



3535 TRAVIS STREET
 SUITE 250 LB-102
 DALLAS, TEXAS 75204
 214-528-8704
 FAX 528-8707
 WWW.BRWARCH.COM

PROJECT SCHEDULE

City of Dallas Texas Horse Park

March 1, 2012

1. Schematic Design

- | | | |
|--|-------------------|------------|
| • Project Kick-Off / Programming Meeting | November 16, 2012 | |
| • BRW Tour of Facilities | November 21, 2012 | |
| • Programming & Concept Design Meeting | November 28, 2012 | |
| • City Pre-Department Meeting | December 4, 2012 | |
| • 50% Schematic Design Meeting | December 6, 2012 | |
| • ONCOR Coordination Meeting | December 17, 2012 | |
| • 90% Schematic Design Owner / Tenant Meeting | December 19, 2012 | |
| • Deliver 100% SD Documents to Owner | December 28, 2012 | No Meeting |
| • 100% Schematic Design Owner / Tenant Meeting | January 2, 2013 | |

2. Design Development

- | | | |
|---|------------------|--|
| • Geotechnical Survey Boring Plan Delivered to Owner
(survey requested in maximum 4 weeks) | January 7, 2013 | |
| • Owner 100% Schematic Design Review Comments | January 8, 2013 | |
| • PD Coordination Meeting | January 11, 2013 | |
| • Fire Department Coordination Meeting | January 16, 2013 | |
| • 50% Design Development DPARD Meeting | January 22, 2013 | |
| • 100% Design Development DPARD Meeting | February 1, 2013 | |
| • Owner 100% Design Development Review Comments | February 4, 2013 | |
| • THP DPARD Site Visit | February 8, 2013 | |

- GeoMarine Archaeological DPARD Presentation February 14, 2013
- 100% Design Development Owner / Tenant Meeting February 19, 2013
- Deliver Revised 100% DD Documents to Owner February 22, 2013
- Visit Ameristall Model Barn February 28, 2013
- Deliver Site Development and Landscape Plans March 1, 2013 No Meeting

3. Construction Documents

- 50% Construction Document DPARD Meeting March 6, 2013 1:00 PM
- Park Board Meeting to Consider Bid Advertisement March 7, 2013
- 75% Construction Documents Owner / Tenant Meeting March 14, 2013 1:30 PM
- Final 75% CD Owner Design Comments to BRW March 18, 2013 No Meeting
- 95% Construction Document DPARD Meeting March 21, 2013 2:00 PM
- Deliver 100% Construction Documents to Owner March 29, 2013 No Meeting
- BRW to Submit 100% CDs for Permit Review March 29, 2013

4. Bidding (Competitive Sealed Proposals)

- Advertise April 3 & 10, 2013
- Release Bid Documents to Contractors April 3, 2013
- Pre-Proposal Contractor Meeting April 10, 2013
- Proposals (Bids) Due April 25, 2013
- Proposal Evaluations TBD
- Deliver Park Board Presentation to Owner May 11, 2013
- Park Board Meeting to Consider Construction Award May 16, 2013
- Deliver City Council Package to Owner TBD
- City Council Meeting to Consider Construction Contract May 22, 2013
- Execute Construction Contract TBD

5. Construction Administration and Occupancy

- City Issues Construction Notice to Proceed About July 1, 2013
- Construction Duration About 10-12 Months
- Construction Substantial Completion TBD
- Construction Final Completion TBD



January 11, 2013

City of Dallas
Park and Recreation Department
1500 Marilla Street, 6FS
Dallas, Texas 75201

Attn: Mr. Donald Burns
Project Manager
E: Donald.burns@dallascityhall.com
P: 214-670-1805

Re: Proposal for Geotechnical Services
Texas Horse Park
Pemberton Hill Road, Dallas, Texas
Terracon Proposal No. P94130056

Dear Mr. Burns:

Terracon Consultants, Inc. (Terracon) appreciates the opportunity to submit this proposal to provide geotechnical engineering services for the referenced project. The purpose of this study is to provide geotechnical recommendations for building foundations, slab-on-ground and pavements. This proposal presents our understanding of the project, scope of services, and fee for our services.

