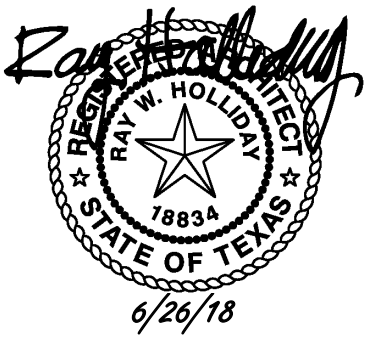


BROWN REYNOLDS WATFORD
ARCHITECTS
BRW

2700 EARL RUDDER FWY SOUTH
SUITE 4000
COLLEGE STATION, TEXAS 77845
979-694-1791
WWW.BRWARCH.COM

ADDENDUM NO. 01

PROJECT: LOS FRESNOS CITY HALL

LOCATION: LOS FRESNOS, TEXAS

PROJECT NO: 217072.00

DATE: June 26, 2018

The Construction Documents on the above referenced project, dated 6/11/18, shall be revised as follows:

SPECIFICATIONS

Item No. 1 (RE: Section 00 00 10 Table of Contents, Section 00 30 00 Information Available to Proposers) – Attachment **00 30 00B Geotechnical Addendum Letter** is added to the Table of Contents and the Project Manual, and is attached to this addendum.

Item No. 2 (RE: Section 00 10 00 Bid Solicitation, 00 20 00 Instructions to Proposers, 00 42 00 Proposal Form) – The pre-proposal meeting is re-scheduled to **2:00 p.m. CST, Friday, June 29, 2018.** The meeting will be located in the council chambers of City Hall located at 200 N Brazil St, Los Fresnos, Texas. The pre-proposal meeting is not mandatory.

CLARIFICATIONS

Item No. 3 (RE: Section 00 10 00 Bid Solicitation) – The project budget is approximately $2,225,000.

Attachments: 00 30 00B Geotechnical Addendum Letter

END OF ADDENDUM NO. 01 *

June 12, 2018

GESSNER
ENGINEERING

Mr. Ray Holliday, AIA
Brown Reynolds Watford Architects
2700 Earl Rudder Freeway South, Suite 4000
College Station, Texas 77845

Re: Supplementary Letter – Stiffened Slab-on-Grade Foundation Option
Los Fresnos Municipal Complex
Highway 100
Los Fresnos, Texas
Gessner Engineering Job No. 17-0424

Dear Mr. Holliday:

Gessner Engineering was requested to issue an addendum letter to provide alternate foundation parameters than those which were recommended for the proposed Los Fresnos Municipal Complex located in Los Fresnos, Texas. This letter is an addendum to the original Los Fresnos Municipal Complex Geotechnical Report, dated October 17, 2017, and the first Los Fresnos Municipal Complex supplementary Letter, dated March 19, 2018. No additional field or laboratory testing was performed in conjunction with this addendum letter. This letter should not be used separately from the original report. It should be noted that the client desires a stiffened slab-on-grade foundation system; however, is not our recommendation for this site.

