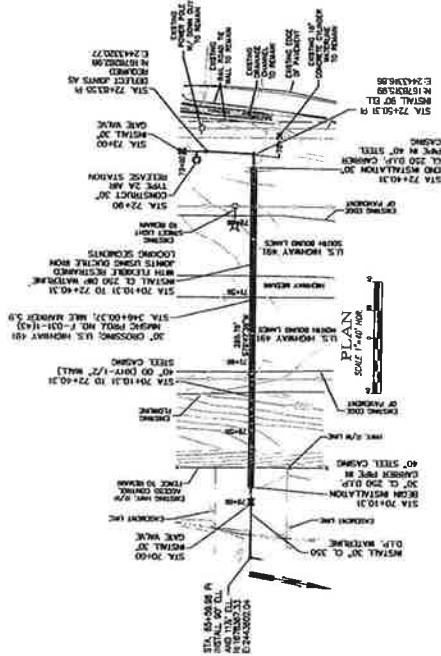


**CITY OF GALLUP**  
 HUNTER COUNTY, NEW MEXICO

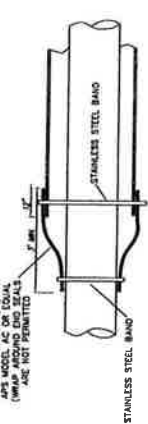
**NAVAJO GALLUP WATER SUPPLY PROJECT**  
 REACH 13

**U.S. HIGHWAY 491**  
**PARALLEL 30" WATERLINE**

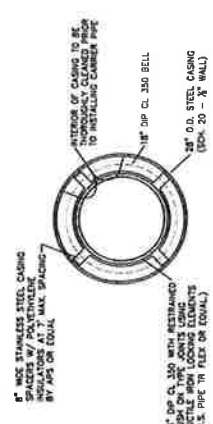
**SHEET**  
**HP-2**



CASING SPACER DETAILS



STEEL/HDPE CASING END DETAIL



CASING & CARRIER PIPE DETAILS

CAUTION  
CALL NEW MEXICO ONE CALL  
BEFORE YOU DIG

REVISIONS  
DATE  
BY  
REASON

Highway 491  
Utility Permit  
18" Crossing  
Line Work  
Permit Form

APPLICATION FOR PERMIT TO INSTALL UTILITY FACILITIES  
WITHIN PUBLIC RIGHT OF WAY

TO: NEW MEXICO DEPARTMENT of TRANSPORTATION  
P.O. BOX 1149  
SANTA FE, NEW MEXICO 87504 - 1149

Permit No. \_\_\_\_\_  
\_\_\_\_\_  
Renewal Permit  
\_\_\_\_\_  
Relocation  
\_\_\_\_\_  
Remain in place  
☒   
New Installation

1. Pursuant to New Mexico Statutes Annotated, 1978 Compilation, Sections 67-8-13 and 55-2-7, and 17.4.2 NMAC the undersigned  
City of Gallup

Address: P.O. Box 1270, Gallup, NM 87305

herein makes application to use highway rights of way to install:

Size and Type of Facility 18" Waterline in a 28" steel casing + 6" waterline connection

in the following location: N.M. Project No. F-031-1(43), S.R. No. U.S. HWY 491

Highway Station / and or GPS/MP MP 7 to Highway Station and/or GPS/MP \_\_\_\_\_

McKinley County, Section 7, Township 16N, Range 18W

2. For the purpose of this application "within" shall be construed as meaning "on, upon, over, under, across or along."
- "Engineer" shall be construed as meaning the District Engineer of the New Mexico Department of Transportation or the District Engineer's representative.
  - "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.
  - "Facility" shall be construed as meaning, but not limited to any 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, stream or other projects carried by means of pipelines, conduits, wires, culverts, ditches, conveyors or other methods.
  - If application is for a parallel installation, justification as to why private right may not be utilized must be furnished.
3. Applicant proposes to relocate, install or leave facility \_\_\_\_\_ feet within the \_\_\_\_\_ right of way line. The proposed installation shall be:

<u>Crossing</u>	<u>Subsurface</u>	<u>Jack &amp; Bore Method</u>
(Crossing or Parallel)	(Subsurface or Overhead)	(Boring, Jacking or Pavement Cut)

- If Applicant requests installation by pavement cut, complete justification therefore shall be submitted by attachment.
  - 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 must be shown. Proposed installations on or in bridges or other structures, or for the installation of any structures, shall require detailed structural drawings.
5. Applicant desires this permit to be in affect for 25 years. Permit shall not be issued for a period longer than 25 years, and must be renewed upon expiration. 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. This application shall be validated as a permit upon the signing of the application by the Engineer and returning it to the applicant. The granting of this permit shall not be construed as granting any easement or property right.
7. Servicing of facilities shall 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 applicable provisions of

