CITY OF AZTEC
REQUEST FOR QUOTATION
RFQ # 2025-872, Hartman Park Williams Arroyo Bank Repair
THIS IS NOT AN ORDER

DATE:	April 22, 2025	**SUBMIT QUOTES TO:** CITY OF AZTEC Attn: Vanessa Tanner, Project Procurement Specialist 610 Western Ave., Aztec, NM 87410 EMAIL: vtanner@aztecnm.gov PHONE: (505) 334-7652 Quotes may be submitted via email or physical delivery.	**QUESTIONS MAY BE DIRECTED TO:** Jeric Jaramillo 505-334-7655 jjaramillo@aztecnm.gov
DUE DATE:	**May 1, 2025**		
TIME:	**10:00 am**		
Quotes Good to Date:	June 1, 2025		
Expected to Award Date:	May 5, 2025		

NOTES TO BIDDERS: **Include freight/delivery charge if applicable.**
Itemized quote required. Pricing may be submitted on this form or attached to this form.
This form must be submitted and signed on page 2.

Brand Name or Equivalent: Any manufacturer name listed is for the purpose of describing the standard of quality, performance, and characteristics desired. Equivalents exhibiting the same standard of design, function, quality and performance will be considered. Include complete specifications if quoting an equal substitute.

Scope of Work

The City of Aztec will be repairing the Williams Arroyo stream bank at Hartman Park (500 Llano St.) The scope of work includes the construction of a new gabion wall for bank stabilization, along with the restoration of any disturbed vegetation, sidewalk, and fencing resulting from the construction activities. The project involves site preparation, erosion control, REMOVAL OF DEBRIS and the installation of structural and surface improvements designed to enhance drainage and stabilize the stream bank. Work will include:

1. **Mobilization and Demobilization** – Transport of equipment, tools, and materials to and from the site.
2. **Temporary Security Fencing (6')** – Installation of 6-foot-high fencing to secure the work zone during construction.
3. **Erosion Control Measures** – Installation of rock berms and inlet protection to manage sediment and prevent runoff.
4. **Gabion Installation** – Placement of gabion baskets in various sizes (1.5'x10', 3'x3', 3'x4', and 3'x5') along 70 linear feet of the arroyo. Each basket will be filled with well-graded 6-inch riprap for stabilization.
5. **Gravel Placement** – Installation of 16 cubic yards each of gravel base and drainage stone to provide foundation support and promote proper water flow.
6. **Geotextile Fabric** – Placement of 218 square yards of geotextile fabric beneath gabion and gravel areas to prevent soil erosion and improve long-term performance.
7. **Sidewalk Work** – Removal of 280 square feet of existing concrete sidewalk and replacement with 32 square yards of new sidewalk surface.
8. **Post and Cable Fencing** – Installation of 235 linear feet of permanent post and cable fencing for site protection and access control.

**See Exhibit A for Construction Plans and Exhibit B for Geomat Report

NAME OF COMPANY SUBMITTING QUOTE: _____

Item	Description	Unit	Total
1	Materials	Lump Sum:	
2	Labor for Scope of Work	Lump Sum:	
		Total:	

Estimated Time to Project Completion after Materials Received: _____

Total Written Amount of Quote:

_____

_____

DATE OF QUOTE	
SUBMITTED BY (Printed Name)	
SIGNATURE (Bidder must sign to validate offer.)	
COMPANY NAME	
ADDRESS	
TELEPHONE	
EMAIL ADDRESS	
FED TAX ID NUMBER	
NM CRS ID NUMBER	

1. CONTRACT DOCUMENTS: The contract documents shall consist of the RFQ Documents, any Addenda issued prior to Due Date, the quote, the Purchase Order and any separate written agreement agreed to by the parties. This RFQ is subject to the Purchase Order Terms and Conditions and RFQ Requirements and Specifications.

2. INTERPRETATION OF CONTRACT DOCUMENTS: If a potential Bidder is uncertain as to the meaning of any part of the specifications or this RFQ, the bidder is expected to contact the Purchasing Agent no less than four (4) days prior to Due Date.

3. EXAMINATION: Bidders shall carefully examine the Contract documents and the maintenance sites to obtain first-hand knowledge of existing conditions. Bidders will not be given extra payment for conditions, which can be determined by examining the site and contract documents. It is mutually agreed that the Bidder has made the examinations, investigations and test required herein and has made provisions as to the cost in his bid/quote.

4. DELIVERY: Quote shall be FOB Destination and must indicate normal lead time and/or best delivery date on the items listed. Shipping costs shall be included in quote. New Mexico laws prohibit acceptance of ownership of goods in transit.

5. DELIVERY/ WORK COMPLETION DATE: Time of proposed delivery of completion of work must be stated in definite terms. The City reserves the right to cancel all items not shipped or work not completed within the period agreed to by the vendor. In case of default of the successful bidder, the City may procure the items from other sources and hold the bidder responsible for any excess cost occasioned thereby.

6. PREPARATION OF BIDS: Bidders are not required to provide quotes for every item listed. The City may award separate items to separate bidders or all to one bidder, depending upon availability and/or pricing of each item.

7. SUBMITTALS: This RFQ and any required documents must be received by the Department indicated on the RFQ by the date and time indicated. Bids/Quotes may be submitted via email, physical delivery, USPS (or VendorRegistry.com if published there).

8. AWARD: The City reserves the right to award to multiple vendors as determined to be in the City's best interest. Award will be made to the most responsive, responsible and qualified vendor with the bid most closely conforming to the solicitation, whose selection will be most advantageous to the City. In determining responsiveness, responsibility and qualifications, the following will be considered by the City: A.) The bid which offers all specifications requested and has the least overall cost to the City of Aztec. B.) Bidder's experience and references. Upon request, the bidder shall supply the City with references, a general history, description, and status of their company and/ or qualifications.

9. NOTICE OF AWARD: Award notification will be sent to the vendor receiving the award via mail and/or email. Award status can obtained by contacting the City Purchasing Office at (505) 334-7652.

10. MATERIALS: All supplies, materials, and components quoted shall be new unless indicated otherwise. Any quotes submitted for used or reconditioned supplies or components will be considered non-responsive. All goods shall be delivered completely serviced and ready for use.

11. CORRECTION OF WORK AFTER FINAL PAYMENT: Final payment shall not relieve the vendor of responsibility for faulty materials or workmanship and the vendor shall promptly remedy any defects due thereto.

12. PERFORMANCE OF CONTRACT: The vendor shall comply with all laws, ordinances, rules regulations and specifications that have a bearing on this contract.

13. OPERATIONAL INSTRUCTION: The bidder shall supply with their bid the latest printed specifications and advertising literature on the unit (s) they propose to furnish.

14. ALTERNATE/ EQUIVALENT BIDS: Unless otherwise stated, any manufacture or brand names listed for the purpose of describing the standard of quality, performance, and characteristics desired. Equivalents exhibiting the same standard of design, function, quality and performance will be considered. Include complete specifications if quoting a substitute.

    Bidders submitting alternate items, of equal specifications, may be requested to demonstrate suitability or provide product samples of the item they intend to supply for testing. The City Purchasing Agent shall be the sole judge to determine whether the alternate item is actually equal to the item identified in the specifications and the Purchasing Agent's decision will be final and binding.

    The City recognizes the expertise provided by many bidders and encourages creativity in bidding. Alternates may be considered if the bid submitted clearly indicates what will be furnished and how it will benefit the City. Alternates will be compared to the lowest responsive, responsible bid as specified.

15. QUOTE EXPIRATION: Unless otherwise indicated, quotes must be valid for a minimum of 30 days.

16. CONTAINER DEPOSITS: The City shall not be charged for container deposits. Seller shall be required to remove empty containers.

17. NON-TAXABLE TRANSACTIONS: Tangible personal property items (parts, supplies) are non-taxable to the City. A non-taxable certificate, if not previously issued, will be issued to successful bidders upon request.

18. TAXABLE TRANSACTIONS (such as labor): Pursuant to Section 13-1-108 NMSA 1978, the total amount of the bid

shall exclude the applicable state gross receipts tax or applicable local option tax. The City will pay for any taxes due on the Contract and will pay any increase in applicable tax which become effective after the date the Contract is entered into.

Taxes shall be shown as a separate amount in each billing or request for payment made under contract and shall separately identify each tax being billed.

19. CORRESPONDENCES: The RFQ Number shall appear on all quotations and related correspondence.

20. DELIVERY/ COMPLETION DATE: Time of proposed delivery of completion of work must be stated in definite terms. Time is of the essence in the placing of this order and the City of Aztec reserves the right to cancel all items not shipped or work not completed within the period agreed to by the vendor. In case of default of the successful bidder, City of Aztec may procure the items from other sources and hold the bidder responsible for any excess cost occasioned thereby.

21. WARRANTIES: The Bidder shall warrant and guarantee all workmanship performed by the Bidder and materials supplied by the Bidder for a minimum period of one (1) year from purchase date, unless otherwise specified in the specifications.

22. DEFAULT: In event of default by the contractor, the City reserves the right to procure the commodities and/or services from other sources, and hold the contractor liable for any excess cost occasioned thereby.

23. FIRM PRICING: Bid price shall remain firm for the entire contract period. The City reserves the right to accept any bid, in whole or in part, and to reject any or all bids if it is deemed in the best interest of the City to do so. The City reserves the right to waive any formality or informality in the process of awarding this bid.

24. CANCELLATION: The City may cancel the contract with the vendor at any time for vendor poor performance or vendor breach of contract. Cancellation shall not release the vendor from legal remedies available to the City.

25. PAYMENT: Original invoices must be presented for payment in accordance with instructions contained on the Purchase Order including reference to Purchase Order number and submitted to the correct address for processing.

26. PROTESTS: Any protest concerning the award of a contract shall be decided by the Procurement Specialist. Protests shall be made in writing to the Purchasing Office and shall be filed within three (3) business days of final approval and acceptance of the bid by the City Commission. A protest is considered filed when received by the Purchasing Office. The written protest shall include the name and address of the protestor, the ITB number, a statement of the specific reasons for the protest and supporting exhibits. The Purchasing Specialist will respond to the written protest within seven (7) days. The Purchasing Specialist's decision relative to the protest shall be final.

    Upon receipt of a protest the City may, but is not required to, delay its order under the awarded contract.

27. ERRORS & OMISSIONS: The City is not responsible for errors and omissions occurring in the transmission or download of any documents or specifications. In the event of any discrepancy between website information and the hard copy documents, the terms of the hard copy will control.

28. RESERVATION OF RIGHTS: The City reserves the right to reject any or all bids failing to meet the City's specifications or requirements and to waive technicalities. If in the City's opinion, the lowest bid is not the most responsible bid, considering value received for monies expended, the right is reserved to make awards as determined solely by the judgment of the City. In determining the lowest responsible bidder, the City shall take into consideration the qualities of the articles supplied, their conformity with the specifications, and their suitability to the requirements of the City and the delivery terms. Intangible factors, such as the Bidder's reputation and past performance, will also be weighed.

    The Bidder's failure to meet the mandatory requirements of the RFQ will result in the disqualification of the bid from further consideration.

    The City further reserves the right to reject all bids/quotes and obtain goods or services through intergovernmental or cooperative agreements, or to issue a new and revised RFQ.

    Submission of a bid/quote confers no rights on the Bidder/ Contractor to a selection or to a subsequent contract. All decisions on compliance, evaluation, terms and conditions shall be made solely at the City's discretion and shall be made in the best interest of the City.

29. TERMINATION, CANCELLATION AND DAMAGES: This contract may be terminated upon mutual agreement of both parties.

    If the City terminates this Contract because of the supplier/contractor's breach, the City shall have the right to purchase items or services elsewhere and to charge the supplier/contractor with any additional cost incurred, including but not limited to the cost of cover, incidental and consequential

damages and the cost of re-bidding. The City may offset these additional costs against any sums otherwise due to the supplier/contractor under this bid or any unrelated contract.

30. TRANSFER OF OWNERSHIP OR ASSIGNMENT: The terms and conditions of this contract shall be binding upon and shall ensure to the benefit of the parties hereto and their respective successors and assigns. Prior to any sales or assignments the City must be notified and approve same in writing.

31. VENUE: By submitting a response, bidder agrees that venue for all disputes arising out of the solicitation process, including but not limited to judicial review of any protest decision, will be exclusively in the circuit court for the Eighteenth Judicial Circuit in City of Aztec, New Mexico and that New Mexico law will control.

32. COOPERATIVE USE AGREEMENT: Use of Contract by Other Agencies: Pursuant to Section 13-1-129, NMSA 1978, Bidders /Contractors /Offerors are hereby notified that any central purchasing office allowed by law and as otherwise allowed by their respective governing rules and regulations, may contract for the goods and/or services included in this procurement document with the awarded Bidder /Contractor /Offeror. Contractual engagements accomplished under this provision shall be solely between the Bidder /Contractor /Offeror and the contracting entity with no obligation by the City of Aztec.

33. BRIBERY: By law (Section 13-1-191, NMSA, 1978) the City is required to inform Vendors of the following: (1) it is a third-degree felony under NM law to commit the offense of bribery of a public officer or public employee (Section 30-24-1); (2) it is a third- degree felony to commit the offense of demanding or receiving a bribe by a public officer or public employee (Section 30-24-2); (3) it is a fourth-degree felony to commit the offense of soliciting or receiving illegal kickbacks (Section 30-41-1); (4) it is a fourth-degree felony to commit the offense of offering or paying illegal kickbacks (Section 30-41-2).

19. CONFLICT OF INTEREST: Bidder warrants that it presently has no interest and will not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of service under this contract. Bidder must notify the City's Chief Procurement Officer if any employee(s) of the requesting department or the Purchasing Office have a financial interest in the Bidder. If yes, the Bidder must specify the employee(s) name in their proposal.