1.0 PROJECT INFORMATION

SITE LOCATION AND SITE CONDITIONS

ITEM	DESCRIPTION
Location	West of Pemberton Hill Road near intersection with Jeane Road, Dallas
Existing structures	Wood frame structures to be demolished
Current ground cover	Wooded areas, grass land and land under cultivation
Existing topography	About 30 to 40 feet of relief

Terracon Consultants, Inc. 8901 Carpenter Freeway, Suite 100 Dallas, Texas 75247 Registration No. F-3272
P [214] 630 1010 F [214] 630 7070 terracon.com

PROJECT DESCRIPTION

ITEM	DESCRIPTION
Structures	Covered arenas, horse barns, office and activity center buildings, feed and equipment storage buildings, drives and parking lots.
Finished grade elevation	Not known, but assumed to be ±2 feet of existing grade.
Maximum allowable movement	Columns: 3/4 inch (assumed) Floor slabs: 3/4 inch
Maximum Column loads	Single story buildings, 10 to 150 kip building column loads anticipated
Load Bearing Walls	0.50 to 2.0 kips per foot
Retaining walls	Retaining walls for 8 foot cuts
Traffic	Fire, garbage and delivery trucks, automobiles and horse trailers

Should any of the above information or assumptions be inconsistent with the planned construction, please let us know so that we may make any necessary modifications to this proposal.

2.0 SCOPE OF SERVICES

The services to be provided by Terracon are summarized in the following paragraphs.

FIELD PROGRAM

We propose the following field program.

ITEM	DESCRIPTION
Borings	25 borings are planned. Twenty-three structure borings will be drilled to depths of 25 feet in the building area. Two borings will be drilled to depths of about 10 feet for pavement and driveways.
Soil Sampling	Continuous to 10 feet then at 5 foot intervals, tube samplers in clay and split-barrel samplers in sand. The strength of bedrock, if encountered, will be evaluated in-place by performance of the Texas Department of Transportation (TxDOT) cone penetration test.
Groundwater	Water level observations will be made during drilling and upon completion of drilling.
Borehole Backfilling	Boreholes will be backfilled with soil cuttings.
Sample Disposal	Sample will be discarded approximately 60 days following report submittal.
Boring Staking	Terracon will stake the boring locations using handheld GPS equipment. The borings will be marked with a wooden stake after the borings are completed to allow the boring locations to be surveyed for location and elevation.
Utility Locations	The boring locations will be checked for underground utilities by contacting the City of Dallas utility department and state one call.

Terracon will take reasonable efforts to reduce damage to the property, such as rutting of the ground surface. However, it should also be understood that in the normal course of our work such disturbance could occur. We have not budgeted to restore the site beyond backfilling our boreholes. If there are any restrictions or special requirements regarding this site or exploration, these should be known prior to commencing field work.

For safety purposes, the borings will be backfilled immediately after completion. Excess auger cuttings would be disposed of on the site. Because backfill material often settles below the surface after a period of time, we recommend the boreholes be checked periodically and backfilled if necessary. We could provide this service at your request or grout the holes, but this would involve additional cost.

LABORATORY TESTING

The samples will be tested in our laboratory to determine physical engineering characteristics. Testing will be performed under the direction of a geotechnical engineer and may include visual classification, moisture content, Liquid and Plastic Limits, grain size analyses, absorption swell, unconfined compression and calibrated hand penetrometer tests.

Engineering Analysis and Report

The results of our field and laboratory programs will be used in preparing a geotechnical engineering report for the project. Two bound copies and one PDF copy of the report will be submitted. The report will include the following:

1. Plan of borings, boring logs, groundwater observations, and laboratory test results.
2. Description of soil and rock conditions including soil corrosion potential.
3. Site grading including the use of on-site soils and recommendations for any required imported borrow. These will include subgrade preparation and compaction criteria.
4. Appropriate foundation types, depths, and alternatives, for deep foundations. Design values will be provided for end bearing and skin friction resistance, soil induced uplift pressures and LPILE parameters. Reduction factors for drilled shaft group effects will be provided. Estimated shaft settlements will be provided.
5. PTI recommendations for design of post-tensioned slabs on ground.
6. Seismic site class, per Table 1613.5.2 of the 2009 IBC.
7. The presence and effect of expansive clays on foundations and floor slabs will be discussed. Methods of reducing the movements associated with expansive clays will be presented.
8. Typical pavement sections for asphalt and Portland cement concrete with subgrade stabilization alternatives.
9. Design earth pressures for recommended backfill soils and drainage requirements.