**regulations of the New Mexico Department of Transportation, 17.4.2 NMAC**, all provisions of this application, drawing and the Instructions for Utility Permits, as they may be modified by the Engineer, and no departure therefrom may be made without the written consent of the Engineer. All facilities shall be so placed that they will not interfere with or endanger any roadway features or 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 shall, 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 workmanlike 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 design installation, maintenance, alteration or removal of such facilities or other appurtenances, the Applicant shall 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 or its contractors or its consultants. 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. 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 shall promptly reimburse the Engineer for all costs and expenses incident thereto, or (b) summarily order the removal of such facility and if the Applicant fails to comply with that removal order within a reasonable time, the Engineer may direct the removal of the facility with all costs and expenses thereto to be borne by Applicant.
11. 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 or 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, the New Mexico Department of Transportation or the New Mexico State Transportation Commission. 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 local franchises not in conflict with the rules and regulations of the New Mexico Department of Transportation. The Engineer makes no 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 or portions thereof.
12. 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 contained in any prejudice or impair any rights or claims existing independent of this application with respect to the construction, operation and maintenance of the Applicant's facilities in the State of New Mexico.
13. The utility owner must indemnify and hold harmless the New Mexico Department of Transportation from loss due to any negligent act of the utility, the utility's employees, any agent acting on the utility's behalf, and anyone else engaged by the utility to work on the utility installations, maintenance or relocations of their facilities. Any contractor or subcontractor engaged by the utility to perform utility installations or relocations in conjunction with or prior to highway construction must also indemnify and hold harmless the New Mexico Department of Transportation from loss due to any negligent act of the utility's contractor or subcontractor.
14. Each copy of the application shall be signed by the Applicant as an individual owner or by any official designated to execute such documents.
15. Utility owners shall carry insurance in amounts not less than those below specified and as outlined in 17 NMAC 4.2 and the Standard Specifications for Highway and Bridge Construction, 1994 Edition, (hereinafter, "Specifications"), as may be updated from time to time. In the event of conflict between the specification, and the regulations, owner shall carry the larger amount of insurance. If a utility is self-insured, the utility shall provide an Owner's Protective Liability Insurance Policy, in favor of the Department, in the amounts below specified. **Department as additional named insured:** The utility, its contractor or subcontractor shall have the New Mexico State Highway and Transportation Department added as an additional named insured on the Comprehensive General Liability Form or Commercial General Liability Form furnished by the Utility.

This application is hereby granted subject to all provisions herein and including the following special provisions, changes or amendments:

The utility shall provide "as-built" horizontal and vertical location information in hard copy and electronic file (AutoCAD DWG (3D) or Microstation DGN (3D) format. The standard horizontal datum shall be North American Datum 1983 (NAD83) and the standard projections shall be the New Mexico State Plane

Coordinate System 1983 (NMSPCS83). The standard vertical datum shall be North American Vertical Datum 1988 (NAVD 1988). The preferred media in which this data must be submitted is CD ROM. The utility location information shall be tied to Department monuments and referenced to highway mileposts and/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.

*Note: Highway projects are time sensitive therefore, permit information requested from Authorization to Engineer Letters must be returned by the date indicated within the Authorization to Engineer letter.*

16. Pursuant to: MAP-21; <http://www.fhwa.dot.gov/construction/contracts/buyam-qa.cfm> and (23U.S.C313) Applicant/Utility Owner certifies we are in compliance with Buy America for said facility described in Section 1. of this permit document. Applicant agrees and understands nonadherence will void said permit.

Applicant City of Gallup

By *Darryl M. ...*

Title Chief Engineer

Approval of this permit is hereby given this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

NEW MEXICO DEPARTMENT of TRANSPORTATION

By \_\_\_\_\_

# **TRAFFIC CONTROL PLAN** **GALLUP-RURAL NAVAJO WATER SUPPLY PROJECT PROJECT 8** **U.S. HWY 491; NMSHC PROJ. NO. F-031-1(43)**

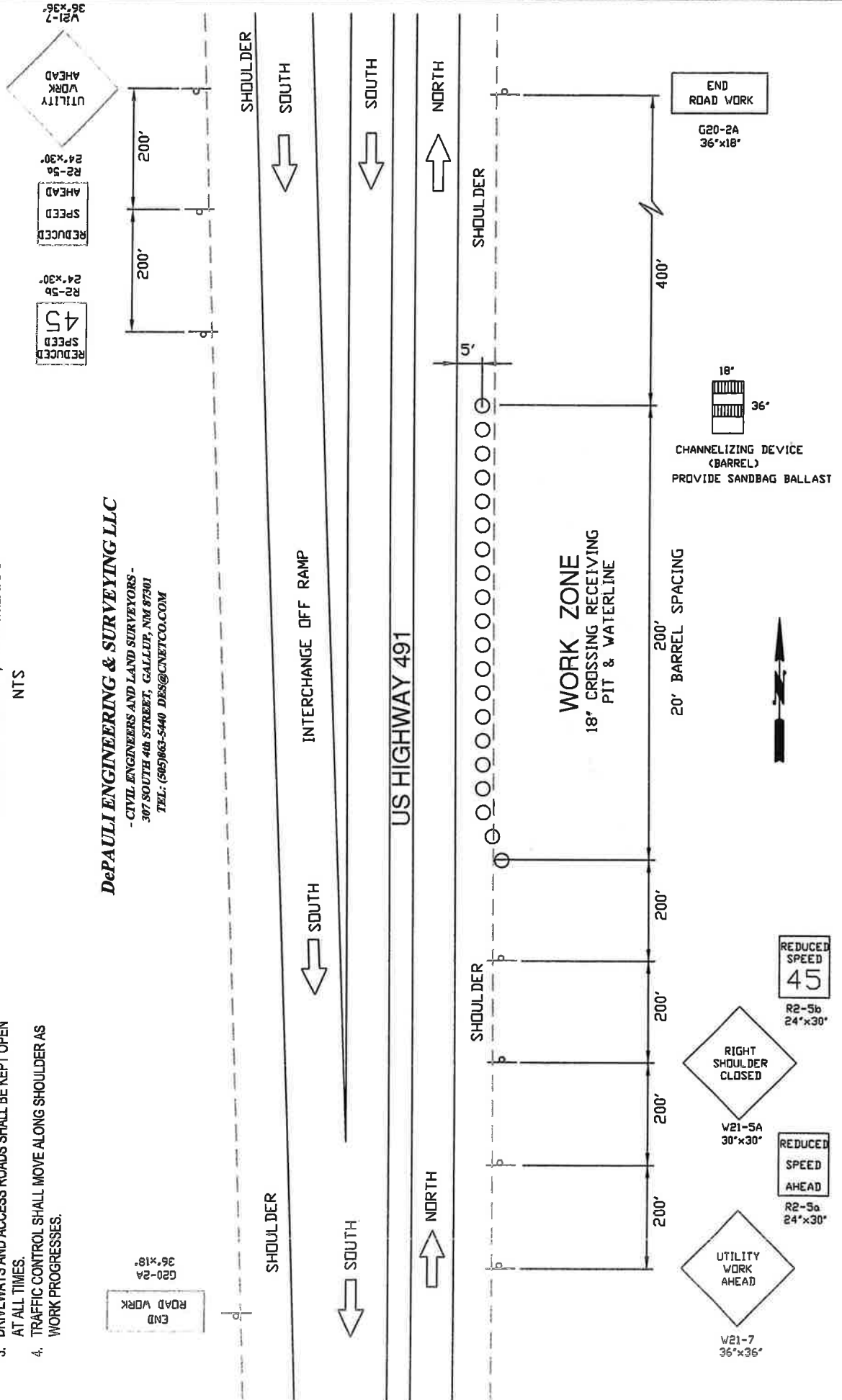
**18" WATERLINE CROSSING,  
 MILE MARKER 7.0, STA. 404+42.55**