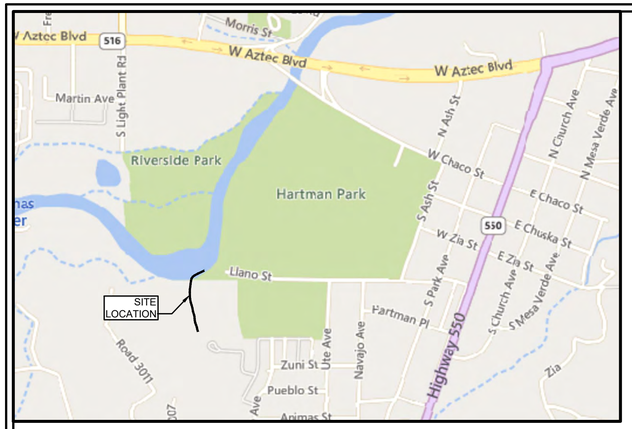
20. DEBARMENT, SUSPENSION, AND INELIGIBILITY: By submitting a response (RFQ/Bid/Offer) to this solicitation, the business (Bidder /Offeror /Contractor) represents and warrants that it is not debarred, suspended, or placed in ineligibility under the provisions of Federal Executive Order 12549.

34. RENEWAL & EXTENSION: This contract will not be subject to renewal or extension.

35. SUBCONTRACTORS: No Subcontractors will be allowed.

36. WITHDRAWAL OF BIDS: Any bid/quote may be withdrawn prior to the Due Date or authorized postponement thereof. Any Bid received after the time and date specified shall not be considered.

37. NEW VENDORS: New vendors are required to complete a Vendor Packet prior to issuance of the purchase order.



LOCATION MAP
N.T.S.

*EXHIBIT A

WILLIAMS ARROYO GABION WALL REPAIR

CIVIL SITE CONSTRUCTION PLANS

AZTEC, NEW MEXICO

BY:

CITY OF AZTEC

201 W. CHACO

AZTEC. NEW MEXICO 87410

APRIL 5, 2024

SHEET INDEX	
SHEET NO.	SHEET TITLE
1	COVER SHEET
2	GENERAL NOTES
3	STAGING AND EROSION CONTORL PLAN
4	PLAN AND PROFILE
5	PLAN AND PROFILE
6	CROSS SECTIONS
7	DETAIL SHEET

SURVEY:

RED MOUNTAIN LAND SURVEYING
(970) 903-2024

TBM 1
DESC: 1/2" REBAR AND YELLOW PLASTIC CAP
NORTHING: 2117728.4770
EASTING: 2672402.4450
ELEV: 5590.68

TBM 2
DESC: 60D NAIL IN ISLAND
NORTHING:2117612.9660
EASTING: 2672336.5890
ELEV: 5589.14

APPLICABLE PERMITS

PERMIT 1: USACE NATIONWIDE PERMIT VERIFICATION
SPA-2023.00371
NATIONWIDE PERMIT 13-BANK STABILZATION
CONTRACTOR RESPONSIBLE FOR BEST MANAGEMENT PRACTICES
ASSOCIATED WITH NWP13.

ALL COORDINATES ARE IN NSRS11.NM-WF UNLESS OTHERWISE NOTED.

A PORTION OF THIS PROJECT LIES WITHIN THE FEMA 100-YEAR FLOODPLAIN (ZONE A), FIRM PANEL 35045C0710F, EFFECTIVE DATE AUGUST 5, 2010.

ENGINEER AND OWNER DISCLAIM ALL RESPONSIBILITY FOR IDENTIFYING SUBSURFACE UTILITIES. CONTRACTOR SHALL BE HELD SOLELY RESPONSIBLE FOR IDENTIFYING, LOCATING, AND PROTECTING UTILITIES PRIOR TO EXCAVATION.

CONTRACTOR SHALL FIELD ALL DIMENSIONS AND QUANTITIES IN THE FIELD PRIOR TO BEGINNING WORK.

CONTRACTOR IS SOLELY RESPONSIBLE FOR SCHEDULING ALL REQUIRED INSPECTIONS.

CONTRACTOR SHALL MAINTAIN A CURRENT SET OF CONSTRUCTION PLANS AT THE CONSTRUCTION SITE AT ALL TIMES.

RELEASE OF THIS APPLICATION DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION, AND CALCULATIONS SUPPLIED BY THE APPLICANT. THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY, AND ADEQUACY OF HIS/HER SUBMITTAL, WHETHER OR NOT THE APPLICATION IS REVIEWED FOR CODE COMPLIANCE BY CITY ENGINEERS.

ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN APPROVING THESE PLANS, THE CITY OF AZTEC MUST RELY UPON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.

811
Know what's below.
Call before you dig.
It's the Law!
New Mexico One Call, Inc.
NMOC
Professional Resources for Damage Prevention

UTILITY OWNERS:

CITY OF AZTEC DEPARTMENT OF PUBLIC WORKS
(505) 334-7660

CITY OF AZTEC ELECTRIC DEVELOPMENT
(505) 334-7660

QWEST (TELEPHONE)
(505) 325-2311

COMCAST CABLE
VICTOR APPLEGATE (505) 402-0055

PNM (GAS)
(505) 324-3783

REVISIONS		
NO.	REVISION DESCRIPTION	DATE
1	Update quantities sheet 2, detail sheet 7	1/7/2025

AquaStrategies
Water Planning, Science & Engineering

Aqua Strategies Inc.
13341 W. US Hwy 290, Bldg. 2
Dripping Springs, TX 78620-5000
www.aquastrategies.com
(512) 826-2604

GENERAL NOTES:

1. THE "NEW MEXICO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, 2019 EDITION", SHALL GOVERN CONSTRUCTION OF THIS PROJECT UNLESS OTHERWISE NOTED ON THESE PLANS OR IN THE CONTRACT DOCUMENTS. IN CASE OF CONFLICT BETWEEN PLANS AND SPECIFICATIONS, THE PLANS SHALL GOVERN.
2. NO PAYMENT WILL BE MADE FOR ANY HAULING OF MATERIALS. THE TRANSPORTATION OF MATERIALS SHALL BE CONSIDERED INCIDENTAL TO THE ITEM TO WHICH THE WORK PERTAINS.
3. THE CONTRACTOR SHALL NOTIFY THE CITY OF AZTEC AND THE CITY OF AZTEC FIRE DEPARTMENT 24 HOURS BEFORE CONSTRUCTION ACTIVITIES BEGIN.
4. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE STREET FREE AND CLEAR OF ANY DEBRIS THAT IS TRACKED FROM THE SITE.
5. ALL ACCESS ROADS SHALL BE SERVICEABLE AND MAINTAINED FOR FIRE PROTECTION AND EMERGENCY VEHICLES PRIOR TO AND DURING CONSTRUCTION.
6. THE CONTRACTOR SHALL PROVIDE REASONABLE ACCESS TO PROPERTY OWNERS AFFECTED BY THE CONSTRUCTION. ALL AFFECTED RESIDENTS SHALL BE INFORMED OF ANY LANE OR ROAD CLOSURES AT LEAST 48 HOURS PRIOR TO CLOSURE. ACCESS TO RESIDENCIES SHALL NOT BE DENIED FOR MORE THAN 24 HOURS WITHOUT THE APPROVAL OF THE PROJECT MANAGER.
7. OVERNIGHT PARKING OF THE CONTRACTOR'S EQUIPMENT SHALL NOT OBSTRUCT DRIVEWAY OPENINGS OR DESIGNATED TRAFFIC LANES.
8. CONTRACTOR SHALL KEEP WORK SITE IN AN ORDERLY CONDITION. DURING CONSTRUCTION. AT COMPLETION OF WORK, CONTRACTOR SHALL REMOVE ALL DEBRIS AND LEAVE WORK SITE IN A CONDITION ACCEPTABLE TO THE CITY ENGINEER.
9. THE CONTRACTOR IS RESPONSIBLE FOR REPORTING ANY DISCREPANCIES DISCOVERED IN THE PLANS AND SPECIFICATIONS PROMPTLY TO THE CITY ENGINEER IN WRITING.
10. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL UNDERGROUND. SURFACE AND AERIAL UTILITIES, CONSTRUCTIONS AND STRUCTURES WHETHER ON PUBLIC OR PRIVATE PROPERTY DAMAGES THERETO BY THE CONTRACTOR SHALL BE REPLACED IN KIND OR BETTER AT NO EXPENSE TO THE PROJECT.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REMOVALS REQUIRED TO COMPLETE THIS PROJECT.

PAVING NOTES:

1. ANY EXISTING PAVEMENT, CURBS, AND/OR SIDEWALKS DAMAGED OR REMOVED WILL BE REPAIRED BY THE CONTRACTOR AT CONTRACTOR'S EXPENSE BEFORE ACCEPTANCE OF THE PROJECT.
2. MANHOLE FRAMES, COVERS, WATER VALVE COVERS, AND OTHER EXISTING UTILITIES SHALL BE RAISED TO FINISHED GRADE AT THE CONTRACTOR'S EXPENSE BY A QUALIFIED CONTRACTOR WITH ENGINEER INSPECTION. ALL UTILITY ADJUSTMENTS SHALL BE COMPLETED PRIOR TO FINAL PAVING CONSTRUCTION.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING ROAD BASE MATERIAL CONSISTING OF EXISTING AND IMPORTED MATERIAL.
3. CONTRACTOR SHALL SAW CUT TACK AND MATCH EXISTING PAVEMENT.
4. THE CONTRACTOR WILL NOTIFY THE AZTEC PUBLIC WORKS DIRECTOR AT LEAST 4 HOURS PRIOR TO PAVING.
5. FLAGGING SHALL BE PROVIDED FOR SAFETY WHERE NEEDED AND REQUIRED BY THE MUTCD OR AS DIRECTED BY THE CITY ENGINEER. ALL FLAGGING OPERATIONS SHALL COMPLY WITH THE REQUIREMENTS OF THE MUTCD. FLAGGERS SHALL BE CONSIDERED INCIDENTAL TO PAYMENT FOR TRAFFIC CONTROL AND NO MEASUREMENT OR PAYMENT WILL BE MADE FOR THIS SERVICE.
6. TRAFFIC CONTROL DEVICES SHALL REMAIN IN OPERATION AT ALL TIMES DURING CONSTRUCTION.

UTILITIES:

1. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITY PIPES, CONDUITS AND STRUCTURES ARE SHOWN WHERE KNOWN TO EXIST. CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL UTILITIES PRIOR TO START OF CONSTRUCTION AND SHALL TAKE PRECAUTIONARY MEASURES TO PROTECT ALL UTILITIES.
2. UTILITY CONFLICTS ARE NOT ANTICIPATED ON THIS PROJECT SINCE EXCAVATION WILL BE LIMITED. IF UTILITIES ARE ENCOUNTERED THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH ALL UTILITY COMPANIES AND THE CITY OF AZTEC WITH REGARDS TO RELOCATING, ADJUSTING, REPLACING, AND REPAIRING UTILITIES DURING CONSTRUCTION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPORTING AND CLEAN UP OF SPILLS ASSOCIATED WITH PROJECT CONSTRUCTION AND SHALL REPORT AND RESPOND TO SPILLS OF HAZARDOUS MATERIAL SUCH AS GASOLINE, DIESEL, MOTOR OILS, SOLVENTS, SEWER CHEMICALS, TOXIC AND CORROSIVE SUBSTANCES, AND OTHER MATERIALS WHICH MAY BE A THREAT TO PUBLIC HEALTH OR THE ENVIRONMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPORTING PAST SPILLS ENCOUNTERED DURING CONSTRUCTION AND OF CURRENT SPILLS NOT ASSOCIATED WITH CONSTRUCTION. REPORTS SHALL BE MADE IMMEDIATELY TO THE NM ENVIRONMENT DEPARTMENT AT (505) 827-9329.

CONSTRUCTION TESTING:

1. THE PROJECT WILL HAVE VERIFICATION, AND DENSITY TESTS COMPLETED BY A GEOTECHNICAL ENGINEERING COMPANY TO VERIFY COMPACTION.
2. THE CITY WILL USE GEOMAT TO PROVIDE QUALITY ASSURANCE TESTING. THE CONTRACTOR SHALL COORDINATE WITH GEOMAT FOR REQUIRED TESTING. CONTRACTOR SHALL PROVIDE QUALITY CONTROL TESTING AS NECESSARY TO PROVIDE ACCEPTABLE WORK QUALITY THAT CONFORMS TO THE GOVERNING SPECIFICATIONS NECESSARY. RETESTING BY GEOMAT WILL BE CHARGED BACK TO THE CONTRACTOR. GEOMAT CONTACT PHONE - 505-327-7928.
3. ROAD BASE MATERIAL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY PER NMDOT SPECIFICATIONS SECTION 203.3.5 "MOISTURE AND DENSITY CONTROL."
4. SP-IV ASPHALT SMALL BE COMPACTED TO A MEAN DENSITY OF 93% OF THE THEORETICAL MAXIMUM DENSITY. REFER TO NMDOT SPECIFICATION DIVISION 473.
5. ASPHALT MIX DESIGN SHALL BE PER NMDOT SP-IV DESIGN ASPHALT MIX SHALL BE TESTED BY GEOMAT.
6. GRADATION OF PROPOSED IMPORTED ROADBASE OR BULK MATERIAL SHALL BE SUBMITTED TO GEOMAT FOR APPROVAL PRIOR TO IMPORT AND TO THE AZTEC PUBLIC WORKS DIRECTOR.
7. NO MATERIAL PITS HAVE BEEN DESIGNATED FOR THIS PROJECT. THE CONTRACTOR MAY OBTAIN SPECIFICATION BORROW AND SURFACING MATERIAL FROM ANY ACCEPTABLE SOURCE ALL MATERIAL SHALL BE GOVERNED BY APPROPRIATE SECTIONS OF THE NMDOT STANDARD.

