

CHAPTER 1

INSTALLATION CONSIDERATIONS:

Type of support

Soft set or pier type permanent foundation system

This is a typical mobile home park set with a tie down pier system and an upgraded perimeter supporting skirting wall. Since the state agency in this case does not have an approval on the perimeter wall serving as perimeter support, the standard perimeter piers are installed. This type of installation is good where a concrete foundation is not permitted, where the land does not belong to the homeowner, where the home is considered temporary. When correctly installed, this system will last as long as the home and need very little maintenance.



Concrete stem wall foundation

This is a very common permanent foundation system that allows solid support and ease of home placement and installation. The finish floor height is about 33". Interior footings can consist of support pads on grade or poured footings.



Concrete sub grade retaining wall foundation

This type foundation is built from about 15" below grade, formed 24" high and backfilled. It provides a low finish floor height but increases cost of home placement and construction. Drainage considerations are very important and a drainage system may be needed.



Flood plain

It is necessary to know if a flood plain elevation is relevant to the installation. An installation should not begin without reviewing permits and plans for this possibility. If a flood plain exists, the elevation of the finish floor must be determined from an existing known elevation and a given elevation from the enforcement agency. It may also require that foundation framing consist of treated framing, treated plywood closure, vent elevation within 12" of finish grade, heat ducts may not intrude into the flood plain. Closure material for the foundation may not be of material that is not flood approved. Stainless fasteners or hot dipped galvanized may be required for the framing. Contact the local Federal Emergency Management Administration (FEMA) for more information. It may be necessary to hire an engineer qualified and registered for the foundation design.

Wind Zone

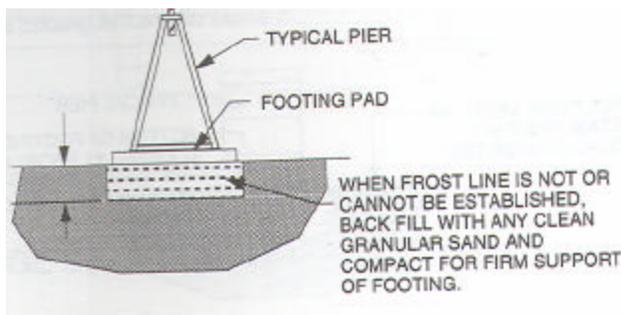
The manufactured home and support system is generally designed to withstand at least 15 Pounds per square foot of wind pressure. Contact the enforcement agency if you are in a coastal zone or high wind area that may require higher standards.

Soil bearing value:

There are several classifications of soil. Soils with highly expansive clay may require special foundation design. Generally, most enforcement agencies are aware of areas of problematic soils and can give guidelines for foundation construction. Many installation manuals have charts giving the support values for various kinds of soil. Usually if you go with 1000 pounds per square foot (psf) of soil bearing pressure there will usually be no question as to its adequacy. Places with peat moss or high ground water may require planning for 500 psf. If you decide to go with higher soil value numbers, you may have to have the soil tested and proven. Check with your enforcement agency for clarification.

Frost Heave

In areas where the ground is subject to freezing, frost heave can lead footings not adequately deep lifting during a freeze and potential damage to the home. Follow the recommendations of the local enforcement agency. In the photo below, one option is depicted.



Snow Load:

The snow load is determined by the planning department or enforcement agency. It is usually based on elevation and known snowfall averages. Generally, 20psf is acceptable in low elevations and places with minimal snow fall. Higher snow loads are required as elevation or snow fall rates are problematic. Check with the building department to be sure of the requirements.

The home must be designed and built to the required snow load and certified on the home data sheet in the home. When the home cannot meet the required snow load, a snow roof can be designed to cover the home and bear the load. This is an expensive alternative and should be cost checked carefully. A snow removal plan may qualify.

Support for the home must increase to carry the additional snow loads. When snow load increases, the required perimeter and marriage ridge supports must increase accordingly. The footings must be adequately sized for the snow load; the piers must be rated to carry the load. Alternately, pier spacing can be decreased for perimeter piers to compensate for the greater load. Standard I beam chassis homes do not need more chassis support regardless of the snow load since the I beams should carry only floor live and dead loads. When on a perimeter concrete foundation, the foundation wall can usually carry the greater load without an increase in width, but the ridge support footings generally must be larger as calculations demand. In any case, a registered foundation design engineer or plan checker should provide the required footing and pier sizes in the plans.

