BOARD OF EDUCATION
BEEVILLE INDEPENDENT SCHOOL DISTRICT

Date: January 16, 2007

Subject: Review the track subsurface exploration report provided by PSI (Professional Services Industries, Inc.)

Submitted by: Erasmo Rodriguez
Related Pages: 8

Supt's Approval: _____

INFORMATION

BACKGROUND INFORMATION:
On December 21, 2006, Athletic Director Chris Soza presented a power point to the Board of Trustees showing the deteriorating condition of the A.C. Jones track. The Board asked the administration to provide further information on the subsurface of the track. On December 27, 2006, PSI conducted a soil test by drilling 6 soil borings approximately 3" x 7' directly on the track surface.

ITEMS ADDRESSED:
Track repairs

RECOMMENDED ACTION:
None - information only

BUDGETARY INFORMATION:
PSI conducted this scope of work for $1,250.00

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January 5, 2006

Mr. Erasmo Rodriguez
Deputy Superintendent
Beeville Independent School District
2400 N. St. Mary's
Beeville, Texas 78102

Re: Subsurface Exploration
Track Repairs for A.C. Jones High School
Beeville, Texas
PSI Project: 330-65048

Gentlemen:

Professional Service Industries, Inc. (PSI) is pleased to submit our Subsurface Exploration Report for the Track Repairs project in Beeville, Texas. This report includes the results of field observations, laboratory testing and recommendations for repairs.

Project Authorization

PSI's services were authorized by Mr. Erasmo Rodriguez, Deputy Superintendent for the Beeville Independent School District, on December 22, 2006, by signing our proposal. This study was accomplished in general accordance with PSI Proposal No. 330-650055 dated December 22, 2006.

Project Description

We understand that the existing track was resurfaced approximately six (6) years ago with a rubberized surface treatment which began experiencing deterioration approximately two (2) years ago. It is our understanding that there are no interior or exterior curb lines at the track and that the site ground surface collects and holds surface runoff around the track.

Purpose and Scope of Services

The purpose of this study was to provide soils information on the existing athletic track at the high school football stadium. Our scope of services included drilling six (6) soil borings each to a depth of approximately seven (7) feet within the existing track area. This report briefly outlines available project information, describes the site and subsurface conditions, and presents recommendations regarding the track repairs.

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SITE AND SUBSURFACE CONDITIONS

Site Location and Description

The site for the existing track is located at 1902 N. Adams in Beeville, Texas and is located around the A.C. Jones High School football stadium. Based on visual observations at the time of our field operations, the area appeared to be relatively dry.

Subsurface Conditions

The site subsurface conditions were explored by drilling six (6) soil borings, and the borings are presented in the Appendix of this report. Soil borings B-1 to B-6 were located within the existing track and were advanced to a depth of seven (7) feet each.

The boring depths and locations were selected by PSI. The borings were drilled using a truck mounted drill rig and solid flight auger drilling methods. Soil samples were routinely obtained during the drilling process. Drilling and sampling techniques were accomplished in general accordance with ASTM procedures (ASTM D 1586 and ASTM D1587).

The soil samples obtained during the field exploration were transported to the laboratory and selected soil samples were tested in the laboratory to determine material properties for our evaluation. Laboratory testing was accomplished in general accordance with ASTM procedures. Laboratory testing and soil classification were performed on selected samples to evaluate the classification, strength and other engineering characteristics of the subsurface materials. Laboratory testing on selected samples included Moisture Content Determination (ASTM D 2216), Unconfined Compressive Strength (ASTM D2166) and Atterberg Limits (ASTM D 4318).

The soil samples obtained from the drilling operation were classified in general accordance with ASTM D 2487 or D 2488. Laboratory test data along with detailed descriptions of the soils can be found on the logs of the borings in the Appendix of this report. A key to terms and symbols used on the logs is also presented in the Appendix.

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Existing Track Surface

It was observed at the time of our field operations, that the existing track thickness included approximately one (1) inch of a rubberized surface treatment, underlain with approximately four (4) inches of base material.

Subsurface Soils

Boring B-1

A stratum of medium dense whitish tan Clayey Sand (SC) was encountered from below the track surface and base and extended to a depth of approximately 1.5 feet below the track surface. A standard penetration value (N) obtained within this stratum was 15 blows per foot.

