

INCORPORATED COUNTY OF LOS ALAMOS

BID AND SPECIFICATIONS

DP ROAD PHASE II RECONSTRUCTION PROJECT



LOS ALAMOS

INVITATION FOR BIDS NO. IFB 24-40

Advertised on February 8, 2024

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1.0 BIDDING PHASE 7

1.1 Invitation for Bids..... 7

1.2 Summary of Work 10

1.3 Requirements for Bidders 12

1.3.1 Bid Evaluation Criteria.....12

1.3.2 Required Bid Response Documents12

1.3.3 The Bidder’s Bid Response Documents.....12

1.3.4 Liquidated Damages for Failure to Enter into Contract13

1.3.5 Conditions of Work13

1.3.6 Addenda and Requests for Interpretation13

1.3.7 Power of Attorney.....14

1.3.8 Obligation of Bidder14

1.3.9 Safety Standards and Accident Prevention14

1.3.10 Substitutes or Brand Name or Equal.....15

1.3.11 Bids to Remain Subject to Acceptance.....15

1.3.12 Withdrawal of Bids.....15

1.3.13 Acceptance or Rejection of Bids.....15

1.3.14 Award15

1.3.15 Registration of Contractors and Subcontractors.....16

1.3.16 Procurement Preferences16

1.4 Notices to Contractors..... 17

1.4.1 Applicable Law17

1.4.2 Gross Receipts Tax17

1.4.3 Minimum Wage Rates.....17

1.4.4 Work Conditions.....17

1.4.5 Public Information.....18

1.4.6 Important Dates18

1.4.7 Performance and Labor and Material Bonds Requirements.....18

1.4.8 Fitness for Work and Drug and Alcohol Policy19

1.4.9 Bid Bond.....19

1.4.10 NMDOT Standard Specifications19

1.4.11 Utility Specifications and Quantities19

1.4.12 Supplemental Technical Specifications19

1.4.13 Abandoned Utilities.....20

1.4.14 Coordination with County Gas, Water, Sewer & Electric Operations20

1.4.15 Time of the Essence20

1.4.16 Coordination with CenturyLink/Lumen.....20

1.4.17 Coordination with Comcast Cable.....20

1.4.18 Coordination with LANL Air Monitoring (Airnet)21

1.4.19 Trenching and Backfill21

1.4.20 Potholing21

1.4.21	Utilities Submittals	21
1.4.22	Permits, CPM Schedule, and Roadway Material Submittals	22
1.4.23	Permits	22
1.4.24	Geotechnical Investigation Report.....	22
1.4.25	Subgrade Stabilization Practices	22
1.4.26	Disposal of Excess Material.....	22
1.4.27	Storm Water Control.....	23
1.4.28	Flowable Fill as an Alternative to Select Backfill	23
1.4.29	Field Offices.....	23
1.4.30	Security	23
1.4.31	Maintenance During Construction.....	23
1.4.32	Preconstruction Walk-Through	24
1.4.33	Cast Iron Truncated Domes – ADA Detectable Warning Surfaces	24
1.4.34	Pre-paving and Permanent Signing & Striping Placement Meetings	24
1.4.35	Traffic Control Supervisor.....	25
1.4.36	Project Liaison	25
1.4.37	Snow Removal and Ice Control	25
1.4.38	Special Project Accommodations.....	26
1.4.39	Rock Excavation (Including Reinforced Concrete).....	26
1.5	Bid Forms	27
1.5.1	Bid Form	29
1.5.2	Alternates and Allowances.....	40
1.5.3	List of Subcontractors	47
1.5.4	Bid Bond	49
1.5.5	Campaign Contribution Form.....	51
1.5.6	Certification - Debarment, Suspension, and other Responsibility Matters	53
1.5.7	Permanent Main Office Address of Company.....	55
1.5.8	Authorization for Verification of Information	55
1.5.9	Certificate of Contractors Registration	57
2.0	AWARD PHASE	58
2.1	Award Forms.....	58
2.1.1	Notice of Award	58
2.1.2	Receipt of Notice of Award	60
2.1.3	Performance Bond	61
2.1.4	Payment (Labor and Materials) Bond	63
2.1.5	Insurance Requirement.....	65
2.1.6	Contract.....	67
3.0	CONSTRUCTION PHASE.....	74
3.1	Construction Phase Related Forms	74

3.1.1	Contractor Personnel Information	74
3.1.2	Notice to Proceed	75
3.1.3	Acceptance of Notice to Proceed.....	76
3.1.4	Application and Certification for Payment Part 1	77
3.1.5	Application and Certification for Payment Part 2	78
3.1.6	Affidavit of Payment and Release of Liens.....	79
3.1.7	Field Order	81
3.1.8	Change Order	82
3.2	Conditions of the Contract - General Conditions	87
3.2.1	Definitions	87
3.2.2	Additional Instructions.....	90
3.2.3	Schedules, Reports and Records	92
3.2.4	Shop Drawings and Submittals.....	94
3.2.5	Start of Various Types of Work and Management Planning	95
3.2.6	Materials, Services and Facilities	97
3.2.7	Substitutes or “Brand Name” or Equal.....	97
3.2.8	Inspection and Testing	99
3.2.9	Correction of Work.....	100
3.2.10	Patents	101
3.2.11	Surveys, Permits, and Regulations	102
3.2.12	Subsurface and Physical Conditions.....	103
3.2.13	Protection of Work, Property and Persons	106
3.2.14	Changes in the Work	107
3.2.15	Suspension, Delay or Termination of Work	110
3.2.16	Subcontracting	111
3.2.17	Duties of the Contractor	112
3.2.18	Job Site Administration	113
3.2.19	Engineer’s Authority.....	116
3.2.20	Duties, Responsibilities and Limitations.....	117
3.2.21	Engineer’s Review of Work, Rejection of Work, Inspections, and Tests	118
3.2.22	Limitations of Authority	118
3.2.23	Land and Right-of-Way.....	119
3.2.24	Warranty/Guaranty.....	119
3.2.25	Miscellaneous	120
3.2.26	Dispute Resolution, Applicable Law, and Venue	120
3.2.27	Examination of Records Provisions	121
3.2.28	American with Disabilities Act Compliance.....	121
3.2.29	Bids and Proposals are Public Records.....	121
3.2.30	Wage Rate Determination	121
3.3	ATTACHMENTS	123
3.3.1	License Agreement for Staging Area	124
3.3.2	Wage Rate Information	129

3.3.3 Geotechnical Report134

3.3.4 Utility Test Hole Report.....183

3.4 TECHNICAL SPECIFICATIONS 205

3.4.1 Special Provisions for Hot Mix Asphalt.....206

3.4.2 Special Provisions for Minimum Testing Requirements.....221

3.4.3 Utility Specifications.....226

3.4.4 Streetlight Specification333

1.0 BIDDING PHASE

1.1 Invitation for Bids

The Incorporated County of Los Alamos (“County”) reserves the right, in its sole discretion, to accept any bid and to reject any or all bids.

Bids are invited from all responsible bidders.

Bid documents for this project may be obtained by contacting the Office of Purchasing Officer at:

Los Alamos County
Procurement Division
101 Camino Entrada, Building 3
Los Alamos, New Mexico 87544
505-662-8056

Copies of Bid Documents and Addenda will be made available for review wherever Solicitation Documents are on file for that purpose. Hard copies may be made available provided advance payment is made to the Office of the Purchasing Officer. Bid details can be found on the County website under “Doing Business” and “Bids & RFPS” or the following URL Link:

<https://www.losalamosnm.us/Doing-Business/Procurement/Open-Solicitations>

Bids in response to this Invitation for Bids (IFB), may be submitted either in paper form, in a sealed envelope, or electronically by email in PDF format. All other requirements stated in the solicitation document remain unchanged and in effect.

1. **ELECTRONIC SUBMISSION:** Emails should be addressed to: lacbid@lacnm.us.

Subject line must contain the following information:

RESPONSE – IFB24-40 DP Road Phase II Reconstruction Project

It is strongly recommended that a second, follow up email (without the Bid included or attached) be sent to carmela.salazar@lacnm.us to confirm the Bid was received.

The body of the email must contain enough information for the identity of the Bidder to be clear, including company name, name of person sending the email, and contact information including email address and phone number.

Only emails with Bids received in the lacbid@lacnm.us email box **prior to 2:00 p.m. MST, Thursday, February 29, 2024**, will be reviewed.

Bids submitted by email will be opened only after the closing date and time stated in the solicitation document.

2. **PAPER FORM SUBMISSION:** Sealed bids, submit one (1) unbound original and five (5) copy, subject to the conditions set forth in the Instructions to Bidders and in the other Solicitation Documents, will be received at the office of the Los Alamos County Purchasing Officer, 101 Camino Entrada, Building 3, Los Alamos, New Mexico, until **2:00 p.m. MST, Thursday, February 29, 2024**, and then publicly opened for the following project:

Incorporated County of Los Alamos
Bid Number: IFB24-40
DP Road Phase II Reconstruction Project

Bid security in the amount of five percent (5%) of the bid must accompany the bid. Such cash, certified checks or bid bonds will be returned to all except the three finalist bidders within three days after the opening of bids. The remaining cash, checks and bid bonds will be returned promptly after the County and the accepted Bidder have executed the contract, or if no award has been made within sixty (60) days after the date of the opening of bids, upon demand of the bidder at any time thereafter, so long as Bidder has not been notified of the acceptance of Bidder's bid. In submitting their Bid Bond, it is not mandatory that Bidders use the Bid Bond form provided in the packet. The County strongly encourages all Contractors to use this form, but if the contractor elects not to use it, the Bid Bond must be submitted on a form acceptable in the construction industry and approved by the County Project Manager in advance of the bid due date.

A Non-Mandatory Pre-bid Conference will be held on Thursday February 15, 2024, at 10:00am via Microsoft Teams. Please contact Carmela Salazar (please see contact information below) to receive link via for the Pre-bid Conference.

The Conference is held to answer questions from the prospective bidders as well as familiarize bidders with the project. Questions regarding the meaning of plans, specifications or other documents related to the project should be submitted in writing prior to the pre-bid conference. The County will preside over the pre-bid conference and provide for the recording and distribution of minutes. The pre-bid conference will include, but not be limited to the following:

1. Discussion of schedule for procurement, progress, values for progress payments and submittals.
2. Critical work sequencing and priorities.
3. Use of construction site premises, storage areas, office areas, security, cleaning, and County's needs.
4. Transmittal, review, and distribution of submittals.
5. Field decision process.
6. Maintain record documents.
7. Public Information.

Questions and interpretations of the bid shall be addressed to:

Keith Wilson, Project Manager
Public Works Department
1000 Central Avenue, Suite 160
Los Alamos, New Mexico 87544
Phone Number: 505-663-1757
Email: keith.wilson@lacnm.us

Any questions must be received in writing at least six (6) days prior to the date fixed for the opening of bids. Failure of any bidder to receive any addendum or interpretation shall not relieve such bidder from any obligation under its bid as submitted. All addenda so issued shall become part of the solicitation documents.

The County reserves the right to issue addenda to the solicitation documents including construction specifications and plans during the advertising period as provided in the solicitation

documents. Bidders are responsible for determining if any addenda have been issued. The terms, bid and solicitation are interchangeable. Also, the terms of the contract and agreement are interchangeable.

For the County of Los Alamos Procurement Division:

By: Carmela Salazar

Title: Senior Buyer

Phone Number: 505-662 8056

E-mail: carmela.salazar@lacnm.us

1.2 Summary of Work

**Incorporated County of Los Alamos
Bid Number: IFB24-40
DP Road Phase II Reconstruction Project**

This project is issued by and under the control of The Incorporated County of Los Alamos. The contracting office is the Public Works Department. The location of the project is in the County of Los Alamos, New Mexico.

The summary of work is as follows, but is not limited to the following:

Part 1

Project Base Scope of Work:

- DP Road Phase II: Roadway infrastructure and drainage improvements to include removal of existing asphalt surfaces and base material. Re-compaction of subgrade and base material and installation of new asphalt surface. Construction of driveways, sidewalks, curb ramps, and curb and gutters will be completed. Existing streetlighting will be relocated and upgraded with new conduit, arms and fixtures. New storm drain installation to include drop inlets, manholes, median drop inlets, and pond infrastructure. (Roadway Reconstruction: Approx. 2450 feet).
- Utilities infrastructure includes installation of low-pressure sewer line 3", 2" by trenching and 3" by slip lining. New Low pressure sewer service manholes. Replacement of water (12-inch) and HDPE gas lines (4-inch). Reconnection of services to adjacent properties. Install conduit for electrical power, County fiber, Century Link/Lumen and Comcast. Add Alternate will include addition 2" low-pressure sewer, 8" and 12" waterline, and 4" HDPE gas line.

Part 2 Work Sequence

- A. Contractor shall prepare and submit for the County approval a work sequence plan. Once approved, contractor shall execute the plan, and resubmit for the owner's approval any revisions needed to this plan.
- B. Contractor shall test all materials, parts and equipment installed as part of this project; start up the system, before turning it to the County for beneficial occupancy.

Part 3 Incidental Work

- A. Contractor shall provide, as part of the contract price, all labor, superintendence, machinery, equipment, supplies, temporary utility services, third party compliance testing and analysis, necessary to complete the various items of work in accordance with these contract documents, to provide a complete, functional, and ready-to-use installation.
- B. Contractor shall, as part of the contract price, acquire all necessary approvals for access to all project sites.

- C. Contractor shall, as part of this contract price, furnish all environmental protection including, but not limited to all necessary work to prevent storm water and other environmental pollution on any construction site or adjacent areas, as well as anywhere in the vehicle and pedestrian routes used by the contractor’s vehicles and equipment.
- D. Contractor shall be responsible for the restoration, reseeding/replanting and cleanup of any areas affected by the project, including any work and materials and labor necessary to return the project site(s) to its original state (prior to construction), by removing all evidence of construction debris, repairing all damage to vegetation, landscapes and finished ground surfaces, scarifying any hard-pack and driven-over earth areas, reseeding any areas disturbed by the contractor’s construction activities, and installing erosion protection as indicated on the drawings, or as required by Contractor’s Stormwater Pollution Prevention Plan (“SWPPP”).
- E. Contractor is responsible to attend, at no additional cost to the County, the following meetings:
 - a. Preconstruction meeting to be scheduled by owner
 - b. Weekly progress meetings on site.
 - c. Special and final field observation meetings when requested or scheduled by the County.
 - d. Construction coordination meetings requested or scheduled by the County.
 - e. Stakeholder/utility customer meetings when deemed necessary by the County to keep them informed or to resolve unanticipated concerns.

Project Dates (Start and Substantial Completion) are as follows:

- A. Project to start on or before – April 15, 2024
- B. Substantial Completion (Mandatory Substantial Completion Only Base Bid) – October 15, 2024.
- C. Substantial Completion (Mandatory Substantial Completion Base Bid with Bid Alternate Awarded) – November 15, 2024.
- D. Project Final Completion with or without Bid Alternate Awarded – December 15, 2024.

Pre-Bid Meeting	February 15, 2024
Bids Due	February 29, 2024
Bid Award	March 26, 2024
Pre-Construction Meeting	April 10, 2024
Notice to Proceed	April 15, 2024
Substantial Completion Date for Base Bid only awarded	October 15, 2024
Substantial Completion Date for Bid Base w/Bid Alternative Awarded	November 15, 2024
Final Completion Date	December 15, 2024

Liquidated Damages for Work: Failure to complete all work on time will result in Liquidated Damages applied to this contract in accordance with the current edition of the New Mexico Department of Transportation Standard Specifications for Highway and Bridge Construction section 108, Table 108.8:1 Schedule of Liquidated Damages. Liquidated damages will be charged per day for failure to complete work by any of the substantial and/or final completion dates listed.

1.3 Requirements for Bidders

Bids must be made with the understanding and in accordance with these conditions for bidders:

1.3.1 Bid Evaluation Criteria

Bid acceptance and bid evaluation. Bids shall be unconditionally accepted without alteration or correction, except as authorized in this article. Bids shall be evaluated based on the requirements set forth in the IFB, which may include criteria to determine acceptability such as inspection, testing, quality, workmanship, delivery, and suitability for a particular purpose. Those criteria that will affect the bid price and be considered in evaluation for award shall be objectively measurable, such as discounts, transportation costs, and total of life cycle costs. The IFB shall set forth the evaluation criteria to be used. Only criteria that are set forth in the IFB may be used in bid evaluation. Interviews are to be used only for the purpose of clarification. The final evaluation results shall be forwarded to the purchasing agent.

The evaluation criteria for this Bid are:

1. Accurate submission of Bid Response Documents
2. Cost

The County may make such investigations as deemed necessary to determine the ability of the Bidder, and any prospective subcontractors of the Bidder, to perform the work, and the bidder shall furnish to the County all such information and data for this purpose as the County may reasonably request. The County reserves the right to reject any bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the County that such Bidder is properly qualified to carry out the obligations of the Contract and to timely complete the work contemplated herein. Conditional bids may not be accepted in the sole discretion of the County.

1.3.2 Required Bid Response Documents

The bidder shall follow the instructions described in Section 1.1 Invitation for Bids.

1.3.3 The Bidder's Bid Response Documents

The following documents must be completed and included in this preferred order:

1. Copy of Bidder's State of New Mexico Contractor's License(s) with proper classifications.
2. Bid Form (Section 1.5.1)
3. Alternatives and Allowances, if applicable (Section 1.5.2)

4. List of Subcontractors (Section 1.5.3).
5. Bid Bond (Section 1.5.4)
6. Campaign Contribution Form (Section 1.5.5)
7. Certification – Debarment, Suspension, and other Responsibility Matters (Section 1.5.6)
8. Permanent Main Office Address of Company (Section 1.5.7) – Note requirement to provide a Certificate of Good Standing and Compliance from the New Mexico Secretary of State, if incorporated.
9. Authorization for Verification of Information (Section 1.5.8)
10. Provide proof of online registration and payment of \$400.00 for Certificate of Contractors Registration (Section 1.5.9) with New Mexico Department of Workforce Solutions.

The County may consider a bid to be non-responsive or non-responsible if the Contractor fails to include any of the items described in items 1 through 10, above.

1.3.4 Liquidated Damages for Failure to Enter into Contract

The successful Bidder, upon failure or refusal to execute and deliver the Contract and required Bonds within ten (10) calendar days after Bidder has received the Notice of Award, shall forfeit the Bidder's Bond to the County, as liquidated damages for such failure or refusal, the bid security deposited with Bidder's bid.

1.3.5 Conditions of Work

Each bidder must inform itself fully of the conditions relating to the construction of the Project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of its obligation to furnish all material and labor necessary to carry out the provisions of the Contract. Insofar as possible, the Contractor in carrying out the Work must employ such methods or means as will not cause any interruption of, or interference with the Work of any other contractor, or the daily operations of County offices. The Work in this Contract shall adhere to Los Alamos County Noise Ordinance. Noise Ordinance Waivers are required for work occurring between the hours 9:00 p.m. and 7:00 a.m.

1.3.6 Addenda and Requests for Interpretation

- A. No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally and bidders understand that no oral interpretation once made may be relied upon. Every request for such interpretation shall be in writing addressed to the Project Manager. Requests for interpretation must be received at least six (6) working days (Monday-Friday) prior by 5:00 p.m. to the date fixed for the opening of bids. Failure of any bidder to acknowledge all addenda on the Addendum Acknowledgement Form shall not relieve such bidder from any obligation under its bid as submitted and may render the bidder non-responsive. Each Bidder shall ascertain prior to submitting a Bid that the Bidder has received all Addenda issued, and the Bidder shall specifically acknowledge their

receipt in the bid. All addenda so issued shall become part of the Contract documents.

- B. Addenda will be e-mailed to all who are known by the County to have requested Bid Documents.
- C. No Addenda will be issued later than four (4) working days prior to the date for receipt of Bids except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

1.3.7 Power of Attorney

Attorneys-in-Fact who sign any required bonds must file with each bond a certified properly executed and dated copy of their power of attorney.

1.3.8 Obligation of Bidder

Complete sets of Solicitation Documents must be used in preparing Bids; neither the County nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Solicitation Documents.

The Submission of a bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of the Bid, which without exception the Bid is premised upon performing and furnishing the Work required by the Solicitation Documents. The bidder will be required to establish to the satisfaction of the County the qualifications and capability of the persons proposed to furnish and perform the Work described in the Solicitation documents. Contractor, by signing the Bid also acknowledges that the Contract Time is reasonable for the weather and climactic conditions.

Prior to the award of the Contract, the County will notify the bidder in writing if the County after due investigation has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, (1) withdraw the Bid, or (2) submit a substitute person or entity acceptable to the County with an adjustment in the Base Bid or Alternate Bid to cover the difference in cost, if any, occasioned by such substitution. The County may accept the adjusted bid price. In the case that the adjusted price makes them no longer the low bidder, County reserves the right to award to the subsequent low bidder. In the event of withdrawal, bid security will not be forfeited. Persons proposed by the Bidder and to whom the County has made no reasonable objection must be used to perform the Work for which they were proposed and shall not be changed except with the prior written consent of the County.

1.3.9 Safety Standards and Accident Prevention

With respect to all work performed under this contract, the Bidder shall:

- A. Comply with the standard provisions of the most current versions of all applicable laws, rules and regulations that apply to the work contracted for.
- B. Provide a Safety Management Plan to the County after award acceptable to the Project Manager (see Section 3).

1.3.10 Substitutes or Brand Name or Equal

During solicitation, it may be determined that a “brand name or equal” is in the County’s best interests, and in many cases is the “Basis of Design” for a particular item or system. The Contractor may provide a substitution of a particular item or items. The Contractor shall provide proof that the proposed substitute item is equal to or exceeds the basis of design. The County reserves the right to accept or reject the substitution at its sole discretion.

All re-design and evaluation costs that may be incurred shall be paid by the Contractor.

The Contractor shall provide an alternate bid based on the original plans and specifications and shall provide separately the cost for the substituted item, which the County reserves the right to accept or reject.

The procedure for submission of any such application by Contractor and consideration by County is set forth in Section 3.

1.3.11 Bids to Remain Subject to Acceptance

All bids will remain subject to acceptance for sixty (60) calendar days after the day of the Bid Opening. The County may, at its sole discretion, release any Bid and return that Bidder’s Bid Security prior to that date. County may request an extension, agreeable to both the Bidder and County.

1.3.12 Withdrawal of Bids

- A. Bidder may withdraw its bid by written notice and received by Purchasing Agent prior to bid opening.
- B. After bid opening, no changes in bid prices or other provisions of bids prejudicial to the interests of the County or fair competition shall be permitted. In lieu of bid correction, a low bidder alleging a material mistake of fact may be permitted to withdraw its bid if: (1) The mistake is clearly evident on the face of the bid document; or (2) The Bidder submits evidence which clearly and convincingly demonstrates that a mistake was made.

1.3.13 Acceptance or Rejection of Bids

The County reserves the right to accept any bid, reject any or all bids without cause, to waive any or all technicalities in any Bid in the interest of the County and the right to reject all non-conforming, non-responsive or conditional Bids.

1.3.14 Award

Bids shall be evaluated based on the requirements set forth in the IFB, which may include criteria to determine acceptability such as inspection, testing, quality, workmanship, delivery and suitability for a particular purpose and the Contract shall be awarded on the basis of the lowest responsible and responsive bidder in accordance with Chapter 31-101 (i) of the Los Alamos Code of Ordinances.

1.3.15 Registration of Contractors and Subcontractors

Any bidder that submits a bid valued at more than the dollar amount required by the New Mexico Public Works Minimum Wage Act [13-4-11 through 13-4-17 NMSA 1978] and the New Mexico Subcontractors Fair Practice Act [13-4-31 through 13-4-43] for a public works project shall be registered with the labor and industrial division of the labor department. County will not accept bids for a public works project subject to the New Mexico Public Works Minimum Wage Act from the contractor that does not provide proof of required registration for itself and its subcontractors.

1.3.16 Procurement Preferences

Sec. 31-261. - State and local preferences.

(a) *Definitions.* For the purposes of this section:

- (1) The terms "resident business" and "resident veteran business" shall be defined as set out in NMSA 1978, § 13-1-21;
- (2) The term "local" as applied to a business shall mean that it meets the requirements of the above definition, maintains its principal office and place of business in Los Alamos County, and has a required Los Alamos County business license.

(b) *Requirements for preference qualification.* The chief purchasing officer shall determine if a preference is applicable to a particular bid or offer on a case-by-case basis. A bidder or offeror must submit a written request for preference, with a copy of the state-issued preference certificate, with its bid or proposal to qualify for this preference.

- (1) If a corporation, it shall be incorporated in New Mexico and maintain its principal office and place of business in the state;
- (2) A person shall have qualified with the state chief purchasing officer as a resident business or resident veteran business and obtained a certification number as provided in NMSA 1978, § 13-1-22.

(c) *Preference factor.*

- (1) The preference factor for qualifying resident and local businesses applied to bids and proposals shall be five percent.
- (2) The preference factor for qualifying resident veteran businesses shall be in accordance with the requirements set forth in NMSA 1978, § 13-1-21.

(d) *Invitations for bids.* When bids are received, the price quoted by the qualifying vendor shall be multiplied by 0.95. After application of the preference factor, the contract shall be awarded to the lowest bidder. If one or more low prices are equal, the bid shall be awarded with respect to the next category of offerors listed below, and the next, until an offer qualifies for award. The priority of categories of offers is as follows:

- (1) Local business;
- (2) Resident business.

(e) *Requests for proposals.* When proposals are received, the total evaluation score with or without the cost factor of each proposal received from a qualifying vendor shall be multiplied by 1.05. After application of the factor, the contract shall be awarded to the highest score. If one or more scores are equal, the same procedure shall be followed with respect to the next

category of offerors listed, and the next, until an offer qualifies for award. The priority of categories of offerors is the same as listed in subsection (d) of this section.

- (f) *Exemptions from preferences.* The resident and local preference specified in this article shall not be applied:
- (1) To requests for qualifications;
 - (2) To any purchase of goods or services in excess of \$500,000.00;
 - (3) When the expenditure of federal funds designated in whole or in part for a specific purchase is involved; or
 - (4) When the expenditure of grant funds, a condition of which prohibits a local preference, is involved.

(Ord. No. 02-098, § 2, 12-2-2008; Ord. No. 02-305, § 8, 2-25-2020)

1.4 Notices to Contractors

1.4.1 Applicable Law

Work shall be performed in accordance with applicable federal, state, and local laws (Los Alamos County Code of Ordinances, Section 31.2 Procurement Code).

1.4.2 Gross Receipts Tax

All bids submitted are to exclude the applicable gross receipts taxes. County will pay the applicable taxes to the Contractor including any increase in the applicable taxes becoming effective after the execution date of the contract. The applicable gross receipts taxes will be shown as a separate amount on each payment application made under the contract. The Contractor is responsible for payment to the State of New Mexico for all gross receipt's taxes collected.

1.4.3 Minimum Wage Rates

Pursuant to the New Mexico Public Works Minimum Wage Act, Section 13-4-11 through 13-4-17 NMSA 1978 (comp.) all certified payrolls submitted must contain required information as stated on the pertinent information sheet of the Wage Rate Decision issued on said project.

The Contractor, Sub-contractor and all tiers shall provide the Statement of Intent to Pay Prevailing Wages form to County's Project Manager.

1.4.4 Work Conditions

This contract will be performed in and adjacent to Los Alamos County for the contract duration specified in the Contract. The Contractor shall be aware of the conditions that may normally exist within the project area during performance of the work. Those conditions may include but are not limited to:

- Extended freezing temperatures,
- Intense rainfall events,
- Snowfall and snow accumulation,
- Limited direct sunlight.

Delays due to normal weather conditions are not eligible for time extensions and/or additional compensation. Contractor is required to protect their work and the project from normal weather events. Unusual weather-related time extensions may be awarded by the County pursuant to an approved change order at the County's sole discretion. Please refer to Section 2, Contract Articles 2 and 3.

1.4.5 Public Information

The Contractor is required to be an active participant in the execution of the Public Information and Involvement Plan (PIIP) to be developed by the County. County retains edit and approval rights to any documents being released to the public and requires two (2) working days advance notice to allow for said edit/approval. Contractor will perform/assist the County in successfully implementing PIIP activities that may include, but not be limited to:

- Weekly updates by Wednesday noon of traffic control expected on this project for the following week;
- Placement of door hangers 48 hours prior to any Utilities service disconnections (gas, water, and electric);
- Five (5) working days advance notification to Project Manager regarding impacts to school or transit bus stops and safe routes to schools.
- Inform businesses and residents 48 hours prior to direct impacts during construction.
- County policy is to advertise in the local newspaper in advance of posting traffic control signs or barricades. The Contractor will submit information concerning posting of traffic control signs and barricades at least five (5) working days in advance to the Owner.

Project Manager shall determine the need, size, and location for a project sign(s) that may include the following:

1. Project name
2. Contractor business name and contact information
3. Budget
4. Project start and end months
5. County Project Manager contact information
6. A rendering of the improvement(s) if available.

1.4.6 Important Dates

Contractor to keep the following dates in mind during the construction phasing/scheduling of the project. Contractor may have to make adjustments and accommodations to work zone prior to and during the events for pedestrians and vehicle access.

- None

1.4.7 Performance and Labor and Material Bonds Requirements

Performance Bond and Labor-Materials Bond shall be executed after receipt of Notice of Award to the successful bidder in an amount equal to one hundred percent (100%) of the total amount payable by the terms of the contract. Bonds must be prepared and executed on the Performance Bond and Labor-Materials Bond forms attached hereto or on such

other forms as may be approved in writing by the Owner. Surety shall be by a company licensed to do business in the State of New Mexico and acceptable to the Owner.

1.4.8 Fitness for Work and Drug and Alcohol Policy

If, at any time, personnel of the Contractor's workforce are deemed unfit for work in a manner resulting in an unsafe condition by the Owner, or Owner's representative, it shall be brought to the attention of the Contractor's Superintendent. It is the Contractor's responsibility to remove said personnel for action in accordance with the provided Safe Work Practices and/or Safety Program documentation, and/or Drug and Alcohol Testing Program.

The Contractor shall have and provide an active and documented Drug and Alcohol Testing Program, as well as a Safe Work Practices and/or Safety Program as a submittal to the Project Manager for review and acceptance.

1.4.9 Bid Bond

In submitting their Bid Bond, it is not mandatory that Bidders use the Bid Bond form provided in the packet. The Owner strongly encourages all Contractors to use this form, but if the Contractor elects not to use it, the Bid Bond must be submitted on a form acceptable in the construction industry and approved by the Owner's Project Manager in advance of the bid due date.

1.4.10 NMDOT Standard Specifications

The New Mexico Department of Transportation Standard Specifications for Highway and Bridge Construction, 2019 Edition (Platinum Book) shall govern construction of this Project except as Modified in the Special Provisions, and Supplemental Technical Specifications. These specifications do not apply to utility work which, in most cases, occurs beneath the road prism.

1.4.11 Utility Specifications and Quantities

The Utilities Specifications are in Section 3.4 - Department of Public Utilities Technical Specification 101 - 601 and take precedent over New Mexico Department of Transportation Standard Specifications for Highway and Bridge Construction. All estimated utility quantities for unit price items stipulated in the bid proposal are approximate and are to be used only (a) as a basis for estimating the probable cost of the work and (b) for the purpose of comparing the bids submitted for the work. The actual amounts of the work done, and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of work done, and materials furnished at the unit price bid. If actual quantities exceed or are less than estimated quantities Contractor will not be eligible for a price adjustment or additional time. The Contractor is responsible for obtaining a copy of the current Utility Specifications and becoming familiar with them.

1.4.12 Supplemental Technical Specifications

The Supplemental Technical Specifications, included in this Invitation for Bids shall supersede any and all provisions in the Standard Specifications related to utility work. All estimated utilities quantities for unit price items stipulated in the bid schedule are approximate and are to be used only (a) as a basis for estimating the probable cost of the work and (b) for the purpose of comparing the bids submitted for the work. The actual

amounts of the work done, and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of work done and materials furnished at the unit price bid.

1.4.13 Abandoned Utilities

Los Alamos has utilities and structures that have been abandoned in place. These abandoned utilities are not owned or operated by the previous owner of the utilities. They cannot be located and do not appear on the Plans. The Contractor upon uncovering an abandoned utility that may conflict with construction and or utility installation must request verification that the utility is in actual fact abandoned. If the line or conduit is verified as abandoned, the Contractor has the choice of working around it or cutting, removing and capping its ends. No additional payment or time will be granted for the removal of abandoned utilities or working around abandoned utilities. Some of the abandoned utilities could be transite asbestos pipe or conduit. If removal of the transite material is required no additional payment or time will be granted for the proper removal and disposal per the appropriate local, State, and federal regulations.

1.4.14 Coordination with County Gas, Water, Sewer & Electric Operations

Contractor shall coordinate with County Utility Operations, prior to initiating any work associated with the pipelines, conduits, electric distribution lines and other appurtenant utility items. All costs associated with the Contractor's coordination efforts shall be incidental to the project's cost. Utility service interruptions shall only occur upon the Contractor receiving approval of their service interruption plan by the Project Manager. Plan shall be submitted for approval no less than a week in advance of the proposed interruption. Any customers who will have service disrupted shall be notified 48 hours in advance by the contractor. Contractor shall not make any connections to existing facilities, until a Penetration Permit has been issued by the County. Furthermore, no roadway work should be initiated until all utility work under that roadway has been completed.

1.4.15 Time of the Essence

Time is of the essence with respect to all provisions of this Agreement that specify a time for performance; provided; however, that the foregoing shall not be construed to limit or deprive a party of the benefits of any grace or use period allowed in this Agreement.

1.4.16 Coordination with CenturyLink/Lumen

Coordination with CenturyLink/Lumen will be required. The County is providing a new roadway and infrastructure with this project. The Contractor may need to provide access to CenturyLink/Lumen or its agents to install the new facilities at the proper depth. Scheduling and coordination will be the responsibility of the Contractor, so it does not interfere with other operations on the Project. No additional payment or time will be granted for this additional coordination.

1.4.17 Coordination with Comcast Cable

Coordination with Comcast Cable will be required. The County is providing a new roadway an infrastructure with this project. The Contractor may need to provide access to Comcast or its agents to install the new facilities at the proper depth. Scheduling and coordination will be the responsibility of the Contractor, so it does not interfere with other operations on the Project. No additional payment or time will be granted for this additional coordination.

1.4.18 Coordination with LANL Air Monitoring (Airnet)

Coordination with Los Alamos National Laboratory (“LANL”) Air Monitoring (“Airnet”) will be required. The County is providing a new roadway and infrastructure with this project that will necessitate the relocation of three (3) AirNet Air Sampler Stations. Station #326 (approx. STA 30+40) will need to remain in operation during construction with a maximum of a one (1) week shut down to facilitate the final relocation of this station. Air Sampler Stations #327 & #328 (approx. STA 16+95 & STA 20+50 respectively) can be removed at the start of construction and reinstalled prior to the completion of the project. Air Sampler Station #317 (approx. STA 25+00) will remain in place and operational for the duration of the project. For those Air Sampler Stations that are to remain in place, protection shall need to be provided. The Contractor will need to provide access to LANL Air Monitoring (Airnet) or its agents to Air Sampler Stations. Scheduling and coordination will be the responsibility of the Contractor, so it does not interfere with other operations on the Project. No additional payment or time will be granted for this additional coordination.

1.4.19 Trenching and Backfill

The trenching, bedding and backfill for utilities pipes, storm drainpipes, and appurtenances in soil or rip able tuff are incidental to the unit cost for the pipe and associated appurtenances, conduit, vault, or splice box and not compensated separately. Actual width and depth of trench will be used to calculate excavation quantities of hard rock. Additional excavation for trench sloping and/or trench boxes and shoring are considered incidental. No additional payment or time will be granted for this additional incidental excavation. Trenching quantities of hard rock for utilities will be calculated using the outside dimensions of the utilities plus 12 inches. Additional excavation for trench sloping and/or trench boxes and shoring are considered incidental. No additional payment or time will be granted for this additional incidental excavation and backfill. The contractor is encouraged to use trench shoring or trench boxes to reduce excavation and disturbance area.

1.4.20 Potholing

All utilities and storm drains crossed, in proximity, and at tie-in locations shall be potholed by the Contractor. The pothole shall have a diameter of at least 12 inches. If the initial pothole of a located utility does not result in the discovery of the utility line, the pothole shall be expanded 18 inches in all directions. If the expanded pothole does not discover the utility line, the utility owner shall be contacted to have the utility owner relocate the utility line. If upon relocation the utility line cannot be discovered by potholing it is the responsibility of the utility owner to pothole and physically locate the utility line. The depth and location of each potholed utility shall be recorded by the Contractor and referenced against excavation for roadbed, curb, and sidewalk to determine if utility line conflicts with roadway construction. All potential conflicts shall be reported in a timely manner to the County Project Manager. Potholing is considered incidental to the installation work and is not compensated separately.

1.4.21 Utilities Submittals

Submittals should be sent to the Project Manager as soon after the Notice of Award as possible. All Utilities Submittals shall be sent to the Project Manager within 30 days of the Notice of Award so that timely delivery of materials does not delay the Project.

1.4.22 Permits, CPM Schedule, and Roadway Material Submittals

Permits, CPM Schedule, and roadway materials submittals having significant lead time for delivery shall be received by the Project Manager ***within thirty (30) days*** following the Notice of Award issued to the Contractor. Permits include Traffic Impedance Permit with traffic control plan and SWPPP (SWPPP modified from template provided in plans). A sample list of Materials Submittals is attached (attachments can be found in Section 3.3). The Contractor is responsible for determining which materials require significant lead time that would affect the critical path of the project schedule.

The County will not allow additional contract time as a result of late delivery of materials to the project site as well as additional time to approve re-submitted traffic control plans, SWPPP plans, Certifications essential to the work to be performed, and CPM schedules that did not meet County requirements.

1.4.23 Permits

Traffic Permit for Road Closures and Traffic Impedance is required for this project. Also, if more than one acre of soil disturbance occurs, the Contractor is required to submit the Notice of Intent (“NOI”) as an “Operator” of the SWPPP. The Contractor is required to submit the NOI on-line at the site identified in the Special Provision for 603-Temporary Erosion and Sediment Control, Exhibit A, section 1.2.1.4 once the SWPPP template has been modified to meet the needs of the work and once it has been approved by the County Project Manager. Note that as of February 16, 2012 the NOI form has been reformatted with a new date but maintaining the previous assigned Permit number. Permit number NMR100000 is assigned to the Area of Coverage (where EPA is the Permitting Authority) for the State of New Mexico, except Indian Country.

The Contractor shall complete these permits and notice prior to construction. The Contractor is notified that there is a mandatory 14-day acknowledgment/waiting period for the NOI to take affect before ground disturbance activities occur. Therefore, the timely submittal of the SWPPP after Contract Award is Critical to the start of construction. The County is not responsible, nor will it not adjust the Contract time for the late deliverable of these submittals and those identified in the Contract document.

1.4.24 Geotechnical Investigation Report

Included as Attachment

1.4.25 Subgrade Stabilization Practices

Geosynthetics are not recommend in the geotechnical report, but should the contractor encounter unstable subgrade material the use of geosynthetics may be incorporated in the pavement prism under this contract and shall be paid for as Line-Item No. 604003-GEO-TEXTILE FABRIC (SEPARATION & STABILIZATION).

1.4.26 Disposal of Excess Material

Excess dirt/soil material will be generated from the project. The drainage infrastructure and utilities installation as well as the reconstruction of the roadway section will generate excess material during the excavation processes. All excess material generated from the project is the property of the Contractor and it is the responsibility of the Contractor to dispose of the material. Los Alamos County will allow stockpiling of the material within the designated staging area under the terms of the Staging Area Agreement during the project. Prior to Final Completion the Contractor is to haul off site all remaining excess

dirt/soil material to a designated location of their choice. Disposal and hauling of the material out of Los Alamos County is incidental to the work and no additional payment will be made by the County.

1.4.27 Storm Water Control

The Work under this contract will occur in existing drainage ways and roadways with active drainage systems. The Contractor shall at all times be responsible for protecting all materials, and work being performed from damage due to storm water runoff at no additional cost to the County.

Dewatering operations, required under any circumstance (e.g., including but not limited to flooding resulting from months when recorded rainfall/precipitation is higher than normal/average, and/or flooding resulting from nonfunctional storm drain systems during construction, and/or unprotected open trenches), are incidental to the cost of the work being performed and shall be at no additional cost to the County.

1.4.28 Flowable Fill as an Alternative to Select Backfill

The Contractor may use flowable fill as an alternative to select backfill. In this case NMDOT Section 206.2.2 flowable fill shall apply. Flowable fill, as select backfill material, is included in the contract unit price per linear foot of culvert trench.

1.4.29 Field Offices

The Contractor, at his expense, is responsible for providing his own field office and/or Caretaker unit under the terms of the Staging Agreement. The County will arrange a meeting place or conference room to conduct weekly meetings.

The Contractor may provide a caretaker unit to serve as a field office at no additional cost to the County; Contractor shall provide a locked storage container for (1)-nuclear densometer which will be used by his qualified testing laboratory designee unless other appropriate accommodations are to be provided. If a nuclear densometer is to be stored on site, the local Fire Marshall shall be informed of its location with the appropriate signage.

1.4.30 Security

The Contractor shall provide security for all Contractor's equipment, materials, supplies, offices, temporary utilities, etc. The County is not responsible for theft and/or damage of Contractor's equipment, materials, supplies, offices, vehicles, or work in progress.

1.4.31 Maintenance During Construction

The Contractor shall assume the responsibilities of maintenance within the project envelope. Work includes but is not limited to sweeping, pothole patching, providing a suitable concrete washout location, and providing smooth pavement transitions.

Sweeping - A suitable street sweeper shall be required for this project to minimize displacement of dirt and other debris. The sweeper shall have an operational/working water storage tank, shield, and drip system as to minimize dust displacement. If such sweeping equipment is ineffective (i.e., Complaints persist due to poor sweeping operations), the Contractor shall use a sweeper with wet vacuum capabilities at no expense to the County.

The Contractor shall sweep all streets that exhibit mud-tracking that originates from the work zone and/or its staging areas. Failure to maintain a clean workspace that contributes to Storm water pollution can result in penalties in the form of liquidated damages as identified in Part 6 of the Master Construction Specification Package for Storm Water Management on Construction Sites document, Special Provisions Section 603.

1.4.32 Preconstruction Walk-Through

Representatives from the Contractor, Owner, and Engineer shall perform a walk-through inspection at a minimum of seven (7) calendar days prior to construction of the Project. The preconstruction walk-through will be performed to discuss/verify the following activities:

1. Construction Staking
2. Location of existing property survey pins
3. Location of all existing utilities
4. Verify all driveway locations
5. Verify new water meter location
6. Verify all existing electric meter locations
7. Review traffic control plan and procedures
8. Walk entire Project Limits
9. SWPPP procedures and BMP placements
10. Staging area locations and usage
11. Identify safe routes to schools and respective maintenance procedures
12. Update Cone Zone report (local newspaper traffic notice)

Prior to the walk-through, the Contractor shall perform ample construction staking for an effective coordination of construction, including the locations of all existing utilities. The Contractor shall budget a minimum of eight (8) hours for the preconstruction walk-through. The preconstruction walk-through will be considered incidental to the completion of the work and no separate measurement or direct payment will be made, therefore.

1.4.33 Cast Iron Truncated Domes – ADA Detectable Warning Surfaces

Contractor shall be responsible for providing all cast iron detectable warning surfaces on the project. The ADA curb ramps that callout for the ADA curb ramps with detectable warning surfaces shall be constructed with an area shown on Sheet 2-8 and Sheet 2-9 for the detectable devices. The detectable devices at the crosswalks shall be in compliance with all NMDOT and federal regulations. Cast iron truncated domes are incidental to the Concrete Sidewalk 4", Item No. 608004.

1.4.34 Pre-paving and Permanent Signing & Striping Placement Meetings

Prior to the respective work, the Contractor is required to coordinate a pre-paving, striping, and a permanent signing placement (if applicable to the project) meeting.

The purposes of such meetings include but are not limited to the following:

Pre-paving - Verify the mix designs being used, paving schedules, Contractor to provide a paving operations QC plan, identify shake-down period, lot determination, joint placement locations with respect to striping placement, discuss Asphalt Price

Adjustment/Composite Pay Factor determination procedures applied the lots determined, hauling restrictions, and weather & field condition limitations.

Striping - Verify all striping is per plans and per Los Alamos County Traffic & Streets Division specifications. Prior to the layout of the striping the pre-striping meeting will be conducted so if any field adjustments are necessary or anticipated the changes can be made ahead of the operation. This will include pavement striping, curb paint, and traffic symbol placement.

Permanent Signing Placement - Ensure that One-call verification prior to sign placement is done. It is anticipated that minor field adjustments will occur during permanent signing placement operations as determined by Los Alamos County Traffic & Streets Division.

Note all operations shall have an approved traffic control plan which requires lead time as determined by the Los Alamos County Traffic & Streets Division. All operations shall be included into the 2-week schedule if it will be required to notify the public and/or provide on the traffic message boards.

1.4.35 Traffic Control Supervisor

As per Section 618.1.7, Traffic Control Supervision, per Special Provision 618-Traffic Control Management, The Contractor shall have a designated traffic control supervisor other than the designated superintendent, full time through the duration of the project. The supervisor shall devote all time and responsibility to the day-to-day duties of the traffic control management within the work zone.

This includes but is not limited to the following: As per the approved TCP, maintain routine inspections to ensure the constant flow of vehicular and pedestrian traffic, maintain pedestrian access areas, removal and replacement of all damaged and unsatisfactory traffic control devices on the project and most importantly be the direct point of contact with LAC Traffic Control Supervisor and LAC Project Manager on traffic control issues throughout the project and respond to their immediate concerns.

1.4.36 Project Liaison

The Contractor shall provide a designated project 'Liaison' that will always represent LAC and the Contractor in regard to the general traveling public and be responsible for public communication with residents', businesses and property owner questions and concerns pertaining to the Project. This liaison shall also be responsible for project duties such as passing out fliers, informing residents of impacts to their services and/or homes, be the point of contact with the Project Manager when issues arise.

The 'Liaison' shall also be responsible for reporting to the Contractor's TCS (Traffic Control Supervisor) should traffic related issues effect the travelling public.

1.4.37 Snow Removal and Ice Control

This project is anticipated to be constructed in one construction season with mandatory completion dates to be attained. Contrary to Section 104.5 Maintenance of Traffic, the Contractor is responsible for snow removal within the work zone limits including those sections of the Roadway open to the traveling public (vehicular and pedestrian). Special considerations for maintaining safe ingress and egress to commercial parking areas,

pathways and designated bus stops are required. This activity is considered incidental to the cost of construction and the contractor shall not be paid for this activity as “Extra Work”. Furthermore, the Contractor is responsible to protect his work throughout the project; if damages occur during snow removal and ice control activities, the Contractor shall repair or replace the work at the Contractor’s expense. Also, the Contractor shall repair and replace any damages to property including landscaping at his own expense resulting from snow removal and ice control operations.

1.4.38 Special Project Accommodations

The Contractor shall make special accommodations for emergency vehicle, and delivery vehicle access to adjacent businesses at all times. School bus transportation may also need to be accommodated. The Contractor shall also allow for pedestrian and parking access during construction to adjacent businesses.

The Project Manager will notify Contractor at preconstruction meeting of this need.

County Solid Waste and Recycle services are once a week, the Contractor shall assist in making roll-off carts accessible for curb side service and dumpster pick up. The Contractor and Project Manager shall coordinate these activities with Environmental Services Department.

1.4.39 Rock Excavation (Including Reinforced Concrete)

The Contractor should be aware that rock excavation, including sub-surface reinforced concrete, could be encountered during roadway construction activities and or storm drainage system trenching operations. In such cases, bid item 203301 Rock excavation will be utilized for measurement and payment in accordance with Section 203.2.1.1 per NMDOT Specifications, based on cubic yard of material removed.

1.5 Bid Forms

This Bid Submitted to:

**Incorporated County of Los Alamos
Bid Number: IFB24-40
DP Road Phase II Reconstruction Project**

- A. The undersigned Bidder proposes and agrees, if this Bid is accepted; to enter into an agreement with County in the form included in the solicitation documents; to perform and furnish all work as specified or indicated in the solicitation documents for the contract price; and within the contract time indicated in this bid; and in accordance with all of the other terms and conditions of the solicitation documents.
- B. Bidder accepts all the terms and conditions of the solicitation and Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid Security. This Bid will remain subject to acceptance for sixty (60) calendar days after the day of the Bid opening. Bidder will sign and submit the Agreement and the Performance, Labor and Material Bonds, Certificate of Insurance and all other documents required by the Solicitation Requirements within ten (10) calendar days after receipt of the County's Notice of Award.
- C. Notice to Proceed shall be issued no later than twenty-eight (28) calendar days from Notice of Award.
- D. Bidder shall promptly provide written notice to the County of any conflicts, errors, or discrepancies discovered in the solicitation documents.
- E. Bidder represents this Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm, or corporation. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid. Bidder has not solicited or induced any person, firm or corporation to refrain from bidding, and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over County.
- F. By submitting the bid, each bidder represents to the County that it has inspected the site, is familiar with local conditions that may affect cost, progress, performance or furnishing of the work, has considered federal, state, and local laws and regulations that may affect cost, progress, performance, or furnishing of the Work and has read and is thoroughly familiar with the technical specifications and plans and the Solicitation and Contract document (including all addenda). The failure or omission of any such bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect to its bid.
- G. Bidder represents that a complete set of Solicitation Documents was used in preparing the Bid and acknowledges that the County assumes no responsibility for errors or misinterpretations resulting from the use of incomplete sets of Solicitation Documents.

- H. Bidder represents that the submission of this bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of the Bid, that without exception the Bid premised upon performing and furnishing the Work required by the Solicitation Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Solicitation Documents, and that the Solicitation Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- I. The Solicitation Documents are intended to describe a functionally complete project to be constructed in accordance with the Contract Documents. Any work, materials, or equipment that may reasonably be inferred from the documents or from prevailing custom or trade usage as being required to produce the intended result will be furnished and performed whether or not specifically required. When words or phrases which have a well-known technical or construction industry or trade meanings are used to describe work, materials or equipment, such words or phrases shall be interpreted in accordance with those meanings. Clarifications and interpretations of the Technical Specifications and Contract Drawings shall be issued by the County.
- J. The quantities appearing in the Bid Schedule, Plans, or other contract documents are approximate only and are prepared for the comparison of bids. Payment to the Contractor will be made only for the actual quantities of Work performed and accepted, or materials furnished in accordance with the contract.
- K. The County reserves the right to obtain a cost breakdown of specific Unit Bid items having lump sum (LS) units of measure during the review process.

1.5.1 Bid Form

Bidder agrees to perform the work for the following prices:

The TOTAL amounts of the below bid (excluding NMGR) shall be shown in both words and figures. In case of discrepancies, the amount shown in words will govern.

UNITS ACRONYMS			
ACRE = Acre	LB = Pound	SQ.YD. = Square Yard	VF-LF = Vertical Feet by
CU.YD. = Cubic Yard	LIN.FT. = Linear Feet	TON = Ton	Linear Feet
EACH = EACH	L.S. = Lump Sum	VF = Vertical Feet	

BASE BID ROADWAY (DP ROAD PHASE II RECONSTRUCTION PROJECT)

ITEM NO.	ITEM DESCRIPTION	UNITS	ESTIMATED QUANTITY	UNIT BID PRICE IN DOLLARS AND CENTS	AMOUNT BID TOTAL IN DOLLARS AND CENTS
201000	CLEARING AND GRUBBING	L.S.	1		
203000	UNCLASSIFIED EXCAVATION	CU.YD.	2900		
203100	BORROW	CU.YD.	360		
203211	UNSTABLE SUBGRADE STABILIZATION	SQ.YD.	700		
203301	ROCK EXCAVATION	CU.YD.	5		
207000	SUBGRADE PREPARATION	SQ.YD.	6600		
303180	BASE COURSE 8"	SQ.YD.	5195		
303500	MOVE, PROCESS AND PLACE MILLINGS	CU.YD.	200		
407000	ASPHALT MATERIAL FOR TACK COAT	TON	2		
408100	PRIME COAT MATERIAL	TON	10		
414130	COLD MILLING ASPHALT 3"	SQ.YD.	4680		

417000	MISCELLANEOUS PAVING (3" THICKNESS)	SQ.YD.	750		
423270	HMA (SP-IV) COMPLETE	SQ.YD.	5240		
511000	STRUCTURAL CONCRETE, CLASS A	CU.YD.	8		
570025	24" CULVERT PIPE END SECTION	EACH	1		
570425	18" STORM DRAIN CULVERT PIPE	LIN.FT.	10		
570437	24" STORM DRAIN CULVERT PIPE	LIN.FT.	1430		
601000	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	L.S.	1		
603262	COMPOSTED MULCH SOCKS	LIN.FT.	1150		
603281	SWPPP PREPARATION AND MAINTANCE	L.S.	1		
604003	GEO-TEXTILE FABRIC (SEPARATION & STABILIZATION)	SQ.YD.	10		
607048	CHAIN LINK FENCE SECURITY FENCE 8'	LIN.FT.	610		
607250	REMOVE AND RESET CHAINLINK GATE	EACH	2		
608004	CONCRETE SIDEWALK 4"	SQ.YD.	1100		
608006	CONCRETE SIDEWALK 6"	SQ.YD.	1000		
608304	CONCRETE MEDIAN PAVEMENT 4" COLORED AND PATTERNED	SQ.YD.	80		
609424	CONCRETE VERTICAL CURB & GUTTER TYPE B 6"x24"	LIN.FT.	1500		

609636	CONCRETE VALLEY GUTTER 6"X36"	LIN.FT	140		
609706	CONCRETE LAYDOWN CURB & GUTTER TYPE E 6"X24'	LIN.FT.	1410		
617003	VIDEO RECORDING	L.S.	1		
618000	TRAFFIC CONTROL MANAGEMENT	L.S.	1		
621000	MOBILIZATION	L.S.	1		
623050	MODIFIED MEDIAN DROP INLET TYPE I (VALLEY/RURAL) H=3'1" TO 6'0"	EACH	1		
623331	CURB DROP INLET TYPE I-B, OVER 4'	EACH	3		
623332	CURB DROP INLET TYPE II-B, OVER 4'	EACH	3		
623333	CURB DROP INLET TYPE III-B, OVER 4'	EACH	1		
662000	MANHOLE TYPE C-4' DIAMETER 0' TO 6' DEPTH	EACH	4		
663200	ELECTRICAL METER	EACH	1		
701000	PANEL SIGN	SQ.FT.	80		
701100	STEEL POST AND BASE POST FOR ALUMINUM PANEL SIGNS	LIN.FT.	170		
702710	MOBILE TRAFFIC SIGNAL SYSTEM	EACH	2		
702810	TRAFFIC CONTROL DEVICES FOR CONSTRUCTION	L.S	1		

704000	RETROREFLECTIVE PAINTED MARKING 4"	LIN.FT.	7150		
704003	RETROREFLECTIVE PAINTED MARKING 4"	LIN.FT.	220		
704704	HOT THERMOPLASTIC PAINTED MARKING 24"	LIN.FT.	215		
704099	TEMPORARY RETROREFLECTORIZED PAINTED MARKINGS 4"	LIN.FT.	1160		
704733	HOT THERMOPLASTIC PAVEMENT MARKING HANDICAPPED SYMBOL	EACH	4		
707525	TYPE V STANDARD 25'	EACH	2		
707801	REMOVE & RESET TYPE V STANDARD COMPLETE	EACH	5		
707822	BASES	EACH	7		
707823	ARMS	EACH	5		
707824	FIXTURES	EACH	7		
709020	RIGID ELECTRICAL CONDUIT 2" (DIA.)	LIN.FT.	1400		
710000	ELECTRICAL PULL BOX (STANDARD)	EACH	7		
711106	SINGLE CONDUCTOR 6	LIN.FT.	4800		
801000	CONSTRUCTION STAKING BY CONTRACTOR	L.S.	1		
802000	POST CONSTRUCTION PLANS	L.S.	1		

ROADWAY BASE BID –	\$
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Total Roadway Base Bid Amount written in words:

_____ **Dollars**

Note: The bid amount shall exclude state gross receipts tax or local option tax, but shall include all other costs of doing business, including but not limited to bonds, insurance and profit. The Incorporated County of Los Alamos is 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 receipts tax or local option tax shall be shown as a separate amount on each billing or request for payment under contract. The Incorporated County of Los Alamos reserves the right to reduce or add quantities.

BASE BID UTILITIES (DP ROAD PHASE II RECONSTRUCTION PROJECT)

WATERLINE

ITEM NO.	ITEM DESCRIPTION	UNITS	EST. QTY	UNIT BID PRICE IN DOLLARS AND CENTS	AMOUNT BID TOTAL IN DOLLARS AND CENTS
1	6" WATERLINE PIPE EXCL. FITTINGS, INCL. TRACER WIRE, TRENCH & COMPACTED BACK FILL TO 6' DEPTH, CIP	LIN.FT.	16		
2	8" WATERLINE PIPE EXCL. FITTINGS, INCL. TRACER WIRE, TRENCH & COMPACTED BACK FILL TO 6' DEPTH, CIP	LIN.FT.	102		
3	12" WATERLINE PIPE EXCL. FITTINGS, INCL. TRACER WIRE, TRENCH & COMPACTED BACK FILL TO 6' DEPTH, CIP	LIN.FT.	1483		
4	6" GATE VALVES W/ VALVE CAN, CIP	EACH	1		
5	8" GATE VALVES W/ VALVE CAN, CIP	EACH	3		

6	12" GATE VALVES W/ VALVE CAN, CIP	EACH	7		
7	CIP 4-1/2' FIRE HYDRANT W/ PIPING VALVES, AND CONNECTION	EACH	4		
8	DUCTILE IRON MJ FITTINGS, ALL SIZES, CLASS 25, CIP	LB	5032		
9	MECHANICAL JOINT RESTRAINTS GLAND, DI&PVC, 4'-8" CIP	EACH	24		
10	MECHANICAL JOINT RESTRAINTS GLAND, DI&PVC, 10"-12" CIP	EACH	91		
11	PRESSURIZED WATERLINE CONNECTIONS, CIP	EACH	1		
12	INSTALL NEW 1" DOUBLE WATER METER PIT SETTER ASSEMBLY, PER STANDARD DETAIL 6003	EACH	2		
13	INSTALL NEW 1" SINGLE WATER METER PIT SETTER ASSEMBLY, PER STANDARD DETAIL 6003	EACH	16		
14	WATER METER BOX REMOVE & REPLACE	EACH	18		

WATERLINE BASE BID –	\$
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LOW PRESSURE SANITARY SEWER SYSTEM

15	3" HDPS DIPS DR 11 PIPE EXCL. FITTING INCL TRACER WIRE TRENCH & COMPACTED BACK FILL TO 6'DEPH CIP	LIN.FT.	497		
16	2" HDPS DIPS DR 11 PIPE EXCL. FITTING INCL TRACER WIRE TRENCH &	LIN.FT.	1418		

	COMPACTED BACK FILL TO 6'DEPH CIP				
17	3" HDPS SLIPLINE INSTALLED IN EXISTING 8" FORCEMAIN INCLUDING GROUT FILLING CIP	LIN.FT.	1178		
18	FURNISH AND INSTALL 1 IN DR11 HDPE PIPE CIP SANITARY SERVICE LINE FROM MAIN TO HOUSE CONNECTION MATERIAL CLEANOUT LBAOR EXCAVATION BACKFILL AND SITE RESTORATION CIP	LIN.FT.	18		
19	SLIPLINE BORE PIT 3 INCLUDING EXCAVATION, BACKFILL, COMPACTION, ASPHALT REMOVAL AND REPLACEMENT CIP	LS	1		
20	SLIPLINE BORE PIT 1 INCLUDING EXCAVATION, BACKFILL, COMPACTION, ASPHALT REMOVAL AND REPLACEMENT CIP	LS	1		
21	LOW PRESSURE CLEANOUT, INCL, CONNECTION TO LOW PRESSURE SEWER MANHOLE CONCRETE COLLAR CIP	LS	3		
22	NEW SERVICE LINE CONNECTION 2" AND 3" PER COUNTY STANDARD DETAIL CIP	EACH	18		
23	EXCAVATE AND DISPOSE OF UNSUITABLE MATERIAL CIP	CU YD	1235		
24	IMPORT OF SELECT MATERIAL	CU YD	1235		

LOW PRESSURE SANITARY SEWER SYSTEM BASE BID –	\$
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GASLINE

25	TIE-IN NEW 4" MDPE TO EXISTING 4" MDPE WITH 2" BY-PASS	EACH	1		
26	4" MDPE GASLINE INCL FITTING, TRACER WIRE, WARNING TAPE, TRENCH, BEDDING & COMPACTED BACKFILL TO 6' DEPTH CIP	LIN FT	1483		
27	4" MDPE BALL VALVES W/ VALVE CAN, CONCRETE COLLAR CAP	EACH	1		
27	2" MDPE GASLINE INCL FITTING, TRACER WIRE, WARNING TAPE, TRENCH, BEDDING & COMPACTED BACKFILL TO 6' DEPTH CIP	LIN FT	120		
28	1' MDPE (SERVICE LINE) INCL FITTING, TRACER WIRE, WARNING TAPE, TRENCH, BEDDING & COMPACTED BACKFILL TO 6' DEPTH	LIN FT	1000		
29	2" MDPE BALL VALVLE W/ VAVLE CAN, CONCRETE COLLAR, CIP	EACH	3		
30	1" MDPE BALL VALVE W/2-1/2" VALVE BOX, CONCRETE COLLAR, CIP (SERVICE VALVA @PROPERTY LINE)	EACH	19		
31	TRANSFER EXISTING GAS SERVICE TO NEW 1" MDPE SERVICE LINE, CIP	EACH	19		

GASLINE BASE BID –	\$
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ELECTRIC LINES

40	6" SCHEDULE 40 ELECTRICAL CONDUIT	LIN.FT.	1800		
41	4" SCHEDULE 40 ELECTRICAL CONDUIT	LIN.FT.	1500		
42	3" SCHEDULE 40 ELECTRICAL CONDUIT	LIN.FT.	1000		
43	6" RIGID STEEL 90- DEGREE ELBOW (TAPED)	EACH	20		
44	4" RIGID STEEL 90- DEGREE ELBOW (TAPED)	EACH	20		
45	3" RIGID STEEL 90- DEGREE ELBOW (TAPED)	EACH	25		
46	ELECTRIC VAULT 4'X4'X6'	EACH	6		
47	ELECTRIC VAULT 4'X4'X4'	EACH	12		
48	ELECTRIC PEDESTAL LIGHTS 12X12X18	EACH	6		

ELECTRIC LINES BASE BID –	\$
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COUNTY FIBER LINES

49	4" SCHEDULE 40 ELECTRICAL CONDUIT	LIN.FT.	3200		
50	4" SCHEDULE 40 90- DEGREE ELBOW	EACH	35		
51	COMMUNICATIONS FLUSH MOUNT PEDESTAL 12"X18"X24"	EACH	12		

COUNTY FIBER LINES BASE BID –	\$
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COMCAST LINES

52	4" SCHEDULE 40 ELECTRICAL CONDUIT	LIN.FT.	1500		
53	4" SCHEDULE 40 90- DEGREE ELBOW	EACH	20		

COMCAST LINES BASE BID –	\$
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LUMEN LINES

52	4" SCHEDULE 40 ELECTRICAL CONDUIT	LIN.FT.	1500		
53	4" SCHEDULE 40 90- DEGREE ELBOW	EACH	20		

LUMEN LINES BASE BID –	\$
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TOTAL UTILITIES BASE BID –	\$
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Total Utilities Base Bid Amount written in words:

_____ **Dollars**

Note: The bid amount shall exclude state gross receipts tax or local option tax, but shall include all other costs of doing business, including but not limited to bonds, insurance and profit. The Incorporated County of Los Alamos is 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 receipts tax or local option tax shall be shown as a separate amount on each billing or request for payment under contract. The Incorporated County of Los Alamos reserves the right to reduce or add quantities.

TOTAL ROADWAY and UTILITIES BASE BID –	\$
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Total Roadway and Utilities Base Bid Amount written in words:

_____ **Dollars**

Note: The bid amount shall exclude state gross receipts tax or local option tax, but shall include all other costs of doing business, including but not limited to bonds, insurance and profit. The Incorporated County of Los Alamos is 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 receipts tax or local option tax shall be shown as a separate amount on each billing or request for payment under contract. The Incorporated County of Los Alamos reserves the right to reduce or add quantities.

1.5.2 Alternates and Allowances

Bid Alternate Items

*Note to Bidders: Bid Alternate Items are intended to stand alone and are therefore separate from the Base Bid Items. Each Bid Alternate is a standalone price, **excluding NMGRT**. As such, the Bidder shall include all applicable Insurance and Bonds Costs in each Bid Alternate Item.*

Depending on Total Base Bid amount and County’s budget, a determination, at County’s sole discretion, will be made if the bid alternates will be awarded in their entirety, individually or none at all.

BID ALTERNATE ROADWAY (DP ROAD PHASE II RECONSTRUCTION PROJECT)

ITEM NO.	ITEM DESCRIPTION	UNITS	ESTIMATED QUANTITY	UNIT BID PRICE IN DOLLARS AND CENTS	AMOUNT BID TOTAL IN DOLLARS AND CENTS
201000	CLEARING AND GRUBBING	L.S.	1		
203000	UNCLASSIFIED EXCAVATION	CU.YD.	1600		
203100	BORROW	CU.YD.	185		
203211	UNSTABLE SUBGRADE STABILIZATION	SQ.YD.	400		
203301	ROCK EXCAVATION	CU.YD.	5		
207000	SUBGRADE PREPARATION	SQ.YD.	3700		
303180	BASE COURSE 8"	SQ.YD.	3365		
303500	MOVE, PROCESS AND PLACE MILLINGS	CU.YD.	100		
407000	ASPHALT MATERIAL FOR TACK COAT	TON	1		
408100	PRIME COAT MATERIAL	TON	7		

414130	COLD MILLING ASPHALT 3"	SQ.YD.	5420		
423270	HMA (SP-IV) COMPLETE	SQ.YD.	2880		
601000	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	L.S.	1		
603281	SWPPP PREPARATION AND MAINTANCE	L.S.	1		
607048	CHAIN LINK FENCE SECURITY FENCE 8'	LIN.FT	150		
607412	CHAINLINK GATE	EACH	2		
617003	VIDEO RECORDING	L.S.	1		
618000	TRAFFIC CONTROL MANAGEMENT	L.S.	1		
621000	MOBILIZATION	L.S.	1		
702810	TRAFFIC CONTROL DEVICES FOR CONSTRUCTION	L.S	1		
704000	RETROREFLECTORIZED PAINTED MARKING 4"	LIN.FT.	7200		
704099	TEMPORARY RETROREFLECTORIZED PAINTED MARKING 4"	LIN.FT.	1160		
801000	CONSTRUCTION STAKING BY THE CONTRACTOR	L.S.	1		
802000	POST CONSTRUCTION PLANS	L.S	1		

ROADWAY BID ALTERNATE-	\$
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Total Roadway Bid Alternate Amount written in words:

Dollars

Note: The bid amount shall exclude state gross receipts tax or local option tax, but shall include all other costs of doing business, including but not limited to bonds, insurance and profit. The Incorporated County of Los Alamos is 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 receipts tax or local option tax shall be shown as a separate amount on each billing or request for payment under contract. The Incorporated County of Los Alamos reserves the right to reduce or add quantities.

BID ALTERNATE UTILITIES (DP ROAD PHASE II RECONSTRUCTION PROJECT)

WATERLINE

ITEM NO.	ITEM DESCRIPTION	UNITS	EST. QTY	UNIT BID PRICE IN DOLLARS AND CENTS	AMOUNT BID TOTAL IN DOLLARS AND CENTS
1	8" WATERLINE PIPE EXCL. FITTINGS, INCL. TRACER WIRE, TRENCH & COMPACTED BACK FILL TO 6' DEPTH, CIP	LIN.FT.	188		
2	12" WATERLINE PIPE EXCL. FITTINGS, INCL. TRACER WIRE, TRENCH & COMPACTED BACK FILL TO 6' DEPTH, CIP	LIN.FT.	984		
3	FUNISH AND INSTALL NEW 13'X8'10" PRECAST VAULT W/BYPASS AND ALL ACCESSORIOES CIP	EACH	1		
4	8" GATE VALVES W/ VALVE CAN, CIP	EACH	7		
5	12" GATE VALVES W/ VALVE CAN, CIP	EACH	8		
7	CIP 4-1/2' FIRE HYDRANT W/ PIPING VALVES, AND CONNECTION	EACH	3		
8	DUCTILE IRON MJ FITTINGS, ALL SIZES, CLASS 25, CIP	LB	2500		
9	MECHANCAL JOINT RESTRAINTS GLAND, DI&PVC, 4'-8" CIP	EACH	34		
10	MECHANCAL JOINT RESTRAINTS GLAND, DI&PVC, 10'-12" CIP	EACH	36		
11	PRESSURIZED WATERLINE CONNECTIONS, CIP	EACH	1		
12	INSTALL NEW 1" SINGLE WATER METER PIT SETTER ASSEMBLY, PER STANDARD DETAIL 6003	EACH	5		

13	WATER METER BOX REMOVE & REPLACE	EACH	5	
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WATERLINE BID ALTERNATE-	\$
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LOW PRESSURE SANITARY SEWER SYSTEM

14	2" HDPS DIPS DR 11 PIPE EXCL. FITTING INCL TRACER WIRE TRENCH & COMPACTED BACK FILL TO 6'DEPH CIP	LIN.FT.	1005	
15	FURNISH AND INSTALL 1 IN DR11 HDPE PIPE CIP SANITARY SERVICE LINE FROM MAIN TO HOUSE CONNECTION MATERIAL CLEANOUT LABOR EXCAVATION BACKFILL AND SITE RESTORATION CIP	LIN.FT.	5	
16	LOW PRESSURE CLEANOUT, INCL, CONNECTION TO LOW PRESSURE SEWER MANHOLE CONCRETE COLLAR CIP	LS	1	
17	NEW SERVICE LINE CONNECTION 2" AND 3" PER COUNTY STANDARD DETAIL CIP	EACH	5	
18	EXCAVATE AND DISPOSE OF UNSUITABLE MATERIAL CIP	CU YD	302	
19	IMPORT OF SELECT MATERIAL	CU YD	302	

LOW PRESSURE SANITARY SEWER SYSTEM BID ALTERNATE -	\$
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GASLINE

20	4" MDPE GASLINE INCL FITTING, TRACER WIRE, WARNING TAPE, TRENCH, BEDDING & COMPACTED BACKFILL TO 6' DEPTH, CIP	LIN FT	984		
21	2" MDPE GASLINE INCL FITTING, TRACER WIRE, WARNING TAPE, TRENCH, BEDDING & COMPACTED BACKFILL TO 6' DEPTH, CIP	LIN FT	300		
22	4" MDPE BALL VALVES W/ VALVE CAN, CONCRETE COLLAR, CIP	EACH	1		
23	2" MDPE BALL VALVES W/ VALVE CAN, CONCRETE COLLAR, CIP	EACH	8		

GASLINE BID ALTERNATE –	\$
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TOTAL UTILITIES BID ALTERNATE –	\$
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Total Utilities Bid Alternate Amount written in words:

Dollars

Note: The bid amount shall exclude state gross receipts tax or local option tax, but shall include all other costs of doing business, including but not limited to bonds, insurance and profit. The Incorporated County of Los Alamos is 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 receipts tax or local option tax shall be shown as a separate amount on each billing or request for payment under contract. The Incorporated County of Los Alamos reserves the right to reduce or add quantities.

TOTAL ROADWAY and UTILITIES BID ALTERNATE –	\$
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Total Roadway and Utilities Bid Alternate Amount written in words:

_____ **Dollars**

Note: The bid amount shall exclude state gross receipts tax or local option tax, but shall include all other costs of doing business, including but not limited to bonds, insurance and profit. The Incorporated County of Los Alamos is 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 receipts tax or local option tax shall be shown as a separate amount on each billing or request for payment under contract. The Incorporated County of Los Alamos reserves the right to reduce or add quantities.

This bid is hereby submitted by the undersigned, in full conformity with the solicitation documents, and warrant that the undersigned. Has the authority to bind the General Contractor for the work.

I the undersigned have reviewed the Summary of Work and certify that the following licenses are required to fully perform the Summary of Work and that I as the General Contractor and/or Sub-contractors to be employed under this contract possess such New Mexico Contractor’s License Number(s) and Classification(s):

Contractor	License Number(s)	Classification(s)

Signature of Agent authorized to sign on behalf of Bidder

Printed Name & Title of Agent

Organization’s Legal Name

Mailing Address

Physical Address

City, State, Zip Code

Telephone Number

Fax Number

Federal Tax I.D Number

NM BTIN # (if located in-state), formerly CRS #

N.M. Preference Certification (attach copy)

Los Alamos County Business License Number: (Required to perform work in the County)

NOTE: The bid amount shall exclude state gross receipts tax or local option tax, but shall include all other costs of doing business, including but not limited to bonds, insurance, and profit. The Incorporated County of Los Alamos is required to pay the applicable tax including any increase in the applicable gross receipts tax or local option tax shall be shown as a separate amount on each billing or request for payment under the contract. The Incorporated County of Los Alamos reserves the right to reduce or add quantities.

NON-DISCRIMINATION POLICY: This Company does not discriminate on the basis of color, national origin, sex, religion, age, and disabled status in employment or the provision of services.

1.5.3 List of Subcontractors

All Bidders shall comply with the Subcontractor’s Fair Practices Act Chapter 13-4-31 to 13-4-43 NMSA 1978, Laws of New Mexico

Pursuant to Section 13-4-34, based on the Architect/Engineer estimate, list all subcontractors including second and third tiers performing work in excess of \$ 5,000.00.

No modifications to the list of subcontractors can be made at any time during the performance of the Work contemplated by the Agreement without the prior written approval of the County.

Contractor & Contact Name:	License # Classification:	E-mail:	Address:	Work to be Performed:

1.5.4 Bid Bond



LOS ALAMOS

As Principal, hereinafter called the Principal or Contractor, and _____, a corporation duly organized and existing under and by virtue of the laws of the State of _____ and authorized to do business in the State of New Mexico, as Surety hereinafter called the Surety, are held and firmly bound unto the County of Los Alamos, New Mexico, as Obligee, hereinafter called the County, in the sum of five percent of the Bid, _____ dollars - \$ _____ for the payment of which sum Principal and Surety bind themselves, their heirs, executors, and administrators, successors, and assigns, jointly and severally. The conditions of this Bond are such that whereas the Principal has submitted the accompanying Bid for:

**Incorporated County of Los Alamos
 Bid Number: IFB24-40
 DP Road Phase II Reconstruction Project**

which Bid is by reference made a part hereof and is hereinafter referred to as the Bid and, if the County shall accept the Bid of the Principal and the Principal shall enter into a Contract with the County in accordance with the terms of such a Bid, and give such bond or bonds as may be specified in the bidding or solicitation documents with good and sufficient surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof, and shall in all other respects perform the agreement created by the acceptance of said Bid, or in the event of the failure of the Principal to enter into such contract and give such bond and bonds, if the Principal shall pay the County the difference between the amount specified in said bid and such larger amount which the County may in good faith

Bid Bond continued

contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. 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 County may accept such Bid; and said Surety does hereby waive notice of any such extension.

SIGNED AND ATTEST this _____ day of _____, 2024.

PRINCIPAL:

By: _____

Print Name: _____

Title: _____

ATTEST: _____

SURETY:

By: _____

Print Name: _____

Title: _____

ATTEST: _____

1.5.5 Campaign Contribution Form

**Incorporated County of Los Alamos
 Bid Number: IFB24-40
 DP ROAD PHASE II RECONSTRUCTION PROJECT**

****This document must be returned with IFB submittal.****

Any prospective contractor seeking to enter into a contract with the Incorporated County of Los Alamos must file this form disclosing whether they, a family member or a representative of the prospective contractor has made a campaign contribution to an applicable public official during the two (2) years prior to the date on which prospective contractor submits a proposal or, in the case of a sole source or small purchase contract, the two (2) years prior to the date prospective contractor signs the contract, if the aggregate total of contributions given by the prospective contractor, a family member or a representative of the prospective contractor to the public official exceeds TWO HUNDRED FIFTY DOLLARS (\$250.00) over the two (2) year period.

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

The following definitions apply:

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

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

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

“Family member” means a spouse, father, mother, child, father-in-law, mother-in-law, daughter-in-law or son-in-law of:

- (a) a prospective contractor, if the prospective contractor is a natural person; or
- (b) an owner of a prospective contractor.

