APPENDIX C Training Course FOR INSTALLERS USING THE CINTEC REINFORCEMENT & ANCHORING SYSTEM

Reinforcement Systems

&

Masonry Anchoring

Training Course

FOR INSTALLERS USING

THE CINTEC REINFORCEMENT &

ANCHORING SYSTEM

IMPORTANT NOTICE

ALL TRAINING IS CARRIED OUT ON SITE

CINTEC ARE NOT BUILDING CONTRACTORS NOR ARE THEY A DRILLING CONTRACTOR.
THIS COURSE DOES NOT TEACH DRILLING.
THE COURSE IS INTENDED TO TRAIN ON HOW TO INSTALL CINTEC'S MASONRY ANCHORING & REINFORCEMENT SYSTEMS ONLY

CINTEC ACKNOWLEDGES THE ASSISTANCE RECEIVED FROM THE SEALANT, WATERPROOFING & RESTORATION INSTITUTE & THE alliance

WWW. CINTEC.COM

A Brief History of the CINTEC REINFORCEMENT & ANCHORING SYSTEM

WE DESIGN AND MANUFACTURE THE WORLD'S MOST INNOVATIVE STRUCTURAL ANCHORING AND REINFORCEMENT SYSTEM

As the designer and manufacturer of the pre-eminent reinforcement and anchoring solution for masonry structures, Cintec™ has cemented its reputation internationally.

For over a quarter of a century, Cintec™ has secured and reinforced historic and historical buildings, masonry bridges, monuments, railway structures, retaining walls and harbour walls.

The patented Cintec™ reinforcement and anchoring system is straightforward: injecting a proprietary cementitious fluid grout into an anchor surrounded by a fabric sock, which has already been placed in an oversized drilled hole. The reinforcement system's ingenuity lies in its versatility. Drawing on decades of experience and testing, our designers can customize it to any specification.

Our engineered solution reinforces an array of materials—stone, concrete, clay, terra cotta, adobe, and even timber. It can be used under water and in weak substrates.

Even as it restores, stabilizes, strengthens, and repairs, the system does not compromise the parent material. And because the reinforcement and anchoring system becomes part of the structure, it does not visibly alter a structure's appearance.

From intricate wall ties to solid bar anchors over 30 metres (100 feet) long, Cintec™ will develop the reinforcement and anchoring solution that will fit your project.

ADVANTAGES

The Cintec™ reinforcement and anchoring system is simple and easy to use, with fast installation and minimal cleanup. But its advantages go far beyond ease of use.

Tested and Approved Worldwide	Unfailing Quality	Remarkable Versatility
• Approved by engineers, government agencies and building codes worldwide • Laboratory-tested over a 40-year accelerated life cycle • Withstands freeze-thaw cycle without shrinkage or loss of strength • Recognized for use in world heritage, landmark and heritage structures • Fire Resistant Anchor Functions normally after two-hour destructive fire testing • Discrete and finite element analysis available where appropriate	• Presstec™ grout is cementitious, not an epoxy resin • Presstec™ is inorganic, non-absorptive and sympathetic to the substrate • Every batch quality-tested • Reinforcement and Anchoring system creates both a mechanical and cementitious bond • All installers are certified with hands-on training • Can be concealed within the fabric of the original structure • Minimal disruption during installation • Anchors can be post-tensioned	• Reinforcement and anchoring systems are custom-designed for each application • Can be used in weak substrates • Can be used under water • Alternative to the dismantle-and-rebuild approach • Solution of last resort to save buildings from demolition • Flexibility in positioning entry points for drill holes, facilitating installation • Optimal system for seismic upgrading of most unreinforced masonry structures and hardening of existing buildings to resist the effects of a blast

Cintec's training program has been in existence for over 30 years. Cintec's products are not available over the counter and are only sold to existing Approved contractors or Contractors Agree to be approved.
Training only takes place at the location where the project is being carried out.

Course Outline & Contractor Training Manual

OVERVIEW – CINTEC CERTIFICATION

We recomend a minimum of 5 Anchors of each type[as indicated on CINTEC identity card] per person must be fully installed including grout mixing to complete the course

THE TRAINING COURSE

The object of the training course is to give the installer a complete knowledge of the Cintec Anchoring System. During the course, the Cintec Anchoring System is demonstrated and the installers given hands on experience as to the techniques of installation.

Upon completion of the course, successful trainee's are certified and issued with an identity card. The Company is then entered onto the Cintec Approved Installers list and referred to clients as needed.

THE CERTIFICATION/INSTALLERS MANUAL

The certification procedure and its accompanying training manual provide a basic guide to the installation of the Cintec Anchor System. While it provides a firm basis for its use, it cannot comprehensively cover all possible applications. Additional information and training is available from Cintec Reinforcement Systems subject to prior arrangements.

Grout and grout mixing are presented. This stage is the most important in the application of the Cintec Anchor System. The grout has been carefully designed and if mixed in clean equipment and according to specified procedure, successful grouting can be routine. Site and equipments cleanliness are fundamental to safety and successful installation.

Successful grout injection relies on good treatment of both anchors and grout from the moment of their arrival on site. Emphasis is placed on their careful storage and handling.

The operation of the grout pressure pot is detailed in the manual along with graphical illustrations. Emphasis is placed on the requirement for cleanliness for all aspects of the mixing and grouting. Graphical illustrations are given of the steps in the grouting procedure, together with details of the customary range of injection pressures.

The two stages of mixing the grout are detailed carefully. The specified procedure leads to a grout which is easily and successfully injected. Details are given to enable the installer to monitor the mixing procedure and subsequent injection to ensure the grout injection is successful. Details for hot and cold weather grouting are also given.

Anchor injection is specifically illustrated, since this provides visual and tactile evidence of successful anchor installation. Attention is drawn to the visible excess milk grout which should be present at the front of the sock and front of the anchor should be firm to the touch and not move in any direction. The excess grout milk is washed off immediately.

IDENTITY CARDS

An installer is required to carry his identification card on site while undertaking all work requiring the use of the Cintec Anchoring System. The card must be available upon request to all authorized site and Cintec personnel. Cintec carries the responsibility for the product while the installer has the responsibility to carry out the work in a professional manner.
You will be required to supply the following:

All holes must be drilled prior to the instructor arriving on site. We Recomend a Minimum Of 5 HOLES PER PERSON BEING TRAINED MUST BE DRILLED. Anchors to be installed are also on site

Injection kit (should you require one)

High powered drill for mixing

Access to clean water

Safe working access must be provided to all areas where anchors are to be installed.

Each person is to supply 2 (two) passport type photos. You may certify up to 5 people.

Reasonable Accommodations/Lodging should the instructor be required to travel to your area.

The cost of Training will differ based on the type and length of anchors to be installed. Training costs vary from 1,500 per day plus reasonable travel and hotel costs if necessary

CINTEC
REINFORCEMENT SYSTEMS

Reinforcement Systems & Masonry Anchoring

NOTES FOR APPROVED INSTALLERS USING THE CINTEC REINFORCEMENT & ANCHORING SYSTEM

ICC - ES Manufacturer's Installation Instructions (MPII)

Table of Contents

THE CINTEC TRAINING COURSE

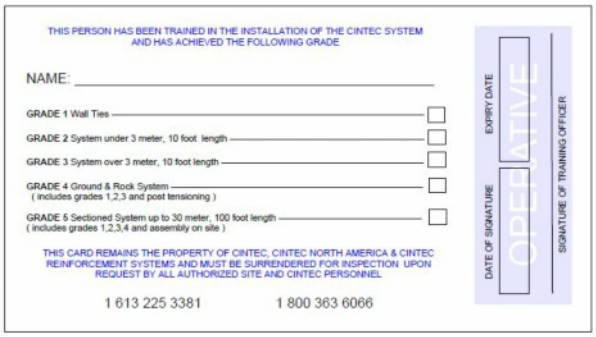
References to ''Cintec'' in this document are to the companies Cintec International Ltd (UK), Cintec America Inc., Cintec Canada Ltd or Cintec Australasia Pty Ltd, or to the product manufactured and marketed by those companies, unless contrary to the context.

The object of this training course is to give the installer a complete knowledge of the Cintec Anchoring System.

During the course you will be shown and given hands on experience in the installation techniques used in the Cintec Anchoring System.

Upon completion of the course, successful trainees will be certificated and issue with an identity card. Your company will then be entered onto our list of approved installers.

IDENTITY CARDS



You will be required to carry this identification card on site while undertaking all work requiring the use of the Cintec Anchoring System.

This card must be shown to all authorized site and Cintec personnel upon request. Failure to carry and produce your identity card may terminate your right to remain an approved installer.

As manufacturers, we carry the responsibility of the product thus giving you the responsibility to carry out the work in a workmanlike manner.

This identification card is valid for three years only, after this time period reassessment will be necessary.

Any new employees joining an approved company must receive training from a Cintec representative before they can install the Cintec Anchoring System.

EQUIPMENT REQUIRED FOR THE INSTALLATION OF THE CINTEC ANCHORING SYSTEM

Potable Water
Water Pipe
Electric Power
Extension
Toolbox (screwdriver, pliers, ASS'T wrench, etc.)
Sharp Knife (exacto)
Electrical tape
High Speed Drill (550 RPM minimum)
Air compressor (100 psi) tank capacity 10 gallon
Pressure pot*
Mortar mixing tool*
Injection control valve*
Plastic injection tip*
Sieve / Strainer*
20 liter buckets (2) (clean)*

* Supplied with the injection kit if purchased.

Cintec recommends a pressure pot of at least 10 liters (2.5 US gallons). This can be provided as part of an installation kit for the installation of the Cintec system by Cintec (see Appendix D).

An equivalent pressure pot may be used but it must be able to be pressurized from 200 kPa to 600 kPa. The outlet on the pressure pot needs to be altered to accept a ½" (1.27 cm) BSP hose adapter with 4 metres (12'0") of reinforced ½" (1.27 cm) tubing and a ½" (1.27 cm) quarter turn ball valve. A ½" (1.27 cm) hose adapter or threaded attachment needs to be screwed into the valve to enable plastic mastic nozzles to be pushed or threaded onto the front of the valve. This assembly will then serve as the grout delivery hose and control valve. For large anchors using grout delivery tubes, quick-connect hose fittings may be used. Contact Cintec for details.

All equipment must be kept in a clean condition. Do not use oil or releasing sprays inside the pressure pot as this may contaminate the grout.

Safety goggles and gloves must be worn at all times when mixing and injecting grout.

INSTALLATION

Drilling

Carefully set out the anchor position using a wax crayon or chalk, as per specifications, or as directed by the structural engineer or supervisor.

Select the drilling method specified: -
Wet diamond - dry diamond - rotary percussion - or other
Drill the hole to the required depth of the anchor and the embedment depth required.
Remove all debris and cores from the borehole and check the depth.
Flush out all bore holes with water or compressed air to remove all dust and debris.

Wash off all stains immediately.

Drilling blind into substrates requires special care. Substrates must be checked to ensure that they are as indicated. If not notify the engineer or supervisor. A particular problem is ending the drill hole in a void larger than the anchors expansion capabilities. Careful checks must be made if this is suspected and the engineer or supervisor informed.

Boreholes in loose material must be sleeved immediately after drilling to facilitate anchor insertion and prevent the need for re-drilling.

Grout mixing

The grout is packed in 25 kg (56 Lbs) bags and is mixed with clean cool water.

The normal mixing ratio is 5 litres (1.32 US Gal) of water to one 25 kg (56 Lbs) bag of grout. One 25 kg (56 Lbs) bag will yield 15.5 litres (4.09 US Gal) of fluid grout when mixed. Please read and confirm mixing instructions on the grout bag.
The 5 litres (1.32 US Gal) of water can be increased by 10% (500ml OR 0.132086 US Gal) in hot weather (20ºC +/68ºF) and when the substrate is very dry and porous or the injection process is through very small injection tubes.

Do not increase the water content outside of these parameters, as this will considerably weaken the strength of the set grout.

The grout must be mixed as follows:

Place 4½ litres (1.18877 US Gal) of clean/cold water into a clean mixing bucket and slowly add approx. 3/4 of one bag of Presstec grout while mixing.

Add the final ½ litre (0.11351 US Gal) of water and the remaining 1/4 bag of grout.

Continually mix the grout for 4 minutes removing all the dry mixture from the sides of the bucket.

Allow the mixture to stand for 5 minutes, during which the mixture will start to thicken, the amount the mixture thickens will depend on the ambient temperature and the temperature of the dry grout and water.

At this stage some or all of the 10% extra water may be added to achieve a smooth creamy texture with no peaks forming on the surface.

HOW TO MIX

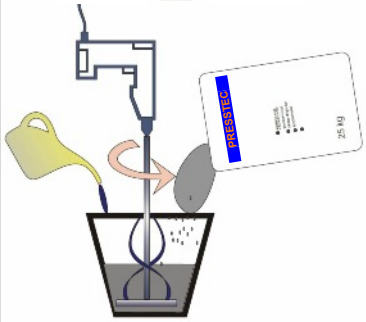
See also hot weather and cold weather procedures

4½ LITRES (1.135104 US Gal) OF WATER = + 1/2 LITRE (0.11351 US Gal) OF WATER

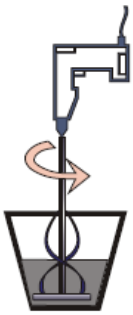
25 KG (56 Lbs) BAG

Very clean bucket or container

Graduated plastic pitcher

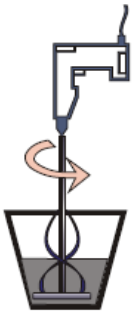


Electric mixer capable of 500 rpm



4 minutes of continuous mixing.

Allow to stand for 5 minutes



Re-mix and add up to 10% (550ml or 0.124861 US Gal) of water if required.

Installation then proceeds:

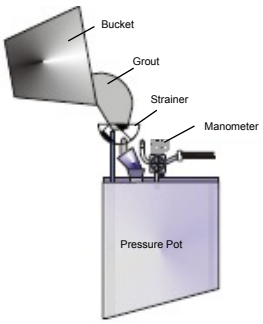
Pour the mixed grout into the pressure pot through the sieve.

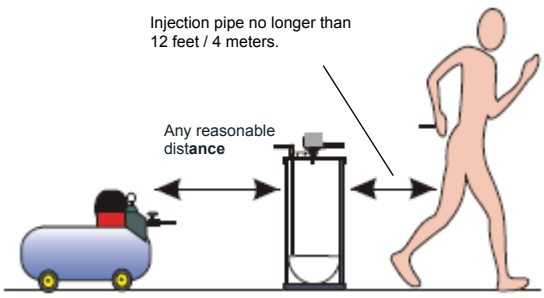
Pressurize the pot from 300 kPa to 500 kPa (40-72 psi) dependent on the type and length of anchor being installed.

Cut the plastic mastic nozzle to fit the anchor's orifice. On anchors with injection tubes, prime the tube with water and cut the mastic nozzle to fit over the injection tube.

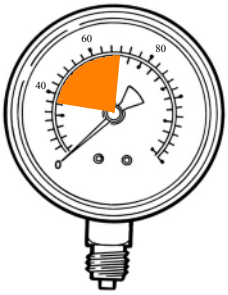
Test the grout flow into a suitable bucket. If the grout flow is continuous and of sufficient pressure the anchor can be injected.

Grout is introduced into pressure pot through a sieve





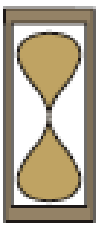
Compressor with a minimum of 2.6 cu. ft. and 90 PSI.



