

log # 34414 ✓

1799

boring # 100 21 22 23 24



**Harding Lawson Associates**  
September 17, 1990

17799,002.05

Genell Mclaury Moore  
Ganthner Melby Lee  
5190 Neil Road, Suite 231  
Reno, Nevada 89502

*Handwritten note:* NW 1/4 11th St. 11th St.

**MONITORING WELL INSTALLATION  
ELY MAXIMUM SECURITY PRISON  
ELY, NEVADA**

*Handwritten note:* SW 3/4 31 18N 62E

Dear Genell,

This letter report presents the results of the monitoring well installation performed at the Ely Maximum Security Prison in Ely, Nevada.

One boring was drilled at the location shown on Plate 1 on 8/13/90, to a depth of 110 feet. The boring was drilled using a 12-inch diameter Ingersoll-Rand Cyclone drill rig. A Harding Lawson field engineer was present during the drilling to log soil conditions encountered and to obtain soil samples for lithologic classification. Soil samples were obtained from a screen catch below the cyclone. Samples were collected every 5 feet. A complete soil description appears on the log of boring (Plates 1, 2, 3 and 4). The soils are classified in accordance with the Unified Soil Classification System (Plate 6).

Boring No. 1 was converted into a monitoring well on 8/15/90. The well was completed using 4-inch diameter, flush threaded Schedule 40 PVC casing. Blank flush threaded casing was installed from 1-1/2 feet above ground to a depth of 35 feet. Machine slotted PVC casing (0.020-inch slots) was installed from 35 to 95 feet. A 10-foot section of blank casing was flush threaded below the slotted screen casing as a sand catch. A sand pack consisting of No. 3 sand was placed in the annular space from the bottom of the bore hole to approximately 10 feet above the slotted screen casing. The sand was overlain with a 2-foot thick bentonite-pellet seal. The well was then grouted to the surface using a cement-sand grout. Surface completion of the well consisted of a locking well cap and a metal stand pipe. The stand pipe was installed approximately 2 feet above ground surface. The stand pipe was spray-painted white and the cover was spray-painted blue as specified for a monitoring well. A monitoring well completion diagram is presented in Plate 5.

The well was purged using the drill rig on 8/16/90.

The monitoring well was installed in substantial compliance with the design specifications.

If you have any questions, please call.

