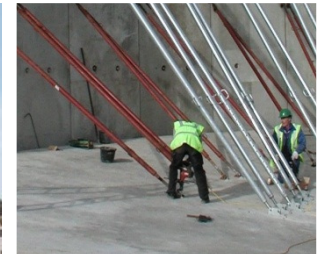
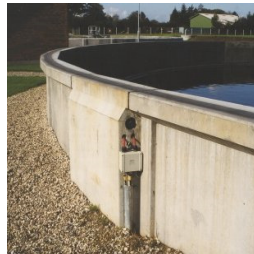
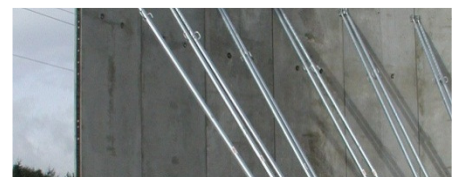




User Manual for AQUA - TANK



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User Manual

Project Ref. No. 430508

Project Title: Colwick, Nottingham

AQUA TANK type N8000/48+2B/2

Tank Height Storage Tank
8030 mm

Client Bio Dynamic UK Ltd

Date 01.05.2017

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Foreword

A Users' Manual provides details regarding technical features, design of the Aqua – Tank and requirements concerning exploitation of the structure.

Finally, this users manual containing general layout drawings of the built structure.

1. Brief Description of the Structure

The Aqua-Tank wall consists of precast concrete panels made from reinforced concrete. The pre-cast concrete panels are installed as a polygon onto a cast-in-situ concrete base slab.

The precast concrete panels are provided with a number of PVC-ducts into which single strand tendons are threaded after erection of the panels. The strands are anchored in a special 'buttress' panel that forms part of the tank wall structure.

Specially profiled EPDM sealant strips are placed in the vertical panel joints in order to provide proper contact and a tight joint between the panels.

When the tensioning of the tendons is completed, a "ring beam seal" is cast from the outer side of the wall at the connection of the wall and the base-slab. As the base slab is provided with stirrups along the edge, and as the wall panels are positioned into a rebate (or have dowel bars protruding at the lower edge of their outer face), the seal will link the base-slab and the wall structurally and ensure the tightness of the wall/base joint.

2. Technical Specifications

The Aqua-Tank is constructed to comply with the main principles and intentions of "BS EN 1992 -1-1 Eurocode 2 "Design of concrete Structures and associated National Annexes".

2.1 Pre-cast concrete panels

The precast concrete panels are manufactured according to the "Aqua-Tank Quality Manual for Precast Concrete Panels" from materials with the following specification.

▪ Concrete:	For aggressive conditions classified as XC4, XF3 Concrete grade C35/45 (according to EN 206-1).
▪ Reinforcement:	Fabric: $f_{yk} \geq 500$ MPa (both mould-side and up-side). Bars: $f_{yk} \geq 500$ MPa (both mould-side and up-side). In addition, for vertically pre-stressed panels only: Bonded tendons: 0.5", breaking load ≥ 164 kN.
▪ Cover to reinforcement:	Inside: min. 35 mm Outside: min. 35 mm
▪ Surface Finish:	Internal (up-side): Steel Float Finish (standard finish) External (mould-side): Fair Finish

Concrete should only be used in tanks for containing liquids with PH-values in a range from 6 to 8.

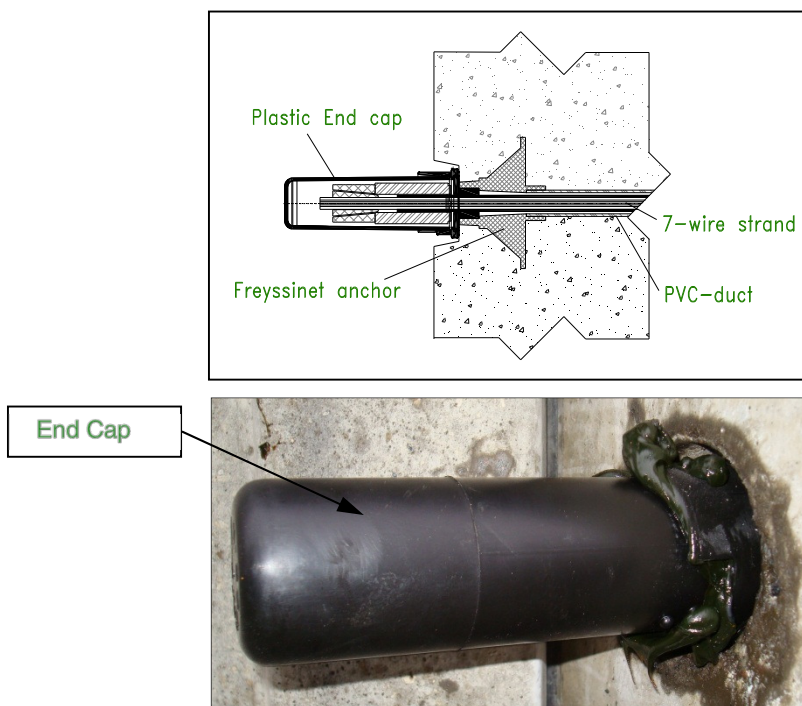
For liquid with a PH-range beyond 6-8 a suitable concrete surface protection coating should be used.