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

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

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

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

DISCLOSURE OF CONTRIBUTIONS: (Report any applicable contributions made to the following - COUNTY COUNCILORS: Theresa Cull; Denise Derkacs; Melanee Hand; Susie Havemann; Keith Lepsch; David Reagor; and Randal Rytli.)

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

(Attach extra pages if necessary)

Please check the box next to the applicable statement.

	CONTRIBUTIONS IN THE AGGREGATE TOTAL OVER TWO HUNDRED FIFTY DOLLARS (\$250.00) WERE MADE to an applicable public official by me, a family member or representative, and I have disclosed those contributions.
	NO CONTRIBUTIONS IN THE AGGREGATE TOTAL OVER TWO HUNDRED FIFTY DOLLARS (\$250.00) WERE MADE to an applicable public official by me, a family member or representative.

Signature

Date

Title (position)

1.5.6 Certification - Debarment, Suspension, and other Responsibility Matters

**Incorporated County of Los Alamos
Invitation for Bids Number IFB24-40
DP ROAD PHASE II RECONSTRUCTION PROJECT**

The Bidder certifies to the best of its knowledge and belief that it, its principals and its sub-contractors:

- A. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal, State, Local Entity;
- B. Have not within a three (3) year period preceding this bid been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or Local) transaction or contract under a public transaction. Violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property
- C. Are not presently indicted for otherwise criminally or civilly charged by a Federal, State, or Local Entity with commission of any of the offenses enumerated in paragraph (1) (B) of this certification; and
- D. Have not within a three (3) year period preceding this application/bid had one or more public transactions (Federal, State, or Local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this bid or termination of the award.

In addition, under 18 U.S.C. Sec. 10 01, a false statement may result in a fine up to \$ 10,000 or imprisonment for up to five (5) years, or both if Federal funding is used.

Typed Name & Title of Authorized Representative

Signature of Bidder’s Authorized Representative

Date

Comments:

Date: _____

Contractor: _____

Address: _____

City, State, Zip Code: _____

_____ confirms that all proposed subcontractors are not currently
 Contractor

suspended or debarred from conducting business with any City, State, County, or Federal Government entities.

Name and Title of Authorized Representative	Date
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--- OR ---

I am unable to certify the above for the following reasons:

1.5.7 Permanent Main Office Address of Company

Organization’s Legal Name Founding Date

Physical Address

Mailing Address

City, State, Zip Code

If incorporated, attach a Certificate of Good Standing from the Public Regulation Commission.

1.5.8 Authorization for Verification of Information

_____ hereby authorizes any person, firm, or corporation to furnish
 Contractor
 any information requested by Los Alamos County or designated representative, to verify any and
 all information submitted with or relevant to this bid.

Printed Name and Title of Authorized Representative

Signature Date

Sec. 31-261. - State and local preferences.

- (a) *Definitions.* For the purposes of this section:
 - (1) The terms "resident business" and "resident veteran business" shall be defined as set out in NMSA 1978, § 13-1-21;
 - (2) The term "local" as applied to a business shall mean that it meets the requirements of the above definition, maintains its principal office and place of business in Los Alamos County, and has a required Los Alamos County business license.
- (b) *Requirements for preference qualification.* The chief purchasing officer shall determine if a preference is applicable to a particular bid or offer on a case-by-case basis. A bidder or offeror must submit a written request for preference, with a copy of the state-issued preference certificate, with its bid or proposal to qualify for this preference.
 - (1) If a corporation, it shall be incorporated in New Mexico and maintain its principal office and place of business in the state;

- (2) A person shall have qualified with the state chief purchasing officer as a resident business or resident veteran business and obtained a certification number as provided in NMSA 1978, § 13-1-22.
- (c) *Preference factor.*
 - (1) The preference factor for qualifying resident and local businesses applied to bids and proposals shall be five percent.
 - (2) The preference factor for qualifying resident veteran businesses shall be in accordance with the requirements set forth in NMSA 1978, § 13-1-21.
- (d) *Invitations for bids.* When bids are received, the price quoted by the qualifying vendor shall be multiplied by 0.95. After application of the preference factor, the contract shall be awarded to the lowest bidder. If one or more low prices are equal, the bid shall be awarded with respect to the next category of offerors listed below, and the next, until an offer qualifies for award. The priority of categories of offers is as follows:
 - (1) Local business;
 - (2) Resident business.
- (e) *Requests for proposals.* When proposals are received, the total evaluation score with or without the cost factor of each proposal received from a qualifying vendor shall be multiplied by 1.05. After application of the factor, the contract shall be awarded to the highest score. If one or more scores are equal, the same procedure shall be followed with respect to the next category of offerors listed, and the next, until an offer qualifies for award. The priority of categories of offerors is the same as listed in subsection (d) of this section.
- (f) *Exemptions from preferences.* The resident and local preference specified in this article shall not be applied:
 - (1) To requests for qualifications;
 - (2) To any purchase of goods or services in excess of \$500,000.00;
 - (3) When the expenditure of federal funds designated in whole or in part for a specific purchase is involved; or
 - (4) When the expenditure of grant funds, a condition of which prohibits a local preference, is involved.

(Ord. No. 02-098, § 2, 12-2-2008; Ord. No. 02-305, § 8, 2-25-2020)

<p>Are you requesting Preference?</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>By answering “yes,” the bidder or offeror is submitting a written request for preference.</p> <p>A Bidder or Offeror must submit a copy of the state-issued preference certificate with its bid or proposal to qualify for this preference.</p>

1.5.9 Certificate of Contractors Registration

Sample
Certificate of Contractor Registration



This is to certify that

XYZ Company, Inc.

1234 Main Street

ALBUQUERQUE, NM, 87109-5564

has registered with the Department of Workforce Solutions

Registration Date: 01/01/2017

Registration Number: 123456789

**This certificate does not show the current status of the company.
To see the current status for this company please go to the Public Works
and Apprenticeship Application (PWAA) at
<https://www.dws.state.nm.us/pwaa>**

2.0 AWARD PHASE

2.1 Award Forms

2.1.1 Notice of Award



LOS ALAMOS

NOTICE OF AWARD AND IDENTIFICATION OF COUNTY’S DESIGNEE

To: _____

Address: _____

Project Description:

**Incorporated County of Los Alamos
 Bid Number: IFB24-40
 DP Road Phase II Reconstruction Project**

Notice of Award:

The County has considered the Bid submitted by you for the above-described Project in response to its Invitation for Bids dated February 8, 2024.

You are hereby notified that your Bid has been accepted subject to your executing the Agreement and furnishing the required Contractor’s Performance Bond, Labor and Materials Payment Bond and required Certificates of Insurance, within ten (10) calendar days from the date of receipt of the Notice of Award.

You are hereby notified that the schedule required per Section 3, Schedules, Reports, and Records will be required to be submitted and accepted prior to Notice to Proceed being issued.

The following documents are provided with the Notice of Award: Two (2) copies of the Agreement, Performance Bond and Labor and Materials Payment Bond.

Notice of Award continued

If you fail to sign and return to County’s Designee said Agreement, and to furnish said Bonds within ten (10) days from the receipt of this notice, the County will be entitled to consider all your rights arising out of the County’s acceptance of your Bid as abandoned and as a forfeiture of your Bid Bond. The County will be entitled to such other rights as may be granted by law.

County’s Designee:

The Incorporated County of Los Alamos (County) designates _____ as the County’s Designee in connection with the performance of the work contemplated in the Contract, dated _____, between the County and _____ (Contractor).

Dated this _____ day of _____ 2024.

Incorporated County of Los Alamos

Steven Lynne
County Manager

2.1.2 Receipt of Notice of Award



LOS ALAMOS

Receipt of the above Notice of Award is hereby acknowledged by:

_____, this _____ day of _____, 2024, for
the following project:

**Incorporated County of Los Alamos
Bid Number: IFB24-40
DP Road Phase II Reconstruction Project**

CONTRACTOR:

By: _____

Printed Name: _____

Title: _____

2.1.3 Performance Bond



LOS ALAMOS

Bond No. _____

We as Principal, hereinafter referred to as Contractor, and _____ a corporation organized and existing under and by the virtue of the laws of the State of _____ and authorized to do business in the State of New Mexico, hereinafter called Surety, are held and firmly bound unto the Incorporated County of Los Alamos, hereinafter referred to as County, in the penal sum of one hundred percent (100%) of the Contract Price of _____ dollars (\$_____), as may be adjusted by Change Order, inclusive of applicable gross receipts taxes in lawful money of the United States of America, for the payment of which sum Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally.

THE CONDITIONS OF THIS BOND are such that, whereas, Contractor has been awarded and has agreed to enter into a certain Contract with the Incorporated County of Los Alamos, to which this Performance Bond will be attached and incorporated therein, for performance of Work or services on Project specifically described in the Contract document for:

**Incorporated County of Los Alamos
Bid Number: IFB24-40
DP Road Phase II Reconstruction Project**

and if Contractor shall perform and complete all of the undertakings, covenants, terms, and obligations of said Contract during the original term thereof, and any extensions which may be granted by the County with or without notice to the Surety, and if Contract shall satisfy all claims and demands incurred under such Contract, and shall fully indemnify and save harmless the County from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the County all outlay and expenses which the County may incur in making good any default, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

Performance Bond Continued

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due, except that, with respect to express guarantees of a longer term, a suit thereon must be initiated within six (6) months following the expiration of said express guarantees, if any.

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

Right of action with respect to any express guarantees, if any, in said Contract shall accrue following completion and formal acceptance of the work under said contract.

The right to sue on this bond accrues only to the contracting agency and the parties to whom New Mexico Statutes Annotated, 1978 Comp. 13-4-18 through 13-4-20, as amended, grant such right; and such right shall be exercised only in accordance with the provisions and limitation of said statutes.

PROVIDED, FURTHER, that Surety, for value received hereby stipulates and agrees that no change, extensions of time, alteration or addition to the terms of Contract. The Agreement, or the work to be performed thereunder, or the Contract Documents accompanying the same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alternation or addition to the terms of the Contract.

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

IN WITNESS WHEREOF, this instrument may be executed in two counter-parts, each one of which shall be deemed as an original, this _____ day of _____, 2024.

The undersigned state that they have the authority to enter into said Contract.

CONTRACTOR AS PRINCIPAL:

By: _____

Print Name: _____

Title: _____

ATTEST: _____

SURETY:

By: _____

Print Name: _____

Title: _____

ATTEST: _____

2.1.4 Payment (Labor and Materials) Bond



LOS ALAMOS

Payment (Labor and Materials) Bond for the Protection of all Persons Supplying Labor and Material to the Contractor or its Sub-contractors

Bond No. _____

We _____ as Principal, hereinafter called the Contractor, and _____, a Corporation organized and existing under and by virtue of the laws of the State of _____, and authorized to do business in the State of New Mexico, hereinafter called the Surety, are held and firmly bound unto the Incorporated County of Los Alamos as Obligee, hereinafter the County , in the amount of _____ Dollars (\$_____), in the penal sum of one hundred percent (100%) of the Contract Price of _____ dollars (\$_____), as may be adjusted by Change Order, inclusive of applicable gross receipts taxes in lawful money of the United States of America, for the payment of which sum Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally.

Payment (Labor and Materials) Bond is for the Protection of all Persons Supplying Labor and Material to the Contractor or its Sub-contractors

WHEREAS, Contractor has agreed to enter into the Contract described as follows:

**Incorporated County of Los Alamos
Bid Number: IFB24-40
DP Road Phase II Reconstruction Project**

Which contract is by reference made part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, the condition of this obligation is such that if the Contractor shall pay as they become due, all just claims for labor performed and materials and supplies furnished upon or for the work under said contract, whether said labor be performed and materials and supplies be furnished under the original contract or any contract thereunder, then this obligation shall be null and void; otherwise, it shall remain in full force and effect, subject, however to the following conditions:

The right to sue on this bond accrues only to the Contracting Agency and the parties to whom Section 31-173 Los Alamos County Code of Ordinances grant such right; and any such right shall be exercised only in accordance with the provisions and limitations of said ordinance.

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

PROVIDE, FURTHER, the County shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have no obligations to make payments to give notices on behalf of or otherwise have obligations to Claimants. The Surety hereby waives notice of any change, including changes of time, to the Contractor or to related subcontracts, purchase orders and other obligations.

SIGNED AND SEALED ON this _____ day of _____, 2024

CONTRACTOR AS PRINCIPAL:

Signature: _____

Print Name: _____

Title: _____

Address: _____

SURETY'S AUTHORIZED NEW MEXICO AGENT:

Signature: _____

Print Name: _____

Title: _____

Address: _____

This bond is issued simultaneously with Performance Bond in favor of County for the faithful performance of the contract.

2.1.5 Insurance Requirement



LOS ALAMOS

- A. Contractor shall purchase and maintain such liability and other insurance including completed operations insurance for the Work being performed and furnished and will provide protection from claims set forth which may arise out of or result from Contractor's performance and furnishing of the Work being performed and furnished and will provide protection from claims set forth which may arise out of or result from Contractor's performance and furnishing of the Work and Contractor's other obligations under the Solicitation Documents, whether it is to be performed or furnished by Contractor, any Subcontractor or Supplier or by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable. Insurance requirements are as follows:
- A.1.1. Comprehensive and General Liability Insurance
 - A.1.2. \$1,000,000 per occurrence and a combined single limit of at least Two Million Dollars (\$2,000,000) aggregate Bodily Injury and Property
 - A.2. Motor Vehicle Insurance
 - A.2.1. Same limits as Comprehensive General Liability Insurance whether for:
 - A.2.1.1. Owned or leased motor vehicles; or non-owned or hired vehicles
 - A.3. Worker's Compensation Insurance
 - A.3.1. The Contractor shall also be required to provide proof of full compliance with New Mexico State Worker's Compensation Laws
 - A.4. Property, Fire, and All Risk Insurance
 - A.4.1. Contractor shall purchase and maintain until final payment, property insurance upon the Work at the site to the full insurable value thereof.
 - A.4.2. This insurance shall insure against the perils of "all risk" insurance for physical loss and damage, and shall include damages, losses, and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys, and other professional). If not covered under the "all risk" insurance, Contractor shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment.

B. The Contractor, prior to signing the Contract, shall provide proof of insurance coverage, which is satisfactory to the County, in the County’s sole discretion, and copies of same to the County which shall remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing or replacing defective Work.

B.1. Insurance Terms and Conditions

B.1.1. The following statement shall be included on the certificate of insurance: “The Incorporated County of Los Alamos is named as additional insured regarding General Liability, Automobile Liability, and Professional Liability if required, for

**Incorporated County of Los Alamos
 Bid Number: IFB24-40
 DP Road Phase II Reconstruction Project**

B.1.2. The insurance shall provide that the County will be notified as soon as possible in the event of cancellation.

B.2. Renewal of Insurance

B.2.1. Evidence of renewal of insurance policies shall be provided to the County no less than forty-five (45) days prior to expiration date.

B.3. Subcontractors

B.3.1. Contractor shall ensure all of its subcontractors meet all insurance requirements.

B.4. Receipt and Application of Insurance Proceeds

B.4.1. Any insured loss under the policies of insurance required of Contractor will be adjusted with County and made payable to County as fiduciary for the insured’s, as their interests may appear, subject to the requirements of any applicable loan clause. County shall deposit into a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no special agreement is reached, the damaged Work shall be repaired or replaced the monies so received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order or Written Agreement.

B.4.2. County as fiduciary shall have power to adjust and settle any loss with insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to County’s exercise of this power. If such objection be made, County as fiduciary shall make agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, County as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party of interest, County as fiduciary shall give bond for the proper performance of such duties.

2.1.6 Contract

**Incorporated County of Los Alamos
 Bid Number: IFB24-40
 DP Road Phase II Reconstruction Project**

THIS CONTRACT, made and entered into by and between the Incorporated County of Los Alamos, New Mexico, hereinafter called the County and _____, a _____ (State and entity status), hereinafter called the CONTRACTOR, is executed on the date set forth opposite the signature of the authorized representatives of the parties.

WHEREAS, the Contractor was awarded the Contract for the Incorporated County of Los Alamos: **Invitation for Bids Number IFB24-40, DP Road Phase II Reconstruction Project** and said award was approved by the County on _____, which date shall be deemed to be the date of this Contract.

THE PARTIES AGREE:

ARTICLE 1 – SUBJECT MATTER – The Contractor shall perform the Work, and shall furnish all the materials, equipment, tools, labor and all supplies, appliances, and appurtenances necessary to the full completion of the Work on the Project, and in accordance with the language of the Contract and the Solicitation documents. The term “Contract” means the Solicitation. The Work shall be performed in accordance with the Contract, which shall be interpreted to give full effect to all of the terms and conditions herein. In the event of a conflict in the terms and provisions of the Contract, the terms and provisions of the Contract shall control in the following order:

- A. Change Orders
- B. Addenda
- C. Contract
- D. Notice to Contractors
- E. Special Conditions
- F. General Conditions
- G. Technical Specifications
- H. Contract Drawings

ARTICLE 2 – CONTRACT TIME –

- A. Construction shall start on or after the date specified on the Notice to Proceed. **The Work shall achieve Substantial Completion for Only Base Bid awarded by October 15, 2024. The Work shall achieve Substantial Completion for Base Bid with Bid Alternate awarded by November 15, 2024. The Project shall achieve Final Completion by December 15, 2024 with or without Bid Alternate Awarded.** The calendar day period between the substantial completion and final completion dates is for the sole purpose of completing all punch list items.

- B. The Contractor will proceed with the Work at such rate of progress to ensure full completion of the Work by the Final Completion date. It is expressly understood and agreed, by and between the Contractor and the County, that the Contract Time for the

completion of Work described herein is a reasonable time, and that in submitting a bid on the Project and executing the Contract, the Contractor has taken into consideration the average climatic and economic conditions and other factors prevailing in the locality where the Work is to be performed.

C. Termination of the Contract-

1. This contract shall terminate upon County's issuance of Notice of Final Completion, provided however, that Contractor's warranty obligations and any warranties listed within the Technical Specifications for materials, equipment, systems and/or labor supplied through the Contractor for the execution of the Work shall survive the termination of this Contract until such time as County determines that Contractor's warranty obligations have been fulfilled and County has specifically released Contractor, in writing or by the individual warranty expirations, from such obligations. The issuance of Notice of Final Completion or the release of surviving Contractor obligations shall not be deemed a waiver of any claim the County may have against Contractor arising from Contractor's performance under this Contract.
2. County may terminate this Agreement with or without cause upon ten (10) days prior written notice to Contractor. Upon such termination, Contractor shall be paid for work actually completed to the satisfaction of County at the rates agreed upon by the parties hereto. Contractor shall render a final report of the work done to the date of termination and shall turn over to County originals of all materials, documents or other deliverables prepared pursuant to this Contract.
3. Funding. This Agreement shall terminate without further action by County on the first day of any County fiscal year for which funds to pay compensation hereunder are not appropriated by the County Council. County shall make reasonable efforts to give Contractor at least ninety (90) days advance notice that funds have not been and are not expected to be appropriated for that purpose.

ARTICLE 3 – LIQUIDATED DAMAGES FOR DELAY OR INCENTIVES FOR EARLY COMPLETION –

- A. Liquidated Damages for Work: Should the Contractor fail to complete the work within the time agreed upon in the Contract, Contractor will be assessed liquidated damages for each calendar day beyond Substantial, and/or Final Completion dates, including all executed change orders. Liquidated damages will be assessed in accordance with the current edition of the New Mexico Department of Transportation Standard Specifications for Highway and Bridge Construction section 108, Table 108.8:1 Schedule of Liquidated Damages. In view of the difficulty of estimating the damage, this amount is fixed by parties as the liquidated damages that the County will suffer by reason of such default and not by way of penalty.

**Table 108.8:1
Schedule of Liquidated Damages**

Total Original Contract Amount (\$)	Charge (\$) per Day
≤100,000	500
>100,000–500,00	1,000
>500,000–1,000,000	1,500
>1,000,000–2,000,000	2,000
>2,000,000–4,000,000	2,500
>4,000,000–7,000,000	3,000
>7,000,000–10,000,000	4,000
>10,000,000	5,000

B. Delays –

1. If the Contractor is delayed at any time in the progress of the Work by any act or neglect by the County, or by changes in the Work, or by labor disputes, fire, unusual delay in transportation, unusual weather, adverse soil conditions other than was described in a geotechnical survey, unavoidable loss by the Contractor, delays specifically authorized by the County, or by unforeseeable or unavoidable causes beyond the Contractor’s control, avoidance, or mitigation, and without the fault or negligence of the Contractor or subcontractor or supplier at any tier, then the Contract Time may be extended by Change Order for such reasonable time as the overall completion of the Work, as the County may in its sole discretion determine that such event has delayed the Critical Path and Completion of the Work, if the Contractor complies with the notice and documentation requirements set forth below.
2. Contractor shall provide a written notice of delay which may result in a request for an extension of time to the County, within ten (10) calendar days from the date the Contractor knew or should have known of the facts giving rise to the delay. The notice shall indicate the cause of the delay, the anticipated length of the delay, and the probable effect of such delay upon the progress of the Work. If the cause of the delay is continuing, the Contractor must give written notice every month at the same time it submits the updated schedule and/or progress report to the County with the Payment Application.
3. Within fifteen (15) calendar days after the elimination of any such delay, the Contractor shall submit a formal Change Order request for an extension of time for such delay. The written request for time extension shall state the cause of the delay, the number of days extension requested, and such analysis and documentation of the schedule of the project and other documentation to demonstrate a delay in the critical path of the Work.
4. If the Contractor does not comply with the notice and documentation requirements set forth above, the Contractor shall have waived its right to a claim for delay.

ARTICLE 4 – COMPENSATION – In consideration of the satisfactory performance of the Work by the Contractor and the acceptance of such Work by the County, Contractor shall be paid an amount not to exceed the Contract Price of _____ (\$ _____), plus any executed Change Order(s), plus applicable New Mexico Gross Receipts Tax

ARTICLE 5 – PROGRESS PAYMENTS –

- A. Contractor shall submit (but not more often than once a month), to the County for review an Application and Certification for Payment as shown herein, filled out and accompanied by such supporting documentation as is required by the Agreement and also as the County may reasonably require. The County has seven (7) calendar days to review the Application for Progress Payment either to accept or reject. If application is rejected, Contractors shall resubmit a new Application for Progress Payment. Upon any re-submittal of Application for Progress Payment, the twenty-one (21) calendar day timeframe is reinstated. These applications for payments shall be based on the performance of the Work in accordance with the Contract Documents. Contractor shall submit Earned Value Curve if required by the Project Manager with each Application for Payment,
- B. Contractor warrants and guarantees that title to all work, material and equipment covered by an Application for Progress Payment, whether incorporated in the Project or not, will pass to County at the time of payment free and clear of all liens, claims, security interests and encumbrances.
- C. Prior to Substantial Completion, the County with the concurrence of the Contractor may use any completed or substantially completed portions of the Work. Such use shall not constitute an acceptance of such portions of the Work.
- D. As provided herein, County may refuse to make payment of the full amount requested by the Contractor. County will provide Contractor with written notice (with copy to Engineer) stating the reasons for such action.
- E. If payment is requested and approved by the Project Manager on the basis of materials and equipment not incorporated in the Work, but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Progress Payment shall also be accompanied by such data, (receipts, invoices, packing lists, delivery tickets, etc.) satisfactory to Owner and will establish Owner's title to the material and equipment and project. Contractor is responsible for all loss or damage to stored materials.
- F. Contractor warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to County no later than time of payment, free and clear of all liens.
- G. In the event that agreement between the County or County's designee and Contractor cannot be reached, the County will pay the portion not in question and attempt to reach agreement on those portions not in agreement in the next billing cycle.
- H. Payment may be made by mutually agreed upon method.
- I. County has full power to withhold payment and release of Contractor's Performance as well as Labor and Materials Bonds until all the work is completed to the County's satisfaction, until the Contractor shall satisfy the County that it has fully settled or paid for

- all labor performed and materials, supplies, equipment rentals and services used from the respective suppliers and subcontractors involved, and to withhold payment equal to liquidated damages as accepted payment for liquidated damages.
- J. County at its sole discretion may require an Affidavit of Payment and Release of Liens with every Application.
 - K. Unless otherwise specified in the Solicitation Documents as a Notice of Extended Payment, permitting the Owner to make payment within a period not to exceed 45 days, payments shall be made within twenty-one (21) calendar days from receipt of an undisputed request in accordance with the New Mexico Prompt Payment Act, Sections 57-28-1 et seq. NMSA 1978.
 - L. Final Application for Payment
 - L.1. The final Application for Progress Payment shall include a notarized Affidavit of Payment and Release of Liens.
 - L.2. After Contractor has completed all such corrections to the satisfaction of the County and delivered in accordance with the Contract Documents all maintenance and operating instructions, all materials including but not limited to spare parts, lubricants, etc., as required by Contract documents, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, Notice of Termination for NPDES, marked up record documents showing work as constructed (as-builts), video recordings, Contractor may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied (except as previously delivered) by all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required, consent of surety, if any, to final payment, and complete and legally effective releases or waivers (satisfactory to County) of all liens arising out of or filed in connection with the Work. If any subcontractor or supplier fails to furnish such release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any lien.
 - M. Final Payment and Acceptance
 - M.1. On the basis of the Engineer's and Owner's observation of the Work during construction and final inspection and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer recommends to Owner that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Owner shall process final payment. Otherwise, County will return the Application to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application.
 - N. The final payment by the County signifies that the Work has been accepted by the County under the conditions of the Contract Documents.
 - N.1. The acceptance by the Contractor of final payment shall be and shall operate as a release to the County of all claims and all liability to the Contractor other than claims in stated amounts as may be specifically expected by the Contractor for all things done or furnished in connection with this Work and for every act and neglect of the

County and others relating to or arising out of this Work. Any payment, however, final or otherwise, shall not release the Contractor or the Contractor's sureties from any obligations under the Solicitation documents or the Performance Bond and Labor and Materials Bond.

- O. The making and acceptance of Final Payment shall constitute a waiver of all claims by the Contractor against the County other than those previously made in writing and still unsettled.

ARTICLE 6 – PAYMENT TO MECHANICS AND LABORERS – Contractor agrees to make prompt payment to its subcontractors and suppliers for work performed under the Contract within seven (7) days after receipt of payment from the County and to pay all mechanics and laborers in accordance with Section 57-28-5 NMSA 1978, as applicable. Contractor shall obtain from each supplier of services or materials used in the performance of the Contractor's obligations under this Contract a written release and waiver of all liens against the County and Project. Such releases and waivers of lien shall be submitted to the County with the final Application for Payment and may be required with each Application for Payment at the County's sole discretion.

Additionally, all Sub-contractors shall require that their Sub-contractors and suppliers make prompt payment to their Sub-contractors and suppliers for amounts owed for work performed on the construction project within seven days after receipt of payment from the owner, contractor or Sub-contractors.

If the contractor or Sub-contractors fails to pay the contractor's or Sub-contractor's subcontractor and suppliers by first-class mail or hand delivery within seven days of receipt of payment, the contractor or subcontractor shall pay interest to the subcontractors and suppliers beginning on the eighth day after payment was due, computed at one and one-half percent of the disputed amount per month or fraction of a month until payment is issued. These payment provisions apply to all tiers of contractors, subcontractors and suppliers.

ARTICLE 7 – MODIFICATION OF CONTRACT – This Contract may be modified only by mutual written consent of the parties.

ARTICLE 8 – INDEMNITY – Contractor shall indemnify, hold harmless and defend County, its Council members, employees, agents and representatives, from and against all liabilities, damages, claims, demands, actions (legal or equitable), and costs and expenses, (including without limitation fees for attorneys and other professionals, of any kind or nature), arising from Contractor's performance or failure to perform hereunder or breach hereof or the performance or failure to perform of Contractor's employees, agents, representatives and subcontractors.

All representations, indemnifications, warranties, and guarantees made in, required by or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment to the extent permitted by New Mexico or other applicable law, completion and acceptance of the Work and termination or completion of the Agreement.

ARTICLE 9 – NON-ASSIGNMENT – Contractor may not assign this Agreement or any privileges or obligations herein without the prior written consent of the County.

ARTICLE 10 – LAWS, REGULATIONS, JURISDICTION AND VENUE – Contractor shall abide by all applicable federal, state and local laws, regulations, and policies and shall perform the Work in accordance with all applicable laws, regulations, and policies during the term of the Contract. In any lawsuit or legal dispute arising from the operation of this Contract Contractor agrees that the laws of the State of New Mexico shall govern. Venue shall be in the First Judicial District court of New Mexico in Los Alamos County, New Mexico.

IN WITNESS whereof the parties have executed this Contract.

CONTRACTOR

Date: _____

By: _____

Print Name: _____

Title: _____

INCORPORATED COUNTY OF LOS ALAMOS:

Date: _____

By: _____

Steven Lynne, County Manager

ATTEST

By: _____

Naomi Maestas, County Clerk

APPROVED AS TO FORM

J. Alvin Leaphart, County Attorney

3.0 CONSTRUCTION PHASE

3.1 Construction Phase Related Forms

3.1.1 Contractor Personnel Information

The Contractor will provide at the pre-construction meeting and update as necessary the following information to the County:

A. Contractor’s Project Manager: _____

B. Contractor’s Superintendent: _____

1. Address: _____

2. Telephone No.: _____

3. Email Address: _____

C. Emergency Contact Information:

1. Name: _____

2. Phone No.: _____

3. Name: _____

4. Phone No.: _____

5. Name: _____

6. Phone No.: _____

7. Name: _____

8. Phone No.: _____

D. List of authorized signatures for: Certified Payroll, Payroll Affidavits, Change Orders, Progress Payment Certifications.

1. Name: _____

2. Title: _____

3. Name: _____

4. Title: _____

E. Project Safety Officer: _____

F. Equal Employment Opportunity Officer: _____

The person listed in “B” will become the Contractor’s Representative of Record. The Contractor will not be allowed more than one (1) Representative. The Contractor’s Representative shall supervise the project and be available at all times when construction is in progress.

3.1.2 Notice to Proceed

Date: _____

To: _____

Address: _____

**Incorporated County of Los Alamos
Bid Number: IFB24-40
DP Road Phase II Reconstruction Project**

You are notified that the Contract time under the above contract will start on _____, 2023. By that date you are to start performing your obligations under the Contract. You are required to return an acknowledged copy of this Notice to Proceed to the County’s Designee before commencing any work and meet all other requirements of the Contract. The date of Substantial Completion of all work is therefore _____, 2024, and Final Completion of all work is therefore _____, 2024.

Incorporated County of Los Alamos

Steven Lynne
County Manager

3.1.3 Acceptance of Notice to Proceed

Receipt of the Notice to Proceed is hereby acknowledged this _____day of _____, 2024 for the following project:

**Incorporated County of Los Alamos
Bid Number: IFB24-40
DP Road Phase II Reconstruction Project**

CONTRACTOR:

By: _____

Print Name: _____

Title: _____

3.1.4 Application and Certification for Payment Part 1



APPLICATION & CERTIFICATION FOR PAYMENT County of Los Alamos

Application Date: _____ Period From: _____ To _____
 Application Number: _____
 Project: _____ Bid Number: _____
 Contractor: _____
 Contract Date: _____

Change Order Summary		ADDITIONS	DEDUCTIONS
Change Orders approved in previous months by County			
TOTAL			
Approved this Month			
Number	Date		
TOTALS			
Net change by Change Orders			

1. ORIGINAL CONTRACT SUM \$ _____
2. Net change by Change Orders \$ _____
3. CONTRACT SUM TO DATE \$ _____
(Line 1 plus line 2)
4. TOTAL COMPLETED TO DATE \$ _____
(Column F on Cont. Sheet)
5. BALANCE TO FINISH \$ _____
(Line 3 less Line 4)
6. PREVIOUS TOTAL COMPLETED \$ _____
(Line 4 from prior Application)
7. SUBTOTAL OF CURRENT PAYMENT \$ _____
(Line 4 less Line 6)
8. **N.M. GROSS RECEIPTS TAX** \$ _____
(_____% of Line 7)
9. CURRENT PAYMENT DUE \$ _____
(Line 7 plus Line 8)

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all Amounts have been paid by the Contractor for Work which previous Certificates for Payment were issued and payments received from the County, and that Current Payment shown herein is now due.

CONTRACTOR:

BY: _____ DATE: _____

State of _____ County of _____

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

Notary Public: _____

My Commission Expires: _____

This certificate is not negotiable. The Amount Certified is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

ENGINEER'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents based on on-site observations and the data comprising the above application, the ENGINEER'S Project Manager certifies to the Owner that to the best of the ENGINEER'S Project Manager's knowledge, information and belief the Work has progressed as indicated, the quantity of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the Amount Certified.

AMOUNT CERTIFIED: \$ _____
(Attach explanation if amount certified differs from the amount applied for.)

ENGINEER'S PROJECT MANAGER:

BY: _____ DATE: _____

3.1.6 Affidavit of Payment and Release of Liens

Affidavit of Payment and Release of Liens

Page 1 of 2

See page 2 of this form for instructions regarding (A)-(H)

To All Whom It May Concern, To The Following I Do Solemnly Swear And Affirm:

WHEREAS, the undersigned has been employed by (A)

to furnish labor and materials for (B)

work, under a contract (C)

for improvement of the premises described as (D)

in the (E) _____ County of _____,

State of New Mexico of which _____ is the Owner.

NOW, THEREFORE, this _____ day of _____, 2024, for and in consideration of the sum of (F) \$ _____ Dollars paid simultaneously herewith, the receipt whereof is hereby acknowledged by the undersigned, the undersigned does hereby waive and release any lien rights to, or claim of lien with respect to and on said above described premises, and the improvements thereon, and on the monies or other considerations due or to become due from the Owner, on account of labor, services, materials, fixtures, apparatus or machinery heretofore or which may hereafter be furnished by the undersigned to or for the above described premises by virtue of said contract.

The undersigned, as Contractor for the above named Contract pursuant to the Conditions of the Contract hereby certifies that, except as listed below, he/she has paid in full or has otherwise satisfied all obligations for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or his/her property might in any way be held responsible.

The undersigned hereby certifies that all work required to be done under terms of the above-described Contract has been fully performed and completed in conformance with the Contract and that applicable provisions of the New Mexico Public Works Minimum Wage Act (§ 13-4-11 NMSA 1978) have been met.

Affidavit of Payment and Release of Liens
Page 2 of 2

EXCEPTIONS:(G)

INSTRUCTIONS:

1. Person or firm with whom you agreed to furnish either labor, or services, or materials, or both. (A)
2. Fill in the nature and extent of work; strike the word labor or the materials if not in the contract. (B)
3. Identify contract(s) by number, description, and extent of work. (C)
4. Describe improvements and location of the premises to exclude all others. (D)
5. Name community, such as City of _____, Village of _____, or Unincorporated Area known as _____. (E)
6. Amount shown should be the amount actually received and equal to the total adjusted contract. (F)
7. If none, write "None". If required by Owner, Contractor shall furnish bond satisfactory to Owner for each exception. (G)
8. If waiver is for a corporation, corporate name should be used, corporate seal affixed and title of officer signing affidavit should be set forth; if waiver is for a partnership, the partnership name should be used, partner should sign and designate as partner. (H)

(H) _____
(Name of sole ownership, corporation or partnership)

(Signature of Authorized Representative)

TITLE: _____

State of _____ County of _____

Subscribed and sworn before me this ___ day of _____ 2024

Notary Public: _____

My Commission Expires: _____

3.1.7 Field Order

Field Order #	Project:	Date:
IFB #:	Affected Document(s):	
Description of Change(s) (Attach to Design Document Mark-ups):		
Reason For Change(s):		
<input type="checkbox"/> Design Error/Omission <input type="checkbox"/> Design Improvement <input type="checkbox"/> Facilitate Construction <input type="checkbox"/> Criteria Change <input type="checkbox"/> As-found Condition/Record <input type="checkbox"/> Other (describe): _____		
Priority: Low Medium High (Circle One)		
Complexity: Low Medium High (Circle One)		
Preliminary Approval To Proceed By Engineer:		
Review		
	Signature	Date
Originator		
Engineer		
Owner		
Contractor		
Request for Quote issued? _____ Date: _____		
Force Account: _____ Date: _____		
ACCEPTED	<input type="checkbox"/>	Owner
REJECTED	<input type="checkbox"/>	Owner

3.1.8 Change Order



Incorporated County of Los Alamos
Change Order Form

Change Order No.:

Agreement Date:

Name of Project:

Contractor:

The following changes are hereby made to the Contract Documents:

JUSTIFICATION:

CHANGE TO CONTRACT PRICE:

Original Price \$ _____ plus GRT

Current Contract Price adjusted by previous Change Order \$ _____ plus GRT

The Contract Price due to this Change Order will be (_____) by: \$ _____ plus GRT

The new Contract Price, including this Change Order will be \$ _____ plus GRT

CHANGE TO CONTRACT TIME:

SUBSTANTIAL COMPLETION:

Original Contract Time _____(Date).

Current Contract time adjusted by previous Change Order(s) _____(Date).

The Contract Time will be increased by _____ (Date).

The date for completion of substantial work will be _____ (Date)

FINAL COMPLETION:

Original Contract Time _____(Date).

Current Contract time adjusted by previous Change Order(s) _____(Date).

The Contract Time will be increased by _____(Date).

The date for completion of all work will be _____ (Date).

APPROVALS REQUIRED:

To be effective, this order must be approved by the County Manager; or the Los Alamos County Council if the contract modification, change order, or contract price adjustment exceeds the funding budgeted and specifically appropriated for this project, or as may otherwise be required by the General Conditions.

The adjustment in Contract price and/or Contract time stated in this Change Order shall constitute the total price and/or time adjustment due or owed the Contractor for the work or changes ordered by the Change Order. By executing the Change Order, the Contractor acknowledges and agrees that the stipulated price and/or time adjustments represent full compensation for all adjustments in the cost or the time required to perform the Contract as a whole arising directly or indirectly from the Change Order, including costs and delays associated with the interruption of schedules, extended overheads, delay, and cumulative impacts or ripple effect on all other non-affected work under Contract not changed by the Change Order. Signing of the Change Order constitutes full and mutual accord and satisfaction for the adjustment in contract price and/or time, subject to the current scope of the entire work as set forth in the Contract Documents. Acceptance of this Change Order constitutes an agreement between Owner and Contractor that the Change Order represents an equitable adjustment to the Contract, and that the Contractor will waive all rights to file a claim on this Change Order after it is properly executed.

Requested by Project Manager:

Keith Wilson, Project Manager

Approved by (County Engineer)

Eric Ulibarri, P.E., County Engineer

Approved by (Public Works Director): _____
Juan Rael, P.E., Public Works Director

Approved by (County Administrator): _____
Steven Lynne, County Manager

If applicable, approved by the County Council on the _____ Day of _____, 2024

Attest:

(County Council)

Print Name _____

Title _____

**INCORPORATED COUNTY OF LOS ALAMOS
CERTIFICATE OF SUBSTANTIAL COMPLETION**



LOS ALAMOS

Date of Issuance: _____

Bid Number: _____

Bid Title: _____

Contractor: _____

Engineer: _____

This Certificate of Substantial/ Final Completion applies to all Work under the Contract Documents or to the following specified parts thereof:

TO:

Contractor

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor and Engineer and that Work is hereby declared to be substantially complete in accordance with the Contract Documents on

DATE OF SUBSTANTIAL COMPLETION

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and failure to include an item in it does not alter the responsibility of Contractor to complete all the Work in accordance with the Contract Documents.

**Certificate of Substantial / Final Completion
(Page 2 of 2)**

This certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor’s obligations to complete the Work in accordance with the Contract Documents.

Executed by Owner on _____, 2024

Project Manager

By: _____
(Authorized Signature)

Accepted by the Engineer on _____, 2024

Engineer

By: _____
(Authorized Signature)

Accepted by the Contractor on _____, 2024

Contractor

By: _____
(Authorized Signature)

3.2 Conditions of the Contract - General Conditions

3.2.1 Definitions

Wherever used in any of the Contract documents, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof unless another meaning is clearly specified:

- A. **The terms “Contract” and “Agreement” are interchangeable when used throughout.**
- B. **Abandoned or Unknown Underground Facilities** – All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which were installed underground and have since been abandoned by Previous Owner. Such utilities will not be located and are not subject to ownership.
- C. **Active Underground Facilities** – All active pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, telephone or other communications, sewage, and drainage removal, or effluent, potable or other pressurized or gravity water. Contractor should exercise due diligence and reasonable care when digging in the event of encountering and working near utilities or facilities that could interfere with the work. Safety for each encounter is primary. These facilities may not be able to be located. Contractor shall be responsible for any costs associated with damage, uncovering, repair, usage, etc.... including delay, and shall include such costs in the proposal.
- D. **Addenda** – Written or graphic documents issued prior to the opening of bid documents which modifies or interprets the Solicitation Documents, Drawings and Specifications, by additions, deletions, clarifications or corrections.
- E. **Application for Payment** – The form accepted by the County which is to be used by Contractor in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract documents.
- F. **Architect** – (See Engineer below)
- G. **Bid** – The documents provided by the County and required documents of the Bidder submitted on the prescribed forms setting forth the prices for the Work to be performed.
- H. **Bidder** – Any person, firm, or corporation submitting a response to the Bid.
- I. **Bid Documents** – Includes but not limited to Advertisement, Invitation to the Solicitation, Summary of Work, Conditions for Bidders, Bid Forms, Plans, Specifications, and including all addenda issued prior to receipt of Bids.
- J. **Bonds** – Bid, Performance, and Labor and Materials Payment Bonds and other instruments of security, furnished by a contractor and the contractor’s surety in accordance with the Solicitation documents.
- K. **Change Order** – A written Amendment to the Contract authorizing an addition, deletion or revision in the Work within the general scope of the Contract documents, or authorizing an adjustment in the Contract, Contract Price or Contract Time.

- L. **Completion Definitions –**
Substantial Completion - The date when the Contractor and County consider the entire Work ready for its intended use as evidenced by the Certificate of Substantial Completion.
1. **Partial Utilization** – Use by County at County’s sole option of any substantially completed part of the Work which constitutes a separately functioning and usable part of the Work that can be used by County for its intended purpose without significant interference with Contractor’s performance of the remainder of the Work and may be accomplished prior to Final Completion of all the Work.
 2. **Final Completion** – The date when the Contractor and County consider the entire Work to be complete, including all outstanding Punch List items. Contractor shall at the completion of work, remove all debris and other rubbish from the project site and shall remove all its tools and surplus materials and shall leave the project site clean. If the Contractor fails to clean up, the County may do so and subtract the cleanup cost from the Contractor’s final payment. Contractor shall legally dispose of all construction debris at the Contractor’s expense.
- M. **Contract Documents** – The written contract between County and Contractor covering the work to be performed, including but not limited to all associated documents contained in the Solicitation:
1. Addenda to the Solicitation, Summary of Work, Conditions for Bidders, Bid Forms, Award Forms, Contract Application and Certification of Payment, Conditions of the Contract, General Requirements, Notices to Contractor, Technical Specifications and Plans, Contractor’s Bid and Documentation submitted by Contractor prior to Notice of Award, Bonds, Written Amendments to any Contract Document, Change Orders, Field Orders, and County’s written interpretations and clarifications issued on or after the Effective Date of the Agreement, all of which are incorporated by reference and made a part of this Contract as fully as if herein repeated and a copy of which the Contractor acknowledges hereby that he has received. Engineer’s written interpretations and clarifications issued on or after the Effective Date of the Contract as identified and incorporated by reference therein.
 2. Shop drawing submittals approved, and the reports and drawings referred to in Section 3, paragraph 3.11 are not Contract documents.
- N. **Compensation** – The total monies payable to the Contractor under the terms and conditions of the Contract documents, and includes all County-approved changes thereafter.
- O. **Contract Time** – The time period stated in the Contract documents for the Contractor’s completion and County’s acceptance of the Work.
- P. **Contractor** – The person, firm or corporation with whom the County has executed the Agreement.
- Q. **County** – Incorporated County of Los Alamos
- R. **Defects and /or Defective Work** – Work that is unsatisfactory, faulty or deficient, in that it does not conform to the contract documents, or does not meet the requirements of any inspection, reference standard, test, or approval, or Work that has been damaged prior to final payment.
- S. **Emergency** – A sudden, unexpected, or impending situation that poses and immediate risk to health, life, property or environment, including but not limited to the

- safety or protection of the Work, or property, real or personal, at the site or on related construction and staging areas and roads, or property adjacent thereto.
- T. **Engineer** – or the Engineer’s designated representative who has designed the technical aspects of this project for the County of Los Alamos, includes Architect, and Architect/Engineer.
- U. **Engineer’s (or Architect’s) Resident Project Representative (RPR)** – Provides construction oversight, administration, inspection, and quality assurance services during construction. Also known as Construction Observer.
- V. **Field Order** – A written order effecting a change in the Work which does not involve an adjustment in the Compensation or an extension of the Contract Time, issued by the County Project Manager or Designee to the Contractor during performance of the Work.
- W. **Hazardous Waste** – The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
- X. **Lump Sum** – The total single price commitment for paying for all of the Work defined in the Solicitation Documents or a specified portion thereof.
- Y. **Notice of Award** – The County’s written notice that the County is issuing award of the Contract to the Contractor.
- Z. **Notice to Proceed** - The County’s written notice to the Contractor authorizing the Contractor to proceed with Work and establishing the date of commencement of the Work.
- AA. **Owner** – The County of Los Alamos
- BB. **Plans** – The part of the Solicitation documents which show the characteristics and scope of the Work to be performed by the Contractor and which have been prepared or approved by the Engineer.
- CC. **Project Manager** – Owner’s designee who provides construction oversight, administration, inspection, and quality assurance services during construction.
- DD. **Samples** – Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be evaluated.
- EE. **Shop Drawings** – All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the Contractor, a Subcontractor, manufacturer, supplier, or distributor which illustrate how specific portions of the Work shall be fabricated, performed or installed. Shop drawings shall illustrate some portion of the work and confirm dimensions and conformance to Solicitation documents. Shop drawings are not part of the Contract documents.
- FF. **Specifications** – Written descriptions of a technical nature of materials, equipment, construction systems, standards, and workmanship.
- GG. **Subcontractor** – An individual, firm or corporation having a direct contract with the Contractor (not the County) or with any other Subcontractor for the performance of a part of the Work at the site.
- HH. **Punch List Items** – A list of deficiencies to be corrected by Contractor between Substantial and Final Completion.
- II. **Successful Bidder** – Lowest responsible and responsive Bidder that the County selects for award.
- JJ. **Supplier** – A manufacturer, fabricator, distributor, or vendor etc., having a direct contract with Contractor or any Subcontractor.
- KK. **Unit Price** – Amount to be paid on the basis of individual line-item prices.

- LL. **Work** – The entire construction or various separately identifiable parts thereof required to be furnished under the Contract. Work includes and is the result of performing or furnishing and incorporating materials and equipment into the construction, and performing furnishing services and furnishing documents, all as required by the Contract.
- MM. **Written Notice** – Any notice to any party of the Contract relative to any part of the Contract.

3.2.2 Additional Instructions

- A. County may furnish to the Contractor additional instructions and detail drawings, Field Orders or Change Orders as necessary to carry out the Work required by the Contract.
- B. Additional drawings and instructions supplied to the Contractor by the County will become a part of the Contract. The Contractor shall carry out the Work in accordance with the additional detail drawings and instructions.
- C. The Contractor is responsible for conducting its own, independent quantity take-off for the Work. Following issuance of Notice of Award, but prior to issuance of the Notice to Proceed, the Contractor shall advise the County in writing of any substantive discrepancies between the Contractor's take off, and the itemized line-item unit prices.
- D. Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and verify pertinent figures shown thereon and all applicable field measurements.
- E. Contractor shall promptly report in writing to County any conflict, error, ambiguity or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from County before proceeding with any Work affected thereby.
- F. The Contract Documents comprise the entire agreement between County and Contractor concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.
- G. The Contract Documents will be construed in accordance with the law of the place of the Work.
- H. It is the intent of the Contract Documents to describe a functionally complete Project to be constructed in accordance with the Contract Documents. Any work, materials, or equipment that may reasonably be inferred from the documents or from prevailing custom or trade usage as being required to produce the intended result will be furnished and performed whether or not specifically called for. When words or phrases which have a well-known technical or construction industry or trade meaning are used to describe work, materials, or equipment, such words or phrases shall be interpreted in accordance with that meaning. Clarifications and interpretations of the Technical Specifications and Contract Drawings shall be issued by the County.
- I. Reference to standards, specifications, manuals, or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest

- standard, specification, manual, code or Laws or Regulations in effect at the time Proposals except as may be otherwise specifically stated in the Contract documents.
- J. If during the performance of the Work, Contractor discovers any conflict, error, or ambiguity, or discrepancy within the Contract documents and any provision of any such Law or Regulation applicable to the performance of the Work or of any such standard, specification, manual, or code or of any instruction of any Supplier, Contractor shall upon discovery provide to the County written notice thereof and Contractor shall not proceed with the Work affected thereby (except in emergencies affecting the safety or protection of the Work or property at the site or adjacent thereto), until the conflict, error, ambiguity or discrepancy has been resolved through a Field Order or a Change Order.
- K. Except as otherwise specifically stated in the Contract documents or as may be provided by Change Order, the provisions of the Contract documents take precedence in resolving any conflict, error, ambiguity or discrepancy between the provisions of the Contract documents and the provisions of any such standard, specification, manual, code or instruction (whether or not specifically incorporated by reference in the Contract Document) or the provisions of any Laws, Regulations, policies or procedures applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract documents would result in violation of such Law or Regulation). No provision of any such standard, specification, manual, code or instruction shall be effective to change the duties and responsibilities of County, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Bid documents, nor shall it be effective to assign to County, Engineer, or any of Engineer's Consultants, agents or employees any duty or authority to supervise or direct the furnishings of performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract documents.
- L. Whenever in the Contract documents the terms "as ordered," "as directed," "as required," "as allowed," or terms similar to "reasonable," "suitable," "acceptable," "proper," or "satisfactory" are used to describe a requirement, direction, review or judgment of County or Engineer as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to Engineer any duty or authority to supervise or direct the furnishing or performance (methods and means) of the Work or any duty or authority to undertake responsibility contrary to any provision of the Contract documents.
- M. The Contractor will develop a document control system for the Project which establishes protocol for acceptance and distribution of all construction related documents. Contractor shall also establish processes for certain standardized

documents in the Contract documents and in other pertinent documents as required such as Requests for Information, Submittals, Change Orders, Field Orders, Cost Proposals, Design Notices, and Meeting Minutes and others as necessary during the Pre-Construction Conference. The Contractor shall adhere to these processes and require the same of all their subcontractors.

- N. Contractor shall maintain in a safe place known to the County one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Field Orders, and written interpretations and clarifications in good order and annotated to show all changes made during construction. These record documents together with all approved samples and all approved Shop Drawings will be available to County for reference. Upon completion of the Work, these record documents, Samples and Shop Drawings will be delivered to the County or the County's designee.
- O. Generally, Plans, Specifications and other Contract Documents are provided electronically. If the Contractor requests paper copies, these copies may be furnished upon request at the cost of reproduction.

3.2.3 Schedules, Reports and Records

- A. Baseline Schedule -
 1. Contractor shall provide a Baseline Schedule for County review and acceptance prior to the Pre-Construction meeting showing the complete sequence of construction by activity with costs loaded by activity as appropriate to depict the value of the activities and the respective rolled-up work packages. This schedule and all updates shall be in Microsoft Project (preferred) or other programs as approved by County.
 2. The Contractor shall submit as part of the Baseline Schedule, the proposed number of working days per week; holidays to be observed during duration of Contract by day and month; planned shifts per day and number of hours per shift. Contractor shall notify County at least three (3) working days in advance of any work to be done outside of usual working hours or any change in usual working hours for approval by County.
 3. The schedule shall be in sufficient detail to include but not be limited to include significant elements of the work, time frame for each element of work with a beginning and ending point, percentage of progress of work placed or to be placed in a monthly period of time, value of the elements of the work and relationship of elements of work one to the other for the total work under the Contract.
 4. The schedule shall show for each activity the durations, early and late start and finish dates, and predecessors. Schedule shall clearly identify one and only one critical path through the whole project.
 5. This schedule shall also show timing of all submittals including by not limited to shop drawings, manufacturer's literature, certificates of compliance, materials samples, permits and inspections by outside agencies, operating manuals, and guarantees as required per the Contract documents. The

- schedule should indicate the type of item and the contract requirement reference. The schedule shall show review time by County, Engineer and sub-consultants for all submittals.
6. Schedule shall also show timing for installation and testing for all equipment and systems.
 7. The schedule will be a logically linked schedule and utilize the Critical Path Method (CPM) based on the period of time within which this Contract is to be completed as set forth in the Contract documents. The schedule shall identify the Work in sufficient detail to ensure compliance with Contract dates, schedules, and sequences of construction.
 8. The schedule shall be maintained throughout the life of the Contract. The initial schedule will be the baseline and progress will be compared monthly to this baseline unless a baseline change request is approved in writing by the County. Schedule is Contractor's schedule, prepared by the Contractor, which retains sole responsibility for adherence thereto.
 9. County reserves the right to establish hold points in the schedule before covering work requiring specialty inspections, or work requiring County approval. Such hold points may include but are not limited to inspection of primary electrical feed equipment prior to connecting to the County system, and pressure testing the gas system prior to County installation of gas meter station. Actual hold points will be determined during the progress meetings. Contractor shall give County 48-hour notice in advance of each hold point, and shall schedule a 72 hour hold until it is automatically released.
- B. In the event that the Contractor submits a Baseline Schedule that provides a shorter time for completion of the Project than that provided in the Contract, the Contractor shall not be entitled to any incentive for early completion or damages for delay resulting from any act or omission of County or any other person or entity, occurring between the end of the Baseline Schedule and the Contract Time allowed in Article 2 of the Contract and any change to contract time approved through an executed Change Order.
- C. Schedule Updates with Payment Applications –
1. After submittal and County review and acceptance of the Baseline Schedule, Contractor shall submit all monthly schedule updates to County with each partial payment application.
 2. The updates to the schedule shall show the Work which has been performed and the order in which the Contractor proposes to carry on the remaining Work, including dates at which the Contractor will start and complete the various parts of the Work.
 3. Monthly progress will be assessed at the activity level to determine Earned Value. The percent complete assigned to each task will be determined by mutual agreement between the Contractor and County. Progress payments shall approximate the total Earned Value as calculated for the month. Each month with the submission of the updated schedule with progress, Contractor

- shall provide a narrative report as needed to define problem areas, anticipated delays, and the impact on the schedule. For any activity which is more than 10% behind approved schedule, contractor shall provide a written corrective action to be taken.
4. Progress payment applications without an updated project schedule may be rejected by County.
- D. Contractor, at its sole expense shall submit schedules, reports, estimates, records, and other data, as required, in a format approved by the County throughout the duration of the project.
 - E. Acceptance of Contractor's schedule by County will not relieve Contractor from compliance with all conditions of the Contract. Errors and omissions in the accepted Contractor's Schedule will not be cause for future claims by Contractor for extra costs or increased Contract Time. Contractor shall adhere to the established progress schedule as may be adjusted from time to time as provided below:
 1. Contractor may submit for County acceptance proposed adjustments in the progress schedule that will not change the Contract Times or Milestones.
 2. Proposed adjustments in the progress schedule that will change the Contract Times or Milestones shall be submitted as a request for a Change Order. In the event Contractor requests and extension of Contract Time, Contractor shall furnish such justification, CPM data and supporting evidence for a determination.
 - F. Contractor shall provide a minimum two (2) week look ahead for all scheduled activities in advance of each regularly scheduled project meeting. County may require this look ahead to be provided in written form.
 - G. Work within the County limits after 9:00 p.m. and before 7:00 a.m. requires a Noise Ordinance Relief Permit. Contractor shall adhere to any conditions imposed by the County.
 - H. Contractor shall maintain updated as-builts during construction. These shall be made available to the Project Manager for inspection upon request.

3.2.4 Shop Drawings and Submittals

- A. The Contractor shall provide shop drawings, manufacturer's literature, certificates of compliance, material samples, materials colors, guarantees and other materials as may be necessary for the completion of the Work as required by the Contract. The Contractor shall review and designate its approval and deliver all submittals to the Project Manager for review with reasonable promptness and in orderly sequence. The County, at its sole discretion may forward submittal(s) for further review by the County's designee. All submittals shall be properly identified.
- B. Contractor shall comply with the Project Manager and/or Engineer's attached comments. If such qualified review or if re-submission is so directed, Contractor shall make any corrections required or indicated by the Project Manager or Engineer at Contractor's expense.

- C. The approval by the Project Manager or Engineer of any shop drawing shall not release the Contractor from responsibility for deviations from the Contract.
- D. The approval of any shop drawing which substantially deviates from the requirement of the contract shall be evidenced by a Change Order.

3.2.5 Start of Various Types of Work and Management Planning

- A. The County will not allow the Contractor to commence work at the project sites, including mobilization of equipment unless the following submittals/shop drawings/firms as applicable are approved by the Engineer:
 - 1. Traffic Control Plan and Traffic Impedance Plan.
 - 2. Storm water Pollution Prevention Plans (SWPPP) as specified.
 - 3. Copies of NPDES Notice of Intent (NOI) as specified.
 - 4. Name of proposed materials, soil, and concrete testing firm as specified.
 - 5. Name of proposed registered land surveyor or registered Engineer as specified.
 - 6. Safety Management Plan.
 - 7. Any material differences between Contractor's quantity take-off and quantities itemized in the Bid.
 - 8. Contractor shall obtain a Los Alamos County Business License.
- B. The County will not allow the Contractor to begin excavation unless the following submittals/shop drawings are approved by the County:
 - 1. Excavation/Shoring Plan
 - 2. Water, sewer, and gas system components (pipe, valve, fittings, manholes, etc.)
 - 3. Underground electric components
 - 4. Storm drain and sewer system components (pipe, inlets, manholes, etc.)
 - 5. Pipe bedding material
- C. The County will not allow the Contractor to commence installation of concrete structures until the following submittals/shop drawings are approved by the County:
 - 1. Concrete mix design
 - 2. Reinforcing steel
- D. The County will not allow the Contractor to commence installation of road work at the Project Site, unless the following submittals/shop drawings are approved by the County:
 - 1. Structural fill material
 - 2. Gravel base course
 - 3. Prime coat/tack coat material
 - 4. Asphalt Pavement Mix Design
 - 5. Performance Graded Binder
 - 6. Storm drain pipe
 - 7. Hydrated lime
 - 8. Geotextile material.
- E. Contractor shall deliver to County prior to Substantial Completion Inspection:

1. Certificates of inspection and of occupancy as required by authorities having jurisdiction over the work.
 2. Contractor shall notify the County in writing when the Work is Substantially Complete and request a Certificate of Substantial Completion.
 3. County and/or Engineer shall then inspect the Work and either concur with or decline the request.
 4. If accepted, a Certificate of Substantial Completion shall be issued, with a “punch list” of items to be corrected and completed by the Final Completion date and shall include division of responsibilities as applicable between County and Contractor including but not limited to security, operation, safety maintenance, insurance, warranties and guarantees. County shall have the right to exclude Contractor from the Work after the date of Substantial Completion, but County shall allow Contractor reasonable access to complete or correct items on the correction list.
 5. If declined, County shall not issue the Certificate of Substantial Completion
- F. Final Completion –
1. The date when the Contractor and County consider the entire Work is complete, as evidenced by the Certificate of Final Completion.
 2. Contractor shall notify the County in writing when the Work is at Final Completion and request a Certificate of Final Completion.
 3. County and/or Engineer shall then inspect the Work and either concur in or reject the request.
 4. If accepted, a Certificate of Final Completion shall be issued.
 5. If declined, County shall not issue the Certificate of Final Completion. Contractor shall take such measures as are necessary to complete such Work or remedy deficiencies.
 6. Unless otherwise identified in the Bidding Documents, all items below in item G. shall be provided prior to Final Completion.
- G. Prior to County execution of the Certificate of Final Completion, Contractor shall furnish maintenance manuals as called for in Contract documents and Contractor shall provide start up assistance for County as required.
1. Data files of accurately surveyed coordinate points locating all as constructed structures and all buried utilities including depths and inverts of manholes. Use the coordinate system described in the Drawings on the Site Plan General Layout. Data files shall be in a format suitable for importing into AutoCAD drawings. Furnish complete written descriptions of each point and include a brief description of the data (Metadata) describing the data collection process and the names and contract information of the parties responsible for producing the data. Approval documents if the work is constructed in any way at variance to that shown on the Contract documents.
 2. As-built plans in the form of redlined plans with all aspects of the project constructed that deviate from the original plans marked in red on a Full Size (24"x36" or larger if architectural) paper set of plans.
 3. Contractor shall provide vendor training for the County as requested by the Project Manager, covering maintenance and operation of the systems. This

may be provided prior to Substantial Completion upon agreement between the County and Contractor.

3.2.6 Materials, Services and Facilities

- A. It is understood that, except as otherwise may be specifically stated in the Contract documents, the Contractor shall provide and pay for the costs and associated taxes for all materials, (except for materials furnished by the County), labor, tools, equipment and machinery, water, light, power, heat, fuel, telephone, sanitary facilities, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the Work within the Contract Time.
- B. Materials and equipment shall be stored to insure the preservation of quality and fitness for the Work. Stored materials and equipment to be incorporated in the Work shall be located to facilitate prompt inspection.
- C. Manufactured articles materials, and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.
- D. Materials, supplies, and equipment furnished by the Contractor shall be in accordance with samples submitted by the Contractor and approved by the County.
- E. Materials, supplies or equipment to be incorporated into the Work shall not be purchased by the Contractor or any Subcontractor, subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.
- F. Materials and equipment shall be new and of good quality.
- G. Contractor shall, if required, furnish evidence of the quality of any materials.
- H. Materials not meeting requirements of the Contract documents shall be removed from project by Contractor without expense to County.
- I. Materials shall be delivered to the site in original packaging with labels and trademarks intact, and such labels and trademarks shall remain intact until used.

3.2.7 Substitutes or “Brand Name” or Equal

- A. Whenever an item of material or equipment is specified or described in the Contract documents by using the name of a proprietary item or the name of a particular supplier, the specification or description is intended to establish the type, function and level of quality required. Unless the specification or description contains or is followed by word reading that no “like,” “equivalent” or “equal” item or no substitution is permitted, other items of material or equipment of other suppliers may be recommended by Contractor for County’s approval under the following circumstances:
 - 1. “Or-Equal”: Contractor will recommend to County if an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required. It may be considered as an “or-equal” item, in which case review and approval of the proposed item may, in County’s discretion, be accomplished without

- compliance with some or all of the requirements for acceptance of proposed substitute items.
2. Substitute Items: If an item of material or equipment proposed by Contractor does not qualify as an “or-equal” item, it will be considered a proposed substitute item.
 - a. Contractor shall first make written request to Project Manager for acceptance, signifying that the proposed substitute will perform the functions as specified and achieve the results called for by the particular design, functional or performance characteristics which are required.
 - (1) Contractor shall submit sufficient information to demonstrate that the item proposed is essentially equivalent to that named and is an acceptable substitute.
 - (2) Contractor will state the extent, if any, to which the evaluation and acceptance of the proposed substitute will impact Contractor’s achievement of Substantial Completion, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract documents (or in the provisions of any other direct contract with County for work on the project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated.
 - (3) Contractor shall provide an itemized estimate of all costs or credits which will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by County in evaluating the proposed substitute. County may require Contractor to furnish additional data about the proposed substitute.
 3. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence or procedure of construction is shown or indicated in and expressly required by the Solicitation documents, Contractor may furnish or utilize a substitute means, method, technique, sequence or procedure of construction acceptable to County upon recommendation from Engineer. Contractor shall submit sufficient information to allow Engineer to make recommendation to County that the substitute proposed is equivalent to that expressly called for by the Solicitation documents.
 4. Engineer’s Evaluation: Engineer will be allowed a reasonable time within which to evaluate each bid or submittal made. County upon recommendation of Engineer will be sole judge of acceptability. No “or-equal” or substitute will be ordered, installed or utilized without Engineer’s prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. County may require Contractor to furnish at Contractor’s expense a special

performance guarantee or other surety with respect to any “or-equal” or substitute. Engineer will record time required by Engineer and Engineer’s Consultants in evaluating substitutes proposed or submitted by Contractor and in making changes in the Solicitation documents (or in the provisions of any other direct contract with the County for work Project) occasioned thereby. Whether or not Engineer accepts a substitute item so proposed or submitted by Contractor, County reserves the right to charge Contractor for review time by Engineer and Engineer’s consultants for evaluation of each such proposed substitute item and for making changes in the Solicitation documents as needed.

5. Contractor’s Expense: All data to be provided by Contractor in support of any proposed “or-equal” or substitute item will be at Contractor’s expense.

3.2.8 Inspection and Testing

- A. All materials and equipment used in performance of the Work shall be subject to adequate inspection and testing in accordance with generally accepted standards and as required and defined in the solicitation documents.
- B. If required by the solicitation documents, the Contractor shall provide at the Contractor’s expense the testing and inspection services.
- C. The Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, paying all costs in connection therewith, and furnishing County/Engineer with the required certificates of inspection, or approval within 72 hours of inspection
- D. The Contractor will give the County/Engineer twenty-four (24) hours’ notice of readiness and shall cooperate with inspection and testing personnel to facilitate required inspections or tests. Contractor shall also be responsible for arranging obtaining and paying all costs in connection with any inspections, tests or approvals required for County and Engineer’s acceptance of materials or equipment to be incorporated in the Work, or materials, mix designs, or equipment submitted for approval prior to Contractor’s purchase thereof for incorporation in the Work.
- E. Alternately, in accordance with the solicitation documents, the County may assume all responsibility and costs associated with testing; this will be noted specifically.
 1. In the event that more than two (2) tests fail, County may at its discretion, charge the Contractor for all subsequent tests.
 2. Such charges may be deducted from the payment application.
- F. County may at their discretion perform additional testing and inspections as a means of quality assurance.
- G. Inspections, tests or approvals by the County/Engineer shall not relieve the Contractor’s obligations to perform the Work in accordance with the requirements of the solicitation documents.
- H. Notice of Defects- Prompt notice of any defective Work of which County or Engineer have actual knowledge will be given to Contractor. All defective Work shall be

- rejected, corrected, accepted, or accepted with payment adjustments as determined by County.
- I. If any Work is covered contrary to the direction of the County, or if Work is covered prior to testing, Contractor shall uncover it for testing and/or observation by the County. Re-excavation, inspection, testing and replacement of any and all materials and items shall be at the Contractor's sole expense.
 - J. If the County directs the Contractor to uncover work where inspections are not required, then
 - 1. The Contractor shall bear all costs for the re-excavation, inspection, testing, replacement and re-covering of the items if the work did not meet specifications, or
 - 2. If items do meet specifications, Contractor may solicit a Change Order to cover the additional work costs.
 - K. Sub-grade, base-course, and asphalt testing shall be conducted by an AMRL (Aggregate Materials Reference Laboratory) certified technician. Cement and concrete testing shall be performed by an ACI (American Concrete Institute) certified technician for lab and field testing.

3.2.9 Correction of Work

- A. The Contractor shall remove at the County's sole discretion from the premises and replace at the Contractor's sole expense all Work rejected by the Engineer or County for failure to comply with the Contract documents, whether incorporated in the project or not, and the Contractor shall promptly replace and re-execute the Work in accordance with the Contract documents. Contractor shall pay claims, cost, losses, and damages caused by or resulting from such correction or removal including but not limited to all costs or repair or replacement of work by others.
- B. If the Contractor does not take action to remove such rejected Work within time specified after receipt of written notice, the County may remove or correct such Work and store the materials. If at the time the County removes or corrects such Work and stores materials and any amount of the Contract Price is then due and owing to the Contractor, the County may deduct from the amount owed to the Contractor the costs incurred by the County for such removal, correction and storage.
- C. In connection with such corrective and remedial action, County may exclude Contractor from all or part of the site, take possession of all or part of the Work, and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stores at the site or for which County has paid Contractor but which are stored elsewhere. Contractor shall allow County, County's representatives, agents, employees, County's other Contractors and Engineer and Engineer's Consultants access to the site to enable County to exercise the rights and remedies under this paragraph. All claims, costs, losses and damages incurred or sustained by County in exercising such rights and remedies will be charged against Contractor and a Change Order will be issued incorporating the necessary

revisions in the Solicitation documents with respect to the Work; and County shall be entitled to an appropriate decrease in the Contract Price. Such claims, costs, losses and damages will include but not be limited to all costs of repair or replacement of work of others destroyed or damaged by correction, removal or replacement of Contractor's defective Work. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by County of County's rights and remedies hereunder.

- D. In an emergency where delay would cause serious risk of loss or damage, County may have the defective Work corrected or the rejected Work removed and replaced, and all claims, costs, losses and damages caused by or resulting from such removal and replacement including but not limited to all costs of repair or replacement of work of others will be paid by Contractor.
- E. If instead of requiring correction or removal and replacement of defective Work, County with Engineer's recommendation prefers to accept it, County may do so. Contractor shall pay all claims, costs, losses and damages attributable to County's evaluation of and determination to accept such defective Work. If such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contractor documents with respect to the Work and County shall be entitled to an appropriate decrease in the Contract Price. If acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to the County.

3.2.10 Patents

- A. The Contractor shall pay on behalf of the County all applicable royalties and license fees. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless County from and against all claims, costs, losses and damages arising out of or resulting from any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device whether it is specified or not in the Solicitation documents. However, if the Contractor has reason to believe that the design, process or product specified is an infringement of a patent, trademark or copyright, the Contractor shall be responsible for such loss unless the Contractor notifies the County upon discovery.
- B. Contractor shall indemnify, defend, or at its option, settle any claim or suit against County if such suit or claim is based on a patent, trademark, copyright or trade secret infringement resulting from the Work or use thereof provided that County, upon knowledge of a claim or potential claim of infringement, promptly notifies Contractor and provides Contractor all related information known to County. In the event of a claim of patent, trademark, copyright or trade secret infringement, Contractor agrees to keep County timely informed of material developments with respect to such claim. In the event that a court of competent jurisdiction adjudicates that the Work or any part of it does infringe a third party's patent, trademark, copyright or trade secret, or in the event that County is enjoined from using the Work or any part of it. Contractor

shall, at its expense and option, do one of the following: 1) procure for County the right to use the Work or the affected part thereof, or 2) replace the Work or affected part thereof with other suitable work, or 3) modify the Work or affected part hereof to make it non-infringing, or 4) if none of the foregoing remedies are commercially feasible, refund the aggregate payments paid by County for the Work which the County is no longer permitted to use, or the affected part thereof, less reasonable amortization for use.

3.2.11 Surveys, Permits, and Regulations

- A. From the information provided by the County, unless otherwise specified in the Solicitation documents, the Contractor shall develop and make all detailed surveys needed for construction such as slope stakes, batter boards, stakes for pile locations and other working points, lines, elevations and cut sheets.
- B. The Contractor shall carefully preserve benchmarks, property corners, reference points and stakes. When it becomes necessary by reason of construction to remove or obliterate any triangulation station benchmark, property corner, monument, stake, witness mark or other survey reference mark, it shall be the duty of the Contractor to cause, at the Contractor's sole expense, the mark to be re-established by a registered surveyor in accordance with Section 61-23-28, NMSA 1978.
- C. Unless otherwise stated in the Solicitation documents or agreed to in writing by the County all permits and licenses necessary for the prosecution of the Work shall be secured and paid for by the Contractor. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations pertaining to the Work as required. If the Contractor observes that the Solicitation documents are at variance therewith, Contractor shall promptly notify the Engineer in writing, and any necessary changes shall be adjusted as provided herein. Changes in the Work. Contractor shall pay for all governmental changes and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening bids. Contractor shall pay all charges of utility connections and payment for use of said utilities for the Work.
- D. A Penetration Permit from the County is required prior to connecting to any gas, water, or sanitary sewer lines. Allow five (5) working days for the County to process the application after submitting. A copy of the Penetration Permit can be obtained from the Los Alamos County Department of Public Utilities (DPU), (505) 662-8130. DPU staff will perform all switching and valve operations.
- E. The Contractor will also need to prepare the plan and file the necessary documentation, obtain approvals, construct and maintain the Storm Water Pollution Prevention Plan (SWPPP) for all job sites, staging areas or other areas required prior to initiation of any site work.
- F. The Contractor will also need to submit and get approval of a Traffic Impedance Permit from the County of Los Alamos, prior to beginning construction as required. Contractor shall apply to the County of Los Alamos for a Traffic Impedance Permit at least ten (10) working days in advance of setting up traffic control signs or

barricades for work efforts which will affect the flow of traffic. Contractor cannot proceed with construction until traffic control plans are approved.

- G. The Contractor shall obtain all New Mexico Environment Department (NMED) Air Quality Permits as required, as well as any other required permits including, but not limited to, asbestos abatement, lead abatement and other hazardous material permits in conjunction with the Work.
- H. County projects do not require an Excavation Permit
- I. Neither County nor Engineer shall be responsible for Contractor's compliance with any Laws or Regulations except where otherwise expressly required.
- J. All County permit fees shall be waived with the exception of Solid Waste fees.
- K. Work within the county limits after 9:00 pm and before 7:00 am require a Noise Ordinance Relief Permit. Contractor shall adhere to any restrictions imposed by the County.

3.2.12 Subsurface and Physical Conditions

- A. Any reports on subsurface and physical conditions are included in Section 3.5 Attachments. The County may not have conducted or contracted for Subsurface and Physical Condition Reports.
- B. Contractor may rely upon the general accuracy of the specific "technical data" contained in such reports and drawings and is provided as the best information at that time for the Contractor's use. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against County, Engineer or any of Engineer's Consultants with respect to:
 - 1. The completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto, or
 - 2. Other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings, or
 - 3. Any Contractor interpretation of or conclusion drawn from any "technical data" or any such data, interpretations, opinions or information.
- C. Notice of Differing Subsurface or Physical Conditions – if Contractor believes that any subsurface or physical condition at or contiguous to the site that is uncovered or revealed either:
 - 1. Is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided above is materially inaccurate, or
 - 2. Is of an unusual nature and differs materially from conditions ordinarily encountered and generally recognized as inherent of the character of Work provided in the Solicitation documents; then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing and Work in connection therewith (except in an emergency), notify County and Engineer in writing immediately about such condition. Contractor shall not further disturb such conditions or perform any

- Work in connection therewith (except as aforesaid) until receipt of written order to do so.
3. County will promptly review the pertinent conditions, determine the necessity of obtaining additional exploration or tests with respect thereto and advise Contractor in writing of its findings and conclusions.
- D. Possible Contract Documents Change: If Engineer concludes that a change in the Contract Documents is required as a result of a condition that meets one or more of the categories in paragraph 3.3.16, a Change Order may be issued to reflect and document the consequence of such change.
- E. Possible Price and Times Adjustments: An equitable adjustment in the Contract Price or in the Contract Times, or both may be allowed to the extent that the existence of such uncovered or revealed condition causes and increase or decrease in Contractor's cost of, or time required for performance of the Work subject to the following:
1. Such condition must meet any one or more of the categories described in paragraphs above;
 2. A change in the Contract Documents pursuant to Section 3, Changes in the Work will not be an automatic authorization of nor a condition precedent to entitlement to any such adjustment;
 3. With respect to Work that is paid for on a Unit price basis, any adjustment in contract price will be subject to provisions relating to unit prices;
 4. Contractor shall not be entitled to any adjustment in the Contract Price or Times if;
 - a. Contractor knew of existence of such conditions at the time Contractor made a final commitment to Owner in respect of Contract Price and Contract Times by the submission of a bid or becoming bound under a negotiated contract; or
 - b. The existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the site and contiguous areas required by the Solicitation Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
 - c. Contractor failed to give the written notice within the time and as required by Section 3, Changes in the Work.
 - d. County, Engineer and Engineer's Consultants shall not be liable to Contractor for any claims, costs, losses or damages sustained by Contractor on or in connection with any other project or anticipated project.
- F. Physical Conditions – Underground Facilities:
1. Shown or Indicated: The information and data shown or indicated in the Solicitation documents or subsequently located by the Active Underground Facilities locating service prior to excavation with respect to existing Active Underground Facilities at or contiguous to the site is based on the information and data furnished by the County of such Active Underground Facilities or by

others. County shall not be responsible for the accuracy or completeness of such information or data provided in the Solicitation Documents. The Contractor shall be solely responsible for requesting the marking of the location of Active Underground Facilities by the locating service in accordance with the New Mexico Excavation Law prior to excavation. The cost of all of the following will be included in the Contract Price and Contractor shall have full responsibility for: reviewing and checking all such information and data, locating all Underground Facilities shown, or indicated in the Solicitation documents, or subsequently located by the Active Underground Facilities owner, coordination of the Work with the County of such Underground Facilities during construction, and safety and protection of all such Underground Facilities and repairing any damage resulting from the Work.

