LIQUID BACKFILL

Construction Applications

"SIMPLE... EFFECTIVE... & ECONOMICAL"

The easiest and totally effective, fool proof, backfill application available at costs that revolutionize backfilling methods and ideas.

Creteco Corp Gunner Ltd.

"LIQUID BACKFILL" IS DEFINITELY AN ASSET PROTECTION INVESTMENT.

What is Liquid Backfill?

Liquid Backfill is a low shrink sand/clay blend, with controlled and tested gradation characteristics. This specially graded material is combined with water, to form a paste/grout. The water initiates a natural consolidation of the particles, resulting in product compaction, once the water dissipates.

The amount of water used, effects the slump of the Liquid Backfill, it's flowability and pumpability.

Common Complaints Liquid Backfill Can prevent:

- Foundations shifting and cracking
- Settlement of patios, driveways and walks
- Heaving and cracking of basement floors

Many people fail to recognize the major importance of proper "backfilling" around their foundations and in service trenches, etc., as the key to a stable foundation. Wildly shifting foundations, landscape damage and water damage, are the unavoidable results of neglected and improper backfilling standards.

It is important that you are aware of the significance backfilling will have on the long term stability of your foundation and the pay back "you save" on repair costs. Everyone strives to use "low maintenance" construction techniques and products, and proper backfilling goes a long way in providing "lowered maintenance". Almost all maintenance problems can, in some way, be attributed to the direct or indirect effects of backfill settlement.

Contrary to many beliefs, weeping tile, in an expansive clay zone, can create greater problems than it solves. Weeping tile, not properly installed sloping to a sump pit, creates numerous low areas that trap water into ponding runs, which gradually over a period of time, undermine the foundation causing settlement to occur.

Improperly backfilled foundations constructed on expansive clay zones will settle as a result of two occurrences:

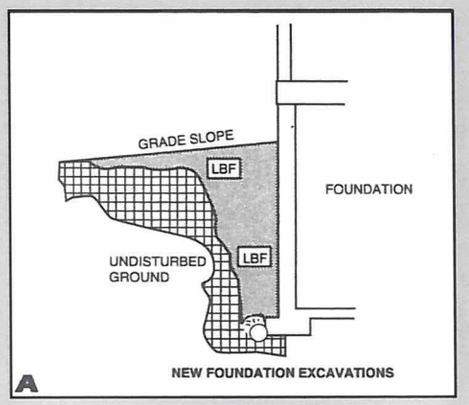
1. A negative grade condition will cause water to be collected in weeping tile depressions, at the footings, which follows the underside of the concrete footing creating a soft thin clay membrane that cannot support the weight of the foundation. On each wetting, this situation is repeated to fractionally settle the foundation, until the combined losses add up to inches.
2. The water held within the weeping tile depressions attracts tree roots to crowd into the area. During dry seasons this infrastructure of roots draw out the moisture to desiccate and shrink the supporting clay zone resulting in further foundation settlement.

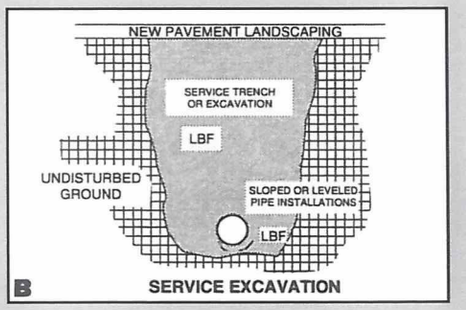
These two occurrences explain why it is so important to lock in (preserve) the ground moisture condition at the footing level, which is exactly what **Liquid Backfill** does... it reinstates an undisturbed ground condition around the entire foundation, to maintain a consistent moisture condition that matches the adjacent undisturbed ground areas. A consistent moisture condition results in a stable foundation, it is just that simple.

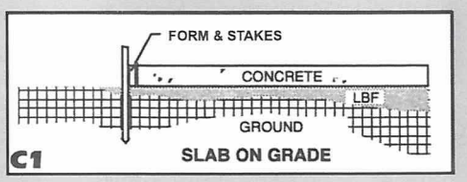
Top soil is <u>NOT</u> a good material for grade backfilling because:

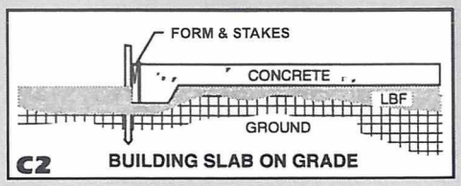
- A large percentage of top soil is composed of organic material, therefore it decomposes and settlement occurs in a relatively short time.
- Top soil cannot be compacted.
- Top soil does not shed water. It becomes saturated and the excess water runs through it and back towards the foundation, to follow the covered up settled grade.

Almost every day we discover other inventive ways that further expand the already wide variety of uses and applications of Liquid Backfill.



