CITY OF PRESCOTT
ARIZONA

Purchasing Department

201 N Montezuma Street
Prescott, Arizona 86301
(928) 777-1408

ADDENDUM NUMBER ONE

FOR THE

YAVAPAI HILLS #1 LIFT STATION REHABILITATION PROJECT

DATE OF ADDENDUM: April 19, 2024

TO ALL BIDDERS BIDDING ON THE ABOVE PROJECT:

The following addendum shall be made part of the Project Specifications and Contract Documents. All other provisions of the Contract Documents remain unchanged. The Bidder shall acknowledge receipt of this Addendum on page 10 of the Bid Proposal form, in addition to signing below and returning this form with the bid package. The contents of this Addendum shall be given full consideration in the preparation of the Bid.

On Page 5 DELIVERY OF SUBMITTALS change:

Sealed bids will be received **before 2:00 PM on Thursday, May 2, 2024, at the City Clerk's Office, 201 N. Montezuma Street, Suite 302, Prescott, Arizona 86301**, at which time all submittals will be publicly opened.

Also on Page 5 change:

The outside of the submittal envelope shall indicate the name and address of the Respondent; shall be addressed to the City Clerk, City of Prescott, at the above address; and shall be clearly marked:

Notice of Inviting Bids:
Yavapai Hills #1 Lift Station Rehabilitation
DUE BEFORE 2:00 PM ON MAY 2, 2024

Also on Page 5 Requests for Information change:

Requests for information must be received **by 5:00 PM on Tuesday, April 23, 2024**. Responses or addenda will be issued **no later than 12:00 PM on Monday, April 29, 2024**.

On Page 13 Proposed Staging Locations change:

Bid Date: May 2, 2024

On Pages 7 and 8 Bidding Schedule:

REMOVE the Bidding Schedule in its entirety and REPLACE it with the REVISED BIDDING SCHEDULE dated April 18, 2024 (attached).

Requests for Information

Question: Sheet M-101 shows the plan view of the top of the Lift Station. There currently isn't any indication that the Contractor is to provide a davit crane at each lift station hatch to lift the lift station pumps. Please clarify if a davit crane shall be provided for each lift station pump.

Response: Davit crane shall not be provided. Boom Truck shall be utilized to remove pumps.

Question: Sheet G-004 shows the new 3 polymer precast manholes. There is no detail of these manholes, or invert elevations, depth, etc. Please provide additional information regarding the new manholes such as a section view of each manhole.

Response: Refer to C-102 "Yard Piping" Manhole point tables and the respective yard pipe point tables.

Question: Bid Schedule, Bid Item #34 - Aggregates mentions the specification section applicable to this bid item is MAG 343.2. This section is not included in the supplement to MAG provided with the bid documents. MAG specification 343 is in regard to exposed aggregate pavement. Please confirm if the aggregate roadway is to be a concrete roadway with exposed aggregate as detailed in MAG 343.

Response: Refer to crushed aggregate gradation table on C-101. Aggregate roadway is to be procured and constructed in accordance with this table.

Question: Ecc reducer to pump size?

Response: Discharge diameter of the pump utilized for the basis of design is 6". This would need to be a 6" by 10" eccentric increaser. This will need to be confirmed with a submittal for the submersible pumps.

Question: Callout # 7 on Sheet M-101 states, "2" Sewage Air/Vacuum Valve, ARI D-025, Route Vent to Wet Well." Valve Vault #1 also contains this call out. Please confirm if the Air/Vaccum Valve in the first valve vault is to be routed around all of the other structures to the wet well.

Response: Valve vaults closest to the wet well shall have the vents routed to the wet well. The vault furthest away shall not need this.

Question: Specification section 11300 paragraph 1.1 Subpart C states, "Use of American Iron and Steel (AIS) applies to this project." Please confirm if this project must adhere to AIS requirements, as this is not mentioned anywhere else in the current bid documents.

Response: AIS is not required.

Question: Will this project be partially funded via WIFA?

