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Quality Assurance During Pre-Construction

Proper preparation can ensure your project's success

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Grading and infrastructure installation must follow the guidance of geotechnical engineering reports, prior to any vertical construction activity. Projects with incomplete soils investigations may result in unexpected challenges such as hydro-consolidation, slab heave, cracking, and foundation failures, along with consequent litigation. If discovered after the homes are occupied, the risk of litigation increases dramatically together with repair scopes and costs.

What to look for in a geotechnical report

One of several reasons for a soils report is to determine the soil-bearing strength of the site. This value drives the parameters of the foundation design. Liquefaction potential and expected settlement at the site will also need to be addressed whether post-tension slabs or friction piles are required. Vapor barrier requirements must also be reflected in the structural and architectural plans. Frequently we find that the vapor barrier is either shown in the incorrect location or with a layer of sand over it. Placing sand over the barrier may lead to moisture issues.

High groundwater at a project site can also adversely affect the foundation. For example, if the building slab is within five-feet of the groundwater level, an under-slab or horizontal waterproofing will need to be specified and installed. Methane mitigation, corrosive soils, and water-soluble sulfates are other important items that should be identified in the preliminary geotechnical report.

LJP verifies geotechnical report recommendations are addressed through a peer review of the engineering and architectural plan sets. While plans are checked as a permitting requirement by the city's building department, receiving a building permit does not mean the project is risk-free.

City and County building departments are focused on fire life safety, structural framing, foundation, and certain MEP items. City inspectors then visit job sites conducting cursory inspections to verify installations of key assemblies. However, waterproofing and exterior envelope installations are not verified by the city within the plans or the field. In fact, there is no city required special or deputy inspector or engineer tasked with verifying the installation of these assemblies; unlike with shear nailing, concrete placement, and roof diaphragm inspections. Code provisions for exterior envelope and waterproofing are frequently vague and defer to product installation guidelines, limiting the city's involvement during plan check.

Fortunately, local jurisdictions do have a list of project submittal requirements, including preliminary soils reports as well as rough grading plans, street improvement plans, tract maps, precise grade plans, construction sequence lists, and architectural plans, among other similar permitting documents.

What to look for in the plans

A third-party peer review can verify coordination within the different disciplines relating to waterproofing and the exterior envelope. During LJP's reviews we often find that area drains, site drainage, or slopes shown on the plumbing, civil, or landscape sheets do not match the locations or slope that are shown on the architectural sheets.

The critical details to look for are transition or interface details, especially if the installation and sequence involves multiple trades. For example, at roof-to-wall intersections, the parapet details usually involve two or more contractors for execution. The roof, sheet metal, and exterior cladding trades meet at this detail. It is critical to show proper layering and sequencing in the detail so that pertinent trades understand who will go first, how much material and overlap dimensions will be required for the subsequent trade, and to verify that each material is compatible with the next one. These details must also be consistent with industry standard drainage patterns and consider the exposure to weather, wind, rainfall, and other demands of the project's location.

Another important system that LJP often finds lacking is appropriate detail and instruction for window and door installations. Windows and doors have standard flashing methods based on established industry associations, like American Architectural Manufacturers Association. However, we rarely see plans that show consistent detailing of windows and door flashing sequences. If not included, contractors will determine the flashing sequences themselves with no oversight or coordination with other assemblies or materials.

Since building departments are not specifically verifying some the above-mentioned critical items during plan check or field visits, and have no mandate to require special inspectors to review these

items, it is especially important to properly detail waterproofing and exterior system components to help ensure a high quality of construction in the field and avoid costly litigation down the road. A third-party peer review of documents and comprehensive QA/QC field inspections are the best methods to help mitigate potential issues, defects and costly repairs, litigation, and damage to client relationships.

What is in your toolbox?

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