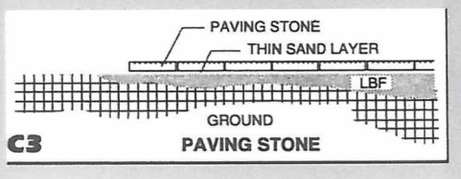


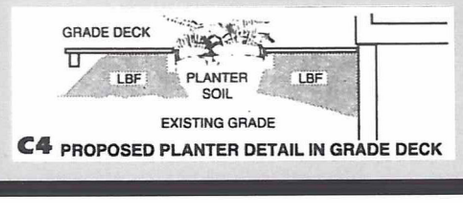




Areas of Application

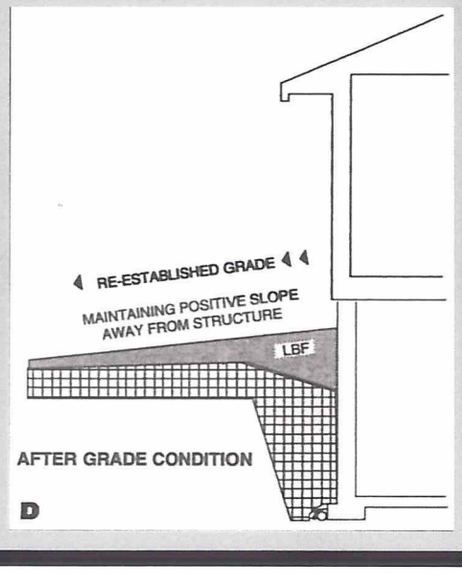
- Excavation fill around new foundations. (see drawing A)
- Excavation fill in new service trenches (see drawing B)
- As a base for new concrete slabs. (see drawing C1 &C2)
- As a base for new paving stone installations. (see drawing C3)
- As a base for a grade deck. (see drawing C4)
- Used for cavity filling, ie. under steps, washed out driveways, walk base and any hard to reach confined space.
- Used to encapsulate newly installed utility pipes, securing the design slope preventing the overburden weight from sagging the pipe. (see drawing B).
- Used to fill settled grading conditions resulting from uncompacted backfill around foundations, etc. (see drawing D).
- Used to design xeriscape and contoured grading plans. (see drawing E).
- Can be used industrially to decommission in situ underground fuel tanks, fill abandoned mine shafts, tunnels, and culverts.
- Can be used to fill a tunnelling cavity around new culvert installations.
- Can be used as a spray on slope stabilization application. (clay-spray)





Liquid Backfill Characteristic

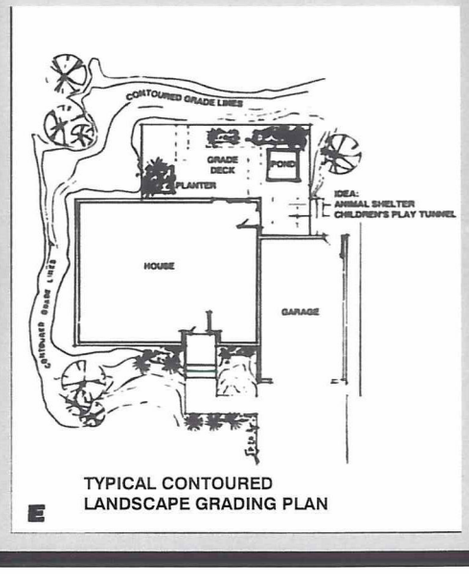
- **Liquid Backfill** naturally cures to a compacted state that is equal to or better than, the original undisturbed ground condition.
- Fill areas can be easily re-excavated.
- **Liquid Backfill** setting time can be controlled to harden within minutes or over a period of days. Various admixtures can be added to create or enhance certain conditions, ie. cement, bentonite, flyash or fertilizers.
- Tests have confirmed a very low permeability (k-value). This information is available on request.
- **Liquid Backfill** can be installed at a high (sloppy) slump or in a very low (stiff) slump. Slump variations do not significantly alter resulting set strengths.
- The mixture's pumpability enables it to be placed hundreds of feet/meters away from the mobile batch plant.
- Installation can usually be completed within hours.



Benefits and Advantages

When new foundation excavations are filled and graded with **Liquid Backfill**, owners can be assured there will not be any future settlement.

- Basements will be dry.
- Landscaping around foundations will not have to be re-done every few years.
- Slab on grade conditions, ie. driveways, patios, walks, etc, will be stable.
- The effects of expansion-contraction & heaving due to freeze-thaw conditions will be minimal as a result of the lower moisture condition created by the use of **Liquid Backfill.**
- **Liquid Backfill** can be quickly and consistently batched on site with mobile batch plants. Batch plants are capable of hauling up to 15 cubic yards with a maximum design discharge of 60 cubic yards per hour.



Installation Considerations

- Can be completed easily by landscape contractor or owner.
- Work basically requires a string-line and level, in order to install a general grid of wood stakes throughout the area, defining the sloped or contoured grade design lay-out.
- Various areas can be blocked-out with the use of miscellaneous materials. ie. cardboard, scrap wood or gyproc. Areas can be terraced, sloped, curved or straight.
- The exciting design quality of "**Liquid Backfill**" is that it can be moulded into almost any imaginative landscaping.

Once your landscaping plan has been designed, staked-out and framed, call **GUNNER.** We will arrive with the equipment and material to make your plan happen... fast, economical and effective.

"You will be impressed"

OTHER SERVICES:

Mudjacking - *slab raising*

Compaction Grouting - *foundation raising*

Shotcrete - *foundation wall repairs*

Liquid Topsoil - *Finish Grades*

682 Adams Street
Regina, SK S4N 6R8
Tel: (306) 775-2626
Fax: (306) 775-2640
gunner@accesscomm.ca
www.gunnercorp.ca