WATER CONTROL PLAN

1. CONTRACTOR TO BE RESPONSIBLE FOR MANAGEMENT OF WATER.

PHASE 1 – MATERIALS ESTIMATE

ITEM	DESCRIPTION	QUANTITY	UNIT	CONTRACTOR BID UNIT COST	CONTRACTOR BID COST
BASE PROJECT ITEMS					
1	Mobilization and Demobilization	1.0	UNIT		
2	Temporary Security Fencing 6'	100.0	L.F.		
3	Erosion Control - Rock Berm	60.0	L.F.		
4	Erosion Control - Inlet Protection	1.0	UNIT		
5	Gabion Mat 1.5'x10'x1' HxWxLength	70.0	L.F.		
6	Gabion 3'X3'x1ft HxWxL	70.0	L.F.		
7	Gabion 3'X4'x1ft HxWxL	70.0	L.F.		
8	Gabion 3'X5'x1ft HxWxL	70.0	L.F.		
9B	Gabion Fill Option 2: 6" Riprap, Well Graded	133.0	C.Y.		
10	Gravel Base	16.0	C.Y.		
11	Gravel Drainage Stone	16.0	C.Y.		
12	Geotextile	218.0	S.Y.		
13	Remove Sidewalk	280.0	S.F.		
14	Replace Sidewalk	32.0	S.Y.		
21	Post and Cable Fencing	235.0	L.F.		
			TOTAL BASE ITEMS		
ALTERNATE PROJECT ITEMS					
9A	Gabion Fill Option 1: 24" Rock w/ Chokestone	133.0	C.Y.		
15	Remove Curb	70.0	L.F.		
16	Replace Curb	70.0	L.F.		
17	Remove Asphalt	1,400.0	S.F.		
18	Replace Asphalt	156.0	S.Y.		
19	Excavation	389.0	C.Y.		
20	Subgrage Preparation	78.0	S.Y.		
22	Culvert Headwall	0.0	UNIT		
			TOTAL ALTERNATE ITEMS		
			TOTAL BASE + ALTERNATE ITEMS		

EXCLUDED AREA NOT PART OF BID FOR PHASE 1

PHASE 2+PHASE 3

ITEM	DESCRIPTION	QUANTITY	UNIT	CONTRACTOR BID UNIT COST	CONTRACTOR BID COST
BASE PROJECT ITEMS					
1	Mobilization and Demobilization	1.0	UNIT		
2	Temporary Security Fencing 6'	100.0	L.F.		
3	Erosion Control - Rock Berm	60.0	L.F.		
4	Erosion Control - Inlet Protection	1.0	UNIT		
5	Gabion Mat 1.5'x10'x1' HxWxLength	525.0	L.F.		
6	Gabion 3'X3'x1ft HxWxL	525.0	L.F.		
7	Gabion 3'X4'x1ft HxWxL	525.0	L.F.		
8	Gabion 3'X5'x1ft HxWxL	525.0	L.F.		
9B	Gabion Fill Option 2: 6" Riprap, Well Graded	1076.0	C.Y.		
10	Gravel Base	116.0	C.Y.		
11	Gravel Drainage Stone	116.0	C.Y.		
12	Geotextile	1,680.0	S.Y.		
13	Remove Sidewalk	840.0	S.F.		
14	Replace Sidewalk	94.0	S.Y.		
21	Post and Cable Fencing	335.0	L.F.		
			TOTAL BASE ITEMS		
ALTERNATE PROJECT ITEMS					
9A	Gabion Fill Option 1: 24" Rock w/ Chokestone	1076.0	C.Y.		
15	Remove Curb	210.0	L.F.		
16	Replace Curb	210.0	L.F.		
17	Remove Asphalt	4,200.0	S.F.		
18	Replace Asphalt	467.0	S.Y.		
19	Excavation	2,889.0	C.Y.		
20	Subgrage Preparation	578.0	S.Y.		
22	Culvert Headwall	0.0	UNIT		
			TOTAL ALTERNATE ITEMS		
			TOTAL BASE + ALTERNATE ITEMS		

* - only include Item 9A or 9B in total

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TIMOTHY DENNIS OSTING
NEW MEXICO
28718
PROFESSIONAL ENGINEER
4/24/2025

GENERAL NOTES

BANK STABILIZATION

WILLIAMS ARROYO HARTMAN PARK

REVISIONS

NO	REVISION DESCRIPTION	DATE
1	Update Materials Estimate Tables - All Phases	1/7/2025

DATE: APRIL 5, 2024
DESIGNED BY: GC TDO
DRAWN BY: RT--MEI
REVIEWED BY: TDO

SHEET # 2

LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- SILT FENCE
- LIMITS OF CONSTRUCTION
- FILTER DIKE/INLET PROTECTION
- FLOW ARROW
- TEMPORARY SECURITY FENCE

N

40 0 40 80

HORIZ. SCALE: 1"=40'

CONSTRUCTION SEQUENCING:

PHASE 1 SHALL BE CONSTRUCTED TO COMPLETION FIRST AS PART OF CURRENT BID PROJECT.

PHASE 2 AND PHASE 3 SHALL BE CONSTRUCTED AS PART OF A SEPARATE BID PACKAGE AT A LATER DATE TO BE DETERMINED BY THE CITY.

NOTE: OTHER CONTRACTORS COULD BE WORKING ON THIS SITE. COORDINATE ALL ACTIVITIES WITH THE ACTIVITIES OF OTHERS.

PHASE 1 SEQUENCE

1. NOTIFY ALL AFFECTED PARTIES AS PRESCRIBED UNDER GENERAL NOTES.
2. PRIOR TO STARTING CONSTRUCTION, CONSTRUCTION SHALL BE COMPLETED ACCORDING TO A TIMETABLE OF CONSTRUCTION AGREED UPON WITH THE ENGINEER. CONSTRUCTION IS TO BE SUBSTANTIALLY COMPLETE BY JUNE 26, 2024.
3. THE SEQUENCE OF CONSTRUCTION INSIDE PHASE 1 SHALL BE AS FOLLOWS:
   a. INSTALL TEMPORARY EROSION CONTROLS PRIOR TO ANY GROUND DISTURBANCE.
   b. THE ORDER OF CONSTRUCTION SHALL BE THE CONTRACTOR'S DECISION.
   c. RESTORE SITE VEGETATION.
4. COMPLETE ANY NECESSARY FINAL DRESS-UP.

PHASE 2 AND PHASE 3

1. NOTIFY ALL AFFECTED PARTIES AS PRESCRIBED UNDER GENERAL NOTES.
2. PRIOR TO STARTING CONSTRUCTION, CONSTRUCTION SHALL BE COMPLETED ACCORDING TO A TIMETABLE OF CONSTRUCTION AGREED UPON WITH THE ENGINEER.
3. THE SEQUENCE OF CONSTRUCTION INSIDE PHASE 2 SHALL BE AS FOLLOWS:
   a. INSTALL TEMPORARY EROSION CONTROLS PRIOR TO ANY GROUND DISTURBANCE.
   b. THE ORDER OF CONSTRUCTION SHALL BE THE CONTRACTOR'S DECISION.
   c. RESTORE SITE VEGETATION.
4. COMPLETE ANY NECESSARY FINAL DRESS-UP.

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(512) 826-2604

TIMOTHY DENNIS OSTING
NEW MEXICO
28718
PROFESSIONAL ENGINEER
4/5/2024

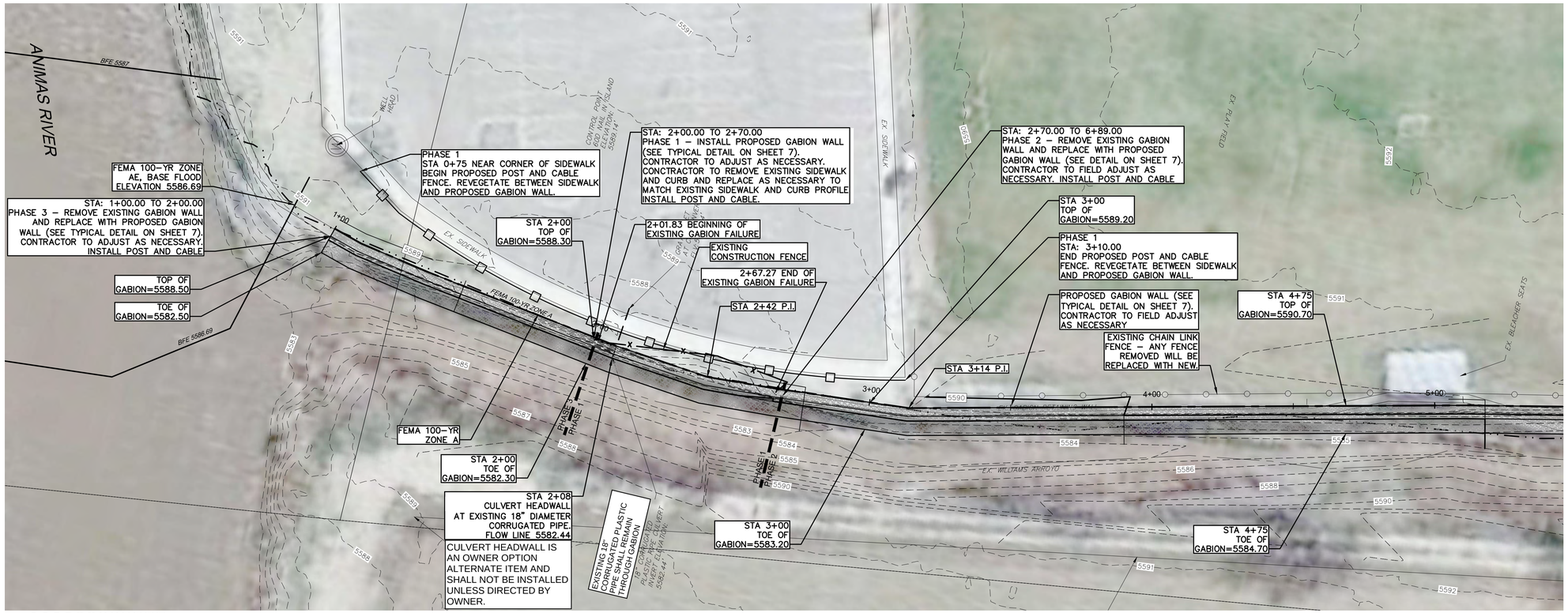
STAGING AND EROSION CONTORL PLAN
BANK STABILIZATION
WILLIAMS ARROYO HARTMAN PARK

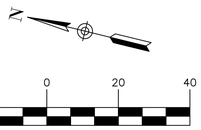
REVISIONS

NO	REVISION DESCRIPTION	DATE

DATE:	APRIL 5, 2024
DESIGNED BY:	GC TDO
DRAWN BY:	RT-MEI
REVIEWED BY:	TDO

SHEET # 3





LEGEND

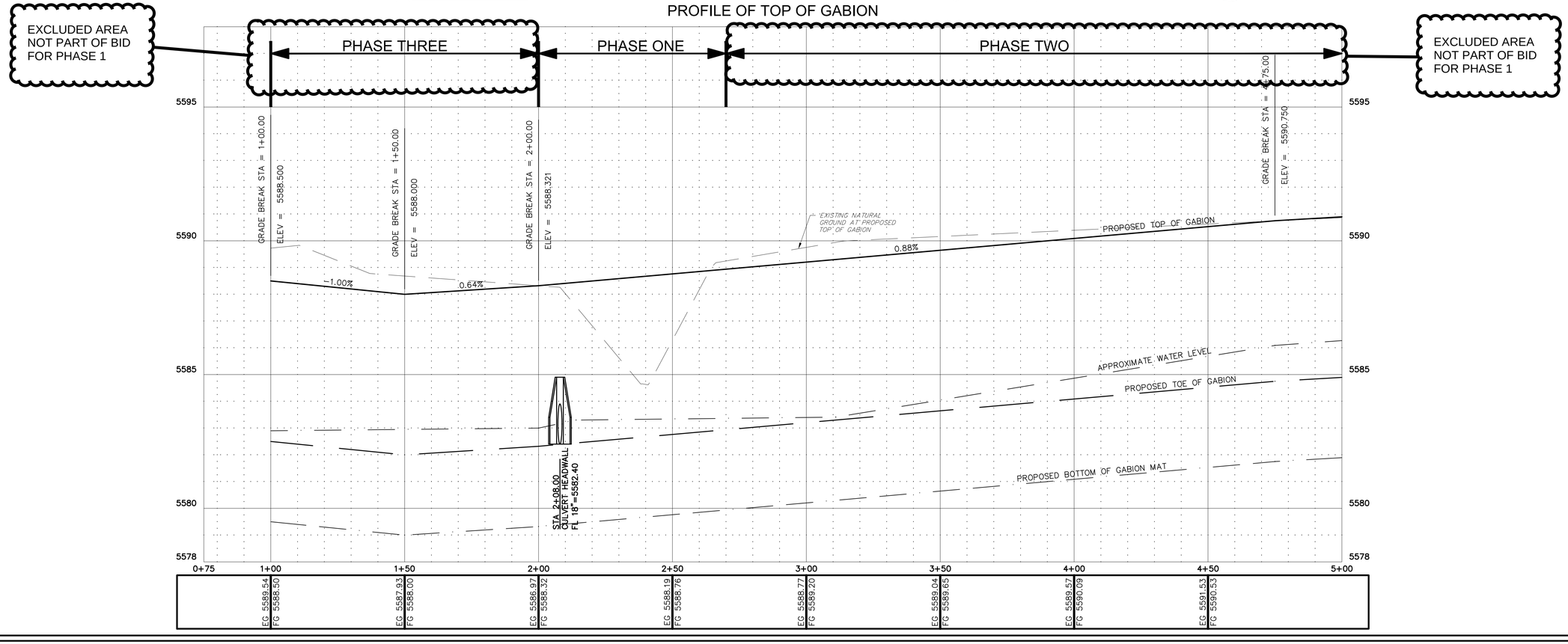
- 452 — EXISTING CONTOUR
- 452 PROPOSED CONTOUR
- FLOW ARROW

NOTES:

1. CONTRACTOR SHALL SECURE NEW GABIONS TO EXISTING UNDESTURBED ADJACENT GABIONS USING TYPICAL TIES.
2. CONTRACTOR SHALL TRANSITION FINISH GRADING SMOOTHLY BETWEEN NEW FILL AND EXISTING GRADE.
3. CONTRACTOR SHALL AVOID DISTURBING EXISTING CURB AND PAVEMENT WITHOUT PRIOR APPROVAL BY ENGINEER

STA OF BACK OF GABION WALL	NORTHING	EASTING
1+00	2117688.83	2672302.28
2+00	2117590.17	2672286.51
2+42	2117548.40	2672282.37
3+00	2117490.58	2672287.19
3+14	2117476.65	2672288.48
4+75	2117320.38	2672327.25
6+83	2117117.79	2672374.34

PROFILE OF TOP OF GABION



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(512) 826-2604

TIMOTHY DENNIS OSTING
NEW MEXICO
26718
PROFESSIONAL ENGINEER
01/23/2025

PLAN AND PROFILE

BANK STABILIZATION
WILLIAMS ARROYO HARTMAN PARK

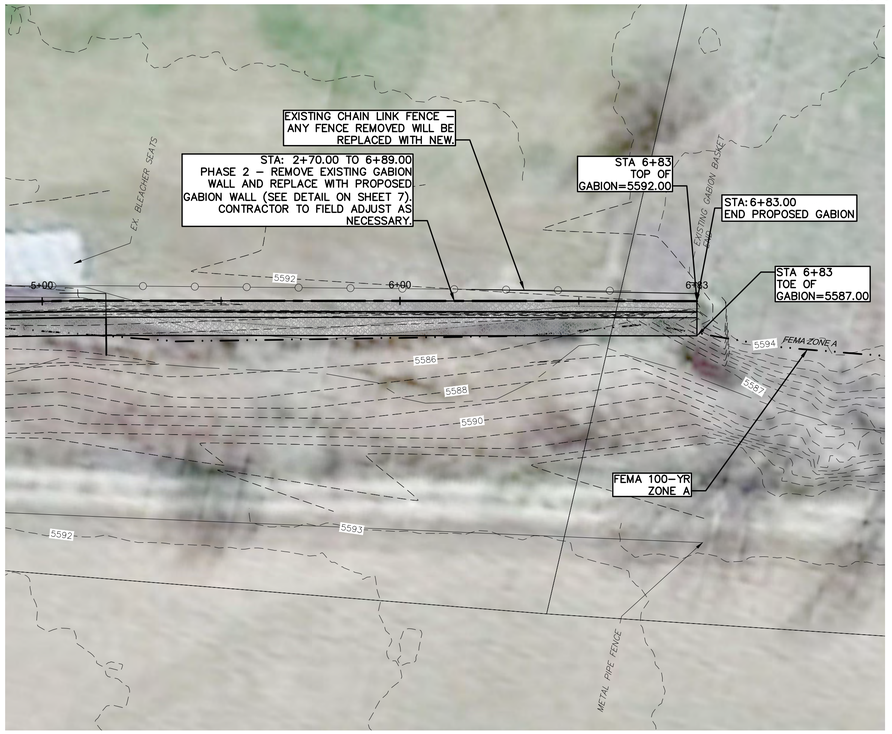
REVISIONS

NO.	REVISION DESCRIPTION	DATE
1	REV. CULVERT HEADWALL AND REV. NOTES	01/23/25

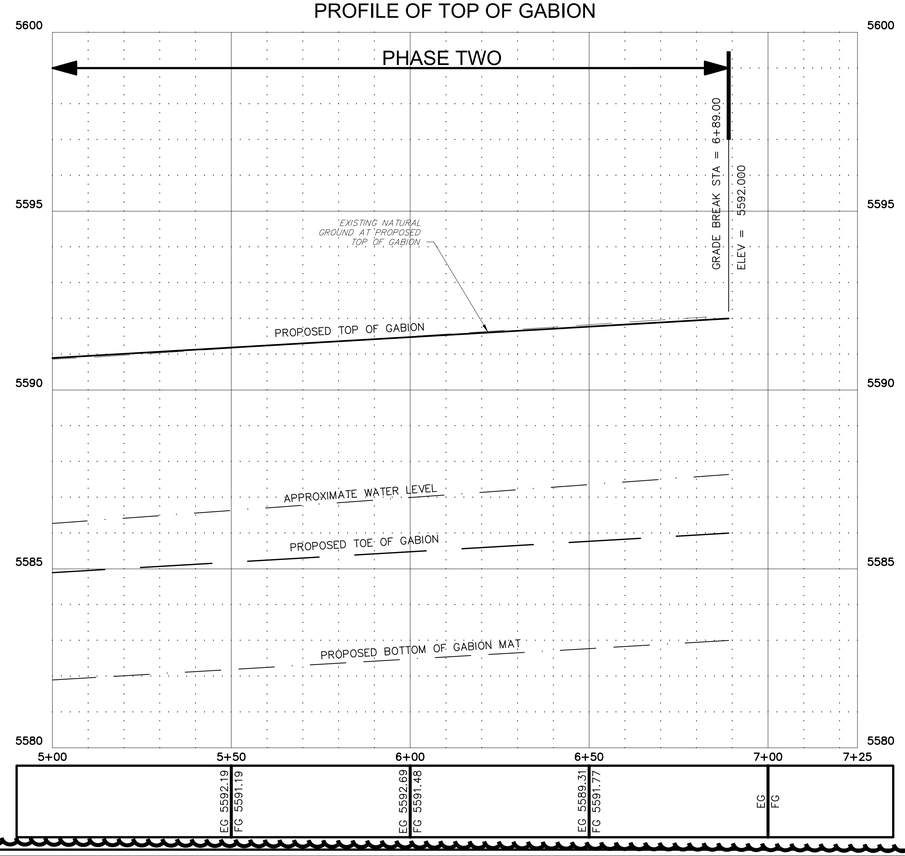
DATE: APRIL 5, 2024
DESIGNED BY: GC TDO
DRAWN BY: RT--MEI
REVIEWED BY: TDO

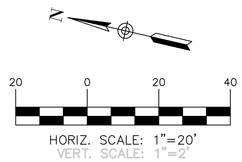
SHEET # 4

EXCLUDED AREA
NOT PART OF BID
FOR PHASE 1



PROFILE OF TOP OF GABION





LEGEND

- 452 — EXISTING CONTOUR
- 452 — PROPOSED CONTOUR
- FLOW ARROW

NOTES:

1. CONTRACTOR SHALL SECURE NEW GABIONS TO EXISTING UNDESTURBED ADJACENT GABIONS USING TYPICAL TIES.
2. CONTRACTOR SHALL TRANSITION FINISH GRADING SMOOTHLY BETWEEN NEW FILL AND EXISTING GRADE.
3. CONTRACTOR SHALL ATTEMPT TO AVOID DISTURBING EXISTING CURB AND PAVEMENT IF SAFELY POSSIBLE.

STA OF BACK OF GABION WALL	NORTHING	EASTING
1+00	2117688.83	2672302.28
2+00	2117590.17	2672286.51
2+42	2117548.40	2672282.37
3+00	2117490.58	2672287.19
3+14	2117476.65	2672288.48
4+75	2117320.38	2672327.25
6+83	2117117.79	2672374.34

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(512) 826-2604

TIMOTHY DENNIS OSTING
NEW MEXICO
28718
PROFESSIONAL ENGINEER
4/5/2024

PLAN AND PROFILE

BANK STABILIZATION

WILLIAMS ARROYO HARTMAN PARK

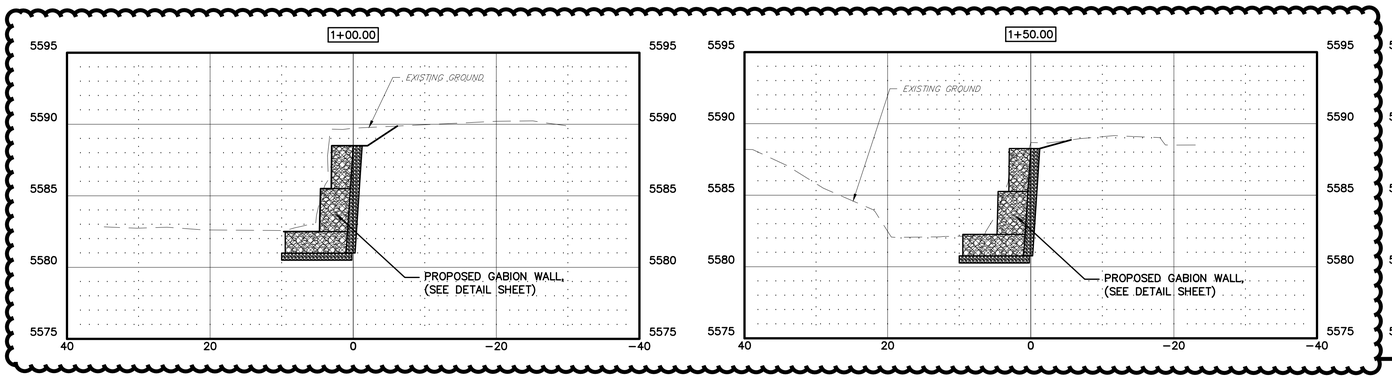
REVISIONS

NO.	REVISION DESCRIPTION	DATE

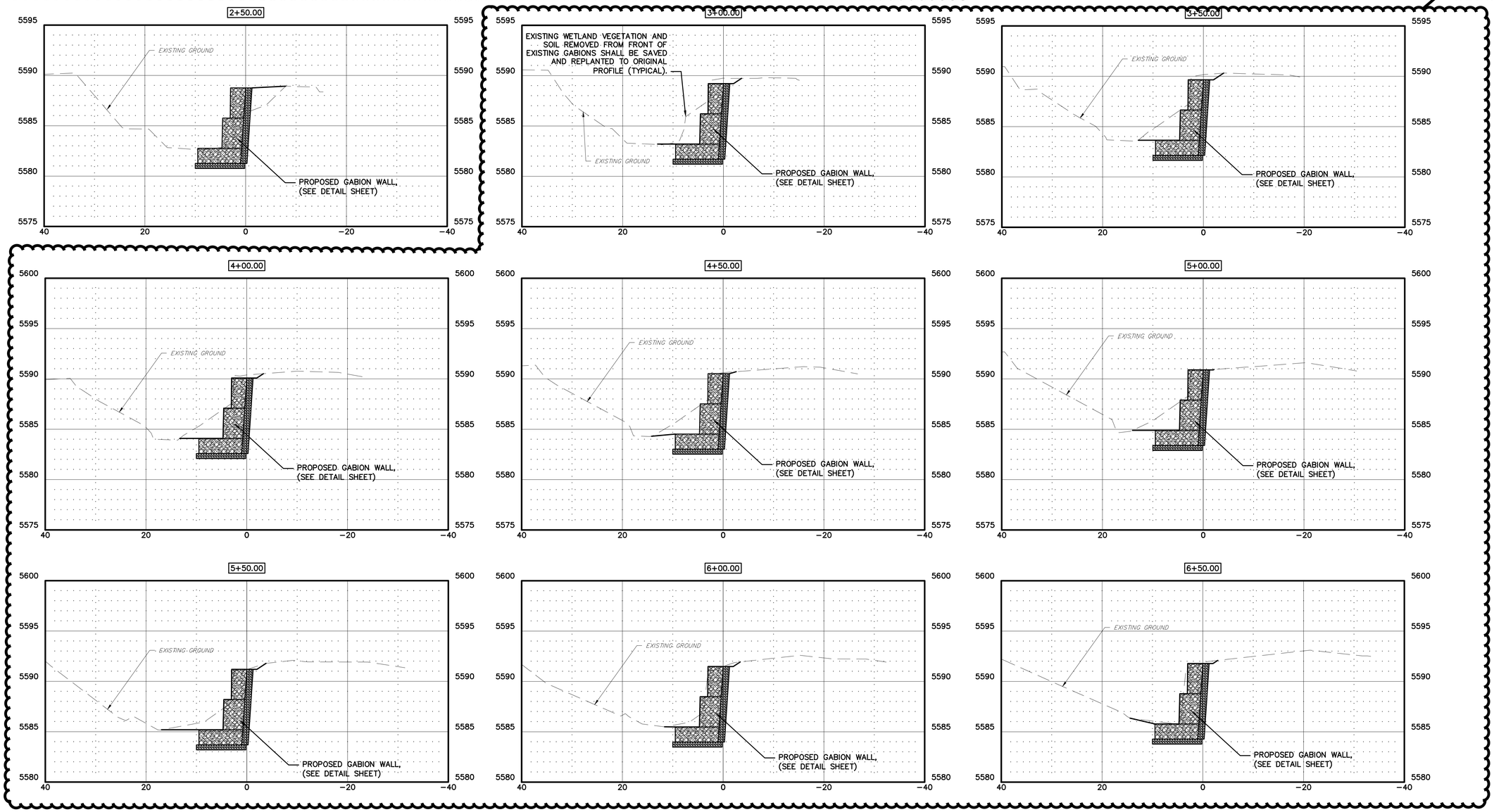
DATE:	APRIL 5, 2024
DESIGNED BY:	GC TDO
DRAWN BY:	RT–MEI
REVIEWED BY:	TDO

SHEET
#
5

SECTION SCALE
1"=10' HORIZONTAL
1"=5' VERTICAL



EXCLUDED AREA
NOT PART OF BID
FOR PHASE 1



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Dripping Springs, TX 78620-5000
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TIMOTHY DENNIS OSTING
NEW MEXICO
28718
PROFESSIONAL ENGINEER
4/5/2024

