

BAB V

KESIMPULAN DAN SARAN

5.1. Kesimpulan

Dari hasil analisis data dan pembahasan yang telah dilakukan dapat ditarik suatu kesimpulan sebagai berikut :

1. Perbaikan dengan metode konvensional

a. Biaya perbaikan dengan metode konvensional.

Dari hasil analisis data menggunakan SNI 2002 dapat diketahui biaya perbaikan yang dibutuhkan untuk perbaikan dengan menggunakan metode konvensional yaitu sejumlah Rp 25.121.418,14.

b. Waktu yang dibutuhkan untuk perbaikan dengan metode konvensional.

Dari hasil analisis data menggunakan SNI 2002 dapat diketahui waktu pelaksanaan perbaikan yang dibutuhkan untuk perbaikan dengan menggunakan metode konvensional yaitu selama 21 hari.

2. Perbaikan dengan menggunakan *chemical construction*.

a. Biaya perbaikan dengan menggunakan material *chemical construction*.

Dari data lapangan yang didapat dari kontraktor pelaksana dapat diketahui biaya perbaikan yang dibutuhkan untuk perbaikan dengan

menggunakan material *chemical construction* yaitu sejumlah Rp 36.129.157,88.

b. Waktu perbaikan dengan menggunakan material *chemical construction*.

Dari data lapangan yang didapat dari kontraktor pelaksana dapat diketahui waktu pelaksanaan perbaikan yang dibutuhkan untuk perbaikan dengan menggunakan material *chemical construction* yaitu selama 8 hari.

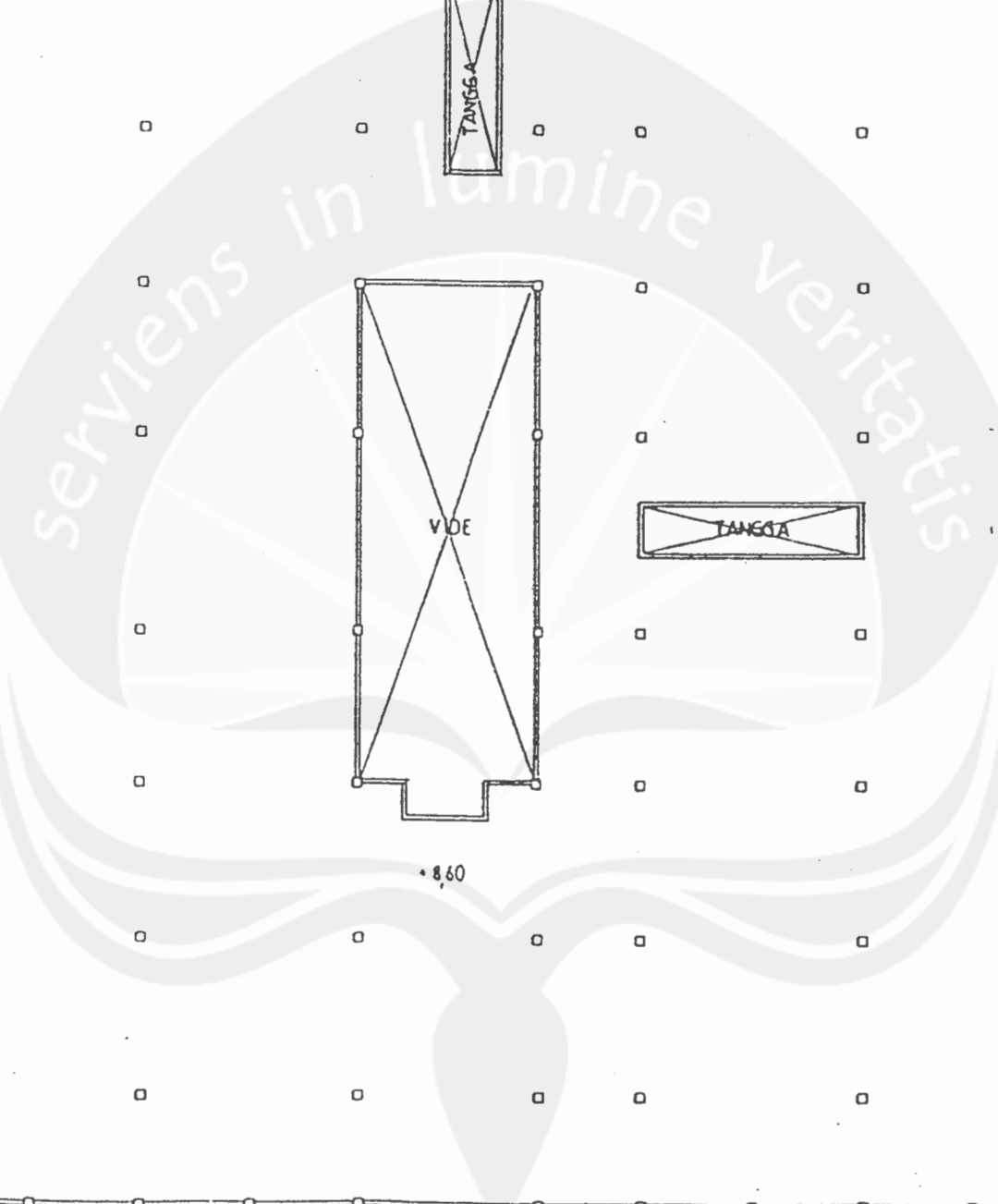
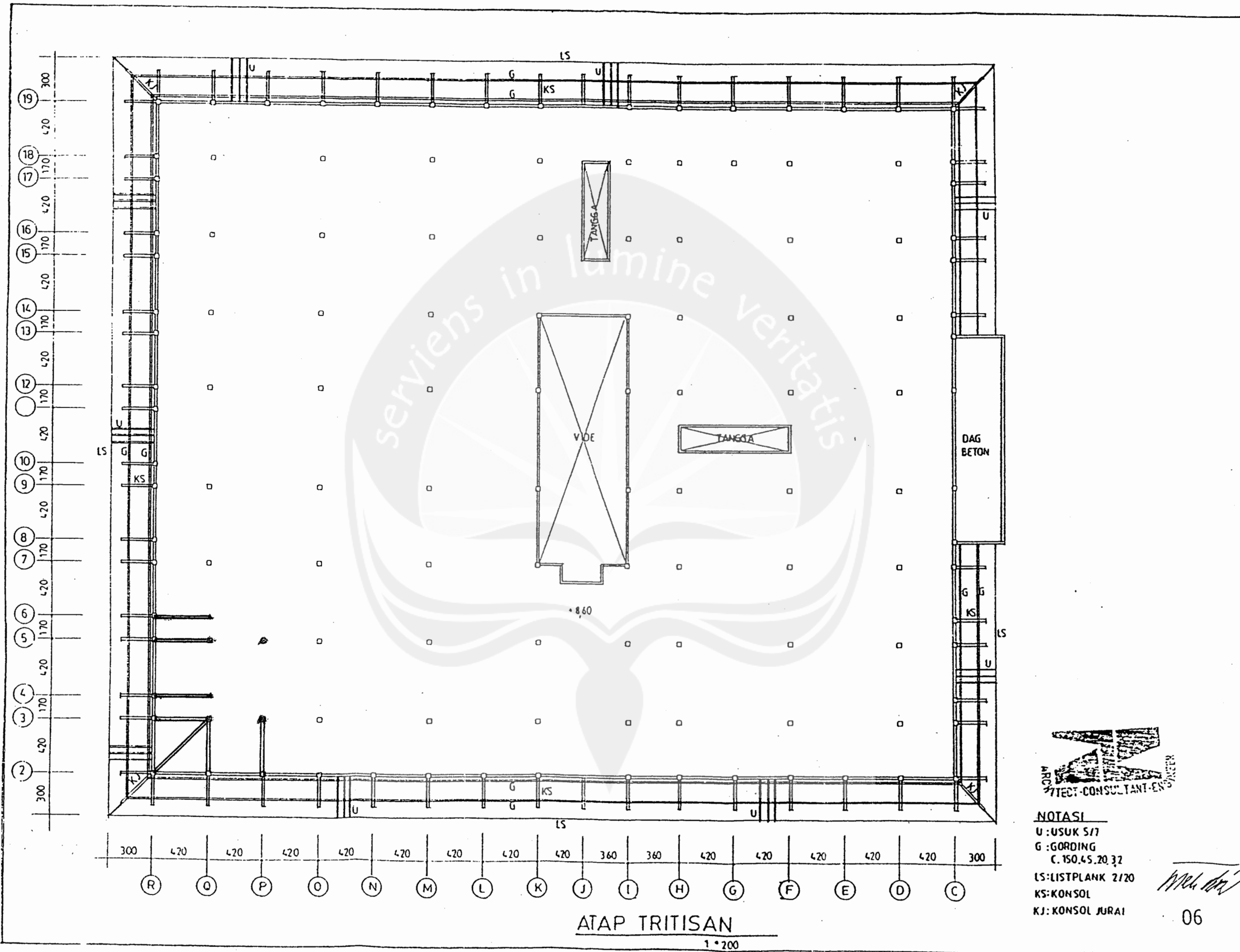
Dari hasil perhitungan tersebut dapat dilihat bahwa dengan menggunakan material *chemical construction* waktu pekerjaan dapat dipercepat hingga 162,5 % tetapi membutuhkan biaya yang lebih mahal sebanyak 15,39 % jika dibandingkan dengan metode konvensional.

