The background of this section shows a pair of silver mechanical calipers and a pencil resting on a set of blueprints. The blueprints feature technical drawings and lines.

CIVIL
MECHANICAL
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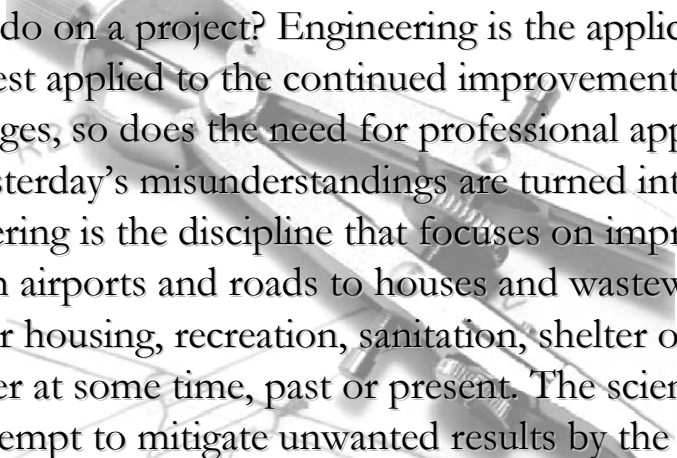
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What does an Engineer Do?

I. Racey Engineering, PLLC have long been prideful of providing our customers with service and experience on Residential Projects of any size and magnitude. We have recognized a need to provide information to our customer that will provide a greater understanding as to how we can best provide that desired product of prompt and accurate service. This document shall in no way be construed to preclude or exclude any application of State or Industry Standards that are incorporated by reference. This is merely the first part of our operational manuals which will better provide information to our customers and employees.

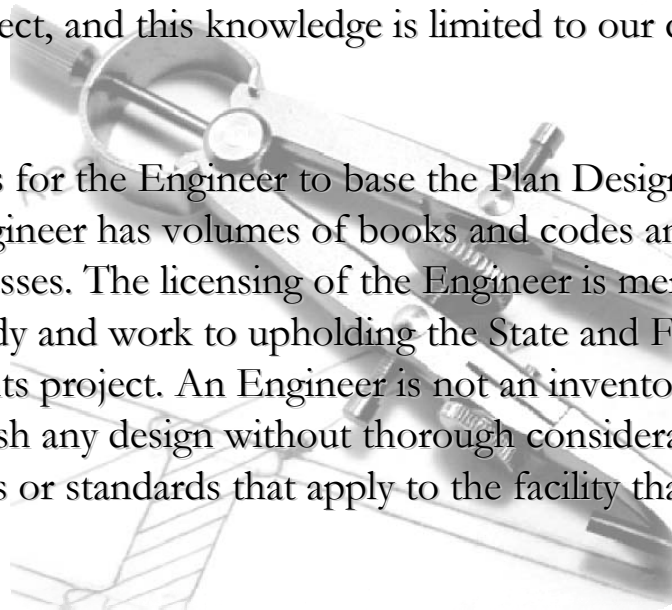
II. What does an Engineer do on a project? Engineering is the application of science to real world needs. This application is best applied to the continued improvement and development of our society. As our society changes, so does the need for professional application of State and Federal Standards to ensure that yesterday's misunderstandings are turned into tomorrow's improvements and solutions. Civil Engineering is the discipline that focuses on improving everyday facilities that are used by the public- from airports and roads to houses and wastewater systems. Any facility that is used by the public for housing, recreation, sanitation, shelter or transportation has been evaluated by a Civil Engineer at some time, past or present. The science of engineering is applied to the modern society in attempt to mitigate unwanted results by the user and his neighbors.



Number One: What does an Engineer Do? -(Continued)

III. What does an Engineer really do for his client? He works with existing stringent codes and standards to develop guidelines for construction of the above-referenced facilities. The instructions that are provided are known as Plans and Specifications, and are not intended to be training or instructional material as the training that is required for construction of an engineered product is a combination of practical experience, certifications and construction know how that best describes the role of the Licensed General Contractor. An Engineer cannot train a client through his plans anymore than a Doctor can train his patient in medicine through reviewing an X-Ray. The basic knowledge of procedures and industry standards must be available to the entity that is to construct the project, and this knowledge is limited to our colleagues in the construction industry.

IV. Who sets the standards for the Engineer to base the Plan Design Process? As with most modern endeavors, the Engineer has volumes of books and codes and standards which must be considered in all plan processes. The licensing of the Engineer is merely a condition by which the individual is vesting his study and work to upholding the State and Federal Codes that are required to properly pursue the clients project. An Engineer is not an inventor, and the likelihood that any Engineer is going to establish any design without thorough consideration of all approved methods, practices, procedures, codes or standards that apply to the facility that is being designed is very unlikely.



Summary of State Health Standards

The State Health Standards require the following, which cannot be avoided or compromised by your Engineer; some local ordinances may require additional, more stringent criteria:

- The system components cannot be positioned closer than 20 feet to the foundation of the structure. Exception: If the house has a Crawl Space, then with consideration from the local Health Department staff the owner may receive conditional permission to reduce the distance to 10 feet.
- The well must be located 50 feet from the proposed house, and 100 feet from the proposed drain field or any other source of pollution [neighbors drain field, barn yards, etc.].
- The proposed House Site must be provided on the plat before the Engineer obtains review and approval of the work.
- A certification letter does not allow for construction of the house or sewage disposal system, and is not considered to be a Construction Plan, Permit or Agreement. A certification letter merely implies that a Sewage Disposal Site was available at the time of the past evaluation, and that the Health Department will work with the owner to devise a plan for Sewage Disposal that is subject to all current and newly revised standards. So if a certification letter was issued in 1995 for a certain Alternative Septic System, that system may no longer be valid for those site conditions under today's standards and plans will have to be prepared by the Engineer to address the current standards, which can be more (or less) costly and stringent.
- Each County may adopt or prescribe sewage regulations that are more stringent than the State Regulations [e.g. at this time Warren County requires a 100% Reserve Area for all Septic Systems, while Shenandoah and Frederick County may allow only 50% Reserve Drain Field Areas]. The Engineer and Soil Evaluator must consider these requirements during the evaluation processes.