2.2 Post-tensioning system

The post-tensioning system consists of un-bonded greased and plastic coated strands. The grease inhibits corrosion and prevents bond between the sheath and the strand. Each strand is individually anchored in an external anchorage house. The anchor is fully encapsulated against corrosion by post-injection of grease in to the external anchor house. The “easy-fix” end cap is grease filled, covering the strand end and the collet (see fig.1)

<ul style="list-style-type: none"> ▪ Un-bonded Strands: 	<p>Conforms with BS 5896 15.3 mm/0.6" Standard Breaking Load \geq 248 kN</p>
<ul style="list-style-type: none"> ▪ Anchorage: 	<p>Freyssinet anchors</p>

Figure 1. External Anchoring House



2.3 EPDM-sealing Strips

The vertical joint between the panels consist of a special EPDM Profile.

The Material conforms to EN681 – Elastomeric Seals – Materials requirements for pipe and joint seals used in water and drainage applications.

▪ Hardness /shore:	60
▪ Profile width:	80 mm
▪ Profile thickness, uncompressed:	14 mm
▪ Profile thickness, compressed:	~ 6 mm

3. Basis of Design for the Aqua-Tank

The following information is the design basis for the Aqua-Tank.

3.1 Foundations

The design and construction of the foundations for the Aqua-Tanks must be capable of sustaining the loads imposed without excessive or differential settlement. It is assumed that the base slab will be constructed to within 10 mm of theoretical datum at its highest point under the Aqua-Tank panels and within +/- 20 mm in level.

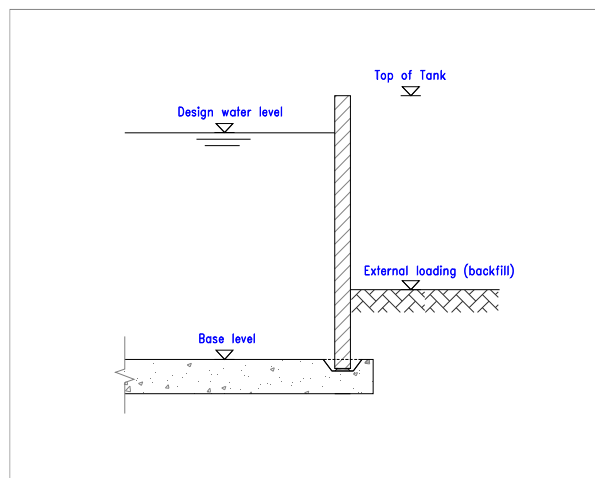
3.2 Design Loadings on the Wall Structure

During the design stage, the following parameter are used:

Liquid containing structures (see Fig.2):

▪ Base level:	0.000 m
▪ Top of Tank:	8.030 m
▪ Operational internal loadings:	SLS: Hydrostatic pressure (10.3 kN/ m ³) to 7.7 m
▪ Operational external loadings:	2.0 m
▪ Surcharge loadings:	10 kN/m ²

Figure 2. Design levels scheme



4. Backfilling of the Aqua-Tank Structure

The following operations are the standard recommendations **for tanks backfilling around only**. The recommendations are to be followed unless otherwise agreed in writing with A-Consult.

- Backfilling is not to be initiated before the installation of the Aqua-Tank is completed and the ring beam seal is properly cured.
- Backfilling should not be allowed if there is water in the excavation (external pressure on the base).
- The backfill material shall be free draining material (i.e. clay can not be used) with $D_{max} < 50$ mm.
- The backfill must be placed in layers of 250-350 mm thick. Each layer is to be compacted before placing the next layer.
- The maximum variation of finished level of backfill is 1 metre. Any variations must be in the form of a gradual slope between levels - steps are not permitted.

5. Water Testing of the Aqua-Tank Structure

When a water test is carried out to test for liquid tightness of an Aqua-Tank the following procedure must be followed:

- Ensure that the ring beam seal has been cast minimum 7 days before test is started.
- (Water could be filled into the tank to a level of maximum $\frac{1}{2}$ m above the base level 24 hours after the ring beam has been cast).
- Guidelines according to section nine in BS8007 stipulates a filling rate of not greater than 2 m in 24 hours, however subject to an assessment of the risk for settlement in the foundation for the structure, the initially filling rate could be increased.
- When first filled, the liquid level should be maintained by the addition of further liquid for a stabilising period while swelling of sealant materials, absorption and autogenous healing take place.
- After the stabilising period a 7 day test according to BS8007 is carried out.
- Satisfactory completion of the water test is based on the interpretation of the term "seepage" as being evidence of passing water only. The existence of damp marks on the surface of the concrete shall not be construed as "seepage".

- Should the Aqua-Tank Structure not satisfy the 7 days test, then A-Consult should be contacted to carry out suitable remedial work. A-Consult to advise of curing time for any sealants or other materials used, the structure can then be refilled to the maximum level within 24 hour period from this time.

6. Periodical Inspections

To ensure a lifetime as long as possible and to prevent leaking, the tank should be inspected regularly with respect to integrity.

It is recommended that the Aqua-Tank is inspected each time the tank is emptied to check for the early signs of any damage. At least every 5 years in conjunction with emptying, the tank should be cleaned inside with high-pressure water cleaner. At the same time the following should be done.

- The surface of the tank wall – both inside and outside above ground – is inspected.
- Internal construction joint between the base and the wall is inspected.
- The plastic caps of above ground tendons in the buttress panels are removed to check that the protective corrosion grease around the anchors is intact.

If any damage during the inspection is found or suspicions arise during these inspections then A-Consult should be contacted immediately.

Regular inspection and restoration, if necessary, reduces the risk of comprehensive and expensive repair and eventual future damage.