Injection limits between 300 & 500 kPa (40-72 psi)

Hand held grouting gun for small quantites

Center the anchor body in the hole.



Pot life 60 minutes dependent on temperature

ANCHOR INSERTION

Carefully unpack the anchor and check there has been no damage to the fabric sock during transit.

All damages must be reported to Cintec.

Small tears or rips in the sock can be repaired using a needle and strong cotton and/or a hot-melt glue stick.

Do not shorten the length of the sock on the anchor.

At this stage the anchor must be handled with extreme care and should not be unwrapped until required.

Some long anchors require sleeves to protect the anchor during insertion, wherever possible use sleeves.

Immediately prior to insertion wet the anchor completely with clean water and position the sock evenly along the length of the anchor.

Long anchors should be wet after insertion into the borehole

N.B. Do not allow the sock to remain completely saturated with water for a long period as this may cause the fabric sock to shrink.

Place the anchor in the bore hole and carefully push the anchor in, lifting it over any fissures or voids, do not force or twist the anchor into the hole.

Install the anchor to within 50 mm (2") of the face of the brickwork (do not push completely in yet.)

ANCHOR INSTALLATION

Carefully cut the nozzle to fit over the injection tube and position the anchor to the specified depth (minimum 25 mm or 1" beyond face of brickwork).

Prior to the mixing and injection of the grout, the equipment should be primed and checked with clean water to ensure that the injection equipment is working and that there are no blockages.

Turn on the control valve and the grout will flow to the rear of the anchor and inflate the sock along the length of the anchor to the front.

Rotate the anchor slowly and carefully if necessary, in a circular motion to facilitate the grout flow and to ensure the anchor is centred in the borehole upon completion.

At this stage the anchor will be felt to be locking in the borehole and grout milk will appear at the front of the anchor (note the colour change in the sock).

Maintain the pressure until the grout milk has stopped flowing and the sock at the front of the anchor cannot be easily compressed.

Use a sponge or cloth during this process to soak up the excess grout milk and avoid the milk running down the face of the brickwork/stonework.

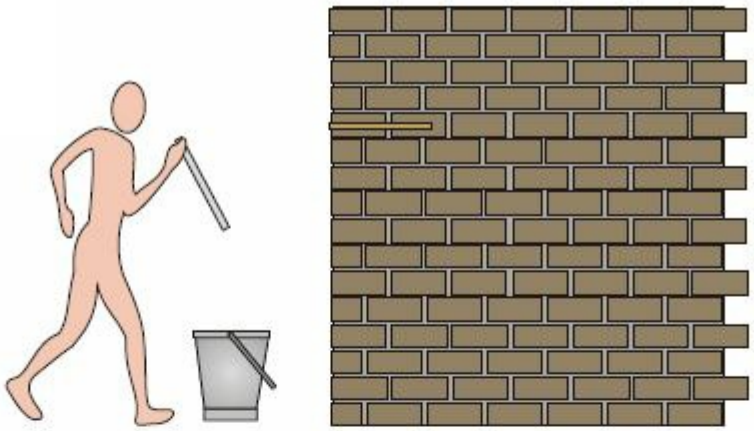
The grout, anchors and pressure pot must be stored in a container or room with a temperature of no less than 10ºC (50ºF).

The clean water used for mixing must be within the temperature range of 15ºC - 20ºC (59ºF-68ºF).

ANCHOR INSTALLATION

SHORT ANCHORS

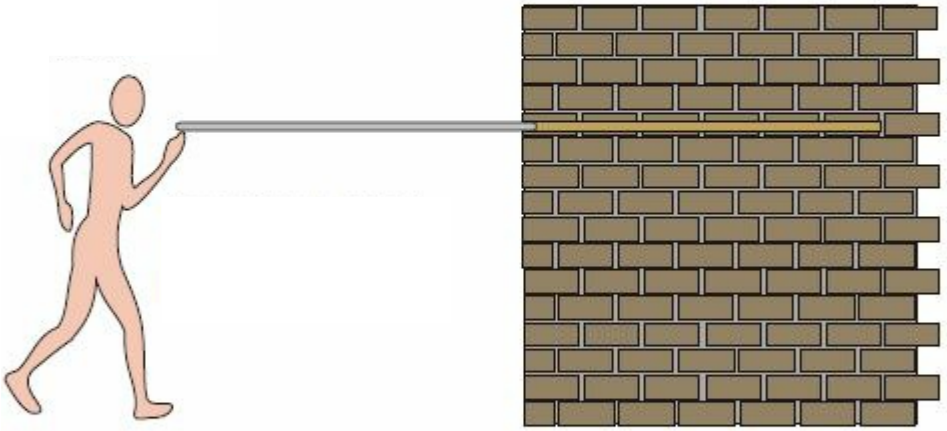
Pre wet short anchors
before installation



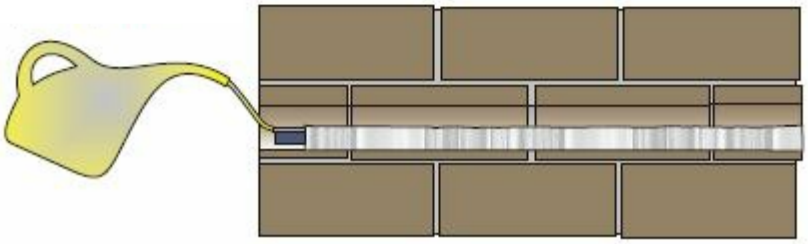
LONG ANCHORS

Pre wet long anchors
after insertion

Ensure sock is evenly distributed along the full length of the anchor as the anchor is installed. Do not twist or force the anchor as it is pushed into the drilled hole.



Prime any injection tubes with clean water prior to injection.



Any grout or milk on the wall must be washed off immediately. Please note that the anchor is not fully inflated until the grout milk has stopped flowing through the sock. Pressure must be maintained to allow this to be achieved.

With large injection orifices, a suitable plug must be placed in the injection port immediately after removing the nozzle.

STUDDING AND SOLID BAR (REBAR) ANCHORS, THE NORMAL INSTALLATION STILL APPLIES,
BUT THE FOLLOWING METHOD NEEDS TO BE ADOPTED TO FACILITATE THE INSTALLATION.

When inserting the anchor, ensure that the injection tube is towards the top of the borehole – NEVER force or twist the anchor into the hole.

COLD WEATHER GROUTING

The installer shall ensure that the minimum temperature of the grout at the time of injection is 7ºC (44.6ºF) and the temperature of the injected grout does not fall below 5ºC (41ºF) for a period of twenty-four hours from the beginning of inflation.

Core holes must be at a minimum of 5ºC (41ºF) prior to anchor installation and maintained above a 5ºC (41ºF) for at least 24 hours after installation. If this is impracticable, cold weather procedures must be adopted with the consent of Cintec.

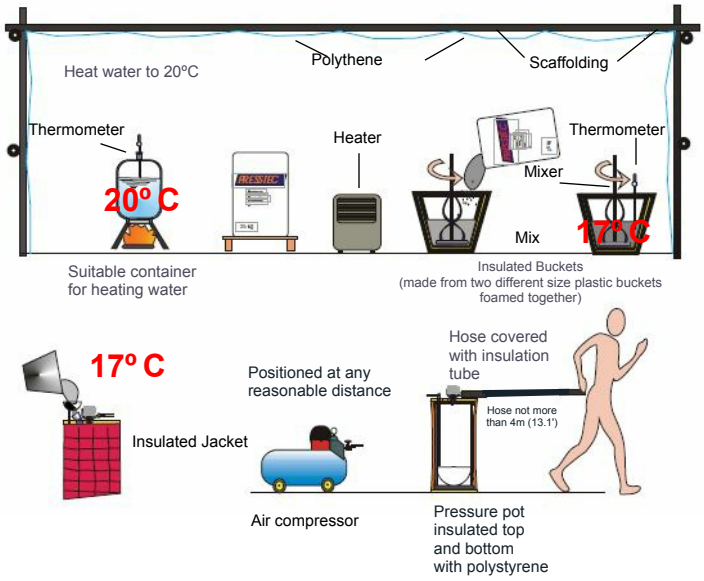
The cold weather procedures are as follows:

- The pressure pot and delivery hose should be lagged with a suitable insulating material.
- The grout, anchors and pressure pot must be stored in a container or room with a temperature of no less than 10ºC (50ºF).
- The clean water used for mixing must be within the temperature range of 15ºC - 20ºC (59ºF-68ºF).
- The bore hole temperature must not be below 5ºC (41ºF) and no ice must be present on the surface of the borehole.
- A suitable shelter needs to be used for the mixing process.
- A screen needs to be erected around the installation area to avoid any wind chill.
- After drilling the borehole, install a suitable plug to maintain a constant core temperature.
- Insert the anchor in the borehole just prior to inflation (as per normal installation methods).
- Mix the grout as per instructions using the heated water and sieve into the insulated pot.
- The pressure pot and delivery hose should be lagged with a suitable insulation material.
- Inflate the anchor as normal.
- Immediately after inflation, install insulation in the front of the borehole.

COLD WEATHER

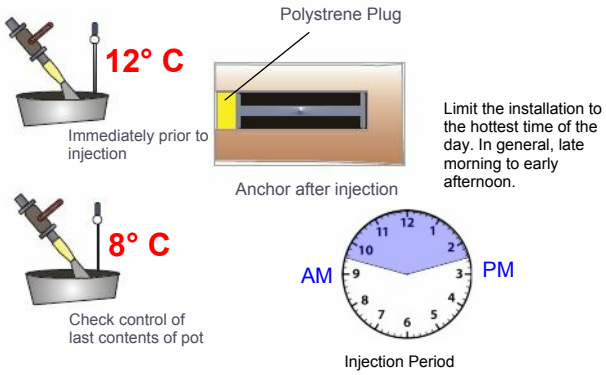
Allow the outside temperature to rise before injecting the grout, i.e. do not inflate first thing in the morning or last thing in the afternoon.
Please note that these procedures must be carried out with extreme care and should not be used unless a representative from Cintec is present.

Shelter prefabricated from scaffold and polythene sheets to mixing area and anchor installation area to form a wind break.



The temperature of the grout during the injection must never be lower than 8 ° C.

Bore hole temperature must be a minimum 5ºC (41ºF)



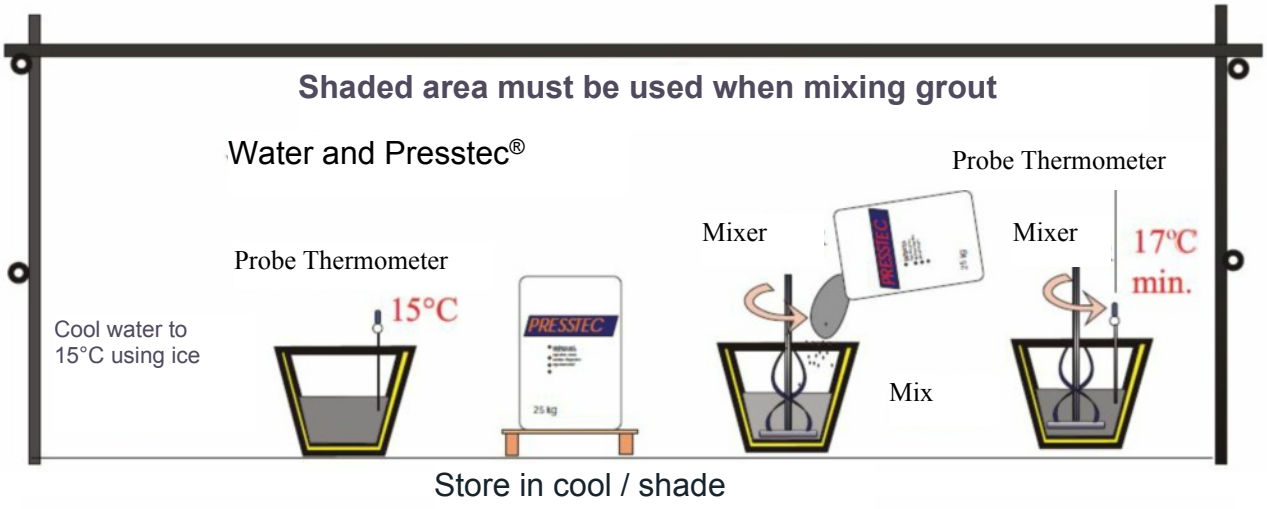
Grout Mix Report

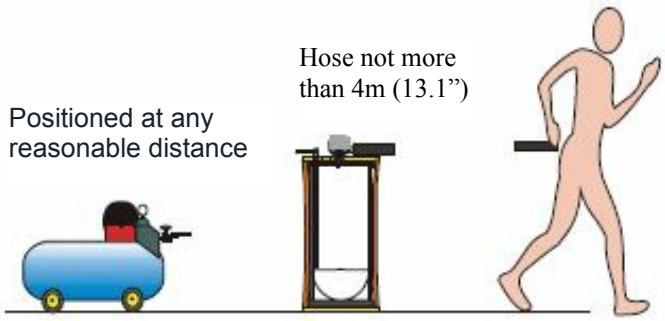
Date: _____
Batch number: _____
Water temperature: _____
Final mixing temperature: _____
Temperature prior to injection: _____
Final pot batch temperature: _____

HOT WEATHER GROUTING

In very hot climates the maximum temperature of the grout at time of injection must not exceed 20°C(68°F). If the temperature exceeds this, the clean water used for mixing must be cooled to 15°C (59°F).

The pressure pot and the bore hole must be shielded from direct sunlight. In extreme conditions the pressure pot must be placed in a vat of cooled water or ice.





COMPRESSOR 7 CU. FT. MIN 100 P.S.I.

Pressure pot to be kept in the shade during injection process

Grout must not exceed 20°C

Immediately prior to injection

Grout must not exceed 20°C

Check control of last contents of pot

PROBLEMS ENCOUNTERED DURING INSTALLATION

Grout blockage can occur in the hose and control valve if left in direct sunlight or the mixed grout has not been sieved correctly.

The anchor will not inflate if the sock has been ripped during installation. Remove the anchor from the borehole and check the sock, small tears can be repaired and the anchor reinstalled; if the damage is more severe remove the grout and fabric sock and wash off the anchor completely. Notify Cintec who will arrange a repair procedure.

Anchor fails to fill, only partially fills, fails to reach surface of borehole.

There are a number of factors to consider here, check all the following possibilities:

- Grout mixture too thick either by incorrect mixing or outside the working time of the mixed grout (usually between 45 minutes and 1 hour, dependent on conditions.)
- Grout has passed its shelf life. Check date on side of bag.
- Anchor installed in a borehole of larger diameter than that for which it was designed. Check original order.
- Large voids are present tensioning the sock at the front of the anchor. A larger sock may be required.
- Insufficient pressure in the pot. Shut off the air from the compressor and check that the pressure pot is maintaining a constant pressure. If it is dropping, check for leaks. Remember, what is shown on the gauge is not necessarily what is in the pot because the air can be passing into the pot and straight out through any leaks.
- The sock has twisted during installation, preventing the grout passing the twist. Do not force or twist the anchor while inserting.
- Sock not distributed evenly before insertion, therefore there is too much sock at the front of the borehole preventing complete inflation.
- Failure to wet the sock. This is very important in porous substrates and in dry/hot weather conditions.

