

ENNIS INDUSTRIAL RAIL PARK

GEOTECHNICAL, ARCHEOLOGICAL, AND ENVIRONMENTAL FINDINGS

CITY OF ENNIS, TEXAS

GEOTECHNICAL FINDINGS

- ❑ **Seismic Activity:** There is no evidence of any seismic activity found at either the proposed site or in the surrounding area.
- ❑ **Sub-surface Characteristics:** According to regional geologic information, the proposed site is underlain by the Wolfe City Sand Formation, the Neylandville Formation, and the Marlbrook Marl Formation Undivided. No soils were found in test borings that are indicative of the Wolfe City Formation. The Neylandville and Marlbrook Formations consist primarily of clay that is calcareous. Within the thirty-two test borings conducted in the Park to the east of the Sterilite Drive area, various clays were encountered the full depth of the test borings. The naturally developed soil profile may be changed by erosion and/or grading activities so that the upper, more weathered zones may be completely stripped away. Also, washed-in alluvial soils, man-made fills, or both may cover residual soils. In general, the upper soil materials at this site are residual soils, which have developed from the underlying parent bedrock materials.
- ❑ **Subsurface Conditions:** As previously mentioned, a total of thirty-two (32) test borings were drilled on the property east of Sterilite Drive. The subsurface conditions discussed in the following paragraphs and those shown on the Records of Subsurface Exploration are based on the soil test borings drilled on the adjacent site and represent an estimate of the subsurface conditions based on interpretation of the boring data using normally accepted geotechnical engineering judgments. The transition between soil strata is less distinct than those shown on the test boring records. Below the ground surface, the soil tests borings encountered various clay materials. These strata are discussed in the following paragraphs:
 - ❑ **Clay:** At the ground surface in the test borings, the borings encountered clay materials. The clay soils generally became marly in composition below depths of 4 to 10 feet. The clay materials extend to the termination depth of the test borings and consist of dark brown to dark grayish brown to gray to tan and gray to yellowish tan and gray, colored soils. The plasticity index (PI) of the clays ranged from 26 to 50, the moisture contents ranged from 11 to 36 percent, and the consistency varied from soft to hard. Calcareous nodules, rust partings and thin, white silt seams were often encountered in the soil strata. These clays had pocket penetrometer unconfirmed compressive strengths that ranged from 0.5 to over 4.5 tsf.
 - ❑ **Groundwater Condition:** Standard continuous flight auger drilling techniques were used to advance the test borings. Groundwater readings were measured in the test borings during drilling and at the completion of each boring. Groundwater was encountered on the drilling tools during the drilling of test boring B-29 at a depth of approximately 21 feet below the ground surface. This boring was dry upon completion.

At the completion of test boring B-11, groundwater was recorded at a depth of 27.5 feet and after 24 hours the water level had risen to a depth of 26 feet. The remaining thirty-one test borings were checked for groundwater presence following completion; each of these borings was found to be dry after 24 hours.

Groundwater seepage flow in this formation generally occurs through the previous sand or silt seams or through joints/fractures within the clay and marly clay strata such as the random groundwater observed within test borings B-11 and B-29. The groundwater level will fluctuate seasonally depending upon the amount of rainfall, prevailing weather conditions, and subsurface drainage characteristics, and the groundwater level may be different at other times.

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Based on the groundwater conditions encountered in the test borings, the use of temporary casing during the construction of drilled shafts is not expected to be necessary to contain groundwater within the open drilled shafts. Drainage ditches, trenches, or pumping from small pumps may be used for temporary de-watering of surface runoff that occurs onsite and within the building area excavation prior to filling.

Rainwater and runoff, which accumulate in shallow foundation and utility excavations, can be pumped out of small sumps. Groundwater levels are subject to seasonal, climatic and other variations and may be different at other times and locations. A site drainage scheme should be implemented and maintained at all times by the contractor to redirect all off site drainage away from the limits of construction.

- ❑ **Unusual soil conditions:** There is no evidence of unusual soil conditions. According to the results recorded from the thirty-two test borings conducted in the Park to the east of the Sterilite Drive area, clays and marly clays were encountered the full depth of the test borings. The naturally developed soil profile may be changed by erosion and/or grading activities so that the upper, more weathered zones may be completely stripped away. Also, washed-in alluvial soils, man-made fills, or both may cover residual soils. In general, the upper soil materials at this site are residual soils, which have developed from the underlying parent bedrock materials.
- ❑ **Frost Depth:** The design frost depth in Ellis County, Texas is 12 inches.
- ❑ **Surrounding Environment:** The tract consists of vacant land covered with low to tall height grass and weeds with numerous mesquite trees. The site is used as pastureland for cows. Several fence lines constructed of barbed wire with wood fence posts also bisect the site.

SITE TOPOGRAPHY

- ❑ **Site Topography:** The site topography slopes gently from high ground at the southeast corner of the site along Sterilite Drive down to the northwest portion of the site in the low swale area. Overall, the general relief across the site is on the order of 10 feet, based on the preliminary topographic plans. The ground surface varies in elevation from 475 feet mean sea level (msl), near the northwest property corner, upward to an elevation of 485 msl near the southeast property corner.

ARCHAEOLOGICAL FINDINGS

- ❑ **Archaeological:** There are no structures located on the proposed site that have the potential to be designated as either historic or archaeologically significant.

ENVIRONMENTAL FINDINGS

- ❑ **Ponds and wetlands:** There is an existing swale and drainage outlet channel located to the east of the proposed site and alignment placed on the low area east of Sterilite Drive crossing the US Highway 287 Bypass. This channel drainage system was cleared through the US Corps of Engineers relative to the wetland and 404 permit issues. The isolated stock farm water tanks are not in the wetland classification and will not require Corps of Engineers permission for removal. One creek is located on the west side of Sterilite Drive and has been relocated away from the proposed development areas.
- ❑ **Existing vegetation:** The tract consists of vacant land covered with low to tall height grass and weeds with numerous mesquite trees.