Summary of State Health Standards- cont'd

- The Engineer cannot alter, move or improperly represent a drain field site in the plans without the consent of the Soil Evaluator. Therefore the Engineer is not in the proper position to stake or flag drain field sites- this is most properly done by the Soil Evaluator or Surveyor.
- The Engineer must show the approximate location of a proposed House Site on the Plans or the Plans will not be approved. This is a State Requirement.
- The Engineer must accurately illustrate the property boundaries on the site plan- which is why the survey plat, corner stakes, flagging and drain field stakeout are so critical to our prompt completion of the construction plans.

Example: If John Doe contacts our office and has his soil evaluation package, his modern survey plat, property corners flagged and marked by the Surveyor, his drain field staked by the Soil Evaluator, and his house site staked with consideration for building and drain field setbacks, then he can reduce the design timeframes by as much as 50% which can equate to reducing the start of construction by weeks and in some cases, months.

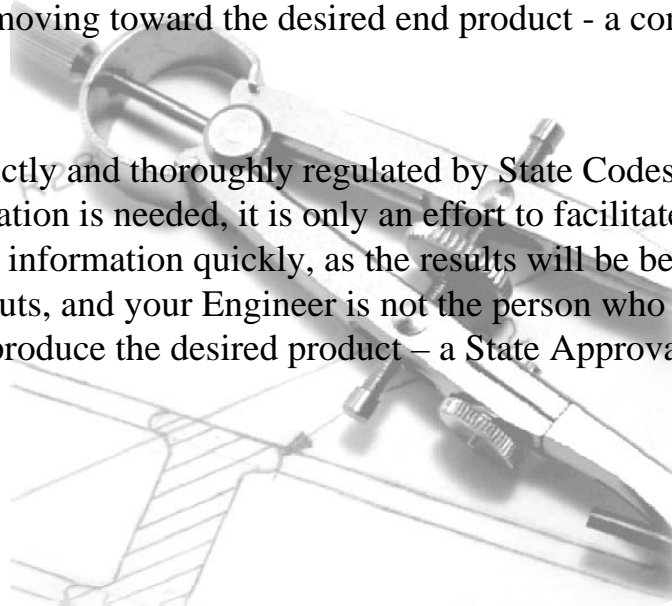
- The Engineer cannot [knowingly] compromise building setback requirements that are established by each locality. If the client contacts the local building or zoning office and provides this information to the Engineer, then further plan preparation time is saved. Building setback requirements are typically shown on the survey plat. **This is a State Requirement.**
- The Engineer must provide a scaled drawing of all on-site visible physical facilities - driveways, well site if available, house site, power lines near the construction site, drain ways and site topography. **This is a State Requirement.**

Summary of State Health Standards: cont'd

- The Construction Plans are required in order to obtain a sewage construction permit for an Alternative Sewage Dispersal System. The sewage system plans must be submitted with the Health Department Construction Permit, and house plans to get the building permit- **This is a State Requirement.**

-The Construction Plans must be properly prepared for review by the local Health Department before a permit will be issued; - So appropriate early work with the Surveyor and Soil Evaluator allows for prompt plan submission to keep the process moving toward the desired end product - a construction permit for the septic system.

-The Engineering Industry is strictly and thoroughly regulated by State Codes and Standards, so when your Engineer is advising that information is needed, it is only an effort to facilitate a complex process. Please work with the individual to supply the information quickly, as the results will be beneficial. The Review and Permit Processes have no known shortcuts, and your Engineer is not the person who can ever expect to compromise the project needs and expect to produce the desired product – a State Approval and a Construction Permit.



State Health Regulations:

Did you know That...

In Virginia it is against the Law to construct any sewage dispersal system or facility without a permit.

In Virginia a soil dispersal field cannot be cleared of trees and brush with Mechanized Equipment.

In Virginia, the Health Department may revoke your Drain Field Permit if the local Health Office determines that the drain field area has been rutted, damaged, disturbed or subjected to frequent travel of any vehicle or construction equipment. This is very important because if a permit is revoked, there can be a completed house on the property without an approved sewage disposal site that will mean the house is unable to be occupied. The permit process is literally restarted from scratch with a Soils Evaluation, Engineering and Review Processes. This will create significant construction delays for the job when it is in the nearly complete stages of construction. It is possible that another dispersal system could not be located.

In Virginia each bedroom of a dwelling is assigned a flow of 150 gpd-which means that a 3 bedroom home is devised to allow for 450 gallons per day of Sewage Flow.

In Virginia each bedroom is assigned a 2-person occupancy, so a 3-bedroom home is devised to serve sewage flows from 6 full-time occupants. In many cases this is more than is produced by the current households that normally involve 3 to 4 full - time occupants.

In Virginia, a 3-bedroom constructed home may be served by a 2-bedroom [300 gallon per day] system with execution of a Conditional Use Permit for limitation to 4 full-time occupants.