The tank is never to be emptied below any external ground water level unless the tank has been explicitly designed for this load-case.

To discuss an inspections and maintenance service contract please contact A-Consult on 01777 249444.

7. Accidental Damage

If the Aqua-Tank is exposed to unintended influences such as collisions, fire or similar that might affect the structural integrity of the structure, A-Consult must be contacted to survey of the consequences.

8. Mechanical Equipment and Penetrations in the Tank Wall

The installation of any mixers, pumps or similar equipment onto the tank walls which were not advised during the structures initial design period *should not be undertaken without prior consultation with A-Consult.*

The Post drilling of precast panels for pipe connections or bolt fixings is permitted, however this work must be carried out with special attention being paid to the location of the post tensioning tendons within the structure, ensuring that the outer diameter of any hole/aperture is no less 75mm away from the outer diameter of any post tensioning tendons.

Consideration should also be given to location of fixing bolts when locating any drilling machine onto the precast panels. The same 75mm rule should be applied to any fixing bolts on the core drilling machine.

9. Precautions during winter

If the base slab is at least 300mm thick, done with a fairly good concrete quality, C35 and above, the risk of damage due to permafrost is insignificant.

If this is not the case and if the ground conditions, ground water level etc. are unknown, other precautions must be made to avoid damaging the concrete and the structure.

During periods of persistent frost, the Aqua-tank must not being emptied completely, especially not if the above mentioned conditions are unknown. In this case it is advisable to make sure that at least 0.5m water/liquid remains in the tank. If this is not possible, the concrete base must be protected against frost, for instance by covering it up with insulation material.

10. Decommissioning of the Aqua-Tank

10.1 Introduction

This method statement covers the decommissioning of a typical AQUA-TANK structure and forms the basis of a site specific Method Statement to be used by a competent demolition contractor.

10.2 References

All demolition work shall comply with the following:

BS5228 Noise control on construction and open sites.

BS6187 Code of Practice for demolition

GS29 Health & Safety in Demolition Work (Produced by HSE)

CDM The Construction (Design & Management) Regulations.

10.3 Documentation

The demolition contractor shall prepare the following documentation:

- i. Detailed (Site Specific) Method Statement.
- ii. Drawings of temporary works (for example, protective measures).
- iii. Survey of any existing services.

10.4 Preliminary Procedures

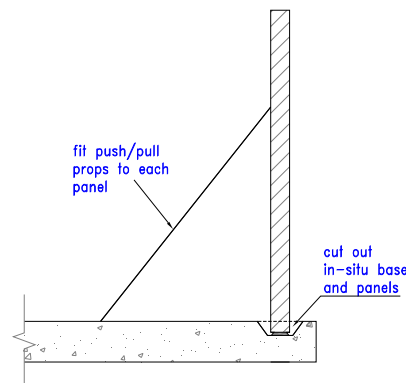
- i. A detailed examination (or survey) should be carried out of the demolition area. Sketches and photograph retained as necessary.
- ii. Ensure all services affected by the demolition are removed, diverted and rendered completely safe at the outset.

10.5 Precautionary Measures

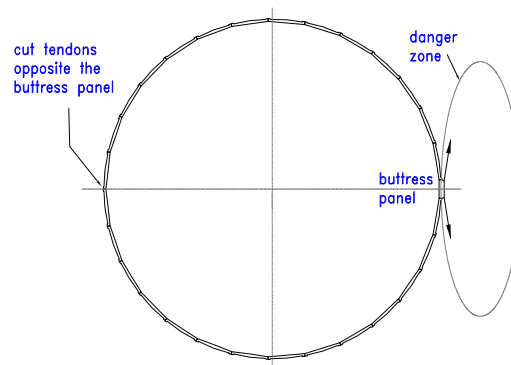
- i. Prior to commencement ensure all relevant documentation is copied/submitted to all appropriate persons.
- ii. Take measures to protect existing works from the demolition process (care of existing works).
- iii. Materials arising from the demolition shall be recovered and recycled where possible; otherwise, it shall be removed from site and disposed of with an appropriate Waste Management Licence. The demolition contractor shall comply with legislation governing the state and the location of proposed tipping areas if carting way is to be sub-let.

10.6 Methodology

- i. The tank is to be empty, cleaned and excavated where necessary before commencing work.
- ii. Remove any mechanical equipment, channels, platforms, pipes etc.
- iii. If coping beams exists, they should be disc cut at each panel joint.
- iv. Push/pull props shall be installed between each panel and the tank floor (step 2).
- v. Break or cut out in-situ concrete at base of precast wall units (step 3).



- vi. As the tendons are cut, the **STEP 2,3** sudden release in tension can lead to ejection of the cut strand at high velocity. Expect, that the tendon will eject up to 5 metre measured from the anchor point when stress is released. The area identified below, under step 4, shall therefore be emptied and cordoned off to prevent unauthorised access.
- vii. Note that there is a small risk that the tendons are ejected beyond the danger zone identified below. To minimize the risk of damage to persons or property beyond the danger zone identified, it is a requirement that heavy rubber mats and/or energy absorbent screens are erected close to the buttress. The actual measures taken are the subject of a risk assessment by the demolition contractor to determine the final details of the protective measures, taking account of the site conditions prevailing at the time.
- viii. Should a safety screen be considered to be necessary, such barrier can made from a 150 mm wide x 8 mm thick steel plate mounted over the cast in anchors on both sides of the buttress panel. Fix the plate centrally over the anchors, using M16/150 mm anchor bolts at 500 mm spacing to hold the plate in position.
- ix. The tendons shall be cut opposite to the buttress panel (if the tank has more than one buttress panel, the tendons shall be cut between the buttresses), using a steel blade in a disc cutter. All cutting equipment and methods used shall be fully HSE compliant (Step 4).