Response: The project will not be funded by WIFA

Question: There is currently no information provided regarding the depths of the yard piping lines or the soil conditions in those locations. Can you please provide profile views of the yard

piping, or average depths? Is there also a soil report that can be shared that provides information of existing soils in the areas of the yard piping?

Response: Geotechnical report is included in this Addendum. Yard piping elevations are shown on plan sheet C-102

Question: Please confirm that Generator Spec section 16232 is to be used for this project, not Spec section 16622.

Response: Use 16232, manufacturer of generator shall be Caterpillar

Question: Please confirm that Ripple Industries is the pre-approved I&C contractor to build the RTU control panel, provide programming and integration services?

Response: Correct, Ripple is pre-approved by the COP.

Question: Is there a cost allotment given in the contract for Ripple Industries services for this project?

Response: No cost allotment required by contractor. Fabrication testing and programming is included within WWE Scope. Contractor must install RTU Panel, wire and ring out all field devices.

Question: Will the owner allow the contractor to build control panels 601 and 602 in our UL508A listed panel shop, or must these panels be furnished by the pump vendor?

Response: Contractor is able to provide control panels 601 and 602. So long as they meet the design requirements.

Question: Please confirm that two NTP's will be issued for this project. The first for procurement and the second for site build-out.

Response: Correct, there will be two notices to proceed.

Question: Please confirm the owner's willingness to extend the contract completion date as appropriate due to product manufacturing and delivery delays.

Response: Contract extension due to unforeseen delays in procurement of materials and equipment is understandable. COP will extend the contract if necessary.

Question: Panel "A' feeder circuit to generator accessory panel should also include a neutral conductor for 120-volt loads. Please advise.

Response: Provide 3rd #10 AWG neutral conductor

Question: Are diaphragm seals to be used for the pressure indicator and transmitter trees in the valve vaults, as is typical for this application in waste-water type projects?

Response: Yes, provide diaphragms seals prior to all pressure indicators, and transmitters.

Question: What is the approximate mount height for the line-of-site SCADA antenna?

Response: 20 ft

Question: Are submersible type or ultrasonic type level transmitters required for the new wet wells?

Response: Ultrasonic.

Question: Will arc flash and coordination studies be required for this project?

Response: Arc flash

Question: Is 3rd party ground resistance testing required for this project?

Response: 3rd party ground resistance testing shall be required.

Question: Is the contractor responsible for providing a radio-path study for this project?

Response: Performed by Ripple.

Question: Which bid Item is Crack Injection included in and please clarify the quantity.

Response: This item is not a specific bid item. This specification is to only be used in the event that damage to concrete surfaces should happen over the course of construction.

Question: Please provide the dimensions of the existing roll-up door.

Response: 10' by 7'

Question: Sheet G-004 states the rolling gates are 20' side. Sheet G-006 states the rolling gates are 16' wide, please confirm what size the gates are to be.

Response: Provide 16' gates.

Question: Please confirm if all concrete structures including the manholes, and all vaults are to be coated per specification section 09875.

Response: All water bearing structures shall require coatings per this specification unless they are polymer concrete.

Question: Specification section 03410 lists Armorock as the only specified manufacturer for the polymer precast structures. Armorock has notified us that they will not be bidding this project because they are no longer manufacturing square structures, and are only manufacturing round structures at this point. Please provide a list of allowable alternates for this scope.

Response: Olson Precast, Rockhard SCP, USCP

Question: The existing WWTP structure contained water during the site visit. Please provide the estimated depth of the WWTP structure, to accurately calculate the backfill required to fill the existing structure.