5.2. Saran

Masalah manajemen waktu dan biaya dalam pelaksanaan suatu proyek, baik dalam proyek bangunan baru maupun dalam proyek perbaikan sangat penting untuk diperhatikan. Sehingga harus dipilih metode pelaksanaan perbaikan yang sesuai dengan keadaan lapangan dan keinginan *owner*.

DAFTAR PUSTAKA

- Besari, MS., Dwiarti, H., Hanafiah, dan Iqbal, MM., *Beton Agregat Prepak untuk Perbaikan dan Produksi Struktur Beton Bertulang*, Dep. TS, ITB
- Boen, Teddy., Desember 1997, *Manual Perbaikan Bangunan Sederhana yang Rusak akibat Gempa Bumi*, Jakarta
- Departemen Pekerjaan Umum, 2002, *Peraturan Beton Bertulang SK. SNI - 2002*
- Dipohusodo, Istimawan., 1994, *Struktur Beton Bertulang*, PT. Gramedia Pustaka Utama, Jakarta
- Dirjen Cipta Karya, 1998, *Petunjuk Teknis Tata Cara Pemeriksaan Keandalan Bangunan Gedung*, Dept. Pekerjaan Umum, Jakarta
- Ervianto, WI., 2002, *Manajemen Proyek Konstruksi*, Andi, Yogyakarta
- McCormac, JC., 2002, *Desain Beton Bertulang*, Erlangga, Jakarta
- PT. Fosroc Indonesia, 2006 / 2007, *Product Catalogue*
- Sagel, R., Kole, P., dan Kusuma, G., 1993, *Pedoman Pengerjaan Beton*, Erlangga, Jakarta
- Siswantara, T., 2006, *Pertunya Bangunan Tahan Gempa*, diakses 20 Juli 2006, <http://www.pikiranrakyat.co.id/cetak/2006/052006/29/0902.htm>
- Spesifikasi *Micro Concrete* untuk Perbaikan Beton (SNI 03-6818-2002)
- Tjokrodimulyo, Kardiyono., 1996, *Teknologi Beton*, Nafiri
- Triwiyono, A., Priyosulistyo Hrc., Handayani AW., Wikana, I., *Pemakaian Tulangan Spiral untuk Perbaikan Kolom Beton yang Rusak Akibat Gempa*, Jurusan Teknik Sipil Universitas Gadjah Mada



