Limited Geotechnical Engineering Investigation

Residences at Park Avenue Phase IV
1830 West Park Avenue
Riverton, UT

PREPARED FOR:

Brad Reynolds Construction
P.O. Box 17958
Salt Lake City, Utah 84117

PREPARED BY:

CMT Engineering Laboratories
CMT Project No. 7684

June 11, 2015

CMT ENGINEERING LABORATORIES

June 11, 2015

Brad Reynolds Construction
Attn: Paul Ranstrom
P.O. Box 17958
Salt Lake City, Utah 84117

Subject: Limited Geotechnical Engineering Investigation
Residences at Park Avenue Phase IV
1830 West Park Avenue
Riverton, Utah
CMT Engineering Project Number 7684

Mr. Randstrom,

Submitted herewith is the report of our limited geotechnical engineering investigation for the subject site. This report contains the results of our findings and an engineering interpretation of the results with respect to the available project characteristics. It also contains recommendations to aid in the design and construction of the earth related phases of this project.

On June 1, 2015, a CMT Engineering Laboratories (CMT) engineer was on-site and supervised the excavation of 3 test pits extending approximately 10 to 11.5 feet below the existing grades. Soil samples were obtained during the field operations and were then transported to our laboratory for further testing.

Based on the findings of the subsurface investigation, the natural soils predominately consist of natural clay soils, extending to the bottom of each test pit. Groundwater was not encountered within the depths explored. Conventional spread and continuous footings may be utilized to support proposed multi-family residences provided the recommendations in this report are followed. A detailed discussion of design and construction criteria is presented in this report.

We appreciate the opportunity to work with you on this project. If we can be of further assistance or if you have any questions regarding this project, please do not hesitate to contact us at (801) 492-4132.

Sincerely,
CMT Engineering Laboratories

LICENSED PROFESSIONAL ENGINEER
374995
JEFFREY J.
EGBERT
6/11/15
STATE OF UTAH

Jeffrey J. Egbert, P.E., LEED A.P.
Senior Geotechnical Engineer

Steven L. Smith, P.E.
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CMT ENGINEERING LABORATORIES

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APPENDIX

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1.0 INTRODUCTION

CMT Engineering Laboratories (CMT) was retained by Paul Ranstrom of Brad Reynolds Construction to conduct a geotechnical engineering subsurface investigation for a proposed high density residential development to be constructed on approximately 3 acres of land on the north side of Park Avenue at approximately 1830 West in Riverton, Utah (See **Figures 1 and 2** in the Appendix). This is Phase IV of the development.

Jeffrey J. Egbert, P.E., formerly with Gordon Geotechnical Engineering, previously prepared a geotechnical study[1] for an earlier phase of the development immediately east of the Phase IV site. The previous study for the earlier phase was reviewed as part of our scope of work for comparison with the subsurface conditions encountered on the Phase IV site. The purpose of the Phase IV study is to observe the subsurface soil conditions at the site and assess if additional recommendations are needed for foundation design, drainage considerations and other earth-related activities necessary for the design and construction of the project. Specifically, we supervised the excavation of three test pits at the site. We also obtained limited samples of the subsurface soils, conducted laboratory tests, analyzed and evaluated field and laboratory test data, and prepared this report which summarizes our findings and provides recommendations for design and construction of foundations and floor slabs.

Significant aspects regarding site development

- The roughly 3 acre development will consist of 8 multi-family residences. Residences will likely be two levels of wood frame construction above grade with some having one level of reinforced concrete below grade.
- We anticipate that the continuous wall footings will have loads which will not exceed 4 kips per lineal foot and the spread footings will have loads that will not exceed 40 kips. Uniform floor loads are projected to not exceed 150 pounds per square foot. If the loading conditions are different than we have anticipated, please notify us so that any appropriate modifications to our conclusions and recommendations contained herein may be made.
- The site currently is predominately an undeveloped field but there is a building on the west side of the site and the development may encroach into a patio on the east side of the existing building.