SECTION 7, T16N, R18W, N.M.P.M.;  
 MCKINLEY COUNTY, NEW MEXICO  
 NTS

**DePAULI ENGINEERING & SURVEYING LLC**  
 - CIVIL ENGINEERS AND LAND SURVEYORS -  
 307 SOUTH 4th STREET, GALLUP, NM 87301  
 TEL: (505) 863-5440 DES@CNETCO.COM

**NOTES:**

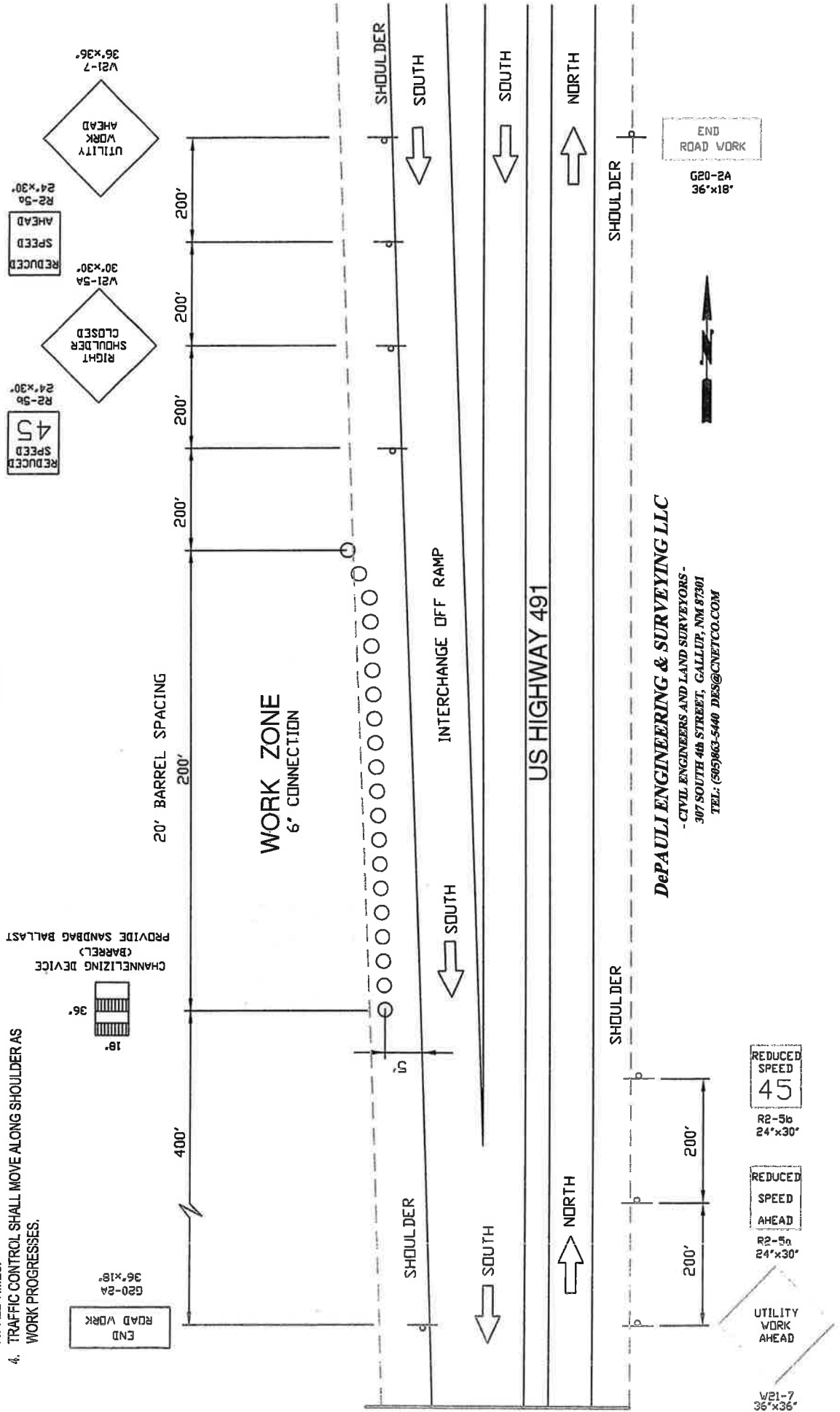
1. PROVIDE FLASHER LIGHTS ON EVERY OTHER BARREL IF TRAFFIC CONTROL IS LEFT IN PLACE OVER NIGHT.
2. TRAFFIC CONTROL DEVICES & SIGNS TO CONFORM TO MUTCD STANDARDS.
3. DRIVEWAYS AND ACCESS ROADS SHALL BE KEPT OPEN AT ALL TIMES.
4. TRAFFIC CONTROL SHALL MOVE ALONG SHOULDER AS WORK PROGRESSES.



