SANTA FE COUNTY
GLORIETA FIRE STATION

IFB 2015-0364-FD/IC

ADDENDUM 3

July 17, 2015

Dear Offerors,

This addendum is issued to reflect the following immediately. It shall be the responsibility of interested offeror to adhere to any changes or revisions to the IFB as identified in this Addendum No.3. This documentation shall become permanent and made part of the departmental files.

Clarification: The Procurement Manager for this project is no longer Marissa Yniguez. Please direct all questions and/or clarifications in writing to Maricela Martinez, Procurement Manager at mcmartinez@santafecountynm.gov.

GEOTECHNICAL REPORT

Please include the attached Geotechnical Report to IFB packet 2015-0364-FD/IC as Appendix F.

Please add this Addendum 3 to the original bid documents and refer to bid documents, hereto as such. This and all subsequent addenda will become part of any resulting contract documents and have effects as if original issued. All other unaffected sections will have their original interpretation and remain in full force and effect.

Bidders are reminded that any questions or need for clarification must be addressed to Maricela Martinez, Senior Procurement Specialist at mcmartinez@santafecountynm.gov

EARTHWORKS ENGINEERING GROUP, L.L.C.
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GEOTECHNICAL INVESTIGATION

GLORIETA FIRE STATION
SANTA FE COUNTY, NM

EEG Project No.: A14-422

Prepared for:

SANTA FE COUNTY

Prepared by

Lee Hopkins, Geologist

Earthworks Engineering Group, LLC.

Reviewed by

Dave Liebelt, P.E.

DAVID K. LIEBELT
NEW MEXICO
14069
REGISTERED PROFESSIONAL ENGINEER

July 3, 2014

SUMMARY

The information presented in this section is a partial summary intended for reference use only. This information is intended for use only in conjunction with the complete geotechnical investigation report. Significant information contained in the complete geotechnical report may not be present here.

ON-SITE SOILS

The test holes encountered low-plasticity clay soils. The clays were dry to slightly moist and medium stiff to stiff in the upper 10 feet as measured by SPT. The clays were medium moist and very stiff at greater depths. Neither groundwater nor bedrock were not encountered in the test holes to the maximum depth of exploration, approximately 22 feet.

EARTHWORK

The near-surface clay soils are not suitable for support of the building and should be remediated as follows: The surface soils should be excavated to allow for the placement of a minimum of 7 feet of engineered fill as measured from finished pad grade. Soil removal should extend a minimum of 5 feet laterally beyond foundation edges or to the lateral extent of concrete flatwork, whichever is greater. The site may then be brought to design grade with engineered fill. Excavated site soils will require 50/50 blending with imported granular materials prior to reuse as engineered fill. This office must perform inspections and testing during construction as detailed in the Earthwork Section of this report and the attached Earthwork Certification Checklist.

FOUNDATIONS AND SLABS

The building may be founded on either conventional shallow foundations with an isolated concrete slab-on-grade ground floor, or a monolithic style slab with turned-down edges. Foundation widths should meet or exceed code minimum widths (12 inches). The base of exterior/perimeter foundations should be embedded a minimum of 24 inches below lowest adjacent grade and may be designed for an allowable bearing capacity of 2000 psf. Interior foundations/thickened slabs should be embedded a minimum of 12 inches below grade and may be designed for an allowable bearing capacity of 1500 psf. These allowable bearing capacities are based on the assumption that the remedial earthwork recommendations herein are followed and that foundations are supported on a minimum of 5 feet of engineered fill. Concrete floor slabs should be supported by 7 feet of engineered fill.

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INTRODUCTION

This report presents the results of our geotechnical investigation for the Glorieta Fire Station to be built on the Old Denver Highway/I-25 West Frontage Road near Glorieta, Santa Fe County, New Mexico.

The investigation was performed to determine the site subsurface conditions, and based on the conditions encountered, develop geotechnical recommendations for:

- Foundation Design
- Slabs-on-Grade
- Retaining Walls
- Site Grading
- Earthwork Construction
- Onsite Asphalt Pavements
- Onsite Leach Fields

The conclusions and recommendations presented are based on information provided by the client regarding the proposed construction, subsurface conditions disclosed by the test holes, laboratory testing, and the local standards of our profession at the time this report was prepared. It is assumed that all recommendations herein will be followed.