Response: 14'

- END -

City of Prescott Public Works Department

Gwen Rowitsch
Digitally signed by Gwen Rowitsch
Date: 2024.04.19 13:23:36 -07'00'

Gwen Rowitsch, Public Works Director — Date

Acknowledgement: (must be signed and turned in with the bid documents)

Company Name

Signature of Company Official — Date

Yavapai Hills Regional Lift Station #1						
CIP # 2105-004						
Line No.	**Item**	**Description**	**Qty**	**Unit**	**Unit Cost**	**Amount**
General Construction Items						
1	105.8	Construction Stakes Lines and Grades	1	LS		
2	107.16	Stormwater Pollution Prevention Plan	1	LS		
3	109.10	Mobilization/Demobilization	1	LS		
4	109.11	Contract Allowance	1	ALL	$350,000.00	$350,000.00
5	COP 200.2	Bypass Pumping	1	LS		
6	420	Permanent Fencing	650	LF		
		General Construction Items Subtotal			*$*	
Sewer Improvements						
7	2200 SP	Piping, Existing Fencing, Pumps, Concrete, Valves, Slide Gates, Manholes and ATS Demolition	1	LS		
8	03410-A SP	Splitter Box - Polymer Pre-Cast	1	EA		
9	03410-B SP	Wet Well - Polymer Pre-Cast	1	EA		
10	725	Storage Building Pad - Slab - on - Grade	10	CY		
11	03400-A SP	Meter Vault - Pre-Cast	1	EA		
12	744	Manhole - Polymer Pre-Cast	3	EA		
13	03400-B SP	Valve Vaults - Pre-Cast	3	EA		
14	08305 SP	Access Hatches	6	EA		
15	2930 SP	Fabricated Steel Gates and Operators	2	EA		
16	15010 SP	Pipe Supports	8	EA		
17	8200 SP	Storage Roll Up Door	1	EA		
18	626.3	Coatings	1	LS		
19	11000 SP	Passive Odor Scrubber	2	EA		
20	11300 SP	Flygt NP3315 HT 452	2	EA		
21	5500 SP	Misc Shelving	1	LS		
22	15100 PSDS PVC1 SP	15" SDR-35 PVC Pipe	50	LF		
23	15100 PSDS PVC1 SP	10" SDR-35 PVC Pipe	75	LF		
24	15100 PSDS DIP SP	10" Class 350 DIP	210	LF		
25	15200.2.2.5.A SP	10" Plug Valve	3	EA		
26	15200.2.2.3.B SP	10" Check Valve	3	EA		
27	15812 SP	4" FRP Duct	200	LF		
28	11100 SP	10" Sluice Gate Manually Actuated	4	EA		
29	16050 SP	General Electrical Provisions	1	LS		
30	16496 SP	ATS	1	EA		
31	16232 SP	Genset	1	EA		
32	13305 SP	Programming	1	LS		

Yavapai Hills Regional Lift Station #1						
CIP # 2105-004						
Line No.	**Item**	**Description**	**Qty**	**Unit**	**Unit Cost**	**Amount**
33	13310.2.2.4 SP	Level Indicator Transmitters	2	EA		
34	13310.2.2.5 SP	Level Switch (High, High High and Low Low)	10	EA		
35	13310.2.2.2 SP	Flow Element and Indicator Transmitter	1	EA		
36	343.2	Aggregate	1010	SY		
37	215.4	Grading	9035	SY		
					Sewer Improvements Subtotal	*$*
Total Bid Amount						

TOTAL BID AMOUNT:

_____ Dollars and _____ Cents

(In Written Words)

Company Name

Company Address

Signature of Company Official

Date Signed

Title

Email

Appendix F Geotechnical Report

ENGINEERING & TESTING CONSULTANTS INC.

December 3, 2021

Mr. Rob Bryant, PE
Water Works Engineers
7500 N. Dobson Rd. STE 200
Scottsdale, AZ 85256

SUBJECT: SUBSURFACE SOIL EXPLORATION FOR YAVAPAI HILLS LIFT STATION NO. 1, PRESCOTT, ARIZONA

Dear Mr. Bryant:

Engineering & Testing Consultants, Inc. (ETC) has completed a subsurface soil exploration for the above referenced project. The purpose of this exploration is to evaluate the general subsurface soil conditions at the site, and to present geotechnical engineering recommendations with regard to foundation support, slabs-on-grade, lateral soil pressures, and site grading for the proposed improvements.

PROJECT AND SITE CONDITIONS

The property is generally located south of E. Robin Drive and west of E. State Route 69, the second parcel east of Tawa Court (Parcel No. 103-20-487A).