SCHEDULE

We can begin the field exploration program within about one week after receipt of our notice to proceed. Five days will be required to complete the borings, if site and weather conditions permit. We estimate the final geotechnical report can be completed within about three weeks after receiving signed authorization and drilling operations are not delayed by weather. Preliminary information will be available throughout the project.

3.0 COMPENSATION

An engineering fee of \$21,751 is estimated for the scope of geotechnical services outlined in this proposal that includes staking borings, drilling, laboratory testing, and an engineering report. Unless instructed otherwise, the invoice will be sent to your attention at the above address.

The fee assumes the borings are accessible to truck-mounted equipment during normal business hours, Monday through Friday. It does not include surveying services.

Additional services will be charged in accordance with current contract with the City of Dallas. Should it be necessary to expand our services beyond those outlined in this proposal, we will notify you, then send a supplemental proposal stating the additional services and fee. We will not proceed without your authorization.

4.0 AUTHORIZATION

This proposal may be accepted by signing in the space provided below. This proposal is valid only if authorized within sixty days from the listed proposal date.

We look forward to the opportunity to be of service.

Sincerely,

Terracon Consultants, Inc.

Texas Registration #3272

Accepted this _____ day of 2013
City of Dallas



Tim G. Abrams, P.E.

Senior Principal

Signature – Donald Burns

Attachment: Table 1 – Cost Estimate

**TABLE 1 - BUDGET ESTIMATE
TEXAS HORSE PARK
Pemberton Hills Road, Dallas, Texas**

Item No.	Description	Quantity	Rate	Unit	Total
100	Truck-Mounted drilling rig & 2-man crew	1	\$350.00	each	\$ 350.00
101	Support Vehicles - Drill crew to and from jobsite	5	\$95.00	each	\$ 475.00
121.1	Continuous Sampling, 0 to 10 feet	250	\$14.50	foot	\$ 3,625.00
122	Intermittent Sampling, 0 to 50 feet	345	\$13.00	foot	\$ 4,485.00
124	TxDOT Cone Penetrometer Test	75	\$35.00	each	\$ 2,625.00
200	Liquid and Plastic Limits	30	\$60.00	each	\$ 1,800.00
202	Percent Finer than No. 200 Sieve	6	\$45.00	each	\$ 270.00
203	Sieve Analyses through No. 200 Sieve	4	\$65.00	each	\$ 260.00
210	Hydrometer	4	\$90.00	each	\$ 360.00
215	Soluble Sulfates	8	\$70.00	each	\$ 560.00
220	Water Content	30	\$6.00	each	\$ 180.00
223	Lime/pH	4	\$275.00	each	\$ 1,100.00
240	Penetrometer	50	\$5.00	foot	\$ 250.00
241	Unconfined Compression - Soil	26	\$38.50	foot	\$ 1,001.00
282	Free Swell Test	8	\$95.00	foot	\$ 760.00
002	Senior Geotechnical Engineer	4	\$135.00	hour	\$ 540.00
005	Senior Engineering Technican	10	\$60.00	hour	\$ 600.00
026	Project Engineer	20	\$105.00	each	\$ 2,100.00
004	Draftsman	6	\$60.00	each	\$ 360.00
007	Clerical	1	\$50.00	each	\$ 50.00
TOTAL BUDGET					\$ 21,751.00

8901 Carpenter Freeway, Suite 100 | Dallas, Texas 75247
P [214] 630 1010 | F [214] 630 7070 | M [972] 804 9753
tgabrams@terracon.com | terracon.com

From: Burns, Don [<mailto:donald.burns@dallascityhall.com>]
Sent: Thursday, January 10, 2013 10:18 AM
To: Abrams, Tim G.; Abrams, Tim G.
Cc: Gary DeVries; Craig Reynolds; Tom Scott
Subject: Re: Texas Horse Park Geo Tech

Tim:

The attached file will provide the guidelines for your geo-technical investigation proposal for 811 Pemberton Hill Rd. The file for the boring locations may be available directly from BRW or J-Q. As mentioned we are on a very fast track and I will need to get you a DO# quickly. Your prompt response will be appreciated.

Donald Burns

Project Manager
City of Dallas Park & Recreation Dept
1500 Marilla St 6FS
214-670-1805 ph
214-670-4286 fax
214-402-1540 cell

Terracon provides geotechnical, environmental, construction materials, and facilities consulting engineering services delivered with responsiveness, resourcefulness, and reliability.