PROJECT DESCRIPTION

The project will consist of construction of a fire station building and associated pavements, etc.

We anticipate the building will utilize conventional frame construction. The building will be a maximum of 2 stories in height. With the exception of elevator pit(s), no below-grade structures or basements are anticipated.

For the purposes of this report, column and strip loads (dead + live) were estimated as not exceeding 20 kips and 2 kips per linear foot. If actual loads are significantly different than those assumed, this office should be contacted to verify the recommendations presented herein remain applicable.

If structure loads or configuration differ from those indicated in this report, this office should be notified.

SOIL CONDITIONS

To explore the site subsurface conditions 4 test holes were excavated on the site with a truck-mounted CME Model 55 drill rig using hollow stem auger drilling techniques. Standard penetration testing was performed with a cathead-assisted SPT safety hammer (140 lb./30 inch free-fall).

The approximate test hole locations are presented on the attached Site Plan, Figure 1. Detailed logs of the test holes are presented on Figures 2 through 5. Soil Index test results are summarized on Table 4.

The test holes encountered low-plasticity clay soils. The clays were dry to slightly moist and medium stiff to stiff in the upper 10 feet as measured by SPT. The clays were medium moist and very stiff at greater depths.

Groundwater was not encountered in the test holes to the maximum depth of exploration, approximately 22 feet.

Excavated site soils will require 50/50 blending with imported granular materials prior to reuse as engineered fill. Material specifications for engineered fill are detailed in the Earthwork section of this report.

The subsurface conditions presented above allow observation of a very small portion of the soils below the site. Significant variation in subsurface conditions may occur across the site that was not disclosed by the test holes.

FOUNDATION RECOMMENDATIONS

The near-surface clay soils are not suitable for support of the building and should be remediated as follows: The surface soils should be excavated to allow for the placement of a minimum of 7 feet of engineered fill as measured from finished pad grade. Soil removal should extend a minimum of 5 feet laterally beyond foundation edges or to the lateral extent of concrete flatwork, whichever is greater. The site may then be brought to design grade with engineered fill. This office must perform inspections and testing during earthwork construction.

If the recommendations herein are followed particularly those concerning earthwork, grading, drainage and landscaping, the building may be founded on either conventional shallow foundations with an isolated concrete slab-on-grade ground floor, or a monolithic style slab with turned-down edges.

Foundation widths should meet or exceed minimum code widths (12 inches). The base of exterior/perimeter foundations should be embedded a minimum of 24 inches below lowest adjacent grade and may be designed for an allowable bearing capacity of 2000 psf. Interior foundations/thickened slabs should be embedded a minimum of 12 inches below grade and may be designed for an allowable bearing capacity of 1500 psf.

These allowable bearing capacities are based on the assumption that the remedial earthwork recommendations herein are followed and that foundations will be supported by a minimum of 5 feet of engineered fill. The allowable bearing capacity values presented herein may be increased by 1/3 for short term loading conditions due to wind and earthquakes. Foundation widths may need to be larger than the minimum widths stated herein based on actual structure design loads. Foundations should be designed by a qualified structural engineer.

Lateral foundation loads will be resisted by a combination of passive soil pressure against the sides of foundations and friction along the base. A passive soil resistance of 300 pounds per cubic foot may be utilized for design. Frictional resistance may be determined by multiplying foundation dead load by a coefficient of friction of 0.40.

Foundations designed and constructed as described herein are not anticipated to experience movement of more than 1 inch. This estimate is based on the assumption the site soils will not be allowed to increase in moisture content and that all recommendations presented in this report will be fully implemented. Additional movement and distress may occur if the soils are allowed to increase in moisture content or if the recommendations presented herein are not followed.

RETAINING WALLS

Retaining walls constructed in association with this project are not anticipated to exceed 5 feet in height. The values presented below do not include surcharge loads or hydrostatic pressures. If taller walls, surcharge loads, or unusual conditions such as sloping backfill are anticipated, this office should be contacted for additional recommendations.

The base of retaining wall foundations should be embedded a minimum of 24 inches below lowest adjacent grade. Soil cover over the foundation toe should be protected from erosion.

Retaining wall foundations supporting building walls, etc. should bear on engineered fill as discussed in the Foundations and Earthwork sections of this report and may be designed for a maximum toe bearing capacity of 2000 psf. Retaining wall foundations not designed to support additional structural loads such as building walls, may bear on natural soils and may be designed for a maximum toe bearing capacity of 1500 psf.