DAG
BETON

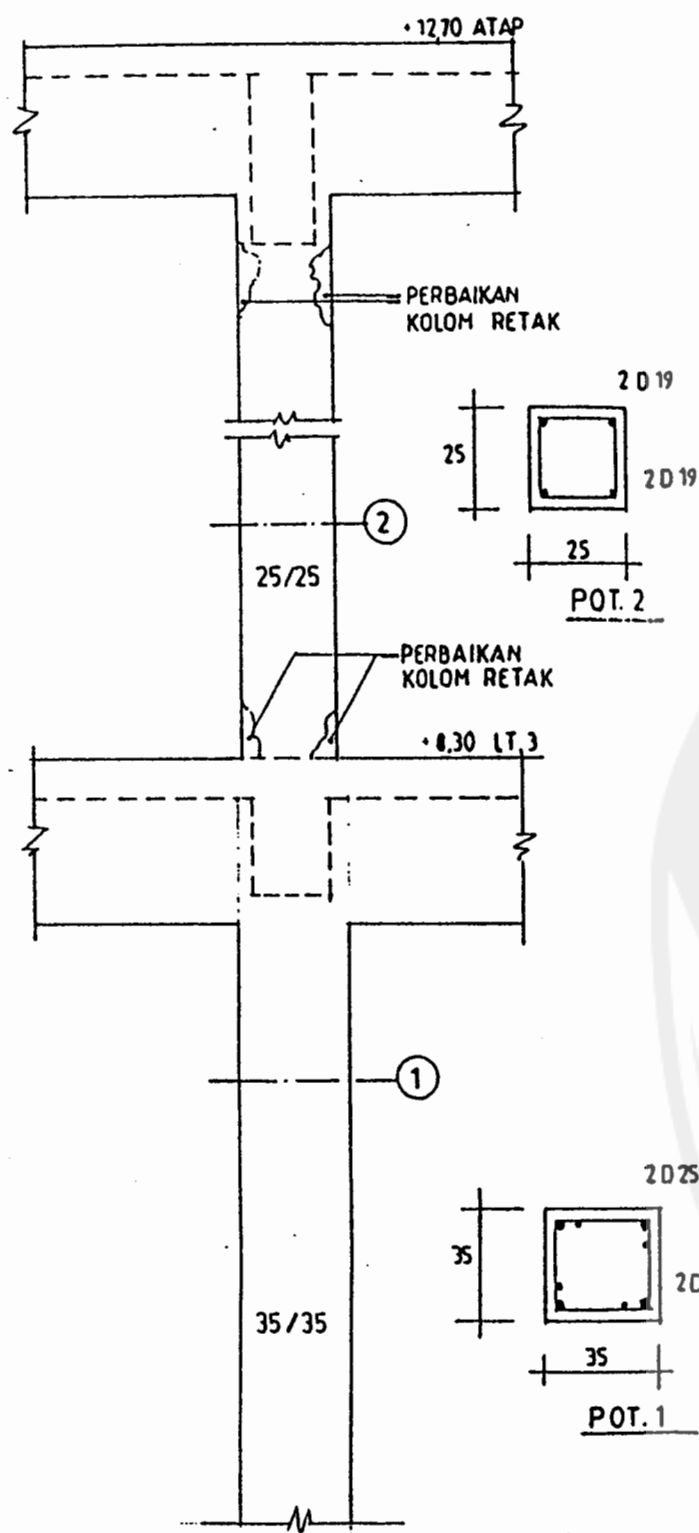


NOTASI
 U : USUK 5/7
 G : GORDING
 C. 150.45.20.32
 LS : LISTPLANK 2120
 KS : KONSOL
 KJ : KONSOL JURAI

M. H. D.

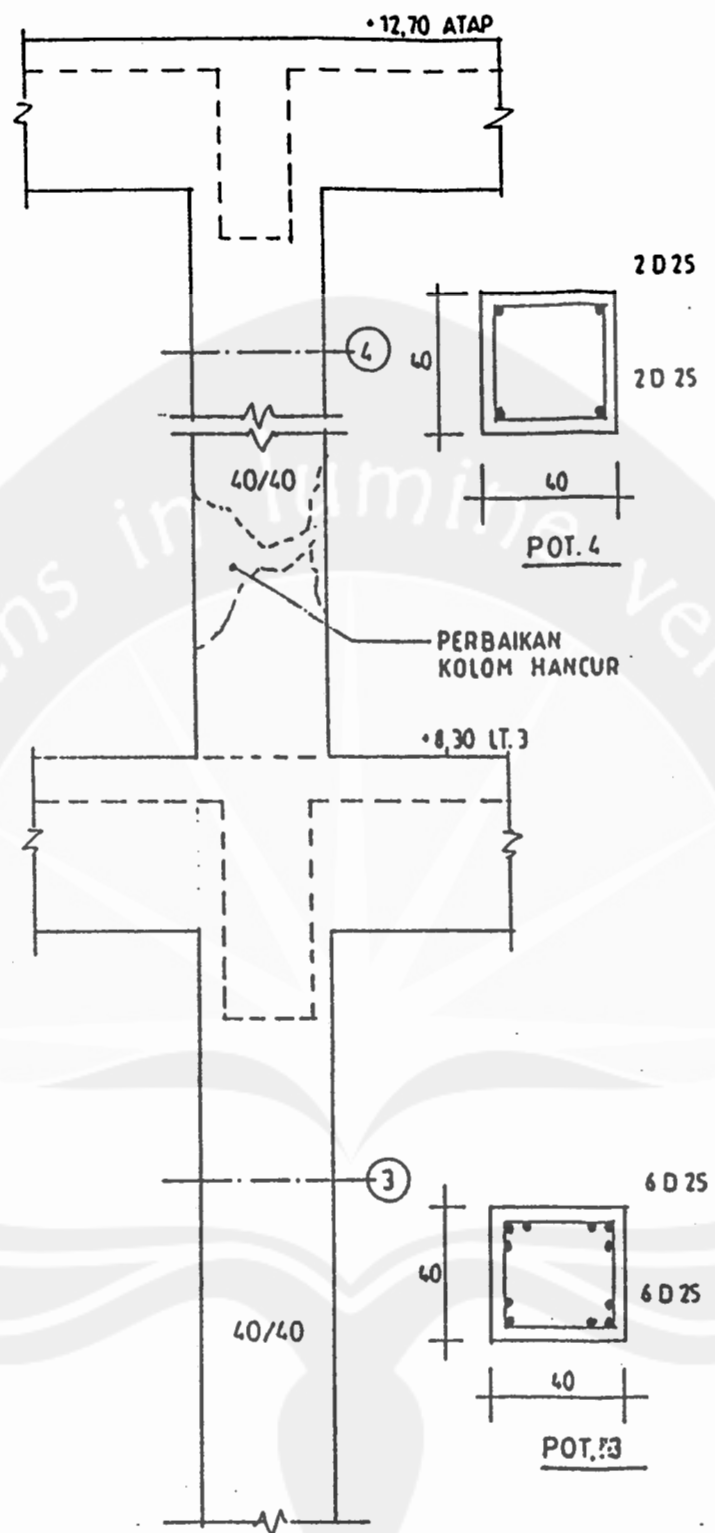
ATAP TRITISAN

1 * 200



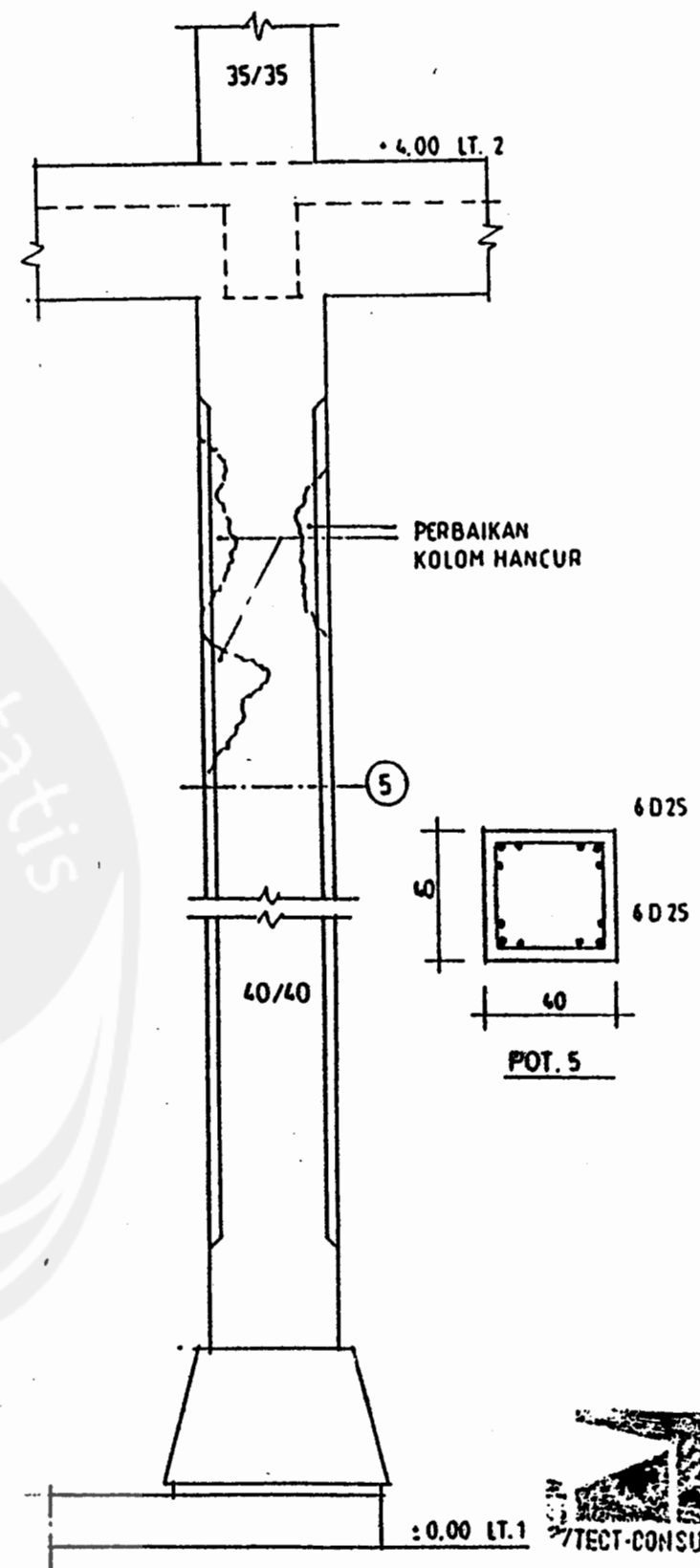
KOLOM LT. 3
1.20

- AS. D (3,5,7,9,12,14,16) P5
 F (3,5,7,9,12,14,16,18) Q3,7,9,12,14,16)
 H (3,5,7,9,12,14,16,18)
 I (7,9,14,16,18)
 K (5,7,9,12,14,16,18)
 M (5,7,9,12,14,16,18)
 O (3,5,7,9,12,14,16,18)



KOLOM LT. 3
1.20

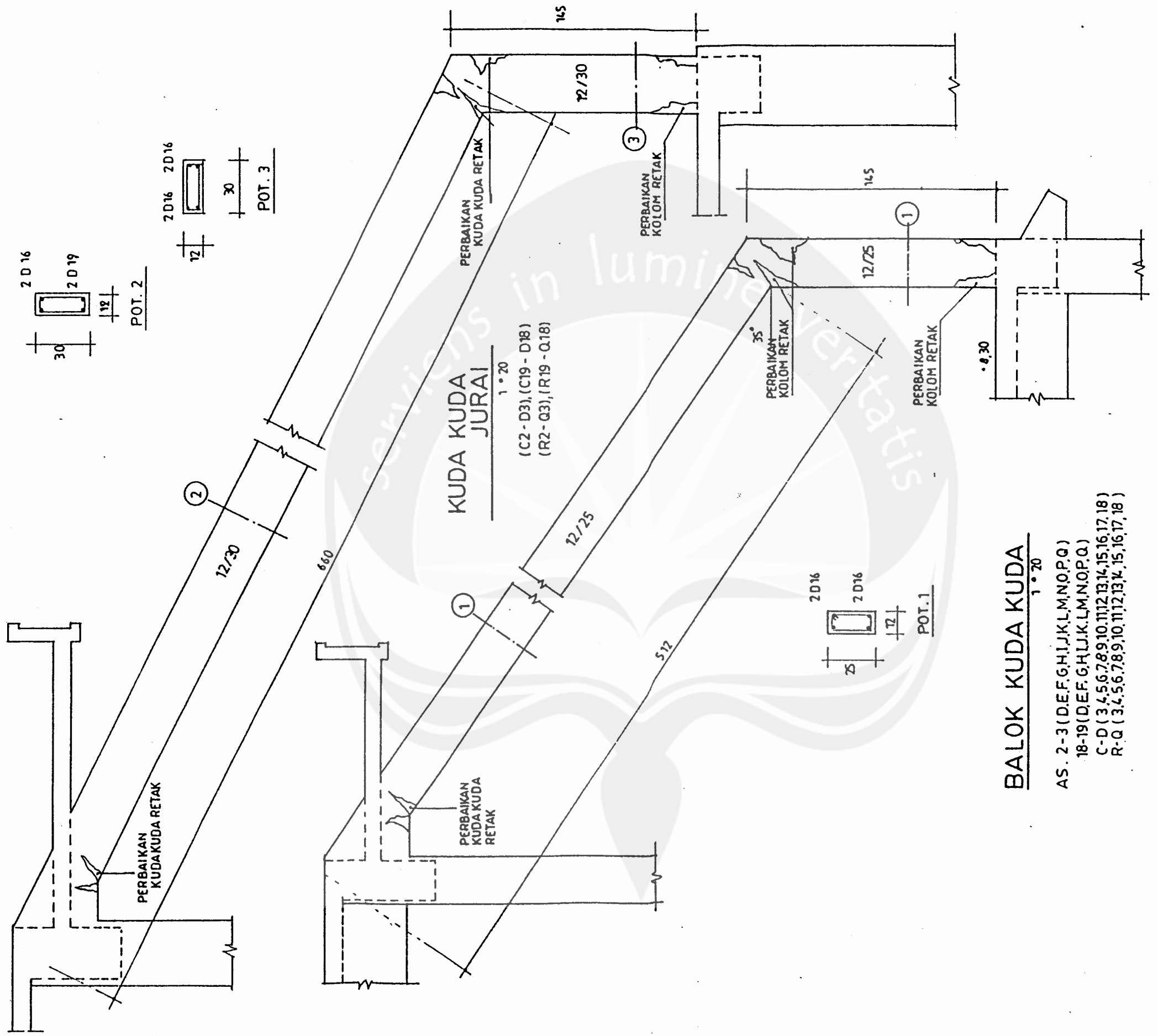
AS. I12,



KOLOM LT. 1
1.20

AS. R3,Q3,R5,R4,R9





KUDA KUDA JURAI
1 • 20

(C2 - D3), (C19 - D18)
(R2 - Q3), (R19 - Q18)

BALOK KUDA KUDA
1 • 20

AS. 2-3 (D,E,F,G,H,I,J,K,L,M,N,O,P,Q)
18-19 (D,E,F,G,H,I,J,K,L,M,N,O,P,Q)
C-D (3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)
R-Q (3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18)



M.H. Hary



Conbextra EP

Epoxy resin free flow grout

One of the main uses of free flow grouts for use in situations where heavy static or mobile loads are encountered. The gap between concrete plate and substrate will need to be filled in such situations as reciprocating machinery, testing equipment, crane and transporter rails, high speed turbines and bridges and drop forges.