IMPORTANT POINTS TO CONSIDER BEFORE ORDERING ANCHORS

The anchor system is engineered for the specific installation, therefore as much information as possible about the type of substrate and possible voids etc. is required to enable us to manufacture the exact anchor to meet your requirements.

The minimum embedment depth of any anchor is 75 mm (3") unless test anchors have been installed to determine the load achievable with a reduced embedment.

The max length of an 8 mm (5/16") or 10 mm (3/8") CHS (circular hollow section) anchor in a 20 mm (3/4") hole is 500mm (20").

For lengths between 500 mm (20") and 1000 mm (39"), a 24 mm (1") hole is required for a 10 mm (3/8") CHS.

The general rule is that the borehole must be twice the diameter of the anchor body utilized. This is only applicable up to certain lengths and the hole size must be increased on longer anchors.

The guidelines are as follows:

8mm (5/16") CHS	20mm (3/4") borehole up to 500mm (20")
10mm (3/8") CHS	20mm (3/4") borehole up to 500mm (20")
10mm (3/8") CHS	25mm (1") borehole up to 1000mm (39")
10mm (3/8") CHS	32mm (1 1/4") borehole up to 2000mm (6'6")
15mm (5/8") x 15mm (5/8") SHS	32mm (1 1/4") borehole up to 3000mm (9'9")
20mm (3/4") x 20mm (3/4") SHS	40mm (1 1/2") borehole up to 3000mm (9'9")
30mm (1 3/16") x 30mm (1 3/16") SHS	60mm (2 1/2") borehole up to 4000mm (13'0")
M10 (3/8") studding	32mm (1 1/4") borehole up to 1000mm (39")
M12 (1/2") studding	32mm (1 1/4") borehole up to 1000mm (39")
M16 (5/8") studding	40mm (1 1/2") borehole up to 3000mm (9'9")
M20 (3/4") studding	50mm (2") borehole up to 4000mm (13'0")

CARE OF ANCHORS AND GROUT

The anchors and fixings are supplied with the correct amount of grout. Care must be taken not to waste grout. The anchors, fixings and grout should be stored safely away from all work areas until needed.

GROUT

Store grout in a dry place off the ground. NEVER allow the grout to become damp, or wet, or store in a place where the temperature can drop below 5ºC (41ºF).

NB – The marriage of steel and fabric is very delicate and the anchors must be treated accordingly to ensure that no damage to the fabric sock occurs. DO NOT leave anchors lying around on the ground or on scaffolding. NEVER use anchors to test the hole depth.

NOTES AND METHOD STATEMENT FOR GROUT FILLED CARTRIDGES

1. Use small clean container E.G. plastic paint bucket and measuring jug.
2. Remove back plug from container, pour grout contents into the mixing pot, gradually add small amount of clean water stirring until the consistency is a smooth medium thick cream.
3. Mix for at least four minutes with a whisk then allow to stand for a further four minutes and whisk again.
4. Pour the mixed grout back into the container and replace back plug securely.
5. Remove nozzle to remove inner plug and replace nozzle.
6. Place container into master gun, insert nozzle into back of anchor and proceed to pump.
7. Pump until trigger is stiff, hold for 10 seconds, release safety catch and withdraw slowly from the anchor.
8. Repeat the same process for each anchor.

NB – If you use a re-usable mastic/grout gun. These hold approximately ½ litre (0.11351 US Gal) of grout. Therefore 220 ml (0.058118 US Gal) of water to 1 kg (2.2 lbs) of grout is enough for one fill, which will pump 5 RAC standard anchors. The water ratio can be altered slightly dependent on weather conditions. Mix as above for at least four minutes, allow to stand for four minutes, mix for a further minute.

Stages

Step 1	Measure 220 ml (0.06 US Gal) of water into a clean container and slowly add 1 kg (2.2 lbs) of grout, whisk thoroughly for four minutes and allow to stand for a further four minutes and whisk again. The mixture should be smooth and creamy with no lumps.
Step 2	Pour mixed grout into front of gun and replace tap assembly.
Step 3	Turn off tap and pressurize gun.
Step 4	Push nozzle on anchor and open valve. When anchor is full, keep pressure on for 10 seconds, close valve and remove nozzle.

If you use a metal grout gun, grout on occasions collects at the base. To overcome this problem fully empty the gun, and remove excess grout. Swill all parts in a clean bucket of water between each mix.

NB – Metal hand grout guns must be washed and fully cleaned and thoroughly dried, after use. DO NOT oil cylinder as this would contaminate the grout.

Failure to carry out above will result in rusty equipment.

CONSTRUCTION SITE SAFETY CHECK LIST

The information that follows is derived from Cintec experience worldwide. It is supplied in good faith, but is not intended to be used in place of any statutory requirements. Occupational Health and Safety regulations that apply in the area in which the installation is being carried out must be adhered to at all times.

Safe access

- Can everyone reach their place of work safely, i.e. are there good roads, gangways, passage ways passenger hoists, staircases, ladders and scaffolds?
- Are all walkways level and free from obstructions such as stored material and wastes?
- Are there adequate barriers or other edge protection to stop falls from open edges of buildings, gangways etc.?
- Are holes and openings securely fenced off or provided with covers?
- Is there adequate artificial lighting when work is carried out after dark or inside buildings?
- Is the site tidy and are materials stored safely?
- Are there proper arrangements for collecting and disposing of scrap?
- Have nails in timber been hammered down or removed?

Ladders

- Are ladders the right equipment to use for the job or should a scaffold be provided?
- Are all ladders in good condition?
- Are ladders secured near the top (even if they will be used for only a short time)?
- If ladders cannot be secured at the top, are they secured near the bottom, weighted or footed to prevent slipping?
- Do the ladders rise the required minimum distance above their landing places or the highest rungs used (refer to appropriate regulations)? If not, are there adequate handholds?
- Are the ladders properly positioned for access?

Tubular scaffolds

- Is there proper access to the scaffold platform?
- Are all uprights provided with base plates (and, where necessary, timber sole plates) or prevented in some way or other from slipping or sinking?
- Have any uprights, ledges, braces or struts been removed?
- Is the scaffold secured to the building in enough places to prevent collapse?
- If any ties have been removed since the scaffold was erected have additional ties been provided to replace them?
- Are the working platforms fully covered?
- Are boards free from obvious defects such as knots and are they arranged to avoid tipping or tripping?
- Are there effective barriers or warning notices to stop people using an incomplete scaffold e.g. one that isn't fully boarded?
- Where the scaffold has been designed and constructed for loading with materials, are these evenly distributed?
- Does a competent person inspect the scaffold regularly i.e. at least once a week and always after bad weather?
- Are the results of inspection recorded (including any defects that were put right during the inspections) and the records signed by the person who carried out the inspections?
- Is there safe access to the excavation e.g. a sufficiently long ladder? Are there barriers to stop people falling in? Is the excavation affecting the stability of neighbouring buildings? Are stacked materials, spoil or plant stored near the edge of the excavation likely to cause a collapse to the site? If vehicles tip into the excavation, are properly secured stop blocks provided?

Machinery

- Are there any dangerous parts e.g. exposed gears, chain drives, projecting engine shafts?
- Are the dangerous parts adequately guarded?
- Are guards secured and in good repair?

Electricity

- Are all portable electric tools and equipment run from a power supply with earth leakage circuit breaker protection?
- Can you see any signs of damage or interference with equipment, wires and cables? Where required, have power tools been checked and tagged by a licensed electrician?
- Are all connections to power points made by proper plugs?
- Are connections to plugs properly made so that the cable grip holds the cable firmly and prevents the earth wire from being pulled out?
- Are there any overhead power lines? Where anything might touch the lines or cause arcing (cranes, tipper lorries, scaffolding etc.), has the electricity supply been turned off or other precautions taken to prevent such contact with the lines?
- Have underground electricity cables been located (with a cable locator and cable plans), marked and precautions taken to avoid contact with them?

Noise
- Are breakers fitted with muffs?
- Is other plant or machinery fitted with silencers?
- Do workers wear ear protection if they have to work in very noisy surroundings?

Protective Clothing
- Is equipment provided to protect the head, nose, eyes, hands and feet?
- Does the equipment meet at least the minimum standard required by law?
- Do workers wear their protective equipment?

Welfare
- Has a suitable toilet been provided?
- Is there a clean washbasin, soap and towel?
- Is wet weather gear provided for those who have to work in wet conditions?
- Is there a site hut where workers can sit and make tea?
- Is there a first aid box?

Site Cleaning

Site tidiness is the foundation of safety and of a job well done.

Always keep your immediate surroundings clean and clear of debris and unwanted plant. This must sound obvious, but surprisingly few people adopt this procedure. Just taking a few minutes care by putting away unwanted tools and equipment will give more room, work space and a clean and level base to work from, saving you time in the long run. This means that it is safer for you and your workmates. They do not slip, trip or step on articles that have been dropped. A clean site is a well run site.

PRESSTEC® GROUT HEALTH & SAFETY

Presstec® grout has been assessed in accordance with the classification, packaging and labeling requirements of regulations pertaining to dangerous substances in various countries and Cintec takes the view that it is not a dangerous or hazardous substance. Precautions common to the handling of Portland cement, slaked lime and products containing them are applicable to the handling of Presstec® grout.

The only precaution that needs to be taken when handling Presstec® grout is the common sense one of elementary hygiene. Unnecessarily prolonged contact on the skin, particularly when damp, should be avoided. Gloves should be worn when handling Presstec® grout bags. If Presstec® grout is in contact with skin, it should be washed of as soon as possible. If Presstec® grout enters the eye it should be immediately washed out thoroughly with clean water and medical treatment sought immediately. Eye protection and respiratory protection should be worn when working in dusty conditions.

Presstec® grout powder mixed with water releases alkali. Concrete or mortar adhering to the skin should be removed as soon as possible by washing with soap and water. Delay may cause skin irritation. Waterproofing gloves, eye protection, (safety) gum boots, full length trousers, long sleeved shorts and other suitable protective clothing should be worn when working with mortar.

Material Safety Data Sheets

Appended is the European Community “C.O.S.H.H.” sheet is provided as the M.S.D.S in accordance with the format provisions of Section 6 of the Code of Practice for the Preparation of Material Safety Data Sheets.

These notes are for guidance only. If you have any queries on the Cintec Anchoring System please contact us at the address below.

CINTEC International Limited
Cintec House, 11 Gold Tops,
Newport, South Wales, NP20 4PH,
Tel: 044 (0) 1633 246614
Fax: 044 (0) 1633 246110

Cintec America Inc
200 International Circle, Suite 5100
Hunt Valley, Maryland, 21030
Tel: 1 410-761-0765
Fax: 613-224-9042

Cintec Canada Limited
38 Auriga Drive, Suite 2
Nepean, ON K2E 8A5
Tel: 613-225-3381
Fax: 613-224-9042

Appendix B

CINTEC PRODUCT INFORMATION UPDATE

NO 1/99: ALTERATIONS OF ANCHORS

We have recently experienced a number of instances where the anchors have been physically altered on site without our knowledge or approval. This is an extremely dangerous practice and apart from breaching the conditions of warranty, there is a possibility that the anchors would not meet their performance specifications. We fully understand that, periodically, problems will occur on site, but we ask that you contact us on such occasions so that checks can be made to ensure the anchors perform to the required specifications and the new dimensions can be entered into our records.

NO 1/02: PRESSTEC® GROUT – HEALTH & SAFETY AT WORK

While working on site, an operative was injecting an anchor with Presstec® grout and some of the grout splashed into his eye. The eye was damaged and the operative UNDERWENT Surgery .He was NOT wearing protective goggles.

It is essential that personnel wear goggles while mixing or working with Presstec Grout®. This requirement is specified in the COSHH Statement, is emphasised during training carried out by Cintec staff and is clearly laid down in the Training Manual.

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

1.1. Product Identifier

Product Form: Mixture

Product Name: Presstec 2000 and Presstec Standard

1.2. Intended Use of the Product

Use of the Substance/Mixture: Building Material

1.3. Name, Address, and Telephone of the Responsible Party

Company

Cintec Reinforcement Systems

T 1-410-761-0765 - F 1-800-461-1862

solutions@cintec.com

1.4. Emergency Telephone Number

Emergency Number : Company: 1-613-225-3381 (8:30-16:30 EST)

Information centre specializing in Symptoms of Poisoning Telephone: 1-800-222-1222

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

Classification (GHS-US)

Skin Irrit. 2 H315

Eye Dam. 1 H318

Skin Sens. 1 H317

Carc. 1A H350

STOT SE 3 H335

STOT RE 1 H372

2.2. Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US) :

GHS05 GHS07 GHS08

Signal Word (GHS-US) : Danger

Hazard Statements (GHS-US) :

H315 - Causes skin irritation

H317 - May cause an allergic skin reaction

H318 - Causes serious eye damage

H335 - May cause respiratory irritation

H350 - May cause cancer

H372 - Causes damage to organs through prolonged or repeated exposure

Precautionary Statements (GHS-US) :

P201 - Obtain special instructions before use.

P202 - Do not handle until all safety precautions have been read and understood.

P260 - Do not breathe dust.

P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

P271 - Use only outdoors or in a well-ventilated area.

P272 - Contaminated work clothing should not be allowed out of the workplace.

P280 - Wear protective gloves, protective clothing, eye protection, face protection, respiratory protection.

P302+P352 - IF ON SKIN: Wash with plenty of soap and water.

P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308+P313 - If exposed or concerned: Get medical advice/attention.
P310 - Immediately call a POISON CENTER or doctor/physician.
P312 - Call a POISON CENTER/doctor/physician if you feel unwell.
P314 - Get medical advice and attention if you feel unwell.
P321 - Specific treatment (see section 4).
P332+P313 - If skin irritation occurs: Get medical advice/attention.
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P362 - Take off contaminated clothing and wash before reuse.
P362+P364 - Take off contaminated clothing and wash it before reuse.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
P501 - Dispose of contents/container to local, regional, national, and international regulations.

2.3. Other Hazards

Other Hazards Not Contributing to the Classification: Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions. Repeated or prolonged exposure to respirable (airborne) crystalline silica dust will cause lung damage in the form of silicosis. Symptoms will include progressively more difficult breathing, cough, fever, and weight loss. Product becomes alkaline when exposed to moisture or water. Exposure can cause chemical burns, or severe irritation of the mucous membranes, skin, eyes, and other exposed areas.

2.4. Unknown Acute Toxicity (GHS-US)

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance

Not applicable
Full text of H-phrases: see section 16

3.2. Mixture

Name	Product identifier	%	Classification (GHS-US)
Cement, portland, chemicals	(CAS No) 65997-15-1	58	Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1, H317 STOT SE 3, H335
Quartz	(CAS No) 14808-60-7	41	Carc. 1A, H350 STOT SE 3, H335 STOT RE 1, H372
Limestone	(CAS No) 1317-65-3	41	Not classified
Proprietary Additive	Proprietary	<1.0	Not classified

The specific chemical identity and/or exact percentage of composition has been withheld as a trade secret.
Full text of H-phrases: see section 16

4.1. Description of First Aid Measures

First-aid Measures General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
First-aid Measures After Inhalation: When symptoms occur: go into open air and ventilate suspected area. If exposed or concerned: Get medical advice/attention. Remove to fresh air and keep at rest in a position comfortable for breathing.
First-aid Measures After Skin Contact: Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Brush off loose particles from skin. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical advice/attention.
First-aid Measures After Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
First-aid Measures After Ingestion: Rinse mouth. Do NOT induce vomiting. Seek medical attention immediately.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/Injuries: Causes damage to organs through prolonged or repeated exposure. Causes serious eye damage. Skin irritation. May cause cancer. May cause respiratory irritation. Product becomes alkaline when exposed to moisture or water. Exposure can cause chemical burns, or severe irritation of the mucous membranes, skin, eyes, and other exposed areas.