Walls should be designed to resist Active Earth Pressure calculated as an equivalent fluid pressure from a fluid having a unit weight of 40 pounds per cubic foot. If the wall is restrained against rotating the wall should be designed for an At-Rest Earth Pressure calculated as an equivalent fluid pressure from a fluid having a unit weight of 60 pounds per cubic foot.

Wall movement will be resisted by Passive Earth Pressure at the toe calculated as an equivalent fluid pressure from a fluid having a unit weight of 300 pounds per cubic foot. Friction along the base can be calculated as the normal force multiplied by a friction factor of 0.40.

The backside of retaining walls should be waterproofed to prevent moisture infiltration. A french drain or gravel-packed weep holes should be installed behind the wall to help prevent hydrostatic forces from developing. Water should drain rapidly.

Retaining wall backfill should be treated as engineered fill. Retaining walls should be backfilled with an approved granular material. Care should be taken during compaction of retaining wall backfill to avoid stressing and deflecting the walls.

CONCRETE SLABS AND EXTERIOR FLATWORK

We anticipate the building(s) will have concrete slab-on-grade ground floors. Concrete slabs should be supported on 7 feet of engineered fill as detailed in the Foundation and Earthwork Sections of this report.

Concrete slabs-on-grade should be designed by a qualified structural engineer. Concrete floors should be designed, constructed and jointed as discussed in the ACI Committee Report 302.1R-04 "Guide for Concrete Floor and Slab Construction" and/or 302.2R-06 "Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials." If moisture-sensitive floorings are planned, the slab should be underlain by an impermeable moisture vapor barrier. Vapor barriers should conform to an ASTM E 1745 Class A material, with a minimum 10-mil thickness. Vapor barriers should be installed in accordance with ASTM E 1643. Care should be taken during construction to minimize damage to the vapor barrier. If a moisture barrier is utilized, the slab reinforcement should be designed to resist shrinkage and curling.

Concrete slabs-on-grade and exterior flatwork should be isolated from all utility lines. Some movement should be expected to occur between the building and adjacent exterior concrete flatwork. Joints and cracks in concrete flatwork should be sealed as discussed in the Maintenance section of this report.

Sidewalks and other areas of concrete flatwork that will not experience vehicular traffic should be a minimum of 4-inches in thickness.

Concrete pavements in front of dumpsters and truck docks should be a minimum of 6-inches in thickness, conform to an approved minimum 4000 psi mix design, and be minimally reinforced with #4 steel reinforcing bars at 12-inches on center. Concrete pavements should be underlain by a minimum of 6-inches of aggregate base course.

All exterior concrete (exposed to weather) should conform to an approved air entrained mix design having between 4.5% and 7.5% air. This also applies to interior slabs, if it is anticipated that they will be placed or left unprotected during winter months.

This office should be allowed the opportunity to review project plans and material submittals prior to the start of construction.

ASPHALT PAVEMENTS

We anticipate the site driveways and main parking areas will have asphalt pavement sections.

The pavement section(s) presented below are based on NMSHTD design procedures.

Based on the conditions encountered in the test holes, on-site surface soils are classified as AASHTO A-4 soils. An estimated R-Value of 20 was utilized for design. The following additional design values were utilized:

Design Life	20-Years
Serviceability Index	1.5
Regional Factor	2.5
Asphalt Structural Coefficient	0.42
Aggregate Base Course Structural Coefficient	0.11

Table 1: Assumed Asphalt Pavement Design Coefficients

We anticipate traffic will consist primarily of passenger vehicles with some fire trucks and ambulances. A daily 18-kip Equivalent Single Axle Load (ESAL) of ≤2.0 were estimated for site pavements. The following asphalt pavement section is recommended:

Area	Pavement Section	SN	Daily ESALS
Driveways & Parking	3 in. Asphalt over 6 in. ABC	1.9	≤ 2.0

Table 2: Recommended Asphalt Pavement Sections

If actual traffic loads are anticipated to differ from these assumptions, this office should be contacted for additional recommendations.

Prior to constructing pavements, the ground surface should be prepared and compacted as detailed in the Earthwork section of this report. The site should be graded to prevent saturation of pavement subgrade soils. The soils ability to support pavement will be significantly reduced should they become wetted.