It is also used in conditions where chemical spillage may be anticipated. Typical situations could be met in steelworks, refineries, electroplating works and chemical plants.

Typical uses are for gas transmission industry, heavy equipment in power plant, pulp & paper industry, steel industry, ball mill, slab tables, scate breakers, bridge bearing. Also as a structural bonding of anchors, supports, starter and tie bars.

Conbextra EP120 is especially suitable where long working time and/or low exotherm properties are required e.g. for large gaps or high ambient temperatures.

Advantages

- Low creep characteristics under sustained loading
- Resistant to repetitive dynamic loads
- No shrink and hence ensures complete surface contact
- Full bond

- High compressive, tensile and flexural strengths
- Fast, convenient installation with early strength gain
- Withstands a wide range of chemicals

Description

Conbextra EP is a range of epoxy resin based products designed for free-flow grouting of gaps from approximately 0.25 mm to 120 mm. Four grades of product are available.

Conbextra EP10 for grouting gaps ranging from 0.25 mm to 10 mm. It is an all liquid system consisting of a base and hardener, and usually used as an injectable resin to seal cavities or cracks.

Conbextra EP40 for grouting gaps ranging from 10 mm to 40 mm.

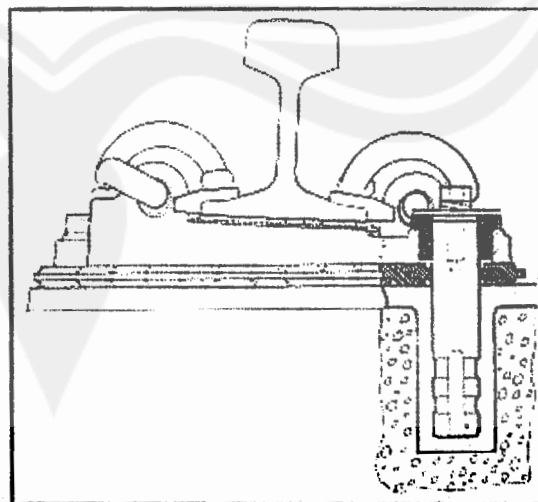
Conbextra EP65 for grouting gaps ranging from 35 mm to 65 mm.

Conbextra EP120 is a low exotherm material which is particularly suitable where long working time is needed; for large gaps (up to 120 mm) or for grouting at high ambient temperatures (up to 55°C).

These products are all three component systems consisting of base resin, liquid hardener and specially graded inert fillers.



London Light Railway



BS 80A resiliently supported baseplate incorporating Pandrol brand rail clips

Conbextra EP

Technical support

Fosroc offers a comprehensive range of high performance, quality construction products all backed by BS 5750 certification. Fosroc offers a technical support package to engineers and contractors as well as technical advice from staff with unrivalled experience in the industry.

Properties

Following results are typical for the hardened grout at

Method for	Typical result			
	EP10	EP40	EP65	EP120
Density (kg/m ³):	1060	1950	2050	1950
Compressive strength (N/mm ²)				
BS 589 part 2 1983				
7 days	57	84	83	46
28 days	66	90	97	93
90 days	83	98	100	94
Tensile strength (N/mm ²)				
BS 589 part 7 1985				
7 days	29	19	15	18
Flexural strength (N/mm ²)				
BS 589 part 3 1990				
7 days	91	40	29	34
Modulus (KN/mm ²)				
BS 589 part 6 1984:		13.3	13.3	12.7

Chemical resistance

Conbextra EP products are resistant to oil, grease, fats, chemicals, mild acids and alkalis, fresh and sea water. Contact Fosroc's Technical Department when exposure to acids or concentrated chemicals is anticipated.

2.

Temperature affects the time for which bulk material can be stored in fluid.

Typical values in minutes are:

Temperature	Typical value
30°C	45
20°C	90
10°C	90
5°C	90

Exotherm

All epoxy systems will develop a temperature rise on mixing. Its extent will be a function of the volume to surface ratio, the ambient temperature as well as the mass and thermal conductivity of the surrounding materials. Contact Fosroc for specific data on each product.

Specification clauses

Supplier specification

All epoxy resin grouting where shown on the drawings, must be carried out using the suitable grade of Conbextra EP product manufactured by Fosroc and used in accordance with the manufacturer's data sheet.

Performance specification

All epoxy resin grouting where shown on the drawings must be carried out with a factory packed product. The hardened grout must have a compressive strength which exceeds 80 N/mm² at 7 days, a tensile strength which exceeds 15 N/mm² at 7 days and a flexural strength which exceeds 28 N/mm² at 7 days.

The storage handling and placement of the grout must be in strict accordance with the manufacturer's instructions.

Instructions for use

Preparation

Foundation surface

All contact surfaces must be free from oil, grease, free standing water or any loosely adherent material. Concrete surfaces should be cut back to a sound base. All dust must be removed and bolt holes or fixing pockets blown clean of any dirt or debris.

Steel surfaces

All steel surfaces should be shot blasted free of rust and flaky mill scale. Cleaned surfaces may be protected by the application of Niloprime 28.

Formwork

The formwork should be constructed to be leakproof as Conbextra EP products are free flowing grouts. Loss of grout once the material is placed, but not hardened, will result in incomplete filling of the gap.

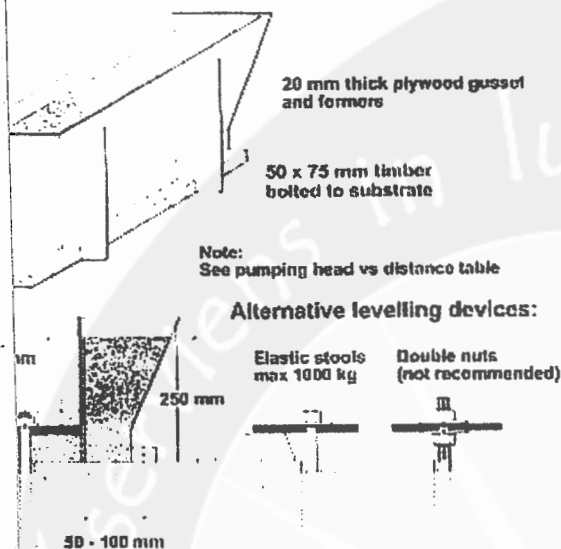
For free flow grout conditions it is essential to provide a hydrostatic head of grout. To achieve this a feeding hopper system should be used.