2. Not Shown or Indicated: If any Active Underground Facilities or Abandoned Underground Facilities are uncovered or revealed at or contiguous to the site which was not shown or indicated in the Solicitation documents or was not subsequently located by the Active Underground Facilities owner in accordance with New Mexico exaction law Contractor shall, promptly after becoming aware of and before further disturbing conditions affected or performing any work in connection therewith (except in an emergency), give written notice to the County, if known, of the Underground Facilities Owner.
3. The Contractor will promptly review the Active or Abandoned Underground Facilities and determine, if possible, the owner of the Underground Facilities. The Contractor shall request that the owner of the Underground Facilities also investigate if the Underground Facilities are Active or Abandoned.
 - a. If the Underground Facilities are Active Underground Facilities the County shall determine the extent, if any, to which a change is required in the Contract documents to reflect and document the consequences of the existence of the Active Underground Facilities. During such time, Contractor shall be responsible for safety and protection of such Active Underground Facilities. Contractor may be allowed and increase in Contract Price or an extension of the Contract Times, or both, to the extent that they are attributable to the existence of any Active Underground Facilities that were not shown, indicated, or not subsequently located by the owner of the Active Underground Facilities prior to excavation, and that the Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated.
 - b. If the Underground Facilities are Abandoned Underground Facilities, and they interfere with the excavation or Work by the Contractor, the Contractor is not eligible for an increase in cost. The Abandoned Underground Facilities can be removed or allowed to remain with steps taken to work around the Abandoned Underground Facilities such as cutting, removing and capping the ends.

- c. If any Abandoned Underground Facilities are transite asbestos pipe or conduit removal, if required or selected by the Contractor, shall be completed and no additional payment will be granted to the Contractor for the proper removal and disposal per the appropriate local, State, and federal regulations.

3.2.13 Protection of Work, Property and Persons

- A. The Contractor will be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. The items below shall be included in the Contractor's Safety Management Plan. Contractor will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees, County staff or agents, and public on the Work, including but not limited to:
 1. Required personal safety equipment for personnel and visitors within the work zone;
 2. Proper operation of equipment and power tools;
 3. Proper maintenance of equipment and power tools;
 4. Protection of personnel and public within excavation areas;
 5. Protection of personnel occupying confined spaces;
 6. Welding;
 7. Fall protection;
 8. Procedures in the event that suspected hazardous materials are encountered and procedures to be used by Contractor and Subcontractors for handling and coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the site in accordance with applicable Laws and Regulations;
 9. Precautions for lifting and maneuvering heavy objects;
 10. Emergency procedures in the event of wildfire or other fire;
 11. Emergency procedures in the event of injury;
 12. Emergency procedures in the event of a line break (water, sewer, gas, power, etc.)
 13. Flooding;
 14. Excavating, trenching, shoring, sheeting, and bracing protection;
 15. Pre-job safety planning;
 16. Designation by Contractor of a qualified and experienced safety representative whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs;
 17. Implementation of safety plan for subcontractors;
 18. Safety meetings; and
 19. Procedures for encounters with wildlife, including snakes.

3.2.14 Changes in the Work

- A. The County may at any time, as the need arises, order changes within the scope of the Work without invalidating the Contract. If such changes increase or decrease the amount due under the Contract documents, or in the time required for performance of the Work, an equitable adjustment shall be authorized by Change Order mutually agreed to by the County and Contractor.
- B. The County may at any time, by issuing a Field Order, make changes in the details of the Work. The Contractor shall proceed with the performance of any changes in the Work so ordered by the County, unless the Contractor believes that such Field Order entitles the Contractor to a change in the Contract Price or Time, or both, in which event the Contractor shall give the County written notice within seven (7) calendar days after the receipt of the Field Order. Thereafter the Contractor shall document the basis for the change in Contract Price or Time within thirty (30) calendar days. The Contractor shall not execute such changes until receipt of an executed Change Order or further instruction from the County followed by the executed Change Order. .
- C. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the original solicitation documents or as amended or modified except in the case of an emergency.
- D. The value of any Work covered by a Change Order or any claim for an adjustment in the Contract Price will be determined as follows:
 - 1. Where the Work involved is covered by unit prices contained in the Solicitation documents, by application of such unit prices to the quantities of the items involved.
 - 2. Where the Work involved is not covered by unit prices contained in the Solicitation documents, by a mutually agreed lump sum.
- E. Force Account -In the event that an agreed upon price or time cannot be reached, Contractor, when directed, shall proceed on a Force Account (Time and Materials) basis and document all costs and time incurred by the work. Force Account shall include a not-to-exceed amount. Costs shall include all direct and indirect labor, equipment and materials and shall be based on:
 - 1. Actual costs for labor, direct overhead, materials, supplies, equipment, and other services required to complete the work;
 - 2. In addition, there shall be an amount agreed upon, but not to exceed fifteen percent (15%) of the actual cost of such work to cover the cost of general overhead and profit;
 - 3. Contractor shall establish and maintain records in accordance with generally accepted accounting practices and submit in a form acceptable to the County an itemized cost breakdown together with supporting data, agreed to at the end of each day by the Project Manager and Contractor.
- F. Cost of Work: The term Cost of Work means the sum of all costs necessarily incurred and paid by Contractor in the proper performance of the Work. Except as otherwise

may be agreed to in writing by County, such costs shall include only the following items and shall not include any of the costs itemized in G below.

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by County and Contractor. Such employees shall include without limitation superintendents, foreman, and other personnel employed full time at the site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work after regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by County.
2. Cost of materials and equipment furnished and incorporated in the Work, including costs of transportation and storage, and Supplier's field services required in connection. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to County and Contractor shall make provisions so that they can be obtained.
3. Payments made by the Contractors to the Subcontractors for Work performed or furnished by Subcontractors. If required by County, Contractor shall obtain competitive bids from subcontractors acceptable to County and Contractor shall deliver such bids to County who will then determine which bids, if any, will be accepted. All subcontracts shall be subject to other provisions of the Solicitation documents insofar as applicable
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain property of Contractor.
 - c. Rentals of all construction equipment and machinery and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by County with the advice of Engineer, and the costs of transportation, loading, unloading, installation, dismantling and removal; all in accordance with the terms of said rental agreements. The rental of

- any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.
- d. Sales, consumer, or similar taxes related to the Work, and for which Contractor is liable, imposed by laws and regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by the County), provided loss has resulted from causes other than the negligence of Contractor, any subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of County. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee. If, however any such loss or damage requires reconstruction and Contractor is placed in charge thereof, Contractor shall be paid for service a proportional fee as stated above.
 - g. The cost of utilities, fuel and sanitary facilities at the site.
 - h. Cost of premiums for additional bonds and insurance required because of changes in the Work.
- G. The term Cost of Work shall not include any of the following:
- 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor whether at the site or in Contractor's principal or a branch office for general administration of the Work which are to be considered administrative cost covered by the Contractor's fee.
 - 2. Expenses of Contractor's offices other than Contractor's office at the site.
 - 3. Any part of Contractor's capital expenses, including interest and charges for delinquent payments.
 - 4. Original cost of premiums for all Bonds and for all insurance required by the Bid documents to purchase and maintain the same
 - 5. Costs due to the negligence of Contractor, any subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

- 6. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included herein.
- H. The Contractor's fee allowed to Contractor for general overhead and profit shall be determined by an amount not to exceed fifteen percent (15%) of the Cost of Work described above.
- I. For work performed by Sub-contractors the Contractor's fee shall not exceed 5%.
- J. No fee will be allowed for cost of special consultants and supplemental costs as described above.

3.2.15 Suspension, Delay or Termination of Work

- A. At any time and without cause, County may suspend the Work or any portion thereof for a period of not more than ninety (90) days per event by notice in writing to Contractor which will fix the date on which Work may be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be allowed an adjustment in the Contract Price or an extension of the Contract time or both, directly attributable to any such suspension of work, if Contractor receives an approved change order as provided herein.
- B. The County, at its sole discretion may terminate the Contract if the Contractor:
 - 1. Is determined to be and adjudged to be bankrupt or insolvent;
 - 2. The Contractor makes a general assignment for the benefit of the Contractor's creditors;
 - 3. A trustee or receiver is appointed for the Contractor for any of the Contractor's property;
 - 4. The Contractor files a petition to take advantage of any debtor's act, to reorganize under the bankruptcy or applicable laws.
 - 5. Contractor fails to perform the Work in accordance with the Contract Documents including but not limited to:
 - a. The Contractor repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment,
 - b. The Contractor repeatedly fails to make prompt payments to Subcontractors or for labor, materials or equipment.
 - c. The Contractor disregards laws, ordinances, rules, regulation or orders of any public body having jurisdiction over the Work,
 - d. The Contractor disregards the authority of the County,
 - e. The Contractor otherwise violates any provision of the Contract Documents.
- C. The County may, without prejudice to any other right of surety, within a minimum of ten (10) calendar days from delivery of a written notice, terminate the services of the Contractor and take possession of the Project and of all materials, equipment, tools, construction equipment and machinery owned by the Contractor, and finish the Work by whatever method the County may deem expedient or at County's sole discretion may elect to suspend the work or any portion thereof until the cause for such order

has been eliminated. In such case the Contractor shall not be entitled to receive any further payment until the Work is finished.

- D. Contractor shall be paid for Work completed in accordance with the Contract Documents.
- E. If an agreement cannot be reached and the County hires a different Contractor to complete the remaining work, or the work is completed by a different means:
 - 1. The resulting costs incurred by the County will be determined by the County
 - 2. If such costs exceed such unpaid balance, the County will request that Contractor pay the difference to the County.
 - 3. If the Contractor refused to pay the difference to the County, the County may terminate the contract and request payment directly from the Contractor's bonding company.
 - 4. Any unpaid balance of the current Contract Price that exceeds the direct and indirect cost of completing the Work, including compensation for additional professional services, shall not be paid to the Contractor.
- F. Where the Contractor's services have been terminated by the County, said termination shall not affect any right or claim of the County against the Contractor existing at that time or which may thereafter accrue. Any payment by the County due the Contractor will not release the Contractor from compliance with the Contract. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.
- G. After ten (10) calendar days from delivery of a written Notice to the Contractor from the County, the County may, without cause and without prejudice to any other right or remedy, elect to abandon the Project and terminate the Contract. In such case, the Contractor shall be paid for all Work executed in conformance with the Contract plus reasonable profit.

3.2.16 Subcontracting

- A. The Contractor may utilize the services of specialty subcontractors on those parts of the Work which, under normal contracting practices, are performed by specialty subcontractors. The County must approve the use of any subcontractor.
- B. The Contractor shall not award Work to subcontractor(s), in excess of fifty percent (50%) of the Contract Price, without prior written approval of the County.
- C. The Contractor shall be fully responsible to the County for the acts and omissions of the Contractor's subcontractors, and of persons either directly or indirectly employed by them, as the Contractor is responsible for the acts and omissions of persons directly employed by the Contractor.
- D. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind subcontractors to the Contractor by the terms of the solicitation documents insofar as applicable to the Work of subcontractors and to give the Contractor the same power to terminating any subcontract that the County may exercise over the Contractor under any provision of the Contract.

- E. Nothing contained in this Contract shall create any contractual relation between any subcontractor and the County.

3.2.17 Duties of the Contractor

- A. The Contract contains the provisions required for the construction of the Project. Information obtained from an officer, agent, or employee of the County or another person shall not affect the risks or obligations assumed by the Contractor or relieve Contractor from fulfilling any of the conditions of the Contract. The Contract requires performance of services entirely at the Contractor's risk and Contractor has agreed to indemnify the County from all claims, demands, and actions, arising from the Contractor's actions, errors, or omissions.
- B. The Contractor will supervise and direct all work to be performed pursuant to this Contract. Contractor will be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The Contractor will employ and maintain at the project site a qualified Superintendent who shall have been designated in writing by the Contractor as the Contractor's representative at the site and who shall not be replaced without written notice to County.
- C. The Superintendent shall be considered an agent of the Contractor and shall have full authority to act on behalf of the Contractor and all communications given to the Superintendent shall be as binding as if given to the Contractor. The Superintendent shall be present on the site at all times as required to perform adequate supervision and coordination of the services provided pursuant to this Contract. Superintendent shall not be replaced without written approval of the County.
- D. If at any time Contractor or any subcontractor is suspended or debarred from conducting business with any city, county, state or federal government, Contractor has continuing obligation to promptly notify County. County has the option to terminate Contract or require a different subcontractor at no additional cost to the County.
- E. Superintendent shall track on a daily basis all labor (including classifications), equipment and materials used on site. Superintendent shall communicate this information to the Project Manager or representative. Superintendent and Project Manager shall agree on this usage.
- F. Contractor shall provide competent, suitably qualified personnel to survey, lay out and construct the Work as required by the Contract. Contractor shall at all times enforce strict discipline and good order among all workers at the sites and shall not employ on the Work any unfit person or anyone not skilled in the work assigned to them.
- G. Contractor shall be responsible to see that the completed Work complies accurately with the Contract.
- H. Contractor shall abide by the Los Alamos County Harassment Policy and Procedures #1120.

3.2.18 Job Site Administration

- A. The Contractor is responsible for orderly use and cleanup of all job sites including staging areas and all areas affected by the project to the satisfaction of the County. Outdoor storage space may be obtained by the Contractor at its sole expense.
- B. The County may authorize by the Staging Area License, Contractor's use of land owned by the County. Contractor shall comply with the terms of written agreements.
- C. Construction materials and equipment such as tools, scaffolds, forms and excess material not in use shall be stored or stacked in neat order at the contractor's storage site. Contractor shall at all times as part of its services, keep the sites free from accumulation of waste materials or rubbish caused by Contractor's operations.
- D. Contractor shall provide trash receptacles sufficient in number to accommodate all refuse generated within the property and provide for their regular and routine maintenance and servicing. At the completion of the services to be performed in the Contract, Contractor shall remove Contractor's waste materials and rubbish from and about the project, as well as all Contractor's tools, construction equipment, machinery and surplus materials and shall clean all surfaces.
- E. Contractor may provide lighting as necessary for security and safety of materials and equipment. Such lighting shall be down directed and approved by the Project Manager.
- F. Contractor shall provide portable toilets at all job sites sufficient in number to accommodate all waste generated within the site and provide for their regular and routine maintenance and servicing.
- G. Contractor shall restore to original condition all affected property not designated for alteration by the Contract.
- H. Services performed pursuant to this Contract are not to unduly interfere with the County's normal operation and maintenance.
- I. Contractor shall be responsible for all areas of the project used by the Contractor, subcontractors, suppliers or other involved in performance of the services to be performed in the Contract.
- J. Contractor shall have the right to exclude all who have no purpose or function related to the performance or inspection of the services, except personnel employed by the County or other governmental agencies. Contractor may require all persons on the site of the work to observe all regulations that the Contractor requires of its employees. Contractor will exert full control over the site and personnel with respect to use, safety and preservation of property and the existing facilities, except for controls as reserved to County or others.
- K. Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workers to the site and land and areas identified in and permitted by the Bid documents and other land and areas permitted by Laws and Regulations. Contractor shall assume full responsibility for any damage to any such land or area or to the owner or occupant thereof or of any adjacent land or areas, resulting from the performance of the Work. Should any claim be made by

- any such owner or occupant because of the performance of the Work, Contractor shall promptly resolve such claim by negotiation or other proceeding at law.
- L. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless County against all claims, costs, losses and damages arising out of or resulting from any claim or action, legal or equitable, brought by any such owner or occupant against County, Engineer or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.
 - M. Contractor shall be responsible for all materials brought to the job sites by the Contractor, its subcontractors or agents.
 - N. Hazardous waste shall be properly stored and disposed in accordance with applicable laws and regulations. The Contractor shall promptly remove all spilled or splattered materials from surfaces to prevent marring, staining, or damage. Adequate clean-up will be evaluated prior to all applications for progress payment.
 - O. County shall have the right to enter the premises for the purpose of doing work not covered by the Contract. This provision shall not be construed as relieving the Contractor of the sole responsibility for the care and protection of the Work or the restoration of any damaged Work except such as may be caused by agents or employees of the County.
 - P. County may perform other work related or unrelated to the Project on the premises using County's own employees, other utility owners, or let other contracts for the performance of work. If there is such work to be performed that was not noted in the Contract, written notice shall be given to the Contractor prior to the start of such work. As directed by the County, Contractor shall provide proper and safe access to the County, contractors and utility owners to the premises and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work.
 - Q. Contractor shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of County and the others whose work will be affected.
 - R. Gas and Oil Storage, Service Areas, Concrete Batch Plant, Caretaker Dwelling Units- County shall approve the location of equipment areas, gas and oil storage areas, service areas, concrete batch plant and caretaker dwelling units in writing. Contractor shall clear all areas of brush, litter, grass and all other flammable debris for a radius of 50 feet. Caretaker dwelling units subject to approval by County.
 - S. Prevention of Oil Spills – If Contractor maintains storage facilities or uses flammable or combustible liquids in the project area, Contractor will provide to the Fire Marshall an operational plan that addresses the use and appropriate measures which will address soil containment and clean-up. Pollutants such as fuels, lubricants and other harmful materials shall not be discharged on the ground.
 - T. Contractor, at its sole expense, shall immediately take action to contain and clean up all potentially hazardous spills in the performance of this Contract which are caused by Contractor's employees directly or indirectly as a result of subcontractor operations and shall immediately report to County and all applicable agencies.

Contractor will be held liable for all damages and costs of additional labor, equipment, supplies, and transportation deemed necessary by the County for the containments and cleanup of potentially hazardous spills caused by Contractor's employees or resulting from subcontractor operations.

- U. Control of Sources of Ignition – When Contractor uses any process that requires an ignition source, Contractor must provide a plan outlining the process and prior approval must be granted by the Fire Marshall before any ignition source is used within the project area. Areas where welding, cutting, burning, or grinding is occurring are to be shielded to prevent flying sparks and debris. Fires shall not be built on the premises.
- V. Communications – The Contractor's communication system shall provide prompt and reliable communications between Contractor's crews. Owner shall be able to communicate with Contractor 24/7; Contractor shall be responsive to phone calls and return calls within fifteen (15) minutes.
- W. Contractor shall conduct all activities associated with this project in such a manner that there will not be any adverse impact to archeological sites, trails, identified natural features, fences, gates and private property.
- X. Contractor shall be responsible for all damage to property and to persons, including third parties that occur as a result of its or its agents or employees or subcontractor or subcontractor's employees' fault or negligence.
- Y. Contractor shall cooperate with the owner of all utilities in removal and or rearrangement operations in order that these operations may progress in a reasonable manner and services shall not be unnecessarily interrupted.
- Z. In the event of interruption to utility services because of accidental breakage or as a result of lines being exposed or unsupported, Contractor shall promptly notify Project Manager and owner of the utility and shall cooperate with owner in the restoration of services. If utility services are interrupted, cooperation shall be required until service is restored.
- AA. Contractor shall protect all streets, private roads, and sidewalks, and shall make all necessary repairs for damage incurred during course of the work at Contractor's own expense.
- BB. Contractor shall provide proper protection of all furnishings and fixtures likely to be damaged. When exterior openings are made, they shall be covered with weather tight protection at the end of the day's work.
- CC. Contractor shall take suitable precautions to protect existing trees, shrubs, and other natural vegetation and fences during construction. The Contractor shall restore the area to permit re-vegetation of the area. This includes restoring the area to pre-existing contours, reducing soil compaction by scarification, and mitigating for the effects of runoff. Any fences that need to be removed must be placed or dealt with as specified in Contract Documents. Contractor shall reseed disturbed areas in accordance with NMDOT Specifications or as specified in the Contract Documents.
- DD. The County will allow Contractor metered usage of water required for construction, to the extent of existing facilities. The Contractor shall obtain a water meter from the

- Los Alamos County Department of Public Utilities (DPU). Payment to the Utilities Department for the quantity of water used at the prevailing rate will be due before final acceptance of the project. A deposit for the water meter is required by DPU.
- EE. Contractor shall remove all snow and ice as may be required for the proper protection and performance of the Work and access to job site. Snow and ice shall also be removed by the Contractor from active work zones open to the public.
 - FF. Contractor shall provide all shoring, bracing, and sheathing as required for safety and for proper execution of the work and have some removed when work is completed.
 - GG. Contractor shall provide installation and maintenance of necessary precautions to protect all personnel on the site, including members of the general public from injury or harm, including but not limited to posting of appropriate warning signs in hazardous areas.
 - HH. Contractor shall at all times provide protection against weather (rain, wind, storms, frost, floods or heat) so as to maintain all Work, materials, apparatus, private property and fixtures free from injury or damage. At the end of the day's work, all new Work likely to be damaged shall be protected.
 - II. During cold weather, Contractor shall protect all work from damage. If low temperatures make it impossible to continue operations safely in spite of cold weather precautions, Contractor shall cease work and so notify County.
 - JJ. Contractor may, as part of its work, provide and erect one sign with a minimum size of 2' x 2' with a maximum size of 4' x 8', with the Contractor's name, license number, address and telephone number and locate sign as approved by the County. No other sign or advertisement shall be displayed by the Contractor unless requested or approved by the County.

3.2.19 Engineer's Authority

The Engineer or the Engineer's designated representative may:

- A. Recommend, disapprove, or reject Work which Engineer believes to be defective or will not produce a completed Project that conforms to the Technical Specifications and Contract Drawings or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Technical Specifications and Contract Drawings or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Technical Specifications and Contract Drawings require special inspection or testing of the Work, whether or not the Work is fabricated, installed or completed.
- B. The Engineer or representative may be on site during construction and determine if the Work is proceeding in accordance with Technical Specifications and Contract Drawings. Duties and responsibilities of Engineer may be modified by County as needed.
- C. Inspections may be made at the factory or fabrication plant of the source of material supply.

- D. The Engineer will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.
- E. As requested by County or Contractor, Engineer will issue to both County and Contractor with reasonable promptness written clarifications or interpretations of the requirements of the Technical Specification and Contract Drawings (in the form of Drawings or otherwise), which shall be consistent with intent of and reasonably inferable from Technical Specifications and Contract Drawings.
- F. Engineer may authorize minor variations in the Work from the requirements of the Technical Specifications and Contract Drawings which do not involve an adjustment in the Contract Price or the Contract Time and are compatible with the design concept of the completed Project as a functioning whole as indicated by a Field Order and will be binding on the County and also on Contractor who shall perform the Work involved promptly.
- G. Engineer will review and approve Shop Drawings, Samples, and submittals in accordance with the schedule of submittals accepted by Engineer. Engineer's review and approval will only be to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Technical Specifications and Contract Drawings and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Technical Specifications and Contract Drawings. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, unless explicitly specified or related to applicable safety precautions or programs. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. Contractor shall make corrections required by the Engineer and shall return the required number of corrected copies of the Shop Drawings and submit as required new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.
- H. Engineer may assure the quality of work through independent testing. Engineer shall provide test results to the Contractor and copy the Project Manager.

3.2.20 Duties, Responsibilities and Limitations

Duties, responsibilities, and limitations of authority of the Resident Project Representative ("RPR").

- A. General – RPR is the Engineer's representative at the site and will act as directed by and under the supervision of Engineer and will confer with Engineer regarding RPR's actions. RPR's dealings in matters pertaining to the on-site work shall in general be with Engineer and Contractor keeping County advised as necessary. RPR's dealings with subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with County with the knowledge of and under the direction of Engineer.
- B. Schedules – Review the progress schedule, schedule of submittals and schedule of values prepared by Contractor and consult with Engineer concerning acceptability.

- C. Conferences and Meetings – Attend meetings with Contractor, such as pre-construction conferences, progress meetings, job conferences and other project related meetings and prepare and circulate copies of meeting minutes.
- D. Liaison – Serve as Engineer’s liaison with Contractor, working principally through Contractor’s Superintendent and assist in understanding the intent of the Technical Specifications and Contract Drawings and assist Engineer in serving as County’s liaison with Contractor when Contractor’s operations affect County’s on-site operations.
- E. Assist in obtaining from County additional details or information when required for proper execution of the Work.
- F. Advise Engineer and Contractor of the commencement of any Work requiring a Shop Drawing or Sample, if the submittal has not been approved by Engineer.

3.2.21 Engineer’s Review of Work, Rejection of Work, Inspections, and Tests

- A. Verify that tests, equipment and systems startups, operating and maintenance training are conducted in the presence of appropriate personnel and that Contractor maintains adequate record thereof, record and report to County appropriate details relative to the test procedures and startups.
- B. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project; record the results of these inspections and report to County.
- C. Modifications – Consider and evaluate Contractor’s suggestions for modification in Drawings or Specifications and report with RPR’s recommendations to County. Transmit to Contractor decisions as issued by County.

3.2.22 Limitations of Authority

Resident Project Representative shall not:

Authorize any deviation from the Technical Specifications and Contract Drawings or substitution of materials or equipment, unless authorized by County and approved by County.

- A. Exceed limitations of Engineer’s authority as set forth in the Contract Documents.
- B. Undertake any of the responsibilities of Contractor, subcontractors or Contractor’s Superintendent.
- C. Advise on or issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction unless such advice or directions are specifically required in the Technical Specifications and Contract Drawings.
- D. Advise on or issue directions regarding, or assume control over safety precautions and programs in connection with the Work.
- E. Accept Shop Drawings or sample submittals from anyone other than Contractor.
- F. Shall not authorize County to occupy the Project in whole or in part.
- G. Participate in specialized field or laboratory tests or inspections conducted by others except as specifically authorized by County.

3.2.23 Land and Right-of-Way

- A. The County shall provide to the Contractor information which delineates and describes the land owned and rights-of-way acquired.
- B. The Contractor may provide at the Contractor's own expense and without liability to the County any additional land and access thereto that the Contractor may desire for temporary construction facilities or for storage of materials.

3.2.24 Warranty/Guaranty

- A. The Contractor shall guarantee all materials and equipment furnished and Work performed for a period of one (1) year from the date established as Final Completion or as specified in the Technical Specifications. The Contractor warrants and guarantees for a period of one (1) year from the date of Final Completion that the completed Work is free from all defects due to faulty materials or workmanship and the Contractor shall promptly make such corrections as may be necessary by reason of such defects, including the repairs of any damage to other parts of the system resulting from such defects. The Contractor shall pay for any and all costs associated with correcting these defects, including but not limited to shipping, travel, labor and parts to repair and or replace the Work. The County will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments or other Work that may be made necessary by such defects, the County may do so and charge the Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect through this one (1) year warranty/guarantee period.
- B. All materials shall be of good quality and new. All warranties and guarantees specifically called for by the Specifications shall be provided in writing and expressly run to the benefit of County.
- C. Where defective Work (and damage to other Work) has been corrected, removed or replaced, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- D. All representations, indemnifications, warranties, and guarantees made in, required by or given in accordance with the Contract documents, as well as all continuing obligations indicated in the Contract documents, will survive the final payment, completion and acceptance of the Work and termination or completion of the Agreement.
- E. The Contract shall cover defects which shall be in existence during such two-year period, but which shall not become apparent until thereafter.
- F. Contractor shall be fully responsible for all direct, indirect and consequential costs to the County approximately caused by such defects in materials or workmanship including defects in materials or workmanship supplied to the Contractor by a subcontractor or supplier. Contractor shall also hold the County harmless from liability of any kind arising from damage due to said defects.

- G. Contractor shall make all repairs and replacements or payments promptly upon receipt of written order from the County. If Contractor fails to make the repairs, replacements or payments promptly, County may do the work and Contractor and the Contractor's Surety shall be liable for cost thereof, including but not limited to, fees and charges for engineers, architects, attorneys and other professionals.
- H. County will schedule an inspection eleven (11) months after the Final Completion date, providing Contractor with a minimum of one (1) week notice unless the County and Contractor mutually agree to other arrangements. Owner will contact Contractor to report and schedule any further warranty work as provided herein.

3.2.25 Miscellaneous

- A. Taxes – Contractor shall be responsible for the payment of all applicable taxes, including but not limited to the State of New Mexico Gross Receipts Tax.
- B. Independent Contractor – The relationship of the Contractor to the County shall be that of an independent contractor. The Contractor and all employees and subcontractors of the Contractor, shall not be deemed agents or employees of the County. This agreement shall not be construed as a joint venture or partnership between the parties hereto. Nothing in this Agreement burdens the County with the duties of an employer concerning Contractor or any employee or subcontractor of the Contractor, under any state workers' compensation laws, any state or federal occupational health and safety laws or any other state or federal laws.
- C. Contractor's Authority – Contractor shall not enter into any agreement with any person which binds or is intending to bind County to any duty or obligation unless the County has given Contractor prior written consent to represent the County in such matter. Nor shall Contractor make representations to any person which indicate that Contractor is acting on behalf of the County without the County's prior written consent.
- D. Contractor its agents or employees shall make no representation that they are County employees, nor shall they create the appearance of being employees by using a job or position title on a name plate, business cards or in any other manner bearing County's name or logo.

3.2.26 Dispute Resolution, Applicable Law, and Venue

- A. Arbitration – This agreement is not subject to arbitration.
- B. Dispute Resolution Procedure – The Contractor shall submit in writing to the Purchasing Agent, any claim unresolved by the County concerning performance by the parties, in accordance with Los Alamos County Procurement Code, Section 31-232 – Contract Claims. Contractor shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with County. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as County and Contractor may otherwise agree in writing.
- C. Applicable Law, Venue – Contractor and County agree that the laws of New Mexico and County Ordinances shall govern any dispute or claim arising from the Contract or the rights, duties and obligations created therein. Contractor and County further

agree that all court actions shall be filed and pursued in New Mexico courts, unless the parties mutually agree to a different forum. Venue shall be in the First Judicial Court of New Mexico, Los Alamos, New Mexico.

- D. If the surety on any Bond furnished by the Contractor is declared as bankrupt or becomes insolvent or its right to do business is terminated in New Mexico or it ceases to meet the requirement in Los Alamos Ordinances, Contractor shall within 10 calendar days thereafter substitute another Bond and surety, both of which must be acceptable to County.
- E. When any period of time is referred to in the Contract documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of such period falls on a Saturday or Sunday or on a day made a legal holiday by Los Alamos County, such day will be omitted from the computation. A calendar day of twenty-four hours measured from midnight to the next midnight will constitute a day.

3.2.27 Examination of Records Provisions

- A. The Contractor agrees that the County, and any authorized representative of the County, shall, until the expiration of six (6) years after acceptance of final payment of the Contract Price, have access to and the right to examine any directly pertinent books, documents, papers and records of the Contractor involving transactions relating to this Contract.

3.2.28 American with Disabilities Act Compliance

The Contractor will comply with all relevant provisions of the Americans with Disabilities Act, as well as with the New Mexico Human Rights Act, and all other applicable local, state, and federal laws governing the rights of the disabled.

3.2.29 Bids and Proposals are Public Records

Pursuant to the New Mexico Inspection of Public Records Act NMSA- 1978, Chapter 14, Article 2, all materials submitted under this IFB shall be presumed and considered public records. Except to the extent any information may be protected by state or federal law, bids shall be considered public documents and available for review by the public.

3.2.30 Wage Rate Determination

- A. Issuance of the following wage rate determination is done pursuant to Section 13-4-11 N.M.S.A. 1978, as amended, or such successor statute and with duly adopted rules and regulations properly registered with the Supreme Court, as required by law, and other statutes pertaining to public works in New Mexico.
- B. Each certified payroll shall have the correct Wage Rate Decision Number printed clearly on the first page. The Contractor and all Subcontractors shall also submit certified payrolls. Prior to the issuance of a Certificate of Payment, the Contractor shall determine that a certified payroll has been submitted to the State Labor Commission as provided for by State law and that all other provisions applicable to

and relating to the payment of wages to artisans, draftsmen, laborers has been abided by and that said payments have been made in accordance with established scales as furnished by the State Labor Commission for this particular contract.

3.3 ATTACHMENTS

3.3.1 License Agreement for Staging Area

3.3.2 Wage Rate Information

3.3.3 Geotechnical Report

3.3.4 Utility Test Hole Report

3.3.1 License Agreement for Staging Area

THIS LICENSE AGREEMENT (Agreement) is entered into by and between the **Incorporated County of Los Alamos (County)** and **Contractor, a New Mexico Corporation** to be effective for all purposes on _____.

A. PURPOSE

The purpose of this Agreement is to grant to CONTRACTOR the revocable privilege of using County properties (Properties), more specifically described herein, for staging areas to facilitate CONTRACTOR'S work on **Los Alamos County Project No. IFB24-40 DP Road Phase II Reconstruction Project**. The County's grant of this revocable privilege shall satisfy County's obligation to provide CONTRACTOR with staging areas under the above-identified Project.

B. TERM

This Agreement shall commence on _____ and shall continue until CONTRACTOR'S work under the above-referenced Project is substantially complete, unless sooner terminated as provided herein.

C. USE OF THE PREMISES

County grants to CONTRACTOR the use of the property described herein for staging area to include the storage of Project related materials, and the storage of Project related equipment, and for no other purpose.

D. GENERAL REQUIREMENTS APPLICABLE TO ALL PROPERTIES

The following requirements are applicable to all Properties unless specifically addressed or modified in Section E. Specific Properties herein: CONTRACTOR shall:

1. Provide properly anchored portable toilets sufficient in number to accommodate all waste generated within the Property. Locate portable toilets as far as possible away from residential/Commercial development and provide for their regular and routine maintenance and servicing;
2. Erect a six (6) foot chain fence along all boundaries of the Property unless one exists;
3. Provide covered trash receptacles sufficient in number to accommodate all refuse generated within the property and provide for their regular and routine maintenance and servicing;
4. May provide sufficient lighting necessary for security and safety of persons, material, and equipment as well as for the security and safety of the public. Such lighting shall be down directed and produce no glare and conform to the New Mexico Dark Sky Act;
5. Provide and maintain a protective buffer between staging activities and nearby water courses;
6. Provide Good housekeeping measures as outlined in the Storm Water Pollution Prevention Plan (SWPPP) that will be adhered to at all times;
7. Provide any applicable utility hook-ups at contractor's coordination and expense;
8. Provide storm water pollution protection and management at contractor's expense;
9. Ensure staging area boundaries do not encroach onto other properties or open space.

E. SPECIFIC PROPERTIES

The following specific Properties, including specific uses or limitations to such use, are designated as staging areas for use by CONTRACTOR in conformity with the contract documents and this License.

STAGING AREA: Approximately 15,000sq/ft of Tract A-16 Parcel

(Contractor accepts to use area by initialing: _____)

Site-specific requirements are as follows:

1. Weather resistant Information Board for posting required information such as prevailing wage rates, Need to Know information, Notice of Intent, Safety Info, etc.;
2. Fuel storage tank is **not** permitted;
3. Mobile fueling/service truck shall be parked (when not in used) at secured location away from tree line;
4. Mobile fueling/service truck may fuel equipment within a suitable clearing, at least 50 ft. away from the tree line;
5. Heavy equipment storage is permitted;
6. Limited Repair of vehicles and equipment is permitted as per SWPPP;
7. Clearing and grubbing is **not** permitted;
8. Contractor shall not encroach into the tree canopy;
9. Grading only to extent necessity to efficient use of the property is permitted;
10. Contractor is responsible for providing additional security if deemed necessary by the Contractor.
11. Optional lighting to the extent that surrounding homes/businesses are not affected by glare is permitted; to be approved by Project Manager;
12. Limited storage space of traffic control devices and storage containers is permitted;
13. All material and equipment must be confined within the defined areas;
14. Temporary stock piling of excess dirt/soil, millings and aggregate is permitted in designated areas but shall be protected with best management practices (BMP's) as per the SWPPP;
15. At completion of the project, grade, sweep and clean all disturbed area at Contractor's expense;
16. Down slope sides of the area must have sediment control;
17. Contractor shall provide adequate dust control at proper frequencies within the staging area;

G. ASSIGNMENT

This License is not assignable.

H. RECORDS

CONTRACTOR shall maintain throughout the term of this License records necessary to demonstrate that all of the terms and conditions of the License have been met, including but not limited to records relating to any necessary licenses, permits, and other "authorizations" and compliance with any and rules, regulations, requirements or guidelines applicable to CONTRACTOR'S use of the Properties. CONTRACTOR shall make available for inspection by County all records, books of account, memoranda and other documents pertaining to County immediately upon request of County.

I. STRUCTURES, IMPROVEMENTS, ALTERATIONS OR ADDITIONS

Except as specifically permitted or required herein, no structures, improvements, alterations or additions shall be permitted on the Properties without the prior written authorization of County. CONTRACTOR shall maintain and leave the Properties in a clean condition, free of debris and litter, and restored to their prior condition or as close thereto as is reasonably practicable.

J. LIABILITY

County shall not be liable for any cost of expense or any kind or nature with respect to this License or CONTRACTOR'S use of the Properties, CONTRACTOR shall promptly pay all costs and expenses associated with CONTRACTOR'S use of the Properties including, without limitation, the cost of utility services and fencing. CONTRACTOR shall assure; and provide evidence to County that the insurance maintained by CONTRACTOR under its Contract the performance of work **IFB24-40 DP Road Phase II Reconstruction Project** is applicable to and will cover losses resulting from the use of the Properties. CONTRACTOR agrees to indemnify, defend, and hold County harmless from any liability, damage, loss, injury, cause of action, and costs and expenses (including attorneys' fees), of any kind or nature, arising from or in any way related to the use of the Properties, including but not limited to, any liability, damage, loss, injury, cause of action, or costs and expenses (including attorneys' fees) arising from or in any way related to any actual, threatened or alleged disposal, release, or contamination by hazardous substances of the Properties by CONTRACTOR its employees, subcontractors and agents. CONTRACTOR'S obligations under this Section shall survive the expiration or termination of the License.

K. SAFETY

CONTRACTOR shall assure that all of its operations conducted on the Properties are performed in a safe manner.

L. COUNTY ACCESS TO PROPERTIES

County and its designated representatives shall have access to the Properties at all times. CONTRACTOR shall notify County immediately of any situation that may arise on the Properties that may cause damage or harm to the health, welfare or safety of the public or to the environment and property of County and shall fully cooperate with County in addressing any such situation.

M. APPLICABLE LAWS

CONTRACTOR shall comply with all federal, state, and local laws, regulations, ordinances and, other legal requirements applicable to CONTRACTOR'S use of and activities on the Properties. This License shall be construed and enforced according to the Laws of the State of New Mexico.

N. CANCELLATION AND VACATION OF THE PROPERTIES

County may, at its sole discretion immediately cancel this License or any part hereof at any time with or without cause and no further use shall be made of the Properties by CONTRACTOR. Failure of County to fully enforce any and all provisions of this License shall not constitute a waiver of any future breach of any such terms or provisions. Upon expiration or cancellation of this License, the CONTRACTOR shall remove within seven (7) days all equipment, tools, vehicles, and any other property belonging to the CONTRACTOR from the Properties and shall leave the Properties in clean condition, free of debris and litter and restored to its prior condition or as close thereto as reasonably practicable.

ATTEST:

INCORPORATED COUNTY OF LOS ALAMOS

Naomi D. Maestas
County Clerk

Steven Lynne
County Manager

Approved as to Form

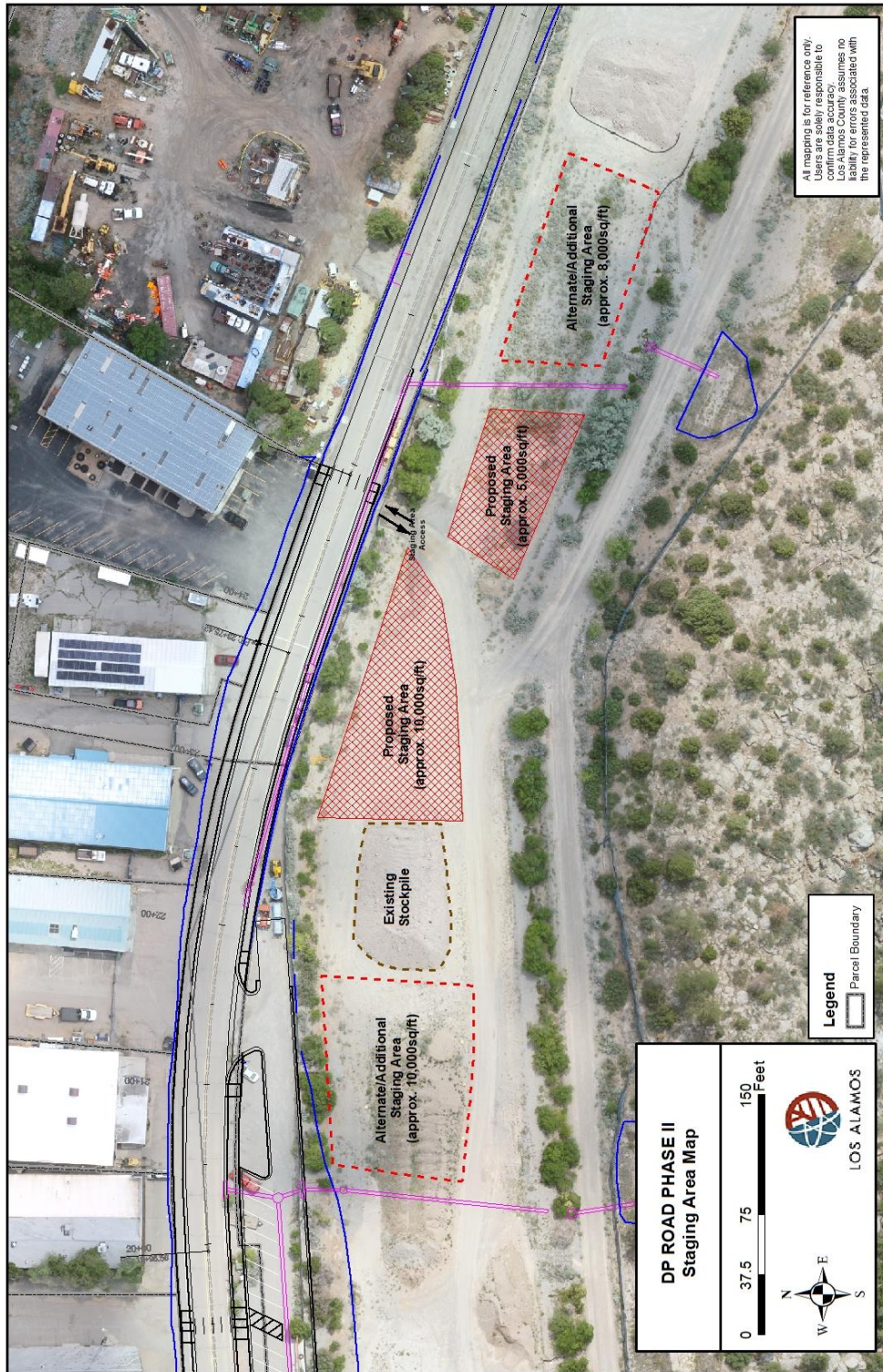
J. Alvin Leaphart
County Attorney

Contractor

Title

Date

STAGING AREA GRAPHIC



3.3.2 Wage Rate Information



LABOR RELATIONS DIVISION

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

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

WWW.DWS.STATE.NM.US

Wage Decision Approval Summary

1) Project Title: DP Road Phase II
Requested Date: 01/24/2024
Approved Date: 01/24/2024
Approved Wage Decision Number: LA-24-0327-A

Wage Decision Expiration Date for Bids: 05/23/2024

2) Physical Location of Jobsite for Project:
Job Site Address: DP Road
Job Site City: Los Alamos
Job Site County: Los Alamos

3) Contracting Agency Name (Department or Bureau): Los Alamos County
Contracting Agency Contact's Name: Karen Henderson
Contracting Agency Contact's Phone: (505) 863-1856 Ext.

4) Estimated Contract Award Date: 03/26/2024

5) Estimated total project cost: \$8,000,000.00
a. Are any federal funds involved?: No
b. Does this project involve a building?: No
c. Is this part of a larger plan for construction on or appurtenant to the property that is subject to this project?: No
d. Are there any other Public Works Wage Decisions related to this project?: No
e. What is the ultimate purpose or functional use of the construction once it is completed?: Reconstruction of existing Utilities and Roadway to support existing and future developments

6) Classifications of Construction:

Classification Type and Cost Total	Description
<p>Highway/Utilities (A) Cost: \$8,000,000.00</p>	<p>Roadway infrastructure and drainage improvements to include removal of existing asphalt surfaces and base material. Re-compaction of subgrade and base material and installation of new asphalt surface. Construction of driveways, sidewalks, curb ramps, and curb and gutters will be completed. Existing streetlighting will be relocated and upgraded with new conduit, arms and fixtures. New storm drain installation to include drop inlets, manholes, median drop inlets, and pond infrastructure. (Roadway Reconstruction: Approx. 2450 feet).</p> <p>Utilities infrastructure includes installation of an 8-inch force main sewer line. New lift station and sewer manholes. Replacement of the water (12-inch) and HDPE gas lines (4-inch). Reconnection of services to adjacent properties. Install conduit for electrical power, County fiber, Century Link/Lumen and Comcast.</p>



TYPE “A” – STREET, HIGHWAY, UTILITY & LIGHT ENGINEERING

Effective January 1, 2024

Trade Classification	Base Rate	Fringe Rate
Bricklayer/Block layer/Stonemason	27.03	10.99
Bricklayer/ Block layer/Stonemason – Curry, DeBaca, Quay and Roosevelt counties	23.10	8.89
Bricklayer/ Block layer/Stonemason – Dona Ana, Otero, Eddie, and Lea counties	29.56	14.10
Carpenter/Lather	29.11	12.79
Carpenter- Los Alamos county	33.18	13.58
Cement Mason	19.34	7.41
Drywall Finisher/Taper	26.40	8.86
Glazier/Fabricator	21.75	7.10
Ironworker Journeyman	28.49	18.71
Probationary Ironworker	22.79	18.71
Painter- Commercial	21.00	5.75
Paper Hanger	21.00	5.75
Plumber/Pipefitter	40.74	15.90
Electricians- Outside Classifications: Zone 1		
Ground man	26.32	12.79
Equipment Operator	37.76	17.13
Lineman	47.70	19.92
Journeyman technician	44.42	19.10
Cable Splicer	48.87	20.22
Electricians-Outside Classifications: Zone 2		
Ground man	26.32	12.79
Equipment Operator	37.76	17.13
Lineman	47.70	19.92
Journeyman technician	44.42	19.10

Cable Splicer	48.87	20.22
Electricians-Outside Classifications: Los Alamos county		
Ground man	27.07	12.81
Equipment Operator	38.85	17.17
Lineman/technician	48.95	20.24
Journeyman technician	45.70	19.42
Cable Splicer	53.75	21.44
Laborers		
Group I – unskilled	16.60	7.30
Group II – semiskilled	17.60	7.30
Group III – skilled	18.10	7.30
Group IV – specialty	18.60	7.30
Operators		
Group I	22.42	6.79
Group II	23.50	6.79
Group III	23.61	6.79
Group IV	24.09	6.79
Group V	24.21	6.79
Group VI	24.43	6.79
Group VII	24.62	6.79
Group VIII	25.33	6.79
Group IX	33.56	6.79
Group X	37.43	6.79
Soft Floor Layers	21.00	9.20
Truck Drivers		
Group I-IX	19.75	9.15

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

For more information about the Subsistence, Zone, and Incentive Pay rates, or to file a wage claim, contact the Labor Relations Division at (505) 841-4400 or visit us online at www.dws.state.nm.us.



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

WWW.DWS.STATE.NM.US

PUBLIC WORKS PROJECT REQUIREMENTS

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

Contracting Agency

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

General Contractor

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



LABOR RELATIONS DIVISION

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

WWW.DWS.STATE.NM.US

Subcontractor

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

Additional Information

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

CONTACT INFORMATION

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

3.3.3 Geotechnical Report

REPORT

**GEOTECHNICAL EVALUATION
DP ROAD PHASE II -
ROADWAY AND UTILITY
INFRASTRUCTURE PROJECT
LOS ALAMOS, NEW MEXICO
NORTHGES PROJECT NO.: 2017-07-07
REVISION 0**

March 17, 2021

PREPARED FOR:

**Wilson & Company, Inc.
Albuquerque, New Mexico**

PREPARED BY:

**NORTH GEOENGINEERING SERVICES, LLC
ALBUQUERQUE, NEW MEXICO**

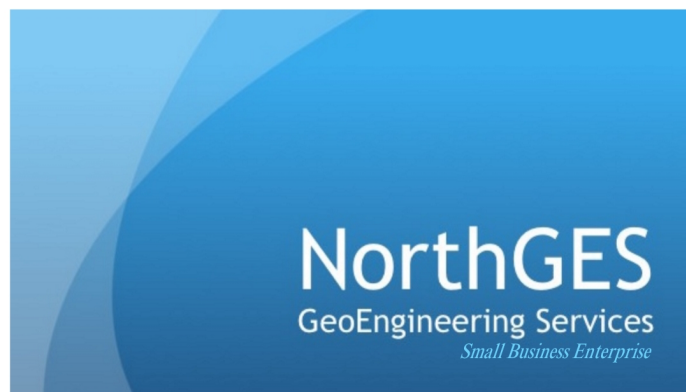




Table of Contents

- 1.0 INTRODUCTION2**
 - 1.1 Project Description.....2**
 - 1.2 Scope of Services2**
- 2.0 SITE INVESTIGATION3**
 - 2.1 Surface Reconnaissance - Site Description3**
 - 2.2 Subsurface Characterization - Subsurface Conditions4**
 - 2.2.1 Coring4
 - 2.2.2 DCP Probes.....5
 - 2.2.3 Hand Auger Borings.....6
 - 2.2.4 Laboratory Testing.....7
 - 2.2.5 Project Site Photos7
- 3.0 GEOLOGY8**
- 4.0 EVALUATION AND DISCUSSION OF RESULTS8**
 - 4.1.1 Pavement.....8**
 - 4.1.2 Excavation.....10**
- 5.0 CONCLUSIONS AND RECOMMENDATIONS11**
 - 5.1 General.....11**
 - 5.2 Earthwork.....11**
 - 5.2.1 Site Clearing and Stripping.....12
 - 5.2.2 Excavations.....12
 - 5.2.3 Subgrade Preparation.....14
 - 5.2.4 Material for Fill.....14
 - 5.2.5 Fill Placement and Compaction.....15
 - 5.2.6 Surface Drainage.....15
 - 5.2.7 Construction in Wet or Cold Weather16
 - 5.2.8 Construction Testing and Observation16
 - 5.3 Pavement.....16**
 - 5.3.1 Section Design16
 - 5.3.2 Material Properties.....18
- 6.0 CLOSURE.....19**
 - 6.1 Limitations19**
 - 6.2 Additional Services.....19**
- FIGURES21**
- APPENDICES.....26**
 - Appendix A – Dynamic Cone Penetrometer Probes.....27**
 - Appendix B – Subsurface Characterization (Hand Auger Borings).....32**
 - Appendix C – Laboratory Testing.....38**

1.0 INTRODUCTION

This report presents the results of the geotechnical evaluation for the proposed DP Road Phase II – Roadway and Utility Infrastructure Project performed by North GeoEngineering Services, LLC (NorthGES). The work presented herein was performed by NorthGES as a subconsultant to Wilson & Company, Inc. (Client) who are the Designer of Record for the subject project and who are contracted directly by the Los Alamos County Public Works Department (County).

The conclusions and recommendations presented in this report are based on the subsurface conditions found at the locations of our investigation at the time our field exploration was performed, and they are subject to the provisions stated in Section 6.1, “Limitations” of this report. Our findings, conclusions, and recommendations presented in this report should not be extrapolated to adjacent sites or used for other projects without written permission from NorthGES.

1.1 Project Description

The project consists of roadway and utility infrastructure improvements of DP Road beginning at about 135 DP Road (just west of the fire station) and extending east for about ½ mile to the gated entrance to Technical Area 21 (TA-21). The project location is shown on Figure 1, Site Vicinity Map. Existing private commercial and industrial tenants are located along approximately half the length of the north side of this segment of DP Road. The Los Alamos Public Schools owns the parcels along the second half of the north side of DP Road which is informally developed as storage yards for construction and landscaping companies. Vacant County owned land (approximately 30 acres of developable land), that is currently slated to be marketed for Industrial/Commercial uses, lines the south side of DP Road the full length of the project. An area adjacent to the south side of DP Road, approximately 1,000 feet in length, currently provides approximately 70 angled parking spaces accessed from a one-way gravel roadway behind the spaces. Based on the existing conditions, the County plans to use a gravity feed sewer line from the fire station to the east end of DP road and then have a lift station raise the sewage back up over the top of the high point and then gravity feed down to the NM502/Trinity Drive Intersection. This is planned by the County in order to minimize the depth of trench excavation. Final roadway grade is expected to be similar to existing roadway grade.

1.2 Scope of Services

The purpose of the geotechnical evaluation presented herein was to evaluate the existing subsurface conditions at the site and to provide geotechnical recommendations pertaining to the earthwork and pavement aspects of the project. The scope of services performed for this evaluation was detailed in our proposal to the Client dated December 3, 2020. In summary, our scope of services consisted of the following:

- Subsurface characterization including the following:
 - Asphalt coring,
 - Dynamic Cone Penetrometer (DCP) probes,

- Hand auger borings that included sampling of subgrade materials, and
- Logging of borings,
- Laboratory testing of selected samples recovered,
- Engineering evaluation of field and laboratory data, and
- Preparation of this geotechnical report.

The data obtained, and evaluation performed were for the purpose of providing design and construction recommendations for the project related to the following:

- Site preparation and grading,
- Utility excavation, and
- Pavement section design.

Subsurface characterization and recommendations for the lift station were not part of the authorized scope of work and are not discussed herein. Environmental services such as chemical analysis of soil and groundwater were not included in our scope of work.

2.0 SITE INVESTIGATION

The site investigation consisted of a surface reconnaissance and subsurface characterization as described in the following subsections of this report.

2.1 Surface Reconnaissance - Site Description

During the site investigation NorthGES personnel performed a surface reconnaissance of the project alignment. As illustrated on the Figure 2, Investigation Location Plan, the point of beginning (POB) is at the east end of the currently active Phase I rehabilitation project which is about 150 feet west of the fire station on DP Road. The project extends about ½ mile east to the gated entrance to TA-21, the point of end (POE) of the project. At the time of the surface reconnaissance, the project alignment includes the following aspects:

- Existing DP Road is a two-lane asphalt paved road aligned approximately west east.
- The existing pavement is in fair to poor condition with abundant longitudinal and transverse cracks, pavement failures, patches, and ravelling over the entire project alignment.
- On the north side of the alignment there are existing brick and mortar business operations along about half of the entire length of the north side of the alignment and construction laydown yards for the remaining half of the alignment.
- On about half of the south side of the alignment there is a designated vehicle parking area.
- Both sides of the eastern half of the alignment are bordered by wire fencing.
- There were several underground utilities along both sides of the alignment including electric, water, and communication.
- Grades along the alignment drop gently from west to east.

Based on Google Earth Pro existing elevations along the project alignment range from about El 7230 (west) to 7180 (east). It’s important to note that the elevations indicated may be different than elevations determined from a professional site survey.

2.2 Subsurface Characterization - Subsurface Conditions

The process for characterizing the subsurface conditions along the subject alignment at each investigation location consisted of the following steps:

- 1) Coring of the existing asphalt concrete followed by removal of the basecourse,
- 2) Performing a Dynamic Cone Penetrometer (DCP) probe,
- 3) Drilling and logging a hand auger boring including sampling of subgrade materials, and
- 4) Backfilling the borehole with drill cuttings and later patching with asphalt the top 3-4 inches of the borehole to grade.

A total of four (4) investigation locations were performed along the subject alignment at the locations shown on Figure 2, Investigation Location Plan.

2.2.1 Coring

All four locations were first cored with a 6-inch diameter core barrel through the existing asphalt concrete. All asphalt cores were recovered; several of the cores (borings B-1 and B-2) included an overlay of about 1.5 inches underlain by one or two other variable thickness pieces. Cores from borings B-3 and B-4 were only about 2.5 to 3 inches thick and the core from boring B-3 included a vertical crack; the core from boring B-4 was intact. After coring, existing basecourse was removed from the core holes down to top of subgrade. The basecourse generally consisted of well-graded sandy gravel in borings B-1 thru B-3; in boring B-4, the base material consisted of a mixture of basecourse and subbase including sand gravel and gravelly sand. A summary of the thickness data from the coring is presented on the following Table 2-1:

Table 2-1: Asphalt Core and Basecourse Thickness Data

Boring	Asphalt Concrete (in.)	Basecourse (in.)	Total Section (in.)
B-1	5.5-6	4	9.5-10
B-2	6-7	7	13-14
B-3	2.5-3	6	8.5-9
B-4	2.5-3	14	16.5-17
Overall Avg. Thick.	4.4	7.75	12.2
Avg. Thick. B-1 thru B-2	6.1	5.5	
Avg. Thick. B-3 & B-4	2.75	10	

Photos of each of the cores are included on each of the boring logs presented in Appendix B.

2.2.2 DCP Probes

Dynamic Cone Penetrometer (DCP) probes were performed at each location following coring and removal of basecourse. Each DCP probe was performed inside the core hole beginning at the top of the exposed subgrade and extended to depths of 2.1 to 5.1 feet below the top of the existing ground (pavement) surface (BGS). The penetration and total depth of each DCP probe is summarized as indicated below in Table 2-2 and shown on the logs presented in Appendix A:

Table 2-2: DCP Penetration and Total Depth Data

DCP	Seating	Pen.	Total Penetration - Depth Below Top of Pavement		
			(mm)	(in.)	(ft.)
1	268	826	1094	43.1	3.6
2	410	957	1367	53.8	4.5
3	330	312	642	25.3	2.1
4	453	1115	1568	61.7	5.1

Table 2-2 presents the following:

- Seating – This is the beginning depth below the top of the pavement that the probe penetration measurements were recorded,
- Pen. – This is the total penetration depth below the seating depth that the probe penetration measurements were recorded,
- Total Penetration – This is the total depth that the probe penetrated below the top of the pavement.
- The limited depth in all but DCP-4 was due to refusal of the probe at that depth on Bandelier tuff.

The DCP probe is used to estimate *in-situ* subgrade stiffness, referred to as the DCP Index or PR Value. The PR Value, a measure of penetration in millimeters per hammer blow, can be used to estimate consistency (cohesive, fine-grained soils) or relative density (cohesionless, coarse-grained soils) as well as depth of refusal. The PR Value can also be correlated to the *in-situ* CBR value based on equations developed by the United States Army Corps of Engineers (USACE) approach for different soil types. The correlated *in-situ* CBR value is generally inversely proportional to the PR Value, thus higher PR Values suggest poorer subgrade conditions (lower CBR) than lower PR Values (higher CBR).

Since the DCP probe is advanced in a continuous process, the results were used to refine the layer types and contact depths encountered in the hand auger borings discussed in the following subsection of this report. However, as indicated previously, the DCP field test is performed *in-situ*, and is influenced by *in-situ* moisture content, consistency, relative density, as well as other factors. The correlated *in-situ* CBR value for cohesive soils (clays and silts), however, is highly dependent on the *in-situ* moisture content of the soil. When the *in-situ* moisture content of fine-grained soils is below the Plastic Limit (PL), the correlated CBR value will appear higher than if the soil were near, at, or above the PL. Therefore, these results may not represent the design

CBR of the subgrade which is based on standardized compaction and a soaked test sample to represent the worst-case condition of the subgrade during its service life.

Details of the DCP testing program are presented in Appendix A. Appendix A also presents the finished DCP logs for each DCP probe performed as well as the PR Value and statistical analysis of the PR Values as they relate to CBR and soil layer designation for all DCP probes performed for the project.

Some of the individual correlated *in-situ* CBR values shown on the DCP probe logs in Appendix A were higher and lower than the averages indicated on the logs. Those variations are likely because of sub-layering within one of the indicated layers (Layers 1 - 4), variation in moisture content, or because the DCP probe likely encountered stiffer interbedded layers that would have reduced the PR Value. Nonetheless, the DCP probe results provide some insight into the relative stiffnesses within and between each of the layers encountered as measured at the existing *in-situ* moisture content.

2.2.3 Hand Auger Borings

The hand auger borings were performed at the same location as the corresponding DCP probes and extended to depths of between 2'-0" to 4'-9" BGS. The materials encountered in the hand auger borings are summarized as indicated below in Table 2-3 and shown on the logs presented in Appendix B.

Table 2-3: Generalized Subsurface Conditions Encountered in the Hand Auger Borings

Layer #	Depth Range (BGS)	Description	Estimated Stiffness
1	9"-17" to 21"-56"	Silty Lean CLAY (CL-ML), Lean CLAY (CL), Clayey SAND (SC), and Silty SAND (SM) (Residual Soil or Possible Fill) (Note 1)	Mostly Firm but some Stiff and Medium Dense
2	21"-56" to (TD in all Borings)	Bandelier Tuff, Unit Qbt3U (Note 2)	Poorly to Moderately Welded

Notes:

- (1) Layer 1 generally consisted of Silty Lean CLAY (CL-ML) but also included layers of Lean CLAY (CL), Clayey SAND (SC), and Silty SAND (SM). Buried organics were observed in boring B-2 at a depth of about 22 to 30 inches. The Silty SAND in boring B-3 may be subbase material. Although no other foreign material was observed in any of the borings, Layer 1 could either be residual soil (weathered tuff) or possible fill. The majority of Layer 1 was relatively easy to drill with the hand auger; however, some more difficult drilling was encountered in the deeper sublayers of Layer 1. Based on lab testing discussed in the next subsection of this report, the soil in Layer 1 is classified using AASHTO Symbols A-4, and A-6.
- (2) Layer 2 was encountered at the bottom of each boring.

Table 2-3 above provides a general description of the subsurface conditions encountered in the hand auger borings performed for this geotechnical evaluation. Details of our approach and

methods to characterize the subsurface conditions, and the specific conditions encountered in each hand auger boring are presented in Appendix B. Photos of the asphalt cores collected as described in previous Section 2.2.1, Coring, are shown on the hand auger boring logs in Appendix B. The lines defining changes in material type shown on the hand auger boring logs are approximate and gradational. The material type boundaries indicated on the hand auger boring logs are based on the observations and interpretations made by the field engineer at the time of the subsurface characterization as well as on the results of laboratory testing. Variation in the actual subsurface conditions encountered at the time of construction is possible and should be anticipated.

No groundwater was encountered in the hand auger borings. If significant variations in the groundwater level are encountered during construction, it might be necessary for NorthGES to review the recommendations presented herein and recommend adjustments as necessary.

2.2.4 Laboratory Testing

Laboratory tests were performed on selected samples collected from the borings. The focus of the laboratory tests was on Layer 1 soils which were prevalent below the pavement basecourse layer in all four borings. One lab test was also performed on a sample of the mixture of basecourse and subbase from boring B-3. The complete set of laboratory test results are presented in Appendix C. The laboratory tests indicate the following:

- Layer 1:
 - Moisture Content (MC): total range of 11.2 to 18.8 percent (%), but generally between 11.2 and 15.3%.
 - Passing #200 Sieve (#200): 75 to 85%.
 - Plastic Limit (PL): 18 to 20.
 - Plasticity Index (PI): 5 to 13.
 - The measured MC was generally less than the PL indicating these soils were relatively dry, except in composite sample S-3, -4, and -5 in boring B-4 where the MC was essentially the same as the PL.
 - Based on lab testing these soils have AASHTO Symbols of A-4, and A-6.
- Base Mixture (Composite Sample S-1 & S-2 from Boring B-3)
 - MC: 5.4%.
 - #200: 12%.
 - PI: Non plastic.
 - Based on the lab testing this material has an AASHTO Symbol of A-1-a.

The laboratory test results are also provided on the boring logs presented in Appendix B.

2.2.5 Project Site Photos

Photos of the project site during the site evaluation are presented on Figure 3, Project Site Photos.

3.0 GEOLOGY

Geology along the alignment was evaluated based on review of two separate geologic maps including:

- “Geology of the North-Central to Northeastern Portion of Los Alamos National Laboratory, New Mexico,” by Lavine, A., et al., LA-14043-MS, dated June 2003, and
- “Geologic map of the Guaje Mountain Quadrangle, Los Alamos and Sandoval Counties, New Mexico,” by Kempter, K.A., Gardner, J., Levine, A., et al., NMBGMR OFGM 55, dated May 1998

Based on these two maps, the project alignment is underlain by fill or otherwise disturbed ground within and west of TA-21, which is underlain by Bandelier tuff consisting of the Unit 3 (**Qbt3**) as shown on Figure 4, Geology Map. **Qbt3** generally consists of poorly to moderately welded volcanic tuff with variable high-angle jointing. The thickness of the fill (disturbed ground) and thus depth to the top of the **Qbt3** is not described on either geologic map shown on Figure 4 and is assumed to be on the order of 3 to 6 feet below existing grade.

The geologic description from Figure 4 generally matches with the types of materials (some appearing as fill) encountered in the hand auger borings performed for this investigation.

4.0 EVALUATION AND DISCUSSION OF RESULTS

The results of the subsurface characterization indicate that there are two primary layers along the alignment. Discussion of the influence of these two layers as it relates to the proposed infrastructure improvements is provided in the following subsections.

4.1.1 Pavement


Evaluation of asphalt concrete pavement design parameters presented herein was based on the approach presented in the 1993 AASHTO Guide for Design of Pavement Structures (AASHTO Method) as well as on the New Mexico Department of Transportation (NMDOT) Infrastructure Design Directive Pavement Design Guideline, IDD-2008-05 (IDD). Using the accumulated laboratory test data, in particular the Atterberg limits determinations and the #200 sieve results, NorthGES classified the near surface subgrade soils (top 3 to 4 feet) into the respective USCS and AASHTO Symbols as noted on the boring logs presented in Appendix B. NorthGES also calculated the wPI values, where “ w ” is the #200 value in percentage and the PI is the plasticity index (PI) for that same sample. Lower values of wPI indicate stiffer (better) subgrade conditions than higher values. The Layer 1 soils classified as either A-4 or A-6, which are characterized by AASHTO as silt-clay mixtures that are considered fair to poor as subgrade.

NorthGES combined the laboratory results reported with published correlations developed by the NMDOT for 50% and 60% risk and based on the PI and AASHTO symbol data discussed previously. The suggested R-values on the table for 50% risk are less conservative and likely to perform more poorly than those on the table for 60% risk. Noting the poor condition of the existing pavement on this section of the alignment, NorthGES considered the more conservative

60% risk table. From this table NorthGES developed the correlated R-values for all Layer 1 soils that were encountered in the four borings drilled for the project. These results are shown below on Table 4-1:

Table 4-1: Correlated R-Values Based on Lab Data and NMDOT Correlations

Boring	Sample #	-200	PI	wPI	AASHTO	60% R-value
B-1	S1/S2	0.85	5	4	A-4	33
B-2	S1/S2	0.85	6	5	A-4	31
B-2	S3/S4	0.84	11	9	A-6	11
B-3	S2	0.75	13	10	A-6	11
B-4	S3/S4/S5	0.85	8	7	A-4	26
Average All						22.4
Std. Dev. All						10.7
Average A-4						30.0
Std. Dev. A-4						3.6
Average A-6						11
Std. Dev. A-6						0

 -200 value assumed based on other relevant tests

What is clear from the results presented in Table 4-1 above is that most of the correlated R-values are moderate to moderately low but that the A-4 soils have a higher average value than the A-6 soils which is consistent with the expectation for these types of soils. Considering that in most cases the A-6 soils are deeper in the soil profile than the A-4 soils, the A-6 soils have less influence on the pavement structural section performance. However, to be conservative, it is NorthGES’ opinion to use an R-value somewhere in the middle between the two different soil types. For the remaining analysis NorthGES has chosen to use an R-value of 20 for design.

The Structural Number (SN) used in the AASHTO Method is dependent on the quality of the subgrade and in particular is calculated based on the Subgrade Resilient Modulus (M_{RS}G). Other parameters used in the AASHTO Method include Reliability (R), Overall Standard Deviation (SD_O) for the pavement system, and Initial (S_i) and Terminal (S_t) Serviceability. A number of different correlations between M_{RS}G and R-value have been developed by different researchers and yield a range of values. For this project NorthGES used two different sources including the internet-based calculator from the American Concrete Pavement Association (ACPA) and the equation used by the City of Albuquerque (COA) indicated below:

$$M_{RS}G = 2175.6 \times e^{(0.0346 \times R)} \text{ (pounds per square inch – psi)}$$

Both sources produced similar results and indicate an M_{RS}G value of 4305 to 4346 psi for the design R-value of 20. Although some of the correlated R-values shown on Table 4-1 would produce higher M_{RS}G values, it is NorthGES’ opinion that a reasonably conservative M_{RS}G value of 4300 psi be used for design of the pavement for the subject project.

To calculate the SN, NorthGES used the program WinPAS12 developed by the ACPA and an M_{RS}G value 4300 psi. The choice of the other parameters above was based on the suggested values indicated either in the IDD or in the supporting documents to the AASHTO Method. For this project NorthGES used the following values:



- R = 80%
- SD_o = 0.45
- S_i = 4.2
- S_t = 2.0

The minimum SN for any given pavement is a function of the M_{RSG} and the expected vehicle loading over the design life of the project as defined by the number of Equivalent Single Axle Loads (ESALs). Traffic loading for the existing and projected design life period (20 years) was not available at the time this report was prepared. However, NorthGES developed SN values for a range of ESAL values for a 20-year design life. Once the Client or County determines the design ESAL for the alignment, the SN value can be estimated and used to develop design thickness values for the pavement structural section including AC and BC.

As indicated previously in Section 2.0 and as presented on the DCP probe logs in Appendix A and the boring logs in Appendix B, the subgrade soils were generally considered firm and relatively easy to hand auger at shallower depths. Based on these observations, the top 2 feet of soil at most boring locations is considered slightly to moderately weak, and not sufficiently compact. These soils if left in an unimproved condition may lead to lower-than-expected performance of the completed pavement section. To improve the performance of the completed pavement section, consideration should be given to reworking these surface soils prior to construction of the final pavement section.

4.1.2 Excavation

The Layer 2 materials consisted of unit Qbt3_U of the Bandelier Tuff. The volcanic tuff encountered in the borings is considered to be poorly to moderately welded and, based on experience with this material at other locations in Los Alamos, will exhibit random, variably spaced, and typically high angle joints (45 to 90 degrees above horizontal). The depth of excavation for the proposed underground utilities was not available to NorthGES at the time this report was prepared. Excavation of the volcanic tuff to nominal depths of 5 to 10 feet BGS should be possible with heavy equipment such as a large excavator equipped with “tiger” teeth or a properly equipped trenching machine. However, more resistant blocks, with fewer joints are possible that may require the use of a hoe ram.

Excavation stability will need to be considered by the contractor and the surface soils (Layer 1) will have to be supported or sloped back in accordance with OSHA requirements. Excavation stability of the volcanic tuff (Layer 2) will have to be evaluated based on the actual field conditions by a competent geotechnical engineer or engineering geologist at the time of construction.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 General

Based upon the data collected from the field and laboratory testing, and from our geotechnical engineering evaluation, it is our opinion that the project may be developed as discussed in this report provided that the recommendations presented in this report are incorporated into the final design and construction of the project. These opinions, conclusions, and recommendations are based on our field and office studies, the properties of the subsurface materials encountered in our borings, the DCP probes, the results of laboratory testing program, our engineering evaluation of the collected data, and our understanding of the proposed project.

The primary consideration for project design is the Layer 1 soils encountered in the borings. Design of pavements underlain by these types of subgrade soils will result in a nominally thicker structural section. Also, because of the relatively low stiffness of these subgrade materials *in-situ* (estimated to be firm based on the relatively high PR Values), a properly designed pavement section thickness based only on ESAL and M_{RSG} and without regard to *in-situ* subgrade stiffness, may deteriorate more quickly and have a shorter service life than the planned design life. Therefore, as discussed in the Section 4.0, consideration should be given to improving these soils by reworking.

A secondary consideration is excavation of trenches into both the Layer 1 soils and Layer 2 tuff materials. The Contractor should be made aware of these conditions and be required to provide competent field engineering to evaluate, address, and mitigate the potential for trench wall instability.

Detailed geotechnical engineering recommendations are presented in the remaining portions of this report. The following opinions, conclusions, and recommendations are based on the properties of the soil and tuff encountered in our site evaluation and the results of the laboratory testing program. We recommend that NorthGES be retained to review the final construction plans and specifications. It has been our experience that this review provides an opportunity to detect misinterpretation or misunderstandings prior to issuing the final plans and specification, and the start of construction.

5.2 Earthwork

The following sections present recommendations relating to earthwork construction. Suitable support for pavements and performance of excavations within the subject project are contingent upon the implementation of the recommendations presented in this Section 4.2, Earthwork.

5.2.1 Site Clearing and Stripping

The project site should be cleared of all obstructions including but not limited to asphalt concrete and basecourse, designated existing utilities, debris, and other below grade obstacles encountered during this operation. Buried utilities to remain should be protected or relocated. Voids or holes in the subgrade resulting from the removal of unsuitable materials should be backfilled and compacted in accordance with the recommendations in this report.

5.2.2 Excavations

After the site has been cleared and stripped, required excavations should be performed. It is anticipated that excavations of as deep as 5 to 10 feet BGS will be required for the planned utilities. Based on these depths, planned excavations will penetrate through Layer 1 and into Layer 2 (Unit Qbt3) which consists of relatively soft rock. It is our opinion that both Layers can be excavated by mechanical means, although more resistant zones within Layer 2 may be encountered which could require specialized equipment such as a hoe-ram or ripper. Our comments on excavatability of Layer 2 are based on our experience with similar tuff formations in the general area and our examination of boring and surface samples recovered during our field exploration. Rock excavatability depends not only on rock hardness, weathering, and jointing frequency, but also the Contractor's equipment, capabilities, and experience.

NorthGES' recommendations for excavation support are intended for the Client's use in planning the project, and in no way relieve the Contractor of its responsibility to construct, support, and maintain safe excavations. Under no circumstances should the following recommendations be interpreted to mean that NorthGES is assuming responsibility for either construction site safety or the Contractor's activities.

NorthGES believes that Layer 1 on this site will classify as Type C materials using OSHA criteria. OSHA requires that unsupported cuts in Type C materials be laid back to ratios no steeper than 1.5H:1V (horizontal:vertical) for un-braced excavations up to 20 feet in height. We believe that these slope ratios will be temporarily stable under unsaturated conditions at this site. We believe the Layer 2 tuff material (Unit Qbt3) will classify as Stable Rock, which OSHA allows for near vertical unsupported cuts. A summary of these recommendations is presented in Table 5-1 below:

Table 5-1: Soil and Rock Excavation Slopes

Layer Number	Description	OSHA Soil/Rock Type Designation ⁽¹⁾	Maximum Allowable Slopes for Excavations Less Than 20 Feet Deep ⁽¹⁾
1	Surface Deposits of Silty Clay, Clay, Clayey Sand, and Silty Sand	Type C	1.5H to 1.0V
2	Volcanic Tuff (Unit Qbt3)	Stable Rock ⁽²⁾	Vertical ⁽²⁾

Notes:

- (1) From 29 CFR 1926 Subpart P, Appendix A.
- (2) Must be assessed for unfavorable jointing at the time of construction and may require flatter inclination associated with Type B soil/rock designation.

As noted in Table 5-1 above, the excavation conditions of Layer 2 (Unit Qbt3) must be assessed for unfavorable jointing and the potential for block or wedge failure into the excavation. The assessment must be performed by a competent geotechnical engineer or engineering geologist hired by the Contractor at the time of construction. As determined by the Contractor in the field it may be necessary to flatten the slope inclination of excavations made in Layer 2 (Unit Qbt3), remove potentially unstable rock blocks or wedges, or provide some type of support to the rock excavation including the use of rock anchors, straps, or netting.

Please note that an OSHA-qualified “competent person” retained by the contractor must make the actual determination of soil and rock type and allowable sloping in the field at the time of the excavation activities.

We recommend that temporary barriers controlling vehicle traffic should be positioned on the roadway such that the barriers are outside of the excavation based on a projected line sloping up from the adjacent toe of the excavation at a slope of 0.5H:1V or flatter. The actual position of the temporary barriers is the responsibility of the Contractor and should be evaluated by the Contractor’s geotechnical engineer with respect to the actual condition of the as-excavated volcanic tuff and the potential for wedge or block failure.

No groundwater was encountered at the time hand auger borings were drilled for this project. However, depending on the time of year earthwork is performed and seasonal precipitation, surface water and resulting drainage could cause subgrade to become wet and create difficult earthwork conditions. The Contractor is responsible for providing suitable control of surface water during excavation operations to remove free water and to provide a dry, stable subgrade on which to construct the proposed pavement and any other planned improvements. The type of surface water control will depend on the planned excavation depths and the amount of water

actually encountered during excavation operations. Surface water control could include temporary diversion structures and the use of localized sump pumping.

