

Cost comparison overview.

All contemporary and traditional below ground building methods and systems have their place in the construction industry, no one method is better than all others in every application. For every project there will be appropriate and inappropriate solutions, there may be several determining factors:

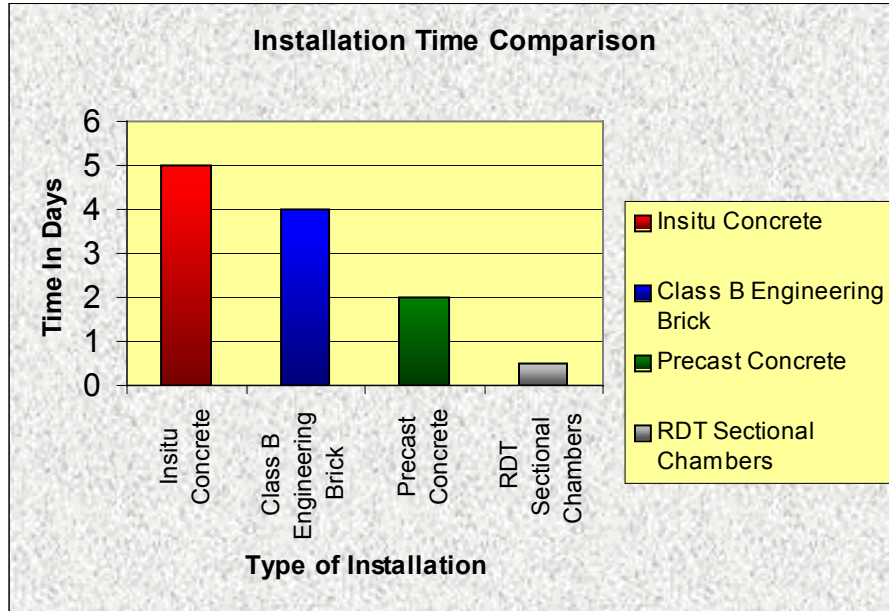
- Ground conditions.
- Loading required.
- Time constraints, site access, lane rental, staffing, client requirements.
- Weather considerations.
- High reliability required due to future access problems, (motorways, railways, etc).
- Whole life costs.
- Available and appropriately skilled personnel.
- Availability of plant and equipment.
- Access for plant and equipment.

Principle project cost factors and the RDT advantage.

1. **Quicker Build time.**
2. **Lower Labour unit cost.**
3. **Reduced Failure rates.**
4. **Competitive Material unit costs.**
5. **Minimum Plant and equipment unit costs.**
6. **Improved Health and Safety.**

Build Time.

Assembly of the RDT chamber sections is quick and easy, at a recent trial our client's civil engineering contractor, having never used the RDT system before, built a 900 x 900 x 600mm deep chamber in a prepared excavation in under fifteen minutes. This can deliver substantial savings, as indicated below:



This graph is based on the time taken given a prepared excavation with a concrete base, to build a 1220 x 675 x 1000mm deep chamber, to backfill, fit a cover and frame using polyester resin bedding mortar, reinstated with rapid setting concrete or macadam and open to traffic.

- **Reduced man-hours**, labour is usually the principle cost of any project, strength wise the RDT system is superior to class B engineering brickwork and comparable to insitu concrete, yet a RDT Chamber can be built in a tenth of the time.
- **Lane rental**, reduced time on site means reduced lane rental charges.
- Time lost due poor **weather conditions** is always an unknown factor when pricing work, RDT chambers sections have a serviceable temperature range from -40 up to +160 degrees centigrade, they are not softened by heat or embrittled by cold.
- RDT sections are at **full strength** from the moment they are installed, with quick set mortars to fix the cover and frame the installation can be reinstated and in use in considerably less time than with traditional construction methods.

Cost Comparison.

Labour Unit Cost, reduce skill reliance.

We have all heard about or experienced the consequences of the skill shortage, particularly in civil engineering and building. Finding good people and retaining them is difficult and expensive, much of the current skill base is approaching retirement age so the situation will only get worse. One solution is to de-skill some operations by changing construction materials and methods:

- Class B Engineering brickwork when well built with good mortar and given enough time to attain full strength is an excellent construction method. However the RDT system, is quicker, stronger, and does not require a bricklayer.
- Insitu Concrete chamber construction requires all steel reinforcement, formwork, and the pouring and vibrating of concrete to be carried out properly to give the required design strengths and durability. That requires a skilled and experienced workforce and sufficient time to do a proper job. An RDT chamber can be built in less time, with comparable and more consistent strength by less skilled site workers.
- Precast concrete chamber systems share many of the advantages of the RDT System, however concrete is heavy and easily damaged so requires skill and experience to place correctly. The RDT chambers sections are very light so do not require lifting equipment, making them very easy to build, they are also very tough and impact resistant.

Low failure rates.

Returning to site to correct a failure is an expensive and unforeseen cost, the amount of work carried out in the maintenance period can be the difference between a profit or a loss for the project. Failures occur due to either bad workmanship or poor design, the RDT system gives repeatable high strength construction and consistent build quality.

- Internal inspection of a completed brick or insitu concrete chamber gives no indication of the overall structural integrity of the chamber, RDT Chamber Sections give consistent strength and build quality.
- Hit budget, no on-costs due to maintenance visits.
- Build or maintain a reputation for quality work.
- Low failure rates help achieve the contract KPI's
- Protect retention and guarantees.

Cost Comparison.

Material unit costs.

Despite the savings in project time, low failure rates, man-hours, and those due to using lower skill workforce, we also understand that the unit price of the materials has to be comparable to traditional building methods.

Material unit costs for the construction of a 1220 x 675 x 1000mm deep chamber, on a suitably prepared base not including the fitting of a cover and frame.

Class B engineering brickwork, 225 thick, using perforated bricks.

Approximately 650 bricks required @ £250 per 1000	=	£162.00
Sand and cement mortar, (approximately)	=	£ 30.00
Total	=	£192.00

Class B engineering brickwork, 225 thick, using solid bricks.

Approximately 650 bricks required @ £390 per 1000	=	£253.50
Sand and cement mortar, (approximately)	=	£ 30.00
Total	=	£283.50

RDT Chamber to D400 loading.

7 chamber rings @ £35 each (Jan 2004)	=	£245.00
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(These are indicative prices and are for comparison purposes only)

Plant and equipment unit costs.

RDT Chamber Sections are light, (600 x 600 x 150mm deep = 12kgs) so no need for lifting equipment, the sections are dry jointed therefore no need for mortars or additional fixings.

Improved Health and Safety.

RDT Chamber Sections are very light, (well inside the HSE one man lift guideline of 25kg), are easily assembled and require less build time.

- No lifting equipment required.
- Easily transported around the site, reduced risk due to loading and unloading.
- Reduced time with an open excavation.
- Reduced time working below ground.
- Systemised installation, therefore simplified method statements and training.
- At full strength from day one, less risk of structural failure.