

TRENCH SAFETY DESIGN CONSIDERATIONS LETTER



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May 15, 2014

Mr. Thusitha Silva, PE
Principal
Walter P Moore and Associates, Inc.
1301 McKinney, Suite 1100
Houston, Texas 77010

Re: Geotechnical Investigation
Almeda Road Paving and Drainage
From Old Spanish Trail (OST) to South MacGregor Way
Owner: City of Houston
WBS No. N-000806-0001-3
TxDOT CSJ No. 0912-72-072
HVJ Project No. HG1018580

Dear Mr. Silva:

The project includes reconstruction of Almeda Road from Old Spanish Trail (OST) to South MacGregor in Houston, Texas. The project also involves sanitary sewer replacement crossing Almeda Road at the intersection of Dixie Road and also water line replacement along Almeda Road between Lockett Street and Holcombe Boulevard. Based on the information provided to us by Walter P Moore and Associates, Inc., we understand that the invert depth of the water line is about 7 feet below the existing grade at most locations, and 17 feet below the existing grade near the sanitary sewer location, that open cut techniques will be used for the installation of the utility lines. This study was performed in general accordance with the City of Houston Department of Public Works and Engineering Infrastructure Design Manual dated July 2011.

Trench Excavation Considerations. Excavations should satisfy two requirements. First, the soils above final grade must be removed without disturbing the soil below excavation grade, which will support constructed facilities. Second, the sides of the excavation must be stable to prevent damage to adjacent streets and facilities as a result of either vertical or lateral movements of the soil. In addition, a satisfactory excavation procedure must include an adequate construction dewatering system to lower and maintain the water level at least a few feet below the lowest excavation grade.

Excavation Stability. Excavations shall be shored, laid back to a stable slope or some other equivalent means may be used to provide safety for workers and adjacent structures. Assessment of the need for excavation sloping, use of trench boxes or other measures required to provide a stable excavation, and the use of appropriate construction practices and/or equipment is the contractor's responsibility. The following comments are intended to represent common solutions to stability problems encountered in similar soil conditions in the Houston area, and may not be construed as excavation system design recommendations. The excavation operations shall be performed in accordance with 29 CFR Part 1926 subpart P, as amended, including rules published in the Federal Register, Vol. 54, No. 209, dated October 31, 1989, as a minimum. In addition, the provisions of legislation enacted by the Texas Legislature and City of Houston should be satisfied.

Excavations Shallower Than Five Feet. Trenches that are less than five feet deep should be appropriately protected when any indication of hazardous ground movement is anticipated. Based on the soil conditions revealed by the borings, all trenches shallower than five feet may be excavated with side slopes of one vertical to one and one-half horizontal. If there are any indications of sloughing during excavation, the side slopes should be flattened.

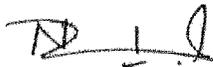
Excavations Deeper Than Five Feet. Trenches that are deeper than five feet should be shored, laid back to a stable slope, or some other appropriate means of protection should be provided where workers might be exposed to moving ground or caving. The slopes may be constructed in accordance with Table B-1 and shoring may be constructed in accordance with Table C-1.1, Table C-1.2 and Table C-1.3 of 29 CFR Part 1926. Soil types required by Table C-1.1, Table C-1.2 and Table C-1.3 (Trench Shoring - Minimum Timber Requirements) are given below:

Boring No.	Street Name	Station No.	OSHA Soil Type			
			Depth of Trench (ft.)			
			0 - 5	5 - 10	10 - 15	15-20
B-1	Almeda Road	33+00.42	B	B	-	-
B-2	Almeda Road	38+01.30	C	C	-	-
B-3	Almeda Road	44+00.24	B	C	-	-
B-4	Almeda Road	52+56.82	C	C	C	B

Please call us if you have any questions or need more information.

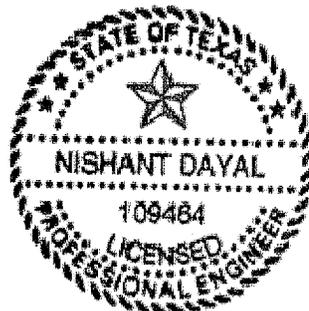
Sincerely,

HVJ ASSOCIATES, INC.
Texas Firm Registration No. F-000646



Nishant Dayal, P.E.
Project Manager

ND/ar



Date: 05/15/2014

The seal appearing on this document was authorized by Nishant Dayal, PE 109464 on May 15, 2014. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.