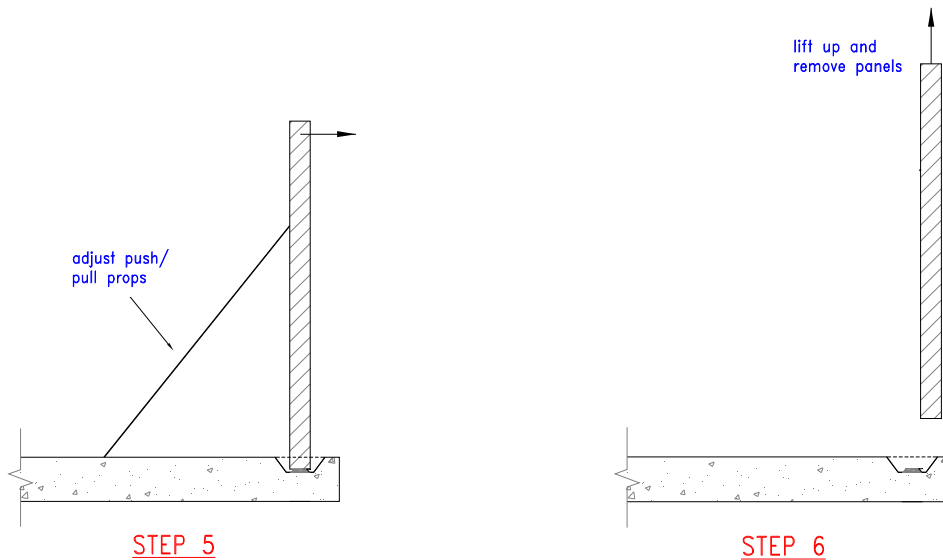


STEP 4

- x. Adjust the push/pull props, so the top of each panel is moved out externally. The panels can then be removed by crane (step 5). Make sure, that no personnel is outside the tank wall, when the props are being adjusted outwards, as the panel in case of a failure in the anchor bolts is likely to fall out from the tank perimeter.

- xi. Where possible, use the existing lifting inserts or drill holes though the panels and use pins for lifting. Make sure, that the lifting system used is fully designed to safely lift the weight of the precast panels (0.8 tonnes per metre length for 2.11 metre wide panels).

- xii. The panels can be loaded onto lorries for re-erection, disposal or breaking up (step 6).



This Aqua-Tank User Manual is prepared:

Date: _____ *01.05.2017* _____

By: (print name)

_____ *Svetlana Volchek* _____ *Title* _____ *design engineer* _____

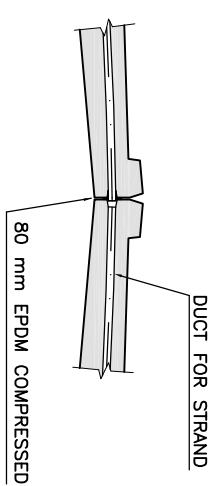
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_____ *SV* _____

Appendix 1: General layout drawings

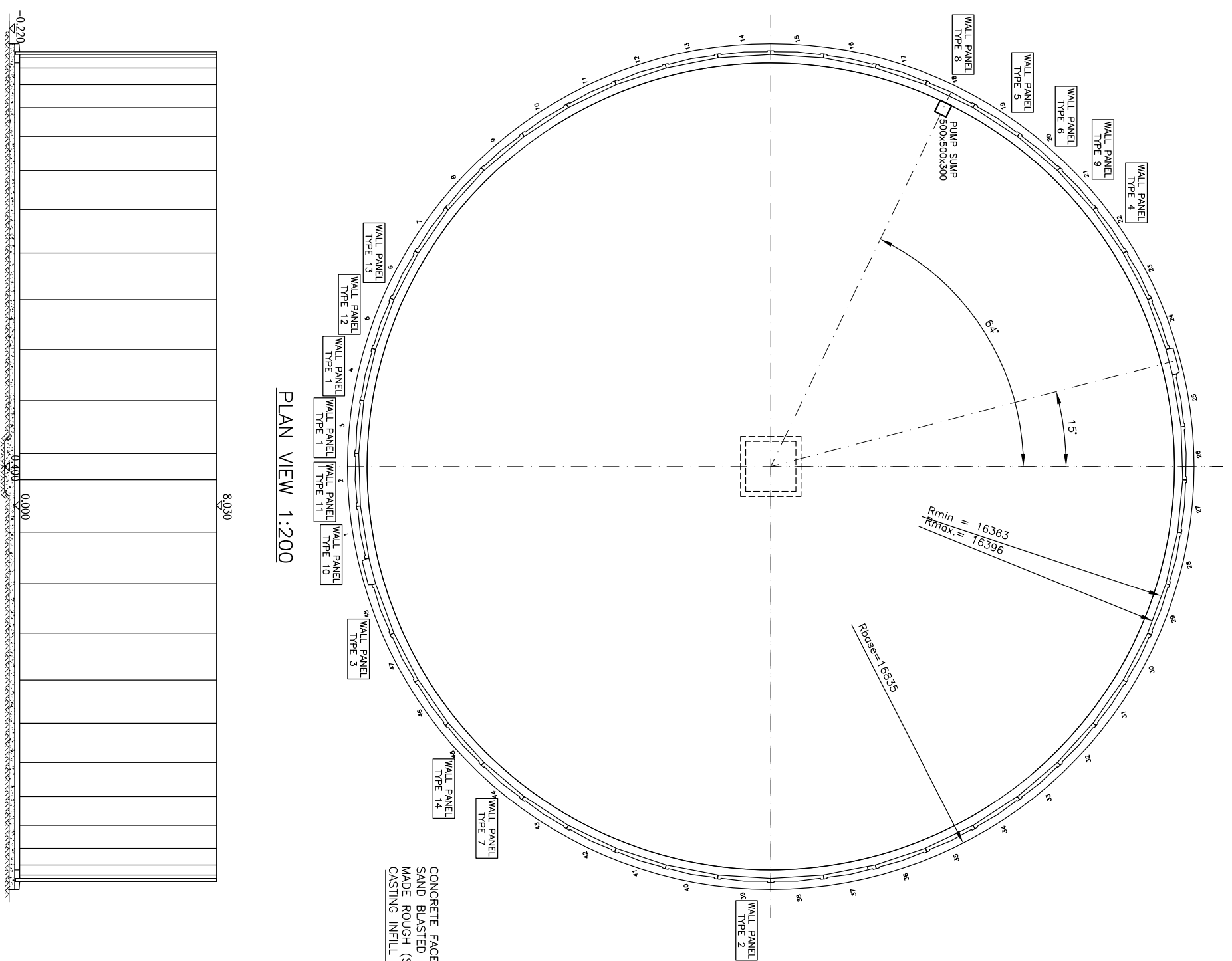
List of drawings:

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AQ430508-80-1100-2	Concrete Layout Wall Panel – STANDARD	C	30.11.2016
AQ430508-80-1101-2	Concrete Layout Wall Panel – TYPE 1	C	30.11.2016
AQ430508-80-1102-2	Concrete Layout Wall Panel – TYPE 2	C	30.11.2016
AQ430508-80-1103-2	Concrete Layout Wall Panel – TYPE 3	D	30.11.2016
AQ430508-80-1104-2	Concrete Layout Wall Panel – TYPE 4	D	30.11.2016
AQ430508-80-1105-2	Concrete Layout Wall Panel – TYPE 5	C	30.11.2016
AQ430508-80-1106-2	Concrete Layout Wall Panel – TYPE 6	C	30.11.2016
AQ430508-80-1107-2	Concrete Layout Wall Panel – TYPE 7	D	30.11.2016
AQ430508-80-1108-2	Concrete Layout Wall Panel – TYPE 8	C	30.11.2016
AQ430508-80-1109-2	Concrete Layout Wall Panel – TYPE 9	C	30.11.2016
AQ430508-80-11010-2	Concrete Layout Wall Panel – TYPE 10	C	30.11.2016
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AQ430508-80-11012-2	Concrete Layout Wall Panel – TYPE 12	C	30.11.2016
AQ430508-80-11013-2	Concrete Layout Wall Panel – TYPE 13	C	30.11.2016
AQ430508-80-11014-2	Concrete Layout Wall Panel – TYPE 14	B	30.11.2016
AQ430508-80-11014-2	Concrete Layout BUTTRESS PANEL	A	01.12.2016