Conbextra EP

Typical on-plate shutter system

Removable hopper. For larger pours the grout may be hand poured or pumped into a removable hopper (trough).



ig

Put the contents of the hardener pack into the base pack. Mix using a slow speed power mixer until homogeneous.

Put the resultant liquid into a container with a capacity of 5 litres. Add all the filler provided for each product, except for EP10. Mix using a slow speed power mixer for two minutes or until a uniform colour is achieved in the grout.

ig

The grout should be poured steadily from one side to ensure the entrapment of air.

Continuous grout flow is essential.

Grout must be available prior to starting.

Time taken to pour a batch should be regulated to the time to prepare the next batch.

Characteristics

Maximum distance of flow is governed by the gap thickness, depth of grout applied and the ambient temperature. The flow table gives typical data for flow design.

	°C	Gap thickness (mm)	Hydrostatic head (mm)	Maximum flow (mm)
EP10:	Flow determined by gap thickness and pressure applied.			
EP40:	5	12	100	450
	20	12	100	900
EP65:	5	35	100	900
	20	35	100	2000
EP120:	Similar to Conbextra EP65			

Cleaning

All tools and equipment should be cleaned immediately after use with Fosroc Solvent 102. Spillages should be absorbed with sand or sawdust and disposed in accordance with local regulations.

Limitations

Temperature

During application

For all product, grouting may be carried out without special precautions at ambient temperatures from 5°C to 35°C. At temperatures above 35°C pot life will be shorter.

For EP120, at temperatures below 20°C the cure rate may be slow, but will go to completion provided the temperature remains above 5°C.

In service

The cured grouts, which are completely resistant to frost and sub-zero temperatures, are suitable for use up to 60°C

Estimating

Supply

EP10: 5 litre packs containing base and hardener.

EP40, 65, 120: 8 litre packs containing base, hardener and filler.

Storage

All Conbextra EP products have a shelf life of 12 months if kept in dry conditions at 5°C - 35°C.



onbextra EP

Precautions

Solvent 102 is flammable. In the event of fire extinguish with CO₂ or foam.

Health and safety

onbextra EP: Contains resins which may cause sensitisation on contact. Avoid contact with skin and eyes and inhalation of dust. Wear suitable protective clothing, gloves and eye/face protection. Barrier creams provide additional skin protection. In the event of accidental skin contact occur, remove immediately with a suitable removing cream, followed by soap and water. Do not use in confined spaces. In case of contact with eyes, rinse immediately with plenty of clean water and seek medical advice. If swallowed seek immediate medical attention immediately - do not induce vomiting.

Solvent 102: Flammable liquid.

Boiling point 33°C.

Keep away from sources of ignition - no smoking. Wear suitable protective clothing, gloves and eye/face protection. Use only in well ventilated areas.

For additional information see relevant Material Safety Data Sheet.

Additional information

For further details about the use and selection of grouts refer to the Fosroc Information Module entitled "Precision Grouting in the Construction Industry".



**Fosroc
Indonesia**

Unit II Blok A8 No. 1
Deltapion Industrial Park
Karakang
17550
Bekasi
[fosroc.com](http://www.fosroc.com)

Important note

Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard terms and conditions of sale. Copies of which may be obtained on request. Whilst Fosroc endeavours to ensure that any advice, recommendation, specification or information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products, whether or not in accordance with any advice, specification, recommendation or information given by it.

telephone:
+ 62 21 897 2103
+ 62 22 520 1308
+ 62 31 502 9142

fax:
+ 62 21 897 2107
+ 62 22 522 2713
+ 62 31 502 2711

email:
indonesia@fosroc.com

Registered Office: Unit II Blok A8 No. 1, Deltapion Industrial Park, 1, Lippo Cikarang, Bekasi 17550, Indonesia



ISO 9001:2008



Renderoc HFpremix

Single component free-flowing micro concrete

Uses

The highly fluid nature of Renderoc HF Premix obviates the need for compaction and vibration even where access to the repair zone is restricted or where reinforcement is congested. The product is ideal for the reinstatement of concrete, structural sections of concrete as well as for many other locations where difficulties of access make hand-applied mortars impractical. It is suitable for use on pre-excellent chloride and carbon dioxide resistance required. Renderoc HF Premix is alkaline in nature and will not affect embedded steel reinforcement.

Advantages

- Dual expansion system compensates for shrinkage in both the plastic and hardener states
- Exceptional bond to concrete substrates without need for independent primer
- Suitable for placement by pumping or pouring techniques into restricted locations
- Self-compacting nature eliminates honeycombing and displaces air without vibration
- High strength and low permeability provide maximum protection against carbon dioxide and chlorides.
- Pre-bagged to overcome site-batched variation - only the site addition of clean water is required.
- Contains no chloride admixtures

Standard Compliance

Renderoc HFpremix conforms to the requirement of the Department of Transport Standard (BD-27/86, Clause 4.6) 'Material for the repair of Concrete Highway Structures'

Description

Renderoc HFpremix is supplied as a ready to use blend of powders which requires only the site addition of clean water to produce a free-flowing, shrinkage compensated micro-concrete suitable for large volume concrete repairs at all thicknesses in excess of 50 mm. The material is based on Portland Cement graded aggregates and additives which impart controlled expansion in both plastic and hardened states while minimizing water demand. The finished product exhibits excellent thermal compatibility with concrete and outstanding water repellent properties. Aggregate grading is designed to aid uniform mixing and to eliminate segregation under pumping pressures. Low water requirement ensures fast strength gain and long term durability.

Technical Supports

Fosroc offers a comprehensive range of high quality, high performance construction products. In addition, Fosroc provides a technical support service to specifiers, end-users and contractors, as well as on-site technical assistance in all parts of the world.

Design criteria

Renderoc HFpremix is designed for large volume repairs typically in excess of 500 mm deep. The product can be applied in sections generally up to 500 mm thick although greater thickness may be achievable dependent on the configuration of the repair location and the volume of exposed reinforcing steel. Consult the local Fosroc office for further information.