Symptoms/Injuries After Inhalation: May cause cancer by inhalation. May cause respiratory irritation.
Symptoms/Injuries After Skin Contact: Causes skin irritation. May cause an allergic skin reaction.
Symptoms/Injuries After Eye Contact: Causes serious eye damage.
Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects.
Chronic Symptoms: May cause cancer. Causes damage to organs through prolonged or repeated exposure. Repeated or prolonged exposure to respirable (airborne) crystalline silica dust will cause lung damage in the form of silicosis. Symptoms will include progressively more difficult breathing, cough, fever, and weight loss.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Use extinguishing media appropriate for surrounding fire.
Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: Not considered flammable but may burn at high temperatures.
Explosion Hazard: Product is not explosive.
Reactivity: Hazardous reactions will not occur under normal conditions. Wet portland cement is alkaline. As such it is incompatible with acids, ammonium salts and phosphorus.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire.
Firefighting Instructions: Use water spray or fog for cooling exposed containers.
Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.
Other information: Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid all contact with skin, eyes, or clothing. Do not breathe dust. Avoid generating dust.

6.1.1. For Non-emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).
Emergency Procedures: Evacuate unnecessary personnel.

6.1.2. For Emergency Responders

Protective Equipment: Equip cleanup crew with proper protection.
Emergency Procedures: Ventilate area.

6.2. Environmental Precautions

Prevent entry to sewers and public waters.

6.3. Methods and Material for Containment and Cleaning Up

For Containment: Avoid generation of dust during clean-up of spills. Let the product solidify.
Methods for Cleaning Up: Clear up spills immediately and dispose of waste safely. Avoid generation of dust during clean-up of spills. Take up mechanically (sweeping, shovelling) and collect in suitable container for disposal.

6.4. Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed: Product becomes alkaline when exposed to moisture or water. Exposure can cause chemical burns, or severe irritation of the mucous membranes, skin, eyes, and other exposed areas. When heated to decomposition, emits toxic fumes.
Precautions for Safe Handling: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Do not breathe dust.
Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Do no eat, drink or smoke when using this product. Wash hands and forearms thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations. Avoid creating or spreading dust.

Storage Conditions: Keep/Store away from extremely high or low temperatures, water, incompatible materials. Store in a wellventilated place. Keep container tightly closed.
Incompatible Products: Strong acids. Strong bases. Strong oxidizers. Aluminum. Ammonium salts.

7.3. Specific End Use(s)
Building Material.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

Quartz (14808-60-7)		
USA ACGIH	ACGIH TWA (mg/m³)	0.025 mg/m³
USA NIOSH	NIOSH REL (TWA) (mg/m³)	0.05 mg/m³
USA IDLH	US IDLH (mg/m³)	50 mg/m³

Cement, portland, chemicals (65997-15-1)		
USA ACGIH	ACGIH TWA (mg/m³)	1 mg/m³
USA NIOSH	NIOSH REL (TWA) (mg/m³)	5 mg/m³
USA IDLH	US IDLH (mg/m³)	5000 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m³)	5 mg/m³

Limestone (1317-65-3)		
USA NIOSH	NIOSH REL (TWA) (mg/m³)	5 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m³)	5 mg/m³

8.2. Exposure Controls

Appropriate Engineering Controls : Emergency eye wash fountains should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation, especially in confined areas. Avoid dust production. Ensure all national/local regulations are observed.

Personal Protective Equipment : Protective clothing. Protective goggles. Gloves. Wear respiratory protection.

Materials for Protective Clothing : Chemically resistant materials and fabrics.

Hand Protection : Wear chemically resistant protective gloves.

Eye Protection : Wear ANSI approved glasses or safety goggles and skin protection.

Skin and Body Protection : Wear gloves, boot covers and protective clothing impervious to water to prevent skin contact. Do not rely on barrier creams, in place of impervious gloves. Remove clothing and protective equipment that becomes saturate with wet cement and immediately was exposed areas.

Respiratory Protection : Under ordinary conditions no respiratory protection is required. Wear a NIOSH approved respirator that is properly fitted and in good condition when exposed to dust above exposure limits.

Other Information : When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State : Solid (Powder)
Appearance : Grey/White powder
Odor : None
Odor Threshold : No data available
PH : 11 - 13.5 (1% aqueous solution)
Relative Evaporation Rate (butylacetate=1) : No data available
Melting Point : 1250°C (2282°F)
Freezing Point : Not applicable
Boiling Point : No data available
Flash Point : No data available
Auto-ignition Temperature : No data available

Decomposition Temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor Pressure	: No data available
Relative Vapor Density at 20 °C	: No data available
Relative Density	: No data available
Specific Gravity	: 900-1500 g/mL
Solubility	: 3g/L (@20°C (68°F)).
Log Pow	: No data available
Log Kow	: No data available
Viscosity	: No data available
Explosive Limits	: Not applicable

9.2. Other Information No additional information available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity: Hazardous reactions will not occur under normal conditions. Wet portland cement is alkaline. As such it is incompatible with acids, ammonium salts and phosphorus.
10.2 Chemical Stability: Stable at standard temperature and pressure.
10.3 Possibility of Hazardous Reactions: Hazardous polymerization will not occur.
10.4 Conditions to Avoid: Extremely high or low temperatures. Incompatible materials. Water. Humidity.
10.5 Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. Aluminum. ammonium salts.
10.6 Hazardous Decomposition Products: Carbon oxides (CO, CO2). Quartz (silica) will dissolve in hydroflouric acid producing a corrosive gas, silicon tetrafluoride. Toxic gases. Oxides of calcium.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information On Toxicological Effects

Acute Toxicity: Not classified

Quartz (14808-60-7)	
LD50 Oral Rat	> 5000 mg/kg

Skin Corrosion/Irritation: Causes skin irritation. **pH:** 11 - 13.5 (1% aqueous solution)
Serious Eye Damage/Irritation: Causes serious eye damage. **pH:** 11 - 13.5 (1% aqueous solution)
Respiratory or Skin Sensitization: May cause an allergic skin reaction.
Germ Cell Mutagenicity: Not classified
Carcinogenicity: May cause cancer.

Quartz (14808-60-7)	
IARC group	1
National Toxicity Program (NTP) Status	Known Human Carcinogens.

Reproductive Toxicity: Not classified
Specific Target Organ Toxicity (Single Exposure): May cause respiratory irritation.
Specific Target Organ Toxicity (Repeated Exposure): Causes damage to organs through prolonged or repeated exposure.
Aspiration Hazard: Not classified
Symptoms/Injuries After Inhalation: May cause cancer by inhalation. May cause respiratory irritation.
Symptoms/Injuries After Skin Contact: Causes skin irritation. May cause an allergic skin reaction.
Symptoms/Injuries After Eye Contact: Causes serious eye damage.
Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects.
Chronic Symptoms: May cause cancer. Repeated or prolonged exposure to respirable (airborne) crystalline silica dust will cause lung damage in the form of silicosis. Symptoms will include progressively more difficult breathing, cough, fever, and weight loss.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity No additional information available

12.2. Persistence and Degradability

Presstec 2000 and Presstec Standard	
Persistence and Degradability	Not established.

12.3. Bioaccumulative Potential

Presstec 2000 and Presstec Standard	
Bioaccumulative Potential	Not established.

12.4. Mobility in Soil No additional information available

12.5. Other Adverse Effects

Other Information : Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste Disposal Recommendations: Dispose of waste material and containers in accordance with all local, regional, national, and international regulations.

SECTION 14: TRANSPORT INFORMATION

14.1 In Accordance with DOT Not regulated for transport

14.2 In Accordance with IMDG Not regulated for transport

14.3 In Accordance with IATA Not regulated for transport

SECTION 15: REGULATORY INFORMATION

15.1 US Federal Regulations

Presstec 2000 and Presstec Standard	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Delayed (chronic) health hazard

Quartz (14808-60-7)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Cement, portland, chemicals (65997-15-1)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Limestone (1317-65-3)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2 US State Regulations

Quartz (14808-60-7)	
U.S. - California - Proposition 65 - Carcinogens List	WARNING: This product contains chemicals known to the State of California to cause cancer.

Quartz (14808-60-7)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

Cement, portland, chemicals (65997-15-1)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

Limestone (1317-65-3)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: OTHER INFORMATION

Revision date : 02/11/2014

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Carc. 1A	Carcinogenicity Category 1A
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Skin Irrit. 2	Skin corrosion/irritation Category 2
Skin Sens. 1	Skin sensitization Category 1

STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H335	May cause respiratory irritation
H350	May cause cancer
H372	Causes damage to organs through prolonged or repeated exposure

Cintec North America believes the information contained herein is accurate; however, Cintec makes no guarantees with respect to such accuracy and assumes no liability in connection with the use of the information contained herein which is not intended to be and should not be construed as legal advice or as insuring compliance with any federal, state or local laws or regulations. Any party using this product should review all such laws, rules, or regulations prior to use, including but not limited to US and Canada Federal, Provincial and State regulations.

NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE.

SDS US (GHS HazCom) - US

Appendix D
GROUT INJECTION KIT

INCLUDES:

- **One pressure pot 10 liter (2.5gal) with preassembled hose and injection valve.**
- **One Grout mesh screen.**
- **One mixing paddle with 6” cage.**
- **Measuring jug marked in liters (or less) increments.**
- **Three extra injection nozzles.**
- **One Grout Mixing Bucket.**
- **One water measuring pail.**
- **Glue gun for anchor repair.**

PRICE AVAILABLE ON APPLICATION TO OFFICE

*

Tel: [410] 761-0765
Tel: [613] 225-3381
Email: solutions@cintec.com
URL: www.cintec.com

GROUT GUN OPTION FOR SMALL ANCHORS

COX™ A Sulzer Brand MK™ A Sulzer Brand

https://www.coxdispensers.com/view-products-grid

- Check for individual models suited for cement up to 30 OZ. -Available in either Battery or Air operarted..

Grout Gun option can only be considered for small anchors.

Tel: [410] 761-0765
Tel: [613] 225-3381
Email: solutions@cintec.com
URL: www.cintec.com

Training Power Point Presentation

CINTEC
REINFORCEMENT SYSTEMS

INSTALLATION TRAINING 2020

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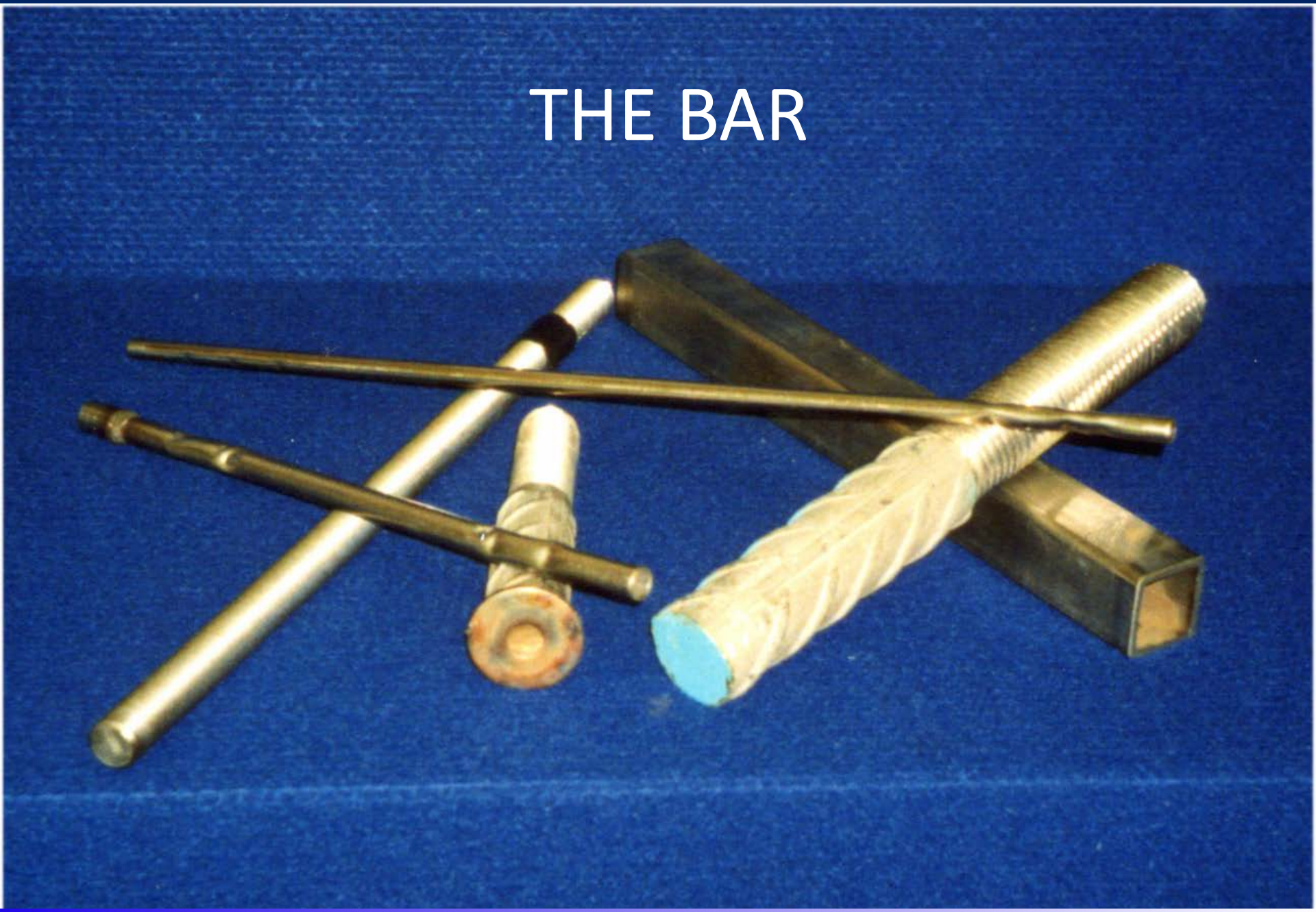
SAFETY