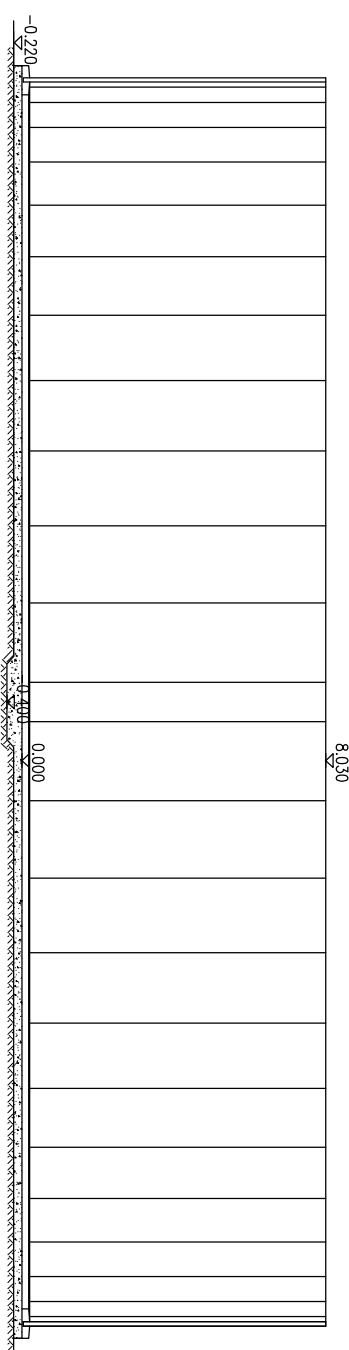


JOINT BETWEEN WALL PANELS
HORIZONTAL SECTION 1:25

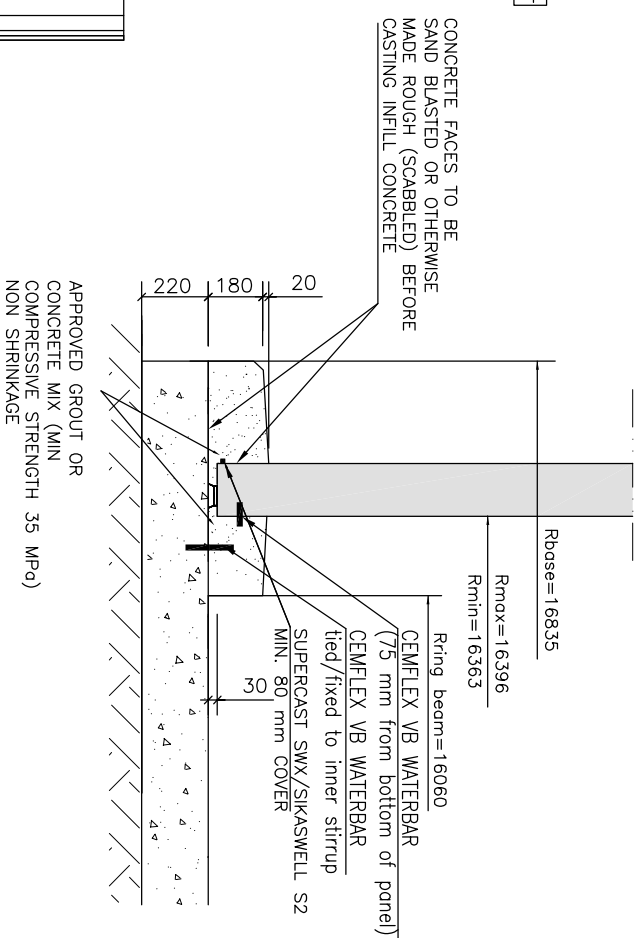
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 - 2) DIMENSIONAL TOLERANCES:
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CIRCULARITY: +/- 25 mm MEASURED FROM R_{nom}.
 - 3) SURFACE FINISH:
FORNSIDE: FAIR
UPSIDE: STEEL FLOATED



PLAN VIEW 1:200



SECTION A-A 1:200



JOINT BETWEEN WALL AND BASE 1:25
CONCRETE LAYOUT

AS BUILT

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ISSUE	DESCRIPTION	DATE	INIT.
E	status	08.12.2016	SV
b	REVISION	07.12.2016	SV
C	REVISION	02.12.2016	SV
B	FRST ISSUE	02.12.2016	SV
A	FRST ISSUE	30.11.2016	SV

A-CONSULT

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MANOR BUSINESS PARK
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DN22 0LG - RETFORD

PROJECT
Colwick, Nottingham
Storage Tank

CLIENT
Bio Dynamic UK Ltd

DRAWING DESCRIPTION
CONCRETE LAYOUT
WALL/BASE DETAILS
TYPE NB000/48+2B/2

DRAWN: RT
CHECKED: SV
SCALE (A3): 1:200,25

REF. NO.: 430508
DATE: 30.11.2016
STATUS: 01

DRAWING NO.: AQ430508-80-48-1001-2 E
ISSUE:

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- 3) STRANDS: 15.3 mm STANDARD PE-SHEATED & GREASE-IMPREGNATED TENDON (BSS5896/3).
- 4) SURFACE FINISH: FORMSIDE: FAIR UPSIDE: STEEL FLOATED
- 5) CONCRETE: WALL PANEL: C35/45.
- 6) EXPOSURE CLASS: XC4, XF3
- 7) PLEASE ALLOW min.75 mm DISTANCE FROM POST BORE-HOLE TO CENTER LINE OF TENDON.

PANEL TYPE	WEIGHT APPROX. [KG]
WALL PANEL - STANDARD	6050
BUTRESS PANEL	5870

THE POST DRILLING OF PRECAST PANELS FOR PIPE CONNECTIONS OR BOLT FIXING IS PERMITTED. HOWEVER THIS WORK MUST BE CARRIED OUT WITH SPECIAL ATTENTION BEING PAID TO THE LOCATION OF THE POST TENSIONING TENDONS WITHIN THE STRUCTURE, ENSURING THAT THE OUTER DIAMETER OF ANY HOLE/APERTURE IS NO LESS 75 MM AWAY FROM THE OUTER DIAMETER OF ANY POST TENSIONING TENDONS.

AS BUILT

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C	STATUS	02.12.2016	SV
B	REVISION	01.12.2016	SV
A	FIRST ISSUE	30.11.2016	SV

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A-CONSULT LIMITED
THE BARN,
MANOR BUSINESS PARK
EAST DRAYTON
DN22 0LG - RETFORD