Aggregate Base course and Sub-Base/Select Fill should be compacted to a minimum of 95% of maximum density as determined by ASTM D-1557. Asphaltic Concrete should exhibit a minimum Marshall stability of 1800 pounds and should be compacted to between 93% and 97% of maximum theoretical density.

Periodic pavement maintenance will be required over the design life. Crack cleaning and sealing should be performed to extend pavement life. Seal coating may also be desired after the pavement has been in service for several years to improve appearances and increase pavement life.

EARTHWORK

STRIPPING AND GRUBBING

Prior to performing earthwork, all borrow and fill areas should be stripped of vegetation and deleterious materials. Strippings should be hauled offsite.

NATURAL GROUND PREP

We anticipate the site soils may be excavated with conventional earthwork equipment. Following all cut earthwork, the natural soils should be scarified to a depth of 8 inches and moisture conditioned to optimum moisture content (+/- 3%). The surface of the natural soils should then be compacted to a minimum of 95% of maximum dry density as determined by ASTM D-1557.

ENGINEERED FILL SPECIFICATIONS

Excavated site soils will require 50/50 blending with imported granular materials prior to reuse as engineered fill. Sieve analysis and Atterberg Limits tests will be required prior to acceptance of proposed fill materials.

Engineered fill soil should have a Plasticity Index of 10 or less and should not contain any frozen, organic, or decomposable material. Cobbles, boulders and rock fragments should not be placed within engineered fills. Engineered fill should meet the following gradation:

U.S. SIEVE SIZE	%-PASSING
1½-INCH	100
NO. 4	70-100
NO. 200	10-40

Table 3: Fill Specifications

Engineered fill should be stockpiled on site, moisture conditioned, and blended to a homogeneous mixture prior to use.

FILL PLACEMENT AND COMPACTION

Engineered fill should be placed in horizontal lifts a maximum of 8 inches in loose thickness, moisture conditioned to optimum moisture content (+/- 3%), and mechanically compacted. Lift thickness may need to be reduced based on the size of the compaction equipment utilized. All engineered fill should be compacted to a minimum of 95% of maximum dry density as determined by ASTM D-1557.

UTILITIES

Care should be taken when installing utilities that the prepared building pad is not overly disturbed. Trenches should be no wider than is necessary for proper installation of utilities. Utility line trenches should not be located parallel and below/immediately adjacent to foundations.

If water or sewer line leaks occur, differential movement of the structure may result. Prior to backfilling utility line trenches, all water and sewer lines should be pressure checked for leaks. Any leaks found should be repaired.

Per the APWA Manual of Standard Specifications 2007 Edition, Section 33-05-20-3.3, the maximum particle size allowable within the pipe zone is ¾-inches for plastic pipes. The New Mexico Standard Specifications for Public Works Construction allows for gravel up to twice that size (1½ inches). If the onsite soils cannot be milled or screened to these specifications then we recommend that buried utilities be surrounded by approximately one cubic foot of nominal 3/8-inch "pea gravel" in the pipe zone.

The excavation spoils may be reused as trench backfill provided that the minimum pipe bedding and cover requirements are fulfilled as described above. Cobbles, boulders and rock fragments should not be placed within pipe bedding or pipe backfills.

To reduce the possibility of breaking utility lines, compaction of pipe backfill should be performed with light, hand-operated equipment. In order to achieve compaction, it will be necessary to place backfill in thinner lifts than would normally be necessary. The fill soils in trenches should be compacted to a minimum of 95% of maximum dry density as determined by ASTM D-1557, except where applying this compactive effort may damage pipes or insulation, in which case the backfill should be compacted to a minimum 90%.

FOUNDATION EXCAVATIONS

Caving and raveling of excavation sidewalls should be expected. Prior to pouring concrete, foundation excavations should be cleaned of any slough, loose soil, or debris. Footing excavations should be scarified and moisture conditioned to optimum moisture content (+/- 3%). Foundation excavations should be compacted to a minimum of 95% of maximum dry density as determined by ASTM D-1557.

OBSERVATION AND TESTING

Compaction testing must be performed by this office during earthwork construction to verify the compaction requirements outlined in this report have been met.

Modified Proctor testing (ASTM D-1557) will be necessary to determine the maximum dry density and optimum moisture content of the natural soils at the base of excavations. The surface of natural soils should be tested for compaction prior to placing engineered fill.