2.0 EXECUTIVE SUMMARY

Following is a brief summary of our findings and conclusions:

[1] Report, Geotechnical Study, Residences at Park Avenue, North Side of 12775 South Street on Both Sides of 1830 West, Riverton, Utah, Gordon Geotechnical Engineering, Inc., Job No. 018-003-12, October 10, 2012.

1. At the test pit locations below the thin surface soils, we generally encountered natural, brown CLAY (CL, CL-ML) extending to the maximum depths explored of about 10 to 11.5 feet below the existing grades. A minor amount of visual indicators (pinholes) of potentially moisture sensitive (collapsible) soil were observed in a few of the subsurface soil layers. Generally the subsurface soils were very similar to those encountered in the subsurface explorations for the earlier phase of the development immediately east.
2. A samples of these soils tested in the laboratory experienced slight amounts of collapse (up to about 2%) when wetted. Laboratory testing also indicated relatively low densities for the samples, another indicator of potential moisture sensitivity.
3. Groundwater was not encountered within the depths explored.
4. Based upon our limited explorations and testing, and the similarities of the subsurface soil conditions to those encountered in the geotechnical study for the earlier phase of the site, the recommendations provided in the geotechnical report for the previous phase may be utilized for this phase of the development. These recommendations are that footings may be established on suitable, non-moisture sensitive undisturbed natural soils or upon structural/engineered fill extending to suitable undisturbed natural soils. A maximum allowable soil bearing pressure of 1,000 psf may be utilized for design. Strict control of surface moisture is recommended due to the moisture sensitivity potential of the natural soils. Each foundation excavation should be observed by a qualified geotechnical engineer to assess if potentially moisture sensitive soils have been removed.
5. The liquefaction potential for this site should be considered low.

3.0 DESCRIPTION OF PROPOSED CONSTRUCTION

The proposed development at this site will include multi-family townhome residences with two levels of wood frame construction above grade and some will have one level of reinforced concrete below grade.

We project that wall loads will not exceed 4,000 pounds per linear foot, column loads will not exceed 40,000 pounds, and uniform floor loads will not exceed 150 pounds per square foot.

The development will also consist of the installation of utilities and the construction of an asphalt concrete paved residential street. Traffic on the street is expected to consist of a light volume of cars and pickup trucks, with an occasional medium weight truck (delivery trucks, garbage trucks). During construction some heavy weight construction vehicles may utilize the pavement.

4.0 SITE CONDITIONS AND FIELD INVESTIGATION

Existing surface and subsurface conditions associated with the subject property are presented in this section.

4.1 Site Conditions

The site is currently an undeveloped field vegetated with grasses and weeds. The site grade has a low point in the central portion of the site running north-south. Overall the grade in the area slopes slightly downward to the south. An aerial photograph of the site dated October 1997 shows the site to be a cultivated field. Aerial photos also show the existing school building immediately west of the site to have been constructed late 2006 thru early 2007. There also some light poles on the site, which we project were part of the school construction, and a couple storm drain inlets as well. The site is bound on the north by an unnamed street, on the south by Park Avenue, on the east by an earlier phase of the development, and on the west by the existing school building (see **Figures 1 and 2** in the Appendix).

4.2 Field Investigation

The subsurface soil conditions were investigated by excavating three test pits throughout the site at the approximate locations shown on **Figure 2** in the Appendix. The test pits extended to depths of approximately 10 to 11.5 feet below the existing grades. The subsurface soils encountered in the test pits were described in general accordance with ASTM 2488 and a few samples were obtained of the subsurface soils brought up by the backhoe bucket from varying depths. The subsurface conditions encountered in the field investigation are discussed in Section 4.3. Logs of the test pits, including a description of all soil strata encountered are presented in **Figures 3 through 5** in the Appendix. Sampling information and other pertinent data and observations are also included in the logs. In addition, a Key to Symbols sheet defining the terms and symbols used on the logs, is provided as **Figure 6** in the Appendix.