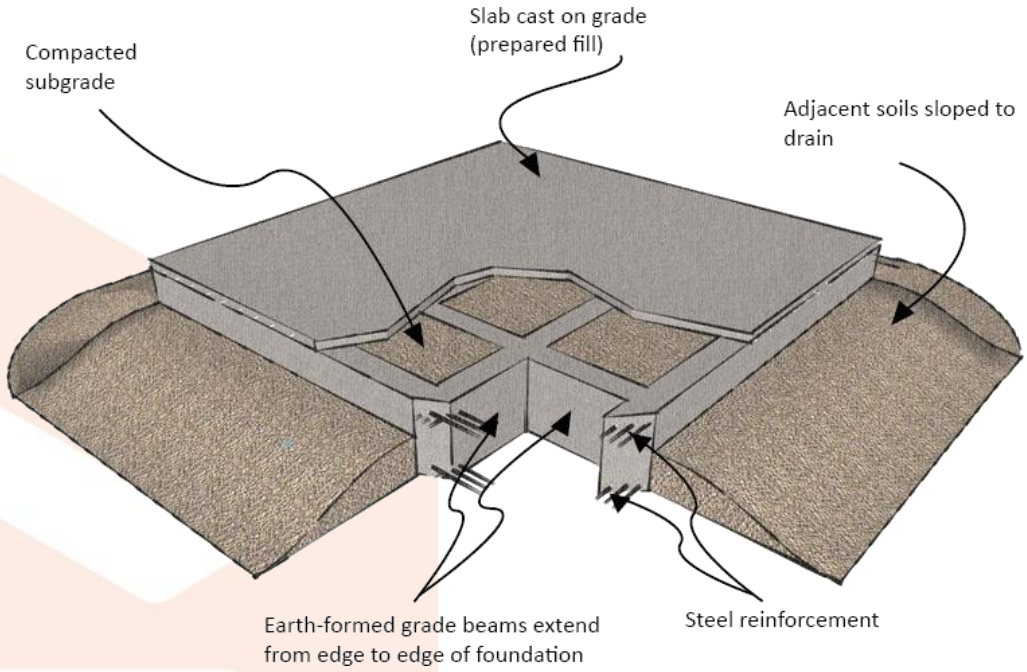
Foundation Options

Per the original geotechnical report, the **structural slab-on-voids foundation system** is the primary recommendation for this site because of its minimal risk for differential movement. In any construction project, the design must balance the construction cost with performance. At the request of the client, parameters for a **stiffened slab-on-grade foundation system** are being presented; this foundation could provide a more cost-effective solution, but sacrifices some performance benefits of a slab-on-voids foundation system. The soils on this site combined with the foundation earthwork as described in this letter make this option feasible. Please understand that this is not our recommendation, but what the client desires. If properly designed and constructed, and with sufficient overexcavation and select fill replacement, a **stiffened slab-on-grade foundation system** can provide adequate foundation support.

Stiffened Slab-on-Grade

A stiffened slab-on-grade, also known as a waffle slab or modified mat foundation, consists of a slab stiffened with beams spanning across the foundation in each direction. Stiffened slab-on-grade foundations are appropriate for foundations on expansive soils that are sensitive to deflection. Grade beams in these foundations should extend from edge to edge across the slab. The network of grade beams is intended to create a rigid plate that moves as a unit in response to soil movement.

Parameters for the foundation design presented here are provided for the methods recommended by the Texas Branch of the American Society of Civil Engineers. Should the design engineer require additional parameters, please contact Gessner Engineering.



Conventionally Reinforced System

The primary role of steel reinforcement in reinforced concrete is to carry the tensile forces due to flexure of the beams. Concrete has high compressive strength but lacks tensile strength. The conventionally reinforced stiffened slab-on-grade uses steel reinforcement in the grade beams to create the necessary stiffness in the foundation. Increasing the grade beam depth and size of reinforcement and decreasing the beam spacing provides additional stiffness for more expansive soils.

Presented below are the design parameters for the Building Research Advisory Board (B.R.A.B.) design method and the Wire Reinforcement Institute (W.R.I.) design method based upon the subsurface conditions observed at this project location. These methods are essentially empirical design techniques and the parameters provided are based on our interpretation of the project soil borings and criteria published in the B.R.A.B. design manual and the W.R.I. design manual.

Based on the existing soil, the effective PI is calculated at **59**, which indicates a very high expansion potential. The table below may be used to determine the estimated values for effective PI corresponding to various depths of overexcavation and select fill replacement. The values calculated in the table assume that select fill material has a plasticity index of 20.

Depth of Overexcavation and Select Fill Replacement (feet)	Estimated Effective PI
0	59
2	59
4	38
6	32
8	26
10	24

Table 1: Estimated Design Effective PI Corresponding to Various Depths of Overexcavation and Select Fill Replacement

It is recommended that this site use a minimum of **5 feet** of overexcavation and **5 feet** of select fill replacement. This recommended overexcavation and select fill replacement and a properly constructed building pad in accordance with the *Foundation Earthwork* section of this letter corresponds to a design effective PI of **34**. This design effective PI is recommended based on our experience using the B.R.A.B. and W.R.I. methods of foundation design. If the building performance requires stricter design guidelines, the table above should be used to determine the acceptable design effective PI with the corresponding overexcavation and select fill replacement.

A value of **2,500 psf** may be used as the resulting allowable bearing pressure for the soils at 1 to 3 feet below ground surface with a properly prepared building pad. This allowable bearing capacity was calculated with a factor of safety of 3. Other measures recommended to reduce moisture infiltration into the subgrade are presented later in this subsection and in the *Drainage* section of the original report. Presented in the table below are effective design parameters for this site after the recommended earthwork is performed.