Engineered fill material should be approved by this office prior to use. Following acceptance of the fill material, Modified Proctor testing (ASTM D-1557) will be necessary to determine the maximum dry density and optimum moisture content. Compaction testing should be performed on engineered fill at a minimum of every other lift until finished grade is reached.

Testing of utility line trenches for compaction should be performed at a minimum of every foot of compacted backfill thickness.

The base of footing excavations and finished pad grade should be tested prior to placing reinforcement and pouring concrete. Compaction testing cannot be performed if reinforcement has been installed and will need to be removed to perform testing.

EARTHWORK CERTIFICATION

An earthwork certification letter may be requested **prior to** placing concrete.

Earthwork certification will only be provided if all recommendations presented herein are followed. It is up to the client to read and understand the recommendations prior to starting construction. Earthworks Engineering Group will answer all questions the client may have concerning these recommendations.

Earthwork certification will be valid for 5 days following the last inspection by this office. Foundations should be poured during this time-period. The site must be re-inspected if foundations are not poured during this time-period or if site conditions change for any reason following the previous inspection.

LEACH FIELDS

Preliminary design information for on-site liquid waste disposal systems may be inferred from the boreholes, in accordance with the regulations set forth by the State of New Mexico code for wastewater disposal in NMAC 20.7.3.

The purpose of this evaluation was to determine general suitability of the site and provide a preliminary soil application rate and suggested system type for on-site liquid waste disposal systems. We anticipate that the final design of the disposal system and sizing of the infiltration area will be performed by others.

The test holes encountered approximately 22 feet of soil. Neither bedrock nor groundwater was encountered in the test holes. Based on the test holes, neither bedrock nor groundwater will present a limiting condition for leach field design.

The site appears to be suitable for primary treatment, conventional disposal systems. The site soils are Sandy Loam/Loam/Silt Loam, which correspond to design Soil Types II/III. An Application Rate (AR) of 2.00 ft^2/gal/day may be used for designing the leach fields.

Should conditions be encountered during construction of the disposal system that differ from those described herein, this office should be contacted for supplemental recommendations.

DRAINAGE, GRADING, AND LANDSCAPING

Site grading should comply with the 2009 IBC Section 1804.3. A grading and drainage plan should be designed by a qualified civil engineer. To reduce the risk of moisture induced movement the site should be graded to rapidly drain away from structures. We suggest a minimum 5 percent gradient within at least the first 10 feet away from structures in areas not protected by sidewalks and pavement. Planters, sidewalks and yard walls should not "dam" water adjacent to structures.

A perimeter barrier should be installed at the ground surface around the building to prevent surface moisture infiltration adjacent to foundations. The barrier should extend out a minimum of five feet and can be any durable, impermeable material such as plastic sheeting under gravel, or concrete paving.

Roof gutters and downspouts should be utilized on the building(s). Roof runoff must be collected and piped into retention basins. If drainage swales are utilized to do this, swales must be lined with a durable impermeable membrane such as 30-45 mil PVC, Polyethylene, or EDPM. Surface water should run off rapidly.

Landscaping adjacent to structures should be designed and constructed to minimize the potential for wetting of soils supporting the proposed facilities. We suggest utilizing a xeriscape design. Watering should be carefully controlled to prevent over watering. Sprinkler lines and drip irrigation mains should be located a minimum of 5 feet away from foundations.

If onsite leach fields or stormwater ponding areas are required, they should be located downhill from and as far away from structures as possible, a minimum of 30 feet.

Permanent, non-retained slopes should be graded to a maximum slope of 3:1 horizontal to vertical for gross slope stability.

All earth slopes will require protection from erosion.

This office should review site grading and drainage plans to evaluate conformance with the recommendations presented herein.

SHORING

All trenches greater than 5 feet in depth must be sloped, shored or braced, or otherwise supported according to OSHA Construction and Safety Standards. Temporary construction excavations less than 8 feet deep should be sloped no steeper than 1½:1 (horizontal: vertical). If deeper excavations are required, this office should be contacted for supplemental recommendations.

Limited raveling of slopes will occur particularly as the exposed soils dry out. Material excavated from the trench or spoil must be placed away from the edge of the excavation. The spoil should be retained in an effective manner such that no loose material can fall into the excavation. Heavy equipment and material stockpiles should be located a minimum of 5 feet from the top of slope.