CROSS SECTIONS

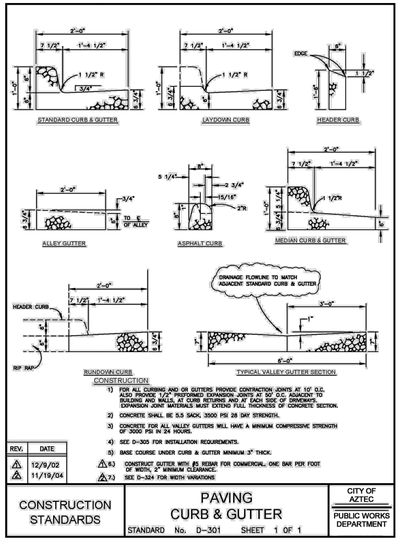
BANK STABILIZATION
WILLIAMS ARROYO HARTMAN PARK

REVISIONS

NO	REVISION DESCRIPTION	DATE

DATE:	APRIL 5, 2024
DESIGNED BY:	GC TDO
DRAWN BY:	RT–MEI
REVIEWED BY:	TDO

SHEET
#
6

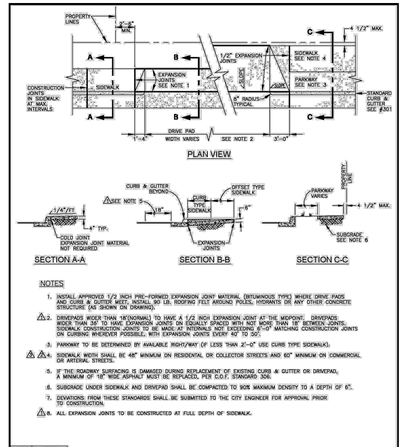


CONSTRUCTION

1) FOR ALL CURBING AND OR GUTTERS PROVIDE CONTRACTION JOINTS AT 10' O.C. ALSO PROVIDE 1/2" PREFORMED EXPANSION JOINTS AT 60' O.C. ADJACENT TO BUILDING AND WALLS, AT CURB RETURNS AND AT EACH SIDE OF DRIVEWAYS. EXPANSION JOINT MATERIALS MUST EXTEND FULL THICKNESS OF CONCRETE SECTION.
2) CONCRETE SHALL BE 5.5 SACK, 3500 PSI 28 DAY STRENGTH.
3) CONCRETE FOR ALL VALLEY GUTTERS WILL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI IN 24 HOURS.
4) SEE D-305 FOR INSTALLATION REQUIREMENTS.
5) BASE COURSE UNDER CURB & GUTTER MINIMUM 3" THICK.
⚠6.3 CONSTRUCT GUTTER WITH #5 REBAR FOR COMMERCIAL, ONE BAR PER FOOT OF WIDTH, 2" MINIMUM CLEARANCE.
⚠7.3 SEE D-308 FOR WIDTH VARIATIONS

REV.	DATE
⚠	12/9/02
⚠	11/19/04

CONSTRUCTION STANDARDS	PAVING CURB & GUTTER	CITY OF AZTEC
	STANDARD No. D-301 SHEET 1 OF 1	PUBLIC WORKS DEPARTMENT



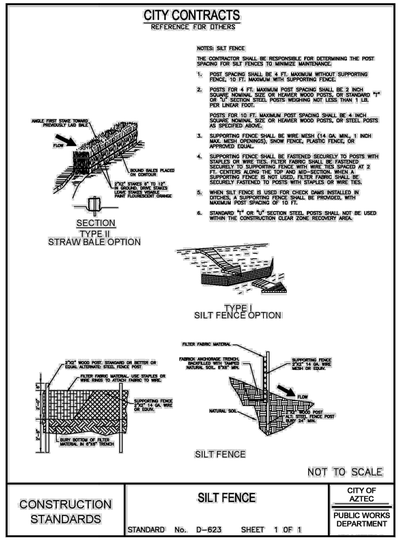
NOTES

1. INSTALL APPROVED 1/2 INCH PRE-FORMED EXPANSION JOINT MATERIAL (BITUMINOUS TYPE) WHERE DRIVE PADS AND CURB & GUTTER MEET, INSTALL 60 LB. ROOFING FELT AROUND POLES, HYDRANTS OR ANY OTHER CONCRETE STRUCTURE (AS SHOWN ON DRAWING).
⚠2. DRIVEPADS WIDER THAN HORIZONTAL TO HAVE A 1/2 INCH EXPANSION JOINT AT THE MIDPOINT. DRIVEPADS WIDER THAN 30' TO HAVE EXPANSION JOINTS ON EQUALLY SPACED WITH NOT MORE THAN 15' BETWEEN JOINTS. SIDEWALK CONSTRUCTION JOINTS TO BE MADE AT INTERVALS NOT EXCEEDING 8'-0" MATCHING CONSTRUCTION JOINTS ON CURB WHEREVER POSSIBLE. WITH EXPANSION JOINTS EVERY 40' TO 50'.
3. PARKWAY TO BE DETERMINED BY AVAILABLE RIGHT-OF-WAY (IF LESS THAN 2'-0" USE CURB TYPE SIDEWALK).
⚠4. SIDEWALK WIDTH SHALL BE 4ft" MINIMUM ON RESIDENTIAL OR COLLECTOR STREETS AND 6ft" MINIMUM ON COMMERCIAL OR ARTERIAL STREETS.
5. IF THE ROADWAY SURFACING IS DAMAGED DURING REPLACEMENT OF EXISTING CURB & GUTTER OR DRIVEPAD, A MINIMUM OF 10' WIDE ASPHALT MUST BE REPLACED, PER C.O.T. STANDARD 306.
6. SUBGRADE UNDER SIDEWALK AND DRIVEPAD SHALL BE COMPACTED TO 90% MAXIMUM DENSITY TO A DEPTH OF 6".
7. DEVIATIONS FROM THESE STANDARDS SHALL BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
⚠8. ALL EXPANSION JOINTS TO BE CONSTRUCTED AT FULL DEPTH OF SIDEWALK.

REV.	DATE
⚠	01/02/01
⚠	01/07/04
⚠	11/30/05

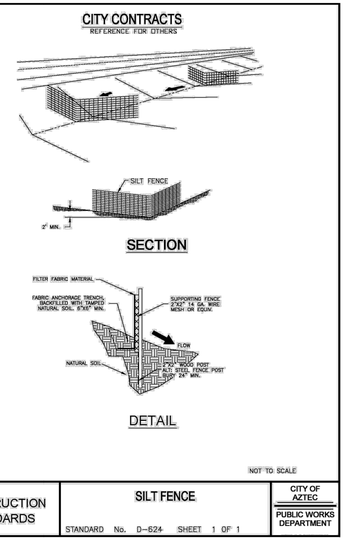
CONSTRUCTION STANDARDS	SIDEWALK & DRIVEPAD	CITY OF AZTEC
	STANDARD No. D-313 SHEET 1 OF 1	PUBLIC WORKS DEPARTMENT

CITY CONTRACTS
REFERENCE FOR OTHERS

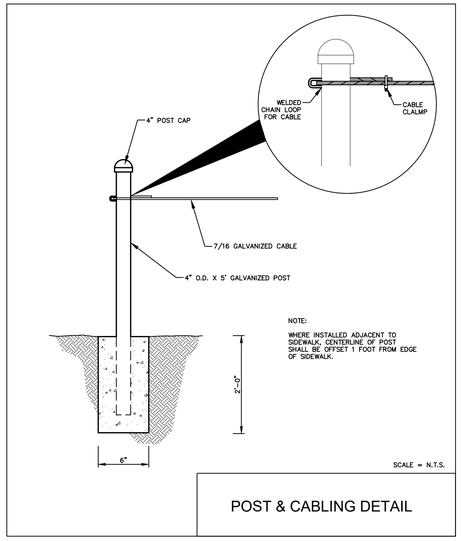


CONSTRUCTION STANDARDS	SILT FENCE	CITY OF AZTEC
	STANDARD No. D-623 SHEET 1 OF 1	PUBLIC WORKS DEPARTMENT

CITY CONTRACTS
REFERENCE FOR OTHERS

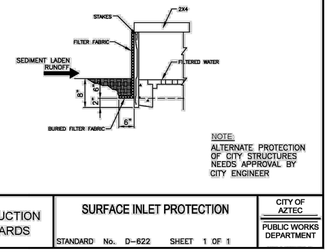


CONSTRUCTION STANDARDS	SILT FENCE	CITY OF AZTEC
	STANDARD No. D-624 SHEET 1 OF 1	PUBLIC WORKS DEPARTMENT



POST & CABLING DETAIL

CITY CONTRACTS
REFERENCE FOR OTHERS

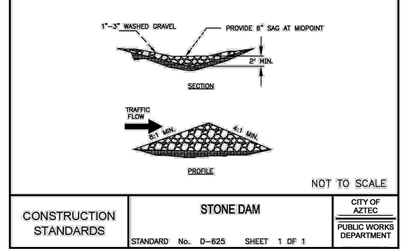


NOTE:
ALTERNATE PROTECTION OF CITY STRUCTURES NEEDS APPROVAL BY CITY ENGINEER

NOT TO SCALE

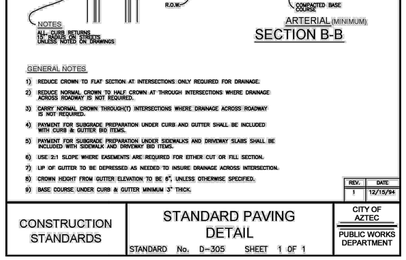
CONSTRUCTION STANDARDS	SURFACE INLET PROTECTION	CITY OF AZTEC
	STANDARD No. D-622 SHEET 1 OF 1	PUBLIC WORKS DEPARTMENT

CITY CONTRACTS
REFERENCE FOR OTHERS



NOT TO SCALE

CONSTRUCTION STANDARDS	STONE DAM	CITY OF AZTEC
	STANDARD No. D-625 SHEET 1 OF 1	PUBLIC WORKS DEPARTMENT

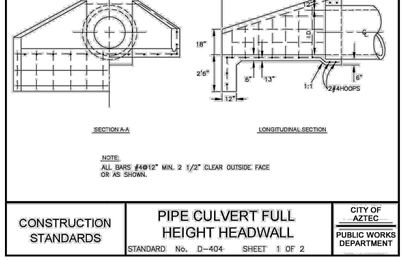


GENERAL NOTES

1) REDUCE CROWN TO FLAT SECTION AT INTERSECTIONS ONLY REQUIRED FOR DRAINAGE.
2) REDUCE NORMAL CROWN TO HALF CROWN AT THROUGH INTERSECTIONS WHERE DRAINAGE ACROSS ROADWAY IS NOT REQUIRED.
3) CARRY NORMAL CROWN THROUGH(T) INTERSECTIONS WHERE DRAINAGE ACROSS ROADWAY IS NOT REQUIRED.
4) PAVEMENT FOR SUBGRADE PREPARATION UNDER CURBS AND GUTTER SHALL BE INCLUDED WITH CURB & GUTTER BID ITEMS.
5) PAVMENT FOR SUBGRADE PREPARATION UNDER SIDEWALKS AND DRIVEWAY SLABS SHALL BE INCLUDED WITH SIDEWALK AND DRIVEWAY BID ITEMS.
6) USE 3:1 SLOPE WHERE EASEMENTS ARE REQUIRED FOR EITHER CUT OR FILL SECTION.
7) LIP OF GUTTER TO BE DEPRESSED AS NEEDED TO INSURE DRAINAGE ACROSS INTERSECTION.
8) CROWN HIGHT FROM GUTTER ELEVATION TO BE 6", UNLESS OTHERWISE SPECIFIED.
9) BASE COURSE UNDER CURB & GUTTER MINIMUM 3" THICK.

REV.	DATE
1	12/15/94

CONSTRUCTION STANDARDS	STANDARD PAVING DETAIL	CITY OF AZTEC
	STANDARD No. D-305 SHEET 1 OF 1	PUBLIC WORKS DEPARTMENT



NOTE:
ALL BARS #4@12" MIN. 2 1/2" CLEAR OUTSIDE FACE OR AS SHOWN.

CONSTRUCTION STANDARDS	PIPE CULVERT FULL HEIGHT HEADWALL	CITY OF AZTEC
	STANDARD No. D-404 SHEET 1 OF 2	PUBLIC WORKS DEPARTMENT

PIPE INSIDE DIAMETER	DIMENSIONS T	L	W	B	APPROXIMATE QUANTITIES: SINGLE PIPE HEADWALL CONC. C.Y.	STEEL LBS.	ADD EACH ADDITIONAL PIPE CONC. C.Y.	STEEL LBS.
12"	8	4'-0"	5'-7 7/16"	1'-6"	1.60	93	0.71	36
15"	8	4'-6"	6'-0 3/8"	1'-6"	1.72	118	0.73	44
18"	8	5'-0"	7'-3 1/4"	1'-9"	2.00	133	0.92	49
21"	9	5'-6"	7'-8 5/16"	1'-9"	2.39	150	1.09	55
24"	9	6'-0"	8'-11 1/8"	2'-0"	2.79	182	1.35	74
27"	9	6'-6"	9'-4"	2'-3"	3.15	201	1.58	80
30"	10	7'-0"	10'-7"	2'-6"	3.81	231	1.93	100
36"	10	8'-0"	12'-2 7/8"	3'-0"	4.65	288	2.51	130
42"	10	9'-0"	13'-10 11/16"	3'-6"	5.61	330	3.19	164
48"	11	10'-0"	15'-5 9/16"	4'-0"	7.02	404	4.11	202
54"	11	11'-0"	17'-2 7/16"	4'-6"	8.25	468	4.96	242
60"	12	12'-0"	18'-10 1/4"	5'-0"	10.16	540	6.11	287
72"	12	14'-0"	22'-2"	5'-6"	12.94	650	7.69	344

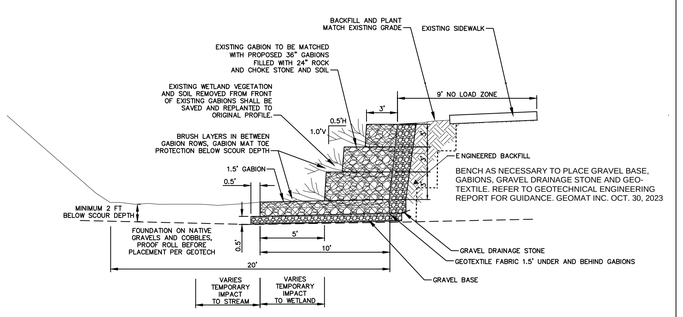
FOR ELLIPTICAL OR SQUASH PIPE USE NEXT LARGEST HORIZONTAL AND VERTICAL PIPE I.D. SHOWN.