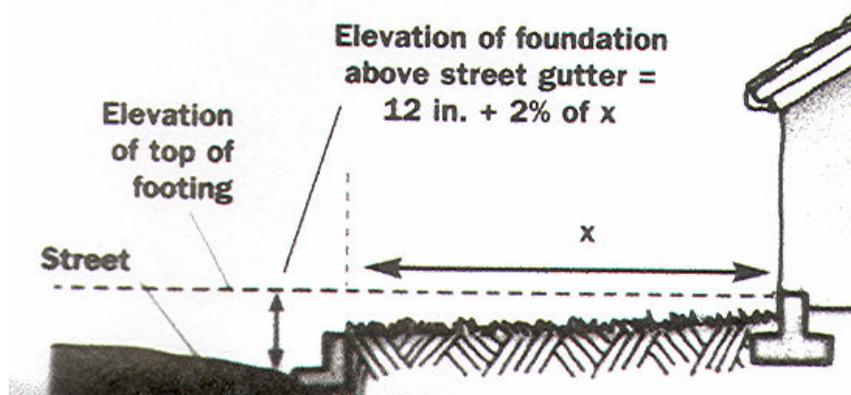
Lot Preparation:

The lot must be stripped of all organic materials such as grass and vegetation, tree roots and decorative rock. For pier and pad sets, it is good to import class 2 road base, grade for drainage and compact.

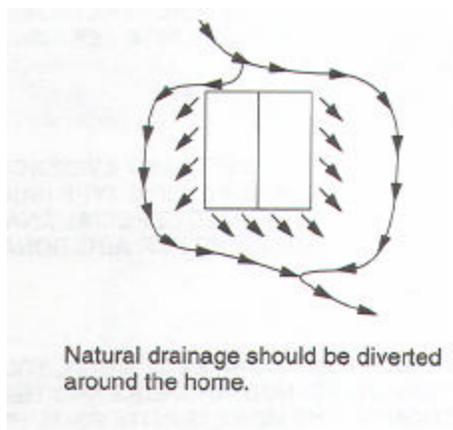
Continuous standing water under the home will cause deterioration of the home as moisture intrudes through the rodent barrier, insulation, framing, floor decking, sheetrock and ceiling. Microbial growth such as mold and mildew may grow when moisture levels remain high in the home. Therefore care must be taken to properly grade the home site. When possible, the lot should be crowned and compacted and finish graded so water drains away from the lot. Generally, 2% slope for 5' (1 1/4" in 5') is acceptable for site built homes.

In a mobile home park space, the lots are usually designed to drain from the rear of the lot to the street gutter. In most mobile home parks, the lot slopes from the rear of the lot towards the street. For these lots, it is important to control the roof and awning watershed and direct it toward the street gutter through roof gutters, downspouts and drainpipes. Some moisture will soak in under the rear of the home and along the sides, but generally it will not be problematic if the roof watershed is properly controlled and the home skirting is properly vented. Irrigation and landscape should be designed to prevent excess water from entering or being trapped under the home.

When a permanent concrete perimeter wall foundation is used, grade for at least 2% slope for 5' away from the home and at least 6" clearance from siding to the soil. Also in city lot applications, the foundation wall should be 12" +2% above the street gutter. When this is not practical, alternate drainage plans may be required. Always check with the local enforcement agency for their rules.



Though the code may specify drainage for 5' away from the home, the water should be directed towards proper drainage facilities through continued slope, ditches, drains or other means. Water should not stand near the home.



Perimeter and chassis elevation.

In order to determine an elevation, the following several factors must be taken into consideration:

- The minimum clearance from the standard I beam chassis to the ground is 12".
- The minimum clearance for the bottom of the floor is 18" to ground.
- The minimum clearance for heat ducting is generally 4" to ground.
- From the final sewer outlet, a quarter inch per foot (2%) is required and if special concerns are met, one eighth inch per foot (1%) fall is required to the outlet.
- Sewer fall may need to be considered to a tie in, a street lateral or a septic tank. You must consider the final destination.

- Generally, 18" clearance from the chassis to the ground is necessary for heat ducts to have proper clearance and to provide adequate crawl space. With 18" from the chassis to the ground, the bottom of floor will be approximately 28" or 30". The finish floor will be higher by the thickness of the floor system, usually 6". Typically, 36" is common between the finish floor and the grade beneath the standard I beam chassis manufactured home.
- Entry stair risers should be considered if a home occupant has special needs.
- Backfill and sub grade excavation preparation may be necessary.
- The lot should be checked for flood plain elevation or height above street or gutter requirements.
- Other considerations may apply.

Choose an acceptable elevation for finish floor and mark it on an immobile post or stake. Determine the thickness of the floor system and locate the bottom of floor elevation appropriately below the finish floor elevation, usually 6". Next determine the chassis beam heights and mark them on the stake below the bottom of floor elevation, usually 10" or 12" and sometimes +/- additional dimensions.