THE BAR



THE SOCK

WOVEN POLYESTER

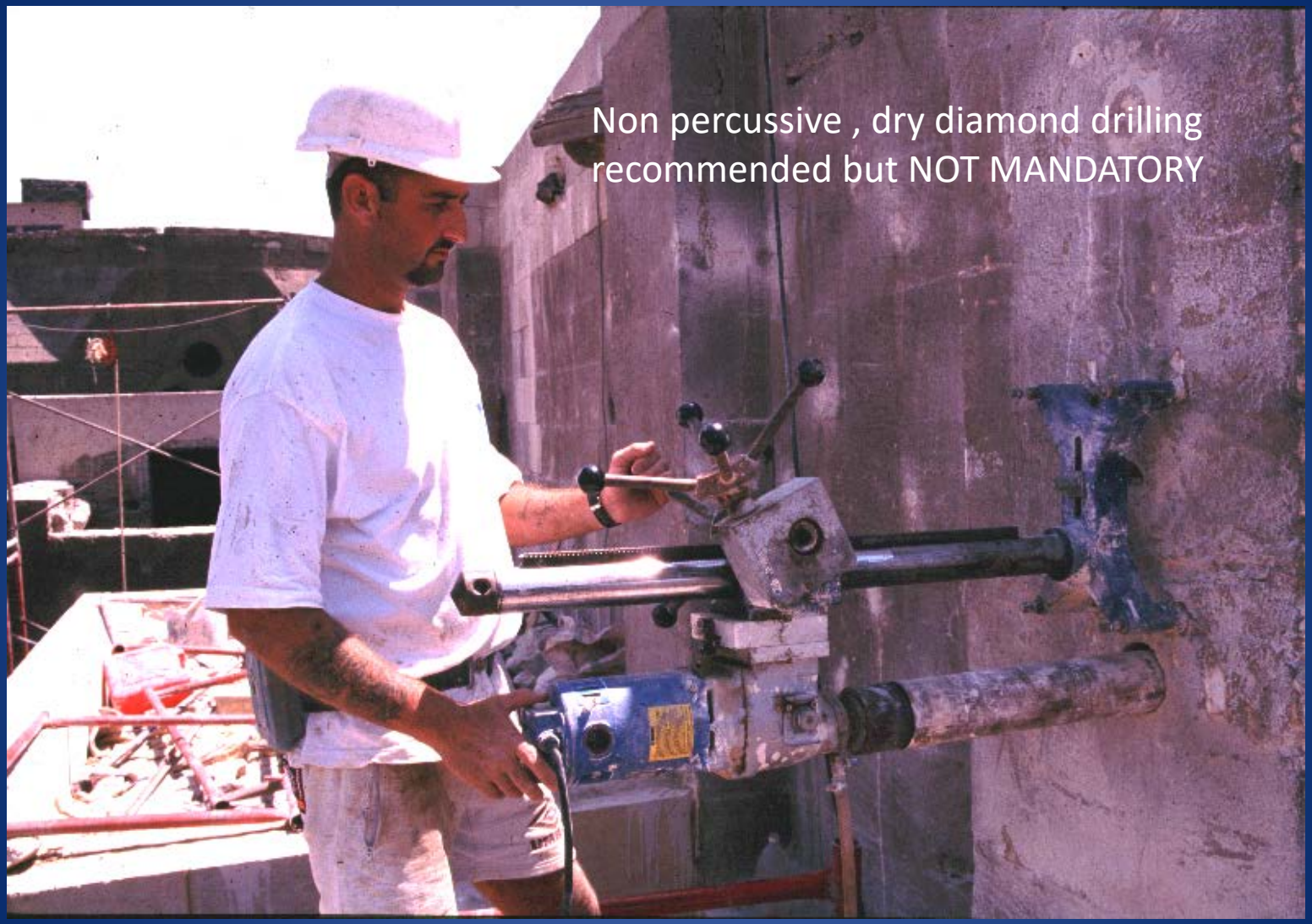
THE GROUT

NON SHRINK GOOD STRENGTH

Wall temperature MUST be above 5° C

Grout MUST be strained

NON PERCUSSIVE DRILLING

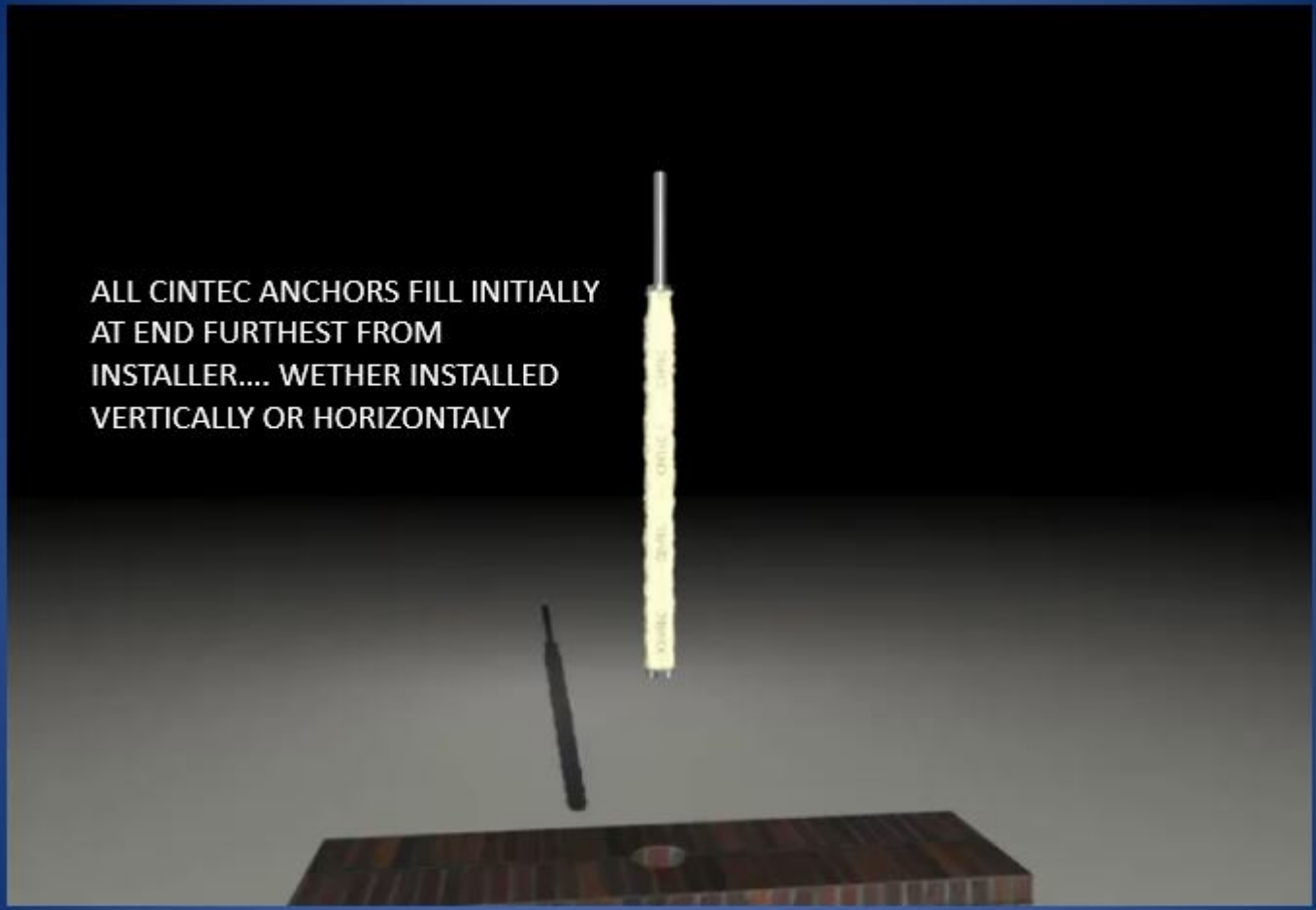


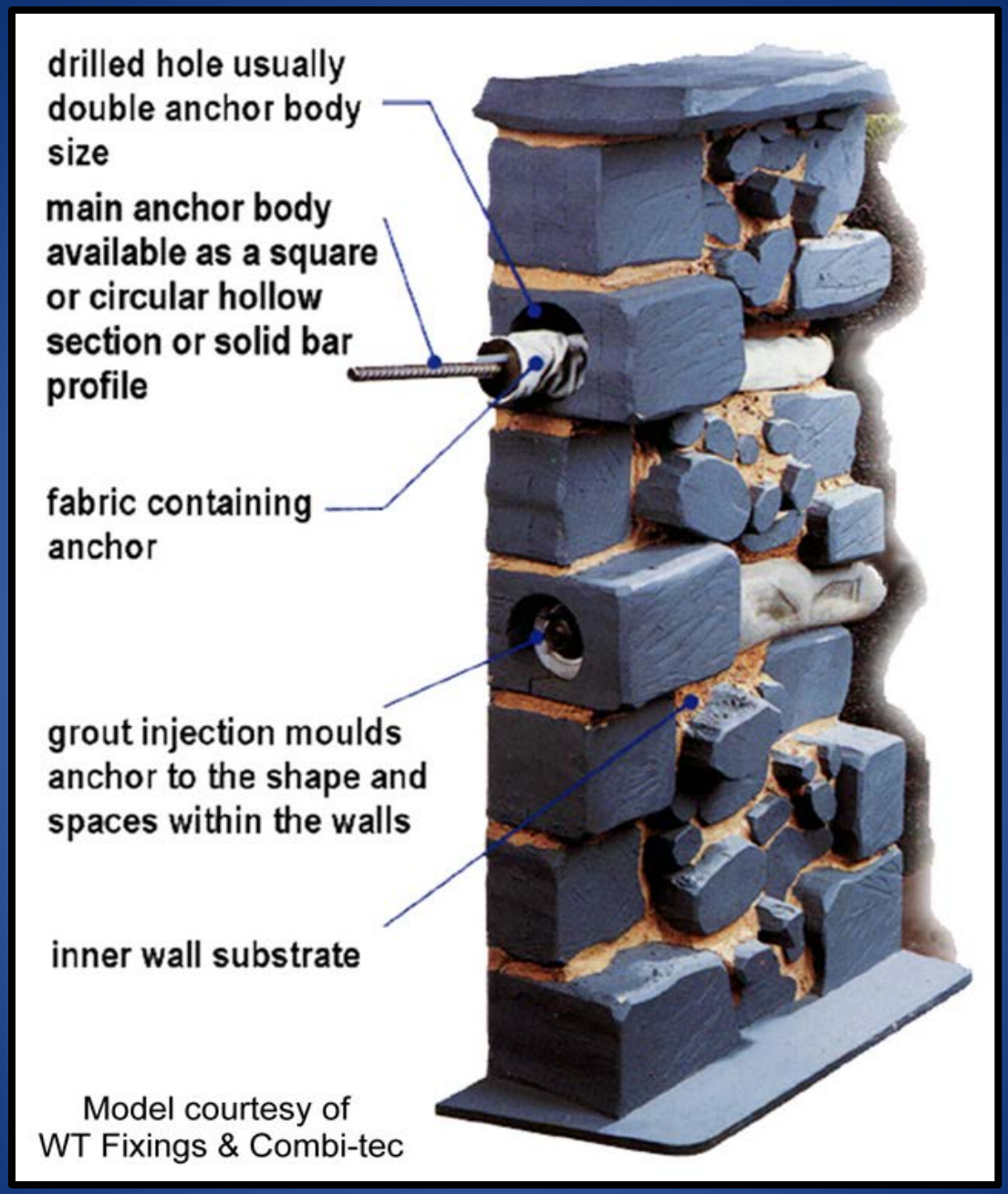
ANCHOR INJECTION

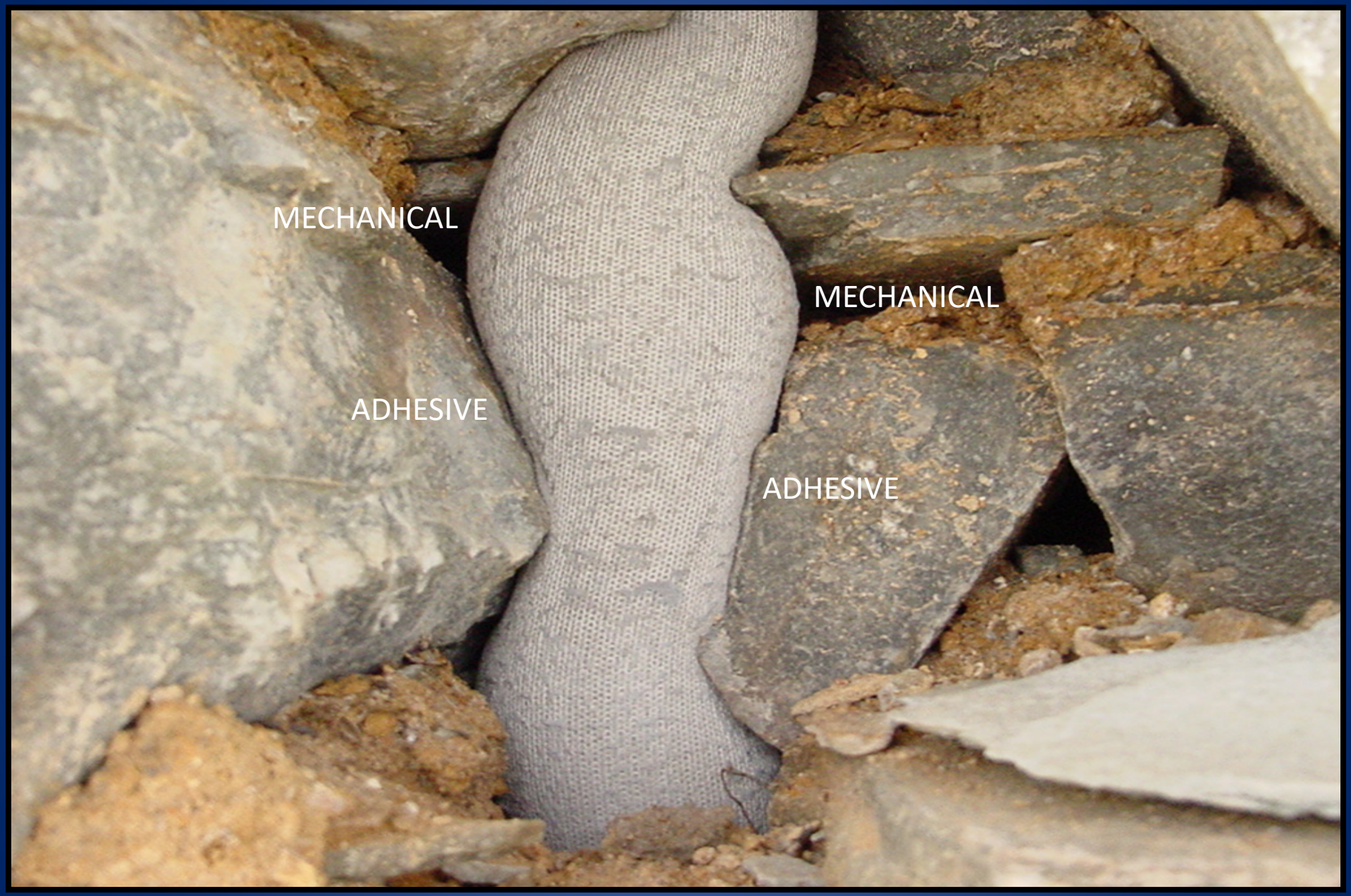
THE GROUT (specially formulated)
ALLOWS LOW PRESSURE INJECTION

(Typically 40 PSI / 3 BAR)