5.2.3 Subgrade Preparation

Based on the soils encountered in the hand auger borings it is our opinion that subgrade soils consist mostly of low stiffness silty clay and clayey sand soils (Layer 1). Depending on the planned scope of rehabilitation, NorthGES recommends that subgrade soils over the entire alignment be reworked through a process of overexcavation and recompaction as Roadway Embankment as described in the following section of this report. We recommend that consideration be given to reworking at least twelve (12) but preferably twenty-four (24) inches of existing subgrade soils to provide suitable subgrade support on which to construct the new pavement section.

After all clearing and recommended reworking excavation operations are complete, exposed subgrade soils in areas to receive fill material should be scarified to a minimum depth of 12 inches, moisture conditioned to between 1 to 2 percent above optimum moisture content, and compacted in accordance with the recommendations presented below under the Section entitled "Fill Placement and Compaction." Moisture conditioning of subgrade soils, as well as other materials for fill, consists of adjusting the water content of these soils either by the addition of water or by drying. Moist to wet native soils should be anticipated where they are located below existing pavements.

After scarifying of the exposed subgrade is complete, we recommend that prior to placement or compaction of any fill (including excavated soil as part of reworking) that the entire planned roadway prism be proof-rolled to confirm a firm, unyielding subgrade surface on which to place roadway embankment fill material (reworked soil and/or import fill). Proof-rolling should be carried out using a fully loaded, road-rated, tandem rear axle dump truck or a similar heavily-loaded rubber-tired vehicle. Where soft or yielding areas are identified, they should be excavated to competent subgrade and filled with properly placed and compacted fill material in accordance with the recommendations given below under Section, "Fill Placement and Compaction."

5.2.4 Material for Fill

Material for fill includes roadway embankment and aggregate basecourse. Based on the proposed pavement section planned, the material designations presented in Table below 5-2 apply:

Table 5-2: Material for Fill

Material Designation	Project Element
Roadway Embankment	Pavement Subgrade
Aggregate Basecourse	Pavement Structural Section

Soils encountered in the hand auger borings are mostly silty clay and clayey sand soils (Layer 1) that consist of AASHTO Symbol types A-4 and A-6 (majority of near-surface soils). Both soil types could be used as roadway embankment for pavements depending on design and construction documents prepared by the Client; however, these soils are sensitive to moisture content and may require moisture conditioning.

Aggregate basecourse should consist of material meeting the requirements of Section 303 of the New Mexico Department of Transportation 2019 Standard Specification for Type I Basecourse.

5.2.5 Fill Placement and Compaction

All fill material should be spread in layers not exceeding 8 inches in un-compacted thickness, moisture-conditioned, processed as necessary, and compacted. The material should be either moistened or dried and thoroughly mixed by reprocessing to the full depth of the lift to achieve the minimum compaction requirement. Density readings should be taken at the lift just prior to placing fill on the succeeding lift. NorthGES recommends that the various fill materials defined in the previous section be compacted to the requirements given in Table 5-3:

Table 5-3: Compaction Requirements

Material Designation	Based on ASTM D1557 (Modified Proctor)	
	Minimum Compaction Relative to Maximum Dry Density	As-Compacted Moisture Content Relative to Optimum Moisture Content
Roadway Embankment	95%	+1 to 2%
Aggregate Basecourse	96%	± 2%

Due to Contractor equipment limitations and placement locations, thinner lift thicknesses may be necessary to achieve the recommended minimum relative compaction and that compaction be performed by mechanical means only. NorthGES recommends that a qualified testing agency provide on-site observation and testing during placement of fill materials to document compliance with the recommendations contained herein.

5.2.6 Surface Drainage

Long-term performance of the proposed pavement section will require that effective surface drainage be provided throughout the life of the project and supporting materials be protected against water infiltration and/or saturation. Appropriately sized ditches on both sides of the roadway section should be provided to collect and to direct surface water (draining from the road as well as surface water flowing from adjacent areas) towards suitable discharge locations and to prevent this water from impacting the roadway subgrade. Discharge or ponding of rainwater adjacent to or on the proposed road should be prevented. Site grades should be sloped away from roadways, and surface water should be directed towards appropriate collection and discharge facilities by means of drainage ditches, swales, and culverts.

5.2.7 Construction in Wet or Cold Weather

Fill should not be placed on frosted or frozen ground, nor should frozen material be placed as fill. Frozen ground should be allowed to thaw or be completely removed prior to placement of fill. If earthwork is performed during the winter months, when freezing is a possibility, NorthGES recommends that the Contractor consider covering the compacted fill with a “blanket” of loose fill each evening to help reduce the potential for freezing of the underlying compacted fill. Prior to commencement of fill placement operations, the next workday, the loose fill blanket must be entirely removed and allowed to thaw before incorporating it into the embankment.

During construction, the site should be graded so that surface water can drain readily away from pavement subgrade. Ponding of water in or near excavations or pavement subgrade should be avoided. Water that accumulates in excavations or on pavement subgrades should be promptly pumped out or otherwise directed to appropriate discharge facilities. Subgrade that has been exposed to rainfall or storm water should be allowed to dry out before resuming construction and provisions made to remove any disturbed material and replace it with properly compacted backfill. Berms, ditches, and other similar means should be used to prevent storm water from entering work areas and to convey water off-site efficiently.

5.2.8 Construction Testing and Observation

NorthGES does not provide construction materials testing (CMT) services. However, the recommendations provided in this report are based on the assumption that an adequate program of tests and observations will be performed before and during construction to verify compliance with these recommendations. A qualified CMT service company should be hired to perform these tests and observations. NorthGES should provide oversight of this field testing and observation performed during construction to support our engineer’s professional opinion as to whether the earthwork does or does not substantially conform to the recommendations in this report.

Furthermore, the opinions and conclusions of a geotechnical report are based on interpretation of a limited amount of information obtained from the field exploration. It is therefore common to find that actual site conditions differ somewhat from those indicated in the report. NorthGES should remain involved throughout the project to evaluate such differing conditions as they appear, and to modify or add to the geotechnical recommendations as necessary.

5.3 Pavement

5.3.1 Section Design

As indicated previously in Section 4.0, the subgrade soils encountered in the hand auger borings consisted mostly of low stiffness silty clay and clayey sand soils (Layer 1), the majority of which are described by the AASHTO Symbol A-4 and A-6. These types of soils are considered by AASHTO as fair to poor for support of pavement. In the following paragraphs NorthGES

provides recommended design pavement sections. As noted previously in Section 4.0, the expected design life traffic loading was not available at the time this report was prepared. NorthGES developed an initial estimate of design life ESAL based on the following traffic loading as presented in Table 5-4:

Table 5-4: Initial Estimate of Design Life ESAL

DP Road Phase II				
Vehicle Type	Designation	ESAL EF	%of AWDT	#of Type/day
Auto	AUT	0.0008	72.70%	200.0
Other 4-Wheel Vehicle Light Duty Truck	LDT	0.0087	18.18%	50.0
Single Unit Truck (SUT)	SUT	0.189	7.27%	20.0
Garbage Truck	GT	2.372	0.36%	1.0
Fire Truck	FT	2.372	0.04%	0.1
Bus	BU	0.6808	0.73%	2
Tractor Trailer	TT	2.372	1%	2
Average Weekday Daily Traffic (AWDT)			100%	275.1
Design Life (yrs.)		20		
%Growth		2%		
Growth Factor 20-yr Design Life and % Growth (GF)		24.30		
Equation 7.1 ESAL =		116100		

The values presented in Table 5-4 are estimates only and the actual 20-year design life ESAL for the alignment could be different. Based on the estimated ESAL value shown in Table 5-4, NorthGES developed pavement design recommendations for various values of ESALs which can then be selected by the Client or the County to establish the final pavement design section.

The design parameters used to develop the various pavement section were presented previously and include the following:

- M_{RSG} = 4,300psi
- R = 80%
- SDO = 0.45
- S_i = 4.2
- S_t = 2.0

Additional design parameters that NorthGES recommends be used for evaluation of pavement section thickness include the following:

- Drainage Coefficients:
 - Asphalt Concrete = 1.0
 - Aggregate Basecourse = 1.0

- Subgrade = 0.80 (to account for the relatively impermeable silty clay soil subgrade)
- Structural Layer Coefficients:
 - Asphalt Concrete = 0.40 (low value based on limited availability of higher quality asphalt concrete in the area)
 - Aggregate Basecourse = 0.10 (low value based on limited availability of higher quality aggregate basecourse in the area)

Based on these values, Table 5-5 below presents the resulting structural number (SN) and the recommended pavement section thicknesses for the various ESAL values.

Table 5-5: Recommended Pavement Section Thickness Values by Estimated ESAL

ESAL	SN	AC (in.)	BC (in.)
50,000	2.38	4.0	8.0
75,000	2.54	4.0	10.0
100,000	2.66	4.0	11.0
150,000	2.83	4.5	11.0
200,000	2.96	4.5	12.0
250,000	3.06	5.0	11.0

The asphaltic concrete (AC) and basecourse (BC) thickness values presented in Table 5-5 are for the ESAL values indicated. After the Client and the County determine the actual 20-year design life ESAL for the alignment, the table can be entered to select the recommended section thickness. The values presented in Table 5-5 are based on the subgrade conditions encountered in the borings. As indicated previously, NorthGES recommends that the existing subgrade soils be reworked as described in Section 5.2.3 to improve the design life performance of the final pavement section design chosen.

5.3.2 Material Properties

The subject project is in Los Alamos County which is in NMDOT District #5. Based on the referenced IDD, the PG Base Grade is 58-28 as shown on Table A-5 of the IDD. NorthGES assumes that based on Table A-5 of the IDD, PG Base Grade Modifications, that a Traffic Loading Rate of “Slow” is appropriate for DP Road, which assumes that the average traffic speed ranges from 15 miles per hour (mph) to less than 45 mph. For a “Slow” traffic rate, and less than 300,000 ESALS there is no adjustment to the PG Base Grade. If either the Traffic Loading Rate is “Standing” or the actual ESAL value is greater than 300,000, the high-temperature value of the PG Base Grade should be increased by 6° Celsius. In conformance with the referenced IDD, NorthGES recommends that the hot-mix asphalt concrete consist of either SP-III or SP-IV.

NorthGES recommends that Type I Basecourse meeting the requirements given in Section 303, Basecourse of the 2019 NMDOT Specifications be used for pavement design and construction.

Independent of the approach and actual traffic loading used for final design and construction, NorthGES recommends a minimum thickness of 4.0 inches for hot-mix asphalt concrete and 8.0 inches for basecourse, or thicker minimum values as required by the County, whichever is greater.

6.0 CLOSURE

6.1 Limitations

The work presented in this report was performed in a manner consistent with that level of care and skill ordinarily exercised by other members of NorthGES' profession practicing in the same locality, under similar conditions and at the date the services are provided. Our conclusions, opinions, and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. NorthGES makes no other representation, guarantee, or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

Regulations and professional standards applicable to NorthGES' engineering services are continually evolving. Techniques are, by necessity, often new and relatively untried. Different professionals may reasonably adopt different approaches to similar problems. As such, our services are intended to provide the Client with a source of professional advice, opinions, and recommendations based on our limited number of field observations and tests, collected and performed in accordance with the generally accepted engineering practice that exists at the time our services are rendered and may depend on, and be qualified by, information gathered previously by others and provided to NorthGES by the Client.

NorthGES offers various levels of investigative and engineering services to suit the varying needs of different clients. Although risk can never be eliminated, more detailed and extensive studies will yield more information, which may help understand and manage the level of risk involved. Since detailed study and analysis involves greater expense, our clients participate in determining levels of service that provide adequate information for their purposes at acceptable levels of risk. More extensive studies could be performed to reduce these uncertainties.

6.2 Additional Services

As the geotechnical engineering firm that performed the geotechnical evaluation for this project, NorthGES should be retained to provide the following additional services:

- Review of final design documents to confirm that the recommendations presented in this report are properly interpreted and incorporated, and
- Field engineering services at the time of earthwork construction to allow us the opportunity to observe and to confirm that recommendations provided herein are properly implemented by the contractor at the time of construction, and to give us an opportunity to review and modify our recommendations if variations in the subsurface conditions are encountered.

These additional services provided by NorthGES may help to avoid misinterpretation or improper implementation of the recommendations contained herein both during final design and construction. If NorthGES is not retained to provide these additional services, we cannot be held responsible for misinterpretation or improper implementation of the recommendations contained herein either during final design or construction.

NorthGES does not provide construction materials testing (CMT) services. However, the recommendations provided in this report are based on the assumption that an adequate program of tests and observations will be performed before and during construction to verify compliance with these recommendations. These tests and observations should include, but not necessarily be limited to, the following:

- Observation and testing during site preparation and earthwork construction, includes but is not limited to, the following:
 - Suitability of fill materials by means of laboratory testing to include:
 - Sieve
 - Atterberg limits
 - Moisture density relationship (Modified Proctor)
 - Observation of reworking, subgrade preparation, proof rolling, fill placement and compaction
 - Field density testing



A qualified CMT service company should be hired to perform these tests and observations. Additional information concerning the scope and cost of these additional services can be provided by NorthGES upon request.

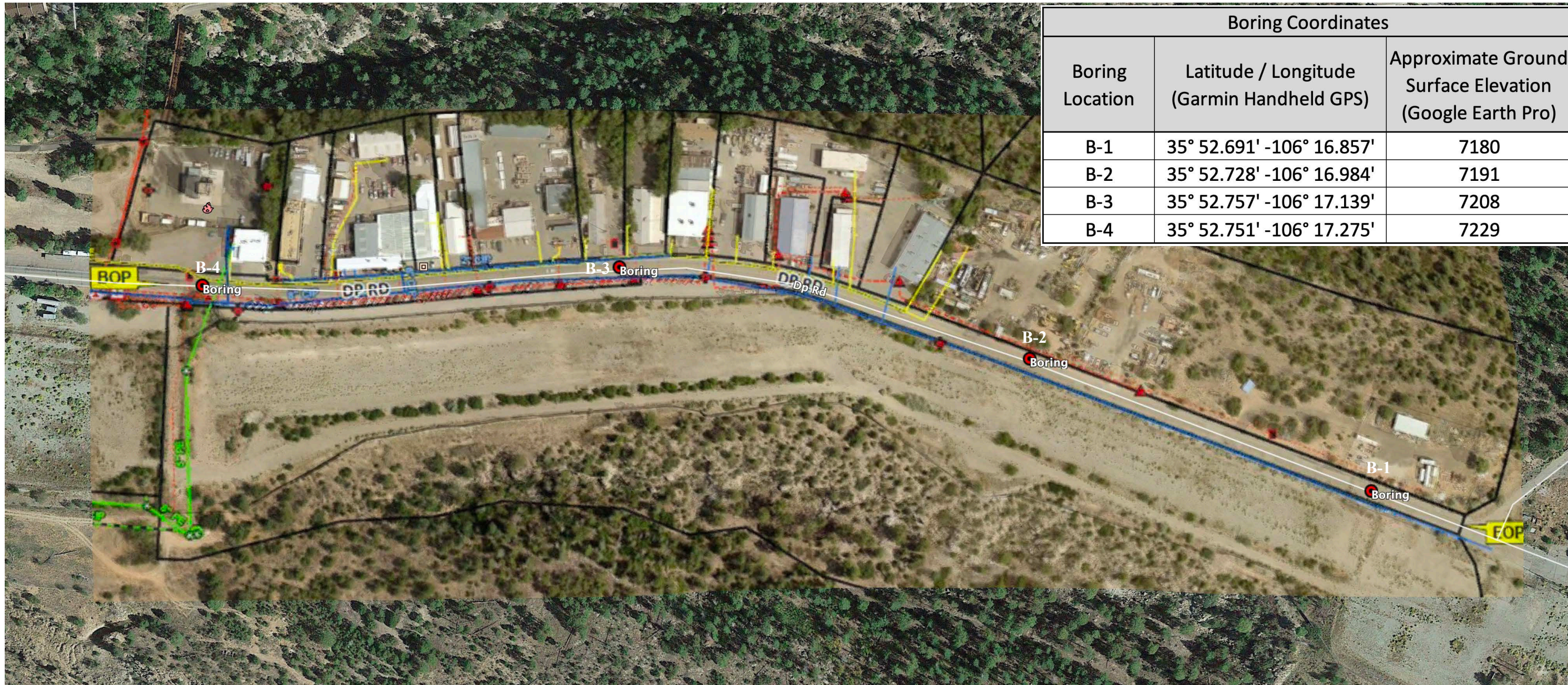
FIGURES

Figure 1	Site Vicinity Map
Figure 2	Investigation Location Plan
Figure 3	Project Site Photos
Figure 4	Geology Map



Base: iMaps

 <p>NorthGES GeoEngineering Services Small Business Enterprise</p>	 <p>WILSON & COMPANY</p>	Fig No. 1	<small>TITLE</small> Site Vicinity Map DP Road Phase II Los Alamos, New Mexico
		Plot Date March 2021	



Boring Coordinates		
Boring Location	Latitude / Longitude (Garmin Handheld GPS)	Approximate Ground Surface Elevation (Google Earth Pro)
B-1	35° 52.691' -106° 16.857'	7180
B-2	35° 52.728' -106° 16.984'	7191
B-3	35° 52.757' -106° 17.139'	7208
B-4	35° 52.751' -106° 17.275'	7229

LEGEND



Approximate Boring Location

Base: Google Earth Pro with Preliminary Project Alignment Provided by Client

REV	DESCRIPTION	DATE	Drawn By:	APPROVED



PROJECT TITLE: DP Road Phase II Los Alamos, New Mexico			
SHEET TITLE: Investigation Location Plan			
SIZE B	SCALE:	DWG NO. Figure 2	REV
SHEET NO.			

C



Boring B-1 After Coring



Boring B-2 After Coring



Boring B-3 After Coring



Boring B-4 After Coring

B



Boring B-1 After Completion



Boring B-2 After Completion



Boring B-3 After Completion



Boring B-4 After Completion

A

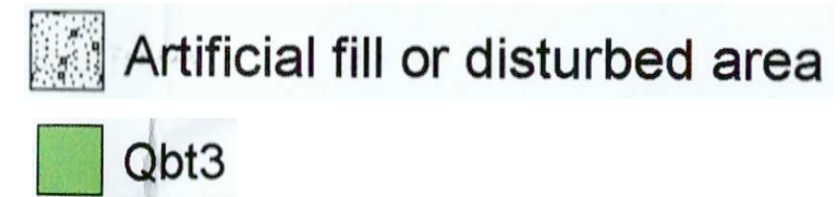
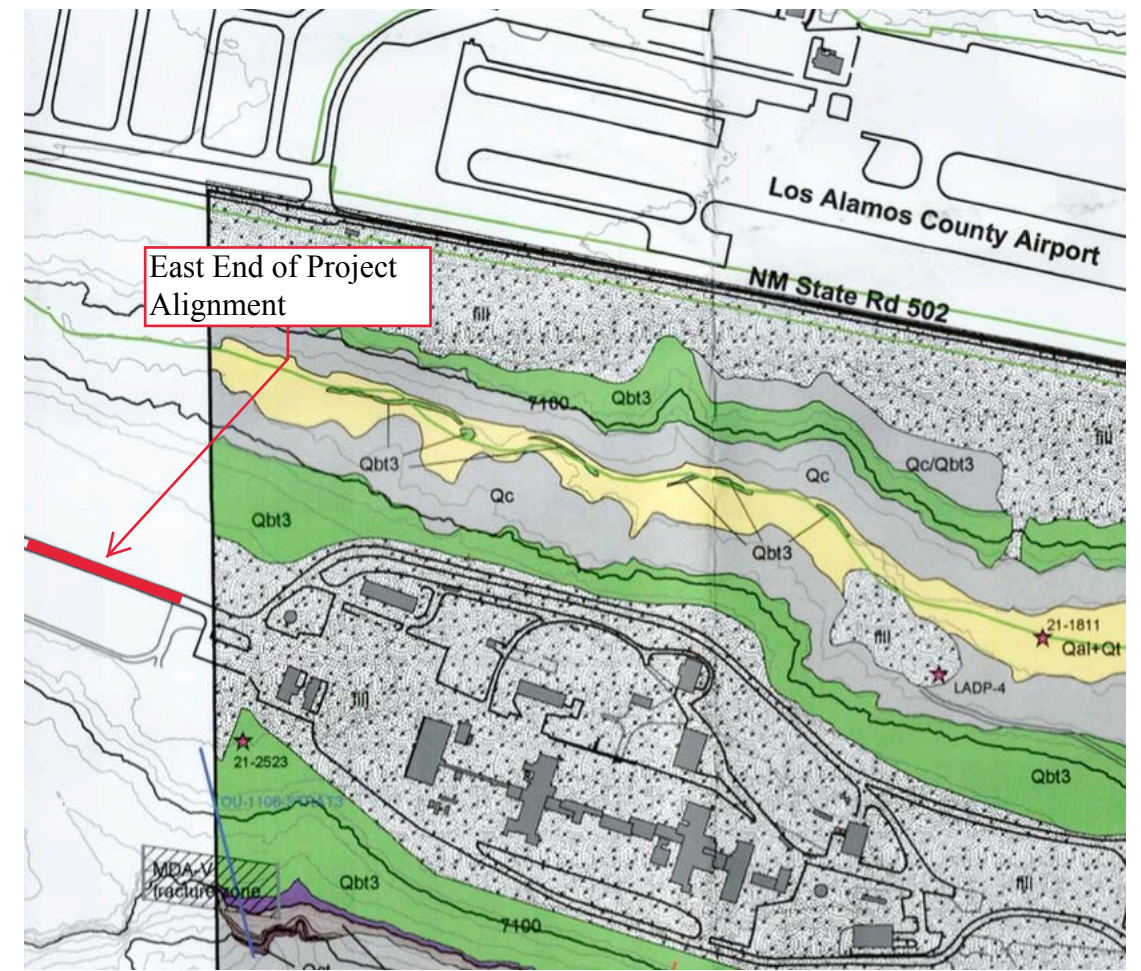
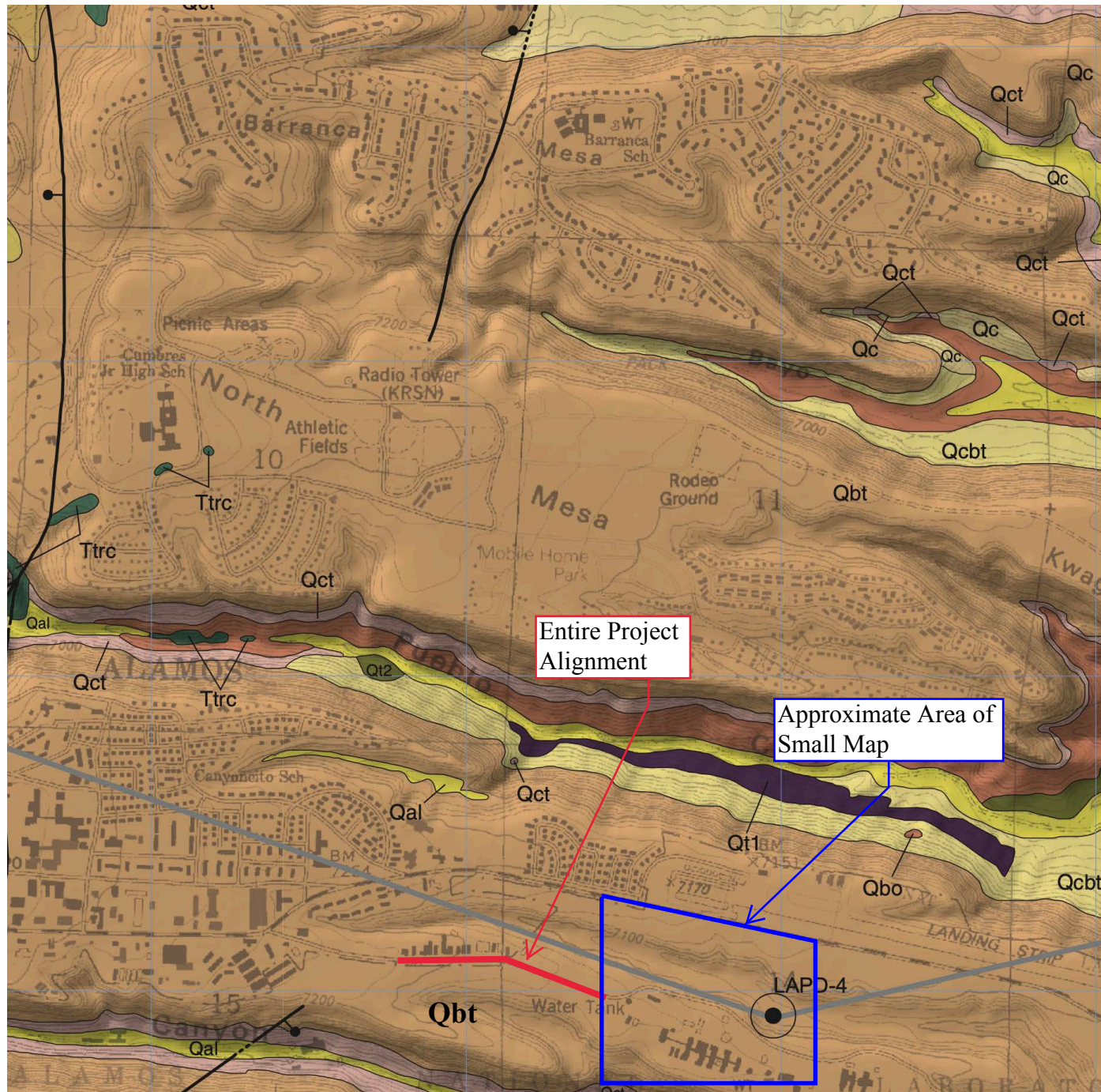
All Photos Taken on February 24, 2021

REV	DESCRIPTION	DATE	Drawn By:	APPROVED

WILSON & COMPANY

NorthGES
GeoEngineering Services
Small Business Enterprise

PROJECT TITLE: DP Road Phase II Los Alamos, New Mexico			
SHEET TITLE: Project Site Photos			
SIZE B	SCALE:	DWG NO.	REV
SHEET NO.		Figure 3	



Qbt **Upper Bandelier Tuff, Tshirege Member.** Beige to orange to gray, poorly-welded to densely-welded ignimbrite containing abundant phenocrysts of sanidine and quartz and trace amounts of clinopyroxene and hypersthene (Smith and Bailey, 1966). Sanidine commonly displays blue iridescence. Accidental lithic fragments typically < 5% except in discreet lenses and lag horizons. *Qbt* is a compound flow unit with multiple flow units as described by Broxton and Reneau (1995) and Gardner et al. (1999, 2001), and is well exposed in canyons throughout the Pajarito Plateau. Surge deposits, typically < 1 meter thick, are common at the base of the unit and overlie a stratified pumice tephra (*Tsankawi Pumice Bed*) that is typically ~ 1 meter thick. The ignimbrite was erupted from the Valles caldera at 1.25±0.01 Ma (Phillips, 2004) and filled valleys along the paleotopographically complex eastern flank of Sierra de Los Valles. The degree of welding decreases toward east and some of the upper cooling units pinch out toward the east. Maximum observed thickness is ~ 180 meters.

Base: **Small Map** - Geology of the North-Central to Northeastern Portion of Los Alamos National Laboratory, New Mexico, by Lavine, A., et al., LA-14043-MS, dated June 2003. **Large Map** - Geologic map of the Guaje Mountain Quadrangle, Los Alamos and Sandoval Counties, New Mexico, by Kempter, K.A., Gardner, J., Levine, A., et al., NMBGMR OFGM 55, dated May 1998

REV	DESCRIPTION	DATE	Drawn By:	APPROVED

WILSON & COMPANY

NorthGES
GeoEngineering Services
Small Business Enterprise

PROJECT TITLE: DP Road Phase II Los Alamos, New Mexico			
SHEET TITLE: Geology Map			
SIZE B	SCALE:	DWG NO.	REV
SHEET NO.	Figure 4		

APPENDICES

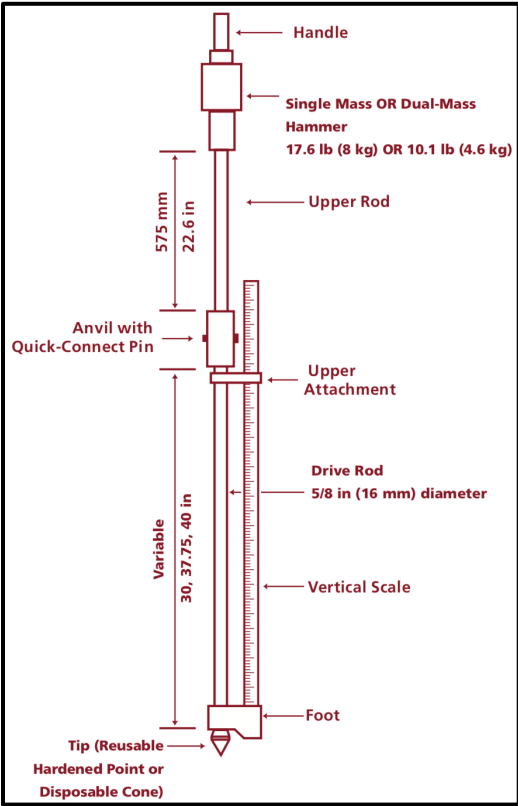
- A Dynamic Cone Penetrometer (DCP) Probes
- B Subsurface Characterization (Hand Auger Borings)
- C Laboratory Test Results

Appendix A – Dynamic Cone Penetrometer Probes

Four (4) DCP probes were performed for the project using a Kessler DCP device as shown on the figure below. The DCP probes were performed on February 24, 2021 and extended to depths ranging from 2.1 to 5.1 feet BGS and were performed in accordance with ASTM D6951.

The Kessler DCP is driven into the soil by dropping either a Single-Mass Hammer 17.6 lb. (8 kg) or a Dual-Mass Hammer 10.1 lb. (4.6 kg) from a height of 22.6 in (575mm). The Single-Mass Hammer (17.6 lb.) was used for the subject project. The DCP device is equipped with steel rods that are fitted at the end with a standard disposable cone that has a diameter of 0.790 inches (20 mm) and a 60-degree cone shape. The cone penetration caused by one blow of the 17.6 lb. (8 kg) hammer is essentially twice that caused by one blow of the 10.1 lb. (4.6 kg) hammer. The 17.6 lb. (8 kg) hammer penetrates high strength materials quicker. The depth of cone penetration is measured at selected penetration or hammer drop intervals and the soil shear strength is reported in terms of DCP index. The DCP index is based on the average penetration depth resulting from one blow of the 17.6 lb (8 kg) hammer.

Logs of the DCP probes are presented below on Figures A-1 thru A-4. The approximate locations of the DCP probes are shown on Figure 2, Investigation Location Plan.



DCP TEST DATA

Project: DP Road Phase II Date: 24-Feb-21
 Location: DCP-1 (B-1) Soil Type(s): Low plasticity Clay with CBR<10

Hammer
 10.1 lbs.
 17.6 lbs.
 Both hammers used

Seating Depth Below
 Pavement Surface = 268mm
 (10.6")

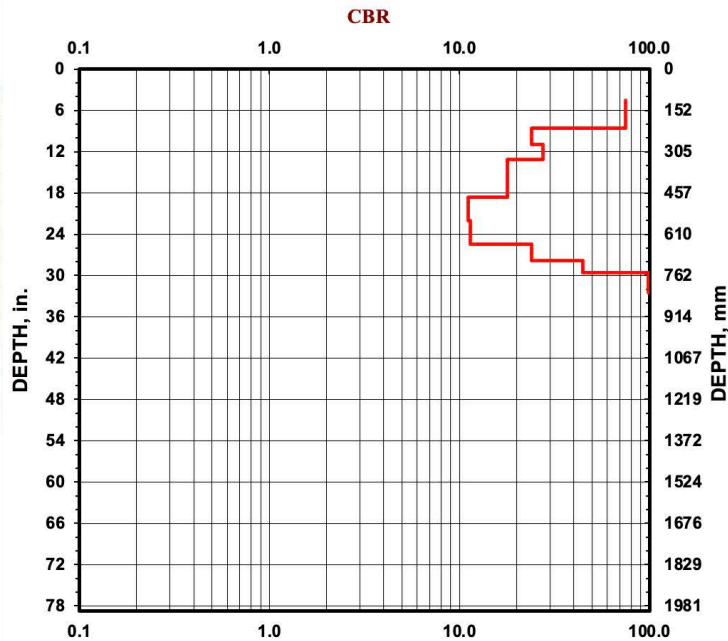
Soil Type
 CH
 CL
 All other soils

LAYER AND *IN-SITU* CBR CORRELATION

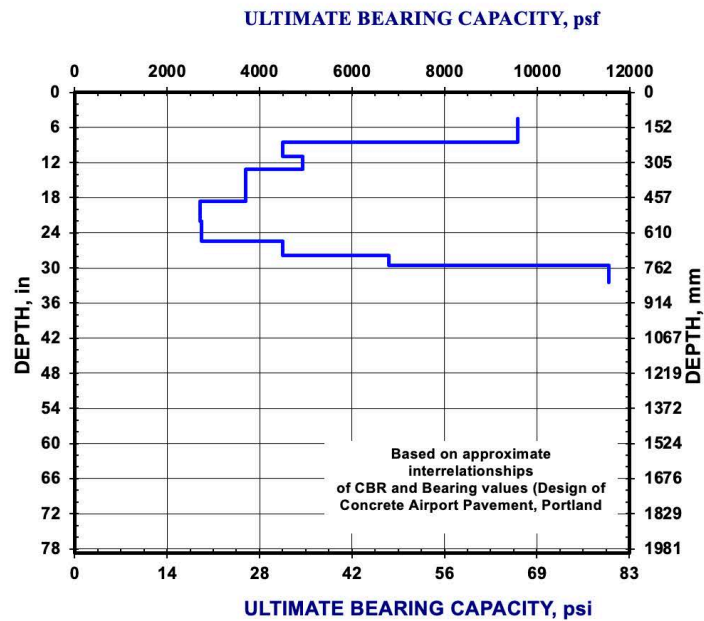
Equations:

$$CBR = 292/PR^{1.12}$$

No. of Blows	Cumulative Penetration Below Seating Depth (mm)	Type of Hammer
10	115	1
15	217	1
5	277	1
5	333	1
10	472	1
5	560	1
5	647	1
5	707	1
5	751	1
10	779	1
5	791	1
20	826	1



Reading Number	DCP Index & PR Value (mm/blow)	CBR (CORR.)	Layer # Based on Boring & PR Value	Average <i>In-Situ</i> CBR Value
1	12	19	L1	19
2	7	34		
3	12	18		
4	11	20		
5	14	15		
6	18	12		
7	17	12		
8	12	18		
9	9	26		
10	3	92	L4	119
11	2	110		
12	2	156		



DCP TEST DATA

LAYER AND *IN-SITU* CBR CORRELATION

Project: DP Road Phase II **Date:** 24-Feb-21[†]
Location: DCP-2 (B-2) **Soil Type(s):** Low plasticity Clay with CBR<10

Hammer
 10.1 lbs.
 17.6 lbs.
 Both hammers used

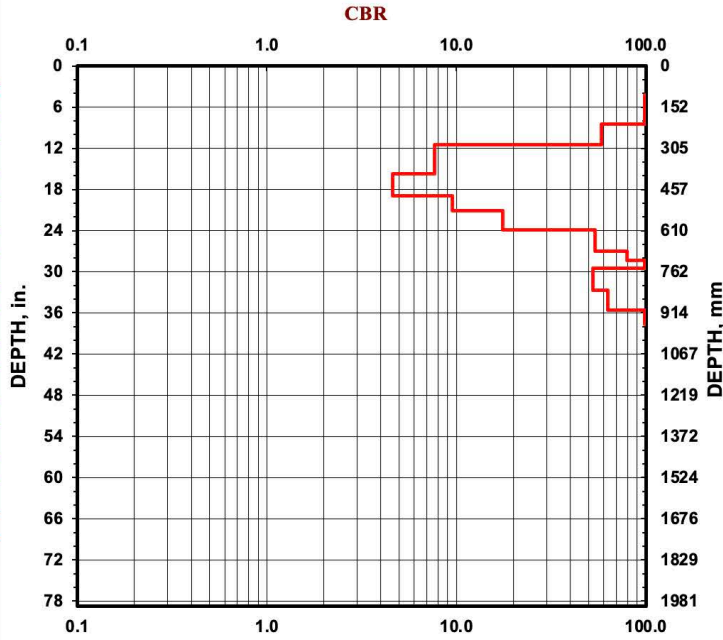
Seating Depth Below Pavement Surface = 410mm (16.2")

Soil Type
 CH
 CL
 All other soils

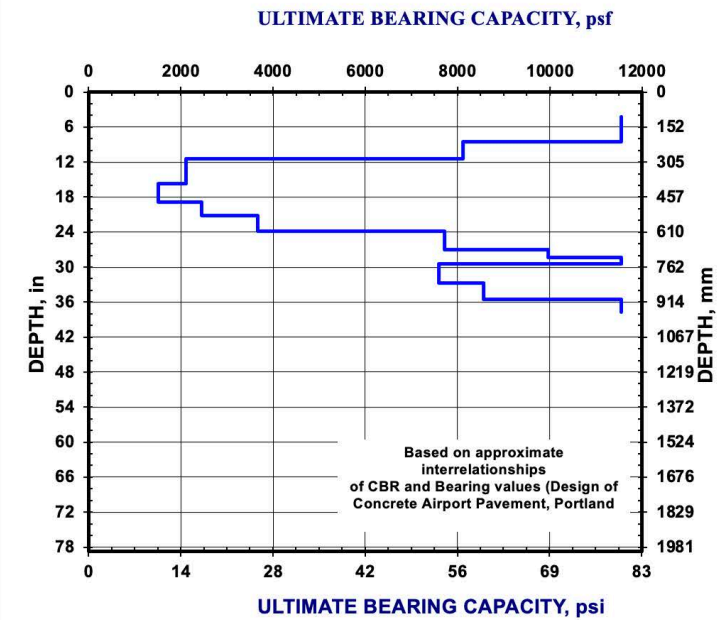
Equations:

$$CBR = 292/PR^{1.12}$$

No. of Blows	Cumulative Penetration Below Seating Depth (mm)	Type of Hammer
5	107	1
10	152	1
10	182	1
10	215	1
10	292	1
5	398	1
3	480	1
3	537	1
5	607	1
5	647	1
5	687	1
5	720	1
5	749	1
10	830	1
10	904	1
5	923	1
15	957	1



Reading Number	DCP Index & PR Value (mm/blow)	CBR (CORR.)	Layer # Based on Boring & PR Value	Average In-Situ CBR Value
1	21	9	L1	33
2	5	54		
3	3	85		
4	3	77		
5	8	30		
6	21	10		
7	27	7		
8	19	11		
9	14	15		
10	8	28		
11	8	28		
12	7	35		
13	6	41		
14	8	28		
15	7	31		
16	4	65	L2	91
17	2	117		



DCP TEST DATA

LAYER AND *IN-SITU* CBR CORRELATION

Project: **DP Road Phase II** Date: **24-Feb-21**
 Location: **DCP-3 (B-3)** Soil Type(s): **Low plasticity Clay with CBR<10**

- Hammer
 10.1 lbs.
 17.6 lbs.
 Both hammers used

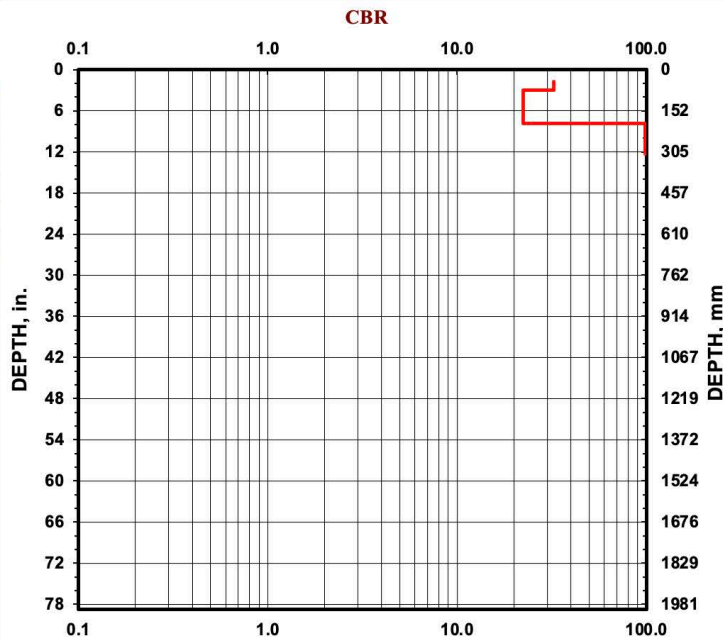
Seating Depth Below
 Pavement Surface = 330mm
 (13")

- Soil Type
 CH
 CL
 All other soils

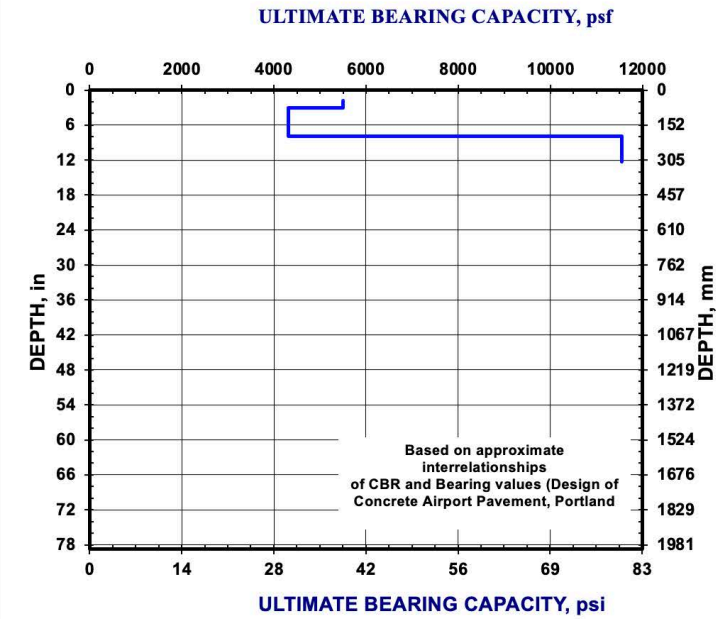
Equations:

$$CBR = 292/PR^{1.12}$$

No. of Blows	Cumulative Penetration Below Seating Depth (mm)	Type of Hammer
10	45	1
3	76	1
10	200	1
10	240	1
20	277	1
20	312	1



Reading Number	DCP Index & PR Value (mm/blow)	CBR (CORR.)	Layer # Based on Boring & PR Value	Average <i>In-Situ</i> CBR Value
1	5	54	L1	31
2	10	21		
3	12	17		
4	4	62	L2	121
5	2	147		
6	2	156		



DCP TEST DATA

Project: DP Road Phase II **24-Feb-21**
Location: DCP-4 (B-4) **Soil Type(s): Low plasticity Clay with CBR<10**

Hammer
 10.1 lbs.
 17.6 lbs.
 Both hammers used

Seating Depth Below
 Pavement Surface = 453mm
 (17.8")

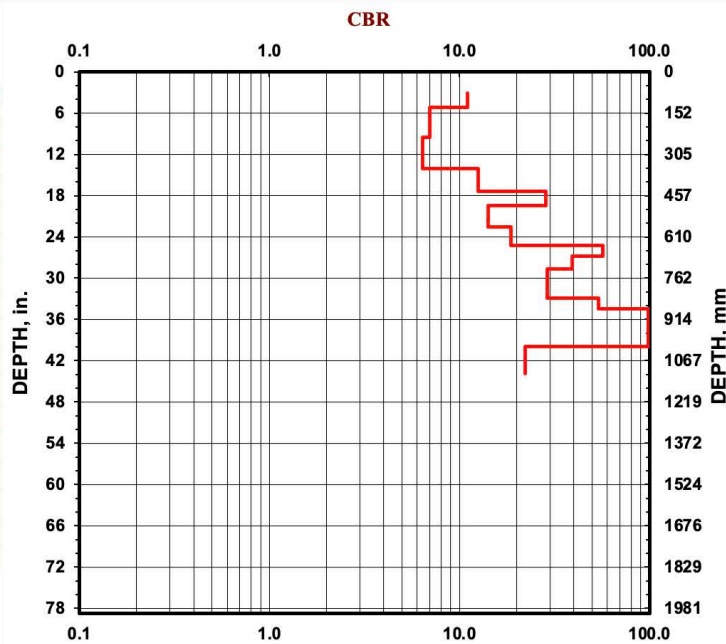
Soil Type
 CH
 CL
 All other soils

LAYER AND *IN-SITU* CBR CORRELATION

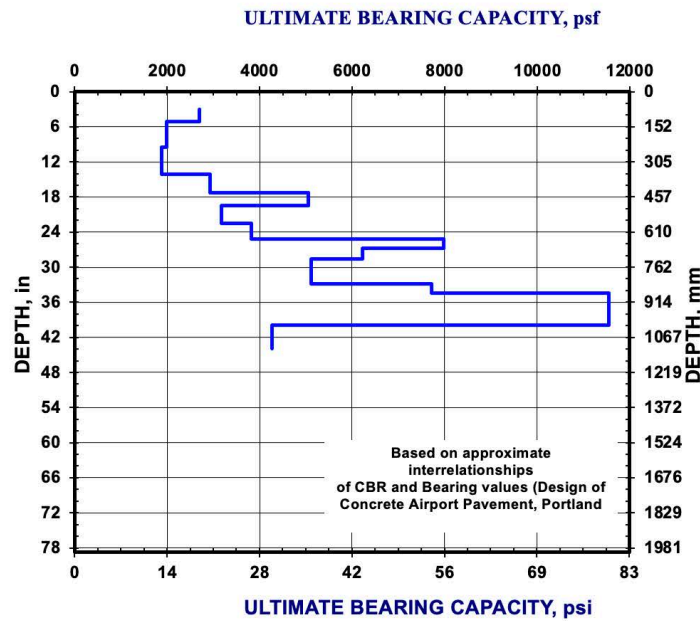
Equations:

$$CBR = 292/PR^{1.12}$$

No. of Blows	Cumulative Penetration Below Seating Depth (mm)	Type of Hammer
3	77	1
3	130	1
5	241	1
5	357	1
5	440	1
5	495	1
5	573	1
5	641	1
5	680	1
5	727	1
10	836	1
5	876	1
5	904	1
10	941	1
4	956	1
11	1015	1
8	1115	1



Reading Number	DCP Index & PR Value (mm/blow)	CBR (CORR.)	Layer # Based on Boring & PR Value	Average <i>In-Situ</i> CBR Value
1	26	8	L1	26
2	18	12		
3	22	9		
4	23	9		
5	17	13		
6	11	20		
7	16	13		
8	14	16		
9	8	29		
10	9	24		
11	11	20		
12	8	28		
13	6	42		
14	4	67		
15	4	66		
16	5	45		
17	13	17		



Appendix B – Subsurface Characterization (Hand Auger Borings)

The subsurface characterization included drilling of four (4) hand auger borings after performing the DCP probes. The borings were drilled using hand auger with both a 3-inch and 2-inch diameter auger barrel. The hand auger borings performed on February 24, 2021 and extended to a maximum depth 4'-9" below existing ground surface (BGS).

The materials encountered in the borings were visually classified in the field and a continuous log of each exploration was recorded by the NorthGES field engineer. Grab (G) samples were obtained from the auger cuttings at changes in material type or other depths within the boring where appropriate.

Visual classifications of the soils encountered in the hand auger borings were made in general accordance with the Unified Soil Classification System (ASTM D2487) by our field engineer. The classification system used for the soil encountered in the borings as well as the terms and symbols used on the boring logs is presented below on the Soil Classification Legend, Figure B-01. The classification of rock (volcanic tuff) encountered in the borings was based on terminology developed by geologists working for Los Alamos National Laboratory (LANL) and as published in the geology report referenced previously in Section 3 of this report. The logs of the borings performed for this investigation are presented below on Figures B-1 through B-4. The approximate locations of the borings are shown on Figure 2, Investigation Location Plan.

No groundwater was encountered in the hand auger borings at the time of drilling. It should be noted that the borings may not have been left open long enough for stabilization of the groundwater level to have occurred. Fluctuations in the groundwater level may occur due to variations in rainfall, temperature, local or regional pumping from wells, and possibly as the result of other factors that were not evident at the time of the field work. Depth to groundwater shallower than indicated should be considered. If significant variations in the groundwater level are encountered during construction, it may be necessary for NorthGES to review the recommendations presented herein and recommend adjustments as necessary.

At the completion of drilling, all hand auger borings were backfilled with lightly compacted drill cuttings to within 4 inches of the ground surface and then completed with asphalt patch.

SOIL CLASSIFICATION LEGEND - ASTM & AASHTO

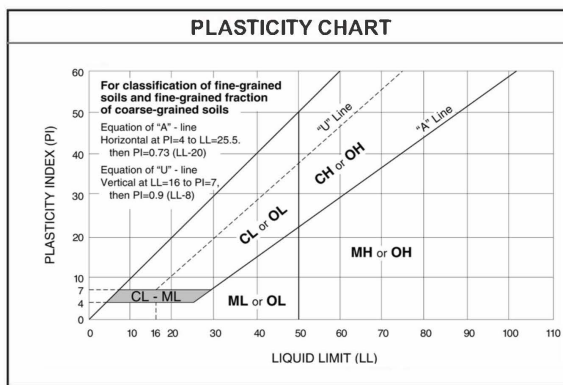
UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D2487

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART		
COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)		
Clean Gravels (Less than 5% fines)		
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	GW Well-graded gravels, gravel-sand mixtures, little or no fines	
	GP Poorly-graded gravels, gravel-sand mixtures, little or no fines	
	Gravels with fines (More than 12% fines)	
	GM Silty gravels, gravel-sand-silt mixtures	
	GC Clayey gravels, gravel-sand-clay mixtures	
Clean Sands (Less than 5% fines)		
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	SW Well-graded sands, gravelly sands, little or no fines	
	SP Poorly graded sands, gravelly sands, little or no fines	
	Sands with fines (More than 12% fines)	
	SM Silty sands, sand-silt mixtures	
	SC Clayey sands, sand-clay mixtures	
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)		
SILTS AND CLAYS Liquid limit less than 50%	ML Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity	
	CL Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
	OL Organic silts and organic silty clays of low plasticity	
SILTS AND CLAYS Liquid limit 50% or greater	MH Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
	CH Inorganic clays of high plasticity, fat clays	
	OH Organic clays of medium to high plasticity, organic silts	
HIGHLY ORGANIC SOILS	PT Peat and other highly organic soils	

LABORATORY CLASSIFICATION CRITERIA	
GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3
GP	Not meeting all gradation requirements for GW
GM	Atterberg limits below "A" line or P.I. less than 4
GC	Atterberg limits above "A" line with P.I. greater than 7
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3
SP	Not meeting all gradation requirements for GW
SM	Atterberg limits below "A" line or P.I. less than 4
SC	Atterberg limits above "A" line with P.I. greater than 7

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent GW, GP, SW, SP
 More than 12 percent GM, GC, SM, SC
 5 to 12 percent Borderline cases requiring dual symbols



AASHTO Soil Classification System (from AASHTO M 145 or ASTM D3282)

General Classification	Granular Materials (35% or less passing the 0.075 mm sieve)							Silt-Clay Materials (>35% passing the 0.075 mm sieve)							
	A-1	A-1-a		A-1-b	A-3	A-2		A-2-a	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7
Group Classification	A-1	A-1-a		A-1-b	A-3	A-2		A-2-a	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7
Sieve Analysis, % passing															
2.00 mm (No. 10)	50 max	...	...	...	...	...	...	...	...	...	...	...	...	...	...
0.425 (No. 40)	30 max	50 max	51 min	...	...	...	...	...	...	...	...	...	...	...	...
0.075 (No. 200)	15 max	25 max	10 max	35 max	35 max	35 max	35 max	36 min	36 min	36 min	36 min	36 min	36 min	36 min	36 min
Characteristics of fraction passing 0.425 mm (No. 40)															
Liquid Limit	...	...	...	40 max	41 min	40 max	41 min	40 max	41 min	40 max	41 min	40 max	41 min	40 max	41 min
Plasticity Index	6 max	...	N.P.	10 max	10 max	11 min	11 min	10 max	10 max	11 min	11 min	10 max	10 max	11 min	11 min ¹
Usual types of significant constituent materials	stone fragments, gravel and sand				fine sand	silty or clayey gravel and sand				silty soils		clayey soils			
General rating as a subgrade	excellent to good							fair to poor							

Note (1): Plasticity index of A-7-5 subgroup is equal to or less than the LL - 30. Plasticity index of A-7-6 subgroup is greater than LL - 30



Fig No. **B-01**
 Plot Date **May 2020**

TITLE
SOIL CLASSIFICATION LEGEND



HAND AUGER BORING LOG

Boring # **B-1**
Sheet 1 of 1

Project Name	DP Road Phase II	Date	Started:	2/24/21	11:00am	Groundwater encountered:	Date/time	Depth	
Project Number	2017-07-07		Completed:	2/24/21	1:25pm		None Encountered		
Location:	See Boring Location Plan		Backfilled:	2/24/21	1:30pm				
Surface Elevation:	7180 +/- (GEP)	Drilling Rig:	Hand Auger	Driller:	J. North	Logged by:	J. North		

Drilling Method: Hand Auger, 3" Diameter

Depth, feet	Sampling			Soil					Field Tests				Description	
	Graphic Log	Sample No.	Sample Type	Depth, inches	Moisture Content	Plastic Limit	Liquid Limit	Plasticity Index	Percent #200	USCS Symbol	AASHTO Symbol	Relative Moisture		Munsell Color
0														Existing Ground Surface ↘
														5.5-6" of Asphaltic Concrete, includes 1.5" Overlay
				6"										4" Basecourse (Well Graded Sandy Gravel (GW-SW)(f-c))
		S-1	G	12"										Silty Lean CLAY (CL-ML), trace sand (f), damp, firm, dark brown
		S-2	G	18"	(Composite of S-1 & S-2)									same as Sample S-1, color to brown
		S-3	G	24"										same as Sample S-2 (Layer 1)
2.5		S-4	G	30"										same as Sample S-3, some gray tuff fragments
		S-5	G	36"										(Residual Soil or Possible Fill) ↑
				42"										Bandelier Tuff, poorly-moderately welded, gray w/pink (Unit 3U) (Layer 2)
5.0				48"										Total Depth = 3'-5". Boring backfilled with cuttings to -4". Completed boring with asphalt to finish grade. Ground surface elevation based on Google Earth Pro (GEP)
				54"										
				60"										

The lines defining changes in soil type shown on the boring logs are approximate and gradational. The soil type boundaries indicated on the boring logs are based on the observations and interpretations made by the field engineer at the time of the subsurface characterization as well as on the results of laboratory testing. Variation in the actual subsurface conditions encountered at the time of construction is possible and should be anticipated. Groundwater was not encountered at the time of drilling. It should be noted that the borings may not have been left open long enough for stabilization of the groundwater level to have occurred. Fluctuations in the groundwater level may occur due to variations in rainfall, temperature, local or regional pumping from wells, and possibly as the result of other factors that were not evident at the time of the field work.

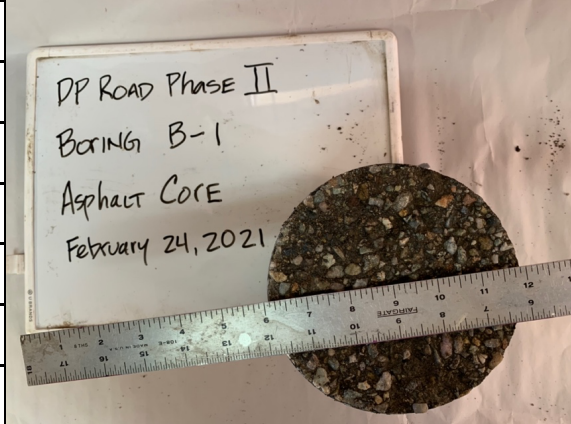
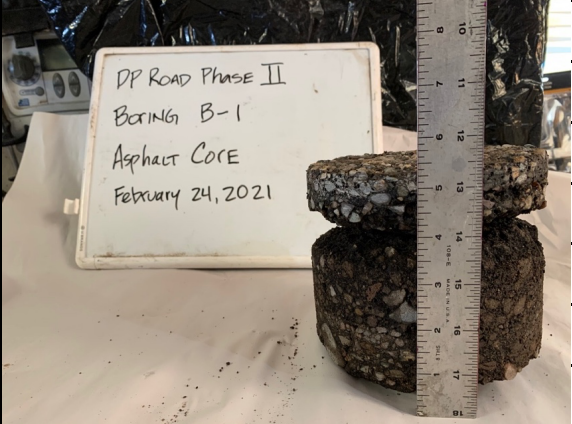


Figure B-1



HAND AUGER BORING LOG

Boring # **B-2**

Sheet 1 of 1

Project Name	DP Road Phase II	Date	Started:	2/24/21	1:50pm	Groundwater encountered:	Date/time	Depth	
Project Number	2017-07-07		Completed:	2/24/21	3:40pm		None Encountered		
Location:	See Boring Location Plan		Backfilled:	2/24/21	3:50pm				
Surface Elevation:	7191 +/- (GEP)	Drilling Rig:	Hand Auger	Driller:	J. North	Logged by:	J. North		

Drilling Method: Hand Auger, 3" Diameter

Depth, feet	Sampling		Soil						Field Tests				Description
	Graphic Log	Sample No.	Sample Type	Depth, inches	Moisture Content	Plastic Limit	Liquid Limit	Plasticity Index	Percent #200	USCS Symbol	AASHTO Symbol	Relative Moisture		Munsell Color
0													Existing Ground Surface ↘
				6"									6-7" of Asphaltic Concrete, includes 1.5" Overlay
				12"									7" Basecourse (Well Graded Sandy Gravel (GW-SW)(f-c))
		S-1	G	18"	(Composite of S-1 & S-2)								Silty Lean CLAY (CL-ML), trace sand (f), damp, firm, dark brown (Layer 1)
		S-2	G	24"	12.9	18	24	6		CL-ML	A-4		
		S-3	G	24"	(Composite of S-3 & S-4)								Lean CLAY with Sand (CL)(f-m), silty, damp, firm brown, trace organics (Layer 1)
2.5		S-4	G	30"	15.3	19	30	11	84	CL	A-6		
		S-5	G	36"									same as Sample S-4 (Residual Soil or Possible Fill)
		S-6	G	36"	(Composite of S-6 & S-7)								grading to Silty Lean Clay (CL-ML), trace sand (f), damp-dry, brown
		S-7	G	42"	11.2								Clayey SAND (SC)(f-c), silty, dry-damp, olive brown, medium dense (Residual Soil - Completely Weathered Tuff) (Layer 1)
				48"									Bandelier Tuff, poorly-moderately welded, gray w/pink (Unit 3U) (Layer 2)
		S-8		54"									Total Depth = 4'-1". Boring backfilled with cuttings to 4". Completed boring with asphalt to finish grade. Ground surface elevation based on Google Earth Pro (GEP)
5.0				60"									
7.5													
10.0													

The lines defining changes in soil type shown on the boring logs are approximate and gradational. The soil type boundaries indicated on the boring logs are based on the observations and interpretations made by the field engineer at the time of the subsurface characterization as well as on the results of laboratory testing. Variation in the actual subsurface conditions encountered at the time of construction is possible and should be anticipated. Groundwater was not encountered at the time of drilling. It should be noted that the borings may not have been left open long enough for stabilization of the groundwater level to have occurred. Fluctuations in the groundwater level may occur due to variations in rainfall, temperature, local or regional pumping from wells, and possibly as the result of other factors that were not evident at the time of the field work.

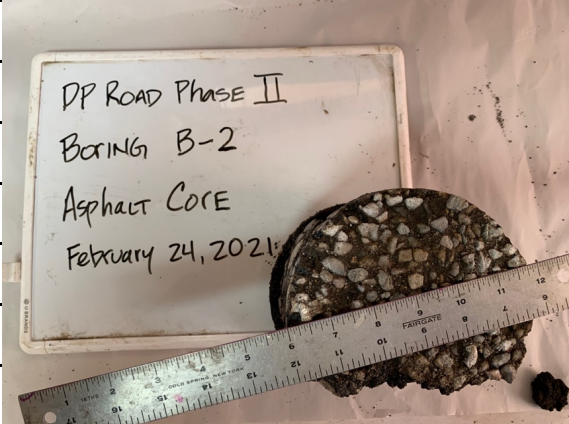
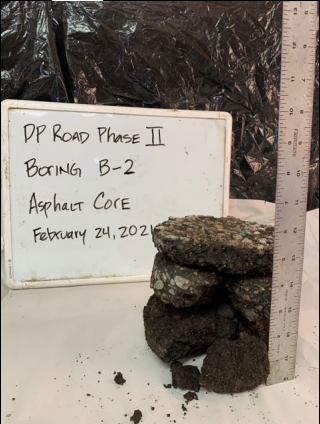


Figure B-2

HAND AUGER BORING LOG

Boring # **B-3**

Sheet 1 of 1

Project Name	DP Road Phase II	Date	Started:	2/24/21	4:15pm	Groundwater encountered: None Encountered	Date/time	Depth
Project Number	2017-07-07		Completed:	2/24/21	5:15pm			
Location:	See Boring Location Plan		Backfilled:	2/24/21	5:30pm			

Surface Elevation: 7208 +/- (GEP) | Drilling Rig: Hand Auger | Driller: J. North | Logged by: J. North

Sampling				Soil					Field Tests				Description	
Depth, feet	Graphic Log	Sample No.	Sample Type	Depth, inches	Moisture Content	Plastic Limit	Liquid Limit	Plasticity Index	Percent #200	USCS Symbol	AASHTO Symbol	Relative Moisture		Munsell Color
0														Existing Ground Surface ↘
														2.5-3" of Asphaltic Concrete
				6"										6" Basecourse (Well Graded Sandy Gravel (GW-SW)(f-c))
		S-1	G	12"										Silty SAND (SM)(f-c), some gravel (f-c), trace clay, dry-damp, medium dense, dark reddish brown (subbase?) (Layer 1)
		S-2	G	18"	14.1	19	32	13	75	CL	A-6			(Residual Soil or Possible Fill) Lean CLAY (CL), silty, some sand (f-c), damp, firm brown (Layer 1) ↑
		S-3	G	24"										Bandelier Tuff, poorly-moderately welded, gray w/pink (Unit 3U) (Layer 2)
2.5				30"										<p>Total Depth = 2'-0". Boring backfilled with cuttings to -4". Completed boring with asphalt to finish grade. Ground surface elevation based on Google Earth Pro (GEP)</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>The lines defining changes in soil type shown on the boring logs are approximate and gradational. The soil type boundaries indicated on the boring logs are based on the observations and interpretations made by the field engineer at the time of the subsurface characterization as well as on the results of laboratory testing. Variation in the actual subsurface conditions encountered at the time of construction is possible and should be anticipated. Groundwater was not encountered at the time of drilling. It should be noted that the borings may not have been left open long enough for stabilization of the groundwater level to have occurred. Fluctuations in the groundwater level may occur due to variations in rainfall, temperature, local or regional pumping from wells, and possibly as the result of other factors that were not evident at the time of the field work.</p> </div>
				36"										
				42"										
				48"										
				54"										
5.0				60"										
7.5														
10.0														

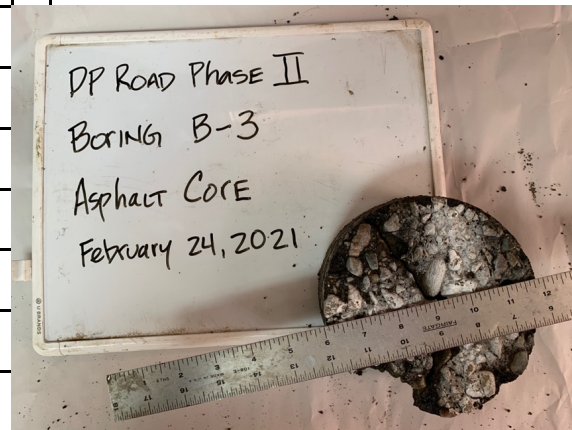
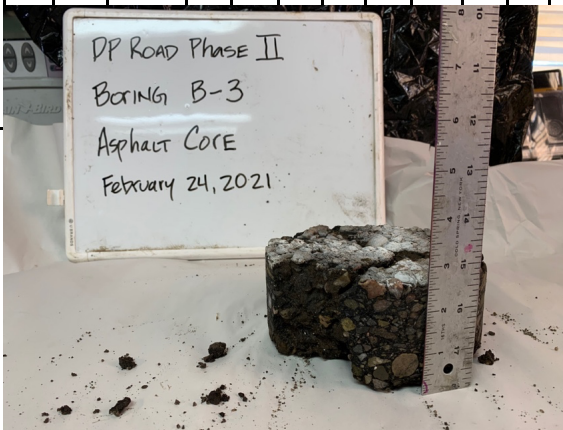


Figure B-3



HAND AUGER BORING LOG

Boring # **B-4**

Sheet 1 of 1

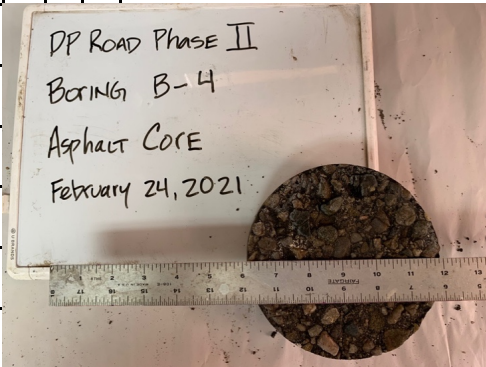
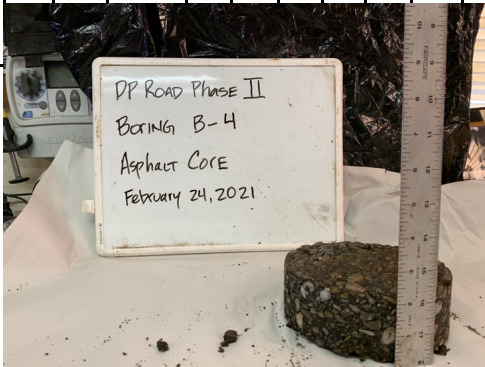
Project Name	DP Road Phase II	Date	Started:	2/24/21	5:40pm	Groundwater encountered:	Date/time	Depth	
Project Number	2017-07-07		Completed:	2/24/21	6:45pm		None Encountered		
Location:	See Boring Location Plan		Backfilled:	2/24/21	7:00pm				
Surface Elevation:	7229 +/- (GEP)	Drilling Rig:	Hand Auger	Driller:	J. North	Logged by:	J. North		

Drilling Method: Hand Auger, 3" Diameter

Depth, feet	Sampling			Soil					Field Tests				Description	
	Graphic Log	Sample No.	Sample Type	Depth, inches	Moisture Content	Plastic Limit	Liquid Limit	Plasticity Index	Percent -#200	USCS Symbol	AASHTO Symbol	Relative Moisture		Munsell Color
0													Existing Ground Surface ↘	
		S-1	G	6"									2.5-3" of Asphaltic Concrete	
					(Composite of S-1 & S-2)									14" Mixture of Basecourse and Subbase (Well Graded Sandy GRAVEL and Gravelly SAND (GW-SW)(f-c)), dry, black to dark reddish brown
		S-2	G	12"	5.4				12	GW-SW	A-1-a			
		S-3	G	18"	(Composite of S-3, S-4, & S-5)									Lean CLAY (CL)(f-m), with sand (f-c), damp, firm, brown, trace roots (Layer 1)
		S-4	G	24"	18.8	19	27	8	85	CL	A-4			
2.5		S-5	G	30"									same as Sample S-3 and S-4	
		S-6	G	36"									same as Sample S-5 (Residual Soil or Possible Fill) ↑	
		S-7	G	42"									Silty Lean CLAY (CL-ML), trace tuff fragments (gray), dry-damp, olive yellow, stiff (Residual Soil - Completely Weathered Tuff) (Layer 1)	
		S-8	G	48"										
		S-9	G	54"									Bandelier Tuff, poorly-moderately welded, gray w/pink (Unit 3U) (Layer 2)	
		S-10	G	60"										
		S-11	G	66"									Total Depth = 4'-9". Boring backfilled with cuttings to -4". Completed boring with asphalt to finish grade. Ground surface elevation based on Google Earth Pro (GEP)	
		S-12	G	72"										

The lines defining changes in soil type shown on the boring logs are approximate and gradational. The soil type boundaries indicated on the boring logs are based on the observations and interpretations made by the field engineer at the time of the subsurface characterization as well as on the results of laboratory testing. Variation in the actual subsurface conditions encountered at the time of construction is possible and should be anticipated. Groundwater was not encountered at the time of drilling. It should be noted that the borings may not have been left open long enough for stabilization of the groundwater level to have occurred. Fluctuations in the groundwater level may occur due to variations in rainfall, temperature, local or regional pumping from wells, and possibly as the result of other factors that were not evident at the time of the field work.

5.0				60"									
7.5													



10.0													
------	--	--	--	--	--	--	--	--	--	--	--	--	--

Figure B-4

Appendix C – Laboratory Testing

Representative samples were obtained from the hand auger borings at selected depths appropriate to this geotechnical evaluation. All samples were returned to our office for further evaluation, quality control checks against the field boring logs, and preparation for lab testing. All lab testing was performed by our subconsultant Bohannon Huston, Inc. (BHI) located in Albuquerque, New Mexico. BHI is an accredited laboratory that provides contract lab testing.

Laboratory testing of selected samples was conducted to evaluate the moisture content, grain size, and Atterberg limits determinations of the samples collected. The complete laboratory test results are presented below as well as on the individual boring logs.

Approved By:

Skylar DeWeese
Skylar DeWeese, P.E.

Bohannon Huston

Field and Materials Testing Laboratory

8371 Corona Loop NE Albuquerque, NM 87113 505-797-1060



Sample No.: **B-1, S-1 & S-2**
Report Date: **3/8/2021**

LABORATORY ANALYSIS WORKSHEET FOR SOILS & AGGREGATES

Project Name: DP Road Phase II	Sample Location: Boring 1, Samples 1 & 2 Composite
BHI Project No.: 20200019-029 / NGES PN: 2017-07-07	Sample Source: In-situ Material
Project Location: Los Alamos, NM	Sample Depth: 10 to 16 in (S-1) and 16 to 24 in (S-2) below Existing Site Grades
Sampled By: J. North / NGES	Sample Date: 2/24/2021
Tested By: G. McCann, R. Cruz	Test Date(s): 3/1/2021 – 3/5/2021

Client Name, Address, Phone: North GeoEngineering Services, LLC 4915 Cumbre Del Sur Ct, NE Albuquerque, NM 87111 505.400.2919

Contractor Name, Address, Phone: N/A

Material Type / Use: *Native Soil / Geotechnical Evaluation*

Methods Followed: (x)ASTM ()AASHTO ()NMDOT
REPRESENTATIVE MATERIAL SAMPLE OBTAINED IN THE FIELD (D75, R90)
REDUCED TO APPROPRIATE SIZE TEST PORTIONS IN THE LAB (C702, R76)

Tests Performed: As-Received Moisture Content, Sieve Analysis, Plasticity Index, Soil Classification

LIQUID LIMIT (D421, D4318, R58, T89)			
Tin Identification	Mg	Sc	Ca
Taps	33	27	17
1. Tin Tare (g)	20.80	20.99	20.79
2. Tin + Wet Soil (g)	30.52	32.41	33.22
3. Tin + Dry Soil (g)	28.67	30.13	30.62
4. Wt. of Moisture (2.- 3.) (g)	1.85	2.28	2.60
5. Wt. of Dry Soil (3.- 1.) (g)	7.87	9.14	9.83
6. % Moisture (4./ 5.) * 100	23.5%	24.9%	26.4%
Liquid Limit, LL:	25	LL Results:	N/A
Specification:	None		

PLASTIC LIMIT / PLASTICITY INDEX (D421, D4318, R58, T90)		
Tin Identification	Tc	Zr
7. Tin Tare (g)	21.10	21.72
8. Tin + Wet Soil (g)	29.27	31.19
9. Tin + Dry Soil (g)	27.95	29.58
10. Wt. of Moisture (8.-9.) (g)	1.32	1.61
11. Wt. of Dry Soil (9.-7.) (g)	6.85	7.86
12. % Moisture (10./11.) * 100	19.3%	20.5%
Plastic Limit, PL:	20	PI Results:
Plasticity Index, PI (LL-PL):	5	N/A
PI Specification:	None	

GRADATION DATA (D1140, D6913, T11, T27)									
Sample Weight Before Washing (g) =	562.1	% Loss by Washing:	83.4%	Gradation Results:		N/A			
Sample Weight After Washing (g) =	93.1	% Sieving Loss:	-1.07% (+/- 0.3% Max)						
Shaking Time:	10 min.	ACCUMULATIVE WEIGHT (g)				TOTAL WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING	SPECIFICATION
SIEVE SIZE	1	2	3	4					
3 in. (75 mm)	0.0	--	--	--	0.0	0.0	100	--	
2 in. (50 mm)	0.0	--	--	--	0.0	0.0	100	--	
1-½ in. (37.5 mm)	0.0	--	--	--	0.0	0.0	100	--	
1 in. (25.0 mm)	0.0	--	--	--	0.0	0.0	100	--	
¾ in. (19.0 mm)	0.0	--	--	--	0.0	0.0	100	--	
½ in. (9.5 mm)	0.0	--	--	--	0.0	0.0	100	--	
No. 4 (4.75 mm)	5.6	--	--	--	5.6	1.0	99	--	
No. 10 (2.00 mm)	12.0	--	--	--	12.0	2.1	98	--	
No. 20 (850 µm)	28.1	--	--	--	28.1	5.0	95	--	
No. 40 (425 µm)	40.5	--	--	--	40.5	7.2	93	--	
No. 60 (250 µm)	48.1	--	--	--	48.1	8.6	91	--	
No. 100 (150 µm)	54.6	--	--	--	54.6	9.7	90	--	
No. 140 (106 µm)	63.4	--	--	--	63.4	11.3	89	--	
No. 200 (75 µm)	83.8	--	--	--	83.8	14.9	85	--	
Pan	94.1	--	--	--	94.1	--	--	--	

% MOISTURE CONTENT (D2216, T265)	
Mass of Moist Soil, condition as-received (g):	328.5
Mass of Dry Soil, constant mass achieved (g):	294.7
% Moisture (mass of water)/(dry soil mass)*100	11.5%
Specification:	None
% Moisture Content Results:	N/A

SAND EQUIVALENT (D2419, T176)			
	1	2	3
Clay (in.):	--	--	--
Sand (in.):	--	--	--
Sand Equivalent (%):	--	--	--
Average Sand Equivalent, SE =	--	SE Results:	
Specification:	--	--	

SPECIFIC GRAVITY (D854, T100)	
Calibrated Mass of dry Flask (g):	--
Mass of Flask + oven-dried Soil (g):	--
Mass of Flask + oven-dried Soil + de-aired Water (g)	--
Temperature of Water (°C):	--
Density of Water at Test Temperature (g/mL):	--
Calibrated Volume of Flask (mL):	--
Mass of Flask + Water at Test Temperature (g):	--
Specific Gravity of Soil at Test Temperature:	--
Specific Gravity of Soil at 20 °C (Corrected):	--

ESTIMATED R-VALUE (NMDOT)			
Est. R-val (60% risk)	--	R-value Result:	--
Specification:	--		

SOIL CLASSIFICATION (D2487, M145)			
Soil Classification:	CL-ML, Silty Clay with Sand	Soil Class Result:	N/A
Specification:	None		

Deviations from Typical Procedures:	None
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Subconsultant Data: Subconsultant: N/A
Certified Report No.: N/A

Approved By:

Skylar DeWeese
Skylar DeWeese, P.E.