When backfilling the test pits only minimal effort was made to compact the backfill and no compaction testing was performed. Thus, settlement of the backfill in the test pits over time should be anticipated.

4.3 Sub-Surface Soils

At the surface of test pits TP-1 and TP-3 we encountered about 4 to 6 inches of dark brown clay soil with roots and organic material (topsoil). At the location of TP-2 we encountered about 6 inches of orange-brown gravel fill that appeared to be road base. Below the surface soils we encountered layers of natural dark brown to light brown CLAY (CL, CL-ML) soils extending to the bottom of the test pits. Generally the near surface natural soil layers (upper 1.5 to 5 feet) contained some root holes, and a few of these layers contained some minor pinholes. Pinholes are a typical visual indicator of potentially moisture sensitive, collapsible soils. When wetted, collapsible soils can experience additional settlement. Laboratory consolidation test results showed some collapse (up to about 2%) when the sample was wetted during testing. Some of this movement is likely the result of sample disturbance during collection and handling.

At depths of approximately 1.5 to 5 feet below the existing surface, the natural clay soils contained no pinholes, were noticeably more stiff, had somewhat of a blocky structure, contained iron oxide stains, and contained a few thin lenses of light brown sandy silt/silty fine sand. These layers are projected to exhibit higher strength and less compressibility and are not moisture sensitive.

For a detailed description of the soil profiles encountered in this investigation see the Test Pit Logs (**Figures 3 through 8**) in the Appendix. See **Figure 2** for approximate test pit locations.

4.4 Ground Water

Groundwater was not encountered within the depths explored. Groundwater levels would currently be near the high point seasonally. Groundwater levels can fluctuate as much as 1.5 to 2 feet seasonally. Numerous other factors such as heavy precipitation, irrigation of neighboring land, and other unforeseen factors, may also influence ground water elevations at the site. The detailed evaluation of these and other factors, which may be responsible for ground water fluctuations, is beyond the scope of this study.

4.5 Site Subsurface Variations

Based on the results of the subsurface explorations and our experience, variations in the continuity and nature of subsurface conditions should be anticipated. Due to the heterogeneous characteristics of natural soils, care should be taken in interpolating or extrapolating subsurface conditions between or beyond the exploratory locations. Seasonal fluctuations in ground water conditions may also occur.

Also, once the subsurface investigation was completed the test pits were backfilled with the excavated soils but only minimal effort was made to compact these soils. Settlement of the backfill in the test pits over time is anticipated and caution should be exercised when constructing footings, floor slabs, or pavements over these locations.

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4.6 Seismic Setting

4.6.1 Faulting

There are no mapped fault traces in the vicinity of the site. We did not observe any conditions during our field investigation that would indicate any seismic faulting in the immediate area. The nearest mapped fault trace is the Wasatch Fault is approximately 5.5 miles east-southeast of the site.

4.6.2 Liquefaction

The project site is within an area mapped by Salt Lake County as having "Very Low" liquefaction potential. Liquefaction of a soil is defined as the condition when saturated, loose, cohesion-less, (sand-type) soils have a sudden, large decrease in their ability to support loads. This is because of excessive pore water pressure which develops during a seismic event. Cohesive (clay type) soils typically do not liquefy during a seismic event.

During our investigation at this site we encountered unsaturated clay soils. It is our opinion that the subsurface conditions we observed support the mapped "Very Low" liquefaction potential designation.

4.6.4 Seismic Design Category

Based upon the subsurface conditions observed in the test pits and the guidelines of the International Building Code (IBC 2012), **Site Classification D** may be utilized for seismic structural design.

The following values should be used for site structural coefficients:

Short Period Spectral Response Acceleration	**S_s = 1.334 g**
One Second Period Spectral Response Acceleration	**S_1 = 0.445 g**
Short Period Spectral Response Design Acceleration	**S_{DS} = 0.889 g**
One Second Period Spectral Design Acceleration	**S_{D1} = 0.461 g**

5.0 LABORATORY TESTING

5.1 Laboratory Examination

Selected laboratory tests were performed on one representative soil sample to determine classification and characteristics with respect to engineering design. Chart 1 indicates typical laboratory tests, which may be applicable to some of the samples retrieved from the site. A summary of the laboratory test results is found on **Figures 7 and 8** in the Appendix.