The property is located along the west side of a creek. *Existing fills and grading have been performed within the facility.* An existing building and other structures are present throughout the area of the facility.

The northwest boring, B-1, is located just outside of the fenced in facility, on undisturbed land. Some native trees and brush are located in the area easterly sloping area of boring B-1.

Existing fill is present in the area of the northeast boring, B-2. Boring B-2 is located approximately 30 feet south of open, below grade, concrete tanks. The tanks extend approximately 12 feet below the existing ground surface. The top of the eastern fill slope, adjacent to the creek is located approximately 23 feet east of the boring. Concrete, asphalt, and rock pieces were observed on the fill slope.

Drill Rig at Boring B-2 – Looking North

SUBSURFACE CONDITIONS

ETC drilled two exploratory test borings at the locations provided to us. The borings were performed to determine general subsurface soil conditions and collect soil samples for laboratory testing. If soil conditions encountered during construction differ from those described herein, this firm should be contacted to review our recommendations made in this report.

The borings were performed utilizing a truck mounted CME 75 drill rig with 8-inch diameter continuous flight augers. *A more detailed description of the soil conditions encountered by the exploratory test borings is presented on the boring logs included in Appendix A. A Boring Location Map is attached as Figure 1.*

The northwest boring, B-1, was drilled outside of the fenced-in area, on undisturbed land. This boring encountered approximately 2 feet of medium plasticity Clayey Sand with Gravel (SC) and

a high percentage of clayey fines. At a depth of approximately 2 feet, boring B-1 encountered highly weathered granite rock, becoming very dense within 5 feet of the surface. This boring encountered refusal on granite rock at a depth of 22.5 feet.

The northeast boring, B-2, was drilled within the facility. This boring encountered approximately 6 to 7 feet of loose, granular fill with cobbles and some boulders.

Below the loose fill, the northeast boring, B-2, encountered medium dense to dense weathered granite rock at a depth of approximately 8 feet, becoming very dense within 15 feet of the surface. Auger refusal on rock was encountered in boring B-2 at a depth of 27 feet.

A subsurface water table was encountered within the northeast boring at a depth of approximately 6.5 feet. The water appears to be perched on top of the lower granite stratum. As discussed herein, a creek is located along the eastern side of the property.

A significant amount of loose fill soils with varying amounts of cobbles and boulders were encountered in the area of boring B-2. The depth of fill may increase to the south and east. In addition, the bottom of the below-grade tanks north of B-2 are at least 12 feet below existing grade.

The loose soils and existing fills shall be removed from building areas, extending at least 5 feet outside of building footprints. The removed soils may be re-used and replaced in controlled, compacted lifts, in accordance with the compaction criteria herein, provided any debris and over-sized rock pieces are removed, as further discussed in the Earthwork section herein.

In addition, the higher plasticity clayey soil, encountered within approximately 2 feet of the surface in the area of boring B-1, shall be removed from floor slab and foundation areas of any proposed building. The removed clayey soils may be replaced with other granular, low plasticity soils encountered below the upper clayey soil or elsewhere on the site.

LABORATORY

Atterberg limits, gradation, and moisture content laboratory tests were performed for representative soil samples collected during the field operation. A summary of the laboratory test results is presented below in Table 1. Laboratory testing was performed in accordance with applicable ASTM standards.

As shown in Table 1, the clayey soil collected from the upper 2 feet in the northeast boring, B-1, is medium to high in plasticity with a high percentage of clayey fines.

The on-site fill soils tested from boring B-2, and the lower soils/decomposed granite tested from boring B-1 consist of low plasticity granular soils.

TABLE 1
SUMMARY OF LABORATORY TEST RESULTS

Boring	Depth (feet)	Liquid Limit (%)	Plasticity Index	Fines Content (%)	Gravel Content (%)	Moisture Content (%)	USCS
B – 1	0 – 2	36	18	42	18	12.3	SC
	2 – 5	22	7	25	11	4.2	SC-SM
B – 2	0 – 4	---	Nonplastic	29	17	7.7	SM

Corrosivity

Selected samples of the on-site soils were also tested for corrosion potential of the soils to buried pipeline, and for concrete corrosivity.