A stratum of stiff dark brown Sandy Lean Clay (CL) was encountered from 1.5 feet below the track surface and extended to a depth of approximately 3.5 feet below the track surface. A standard penetration value (N) obtained within this stratum was 11 blows per foot. The measured Liquid Limit (LL) was 45 and the corresponding plasticity index (PI) was 22.

A stratum of medium dense to dense whitish tan Clayey Sand (SC) was encountered from approximately 3.5 feet below the track surface and extended to the boring termination depth of approximately seven (7) feet below the track surface. Standard penetration values (N) obtained within this stratum ranged from 9 to 10 blows per foot.

Boring B-2

A stratum of stiff dark brown Sandy Lean Clay (CL) was encountered from below the track surface and base and extended to a depth of approximately 1.5 feet below the track surface. An unconfined compressive strength test obtained within this stratum was 1.1 tsf. A hand penetrometer strength test was 3.5 tsf. The measured Liquid Limit (LL) was 35 and the corresponding plasticity index (PI) was 23.

A stratum of medium dense whitish tan Clayey Sand (SC) was encountered from approximately 1.5 feet below the track surface and extended to the boring termination depth of approximately seven (7) feet below the track surface. Standard penetration values (N) obtained within this stratum ranged from 10 to 12 blows per foot.

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Boring B-3

A stratum of dense brown Clayey Sand (SC) was encountered from below the track surface and base and extended to a depth of approximately 1.5 feet below the track surface. A standard penetration value (N) obtained within this stratum was 9 blows per foot. The measured Liquid Limit (LL) was 34 and the corresponding plasticity index (PI) was 18.

A stratum of very stiff dark brown Sandy Lean Clay (CL) was encountered from approximately 1.5 feet below the track surface and extended to a depth of approximately 3.5 feet below the track surface. A hand penetrometer strength test obtained within this stratum was 2.5 tsf.

A stratum of loose whitish tan Clayey Sand (SC) was encountered from approximately 3.5 feet below the track surface and extended to the boring termination depth of approximately seven (7) feet below the track surface. Standard penetration values (N) obtained within this stratum ranged from 5 to 6 blows per foot. The measured Liquid Limit (LL) was 32 and the corresponding plasticity index (PI) was 15.

Boring 4

A stratum of firm to stiff dark brown Sandy Lean Clay (CL) was encountered from below the track surface and base and extended to the boring termination depth of approximately seven (7) feet below the track surface. An unconfined compressive strength test obtained within this stratum ranged was 0.8 tsf. Hand penetrometer strength tests ranged from 2.5 to 4.0 tsf. The measured Liquid Limit (LL) was 45 and the corresponding plasticity index (PI) was 24.

Boring B-5

A stratum of medium dense whitish tan Clayey Sand (SC) was encountered from below the track surface and base and extended to a depth of approximately1.5 feet below the track surface. A standard penetration value (N) obtained within this stratum was 12 blows per foot.

A stratum of stiff dark brown Sandy Lean Clay (CL) was encountered from approximately 1.5 feet below the track surface and extended to the boring termination depth of approximately seven (7) feet below the track surface. An unconfined compressive strength test obtained within this stratum was 1.0 tsf. Hand penetrometer strength tests ranged from 1.25 to 3.5 tsf.

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Boring B-6

A stratum of firm to stiff dark brown Sandy Lean Clay (CL) was encountered from below the track surface and base and extended to the boring termination depth of approximately seven (7) feet below the track surface. An unconfined compressive strength test obtained within this stratum ranged was 1.2 tsf. Hand penetrometer strength tests ranged from 1.0 to 4.0 tsf. The measured Liquid Limit (LL) was 40 and the corresponding plasticity index (PI) was 23.

The above subsurface descriptions are of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs included in the Appendix should be reviewed for more detailed information at individual boring locations. These records include soil descriptions, stratifications, penetration resistances, locations of the samples and laboratory test data. The stratifications shown on the boring logs only represent the conditions at the actual boring locations and are estimated to the nearest ½ foot. Variations will occur and should be expected at locations away from the boring locations.