Chart 1 Laboratory Soil Testing

Test Conducted	Specification	To Determine
Moisture Content	ASTM D 2216	% moisture representative of field conditions
Dry Density	ASTM D 2937	Dry unit weight representative of field conditions.
Atterberg Limits	ASTM D 4318	Plasticity and workability
Gradation Analysis	ASTM D 1140/ C117	Grain Size Analysis
One Dimension Consolidation	ASTM D-2435	Consolidation properties

Generally the results of the laboratory testing indicate that the natural soils have moderate pre-consolidation pressures, reactively low density, slight moisture sensitivity, and will exhibit moderate compressibility characteristics when dry and loaded below the pre-consolidation pressures. The final soil classifications are illustrated on the Test Pit Logs contained in the Appendix (**Figures 3 through 5**).

5.2 Engineering Analysis and Report

Data obtained from the exploratory test pits, the laboratory-testing program, and the previous study performed for the earlier phase of the development immediately to the east, was evaluated and used in the geotechnical analyses, which included the preparation of this report which presents our findings and recommendations.

6.0 FOUNDATION RECOMMENDATIONS

The following recommendations have been developed on the basis of the previously described project characteristics, the subsurface conditions observed in the field and their similarity to the subsurface conditions observed in the geotechnical study for the previous phase of the development, the laboratory test data, as well as common engineering practice.

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6.1 Foundation Recommendations

We anticipate that the basement footings will be established at approximately 6 to 8 feet below the existing ground surface, and garage footings at about 2.5 to 3 feet. Due to the moisture sensitivity in the near surface natural soils (1.5 to 5 feet deep) observed during laboratory testing, we recommend that each foundation excavation be observed by a qualified geotechnical engineer to assess the presence of potentially moisture sensitive soils. Footings may be established on suitable, non-moisture sensitive, undisturbed natural soils or on compacted structural fill placed on suitable, undisturbed natural soils. Footings may be designed using a maximum allowable bearing pressure of 1,000 psf.

The following recommendations should be followed:

- All topsoil, organic soils, undocumented fill, loose or disturbed soils, or any other deleterious materials should be removed from building footprints prior to the placement of foundations, floor slabs, or structural fill.
- Footings areas should be excavated using a cutting bar or other smooth-bladed equipment to minimize disturbance to the underlying soils.
- Base soil should be examined by a qualified geotechnical engineer to confirm that suitable bearing soils have been exposed.
- All imported structural fill should be placed and compacted in accordance to Section 10.0.
- Continuous footing width should be maintained at a minimum of 20 inches.
- Spot footings should be a minimum of 30 inches in width.
- Exterior footings should be placed a minimum of 30 inches below final grade and interior footing shall be placed a minimum of 16 inches below grade.
- **Proper grading should be established to reduce the potential for water to flow into the excavation during construction and to prevent water from collecting near foundations after construction. See Section 9.0, Drainage Recommendations, for additional information.**

The allowable bearing pressure may be increased by 1/3 for temporary loads such as wind and seismic forces.

6.2 Estimated Settlement

Foundations designed and constructed in accordance with our recommendations could experience some settlement. If the recommendations provided herein are observed, we estimate settlement should not exceed one inch, with differential settlements on the order of one-half inch. We expect approximately 75 percent of initial settlement to take place during construction. Additional settlement could occur if the foundation soils are wetted.

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7.0 LATERAL EARTH PRESSURES

The following lateral soil pressures should be used for design:

1. An equivalent fluid pressure of 45 pounds per cubic foot (pcf) for the active case. That is when the structure is allowed to yield, i.e. move away from the soil. This requires a minimum movement or rotation at the top of the wall of 0.001H, where "H" is the height of the wall (bottom of footing to top of wall).
2. 65 pcf for the at rest case. This case occurs when the wall is not allowed to yield.
3. 295 pcf for the passive case. In this situation, the wall moves into the soil.