# **TRAFFIC CONTROL PLAN** **GALLUP-RURAL NAVAJO WATER SUPPLY PROJECT PROJECT 8** **U.S. HWY 491; NMSHC PROJ. NO. F-031-1(43)** **6" WATERLINE CONNECTION,** **MILE MARKER 7.0, STAS. 404+02**

SECTION 7, T16N, R18W, N.M.P.M.;  
 MCKINLEY COUNTY, NEW MEXICO  
 NTS

- 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. DRIVEWAYS AND ACCESS ROADS SHALL BE KEPT OPEN AT ALL TIMES.
  4. TRAFFIC CONTROL SHALL MOVE ALONG SHOULDER AS WORK PROGRESSES.



**DePAULI ENGINEERING & SURVEYING LLC**  
 - CIVIL ENGINEERS AND LAND SURVEYORS -  
 307 SOUTH 4th STREET, GALLUP, NM 87301  
 TEL: (505) 863-5440 DES@CNETCO.COM





DePauli Engineering  
& Surveying, LLC.

Civil Engineers and Land Surveyors

Phone: 505.863.5440 • Fax: 505.863.1919 • [des@netnet.com](mailto:des@netnet.com)

107 South 4<sup>th</sup> Street • Gallup, NM 87301

PO BOX 876 • Gallup, NM 87301

January 9, 2013

Genevieve Head  
NMDOT-Cultural Resource Bureau  
Environmental Design Section  
P.O. Box 1149, Room 213  
Santa Fe, NM 87504-1149

**Re: Gallup-Rural Navajo Water Supply Project-Project 8, Reach 13, Environmental and Cultural Resource Clearance**

Dear Genevieve,

The following information is provided to obtain Environmental and Cultural Resource clearance in order to proceed with the application for utility permits.

1. **Purpose and Nature:** The purpose is to remove a fire hydrant and reconnect to an existing 6" line near the west RW line. The purpose is also to cross the highway with an 18" waterline by boring. Construction equipment to consist of a backhoe excavator, loader, water truck, and hand operated compaction equipment. The receiving pit for the highway crossing (east side) to be approximately 15ft by 20ft. The trench for 6" connection to be approximately 8' wide, 6' deep and 30' long.
2. **NMDOT Project ?:** No
3. **Funding Source:** State Water Trust Board and Federal
4. **Land Status:** NMDOT
5. **Permitting Agencies:** NMDOT
6. **County:** McKinley
7. **Highway Number:** 491
8. **BOP and EOP:** Mile Post 7.0
9. **Side of Road:** Near West RW Line & East RW Line
10. **Length:** Crossing 320ft., 6" connection 30ft.

CULTURAL RESOURCE INVENTORY NOT REQUIRED NMDOT, ENVIRONMENTAL SECTION <b>REVIEWED</b> By Genevieve Head at 1:17 pm, Jan 22, 2013
ENVIRONMENTAL SURVEY NOT REQUIRED NMDOT, ENVIRONMENTAL SECTION

For NMDOT right  
of way acquired  
from private  
sources

11. **Legal Description:** SE<sup>1</sup>/<sub>4</sub>, Section 7, T16N, R18W, NMPPM

12. **USGS Quad Map:** Gallup, NM West

We are enclosing a location map for proposed project. Please call if you have questions.

Sincerely,

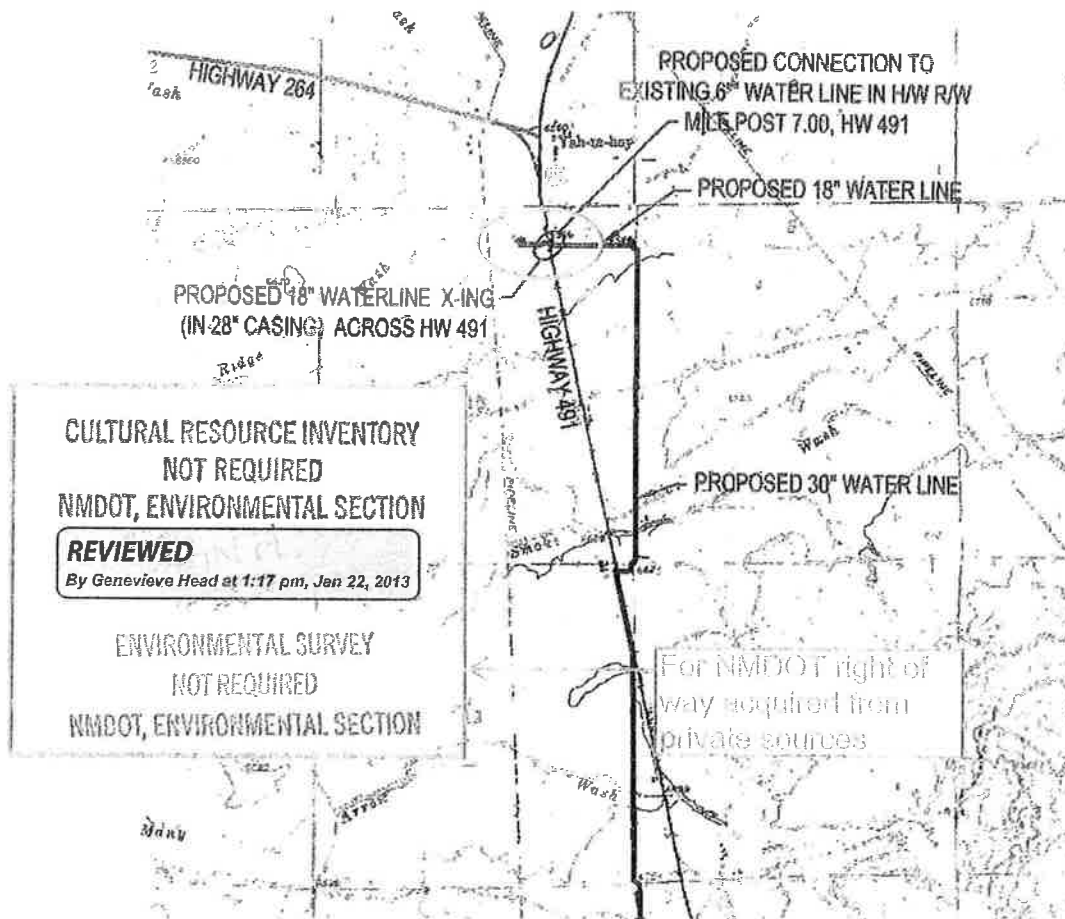
A handwritten signature in cursive script, appearing to read "Don Sterling".