ETC has performed the following laboratory tests to evaluate the soil corrosivity: resistivity, pH, oxidation-reduction potential (redox), chlorides, sulfides, and sulfates. A summary of the test results is presented below in Table 2.

Utilizing the 10-point scale developed by the American Water Works Association, Standard C105-05, and ASTM A888, Appendix X, the soil tested does not meet the 10-point criteria for needing protection against corrosion for ductile iron pipe.

TABLE 2
PH & RESISTIVITY TEST RESULTS

Boring	Depth (feet)	pH	Resistivity Saturated (Ohm-cm)	Redox Potential Eh(mV)	Chloride Content (mg/kg)	Sulfide Content (mg/kg)	Sulfate Content (mg/kg)
B – 1	0 – 2	8.5	3,752	170	12.5	0.19	4.2

Per Table 4.3.1 of ACI 318, the sulfate exposure will be negligible and modified Portland cement criteria are not required. In addition, additional concrete coverage for reinforcing steel in concrete is not required based on the negligible chloride content of the soil.

FOUNDATIONS

As discussed herein, existing fill and loose soils, where encountered, shall be removed from any building site, extending at least 5 feet outside of the building footprint. The removed soils may be re-used and replaced in controlled, compacted lifts, in accordance with the compaction criteria herein, provided over-sized rock pieces are removed. ETC is also providing an option for partial removal due to the lower water table, provided the bottom of the over excavation can be adequately compacted and stabilized, as further discussed herein.

The medium to high plasticity clayey soil, encountered within approximately 2 feet of the surface shall be removed from any building site. The removed upper clayey soil may be replaced with the underlying excavated granular material, or low plasticity granular material from elsewhere on the site.

ETC recommends any proposed building be supported on conventional, shallow foundations (continuous/spread footings). All footings shall be seated in firm, native soils and/or adequately compacted and tested fill, per the compaction criteria herein.

All foundations seated in low plasticity, granular, adequate bearing soils shall be seated at a minimum embedment depth of **18 inches** below lowest adjacent finished grade.

If refusal on relatively hard, intact rock is encountered, foundations on intact rock may be seated at a minimum embedment depth of **12 inches** or pinned to hard rock, as approved by the engineer.

In determining minimum foundation embedment depths, landscaping shall not be considered as finished grade. Lowest, adjacent finished grade should be measured from within 5 feet of the foundations for exterior footings and may be measured from finish floor for interior footings.

Construction, as recommended herein, will have all foundations seated in firm, native soils and/or adequately compacted and tested fill. ETC recommends that foundations be designed for a maximum allowable foundation pressure of **2,000 psf**, including design dead and live loads. Any deeper foundations within the relatively shallow, weathered rock stratum may be designed for an increased foundation pressure of 3,500psf. The weathered rock stratum was encountered at a depth of approximately 2 feet in boring B-1, and 8 feet in boring B-2.

Continuous footings and stem walls should be reinforced to distribute stresses arising from small differential movements and long exposed walls should be provided with control joints to accommodate these movements. Reinforcement and control joints are suggested to allow slight movement and minimize cracking.

Increased movements can occur if adequate drainage is not maintained adjacent to foundations, slabs, and around the perimeter of the building, or foundation soils experience significant increases in moisture.

SLABS-ON-GRADE

As discussed herein, ETC is recommending removal and replacement of existing granular fill soils within building pads in compacted and tested lifts. The higher plasticity clayey soils encountered within 2 feet of the surface in boring B-1 shall also be removed.

ETC recommends a minimum thickness of **4 inches** of processed aggregate base course in accordance with MAG Specifications, Section 702, be placed between the prepared granular subgrade soils and all concrete slabs.

A turn-down edge is recommended for exterior slabs to help mitigate exterior moisture migration into the underlying subgrade soils.