The given values for design are based on the use of native soils as back fill. If imported soils other than native soils are used, we recommend that this office review the materials and determine if the above design earth pressures are still appropriate.

8.0 FLOOR SLABS

Floor slabs may be established on suitable, undisturbed natural soils or upon structural fill extending to undisturbed natural soils. To aid in distributing the floor loads and to create a capillary break, we recommend that all slabs, including exterior flatwork, be underlain by a minimum of 4 inches of free draining granular material such as ¾ inch minus gravel or 'pea gravel'.

To help control normal shrinkage and stress cracking, the floor slabs should have the following features:

1. Adequate reinforcement for the anticipated floor loads with the reinforcement continuous through interior floor joints;

2. Frequent crack control joints; and

3. Non-rigid attachment of the slabs to foundation walls and bearing slabs.

9.0 DRAINAGE RECOMMENDATIONS

All soils can experience some volume change when exposed to water. Slight moisture sensitivity and relatively low density was observed in the natural soils during laboratory testing. Therefore, we recommend strict surface moisture control at this site. Site grading design and construction should be completed to insure that all surface water is directed away from the foundation bearing soils. We recommend that the following actions be taken:

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1. All areas around the structures should be sloped to provide drainage away from the structures. We recommend a minimum slope of 6 inches in the first 10 feet away from the structure.

2. All roof drainage should be collected in rain gutters with downspouts designed to discharge well beyond the backfill limits.

3. Adequate compaction of the foundation backfill should be provided. We suggest a minimum of 90% of the maximum laboratory density as determined by ASTM D-1557. Water consolidation methods should not be used under any circumstances.

4. Sprinklers should be aimed away from the foundation walls. The sprinkling systems should be designed with proper drainage and be well-maintained. Over watering should be avoided.

5. Other precautions may become evident during construction.

10.0 SITE PREPARATION AND GRADING

10.1 General Site Grading

All deleterious materials should be stripped from the site prior to commencement of construction activities. This includes undocumented fill, loose and disturbed soils, topsoil, vegetation, etc. Based upon the conditions observed in the test pits, stripping of about 4 inches from the surface may be required to remove vegetation, significant roots, and organic material. Also, about 6 inches of road base fill was encountered at the surface of TP-2 which should also be completely removed. The site should be examined by a qualified geotechnical engineer to assure that all deleterious materials have been removed from beneath the proposed structures.

The exploratory test pits dug as part of our investigation will likely contain loose and disturbed soils and possibly vegetation. If these conditions are encountered in excavations, the loose and disturbed soils should be removed and replaced with structural fill.

Fill placed over large areas to raise overall site grades can induce settlements in the underlying natural soils. If more than 3 feet of site grading fill is anticipated over the existing surface of the site, we should be notified to assess potential settlements and provide additional recommendations as needed. These recommendations may include placement of the site grading fill far in advance to allow potential settlements to occur prior to construction.

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10.2 Temporary Excavations

For temporary excavations less than 5 feet deep, either in the native soils or structural fill, slopes should not be steeper that 0.5:1 (horizontal to vertical). Excavations extending up to 10 feet in depth into the natural soils should not be made steeper than 1:1 (horizontal:vertical). Groundwater will likely be encountered in excavations at this site thus flatter slopes, shoring, bracing, and/or dewatering may be required for all conditions. All excavations should be made following OSHA safety guideline.

10.3 Fill Material

The natural soils should not be utilized as structural fill in footing excavations, but may be utilized as site grading fill. Any structural fill required for the project will need to be imported. The following types of fill are recommended for their specific applications:

10.3.1 Structural Fill:

Well-graded granular soils free of organics, debris, or other deleterious materials are recommended for use as structural fill at this site. We recommend a well-graded sandy gravel material with no less than 5% and no more than 25% passing the #200 sieve and no particles greater than 4 inches in maximum dimension.