Don Sterling, PE

DS/dmta

# LOCATION MAP

## GALLUP-RURAL NAVAJO WATER SUPPLY PROJECT PROJECT 8, REACH 13 18" WATER LINE CROSSING 6" WATERLINE CONNECTION HIGHWAY 491 SE 1/4, SECTION 7, T16N, R18W, MCKINLEY COUNTY, NEW MEXICO



**CULTURAL RESOURCE INVENTORY  
NOT REQUIRED  
NMDOT, ENVIRONMENTAL SECTION**

**REVIEWED**

By Genevieve Head at 1:17 pm, Jan 22, 2013

**ENVIRONMENTAL SURVEY  
NOT REQUIRED  
NMDOT, ENVIRONMENTAL SECTION**

For NMDOT right of  
way acquired from  
private sources



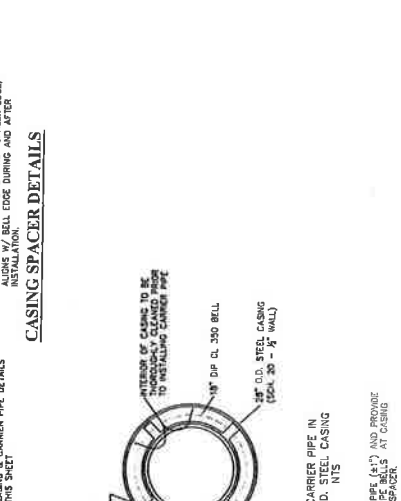
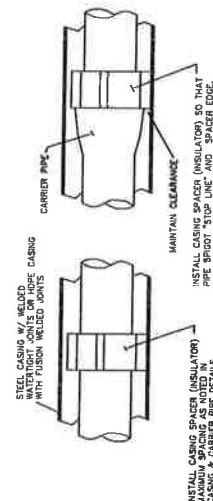
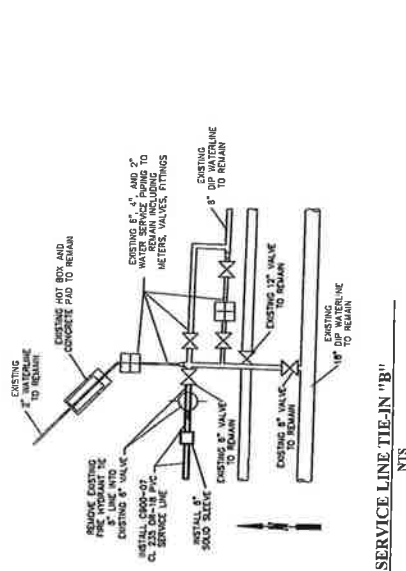
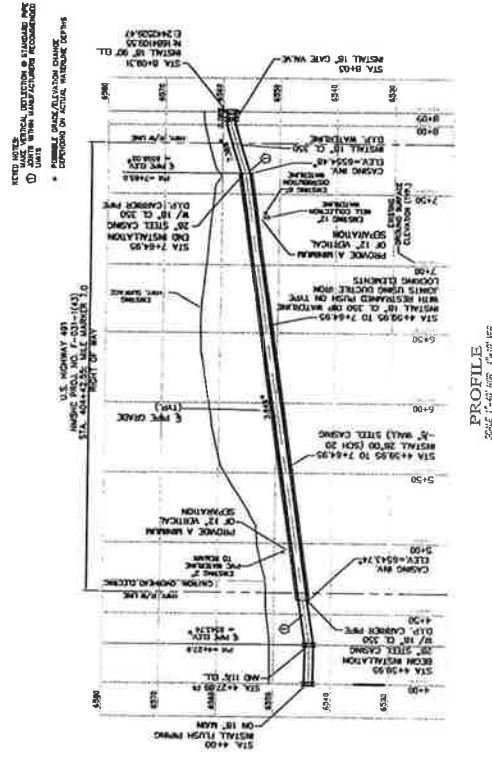
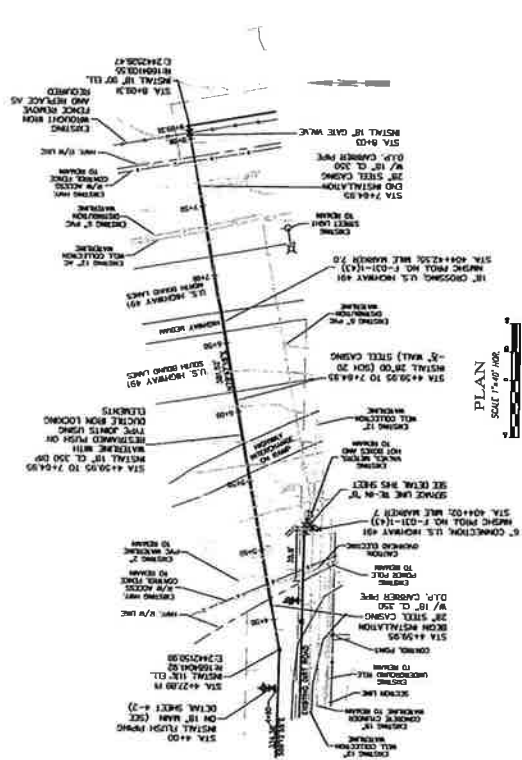
**GRAPHIC SCALE**  
Scale: 1"=3000'

**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 -  
307 South 4th Street, Gallup, New Mexico 87301  
Tel: (505) 863-5440  
Fax: (505) 863-1919  
des@cnetco.com