Bohannon Huston

Field and Materials Testing Laboratory

8371 Corona Loop NE Albuquerque, NM 87113 505-797-1060



Sample No.: B-2, S-1 & S-2
Report Date: 3/8/2021

LABORATORY ANALYSIS WORKSHEET FOR SOILS & AGGREGATES

Project Name: DP Road Phase II	Sample Location: Boring 2, Samples 1 & 2 Composite
BHI Project No.: 20200019-029 / NGES PN: 2017-07-07	Sample Source: In-situ Material
Project Location: Los Alamos, NM	Sample Depth: 14 to 18 in (S-1) and 18 to 22 in (S-2) below Existing Site Grades
Sampled By: J. North / NGES	Sample Date: 2/24/2021
Tested By: I. Sisneros, R. Cruz	Test Date(s): 3/1/2021 – 3/5/2021

Client Name, Address, Phone: North GeoEngineering Services, LLC 4915 Cumbre Del Sur Ct, NE Albuquerque, NM 87111 505.400.2919

Contractor Name, Address, Phone: N/A

Material Type / Use: Native Soil / Geotechnical Evaluation

Methods Followed: (x)ASTM ()AASHTO ()NMDOT
REPRESENTATIVE MATERIAL SAMPLE OBTAINED IN THE FIELD (D75, R90)
REDUCED TO APPROPRIATE SIZE TEST PORTIONS IN THE LAB (C702, R76)

Tests Performed: As-Received Moisture Content, Plasticity Index

LIQUID LIMIT (D421, D4318, R58, T89)

Tin Identification	Zn	N	Ti
Taps	21	26	32
1. Tin Tare (g)	21.17	21.04	21.41
2. Tin + Wet Soil (g)	34.76	36.03	37.79
3. Tin + Dry Soil (g)	32.06	33.19	34.95
4. Wt. of Moisture (2.- 3.) (g)	2.70	2.84	2.84
5. Wt. of Dry Soil (3.- 1.) (g)	10.89	12.15	13.54
6. % Moisture (4./ 5.) * 100	24.8%	23.4%	21.0%
Liquid Limit, LL:	24	LL Results:	N/A
Specification:	None		

PLASTIC LIMIT / PLASTICITY INDEX (D421, D4318, R58, T90)

Tin Identification	Ag	Cl
7. Tin Tare (g)	21.24	21.33
8. Tin + Wet Soil (g)	30.04	29.00
9. Tin + Dry Soil (g)	28.72	27.85
10. Wt. of Moisture (8.-9.) (g)	1.32	1.15
11. Wt. of Dry Soil (9.-7.) (g)	7.48	6.52
12. % Moisture (10./11.) * 100	17.6%	17.6%
Plastic Limit, PL:	18	PI Results:
Plasticity Index, PI (LL-PL):	6	N/A
PI Specification:	None	

GRADATION DATA (D1140, D6913, T11, T27)

Sample Weight Before Washing (g) =	--	% Loss by Washing:	--	Gradation Results:	N/A			
Sample Weight After Washing (g) =	--	% Sieving Loss:	-- (+/- 0.3% Max)					
Shaking Time:	10 min.	ACCUMULATIVE WEIGHT (g)			TOTAL WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING	SPECIFICATION
SIEVE SIZE	1	2	3	4				
3 in. (75 mm)	--	--	--	--	--	--	--	--
2 in. (50 mm)	--	--	--	--	--	--	--	--
1-½ in. (37.5 mm)	--	--	--	--	--	--	--	--
1 in. (25.0 mm)	--	--	--	--	--	--	--	--
¾ in. (19.0 mm)	--	--	--	--	--	--	--	--
½ in. (9.5 mm)	--	--	--	--	--	--	--	--
No. 4 (4.75 mm)	--	--	--	--	--	--	--	--
No. 10 (2.00 mm)	--	--	--	--	--	--	--	--
No. 20 (850 mm)	--	--	--	--	--	--	--	--
No. 40 (425 µm)	--	--	--	--	--	--	--	--
No. 60 (250 µm)	--	--	--	--	--	--	--	--
No. 100 (150 µm)	--	--	--	--	--	--	--	--
No. 140 (106 µm)	--	--	--	--	--	--	--	--
No. 200 (75 µm)	--	--	--	--	--	--	--	--
Pan	--	--	--	--	--	--	--	--

% MOISTURE CONTENT (D2216, T265)

Mass of Moist Soil, condition as-received (g):	364.1
Mass of Dry Soil, constant mass achieved (g):	322.6
% Moisture (mass of water)/(dry soil mass)*100	12.9%
Specification:	None
% Moisture Content Results:	N/A

SAND EQUIVALENT (D2419, T176)

	1	2	3
Clay (in.):	--	--	--
Sand (in.):	--	--	--
Sand Equivalent (%):	--	--	--
Average Sand Equivalent, SE =	--	SE Results:	
Specification:	--	--	

SPECIFIC GRAVITY (D854, T100)

Calibrated Mass of dry Flask (g):	--
Mass of Flask + oven-dried Soil (g):	--
Mass of Flask + oven-dried Soil + de-aired Water (g)	--
Temperature of Water (°C):	--
Density of Water at Test Temperature (g/mL):	--
Calibrated Volume of Flask (mL):	--
Mass of Flask + Water at Test Temperature (g):	--
Specific Gravity of Soil at Test Temperature:	--
Specific Gravity of Soil at 20 °C (Corrected):	--

ESTIMATED R-VALUE (NMDOT)

Est. R-val (60% risk)	--	R-value Result:	--
Specification:	--		

SOIL CLASSIFICATION (D2487, M145)

Soil Classification:	--	Soil Class Result:	--
Specification:	--		

Deviations from Typical Procedures: None

Subconsultant Data: Subconsultant: N/A
Certified Report No.: N/A

Approved By:

Skylar DeWeese
Skylar DeWeese, P.E.

Bohannon Huston

Field and Materials Testing Laboratory

8371 Corona Loop NE Albuquerque, NM 87113 505-797-1060



Sample No.: **B-2, S-3 & S-4**
Report Date: **3/8/2021**

LABORATORY ANALYSIS WORKSHEET FOR SOILS & AGGREGATES

Project Name: DP Road Phase II	Sample Location: Boring 2, Samples 3 & 4 Composite
BHI Project No.: 20200019-029 / NGES PN: 2017-07-07	Sample Source: In-situ Material
Project Location: Los Alamos, NM	Sample Depth: 22 to 26 in (S-3) and 26 to 30 in (S-4) below Existing Site Grades
Sampled By: J. North / NGES	Sample Date: 2/24/2021
Tested By: G. McCann, R. Cruz	Test Date(s): 3/1/2021 – 3/5/2021

Client Name, Address, Phone: North GeoEngineering Services, LLC 4915 Cumbre Del Sur Ct, NE Albuquerque, NM 87111 505.400.2919

Contractor Name, Address, Phone: N/A

Material Type / Use: *Native Soil / Geotechnical Evaluation*

Methods Followed: (x)ASTM ()AASHTO ()NMDOT
REPRESENTATIVE MATERIAL SAMPLE OBTAINED IN THE FIELD (D75, R90)
REDUCED TO APPROPRIATE SIZE TEST PORTIONS IN THE LAB (C702, R76)

Tests Performed: As-Received Moisture Content, Sieve Analysis, Plasticity Index, Soil Classification

LIQUID LIMIT (D421, D4318, R58, T89)

Tin Identification	Cr	P	Rb
Taps	24	30	35
1. Tin Tare (g)	21.06	21.58	20.56
2. Tin + Wet Soil (g)	33.77	35.28	33.80
3. Tin + Dry Soil (g)	30.84	32.29	31.11
4. Wt. of Moisture (2.- 3.) (g)	2.93	2.99	2.69
5. Wt. of Dry Soil (3.- 1.) (g)	9.78	10.71	10.55
6. % Moisture (4./ 5.) * 100	30.0%	27.9%	25.5%
Liquid Limit, LL:	30		
Specification:	None		
		LL Results:	N/A

PLASTIC LIMIT / PLASTICITY INDEX (D421, D4318, R58, T90)

Tin Identification	Rf	Ru
7. Tin Tare (g)	20.93	21.41
8. Tin + Wet Soil (g)	29.71	31.18
9. Tin + Dry Soil (g)	28.32	29.60
10. Wt. of Moisture (8.-9.) (g)	1.39	1.58
11. Wt. of Dry Soil (9.-7.) (g)	7.39	8.19
12. % Moisture (10./11.) * 100	18.8%	19.3%
Plastic Limit, PL:	19	PI Results:
Plasticity Index, PI (LL-PL):	11	
PI Specification:	None	N/A

GRADATION DATA (D1140, D6913, T11, T27)

Sample Weight Before Washing (g) =	534.7	% Loss by Washing:	83.1%		Gradation Results:	N/A		
Sample Weight After Washing (g) =	90.2	% Sieving Loss:	-0.33% (+/- 0.3% Max)					
Shaking Time:	10 min.							
SIEVE SIZE	ACCUMULATIVE WEIGHT (g)				TOTAL WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING	SPECIFICATION
	1	2	3	4				
3 in. (75 mm)	0.0	--	--	--	0.0	0.0	100	--
2 in. (50 mm)	0.0	--	--	--	0.0	0.0	100	--
1-½ in. (37.5 mm)	0.0	--	--	--	0.0	0.0	100	--
1 in. (25.0 mm)	0.0	--	--	--	0.0	0.0	100	--
¾ in. (19.0 mm)	0.0	--	--	--	0.0	0.0	100	--
½ in. (9.5 mm)	0.0	--	--	--	0.0	0.0	100	--
No. 4 (4.75 mm)	4.3	--	--	--	4.3	0.8	99	--
No. 10 (2.00 mm)	10.0	--	--	--	10.0	1.9	98	--
No. 20 (850 µm)	31.4	--	--	--	31.4	5.9	94	--
No. 40 (425 µm)	45.6	--	--	--	45.6	8.5	91	--
No. 60 (250 µm)	51.5	--	--	--	51.5	9.6	90	--
No. 100 (150 µm)	56.8	--	--	--	56.8	10.6	89	--
No. 140 (106 µm)	65.0	--	--	--	65.0	12.2	88	--
No. 200 (75 µm)	84.3	--	--	--	84.3	15.8	84	--
Pan	90.5	--	--	--	90.5	--	--	--

% MOISTURE CONTENT (D2216, T265)

Mass of Moist Soil, condition as-received (g):	226.9
Mass of Dry Soil, constant mass achieved (g):	196.8
% Moisture (mass of water)/(dry soil mass)*100	15.3%
Specification:	None
% Moisture Content Results:	N/A

SAND EQUIVALENT (D2419, T176)

	1	2	3
Clay (in.):	--	--	--
Sand (in.):	--	--	--
Sand Equivalent (%):	--	--	--
Average Sand Equivalent, SE =	SE Results:		--
Specification:	--		

SPECIFIC GRAVITY (D854, T100)

Calibrated Mass of dry Flask (g):	--
Mass of Flask + oven-dried Soil (g):	--
Mass of Flask + oven-dried Soil + de-aired Water (g)	--
Temperature of Water (°C):	--
Density of Water at Test Temperature (g/mL):	--
Calibrated Volume of Flask (mL):	--
Mass of Flask + Water at Test Temperature (g):	--
Specific Gravity of Soil at Test Temperature:	--
Specific Gravity of Soil at 20 °C (Corrected):	--

ESTIMATED R-VALUE (NMDOT)

Est. R-val (60% risk)	--	R-value Result:	--
Specification:	--		

SOIL CLASSIFICATION (D2487, M145)

Soil Classification:	CL, Lean Clay with Sand	Soil Class Result:	N/A
Specification:	None		

Deviations from Typical Procedures: None

Subconsultant Data: Subconsultant: N/A
Certified Report No.: N/A

Approved By:

Skylar DeWeese
Skylar DeWeese, P.E.

Bohannon Huston

Field and Materials Testing Laboratory

8371 Corona Loop NE Albuquerque, NM 87113 505-797-1060



Sample No.: **B-2, S-6 & S-7**
Report Date: **3/8/2021**

LABORATORY ANALYSIS WORKSHEET FOR SOILS & AGGREGATES

Project Name: DP Road Phase II	Sample Location: Boring 2, Samples 6 & 7 Composite
BHI Project No.: 20200019-029 / NGES PN: 2017-07-07	Sample Source: In-situ Material
Project Location: Los Alamos, NM	Sample Depth: 34 to 38 in (S-6) and 38 to 46 in (S-7) below Existing Site Grades
Sampled By: J. North / NGES	Sample Date: 2/24/2021
Tested By: I. Sisneros	Test Date(s): 3/1/2021 – 3/5/2021

Client Name, Address, Phone: North GeoEngineering Services, LLC 4915 Cumbre Del Sur Ct, NE Albuquerque, NM 87111 505.400.2919

Contractor Name, Address, Phone: N/A

Material Type / Use: *Native Soil / Geotechnical Evaluation*

Methods Followed: (x)ASTM ()AASHTO ()NMDOT
REPRESENTATIVE MATERIAL SAMPLE OBTAINED IN THE FIELD (D75, R90)
REDUCED TO APPROPRIATE SIZE TEST PORTIONS IN THE LAB (C702, R76)

Tests Performed: As-Received Moisture Content

LIQUID LIMIT (D421, D4318, R58, T89)

Tin Identification	--	--	--
Taps	--	--	--
1. Tin Tare (g)	--	--	--
2. Tin + Wet Soil (g)	--	--	--
3. Tin + Dry Soil (g)	--	--	--
4. Wt. of Moisture (2.- 3.) (g)	--	--	--
5. Wt. of Dry Soil (3.- 1.) (g)	--	--	--
6. % Moisture (4./ 5.) * 100	--	--	--
Liquid Limit, LL:	--	LL Results:	--
Specification:	--		--

PLASTIC LIMIT / PLASTICITY INDEX (D421, D4318, R58, T90)

Tin Identification	--	--
7. Tin Tare (g)	--	--
8. Tin + Wet Soil (g)	--	--
9. Tin + Dry Soil (g)	--	--
10. Wt. of Moisture (8.-9.) (g)	--	--
11. Wt. of Dry Soil (9.-7.) (g)	--	--
12. % Moisture (10./11.) * 100	--	--
Plastic Limit, PL:	--	PI Results:
Plasticity Index, PI (LL-PL):	--	
PI Specification:	--	--

GRADATION DATA (D1140, D6913, T11, T27)

Sample Weight Before Washing (g) =	--	% Loss by Washing:	--				Gradation Results:	N/A	
Sample Weight After Washing (g) =	--	% Sieving Loss:	--	(+/- 0.3% Max)					
Shaking Time:	10 min.	ACCUMULATIVE WEIGHT (g)				TOTAL WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING	SPECIFICATION
SIEVE SIZE		1	2	3	4				
3 in. (75 mm)	--	--	--	--	--	--	--	--	--
2 in. (50 mm)	--	--	--	--	--	--	--	--	--
1-½ in. (37.5 mm)	--	--	--	--	--	--	--	--	--
1 in. (25.0 mm)	--	--	--	--	--	--	--	--	--
¾ in. (19.0 mm)	--	--	--	--	--	--	--	--	--
½ in. (9.5 mm)	--	--	--	--	--	--	--	--	--
No. 4 (4.75 mm)	--	--	--	--	--	--	--	--	--
No. 10 (2.00 mm)	--	--	--	--	--	--	--	--	--
No. 20 (850 mm)	--	--	--	--	--	--	--	--	--
No. 40 (425 µm)	--	--	--	--	--	--	--	--	--
No. 60 (250 µm)	--	--	--	--	--	--	--	--	--
No. 100 (150 µm)	--	--	--	--	--	--	--	--	--
No. 140 (106 µm)	--	--	--	--	--	--	--	--	--
No. 200 (75 µm)	--	--	--	--	--	--	--	--	--
Pan	--	--	--	--	--	--	--	--	--

% MOISTURE CONTENT (D2216, T265)

Mass of Moist Soil, condition as-received (g):	376.8
Mass of Dry Soil, constant mass achieved (g):	339.0
% Moisture (mass of water)/(dry soil mass)*100	11.2%
Specification:	None
% Moisture Content Results:	N/A

SAND EQUIVALENT (D2419, T176)

	1	2	3
Clay (in.):	--	--	--
Sand (in.):	--	--	--
Sand Equivalent (%):	--	--	--
Average Sand Equivalent, SE =	--	--	--
Specification:	--	SE Results:	--

SPECIFIC GRAVITY (D854, T100)

Calibrated Mass of dry Flask (g):	--
Mass of Flask + oven-dried Soil (g):	--
Mass of Flask + oven-dried Soil + de-aired Water (g)	--
Temperature of Water (°C):	--
Density of Water at Test Temperature (g/mL):	--
Calibrated Volume of Flask (mL):	--
Mass of Flask + Water at Test Temperature (g):	--
Specific Gravity of Soil at Test Temperature:	--
Specific Gravity of Soil at 20 °C (Corrected):	--

ESTIMATED R-VALUE (NMDOT)

Est. R-val (60% risk)	--	R-value Result:	--
Specification:	--		

SOIL CLASSIFICATION (D2487, M145)

Soil Classification:	--	Soil Class Result:	--
Specification:	--		

Deviations from Typical Procedures: None

Subconsultant Data: Subconsultant: N/A
Certified Report No.: N/A

Approved By:

Skylar DeWeese
Skylar DeWeese, P.E.

Bohannon Huston

Field and Materials Testing Laboratory

8371 Corona Loop NE Albuquerque, NM 87113 505-797-1060



Sample No.: **B-3, S-1**
Report Date: **3/8/2021**

LABORATORY ANALYSIS WORKSHEET FOR SOILS & AGGREGATES

Project Name: DP Road Phase II	Sample Location: Boring 3, Sample 1
BHI Project No.: 20200019-029 / NGES PN: 2017-07-07	Sample Source: In-situ Material
Project Location: Los Alamos, NM	Sample Depth: 9 to 15 in below Existing Site Grade
Sampled By: J. North / NGES	Sample Date: 2/24/2021
Tested By: I. Sisneros, G. McCann	Test Date(s): 3/1/2021 – 3/5/2021

Client Name, Address, Phone: North GeoEngineering Services, LLC 4915 Cumbre Del Sur Ct, NE Albuquerque, NM 87111 505.400.2919

Contractor Name, Address, Phone: N/A

Material Type / Use: Native Soil / Geotechnical Evaluation

Methods Followed: (x)ASTM ()AASHTO ()NMDOT
REPRESENTATIVE MATERIAL SAMPLE OBTAINED IN THE FIELD (D75, R90)
REDUCED TO APPROPRIATE SIZE TEST PORTIONS IN THE LAB (C702, R76)

Tests Performed: As-Received Moisture Content, Sieve Analysis

LIQUID LIMIT (D421, D4318, R58, T89)			
Tin Identification	--	--	--
Taps	--	--	--
1. Tin Tare (g)	--	--	--
2. Tin + Wet Soil (g)	--	--	--
3. Tin + Dry Soil (g)	--	--	--
4. Wt. of Moisture (2.- 3.) (g)	--	--	--
5. Wt. of Dry Soil (3.- 1.) (g)	--	--	--
6. % Moisture (4./ 5.) * 100	--	--	--
Liquid Limit, LL:	--	LL Results:	--
Specification:	--		--

PLASTIC LIMIT / PLASTICITY INDEX (D421, D4318, R58, T90)			
Tin Identification	--	--	--
7. Tin Tare (g)	--	--	--
8. Tin + Wet Soil (g)	--	--	--
9. Tin + Dry Soil (g)	--	--	--
10. Wt. of Moisture (8.-9.) (g)	--	--	--
11. Wt. of Dry Soil (9.-7.) (g)	--	--	--
12. % Moisture (10./11.) * 100	--	--	--
Plastic Limit, PL:	--	PI Results:	--
Plasticity Index, PI (LL-PL):	--		--
PI Specification:	--		--

GRADATION DATA (D1140, D6913, T11, T27)								
Sample Weight Before Washing (g) =	652.3	% Loss by Washing:	16.2%	Gradation Results:		N/A		
Sample Weight After Washing (g) =	546.5	% Sieving Loss:	-0.04% (+/- 0.3% Max)					
Shaking Time:	10 min.	ACCUMULATIVE WEIGHT (g)			TOTAL WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING	SPECIFICATION
SIEVE SIZE	1	2	3	4				
3 in. (75 mm)	0.0	--	--	--	0.0	0.0	100	--
2 in. (50 mm)	0.0	--	--	--	0.0	0.0	100	--
1-½ in. (37.5 mm)	0.0	--	--	--	0.0	0.0	100	--
1 in. (25.0 mm)	0.0	--	--	--	0.0	0.0	100	--
¾ in. (19.0 mm)	13.7	--	--	--	13.7	2.1	98	--
½ in. (9.5 mm)	101.5	--	--	--	101.5	15.6	84	--
No. 4 (4.75 mm)	212.6	--	--	--	212.6	32.6	67	--
No. 10 (2.00 mm)	297.0	--	--	--	297.0	45.5	54	--
No. 20 (850 µm)	377.2	--	--	--	377.2	57.8	42	--
No. 40 (425 µm)	443.0	--	--	--	443.0	67.9	32	--
No. 60 (250 µm)	489.4	--	--	--	489.4	75.0	25	--
No. 100 (150 µm)	519.2	--	--	--	519.2	79.6	20	--
No. 140 (106 µm)	532.9	--	--	--	532.9	81.7	18	--
No. 200 (75 µm)	542.8	--	--	--	542.8	83.2	17	--
Pan	546.7	--	--	--	546.7	--	--	--

% MOISTURE CONTENT (D2216, T265)	
Mass of Moist Soil, condition as-received (g):	310.5
Mass of Dry Soil, constant mass achieved (g):	292.6
% Moisture (mass of water)/(dry soil mass)*100	6.1%
Specification:	None
% Moisture Content Results:	N/A

SAND EQUIVALENT (D2419, T176)			
	1	2	3
Clay (in.):	--	--	--
Sand (in.):	--	--	--
Sand Equivalent (%):	--	--	--
Average Sand Equivalent, SE =	--	SE Results:	--
Specification:	--		--

SPECIFIC GRAVITY (D854, T100)	
Calibrated Mass of dry Flask (g):	--
Mass of Flask + oven-dried Soil (g):	--
Mass of Flask + oven-dried Soil + de-aired Water (g)	--
Temperature of Water (°C):	--
Density of Water at Test Temperature (g/mL):	--
Calibrated Volume of Flask (mL):	--
Mass of Flask + Water at Test Temperature (g):	--
Specific Gravity of Soil at Test Temperature:	--
Specific Gravity of Soil at 20 °C (Corrected):	--

ESTIMATED R-VALUE (NMDOT)			
Est. R-val (60% risk)	--	R-value Result:	--
Specification:	--		--

SOIL CLASSIFICATION (D2487, M145)			
Soil Classification:	--	Soil Class Result:	--
Specification:	--		--

Deviations from Typical Procedures:	None
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Subconsultant Data: Subconsultant: N/A
Certified Report No.: N/A

Approved By:

Skylar DeWeese
Skylar DeWeese, P.E.

Bohannon Huston

Field and Materials Testing Laboratory

8371 Corona Loop NE Albuquerque, NM 87113 505-797-1060



Sample No.: **B-3, S-2**
Report Date: **3/8/2021**

LABORATORY ANALYSIS WORKSHEET FOR SOILS & AGGREGATES

Project Name: DP Road Phase II	Sample Location: Boring 3, Sample 2
BHI Project No.: 20200019-029 / NGES PN: 2017-07-07	Sample Source: In-situ Material
Project Location: Los Alamos, NM	Sample Depth: 15 to 21 in below Existing Site Grade
Sampled By: J. North / NGES	Sample Date: 2/24/2021
Tested By: C. Duran, R. Cruz	Test Date(s): 3/1/2021 – 3/5/2021

Client Name, Address, Phone: North GeoEngineering Services, LLC 4915 Cumbre Del Sur Ct, NE Albuquerque, NM 87111 505.400.2919

Contractor Name, Address, Phone: N/A

Material Type / Use: **Native Soil / Geotechnical Evaluation**

Methods Followed: (x)ASTM ()AASHTO ()NMDOT
REPRESENTATIVE MATERIAL SAMPLE OBTAINED IN THE FIELD (D75, R90)
REDUCED TO APPROPRIATE SIZE TEST PORTIONS IN THE LAB (C702, R76)

Tests Performed: As-Received Moisture Content, Sieve Analysis, Plasticity Index, Soil Classification

LIQUID LIMIT (D421, D4318, R58, T89)			
Tin Identification	Cs	B	Mo
Taps	17	25	34
1. Tin Tare (g)	20.79	20.78	21.63
2. Tin + Wet Soil (g)	33.21	32.71	35.02
3. Tin + Dry Soil (g)	30.07	29.85	31.97
4. Wt. of Moisture (2.- 3.) (g)	3.14	2.86	3.05
5. Wt. of Dry Soil (3.- 1.) (g)	9.28	9.07	10.34
6. % Moisture (4./ 5.) * 100	33.8%	31.5%	29.5%
Liquid Limit, LL:	32	LL Results:	N/A
Specification:	None		

PLASTIC LIMIT / PLASTICITY INDEX (D421, D4318, R58, T90)		
Tin Identification	Nb	W
7. Tin Tare (g)	20.93	21.71
8. Tin + Wet Soil (g)	26.01	27.53
9. Tin + Dry Soil (g)	25.23	26.59
10. Wt. of Moisture (8.-9.) (g)	0.78	0.94
11. Wt. of Dry Soil (9.-7.) (g)	4.30	4.88
12. % Moisture (10./11.) * 100	18.1%	19.3%
Plastic Limit, PL:	19	PI Results:
Plasticity Index, PI (LL-PL):	13	N/A
PI Specification:	None	

GRADATION DATA (D1140, D6913, T11, T27)								
Sample Weight Before Washing (g) =	283.9	% Loss by Washing:	72.2%	Gradation Results:		N/A		
Sample Weight After Washing (g) =	78.8	% Sieving Loss:	0.38% (+/- 0.3% Max)					
Shaking Time:	10 min.	ACCUMULATIVE WEIGHT (g)			TOTAL WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING	SPECIFICATION
SIEVE SIZE	1	2	3	4				
3 in. (75 mm)	0.0	--	--	--	0.0	0.0	100	--
2 in. (50 mm)	0.0	--	--	--	0.0	0.0	100	--
1-½ in. (37.5 mm)	0.0	--	--	--	0.0	0.0	100	--
1 in. (25.0 mm)	0.0	--	--	--	0.0	0.0	100	--
¾ in. (19.0 mm)	0.0	--	--	--	0.0	0.0	100	--
½ in. (9.5 mm)	0.0	--	--	--	0.0	0.0	100	--
No. 4 (4.75 mm)	3.5	--	--	--	3.5	1.2	99	--
No. 10 (2.00 mm)	8.0	--	--	--	8.0	2.8	97	--
No. 20 (850 µm)	27.5	--	--	--	27.5	9.7	90	--
No. 40 (425 µm)	40.4	--	--	--	40.4	14.2	86	--
No. 60 (250 µm)	46.3	--	--	--	46.3	16.3	84	--
No. 100 (150 µm)	52.2	--	--	--	52.2	18.4	82	--
No. 140 (106 µm)	58.1	--	--	--	58.1	20.5	80	--
No. 200 (75 µm)	69.8	--	--	--	69.8	24.6	75	--
Pan	78.5	--	--	--	78.5	--	--	--

% MOISTURE CONTENT (D2216, T265)	
Mass of Moist Soil, condition as-received (g):	324.0
Mass of Dry Soil, constant mass achieved (g):	283.9
% Moisture (mass of water)/(dry soil mass)*100	14.1%
Specification:	None
% Moisture Content Results:	N/A

SAND EQUIVALENT (D2419, T176)			
	1	2	3
Clay (in.):	--	--	--
Sand (in.):	--	--	--
Sand Equivalent (%):	--	--	--
Average Sand Equivalent, SE =	--	SE Results: --	
Specification:	--		

SPECIFIC GRAVITY (D854, T100)	
Calibrated Mass of dry Flask (g):	--
Mass of Flask + oven-dried Soil (g):	--
Mass of Flask + oven-dried Soil + de-aired Water (g)	--
Temperature of Water (°C):	--
Density of Water at Test Temperature (g/mL):	--
Calibrated Volume of Flask (mL):	--
Mass of Flask + Water at Test Temperature (g):	--
Specific Gravity of Soil at Test Temperature:	--
Specific Gravity of Soil at 20 °C (Corrected):	--

ESTIMATED R-VALUE (NMDOT)			
Est. R-val (60% risk)	--	R-value Result:	--
Specification:	--		

SOIL CLASSIFICATION (D2487, M145)			
Soil Classification:	CL, Lean Clay with Sand	Soil Class Result:	N/A
Specification:	None		

Deviations from Typical Procedures:	None
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Subconsultant Data: Subconsultant: N/A
Certified Report No.: N/A

Approved By:

Skylar DeWeese
Skylar DeWeese, P.E.

Bohannon Huston

Field and Materials Testing Laboratory

8371 Corona Loop NE Albuquerque, NM 87113 505-797-1060



Sample No.: **B-4, S-1 & S-2**
Report Date: **3/8/2021**

LABORATORY ANALYSIS WORKSHEET FOR SOILS & AGGREGATES

Project Name: DP Road Phase II	Sample Location: Boring 4, Samples 1 & 2 Composite
BHI Project No.: 20200019-029 / NGES PN: 2017-07-07	Sample Source: In-situ Material
Project Location: Los Alamos, NM	Sample Depth: 3 to 9 in (S-1) and 9 to 17 in (S-2) below Existing Site Grades
Sampled By: J. North / NGES	Sample Date: 2/24/2021
Tested By: I. Sisneros, G. McCann	Test Date(s): 3/1/2021 – 3/5/2021

Client Name, Address, Phone: North GeoEngineering Services, LLC 4915 Cumbre Del Sur Ct, NE Albuquerque, NM 87111 505.400.2919

Contractor Name, Address, Phone: N/A

Material Type / Use: *Native Soil / Geotechnical Evaluation*

Methods Followed: (x)ASTM ()AASHTO ()NMDOT
REPRESENTATIVE MATERIAL SAMPLE OBTAINED IN THE FIELD (D75, R90)
REDUCED TO APPROPRIATE SIZE TEST PORTIONS IN THE LAB (C702, R76)

Tests Performed: As-Received Moisture Content, Sieve Analysis

LIQUID LIMIT (D421, D4318, R58, T89)			
Tin Identification	--	--	--
Taps	--	--	--
1. Tin Tare (g)	--	--	--
2. Tin + Wet Soil (g)	--	--	--
3. Tin + Dry Soil (g)	--	--	--
4. Wt. of Moisture (2.- 3.) (g)	--	--	--
5. Wt. of Dry Soil (3.- 1.) (g)	--	--	--
6. % Moisture (4./ 5.) * 100	--	--	--
Liquid Limit, LL:	--	LL Results:	--
Specification:	--		--

PLASTIC LIMIT / PLASTICITY INDEX (D421, D4318, R58, T90)			
Tin Identification	--	--	--
7. Tin Tare (g)	--	--	--
8. Tin + Wet Soil (g)	--	--	--
9. Tin + Dry Soil (g)	--	--	--
10. Wt. of Moisture (8.-9.) (g)	--	--	--
11. Wt. of Dry Soil (9.-7.) (g)	--	--	--
12. % Moisture (10./11.) * 100	--	--	--
Plastic Limit, PL:	--	PI Results:	--
Plasticity Index, PI (LL-PL):	--		--
PI Specification:	--		--

GRADATION DATA (D1140, D6913, T11, T27)								
Sample Weight Before Washing (g) =	1050.6	% Loss by Washing:	11.2%	Gradation Results:		N/A		
Sample Weight After Washing (g) =	932.6	% Sieving Loss:	0.45% (+/- 0.3% Max)					
Shaking Time:	10 min.	ACCUMULATIVE WEIGHT (g)			TOTAL WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING	SPECIFICATION
SIEVE SIZE	1	2	3	4				
3 in. (75 mm)	0.0	--	--	--	0.0	0.0	100	--
2 in. (50 mm)	0.0	--	--	--	0.0	0.0	100	--
1-½ in. (37.5 mm)	0.0	--	--	--	0.0	0.0	100	--
1 in. (25.0 mm)	0.0	--	--	--	0.0	0.0	100	--
¾ in. (19.0 mm)	257.1	--	--	--	257.1	24.5	76	--
½ in. (9.5 mm)	366.3	--	--	--	366.3	34.9	65	--
No. 4 (4.75 mm)	466.2	--	--	--	466.2	44.4	56	--
No. 10 (2.00 mm)	584.8	--	--	--	584.8	55.7	44	--
No. 20 (850 µm)	692.5	--	--	--	692.5	65.9	34	--
No. 40 (425 µm)	781.5	--	--	--	781.5	74.4	26	--
No. 60 (250 µm)	850.1	--	--	--	850.1	80.9	19	--
No. 100 (150 µm)	897.2	--	--	--	897.2	85.4	15	--
No. 140 (106 µm)	915.0	--	--	--	915.0	87.1	13	--
No. 200 (75 µm)	926.5	--	--	--	926.5	88.2	12	--
Pan	928.4	--	--	--	928.4	--	--	--

% MOISTURE CONTENT (D2216, T265)	
Mass of Moist Soil, condition as-received (g):	740.1
Mass of Dry Soil, constant mass achieved (g):	702.4
% Moisture (mass of water)/(dry soil mass)*100	5.4%
Specification:	None
% Moisture Content Results:	N/A

SAND EQUIVALENT (D2419, T176)				
	1	2	3	
Clay (in.):	--	--	--	
Sand (in.):	--	--	--	
Sand Equivalent (%):	--	--	--	
Average Sand Equivalent, SE =	--	SE Results:		--
Specification:	--			--

SPECIFIC GRAVITY (D854, T100)	
Calibrated Mass of dry Flask (g):	--
Mass of Flask + oven-dried Soil (g):	--
Mass of Flask + oven-dried Soil + de-aired Water (g)	--
Temperature of Water (°C):	--
Density of Water at Test Temperature (g/mL):	--
Calibrated Volume of Flask (mL):	--
Mass of Flask + Water at Test Temperature (g):	--
Specific Gravity of Soil at Test Temperature:	--
Specific Gravity of Soil at 20 °C (Corrected):	--

ESTIMATED R-VALUE (NMDOT)			
Est. R-val (60% risk)	--	R-value Result:	--
Specification:	--		--

SOIL CLASSIFICATION (D2487, M145)			
Soil Classification:	--	Soil Class Result:	--
Specification:	--		--

Deviations from Typical Procedures:	None
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Subconsultant Data: Subconsultant: N/A
Certified Report No.: N/A

Approved By:

Skylar DeWeese
Skylar DeWeese, P.E.

Bohannon Huston

Field and Materials Testing Laboratory

8371 Corona Loop NE Albuquerque, NM 87113 505-797-1060



Sample No.: **B-4, S-3 & S-4 & S-5**
Report Date: **3/8/2021**

LABORATORY ANALYSIS WORKSHEET FOR SOILS & AGGREGATES

Project Name: DP Road Phase II	Sample Location: Boring 4, Samples 3 & 4 & 5 Composite
BHI Project No.: 20200019-029 / NGES PN: 2017-07-07	Sample Source: In-situ Material
Project Location: Los Alamos, NM	Sample Depth: 17 to 21 in (S-3), 21 to 25 in (S-4), 25 to 30 in (S-5) below Existing Site Grades
Sampled By: J. North / NGES	Sample Date: 2/24/2021
Tested By: G. McCann, C. Duran	Test Date(s): 3/1/2021 – 3/5/2021

Client Name, Address, Phone: North GeoEngineering Services, LLC 4915 Cumbre Del Sur Ct, NE Albuquerque, NM 87111 505.400.2919

Contractor Name, Address, Phone: N/A

Material Type / Use: *Native Soil / Geotechnical Evaluation*

Methods Followed: (x)ASTM ()AASHTO ()NMDOT
REPRESENTATIVE MATERIAL SAMPLE OBTAINED IN THE FIELD (D75, R90)
REDUCED TO APPROPRIATE SIZE TEST PORTIONS IN THE LAB (C702, R76)

Tests Performed: As-Received Moisture Content, Sieve Analysis, Plasticity Index, Soil Classification

LIQUID LIMIT (D421, D4318, R58, T89)			
Tin Identification	Li	Al	Hf
Taps	21	29	35
1. Tin Tare (g)	20.93	21.36	21.34
2. Tin + Wet Soil (g)	34.30	36.01	39.41
3. Tin + Dry Soil (g)	31.47	32.91	35.70
4. Wt. of Moisture (2.- 3.) (g)	2.83	3.10	3.71
5. Wt. of Dry Soil (3.- 1.) (g)	10.54	11.55	14.36
6. % Moisture (4./ 5.) * 100	26.9%	26.8%	25.8%
Liquid Limit, LL:	27	LL Results:	N/A
Specification:	None		

PLASTIC LIMIT / PLASTICITY INDEX (D421, D4318, R58, T90)		
Tin Identification	Sr	Fr
7. Tin Tare (g)	20.92	20.75
8. Tin + Wet Soil (g)	30.24	30.64
9. Tin + Dry Soil (g)	28.77	29.09
10. Wt. of Moisture (8.-9.) (g)	1.47	1.55
11. Wt. of Dry Soil (9.-7.) (g)	7.85	8.34
12. % Moisture (10./11.) * 100	18.7%	18.6%
Plastic Limit, PL:	19	PI Results:
Plasticity Index, PI (LL-PL):	8	N/A
PI Specification:	None	

GRADATION DATA (D1140, D6913, T11, T27)								
Sample Weight Before Washing (g) =	792.4	% Loss by Washing:	81.0%	Gradation Results:		N/A		
Sample Weight After Washing (g) =	150.4	% Sieving Loss:	0.00% (+/- 0.3% Max)					
Shaking Time:	10 min.	ACCUMULATIVE WEIGHT (g)			TOTAL WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING	SPECIFICATION
SIEVE SIZE	1	2	3	4				
3 in. (75 mm)	0.0	--	--	--	0.0	0.0	100	--
2 in. (50 mm)	0.0	--	--	--	0.0	0.0	100	--
1-½ in. (37.5 mm)	0.0	--	--	--	0.0	0.0	100	--
1 in. (25.0 mm)	0.0	--	--	--	0.0	0.0	100	--
¾ in. (19.0 mm)	0.0	--	--	--	0.0	0.0	100	--
½ in. (9.5 mm)	0.0	--	--	--	0.0	0.0	100	--
No. 4 (4.75 mm)	8.7	--	--	--	8.7	1.1	99	--
No. 10 (2.00 mm)	23.0	--	--	--	23.0	2.9	97	--
No. 20 (850 µm)	37.8	--	--	--	37.8	4.8	95	--
No. 40 (425 µm)	49.6	--	--	--	49.6	6.3	94	--
No. 60 (250 µm)	59.3	--	--	--	59.3	7.5	93	--
No. 100 (150 µm)	71.6	--	--	--	71.6	9.0	91	--
No. 140 (106 µm)	87.6	--	--	--	87.6	11.1	89	--
No. 200 (75 µm)	117.9	--	--	--	117.9	14.9	85	--
Pan	150.4	--	--	--	150.4	--	--	--

% MOISTURE CONTENT (D2216, T265)	
Mass of Moist Soil, condition as-received (g):	498.2
Mass of Dry Soil, constant mass achieved (g):	419.5
% Moisture (mass of water)/(dry soil mass)*100	18.8%
Specification:	None
% Moisture Content Results:	N/A

SAND EQUIVALENT (D2419, T176)			
	1	2	3
Clay (in.):	--	--	--
Sand (in.):	--	--	--
Sand Equivalent (%):	--	--	--
Average Sand Equivalent, SE =	--	SE Results: --	
Specification:	--		

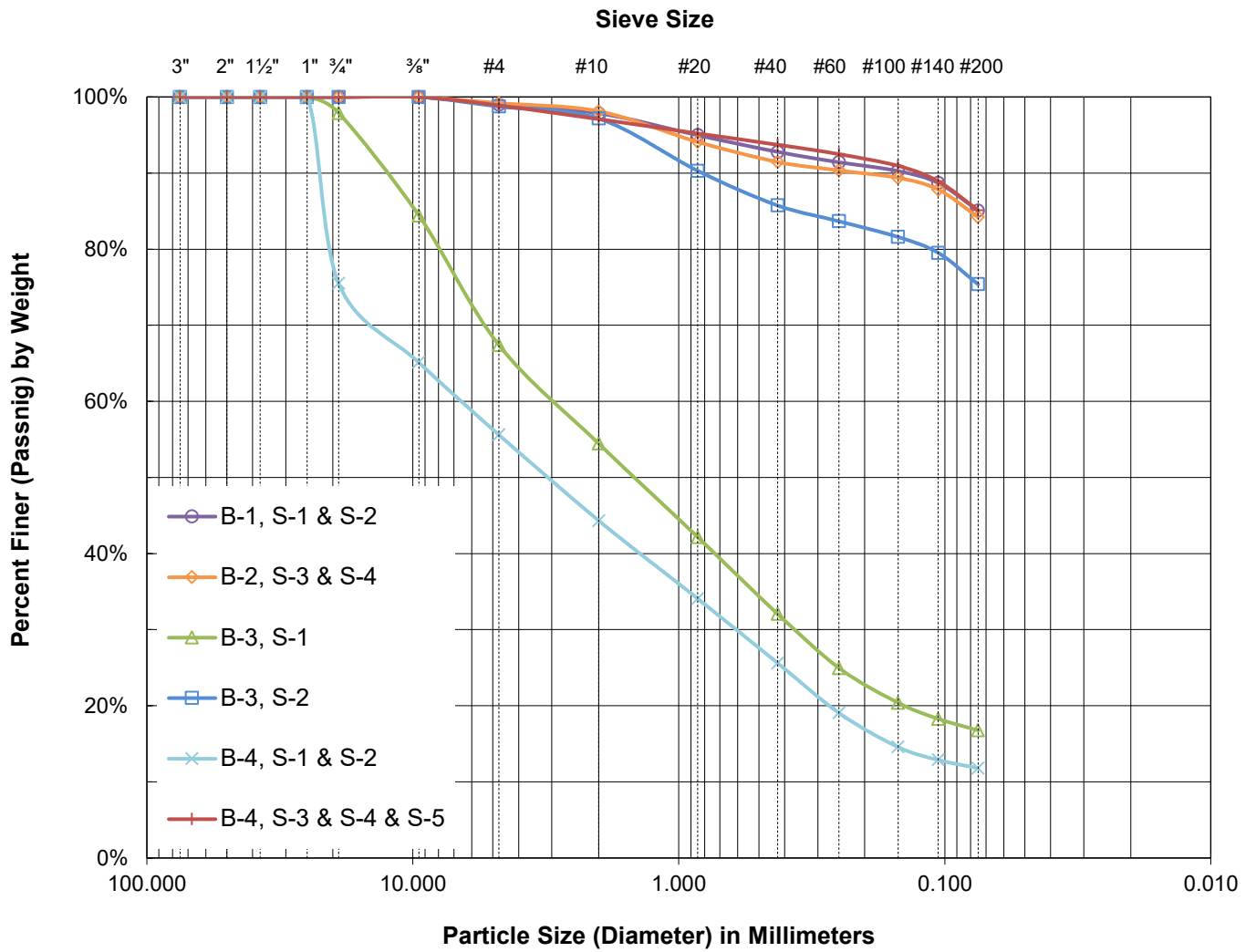
SPECIFIC GRAVITY (D854, T100)	
Calibrated Mass of dry Flask (g):	--
Mass of Flask + oven-dried Soil (g):	--
Mass of Flask + oven-dried Soil + de-aired Water (g)	--
Temperature of Water (°C):	--
Density of Water at Test Temperature (g/mL):	--
Calibrated Volume of Flask (mL):	--
Mass of Flask + Water at Test Temperature (g):	--
Specific Gravity of Soil at Test Temperature:	--
Specific Gravity of Soil at 20 °C (Corrected):	--

ESTIMATED R-VALUE (NMDOT)			
Est. R-val (60% risk)	--	R-value Result:	--
Specification:	--		

SOIL CLASSIFICATION (D2487, M145)			
Soil Classification:	CL, Lean Clay with Sand	Soil Class Result:	N/A
Specification:	None		

Deviations from Typical Procedures:	None
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Subconsultant Data: Subconsultant: N/A
Certified Report No.: N/A



Course	Fine	Coarse	Medium	Fine	
GRAVEL		SAND			FINES

3.3.4 Utility Test Hole Report

Utility Locating

Utility Test Holes

GPR

Surveying

Mapping



Date: 04-13-22
Crew: James G., Joey Sr. G., Joey Jr. G.
Project Name: LAC - Dp Road
Project Address: Los Alamos County
Project Number: 2022-035 - DP Road Test Holes

Utility Test Hole Report

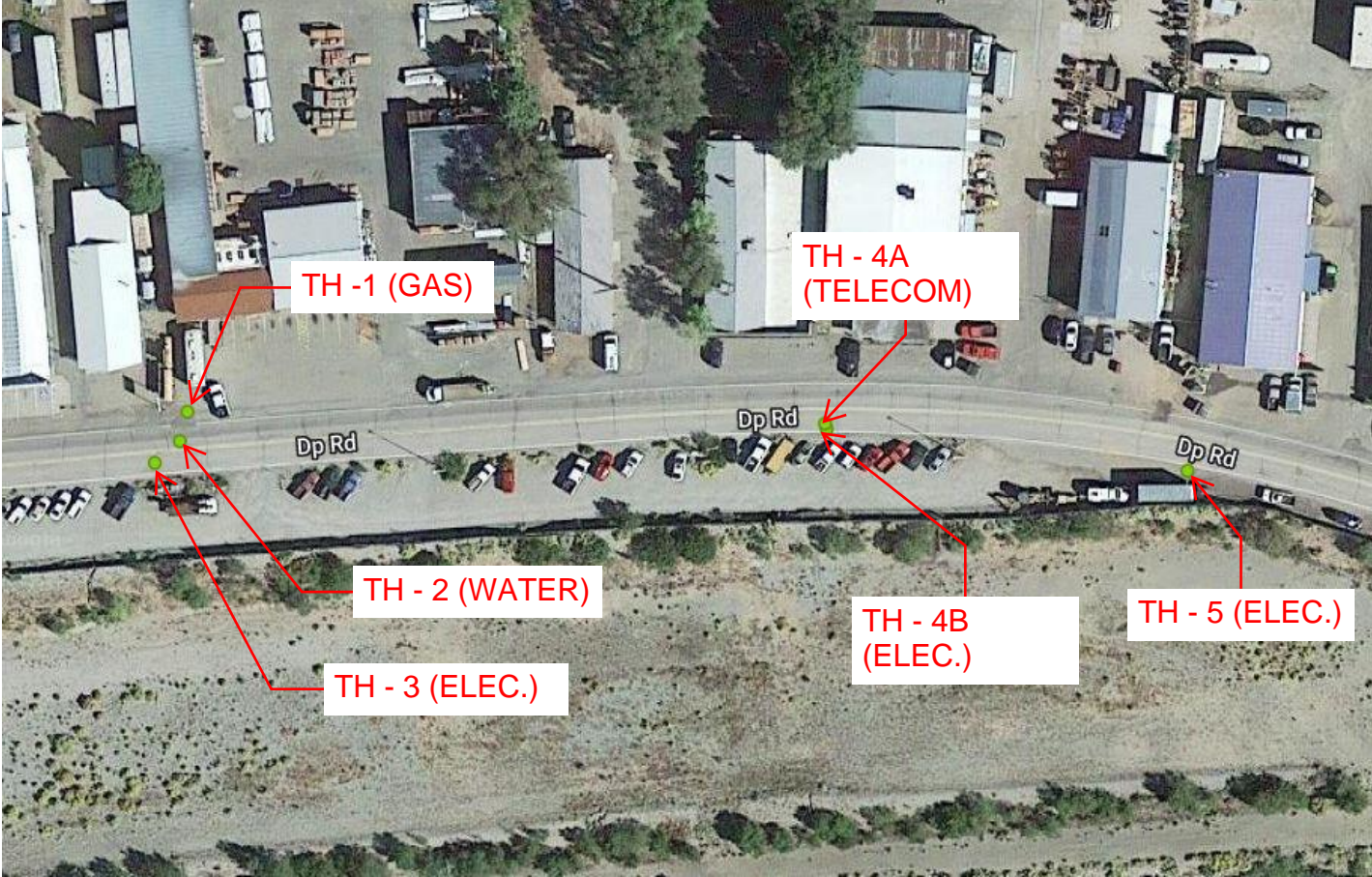
www.cstiinc.com

575-644-0250

6509 Americas Parkway NE, 4th Floor

Albuquerque, NM 87110

Overall Map



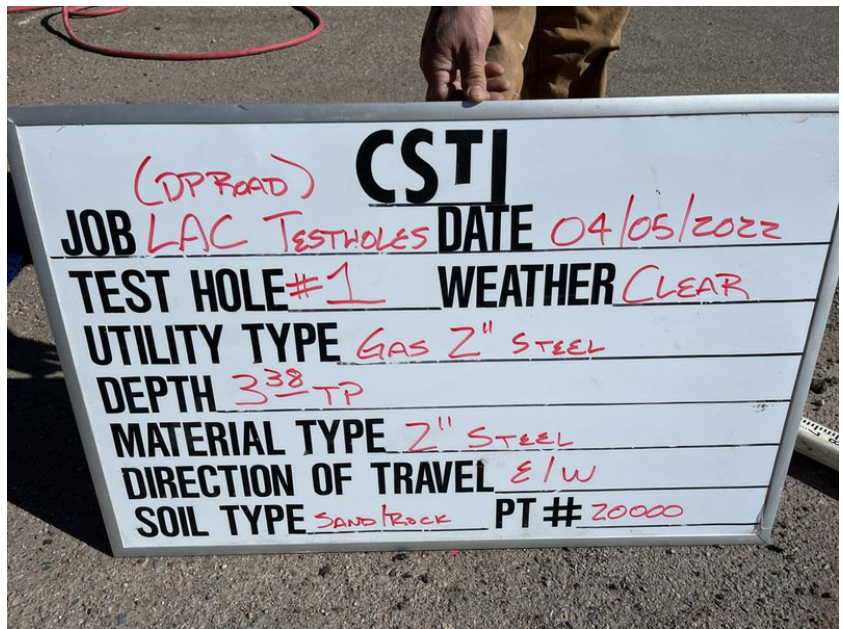
DP Road Los Alamos

Project	2022-035-DP Road LA
Created	2022-04-05 15:36:29 UTC by John Gallegos
Updated	2022-04-05 17:08:38 UTC by John Gallegos
Location	35.87927504360641, -106.28642074763775
Status	■ Complete
Project Name	DP Road Los Alamos
Project No.	2022-035
Location	DP Road
Test Hole No.	1
Utility	Gas
Date	2022-04-05
Weather	Clear Sky Sunny
Reference Marker (RM) Elevation @ RM	20000
Depth	3.38
Width or Dia of Utility (inches)	2
Material of Utility	Steel
General Condition	Good
Thickness of Pvmt,	4
Description of Soil	Sand/Gravel

Photos









DP Road Los Alamos

Project	2022-035-DP Road LA
Created	2022-04-05 17:08:56 UTC by John Gallegos
Updated	2022-04-05 17:28:57 UTC by John Gallegos
Location	35.87923265933161, -106.28643391286273
Status	■ Complete
Project Name	DP Road Los Alamos
Project No.	2022-035
Location	DP Road
Test Hole No.	2
Utility	Water
Date	2022-04-05
Weather	Clear Sky Sunny
Reference Marker (RM) Elevation @ RM	20001
Description of Soil	Sand/Dirt
Remarks	Unable to find. Probed to depth of 6 feet!

Photos





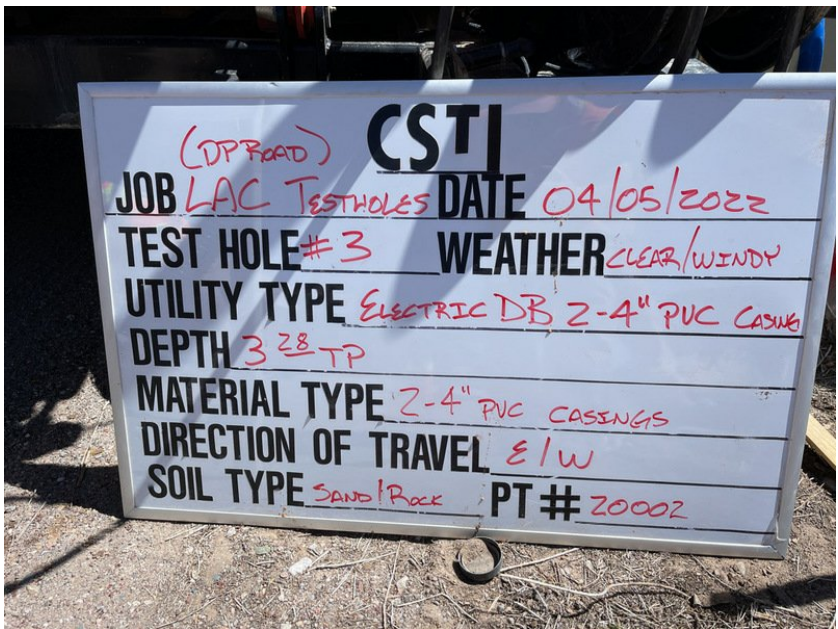
DP Road Los Alamos

Project	2022-035-DP Road LA
Created	2022-04-05 18:24:55 UTC by John Gallegos
Updated	2022-04-05 20:42:13 UTC by John Gallegos
Location	35.87920142405942, -106.2864787504077
Status	■ Complete
Project Name	DP Road Los Alamos
Project No.	2022-035
Location	DP Road
Test Hole No.	3
Utility	Electrical
Date	2022-04-05
Weather	Clear Sky Sunny
Reference Marker (RM) Elevation @ RM	20002
Depth	3.28
Width or Dia of Utility (inches)	4
Material of Utility	PVC
General Condition	Good
Description of Soil	Sand/Gravel
Remarks	2-4" PVC

Photos









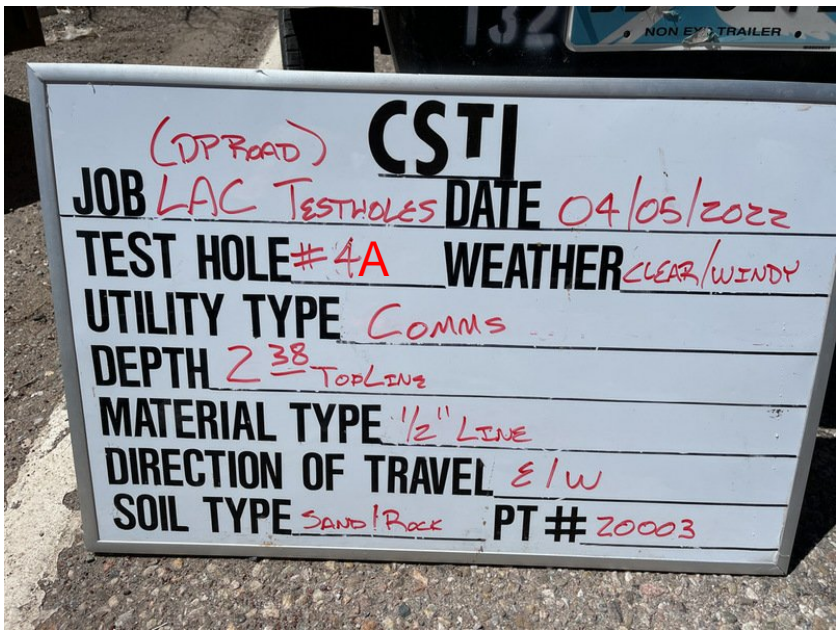
DP Road Los Alamos

Project	2022-035-DP Road LA
Created	2022-04-05 18:58:10 UTC by John Gallegos
Updated	2022-04-05 19:01:12 UTC by John Gallegos
Location	35.87925042529755, -106.28528150374751
Status	■ Complete
Project Name	DP Road Los Alamos
Project No.	2022-035
Location	DP Road
Test Hole No.	4A
Utility	Telecom
Date	2022-04-05
Weather	Clear Sky Sunny
Reference Marker (RM) Elevation @ RM	20003
Depth	2.38
Width or Dia of Utility (inches)	0.5
Material of Utility	Fiber Line
General Condition	Good
Description of Soil	Sand/Gravel

Photos







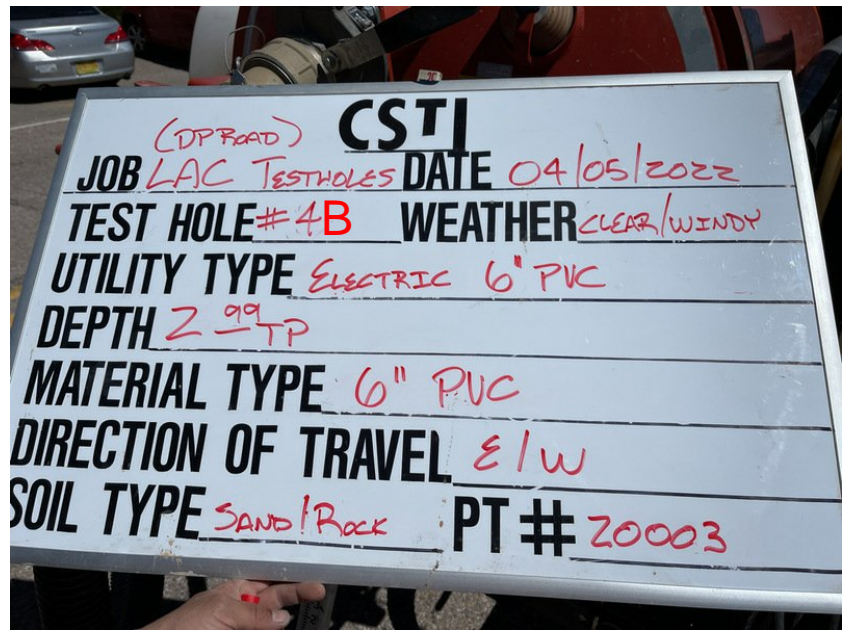
DP Road Los Alamos

Project	2022-035-DP Road LA
Created	2022-04-05 18:55:19 UTC by John Gallegos
Updated	2022-04-13 15:29:42 UTC by John Gallegos
Location	35.8792582155, -106.285284078
Status	■ Complete
Project Name	DP Road Los Alamos
Project No.	2022-035
Location	DP Road
Test Hole No.	4B
Utility	Electrical
Date	2022-04-05
Weather	Clear Sky Sunny
Reference Marker (RM) Elevation @ RM	20003
Depth	2.99
Width or Dia of Utility (inches)	6
Material of Utility	PVC
General Condition	Good
Description of Soil	Sand Gravel

Photos







DP Road Los Alamos

Project	2022-035-DP Road LA
Created	2022-04-05 19:25:42 UTC by John Gallegos
Updated	2022-04-05 19:27:32 UTC by John Gallegos
Location	35.87919001438182, -106.28463841974735
Status	■ Complete
Project Name	DP Road Los Alamos
Project No.	2022-035
Location	DP Road
Test Hole No.	5
Utility	Electrical
Date	2022-04-05
Weather	Clear Sky Sunny
Reference Marker (RM) Elevation @ RM	20004
Depth	2.9
Width or Dia of Utility (inches)	4
Material of Utility	Steel
General Condition	Good
Description of Soil	Sand/Gravel
Remarks	Steel casing

Photos







3.4 TECHNICAL SPECIFICATIONS

3.4.1 Special Provisions for Hot Mix Asphalt

SPECIAL PROVISIONS FOR SECTION 423 HOT MIX ASPHALT (HMA) (August 2021 – Not to be used on Federally Funded Projects)

The special provision shall supersede the section 423 of the 2019 Edition of New Mexico Department of Transportation Standard Specification for Highway and Bridge Construction:

423.1 DESCRIPTION

This Work consists of constructing one (1) or more pavement courses of Hot-Mix Asphalt (“HMA”) on a prepared base, to include crushing, stockpiling, hauling, binder, mineral admixture, mix design, mixing, providing cold feeds, process control testing and placement.

423.2 MATERIALS

423.2.1 General

HMA is a mixture of asphalt binder, aggregate, blending sand, mineral filler, and mineral admixture. Unless otherwise prohibited in the Contract, the County will allow Recycled Asphalt Pavement (RAP) in HMA mixtures as long as the resulting mixture conforms to all Specification requirements. The Contractor shall size, uniformly grade, and combine aggregate fractions in accordance with the Contract. The Contractor shall test Materials in accordance with applicable American Association of Highway and Transportation Officials (“AASHTO”) / American Society for Testing and Materials (“ASTM”) methods, as modified by the County or other test procedures as directed by the County. The Project Manager will decide all questions pertaining to the interpretation of test procedures.

423.2.2 Aggregate

The Contractor shall ensure the aggregate gradation of the HMA mixture meets the requirements of Table 540 .2.2.1:1, “HMA Aggregate Gradation Control Points.” of the 2019 Edition of New Mexico Department of Transportation Standard Specification for Highway and Bridge Construction. The Project Manager may require, at no additional cost to the County, wet preparation, per AASHTO T 146, Method A, if the Project Manager determines there are Deleterious Materials present in the aggregate stockpiles before aggregate gradation testing. The Contract will specify the type of HMA the Contractor is to use. The County will allow the Contractor to combine Materials from two (2) or more sources to produce aggregate only when each individual aggregate source meets all applicable quality requirements

423.2.2.1.1 Aggregate Quality

For each Material source, the Contractor shall ensure the HMA coarse aggregate has an AI of 25 or less when calculated in accordance with Section 901, "QUALITY CONTROL/QUALITY ASSURANCE (QC/QA)."

The Contractor shall regulate the crushing of aggregate to:

1. Minimum Fractured Faces content of the plus No. 4 Material complies with the requirements of Table 423.2.2.1.2:1, "Fractured Faces, Sand Equivalent, and Fine Aggregate Angularity," of the 2019 Edition of New Mexico Department of Transportation Standard Specification for Highway and Bridge Construction and evaluation by AASHTO 335-09, "Fractured Face Determination for Coarse Aggregate;"
2. Ensure the combined plus 3/8-inch material contains no more than 20% flat, elongated particles with a dimensional ratio of 3:1 or greater as determined by ASTM D 4791 (TTCP Modified);
3. Ensure the combined Material, excluding RAP; passing the No. 40 sieve is non-plastic;
4. Ensure that before the addition of mineral admixtures, the minimum sand equivalent value and the minimum fine aggregate angularity value of the combined aggregate, excluding RAP, complies with the requirements of Table 423.2.2.1.2:1, "Fractured Faces, Sand Equivalent, and Fine Aggregate Angularity;" of the 2019 Edition of New Mexico Department of Transportation Standard Specification for Highway and Bridge Construction; and
5. Determine the Sand Equivalent value in accordance with AASTHO T 176, Alternate Method No. 1, and Fine Aggregate Angularity value in accordance with AASHTO T 304, Method A.

423.2.2.1.2 Fractured Faces

The County will consider a face to be fractured when at least one-half of the projected particle area exhibits a rough, angular, or broken texture with well-defined edges.

423.2.2.2 Production

When producing aggregates for HMA, the Contractor shall:

1. Remove natural fines by screening and stockpiling separately;
2. Use a No. 4 screen, minimum, or a larger screen if needed to properly control the crushing and screening operation;
3. Crush the aggregate retained on the scalping screen and separate the crushed Material into at least two (2) stockpiles of fine and coarse aggregates; and
4. Regulate crushing operations to produce Material that meets design requirements when combined.

423.2.2.3 Stockpiling

The following requirements apply to stockpiles, the Contractor shall:

1. Place stockpiles upon prepared sites;
2. Make stockpiles neat and regular to prevent segregation;
3. Provide enough storage space for each size of aggregate;

4. Separate the aggregate stockpiles far enough apart to prevent mixing, or with walls or partitions;
5. Prevent contamination (store stockpiles away from vehicular and Equipment traffic);
6. Keep the storage yard neat and orderly and keep the stockpiles accessible for sampling; and
7. Keep the aggregate sizes separated until delivered to the cold feed system that feeds the drier.

423.2.2.4 Combining

When combining crushed Materials from different stockpiles, including RAP (if in the mixture); the Contractor shall ensure the product is in accordance with the mix design gradation requirements. The Contractor shall use controlled feeders from each stockpile to combine crushed Material.

423.2.3 Asphalt Binder

The Contract will specify the type and grade of asphalt binder. The Contractor shall provide asphalt binders in accordance with Section 402, "Asphalt Materials and Mineral Admixtures." The Contractor shall not change the asphalt source after approval of the mix design without written approval of the State Materials Bureau.

423.2.4 Mineral Admixtures

The Contractor shall provide mineral admixtures in accordance with Section 402, "Asphalt Materials and Mineral Admixtures."

423.2.5 Blending Sand

Blending sand consists of the following:

1. Natural fines from the scalping process;
2. Concrete sand;
3. Sandy Material; or
4. A combination of these, graded to the mix design requirements.

The Contractor shall determine the need for and percentage (a maximum of 20.0%) of blending sand using mix design tests on samples taken from stockpiles during crushing operations and submitted to an approved testing Laboratory.

423.2.6 Mineral Filler

The Contractor shall, if required by mix design, provide mineral filler in accordance with AASHTO M 17 and approved by the NMDOT State Materials Bureau. Fly ash as a mineral filler for HMA is not allowed.

423.2.7 Reclaimed Asphalt Pavement (RAP)

Unless otherwise specified in the Contract, the Contractor may use RAP removed under the Contract consisting of salvaged, milled, pulverized, broken, or crushed asphalt pavement. The Contractor may use RAP produced from outside sources provided the following is met: after the

Contractor obtains sufficient quantities of RAP aggregate samples in accordance with AASHTO T 308; the County will Accept RAP for which the coarse aggregate has a percent wear of 40.0 or less, at 500 revolutions, when tested in accordance with AASHTO T 96. The Contractor shall provide plus No. 4 RAP Material with a minimum of 75% Fractured Faces content (one (1) face). The County will make no additional payment for the asphalt binder in the RAP or asphalt binder due to asphalt binder grade adjustment.

The Contractor may use a maximum of 15% RAP (by weight) in the production of HMA mixtures without changing the asphalt binder.

For quantities greater than 15% and up to 25% RAP, the Contractor shall:

1. Either lower the asphalt binder's high and low temperature grades by one (1) grade (e.g. lower a PG 76-22 to a PG 70-28); or
2. Extract, recover, and combine the RAP's asphalt binder with a virgin asphalt binder per AASHTO M 323, Appendix A, ensuring the resultant binder meets the entire AASHTO M 320 (excluding direct tension) required Project PG asphalt binder properties indicated on the approved mix design.

For quantities greater than 25% and up to 35% RAP, the Contractor shall:

1. Extract, recover, and combine the RAP's asphalt binder with a virgin asphalt binder per AASHTO M 323, Appendix A; and
2. Ensure the resultant binder meets the entire AASHTO M 320 (excluding direct tension) required Project PG asphalt binder properties indicated on the approved mix design.

The County will not allow the Contractor to use more than 35% RAP in the production of HMA mixtures.

For Projects of entirely new construction, the Contractor shall:

1. Limit the RAP to 15% in the top mat or extract, recover and combine the RAP's asphalt binder with a virgin asphalt binder per AASHTO M323, Appendix A; and
2. Ensure the resultant binder meets the entire AASHTO M320 (excluding direct tension) required Project PG asphalt binder properties indicated on the approved mix design.

If Plus Grades of PG asphalt binder is specified on the project, for quantities greater than 15% RAP, the Contractor shall extract, recover, and combine the RAP's asphalt binder with a virgin asphalt binder per AASHTO M 323, Appendix A. The Contractor shall ensure the Section 423: Hot Mix Asphalt (HMA) (Major Paving) Page 214 resultant binder meets the entire AASHTO M 320 required Project PG asphalt binder properties indicated on the approved mix design including the additional Plus Grade requirements for Elastic Recovery and Solubility.

The Contractor shall:

1. Process RAP so that 100% passes a 1-1/2-inch sieve;
2. Maintain adequate stockpile management (i.e. sufficient quantities and shaping of the stockpiles);
3. Address in the Quality Control Plan how RAP will be controlled, such as which screen will be used to split into two (2) stockpiles, or by what method the RAP will be controlled to keep the resultant mix within Acceptable limits;

4. Account for the weight of the binder in the RAP when batching aggregates;
5. Provide RAP that is free of Deleterious Materials; and
6. Perform process control testing in accordance with Section 901, “Quality Control/Quality Assurance (QC/QA)” and Table 901.5:3, “Minimum Process Control Guidelines for Aggregates, Base Course, and RAP (QC);” as RAP is produced and prepared for inclusion in the HMA.

If problems with HMA consistency or compliance with Project Specifications occur, additional efforts taken to achieve Acceptable levels of consistency and compliance with Contract Specifications, at the Contractor’s discretion (at no additional cost to the County), include, but are not limited to:

1. Reduce the top size of the RAP from 1-1/2 inch to one (1) inch;
2. Fractionate the aggregates on a second screen, such as the 3/8 inch or ¼ inch Screen so that the RAP is maintained in three (3) stockpiles, one being RAP larger than 1-1/2 inch to two (2) inches, Coarse RAP and the third being Fine RAP;
3. Ensure that the RAP used in the HMA mix design is representative of the RAP available on the Project;
4. Cover the RAP pile(s) so that ambient moisture is not absorbed; and
5. Process and maintain the stockpiles so that the RAP Material is equally and uniformly distributed throughout the entire stockpile(s) and is withdrawn such that uniform, non-segregated RAP is delivered to the hoppers

423.2.8 Mix Design

The Contractor shall provide a mix design developed by a NMDOT approved testing Laboratory, reviewed and signed by a professional Engineer licensed by the New Mexico Board of Registration for Professional Engineers and Land Surveyors. A list of approved private testing laboratories is available from the NMDOT State Materials Bureau. The Contractor shall develop the mix design at no additional cost to the County. The Contractor may develop the mix design at any time prior to the Project Pre-Construction meeting.

The Contractor shall provide to the Project Manager the mix design developed in accordance with the Contract documents and AASHTO R35 as modified by NMDOT for review and concurrence. The Contractor shall summarize the mix design results from the NMDOT approved testing Laboratory. County concurrence of a mix design will not relieve the Contractor of full responsibility for producing an Acceptable mixture. The mix design may require adjustment in accordance with Section 423.2.9, “Job Mix Formula.

The County will require a minimum of one percent (1.0%) for mix designs that include hydrated lime, anhydrite based Material, or Portland cement. The Contractor shall include these mineral admixtures in the gradation for developing the mix design. AASHTO T 354 may be used in lieu of AASHTO T 84/T 85. If lubricating antistripping is used as a mineral admixture, the percent dosage shall be done in accordance with the manufacturer’s recommendation and approved by the Contractor’s design Lab. Lubricating antistripping shall be approved by the County and included in the most current NMDOT Approved Products List (APL). The mix design shall be in accordance with Table 423.2.8:1, “HMA Superpave Design Requirements for Aggregates with Less Than three percent (3.0%) Absorption,” or Table 423.2.8:2, “HMA Superpave Design Requirements for Aggregates with three

percent (3.0%) or Greater Absorption” of the 2019 Edition of New Mexico Department of Transportation Standard Specification for Highway and Bridge Construction.

The Contractor shall test the HMA in accordance with AASHTO T 283, as indicated below:

1. Use six (6) inch diameter specimens; Compact all test specimens in accordance with AASHTO T 312;
2. Conditioned specimens shall include one (1) freeze thaw cycle;
3. On the AASHTO T283 Section 11.3 scale of zero (0)-five (5), with five (5) exhibiting the most damage from moisture, visually estimate the amount of damage caused by moisture on the interior surfaces of each broken specimen; and
4. The tensile stress ratio shall be a minimum of 85%. The Contractor shall provide a mixture that meets all applicable criteria. If tests indicate the need for additives or modifiers not specified in the Contract or a change in source of binder to satisfy mix design requirements, the Contractor shall perform the required changes at no additional cost to the County.

NMDOT reviewed commercial mix designs are Acceptable for use on Project with the concurrence of the Project Manager The commercial mix design will be submitted for review and concurrence by the Project Manager for conformance with the Contract documents and re-issued with Project information.

An approved mix design is valid up to one (1) year from the date of review. If the Aggregate Index expires within that year, a new Aggregate Index needs to be established in order to keep the mix design valid. The Contractor shall submit a new mix design if changing the source of Materials.

For Projects that are longer than one (1) year and aggregate Materials are produced and stockpiled the mix design and Aggregate Index (AI) may be approved for an extension by the Project Manager.

423.3 CONSTRUCTION REQUIREMENTS

423.3.1 General

The Contractor shall:

1. Provide sufficient storage space for each size of aggregate and RAP;
2. Keep the different sizes separate and ensure that segregation, degradation, or combination of Materials of different aggregate sizes does not occur until delivery to the cold feed system;
3. Re-screen or waste segregated or degraded Material;
4. Provide separate storage and feeder for mineral filler if the Contract requires mineral filler; and
5. If the Project Manager determines that uncoated aggregate exists, the Contractor shall take corrective action.

423.3.2 Mix and Laydown Temperature Requirements

The Contractor shall not allow the temperature of the HMA discharged from the mixer into the transport vehicle to be greater or less than ten percent (10%) of the target mixing temperature specified in the mix design, not to exceed 350° F, unless written concurrence by the asphalt binder supplier and design lab are provided to the Project Manager.

HMA delivered to the Project with mix temperatures outside the acceptable laydown temperature range as specified in the mix design shall, at the sole discretion of the Project Manager, be removed and replaced at no cost to the County.

423.3.3 Addition of Mineral Admixtures

The Contractor shall:

1. Monitor the out feed of the mineral admixture with sensors that provide audible and visual signals to control the out feed with an accuracy of \pm three percent (3.0 %) by weight;
2. Control the mineral admixture content such that it meets the range specified in the approved mix design;
3. Add the mineral admixture to the aggregate in an enclosed pug mill immediately after leaving the cold feed and just before introduction into the drier drum or aggregate drier; and
4. Minimize the loss of mineral admixture while adding to the aggregate.

When mixing the aggregate and mineral admixture, the Contractor shall maintain the moisture content of the combined aggregate at the recommended moisture content as shown on the approved mix design.

423.3.4 Equipment

423.3.4.1 Mixing Plants

423.3.4.1.1 Plant Scales

The Contractor shall ensure that the scales are accurate to 0.5% of the maximum allowable load in accordance with the Federal Motor Carrier Safety Administration (“FMCSA”) publication, as certified by a licensed scale technician. The Contractor shall submit a copy of the certification to the Project Manager.

423.3.4.1.2 Storage of Asphalt Binder Materials

The Contractor shall provide storage tanks for asphalt binder capable of holding, heating and circulating the asphalt at the required temperatures and measuring the temperature of the asphalt in the tank. The Contractor shall allow measuring and sampling of asphalt binder from the delivery trucks upon arrival.

423.3.4.1.3 Feeder for Drier

The Contractor shall equip the plant with an accurate feeding mechanism to deliver the aggregate into the drier and maintain uniform production.

423.3.4.1.4 Drier

The Contractor shall equip the plant with a system to continuously agitate the aggregate during the heating and drying process. The Contractor shall use a drier that can dry and heat the aggregate and prevent fuel oil or carbon from coating the aggregate. The Contractor shall take corrective action if the aggregate becomes coated with burner fuel.

423.3.4.1.5 Bins

The Contractor shall equip the plant with storage bins large enough to supply the mixer when it is operating at full capacity and arrange the bins to ensure separate and adequate storage of the appropriate aggregate sizes. The Contractor shall equip the bins with warning devices that notify the control panel when the bins are low.

423.3.4.1.6 Asphalt Binder Control Unit

The Contractor shall equip the plant with a scale or meter to control the rate of flow to determine the amount of asphalt binder added to the mix.

423.3.4.1.7 Thermometers

The Contractor shall equip the discharge chute of the drier with a recording thermometer to register the temperature of the heated aggregates or mix. The Contractor shall provide the Project Manager with a record of discharge temperatures at the end of each week's production or as requested by the Project Manager.

423.3.4.1.8 Truck Scales

The Contractor shall weigh the HMA on approved plant or truck scales provided by the Contractor or public scales in accordance with Section 109.1, "Measurement of Quantity."

423.3.4.1.9 Requirements for Batching Plants**423.3.4.1.9.1 Weigh Box or Hopper**

The Contractor shall provide a batching plant that can accurately weigh aggregate in a weigh box or hopper suspended on scales. The Contractor shall use a weigh box or hopper that can hold a full batch. The Contractor shall ensure that the gate of the weigh box or hopper does not allow Material to leak into the mixer while being weighed. The Contractor shall test the scales in accordance with Section 109.1, "Measurement of Quantity."

423.3.4.1.9.2 Mixer

The Contractor shall provide a batch mixer with a capacity of at least 2,000 lb., capable of producing a uniform mixture within specified tolerances.

423.3.4.1.9.3 Control of Mixing Time

The Contractor shall equip the mixer with an accurate timing device that signals the end of the mixing time.

423.3.4.1.10 Drum Mix Plants

The Contractor shall equip the drum mix plant with the following auxiliary Equipment and capabilities:

1. Separate cold feed controls for each Material;
2. An automatic interlocking device for cold feed, asphalt, and mineral admixtures;
3. A means for controlling moisture content of aggregate. A means for sampling individual cold feeds and provisions for sequential sampling of aggregate, RAP, asphalt binder, and mineral admixtures;

4. Equip the bins with mechanical or electrical devices that provide an audible or visual warning when the bins are less than 1/4 full;
5. Bins shall be designed and equipped to prevent segregation;
6. Equip the bin containing fine aggregate and filler, if required, with a device that prevents Material hang-up during plant operation;
7. A minimum of one (1) cold feed bin for each aggregate size in the mix;
8. Equip the cold feed with mechanical or electrical devices that indicate with an audible or visual warning when the cold feed belt is not carrying the proper amount of Material;
9. A separate cold feed for RAP Material. Introduce RAP so that it does not come into direct contact with the burner flame; and
10. Couple the asphalt feed control with the total-aggregate-weight measurement device to automatically vary the asphalt feed rate to maintain the required proportion.