The above information is intended to provide only general guidelines. This office is not responsible for excavation safety. Temporary construction excavations should be evaluated by the contractor's competent person. Design of safe excavations should conform to the regulations set forth in 29 CFR 1926 Subpart P by the contractor or their designated engineer of record.

MAINTENANCE

Performance of structures depends not only on proper design and construction, but also on an ongoing foundation maintenance program. A properly designed foundation may still experience distress from incorrectly controlled water sources, improper drainage, and landscaping. The owner should perform a yearly inspection to observe for necessary maintenance and repair.

Positive drainage should be provided away from the structure over the life of the building. A minimum slope of four percent within the ten feet of the structure should be maintained. Flowerbeds and landscaping that requires irrigation should not be installed adjacent to structures. Walkways and borders that dam water adjacent to foundations should be eliminated.

Depressions and excavations should be backfilled with compacted, non-swelling, relatively-impervious soils such as clayey sands.

Gutters and downspouts should be installed to control roof drainage. Downspouts should discharge a minimum of ten feet away from structures. Area drains may be installed around structures to improve drainage. Discharge pipes should slope a minimum of 1/8th inch vertical per foot of horizontal pipe. Drainage sewers and discharge channels should be kept free of debris.

Water bills should be monitored for unexplained increases in usage. Higher than normal water usage may indicate a leaking utility line. If a leaking line is suspected, utility lines should be pressure checked for leaks.

Expansion joints within exterior concrete flatwork should be filled with a flexible joint sealer to minimize water infiltration.

Some minor cracking of new concrete foundations, concrete flatwork, and interior dry wall is normal. This is a result of concrete shrinkage as it cures, "settling in" of the new structure, drying of timbers used in construction, etc. Normally the majority of this movement should cease within the first year following construction. However, depending on the structure and site conditions, movement may continue at a slow rate for several years. If cracks tend to open and close, increase significantly within a short period of time, or resume after a period of relative inactivity, it is recommended that this office be contacted to review the situation.

CLOSURE

The recommendations presented in this report are based upon the subsurface conditions disclosed by the test holes. Soil and groundwater conditions may vary between test holes and with time. This office may change the recommendations presented herein based on the conditions encountered during construction.

Prior to performing earthwork, a meeting between the client, this office, and the earthwork contractor should be arranged to discuss the earthwork and foundation recommendations and testing requirements of this project. The purpose of this meeting is to assure that recommendations and requirements are implemented and to minimize delays and expenses during construction.

In order to verify the recommendations presented herein are followed this office must perform field inspections and earthwork Proctor and compaction testing. If this office is not utilized to perform these services, the client agrees to assume all risk for post-construction movement and distress.

This report reflects our interpretation of the site subsurface conditions. We strongly recommend that prior to bidding all contractors perform their own subsurface investigation to form their own opinion of the site soil, rock and groundwater conditions. Should contractors elect to use this report for construction, bidding or estimating purposes, they do so at their own risk.