Yours very truly,

**HARDING LAWSON ASSOCIATES**

John J. Welsh, P.E.  
Associate Engineer

JJW/rs/17799002.106

**Enclosures**

Engineers  
Geologists &  
Geophysicists

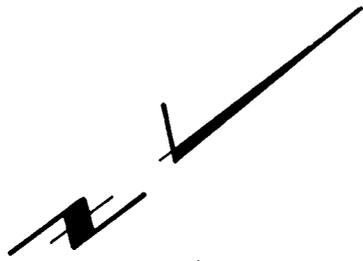
940 Matley Ln.  
Reno  
Nevada 89502

Telephone  
702/329-6123

Alaska  
California

Hawaii  
Nevada

Texas



SSMH#29  
IE(IN)=36.95  
IE(OUT)=36.95

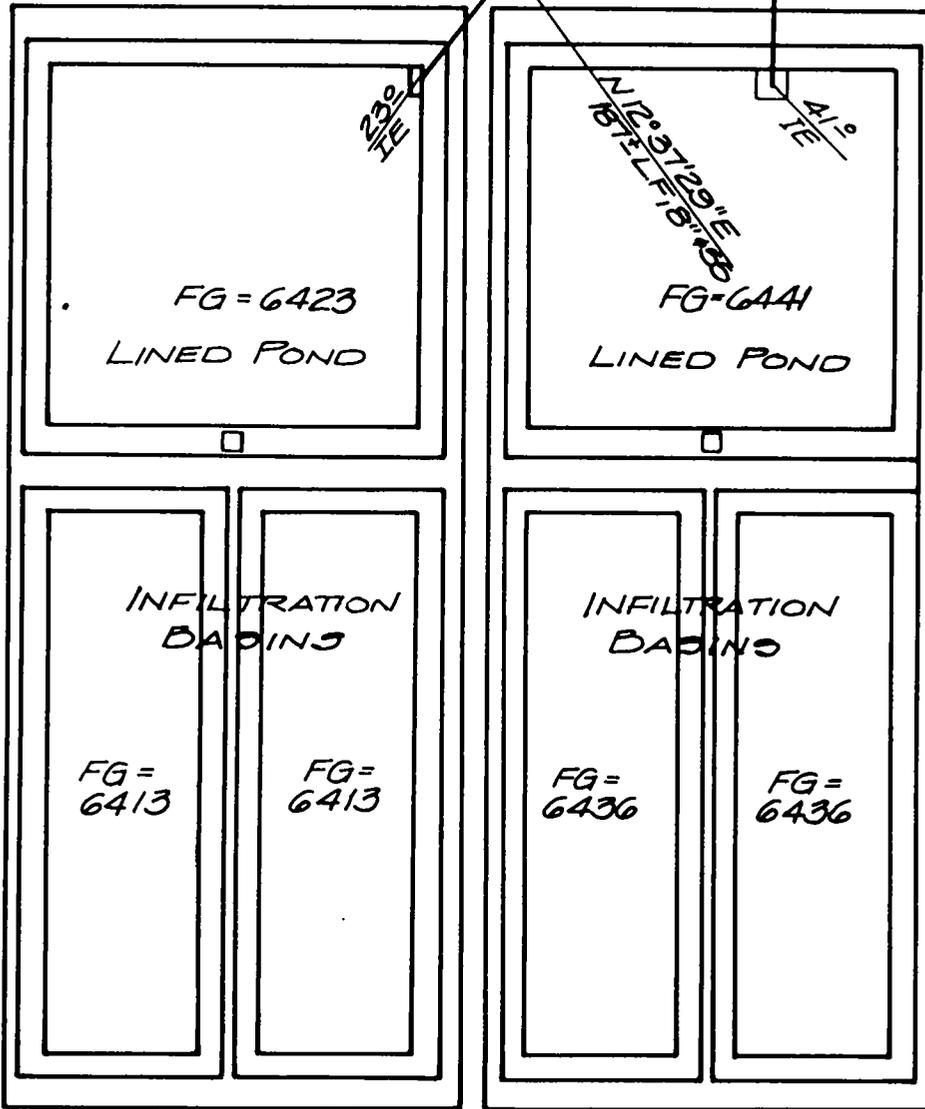
N 37° 06' 26" E  
129 ± L.F. 8' 9"

SSMH#30  
IE(IN)=46.95  
IE(OUT)=46.95

N 20° 29' 47" W  
321 ± L.F.  
12' 9" 95, 5-0-35%

SSMH#31  
IE=45.86

N 31° 34' 30" W  
214 ± L.F. 8' 55"



MONITORING WELL LOCATION



**Harding Lawson Associates**  
Engineering and Environmental Services

**ELY MAXIMUM SECURITY PRISON  
FACULTATIVE LAGOONS  
GROUNDWATER MONITORING WELL LOCATION  
ELY, NEVADA SEC.31, T.18 N., R.63E.**