423.3.4.2 Haul Equipment

The Contractor shall haul asphalt mixtures with trucks that are tarped and have tight, clean, smooth metal beds and a thin coat (a minimal amount) of a County approved release agent in accordance with Section 423.3.4.2.1, “Asphalt Release Agent (ARA).”

423.3.4.2.1 Asphalt Release Agent (ARA)

The Contractor shall use Asphalt Release Agents (ARA) for prevention of asphalt mixtures adhering to haul trucks and any other type of Equipment that is used for asphalt paving operations. ARA shall meet the requirements of Table 423.3.4.2.1:1, “Asphalt Release Agent Properties” of the 2019 Edition of New Mexico Department of Transportation Standard Specification for Highway and Bridge Construction. All testing will be in accordance with NTPEP Evaluation of Asphalt Release Agents AASHTO ARA 14

423.3.4.3 Pavers

The Contractor shall use self-contained, self-propelled pavers, with activated screeds or strike-off assemblies, heated if necessary, and capable of spreading and finishing courses of HMA in accordance with the Plans.

423.3.4.4 Compaction Equipment

The Contractor shall provide a sufficient number, weight, and type of rollers to obtain the required compaction and specified pavement density while the HMA is in a workable condition. All rollers must be capable of reversing direction without shoving or tearing the mixture.

423.3.5 Placement Operations

For cold milled surfaces, the Contractor shall prepare the surface in accordance with Section 414, “Cold Milling.” The Contractor shall clean the existing surfaces and apply a tack coat as required in the Plans or at an application rate as approved by the Project Manager in accordance with Section 407, “Tack Coat.”

The Contractor shall place HMA on prepared Base Course in accordance with Section 303, “Base Course.” The Contractor shall apply prime coat as required in the Plans or at an application rate as approved by the Project Manager in accordance with Section 408, “Prime Coat.”

The Contractor shall place the HMA on the Accepted surface, spread and compact to specified width, lift thickness, and cross slope in accordance with the Plans.

Materials Transfer Vehicle (MTV): The Contractor shall use an MTV with storage and remixing capabilities on all mainline construction that utilizes greater than 25% RAP when placing HMA State approved designs. The MTV will independently remix and deliver mixture from the hauling Equipment to the paving Equipment.

The Contractor shall furnish an MTV with the following capabilities:

1. An unloading system to receive mixtures from the hauling Equipment;
2. A minimum storage capacity of 13 tons with a remixing system in the MTV storage bin;
3. A discharge conveyor to deliver the mixture to the paver hopper; and
4. The MTV system cannot exceed maximum legal loading on Structures.

Pick-up machines, hopper inserts and Material transfer devices are not considered MTVs.

In the event the MTV malfunctions during paving operations, the Contractor can finish the Day without the MTV. The Contractor shall not resume further mainline mix placement until the MTV is operational.

Consistently overloading the HMA mix into the paving machine is not Acceptable. The Contractor shall coordinate the speed of the paving machine with the production of the plant and keep enough haul Equipment available to achieve continuous operation.

The Contractor shall use the control system on the paving machine to control the grade and the transverse slope by either of the following methods:

1. One end directly and the other indirectly through controlling the transverse slope; or
2. Each end independently, including screed attachments.

The Contractor shall suspend operations if the control system does not achieve the typical section in accordance with the Plans. The Contractor shall place, spread, and finish the courses of HMA according to the following:

1. Without segregation or tearing;
2. True to the line, grade, and crown in accordance with the Plans; and
3. With self-propelled pavers, except as otherwise directed.

On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing Equipment impracticable, the Contractor shall dump, spread, and level the HMA by other methods to achieve the required compacted thickness.

423.3.5.1 Weather Limitations

The Contractor shall not place HMA on wet or frozen surfaces or if weather conditions prevent proper handling, finishing, and compacting. The Contractor shall place HMA when the Chill Factor is at least 40 °F and rising. If the air temperature is 60 °F or warmer do not consider the Chill Factor.

423.3.5.2 Compaction

The Contractor shall:

1. Compact the HMA thoroughly and uniformly immediately after placement. Operate rollers at speeds slow enough to minimize displacement of the HMA, including the lines and grades of the asphalt edges. Remove marks from pneumatic rollers;
2. Prevent the HMA from sticking to the roller wheels by keeping the wheels moistened with water; water mixed with very small quantities of detergent or other approved Material. Do not use diesel fuel or other petroleum diluents;
3. At locations inaccessible to the rollers, the Contractor shall compact the HMA with hot hand tampers, smoothing irons, or mechanical tampers;
4. Use a trench roller or cleated compression strips under the roller to transmit compression to depressed areas; and
5. Remove areas that become loose, broken, mixed with dirt, segregated or defective, replace with fresh HMA, and compact to match the surrounding area, at no additional cost to the County.

423.3.5.3 Joints

The Contractor shall off set longitudinal joints at least six (6) inches relative to the longitudinal joints of the underlying course.

Unless otherwise specified, the Contractor shall taper transverse and longitudinal joints as follows:

1. At least a three (3) ft taper for transverse joints, with a taper slope no steeper than 24:1;
2. At least a one (1) ft taper or a notched taper, for longitudinal joints, with a taper slope no steeper than 6:1 or a notched taper with a one (1) inch vertical edge at the top of the taper connected to a slope no steeper than 6:1;
3. Cut and square off transverse tapers before commencing new Work;
4. Clean and tack coat longitudinal joints from previous operations; and
5. Avoid placing longitudinal joints in the wheel paths, unless approved by the Project Manager.

The Contractor shall completely bond joints and provide smooth surface for each course at the joints. The County will not allow deviations greater than 3/16 inch when tested with a ten (10) ft straightedge in any direction. When paving under traffic, the Contractor shall schedule the daily surfacing operations so that tapered longitudinal joints are not exposed for longer than seven (7) Days.

423.3.5.4 Surface Tolerances

The Contractor shall provide a final HMA surfacing course that conforms to Section 401, "Pavement Smoothness Measurement.

423.3.5.5 Plan Surfacing Thickness

The Contractor shall:

1. Place pavement at the thickness specified in the Contract;
2. Monitor thickness by calculating continuous production yields using the formula found in the MT-1, as maintained by the NMDOT State Materials Bureau;
3. Calculate the required yield and the corresponding yields for 0.25 inch increase (upper limit) and decrease (lower limit). The Project Manager may adjust the required yield to fit field conditions. If adjusted, the new target yield will be communicated to the Contractor in writing;
4. Control production to keep yield within the upper and lower limits;
5. Correct deficiencies at no cost to the County;
6. Correct deficient depths during placement; and
7. Address Plan Surfacing thickness in the Quality Control Plan.

423.3.6 Sampling and Testing

The Contractor shall sample and test in accordance with Section 901, “Quality Control Quality Assurance General Provisions,” and Special Provision for Section 906 Minimum Testing Requirements. The County will sample and test in accordance with Section 901, “Quality Control /Quality Assurance General Provisions,” and Special Provision for Section 906 Minimum Testing Requirements.

A Quality Control/Assurance asphalt concrete material field sample shall be taken in accordance with the requirements of ASTM D979 for each job mix delivered. The materials shall be sampled at the greater rate of either one sample for each 500 tons, or one sample per day, for each type of material placed on a project, as directed by the Project Manager. The sample shall be of such size to provide material for all tests specified and a split sample to perform verification/referee tests for gradation and binder content, if required.

423.3.6.1 CONTRACTOR QUALITY CONTROL FOR COMPACTION

The Contractor shall:

1. Monitor the compaction process by determining the density of the HMA with a portable densometer in accordance with the Plan;
2. Establish calibration of the portable densometer from cut pavement samples;
3. Determine the density readings of the cut pavement samples in accordance with AASHTO T 166 (weight, volume method); determine the density readings of the pavement with the portable densometer and correlate these test results;
4. Conduct Quality Control testing in accordance with Division 900, “QUALITY CRITERIA” and provide test results to the Project Manager;
5. Perform Quality Control density testing while the asphalt mixture is hot enough to permit further compaction;
6. Not roll for compaction when it becomes ineffective or damages the HMA; and
7. Not use vibratory mode when it becomes ineffective or damages the HMA.

The County shall perform Quality Assurance compaction testing in conjunction with contractor.

423.3.6.2 Acceptance

The County will evaluate Materials using Contractor and County test data for Acceptance.

Acceptance Testing Tolerances^a	
Characteristic	Specification limit, percentage points from TV
Air Voids, %	± 1.4
Pavement Density % ^c	± 2.5
Mineral Admixture% ^e	Minimum of JMF Target Value
Voids in the Mineral Aggregate (VMA), % ^{a,d}	± 1.6
Asphalt Content % ^{a,b}	± 0.50

^a All gradation, Asphalt Content, VMA, and VFA values shall be determined using the AASHTO T 308 testing results.

^b HMA will not be rejected based on Asphalt Content Determined by AASHTO T 308.

^c Density payment will be adjusted in accordance with Section 901.3.11, “QLA.”

^d If Gmm fluctuates more than ±0.03 on a consistent basis, it is recommended that the Specific Gravity of the aggregates be checked in order to verify VMA.

^e If Mineral Admixture is below Design TV cease hot mix production, investigate and correct.

423.3.6.2.1 Acceptance of Pavement Density

The target density for Acceptance of HMA will be 94.50% of the theoretical maximum density as determined from AASHTO T 209. For determination of maximum specific gravity, the Contractor shall obtain and test a minimum of two (2) samples and ensure the County obtains and tests a minimum of one (1) sample for each Day that the HMA is placed. Each individual density test value obtained less than 92.0% or more than 97.0% of the theoretical maximum density will be evaluated in accordance with Section 423.3.6.3.2, “Adherence to Specifications and Rejection of Non-specification Material.”

For purposes of Acceptance and pay factor determination:

1. Determine the density from cut pavement sections (cores) with six (6) inch diameters extending through the full thickness of the HMA;
2. Determine the pay factor in accordance with Section 904, “Quality Level Analysis;”
3. To be prepared for dispute resolution, the Contractor shall provide one (1) additional core for each core tested by the County for Acceptance of density in accordance with section 423.3.7, “Dispute Resolution;” and
4. If a composite pay factor of more than one (1.00) is calculated, the composite pay factor will be a one (1.00) for the purposes of payment.

423.3.6.2.2 Adherence to Specifications and Rejection of Non-Specification Material

The Contractor shall produce Material in substantial compliance with all Specification requirements. The County will evaluate Air Voids, Pavement Density, Void in Mineral Aggregate (VMA), and Asphalt Content test results for Specification compliance. Evaluation of Material that does not meet Specifications will be in accordance with the following:

Individual Test Results.

If an individual test is outside the Specification limits but is less than two (2) standard deviations from the mean of previously produced Material of the current lot, investigate and propose corrective actions but production may continue and the result will be entered into QLA. If an individual test result (for the current lot) is outside the Specification limits and is two (2) or more standard deviations from the mean of previously produced Material, the Contractor shall cease production, investigate the causes of the failure, and propose corrective actions. The Contractor shall not resume production until the proposed corrections are approved by the Project Manager.

Consecutive Test Results.

If two (2) consecutive test results of the same property (for the current lot) are outside the Specification limits, cease production, investigate the causes of the failure, and propose corrective action. The Contractor shall not resume production until the proposed corrections are Accepted by the Project Manager in writing. Limit production to a maximum of 1,000 tons, production will include a minimum of two (2) Contractor tests and one (1) County test. If testing indicates that the problem has been corrected, the Contractor shall resume full operations. If the problem has not been corrected, the Contractor shall perform further trial runs and testing.

Pavement Density Below 90.000%.

All pavement density tests that are below 90.000% are rejected and the Contractor shall remove and replace all Material represented by the test with Specification Material at the Contractors expense. The Contactor shall submit a Plan in writing for approval by the Project Manager that determines the limits of Material to be removed within 48 hours of reporting a Quality Control test or receiving a Quality Assurance test for pavement density below 90.000% density. If the test below 90.000% is a County test, the County will obtain a new test from the Material replaced by the Contractor to replace the density test reported by the County. If the test below 90.000% is a Contractor test, the Contractor shall obtain a new test from the Material replaced by the Contractor to replace the test reported by the Contractor. The test obtained from the replaced Material will be input into the QLA to replace the test below 90.000%. All Material that is rejected, at the sole discretion of the County, shall be removed and replaced with Specification Material at the Contractor's expense. If the Material is allowed to remain in place by the County all random, sample data will be entered into QLA, this does not apply to pavement density below 90.000% that shall be removed and replaced. Sampling for corrective action will not be entered into QLA.

The Project Manager may reject Material that appears to be defective based on visual inspection.

423.4 METHOD OF MEASUREMENT

If the County measures HMA by the square yard, the County will use the average width of the HMA in place and the length from station to station along the centerline of the Roadway when calculating quantities.

423.5 BASIS OF PAYMENT

<u>Pay Item</u>	<u>Pay Unit</u>
HMA Complete	Ton or Square Yard
HMA	Ton or Square Yard

The County will pay for Accepted quantities at the Bid Item Unit Price. Providing and transporting all cores, samples and storage containers shall be Incidental to the Pay Items above.

423.5.1 Work Included in Payment

The County will consider as included in the payment for the pay item(s) listed in this section and will not measure or pay separately for the following Work:

1. Asphalt binder, aggregate, blending sand, mineral filler, mineral admixture, and WMA additive or process as appropriate;
2. Mixing, hauling, placement, and compaction of HMA or WMA;
3. Quality Control in accordance with Section 902, "Quality Control;"
4. Providing and transporting all cores for correlation;
5. Providing Mix Design in accordance with Section 423.2.8, "Mix Design;" and
6. Providing storage container for samples and cores if referee testing is used.

3.4.2 Special Provisions for Minimum Testing Requirements

**SPECIAL PROVISIONS
FOR
SECTION 906 MINIMUM TESTING REQUIREMENTS (MTR's)**
(August 2021 – Not to be used on Federally Funded Projects)

The special provision shall supersede section 906 of the 2019 Edition of New Mexico Department of Transportation Standard Specification for Highway and Bridge Construction:

906.1 DESCRIPTION

906.1.1 General

This Work consists of Minimum Testing Requirement's (MTR's) for the County and Contractor which includes construction sampling, tests, and testing frequencies of Materials incorporated into the Work for Acceptance and Quality Control.

906.1.2 Minimum Testing Requirements

Earthwork				
ITEM	Test Required	Sampling/Testing Location	Minimum Testing Frequency	NMDOT Requirements (Revised, Same)
Embankment, Unclassified Excavation and Borrow	Moisture/Density Tests (Proctor), Soils Classification	Roadway	1 per material type	Same
	In-Place Density and Moisture	Roadway	1/500 cy	Revised
Natural Ground (NMDOT Standard Spec. Section 203.3.5.1)	Moisture/Density Tests (Proctor), Soils Classification	Roadway	1 per material type	Same
	In-Place Density and Moisture	Roadway	1/500lf per 2 lane Roadway	Revised
Surfacing Required (NMDOT Standard Spec. Section 203)	Estimated "R" Value	Top 2 feet of Roadway	1/500lf per 2 lane Roadway	Revised
Foundations/Backfill for Culverts and Minor Structures	In-Place Density and Moisture	Structure	See Table A	See Table A
	Moisture/Density Tests (Proctor), Soils Classification	Stockpile	1 per material type	Same
	Gradation		1/300cy	Same

Subgrade Preparation	Moisture/Density Tests (Proctor), Soils Classification	Roadway	1 per material type	Same
	In-Place Density and Moisture		1/500lf/lane	Revised
Backfill for Major Structures	In-Place Density and Moisture	Structure	See Table A	See Table A
	Moisture/Density Tests (Proctor), Soils Classification	Stockpile	1 per material type	Same
	Gradation		1/300cy	Same
Backfill for Mechanical Stabilized Earth (MSE) Retaining Structures (NMDOT Standard Spec. Section 506)	In-Place Density and Moisture	Structure	See Table A	See Table A
	Moisture/Density Tests (Proctor), Soils Classification	Stockpile	1 per material type	Same
	Gradation, PI		1/300cy	Same
Foundations for Slope and Erosion Protection Structures (NMDOT Standard Spec. Section 602)	In-Place Density and Moisture	Structure	1 per 25sy	Same
	Moisture/Density Tests (Proctor), Soils Classification	Foundation Material location	1 per material type	Same
Foundations For Sidewalks, Drive pads, and Concrete Median Paving (NMDOT Standard Spec. Section 608)	In-Place Density and Moisture	Roadway	1/500lf and at least 1 per day	Revised
	Moisture/Density Tests (Proctor), Soils Classification	Stockpile	1 per material type	Same
Bed Course Material for Sidewalks, Drive Pads, and Concrete Median Paving (NMDOT Standard Spec. Section 608)	Moisture/Density Tests (Proctor), Soils Classification	Stockpile	1 per material type	Same
	In-Place Density and Moisture	Roadway	1/500lf and at least 1 per day	Revised
Foundations For Curb and Gutter (NMDOT Standard Spec. Section 609)	In-Place Density and Moisture	Roadway	1/500lf and at least 1 per day	Same
	Moisture/Density Tests (Proctor), Soils Classification	Stockpile	1 per material type	Same
Bed Course For Curb and Gutter (NMDOT Standard Spec. Section 609)	In-Place Density and Moisture	Stockpile	1 per material type	Same
	Moisture/Density Tests (Proctor), Soils Classification	Roadway	1/500lf and at least 1 per day	Same
Foundations/Backfill for Drop Inlets and Junction Boxes (NMDOT Standard Spec. Section 623)	In-Place Density and Moisture	Structure	See Table A	See Table A
	Moisture/Density Tests (Proctor), Soils Classification	Foundation Material location	1 per material type	Same

Base Course				
ITEM	Test Required	Sampling/Testing Location	Minimum Testing Frequency	
Base Course	In-Place Density and Moisture	Roadway	1/500ft/lift	Revised
*if the percent passing the No. 10 sieve is less than 10% of AASHTO T-27 test procedure, than this test does not need to be performed.	Moisture/Density Tests (Proctor), Soils Classification	Stockpile	1 per material type	Same
	Gradation	Processed Material	1 per source and 1 per 1000 tons of placement	Revised
	FF, LL*, PI*	Processed Material	1 per source and 1 per 1000 tons of placement	Revised
	Thickness	Roadway after Compaction	1/500ft/lane	Revised
Asphalt				
ITEM	Test Required	Sampling/Testing Location	Minimum Testing Frequency	
Pavement	Asphalt Content	Roadway	1/500 tons/lift, with a minimum of 1 per day's run	Revised
	Air Voids, Roadway Compaction (Cores)	Roadway after Compaction	1 per days run or as required by the County Inspector	Revised
	Roadway Compaction (Nuclear Densometer)	Roadway after Compaction	1 per 500ft/lane	Revised
	Gradation, FF, PI, SE, F&E, FAA, Moisture	Cold Feed before addition of lime or Anhydrite material	1/segment	Revised
Performance Graded Asphalt Binder	The manufactures certificate of compliance will suffice for testing credits	From storage tank of injection line to the plant	1 per binder type per project	Revised

Portland Cement Concrete				
ITEM	Test Required	Sampling/Testing Location	Minimum Testing Frequency	
Fine Aggregates	Gradation	Stockpile	1/100cy	Revised
	SE, FM		2 per project	Revised
Course Aggregates	Gradation	Stockpile	1/100cy	Revised
	FF, F&E		2 per project	Revised
Non-Shrink Mortar Aggregate	Gradation	Stockpile	1/10 cy	Revised
Project Acceptance Test	Compressive Strength Cylinders	See Table B	1 set (4) of cylinders from one of the first three trucks, minimum of 1 per day	Same
	Slump, Unit Weight, Air Content, Temperature		1 per first three trucks, then 1 within the next 6 trucks, minimum of 1 per day	Same

Table 906.1.2:14

Method of Placement	Sample Location
Pumped	Point of discharge from pump into Structure
Direct Discharge from Truck	At end of discharge chute of truck
Crane and Bucket	From discharge chute of bucket
Conveyor belt	From Material on Roadway after being discharged from conveyor
Slip Form (Curb and Gutter/Barrier Walls)	Point of discharge into extrusion machine
Slip Form Paver (PCCP)	From grade in front of paving machine
Drill Shafts	At end of discharge chute of truck

**Table 906.1.2:15
Tolerances for Comparison of Independent Assurance Sample Tests
to Acceptance and Process Control Tests**

Characteristics	Tolerances
Moisture/Density Test (Proctor)	± 3.0 PCF*, ± 2 Units for Moisture
In Place Moisture/Density (Roadway)	± 3.0 PCF, ± 2 Units for Moisture
Plasticity Index (P.I.)	± 3 Units
*Only if proctors are run by both District and Project. If proctors are not run by both District and Project ± 5.0 PCF.	
Gradation	Tolerances
1 1/2" to 3/4"	± 6 Units
1/2" to No. 4	± 5 Units
No. 8 through No. 200	± 4 Units
Fractured Faces	± 5 Units
Flat & Elongated	± 5 Units
Fine Aggregate Angularity	± 3 Units
Sand Equivalent	± 4 Units
Aggregate Specific Gravity	± 0.020
Concrete	Tolerances
Slump	± 0.5 Inch
Unit Weight	± 2.0 PCF
Compressive Strength	10% or less = Range / Average x 100%
Hot Mix Asphalt (HMA)/Warm Mix Asphalt (WMA)	Tolerances
Roadway Density (Cores from Project, retained by Agency and Contractor Personnel)	± 0.025 Units
Density (Nuclear)	± 4 Units
VMA	± 1.0 Units
Asphalt Content (Ignition Burn Oven)	± 0.50
Bulk Specific Gravity at Ndes	± 0.025 Units
Maximum Specific Gravity	± 0.020 Units
Air Voids	± 1.5 Units

3.4.3 Utility Specifications

DP Road Phase 2 – Electrical General Roles and Responsibilities

1. The Contractor will be responsible for all trenching and conduit installations.
2. The Utility will inspect all trenches prior to conduit installation.
3. The Contractor will mandrel and clean all conduit sections under the supervision of LACU engineering.
4. The Contractor will install mule tape in each conduit run and tie off on each end.
5. The Contractor will provide labels on each conduit end to identify opposite end locations.
6. The Contractor will coordinate with installation of all other utilities in the area.
7. The Contractor will dive to avoid conflicts when installing electric conduit. Shallow conduit will only be allowed with LACU Engineers approval and terms.
8. The Contractor will construct transformer pads.
9. The Contractor will install Utility supplied vaults, junction boxes, pedestals and switch sleeves.
10. The Utility will supply and install conductors and terminate in the transformer, vaults, switches, pedestals, and junction boxes.
11. The Contractor will coordinate any required power outage with any affected customers and the Utilities department.
12. The Contractor will always allow LACU crews access to the job site to perform electric work.
13. The Contractor will construct electric facilities as approved and directed by LACU.
14. All material and labor provided by the Utility will be billed to the Project. See project estimate sheet. Any changes to design that result in additional materials or labor will be charged to the project above the estimated costs.

All work listed here will follow Los Alamos County Department of Public Utilities (LACU) specifications.

These terms are based on a project drawings and site plans and are for coordination purposes only. This document does not override any terms and agreements made in official contracts.

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**TECHNICAL SPECIFICATIONS
FOR
CONSTRUCTION
OF**

DP ROAD PHASE II

Wilson & Company Project No. 17-100-005-07

PREPARED FOR:

Los Alamos County
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CONSTRUCTION DOCUMENTS PREPARED BY:

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January 2024

**WILSON
& COMPANY**

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discipline | intensity | collaboration | shared ownership | solutions

TECHNICAL SPECIFICATIONS

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SECTION 02723

HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

PART 1 GENERAL

1.01 DESCRIPTION

A. Scope:

1. This section specifies high density polyethylene (HDPE) pipe and fittings, including acceptable fusion technique and practice, and safe handling and storage.

B. PIPE DESCRIPTION

1. Pipe Supplier shall furnish high density polyethylene (HDPE) pipe and fittings conforming to all applicable standards and procedures as referenced in this specification, and meeting all applicable testing and material properties as described by the applicable standards referenced in this specification or as required within this specification.

1.02 QUALITY ASSURANCE

A. References:

1. This section contains references to the following documents. They are a part of this section to the extent referenced in this specification. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of a conflict between the requirements of this section and those of the referenced documents, the requirements of this specification shall prevail.
2. Unless otherwise specified, references to documents shall mean the latest published edition of the referenced document in effect at the time of construction.
 - a. AWWA C651
 - b. ANSI/AWWAC901
 - c. ANSI/AWWA C906
 - d. ASTM C923
 - e. AWWA M55
 - f. ASTM D1603
 - g. ASTM D2321
 - h. ASTM D2774
 - i. ASTM D3261
 - j. ASTM D3350

k. ASTM D4218

l. ASTM F585

B. Manufacturer Requirements

1. High density polyethylene (HDPE) pipe and fittings shall be manufactured in accordance with the following standards:
 - a. ASTM D3035 – ½ in through 24-in pipe
 - b. ASTM F714 – 3-in through 54-in pipe
 - c. AWWA C901 – 1/2 In. (130mm) through 3 In. (76 mm) pipe and tubing
 - d. AWWA C906 – 4 In. (100 mm) through 63 In (1,600 mm) pipe and fabricated fittings
 - e. ASTM D3261 – butt fusion fittings, saddles and flange adapters
 - f. ASTM F1055 – electrofusion couplings and saddles.
 - g. ASTM F2206 – fabricated fittings

C. Fusion Technician Requirements

1. Each Fusion Technician shall be separately qualified to make each type of fusion joint. Fusion joint types are butt fusion, saddle fusion and electrofusion. Qualification to make one type of fusion joint shall not qualify a Fusion Technician to make a different type of fusion joint.
2. Each Fusion Technician making butt fusion joints shall be qualified to make butt fusion joints in accordance with ASTM F2620. Qualification shall have occurred not more than 12 months before performing fusion joining on site in accordance with this specification. Qualification shall be a documented demonstration of proficiency by making joints in accordance with ASTM F2620 that are proved to be satisfactory by destructive testing in accordance with ASTM F2620.
3. Each Fusion Technician making saddle fusion joints shall be qualified to make saddle fusion joints in accordance with ASTM F2620. Qualification shall have occurred not more than 12 months before performing on-site fusion joining in accordance with this specification. Qualification shall be a documented demonstration of proficiency by making joints in accordance with ASTM F2620 that are proved to be satisfactory by destructive testing in accordance with ASTM F2620.
4. Each Fusion Technician making electrofusion fitting joints shall be qualified to make electrofusion fitting joints in accordance with ASTM F1290 and the electrofusion fitting manufacturer's recommended procedure. Qualification shall have occurred not more than 12 months before performing on-site fusion joining in accordance with this specification. Qualification shall be a documented demonstration of proficiency by making joints in accordance with ASTM F1290 and the electrofusion fitting manufacturer's recommended procedure that are proved to be satisfactory by destructive testing in accordance with ASTM F1290 and the electrofusion fitting manufacturer's recommended procedure.

D. Approved Suppliers

1. Pipe and fitting suppliers shall be approved by the Project Engineer.
 - a. The following pipe manufacturers are approved:
 - i JM Eagle
 - ii Chevron Phillips Performance Pipe
 - iii ISCO Industries, LLC
 - iv WL Plastics
 - b. The following fitting manufacturers are approved:
 - i JM Eagle
 - ii Chevron Phillips Performance Pipe
 - iii ISCO Industries, LLC
 - iv WL Plastics

E. Warranty

1. Pipe and fitting suppliers shall provide a one-year warranty covering defects in product material and workmanship. A successful pressure test or pressure leak test prior to the expiration of the warranty period shall not relieve the supplier of warranty responsibility for the full warranty term.
2. Fusion providers shall provide a one-year warranty from the date of installation acceptance covering defects in fusion joining workmanship that shall provide for remaking defective butt fusion, saddle fusion or electrofusion joints. A successful pressure test or pressure leak test prior to the expiration of the warranty period shall not relieve the installer of warranty responsibility for the full warranty term.

F. Submittals

1. The following information shall be submitted by pipe and fitting suppliers:
 - a. Name of the pipe manufacturer and a list of the piping and quantities to be provided by manufacturer.
 - b. Name(s) of fitting manufacturer(s) and lists of fittings and quantities to be provided by manufacturer.
 - c. Pipe and fitting product data indicating conformance with this specification, applicable standards, and warranty provisions, including written documentation regarding any intended variance from this specification and applicable standards.
 - d. At the time of shipment, the supplier shall provide certified documentation of pipe and fitting conformance with this specification and applicable pipe and fitting standards specified herein.

2. The following information shall be submitted by Fusion Providers.
 - a. Documentation that each Fusion Technician has met requirements for joining proficiency for each type of fusion joint performed by the Fusion Technician under this specification.
 - b. Documentation of conformance with this specification and applicable standards, including written documentation regarding any intended variance from this specification and applicable standards. This will include fusion joint warranty information and recommended project specific fusion parameters, including criteria logged and recorded by data logger.
 - c. The following AS-RECORDED DATA is required from the Contractor and/or Fusion Provider:
 - i. Fusion reports for each fusion joint performed on the project, including joints that were rejected. Submittals of the Fusion Technician's joint reports are required as requested by the Owner or Engineer. Specific requirements of the Fusion Technician's joint report shall include:
 - a. Pipe or fitting size and DR or pressure class rating
 - b. Fusion equipment size and identification
 - c. Fusion Technician Identification
 - d. Job Identification Number
 - e. Fusion Number
 - f. Fusion joining parameters
 - g. Ambient Temperature

PART 2 PRODUCTS

2.01 PIPE AND FITTINGS FOR PRESSURE POTABLE WATER SERVICE

A. PE4710 pipe and fitting material compound:

1. PE4710 material compound shall conform to material requirements specified in ASTM F714 as applicable for the pipe or fitting. PE4710 material shall meet the requirements of ASTM D3350 and shall meet or exceed a cell classification of 445574 per ASTM D3350.
2. PE4710 material compound shall have a hydrostatic design stress (HDS) rating for water at 73°F (23°C) of not less than 1,000 psi that shall be documented in the name of the pipe manufacturer in PPI TR-4.
3. PE4710 material compound shall have a hydrostatic design basis (HDB) rating at 140°F (60°C) of not less than 1,000 psi that shall be documented in the name of the pipe manufacturer in PPI TR-4.
4. PE4710 pipe and fitting material compound in PE4710 pipe and fittings shall contain color and ultraviolet (UV) stabilizer meeting the requirements of Code C or E per ASTM D3350. Code C material shall contain 2 to 3 percent carbon black to provide indefinite protection against UV degradation when material from the pipe is tested in accordance with ASTM D1603 or ASTM D4218. Code E material used for coextruded OD color stripes or a coextruded ID color layer shall

contain sufficient UV stabilizer to protect the pipe against UV degradation for at least 24 months of unprotected outdoor exposure. Coextruded color PE compound material shall be PE4710 pipe material compound, varying only by color and UV stabilizer.

5. Clean rework materials derived from pipe production by the same manufacturer are acceptable as part of a blend with virgin material for the production of new pipe or tubing provided that the rework material is the same PE4710 material designation as the virgin material compound to which it is added. Finished products containing rework material shall meet the requirements this specification.
6. *Qualification for potable water service.* PE4710 compounds shall be tested and certified as suitable for use with potable water in accordance with requirements that are no less restrictive than the applicable requirements in NSF/ANSI 61.

B. PE4710 pipe and butt fusion fittings shall have plain ends for butt fusion.

C. PE4710 pipe:

1. Nominal straight lengths of 3 inch and larger pipe shall be 40 ft. or 50 ft.
2. Nominal coil lengths of 4-inch and smaller pipe shall be 500 ft. Longer or shorter coils such as 800 ft for 4-inch pipe, 1000 ft for 3-inch pipe, or 2000 ft for 2 inch or smaller pipe shall be acceptable.
3. Pipe shall be black with coextruded OD green stripes.
4. Pipe shall be permanently marked using heated indent printing in accordance with ASTM F714 as applicable for the pipe size including:
 - a. Nominal size and sizing system, e.g., IPS or DIOD
 - b. PE4710 material designation
 - c. DR or SDR
 - d. Standard Designation, e.g., ASTM F714
 - i The Standard Designation marking on the pipe shall serve as the manufacturer's certification that the pipe has been manufactured, sampled and tested and has been found to comply with the requirements of the standard.
 - e. NSF-61 mark verifying suitability for potable water service
 - f. Extrusion production-record code
 - g. Manufacturer's Trademark or trade name

D. PE4710 fittings:

1. PE4710 butt fusion, saddle fusion, electrofusion and fabricated fittings shall be manufactured from PE4710 material compound in accordance with this specification.

2. PE4710 fittings shall comply with ASTM D3261 for molded butt fusion and saddle fusion fittings, flange adapters and MJ adapters, or shall comply with ASTM F2206 for fabricated butt fusion fittings, or shall comply with ASTM F1055 for electrofusion fittings.
3. PE4710 fittings shall comply with the marking requirements of ASTM D3261 for molded butt and saddle fusion fittings, flange adapters and MJ adapters or shall comply with the marking requirements of ASTM F2206 for fabricated butt fusion fittings, or shall comply with the marking requirements of ASTM F1055 for electrofusion fittings.
 - a. Marking shall include the NSF-61 mark verifying suitability for potable water service.
4. PE4710 fittings shall have pressure class ratings not less than the pressure class rating of the pipe to which they are joined.

2.02 PIPE AND FITTINGS FOR PRESSURE NON-POTABLE (RECLAIMED) WATER SERVICE

A. PE4710 pipe and fitting material compound:

1. PE4710 material compound shall conform to material requirements specified in ASTM F714 as applicable for the pipe or fitting. PE4710 material shall meet the requirements of ASTM D3350 and shall meet or exceed a cell classification of 445474 per ASTM D3350.
2. PE4710 material compound shall have a hydrostatic design stress (HDS) rating for water at 73°F (23°C) of not less than 1,000 psi that shall be documented in the name of the pipe manufacturer in PPI TR-4.
3. PE4710 material compound shall have a hydrostatic design basis (HDB) rating at 140°F (60°C) of not less than 1,000 psi that shall be documented in the name of the pipe manufacturer in PPI TR-4.
4. PE4710 pipe and fitting material compound in PE4710 pipe and fittings shall contain color and ultraviolet (UV) stabilizer meeting the requirements of Code C or E per ASTM D3350. Code C material shall contain 2 to 3 percent carbon black to provide indefinite protection against UV degradation when material from the pipe is tested in accordance with ASTM D1603 or ASTM D4218. Code E material used for coextruded OD color stripes or a coextruded ID color layer shall contain sufficient UV stabilizer to protect the pipe against UV degradation for at least 24 months of unprotected outdoor exposure. Coextruded color PE compound material shall be PE4710 pipe material compound, varying only by color and UV stabilizer.
5. Clean rework materials derived from pipe production by the same manufacturer are acceptable as part of a blend with virgin material for the production of new pipe or tubing provided that the rework material is the same PE4710 material designation as the virgin material compound to which it is added. Finished products containing rework material shall meet the requirements this specification.

B. PE4710 pipe and butt fusion fittings shall have plain ends for butt fusion.

C. PE4710 pipe:

1. Nominal straight lengths of 3 inch and larger pipe shall be 40 ft. or 50 ft.
2. Nominal coil lengths of 4-inch and smaller pipe shall be 500 ft. Longer or shorter coils such as 800 ft for 4-inch pipe, 1000 ft for 3-inch pipe, or 2000 ft for 2 inch or smaller pipe shall be acceptable. Pipe shall be black with coextruded green stripes.

3. Pipe shall be permanently marked using heated indent printing in accordance with ASTM F714 as applicable for the pipe size including:
 - a. Nominal size and sizing system, e.g., IPS or DIOD
 - b. PE4710 material designation
 - c. DR or SDR
 - d. Standard Designation, e.g., ASTM F714:
 - i The Standard Designation marking on the pipe shall serve as the manufacturer's certification that the pipe has been manufactured, sampled and tested and has been found to comply with the requirements of the standard.
 - e. Extrusion production-record code
 - f. Manufacturer's Trademark or trade name

D. PE4710 fittings:

1. PE4710 butt fusion, saddle fusion, electrofusion and fabricated fittings shall be manufactured from PE4710 material compound in accordance with this specification.
2. PE4710 fittings shall comply with ASTM D3261 for molded butt fusion and saddle fusion fittings, flange adapters and MJ adapters, or shall comply with ASTM F2620 for fabricated butt fusion fittings, or shall comply with ASTM F1055 for electrofusion fittings.
3. PE4710 fittings shall comply with the marking requirements of ASTM D3261 for molded butt and saddle fusion fittings, flange adapters and MJ adapters or shall comply with the marking requirements of ASTM F2620 for fabricated butt fusion fittings, or shall comply with the marking requirements of ASTM F1055 for electrofusion fittings.
4. PE4710 fittings shall have pressure class ratings not less than the pressure class rating of the pipe to which they are joined.

2.03 PIPE AND FITTINGS FOR PRESSURE OR NON-PRESSURE WASTEWATER SERVICE

A. PE4710 pipe and fitting material compound:

1. PE4710 material compound shall conform to material requirements specified in ASTM F714 as applicable for the pipe or fitting. PE4710 material shall meet the requirements of ASTM D3350 and shall meet or exceed a cell classification of 445474 per ASTM D3350.
2. PE4710 material compound shall have a hydrostatic design stress (HDS) rating for water at 73°F (23°C) of not less than 1000 psi that shall be documented in the name of the material manufacturer in PPI TR-4.
3. PE4710 pipe and fitting material compound in PE4710 pipe and fittings shall contain color and ultraviolet (UV) stabilizer meeting the requirements of Code C or E per ASTM D3350. Code C material shall contain 2 to 3 percent carbon black to provide indefinite protection against UV degradation when material from the pipe is tested in accordance with ASTM D1603 or ASTM D4218. Code E material used for coextruded OD color stripes or a coextruded ID color layer shall

contain sufficient UV stabilizer to protect the pipe against UV degradation for at least 24 months of unprotected outdoor exposure. Coextruded color PE compound material shall be PE4710 pipe material compound, varying only by color and UV stabilizer.

4. Clean rework materials derived from pipe production by the same manufacturer are acceptable as part of a blend with virgin material for the production of new pipe or tubing provided that the rework material is the same PE4710 material designation as the virgin material compound to which it is added. Finished products containing rework material shall meet the requirements this specification.

B. PE4710 pipe and butt fusion fittings shall have plain ends for butt fusion.

C. PE4710 pipe:

1. Nominal straight lengths of 3 inch and larger pipe shall be 40 ft. or 50 ft.
2. Nominal coil lengths of 4-inch and smaller pipe shall be 500 ft. Longer or shorter coils such as 800 ft for 4-inch pipe, 1000 ft for 3-inch pipe, or 2000 ft for 2 inch or smaller pipe shall be acceptable.
3. Pipe shall be black. Coextruded OD green stripes shall be an acceptable option. A coextruded light grey or light green color ID layer to facilitate video ID inspection shall be an acceptable option.
4. Pipe shall be permanently marked using heated indent printing in accordance with ASTM F714 as applicable for the pipe size including:
 - a. Nominal size and sizing system, e.g., IPS or DIOD
 - b. PE4710 material designation
 - c. DR or SDR
 - d. Standard Designation, e.g., ASTM F714:
 - i The Standard Designation marking on the pipe shall serve as the manufacturer's certification that the pipe has been manufactured, sampled and tested and has been found to comply with the requirements of the standard.
 - e. Extrusion production-record code
 - f. Manufacturer's Trademark or trade name

D. PE4710 fittings:

1. PE4710 butt fusion, saddle fusion, electrofusion and fabricated fittings shall be manufactured from PE4710 material compound in accordance with this specification.
2. PE4710 fittings shall comply with ASTM D3261 for molded butt fusion and saddle fusion fittings, flange adapters and MJ adapters, or shall comply with AWWA C906 or ASTM F2206 for fabricated butt fusion fittings, or shall comply with ASTM F1055 for electrofusion fittings.
3. PE4710 fittings shall comply with the marking requirements of ASTM D3261 for molded butt and saddle fusion fittings, flange adapters and MJ adapters or shall comply with the marking

requirements of AWWA C906 or ASTM F2206 for fabricated butt fusion fittings, or shall comply with the marking requirements of ASTM F1055 for electrofusion fittings.

2.04 FUSION JOINTS

- A. Unless otherwise specified, PE4710 pipe and fittings shall be assembled in the field with butt fusion, saddle fusion or electrofusion joints. ASTM F2620 and the pipe manufacturer's recommended procedure shall be observed for butt fusion and saddle fusion joints. ASTM F1290 and the electrofusion fitting manufacturer's recommended joining procedure shall be observed for electrofusion joints.
- B. Field butt fusion, saddle fusion and electrofusion joints shall be made by Fusion Technicians that are qualified in accordance with this specification to make the specific fusion joint type.
- C. Field fusion joints shall be recorded and documented in accordance with this specification.

2.05 CONNECTIONS AND FITTINGS FOR PRESSURE APPLICATIONS

- A. Connections shall be defined in conjunction with the linking of project piping, as well as the tie-ins to other piping systems.

B. MECHANICAL FITTINGS

- 1. Acceptable mechanical fittings for use with PE4710 pipe and fittings shall be mechanical fittings that are qualified by the mechanical fitting manufacturer for use with PE4710 pipe and fittings.
- 2. Mechanical fittings for use with HDPE pipe shall provide restraint against longitudinal separation that is inherent to the design of the joint. Mechanical joints that do not provide restraint against pull-out or push-off are prohibited.
- 3. Mechanical connections to non-HDPE devices and appurtenances shall be by bolted flange adapter or MJ adapter. Flange adapter and MJ adapter connections shall be assembled and tightened in accordance with flange adapter or MJ adapter manufacturer's instructions.

C. GASKETED, PUSH-ON FITTINGS

- 1. Gasketed push-on fittings shall be fitted with external mechanical restraints that span across the joint and are assembled in accordance with restraint manufacturer's instructions.
 - a. Thrust blocking does not provide acceptable restraint and is prohibited.
 - b. Where plain-end PE4710 pipe is assembled with push-on fittings, the PE4710 pipe end shall be fitted with electrofusion restraints so that external mechanical restraint may be secured to the PE4710 pipe.
- 2. Where PE4710 pipe is connected to gasketed mechanical joint fittings or appurtenances, the connection shall be made by butt fusing a PE4710 Adapter to the PE4710 pipe and connecting the PE4710 MJ Adapter to the mechanical joint fitting or appurtenance.

D. SLEEVE-TYPE COUPLINGS

- 1. Sleeve-type mechanical couplings shall be manufactured for use with PE4710 pipe, and shall be restrained as indicated on the drawings and in these specifications. Unrestrained sleeve-type couplings are prohibited.

E. EXPANSION AND FLEXIBLE COUPLINGS

1. Expansion-type mechanical couplings are prohibited.

F. CONNECTION HARDWARE

1. Bolts and nuts for buried service shall be made of non-corrosive, high-strength, low-alloy steel having the characteristics specified in ANSI/AWWA C111/A21.11, regardless of any other protective coating.

2.06 CONNECTIONS FOR NON-PRESSURE SEWER OR WASTEWATER APPLICATIONS

- A. The following connections are to be used in conjunction with tie-ins to other non-pressure sewer piping and structures, and shall be as indicated on the drawings.

B. SLEEVE-TYPE COUPLINGS:

1. Sleeve-type mechanical couplings shall be manufactured for use with non-pressure PE4710 pipe, and may be restrained or unrestrained as indicated on the drawings and in these specifications.

C. CONNECTION HARDWARE

1. Bolts and nuts for buried service shall be made of non-corrosive high strength, low-alloy steel having the characteristics specified in ANSI/AWWA C111/A21, regardless of any other protective coating.

D. CONNECTION TO NON-PRESSURE MANHOLES AND STRUCTURES

1. Non-pressure PE4710 pipe and fittings shall be connected to manholes and other structures to provide a leak-free, properly graded flow into or out of the manhole or structure.
2. Connections to existing manholes and structures shall be as specified and shown on the drawings.
 - a. For a cored or drilled opening provide a flexible, watertight connection that meets and/or exceeds ASTM C923.
 - b. For a knock out opening, provide a watertight connection (waterstop or other method) meeting the material requirements of ASTM C923 that is securely attached to the pipe with stainless steel bands or other means.
 - c. Grout opening in manhole wall with non-shrink grout. Pour concrete collar around pipe and outside manhole opening.
3. Connections to a new manhole or structure shall be as specified and shown on the drawings.
 - a. A flexible, watertight gasket per ASTM C 923 shall be cast integrally with riser section(s) for all precast manhole and structures.
 - b. Drop connections shall be required where shown on drawings.
 - c. Grout internal joint space with non-shrink grout.

PART 3 EXECUTION

3.01 DELIVERY AND OFF-LOADING

- A. All piping shall be bundled or packaged for transportation by commercial carrier to the site.
- B. Before off-loading, pipe shall be inspected for damage. Any pipe damaged in shipment shall be assessed and either accepted or rejected as directed by the Owner or Engineer, and the pipe supplier shall be notified of rejected pipe within 7 days of delivery at the site. Rejected pipe shall be quarantined for disposition. Each pipe shipment shall be checked for quantity and proper pipe size, color and type.
- C. Pipe shall be off-loaded and handled in accordance with the pipe manufacturer's instructions and AWWA M55.

3.02 HANDLING AND STORAGE

- A. Pipe lengths should be placed and stored on level ground. Pipe should be stored at the job site in the unit packaging provided by the manufacturer. The interior of the pipe, as well as all end surfaces, should be kept free from dirt and foreign matter.
- B. Pipe shall be handled and supported with the use of woven fiber pipe slings or approved equal. Care shall be exercised when handling the pipe to not cut, gouge, scratch or otherwise abrade the piping in any way. Use of hooks, chains, wire rope or any other handling device which creates the opportunity to damage the surface of the pipe is strictly prohibited.
- C. Covering or shading of PE4710 pipe and fittings against exposure to ultraviolet light from sunlight is not required.

3.03 FUSION PROCESS

A. GENERAL

- 1. Butt and saddle fusion of PE4710 pipe and fittings shall be in accordance with ASTM F2620 and the manufacturer's recommended joining procedure.
- 2. Electrofusion of PE4710 pipe and fittings shall be performed in accordance with ASTM F1290 and the electrofusion fitting manufacturer's recommended procedure.
- 3. PE4710 pipe and fittings shall be fused by qualified fusion technicians, as documented by the fusion provider. Training records for qualified fusion technicians shall be available to Owner or Engineer upon request.
- 4. Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) affixed to the fusion machine. Joint data shall be submitted as part of the As-Recorded information, in accordance with this specification.
- 5. Butt fusion machines shall incorporate the following properties, including the following elements:
 - a. HEAT PLATE – Heat plates and the non-stick coatings on heating surfaces shall be in good condition without heating surface gouges or scratches. The non-stick coating shall be intact, clean and free of any contamination. Heater controls and temperature indicators shall function properly, and electrical cords and connections shall be in good condition. The heat plate shall maintain a

uniform and consistent temperature on all areas of the heating surfaces on both sides of the heat plate.

- b. CARRIAGE – Carriage shall travel smoothly with no binding at less than 50 psi for hydraulic fusion machines. Clamps shall be in good condition with proper inserts for the pipe size being fused.
 - c. GENERAL MACHINE - Overview of machine body shall yield no obvious defects, missing parts, or potential safety issues during fusion.
 - d. DATA LOGGER - The current version of the pipe supplier's recommended and compatible software shall be used. Protective case shall be utilized for the hand held wireless portion of the unit. Data logger operations and maintenance manual shall be with the unit at all times. If fusing for extended periods of time, an independent 110V power source shall be available to extend battery life.
6. Other equipment specifically required for fusion processes shall include the following:
- a. Pipe rollers shall be used to support pipe to either side of the butt fusion machine and provide for vertical and lateral pipe alignment straight through the butt fusion machine.
 - b. A protective enclosure that provides for full machine motion of the clamps, heat plate, fusion assembly and carriage shall be provided for fusion in inclement and/or windy weather. Pipe ends shall be covered or blocked where open pipe ends could allow prevailing winds to blow through the pipe.
 - c. Fusion machine operations and maintenance manual shall be kept with the fusion machine at all times.

B. JOINT RECORDING

1. Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) connected to the fusion machine that shall register and/or record the parameters required by the manufacturer and these specifications. Data not logged by the data logger shall be logged manually and be included in the Fusion Technician's joint report.

3.04 INSTALLATION

- A. The PE4710 pipe and fittings will be installed such that PE4710 pipe curvature is not less than the minimum bending radius recommended by the pipe manufacturer.
- B. Direct burial installation of PE4710 pressure pipe shall be in accordance with ASTM D2774 and the pipe manufacturer's recommendations.
- C. Direct burial installation of PE4710 non-pressure pipe shall be in accordance with ASTM D2321 and the pipe manufacturer's recommendations.
- D. Installation of PE4710 pipe by horizontal directional drilling shall be in accordance with ASTM F1962 and the pipe manufacturer's recommendations.
- E. Installation of PE4710 pipe by sliplining or insertion within a casing or host pipe shall be in accordance with ASTM F585 and the pipe manufacturer's recommendations.

- F. Tracer Wire – All PE4710 piping shall be installed with a continuous, insulated TW, THW, THWN, or HMWPE insulated copper, 10 gauge or thicker wire for pipeline location purposes by means of an electronic line tracer.
1. The wires shall be installed along the entire length of the pipe.
 2. The insulation color shall match the service color of the pipe being installed. Blue shall be used for potable water; green for wastewater or sanitary sewer; and purple or lavender for non-potable or reclaimed water.
 3. Sections of wire shall be spliced together using approved splice caps and waterproof seals. Twisting the wires together is not acceptable.

3.05 MAKING CONNECTIONS TO NON- PE4710 PIPING SYSTEMS

- A. Approximate locations for non- PE4710 piping systems are shown on the drawings or detailed in the specifications. Prior to making connections into existing piping systems, the Contractor shall:
1. Verify the actual field location, size, piping material and service of non- PE4710 piping systems.
 2. Obtain all required non- PE4710 piping manufacturer(s) approved fittings (i.e., saddles, sleeve type couplings, flanges, tees, etc., as shown).
 3. Have installed all temporary pumps and/or pipes in accordance with established connection plans.
 4. Have on hand pipe stoppers, blind flanges or other devices to seal a valve or appurtenance that fails to seal properly. When applied to pressure rated valves or appurtenances, all such devices shall be pressure rated equal to or greater than the pressure rating of the valve or appurtenance to which they are attached.
- B. Where PE4710 pipe connects in-line to unrestrained gasketed push-on piping, the end of the PE4710 pipe shall be anchored in-line within 10 ft of the connection to prevent longitudinal movement of the PE4710 pipe.
1. The PE4710 pipe shall be fitted with a PE4710 wall anchor or electrofusion flex restraints.
 2. The PE4710 wall anchor or electrofusion flex restraints shall be encased in reinforced concrete that is sufficient to withstand Poisson effect longitudinal loads in accordance with AWWA M55 In-Line Anchoring.
- C. Unless otherwise approved by the Engineer, new piping systems shall be completely assembled and successfully tested prior to making connections to non-PE4710 piping systems.

3.06 PIPE SYSTEM CONNECTIONS

- A. Pipe connections shall be installed per applicable standards and regulations, as well as per the connection manufacturer's recommendations and as indicated on the drawings. Pipe connections to structures shall be installed per applicable standards and regulations, as well as per the connection manufacturer's recommendations.

3.07 TRACER WIRE TESTING

- A. Upon completion of installation by direct burial, sliplining, directional boring or pipe bursting, the Contractor shall demonstrate that the tracer wire is continuous and unbroken through the entire run of the pipe.
- B. Demonstration shall include full signal conductivity (including splices) when energizing for the entire run in the presence of the Owner or Engineer.
- C. If the wire is broken, the Contractor shall repair or replace it. Pipeline installation will not be accepted until the tracer wire passes a continuity test.

3.08 TAPPING FOR POTABLE AND NON-POTABLE WATER APPLICATIONS

- A. Tapping shall be performed using standard saddle fusion fittings, electrofusion saddle fittings, or mechanical tapping saddles or sleeves designed for use on PE4710 piping. Tapping by threading directly into the PE4710 pipe wall is prohibited.
- B. Branching connections requiring a larger diameter shall be made with saddle fusion branch saddle fittings or mechanical branch connection fittings as specified and indicated on the drawings.
- C. Equipment used for tapping shall be made specifically for tapping PE4710 pipe:
 - 1. Tapping bits shall be slotted “shell” style cutters, specifically made for PE4710 pipe. ‘Hole saws’ made for cutting wood, steel, ductile iron, or other materials are strictly prohibited.
 - 2. Manually operated or power operated drilling machines may be used.
- D. Taps may be performed while the pipeline is filled with water and under pressure (‘wet’ tap), or when the pipeline is not filled with water and not under pressure (‘dry’ tap).

3.09 TESTING

- A. Testing shall comply with all local building codes, statutes, standards, local jurisdiction, and laws.
- B. Segments of the pipe may be tested separately in accordance with standard testing procedure, as approved by the Owner and Engineer.
- C. HYDROSTATIC LEAKAGE TESTING FOR PRESSURE PIPING
 - 1. Hydrostatic leakage testing shall comply with ASTM F2164. If the test section fails the test for excessive leakage, the Contractor shall repair or replace all defective materials and/or workmanship at no additional cost to the Owner.
 - 2. Pneumatic (compressed air) leakage testing of PE4710 pressure piping is prohibited.
- D. LEAKAGE TESTING FOR NON-PRESSURE PIPING
 - 1. Non-pressure piping such as sewers shall be tested for excessive leakage in accordance with ASTM F1417.
 - 2. If the test section fails the test for excessive leakage, the Contractor shall repair or replace all defective materials and/or workmanship at no additional cost to the Owner.

E. DISINFECTION OF THE PIPELINE FOR POTABLE WATER PIPING

1. After installation, the pipeline, having passed all required testing, shall be disinfected prior to being put into service. Unless otherwise directed by the Owner or Engineer, the pipeline will be disinfected per AWWA C651.

PART 4 MEASUREMENT AND PAYMENT

- A. Except as otherwise specified herein, providing for and complying with requirements in this Section will be per linear foot, furnished and placed in trench, including fusion welding services.

END OF SECTION

SECTION 03 4000

PRECAST CONCRETE VAULTS-STRUCTURAL

PART 1 - GENERAL

1.01 Description of Work

- A. This Section of the Specifications shall be supplemental to Section 510 “Concrete Structures” of the “New Mexico Standard Specifications for Public Works Construction, 2006 Edition”, as published by the New Mexico chapter of APWA, referred to in this specification as the Standard Specifications. Requirements of Section 510 – Concrete Structures shall apply except as modified herein.
- B. Precast Concrete structures such as: Underground Valve vaults; and similar structures, shall be constructed in conformity with these specifications and drawings.

1.02 References

- A. The NM-APWA Standard Specifications Section 101, Section 102, Section 105, Section 106, Section 107 Section 501, Section 510 and Section 701.

PART 2 - PRODUCTS/MATERIALS

2.01 Furnish and Install Precast Concrete Vaults

- A. The Contractor shall provide a Precast Concrete Vault, with the dimensions as provided in the plans specific to each vault within the project. Vault concrete thicknesses shall be a minimum of 6-inches for walls, 8-inches for base and 8-inches for top slabs, unless otherwise noted within the plans.
- B. Valve vaults shall be constructed with concrete having a minimum 4,000 (psi) 28-day compressive strength and rated for H2O loading. Minimum wall thickness shall be as indicated in drawings. Precast sections shall meet the requirements of ASTM C478.
- C. The Precast Vault shall be as manufactured, assembled, cast and shipped by a precast manufacturer as approved by both the Engineer and Owner. The Unit shall be precast in a minimum of four (4) sections. The Base with part of the vertical perimeter wall height shall be one section, the remainder height of the walls shall be one section, and the top slab shall be composed of two sections. Both top slab sections shall be rated for H2O loading. Both top slab sections, including the one containing the hatch shall have additional reinforcing, and sufficient slab thickness to be fully capable of supporting the H2O loads

- D. The precast vault shall have an Aluminum hinged cover, with opening as detailed in the plans, as manufactured by USF Fabrication, inc., Bilco, Halliday, or other engineering approved equal. Hatch shall have a hinged cover with 30" minimum clear and heavy-duty H20 rated. Top slab thickness and reinforcing shall be sufficient to fully-support the top hatch. Other acceptable hatch manufacturer brands are "Bilco" or "Halliday", except that hatch shall be fully equal and Engineer-approved.
- E. Mastic sealing compound per FS SS-S-210. Approved products; Kent Seal No. 2 by Hamilton Kent; CONSEAL CS 102 by Concrete Sealants Inc.; Butyl-Nek by CRETECO; BUTYL-LOK by ALOK Products, Inc., or approved equal.
- F. All openings for the piping or other appurtenances shall be sealed in the field with epoxy-concrete matching the strength and adhesion to the precast units, or non-shrink grout.
- G. Outside surface of the vault exterior walls and base below grade shall be coated with asphalt-based sealer for moisture protection.
- H. Lifting lugs for the precast base unit as used by the precast vault manufacturer, and placing of the one-piece piping & valve assembly, shall be coordinated by the contractor prior to delivery of both units, so that the precast base provides a smooth top (of bottom slab) surface to receive the piping and valve assembly and any framing system. Either a two-piece lifting assembly or removal of lifting lugs to flush with concrete are acceptable, once the base precast unit is in place, level and to lines and grades as required.
- I. Concrete for use in work constructed under this section shall conform to the requirements of Section 101-Portland Cement Concrete of the Standard Specifications and as shown on the plan drawings. Reinforcement bars shall conform to the requirements specified in Section 102 -Steel Reinforcement of the Standard Specifications.

PART 3 - EXECUTION

3.01 Subgrade for Precast Concrete Structures

- A. The project shall provide for the construction of a 6-inch thickness filter material consisting of 3/4" gravel, which material becomes subgrade for the precast concrete vault. The placing of the precast concrete vault base section shall follow the placing of the filter material as closely as possible.
- B. The costs of preparation of subgrade or leveling course beneath the base for the proper placing of the precast concrete vault thereon shall be not paid for separately but shall be included as incidental to the precast concrete vault.

- B. When the precast concrete vault is found to rest in rock, the rock shall be fully uncovered and removed to below the lines and grades as required for placing the precast concrete vault. The surface of the rock shall be removed to a depth sufficient to allow for placement of the precast concrete vault and 6-inch sand/gravel subgrade. The minimum thickness of the subgrade / leveling course shall be 6-inches and shall be provided so as to set the vault level, and to the lines and grades as required.
- C. Excavation of rock, if required for the precast concrete vault shall not be paid for separately but shall be included as incidental to the precast concrete vault.
- D. Final placement elevation tolerances of the Precast Concrete Vaults shall be level and within 1/2-inch of design, so as to allow match of the outside piping alignment to the vault inside piping elevations.

3.02 Installation of the Precast Structure

- A. Installation Instructions, procedures, pickup points, back-anchoring and unit weights for crane loadings for installing the precast units shall be as provided by the respective precast suppliers, and shall be in accordance with all applicable portions of the APWA Standard specifications, and applicable data of the crane manufacturer for the specific crane equipment utilized. The crane operator shall be required to be fully licensed to operate the specific crane equipment utilized by the contractor.
- B. In addition, installation shall be in accordance with the applicable Precast Structure Installation Sub-sections of Section 517 of the New Mexico Department of Transportation (NMDOT) "Standard Specifications for Highway and Bridge Construction, Latest Edition".
- C. The Contractor shall use extreme caution during installation, and provide such safety measures to avoid damage of existing utilities, including gas lines, fiber-optic lines, or others adjacent to the structure final alignment, overhead lines, and other utilities as located.
- D. Contractor shall inspect the Precast Vault units upon delivery to the jobsite, and take photographic evidence of the condition of the units prior to unloading or installing the units.
- E. Damage to the precast vault units or to the existing or installed utilities during transfer, unloading or installation, shall be repaired or replaced at the sole expense of the contractor.
- F. All safety requirements shall be in accordance with all applicable state and federal requirements.
- G. Backfill around the structure shall be performed as directed by Specification 501-Excavation and Backfill for Structures

3.03 Tests

- A. Testing procedures for precast units shall be as provided for in Section 101-Portland Cement Concrete, or ASTM C913 with test results supplied to the Engineer prior to shipping of the units.
- B. Contractor shall coordinate the project manager's inspection of vault grout, invert, pipe penetrations, walls, steps, and coatings to verify their conformance with drawings and specifications.
- C. Infiltration and Hydrostatic Testing
 - 1. Structure shall be thoroughly hosed, from either the inside or the outside, with potable water
 - 2. No visible signs of water exfiltration (running or dripping) shall occur anywhere in or around the new structure
 - 3. Hydrostatic Testing shall be performed from an upstream manhole for vaults when directed by the Project Manager, following the steps listed below:
 - a. Contractor shall plug all inlets and outlets.
 - b. Structure shall be filled with potable water, to 3/4 height, or six inches above the highest joint.
 - c. Water shall be allowed to stand for a minimum of 24 hours.
 - 4. Maximum leakage allowable shall be less than 0.2 gallons per hour for each foot of depth, in the 24-hour period following the beginning of the test.
 - 5. Any structure that fails to pass the hydrostatic test shall be repaired by the Contractor at no additional cost to Owner

PART 4 - MEASUREMENT AND PAYMENT

4.01 Measurement and Payment for Precast Concrete Structures

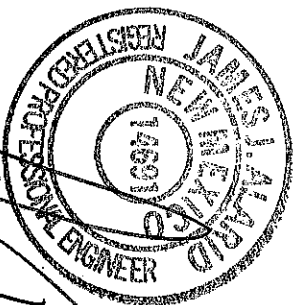
- A. Measurement under this section shall not be separately measured, and payment shall be merged into each of the Bid Items, entitled as follows:
 - 1. Furnish and install new 13' X 8'-10" precast concrete vault with bypass. Complete in Place. (CIP), with all accessories.

END OF SECTION

TABLE OF CONTENTS

IFB 24-40 DP Road Project Phase II

<u>SPECIFICATION SECTION</u>	<u>TITLE / DESCRIPTION</u>
101	General Requirements
102	Submittal Requirements
103	Compliance Requirements
104	Underground Facilities Staking Requirements
202	Excavation, Trenching & Backfill
301	Gas Systems
401	Underground Ductbank Systems
501	Sanitary Sewer Systems
502	Sewer Manholes
601	Water Systems
701	Cast In Place Concrete
702	Grout



[Handwritten Signature]
2/2/24

**SECTION 101
GENERAL REQUIREMENTS**

PART 1 GENERAL

1.1 INCLUDED

- A. Applicable codes, ordinances, rules and regulations, administrative requirements, coordination with Department of Public Utilities (DPU), easements, approved construction drawings, testing, inspection, contractor qualifications and acceptance of public utility infrastructure.

1.2 APPLICABLE CODES, ORDINANCES AND RULES AND REGULATIONS

- A. Department of Public Utilities Rules and Regulation, Revised May 17, 2006
- B. Los Alamos County Code of Ordinances, Chapter 16 Development Code
- C. Los Alamos County Code of Ordinances, Chapter 40 Utilities
- D. New Mexico Administrative Code, Title 14 Housing and Construction
- E. 49 Code of Federal Regulations, Part 191
- F. 49 Code of Federal Regulations, Part 192

1.3 CONTRACTOR QUALIFICATIONS

- A. Licenses: Contractors performing work on new or existing public utility infrastructure shall be licensed by the State New Mexico Construction Industries Department.
 - 1. GF-9 or GF-98: Required for gas, water and sewer work. Electric ductbank, vaults and pull boxes only (no installation or handling of wire, terminating, grounding etc.).
 - 2. EL-1J: Required for electric overhead and underground distribution and transmission lines.
 - 3. Pre approved Operator Qualification Plan and Drug and Alcohol program as applicable.
- B. Specific training, certifications, qualifications, manufacturer certifications listed in the individual specifications required to perform work.

1.4 COORDINATION WITH DEPARTMENT OF PUBLIC UTILITIES (DPU)

- A. Notification: The contractor shall notify all customers and the Department of Public Utilities 4 calendar days in advance of any service disruption due to work performed by the contractor. Contractor shall notify affected customers with a door hanger approved by the DPU.
- B. Permits: A penetration permit issued by the DPU is required for all connections to an existing gas, water and sewer main. The contractor shall complete the permit and coordinate the work with the Engineering Department and the Gas/Water/Sewer

Department at least 48 hours before performing the work. The permit must be signed by the contractor, a representative of the Engineering Department and Gas/Water/Sewer Department 48 hours prior to performing work. If the work will impact or take place on a water transmission line, a representative of the Water Production department must sign the permit.

C. Functions performed by Department of Public Utilities (DPU).

1. Gas

- a. Gas valves shall only be operated by DPU.
- b. Connections to existing gas mains shall be performed by DPU or contractor personnel with applicable Operator Qualifications (OQ) and who are a member of an approved Drug and Alcohol Program in accordance with U.S. Department of Transportation Pipeline Safety Regulations. If approved prior to connection, DPU may directly supervise, with OQ qualified personnel, the contractor personnel making the connections.
- c. DPU will provide materials and install residential service lines upon completion of service request form, approval of plans and payment of applicable fees.
- d. DPU will connect service and install meter only after New Mexico Construction Industries Division inspection and approval is obtained.

2. Water

- a. Water system valves shall only be operated by DPU staff.
- b. Water utility meters will be provided and installed by DPU.

3. Sewer

- a. Service connections to existing sewer mains shall be performed by DPU.

4. Electric

- a. All primary terminations in the distribution system shall be completed by DPU unless otherwise stated in DPU approved plans.
- b. DPU will provide and install electric meters.
- c. DPU will provide materials and install residential service lines upon completion of service request form, approval of plans and payment of applicable fees unless otherwise stated in DPU approved plans.
- d. DPU will connect service only after New Mexico Construction Industries Division inspection and approval is obtained.

1.5 APPROVED CONSTRUCTION DOCUMENTS

- A. Construction drawings must be prepared by a Professional Engineer licensed in the state of New Mexico.

- B. Construction drawings must be approved for construction by the DPU Engineering Department.

1.6 EASEMENTS

- A. All public utility infrastructure shall be constructed in utility easements or right-of-way.
- B. Easements and right-of-way shall be granted and filed in the office of the Los Alamos County Clerk prior to beginning construction.
- C. Prior to construction all easements and right-of-way in which public utility infrastructure will be constructed must be staked by a Professional Surveyor licensed in the state of New Mexico.

1.7 TESTING, INSPECTION AND ACCEPTANCE OF INFRASTRUCTURE

- A. All tests required in the individual sections of these specifications shall be completed by the contractor and at the expense of the contractor. Any infrastructure that fails a test must be corrected and retested until a passing test is achieved. All cost associated with correcting infrastructure that fails testing and all cost of re-testing is the responsibility of the contractor. Documentation of test shall be submitted to DPU.
- B. DPU shall inspect all new public infrastructure. Contractor is responsible for coordinating the inspections with DPU. Improvements that are buried before DPU has inspected shall be exposed for inspection by the contractor and at the expense of the contractor.
- C. Locate wire installed on new public infrastructure shall be verified for continuity as follows:
 - 1. Contractor shall verify continuity with own equipment.
 - 2. When contractor has verified all of tracing wire is continuous, contractor shall make arrangements through Project Manager to have Gas/Water/Sewer Department (GWS) staff verify the continuity of the locate wire.
 - 3. Contractor shall demonstrate continuity, in the presence of DPU staff, by locating all newly installed facilities at all location points (test boxes, valves, hydrants, services, etc.) with own equipment while GWS staff verifies continuity with own equipment and verifies accuracy of as-built drawings.
 - 4. Locations identified where no continuity is found shall be repaired by contractor.
- D. Inspection fees as required by DPU and Regulations Fee Schedule, current version, shall be paid prior to beginning construction.
- E. Acceptance of public infrastructure shall occur as follows:
 - 1. Public utility infrastructure constructed as part of a new development shall be accepted in accordance with Los Alamos County Code of Ordinances, Chapter 16 Development Code, Section 16-238 Acceptance.

2. Public utility infrastructure constructed by a DPU capital improvement project by means of competitive bid shall be accepted when the terms of the construction contract associated with the work have been satisfied.

END OF SECTION

SECTION 102 SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Required submittals.
- B. Submittal procedure.
- C. Definition of submittal types for construction.

1.2 REQUIRED SUBMITTALS

- A. Provide submittals as indicated in each specific specification section.

1.3 SUBMITTAL PROCEDURE

- A. Review submittals prior to transmittal to determine and verify field measurements, field construction criteria, manufacturers' catalog numbers, and conformance of submittals with Contract Documents. To certify compliance with these specifications:
 - 1. Routing Sheet provided in this section shall be attached to all submittals. Form must be completed in its entirety, signed and dated.
- B. For any proposed deviation from the Contract Documents, submit a written request to the Project Manager.
- C. Submit for review to Project Manager the following number of copies of submittals:
 - 1. 2 Copies for Department of Public Utilities use.
 - 2. Additional number of copies for Engineer and or Contractor use as determined by the Engineer/Contractor.
 - 3. A digital file (Adobe PDF) may be submitted if the Engineer and County agree. Separate or non-affiliated items shall be submitted as separate digital files.
- D. Submittal Clarity:
 - 1. Contractors Submittal No. on the routing sheet shall be a successive numbering system.
 - 2. Drawings shall be clear and legible.
 - 3. Manufacturer's Literature: Submit a minimum of one original of all manufacturers' printed material. Remaining number of submittals may be reproductions. Reproductions of original material shall be clear and legible.
- E. A partial submittal consists of only a portion of the total required for a project. This is acceptable when it is prudent to submit for review certain submittals before the remaining submittals are available. Submit all items concurrently for which,

due to coordination concerns, a simultaneous review is required. Include a separate Routing Sheet indicating the submittals transmitted with each numbered submittal package.

- F. After review of the submittal package the "Action Code" will be indicated on the Routing Sheet and returned to the Contractor. Review of submittals will be indicated on each Routing Sheet by appropriate signature, stamp, and date. The number of copies of each submittal noted above for Los Alamos County use will be retained and the balance will be returned to the Contractor. The Contractor shall allow a minimum of 10 calendar days for return of submittals.
- G. The Department of Public Utilities will utilize the following "Action Codes" to indicate the status of submittals resulting from the review, and the action required of the Contractor.
 - 1. A - Reviewed. No comments.
 - 2. B – Reviewed And Noted. Make corrections noted. Resubmission not required.
 - 3. C – Reviewed And Not Accepted. Revise and resubmit.
- H. Use a Routing Sheet with all resubmittals indicating each item's submittal number and type suffixed "R1" for the first resubmittal, "R2" for the second resubmittal, and so forth.
- I. Do not fabricate products or begin Work that requires submittals before such submittals are approved.

1.4 DEFINITIONS OF SUBMITTAL TYPES FOR CONSTRUCTION

- A. Calculations: The methods and results of calculations in documented form where specified.
- B. Catalog Data: Standard printed information on materials, products and systems, which shows performance characteristics, dimensions, material of fabrication, and other characteristics necessary to assure conformity with the design requirements. Where other items or information not related to the work of this project are included in the literature submitted, the item(s) and/or information applicable to this project shall be clearly marked.
- C. Certifications: A written statement, signed by a qualified party, attesting that items or services are in accordance with specified requirements. Typically, this written statement is accompanied by additional information to substantiate the statement.
- D. Installation Instructions: Manufacturer's instructions, step-by-step if necessary, showing the field installation of parts, components, equipment, and other similar items.
- E. Material List/Parts List/Design Mixes: A list of system or material components.
- F. Performance Data/Curves: Performance data and/or curves for the proposed equipment to show compliance with contract documents.
- G. Samples/Colors: Samples, including colors, of proposed materials.
- H. Shop Drawings: Drawings necessary to show fabrication details to ensure compliance with contract documents.
- I. Test Reports: Results of specified test requirements.

- J. Wiring Diagrams: Drawings showing the point-to-point wiring of a piece of equipment or between pieces of equipment in a system.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION



**CONTRACTOR SUBMITTAL ROUTING SHEET
DEPARTMENT OF PUBLIC UTILITIES**

PROJECT:	Contractor's Submittal No.:
	Date:
	Product Description:
CONTRACTOR:	Dates of any previous submissions:
Supplier:	Manufacturer:
Specification No.:	Drawing Nos.:
Are there any deviations to the contract documents? <input type="checkbox"/> No <input type="checkbox"/> Yes (explain and identify)	
<p>CONTRACTOR'S CERTIFICATION: This submittal has been reviewed by the Contractor in compliance with the CONTRACT DOCUMENTS. Any deviations to the CONTRACT DOCUMENTS are identified above. If this is a resubmittal, any changes other than those specifically called for by the PROJECT MANAGER on previous submittals are specifically identified on the sheet(s) directly following this form.</p> <p align="center">Signed: _____ Date: _____</p>	
LOS ALAMOS COUNTY ACTION	
Date Received:	No. Copies Received:
Date Returned:	No. Copies Returned:
A	<p>REVIEWED for general conformity with DRAWINGS and SPECIFICATIONS. No comments, approved for construction.</p> <p>By: _____ Date: _____</p>
B	<p>REVIEWED AND NOTED for general conformity with DRAWINGS and SPECIFICATIONS. Make corrections as noted, resubmittal not required.</p> <p>By: _____ Date: _____</p>
C	<p>REVIEWED AND NOT ACCEPTED. Not in conformity with DRAWINGS and SPECIFICATIONS. Revise and resubmit.</p> <p>By: _____ Date: _____</p>
PROJECT MANAGER'S COMMENTS, IF ANY:	

**SECTION 103
COMPLIANCE REQUIREMENTS**

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Erosion and Sediment Control
- B. Site Stabilization
- C. Spill Control and Response
- D. Debris Control
- E. Dust Suppression
- F. Traffic Control

1.2 QUALITY ASSURANCE

- A. Submit per Section 102 Submittal Procedures, manufacturer's data, materials certifications, certified seed mix, Storm Water Pollution Prevention Plan (SWPPP), erosion and sediment control best management practices, traffic control plans and applicable appurtenances to complete work in this section.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 EROSION AND SEDIMENT CONTROL

- A. General Requirements
 - 1. Contractor shall supply, install and maintain all erosion and sediment control measures, stabilization and structural controls, and other protective measures through the use of Best Management Practices (BMPs) including silt fences, straw bales, compost socks, or other approved methods, prior to any earth disturbing activity. Standard Details, Section 7000 contains drawings for installation of BMPs.
 - 2. Maintain BMPs in accordance with manufacturer's recommendations.
 - 3. Disturb only the minimum amount of soil necessary. Contractor shall take suitable precautions to protect existing trees, shrubs and other natural vegetation during construction. Project Manager must approve any trees to be removed.
- B. Projects Where Soil Disturbance Is Greater Than One Acre (SWPPP Required)
 - 1. All provisions in subsection 3.1, A. General Requirements stated above apply.
 - 2. Contractor shall prepare for review and acceptance by Project Manager a Storm Water Pollution Prevention Plan (SWPPP) in compliance with all requirements set by Environmental Protection Agency (EPA) National Pollution Discharge Elimination System for projects where soil disturbance is greater than one acre.

3. Contractor and County, as co-operators, shall each submit a Notice of Intent to the EPA Storm Water Notice Processing Center (<http://cfpub.epa.gov/npdes/stormwater/enoi.cfm>).
4. Contractor shall manage the SWPPP by supplying and installing all erosion and sediment control measures, stabilization and structural controls, and other protective measures through the use of Best Management Practices (BMPs) including silt fences, straw bales, compost socks, or other approved methods, prior to any earth disturbing activity.
5. Contractor shall conduct and document storm water inspections, maintain a soil disturbance log during construction and maintain records as required by EPA. Inspections shall be documented on the attached form provided on pages 5 and 6 of this section.
6. Contractor shall amend the SWPPP as required by EPA.
7. Contractor shall submit a Notice of Termination (NOT) following project completion and final stabilization, as defined by the EPA, is achieved.