Additional Considerations

ETC recommends the American Concrete Institute (ACI) be used as a guide for placement, curing, and finishing of Portland cement concrete (PCC). Concrete should be placed at the appropriate slump determined by mix design, required strength, and application. After placement, concrete should be cured properly and special attention shall be given to ensure adequate moisture is present during the initial curing process to prevent/reduce shrinkage and stress cracks.

Concrete slabs should be properly jointed, with maximum joint spacing of 24 to 36 times the slab thickness, unless noted otherwise. Any required saw cutting should be performed to an appropriate depth and in a timely manner, typically within 12 hours of concrete finishing.

It should be noted that for exterior concrete, that the use of deicing salt within the first year of concrete placement can cause damage to the concrete surface. This can be avoided by using 4,500psi concrete with a water/cement ratio of 0.45.

DRAINAGE

Positive drainage is critical to the successful performance of any foundation or slab system. Excess moisture infiltration into foundation soils is often the primary cause of soil-related problems below structures. Efficient surface and subsurface drainage should be established prior to and maintained during and after construction to prevent water from ponding and/or saturating the soils within or adjacent to building and slab areas. Increased movements can occur if the underlying soils experience significant increases in moisture content.

The design should divert water away from where it could penetrate the ground, particularly if granular fills are used. Care should be taken in design and construction to assure that water is contained to prevent seepage into the underlying soils.

ETC recommends that vegetation not be planted within 5 feet of any building. Backfill against footings, exterior walls, and in utility trenches shall be adequately compacted to reduce the possibility of moisture infiltration through loose soil.

Positive drainage of surface water away from the buildings, and adequate compaction of soils around the buildings and in utility trenches is very important for the long-term stability of foundation soils.

EARTHWORK

Excavation conditions are further discussed below.

As discussed herein, a significant amount of existing fills and/or loose soils were encountered in the area of boring B-2, to a depth of approximately 6.5 feet.

Due to the subsurface water table encountered near the bottom of the fill, gravel may be required to stabilize the bottom of the over-excavation prior to fill placement. Alternatively, the existing fills may be removed to a minimum depth of 5 feet below existing grade. However, if the bottom of the over-excavation cannot be adequately stabilized with conventional compaction methods, additional over-excavation may be required. Other alternatives for stabilization may include the use of coarse, angular rock for stabilization, , as determined by the engineer.

Removal of loose soils and existing fills, where encountered, shall extend at least 5 feet outside of the building footprint. The removed low plasticity granular soils oils may be re-used and replaced in controlled, compacted lifts, in accordance with the compaction criteria herein, provided any debris and over-sized rock pieces are removed. Rock size limits are provided below.

In addition, the higher plasticity clayey soil, encountered within approximately 2 feet of the surface in the area of boring B-1, shall be removed from the building footprint. The removed clayey soil may be replaced with underlying excavated granular materials or other low plasticity granular soils encountered elsewhere on-site.

The areas where fill is required must be stripped of all vegetation, debris, loose, or other unstable material, and such materials should be removed. Depressions and sloped ground should be widened or benched as necessary to accommodate compaction equipment and provide a level base for placing fill.

Prior to fill placement, the exposed ground surface shall be scarified, moisture conditioned, and thoroughly compacted to a minimum depth of 8 inches. Special attention shall be given to ensure adequate moisture is present throughout the entire 8-inch depth.

ETC shall be contacted prior to fill placement to observe adequate removal of loose material, and to verify that the ground surface has been adequately prepared for fill placement.

Engineered fill, where required, shall be clean, granular soil free of vegetation, debris, organic soil, and shall conform to the following requirements, as approved by the engineer:

- 100 percent passing 6" sieve (depths greater than 5 ft. below finished grade);
- 100 percent passing 4" sieve (within 5 feet of finished grade in structural areas);
- 3 to 36 percent passing No. 200 sieve
- 30 to 97 percent passing No. 4 sieve
- Maximum Plasticity Index (PI) of 15
- Maximum expansion index of 20

All subbase fill required to bring the structured areas up to subgrade elevation should be placed in horizontal lifts not exceeding 8 inches compacted thickness.