PLATE

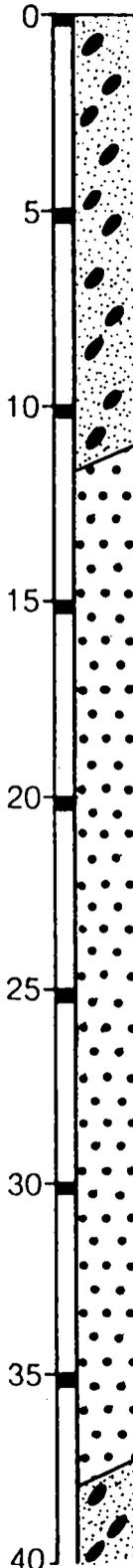
LOG OF BORING 1

Equipment Ingersoll-Rand Cyclone

Elevation 6407'±

Date 8/13/90

Depth (ft)  
Sample



BROWN POORLY GRADED FINE GRAVEL WITH SAND (GP); Medium dense to dense, angular

Gravel becoming coarser

BROWN POORLY GRADED COARSE SAND WITH GRAVEL (SP); Dense

Decreasing gravel

BROWN POORLY GRADED SAND WITH GRAVEL, SILT, AND COBBLES (SP); very dense

Sand becoming coarser, gravel chips

BROWN POORLY GRADED FINE GRAVEL WITH SAND AND COBBLES (GP); Dense, rock chips