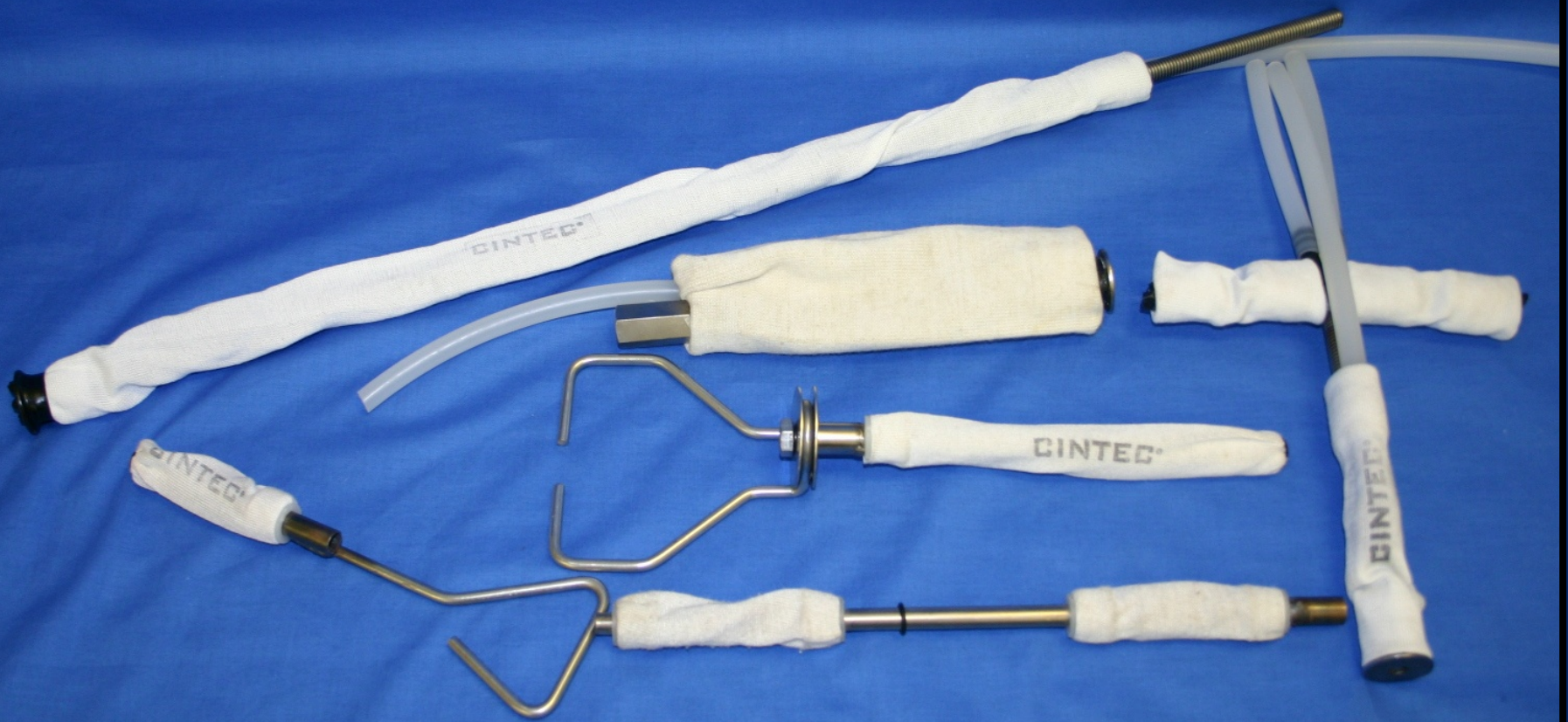
HIGH VOLUME PUMP

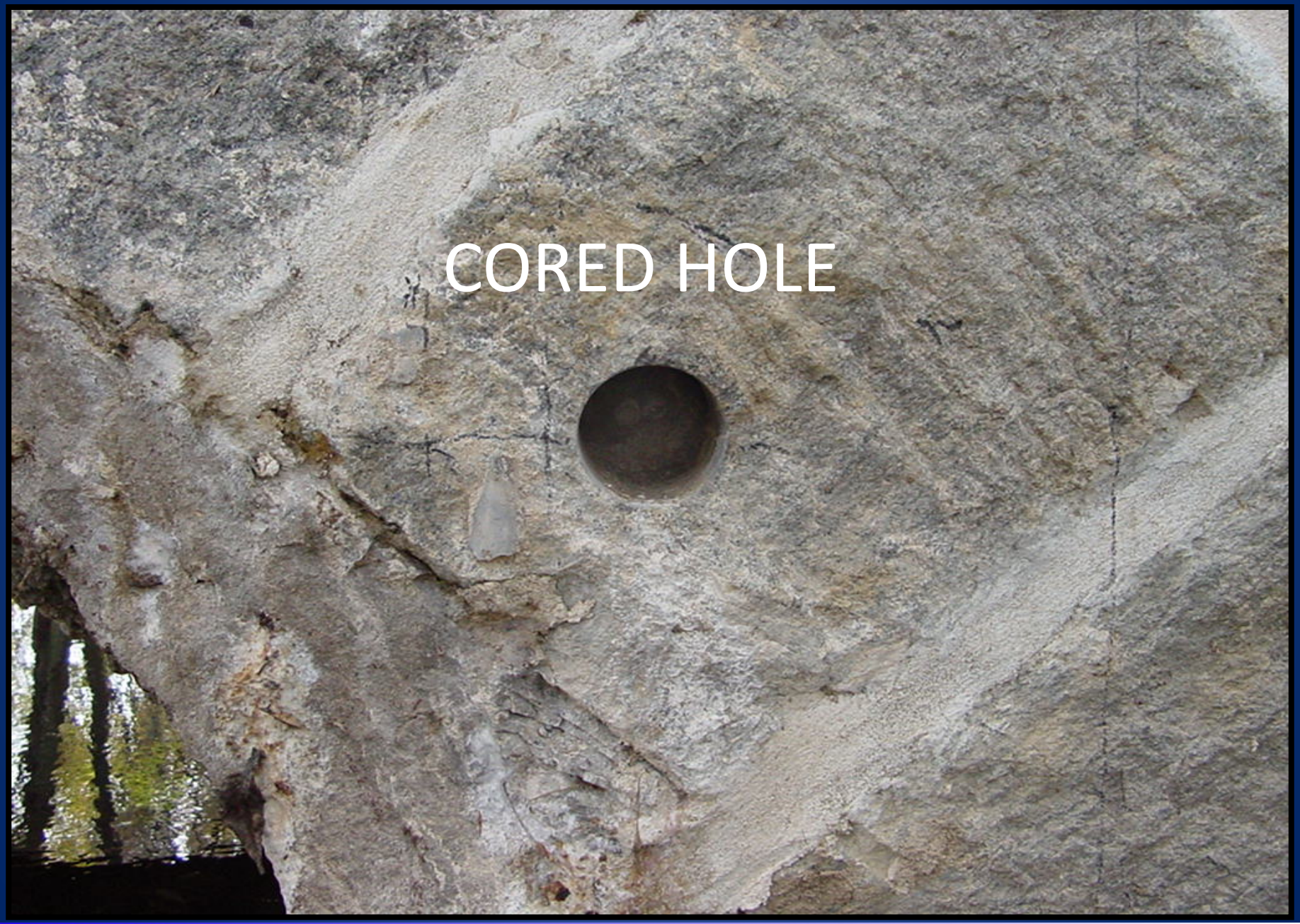






PROJECT SPECIFIC ANCHORS



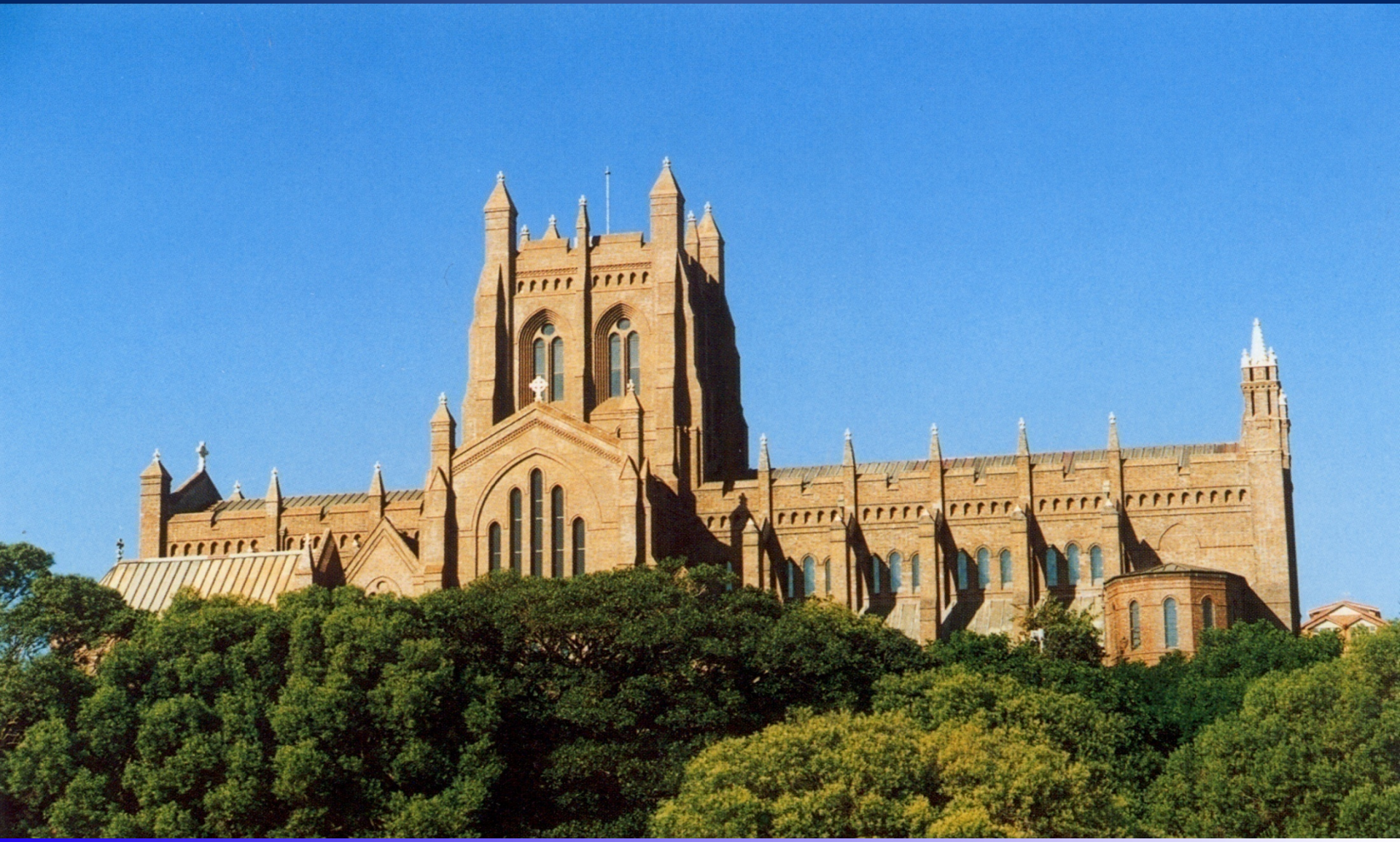

CORED HOLE

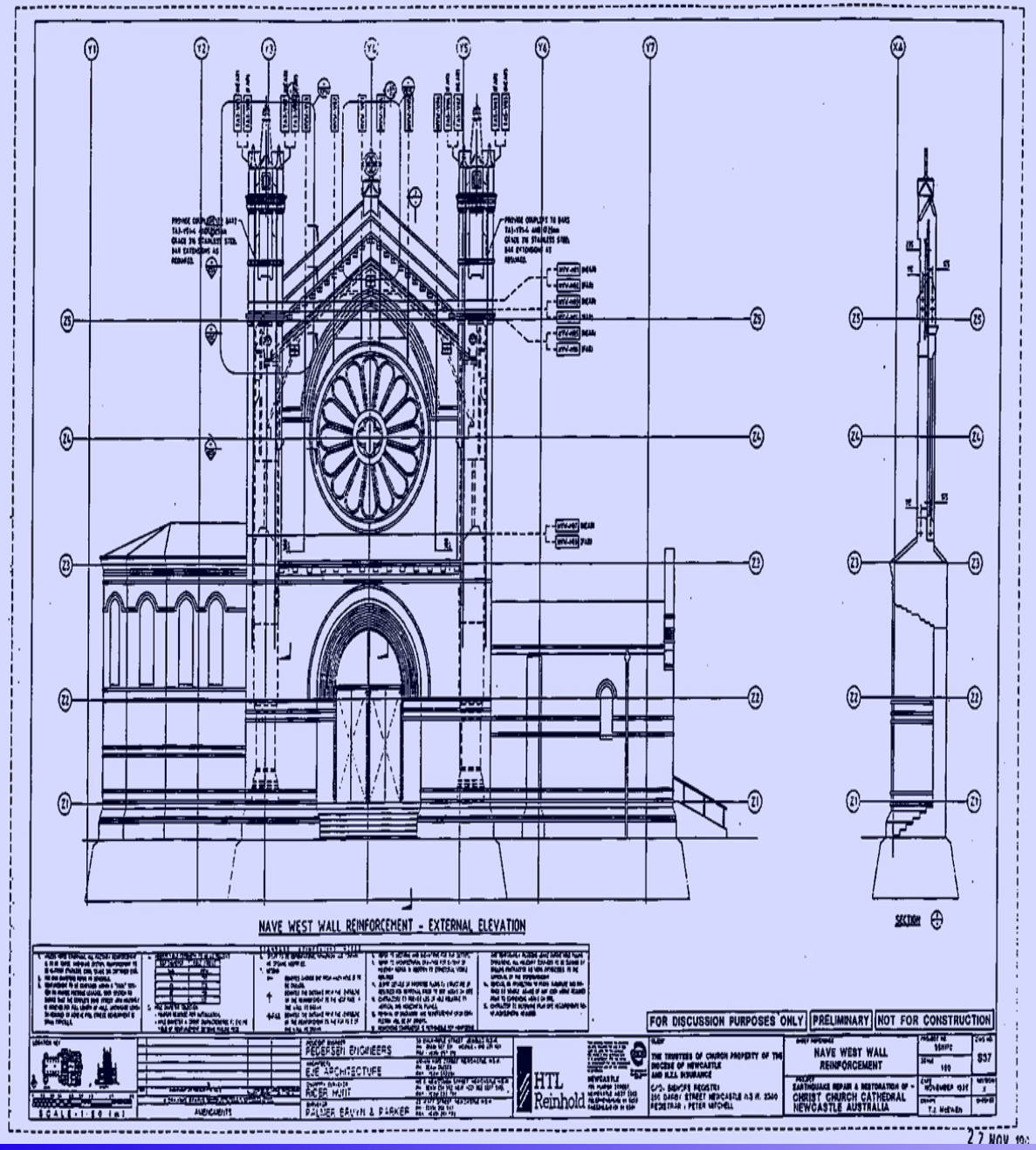
CORNER REBUILDING

BEFORE

AFTER

Christchurch Cathedral N.S.W



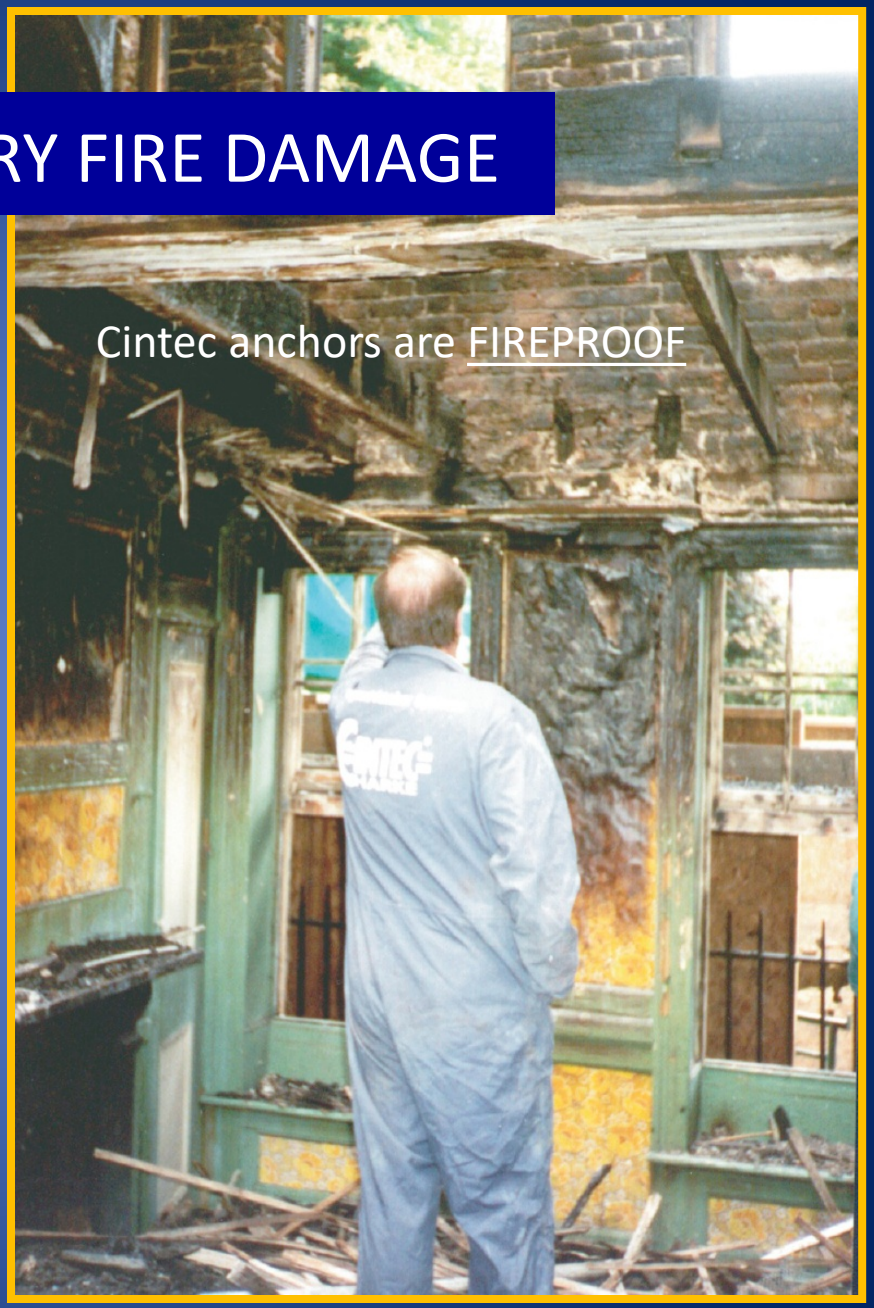

NAVE WEST WALL REINFORCEMENT - EXTERNAL ELEVATION
SECTION
FOR DISCUSSION PURPOSES ONLY
PRELIMINARY
NOT FOR CONSTRUCTION
PEDERSEN ENGINEERS
EVE ARCHITECTURE
RICER HUNT
PALMER GALVIN & PARKER
HTL Reinhold
THE TRUSTEES OF CHURCH PROPERTY OF THE DIOCESE OF NEWCASTLE AND N.S.W. INCORPORATED
NAVE WEST WALL REINFORCEMENT
EARTHQUAKE REPAIR & RESTORATION OF CHRIST CHURCH CATHEDRAL NEWCASTLE AUSTRALIA
$37
NOVEMBER 1917
27 NOV


DIVISION BETWEEN FIRST
AND SECOND SOCK.


DIVISION BETWEEN FIRST
AND SECOND SOCK.

FULLERS BREWERY

FULLERS BREWERY FIRE DAMAGE



Cintec anchors are FIREPROOF

FULLERS BREWERY ANCHOR TESTING

THE ADVANTAGES

- Custom Designed
- Cementitious
- Highly durable, fireproof
- Controlled grout flow
- Invisible when installed
- Speed of installation

Resumes of Training Staff

Cintec TRAINING STAFF
TECHNICAL EXPERIENCE

Robert Lloyd-Rees.CAHP.FFB.MIABTI CEO/COO	**Trained as a Building Surveyor in 1960 and has spent over 60 years dealing with the restoration of the built environment…In 1986 was one of the first people to be trained by GÖLZ (UK) Ltd and GÖLZ in Europe in Dry Diamond drilling. Robert Has over 40 years' experience with Cintec**
Gene Quesnel Divisional Manager	**For the past 14 years, has worked alongside Engineers, Architects and Contractors assisting in the development and application of Cintec anchoring and reinforcement systems to suit their various projects. A considerable part of his time is spent on-site, training on the proper use and placement procedures of Cintec anchors.**
Kent Crawford BSE. Territory Manager	**Kent obtained his BSE at Old Dominion University Norfolk Virginia. As Territory Manager he's responsible for training and certifying all Contractors within his territory.**
Daryl Davis	**Daryl is Cintec's specialist trainer for all Long anchors up to 100 feet +. Daryl has over 30 years' experience with Cintec Within the last five years has supervised the drilling and installation of over 35,000 feet of masonry drilling and the successful installation of more than 25,000 Cintec anchors.**
Patrick Morrissey B.S.C.E.	Patrick looks after the five Boroughs of New York City.He obtained his Degree in Civil engineering from Manhattan College, Bronx,NY and post graduate studies at NJIT.Has over 40 years experince in consruction and indusry. Pat is also a fellow of I.C.R.I. He has over 20 years experience with Cintec

TRAINING Course Test

ANSWER

1. All Cintec anchors have three main components:

A	**B**	**C**
Sock	Sock	Both A and B
Vent tube	Presstec Grout	
SS Body	SS Body	

2. Cintec anchors are:

A	**B**	**C**
Mechanical	Adhesive	Both

3. All Cintec anchors must be installed in a clean, dry cored hole:

A	**B**
TRUE	FALSE

4. Presstec grout is normally mixed, 1 bag grout to:

A	**B**	**C**
6.5 Litres water	5.0 Litres water	4.5 Litres water

5. The mixing time sequence for Presstec grout after it has been slowly added to water is:

A	**B**	**C**
Mix 5 minutes	Mix 4 minutes	Mix 4 minutes
Sit 4 minutes	Sit 4 minutes	Sit 5 minutes
Mix 2 minutes	Mix 30 seconds	Mix 30 seconds

6. The normal “POT LIFE” of Presstec grout is about:

A	**B**	**C**
15 to 30 minutes	45 to 60 minutes	75 to 90 minutes

7. The special epoxy in Presstec grout is fireproof:

A	**B**
TRUE	FALSE

ANSWER

8 Cintec anchors should be wetted before inflation:

A	B	C	
Always	Never	Only if core hole is dry	_____

9 Before putting grout in pressure pot, it must be put through a strainer:

A	B	C	
If grout is not smooth	Always	If left in sun	_____

10 The normal inflation pressure is:

A	B	C	
30 psi	40 psi	50 psi	_____

11 Cintec anchors should only be installed when the wall temperature is:

A	B	C	
Above 10 degree C	Above 5 degree C	Above 0 degree C	_____

12 The best way to confirm hole depth is to check with anchor to be used:

A	B	
TRUE	FALSE	_____

13 Cintec grout is:

A	B	C	
Cementitious	Cementitious with special epoxy	European epoxy/resin	_____

14 The fill tube on horizontal Cintec anchors,when being inserted, must be:

A	B	C	
On side	On top	Does not matter	_____

ANSWER

15 To insure proper insertion of anchor, it should be:

A	**B**	**C**	
Screwed in in a clockwise direction	Pushed in and out quickly	Neither	_____

16 Indicators of proper inflation are:

A	**B**	**C**	
Sock turns grey Grout milk present	Sock bulbous Sock firm to touch	Both	_____

17 Cintec anchors may be installed under-water:

A	**B**	
TRUE	FALSE	_____

18 The adhesive pull out strength of Cintec anchors is about:

A	**B**	**C**	
40 psi	65 psi	90 psi	_____

19 Non-percussive, dry drilling is the only method that can be used when making holes for Cintec anchors.

A	**B**	
TRUE	FALSE	_____

20 No less than a full bag mix of Presstec grout can be made.

A	**B**	
TRUE	FALSE	_____

Score #

Trainee Name: _____ Score %

Date: _____ CINTEC _____

CINTEC
NORTH AMERICA

TRAINING SHEET

Date of Instruction		Name	
Card Expiry Date		Surname	
Company Name		Grade	
Company Address		Site Address	
Telephone No.			
Fax No.			
Injection Method	Inner ☐		
	Outer ☐		
Anchor Type			
Borehole Diameter			
Substrate			

PHOTO

I have received training as indicated on this form and have received and read the *Notes for Approved Installers of the Cintec Designed Anchor System*

TRAINEE'S SIGNATURE

INSTRUCTORS SIGNATURE

	Verbal	Demonstration
Safety Measures	☐	☐
Pressure Pot Maintenance	☐	☐
Pressure Pot Operation	☐	☐
Bar Pressure Ranges	☐	☐
Handling and care of anchors	☐	☐
Small Anchor Repairs	☐	☐
Resocking of Anchors	☐	☐
Cleaning Borehole	☐	☐
Anchor Insertion	☐	☐
Grout Mixing	☐	☐
When to Wet Anchors	☐	☐
When to Wet Brickwork	☐	☐
Anchor Inflation	☐	☐
Anchor Test Cure Times	☐	☐
Washing Spit Grout Off Wall	☐	☐
Disposal of Grout	☐	☐
Cleaning Of Work Area	☐	☐

SAFETY

Toolbox Talk: Power Tools

Safety Measures to ensure proper use and avoid serious injuries

Power tools include electric, fuel powered, hydraulic, pneumatic, and powder actuated tools. Always follow manufacturer's instructions on proper use, safety precautions, inspection, and troubleshooting procedures. Maintain power tools in a safe condition.

Proper Use

- Never carry a tool by its cord or lower a tool by its cord.
- Never yank the cord to disconnect it from the outlet.
- Only trained employees are allowed to operate power tools.