All granular soils in structural areas, including soils within or adjacent to the building, slabs, and backfill in utility trenches and behind retaining walls shall be compacted to a minimum relative density of 95% maximum dry density at – 2% to +2% of optimum moisture, ASTM D698.

ETC recommends the observation of the site grading operation with sufficient tests to verify adequate compaction.

Excavation Conditions

At the locations explored, granite rock is present, encountered within 2 feet of the surface in the undisturbed area of boring B-1. Therefore, any significant excavations will likely not easily be accomplished with standard excavation equipment. The Contractor should expect excavations to require heavy equipment and other special excavation methods and rock removal techniques.

As noted, the fill material encountered at the location of boring B-1 was found to be relatively loose with larger cobble and boulder sized rock pieces. The cohesionless, rocky fill material should not be expected to stand vertical without collapsing trench sidewalls, due to the consistency of the material.

The weathered rock and granular, rocky fill will not easily allow for neat-lined trench excavations.

LATERAL DESIGN PARAMETERS

ETC recommends the following parameters be used for design of retaining structures. Retaining wall foundations shall be constructed in accordance with the foundation recommendations herein.

Retaining wall backfill shall consist of on-site or imported, granular, non-expansive, engineered fill, as specified herein. Retaining walls shall be waterproofed prior to being backfilled against, and drains shall be installed to help prevent saturation of wall backfill.

[1] Foundation Toe Pressure	1.33 x allowable bearing pressure
[2] Lateral Backfill Pressure:	
unrestrained walls	36 psf/foot
restrained walls	56 psf/foot
Lateral Passive Pressure:	
firm native/compacted fill	370 psf/foot
Coefficient of Base Friction:	
firm native/compacted fill	0.35
weathered rock (where encountered)	0.55

1 Increase in allowable foundation bearing pressure (provided herein) for foundation toe pressure due to eccentric or lateral loading. The entire footing-bearing surface should remain in compression.

2 Equivalent fluid pressures for vertical walls and horizontal backfill surfaces (maximum 12-foot height). Pressures do not include temporary forces imposed during compaction of the backfill, swelling pressures developed by overcompacted clayey backfill, hydrostatic pressures from inundation or saturation of backfill, or surcharge loads. Walls should be suitably braced during backfilling to prevent damage and deflection.

When calculating the stability of the wall against sliding, independent of passive resistance, the factor of safety should be 1.5 minimum. When calculating the stability of the wall against sliding, in conjunction with the passive pressure, the factor of safety should be 2.0 minimum.

LIMITATIONS

The figures and recommendations in this report were prepared in accordance with accepted professional engineering principles and soil mechanics practices. We make no other guarantee or warranty, either implied or expressed. If during subsequent planning and construction, conditions are different than as indicated, this firm should be notified for evaluation.

We like to inform our clients that Portland cement concrete is not a perfect construction material. Due to the characteristics of Portland cement itself, cracking of the concrete may occur. Cracking will be minimized, but not eliminated, by providing appropriate control, isolation, construction joints, and quality control testing. Drying and thermal shrinkage of the slabs with resultant hairline cracking or curling may occur even if the slabs are cured under optimum curing conditions. In short, there is no practical method of insuring that all floor cracking is eliminated utilizing slab-on-grade construction at the site.

This report is not a bidding document. Any contractor reviewing this report must draw his own conclusions regarding site conditions and specific construction techniques to be used on this project.

For your use. Should you have any questions or concerns, please contact us at (928) 778-9001.