**Harding Lawson Associates**  
Engineers, Geologists  
& Geophysicists

**ELY MAXIMUM SECURITY PRISON  
MONITORING WELL  
LOG OF BORING  
ELY, NEVADA SEC. 31, T.18N., R.63E.**

PLATE

**2**

DRAWN

MAE

JOB NUMBER

17799.002.05

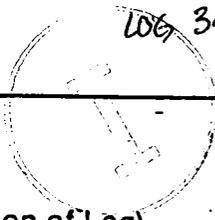
APPROVED

DATE

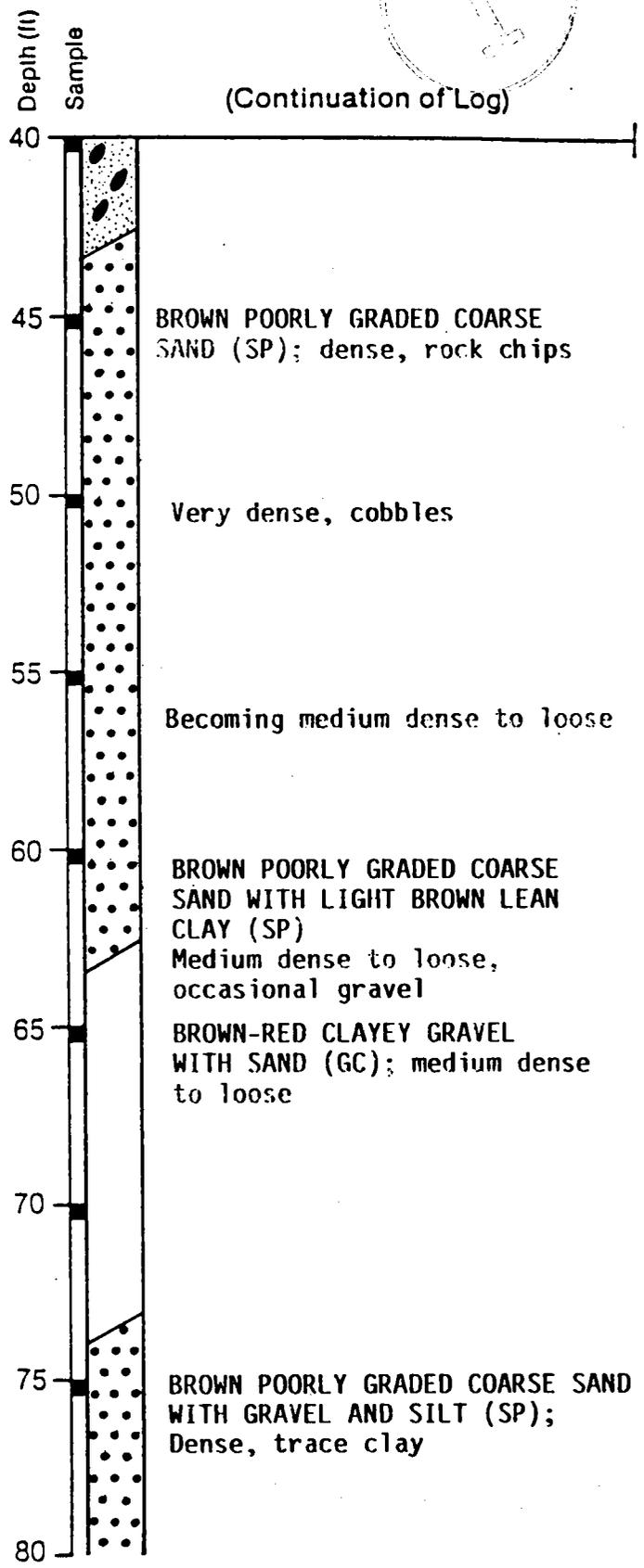
9/10/90

REVISED

DATE



(Continuation of Log)



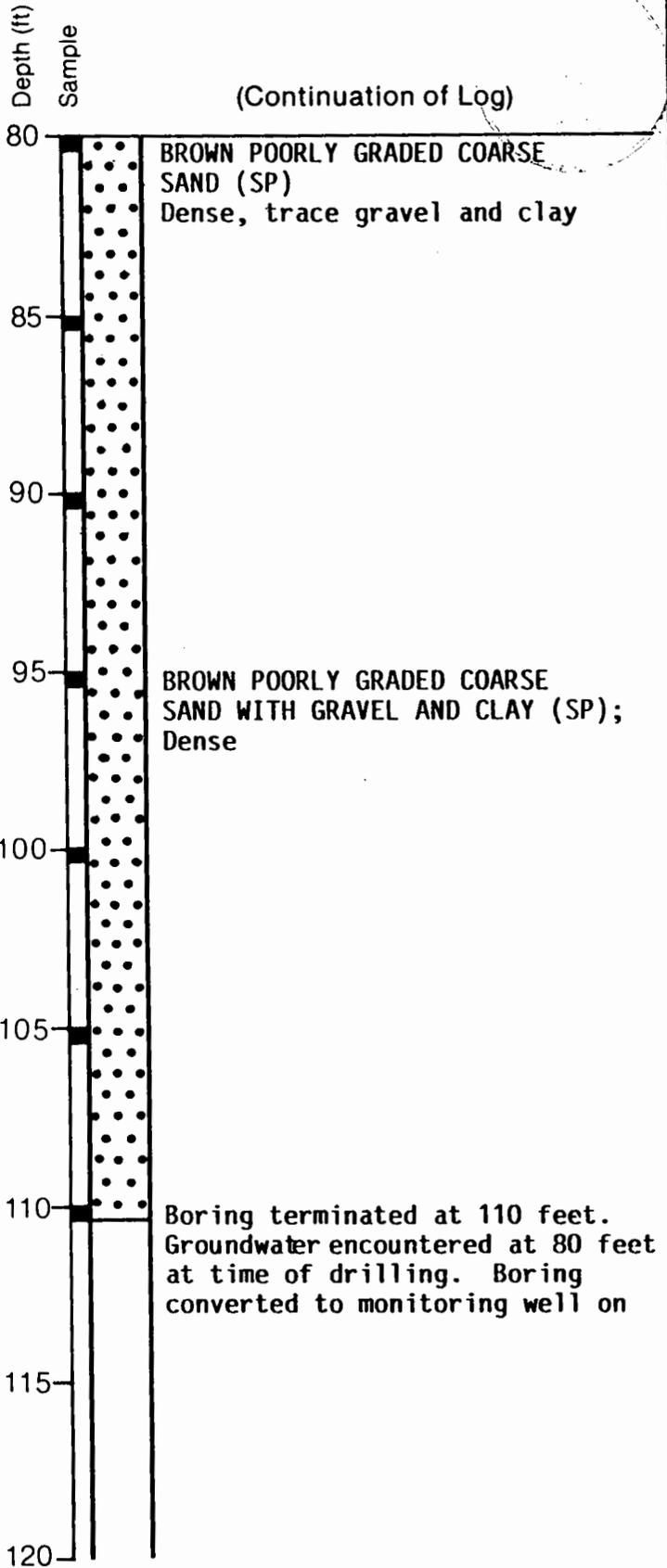
**Harding Lawson Associates**  
 Engineers, Geologists  
 & Geophysicists