Properties

The following results were obtained at a water/powder ratio of 0.13 and temperature 20° C

Test Method	Typical result
Flow Properties (UK dept. of Transport BD 27/86 Clause 4.6 [b]) :	750 mm within 10 sec
Setting Time (BS 4550) - Initial Set : Final Set :	6 hours, 30 mins @ 20° C 9 hours @ 20° C
Compressive Strength (BS 1881 Pt 116 - restrained)	30 N/mm ² @ 3 days 45 N/mm ² @ 7 days 60 N/mm ² @ 28 days
Water absorption ISAT (BS 1881 Pt 5 - 1970) - 10 mins : 2 hours :	0,0125 ml/m ² /sec 0,0013 ml/m ² /sec
Coefficient of thermal expansion :	10 to 12 x 10 ⁻⁶ / °C
Modulus of elasticity (BS 1881 Pt 121 : 1983-cylinder cast under restraint and wet-cured) :	33 kN/mm ² @ 28 days
Bond strength (BS 6319 slant / shear substrate presoaked, no bonding aid) :	66 N/mm ² @ 28 days
Fresh wet density :	Approximately 2270 kg/m ² dependent on actual consistency used

Specification Clauses

Steel reinforcement primer

The steel reinforcement primer shall be Nitoprime Zincrich, a single component zinc-rich epoxy resin. The primer shall be an 'active' type, capable of avoiding the generation of incipient anodes in the immediately adjacent locations. It shall be fully compatible with the Renderoc system of concrete repair.

Fluid micro-concrete repair system

The fluid repair system (micro-concrete) shall be Renderoc HFpremix a single component, cement-based blend of powders to which only the site-addition of clean water shall be permitted. The micro-concrete shall exhibit a 3-day compressive strength not less than 30 N/mm² and a 28 day compressive strength of 60 N/mm² (at 20°C). The coefficient of thermal expansion shall be within the range of 10 to 20 x 10⁻⁶ / °C.

Application Instruction

Preparation

The unrestrained surface area of the repair must be kept to a minimum. The formwork should be rigid and tight to prevent loss of material and have properly sealed faces to ensure that no water is absorbed from the repair material.

The formwork should include drainage outlets for pre-casting and, if beneath a soffit, provision for air-venting. Provision must also be made for suitable access points to allow for pump the mixed micro-concrete in place.

Trim or cut back the extremities of the repair locations to a depth of at least 10 mm to avoid feather-edging and to provide a square edge. Break out the complete repair area to a minimum depth of 50 mm up to the sawn edge.

Clean the surface and remove any dust, unsound or delaminated material, plaster, oil, paint, grease, corrosion, deposits or algae. Where breaking out is not required, roughen the surface and remove any laitance by scabbling or grit-blasting.

Oil and grease deposits should be removed by steaming, detergent scrubbing or the use of a proprietary degreaser. The effectiveness of decontamination should be assessed by a pull-of-test.

Remove fully any corroded steel in the repair area and remove all loose scale and corrosion deposits. Steel

should be clean to a bright condition paying particular attention to the back of exposed steel bars. Grit-blasting is recommended for this process.

If severe corrosion has occurred due to the presence of chlorides, the steel should be high-pressure washed with clean water immediately after grit-blasting to remove corrosion products from pits and imperfections within its surface.

Reinforcing steel priming

Apply one full coat of Nitoprime Zincrich and allow to dry before continuing. If any doubt exists about having achieved an unbroken coating, a second application should be made and again, allowed to dry before continuing.

Formwork priming

Several hours prior to placing, the prepared concrete formwork should be saturated by filling the prepared formwork with clean water. Immediately prior to the placement of Renderoc HFpremix, any excess water should be removed.

Mixing

It should be taken to ensure that Renderoc HFpremix is thoroughly mixed. A forced-action mixer is essential. Mix in a suitable sized drum using an approved spiral auger in a slow speed (400/500rpm) heavy-duty drill is suitable. Free fall mixer must not be used. Mixing of part bags should never be attempted.

It is essential that machine mixing capacity and labour availability is adequate to enable the placing operation to be carried out continuously. Measure 4.0 litres of drinking water and pour three-quarters into the mixer. With the machine in operation, add one full 30 kg bag of Renderoc HFpremix and mix for one minute before adding the rest of the water. Mix for a further 2 to 3 minutes until a smooth even consistency is obtained. Note that powder

must always be added to water. The quantities mixed may be scaled up as required.

When the drill and paddle mixing method is used, the complete 4.0 litres of water should be placed in the mixing drum. With the paddle rotating, add one full 30 kg bag of Renderoc HFpremix and mix for 2 to 3 minutes until a smooth even consistency is obtained.

It is recommended that the mixed product be passed through a suitable coarse metal screen prior to placing or pumping to highlight any unmixed material.

Placing

The mixed material should be placed within 30 minutes of mixing in order to gain the full benefit of fluidity and of the expansion process. If placing by pump, standard concrete pumping practice should be followed. The pump and pipeline must be 'grouted' with a rich cement slurry or mortar, discharging the 'grout' as waste. Pumping should be commenced immediately after 'grouting' in this way.

High temperature working

At ambient temperatures above 35°C, the material should be stored in the shade and cool water used for mixing.

Curing

The formwork should be left in place until the compressive strength of the Renderoc HFpremix is 10 N/mm² or as otherwise specified by the Supervising Officer. Renderoc HFpremix is a cement-based concrete reinstatement material. In common with all cementitious materials, Renderoc HFpremix must be cured immediately after striking the formwork, all exposed faces of the repair should be thoroughly soaked with clean water and then sprayed with a liquid curing membrane such as Concure P or Concure 90 Clear. In fast drying conditions, supplementary curing with polythene sheeting taped down at the edges must be used.

Overcoating with protective decorative finishes

Renderoc HFpremix is extremely durable and will provide excellent protection to the embedded steel reinforcement within the repair locations. The surrounding parts of the structure will generally benefit from the application of a barrier / decorative coating to limit the advance of chlorides and carbon dioxide, thus bringing them up to the same protective standard as the repair itself. Fosroc recommend the use of the Dekguard range of protective, anti-carbonation coatings. These products provide a decorative and uniform appearance as well as protecting areas of the structure which might otherwise be at risk from the environment. All traces of form-release oils and curing membranes must be removed prior to the application of Dekguard products. This is best achieved by light grit or sand-blasting.

Cleaning

Renderoc HFpremix and Concure P should be removed from tools, equipment and mixer with clean water immediately after use. Cured material can only be removed mechanically.

Limitations

Renderoc HFpremix should not be used when the temperature is below 5°C and falling. Do not mix part bags. The product should not be used to reinstate horizontal areas where the surface would remain unrestrained during cure. It should not be exposed to moving water during application. If any doubt arise concerning temperature,

application or substrate conditions, consult the local Fosroc representative.

Timing

Apply

Renderoc HFpremix	30 kg bag
Prime Zincrich	1 litre & 5 litre tins
Cure P	200 litre drums
Cure 90 Clear	25 & 200 litre drums

Coverage & Yield

Renderoc HFpremix	Approximately 14.5 litres / 30 kg bag
Prime Zincrich	7.4 m ² / litre
Cure P	5 m ² / litre
Cure 90 Clear	4 to 5 m ² / litre

Notes:

Coverage figures for liquid products are theoretical – to wastage factors and the variety and nature of suitable substrates, practical coverage figures will be needed.