CONSTRUCTION STANDARDS	PIPE CULVERT FULL HT. HEADWALL DIMENSIONS	CITY OF AZTEC
	STANDARD No. D-404 SHEET 2 of 2	PUBLIC WORKS DEPARTMENT

GABION FILL OPTIONS:

OPTION 1: FILL WITH 24" ROCK WITH CHOKESTONE AND SOIL. CHOKESTONE=8" DIA. AND LESS

OPTION 2: FILL GABIONS WITH 6" RIP RAP, E.G., 2" TO 12" WELL GRADED ANGULAR ROCK



NOTES:

1. GABION BASKET TO BE HIGH TENSILE STRENGTH (600 Mpa)
2. GALFAN COATING BS EN 10244-2:2009 (CLASS A) OR EQUIVALENT
3. COATING DENSITY (300g + gsm)
4. WELD SHEAR STRENGTH 10.0 kn
5. WELD POINT DEPTH & STRENGTH (15% DEPTH ON CROSS WIRE)

SCALE = N.T.S.

TYPICAL GABION WALL SECTION

AquaStrategies
Water Planning, Science & Engineering
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13341 W. US Hwy 290, Bldg. 2
Dripping Springs, TX 78620-5000
www.aquastrategies.com
(512) 826-2604

TIMOTHY DENNIS OSTING
NEW MEXICO
28718
PROFESSIONAL ENGINEER
12/4/2025

DETAIL SHEET

BANK STABILIZATION

WILLIAMS ARROYO HARTMAN PARK

REVISIONS

NO.	REVISION DESCRIPTION	DATE
1	Update Typical Gabion Wall Section	1/7/2025

DATE: APRIL 5, 2024
DESIGNED BY: GC TDO
DRAWN BY: RT–MEI
REVIEWED BY: TDO

SHEET # 7

*EXHIBIT B

GEOTECHNICAL ENGINEERING REPORT
WILLIAMS ARROYO GABION WALL REPAIR
AZTEC, NEW MEXICO

Submitted To:

Tim Osting, PE, D.WRE, CFM
Aqua Strategies Inc.
13341 W. US Hwy 290, Bldg. 2
Austin, TX 78737

Submitted By:

GEOMAT Inc.
915 Malta Avenue
Farmington, New Mexico 87401

October 30, 2023
GEOMAT Project 232-4570

GEOMAT INC.
915 Malta Avenue ◆ Farmington, NM 87401 ◆ Tel (505) 327-7928 ◆ Fax (505) 326-5721

October 30, 2023

Tim Osting, PE, D.WRE, CFM
Aqua Strategies Inc.
13341 W. US Hwy 290, Bldg. 2
Austin, TX 78737

RE: Geotechnical Engineering Report
Willaims Arroyo Gabion Wall Repair
Aztec, New Mexico
GEOMAT Project No. 232-4570

GEOMAT Inc. (GEOMAT) has completed the geotechnical engineering exploration for the Williams Arroyo Gabion Wall Repair project located at the Hartman Soccer Fields in Aztec, New Mexico. This study was performed in general accordance with our Proposal No. 232-06-18 – Rev. 1, dated August 14, 2023.

The results of our engineering study, including the geotechnical recommendations, vicinity plan, boring records, and laboratory test results are attached. Other design and construction details, based upon geotechnical conditions, are presented in the report.

We have appreciated being of service to you in the geotechnical engineering phase of this project. If you have any questions concerning this report, please contact us.

Sincerely yours,

GEOMAT Inc.

MATTHEW J. CRAMER
NEW MEXICO
18710
10/30/23
PROFESSIONAL ENGINEER

Chase J. Beckstead, P.E.
Staff Engineer

Matthew J. Cramer, P.E.
President, Principal

Copies to: Addressee (1)

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

GEOTECHNICAL ENGINEERING REPORT
WILLIAMS ARROYO GABION WALL REPAIR
AZTEC, NEW MEXICO
GEOMAT PROJECT NO. 232-4570

INTRODUCTION

This report contains the results of our geotechnical engineering exploration for the Williams Arroyo Gabion Wall Repair project located at the Hartman Soccer Fields in Aztec, New Mexico, as shown on the Vicinity Plan in Appendix A of this report.

The purpose of these services is to provide information and geotechnical engineering recommendations about:

- subsurface soil conditions
- groundwater conditions
- lateral soil pressures
- earthwork
- drainage

The opinions and recommendations contained in this report are based upon the results of field and laboratory testing, engineering analyses, and experience with similar soil conditions, structures, and our understanding of the proposed project as stated below.

PROPOSED CONSTRUCTION

Based upon the information provided, we understand the existing wall is approximately 6 feet high with a length of 600 linear feet. A portion of the wall has been damaged and requires repair. Based upon information received from the design team, we anticipate that the work will consist of the removal and reconstruction of the damaged sections with new gabion walls and geofabric.

SITE EXPLORATION

Our scope of services performed for this project included a site reconnaissance, a subsurface exploration program, laboratory testing and engineering analyses.

Field Exploration:

Subsurface conditions at the site were explored on August 28th, 2023, by drilling a total of six (6) exploratory borings at the approximate locations shown on the Vicinity Plan in Appendix A. Borings B-1 through B-6 were drilled along the arroyo channel to an approximate planned depth 15 feet below existing ground surface (bgs).

The borings were advanced using a CME-55 truck-mounted drill rig with continuous-flight, 7.25-inch O.D. hollow-stem auger. The borings were continuously monitored by a staff engineer from our office who examined and classified the subsurface materials encountered, obtained representative samples, observed groundwater conditions, and maintained a continuous log of each boring.

Soil samples were obtained from the borings using a combination of standard 2-inch O.D. split spoon and 3-inch O.D. modified Dames & Moore ring barrel samplers. The samplers were driven using a 140-pound hammer falling 30 inches. The standard penetration resistance was determined by recording the number of hammer blows required to advance the sampler in six-inch increments. Representative bulk samples of the subsurface materials were also obtained.

Groundwater evaluations were made in each boring at the time of site exploration. Soils were classified in accordance with the Unified Soil Classification System described in Appendix A. Boring logs were prepared and are presented in Appendix A.

Laboratory Testing:

Samples retrieved during the field exploration were transported to our laboratory for further evaluation. At that time, the field descriptions were confirmed or modified as necessary, and laboratory tests were performed to evaluate the engineering properties of the subsurface materials.

SITE CONDITIONS

The proposed project site is located at Hartman Soccer Field in Aztec, New Mexico along the drainage arroyo known as Williams Arroyo. The project site is generally flat, developed with small building structures, grandstands and vegetated with grass for the athletic fields. The site is bordered by water channels on the west and north side, grass fields to the east, and a private home property to the south.

The following photograph depicts the site at the time of our exploration. Additional photographs in Appendix A are provided to illustrate the extent of damage and construction of the gabion wall.

Drill Rig at Boring B-2
View Towards the North

Damaged Gabion Wall near Boring B-3
View Towards the North

Existing Gabion Wall along Animas River near Boring B-5
View Towards the East

SUBSURFACE CONDITIONS

Soil Conditions:

As presented on the Boring Logs in Appendix A, in boring B-1, we encountered grass and topsoil, underlain by sandy soil to approximately 6 feet bgs. Beneath the sandy soil we encountered clayey soil to approximately 9 feet bgs underlain by sandy and gravelly soils to the depths explored. In boring B-2, we encountered grass and topsoil, underlain by sandy soil to approximately 4 ½ feet bgs. Beneath the sandy soil, we encountered silty soil to approximately 7 feet bgs, underlain by sandy soil to approximately 12 feet bgs. Beneath the sandy soil, we encountered gravel and cobbles and terminated our boring at 14 feet bgs due to auger refusal on gravel and cobbles. In boring B-3, we encountered sandy soil to approximately 5 ½ feet bgs underlain by clayey soil to approximately 6 ½ feet bgs. Beneath the clayey soil, we encountered sandy and gravelly soils to 9 feet bgs underlain by gravel and cobbles and terminated our boring at 11 ½ feet bgs due to auger refusal on gravel and cobbles. In boring B-4, we encountered sandy and gravelly soils to approximately 8 feet bgs underlain by gravel and cobbles and terminated our boring at 10 feet bgs due to auger refusal on gravel and cobbles. In borings B-5 and B-6, we encountered gravelly soils ranging from 5 ½ to 7 feet bgs underlain terminated our borings due to auger refusal on gravel and cobbles.

The sandy soils were generally light brown to brown, gray, fine to coarse-grained, very loose to medium dense, and slightly damp to wet. The clayey soils were generally tan to brown, gray, soft to stiff, and damp to wet.

Groundwater Conditions:

Groundwater was encountered in the borings B-1 through B-4 at ranging from depths of 5 ½ to 7 feet bgs at the time of our exploration. Groundwater elevations can fluctuate over time depending upon precipitation, irrigation, runoff, and infiltration of surface water. We do not have any information regarding the historical fluctuation of the groundwater level in this vicinity.

Laboratory Test Results:

Laboratory analyses of samples tested indicates that the sandy soils have fines contents (silt- and/or clay-sized particles passing the U.S. No. 200 sieve) ranging from approximately 24 to 38 percent, and plasticity index ranging from non-plastic to 16. The in-place dry density of sandy soil samples ranged from approximately 97 to 104 pounds per cubic foot (pcf), with natural moisture contents ranging from approximately 10 to 17 percent.

Laboratory analyses of a sample tested indicates that the silty soil has fines contents (silt- and/or clay-sized particles passing the U.S. No. 200 sieve) of approximately 51 percent and is non-plastic. The in-place dry density of a clayey soil sample was approximately 82 pounds per cubic foot (pcf), with natural moisture contents ranging from approximately 34 percent.

A modified proctor (ASTM D1557) and remolded swell test were conducted on the sandy soils encountered in borings B-4 through B-6. The maximum dry density and optimum moisture were 128.1 pcf and 7.6 percent, respectively. The remolded swell was conducted on a sample compacted to approximately 95 percent of the maximum dry density at approximately 3 percent below optimum moisture, confined under a load of 144 psf and submerged. The resulting swell/expansion was 7.1 percent.

pH tests were conducted on various samples. The results of those tests are discussed in the **Corrosion** section below.

Results of all laboratory tests are presented in Appendix B.

OPINIONS AND RECOMMENDATIONS

Geotechnical Considerations:

The site is considered suitable for the proposed gabion wall repair on the geotechnical conditions encountered and tested for this report. However, potentially expansive soils were encountered on the site and tested in the laboratory. To reduce the potential for settlement or swelling, and to provide more uniform and higher allowable bearing, the gabion baskets should bear directly on cobbles or compacted gravel fill or two feet below the scour depth, whichever is greater.

The recommendations contained herein are based upon the conditions encountered in our borings, but variation in subsurface conditions may become evident during excavation and construction activities. GEOMAT should be contacted to review the recommendations contained herein should differing subsurface conditions be encountered.

If there are any significant deviations from the assumed floor elevations, structure locations and/or loads noted at the beginning of this report, the opinions and recommendations of this report should be reviewed and confirmed/modified as necessary to reflect the final planned design conditions.

Foundations:

Gabion Retaining Wall:

Based on our understanding of the type of structure to be built and the results of our field subsurface exploration and laboratory testing, the gabion retaining wall could be founded on the native gravel and cobbles or 2 feet below the scour depth, whichever is deeper. To provide a more uniform bearing surface, a six-inch gravel base could be placed on top of the gravels and cobbles and extend a minimum of 6 inches beyond the edges of the gabion wall on each side or as required by the final gabion wall design. Prior to placement of the gravel base the existing subgrade, once properly cleared and benched where necessary, should be proof rolled under observation by GEOMAT. Walls supported in this manner may be designed for an allowable bearing pressure of 2,000 psf.

The existing sandy and gravelly soils can be used as backfill behind the gabion retaining wall in non-structural or landscape areas provided that any material greater than 6-inches in diameter is removed and the material is uniformly graded. If used, a unit weight of 110 pcf, cohesion of 0 psf, and internal friction angle of 30 degrees may be used in design for the existing gravelly soils. Native soils should be compacted in accordance with the **Placement and Compaction** portion of the report. In structural, parking areas, or as required, imported backfill soils should be used and meet the criteria given in the **Fill Materials** portion of this report and compacted in accordance with the **Placement and Compaction** portion of the report. Any existing lean clay material encountered should not be used as backfill.

Ground water was encountered in our borings and should be anticipated during construction. Dewatering will likely be necessary to facilitate installation of the proposed gabion walls and necessary earthwork operations including compaction of soils. Total and differential settlements resulting from the assumed structural loads are estimated to be on the order of three fourths (3/4) of an inch or less. Proper drainage should be provided in the final design and during construction and areas adjacent to the structure should be designed to prevent water from ponding or accumulating next to the structures.