Design Effective PI	34
Allowable Bearing Capacity (psf)	2,500
Climatic Rating	15
Soil Support Index (SSI)	0.78

Table 2: B.R.A.B. or W.R.I. Design Parameters

It is recommended that grade beams extend at least 12 inches below final grade into properly compacted earth. This recommendation is to reduce surface water migration below the foundation elements and to develop proper bearing of the grade beams. According to section 1809 of the International Building Code, the foundation is required to bear 12 inches below the adjacent soil. The grade beam width and depth should be properly evaluated by the structural engineer. Grade beams may be thickened and widened at column locations to serve as spread footings to support concentrated loads. It is also recommended that a vapor barrier be placed between the supporting soils and the concrete floor slab in accordance with ASTM E 1745-11, ASTM E 1643-11, and ACI 302.2R-06.

For a stiffened slab-on-grade foundation, it is recommended that measures be taken whenever practical to increase the tolerance of the Los Fresnos Municipal Complex to post-construction foundation movements. An example of such measures would be to provide frequent control joints for masonry/brick/stucco veneer exteriors, if any, to control cracking across such walls and concentrate movement along the joints.

Care should be taken in all foundation systems to provide adequate drainage around the structure and prevent ponding of runoff adjacent to the foundation. In addition, systems that extend from the building into the shallow soils such as plumbing should be designed to accommodate the movement of the shallow soils.

Subgrade for stiffened slab-on-grade foundation system shall be prepared in accordance with the *Foundation Earthwork* section of this letter.

Foundation Earthwork

The following earthwork recommendations are provided for the design parameters as described previously in this letter. For a **stiffened slab-on-grade foundation system** at this site, it is recommended that a minimum of **5 feet** of existing material be overexcavated and minimum of **5 feet** of select fill be compacted in place to form a level building pad. The building pad shall extend a minimum of 5 feet from the edge of the building footprint in all directions. Select fill shall slope away at an angle that allows for proper drainage (see *Drainage* section of the original report).

Earthwork:

Stiffened Slab-on-Grade

- Overexcavate 5 feet of existing material
- Replace with 5 feet of compacted select fill

Select Fill

Select fill to be utilized beneath the jointed slab-on-grade limits should consist of a low plasticity clayey soil with a PI between 8 and 20, a maximum gravel content (percentage retained on No. 4 sieve) of 40 percent, and rocks no larger than 2 inches in their largest dimension; or a crushed limestone base material meeting the requirements of the Texas Department of Transportation (TxDOT) 2004 Standard Specifications Item 247, Type A, Grade 4. Alternatively, a low-plasticity granular fill material that does not meet these specifications may be utilized only if approved by Gessner Engineering. All structural fill should be placed on prepared surfaces in lifts not to exceed 8 inches loose measure, with compacted thickness not to exceed 6 inches. Select fill should be compacted to at least 95 percent of the Standard Proctor (ASTM D 698) density at a moisture content ranging within 2 percent of optimum moisture content for depths of 3 feet or less. **If fill in excess of 3 feet is required, all structural and select fill deeper than 3 feet shall be compacted to 99 percent of Standard Proctor (ASTM D 698).**

Site Fill

For site areas not below pavements or ground-supported structures, general fill may be used to achieve the desired grade. General fill shall have a PI no greater than 30 and shall be free of debris and organics. All general fill should be placed on prepared surfaces in lifts not to exceed 8 inches loose measure, with compacted thickness not to exceed 6 inches. General fill should be compacted to at least 92 percent of the Standard Proctor (ASTM D 698) density at a moisture content ranging within 2 percent of optimum moisture content.

A surficial backfill material within 5 feet of the foundation perimeter for the top foot of soil may be installed as a clay cap on fill materials to prevent migration of surface water beneath the structure. This material shall be placed as noted for general fill above and shall have a PI in excess of 30. Fill shall be free of debris and organics and shall be placed in accordance with the *Drainage* section of the original report.

It has been a pleasure to provide you this supplemental information. If I can be of further assistance to you with this situation please contact me.

Sincerely,
GESSNER ENGINEERING, LLC F-7451

Kristina M. Surber, P.E.