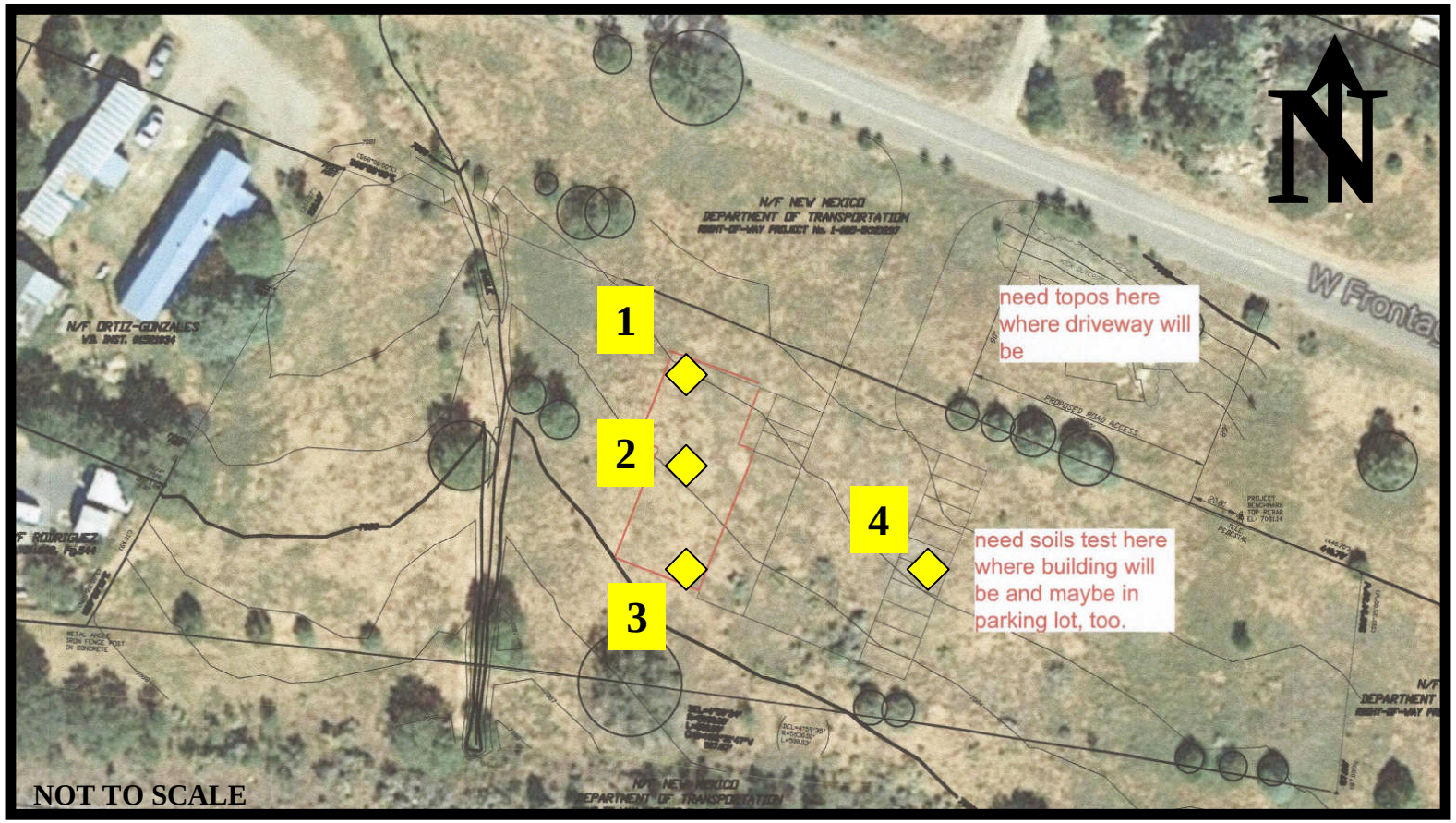
As this report makes recommendations concerning prudent landscaping and site maintenance, the facility manager should be given access to this report and the recommendations herein.

The staff of Earthworks Engineering Group, LLC is available for supplemental consultation as necessary at (505) 899-4886.

LABORATORY TEST RESULTS

Test Hole	Depth (feet)	Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Percent Passing - U.S. Sieve Numbers									
						1-1/2"	3/4"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	N0. 100	No. 200
1	0		3.1	24	4				100	99	98	94	85	72	61.0
	2		6.8				100	99	99	99	98	97	93	84	72.6
	5		5.9												
	10		6.9												
	15		18.1						100	99	99	98	97	95	90.6
	20		14.7												
2	2		4.3												
	5		5.3	23	7				100	99	97	95	89	75	60.6
	10		7.0												
	15		9.9												
	20		14.6												
3	2		4.5				100	99	99	97	95	90	76	60	45.0
	5		6.6				100	98	96	96	95	94	92	85	72.0
	10		14.2	43	23										
	15		12.2												
	20		8.5												
4	0		4.5	27	8			100	99	98	96	93	86	75	62.2
	5		5.1												

Table 4. - Summary of Laboratory Test Results



SITE PLAN

◆ **TEST HOLE LOCATION**

FIGURE 1.

