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Benefits of in-house collaboration of geotechnical/structural engineering

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Traditionally, separate geotechnical and structural engineering firms contribute to the design and construction of building projects. In 1995, Gible Norden Champion Brown Consulting Engineers, Inc., (GNCB), practicing traditional structural engineering, created a unique firm in Old Saybrook, which combined expertise from both services under one roof. This innovative in-house collaborative practice adds value to its menu of client services and demonstrates the benefits of incorporating professional and experienced geotechnical engineering into a project, from concept to completion. Direct participation in early design and construction decisions results in knowledge of subsurface soil conditions, which benefits the important early stages of project planning.

Tangible benefits of a combined structural and geotechnical engineering practice to the design team include:

- * **Geotechnical Involvement Throughout the Project:** When GNCB serves as both geotechnical and structural engineer on a building project, the geotechnical involvement, from conceptual design to completion of construction, becomes part of the design process throughout. Too often, owners that contract directly for geotechnical engineering services require only limited participation, with a reduced role, on an "as-needed" (I'll call you) basis, after the report is completed. This somewhat limited participation leaves the design team without geotechnical engineering support during the critical periods of final design and construction.
- * **Enhanced Contract Drawings:** Contract drawings and specifications normally convey design requirements to contractors. Enhancement of these drawings, by including geotechnical engineering criteria, ensures that the foundation design is accurately presented to the contractor, eliminating the excuses "I didn't see (or understand) the report", or "I wasn't aware of the fill that needed to be removed." Enhancement of the contract drawings, whether it is by detail on the structural drawings or preparation of a separate geotechnical engineering contract sheet, conveys necessary foundation design requirements to the entire team.
- * **Expansion into New Services:** GNCB's integration of geotechnical and structural engineering services enabled expansion of in-house services to provide one-stop shopping. These additional services relate to areas not typically completed by a traditional or specialty service firm such as demolition specifications, design of foundation drainage, waterfront construction and wall design.
- * **Reduced Company Risk:** The geotechnical presence on GNCB's structural projects reduces the overall risk of conducting business. A few examples include: renovation projects where existing foundations may receive increased load, construction monitoring and third party review projects can assign geotechnical engineering staff to handle geotechnical-related items, and residential work, which does not routinely have a geotechnical engineer.
- * **Greater (Structural) Staff Awareness:** Since integration of geotechnical and structural engineering

services, the structural engineers have all gained a valued and beneficial understanding of geotechnical issues. Now, GNCB structural engineers routinely request preliminary information on subsurface conditions, even during the proposal stage, enabling an early incorporation of geotechnical information into the design process.

GNCB's implementation of a policy for geotechnical engineering review of all projects, on which the firm serves as structural engineer-of-record, identifies the significant foundation components to be presented on the structural foundation drawings. The GNCB geotechnical review policy includes:

- * Geotechnical engineering staff reviews applicable reports or documentation of geotechnical recommendations in order to prepare a brief memo of pertinent items.
- * A separate geotechnical contract drawing is developed, or structural drawings are prepared, with pertinent geotechnical engineering information added.
- * If GNCB is not the geotechnical engineer-of-record, the geotechnical engineer-of-record is requested to review the geotechnical information shown on the structural drawings for accuracy.
- * As needed, bid items are coordinated with the project specifications.
- * GNCB makes a final review of all foundation related information for consistency with the design intent.

The in-house collaboration of geotechnical and structural engineering services provides benefits for the entire design and construction team. Most of all, the enhancement of contract drawings identify and highlight the geotechnical design issues to both the design team and contractor. The ultimate winner is the owner and/or developer, who benefits from reduced risk and potential for cost and time savings.

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