**CAUTION**  
ALL NEW MEXICO CALL  
811  
BEFORE YOU DIG!

**CAUTION**  
CALL NEW MEXICO ONE CALL  
811  
BEFORE YOU DIG!

# APPENDIX F

## 404 & 401 Permits

# Department of the Army Albuquerque District, Corps of Engineers

- Action No. SPA-2012-00254-ABQ, USBR Navajo-Gallup Water Supply Project, Reaches 13 & 27.5 (404 Permit)



DEPARTMENT OF THE ARMY  
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS  
4101 Jefferson Plaza NE  
Albuquerque, NM 87109

August 16, 2013

REPLY TO  
ATTENTION OF:

Regulatory Division  
New Mexico/Texas Branch

SUBJECT: Action No. SPA-2012-00254-ABQ, USBR Navajo-Gallup Water Supply Project, Reaches 13 and 27.5

US Bureau of Reclamation  
Attn: Barry Longwell  
2200 Bloomfield Highway  
Farmington, NM 87401-8110

Dear Mr. Longwell:

The U.S. Army Corps of Engineers (Corps) received your application on July 2, 2013, requesting authorization for your proposed Reaches 13 and 27.5 project. Reach 13 includes 18,000 ft of pipeline to connect the Yah-ta-Hey pump station to Gameraco. Reach 27.5 includes 5,400 ft of pipeline, storage tanks, and control building and the Yah-ta-Hey pump station. Proposed impacts to waters of the U.S. include ephemeral pipeline crossings and gabion basket bank stabilization within Reach 13 only. There are no proposed impacts to waters of the U.S. within Reach 27.5. The project is located north of Gallup, McKinley County, New Mexico. We have assigned Action No. SPA-2012-00254-ABQ to your file. To avoid delay, please include this number in all future correspondence concerning this project.

We have reviewed this project in accordance with Section 404 of the Clean Water Act. Under Section 404, the Corps regulates the discharge of dredged and fill material into waters of the United States (U.S.), including wetlands. Based on your description of the proposed work, and other information available to us, we have determined that the proposed project will involve activities subject to Section 404. Therefore, a Department of the Army permit is required.

Under Section 401 of the Clean Water Act, certification of compliance with state or tribal water quality standards by the state water quality agency or tribal water quality certifying authority is required for any discharge of dredged and fill material into waters of the United States under Section 404 of the Clean Water Act. For Water Quality Certification information and a list of tribes with water quality certifying authority and their contact information please visit:  
<http://www.spa.usace.army.mil/Missions/RegulatoryProgramandPermits/WaterQualityCertification.aspx>.

We have determined that this project is authorized by Nationwide Permit (NWP) 12, for utility line projects and NWP 13, for bank stabilization. A summary of these permits and the regional conditions for New Mexico are available on our website at [www.spa.usace.army.mil/reg/NWP](http://www.spa.usace.army.mil/reg/NWP). You are only authorized to conduct the work described in your submittal. To use this permit, you must ensure that the

work complies with the terms and conditions listed in the permit and the special condition(s) listed below. The special condition(s) for this permit are:

1. This letter is considered a denial without prejudice until you have received water quality certification from the Navajo Nation Environmental Protection Agency (NNEPA). You may not initiate work in waters of the U.S. until you have received a Section 401 Water Quality Certification for your proposed work in Reaches 13 and 27.5.

1. You shall comply with all conditions in the Section 401 Water Quality certification once issued by the NNEPA. Failure to comply may result in enforcement or revocation of your authorization to work within waters of the U.S.

Our review of this project also addressed its effects on threatened and endangered species and historic properties in accordance with general conditions 18 and 20. You have determined, as lead federal agency, that this project will not affect any species listed as threatened or endangered by the U.S. Fish and Wildlife Service within the permit area. You have also determined that this project will not affect historic properties listed, or eligible for listing, in the National Register of Historic Places. However, please note that you are responsible for meeting the requirements of general condition 18 on endangered species and general condition 20 on historic properties.

This verification is valid for a period of two years from the above date (33 CFR 330.6), unless the nationwide permit is modified, suspended, revoked or reissued prior to that date. Continued confirmation that an activity complies with the terms and conditions, and any changes to the nationwide permit, is the responsibility of the permittee.

The Corps based this decision on a preliminary jurisdictional determination (JD) that there may be waters of the United States on the project site. Preliminary JDs are advisory in nature and may not be appealed. An approved JD is an official Corps determination that "waters of the U.S." and/or "navigable waters of the U.S." are either present or absent on a particular site. An approved JD precisely identifies the limits of those waters on the project site determined to be jurisdictional under the CWA or RHA. If you wish, you may request that the USACE reevaluate this case and issue an approved JD. If you choose to begin work prior to receipt of the approved JD, you do so at your own risk. Please contact me if you wish to request an approved JD for this case.

You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being, or has been, accomplished in accordance with the terms and conditions of the nationwide permit.

You must sign and submit to us the enclosed certification that the work, including any required mitigation, was completed in compliance with the nationwide permit. You should submit your certification within 30 days of the completion of work.

This permit is not an approval of the project design features, nor does it imply that the construction



is adequate for its intended purpose. This permit does not authorize any injury to property or invasion of rights or any infringement of Federal, state or local laws or regulations. You must possess the authority, including property rights, to undertake the proposed work.

To remain valid the project must be in compliance with all conditions of NWP's 12 and 13, this authorization, regional conditions and the applicable WQC. Non-compliance with any condition could result in the suspension, modification or revocation of this authorization, or initiation of a non-compliance action by the Corps. This NWP authorization does not obviate the need to obtain other approvals required by law.

If you have any questions concerning our regulatory program, please contact me at 505-342-3280 or by e-mail at [Deanna.L.Cummings@usace.army.mil](mailto:Deanna.L.Cummings@usace.army.mil). At your convenience, please complete a Customer Service Survey on-line available at <http://pcr2.nwp.usace.army.mil/survey.html>.