10.3.2 Non-Structural Fill

The natural soils may be used as site grading fill and as fill in non-load bearing areas however, these soils will likely be time consuming to compact due to difficulties in controlling the moisture content. All fill material should be approved by the engineer prior to placement.

10.4 Trenches

Most municipalities are requiring that utility trench backfill be composed of granular material with limited fines. Structural fill as described above will meet these specifications. All trench backfill should be compacted to the requirements set forth in **Section 10.5.**

10.5 Fill Placement and Compaction

The various types of compaction equipment available have their limitations as to the maximum lift thickness that can be compacted. For example, hand operated equipment is limited to lifts of about 4 inches and most "trench compactors" have a maximum, consistent compaction depth of about 6 inches. Large rollers, depending on soil and moisture conditions can achieve compaction at 8 to 12 inches. The full thickness of each lift should be compacted to at least the following percentages of the maximum dry density as determined by ASTM D-1557:

1. Compacted fill, supporting foundations.	95%
2. Compacted fill, below floor slabs	95%
3. Backfill of trenches	
a. Below foundations	95%
b. Below floor slabs	95%
c. Below pavements	95%
d. Others	90%
4. Below Pavements	95%

Field density tests should be performed on each lift as necessary to insure that compaction is being achieved. As a minimum, 33% of all spot footings, and one test for every 50 lineal feet of continuous wall footings shall be tested for each lift.

10.6 Stabilization

The likelihood of disturbance or rutting and/or pumping of the existing natural soils is a function of the load applied to the surface, as well as the frequency of the load. Consequently, rutting and pumping can be minimized by avoiding concentrated traffic, minimizing the load applied to the surface by using lighter equipment and/or partial loads, by working in drier times of the year, or by providing a working surface for the equipment. Rubber-tired equipment particularly, because of high pressures, promotes instability in wet, soft soils.

If rutting or pumping occurs, traffic should be stopped and the disturbed soils should be removed and replaced with granular material. Typically a minimum of 18 inches of the disturbed soils must be removed to be effective. However, deeper removal is sometimes required.

The most effective granular material for stabilization is an angular, well-graded gravel such as a pit run or crushed rock with a maximum size of about four inches. We suggest that the initial lift be approximately 12 inches thick and be compacted with a static roller-type compactor. The more angular and coarse the material, the thinner the lift that will be required. We recommend that the fines content (percent passing the no. 200 sieve) be less than 15%, the liquid limit be less than 35, and the plasticity index be less than 15.

Often the amount of granular material can be reduced with the use of a geotextile fabric such as Mirafi 500x or equivalent. Its use will also help avoid the mixing of the subgrade soils with the granular material. After the excavation of the disturbed soils, the fabric should be spread across the bottom of the excavation and up the sides a minimum of 18 inches. Otherwise, it should be placed in accordance with the manufacturer's recommendation, including proper overlaps. The granular material can then be placed over the fabric in compacted lifts as described above.

11.0 PAVEMENTS

The natural soils will provide relatively poor pavement support characteristics when saturated or nearly saturated. Prior to pavement construction the zone of most significant roots and organic material should be removed. The subgrade should be proof-rolled to identify soft areas. Any localized soft zones found should be excavated and replaced with structural fill. We expect site traffic to consist primarily of lightweight vehicles (cars and pickup trucks) with occasional medium weight trucks (delivery trucks, garbage trucks, school busses). A few heavy trucks are expected during construction. We estimate a traffic load of 3 equivalent 18-kip single axel loads (EASL's) per day. Table 1 below contains the minimum recommended pavement section based on an estimated CBR of 3% for the near surface natural soils.

Table 1: Pavement Design

Material	Pavement Section Thickness (in)
Asphalt	**3**
Road-Base	**8**
Sub-base	**0**
Total Thickness	**11**

Untreated base course (UTBC) should conform to 1"-minus UDOT specifications for A-1-A/NP and have a CBR value greater than 70%. Asphalt should conform to the standard city or UDOT specification.