- Employees must wear the appropriate personal protective equipment to protect them from particular hazards arising from the use of hand and power tools. For example, employees using these tools may be exposed to falling or flying abrasives (mortar, sand, metal), splashing objects (coatings, paints) or exposed to harmful dusts (grinding mortar joints, flat work prep), fumes, mists, vapors (coatings), or gases. Respirators, hearing protection, or gloves may be needed depending on the tools being used and elements being worked on.
- All power tools should have the cords wrapped up tightly when in storage and not hanging loosely.
- Safety glasses must be worn at all times when operating any type of power tool. No exceptions.
- Store electrical tools in a dry place. If they do get wet, let them dry out for a full 24 hours and then inspect them again to see if the moisture has evaporated before using.
- Remove all damaged portable electric tools from use and tag them "Do Not Use."
- Proper guards are in place and not altered.

Do:

- Do ensure cords from electrical tools do not present a tripping hazard.
- Do inspect and test all power tools daily before use and correct all defects as soon as possible.
- Do protect cords from doors closing on them and pinching the insulation.
- Do disconnect tools when not to use, before servicing, and when changing blades, guards, or bits.
- Do use tools with correct guard, shield, or attachment recommended by the manufacturer.
- Do make sure to use the proper tool for the job.

Don't:

- Do not load tools, such as nails or staples in guns, until immediately before use.
- Do not leave tools unattended in a place where they would be available to unauthorized persons.
- Do not use tools in explosive or flammable environments.
- Do not override, damage, or disable operating switches or safety devices.
- Do not lower or hoist tools using hoses or electrical cords.
- Do not use defective equipment until properly repaired.

Through the OSHA and SWRInstitute Alliance, the SWRInstitute developed this toolbox talk for informational purposes only. It does not necessarily reflect the official views of OSHA or the U.S. Department of Labor.

Review Questions:

1) Some employees do not need power tool training.

   A) True

   B) False: Only trained employees are allowed to operate power tools.

2) It is the user's responsibility to inspect the work environment prior to operating any power tool to identify any hazards.

   A) True

   B) False

3) Which one of the following is something you should NEVER do:

   A) Carry a tool by its handle

   B) Store a tool in its assigned box

   C) Carry a tool by its power cord

   D) Clearly mark tools that are inoperable

4) Which of the following is a proper safety measure when using a power tool:

   A) Using guards and shields on all tools

   B) Always wear safety glasses

   C) Wear hearing protection

   D) All of the above

Talk Given By: _____ **Date:** _____

Company: _____ **Location:** _____

Printed Name	**Signature**

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TOOLBOXTALK

PERSONAL PROTECTIVE EQUIPMENT (PPE)

OSHA requires the use of personal protective equipment (PPE) to reduce employee exposure to hazards when engineering and administrative controls are not feasible or effective in reducing these exposures to acceptable levels. Employers must determine if PPE should be used to protect their workers.

If PPE is to be used, employers must implement a PPE program. The program should address the hazards present; the selection, maintenance, and use of PPE; the training of employees; and monitoring of the program to ensure its ongoing effectiveness.

HEAD PROTECTION

- Workers must wear hard hats when overhead, falling, or flying hazards exist or when danger of electrical shock is present.
- Inspect hard hats routinely for expiration date, dents, cracks, or deterioration.
- If a hard hat has taken a heavy blow or electrical shock, you must replace it even when you detect no visible damage.
- Maintain hard hats in good condition; do not drill; clean with strong detergents or solvents; paint; or store them in extreme temperatures.
- Do not wear your hard hat backwards unless specifically approved by the hard had manufacturer and your employer.

EYE AND FACE PROTECTION

- Workers must wear only ANSI approved safety glasses, face shields or goggles for welding, cutting, nailing (including pneumatic), or when working with concrete and/or harmful chemicals and to protect against flying particles. Look for Z87 stamped on the frames.
- Eye and face protectors are designed for particular hazards. Be sure to select the proper type to match the hazard that is present.
- Always replace poorly fitting or damaged safety glasses as soon as possible.
- Workers needing corrective lenses must either wear ANSI approved safety glasses with prescription lenses and frames or wear ANSI approved goggles designed to be worn over their regular prescription glasses.

FOOT PROTECTION

- Residential construction workers must wear shoes or boots with slip-resistant and puncture-resistant soles to prevent slipping and puncture wounds.
- Safety-toed shoes are recommended to prevent crushed toes when working with heavy rolling equipment or falling objects.

HAND PROTECTION

- High-quality gloves can prevent injury. Make sure that gloves should fit snugly.
- Always inspect gloves for cuts, tears and discoloration that might indicate excessive wear.
- Hands must be clean before putting gloves on and always thoroughly clean glove exteriors before removing them.
- Glove gauntlets should be taped for working with fiberglass materials.
- Workers should always wear the right gloves for the jobs (for example, heavy-duty rubber for concrete work, welding gloves for welding). Check the Safety Data Sheet (SDS, formerly called MSDS) for detailed information.
- Never use petroleum-based products (Vaseline) under gloves. They can trap chemicals against your skin if they get into your gloves

FALL PROTECTION

- Use a safety harness system for fall protection.
- Where fall prevention cannot be installed, use a "personal fall arrest system" (PFAS). A PFAS includes an anchorage, full body harness, and connector such as a lanyard or lifeline.
- A PFAS must be rigged to limit falls to 6 feet or less without contacting any lower level and limit the arresting forces on the worker to 1,800 pounds or less.
- PFAS components, including safety harnesses, should be inspected before each use for wear, damage and other deterioration.
- PFAS should be designed, installed, and used, under the supervision of a qualified person.

BODY PROTECTION:

- Clothing to protect the body should consist at a minimum of long work pants and a sleeved shirt. When hazardous

liquids, gases, vapors or debris are present, the level of protection needed increases. This may include garments of Tyvek, Nomex, or PVC.