**ELY MAXIMUM SECURITY PRISON  
 MONITORING WELL  
 LOG OF BORING  
 ELY, NEVADA SEC. 31, T.18N., R.63E.**

PLATE

3

(Continuation of Log)

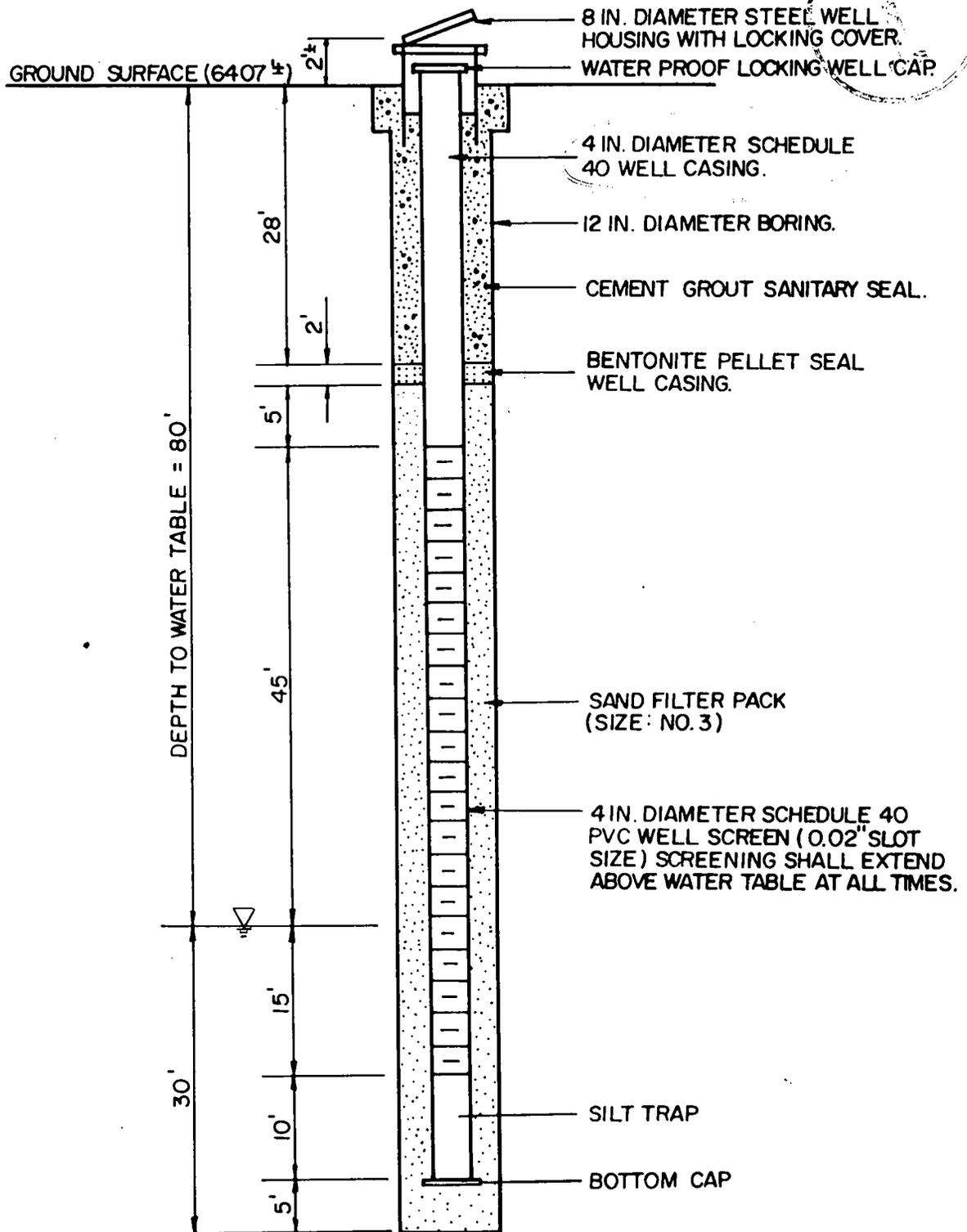


**Harding Lawson Associates**  
Engineers, Geologists  
& Geophysicists

**ELY MAXIMUM SECURITY PRISON  
MONITORING WELL  
LOG OF BORING  
ELY, NEVADA SEC. 31, T.18N., R.63 E.**

PLATE

**4**



NOTE:  
 WATER TABLE MUST NOT BE ABOVE PERFORATED PORTION OF WELL. THE SCREENING MUST BE ABOVE THE WATER TABLE AT ALL TIMES.



**Harding Lawson Associates**  
 Engineering and  
 Environmental Services

**ELY MAXIMUM SECURITY PRISON  
 FACULTATIVE LAGOONS  
 GROUNDWATER MONITORING WELL  
 ELY, NEVADA SEC. 31, T. 18N., R. 63E.**

PLATE

5

DRAWN  
MAE

JOB NUMBER  
17799.002.03

APPROVED

DATE

REVISED

DATE

9-90

MAJOR DIVISIONS			TYPICAL NAMES	
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS  MORE THAN HALF COARSE FRACTION IS LARGER THAN No. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, SILTY GRAVELS WITH SAND
			GC	CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SANDS  MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS WITH OR WITHOUT GRAVEL
			SC	CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS  LIQUID LIMIT 50% OR LESS	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS	
		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS	