Private and confidential as detailed here (www.terracon.com/disclaimer). If you cannot access hyperlink, please e-mail sender.

Issued To:

TERRACON CONSULTANTS, INC
 ATTN:RALPH B. BARNES, JR.
 PO BOX 843358

KANSAS CITY, MO 64184-3358

Contact Phone: 214-630-1010

Ship To:

PARK & REC/ENGINEERING/DESIGN
 1500 MARILLA, 6F SOUTH

DALLAS, TX 75201

Deliver By:

Bill To:

Parks & Recreation
 1500 Marilla 6FS

Dallas, TX 75201

**Invoice must reference DO number

F.O.B.:

Vendor No.: 341409

BOC# 09-1604

BOC Date: 06/24/09

Line	Commodity Code / Description	Quantity	Unit	Unit Price	Total Amount
		Service From		Service To	
1	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 100-Truck mounted drilling rig & 2 man crew	1.00	EA	\$ 350.00	\$ 350.00
2	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 101-Support vehicles-drill crew to and from jobsite	5.00	EA	\$ 95.00	\$ 475.00
3	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 121.1-Continuous Sampling, 0-10 Feet	250.00	FT	\$ 14.50	\$ 3,625.00
4	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 122-Intermittent Sampling, 0-50 feet	345.00	FT	\$ 13.00	\$ 4,485.00
5	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 124-TxDOT Cone Penetrometer Test	75.00	EA	\$ 35.00	\$ 2,625.00
6	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 200-Liquid and Plastic limits	30.00	EA	\$ 60.00	\$ 1,800.00
7	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 202-Percent Finer than No. 200 Sieve	6.00	EA	\$ 45.00	\$ 270.00

Texas Horse Park

This delivery order is issued in accordance with the City of Dallas General Conditions and specifications in referenced bid.

Purchasing Agent	Refer Questions To:	Delivery Order Total
SIGNATURE	Issuer: Dana Ragland Phone: 214/671-9249	\$ 21,751.00

Issued To:

TERRACON CONSULTANTS, INC
 ATTN: RALPH B. BARNES, JR.
 PO BOX 843358

KANSAS CITY, MO 64184-3358

Contact Phone: 214-630-1010

Ship To:

PARK & REC/ENGINEERING/DESIGN
 1500 MARILLA, 6F SOUTH

DALLAS, TX 75201

Deliver By:

Bill To:

Parks & Recreation
 1500 Marilla 6FS

Dallas, TX 75201

**Invoice must reference DO number

F.O.B.:

Vendor No.: 341409

BOC# 09-1604

BOC Date: 06/24/09

Line	Commodity Code / Description	Quantity	Unit	Unit Price	Total Amount
		Service From		Service To	
8	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 203-Sieve Analysis through No. 200 Sieve	4.00	EA	\$ 65.00	\$ 260.00
9	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 210-Hydrometer	4.00	EA	\$ 90.00	\$ 360.00
10	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 215-Soluble Sulfates	8.00	EA	\$ 70.00	\$ 560.00
11	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 220-Water Content	30.00	EA	\$ 6.00	\$ 180.00
12	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 223-Lime/pH	4.00	EA	\$ 275.00	\$ 1,100.00
13	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 240-Penetrometer	50.00	EA	\$ 5.00	\$ 250.00
14	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 241-Unconfined compression-soil	26.00	FT	\$ 38.50	\$ 1,001.00

This delivery order is issued in accordance with the City of Dallas General Conditions and specifications in referenced bid.

Purchasing Agent	Refer Questions To:	Delivery Order Total
SIGNATURE	Issuer: Dana Ragland Phone:	

CITY OF DALLAS
 Business Dev/Procurement Services
 1500 Marilla, 3FS
 Dallas TX 75201
 Tax ID: 1-75-6000508-8

DELIVERY ORDER
DO PKR 00000389020 01/17/13

Ship To:

PARK & REC/ENGINEERING/DESIGN
 1500 MARILLA, 6F SOUTH
 DALLAS, TX 75201

Deliver By:

Issued To:

TERRACON CONSULTANTS, INC
 ATTN:RALPH B. BARNES, JR.
 PO BOX 843358

KANSAS CITY, MO 64184-3358

Contact Phone:214-630-1010

Bill To:

Parks & Recreation
 1500 Marilla 6FS

Dallas, TX 75201

**Invoice must reference DO number

F.O.B.:

Vendor No.: 341409

BOC# 09-1604

BOC Date: 06/24/09

Line	Commodity Code / Description	Quantity	Unit	Unit Price	Total Amount
		Service From		Service To	
15	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 282-Free Swell Test	8.00	FT	\$ 95.00	\$ 760.00
16	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 002-Senior Geotechnical Engineer	4.00	HOUR	\$ 135.00	\$ 540.00
17	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 005-Senior Engineer Tech	10.00	HOUR	\$ 60.00	\$ 600.00
18	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 026-Project Engineer	20.00	EA	\$ 105.00	\$ 2,100.00
19	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 004-Draftsman	6.00	EA	\$ 60.00	\$ 360.00
20	96148 LABORATORY AND FIELD TESTING SERVICES (NOT OTHERWISE CLASSIF 007-Clerical	1.00	EA	\$ 50.00	\$ 50.00

This delivery order is issued in accordance with the City of Dallas General Conditions and specifications in referenced bid.

Purchasing Agent	Refer Questions To:	Delivery Order Total
SIGNATURE	Issuer: Dana Ragland Phone:	

Master Agreement

5/6/2013

Park and Recreation
 Planning, Design and Construction

Vendor	Vendor #	PA#	Comm#	Amount	Encumbrance#
Advertising: Dallas Morning News	028774 A		91571		
Reprographics: Thomas Reprographics	007564 A	MA BS1210	96676		DO - PKR -
Signage: Dallas Lite & Barricade	053684	MA 1214	80197		DO - PKR -
Check One: Testing			BDZ0903	96148	21,751 DO - PKR -
Accutest Laboratories Gulf Coast, Inc	B VS*40811	Kleinfelder	AC	041746	
Alliance Geotechnical Group	AC 338366	LCA Environmental Inc	C	342318	A: Geotechnical &
Alpha Testing	AC 134532	Malcolm Pirnie Inc	C	341680	Construction Testing
ATC Associates Inc	ABC 049753	Mas-Tek Engineering & Assoc	A	350688	
BDS Technologies Inc	C 358484	Mazidiji Group	C	VS*26919	B: Analytical Lab Testing
Benchmark Environmental	C 508013	Oxidor Laboratories, LLC	B	VS*15970	
Bio-Aquatic Testing	B 256517	Prof Service Industries Inc	ABC	VS*17524	C: General Environmental
Bureau Veritas North America, Inc	C VS*19283	Providence Engineering & Env	C	VS*20258	Services
Camp Dresser & McKee, Inc	C 089614	Reed Engineering Group	AC	VS*36029	
CH2MHILL	C 505225	Reliance Engineering & Env	C	VC*4365	
CTL Thompson	A out of business	Resource Environmental	C	335748	
Dougherty Sprague Environment	C 356555	Rone Engineering	AC	089164	
EDI Environmental	C VS*2138	Sigma Enviro Solutions, Inc	C	VS*16824	
Enercon Services Inc	C 343932	SWG Sonsultants, Inc	C	520144	Routing:
Fugro Consultants, Inc	A 505028	STL Engineers & Laboratories	A	517672	1 Proposal and Price
Giles Engineering Associates	ABC 350698	Syntec Engineering Group	A	519098	Agreement form
GME Consulting Services Inc	AC 356975	TEAM Consultants, Inc.	AC	255849	completed by PM
Gresham, Smith and Partners	C 503071	X Terracon Consultants, Inc	AC	341409	2 Division Mgr
GSWW, Inc	C 090012	TTI Enviro Laboratories	B	349592	approval
Half Associates, Inc	C 506773	W&M Environmental Group	C	509461	3 Funding
Henley Johnston & Associates, Inc	A 041733	Xenco Laboratories	B	345551	4 Adv3/database
HNTB Corporation	C dropped per request				5 PM notified of enc
HVJ Associates, Inc	A VS*15750				by A/P staff

Project/Description: Borings and geotech data for the Texas Horse park site

Funding Distribution	Fund					
	Agency					
	Unit					
	Object - Adv	3320	3320	3320	3320	3320
	Object - Repro	3030	3030	3030	3030	3030
	Object - Signage	4599	4599	4599	4599	4599
	Object - Testing	3070	3070	3070	3070	3070
	Job #					
	Adv 3 Input			Database		
	Adv 3 Approval			Rotation Verified		