Storage

Shelf life

Products have a shelf life of 6 months if kept in a dry environment in the original, unopened bags or packs.

Storage Conditions

Store in dry conditions in the original, unopened bags or packs, if stored at high temperatures and / or high humidity then the shelf life may be reduced to 3 or 6 months.

CAUTIONS

Health and Safety

Renderoc HFpremix contains cement powders which, when wet or become damp, release alkalis which can be harmful to the skin. During use, avoid inhalation of the dust and contact with the skin or eyes. Wear suitable protective clothing, eye protection and respiratory protective equipment.

The use of barrier creams to provide additional skin protection is also advised. In case of contact with the skin, wash with plenty of clean water, then cleanse thoroughly with soap and water.

In case of contact with eyes, rinse immediately with plenty of clean water and seek medical attention immediately – do not induce vomiting.

Prime Zincrich and Concure products should not come into contact with skin or eyes, or be swallowed. Ensure adequate ventilation and avoid inhalation of fumes. Some people are sensitive to resins, hardeners and solvents. Wear suitable protective clothing, gloves and eye protection. If working in confined areas, suitable respiratory protective equipment must be used. The use of barrier creams provide additional skin protection. In case of contact with skin, rinse with plenty of clean water, then wash with soap and water, in case of skin contact with Prime Zincrich and Concure 90 Clear, remove immediately with resin removing cream followed by washing with soap and water. Do not use solvent in case of

contact with eyes, rinse immediately with plenty of clean water and seek medical advice. If swallowed, seek medical attention immediately, do-not induce vomiting.

Fire

Renderoc HFpremix, Nitobod EP and Concure P are not flammable.

Nitoprime Zincrich and Concure 90 Clear are flammable. Keep away from sources of ignition. No smoking. In the event of fire, extinguish with CO2 or foam. Do not use a water jet.



Nitobond EC

Two-parts epoxy bonding agent

Uses

Adhesive compound is a specially formulated epoxy resin adhesive for anchoring, bonding prefabricated elements such as bridge segments, permanent installation of reinforcement starter bars, foundation boll, railway track.

Advantages

Excellent adhesive

Fast cure

Chemical resistance

Easy to use

Description

Adhesive compound is an epoxy resin based products with special fine fillers. The components differ in colour allowing visual assessment of mixing.

Properties

Colour : Grey

Mixed density (kg/m³) : 1880

Pot life (mins) : 60 at 25°C
45 at 30°C

Compressive Strength (N/mm²)
1 days 60
3 days 70
7 days 80

Tensile Strength (N/mm²)
S 6319 part 7, 1985
7 days 22

Flexural Strength (N/mm²)
S 6319 part 3, 1990
7 days 50

Bond Strength-Slant Shear (N/mm²)
S 6319 part 4, 1990 :
7 days 40
(failure of concrete)

Instruction For Use

Surface Preparation

Concrete should be mechanically sound, dry and free from oil or grease, laitance and dust. A dry grit blast surface is recommended for optimum adhesion.

Bar should be deformed. This will ensure good bond between bar and adhesive compound.

Bar should be degreased and any mill scale or flaky rust removed.

Mixing

The contents of hardener should be added to the base can and mixed for three minutes (minimum) with a paddle and slow speed heavy duty drill, ensuring the sides are scraped down. A uniform grey colour should be obtained.

Application

Precast Element

The mix adhesive should be applied at the required thickness to both facing surfaces with a serrated trowel or other suitable spreader.

Anchoring

The mixed grout should be poured or pumped steadily into the prepared anchor holes. The anchor bar should then be pressed into the hole to the required depth. Slight agitation of the bar will greatly assist in achieving a complete bond.

The bar should be left undisturbed in the required position until the adhesive compound hardened fully.

bond EC

Table

Number of bolts in 200 mm (bonded length) deep holes												
Bolt size	1 1/8"		1 1/4"		1 3/8"		1 1/2"		1 3/4"		1 7/8"	
	12 mm	16 mm	20 mm	25 mm	32 mm	38 mm	45 mm	50 mm	60 mm	70 mm	80 mm	90 mm
Pack Size	2.5	8.0	2.5	8.0	2.5	8.0	2.5	8.0	2.5	8.0	2.5	8.0
	114	364										
	50	150	88	282								
	30	90	40	128	72	231						
	15	48	17	53	21	68	28	91				
	10	32	11	34	12	39	16	48	31	97		
	7	23	8	24	9	27	11	31	14	45	28	83
	5	16	6	19	6	20	8	23	9	28	13	39
	3	10	4	12	4	12	5	14	5	15	6	17

is in table for a 25% wastage factor. If the anchor is used in concrete, masonry or brick work the wastage factor should be increased. If the bonded depth is not 200 mm, the number of bolts in the above table need to be extrapolated according to the following factors :

Depth	Factor
800	0.25 (=200/800)
400	0.5
350	0.57
300	0.67
250	0.8
200	1.0
150	1.33
100	2.00

bond length

and equipment should be cleaned immediately after use of Fosroc Solvent 102. Solvent should not be absorbed with sand or saw dust and in accordance with local regulations.

Packing

5 kg packs containing hardener and based.

Storage

At least 12 month if stored below 35 °C in unopened containers.

Precautions

Fire

Fosroc Solvent 102 is flammable. In the event of fire extinguish CO₂ or foam.

Health and Safety

Adhesive Compound : Contains resins which may cause sensitisation by skin contact. Avoid contact with skin and eyes and inhalation of vapour.

Wear suitable protective clothing, gloves, and eyeface protection. Barrier creams provide additional skin protection. Should accidental skin contact occur, remove immediately with a resin removing cream, followed by soap and water. Do not use solvent. In case of contact with eyes, rinse immediately with plenty of clean water and seek medical advice. If swallowed seek medical attention immediately, do not induce vomiting.

Fosroc Solvent 102 : Flammable Liquid Flash Point 33°C Keep away from sources of ignition - no smoking, wear suitable protective clothing, gloves and eye, face protection. Use only in well ventilated areas.

Additional Information

Adhesive compound is part of a wide range of repair mortars, sealing components and protective coating products specially designed and manufactured by Fosroc for the construction industry.

Important note

Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard terms and conditions of sale, copies of which may be obtained on request. Whilst Fosroc endeavours to ensure that any advice, recommendation, specification or information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products, whether or not in accordance with any advice, specification, recommendation or information given by it.

roc
sia

lok A8 No. 1
Industrial Park
g

oc.com

telephone:
+ 62 21 897 2103
+ 62 31 502 9142
+ 62 22 620 1308

fax:
+ 62 21 897 2107
+ 62 31 502 2711
+ 62 22 622 2713

email:
indonesia@fosroc.com