Foundation excavations should be observed by GEOMAT. If the soil conditions encountered differ significantly from those presented in this report, supplemental recommendations will be required.

Corrosion:

Representative samples of soil from borings B-1 through B-6 were tested to evaluate the potential for the on-site soils to corrode buried metal. The samples were tested for pH. Results of these tests are summarized in the following table.

pH Test Results			
Sample No.	**Boring No.**	**Sample Depth (feet)**	**pH**
15280	B-1	5	7.73
15284	B-2	7 ½	7.86
15286	B-3	3 – 5	8.05
15288	Combined[1]	0 – 5	7.96

[1]Sample is a combination of auger cuttings from Borings B-4 through B-6

Site Classification:

Based on the subsurface conditions encountered in the borings, we estimate that Site Class D is appropriate in accordance with the International Building Code. This parameter was estimated based on extrapolation of data beyond the deepest depth explored, using methods allowed by the code. Actual shear wave velocity testing/analysis and/or exploration to a depth of 100 feet were not performed as part of our scope of services for this project.

Lateral Earth Pressures:

For soils above any free water surface, recommended equivalent fluid pressures for unrestrained foundation elements are presented in the following table:

Active (above the water table – excluding any hydrostatic pressures):

Granular soil backfill ..... 35 psf/ft
Undisturbed subsoil .....30 psf/ft

Active (below the water table – excluding the hydrostatic pressures):

Granular soil backfill ..... 20 psf/ft
Undisturbed subsoil .....15 psf/ft

Passive (above the water table – excluding any hydrostatic pressures):

Shallow foundation walls .....250 psf/ft
Shallow column footings.....…….....350 psf/ft

Passive (below the water table – excluding any hydrostatic pressures):

Shallow foundation walls .....150 psf/ft
Shallow column footings.....…….....175 psf/ft

Coefficient of base friction: 0.40

The coefficient of base friction should be reduced to 0.30 when used in conjunction with passive pressure.

Fill against retaining walls should be compacted to densities specified in **Earthwork**. Medium to high plasticity clay soils should not be used as backfill against retaining walls. Compaction of each lift adjacent to walls should be accomplished with hand-operated tampers or other lightweight compactors. Over compaction may cause excessive lateral earth pressures that could result in wall movement. Dewatering will likely be required in areas to facilitate compaction efforts.

Slopes:

Assuming fill specifications, compaction requirements, and recommended setbacks provided in this report are followed, temporary cut and fill slopes of fill areas as steep as to 2.5:1 (horizontal:vertical) should be stable. Surcharge loads should be set back a minimum distance equal to the height of the wall unless the wall is designed for those surcharges. Depending upon specific project conditions, adequate factors of safety against slope failure may be available for steeper configurations. However, such a determination would require additional analysis. Recommendations for slopes and benches during site clearing for fill earthwork are given in the *Site Clearing* portion of this report.

Earthwork:

General Considerations:

The opinions contained in this report for the proposed construction are contingent upon compliance with recommendations presented in this section. Although underground facilities such as foundations, septic tanks, cesspools, basements, and irrigation systems were not encountered during site reconnaissance, such features could exist and might be encountered during construction.

Site Clearing:

1. Strip and remove all existing pavement, fill, debris, and other deleterious materials from the proposed building areas. Any existing structures should be completely removed from below any building, including foundation elements and any associated development such as underground utilities, septic tanks, etc. All exposed surfaces below footings and slabs should be free of mounds and depressions which could prevent uniform compaction.

2. If unexpected fills or underground facilities are encountered during site clearing, we should be contacted for further recommendations. All excavations should be observed by GEOMAT prior to backfill placement.

3. Stripped materials consisting of vegetation and organic materials should be removed from the site or used to re-vegetate exposed slopes after completion of grading operations. If it is necessary to dispose of organic materials on-site, they should be placed in non-structural areas, and in fill sections not exceeding 5 feet in height.

4. Sloping areas steeper than 5:1 (horizontal:vertical) should be benched to reduce the potential for slippage between existing slopes and fills. Benches should be level and wide enough to accommodate compaction and earth-moving equipment and at heights not exceeding 4 feet.

5. All exposed areas which will receive fill, once properly cleared and benched where necessary, should be scarified to a minimum depth of eight inches, conditioned to near optimum moisture content and compacted to at least 95% of modified proctor (ASTM D1557). If gravels and cobbles are present at the bottom of the over excavation, they should be proof compacted under observation by GEOMAT.

Excavation:

1. We present the following general comments regarding our opinion of the excavation conditions for the designers' information with the understanding that they are opinions based on our boring data. More accurate information regarding the excavation conditions should be evaluated by contractors or other interested parties from test excavations using the equipment that will be used during construction. Based on our subsurface evaluation it appears that excavations in soils at the site will be possible using standard excavation equipment.

2. On-site soils may pump or become unstable or unworkable at high water contents, especially for excavations near the water table. Dewatering may be necessary to achieve a stable excavation. Workability may be improved by scarifying and drying. Over-excavation of wet zones and replacement with granular materials may be necessary. Lightweight excavation equipment may be required to reduce subgrade pumping.

Fill Materials:

1. Based upon the conditions encountered and tested, the clayey native soils will not be suitable for reuse as structural (engineered) fill. The native sandy and gravel soils can be used as backfill behind the wall. It is the responsibility of the contractor to determine the appropriate methods for providing suitable structural (engineered) fill material prior to bidding the work. Periodic quality control testing during construction will be required to determine the suitability of native soils to be re-used as engineered fill.

2. Imported soils to be used in structural (engineered) fills should conform to the following:

Gradation	**Percent Finer by Weight (ASTM C136)**
3"	100
No. 4 Sieve	50 – 100
No. 200 Sieve	20-50
Plasticity Index	12 Max
Maximum Expansive Potential (%) *	+ 1.5

* Measured on a sample compacted to approximately 95 percent of the ASTM D1557 maximum dry density at about 3 percent below optimum water content. The sample is confined under a 144-psf surcharge and submerged.

4. Aggregate base should conform to Type I or II Base Course as specified in Section 303 of the 2019 New Mexico Department of Transportation (NMDOT "Standard Specifications for Highway and Bridge Construction".

Placement and Compaction:

1. Place and compact fill in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift.

2. Un-compacted fill lifts should not exceed 10 inches loose thickness.

3. Materials should be compacted to the following:

Material	**Minimum Percent (ASTM D1557)**
Subgrade soils beneath fill areas	95
On site or imported soil fills	
On site or imported soils	95
Miscellaneous backfill	95

4. On-site and imported soils should be compacted at moisture contents near optimum.

Compliance:

Recommendations for slabs-on-grade and foundation elements supported on compacted fills depend upon compliance with **Earthwork** recommendations. To assess compliance, observation and testing should be performed by GEOMAT.

Drainage:

Surface Drainage:

1. Positive drainage should be provided during construction and maintained throughout the life of the proposed project. Infiltration of water into utility or foundation excavations must be prevented during construction. Planters and other surface features that could retain water in areas adjacent to the building or pavements should be sealed or eliminated.

2. In areas where sidewalks or paving do not immediately adjoin the structure, we recommend that protective slopes be provided with a minimum grade of approximately 5 percent for at least 10 feet from perimeter walls. Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration.

3. Downspouts, roof drains or scuppers should discharge into splash blocks or extensions when the ground surface beneath such features is not protected by exterior slabs or paving.

4. Sprinkler systems should not be within 5 feet of foundation walls. Irrigated landscaping adjacent to the foundation system should be minimized or eliminated.

GENERAL COMMENTS

It is recommended that GEOMAT be retained to provide a general review of final design plans and specifications in order to confirm that grading and foundation recommendations in this report have been interpreted and implemented. In the event that any changes of the proposed project are planned, the opinions and recommendations contained in this report should be reviewed and the report modified or supplemented as necessary.

GEOMAT should also be retained to provide services during excavation, grading, foundation, and construction phases of the work. Observation of footing excavations should be performed prior to placement of reinforcing and concrete to confirm that satisfactory bearing materials are present and is considered a necessary part of continuing geotechnical engineering services for the project. Construction testing, including field and laboratory evaluation of fill, backfill, pavement materials, concrete and steel should be performed to determine whether applicable project requirements have been met.

The analyses and recommendations in this report are based in part upon data obtained from the field exploration. The nature and extent of variations beyond the location of test borings may not become evident until construction. If variations then appear evident, it may be necessary to re-evaluate the recommendations of this report.

Our professional services were performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical engineers practicing in this or similar localities at the same time. No warranty, express or implied, is intended or made. We prepared the report as an aid in the design of the proposed project. This report is not a bidding document. Any contractor reviewing this report must draw his own conclusions regarding site conditions and specific construction equipment and techniques to be used on this project.

This report is for the exclusive purpose of providing geotechnical engineering and/or testing information and recommendations. The scope of services for this project does not include, either specifically or by implication, any environmental assessment of the site or identification of contaminated or hazardous materials or conditions. If the owner is concerned about the potential for such contamination, other studies should be undertaken. This report has also not addressed any geologic hazards that may exist on or near the site.

This report may be used only by the Client and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on and off site), or other factors may change over time and additional work may be required with the passage of time. Any party, other than the Client, who wishes to use this report, shall notify GEOMAT in writing of such intended use. Based on the intended use of the report, GEOMAT may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements, by the Client or anyone else, will release GEOMAT from any liability resulting from the use of this report by an unauthorized party.

Appendix A

Approximate

Not to Scale

VICINITY PLAN

Boring Locations (approximate)

GEOMAT Project No. 232-4570

Date of Exploration: August 28, 2023

PROJECT

Williams Arroyo Gabion Wall Repair
Aztec, New Mexico

GEOMAT INC.

GEOMAT INC
915 Malta Ave
Farmington, NM 87401
Tel (505) 327-7928
Fax (505) 326-5721

Boring B-1

Project Name: Williams Arroyo Gabion Wall Repair
Project Number: 232-4570
Client: Aqua Strategies
Site Location: Aztec, New Mexico
Rig Type: CME-55
Drilling Method: 7.25" O.D. Hollow Stem Auger
Sampling Method: Ring and Split spoon samples
Hammer Weight: 140 lbs
Hammer Fall: 30 inches

Date Drilled: 8/28/2023
Latitude: Not Determined
Longitude: Not Determined
Elevation: Not Determined
Boring Location: See Site Plan
Groundwater Depth: 5 ½
Logged By: CB
Remarks: None

Laboratory Results				Blows per 6"	Sample Type & Length (in)	Symbol	Material Type	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
							TS		1	Grass and topsoil approx. thickness 6"
										Silty SAND, light brown to brown, fine- to coarse-grained, very loose, damp
97.1	-	-	14.1	3-4	R		SM		2 3 4	
				2-1-1	SS				5	sandy lens
										▽ wet
									6	
										Lean CLAY, light gray/brown, soft, wet
81.7	-	-	33.8	2-3	R		CL		7 8	
									9	gravel lens
							SP			Poorly Graded SAND, brown/gray, fine- to medium-grained, rounded particles, wet
				2-2-12	SS				10	
										Well Graded GRAVEL with silt, tan to brown/white, fine- to coarse-grained, wet
									11 12	
							GW-GM		13 14	
				4-5-10	SS				15	gravel and cobble lens
									16	
									17	Total Depth 16 ½ feet
									18 19 20	

A = Auger Cuttings R = Ring-Lined Barrel Sampler SS = Split Spoon GRAB = Manual Grab Sample D = Disturbed Bulk Sample SH = Shelby Tube Sampler

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GEOMAT INC
915 Malta Ave
Farmington, NM 87401
Tel (505) 327-7928
Fax (505) 326-5721

Boring B-2

Project Name: Williams Arroyo Gabion Wall Repair
Project Number: 232-4570
Client: Aqua Strategies
Site Location: Aztec, New Mexico
Rig Type: CME-55
Drilling Method: 7.25" O.D. Hollow Stem Auger
Sampling Method: Ring and Split spoon samples
Hammer Weight: 140 lbs
Hammer Fall: 30 inches

Date Drilled: 8/28/2023
Latitude: Not Determined
Longitude: Not Determined
Elevation: Not Determined
Boring Location: See Site Plan
Groundwater Depth: 6
Logged By: CB
Remarks: None

Laboratory Results: Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Symbol	Material Type	Soil Symbol	Depth (ft)	Soil Description
							TS			Grass and topsoil approx. thickness 6"
-	30	NP	17.5	2-3-2	SS		SM		1 2 3 4	Silty SAND, brown/gray, fine- to medium-grained, very loose, slightly damp to damp
-	51	NP	31.4	1-1-2	SS		ML		5 6 7	Sandy SILT, brown to gray, soft, damp to wet
				2-8-16	SS		SM		8 9 10 11	Silty SAND with gravel, tan to brown/white, fine- to coarse-grained, dense, wet
				39-20-21	SS					
				15-12-35	SS		GP		12 13 14	Gravels and cobbles
									15	auger refusal on gravel and cobbles Total Depth 14 feet

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GEOMAT INC
915 Malta Ave
Farmington, NM 87401
Tel (505) 327-7928
Fax (505) 326-5721

Boring B-3

Project Name: Williams Arroyo Gabion Wall Repair
Project Number: 232-4570
Client: Aqua Strategies
Site Location: Aztec, New Mexico
Rig Type: CME-55
Drilling Method: 7.25" O.D. Hollow Stem Auger
Sampling Method: Ring and Split spoon samples
Hammer Weight: 140 lbs
Hammer Fall: 30 inches

Date Drilled: 8/28/2023
Latitude: Not Determined
Longitude: Not Determined
Elevation: Not Determined
Boring Location: See Site Plan
Groundwater Depth: 5 ½
Logged By: CB
Remarks: None