LOG OF TEST HOLE NO.: 1

Project:	Glorieta Fire Station
Date Drilled:	6.19.14
Drilling Method:	3.25" ID Hollow Stem Auger
Surface Elevation:	Not Available
Depth to Groundwater:	Not Encountered
Bottom of Hole:	21.5 ft

Depth (feet)	N-Value (blows/ft)	Sample Type	Unified Class.	Description	Dry Density (pcf)	Moisture Content (%)
			CLML	CLAY-SILT, sandy, fine to medium grained, medium stiff, dry, dark-red-brown		3.1
2	5	S				6.8
5	10	S		- stiff		5.9
10	9	S	CL	CLAY, sandy, fine to medium grained, stiff, slightly moist, dark-red-brown		6.9
15	24	S		- very stiff, dark-red-brown, moist		18.1
20	21	S		- medium moist		14.7
				Bottom of Test Hole at 21.5 Feet		
25						

LOG OF TEST HOLE NO.: 2

Project:	Glorieta Fire Station
Date Drilled:	6.19.14
Drilling Method:	3.25" ID Hollow Stem Auger
Surface Elevation:	Not Available
Depth to Groundwater:	Not Encountered
Bottom of Hole:	21.5 ft

Depth (feet)	N-Value (blows/ft)	Sample Type	Unified Class.	Description	Dry Density (pcf)	Moisture Content (%)
			CLML	CLAY-SILT, sandy, fine to medium grained, dry, red-brown		
2		B				4.3
5		B				5.3
10		B		- slightly moist		7.0
15		B		- dark-red-brown		9.9
20		B		- medium moist		14.6
				Bottom of Test Hole at 21.5 Feet		
25						

LOG OF TEST HOLE NO.: 3

Project:	Glorieta Fire Station
Date Drilled:	6.19.14
Drilling Method:	3.25" ID Hollow Stem Auger
Surface Elevation:	Not Available
Depth to Groundwater:	Not Encountered
Bottom of Hole:	21.5 ft

Depth (feet)	N-Value (blows/ft)	Sample Type	Unified Class.	Description	Dry Density (pcf)	Moisture Content (%)
			SC	SAND, clayey, fine to medium grained, loose, slightly moist, red-brown		
2	8	S				4.5
5	7	S	CL	CLAY, sandy, fine to medium grained, medium stiff, slightly silty		6.6
10	17	S		- very stiff, medium moist, dark-brown, red-brown		14.2
15	27	S				12.2
20		B		- slightly moist		8.5
				Bottom of Test Hole at 21.5 Feet		
25						

LOG OF TEST HOLE NO.: 4

Project:	Glorieta Fire Station
Date Drilled:	6.19.14
Drilling Method:	3.25" ID Hollow Stem Auger
Surface Elevation:	Not Available
Depth to Groundwater:	Not Encountered
Bottom of Hole:	10 ft

Depth (feet)	N-Value (blows/ft)	Sample Type	Unified Class.	Description	Dry Density (pcf)	Moisture Content (%)
		B	CL	CLAY, sandy, dry, red-brown		4.5
2						
5		B				5.1
10				**Bottom of Test Hole at 10 Feet**		
15						
20						
25						

EARTHWORK CERTIFICATION CHECKLIST

Client: Santa Fe County EEG Project No. (GT): A14-422

Project: Glorieta Fire Station EEG Project No: (MT):

It is the responsibility of the owner and the contractor to fully read and understand the complete geotechnical investigation report and recommendations made therein. The following checklist is a summary of steps necessary in order to receive earthwork certification by Earthworks Engineering Group, LLC.

SCHEDULING

Call a minimum of 2 days prior to starting earthwork, to arrange for the pickup and testing of proctor sample(s). Call a minimum of 1 day prior to starting earthwork, to schedule natural ground prep inspection and initial compaction testing. Call 24 hours in advance to schedule testing once earthwork has commenced.

EARTHWORK COMPACTION TESTING		**Pass?**
1. Have Proctor Test Results for onsite and/or import soils:_____		☐
2. Test Base of Excavations/Natural Ground Preparation:_____		☐
3. Test During Placement of Engineered Fill (Test @ 1 Ft Min. Intervals):_____		☐
4. Test Bottom of Footing Excavations Prior to Steel Placement:_____	*EXTERIOR FTGS*	☐
	INTERIOR FTGS	☐
5. Test Plumbing Trench Backfill (Test @ 1 Ft. Min. Intervals):_____		☐
6. Test Finished Pad Grade (After Footing Excavation & Trench Backfill):_____		☐
7. **BEFORE PLACING CONCRETE, GET CERTIFICATION LETTER:**_____		☐

Figure 6