The stratifications represent the approximate boundary between subsurface materials and the actual transitions may be gradual. Water level observations made during field operations are also shown on these boring logs. The portions of samples that are not altered or consumed by laboratory testing when completed will be retained for 60 days from the date of this report and will then be discarded.

Groundwater Information

The borings were dry upon completion of drilling, indicating that the continuous ground water level at the site at the time of the exploration was either below the terminated depths of the borings, or that the soils encountered are relatively impermeable. Although groundwater was not encountered at this time, it is possible for a groundwater table to be present within the depths explored during other times of the year depending upon climatic and rainfall conditions. Additionally, discontinuous zones of perched water may exist within the overburden materials.

Soil Swell/Shrink Potential

The results of laboratory tests indicate that the soils at this site have low to moderate potential to shrink or swell with moisture content variations. The soils have a tendency to swell when soil moisture increases and shrink when the soil moisture decreases. We have estimated the amount of potential movement to shrink and swell with soil moisture using the calculated Potential Vertical Rise (PVR).

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A PVR value of about one (1) inch was calculated for this site by generally using the Texas Department of Transportation (TxDOT) TEX-124-E method. This method uses the maximum percent swell through the entire assumed zone of active moisture change of approximately seven (7) feet for this site. This method is considered appropriate for soil moisture variations such as extreme rainfall variations in this area. It is important to recognize that the PVR approach is not a precise predictor of soil behavior. It is a useful tool than can provide the designer with calculated values that can be evaluated with respect to PVR values that have adopted the use of a calculated PVR of one (1) inch or less as the threshold value. It should be noted that soils present at depths greater than seven (7) feet may also swell and shrink with increases and decreases in moisture content.

Summary

In summary, the deteriorating condition of the track is attributable to application of the rubberized surface directly onto the base course and to observed areas of poor drainage around the track area. It is therefore recommended that the track surface be removed and that the base course be reworked or replaced depending upon overall condition. The specific recommendations are as follows:

1. Correct the drainage to direct surface runoff away from the track.

2. Install a deep curb on the interior and exterior of the track to a depth of at least six (6) inches below the bottom of the base layer. The installation of wick drains behind the curbs should also be considered to protect the track from water that ponds behind the curbs.

3. Rework or replace the existing base course. Base materials should be placed in maximum eight (8) inch loose lifts and compacted to at least 95 percent of the standard Proctor (ASTM D698) maximum dry density near optimum moisture. The base layer should have a minimum compacted thickness of six (6) inches.

4. Place a minimum of 1.5 inches of hot-mix asphaltic concrete on the reworked base course. The hot-mix asphaltic concrete shall conform to TXDOT Item 340, Type "D".

5. Replace the track's rubberized surface treatment.

6. Verify that proper drainage has been achieved.

Proper drainage will have to be maintained throughout the lifetime of the structure. The joint between the curb and the asphalt surface should be maintained in a sealed condition. Uniform watering of the exterior of the track will provide improved long term performance of the track.

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Report Limitations

The recommendations submitted in this report are based on the available subsurface information obtained by PSI and design details furnished by Mr. Erasmo Rodriguez of the Beeville Independent School District for the proposed project. If there are any revisions to the plans for this project, or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be notified immediately to determine if changes in the recommendations are required. If PSI is not notified of such changes, PSI will not be responsible for the impact of those changes on the project.

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

After the plans and specifications are more complete, the geotechnical engineer should be retained and provided the opportunity to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated into the design documents. At this time, it may be necessary to submit supplementary recommendations. If PSI is not retained to perform these functions, PSI will not be responsible for the impact of those conditions on the project. This report has been prepared for the exclusive use of the Beeville Independent School District for the specific application to the Track Repairs for A.C. Jones High School located in Beeville, Texas.

Closing

It is recommended that construction activities be observed by PSI once renovation of the track begins. Construction activities should be performed during a period of dry weather.

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PSI appreciates this opportunity to be of service to you on this project. If you should have any questions pertaining to this report, or if we may be of further service, please feel free to contact our office.

Respectfully submitted,
Professional Service Industries, Inc.

Charlie Williams, Jr.
Branch Manager

Clement Bommarito, P.E.
Principal Consultant

Appendix

Boring Location Plan
Boring Logs B-1 thru B-6
General Notes