Project Manager Signature: _____ Date: _____

Division Manager Approval: _____ Date: _____



March 21, 2013

City of Dallas
Park and Recreation Department
1500 Marilla Street, 6FS
Dallas, Texas 75201

Attn: Mr. Donald Burns

Re: Geotechnical Engineering Report Addendum Letter
Texas Horse Park
Pemberton Hill Road, Dallas, Texas
Dallas, Texas
Terracon Project No. 94135010

Dear Mr. Burns:

Based on the March 1, 2013 conference call with BRW Architects and JQ and additional information provided to us via various emails, we are providing the following additional recommendations concerning foundation design and construction. These recommendations must be used in conjunction with previously submitted Terracon Geotechnical Report dated February 26, 2013.

1.0 DESIGN RECOMMENDATIONS

1.1 Building and Arena Structure Foundations and Tie-Beams

The River Ranch Covered Arena, River Ranch Horse Barn, and River Ranch Equipment Storage Building, River Ranch Camp Activity Building, River Ranch Admin building, and Equest Admin building structures can be placed on shallow foundations if differential movements on the order of one inch are acceptable. The recommendations provided in the original Report Section 4.3.1 can be used to design the footings on moisture conditioned or select fill material. The moisture conditioned clays can be replaced with onsite or imported select fill materials. The select fill requirements are provided in Report Section 4.2.2 Suitable Fills. The select fill must extend from base of footings to depth of 8 feet below finished surface grade.

We recommend using a vertical expansion joint for stone walls to avoid cracking due to subgrade movements. The moisture conditioning and/or select fill should extend at least 5 feet beyond the stone wall veneer.

Terracon Consultants, Inc. 8901 John W. Carpenter Freeway, Suite 100 Dallas, Texas 75247
P [214] 630 1010 F [214] 630 7070 terracon.com

Geotechnical



Environmental



Construction Materials



Facilities

An ultimate passive earth pressure coefficient of 2.4 and unit weight of 120 pcf can be used to calculate the passive resistance for the tie-beam design. A factor of safety of 3 is recommended to calculate the allowable passive resistance for tie-beams. A minimum width of 12 inches is recommended for the beams. The tie- beams should be cast against earth trenches. Any backfill behind the beams must be properly compacted to use the passive pressures.

1.2 Retaining Walls Design Parameters

Design recommendations including allowable bearing pressures, sliding coefficients, equivalent fluid pressures, total and differential settlements for retaining wall foundations bearing in the moisture conditioned clays or properly compacted fills are presented in the following table.

Description	Continuous Footing
Equivalent Fluid Pressure	50 pcf
Active Earth Pressure Coefficient	0.40
Bearing stratum	Moisture conditioned clay soils or select fill
Minimum bearing depth below finished grade	2 feet
Net allowable bearing pressure for strip footing ¹	1,500 psf - moisture conditioned clays 2,000 psf - select fill or natural subgrade
Minimum dimensions	18 inches
Approximate total vertical movement ²	1 to 2 inches
Ultimate Passive Pressure Coefficient ³	2.4
Coefficient of sliding friction	0.40 – Clay 0.5 – Select Fill

1. The recommended net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation.
2. The foundation movement will depend upon the variations within the subsurface soil profile, the structural loading conditions, the embedment depth of the footings, and the quality of the earthwork operations.
3. A factor of safety of 3 is recommended.

1.3 Fire Lane Pavement Recommendations

The following design parameters were used to determine the pavement section for support of fire trucks.

Traffic Conditions	Design Parameter
Axle Load	36 kips

Traffic Conditions	Design Parameter
Tire Pressure	100 psi
Truck Passes	250
Maximum Rut Depth	1.5 inches

Based on the required truck loading conditions, we recommend using following pavement section for the gravel road section. Lime stabilization of fire lane pavement subgrade is not required where geogrid is used in the pavement section.