Laboratory Results				Blows per 6"	Sample Type & Length (in)	Symbol	Material Type	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
							SM		1	Silty SAND, light brown to tan, fine- to coarse-grained, dry to slightly damp
104.8	-	-	11.8	2-3	R A		SC		2 3 4	Clayey SAND, brown/gray, fine- to coarse-grained, very loose to medium dense, slightly damp to damp gravel lens
				1-4-11	SS				5	▽
							CL		6	Sandy Lean CLAY with gravel, tan to brown/gray, stiff, moist to wet
							SM		7	Silty SAND with gravel, brown, fine- to coarse-grained, wet
				13-15-50/5"	SS				8	
							GW-GM		9	Well Graded GRAVEL with silt, brown/gray, fine- to coarse-grained, wet
										Gravels and cobbles
				13-13-11	SS		GP		10 11	
									12	auger refusal on gravel and cobbles Total Depth 11 ½ feet
									13 14 15	

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GEOMAT INC
915 Malta Ave
Farmington, NM 87401
Tel (505) 327-7928
Fax (505) 326-5721

Boring B-4

Project Name: Williams Arroyo Gabion Wall Repair
Project Number: 232-4570
Client: Aqua Strategies
Site Location: Aztec, New Mexico
Rig Type: CME-55
Drilling Method: 7.25" O.D. Hollow Stem Auger
Sampling Method: Ring and Split spoon samples
Hammer Weight: 140 lbs
Hammer Fall: 30 inches

Date Drilled: 8/28/2023
Latitude: Not Determined
Longitude: Not Determined
Elevation: Not Determined
Boring Location: See Site Plan
Groundwater Depth: 7
Logged By: CB
Remarks: None

Laboratory Results: Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Symbol	Material Type	Soil Symbol	Depth (ft)	Soil Description
									1	Silty SAND, light brown to brown/tan, fine- to coarse-grained, very loose to medium dense, dry to slightly damp
									2	
										gravel and cobbles lens
				1-1-1	SS		SM		3	no recovery
									4	
					GRAB					
				8-20	R				5	no recovery
									6	
										Well Graded GRAVEL with silt, brown/gray, fine- to coarse-grained, damp to wet
							GW-GM		7	▽
				50/4"	SS				8	
										Gravels and cobbles
							GP		9	no recovery
				50/½"	SS				10	
									11	auger refusal on gravel and cobbles Total Depth 10 feet
									12	
									13	
									14	
									15	

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GEOMAT INC
915 Malta Ave
Farmington, NM 87401
Tel (505) 327-7928
Fax (505) 326-5721

Boring B-5

Project Name: Williams Arroyo Gabion Wall Repair
Project Number: 232-4570
Client: Aqua Strategies
Site Location: Aztec, New Mexico
Rig Type: CME-55
Drilling Method: 7.25" O.D. Hollow Stem Auger
Sampling Method: Ring and Split spoon samples
Hammer Weight: 140 lbs
Hammer Fall: 30 inches

Date Drilled: 8/28/2023
Latitude: Not Determined
Longitude: Not Determined
Elevation: Not Determined
Boring Location: See Site Plan
Groundwater Depth: Not Encountered
Logged By: CB
Remarks: None

Laboratory Results				Blows per 6"	Sample Type & Length (in)	Symbol	Material Type	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
				43-41-34	SS		GC		1	Clayey GRAVEL with cobbles and sand, brown/tan/gray, fine- to coarse-grained, dry to slightly damp
									2	
									3	
					GRAB				4	
				50/6"	SS				5	
									6	auger refusal on gravel and cobbles Total Depth 5 ½ feet
									7	
									8	
									9	
									10	

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GEOMAT INC
915 Malta Ave
Farmington, NM 87401
Tel (505) 327-7928
Fax (505) 326-5721

Boring B-6

Project Name: Williams Arroyo Gabion Wall Repair
Project Number: 232-4570
Client: Aqua Strategies
Site Location: Aztec, New Mexico
Rig Type: CME-55
Drilling Method: 7.25" O.D. Hollow Stem Auger
Sampling Method: Ring and Split spoon samples
Hammer Weight: 140 lbs
Hammer Fall: 30 inches

Date Drilled: 8/28/2023
Latitude: Not Determined
Longitude: Not Determined
Elevation: Not Determined
Boring Location: See Site Plan
Groundwater Depth: Not Encountered
Logged By: CB
Remarks: None

Laboratory Results				Blows per 6"	Sample Type & Length (in)	Symbol	Material Type	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
-	24	15	10.0	5-8-9	SS		GC		1 2 3 4	Clayey GRAVEL with cobbles and sand, brown/tan/gray, fine- to coarse-grained, dry to slightly damp
				12-10-8	SS				5 6	
				50/2"	SS				7	no recovery
									8 9 10	auger refusal on gravel and cobbles Total Depth 7 feet

A = Auger Cuttings R = Ring-Lined Barrel Sampler SS = Split Spoon GRAB = Manual Grab Sample D = Disturbed Bulk Sample SH = Shelby Tube Sampler

GEOMAT 232-4570.GPJ GEOMAT.GDT 10/4/23

UNIFIED SOIL CLASSIFICATION SYSTEM					CONSISTENCY OR RELATIVE DENSITY CRITERIA
Major Divisions			Group Symbols	Typical Names	
Coarse-Grained Soils More than 50% retained on No. 200 sieve	**Gravels** 50% or more of coarse fraction retained on No. 4 sieve	Clean Gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	Standard Penetration Test Density of Granular Soils
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines	Penetration Resistance, N (blows/ft.) — Relative Density
		Gravels with Fines	GM	Silty gravels, gravel-sand-silt mixtures	0-4 Very Loose
			GC	Clayey gravels, gravel-sand-clay mixtures	5-10 Loose
	Sands More than 50% of coarse fraction passes No. 4 sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines	11-30 Medium Dense
			SP	Poorly graded sands and gravelly sands, little or no fines	31-50 Dense
		Sands with Fines	SM	Silty sands, sand-silt mixtures	>50 Very Dense
			SC	Clayey sands, sand-clay mixtures	Standard Penetration Test Density of Fine-Grained Soils
Fine-Grained Soils 50% or more passes No. 200 sieve	**Silts and Clays** Liquid Limit 50 or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands	Penetration Resistance, N (blows/ft.) — Consistency — Unconfined Compressive Strength (Tons/ft2)
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	<2 Very Soft <0.25
			OL	Organic silts and organic silty clays of low plasticity	2-4 Soft 0.25-0.50
	Silts and Clays Liquid Limit greater than 50		MH	Inorganic silts, micaceous or diatomaceous free sands or silts, elastic silts	4-8 Firm 0.50-1.00
			CH	Inorganic clays of high plasticity, fat clays	8-15 Stiff 1.00-2.00
			OH	Organic clays of medium to high plasticity	15-30 Very Stiff 2.00-4.00
Highly Organic Soils			PT	Peat, mucic & other highly organic soils	>30 Hard >4.0

U.S. Standard Sieve Sizes

>12"	12"	3"	3/4"	#4	#10	#40	#200

Boulders	Cobbles	Gravel		Sand			Silt or Clay
		coarse	fine	coarse	medium	fine	

MOISTURE CONDITIONS	
Dry	Absence of moist, dusty, dry to the touch
Slightly Damp	Below optimum moisture content for compaction
Moist	Near optimum moisture content, will moisten the hand
Very Moist	Above optimum moisture content
Wet	Visible free water, below water table

MATERIAL QUANTITY	
trace	0-5%
few	5-10%
little	10-25%
some	25-45%
mostly	50-100%

OTHER SYMBOLS
R Ring Sample
S SPT Sample
B Bulk Sample
▼ Ground Water

BASIC LOG FORMAT:

Group name, Group symbol, (grain size), color, moisture, consistency or relative density. Additional comments: odor, presence of roots, mica, gypsum, coarse particles, etc.

EXAMPLE:

SILTY SAND w/trace silt (SM-SP), Brown, loose to med. Dense, fine to medium grained, damp

UNIFIED SOIL CLASSIFICATION SYSTEM

TEST DRILLING EQUIPMENT & PROCEDURES

Description of Subsurface Exploration Methods

Drilling Equipment – Truck-mounted drill rigs powered with gasoline or diesel engines are used in advancing test borings. Drilling through soil or softer rock is performed with hollow-stem auger or continuous flight auger. Carbide insert teeth are normally used on bits to penetrate soft rock or very strongly cemented soils which require blasting or very heavy equipment for excavation. Where refusal is experienced in auger drilling, the holes are sometimes advanced with tricone gear bits and NX rods using water or air as a drilling fluid.

Coring Equipment – Portable electric core drills are used when recovery of asphalt or concrete cores is necessary. The core drill is equipped with either a 4" or 6" diameter diamond core barrel. Water is generally used as a drilling fluid to facilitate cooling and removal of cuttings from the annulus.

Sampling Procedures - Dynamically driven tube samples are usually obtained at selected intervals in the borings by the ASTM D1586 test procedure. In most cases, 2" outside diameter, 1 3/8" inside diameter, samplers are used to obtain the standard penetration resistance. "Undisturbed" samples of firmer soils are often obtained with 3" outside diameter samplers lined with 2.42" inside diameter brass rings. The driving energy is generally recorded as the number of blows of a 140-pound, 30-inch free fall drop hammer required to advance the samplers in 6-inch increments. These values are expressed in blows per foot on the boring logs. However, in stratified soils, driving resistance is sometimes recorded in 2- or 3-inch increments so that soil changes and the presence of scattered gravel or cemented layers can be readily detected and the realistic penetration values obtained for consideration in design. "Undisturbed" sampling of softer soils is sometimes performed with thin-walled Shelby tubes (ASTM D1587). Tube samples are labeled and placed in watertight containers to maintain field moisture contents for testing. When necessary for testing, larger bulk samples are taken from auger cuttings. Where samples of rock are required, they are obtained by NX diamond core drilling (ASTM D2113).

Boring Records - Drilling operations are directed by our field engineer or geologist who examines soil recovery and prepares boring logs. Soils are visually classified in accordance with the Unified Soil Classification System (ASTM D2487), with appropriate group symbols being shown on the logs.

Gabion Wall near at Boring B-2
View Towards the South

Drill Rig at Boring B-1
View Towards the North

Damaged Gabion Wall near Boring B-3
View Towards the South

Piping behind Damaged Gabion Wall near Boring B-3
View Towards the East

Damaged Gabion Wall near Boring B-3
View Towards the North

Fill Behind Gabion Wall near Boring B-3
View Towards the East

Gabion Wall near Boring B-4
View Towards the Northeast

Riverview of Gabion Wall near Boring B-4
View Towards the East

Riverview of Gabion Wall near Boring B-4
View Towards the East

Riverview of Gabion Wall near Boring B-5
View Towards the East

Appendix B

LAB NO.	BORING NO.	SAMPLE DEPTH (ft)	SIEVE ANALYSIS, CUMULATIVE PERCENT PASSING (%)												ATTERBERG LIMITS			ASTM D1557		SWELL (%)	MOISTURE CONTENT (%)	DENSITY		CLASSIFICATION
			¾"	½"	⅜"	No. 4	No. 8	No. 10	No. 16	No. 30	No. 40	No. 50	No. 100	No. 200	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	DENSITY	MOISTURE			WET (pcf)	DRY (pcf)	
15279	B-1	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.1	110.8	97.1	Clayey **SAND** (SC)
15280*	B-1	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Clayey **SAND** (SC)
15281	B-1	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33.8	109.3	81.7	Lean **CLAY** (CL)
15282	B-2	2.5	-	-	-	-	-	-	-	-	-	-	-	30	NLL	NPL	NP	-	-	-	17.5	-	-	Silty **SAND** (SM)
15283	B-2	5	-	-	-	-	-	-	-	-	-	-	-	51	NLL	NPL	NP	-	-	-	31.4	-	-	Sandy **SILT** (ML)
15284*	B-2	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Silty **SAND** (SM)
15285	B-3	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.8	117.2	104.8	Clayey **SAND** (SC)
15286*	B-3	3 to 5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Clayey **SAND** (SC)
15287	B-6	2.5	-	-	-	-	-	-	-	-	-	-	-	24	32	17	15	-	-	-	10.0	-	-	Clayey **SAND** (SC)
15288*	Combined B-4 thru B-6	0 to 5	100	98	95	91	89	88	86	76	68	60	48	38	35	19	16	128.1	7.6	6.2	-	-	-	Clayey **SAND** (SC)

NLL = No Liquid Limit
NPL = No Plastic Limit
NP = Non-Plastic
* = pH Testing

GEOMAT INC.

SUMMARY OF SOIL TESTS
Page 1 of 1

Project Name	Williams Arroyo Gabion Wall Repair
Project No.	232-4570
Location	Aztec, New Mexico
Date(s) of Exploration	8/28/2023

LABORATORY TESTING PROCEDURES

Laboratory testing is performed by trained personnel in our accredited laboratory or may be subcontracted by GEOMAT through a qualified outside laboratory if necessary. Actual types and quantities of tests performed for any project will be dependent upon subsurface conditions encountered and specific design requirements.

The following is an abbreviated table of laboratory testing that may be performed by GEOMAT with the applicable standards listed. Testing for a specific project may include all or a selected subset of the laboratory work listed. Laboratory testing beyond those listed may be available and could be incorporated into the project scope at the discretion of GEOMAT.

PROCEDURE	ASTM	AASHTO
Moisture Content	ASTM D2216	AASHTO T 265
Sieve Analysis	ASTM C136	AASHTO T 27
Fines Content	ASTM D1140	T 11
Hydrometer	ASTM D422	T 88
Atterberg Limits	ASTM D4318	AASHTO T 89/T 90
Soil Compression/Expansion	ASTM D2435	T 216
Soil Classification	ASTM D2487	M 145
Direct Shear	ASTM D3080	T 236
Unconfined Compressive Strength of Soils	ASTM D2166	T 208
Unconfined Compressive Strength of Rock Cores	ASTM D4543	-

Appendix C

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org