3.2 SITE STABILIZATION

- A. Contractor shall stabilize all disturbed areas with native perennial vegetation. Do not leave any disturbed areas as barren soil. After reseeding contractor shall provide and install degradable rolled erosion control product perpendicular to slope to provide long term erosion control without active maintenance.
- B. Final stabilization shall be accepted by Project Manager.
- C. Seeding application shall be per New Mexico State Highway and Transportation Standard Specifications for Highway and Bridge Construction 2000 Edition, Section 632 or latest. Seeding class shall be Class B.
- D. Seed mix shall be from commercial supplier and be certified to be free of invasive species. Seed mix shall be delivered to site in a sealed packaging labeled with mix design from supplier. Seed mix as follows:

SEED MIX FOR ELEVATIONS 6,900 TO 7,500 FEET

SPECIES SCIENTIFIC NAME	SPECIES COMMON NAME	LBS SEED/ ACRE
Bouteloua Gracilis	Blue Gramma	3.0
Bromus Carinatus Var. Polyanthus	Foothills Brome	3.0
Elymus Trachycaulus	Slender Wheatgrass	4.5
Anropogon Gerardii	Big Bluestem	4.5
	Total	15.0

SEED MIX FOR ELEVATIONS 6,000 TO 6,900 FEET

SPECIES SCIENTIFIC NAME	SPECIES COMMON NAME	LBS SEED/ ACRE
Bouteloua Gracilis	Blue Gramma	4.5
Bouteloua Curtipendula	Sideoats Gramma	3.0
Pleuraphis Jamesii	Galleta	3.0
Schizachyrium Scoparium	Little Bluestem	4.5

		Total	15.0
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3.3 SPILL CONTROL AND RESPONSE

- A. In the event of a spill, contractor shall immediately notify all regulatory agencies having authority and the Los Alamos Project Manager. The Contractor shall be responsible for remediation of any spill and notifying all required agencies in compliance with all local, state and federal laws.
- B. Store all fuels, lubricants, chemical storage, material stockpiles, and other potential pollutants in a designated area on-site. Provide secondary containment and controls including berming lined with an impervious material, covering, or other appropriate BMPs.

3.4 DEBRIS CONTROL & DISPOSAL

- A. Use good housekeeping practices to keep sites free of construction debris and trash. Provide containers for deposit of debris and trash. Contractor is responsible for disposing of all waste materials generated from the construction including materials demolished, unsuitable excavated debris and construction debris. All materials shall be disposed in a lawful manner.
- B. Do not drive or move any vehicle on any public road unless the vehicle is constructed, loaded, secured or covered in a manner that will prevent any of its load from dropping, shifting, leaking, or otherwise escaping.
- C. Securely fasten all load covers to vehicles prior to driving on public roads so that the covering does not come loose or become a hazard to others.
- D. Do not bury construction waste, sanitary waste, or trash on-site.
- E. Concrete truck washout area shall be approved by Project Manager. If necessary, special provisions shall made by contractor if needed to protect property and the environment.

3.5 DUST SUPPRESSION

- A. Contractor is responsible for supplying and applying potable water as needed for dust control throughout the project. Apply all liquids in a manner that does not result in runoff.
- B. Commercial dust control products may be approved in a case by case basis.
- C. Use means necessary to control dust on and near the work, and on and near off-site areas, if such dust is caused by the contractor's operations during performance of the work, or if resulting from the condition in which the contractor leaves the site.
- D. Thoroughly moisten surfaces as required to prevent dust being a nuisance to the public, neighbors, and personnel performing other work on the site.

3.6 TRAFFIC CONTROL

- A. A temporary traffic control plan shall be prepared by the contractor for any work that will impact vehicular or pedestrian traffic. Contractor shall submit all traffic plans to the County Traffic Engineering Department for approval. Allow 10 working days for traffic plan approval. The County Traffic Engineering Department shall approve any proposed changes in the temporary traffic control plan.
- B. Consider and address the safety of pedestrians in the Traffic Control Plan, and if altering pedestrian traffic, provide an alternate pedestrian route.

- C. Traffic control devices shall be properly maintained and inspected daily during the project.
- D. A Traffic Control Supervisor shall be designated and be available for call out 24 hours per day.
- E. The Traffic Control Supervisor shall be certified in Work-zone Traffic Control.
- F. Traffic Control Supervisor shall perform on site inspections of work zone twice daily and once nightly if traffic control devices will be in place during night hours.
- G. Contractor is responsible for providing construction coordination to include a weekly log of daily inspections of barricade and maintenance schedules on projects that are over one week duration.
- H. Traffic plans shall conform to the latest edition of the Manual of Uniform Traffic Control Devices (latest edition) and may be required to follow AASHTO safety recommendations.
- I. Temporary Concrete Barriers must be used where open trenches are within 6 feet of driving lanes. End sections of the temporary concrete barrier must be angled away from the traveled way.
- J. Traffic Control Devices shall be kept in a clean condition. Washing of equipment is incidental to its placement and maintenance.
- K. Contractor is responsible for the obliteration of any conflicting striping and for any temporary striping.

3.7 DEMOLITION

- A. Any person or contractor performing demolition on structures or appurtenance which have utility in the vicinity must contact and make arrangement with DPU to assess the impact on DPU infrastructure.
- B. Upon review by the DPU, the person or contractor must pay by means of a back charge any cost associated with demolition that impacts any DPU infrastructure – either temporary or permanent - including but not limited to electric, gas, water or wastewater.
- C. Person or contractor excavating as part of the demolition process shall contract NM811 in accordance with NM State Statues.

END OF SECTION



**National Pollutant Discharge Elimination System (NPDES)
Storm Water Pollution Prevention Plan (SWPPP) Inspection Checklist
Los Alamos County Department of Public Utilities**

Project Title: _____

Project Location: _____

Inspector/Inspection Date: _____

Weather

 Current: _____

 Last 24 Hours: _____

 Date of Last Rainfall _____

 Amount of Last Rainfall _____

Chemicals Stored On Site: _____

Method of Chemical Containment: _____

Soil Disturbance Log Status: _____

Assessment of Best Management Practices (BMPs)

Part A. Erosion Prevention - Note condition and corrective actions for deficiently applied BMPs

1. Construction Access – Trackout, Street Clean	<input type="checkbox"/> OK <input type="checkbox"/> Deficient
2. Soil Stabilization - Signs of Erosion, Gullies, Slope Failures, Rills	<input type="checkbox"/> OK <input type="checkbox"/> Deficient
3. Slope Protection – Plastic Condition, Grass Growing, Hydroseed Condition, Matting	<input type="checkbox"/> OK <input type="checkbox"/> Deficient
4. Perimeter Control - Clearing Limits Marked, Silt Fences, Swales	<input type="checkbox"/> OK <input type="checkbox"/> Deficient
5. Conveyances Stable – Ditches, Check Dams Intact, Sand Bags, Slope Drains	<input type="checkbox"/> OK <input type="checkbox"/> Deficient

6. Temporary Erosion and Sediment Control Management - Revisions Required	<input type="checkbox"/> OK <input type="checkbox"/> Deficient
7. Water Management - Infiltration, Clean/Dirty Water Separated, Offsite Water Bypassed	<input type="checkbox"/> OK <input type="checkbox"/> Deficient
8. Outlet Protection – Stabilized	<input type="checkbox"/> OK <input type="checkbox"/> Deficient

Part B. Sediment Control - Note condition and corrective actions for deficiently applied BMPs

1. Storm water Detention and Monitoring	<input type="checkbox"/> OK <input type="checkbox"/> Deficient
2. BMP Maintenance	<input type="checkbox"/> OK <input type="checkbox"/> Deficient
3. Inlet Protection	<input type="checkbox"/> OK <input type="checkbox"/> Deficient
4. Dust Control	<input type="checkbox"/> OK <input type="checkbox"/> Deficient
5. Spill Prevention	<input type="checkbox"/> OK <input type="checkbox"/> Deficient
6. Condition of Discharge Water	<input type="checkbox"/> OK <input type="checkbox"/> Deficient

Other/Continued Comments, Conditions, Corrective Actions, and Observations:

SECTION 104 UNDERGROUND FACILITIES STAKING REQUIREMENTS

PART 1 GENERAL

1.1 WORK INCLUDED

This standard provides the requirements for the construction staking of public utility infrastructure.

1.2 QUALITY ASSURANCE

Utility staking is contingent upon the completion of the following by the owner/developer:

- A. Right-of-way and easements establishing legal access for new utility infrastructure shall be granted and filed in the office of the Los Alamos County Clerk prior to beginning construction.
- B. Right-of way, easements, lot corners and lot boundaries shall be staked by a New Mexico Licensed Professional Surveyor when utility infrastructure will be constructed within or adjacent to an established legal boundary to prevent encroachments and ensure legal access to facilities is maintained.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

- A. The contractor is responsible for completion and maintenance of all construction staking necessary to complete the work, consistent with standard survey practices.
- B. Clearing and grubbing shall be completed prior to staking.
- C. Staking utility infrastructure when grading has not been completed to final grades or final subgrade, stakes indicating grade cut or fills shall be placed as necessary to ensure utility infrastructure will be constructed at the proper depth when final grading is complete. All infrastructure not installed to the proper burial depth due to lack of staking or incorrect staking shall be removed and replaced at the proper depth at the expense of the contractor.
- D. Subgrade stakes: subgrade stakes are generally correct to within 0.2' which is sufficient precision to stake subgrade. However, care must be exercised when staking a utility location in that a greater degree of precision may be necessary.
- E. The burial depths and tolerances specified or drawn elsewhere in these construction standards for each specific utility shall be met.
- F. It is the contractor's responsibility to stake location and finished grade in all pertinent features, including but not limited to, roadways, curb and gutter, sidewalks, drainage structures, signage, retaining walls that are necessary for placement of utility components as specified.
- G. Offset distance: a distance shall be selected which will ensure the protection of stakes during trenching. This distance is generally 10' to 15' to centerline of trench but may depend on site conditions. The stakes may be placed adjacent to the contractor's sub grade stakes if the offset distance is adequate, or may, in fact, be the same if so marked.
- H. Stake interval: stakes will be placed as required in order to ensure that the trench will be properly aligned and at all utility components such as vaults, pedestals, transformers,

manholes, clean-outs, meter sets, fire hydrants, changes in direction, fitting location, valve location and other utility components that require to be placed at a specified location and depth. In no case shall staking intervals be less than 50'. The interval may have to be decreased to 25' or less on curves or where site conditions otherwise dictate.

- I. Although the center location on small electric boxes and property line structures are normally adequate, in most cases, it will be necessary to stake two corners on the larger boxes. When a box is to be placed against the back face of a sidewalk or any other critical location, care must be exercised to ensure adequate precision in staking.

END OF SECTION

SECTION 202
EXCAVATION, TRENCHING AND BACKFILL

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. This section covers trenching and backfill requirements for buried gas, water and sewer piping systems, as well as electric and communication conduits.
- B. This section also covers requirements for excavation and for compaction of succeeding layers after backfill has been placed around pipe, electric conduits, communication conduits, under manholes, surrounding manholes, under vaults, surrounding vaults, beneath equipment bases where detailed in drawings, as well as backfill associated with structures to be abandoned in place.

1.2 RELATED WORK

- A. Section 301 Gas Systems
- B. Section 401 Underground Ductbank Systems
- C. Section 501 Sewer Systems
- D. Section 502 Sewer Manholes
- E. Section 601 Water Systems

1.3 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the general designation only.
- B. American Society for Testing and Materials (ASTM) Publications:
 - D - 1557 Moisture-Density Relations of Soils and Soil Aggregate Mixtures
 - D - 2419 Sand Equivalent Value of Soils and Fine Aggregate
 - D - 2487 Classification of Soils for Engineering Purposes
- C. State of New Mexico Excavation Law: Chapter 62, Article 14 NMSA 1978, 2001 Amendment, and all amendments in place at the time of construction.

1.4 QUALITY ASSURANCE

- A. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted backfill material to the maximum dry density of the material as determined by the procedure set forth in ASTM Designation D1557 (Modified Proctor).

1.5 GENERAL REQUIREMENTS

A. EXISTING UTILITIES

- 1. The protection of active utility lines shown on the Plans or otherwise made known to the Contractor shall be the responsibility of the Contractor, prior to and during excavation. Active utility lines shown to be removed, retired, or abandoned in place shall be protected until the replacement utility lines are in place and ready to begin service or be otherwise activated. Any damaged utility shall be repaired or replaced

at the Contractor's expense. Potholing, as may be required to verify utility locations, shall also be the responsibility of the Contractor. Hand digging shall be performed at any time the excavation is within 18 inches of a live utility line per New Mexico Excavation Law. Contractor shall be responsible for contacting all utility companies and coordinating any work that requires relocation or abandonment of existing utilities.

2. Abandoned utility lines shall be cut and capped on both ends of the abandoned section.
3. If active utility lines are encountered and are not shown on the Plans or otherwise made known to the Contractor, promptly take necessary steps to assure no utility services are interrupted.
4. If any utility service is interrupted as a result of work under this section, immediately contact The Department of Public Utilities at 662-8333, or Police Dispatch at 662-8222, to restore service by repairing the damaged utility at Contractor's expense.
5. Existing utilities, whether or not shown on the drawings, and believed to interfere with the installation of permanent facilities being constructed under this contract, Contractor shall immediately send written notification to the Project Manager for direction.
6. Contractor shall not proceed with permanent repair or relocation of any existing utilities until written instructions are received from the Department of Public Utilities.

B. PROTECTION OF PERSONS & PROPERTY

1. Contractor shall install all necessary underpinning, shoring, lagging, cribbing, and bracing of ample strength to support adjoining soils, paving and structures. All such items shall be so constructed that they will not interfere with the building of any structural elements, and shall be removed upon completion of the work.
2. Contractor shall barricade open depressions and holes occurring as part of this work, and post warning lights on property adjacent to or with public access, all in compliance with County-approved traffic control plan.
3. Contractor shall protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by operations of Contractor.
4. Contractor shall install fences and barricades to secure the area from the public.
5. Contractor shall maintain access to areas adjacent to the project site(s) at all times.
6. Contractor shall maintain and/or replace all bench marks, monuments, construction stakes and other reference points. Any property boundary pins, survey monuments or survey benchmarks disturbed or damaged by the contractor shall be replaced at the expense of the contractor, by a surveyor licensed in the state of New Mexico.
7. Contractor shall repair or restore damage to any portion of the work resulting from movement of the sides or bottom of trenches or other excavation which is

attributable to the Contractor's acts or omissions, whether sides are braced or not.

C. SHORING

1. The Contractor shall be solely responsible for all bracing and shoring in compliance with all local, state and federal laws.

D. DEWATERING

1. Contractor shall remove all water, including rain water, encountered during trenching and substructure work to an approved location by pumps, drains, and other approved methods.
2. Contractor shall keep excavations and site construction area free from extraneous water.

E. DUST CONTROL:

1. Contractor shall use any and all means necessary to control dust on and near the work, and on and near off-site areas, if such dust is caused by the Contractor's operations during performance of the Work, or if resulting from the condition in which the Contractor leaves the site.
2. Thoroughly moistening surfaces as required to prevent dust from becoming a nuisance to the public, neighbors, and personnel performing other work on the site shall be the responsibility of the Contractor, throughout the construction period.

F. TRENCHING IN ROCK

Unless Trenching in Rock is specifically listed as a bid item, all trenching to be performed under this contract will be considered incidental to pipe, conduit, or ductbank installation. Excavation in Rock, as may be defined elsewhere in this contract, shall apply only to excavation other than trenching.

The Owner shall provide pertinent information to the contractor, following all appropriate subsoil investigations conducted on the project site, prior to project bidding. Contractor may, at contractor's expense, expand on the scope of such subsoil investigations.

Payment for trenching in rock shall be made in accordance with the specific bid item, and shall be adjusted only if quantities vary from those originally bid.

PART 2 PRODUCTS

2.1 BACKFILL MATERIALS

- A. Backfill Materials are those materials placed in the trench between the bedding material to the top of the trench or to below specified base course under roadways or those material used to fill excavations for subsurface structures. On-site native material used as backfill shall be select material free of debris, roots, wood, scrap material, vegetation, refuse, soft unsound particles, frozen, deleterious, or objectionable materials, free of stones or lumps exceeding 3 inches in greatest dimension satisfactory to the Project Manager.

- B. Soft, wet, plastic soils which may be expansive, clay soils having a natural in place water content in excess of 30%, soils containing more than 5% (by weight) fibrous organic materials, and soils having a plasticity index greater than 30 shall be considered unsuitable for use as backfill.
- C. In the event that native materials not meet the requirements specified for bedding material or backfill, or if the specified field compaction cannot be obtained, contractor shall import suitable material at no additional cost to the owner.
- D. The removal, hauling, and disposal of unsuitable material, such as rocks, pavement, concrete, demolished structures, debris, or other extraneous items shall be the responsibility of the Contractor, and shall be performed at no additional cost to the owner. Securing the site and coordinating with the respective agencies or disposal site owners shall also be the responsibility of the Contractor to do at no additional cost to the owner and in accordance with applicable environmental regulations.

2.2 PIPE BEDDING MATERIAL

- A. Pipe bedding, a minimum 4 inches below bottom of pipe and six inches above the top of the pipe shall be permeable material with a maximum particle size of 0.5 inches in any dimension, with no sharp rocks. Portion passing No. 200 sieve shall be 50% maximum. Contractor shall provide a submittal for bedding material for approval by the Project Manager, prior to installing such bedding material.

2.3 TRENCHES ON PAVED SURFACES

- A. Existing pavement surfaces shall be neatly saw-cut, removed and disposed of by Contractor in a lawful manner and at the Contractor's expense, as necessary for trenching operations to take place. Removed pavement or asphalt shall never be used as backfill. Paved surfaces shall be replaced upon backfilling the trench, in compliance with Los Alamos County Public Works Department Construction Standards. Asphalt and base course thickness shall be as detailed in plans, or at a minimum match existing concrete pavement or asphalt and base course section.

PART 3 EXECUTION

3.1 GENERAL TRENCHING AND EXCAVATING

- A. Trenches may be excavated either by hand, or by machine. Trenches shall be cut with vertical sides, and shall be of sufficient width to provide adequate space for working therein. When applicable such space shall have adequate clear distance when shoring is used, so that pipe can be properly placed and aligned in conformity with the plans. Trench sides shall be parallel to and at equal distance from the center-line of the pipe, when aligned as shown on drawings.
- B. Pipe trenches shall be excavated to a depth below the bottom of the pipe sufficient to provide for pipe bedding materials as required by Section 2.2.
- C. Where a trench has been excavated below the designed grade, the bottom of the trench shall be refilled to proper subgrade with approved material well compacted in place, in an approved manner.
- D. No more than 150 feet of trench shall be opened at any one time unless approved by the Project Manager.

- E. If practical, no trench or holes shall be left open overnight. Use steel plating to protect open trenches overnight.
- F. Excavation for thrust blocks shall be neat to the line and dimensions shown or called for on the plans.
- G. Provide for dewatering trenches and excavations and subsequent control of ground water, utilizing such pumps or other equipment as may be necessary to control ground water and seepage until backfilling is completed.
- H. The contractor shall remove and legally dispose of all excess excavated material and demolition debris.

3.2 GENERAL BEDDING

- A. Utilities shall be laid on a layer of firm bedding material, per section 2.2 A, not less than four (4) inches in depth as shown or as noted on the plans and detail drawings. Compact as specified herein.
- B. Upon completion of bedding operations and, prior to the installation of pipe or appurtenances, notify the Project Manager who will then inspect the bedding layer. Pipe laying shall not commence until the bedding has been approved. Upon completion of placement of 6" of bedding above pipe or conduit notify the Project Manager who will then inspect.

3.3 GENERAL BACKFILLING

- A. Backfill shall be as shown on the plans. Place in 8-inch maximum lifts. Bring up evenly on each side, and for the full length of the structure. Ensure that no damage is done to structures or protective coatings thereon. Compact each loose lift as specified in Paragraph "General Compaction" before placing the next lift. Where unacceptable settlements occur in trenches and pits due to improper compaction, excavate to the depth necessary to rectify the problem, then backfill and compact the excavation as specified herein and restore the surface to the required elevation.
- B. No backfill shall be placed until the line has been inspected and bedding approved.

3.4 GENERAL COMPACTION

- A. Use hand-operated plate type vibratory or other suitable hand tampers in areas not accessible to larger rollers or compactors. Contractor shall avoid damaging structures, pipes and protective pipe coatings. Compaction shall be in accordance with the following unless otherwise specified. If necessary, the Contractor's selected equipment and construction procedure shall be altered, changed or modified in order to meet the specified compaction requirements.
- B. Initial bedding shall be carefully packed under the haunches of the pipe and brought up simultaneously on both sides so as to prevent any displacement of the pipe from its true alignment. Backfill shall be compacted in layers not more than eight (8) inches in thickness in a manner that will preclude moving the pipe, to not less than 90%, and 95% within road right of ways, and as specified. Base course shall be compacted as required by roadway authority.
- C. Backfill above the bedding shall be placed in loose lifts not exceeding eight (8) inches in thickness before compaction, and compacted by the use of pneumatic tampers or other mechanical means approved. Water or dry, as required, to bring the soils as close as

practicable to the optimum moisture content for proper compaction. Compaction equipment or methods that produce horizontal or vertical earth pressures that may cause excessive displacement or may damage the pipeline will not be permitted.

- D. Backfill will be inspected during placement. Backfill not compacted in accordance with these specifications shall be recompact, or removed as necessary and replaced to meet specified requirements prior to proceeding with the work.
- E. Contractor is responsible for protection and maintenance of work during construction and until the project is accepted. The contractor will not be paid an additional amount for such work.
- F. Open excavations and backfilled trenches that have not been paved shall be protected from moisture that may sacrifice compaction or backfill quality. Base course or asphalt shall not be placed on subgrade or backfill that is visibly saturated. Saturated subgrade and backfill shall be removed, replaced, recompact per these specifications and demonstrated to be in conformance with these specifications by testing performed by an approved testing laboratory at the expense of the contractor. Frequency and location of this testing will be determined by the Project Manager.

3.5 GENERAL BRACING AND SHORING

- A. The Contractor shall furnish, place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; and to prevent damage to or adversely affect adjacent structures, facilities, landscaping, or pavement.
- B. Upon completion of the work, all bracing and shoring shall be removed.

3.6 FIELD QUALITY CONTROL

- A. Compaction test are required to be performed by a qualified material testing Laboratory provided by the Contractor and at the expense of the Contractor, and test results shall be provided to the engineer directly from the laboratory.
- B. Definition of road prism in these specifications is all subsurface material directly below paving, sidewalk, curb, valley gutter, roadway islands, landscaping and bar ditches within a road right of way.
- C. Compaction requirements and test schedule:
 - 1. Trenches under road prism 95% compaction required for bedding and backfill. Minimum of one field density test for each compacted 12" layer of trench backfill for each 400 linear feet of trench.
 - 2. Trenches crossings under road prism 95% compaction required. Minimum of one field density test for each 12" compacted layer of trench backfill at each trench road crossing.
 - 3. Trenches not under road prism 90% compaction required. Minimum of one field density test for each 12" compacted layer of trench backfill for each trench less than 400 linear feet.

4. New manholes, pull boxes or vaults, 95% compaction required. Minimum of one field density test for each 12" compacted layer of backfill for each structure.
 5. Manhole bases, pull box bases, transformer pads, vault bases and switch pads 95% compaction required. Minimum of one field density test of prepared subgrade.
- D. If backfill has been placed, that is below the specified density, provide additional compaction with subsequent retesting until successful compaction is achieved at no cost to the owner.

3.7 DUST ALLEVIATION AND CONTROL

- A. Contractor shall be responsible for and shall provide pollution and dust abatement and control measures satisfactorily during the course of the work. Water trucks shall be equipped with a directional spray nozzle.

3.8 FINISH OPERATIONS

- A. Pipes shall be laid to finished grades indicated on the plans.
- B. Contractor shall dispose of all surplus material or material unsuitable for filling or grading off the site in a legal manner at no additional cost to the owner.
- C. Satisfactorily restore any existing improvements, paving, landscaping, and other utilities disturbed during the course of constructing the improvements.
- D. Existing traffic markings and control devices damaged or disturbed during construction shall be replaced or repaired to the satisfaction of the Project Manager.

END OF SECTION

SECTION 301 GAS SYSTEMS

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Supply all labor, materials, equipment and incidental work required to install and test new gas lines, fittings and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification. The publications are referenced in the text only by their general designation only. Specifications and Standards:

- B. Specifications and Standards:

1. New Mexico Natural Gas Code
2. 49 CFR Part 191 - U.S. Department of Transportation: Annual Reports, Incident Reports And Safety Related Condition Reports
3. 49 CFR Part 192 - U.S. Department of Transportation: Transportation of Natural and Other Gas by Pipe Line
4. ASA B 31- U.S.A. Standard Code for Pressure Piping
5. API-5L - American Petroleum Institute Code for Steel and Iron (Seamless and Welded) Line Pipe
6. API 1104 - American Petroleum Institute, Standard for Welding Pipe Lines and Related Facilities
7. API 6D – Specifications for Pipeline Valves
8. ASTM A53 – Standard Specification for Pipe, Steel, Black and Hot Dipped Zinc Coated, Welded, and Seamless
9. ASTM D2513 – Standard Specification for Thermoplastic Gas Pressure Pipe, Tubing and Fittings
10. ASTM D2683 – Socket-Type Polyethylene Fittings for Outside Diameter controlled Polyethylene Pipe and Tubing
11. ASTM D3261 – Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
12. ASTM D3350 –For Polyethylene PE 2708 and PE 4710-PE100
13. ASTM F1055 – Standard Specifications for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing
14. ASME/ANSI 16.1 & 16.5 – Pipe Flanges and Flange Fittings

15. ASME/ANSI B31.8 – Gas Transmission and Distribution Piping Systems
16. ASME - Boiler and Pressure Vessel Codes

1.3 QUALITY ASSURANCE

- A. Gas mains, services and appurtenances shall be subject to pressure tests with air or inert gas.
- B. Gas mains and appurtenances shall be pigged prior to connection to existing systems.
- C. Submit manufacturer's data on the pipe material, fittings, valves and service material in accordance with Section 102 Submittal Procedures.
- D. The Department of Public Utilities engineer may require manufacturer's certificates showing conformance with this specification for any of the pipe materials, fittings, valves and appurtenances delivered to the job site.

1.5 OPERATOR QUALIFICATIONS AND DRUG AND ALCOHOL POLICY

- A. All personnel making the connection or otherwise performing any operation or maintenance, including excavation and backfill, on gas facilities containing natural gas must be Operator Qualified for the covered task or directly supervised by an Operator Qualified person and must be in an approved Drug and Alcohol testing program in accordance with Part 192 - U.S. Department of Transportation: Transportation of Natural and Other Gas by Pipe Line.

1.6 JOB CONDITIONS

- A. Comply and conform with the conditions and requirements indicated and specified under Section 202 Excavation, Trenching and Backfill.

PART 2 – PRODUCTS

2.1 PIPE AND FITTING MATERIALS

- A. Steel Pipe: Steel pipe shall conform to API-5L Specification Grade B or better. Pipe shall have beveled ends for welding. Buried steel pipe shall be coated and above ground steel pipe painted with approved alkyd urethane paint or equivalent or other means of protection.
 1. Approved manufacturers of steel pipe or approved equivalent:
 - a. California Steel Industries, Inc.
P.O. Box 5080
14000 San Bernardino Avenue
Fontana, CA 92335
 - b. United States Steel Corporation
600 Grant Street, Pittsburgh
Pennsylvania 15219
 2. Approved manufacturers of paint:
 - a. Sherwin Williams Company
816 First St NW

Albuquerque, NM 87102

- b. Krylon Products Group
101 W. Prospect Ave
Cleveland, OH 44115

B. Steel Pipe Fittings and Specials: Fittings and specials for threaded steel pipe shall be malleable and conform to Federal Specification WW-P-521b. Fittings and specials for plain-end steel pipe shall be steel butt-weld fittings conforming to American Standard B16.9.

1. Approved manufacturers or approved equivalent:

- a. Dobson Global Inc.
5650 East Ponce de Leon Ave.
Stone Mountain, GA 30083.
- b. Weldbend Corporation
6600 South Harlem Ave
Argo, Illinois 60501.

C. Polyethylene Pipe and Fittings:

Material. The pipe and fitting manufacture shall use virgin resin, 0% regrind, in the production of MDPE and HDPE pipe and fittings.

MDPE materials used for the manufacture of polyethylene pipe and fittings shall be PE 2708 MDPE meeting cell classification 234373E per ASTM D 3350; and shall be listed in PPI (Plastics Pipe Institute) TR-4 with standard grade HDB ratings of 1250 psi at 73°F and 800 psi at 140°F. All MDPE pipe and fittings materials shall be yellow in color.

HDPE materials used for the manufacture of polyethylene pipe and fittings shall be PE 4710/PE 100 meeting the cell classification of 445574C and 445576C per ASTM D3350; and shall be listed in PPI (Plastics Pipe Institute) TR-4 with standard grade HDB ratings of 1600 psi at 73°F and 1000 psi at 140°F. The material shall also be listed in the same PPI document as a PE 100 with a MRS (Minimum Required Strength) of 10 Mpa (1450 psi) at 20°C (68°F). Pipe shall be black with Yellow Strips.

Polyethylene Pipe. Pipe shall be manufactured and tested in accordance with ASTM D 2513 incorporated by reference in 49 CFR Part 192.

Pipe should be marked with a 1-Dimension bar code and a 16-Digit alpha numeric code that identifies the manufacturer, production run number, date of manufacture, pipe type and material grade per ASTM F 2897.

Polyethylene Fittings. Polyethylene fittings shall be manufactured and tested in accordance with ASTM D 2513 incorporated by reference in 49 CFR Part 192.

Fittings should be marked with a 2-Dimension DataMatrix code that identifies the manufacturer, production run number, date of manufacture, fitting type and material grade per ASTM F 2897.

Storage of Plastic pipe, time limits per §192.321 (g) (1) LAC must be able to demonstrate that the cumulative aboveground exposure of the pipe does not exceed the manufacturer's recommended maximum period of exposure or 2 years, whichever is less.

1. Approved Manufacturers or approved equivalent:

- a. Chevron Phillips Chemical Performance Pipe
5085 W. Park Blvd., Suite 500
Plano, TX 75093
 - b. PolyPipe, Inc.
P.O. Box 390 Gainesville,
Texas 76241
 - c. USPoly Company
4501 W 49th Street
Tulsa, Oklahoma 74107
- D. HDPE & MDPE to coated steel transition fitting: Steel end shall be weld end API-5L standard wall thickness pipe coated with Fusion- Bonded Epoxy coating and mechanically connected to MDPE or HDPE pipe that meets the above MDPE or HDPE specifications in 2.1.C 1 & 2.
- 1. Approved Manufacturers or approved equivalent:
 - a. Central Plastics Company
39605 Independence
Shawnee, Okla. 74801
 - b. R.W. Lyall & Company, Inc.
2665 Research Drive
Corona, CA 92882-6918
- E. Excess flow valves to be installed on all new and replacement service lines. Refer to section "R" of LAC O&M manual.
- Approved vendor or approved equal.
- a. Central Plastics Company
- F. Heat Fusion Joining: Butt, socket, saddle fusion joints and electrofusion joints shall be made using procedures that have been qualified in accordance with Title 49, CFR, Part 192.283. The manufacturer shall provide qualified fusion procedures. The Department of Public Utilities and the Contractor shall ensure that persons making heat fusion joints are qualified to make heat fusion joints in accordance with Title 49, CFR, Part 192.285. The Department of Public Utilities and the Contractor shall maintain records of qualified personnel, and shall certify that training was received not more than 12 months before commencing construction. Contractor shall demonstrate his procedure to the Department of Public Utilities (DPU) and perform a sample weld, witnessed by the DPU, for testing.

2.2 VALVES AND VALVE BOXES

- A. Valves shall be provided with plastic slip type traffic valve boxes and cast iron traffic covers with "gas" cast thereon, set in a concrete base as shown and dimensioned on the detail on the plans. Upper tube size and bell area shall be appropriate for type of valve and valve size.
- B. Valves in steel systems shall be iron-body or steel, 175 psi working pressure non-lubricated ball valves, or other approved valves conforming to American Petroleum Institute Standard No. 6D, or equivalent, including the air test. Steel valves shall be flanged, weld end, or screwed and shall be approved by the Project Manager for the use intended.
- C. Polyethylene valves shall be used in all polyethylene systems and shall be SDR 11 full port HDPE or MDPE and be compatible with the polyethylene pipe.

1. Approved manufacturers or approved equivalent:
 - a. Flowserve Nordstrom Valves
1511 Jefferson Street
Sulphur Springs, Texas 75482
 - b. Kerotest Manufacturing Corp.
5500 Second Avenue
Pittsburgh, PA 15207

2.3 GAS SERVICES

- A. New and replacement gas service lines shall be approved polyethylene pipe 3/4" iron pipe size (IPS) diameter or larger depending on the gas load to be served. Service lines of 1/2" copper tubing size (CTS) can be used for insertion in steel pipe if the distance and gas load will allow its use.
- B. Service lines shall be connected to polyethylene mainlines by use of compatible polyethylene molded saddle or electrofusion tapping tee. Service lines connected to steel mainlines shall be connected by use of welded steel Mueller Autoperf Service Tees with 3/8 inch perforator or equivalent.
- C. Anodeless type risers for polyethylene service lines compatible with the service line pipe size shall be used for the meter riser.
 1. Approved Manufacturers or approved equivalent:
 - a. R.W. Lyall & Company, Inc
2665 Research Drive,
Corona, CA 92882-6918
 - b. Perfection Corporation
222 Lake St.
Madison, Ohio 44057-3189
- D. Riser meter valve shall be Mueller 175 psig Luboseal Lockwing Meter Valve or approved equal.
- E. Gas service lines may be under concrete slabs if the edges of the concrete slabs are a minimum of 2 feet from any building. The 2 foot space must be earth or gravel with no impervious material. Gas service lines that are parallel to building shall be 5 feet from any building and 2 feet from property lines, unless alternate plans are reviewed and approved by the Department of Public Utilities engineer. No gas lines are allowed under any structures other than concrete or paved areas as stated above.
- F. Gas service lines shall not be laid under concrete slabs that are connected to structures if the gas service line is closer than 20 feet, without a triple felt expansion joint over the gas line and at the point where the concrete slab connects to the building. There shall be an open area in the concrete min 12 X 12 inches where the gas service riser exits the ground. In all cases the footing of the building must be lower than the gas line in the area of the concrete slab.

2.4 GAS REGULATOR STATIONS

- A. Flanged Ball Valve 150 ANSI Steel or Ductile Iron
 1. Approved manufacturers or approved equivalent:
 - a. Balon Corporation

3245 S. Hattie
Oklahoma City, OK 73129

- b. Kerotest Manufacturing Corp.
5500 Second Avenue
Pittsburgh, PA 15207

B. Flowgrid Gas Regulator: Flanged 150 ANSI standard single port 2" or 2" X 1" depending on flow requirements with Series 20 Pilot Regulator and pilot filter.

1. Recommended manufacturer:

- a. Mooney Controls
40 West Gregson Ave
Salt lake City, Utah 84115

C. Flanged Ductile Iron or Steel Strainer 150 ANSI.

1. Approved manufacturers or approved equivalent:

- a. Mueller Steam Specialty
1491 NC Hwy 20 W
St. Pauls, NC 28384
- b. Kerotest Manufacturing Corp.
5500 Second Avenue
Pittsburgh, PA 15207

D. ¼" Threaded Steel or Stainless Steel Needle valve.

1. Approved manufacturers or approved equivalent:

- a. Balon Corporation
3245 S. Hattie
Oklahoma City, OK 73129
- b. Kerotest Manufacturing Corp.
5500 Second Avenue
Pittsburgh, PA 15207

E. 3/8" Stainless steel tubing .035" wall thickness.

1. Approved manufacturers or approved equivalent:

- a. Swagelok Company
29500 Solon Road
Solon, OH 44139
- b. Eagle Stainless
10 Discovery Way
Franklin, MA 02038

F. Steel pipe shall meet requirements of 2.1 A & B. Wall thickness shall be standard pipe. Above ground steel pipe shall be painted and underground pipe coated in accordance with 3.2, D.

2.5 LOCATING WIRE & WARNING TAPE

A. Locate wire shall be installed on all gas mains and service lines beneath the pipe. Locate wire must be electrically continuous along mains and service lines. Locate wire shall be accessible at each valve box and at each service riser. The locator wire shall be terminated

above ground at each non-corrodible service riser and shall be secured to the riser with cable ties.

- B. Locating wire shall be solid copper, ten (10) gauge type electrical wire with solid yellow jacket. All locate wire splices shall be connected with copper wire split nuts or other approved mechanical connector, waterproofed with sealing compound, and wrapped in electric tape. Locate wire must be raised in a test box every 500 feet, in all valve boxes, and in all locations where gas lines end.
- C. Locator wires, which distribute protective direct current, shall be connected to all underground steel components by thermite welding or brazing. The locator wire systems with anodes must be tested for electrical continuity as they are installed. A short section of wire may be brazed to the steel components before installation. This permits connections to the locator wire with an approved wire connector. All bare metal at thermite welds shall be field coated.
- D. Warning tape shall be installed above all gas mains and gas service lines. The warning tape shall be installed 12 inches below grade directly above the gas pipeline. The warning tape should be yellow in color and have permanently printed in black letters, "Caution: Buried Gas Line Below". The warning tape should be 6 inches in width and 5 Mil in thickness and have aluminum foil backing.

2.8 PIPE BEDDING AND BACKFILL MATERIAL

- A. Shall conform to Section 202 Excavation, Trenching and Backfill of these Specifications except for particle size that shall conform to B below.
- B. Gas pipe bedding material placed as showing on drawings and shall be sandy soil that contains no sharp rocks or rounded rocks larger in diameter than ½ inch. Protective sleeves of PE pipe may be used in lieu of bedding material for service lines.

PART 3 – EXECUTION

3.1 TRENCHING, BACKFILLING AND SHORING

- A. Shall conform to Section 202 Excavation, Trenching and Backfill of these Specifications.
- B. Minimum trench width shall be the same as the outside diameter of the gas pipe plus 6 inches on each side of pipe.

3.2 PIPE INSTALLATION

- A. Installation: New gas mains shall have a typical 3 feet of cover to the top of pipe and new gas service lines shall have a typical 2 feet of cover to the top of pipe. If field conditions such as consolidated rock, utility conflicts or other similar circumstances exist then, only upon approval of the DPU for a change in the standard installation, the minimum cover to the top of pipe for gas mains shall be 24 inches and for gas service lines shall be 18 inches. Pipe, valves, fittings and appurtenances shall be installed in accordance with the best practice, and in conformance with the applicable requirements of the API and ASTM Standards.
- B. Clearance: Gas mains and service lines shall be installed with enough clearance from any underground structure or utility to allow proper maintenance and to protect against damage that might result from proximity to other structures. The typical separation clearance shall be 12 inches. The minimum, only upon approval of the DPU for a change in the standard installation, shall be 4 inches.
- C. Handling: Pipe, valves, and fittings shall be carefully handled during hauling, unloading, and placing operations, so as to avoid breakage or damage. Strap type slings shall be used for lifting and placing; no chains or hooks will be permitted. Broken or damaged pipe or

appurtenances will be rejected by the Project Manager and shall thereupon be removed from the work and replaced. Avoid pushing or pulling around sharp objects. Any scratch deeper than 10 percent of the minimum pipe wall thickness of polyethylene pipe shall be cut out. Any area kinked or buckled shall be removed. Pipe should be dragged so that it is not touching the concrete or hard surface and must be supported with soft, non-abrasive material such as wood or sandbags, etc. Pipe shall not be stored in the sunlight more than six months.

A. Coating:

1. Buried steel pipe shall be coated with a mill applied coating or approved hand applied coating.
2. Any coating that is not firmly bonded to the pipe shall be removed. A draw knife or similar tool can be used to clean the pipe to the bare metal surface. The entire area to be coated shall be thoroughly cleaned of all foreign substances including, but not limited to, weld splatter, burrs, slag, oil, grease, frost, moisture, rust, and scale. Do not use kerosene or other oily solvents when removing oil and grease. All frost and moisture shall be removed from the pipe by wiping with a rag and/or heating if necessary. Heat may be applied with an oxygen-acetylene or butane torch.
3. After the gas line has been cleaned, the primer shall overlap any adjacent mill coating for a distance of at least 2 inches.
4. Cold applied tape shall be used in conjunction with primer to effectively protect metal surfaces of underground gas lines that are not sufficiently mill coated. The tape is available in widths from 2 through 12 inches. Each wrap shall overlap the preceding wrap by approximately ½ inch. The tape should be spirally wrapped and shall extend at least 2 inches over the mill coating on steel to steel connections, and approximately 2 inches over the PE pipe on polyethylene to steel connections. To avoid tape pull-back, the final wrap shall be applied using less tension and the last few inches of the tape shall have primer applied to the underside.
5. All coatings shall be electrically tested for holidays by a method approved by the DPU.

B. Cutting: Pipe cutting, where necessary, shall be done in a neat and workmanlike manner without damage to the pipe. Cutting shall be done by means of an approved type of mechanical cutter.

C. Cathodic Protection:

1. Magnesium anodes are installed on all buried new steel gas pipes for the purpose of providing protective direct current for the steel segments of buried gas lines. Anodes shall be packaged in cloth bags. When the anodes are packaged in an additional paper wrap, this wrap shall be removed prior to installation but the anode shall be installed with the cloth bag intact.
2. Cathodic protection on bare or poorly coated Steel is considered attained at a minimum of -0.85 volt. A higher value of -1.00 volt is recommended on well coated pipe. These potentials are to be taken with the half-cell directly over the pipe and shall be considered the minimum for adequate protection by anode.
3. When services or extensions are added to protected mains, the protection level of the system shall be checked before and after the work is completed with a half-cell. The results of the final check must appear on the record of installation. If the protection level is low, check the effect of an additional anode with the

Current Requirements Probe. Report on shorted conditions not corrected on job.

4. All new coated pipe must be insulated from bare or unprotected pipe.
 5. The anode should be laid in a hole of sufficient length and width 16 inches below the pipe and 3' horizontally clear of the pipe and backfilled with well compacted moistened soil. For installations on risers, use a post hole digger to excavate a hole 16 inches or more from the riser with a trench from the hole to the riser to accommodate the anode lead wire. Holes and trenches should be deep enough to allow 1 foot of cover. For steel pipe installations, the anodes solid copper lead wires must be thermite welded to the pipe. All thermite welds, anode lead wires, steel fittings, bare portions of mill wrapped pipe, and any other exposed metal in a buried system must be coated per section 3.2.D.
 6. The person in charge shall record the quantity, size, pipe to soil reading, and location of the installed anodes and submit to the Project Manager.
- D. Alignment: All pipe shall be accurately laid in conformity with the prescribed lines and grades as established by the Project Manager. Each length shall be jointed to the preceding section as specified.
- E. Pipe Deflections: Joints in bends should be avoided. Radius of bends shall not exceed twenty (20) times the diameter of the pipe. Where there is a bend in the joint, the bending radius shall not exceed 125 times the pipe diameter.
- Example: Bends without joints:
1 1/4" Diameter = 25" R or 2'- 1"
2" Diameter = 40" R or 3'- 4"
4" Diameter = 80" R or 6'- 8"
- Bends with joints:
1 1/4" Diameter = 156" = 13'-0"
2" Diameter = 250" = 20'-10"
4" Diameter = 500" = 41'-8"
- F. Jointing: All polyethylene gas pipe shall be fused. All steel pipe shall be welded except for threaded or flanged joints for valves, meters, regulators, or other joints.
- G. Threaded Joints: In jointing threaded pipe, an approved Teflon joint sealing compound shall be applied to the male threads, and the joint shall be tightened with wrenches that are suitable for the purpose and in a manner that will not damage the pipe. Threaded joints shall not be installed underground.
- H. Welded Joints: Welded joints shall be made by metal arc-welding process or oxyacetylene welding process in accordance with API 1104, 18the edition. Mechanical Joints: Mechanical connections shall be installed in accordance with published instructions of the pipe or coupling manufacturer.
- I. Heat Fusion Joints: Butt, socket, and saddle fusion joints and electrofusion joints shall be made using procedures that have been qualified in accordance with Title 49, CFR, Part 192.283. The manufacturer shall provide qualified fusion procedures. The Department of Public Utilities and the Contractor shall ensure that persons making heat fusion joints are qualified for the task, in accordance with Title 49, CFR, and Part 192.285. The Department of Public Utilities and the contractor shall maintain records of qualified personnel, and shall certify that training was received not more than 12 months before commencing construction. Contractor shall demonstrate his procedure to the Department of Public Utilities and perform a sample weld, witnessed by the DPU, for testing.

- J. PE Insertion: 49 CFR Part 192.321 (f) requires: Polyethylene pipe that is being encased must be inserted into the casing pipe in a manner that will protect the pipe. The leading edge of the polyethylene pipe must be closed before insertion. Casing shall be pigged when necessary before insertion of pipe with a test piece of PE pipe and examined for scratches. Any exposed PE piping must have selected backfill as required. Inserted pipe shall be padded where it emerges from casing to prevent sharp ends of casing from cutting pipe. Starting ditch lengths must be long enough to prevent kinking and allow for a funnel inserted in encasement to prevent scratching the pipe. Tracing wire shall be pulled in with the pipe. Pull tensions shall be monitored and the allowable tensile load (ATF) specified by the pipe manufacturer shall not be exceeded. When pipe is pulled through encasement, a waiting time as recommended by the manufacturer must be allowed so pipe will have time to shrink back to its original size before welding tap tees saddles, or butt fusion (jointing pipe).
- K. Bearing: Pipe in the trench shall have continuous uniform bearing along its bottom, except at bell holes. Before lowering pipe into the trench, the Contractor shall remove all stakes, debris, loose rock and other hard material from the bottom of the trench.
- L. Positioning: After the final positioning, the pipe shall be held in place in the trench with backfill material placed equally on both sides of the pipe at as many locations as are required to hold the pipe section in place. After joints are completed, the backfill material shall be redistributed and compacted as herein required.
- M. Closure: When pipe laying is not in progress, all open pipe ends shall be closed with watertight plugs in a satisfactory manner. At the end of each day and when work is not in progress, the open ends of pipe installed in the line shall be closed with watertight plugs or caps.
- N. Cleaning: Before placing mainline pipe in service, the interior of the pipe shall be carefully cleaned of all dirt and debris by pigging.

3.3 CONNECTIONS TO EXISTING SYSTEMS

- A. Connections to existing systems shall not be made until the new mains have been satisfactorily cleaned, pressured tested, and penetration permits have been approved.
- B. Connections between new work and existing gas lines shall require an approved penetration permit from the Department of Public Utilities. Contractor shall locate pipe and allow the Department of Public Utilities to verify locating wire continuity per Section 101 General Requirements of these specifications, and shall supply as built drawings showing exact location, test records, inspection records, and other required records before any connections are made.
- C. Personnel making the connection or otherwise performing any operation or maintenance on gas facilities containing natural gas must be Operator Qualified for the covered task or directly supervised by an Operator Qualified person and must be in an approved Drug and Alcohol testing program in accordance with Part 192 - U.S. Department of Transportation: Transportation of Natural and Other Gas by Pipe Line.

3.4 PRESSURE AND LEAKAGE TESTS

- A. Preparation:
 - 1. The Contractor shall provide all necessary material equipment, and labor and shall perform all work required in connection with the testing of the gas system, as specified herein.

2. Air, inert gas pressure tests shall be made only after the trenches have been backfilled sufficiently to hold the pipe firmly in position, however backfilling is not mandatory during pressure test.

B. Procedure:

1. Any flaw disclosed by any test shall be repaired and satisfactorily retested.
2. Each section being tested shall be slowly filled with air or an inert gas. Each tested segment of pipe shall have the test pressure documented on a pressure recording chart or a pressure recording gauge. The test instruments shall meet the approval of the Department of Public Utilities and shall be subject to their inspection at all times during the test. If the Department of Public Utilities so requires, the test shall be made with instruments supplied by the Department of Public Utilities. Hand recording of test pressure from a non-recording device is not an acceptable procedure.
3. The Contractor shall prove the entire system of gas mains and service lines included in the contract to be gas tight by air or inert gas pressure to a minimum pressure of 95 psig for all systems that will operate up to a pressure of 60 psig and 155 psig for all systems that will operate up to a pressure of 100 psig. The test may be made on the system as a whole or on applicable sections. Smaller sections may be tested when backfilling of the trench is completed in each section in advance of the test.
4. The test shall continue for one (1) hour for each 30 cubic feet of volume, or fraction thereof, with a minimum of two (2) hours. The maximum test duration shall be twenty four (24) hours for steel pipe and eighteen (18) hours for polyethylene (PE) pipe.
5. The initial readings of the instruments for the test shall not be made for at least one (1) hour after the pipe has been subjected to the full test pressure. Neither the initial nor final reading shall be made during a time of rapid changes in the atmospheric conditions. The temperatures shall be representative of the of the actual trench conditions. There shall be no indication of reduction of pressure during the test after corrections have been made for changes in the atmospheric conditions in conformity with the relationship $T_1P_2 = T_2P_1$ in which T and P denote absolute temperature and pressure respectively and the subscripts denote initial and final readings.
6. During the test the entire system shall be completely isolated from all compressors and other sources of air pressure.
7. Service lines may be tested separately with a minimum fifteen (15) minute test duration using the same test equipment, pressure and procedure requirements listed above.
8. After the pipe section is tested, a written record must be prepared, placed and maintained in the record system of the Department of Public Utilities.

END of SECTION

**SECTION 401
UNDERGROUND DUCTBANK SYSTEMS**

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Underground conduit system for electric power.
- B. Underground conduit system for communications.
- C. Pull boxes and vaults for electric power.
- D. Pull boxes and vaults for communications.

1.2 DEFINITION

- A. "Duct" as used herein, is a single enclosed raceway for conductors or cable.
- B. "Conduit" is a structure containing one or more ducts.
- C. "Conduit System" is the combination of conduit, conduits, manholes, handholes, and/or vaults joined to form an integrated whole.

1.3 REFERENCE STANDARDS

- A. Publications noted in these specifications form a part of these specifications to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. Where reference is made to publications and standards, the revision in effect at the time of bid opening shall apply.

1.4 WORK PERFORMED BY THE DEPARTMENT OF PUBLIC UTILITIES (DPU)

- A. The Department of Public Utilities shall terminate all primary conductors necessary to energize new distribution circuits. The Contractor shall install and terminate secondary or service conductors when specified and approved by Department of Public Utilities. Contractor will provide and install connectors on secondary lines as specified by Department of Public Utilities.

1.5 SUBMITTALS

Submit the following in accordance with Section 102 Submittal Procedures.

- 1. Catalog Data: Contractor shall submit catalog data describing cable, pull boxes, pre-cast concrete vaults, manhole frames and lids, ladders, and cable

racks. Data substantiating that materials comply with specified requirements shall be included in submittal.

2. Catalog Data: Contractor shall submit catalog data describing all PVC duct, fittings, couplings, terminations, associated conduit system materials and galvanized 90-degree bends.
3. Test Reports: Contractor shall submit a report of duct blockage and cable tests.
4. As-Built drawings with details including burial depth, ductbank configuration, materials, lengths and stub up locations shall be submitted. The original design drawings are not to be submitted in the place of As-Built drawings.

1.6 QUALITY ASSURANCE

- A. Contractor shall comply with the National Electrical Code (NEC) and National Electrical Safety Code (NESC) for components and installation.
- B. Contractor shall provide products that are listed and labeled by a Nationally Recognized Testing Laboratory (NRTL) for the application, installation condition, and the environment in which installed.
- C. Contractor shall provide products that are accepted by Rural Utility Service (RUS)

1.7 RECEIVING, STORING AND PROTECTING

- A. Contractor shall receive, store, protect, and handle products according to NECA 1 – Standard Practices for Good Workmanship in Electrical Construction.

1.8 SEQUENCING AND SCHEDULING

- A. Installation of conduit or medium voltage cable must be coordinated with the Department of Public Utilities at least two working days prior to beginning work.
- B. Contractor shall schedule the inspection of each trench segment before bedding is placed.
- C. Contractor shall notify the Project Manager at least two days prior to duct tests.

PART 2 PRODUCTS

2.1 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. All submittals shall be approved by the Department of Public Utilities engineer prior to installation. No substitutions will be made on previously approved items without new submittal approval.

2.2 RIGID GALVANIZED STEEL CONDUIT AND FITTINGS

- A. Contractor shall furnish rigid galvanized steel conduit (RGS) that meets the requirements of UL6 – *Rigid Metal Electrical Conduit* and ANSI C80.1 – *Rigid Steel Conduit, Zinc Coated*.
- B. For rigid galvanized steel conduit and 90-degree elbows, the contractor shall furnish zinc-plated, threaded, malleable iron fittings and conduit bodies that meet the requirements of UL514B and ANSI/NEMA FB1.

2.3 RIGID NON-METALLIC CONDUIT AND FITTINGS

- A. Rigid, non-metallic duct (PVC) that meets the requirements of UL651 – Schedule 40 and 80 PVC duct and NEMA TC 2 – Electrical Plastic Tubing and Conduit, ANSI C80.3 shall be furnished by the contractor.
- B. For rigid non-metallic duct, Contractor shall furnish non-metallic, solvent-welded socket fittings that meet the requirements of UL514C – Non-Metallic Fittings for Conduit and Outlet Boxes, and NEMA TC 3 – PVC Fittings for Use with Rigid PVC Conduit and Tubing.
- C. All non-metallic ducts shall be solvent welded.

2.4 USE THE FOLLOWING DUCT MATERIALS:

- 1. Electrical grade Schedule 40 PVC rigid non-metallic duct is required for electric conduit systems.
- 2. Electrical grade Schedule 40 PVC rigid non-metallic duct is required for communication conduit systems.
- 3. Long sweep tape-wrapped galvanized rigid steel 90 and 45-degree elbows shall be used in electric conduit systems and for elbow and riser where ducts turn up to the surface as indicated in drawings.
- 4. Long sweep Schedule 40 PVC rigid non-metallic elbows shall be used in communication conduit systems.

2.5 DUCT SPACING

- A. Ducts shall be laid so that they remain in sequence and each layer remains distinct. Contractor will provide and install spacers if specified by Department of Public Utilities

2.6 CORROSION PROTECTION TAPE

- A. Contractor shall furnish pressure-sensitive, 10 mil thick. PVC based tape for corrosion protection of metal duct and fittings. Manufacturer: 3M, Type 50 or approved equivalent.

2.7 UNDERGROUND WARNING TAPE

- A. Underground warning tape shall be placed in areas where an underground conduit system is installed.
- B. Contractor shall use 6-inch wide, 0.004-inch thick, polyethylene underground warning tape with the following background colors:
 - 1. Electric: Red
 - 2. Communication: Orange
- C. Lettering shall be black and indicate the type service buried below.
 - 1. Electric: "CAUTION ELECTRIC LINE BURIED BELOW"
 - 2. Communications: "CAUTION COMMUNICATION LINE BURIED BELOW"Manufacturer: Electromark, Utility Safeguard, LLC or approved equivalent.

2.8 DUCT CAPS

- A. Duct caps are required on all unused ducts. The caps shall be designed to hold the pull string and seal the duct completely to prevent moisture intrusion.
- B. Contractor shall provide PVC end caps, which are glued securely on the end of the duct that will produce a positive seal in unused ducts against water and gas. Caps shall be made of schedule 40 PVC. Manufacturer: Carlon, Condux, Jackmoon USA, Inc or approved equivalent.

2.9 PRE-CAST PULL BOXES

- A. Contractor shall provide pre-cast polymer concrete pull boxes outside of the perimeters of roads in areas subject to light traffic.
 - 1. Electrical pull boxes shall be in compliance with the Department of Public Utilities Standards.
 - 2. County Communication pull boxes shall have minimum outside dimensions: 48"H x 48"D x 48"W.

3. Heavy Duty Covers shall be designed to H-10 or H-20; ASTM C 857-95 for incidental or non-deliberate traffic areas and are not intended to be installed in roadways.
4. Manufacturer: Carson Industries, Quazite, New Basis, New Line

2.10 PRE-CAST CONCRETE VAULTS

- A. Contractor shall provide pre-cast concrete vaults inside and outside of the perimeters of roads in areas subject to specified traffic ratings.
 1. Manholes shall be ordered to comply with specified dimensions.
 2. Contractor shall provide grounding lugs attached to ½-inch grounding inserts.
 3. Heavy Duty Covers shall have be designed in compliance with H-20; ASTM C 857-95.
 4. Contractor shall construct manholes using 4000 psi concrete.
 5. Contractor shall provide watertight seal between all manhole components.
 6. Contractor shall provide pulling eyes within the vault as detailed in drawings.
 7. Contractor shall provide lifting eyes and hardware on all manhole components.
 8. Contractor shall provide PVC duct terminations as specified in project detail drawings.

2.11 VAULT ACCESSORIES

1. Contractor shall provide removable ladder with all associated ladder hardware.
2. Contractor shall provide Risers as specified with appropriate lifting hardware.
3. Contractor shall provide a 36-inch steel lid with “Electric” stamped finish.
4. Contractor shall provide Unistrut rails cast into vault walls, two on each face, separated by 48 inches.

PART 3 EXECUTION

3.1 PREPARATION

- A. Contractor shall install underground conduit systems according to the Department of Public Utilities Standards
- B. Conduit system routing shown on Drawings shall be considered an approximation of location unless specifically dimensioned. Contractor shall route system conduit as required to complete the system.
 - 1. Contractor shall coordinate all underground conduit system work in a manner which avoids interference with other projects and existing utilities.
 - 2. Routing and termination locations of conduit system shall be verified prior to excavation for rough-in.
 - 3. Contractor shall verify that field measurements are as shown on Drawings and convey actual measurements to the as-built drawing set.
- C. Contractor shall position trench so envelope of conduit will have 12-inch minimum horizontal and vertical separations from parallel or perpendicular runs of other existing utility pipes or ducts.
- D. Separations from existing utilities may be greater than 12 inches.

3.2 EXCAVATION AND BACKFILL

- A. Excavation shall be performed in accordance with Section 202 Excavation, Trench and Backfill.
- B. Contractor shall perform excavation for pull boxes, vaults, and duct to the depth specified by Drawings in a manner that provides solid bearing.
- C. When excavating for trenches, Contractor shall provide sufficient width within the trench to receive work to be installed while providing specified bedding coverage on sides.

3.3 UNDERGROUND CONDUIT INSTALLATION

- A. Contractor shall install the number and size of ducts as indicated on the Drawings.
- B. Contractor shall abide by the following duct material specifications:
 - 1. Electrical grade Schedule 40 PVC rigid non-metallic duct shall be used for electric conduit systems.

2. Electrical grade Schedule 40 PVC rigid non-metallic duct shall be used for communication conduit systems.
 3. Contractor shall use long sweep, tape-wrapped, galvanized rigid steel for 90-degree and 45-degree elbows for electric conduit systems.
 4. Contractor shall use long sweep Schedule 40 PVC rigid non-metallic elbows in communication conduit systems.
- C. Where ducts turn up into the surface, Contractor shall use RGS, IMC or PVC coated rigid steel elbows with minimum 36-inch radius and terminate in a coupling 6 inches above the inner surface in a pull box or 4 inches above the surface of equipment pad. Contractor shall install zinc-plated malleable iron pipe plug in each unused duct stub-up.
- D. For ducts installed through holes in existing vault or manhole walls, Contractor shall pack opening with non-shrink grout and feather the edge of the grout around each bell in a manner that conforms to the curvature of the bell end. Contractor shall remove sharp edges and projections and fill voids within 6 inches of bell ends.
- E. Contractor shall ground metallic risers exposed to contact according to the requirements of the Department of Public Utilities. Exothermic welded connections for concealed grounding connections shall be used.
- F. In underground ducts, make-up joints shall be tight, driven home from both sides and made thoroughly waterproofed. On non-metallic ducts, Contractor shall use manufacturer's recommended primer and solvent-cement. On metallic conduits, Contractor shall coat male threads with red colored, alkyd base, tank and structural primer that is suitable for galvanized steel; make-up fittings wrench-tight.
- G. Where metallic ducts are below grade, Contractor shall use plastic coated rigid steel conduit or tape-wrap with corrosion protection tape, half-lapped.
- H. Contractor shall schedule inspection of each ductbank or ductbank segment before covering. Failure to obtain inspection by the Department of Public Utilities prior to backfill will result in re-excavation of segments not previously inspected.
- I. Each duct shall be tested for blockage or deformation as follows:
1. Contractor shall clean duct using a flexible mandrel/scrapper/brush not less than 12 inches long with a diameter approximately 1/4 inch smaller than the inside diameter of the duct.
 2. If a blockage is found within the duct, the blocked section shall be replaced.

3. The Project Manager shall be notified at least two days prior to duct tests; Contractor shall submit written reports of tests to Project Manager.
- J. Contractor shall place underground warning tape in backfill 12 inches below finish grade.
 - K. Contractor shall install measuring and pulling rope in each duct and leave not less than 12 inches of rope slack at each end. Each end of the rope shall be secured with approved restraint method and the PVC cap shall be glued to seal non-metallic ducts.
 - L. Stub-Up Connections:
 1. Contractor shall use rigid steel duct or IMC for outdoor stub-up connections. Non-metallic duct may be used for those indoor stub-up connections which are not subject to physical damage.
 2. Ducts shall extend through concrete pad or floor for connection to freestanding equipment with an adjustable top or coupling threaded inside for plugs which shall be set flush with the finished floor or equipment pad.
 3. Where equipment connections are not made under this Contract, threaded insert plugs shall be installed and set flush with the floor.
 - M. Contractor shall install corrosion protection tape on metal conduits and fittings in contact with soil using half-lapped wrappings.

3.4 PULL BOX AND VAULT INSTALLATION

- A. Pull boxes and vaults shall be installed at locations specified on Drawings.
- B. Contractor shall perform excavation of suitable dimensions so that ducts enter pull box or vault at proper elevation per project detail drawing dimensions.

3.5 DUCT PLUGGING AND SEALING

- A. Contractor shall install solvent welded caps in both ends of all unused ducts.

END OF SECTION

**SECTION 501
SANITARY SEWERAGE SYSTEMS**

PART 1 GENERAL

WORK INCLUDED

- A. Conventional gravity-flow and pressure sanitary wastewater pipelines, service lines, fittings, and accessories.

1.1 SUBMITTALS

- A. Product data for pipe, fittings and accessories per Section 102 Submittal Procedures.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Ductile Iron Gravity and Force Mains.

- 1. Pipe and Fittings.

- a. Pipe AWWA C-151 ceramic-epoxy lined bell and spigot push-on joint type pipe.
- b. Fittings AWWA 153 Fittings shall be mechanical joint ductile iron per AWWA C110 full body or AWWA C153 Short body. Fittings shall be ceramic-epoxy lined and coated per AWWA C116.
- c. On force mains all fitting joints shall be mechanically restrained. Accepted mechanical restraints: Megalug by EBBA Iron Inc. or UNI-FLANGE by the Ford Meter Box CO., Inc., or DPU-approved equal.
- d. In vaults and where indicated in drawings, Contractor shall use supported flanged pipe, and fittings.
- e. Accepted manufacturers: U.S. Pipe, Griffin Pipe or American Pipe, or approved equal.

- B. Non-Pressure Gravity-flow Mains.

- 1. Pipe and Fittings.

- a. For 15-inch diameter and smaller sewers, under normal conditions of gravity flow, SDR 35 PVC pipe, per ASTM D3034 shall be used, unless otherwise indicated in the drawings.
- b. Pressure-rated pipe may be specified for gravity-flow sewers, under some conditions, such as arroyo/stream crossings and shallow-bury installations. In such cases, pipe shall be

manufactured in accordance with AWWA C-900, with bell and spigot push-on type pipe, or mechanically restrained joints.

- c. For deeper installations and for sewer sizes 18-inch diameter and larger, pipeline shall be AWWA C-900 PVC pipe in order to provide sufficient structural performance. Mechanically restrained joints may also be specified under these conditions.

2. Joints.

- a. Internally cast bell with one rubber sealing ring per ASTM D3212 and F477. Lubricant shall be per Manufacturer's recommendations.
- b. As required by the design, where necessary for structural reasons, pressure pipe may be assembled with mechanically restrained joints.

C. High Pressure Sewer Force Mains

1. Pipe and Fittings:

- a. Class 150 C-900 PVC push-on joint type pipe or mechanically restrained joints as may be specified.
- b. All fittings shall also have mechanically restrained ductile iron joints per AWWA C110 full body or AWWA C153 Short body. Fittings shall be ceramic-epoxy lined and coated per AWWA C116.

2. High Density Polyethylene Pipe (HDPE).

- a. Refer to specification Section 503 Polyethylene Pipe for Sewer and Non-Potable Water.

D. Low Pressure Sewers

1. Pipe and fittings

- a. 2" to 6" diameter: Schedule 40 PVC per ASTM 1785, with thermally fused or solvent-welded bell and spigot joints ASTM 2855 and 2564.
- b. 2" to 6" diameter: DR 17 HDPE, per ASTM F714, with thermally fused joints

E. Sewer Service Lines.

1. Pipe and Fittings: Schedule 40 PVC per ASTM D1785, Solvent welded bell and spigot joints ASTM D2855 and ASTM D2564.
2. On existing mains: Service saddles for installation on existing SDR 35 PVC or clay sewer mains shall be a cast iron or ductile iron body with

shop applied coating, stainless steel strap, and bolts, nuts and washers, with rubber gasket per ASTM D2000 as detailed in drawing 5001. Saddle shall be approved by manufacturer for use on type of pipe being fastened to. Saddles shall be manufacturer by; The General Engineering Company; or approved equal.

3. On new mains: Service laterals shall be installed on new PVC gravity sewer mains by installing a SDR-35 gasketed directional tee with run sized to fit main and branch sized to fit sewer lateral. Service line shall transition to schedule 40 PVC pipe as detailed in drawing 5002.
4. Refer to specification Section 503 Polyethylene Pipe for Sewer and Non-Potable Water for HDPE gravity sewer service saddles.
5. All sewer service connection on low-pressure sewer mains shall be connected into directional tees.

F. Valves.

1. Valves in high pressure sewers shall be plug type, with hand lever actuator in vault applications, manufactured by DeZurick, or approved equivalent.
2. Combination air and vacuum release valves shall be installed where indicated on Contract Documents, at high points on force mains. Contractor shall avoid creating high point not indicated on contract documents. Combination air release and vacuum valves shall meet the requirements of AWWA C-512 and be approved by the manufacturer for use on pressure sewer systems. The valves shall have a minimum operation pressure of 250 (psi), all stainless steel trim, cast iron single housing type body. Manufactured by APCO, VAL-MATIC, Crespin or approved equal.
3. Valves in low-pressure sewer lines shall be installed where indicated in the relevant drawings, and shall be ball type, per ASTM F1970 for PVC pipe and ASTM D3350 for HDPE pipe.

G. Service Pipe Adapter.

1. Rigid coupling, Romac 501 or Fermco Strong Back with stainless steel backing sized specifically for the pipes to be joined.

PART 3 EXECUTION

3.1 INSTALLATION OF PIPE

- A. Per Section 202 Excavation, Trenching and Backfill. Curvature in sewer lines is prohibited.
- B. Contractor shall use rigid rubber gasket on exterior of pipe to seal pipe into grout at manholes.

- C. Clean sewer lines of all sand, gravel, dirt, and other foreign materials after installation.
- D. Service Lines shall be as indicated on contract documents. Minimum 2% slope is required.
- E. Warning tape shall be installed above all gravity sewer mains, sewer force mains and sewer service lines. The warning tape shall be installed 12 inches below grade directly above the sewer pipeline. The warning tape should be green in color and have permanently printed in black letters, "Caution: Buried Sewer Line Below". The warning tape should be 6 inches in width and 5 millimeters in thickness.
- F. Locate wire shall be installed on all sewer force mains. Locate wire shall be accessible at each sewer valve vault, cleanout, and manhole receiving force main discharge.
- G. Locating wire shall be solid copper, ten (10) gauge type electrical wire with solid green jacket. All locate wire splices shall be connected with epoxy capsule connectors, or other approved mechanical connectors, waterproofed with a sealing compound and wrapped in electric tape. Locate wire must be raised in a test box every 500 feet, at a minimum, and in all locations where sewer force mains end.
- H. In accordance with ASTM D 2774, pipe connections shall be protected where an underground PVC branch or service pipe is joined to a branch fitting such as a service saddle, branch saddle or tapping tee on a main pipe, and where pipes enter or exit casings or walls. The area surrounding the connection shall be embedded in properly placed, compacted backfill, preferably in combination with a protective sleeve or other mechanical structural support to protect the PVC pipe against shear and bending loads.
- I. Repairs
 - 1. Should an area be damaged and it be determined by the Project Manager that pipe replacement is not required, pipe repairs shall be permitted. Any repairs to damaged pipe sections shall be performed using a clamp (Muller 230 or equivalent) or wrap (Metalclad DuraWrap or equivalent) at no additional cost to Owner. Should the Project Manager find that a section of pipe is damaged to a point that may be detrimental to the pipe's performance, Contractor shall completely remove damaged pipe sections and replace with undamaged pipe at no additional cost to Owner.

3.2 FIELD QUALITY CONTROL

- A. Contractor shall provide all labor, equipment and materials required to perform all specified tests. Contractor shall coordinate for all tests to be observed by a representative of the Department of Public Utilities.
- B. Air Testing for Installed PVC Sewer Pipe shall be per Uni-Bell Standard UNI-B-6.
 - 1. Contractor shall block off all manhole and line openings.

2. Low pressure air shall be introduced into the plugged line until the internal line pressure is raised to approximately 4.0 pounds per square inch (psi). After a constant pressure of 4.0 (psi) is reached, the air supply shall be throttled to maintain that internal pressure for at least 2 minutes to permit the temperature of the entering air to equalize with the temperature of the pipe wall.
3. After the internal line pressure has stabilized at or above 3.5 (psi), testing shall begin.
4. If the time shown in Table I, for the designated pipe size and length, elapses before the air pressure drops 1.0 (psi) the pipe section undergoing the test has passed. Alternatively, if there has been no leakage after one hour of testing, the tested pipe section has passed.
5. Should a section of pipe fail testing, Contractor shall, at own expense, determine the source(s) of leakage and repair or replace all defective materials and/or workmanship to the satisfaction of the Project Manager. The repaired line shall then be retested until the pipe section has passed all testing requirements.

C. Mandrel Test

1. The mandrel test shall be performed on all PVC and HDPE gravity mains.
2. The mandrel test shall be performed no sooner than 30 days after placement and compaction of backfill, but prior to placement of permanent surface materials.
3. Contractor shall use a rigid mandrel with diameter of at least 95% of the pipe's specified average inside diameter and a length of the mandrel circular portion at least equal to the nominal pipe diameter.
4. The mandrel shall be pulled through the pipe by hand.
5. All pipe exceeding the 5% deflection shall be re-laid or replaced by the Contractor at no additional cost to the Owner.

D. Grade Tolerances

1. Pipe shall be free from noticeable depressions or humps.
2. Invert elevations shall not exceed plus or minus 0.2 inches from elevations shown on Drawings or which can be computed from Drawings.

- E. Contractor shall perform a video inspection of all PVC, HDPE, and ductile iron sewer pipe installed from manhole to manhole. The video and a video log documenting the inspection shall be submitted to the Department of Public Utilities for review prior to acceptance of public sewer lines. Video must be performed while introducing water into the pipe being viewed.

END OF SECTION

TABLE 1
MINIMUM SPECIFIED TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP
FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q = 0.0015

1 Pipe Diameter (in.)	2 Minimum Time (min:sec)	3 Length for Minimum Time (ft.)	4 Time for Longer Length (sec.)	Specification Time for Length (L) Shown (min:sec)								
				100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft	
4	3:46	597	.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	5:40	398	.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24	11:24
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48	17:48
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38	25:38
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04	40:04
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41	57:41
21	19:50	114	10.470 L	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31	78:31
24	22:40	99	13.674 L	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33	102:33
27	25:30	88	17.306 L	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48	129:48
30	28:20	80	21.366 L	35:37	53:25	71:13	89:02	106:50	124:38	142:26	160:15	160:15
33	31:10	72	25.852 L	43:05	64:38	86:10	107:43	129:16	150:43	172:21	193:53	193:53
36	34:00	66	30.768 L	51:17	76:55	102:34	128:12	153:50	179:29	205:07	230:46	230:46
42	39:48	57	41.883 L	69:48	104:42	139:37	174:30	209:24	244:19	279:13	314:07	314:07
48	45:34	50	54.705 L	91:10	136:45	182:21	227:55	273:31	319:06	364:42	410:17	410:17
54	51:02	44	69.236 L	115:24	173:05	230:47	288:29	346:11	403:53	461:34	519:16	519:16
60	56:40	40	85.476 L	142:28	213:41	284:55	356:09	427:23	498:37	569:50	641:04	641:04

Note: If there has been no leakage (zero psig drop) after one hour of testing, the test section shall be accepted and the test complete

**LOS ALAMOS COUNTY DEPARTMENT OF PUBLIC UTILITIES
SEWER AIR TEST DATA SHEET**

Identification of Pipe Installation (Job name, location, contract number, etc.)

Field Test Data: (To be filled in by the Inspector)

Date: _____

Specified Maximum Pressure Drop: **1 (psig)**

Identification of Pipe Material Installed _____

Pipe Under Test				Spec. Time	Field Test Operations Data						
Upstream MH Sta #	Downstream MH Sta #	Dia. (in.)	Length (ft.)		Refer to Table (min:sec)	Pressure Initially Raised to (psig)	Time Allowed for Pressure to Stabilize (min)	Start Test Pressure (psig)	Stop Test Pressure (psig)	Elapsed Time (min:sec)	Pass or Fail

Inspector's Name and Title: _____

Signature of Inspector: _____

If a section fails, the following items should be completed:

Identify section(s) that failed _____

Leak (was) (was not) located. Method used: _____

Description of leakage found: _____

Description of corrective action taken: _____

For test results after repair refer to Test No. _____ Inspector _____

SECTION 502 SEWER STRUCTURES

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Manholes, vaults and wet wells installed for the maintenance of gravity flow sewers, energy dissipaters, lift station wet wells, and lift station valve vaults, supplied and installed complete with frames, covers and doors, as well as other associated components.

1.2 RELATED WORK

- A. Section 701 Cast-In-Place Concrete
- B. Section 702 Grout
- C. Section 501 Sanitary Sewer Systems
- D. Section 503 Polyethylene Pipe for Sewer and Non-potable Water
- E. Section 504 Sewer Flow Control
- F. Section 505 Lift Station Equipment

1.3 REFERENCED STANDARDS

- A. The publications listed below form a part of this specification. The publications are referenced in the text by their general designation only.
- B. ASTM C478 – Standard Specification for Precast Reinforced Concrete Manhole Sections
- C. ASTM A48-07 – Standard Specification for Gray Iron Castings
- D. ASTM C923-07 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals
- E. ASTM D4101-07 - Standard Specification for Polypropylene Injection and Extrusion Materials

1.4 SUBMITTALS

- A. Submit shop drawings and product data for manhole sections, mastic sealants, pipe to manhole/wet well/vault connections, steps and castings per Section 102 Submittal Procedures.

PART 2 PRODUCTS

2.1 MATERIALS

A. Precast Manhole, Wet Well, and Valve Vault Sections

1. Precast manhole sections shall be constructed with concrete having a minimum 4,000 (psi) 28-day compressive strength and have a minimum wall thickness of 4 inches. Precast sections shall meet the requirements of ASTM C478. Pre-fabricated materials other than concrete, may be acceptable, upon written approval, by the Owner, as being equivalent. Contractor shall submit complete information, including costs, on any proposed material substitution for approval by the Engineer.
2. Lift station wet wells and valve vaults shall be constructed with concrete having a minimum 4,000 (psi) 28-day compressive strength. Minimum wall thickness shall be as indicated in drawings. Precast sections shall meet the requirements of ASTM C478.

B. Gaskets

1. Mastic sealing compound per FS SS-S-210. Approved products; Kent Seal No. 2 by Hamilton Kent; CONSEAL CS 102 by Concrete Sealants Inc.; Butyl-Nek by CRETECO; BUTYL-LOK by ALOK Products, Inc., or approved equal.
2. Flexible pipe to manhole/wet well/vault connectors per ASTM C923 with hardness of 40 plus or minus 5 per ASTM D2240 (shore A durometer). Approved products; Kor-N-Seal by NPC; Z-LOK by A-LOK Products, Inc.; PSX or Cast-A Seal by Press-Seal Gasket Corp.; TYLOX by Hamilton Kent; or approved equal.

C. Castings

1. Standard manhole cast iron frame and cover per ASTM A48. Minimum combined weight of frame and cover 325 pounds. Cover shall have vent hole, monolithic lifting rod and "SEWER" cast in cover, with letters 1 inch in height minimum. Approved products by Deeter Foundry, Inc.; Neenah Foundry Company; East Jordan Iron Works, Inc.; or approved equal.
3. Entry feature (door) for wet well or vault shall be as indicated in drawings.