		OL	ORGANIC SILTS OR CLAYS OF LOW PLASTICITY	
	SILTS AND CLAYS  LIQUID LIMIT GREATER THAN 50%	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS	
		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
		OH	ORGANIC SILTS OR CLAYS OF MEDIUM TO HIGH PLASTICITY	
HIGHLY ORGANIC SOILS		PI	PEAT AND OTHER HIGHLY ORGANIC SOILS	

UNIFIED SOIL CLASSIFICATION - ASTM D2487-85

Perm	—	Permeability	Shear Strength (psf)	Confining Pressure
Consol	—	Consolidation	TxUU 3200 (2600)	—
LL	—	Liquid Limit (%)	(FM) or (S)	Unconsolidated Undrained Triaxial Shear (field moisture or saturated)
PI	—	Plastic Index (%)	TxCU 3200 (2600)	—
G <sub>s</sub>	—	Specific Gravity	(P)	Consolidated Undrained Triaxial Shear (with or without pore pressure measurement)
MA	—	Particle Size Analysis	TxCD 3200 (2600)	—
■	—	"Undisturbed" Sample	SSCU 3200 (2600)	—
☒	—	Bulk or Classification Sample	(P)	Consolidated Drained Triaxial Shear
			SSCD 3200 (2600)	—
			DSCD 2700 (2000)	—
			UC 470	—
			LVS 700	—
				Simple Shear Consolidated Undrained (with or without pore pressure measurement)
				Simple Shear Consolidated Drained
				Consolidated Drained Direct Shear
				Unconfined Compression
				Laboratory Vane Shear

KEY TO TEST DATA



**Harding Lawson Associates**  
Engineers and Geoscientists

**ELY MAXIMUM SECURITY PRISON  
MONITORING WELL  
KEY TO TEST DATA  
ELY, NEVADA SEC. 31, T.18N, R.63E**

PLATE

**6**