Sincerely,

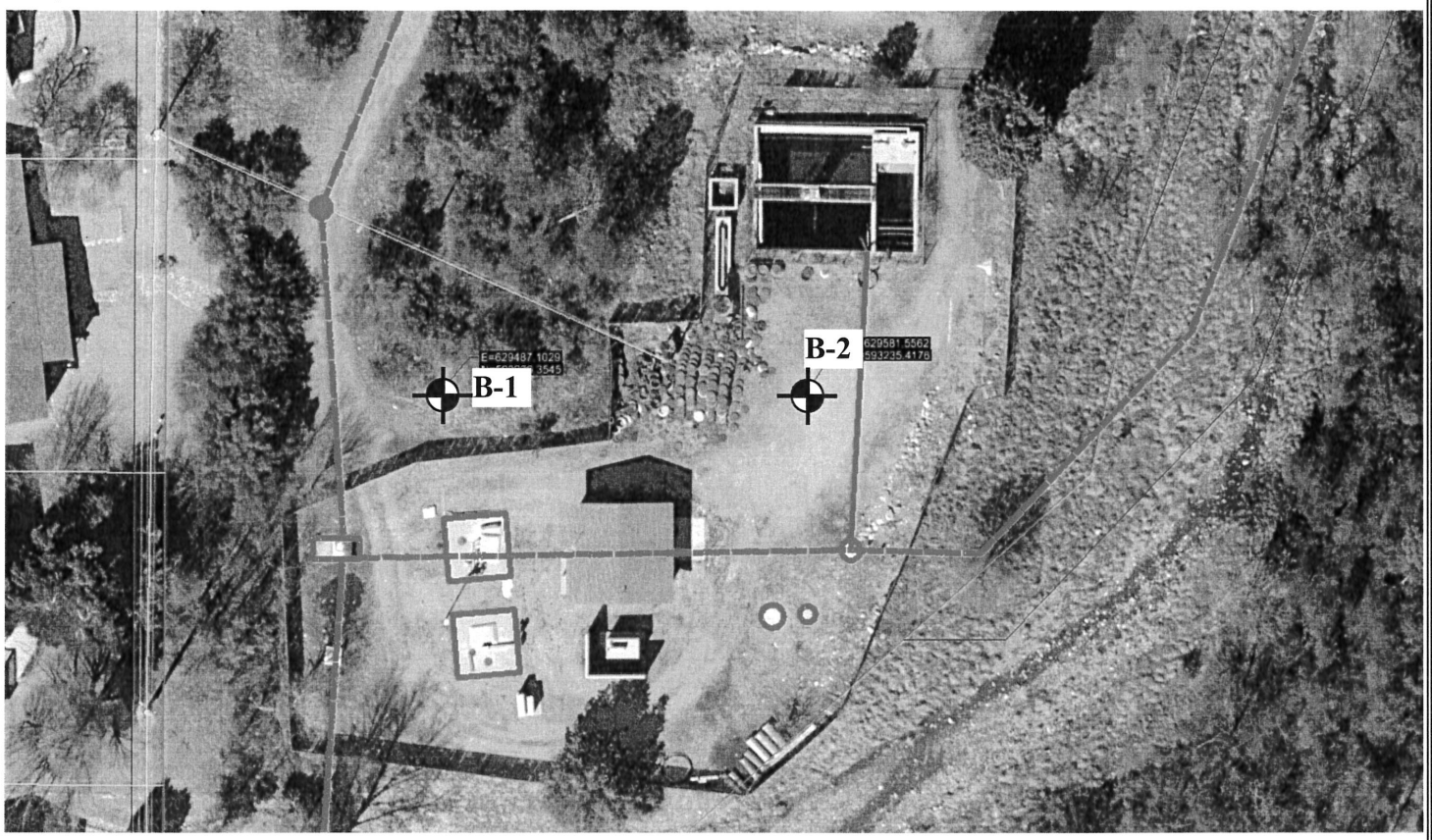
ENGINEERING & TESTING CONSULTANTS, INC.

Michael P. Wilson, P.E.
Project Engineer

Reviewed by: Richard G. Kelley, P.E.
Project Manager

Attachments: Figure 1 and Appendix A

cc: ETC File No. 11531



Legend

Approximate Boring Location

N

Engineering & Testing Consultants, Inc. •Subsurface Drilling •Geotechnical •Environmental Support	**FIGURE 1** **BORING LOCATION MAP**	ETC
Drawn by: others Date: 10/27/21 Project No: ETC 11531 Page No:	Yavapai Hills Lift Station No. 1 Prescott, AZ	