Pavement Section	Pavement Thickness, Inches
Surface Course (3/4" Minus Crushed Limestone Surface Course)	3
Flexible Base (TxDOT Item 247, Type A, Grade I)	8
Tensor TX7 Geogrid or Equal	-
Compacted Subgrade	8

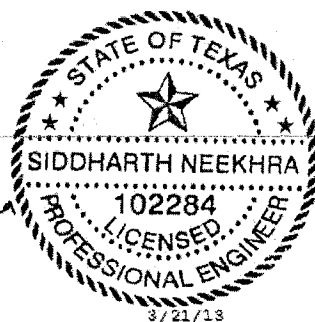
1.4 Additional Recommendations

We recommend drilling at least two confirmatory borings at each of the building location where the auger cast pile foundations extend to depth greater than the borings termination depths.

Please contact us if there are any questions, or if we can be of further assistance.

Sincerely,
Terracon Consultants, Inc.
 Texas Registration #3272

Siddharth Neekhra
 Siddharth Neekhra, P.E.
 Project Engineer



Tim G. Abrams
 Tim G. Abrams, P.E.
 Senior Principal

March 13, 2013

City of Dallas
Park and Recreation Department
1500 Marilla Street, 6FS
Dallas, Texas 75201

Attn: Mr. Donald Burns

Re: Geotechnical Engineering Report Addendum Letter
Texas Horse Park
Pemberton Hill Road, Dallas, Texas
Dallas, Texas
Terracon Project No. 94135010

Dear Mr. Burns:

Based on the March 1, 2013 conference call with BRW Architects and JQ and additional information provided to us via email, we are providing the following amended recommendations concerning foundation design and construction. These recommendations must be used in conjunction with previously submitted Terracon Geotechnical Report dated February 26, 2013.

1.0 DESIGN RECOMMENDATIONS

1.1 Building and Arena Structure Foundations

The River Ranch Covered Arena, River Ranch Horse Barn, and River Ranch Equipment Storage Building structures can be placed on shallow foundations if differential movements on the order of one inch are acceptable. The recommendations provided in original Report Section 4.3.1 can be used to design the footings on moisture conditioned or select fill material. The moisture conditioned clays can be replaced with onsite or imported select fill materials. The select fill requirements are provided in Report Section 4.2.2 Suitable Fills. The select fill must extend from base of footings to depth of 8 feet below finished surface grade.

We recommend using a vertical expansion joint for stone walls to avoid cracking due to subgrade movements. The moisture conditioning and/or select fill should extend at least 5 feet beyond the stone wall veneer.

1.2 Retaining Walls Design Parameters

Design recommendations including allowable bearing pressures, sliding coefficients, equivalent fluid pressures, total and differential settlements for retaining wall foundations bearing in the moisture conditioned clays or properly compacted fills are presented in the following table.

Description	Continuous Footing
Equivalent Fluid Pressure	50 pcf
At Rest Earth Pressure Coefficient	0.40
Bearing stratum	Moisture conditioned clay soils or select fill
Minimum bearing depth below finished grade	2 feet
Net allowable bearing pressure for strip footing ¹	1,500 psf - moisture conditioned clays 2,000 psf - select fill
Minimum dimensions	24 inches
Approximate total vertical movement ²	1 to 2 inches
Coefficient of sliding friction	0.40 - Clay

1. The recommended net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation.
2. The foundation movement will depend upon the variations within the subsurface soil profile, the structural loading conditions, the embedment depth of the footings, and the quality of the earthwork operations.

We recommend drilling at least two confirmatory borings at each of the building location where the auger cast pile foundations extend to depth greater than the borings termination depths.

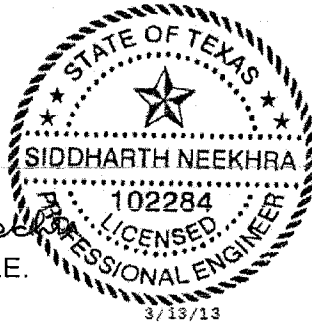
Please contact us if there are any questions, or if we can be of further assistance.

Sincerely,

Terracon Consultants, Inc.

Texas Registration #3272

Siddharth Neekhra
 Siddharth Neekhra, P.E.
 Project Engineer



Tim G. Abrams
 Tim G. Abrams, P.E.
 Senior Principal

Burns, Don

From: Holt, Scott
Sent: Tuesday, April 23, 2013 3:17 PM
To: Fernandez, Elizabeth; Burns, Don; Elam, Louise
Subject: Horse Park Building Staking

All structures, and some roads, for the Horse Park are staked and labeled.

Scott Holt, RPLS
Survey Program Manager
Public Works Department
320 E. Jefferson, Room 318
(214) 948-4137