Sincerely,



Deanna L. Cummings  
Regulatory Project Manager

Copies furnished (via email):

Lee Anna Silversmith, Navajo Nation EPA  
Gary Vance, USBR

**Certification of Compliance  
with Department of the Army Nationwide Permit**

Action Number: SPA-2012-00254-ABQ, Reaches 13 and 27.5

Name of Permittee: Barry Longwell, US Bureau of Reclamation

Nationwide Permit: 12, Utilities and 13, Bank Stabilization

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

Deanna Cummings  
Albuquerque District, U.S. Army Corps of Engineers  
4101 Jefferson Plaza NE  
Albuquerque, NM 87109  
505-342-3280

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit, you are subject to permit suspension, modification, or revocation.

Please enclose photographs showing the completed project (if available).

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

Date Work Started \_\_\_\_\_

Date Work Completed \_\_\_\_\_

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Permittee

New Mexico  
Environment  
Department – Surface  
Water Quality Bureau

- Clean Water Act Section 401  
Water Quality Certification  
United States Army Corps of  
Engineers 2012 Nationwide  
Permits



SUSANA MARTINEZ  
Governor

JOHN A. SANCHEZ  
Lieutenant Governor

NEW MEXICO  
ENVIRONMENT DEPARTMENT

*Surface Water Quality Bureau*

Harold Runnels Building, N2050  
1190 South St. Francis Drive (87505)  
P.O. Box 5469, Santa Fe, NM 87502-5469  
Phone (505) 827-0187 Fax (505) 827-0160  
[www.nmenv.state.nm.us](http://www.nmenv.state.nm.us)



DAVE MARTIN  
Secretary

BUTCH TONGATE  
Deputy Secretary

JAMES H. DAVIS, Ph.D.  
Director  
Resource Protection Division

April 13, 2012

**CERTIFIED MAIL NO. 700801830 0003 4175 8463**

Mr. Allan Steinle  
U.S. Army Corps of Engineers  
Albuquerque District, Regulatory Branch  
4101 Jefferson Plaza NE  
Albuquerque, New Mexico 87109-3434

**Re: Clean Water Act Section 401 Water Quality Certification  
United States Army Corps of Engineers 2012 Nationwide Permits**

Dear Mr. Steinle:

The New Mexico Environment Department (NMED) has examined both the February 21, 2012 final notice of the Reissuance of Nationwide Permits (NWP) under the Clean Water Act (CWA) §404, issued by the U.S. Army Corps of Engineers ("Corps") (*see* 77 FR 10184) and the February 23, 2012 Corps Albuquerque District public notice of the final NWP and NMED's intent to consider certification of those permits under the CWA §401 (Certification). Certification is required by CWA §401 to ensure that the NWP are consistent with state law, comply with the state Water Quality Standards (20.6.4 NMAC), the Water Quality Management Plan/Continuing Planning Process, including Total Maximum Daily Loads (TMDLs), and the Antidegradation Policy. Certification is also required to comply with General Condition 25 (Water Quality) and General Condition 27 (Regional and Case-By-Case Conditions) of the NWP.

The following conditions are necessary to assure compliance with the applicable provisions of the Clean Water Act §§301, 302, 303, 306, and 307 and with applicable requirements of State law. Compliance with the terms and conditions of the permit and this certification will provide reasonable assurance that the permitted activities will be conducted in a manner which will not violate applicable water quality standards and the water quality management plan and will be in compliance with the antidegradation policy. The State of New Mexico certifies that the discharge will comply with these provisions and requirements upon inclusion of the following conditions in the permit:

**Conditional Section 401 Certification of NWP's:**

1. Activities in intermittent and perennial surface waters of the state require notification to the NMED Surface Water Quality Bureau. The notification must include: 1) detailed construction plans (including proposed in-channel excavations and temporary diversions); 2) a description of potential adverse water quality impacts (including turbidity, which is a measurement of the amount of suspended material in water, as well as oil, grease, or hydraulic fluid, and all other potential contaminants); 3) a description of methods to be used to prevent water quality impacts (including detailed Best Management Practices, which must be designed to minimize sediment, oil, grease, and other pollutants from entering the water); 4) any surface water monitoring procedures; and 5) for any unavoidable surface water impacts, conceptual mitigation plans.
2. Fuel, oil, hydraulic fluid, lubricants, and other petrochemicals must not be stored within the 100-year floodplain and must have a secondary containment system capable of containing twice the volume of the product. Appropriate spill clean-up materials such as booms and absorbent pads must be available on-site at all times during construction.
3. All heavy equipment used in the project area must be pressure washed and/or steam cleaned before the start of the project and inspected daily for leaks. A written log of inspections and maintenance must be completed and maintained throughout the project period. Leaking equipment must not be used in or near surface water. Refuel equipment at least 100 feet from surface water.
4. Work in the stream channel should be limited to periods of no flow. Work during low-flow periods must have prior approval by the NMED. Requests for such approval must describe planned methods to minimize turbidity and to avoid spills. Releases from dams must be incorporated into the work schedule to avoid working in high water.
5. Temporary crossings should be restricted to a single location and perpendicular to and at a narrow point of the channel to minimize disturbance. Heavy equipment must be operated from the bank or work platforms and not enter surface water, unless otherwise approved in writing by NMED. Heavy equipment must not be parked within the stream channel. Unless otherwise approved by NMED, directional borehole (horizontal) drilling must be used instead of open-cut trenching for the placement of utility lines or other buried structures crossing the channel. Requests for such approval of deviations must include a description of planned methods to minimize turbidity, to avoid spills, and to salvage any drilling equipment that cannot be withdrawn from beneath the channel.
6. Unless otherwise approved by NMED, flowing water must be temporarily diverted around the work area, but remain within the existing channel to minimize erosion and turbidity and to provide for aquatic life movement. Diversion structures must be non-erodible, such as sand bags, water bladders, concrete barriers, or channel lined with geotextile or plastic sheeting. Dirt cofferdams are not acceptable diversion structures. Requests for such approval of deviations must include descriptions of planned methods to minimize turbidity,

to avoid spills, and to provide a continuous zone of passage for aquatic life through or around the project area in which the water quality meets all applicable criteria including turbidity.

