

Technical Design Diagnostic

The purpose of the Technical Design Diagnosis process is to make solid decisions and set limits in the pre-design stage.

1. Occupancies, functions, and budget determine the types, sizes, and proportions of spaces. It's too common that occupancies and budget aren't carefully estimated early on – a major cause of delays.

Prepare a preliminary listing of spaces with the additional information of length, width, occupant load, cost, and function of space.

2. Interior sizing and proportions, plus site and zoning limitations, set the limits of overall building height and massing. Projects very often are delayed because of false preliminary assumptions about site zoning restrictions.

Layout space requirements to scale on all site plan on which zoning restriction have been shown.

3. Room relationships, and the importance of relationships, determine interior spatial layout. Designers often fail to work out conflicts and contradictions diagrammatically before starting full-scale plans.

Make a space diagram with rooms located with necessary adjacencies.

Re-check the budget facet of the program.

4. Required room sizes and proportions determine the possible size of spatial modules and structural modules. When a designer decides on structural or spatial modules before having all essential room sizes, rooms get squeezed or expanded arbitrarily.

Select structural grid and planning grid.

Rearrange the space diagram to fit.

Re-check the budget facet of the program.

5. Limits of choices in structural systems are determined by: room sized and proportions, building height and mass limits, and the limits of the site. These decisions are usually made in proper sequence—often forced by the consulting engineer.

Select structural system and identify any alternatives.

6. The construction sequence and process should be decided at this point. Limits on the methods of construction imposed, for example, by site limitations or building codes may well determine the primary structural system, flooring system, and exterior cladding.

Determine type of project delivery, pre-bidding of systems, construction sequence considerations, such as early roofing.

Determine the structural system, and building envelope as much as possible.

Re-check the budget facet of the program

The preceding add up to provide limits of options for interior substructures and modules.

7. Select utility cores, stair types, elevators, mech./elect rooms or closets, and other stand alone spaces as well as systems, e.g. security.

Re-check the budget facet of the program.

8. HVAC systems are limited by a combination of the foregoing plus: orientation, site climate, and operating costs. The usual criteria of "lowest cost" system will not only cost more in terms of operations and discomfort, it often won't fit with the construction process.

Select HVAC based on expected level of comfort and control, first costs, operating costs, available energy and fit with construction.

Re-check the cost per square foot assumption of the budget facet of the program.

9. The limits of choices for exterior surface materials, in combination with fenestration, can be decided at this point. As can general building shaping, configuration, and special design features.

Determine the general characteristics of the building envelop- roof type, wall materials, amount of glass and its type.

Re-check the budget facet of the program.

10. All the foregoing, particularly with a re-check of budget, will set limits on interiors, particularly partition and ceiling systems.

Select partition, ceiling, flooring, and door types.

Re-check the budget facet of the program.

Up to this point, most decision making can be verbal, numerical or diagrammatic. No overall design drawings or iterations are yet required.

11. The schematic building plans and sections can begin. Schematic plans will integrate the limited options of plan, structure, and HVAC systems.

Prepare schematic design with site plans, elevations, sections, and outline of building systems.