All engineered fill materials soil should be compacted in accordance with Section 10.5 of this report. The asphalt pavement should be compacted to 96% of the maximum density for the asphalt material. Due to the soft soils and shallow groundwater, additional sub-base and/or a stabilization fabric or geo-grid may be required to provide a stable surface for the remainder of the pavement materials.

12.0 QUALITY CONTROL

12.1 Quality Control

Our recommendations in this report are based on the assumption that adequate quality control testing and observations will be conducted by CMT during construction to verify compliance. This may include but not necessarily be limited to the following:

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principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

We appreciate the opportunity to be of service to you on this project. If we can be of further assistance or if you have any questions regarding this project, please do not hesitate to contact us at (801) 908-5954.

14.0 REFERENCES

ASTM, American Society for Testing and Materials 2010

Special Studies Map, Salt Lake County, UT, Salt Lake County Planning and Development Services 2010

IBC, International Building Code, 2012 Edition, International Conference of Building Officials, Whittier, CA.

CMT ENGINEERING LABORATORIES

Vicinity Map

1830 West, Park Avenue, Riverton

Residences at Park Avenue, Phase IV

Date:	1-Jun-15	Figure: 1
Project #:	7684	
Engineer:	Jeff Egbert	
Drawn by:	Jeff Egbert	

KEY TO SYMBOLS

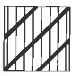
Symbol Description

Strata symbols

 **Topsoil**

 **Low plasticity clay**

 **Fill**

 **Silty low plasticity clay**

Soil Samplers

 **Undisturbed Block Sample**

Notes:

1. The results of laboratory tests on the samples collected are shown on the logs at the respective sample depths.

2. The subsurface conditions represented on the logs are for the locations specified. Caution should be exercised if interpolating between or extrapolating beyond the exploration locations.

3. The information presented on the logs is subject to the limitations, conclusions, and recommendations presented in the report.

CMT ENGINEERING LABORATORIES

Lab Summary

Residences at Park Avenue Phase IV | 1830 West Park Avenue, Riverton | Job #: 7684

Pit	Depth (ft.)	Sample	Soil Class*	N	Sample Type	Moisture ASTM: D2216	Gradation ASTM: D1140/ C117			Atterberg ASTM: D4318			CBR %		Dry Density	Other
							Gravel	Sand	Fines	LL	PL	PI	1%	2%		
TP-1	9.0	Block	CL													
TP-2	3.0	Block	CL			15.9				37	22	15			91.1	

* In accordance with the Unified Soil Classification System

Sampled By: Jeff Egbert | Sample date: June 1, 2015 | Excavated By: BRC

Figure 8

STOCK Building Supply

Framing Division/ Wasatch Installed Sales
1333 West 9000 South West Jordan, Utah 801-561-9000

Date **6/11/2015**

Framing Estimate

For: Brad Reynolds

Project/Job Name: Hopkins Remodel
1989908

Price
$6,201.00

Notes: **PRICE INCLUDES: LUMBER, LABOR**

Prices are limited solely to framing; Lumber, Labor, and Hardware.
Pricing remains valid if framing is started on the job before: 6/25/15
If Framing starts after: 6/25/15 pricing is no longer valid and is subject to market conditions.
Framing pending scope of work. Scope of work to be determined prior to start.
Framing as per plans provided to Stock Building Supply.
Subject to engineering review and lot/ jobsite specific info.
The prices listed are based upon the information provided by the party requesting the bid and shall not be relied upon as final pricing if changes are made.
Stock Building Supply will not pay any backcharges without having the opportunity to review and address any issues thay may arise. In the event that there are repairs needed, Stock Building Supply will not be liable for the labor or materials of any other trades.
Contract agreements need to be reviewed and agreed upon by all parties prior to acceptance of bid.

List of people authorized to sign change orders whose signature guarantees payment.

1 ______________________________
2 ______________________________
3 ______________________________
4 ______________________________
5 ______________________________

Labor charge for changes is $40.00 per hour. Materials will be priced per item.

Customer Signature ______________________________ **Date** ______________