PROJECT

Colwick, Nottingham
Storage Tank

CLIENT

Bio Dynamic UK Ltd

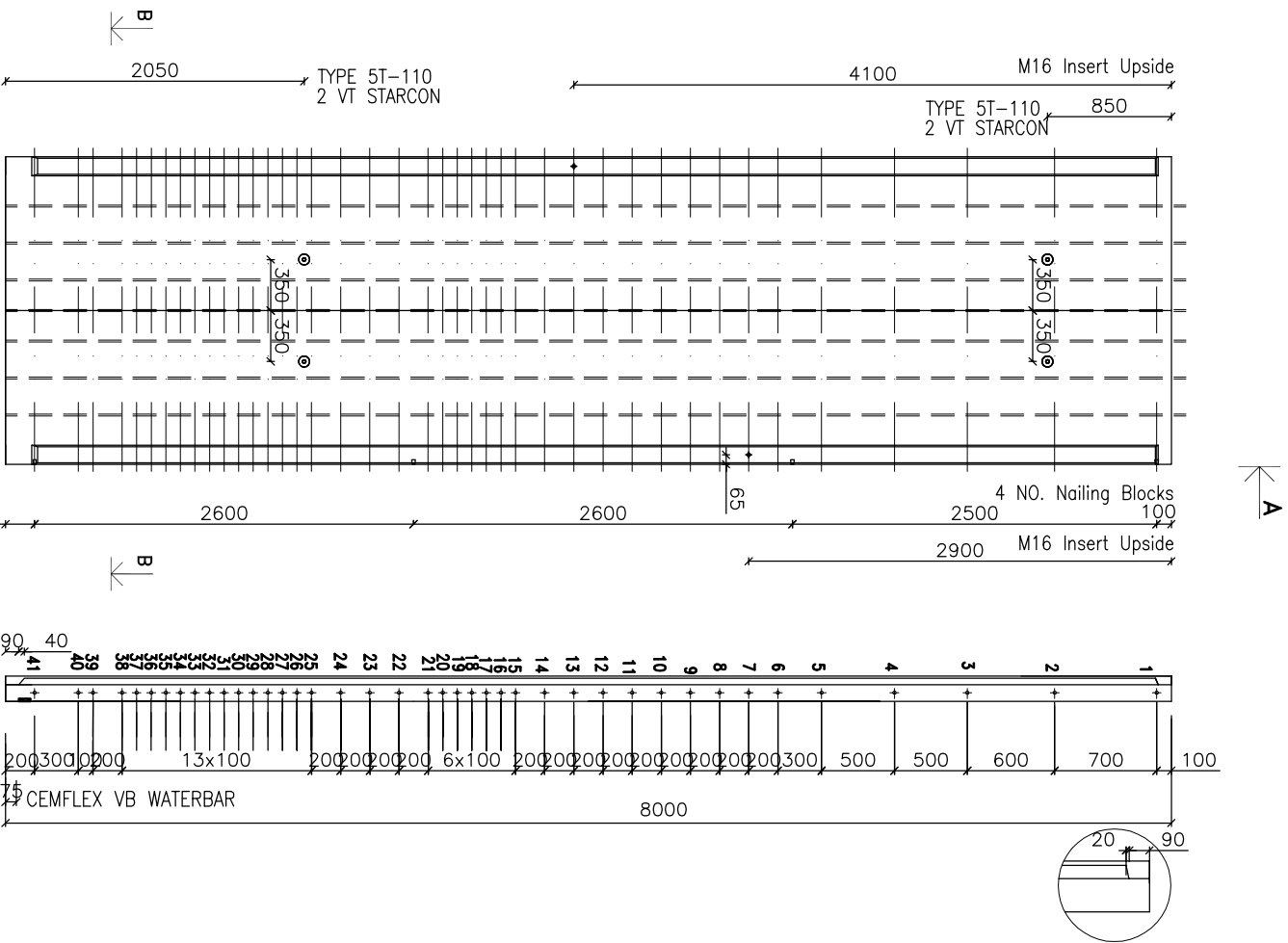
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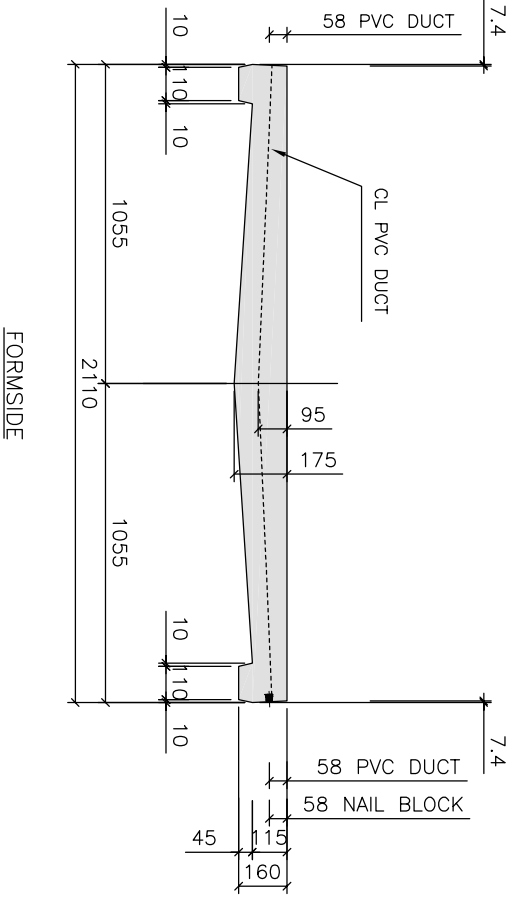
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ELEVATION (FORMSIDE) 1:50

SECTION A-A 1:50



SECTION B-B 1:25

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- 2) DUCTS: Ø23/25 mm PVC-TUBES
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- 6) EXPOSURE CLASS: XC4, XF3
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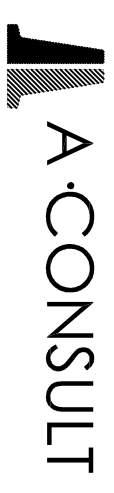
PANEL TYPE	WEIGHT APPROX. [kg]
WALL PANEL - STANDARD	6050
BUTRESS PANEL	5870