PART 3 EXECUTION

3.1 FABRICATION

A. Manhole/Wet Well/Vault Section

1. Precast barrels, cone sections, base and cover.
 2. Minimum inside diameter as indicated in drawings.
 3. Manholes 6 feet deep and greater shall be provided with eccentric cones.
 4. Manholes less than 6 feet deep shall be provided with flat concrete top slabs, unless specified otherwise elsewhere.
 5. Step openings for co-polymer coated steel step placement cast in sidewall.
 6. Keylock-type shall have pre-formed gaskets or mastic seal.
 7. Manholes clear opening shall be 30 inches minimum unless otherwise shown in drawings. Wet well and vault clear opening shall be as indicated in drawings.
 8. Drop, energy dissipating, or any other specialty manholes shall be as indicated on drawings.
- B. Manhole/Wet Well/Vault Height Adjustment
1. Contractor shall use precast grade adjustment rings, 12 inches maximum total adjustment height above cone or flat top to top of casting.
- C. Placing Precast Manhole/Wet Well/Vault Sections
1. Section joints shall be cleaned before applying mastic or gasket seal, completed structure shall be rigid and watertight.
 2. Sections with chipped or cracked joints shall not be accepted.
- D. Prefomed Gaskets and Flexible Pipe to Manhole/Wet Well/Vault Seals
1. Shall be installed in conformance with manufacturer's recommendations.
- E. Interior Manhole/Wet Well/Vault Finish
1. Contractor shall remove excess mastic flush with precast sections, mortar in joints and penetrations flush with precast sections, and fill in any chipped areas with non-shrink grout.
 2. Lift Station Wet Wells, Dissipating Manholes, and Manholes as indicated in drawings: Contractor shall complete surface preparation and apply finish in accordance with manufacturer's recommendations. Preparation shall include concrete walls and floor and the interior surfaces of any non-aluminum or non-stainless steel entry feature such as manhole rings and covers, entry hatches, exposed pipe and conduit, etc. Testing for full coverage (spark test) is required per manufacturer's recommendations.

3.

Approved Manufacturers:

- a. ZEBRON 386, 100% solids polyurethane, 125 mils dry film thickness (DFT). ZEBRON Low Temperature poxy primer, 4-8 mils DFT. Color shall be Cream.
- b. Sauereisen SewerGard No. 210, aggregate-filled epoxy, 1/8 inch thick DFT.
- c. Polibrod 705 by Carboline, 125 mils DFT.

F. Manhole Invert

1. Construction shall conform to engineering drawings, with particular attention paid to elevations shown on drawings.
2. Concrete shall be placed in manhole's invert, to form a smooth transition.
3. Contractor shall invert shape to conform to radius of pipe it connects.
4. Contractor shall remove all rough sections or sharp edges which tend to obstruct flow or impede or cause material to snag.

G. Wet Well and Vault Invert/Floor

1. Construction shall conform to engineering drawings, with particular attention paid to elevations shown on drawings.
2. Concrete shall be placed in wet well and vault inverts, to form a smooth surface, and to accommodate sewage or drainage flows in accordance with engineering drawings.
3. Contractor shall remove all rough sections or sharp edges which tend to obstruct flow or impede or cause material to snag.

H. Drop Assemblies

1. Shall be constructed as shown on drawings with C-900 PVC or ductile iron pipe, both with gasketed fittings.

I. Pipe Stubouts for Future Connections

1. Where indicated in drawings stubouts shall be constructed from manholes/wet wells/vaults. They should connect to these structures, allowing a ell formed transition either at the inverts or walls, as shown on drawings.

2. Length and slope of stub-out shall be as shown on drawings.
3. Watertight temporary plug shall be laced in all stub-outs brace plug against blow-off.

J. Manholes over existing sewers

1. Base shall be built on site, around existing pipe, using 4,000 psi Portland cement concrete, per Section 701 - Cast-in-Place Concrete. Form tongue joint to match barrels for water tightness.
2. Wastewater flow shall be maintained in the affected lines at all times. Contractor shall obtain prior approval from Project manager, on the proposed method for maintaining continuous wastewater flow. Refer to section 504 Sewer Flow Control.
3. When breaking into an existing sewer manhole, its invert shall be reshaped, to provide for a smooth transition for the new flows. Care shall be taken to keep debris from entering the existing sewer.
4. Annular space between the new perforations and the new pipe shall be filled with non-shrink grout to ensure watertight conditions.

3.2 FIELD TESTING

A. Contractor shall coordinate the project manager's inspection of manhole/wet well/vault grout, invert, pipe penetrations, walls, steps, and coatings to verify their conformance with drawings and specifications.

B. Infiltration and Hydrostatic Testing

1. Structure shall be thoroughly hosed, from either the inside or the outside, with potable water.
2. No visible signs of water exfiltration (running or dripping) shall occur anywhere in or around the new structure.
3. Hydrostatic Testing shall be performed from an upstream manhole, for gravity flow lines, wet wells and vaults, when directed by the Project Manager, following the steps listed below:
 - a. Contractor shall plug all inlets and outlets.
 - b. Structure shall be filled with potable water, to $\frac{3}{4}$ height, or six inches above the highest joint.
 - c. Water shall be allowed to stand for a minimum of 24 hours.

4. Maximum leakage allowable shall be less than 0.2 gallons per hour for each foot of depth, in the 24-hour period following the beginning of the test.
5. Any structure that fails to pass the hydrostatic test shall be repaired by the Contractor at no additional cost to Owner.

END OF SECTION

SECTION 601 WATER SYSTEMS

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Supplying all labor, materials, equipment and incidentals required, install, flush, disinfect, and test new water mains, fittings, and apparatus as shown on the Drawings and specified herein.

1.2 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification. The publications are referenced in the text by their general designation only.
- B. American Water Works Association (AWWA) Standards, latest publications.

1.3 QUALITY ASSURANCE

- A. Water mains and appurtenances shall be subject to hydrostatic tests.
- B. Water mains and appurtenances shall be properly disinfected prior to connection to existing system.
- C. Submit manufacturer's data on the pipe material, fittings, valves and service material in accordance with Section 102 Submittal Procedures.
- D. As-built drawings with details including burial depth, pipe and fitting configuration, materials, and lengths. The original design drawings are not to be submitted in the place of As-built drawings.
- E. The Project Manager may require manufacturer's certificates showing conformance with this specification for any of the pipe materials, fittings, valves and appurtenances delivered to the job site.

PART 2 PRODUCTS

2.1 PIPE AND FITTING MATERIALS

- A. Water mains 4" to 12" in diameter shall be Ductile Iron or PVC pressure pipe.
 - 1. PVC, AWWA C900, DR-18 Class 150 pipe, push on bell end pipe. All gaskets of neoprene or other synthetic rubber per ASTM D412 and D395.
 - 2. Ductile iron pipe, AWWA C151, Class 350 pipe, cement mortar lined per ANSI/AWWA C104 /A21.4-03. All gaskets of neoprene or other synthetic rubber per ASTM D412 and D395. All pipe shall be installed with polyethylene encasement per AWWA C105, minimum 8 mil thickness.
 - 3. Fittings shall be mechanical joint ductile iron per AWWA C110 full body or C153 Short body.
 - 4. In vaults where indicated in drawings ductile iron pipe and fittings shall meet the requirements above, and shall be flanged end pipe per AWWA C115.

- B. Water mains 14" and Larger in diameter shall be Ductile Iron pipe.
 - 1. Ductile iron pipe, AWWA C151, Class 250 pipe, cement mortar lined per ANSI/AWWA C104 /A21.4-03. All gaskets of neoprene or other synthetic rubber per ASTM D412 and D395. All pipe shall be installed with polyethylene encasement per AWWA C105, minimum 8 mil thickness.
 - 2. Fittings shall be mechanical joint ductile iron per AWWA C110 full body or C153 Short body.
 - 3. In vaults where indicated in drawings ductile iron pipe and fittings shall meet the requirements above, and shall be flanged end pipe per AWWA C115.

2.2 VALVES AND VALVE BOXES

- A. Gate valves 4" to 12" shall conform to the requirements of AWWA C509 for resilient-seated valves. Stems shall be, fitted with a 2" x 2" square wrench nut and shall be manufactured to open counter-clockwise. Rated operating pressure of 250 (psi). Stem extensions shall be installed to bring the operating nut to within one (1) foot of finish grade where the depth from finished grade to operating nut exceeds four (4) feet. Gate valves shall be used for all valves and shall be fusion-epoxy lined and coated in conformance with the requirements AWWA Standard C-550. Manufactured by Mueller, AVK or approved equal.
- B. Gate valves 14" to 24" shall conform to the requirements of AWWA C515 for resilient-seated valves. Stems shall be fitted with a 2" x 2" square wrench nut and shall be manufactured to open counter-clockwise. Rated operating pressure of 250 (psi). Stem extensions shall be installed to bring the operating nut to within one (1) foot of finish grade where the depth from finished grade to operating nut exceeds four (4) feet. Gate valves shall be used for all valves and shall be fusion-epoxy lined and coated in conformance with the requirements AWWA Standard C-550. Manufactured by Mueller, AVK or approved equal.
- C. Valve boxes shall be 5 ¼" to 6" plastic body adjustable slip type with heavy duty cast iron lid and cover with "water" cast thereon. Cast iron lid set in a concrete collar as shown in drawings. Manufactured by ARMOUR Access boxes, Handley Industries, Inc., Bingham & Taylor Corp., or approved equal.
- D. In vaults and where indicated in drawings, valves shall meet the requirements of A and B above, and shall be flanged end pipe per AWWA C115 with hand wheel operator.

2.3 WATER SERVICES UP TO TWO (2) INCHES

- A. Water service piping two (2) inches in diameter or less per AWWA C800-05, shall be Engle Method Cross Linked Polyethylene (PEX) or Type K copper. All copper fittings shall be flare or compression type. All PEX fittings shall be brass insertion fittings and approved for use by the pipe manufacturer. PEX piping by WIRSBO AQUAPEX or approved equal.
- B. Water service valves and fittings two (2) inches in diameter or less per AWWA C800-05, shall be brass, of the size and type called for in the drawings, and rated at 150 psi working pressure.
- C. Meter boxes for 5/8" through 2" services shall be pre-fabricated as shown in the Drawings. Meter can construction shall be per materials and size detailed in the Drawings. When a new meter box is located in an existing driveway or sidewalk, the meter box shall be

constructed with a concrete collar as detailed in Drawings. Manufactured by Mueller, The Ford Meter Box Company, or approved equal.

- D. Curb valves and curb boxes shall be constructed where shown on the Drawings. Manufactured by Mueller, Ford Meter Box Company, A.Y. McDonald or approved equal. Curb boxes shall be 2" plastic body extension type with locking lid and plug, and be manufactured by Mueller, Handley Industries, Inc., Bingham & Taylor Corp., or approved equal.
- E. Service saddles two (2) inches in diameter or less shall be a double strap design with shop coated ductile iron body. Manufactured by Mueller, Ford Meter Box Company, A.Y. McDonald, JCM Industries or approved equal.
 - 1. Saddles on C-900 PVC shall have wide stainless steel straps.
 - 2. Saddles on ductile or cast iron pipe shall have two zinc plated, or equivalent, steel straps.

2.4 WATER SERVICES THREE (3) INCHES AND LARGER

- A. All piping in meter vault shall be flanged ductile iron in accordance with section 2.1 of this specification.
- B. All valves in meter vault shall be flanged in accordance with section 2.2 of this specification.
- C. Meter vaults and construction shall be per materials and size detailed in the drawings.
- D. All fasteners shall be torque rated steel bolts with stainless steel coating.

2.5 FIRE HYDRANTS

- A. Fire Hydrants conforming to AWWA C502; post type dry barrel design fusion epoxy lined and coated; 5 ¼" main valve opening; provided with two 2-1/2" and one 4-1/2" outlets with national standard threads; national standard 1-½" pentagon operating nut; breakaway stem and flange traffic feature; all fire hydrant heads, buries and extension spools shall be bolted with stainless steel bolts and washers. Mueller Centurion A-423; Kennedy K81D; or American B-84-B-5.
- B. All fire hydrant legs shall be six (6) inches in diameter ductile iron and shall be fully restrained with mechanical restraints.
- C. All exterior metal parts of the hydrant from the ground up shall be factory painted with two coats of paint, or one coat of primer and one coat of paint. Paint shall be yellow in color.

2.6 LOCATE WIRE & WARNING TAPE

- A. Locate wire shall be installed on all water mains and service lines. Locate wire must be electrically continuous along mains and service lines. Locate wire in service cans shall extend to, and be fastened to, the meter can cover. Locate wire must be raised in a test box at a minimum of every 500 feet and at all locations where water mains end. Locate wire must be raised and accessible in test boxes, all valve boxes, and at each fire hydrant. Text boxes manufactured by Handley Industries, Inc., Bingham & Taylor Corp., or approved equal.
- B. Locating wire shall be solid copper, ten (10) gauge type electrical wire with solid blue jacket for potable water or with solid purple jacket for non-potable water. All locate wire splices

shall be connected with epoxy capsule connector or other approved connection type, and wrapped in electric tape.

- C. Warning tape shall be installed 12" below grade above all water mains and water service lines. Warning tape shall be a minimum of 6" wide, locatable, blue in color for potable or purple in color for non-potable, with lettering reading "CAUTION BURIED WATERLINE BELOW".

2.7 JOINT RESTRAINT

- A. All joints will be mechanically restrained per schedule in drawings. Mechanical joint retainer glands and bell joint harnesses by EBBA Iron or The Ford Meter Box Company.
- B. Concrete blocking will only be used where indicated in the drawings and when approved by the Project Manager.

2.8 AIR RELIEF AND VACUUM VALVES

- A. Combination air release and vacuum valves shall meet the requirements of AWWA C-512 and shall have a minimum operation pressure of 250 (psi), all stainless steel trim, cast iron single housing type body. Manufactured by APCO, VAL-MATIC, Crespin or approved equal.

2.9 PRESSURE REDUCING VALVES

- A. Pressure reducing valves shall be CLA-VAL 90-01, CLA-VAL 690-01 or approved equal, unless otherwise shown on these contract documents.
- B. All fasteners shall be torque rated steel bolts with stainless steel coating.

PART 3 – EXECUTION

3.1 EXCAVATION, TRENCHING AND BACKFILL

- A. Shall conform to Section 202 Excavation, Trenching and Backfill of these Specifications.

3.2 PIPE INSTALLATION

- A. Installation: Water mains shall have 4 feet minimum of cover to the top of pipe and water service lines shall have 3 feet minimum of cover to top of pipe. Pipe, valves, fittings and appurtenances shall be installed in accordance with the best practice, and in conformance with the applicable requirements of the AWWA Standards.
- B. Handling: Pipe, valves, and fittings shall be carefully handled during hauling, unloading, and placing operations, so as to avoid breakage or damage. Straptypes shall be used for lifting and placing; no chains or hooks will be permitted. Broken or damaged pipe or appurtenances will be rejected by the the Project Manager and shall thereupon be removed from the work and replaced.
- C. Alignment: All pipe shall be accurately laid in conformity with the prescribed lines and grades as established by the Project Manager. Each length shall be jointed to the preceding section as specified, and after said jointing has been completed, there shall be no movement of the pipe in subsequent operations.
- D. Pipe Deflections: The laying of pipe on curved alignment will be permitted up to one-half the deflection as recommended by the respective pipe manufacturer.

- E. Cleaning: Before each new length of pipe is placed, the interior of the preceding pipe shall be carefully cleaned of all dirt and debris. When pipe laying is not in progress, all open pipe ends shall be closed with watertight plugs in a satisfactory manner.
- F. Bearing: Pipe in the trench shall have continuous uniform bearing along its bottom, except at bell holes. Blocking used to support the pipe during laying shall be placed at the end of the section and shall be removed before laying the next section. Before lowering pipe into the trench, the Contractor shall remove all stakes, debris, loose rock and other hard material from the bottom of the trench.
- G. Positioning: After the final positioning, the pipe shall be held in place in the trench with backfill material placed equally on both sides of the pipe at as many locations as are required to hold the pipe section in place. After joints are completed, the backfill material shall be redistributed and compacted as herein required.
- H. Closure: At the end of each day and when work is not in progress, the open ends of pipe installed in the line shall be closed with watertight plugs or caps.
- I. Thrust Blocking: Where indicated on Drawings as approved by the Project Manager, concrete thrust blocks of the form and dimensions shown or noted on the plans shall be provided. Thrust blocks shall be installed in strict conformance with the details shown or noted on the plans.

3.3 CONNECTIONS TO EXISTING SYSTEMS

- A. Connections to existing systems shall not be made until the new mains have been satisfactorily disinfected and have passed all tests herein specified.
- B. A penetration permit, per Section 101 General Requirements of these specifications, shall be obtained from the DPU's Project Manager, no less than 48 hours in advance of planned connection.
- C. Locate wire shall be verified electrically continuous per Section 101 General Requirements of these specifications.
- D. All water valves on existing systems shall be operated by DPU staff only.

3.4 HYDROSTATIC TEST OF PVC AND DUCTILE IRON PIPE

- A. Preparation:
 - 1. The Contractor shall provide all necessary materials and equipment, and shall perform all work required in connection with the testing of the water system, as specified herein.
 - 2. Hydrostatic and leakage tests shall be made only after the trenches have been backfilled sufficiently to hold the pipe firmly in position.
 - 3. The Contractor shall provide all water necessary for filling, flushing, disinfection, and any required tests including all labor and equipment required.
- B. Procedure:
 - 1. Hydrostatic test of all new PVC waterlines shall be completed by the contractor in conformance with AWWA C 605-5.

2. Hydrostatic test of all new Ductile Iron waterlines shall be completed by the contractor in conformance with AWWA C 600-5.
- C. Test Pressure and Duration:
1. Test pressure shall be the greater of 150 (psi) or 1.5 times the operating pressure specified by the County.
 2. Hydrostatic test duration shall be 2 hours minimum.
- D. Allowable Leakage:
- a. When test results indicate leakage beyond what is allowed in AWWA C605-5 (PVC pipe) Contractor shall conduct a survey of the line and repair any leaks found. Hydrostatic tests shall be repeated until satisfactory compliance with this specification is demonstrated. Contractor is responsible for any costs associated with the repair and re-test of pipelines.
 - b. When test results indicate leakage beyond that allowed in AWWA C600-5 (Ductile iron pipe), Contractor shall conduct a survey of the line and any leaks found shall be repaired, after which the hydrostatic test shall be repeated until satisfactory compliance with this specification is demonstrated. Contractor is responsible for any costs associated with the repair and re-test of pipelines.
 - c. Hydrostatic test shall be documented on form provided in this section.

3.5 DISINFECTION AND BACTERIOLOGICAL TEST

- A. Disinfection:
1. Following the Hydrostatic Test and before being placed in service, all new water lines shall be chlorinated in accordance with the requirements of AWWA Standard C651-05. During disinfection, water shall have a minimum 25 mg/L free chlorine concentration demonstrated by testing method approved by the Project Manager. The chlorinated water shall be retained in the main for 24 hours.
 2. After chlorination has been satisfactorily completed, the lines shall be thoroughly flushed until the chlorine content in all parts of the system has been proven by test to have a chlorine concentration less than or equal to 1.0 mg/L.
 3. It shall be the responsibility of the Contractor to de-chlorinate and lawfully dispose of the chlorinated water and flushing water, and avoid flooding or damage to adjacent properties or facilities.
- B. Bacteriological Test:
1. After flushing the chlorine from the water system and prior to placing line in service, the Contractor shall engage the services of an approved commercial testing laboratory, to gather an approved number of representative water samples, the location and number of which shall be determined by the Project Manager. Bacteriological testing shall be completed in accordance with AWWA Standard C651-05.
 2. No section of water systems will be allowed to be connected to the Department of Public Utilities existing water system when any sample of water tests indicates presence of coliform bacteria. Should the laboratory report show that any sample

taken was not acceptable, Contractor shall re-chlorinate and test the water again as described herein. This process shall be repeated until satisfactory disinfection has been accomplished.

3. Contractor shall direct the laboratory to send the original report of Bacteriological Examination to the Project Manager.

END OF SECTION



**DEPARTMENT OF PUBLIC UTILITIES
PVC AND DUCTILE IRON PIPE HYDROSTATIC TEST REPORT**

PROJECT NAME: _____
CONTRACTOR: _____
LOCATION: _____
DATE: _____
OBSERVER: _____

PIPE DESCRIPTION

	MATERIAL	DIAMETER (INCHES)	LENGTH (FEET)
SEGMENT NO. 1			
SEGMENT NO. 2*			
SEGMENT NO. 3*			

* Only applies when there are segments of different size pipes being tested.

TEST PRESSURE

PRESSURE: _____

LEAKAGE

ALLOWABLE LEAKAGE FORMULA:** _____

ALLOWABLE LEAKAGE:** _____

ACTUAL LEAKAGE: _____

** PVC pipe from AWWA C605-05 / Ductile iron pipe from AWWA C600-05.

TIME (2 HOUR TEST)

BEGIN TEST: _____

PASSED: _____

END TEST: _____

FAILED: _____

NOTES:

SECTION 701 CAST IN PLACE CONCRETE

GENERAL

1.1 WORK INCLUDED

- A. Formwork, shoring, bracing, anchorage, reinforcing, and accessories for cast in place vaults and manholes.
- B. Concrete sidewalks, drive pads, curb and gutter, and median pavement.
- C. Concrete utility pads, thrust blocks, valve box collars, manhole cover collars, and fence posts.
- D. Control, expansion, and contraction joint devices associated with concrete work.

1.2 RELATED WORK IN OTHER SECTIONS

- A. Section 401 Underground Ductbank Systems
- B. Section 502 Sewer Manholes
- C. Section 601 Water Systems
- D. Section 702 Grout

1.3 DEFINITIONS

- A. Reinforced concrete is structural concrete reinforced with no less than the minimum amounts of steel reinforcement specified in ACI 318.
- B. Plain concrete is structural concrete with no reinforcement or with less reinforcement than the minimum amount specified for reinforced concrete.

1.4 REFERENCES

- A. Publications noted in these specifications shall form a part of these specifications to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. New Mexico Department of Transportation (NMDOT) Standard Specifications for Highway and Bridge Construction including any Supplemental or Interim Specifications.
- C. All concrete work, products, and materials conform to ACI 301 and other specific referenced publications and standards except where otherwise specified herein.
- D. Where reference is made to publications and standards, the revision in effect at the time of bid opening shall apply.

1.5 SUBMITTALS

- A. The contractor shall submit the following to the Project Manager, in accordance with Section 102 Submittal Procedures:

- Design mix of concrete: A request for approval of the concrete mix design shall be submitted to the Project Manager thirty (30) days minimum prior to concrete placement. Submit a mix design for each strength and type of concrete for approval. Each request shall be made in writing with a cover letter exhibiting the company name of the testing laboratory, company address and telephone number, and the signature and stamp of the New Mexico Professional Engineer responsible for work.
- Laboratory test reports for each design mix.
- Batch Tickets.
- Shop Drawings: Indicate bar sizes, spacing, locations and quantities of reinforcing steel and welded wire fabric, bending and cutting schedules, supporting and spacing devices, spacing and location of dowels, and spacing and location of water stops.
- Product Data: Provide data on joint devices (sealer and filler), attachment accessories, admixtures, rebar doweling anchorage, epoxy bonding compound, and water stops.
- Test reports of concrete field testing per Section 3.10, Field Quality Control.

1.6 QUALITY ASSURANCE

- A. Contractor shall perform Work in accordance with ACI 301, 318, and 347, CRSI 63 and Manual of Practice, ANSI/ASTM A184.
- B. The work shall be subject to inspection at all times by the Owner for the purpose of determining that the work is properly executed in accordance with this specification. Failure to detect defective workmanship or material during any interim inspection shall not constitute acceptance of workmanship and materials.
- C. Work shall conform to ACI 305R when concreting during hot weather, as well as ACI 306R when concreting during cold weather.
- D. Independent Testing Agency Qualifications shall be approved by the Department of Public Utilities, qualified according to ACI 301, ASTM C 1077 and ASTM E 329 for testing indicated.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Contractor shall not deliver concrete until vapor barrier, forms, reinforcement and embedded items are in place and ready for concrete placement. Job site storage of materials shall be in accordance with ACI 301, and contractor shall protect materials from contaminants such as grease, oil, and dirt.
- B. Reinforcement: Contractor shall store reinforcement of different sizes and shapes in separate piles on racks raised above the ground in order to avoid excessive rusting. Reinforcement material shall be protected from contaminants such as grease, oil, and dirt. Contractor shall ensure bar sizes can be accurately identified after bundles are broken and tags removed.

PRODUCTS AND MATERIALS

1.1 FORM MATERIALS AND ACCESSORIES

- A. Smooth-Formed Finished Concrete shall be constructed using form-facing panels that provide continuous, true, and smooth concrete surfaces. Forms shall be furnished in largest practicable sizes to minimize number of joints.
 - 1. Plywood, metal, or other approved panel materials.
 - a. Metal form surfaces shall not contain irregularities, dents, or sags.
 - 2. Prefabricated forms.
 - a. Preformed Steel Forms: Minimum 16 gage matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
- B. Form Ties: Contractor shall use snap off type, galvanized metal cone type with waterproofing washer free of defects that could leave holes or gaps larger than 1 inch in concrete surface.
- C. Form Release Agent: Colorless mineral oil, which will not stain concrete, absorb moisture, or impair natural bonding or color characteristics of coating intended for use on concrete.
- D. Corners: Chamfered, wood strip type; $\frac{3}{4}$ x $\frac{3}{4}$ in. size where indicated in drawings.
- E. Nails, Spikes, Lag Bolts, Through Bolts, and Anchorages: Sized as required and of sufficient strength and character to maintain formwork in place while placing concrete.

1.2 REINFORCING AND ACCESSORIES

- A. Reinforcing Steel: ASTM A 615, grade 60 deformed bars and stirrups; ties grade 40.
- B. Welded Steel Wire Fabric: ASTM A 185 Plain type in flat sheets.
- C. Concrete reinforcing shall be fabricated in accordance with CRSI Manual of Practice.
- D. Welding of reinforcing bars is not permitted.
- E. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions, including load bearing pad on bottom to prevent vapor barrier puncture. Special chairs, bolsters, bar supports, and spacers adjacent to weather exposed concrete surfaces shall be plastic coated steel type of required size and shape.
- F. Tie Wire shall be minimum 16 gage annealed type.

1.3 CONCRETE MATERIALS

- A. Cement: ASTM C 150, Type I or Type II.

- B. Fine and Coarse Aggregates: Shall conform to ASTM C 33.
- C. Water: Clean, potable water that is not detrimental to concrete.
- D. Fly Ash: Shall conform to ASTM C 618, type F. Fly ash.

1.4 ADMIXTURES

- A. Air Entrainment: Shall conform to ASTM C260.
- B. Chemical: Shall conform to ASTM C494.

1.5 ACCESSORIES

- A. Bonding Agent: Polymer resin emulsion.
- B. Vapor Barrier: 6 mil clear polyethylene film of type recommended for below grade application.
- C. Joint Filler: ASTM D 1751; asphalt impregnated fiberboard or felt, 1/4 in. thick.

1.6 CONCRETE MIX

A. STANDARD MIX DESIGN

1. The standard mix design for the Department of Public Utilities shall contain from 20% to 30% by dry weight of total cementitious material Type F fly ash conforming to ASTM C 618 for mitigating the deleterious effects of alkali-silica reaction in concrete that is common with the silicious nature of aggregates found in northern New Mexico.
- B. The compressive strength required for the various applications is indicated on the standard detail for the work. Contractor shall provide concrete that meets the following criteria:
 1. 4,000 psi exterior concrete exposed to freezing and thawing.
 - a. Compressive strength, f'_{c} : 4,000 psi @ 28 days.
 - b. Maximum nominal aggregate size: 0.75 inch.
 - c. Maximum water / cement ratio: 0.44.
 - d. Slump: 3 inches plus or minus 1 inch tolerance.
 - e. Air content: 4 to 6 percent.
 2. 3,000 psi exterior concrete exposed to freezing and thawing.
 - a. Compressive strength, f'_{c} : 3,000 psi @ 28 days.
 - b. Maximum nominal aggregate size: 0.75 inch.
 - c. Maximum water / cement ratio: 0.44.
 - d. Slump: 3 inches plus or minus 1 inch tolerance.
 - e. Air content: 4 to 6 percent.

- C. Contractor shall use accelerating admixtures in cold weather only when approved by the Project Manager. Use of admixtures will not relax cold weather placement requirements.
- D. Contractor shall use set retarding admixtures during hot weather only when approved by the Project Manager.

EXECUTION

3.1 GENERAL

- E. All concrete construction shall conform to applicable provision of ACI 301 unless otherwise specified herein.

3.2 EXAMINATION

- A. Contractor shall verify the following:
 - a. Lines, levels, block-outs, and centers before proceeding with formwork. Contractor shall ensure that dimensions agree with the Drawings.
 - b. Anchors, seats, plates, reinforcement, and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.
 - c. Erected formwork, shoring, and bracing is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.
 - d. Concrete cover for reinforcement conforms to the drawings and to Section 3.4.B herein.

3.3 FORMWORK ERECTION

- A. Formwork, shoring and bracing shall be erected to achieve design requirements and maintain tolerances in accordance with requirements of ACI 301 and ACI 347.
- B. Bracing shall be installed to ensure stability of formwork. Contractor shall shore or strengthen formwork subject to overstressing by construction loads.
- C. Form joints shall be properly aligned, made watertight and kept to a minimum.
- D. Installation shall provide formed openings where required for items to be embedded in or passing through concrete work.
- E. Contractor shall locate and set in place items that cast directly into concrete.
- F. All accessories shall be installed in accordance with manufacturer's instructions, straight, level, and plumb. Items shall not be disturbed during concrete placement.
- G. Where required, water stops shall be continuous without displacing reinforcement.
- H. Forms or bracing shall not be removed until concrete has gained sufficient strength to carry its own weight and other imposed loads without excessive deflection or creep. Shoring under elevated slabs shall remain in place for at least 7 days after concrete is placed.
- I. Forms shall be carefully loosened without the use of pry bars, hammers, or tools against finish concrete surfaces that are scheduled to be exposed.

3.4 REINFORCING PLACEMENT

- A. Contractor shall place, support, and secure reinforcement against displacement and shall not deviate from required position
- B. Minimum concrete cover around reinforcing shall be as follows:

Item	Minimum Cover, inches
Formed Concrete Surfaces Exposed to Earth, Water, and/or Weather:	
No. 5 bars and smaller, W31 or D31 wire and smaller	2
No. 6 through No. 18 bars, W45 or D45 wire	2
Footings and Base Slabs:	
At formed surfaces	2
At unformed surfaces and bottoms in contact with earth	3
Top of footings	2

C. PREPARATION

- 1. Previously placed concrete shall be prepared by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.

3.6 PLACING CONCRETE

- A. Concrete shall be placed in accordance with ACI 301.
- B. Contractor shall notify the Project Manager a minimum of 24 hours prior to commencement of concreting operations.
- C. Reinforcement, inserts, embedded parts, formed joint fillers, joint devices, water stops, and formwork shall not be disturbed during concrete placement.
- D. Joint fillers, primer, and sealant shall be installed in accordance with manufacturer's instructions.
- E. Joint filler shall extend from bottom of slab to within 0.25 inch of finished slab surface.
- F. Joint devices shall be installed in accordance with manufacturer's instructions.
- G. Concrete shall be placed continuously between predetermined expansion, control, and construction joints.
- H. Screed floors on grade level, maintaining surface flatness with maximum level variations of 0.25 inch in 10 feet.
- I. ...

3.7 CONCRETE FINISHING

- A. Formed concrete surfaces shall be left exposed with smooth rubbed finish.
- B. Broom finish shall be performed on exterior sidewalks, vault tops, valve collars or other areas subject to pedestrian or vehicular traffic.
- C. Concrete floor surfaces shall be finished in accordance with ACI 301.
- D. New concrete finish shall match existing concrete unless otherwise approved by the Project Manager.
- E. Contractor shall avoid excessive float. Floating shall not be performed until concrete has stopped bleeding and the water sheen has left the surface. No water or cement shall be applied to the concrete surface while finishing.

1.7 CURING AND PROTECTION

- A. General.
 - 1. Immediately after placement, concrete shall be protected from premature drying and excessively hot or cold temperatures.
 - 2. Contractor shall comply with applicable practices and recommendations for hot weather concrete application from ACI 305R; for cold weather concrete applications from ACI 306R; for curing from ACI 308.

1.8 CONTROL/CONTRACTION JOINTS

- A. Where shown on drawings, joints shall be provided while concrete is still plastic.

1.9 FIELD QUALITY CONTROL

- A. A certified testing agency shall be retained by the Contractor to perform all required field-testing in accordance with ACI 301. Testing laboratory certification may be provided by Cement and Concrete Reference Lab (CCRL). All testing costs shall be incidental to the cost of the project.
 - 1. Testing agencies performing testing services on concrete materials shall meet the requirements of ASTM C 1077.
 - 2. Field-testing of concrete shall be performed by an ACI Certified Concrete Field Testing Technician – Grade I.
- B. Contractor shall submit proposed mix design of each class of concrete to the Project Manager for approval prior to commencement of work.
- C. Contractor shall inform the Project Manager 48 hours in advance of field-testing to allow for witnessing of testing.
- D. The Testing Agency shall collect strength cylinders from one batch in every 20 cubic yards of concrete placed, or once a day when less than 20 cubic yards is placed, and perform the tests specified herein. Samples for Acceptance Testing are to be taken at the discharge from the transit mixer, except when using concrete pumps or conveyors to transport concrete to its final placement location. When pumps or

conveyors are used, the samples for acceptance tests shall be taken at the end of the pipe or last conveyor belt.

1. Concrete shall be sampled in accordance with ASTM C-172.
 2. Temperature of concrete shall be recorded in accordance with ASTM C 1064.
 3. Slump test shall be performed in accordance with ASTM C 143.
 4. Air content test shall be performed in accordance with ASTM C 231, pressure method.
 5. Six (6) concrete strength test cylinders shall be taken in accordance with ASTM C 31.
- E. The Testing Agency shall test the strength test cylinders in accordance with ASTM C 39 at 7 days and 28 days.

1.10 CONCRETE ACCEPTANCE CRITERIA

A. Fresh Concrete

1. Temperature - Less than 90 degrees F.
2. Slump - per Section 2.6.
3. Air content - per Section 2.6.
4. Drum revolution counter - 100 to 300 revolutions within 1-1/2 hours after initial mixing.

B. Strength

1. Concrete strength is satisfactory if the average of all sets of 3 consecutive strength test results equal or exceed the specified 28 day strength f'_c and no individual strength test result falls below the specified 28 day strength f'_c by more than 500 psi.

C. Appearance

1. Free from honeycombs and embedded debris.

D. Construction requirements

1. Conforming to required lines, details, dimensions and tolerances specified for construction.

1.11 DEFECTIVE CONCRETE

- A. Defective concrete is concrete not conforming to acceptance criteria in Section 3.10.
- B. Contractor shall replace defective concrete not meeting strength criteria at Contractor's expense. The concrete's in-place strength may be evaluated by testing 3 core samples for each strength test, wherever LAC-cured cylinders were more than 500 psi below f'_c , all in accordance with ACI 301 and ASTM C42. Core

holes shall be filled in accordance with ACI 301. Testing shall be completed at no additional cost to the Owner.

- C. Defective concrete not meeting appearance criteria shall be replaced or, where approved by the Project Manager, repaired at Contractor's expense.
- D. Concrete not in conformance with details, tolerances, and other construction requirements shall also be replaced at Contractor's expense.

END OF SECTION

SECTION 702 GROUT

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Furnish all labor, materials, equipment, and incidentals required, and install grout complete as shown on the Drawings and as specified herein.

1.2 RELATED WORK IN OTHER SECTIONS

- A. Section 401 Underground Ductbank Systems
- B. Section 502 Sewer Manholes
- C. Section 601 Water Systems
- D. Section 701 Reinforced Concrete

1.3 SUBMITTALS

- A. Contractor shall submit, in accordance with Section 102 Submittals Procedures, shop drawings and product data showing materials of construction and details of installation for:
 - 1 Commercially manufactured non-shrink cementitious grout: The submittal shall include catalog cuts, technical data, storage requirements, product life, working time after mixing, temperature considerations, and conformity to required ASTM standards and Material Safety Data Sheet.
 - 2 Commercially manufactured non-shrink epoxy grout: The submittal shall include catalog cuts, technical data, storage requirements, product life, working time after mixing, temperature considerations, and conformity to required ASTM standards and Material Safety Data Sheet.
 - 3 Cement grout: The submittal shall include the type and brand of the cement, the gradation of the fine aggregate, and product data on any proposed admixtures and the proposed mix of the grout.

1.4 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM C531 - Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes
 - 2. ASTM C579 - Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing and Polymer Concretes

3. ASTM C827 - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures
 4. ASTM C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non shrink)
- B. U.S. Army Corps of Engineers Standard (CRD)
1. CRD C-621 - Corps of Engineers Specification for Non-shrink Grout
- C. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.
- 1.5 QUALITY ASSURANCE
- A. Qualifications
1. Grout manufacturer shall have a minimum of 10 years experience in the production and use of the type of grout proposed for the work.
- 1.6 DELIVERY, STORAGE, AND HANDLING
- A. Delivery of materials to the jobsite shall be made in original, unopened packages, clearly labeled with the manufacturer's name, product identification, batch numbers, and printed instructions.
- B. Materials shall be stored in full compliance with the manufacturer's recommendations. Total storage time from date of manufacture to date of installation shall be limited to 6 months or the manufacturer's recommended storage time, whichever is less.
- C. Material that becomes damp or otherwise unacceptable shall be immediately removed from the site and replaced with acceptable material at no additional expense to the Department of Public Utilities.
- D. Non-shrink cement-based grouts shall be delivered as pre-blended, pre-packaged mixes that require only the addition of water to be applied.
- E. Non-shrink epoxy grouts shall be delivered as pre-measured, pre-packaged, three component systems that require only blending as directed by the manufacturer before application.
- 1.7 DEFINITIONS
- A. Non-shrink Grout: A commercially manufactured product that does not shrink in either the plastic or hardened state, is dimensionally stable in the hardened state and bonds to clean prepared surfaces.

PART 2 PRODUCTS

2.1 GENERAL

- A. Like materials shall be the products of one manufacturer or supplier in order to provide standardization of appearance.

2.2 MATERIALS

A. Non-Shrink Cementitious Grout

1. Non-shrink cementitious grouts shall meet or exceed the requirements of ASTM C1107, Grades B or C and CRD C-621. Grouts shall be portland cement based, contain a pre-proportioned blend of selected aggregates and shrinkage compensating agents, and shall require only the addition of water. Non-shrink cementitious grouts shall not contain expansive cement or metallic particles. The grouts shall exhibit no shrinkage when tested in conformity with ASTM C827. General purpose non-shrink cementitious grout shall be: SikaGrout 212 by Sika Corp.; Euco NS Grout by The Euclid Chemical Co.; FX-228 by Fox Industries; UNIGROUT by Universal Building Products; Five Star Grout by Five Star Products; or equal.

B. Non-Shrink Epoxy Grout

1. Non-shrink epoxy-based grout shall be a pre-proportioned, three-component, 100 percent solids system consisting of epoxy resin, hardener, and blended aggregate. It shall have a compressive strength of 13,600 psi in 7 days when tested in conformity with ASTM C579 and have a maximum thermal expansion of 18×10^{-6} when tested in conformity with ASTM C531. The grout shall be Five Star HP Epoxy Grout by U.S. Grout Corp.; Sikadur 42 Grout-Pak by Sika Corp.; High Strength Epoxy Grout by the Euclid Chemical Co.; or equal.

C. Cement Grout

1. Cement grouts shall be a mixture of one-part portland cement (conforming to ASTM C 150, Types I, II, or III) and one- to two-parts sand (conforming to ASTM C33) with sufficient water to place the grout. The water content shall be sufficient to impart workability to the grout but not to the degree that it will allow the grout to flow.

D. Water

1. Only potable water shall be used in the preparation of grouts for application.

PART 3 EXECUTION

3.1 PREPARATION

- A. Grout shall be placed over cured concrete that has attained its full design

strength unless otherwise approved by the Department of Public Utilities engineer.

- B. Concrete surfaces to receive grout shall be clean and sound; free of ice, frost, dirt, grease, oil, curing compounds, laitance, and paints; free of all loose material or foreign matter, all of which may affect the bond or performance of the grout.
- C. Concrete surfaces shall be roughened by chipping, sandblasting, or other mechanical means to ensure bond of the grout to the concrete. Loose or broken concrete shall be removed. Irregular voids or projecting coarse aggregate need not be removed if they are sound, free of laitance, and firmly embedded into the parent concrete.
- D. Air compressors used to clean surfaces in contact with grout shall be the oil-less type or equipped with an oil trap in the airline to prevent oil from being blown onto the surface.
- E. Concrete surfaces shall be washed clean and then kept moist for at least 24 hours prior to the placement of cementitious or cement grout. Saturation may be achieved by covering the concrete with saturated burlap bags, use of a soaker hose, flooding the surface, or other method acceptable to the Project Manager. Upon completion of the 24-hour period, visible water shall be removed from the surface prior to grouting. The use of an adhesive bonding agent in lieu of surface saturation shall only be used when approved by the Project Manager for each specific location of grout installation.
- F. Epoxy-based grouts do not require the saturation of the concrete substrate. Surfaces in contact with epoxy grout shall be completely dry before grouting.
- G. Grout forms or other leak proof containment shall be constructed as required. Forms shall be lined or coated with release agents recommended by the grout manufacturer.
- H. Grout forms shall be of adequate strength, securely anchored in place, and shored to resist the forces imposed by the grout and its placement.
- I. Equipment shall be supported during alignment and installation of grout by shims, wedges, blocks, or other approved means. The shims, wedges, and blocking devices shall be prevented from bonding to the grout by appropriate bond breaking coatings and removed after grouting unless otherwise approved by the Project Manager.

3.2 INSTALLATION - GENERAL

- A. Mix, apply, and cure products in strict compliance with the manufacturer's recommendations and this section.
- B. Have sufficient manpower and equipment available for rapid and continuous mixing and placing. Keep all necessary tools and materials ready and close at hand.

- C. Maintain temperature of the grout during and after grouting as recommended by the grout manufacturer.
- D. Take special precautions for hot weather or cold weather grouting as recommended by the manufacturer when ambient temperatures and/or the temperature of the materials in contact with the grout are outside of the 60 and 90 degrees Fahrenheit range.
- E. Install grout in a manner that will preserve the isolation between the elements on either side of the joint where grout is placed in the vicinity of an expansion or control joint.

3.3 INSTALLATION - CEMENT GROUTS AND NON-SHRINK CEMENTITIOUS GROUTS

- A. Mix in accordance with manufacturer's recommendations.
- B. Avoid mixing by hand. Mixing in a mortar mixer (with moving blades) is recommended. Before mixing, wet the mixer and empty excess water. Add pre-measured amount of water for mixing, followed by the grout. Begin with the minimum amount of water recommended by the manufacturer and then add the minimum additional water required to obtain workability. Do not exceed the manufacturer's maximum recommended water content.
- C. Placements greater than 3" in depth shall include the addition of clean washed pea gravel to the grout mix when approved by the manufacturer. Comply with the manufacturer's recommendations for the size and amount of aggregate to be added.
- D. Place grout into the designated areas in a manner that will avoid segregation or entrapment of air. Do not vibrate grout to release air or to consolidate the material. Placement should proceed in a manner that will ensure the filling of all spaces and provide full contact between the grout and adjoining surfaces.
- E. Place grout rapidly and continuously to avoid cold joints. Do not place cement grouts in layers. Do not add additional water to the mix after initial stiffening.
- F. Begin curing immediately after form removal, cutback, and finishing. Keep grout moist and within its recommended placement temperature range for at least 24 hours after placement or longer if recommended by the manufacturer. Saturate the grout surface by use of wet burlap, soaker hoses, ponding, or other approved means. Provide sunshades as necessary. If drying winds inhibit the ability of a given curing method to keep grout moist, erect wind breaks until wind is no longer a problem or curing is finished.

3.4 INSTALLATION - NONSHRINK EPOXY GROUTS

- A. Mix in accordance with the procedures recommended by the manufacturer. Do not vary the ratio of components or add solvent to change the consistency of the grout

mix. Do not overmix. Mix full batches only to maintain proper proportions of resin, hardener, and aggregate.

- B. Monitor ambient weather conditions and contact the grout manufacturer for special placement procedures to be used for temperatures below 60 or above 90 degrees F.
- C. Place grout into the designated areas in a manner that will avoid trapping air. Placement methods shall ensure the filling of all spaces and provide full contact between the grout and adjoining surfaces.
- D. Finish grout by puddling to cover all aggregate and provide a smooth finish. Break bubbles and smooth the top surface of the grout in conformity with the manufacturer's recommendations.
- E. Epoxy grouts are self-curing and do not require the application of water. Maintain the formed grout within its recommended placement temperature range for at least 24 hours after placing, or longer if recommended by the manufacturer.

3.5 SCHEDULE

- A. The following list indicates where the particular types of grout are to be used:
 - 1. General purpose non-shrink cementitious grout: Use at all locations where non-shrink grout is called for on the Drawings.
 - 2. Non-shrink epoxy grout: Use for the setting of anchor rods, anchor bolts and reinforcing steel in concrete and for all locations specifically indicated to receive epoxy grout.
 - 3. Cement grout: Only use where cement grout is called for on the Drawings. It shall not be used when non-shrink grout is specifically called for on the Drawings.

END OF SECTION

3.4.4 Streetlight Specification

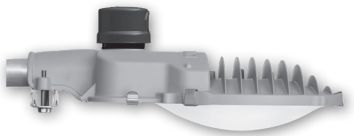
EVLUMA AREAMAX™

LED STREET, AREA AND SECURITY LIGHTING
REPLACES HID LUMINAIRES 100-250W

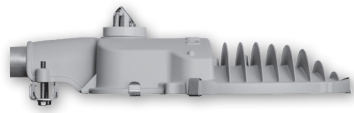
AMAX 30
AMAX 40
AMAX 55
AMAX 70
AMAX 100

DESCRIPTION

The AreaMax LED luminaire for street and area lighting is a robust, utility-grade luminaire designed to last for years. Easy to install, the AreaMax saves energy and maintenance time. Perfect for residential street lighting, parking lots, or rural security applications requiring either full cutoff, or maximal visibility with a diffuse, low-glare light. AreaMax ship with Photocontrol Failsafe™ built-in and the option to activate ConnectLED™ features with the purchase of the Evluma custom Bluetooth application.



reuse existing photocontrol with S3 option (dome lens shown)



Evluma integrated photocontrol with P option (flat lens shown)

Construction & Finish

Cast aluminum housing with gray powder coat. Hinged access panel is galvanized steel with spring clips to allow for easy open and close. Color by custom order. Add suffix -BLK for black or -BRZ for bronze.

Optical (lens)

AreaMax is the original low-glare luminaire. A textured glass drop or flat lens with a white, optical-grade reflective film liner combine to create a bright yet low-glare, diffuse light.

Electrical

Evluma proprietary Class II driver. Dimmable. Patented. 120-277 VAC 50/60 Hz high capability surge protection for 20kV/10kA per ANSI C136.2 - 2018 Extreme Location Category C-High.

Thermal Management

LED life is ensured by thermal management protection circuitry that controls current levels to the LEDs based on temperature. Critical components were selected for their minimal thermal resistance then paired with a custom light engine and casting design to maximize cooling.

Mounting

Stainless steel tenon clamp and stainless steel screws accept 2" (5.08 cm), or 1 1/4" (3.17 cm) diameter arm.

Lumen Maintenance

L70 (10,000) >55,000
L90 (10,000) >55,000
L70 (TM21) >100,000

LM at 10,000 hours >97%
LM at 100,000 > 83%

LM 80 and ISTMT available at www.evluma.com
TM 21 calculations available upon request.

Warranty

Ten-year warranty.
Visit evluma.com/products/warranty/



CERTIFICATION DATA
UL 1598. MET Labs
IP66. IEC 60598-1
ASTM D2247-68
FM 4473
EPA under 0.5 sq ft
C136.31-2018 Level2/3G
ANSI C136.2-2018

ENERGY DATA
PF >99% at 120 VAC
THD <10% at 120 VAC
PF >91% at 277 VAC
THD <20% at 277 VAC
<1/2W off-state power
Driver Lifetime >100,000 hrs
-40°C Min / 50°C Max AM Temp

SHIPPING DATA
Single Unit Net/Pkgd = 8lbs/10lbs
Pallet Qty: 56 units, 600 lbs



Dark Sky Friendly
We are proud to offer multiple AreaMax models that have received the IDA Dark Sky Seal of Approval.

Flat lens models (C) with U0, offered in 3000K or 2700K are IDA compliant. www.darksky.org

EVLUMA AREAMAX™



ORDERING INFORMATION

SAMPLE NUMBER: AX-40-50-5-D-S7-CST-6

PRODUCT FAMILY	WATTS	CCT	DISTRIBUTION TYPE	LENS (options)	PHOTOCONTROL SOCKET (options)	ENVIRONMENTAL PACKAGE (options)	LEADS (options)	EXTRA
AX = AreaMax	30 = 30 watts 40 = 40 watts 55 = 55 watts 70 = 70 watts 100 = 100 watts	27 = 2700K 30 = 3000K 40 = 4000K 50 = 5000K	5 = type V 3 = type III	D = dome C = cutoff	P = integrated S3 = 3 pin socket S7 = 7 pin socket	STD = std outdoor CST = coastal	6 = 66" 10 = 10' 20 = 20' N = none	- CAP incl shorting cap

30W PERFORMANCE

recommended to replace 70-100W HID
CRI for 2700K = 80, all others >70

Code	Lumens	LM/W	BUG
50 5 (C)	4500	151	B2-U0-G1
50 5 (D)	4500	153	B2-U2-G1
40 5 (C)	4400	149	B2-U0-G1
40 5 (D)	4500	151	B2-U2-G1
30 5 (C)	4300	145	B2-U0-G1
30 5 (D)	4400	147	B2-U2-G1
27 5 (C)	3600	123	B2-U0-G1
27 5 (D)	3700	126	B2-U2-G1
50 3 (C)	4600	154	B2-U0-G1
50 3 (D)	4600	156	B2-U2-G2
40 3 (C)	4500	152	B2-U0-G1
40 3 (D)	4600	154	B2-U2-G2
30 3 (C)	4400	148	B2-U0-G1
30 3 (D)	4500	150	B2-U2-G2
27 3 (C)	3800	127	B1-U0-G2
27 3 (D)	3800	129	B1-U2-G1

40W PERFORMANCE

recommended to replace 100-150W HID
CRI for 2700K = 80, all others >70

Code	Lumens	LM/W	BUG
50 5 (C)	5900	148	B2-U0-G1
50 5 (D)	6000	150	B3-U2-G1
40 5 (C)	5800	147	B2-U0-G1
40 5 (D)	5900	149	B3-U2-G1
30 5 (C)	5600	142	B2-U0-G1
30 5 (D)	5700	144	B3-U2-G1
27 5 (C)	4800	122	B2-U0-G1
27 5 (D)	5000	125	B2-U2-G1
50 3 (C)	6000	151	B2-U0-G2
50 3 (D)	6100	153	B2-U2-G2
40 3 (C)	6000	150	B2-U0-G2
40 3 (D)	6000	152	B2-U2-G2
30 3 (C)	5800	145	B2-U0-G2
30 3 (D)	5800	147	B2-U2-G2
27 3 (C)	5000	126	B2-U0-G1
27 3 (D)	5100	128	B2-U2-G2

55W PERFORMANCE

recommended to replace 100-175W HID
CRI for 2700K = 80, all others >70

Code	Lumens	LM/W	BUG
50 5 (C)	7700	141	B3-U0-G1
50 5 (D)	7800	143	B3-U2-G1
40 5 (C)	7700	140	B3-U0-G1
40 5 (D)	7800	142	B3-U2-G1
30 5 (C)	7400	136	B3-U0-G1
30 5 (D)	7500	137	B3-U2-G1
27 5 (C)	6300	116	B2-U0-G1
27 5 (D)	6500	119	B3-U2-G1
50 3 (C)	7900	144	B2-U0-G2
50 3 (D)	8000	146	B2-U2-G2
40 3 (C)	7800	143	B2-U0-G2
40 3 (D)	7900	145	B2-U2-G2
30 3 (C)	7500	138	B2-U0-G2
30 3 (D)	7700	140	B2-U2-G2
27 3 (C)	6600	120	B2-U0-G2
27 3 (D)	6700	122	B2-U2-G2

70W PERFORMANCE

recommended to replace 100-200W HID
CRI for 2700K = 80, all others >70

Code	Lumens	LM/W	BUG
50 5 (C)	9300	134	B3-U0-G1
50 5 (D)	9500	136	B3-U2-G2
40 5 (C)	9300	133	B3-U0-G1
40 5 (D)	9400	135	B3-U2-G2
30 5 (C)	9000	129	B3-U0-G1
30 5 (D)	9100	131	B3-U2-G2
27 5 (C)	7700	111	B3-U0-G1
27 5 (D)	7900	113	B3-U2-G1
50 3 (C)	9500	137	B2-U0-G2
50 3 (D)	9700	139	B3-U3-G3
40 3 (C)	9500	136	B2-U0-G2
40 3 (D)	9600	138	B3-U3-G3
30 3 (C)	9200	132	B2-U0-G2
30 3 (D)	9300	134	B3-U3-G3
27 3 (C)	7900	113	B2-U0-G2
27 3 (D)	8000	115	B2-U2-G2

100W PERFORMANCE

recommended to replace 150-250W HID
CRI for 2700K = 80, all others >70

Code	Lumens	LM/W	BUG
50 5 (C)	12,300	123	B3-U0-G1
50 5 (D)	12,500	125	B3-U3-G2
40 5 (C)	12,200	122	B3-U0-G2
40 5 (D)	12,400	124	B3-U3-G2
30 5 (C)	11,800	118	B3-U0-G2
30 5 (D)	12,000	120	B3-U2-G2
27 5 (C)	10,200	102	B3-U0-G1
27 5 (D)	10,400	104	B3-U2-G2
50 3 (C)	12,600	126	B3-U0-G3
50 3 (D)	12,800	128	B3-U3-G3
40 3 (C)	12,500	125	B3-U0-G3
40 3 (D)	12,700	127	B3-U3-G3
30 3 (C)	12,100	121	B3-U0-G3
30 3 (D)	12,300	123	B3-U3-G3
27 3 (C)	10,400	104	B3-U0-G2
27 3 (D)	10,600	106	B3-U3-G3

Nominal lumen values reported.

Normal tolerance ± 10%. Individual fixtures may vary with LED bin variance and ambient temperatures.

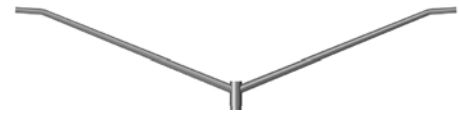
Aluminum Tapered Elliptical Mast Arm, Round Pole Mount

Product Overview

- **Center Hub Mount** - Connection allows arm to be erected and held in place by gravity and secured by three set screws.
- **Bolt Mount** - Connection allows arm to be erected and held in place by gravity and secured by four bolts, lock washers and flat washers.
- **Simplex Mount** - Connection allows arm to be erected and held in place by gravity and secured by two bolts.
- **Clamp Mount** - Connection allows arm to be erected and held in place by gravity and secured by four bolts, lock washers, flat washers and hex nuts.
- **Arms** - Luminaire arms are conically tapered from seamless alloy aluminum to 2-3/8" OD at the luminaire end.
- **Hardware** - All structural fasteners are galvanized high strength carbon steel. All non-structural fasteners are galvanized or zinc-plated carbon steel or stainless steel.
- **Finish** - Finishes include anodized or painted. Please consult factory for special finishing colors and fixture matching options. When storing brackets outside, remove all protective wrapping immediately upon delivery to prevent finish damage.



Single Arm



Double Arm

Designation, Load & Dimensional Information

MODEL #	MOUNTING TYPE	MAX QTY OF LUMINAIRES	FIXTURE ORIENTATION	WEIGHT (LBS)	ARM LENGTH
VA-A-MST-RXX-1-000-FP-48	Top Hub	1	N/A	10	4'-0"
VA-A-MST-RXX-1-000-FP-72	Top Hub	1	N/A	13	6'-0"
VA-A-MST-RXX-1-000-FP-96	Top Hub	1	N/A	15	8'-0"
VA-A-MST-BTP-1-000-FP-48	Side Bolt	1	N/A	10	4'-0"
VA-A-MST-BTP-1-000-FP-72	Side Bolt	1	N/A	13	6'-0"
VA-A-MST-BTP-1-000-FP-96	Side Bolt	1	N/A	15	8'-0"
VA-A-MST-SMX-1-000-FP-48	Side Simplex	1	N/A	10	4'-0"
VA-A-MST-SMX-1-000-FP-72	Side Simplex	1	N/A	13	6'-0"
VA-A-MST-SMX-1-000-FP-96	Side Simplex	1	N/A	15	8'-0"
VA-A-MST-CP-1-000-FP-48	Side Clamp	1	N/A	11	4'-0"
VA-A-MST-CP-1-000-FP-72	Side Clamp	1	N/A	14	6'-0"
VA-A-MST-CP-1-000-FP-96	Side Clamp	1	N/A	16	8'-0"
VA-A-MST-RXX-2-180-FP-48	Top Hub	2	180°	19	4'-0"
VA-A-MST-RXX-2-180-FP-72	Top Hub	2	180°	20	6'-0"
VA-A-MST-RXX-2-180-FP-96	Top Hub	2	180°	28	8'-0"
VA-A-MST-BTP-2-180-FP-48	Side Bolt	2	180°	19	4'-0"
VA-A-MST-BTP-2-180-FP-72	Side Bolt	2	180°	26	6'-0"
VA-A-MST-BTP-2-180-FP-96	Side Bolt	2	180°	30	8'-0"
VA-A-MST-SMX-2-180-FP-48	Side Simplex	2	180°	19	4'-0"
VA-A-MST-SMX-2-180-FP-72	Side Simplex	2	180°	20	6'-0"
VA-A-MST-SMX-2-180-FP-96	Side Simplex	2	180°	28	8'-0"
VA-A-MST-CP-2-180-FP-48	Side Clamp	2	180°	20	4'-0"
VA-A-MST-CP-2-180-FP-72	Side Clamp	2	180°	26	6'-0"
VA-A-MST-CP-2-180-FP-96	Side Clamp	2	180°	30	8'-0"

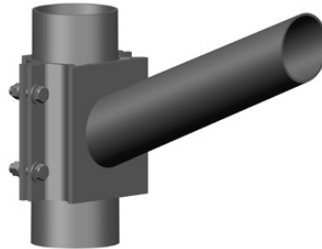
1. Maximum EPA (Effective Projected Area) and weight values for light pole assemblies are available by contacting the factory.
2. Total combined weight and EPA of brackets and luminaires cannot exceed Design Information of specified pole.

Note: Additional sizes and configurations are available upon request.

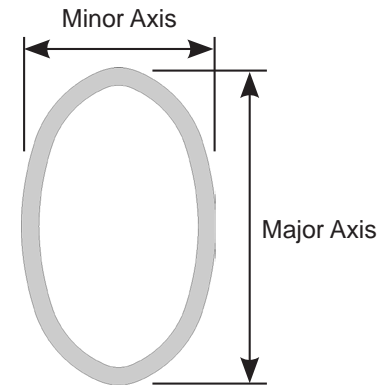
Pole Top Hub Attachment



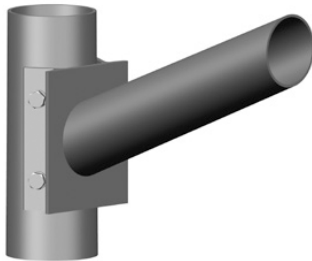
Clamp Attachment



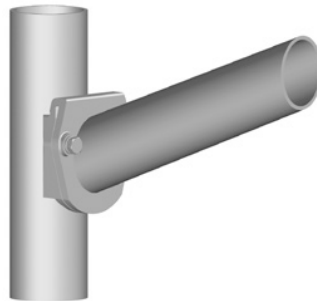
Arm Cross Section Detail



Bolt Attachment



Simplex Attachment



Ordering Information

Ex.VA-A-MST-R30-1-000-FP-48

Designation	Mounting*	Mounting Points	Orientation*	Finish Type	Color	Length
Aluminum VA-A-MST = Tapered Elliptical Mast Arm	R30 = 3" Round Pole/Tenon Top Mount	1	000 = N/A	FP = Finish Painted	DB = Dark Bronze	48 = 4'-0"
	R40 = 4" Round Pole/Tenon Top Mount	2	180 = 180°	SBF = Satin Brushed	MB = Medium Bronze	72 = 6'-0"
	R45 = 4-1/2" Round Pole/Tenon Top Mount				LG = Light Gray	96 = 8'-0"
	R60 = 6" Round Pole/Tenon Top Mount				DG = Dark Green	
	BTP = Bolt Mount				SG = Slate Gray	
	SMX = Simplex Mount				BK = Black	
	CP = Clamp Mount				WH = White	
					SL = Silver	
					SC = Custom	
					NA = Natural Alum. Paint	
					SSA = Satin Silver Anod.	
					BZA = Bronze Anod.	
					BKA = Black Anod.	

* See previous pages for base model configurations.
Consult factory or your sales rep for deviations from base models.
Additional sizes and configurations available upon request.

lightpoles PLUS.com

308 N. Brooke St.
Fond du Lac, WI 54935

888-791-1463
quotes@lightpolesplus.com
LightPolesPlus.com



Rev. V07312019

This specification brochure is intended to serve as a general guide. Our products are continually being engineered and improved, and specifications are subject to change without notice.



- » Built to UL 508A standards
- » Available metered up to 100 Amps
- » Rated for 120 to 480 volts
- » Small, low-profile and attractive with no exposed fasteners
- » Self-contained
- » Meets EUSERC Requirements (Electric Utility Service Equipment Requirements Committee)

TESCOFLEX[®] low-profile, single-meter underground service distribution and control pedestals are used for a wide variety of municipal applications. The 26-100 single meter TESCOFLEX[®] low-profile, slimline pedestal provides power distribution and metering rated for 120 to 480 volts; single phase or three phase applications; 1, 2 or 3 pole main breakers; and may be rated at 100 amp. The 26-100 model is also available in an unmeterepedestal.

TESCOFLEX[®] pedestals are constructed of the highest grade of materials using hot-dipped galvanized steel, stainless steel, or aluminum. Our coatings will withstand the most stringent testing applied to outdoor enclosures and meet or exceed state specifications. The wide range of options we can provide will allow for maximum utilization of your space.

Call us and see for yourself how Tesco Controls can make a difference on your next project.

Applications

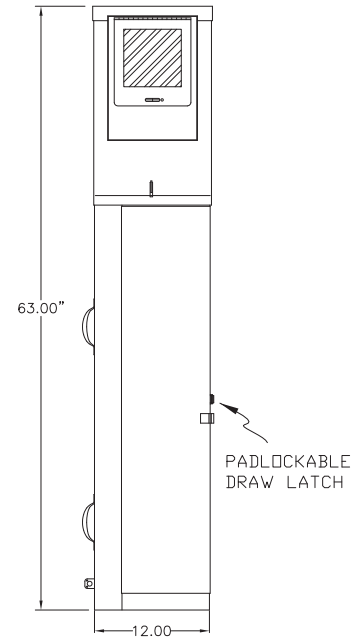
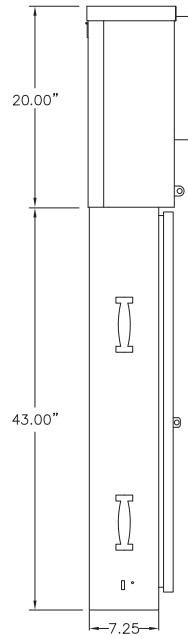
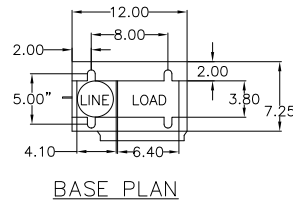
- » Airport Beacon Systems
- » Athletic Field/Stadium Lighting
- » CATV Termination
- » Cellular
- » Flashing Beacon Controls
- » Landscape Irrigation
- » Parking Lot Lighting
- » Residential Applications
- » Sign Lighting
- » Street Lighting
- » Storm Water Lift Stations
- » Tennis Court Lighting & Control
- » Traffic Signals
- » Waste Water Lift Stations
- » Water Pumping Plants

Features

- » Low Profile, Slimline
- » No exposed fasteners
- » Hot-dipped galvanized aluminum or stainless steel
- » Durable all-welded construction
- » UL approved copper cable bussing and control wiring
- » Circuit breakers cable-in cable-out type
- » Factory wired and tested before shipment
- » Meets EUSERC requirements (Electric Utility Service Equipment Requirements Committee)
- » Built to UL 508A Standards
- » Vandal-resistant doors with hasp, stress rated to 2,000 lbs

Component Options

- » Breakers
- » Contactors
- » Switches
- » Relays
- » Photo cells
- » Time clocks
- » Time delays
- » Transformers
- » Motor controls
- » Fans
- » Heaters
- » Thermostats
- » Terminal blocks
- » Flasher controls
- » Receptacles
- » Generator Receptacles
- » Transfer Switches



Enclosure Options

- » May also be unmetered
- » Custom colors available - **WHITE**
- » Additional sections may be added to house more components
- » Additional options for vandalism protection available

Specifications

- » Main breakers shall be 1, 2 or 3 pole
- » May be rated 120 volt up to 480 volt
- » Single or three phase
- » Rated to 100 amp
- » Continuous welded seams
- » Fully framed side hinged outer door for flush fit with top drip lip & closed cell neoprene flange compressed gaskets
- » Separate pull section
- » Service enclosure interior is fabricated from cold rolled steel & powder coated white
- » Full length deadfront with stainless steel hinge and ¼ turn latch & knurled knobs
- » Deadfront hinged on same side as the front door and opens up to 120 degrees
- » Completely prewired in the factory
- » Wiring will be to NEMA IIB standards showing external connections & external equipment

Custom options are available. Contact Tesco Controls, Inc. for more information:

916-395-8800 | sales@tescocontrols.com | www.tescocontrols.com | 8440 Florin Road, Sacramento, CA 95828

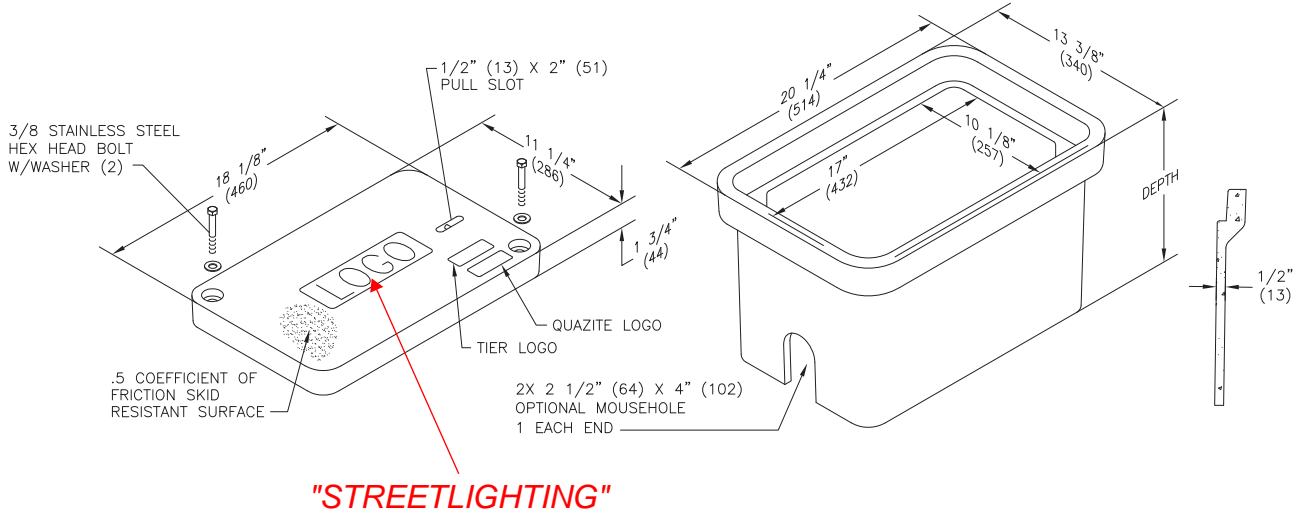
26-100 METERED TESCOFLEX SERVICE PEDESTAL

OPTIONS

Enclosure Catalog Number	Description	Enclosure Size W x H x D inch	*Millimeter
26-100 M	Metered Service Pedestal	12 x 63 x 7.25	304 x 1600 x 184

*Millimeter dimensions are approximate and for reference only; do not convert metric dimensions to inch.

Hex Head Bolts are Standard



Covers

	DESCRIPTION	TIER	DESIGN / TEST LOAD #	WEIGHT #	PALLET QTY	PART NO.
UL	W/ 2 Bolts	8	8,000 / 12,000	27	40	PG1118CA00**
UL	W/ 2 Bolts	15	15,000 / 22,500	27	40	PG1118HA00**
UL	No Bolts	8	8,000 / 12,000	27	40	PG1118WA00**
UL	W/ 2 Bolts	22	22,500 / 33,750	27	40	PG1118HH00**

To order gasketed covers, replace the letter "A" with the letter "G".
 Replace ** with a logo code found on page 64. See page 70 for meter and touch/radio read cover options.
 NOTE: Gasketed covers and bolt grommets must be used with a gasketed box. Gaskets reduce the inflow of fluids but do not make the enclosure water tight.

Boxes

	DESCRIPTION	DEPTH	TIER	DESIGN / TEST LOAD #	WEIGHT #	PALLET QTY	PART NO.
UL	Standard Open Bottom	12"	22	22,500 / 33,750	40	30	PG1118BA12
UL		18"		22,500 / 33,750	53	24	PG1118BA18
UL	Solid Bottom	12 1/2"	22	22,500 / 33,750	43	30	PG1118DA12
UL		18 1/2"		22,500 / 33,750	60	24	PG1118DA18
UL	Footed Box	12 1/2"	22	22,500 / 33,750	41	30	PG1118JA12
UL		18 1/2"		22,500 / 33,750	55	24	PG1118JA18

To order boxes with two standard mouseholes, replace the letter "A" with the letter "B".
 To order gasketed boxes, replace the letter "A" with the letter "G".
 NOTE: Gasketed covers and bolt grommets must be used with a gasketed box. Gaskets reduce the inflow of fluids but do not make the enclosure water tight.



CROSS REFERENCE

I am looking for... SEARCH

LOGIN

Products > Anchors - Utility > Street Light Foundations



STREET LIGHT FOUNDATIONS

The MacLean Street Light Foundations is a one-piece steel pile used to support light poles. The MPS helical foundation is rotated into the soil using simple hydraulic equipment. There are no spoils created during the installation and it eliminates the need to pour concrete footings. Our light pole bases are economical solutions that reduce the cost and labor associated with traditional concrete footings and allow for immediate pole mounting.

DESCRIPTION

LINKS & PDFS

[AN-16-17.pdf](#)

[MacLean Street Light Foundation Brochure](#)

6" DIAMETER STREET LIGHT FOUNDATIONS

Catalog Number	Length (ft)	Bolt Circle Range (in)	Top Plate Configuration	Cableway Size Inches (cm)	Cableway Location from Base Plate Inches (cm)	Hardware Size (in)
D06060BBB08148V	5	8-14	Slotted	2-5/8 X 12	12 (30.5)	1 X 4 Carriage Bolt
D06072BBB10.58T	6	10.5	Tapped Bolt Holes	2-5/8 X 12	12	1 X 2.5 Hex Bolts

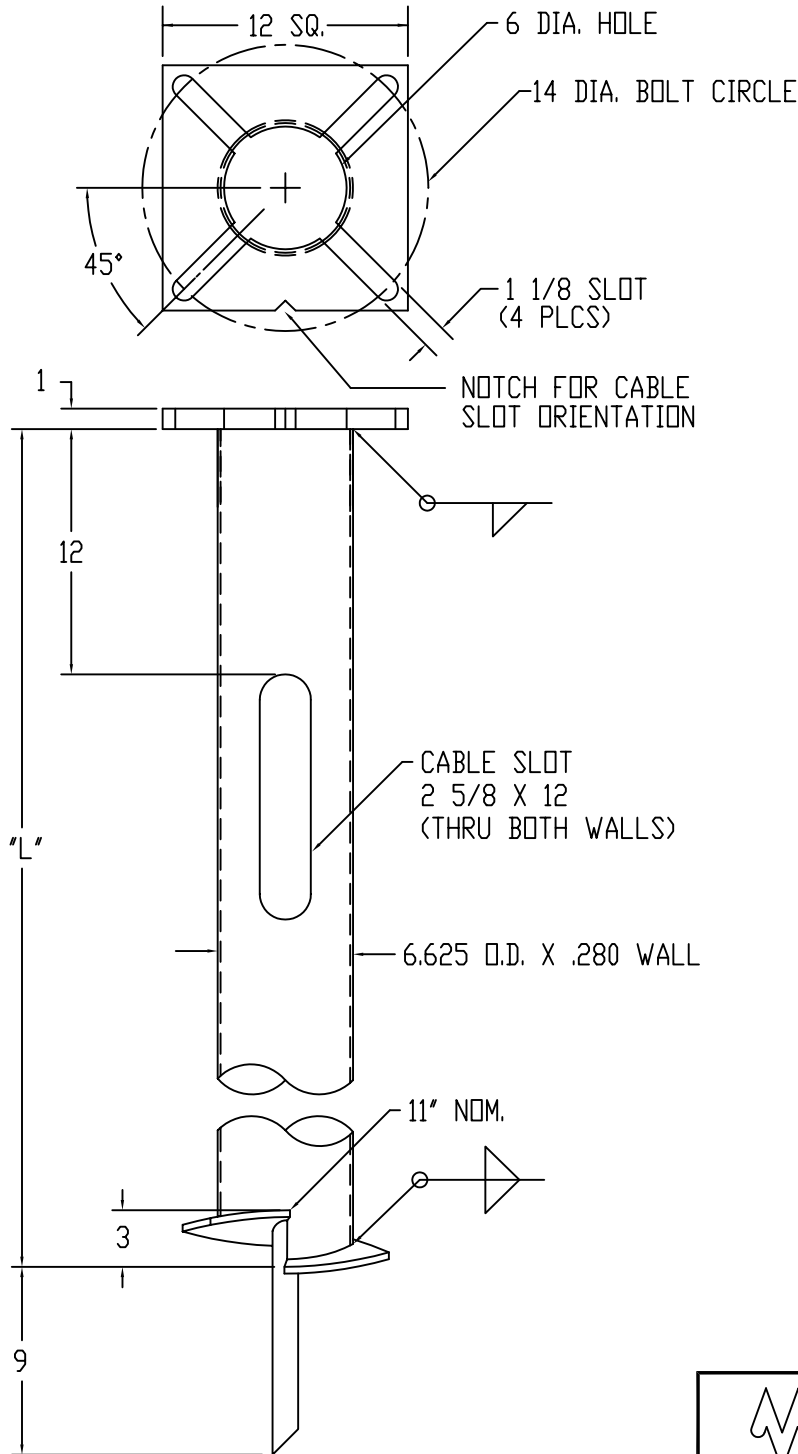
8" DIAMETER STREET LIGHT FOUNDATIONS

Catalog Number	Length (ft)	Bolt Circle Range (in)	Top Plate Configuration	Cableway Size Inches (cm)	Cableway Location from Base Plate Inches (cm)	Hardware Size (in)
D08060BBB11178V	5	11-17	Slotted	2-5/8 X 12	12 (30.5)	1 X 4 Carriage Bolt
D08072BBB11178V	6	11-17	Slotted	2-5/8 X 12	12 (30.5)	1 X 4 Carriage Bolt
D08084BBB11178V	7	11-17	Slotted	2-5/8 X 12	12 (30.5)	1 X 4 Carriage Bolt

Contact your local MPS Distributor for additional foundation sizes

REVISIONS

NO.	DATE	DESCRIPTION	BY	CKD



CATALOG NUMBER	LENGTH (FT)
D06060BBB08148V	5
D06072BBB08148V	6
D06084BBB08148V	7

NOTES:

1. FINISH: HOT DIP GALVANIZE PER ASTM A153
2. INSTALLATION TORQUE RATING: 10,000 FT/LBS.
3. HARDWARE KIT CONSISTS OF 4 EA OF THE FOLLOWING, BAGGED AND SECURE TO PIPE SHAFT.
1" x 4" CARRIAGE BOLTS
1" FLATWASHER
1" HEX NUT



MACLEAN DIXIE, LLC.

A MACLEAN POWER SYSTEMS COMPANY

1500 RED HOLLOW RD.

BIRMINGHAM, ALABAMA 35215

FOUNDATION ANCHOR
6" PIPE W/ 12" SQ. TOP PLATE

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DATE: 09/24/08	SCALE: FULL	NO. A-2517	R/0	SH. 1 OF 1
DWN. BY: MW	CKD. BY:	APR. BY:		