- For jobs that leave clothes very contaminated, bring a set of clean clothes to change into at the end of the day. Wash contaminated clothing separately.

HEARING PROTECTION:

- Wherever it is not feasible to reduce the noise levels or duration of exposures, ear protective devices shall be provided and used.
- Ear protective devices inserted in the ear shall be fitted or determined individually by competent persons.
- Plain cotton is not an acceptable protective device.

Respiratory Protection

- Select the correct respirator based on the hazard.
- Inspect the respirator for missing or worn respirator parts.
- Depending on the type of respirator, the employee must be medically cleared, trained and respirator fit tested prior to respirator use.
- Do not share respirators and only use the respirator that you have been fitted for.

DO:

- Do maintain PPE in a clean sanitary, serviceable condition.
- Do make sure to have PPE meet applicable recognized performance standards, such as ANSI, National Institute for Occupational Safety and Health, Mine Safety and Health Administration, etc.

DON'T:

- Do not use PPE in lieu of sound engineering and manufacturing practices.
- Do not use PPE without proper training in its use and limitations.
- Do not use damaged or inferior equipment.

REVIEW QUESTIONS

1) The following are examples of Personal Protective Equipment, except:

a) Head Protection

b) Foot Protection

c) Eye and Face Protection

d) Ladders

2) Workers must not wear hard hats when overhead, falling, or flying hazards exist or when danger of electrical shock is present.

a) True

b) False

3) It is appropriate to maintain PPE in a clean sanitary condition.

a) True

b) False

Talk Given By: _____ Date: _____

Company: _____ Location: _____

Printed Name	Signature

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TOOLBOXTALK

FIRST AID A BASIC UNDERSTANDING OF TREATMENTS, PROCEDURES AND INSTRUCTIONS

OSHA requires that employees be given a safe and healthy workplace that is reasonably free of occupational hazards. However, it is unrealistic to expect accidents not to happen at construction sites. Therefore, employers are required to provide medical and first aid and supplies and properly trained personnel to prepare for medical needs in the workplace. This is an overview of how to properly respond to injury and illness on the construction site.

PROVISIONS FOR FIRST AID TREATMENT

- Before the start of a construction project, employers must make provisions for prompt medical attention in case of serious injury.
- When a medical facility is not within reasonable distance from the jobsite, a properly trained employee with a certification card from a qualified training organization must be on site at all times.
- First aid supplies shall be easily accessible.
- All workers should know where the first aid supplies are located.
- The contents of the first aid kit shall be placed in a weatherproof container with individual sealed packages for each type of item, and they shall be checked by the employer before being sent out on each job and at least weekly on each job to ensure that the expended items are replaced.
- In areas without 911 access, the telephone numbers of the physicians, hospitals, or ambulances shall be conspicuously posted.
- Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.
- In more serious cases, CPR may need to be administered or the use of an AED may be used to revive a worker in cardiac arrest.
- A clear access for emergency vehicles must be maintained throughout the job site.

DO

- Do try to stop the flow of bleeding until medical help arrives. For deep cuts, elevate the wound while you apply pressure. For more serious wounds, push on the pressure points on the inside of the upper arm and the crease of the groin. First aid providers must be trained under OSHA's bloodborne pathogens standard.
- Do be aware that a seriously injured person will frequently go into shock. This can be fatal. While you are waiting for help, lay the person down, cover and raise the feet above heart level.

- Do place an amputated limb or body part in a bag with ice and send it to the hospital with the victim.
- Do flush eyes splashed by chemicals for at least 15 minutes. Then close the eyes, cover them and get medical help. If something is embedded in the eye, keep the person calm until help arrives.

  Note: Please see the Safety Data Sheet (SDS, formerly known as MSDS).
- Do cool burns with cool (not cold) running water or a cool water compress (wet towel or handkerchief). Elevate burned limbs.

DO NOT

- Do not touch blood or other bodily fluids without protective gloves.
- Do not provide anything to drink to a person in shock.
- Do not move the victim unless absolutely necessary until you are sure what the injury is and first aid has been rendered.
- Do not move a person with broken bones. The wrong move can cause serious injury—even death.
- Do not use ice, lotion or ointment on a burn.
- Do not hesitate to call 911.

REVIEW QUESTIONS

1) Immediately move the victim away from the area, regardless if the person's injuries cannot be identified.

a) True

b) False: Victims shall not be moved unless absolutely necessary until you are sure what the injury is and first aid has been rendered.

2) If a person were to go into shock, what should you do?

a) Hold them down.

b) Lay the person down, cover and raise the feet above heart level.

c) Stay with them and keep them calm.

d) Nothing.

3) To stop the flow of bleeding until medical help arrives, you should elevate the wound while you apply pressure.

a) True

b) False

Talk Given By: _____ Date: _____

Company: _____ Location: _____

Printed Name	Signature

TOOLBOXTALK

ELECTRICAL SAFETY

ELECTRIC SHOCK CAN CAUSE BURNS, SHOCKS, FALLS AND ELECTROCUTION (DEATH)

According to the Bureau of Labor Statistics, for the last decade, electrical injury has been responsible for an average of 320 workplace deaths and over 4,000 injuries involving days away from work annually in the United States.

Precautions for avoiding electrical shocks include, but not limited to the following:

GENERAL SAFETY PRECAUTIONS:

Safety to personnel and safe operation of machines and tools should be of uppermost importance in all considerations of using electricity on the jobsite. Electrical problems are among the most commonly cited OSHA violations. There are many specific standards that address electrical safety. Refer to the OSHA regulations for specific applications.

Ground Fault Circuit Interrupters: The GFCI is a fast acting device that senses a small current leakage to ground. Within 1/40 of a second it shuts off the electricity and "interrupts" the current flow. It provides effective protection against shocks and electrocution. OSHA requires GCFIs or an assured equipment grounding conductor program on all construction sites and projects.

Extension Cords: Extension cords are convenient ways to provide power to portable equipment. However, they are often misused, resulting in injuries and expensive OSHA fines. The most important thing to remember is that extension cords are for temporary use only. Inspect extension cords for physical damage before use. Check wattage rating on the tool being used with the extension cord; do not use an extension cord that has a lower rating. Don't use extension cords marked for indoor use outdoors. Don't plug one extension cord into another.

Electrical Fires: On construction sites, an electrical fire that may occur is when portable tools overload a power source. If possible to do safely, immediately disconnect the tool or power cord from the power source; this usually results in the electrical fire being extinguished. A Class C or multi-purpose fire extinguisher may also be used to ensure the fire is out.

ELECTRICAL SAFETY

DO:

- Do inspect all electrical equipment daily prior to use, and tag as needed and report damaged tools to supervisor.
- Do survey the work site for overhead power lines and other electrical hazards when using ladders or working platforms. Maintain the required distance from electrical equipment and conductors. This distance depends on the voltage hazard.

- Do provide adequate overload and short-circuit protection for safe operation. The interrupting capacity of all breakers and fuses must be sufficient to clear the fault current rapidly and without damage to itself.
- Do provide cord protection for flexible cords and cables passing through doorways or other pinch points.
- Do keep a fire extinguisher on work site at ALL times. The standard procedure for fighting electrical fires is to open the circuit and then apply an approved extinguishing agent. A carbon dioxide (CO_2) extinguisher offers the advantage of extinguishing the fire, cooling the apparatus, leaving no residue, and having no adverse affect on the insulation and metal parts; it may be used on live circuits. CO_2 should not be used in confined spaces, unless a breathing apparatus is used. A dry chemical extinguisher may be used; however it will leave a residue.
- Do avoid mixing water and electricity. Keep electrical equipment, hands and feet, and working surface dry.
- Do check all electrical equipment and notify others that are also connected to the power source before resetting GFCI or breakers.

- Do use a GFCI on all construction sites.

DON'T:

- Do not use Shop Made Cords with Receptacle Boxes. Among the most common electrical violations is when a multiple receptacle box, designed to be surface mounted, is fitted with a flexible cord and is placed on the floor to provide power to various tools or equipment. These are not permitted and should be taken out of service.
- Do not use a length or size (wire gauge) extension cord that exceeds the max recommended by tool manufacturer.
- Do not splice extension cords with electrical tape. Splices should be approved permanent splices. Hard service flexible cords 12 AWG or larger may be repaired if spliced so that the splice retains the insulation, outer sheath properties, and usage characteristics of the cord being spliced.
- Do not leave extension cords in walk ways or work areas causing a trip hazard.
- Do not use worn frayed or damaged cords
- Do not fasten extension cords with staples, hang from nails, or suspend from wire.
- Do not exit your vehicle if it comes in contact with electricity. Drive away until the electricity is no longer in contact with you vehicle. If the engine stops running, call 911 for assistance.

REVIEW QUESTIONS:

1) A GFCI senses electrical leakage?

a) True

b) False

2) A Fire extinguisher should not be onsite all times in case of electrical or other types of fire?

a) True

b) False

3) Worn extension cords should be removed from service?

a) True

b) False

4) The human body has a low resistance to electricity; this makes it a good conductor?

a) True

b) False

Talk Given By: _____ Date: _____

Company: _____ Location: _____

Printed Name	Signature

Hazards and Safe Use of Multi-component Chemical Products in Construction

Introduction

Chemicals can present serious hazards to worker health and safety. Multi-component chemicals present additional hazards. The MSDS provides information that the manufacturer is required to disclose in order to handle the product safely. This includes safe storage, transport and disposal. All MSDS should include a description of the chemicals that are in a product and what steps to take to protect yourself when using the product. A MSDS is required for each component of a multi-component product. Manufacturers or importers of chemicals are required to assess the hazards of these chemicals. This includes hazards that are known to be present in the workplace and that employees may be exposed to under normal conditions of use or in a foreseeable emergency. ***Additional hazards may be created when the individual chemicals of a multi-component products are mixed together that may not be addressed on the MSDS of the individual components.*** The product created by the mixing of multi-component chemicals may require different personal protective equipment, engineering controls, handling procedures, emergency procedures, and disposal requirements.

Prior to the use or mixing of multi-component chemical products, employees should be properly trained on the hazards and safe use of these products.

Material Identification

Multi-component materials are often identified on the MSDS by having a part A, B, C, etc. after the product name. Multi-component material types include **epoxies, polyurethanes, polyureas, polyisocyanates, polyaspartics,** as well as others.

While all potential hazards should be listed on the individual MSDSs if the components are sold to be mixed together (since mixing would be under normal conditions of use), that may not always be the case.

Health Hazards

In addition to the health hazards listed on each of the individual components, there may be health hazards that are created by the mixture that are not listed on the MSDS. The manufacturer should be consulted about these additional hazards. The mixture of the individual components of some multi-component products can produce exothermic reactions (high heat) or produce dangerous respiratory hazards and require additional measures to protect workers, such as engineering controls and personal protective equipment.

The most common health hazards created by the mixture of multi-component products include:

- Flammability and/or combustibility - products can auto-ignite
- Extreme heat - causing burns to skin, eyes, mouth and lungs
- Inhalation hazard - fumes may require respiratory protection
- Allergic reactions/occupational asthma - most common with latex, formaldehydes, isocyanates.

First Aid

First aid treatment for exposure to mixed multi-component products may be different than for the unmixed components. It is important that medical personnel have information about these products

prior to treatment. First aid information for a mixed multi-component product may not be clearly stated on the MSDS. Emergency contact information should be on the MSDS.

Explosion and Fire Information

Extra care should be taken when using multi-component products, especially in confined spaces or areas of poor ventilation. Some of these mixtures are more flammable and/or explosive when combined than they are prior to mixing. Ambient conditions may affect and or accelerate reactions of multi-component chemicals. Special equipment and control measures may be required in order to maintain a safe work environment. The manufacturer should be consulted to determine the proper equipment. Always have the appropriate fire extinguisher(s) ready at the work location. Have MSDS and emergency contact information available. An emergency action plan is recommended when using products that can generate heat or explosion hazards.

Personal Protective Equipment

The personal protective equipment for multi-component products must address the additional risks posed by the products once they are combined. This may include heat and chemical resistant gloves, goggles and face shield, additional or alternate respiratory protection and body covering clothing. In addition to complying with recommendations of the MSDS for the individual components, the product manufacturer should be consulted about the proper PPE required for safe handling of the mixed and unmixed products.

Disposal Information

Disposal requirements for properly blended multi-component products are often different from that of their individual single components. Many of these multi-component liquids are hazardous waste as liquids, but may be disposed of as non-hazardous waste when solid. Disposal of waste products are regulated by federal, state and local authorities.

OSHA Standards

The following are some of the OSHA standards that may apply when using multi-component products

- Confined Space 29 CFR 1926.21(b)(6)
- Fire Extinguishers 29 CFR 1926.150
- First Aid 29 CFR 1926.50
- Hazard Communication 29 CFR 1926.59 (refers to 29 CFR 1910.1200)
- Personal Protective Equipment 29 CFR 1926.28, 29 CFR 1926.95-107

Additional Information:

- Evacuations Plans and Procedures: Portable Fire Extinguishers: OSHA eTool: http://www.osha.gov/SLTC/etools/evacuation/portable.html
- Hazard Communication: OSHA Safety and Health Topics Page: http://www.osha.gov/dsg/hazcom/index.html
- Medical and First Aid: OSHA Safety and Health Topics Page: http://www.osha.gov/SLTC/medicalfirstaid/index.html
- Occupational Asthma. OSHA Safety and Health Topics Page: http://www.osha.gov/SLTC/occupationalasthma/index.html
- Personal Protective Equipment: OSHA Safety and Health Topics Page: http://www.osha.gov/SLTC/personalprotectiveequipment/index.html

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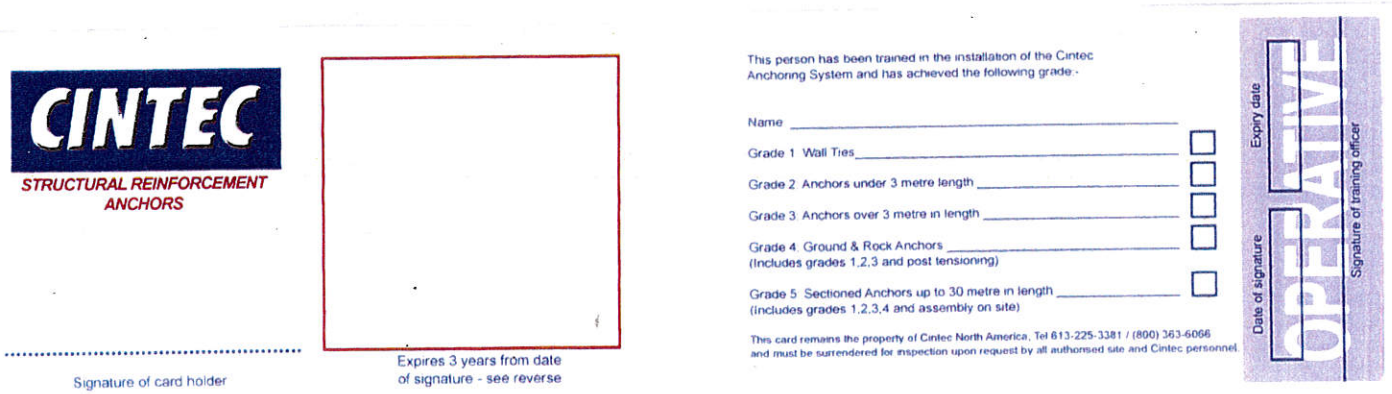

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