7. All asphalt, concrete, drilling fluids and muds, and other construction materials must be properly handled and contained to prevent releases to surface water. Poured concrete must be fully contained in mortar-tight forms and/or placed behind non-erodible cofferdams to prevent contact with surface or ground water. Appropriate measures must be used to prevent wastewater from concrete batching, vehicle wash-down, or aggregate processing entering the watercourse. Dumping of any waste materials in or near watercourses is prohibited.
8. Protective measures must be used to prevent blast, ripped or excavated soil or rock from entering surface water. Construction excavation dewatering discharges are to be uncontaminated and include all practicable erosion control measures and turbidity control techniques.
9. Work or the use of heavy equipment in wetlands must be avoided or minimized unless the impacts are to be mitigated. Construction activities in wetlands must be scheduled during low water or winter (frozen) conditions. Unless otherwise approved by NMED, wetland crossings must be restricted to a single location and constructed perpendicular to and at a narrow point of the wetland. Requests for such approval of deviations must include descriptions of planned methods to minimize turbidity and avoid spills. Wetland vegetation and excavated material (top soil) must be retained and reused to improve seeding success. Permeable fills should be designed and installed when practicable, and flows to wetlands must not be permanently disrupted. Fill materials must be clean and consist of coarse material with minimal fines. Ditches or culverts in wetlands must have properly designed, installed and maintained siltation or sedimentation structures at the outfall.
10. During repair, demolition, treatments, or cleaning activities of bridges or associated structures (e.g., deck, pier, abutment, and wing walls), materials must be kept out of the channel. Before removing a bridge or related structures, impermeable containment material (e.g., plastic sheet, canvas, tarpaulins or other catchment devices) must be secured under the bridge and on the banks to capture any debris that may fall into the stream channel. Sandblasting operations must include vacuum systems or the bridge and associated structures must be completely bagged to collect all lead paint and concrete debris. Any debris that falls onto the containment area or channel must be properly disposed in accordance with the New Mexico Solid Waste Regulations (20.9.1 NMAC). Applicable Material Safety Data Sheets of water repellants and surface finish treatments must be maintained at the project area.
11. Bridges, culverts and structures at stream crossings must be properly designed, installed and maintained to allow passage of sediment, bedload, and woody debris, and to prevent erosion problems or diversion of the stream from its natural channel. Unless otherwise approved by NMED, projects must not alter the natural stream channel size or shape (width, depth, gradient, direction or meander pattern), streamflow velocity (sediment transport rates), or water flow capacity. Requests for such approval of deviations must include descriptions of

planned methods to minimize turbidity and avoid spills, as well as to stabilize modified hydraulic geometry.

12. Culverts at stream crossings must be designed and installed to prevent upstream headcutting, downstream channel incision, and erosion of the streambanks or the crossing. Culverts should be designed to pass 100-year flow events. Culvert design must allow for the passage of fish and other aquatic organisms. The road grade at culvert stream crossings must prevent the diversion of the stream from its channel in the event of culvert failure due to plugging or the exceedance of capacity. If the flow overtops the road, it must return to its natural channel instead of running down the road into a new channel.
13. Excavated trenches must be backfilled and compacted to match the bulk density and elevation of the adjacent undisturbed soil.
14. Unless otherwise approved by NMED, all areas adjacent to the watercourse that are disturbed because of the project, including temporary access roads, stockpiles and staging areas, must be restored to pre-project elevations. Disturbed areas outside the channel that are not otherwise physically protected from erosion must be reseeded or planted with native vegetation. Stabilization measures including vegetation are required at the earliest practicable date, but by the end of first full growing season following construction. Native woody riparian and/or wetland species must be used in areas that support such vegetation. Measures to prevent damage by beavers, wildlife, or livestock are required until trees are established. Plantings must be monitored and replaced for an overall survival rate of at least 80 percent by the end of the second growing season. Once established, native plants adapted to the site must be able to thrive with no supplemental water or treatment. Requests for approval of deviation from this condition must include descriptions of planned methods to minimize turbidity and avoid spills, as well as final grading plans.
15. A copy of this Certification must be kept at the project site during all phases of construction. All contractors involved in the project must be provided a copy of this certification and made aware of the conditions prior to starting construction.
16. The NMED must be notified at least five days before starting construction to allow time to schedule monitoring or inspections. The NMED must be notified immediately if the project results in an exceedance of applicable Standards.

#### **Denial of Certification of NWP's**

NMED denies Certification of NWP's for any activities in Outstanding National Resource Waters (ONRW) designated in 20.6.4.9 NMAC, and NWP 16 (Return Water From Upland Contained Disposal Areas). Although state WQS provide for temporary and short-term degradation of water quality in an ONRW under very limited circumstances if approved by the Water Quality Control Commission as specified at 20.6.4.8.A NMAC, the approval process required for these activities does not lend itself for use for projects covered under these NWP's. This condition is necessary to ensure that no degradation is allowed in ONRW's by requiring proposed discharges

Mr. Allan Steinle  
April 13, 2012  
Page 5

of dredged or fill material to be reviewed under the individual permit process. Also, in accordance with General Condition 25 of the Nationwide Permits, a project-specific Certification must be obtained (see 33 CFR 330.4(c)) for discharges authorized under NWP 16 prior to construction. The NMED requires a complete CWA §404 application prior to commencing the water quality certification review in these cases. This certification process will be conducted pursuant to NMAC 20.6.2.2002.

Please contact Neal Schaeffer of my staff at (505)476-3017 should you have any question.

Sincerely,



James P. Bearzi  
Chief  
Surface Water Quality Bureau

JPB: cns

xc: Tom Nystrom, Wetlands, Region 6, USEPA  
Jill Wick, New Mexico Department of Game and Fish  
U.S. Fish and Wildlife Service  
401 Certification File 897