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A	FIRST ISSUE	30.11.2016	SV



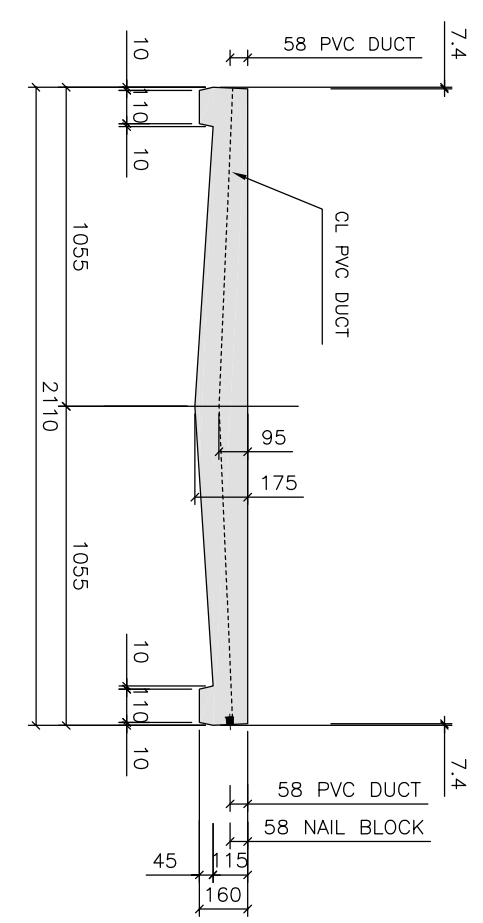
A-CONSULT LIMITED
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PROJECT
 Colwick, Nottingham
 Storage Tank

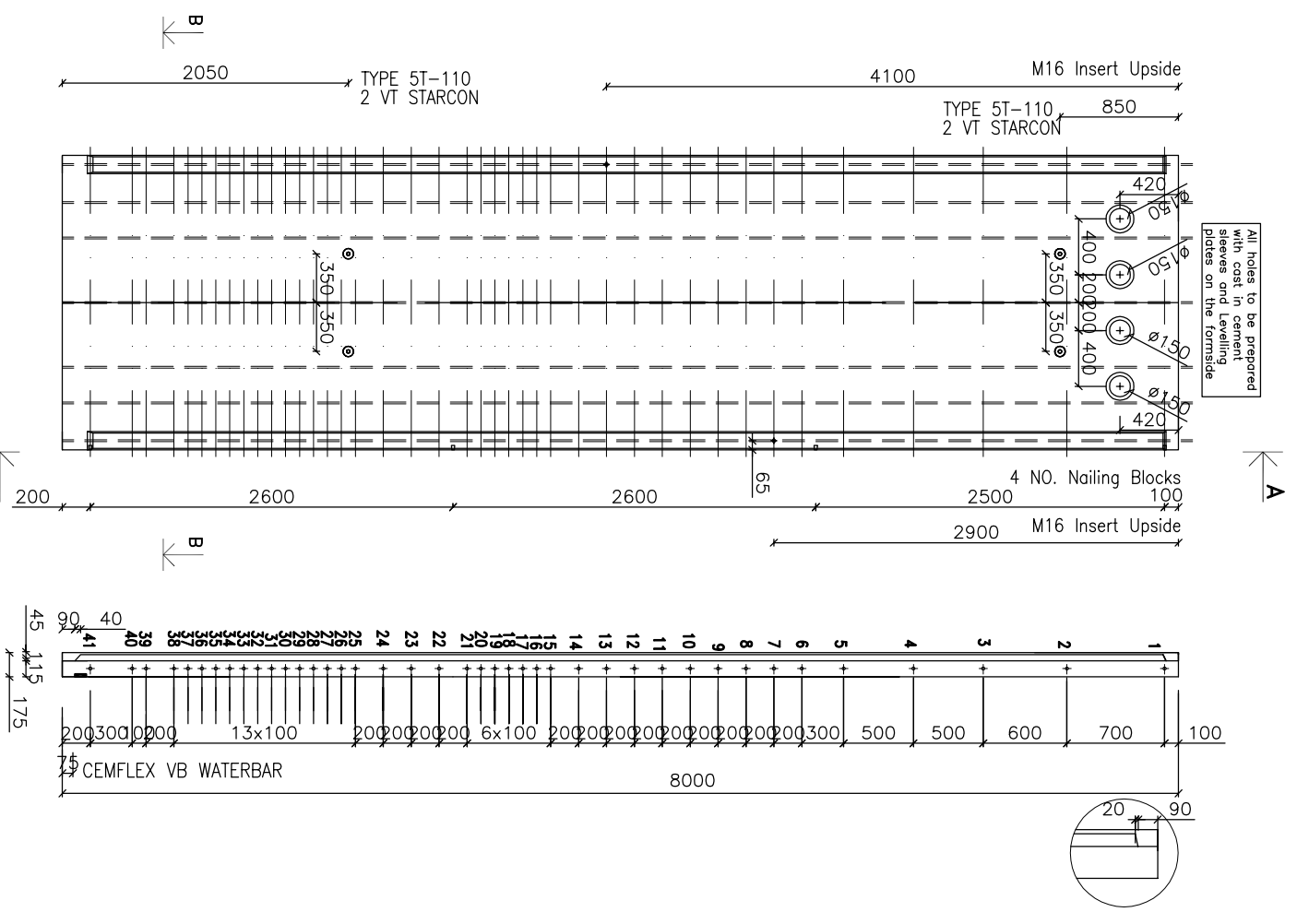
CLIENT
 Bio Dynamic UK Ltd

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 TYPE NB000/48+2B/2

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CHECKED: RT
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DATE: 30.11.2016
STATUS: 01
DRAWING NO.: A0430508-80-48-1101-2
ISSUE: C



SECTION B-B 1:25



ELEVATION (FORMSIDE) 1:50

SECTION A-A 1:50

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- 1) ALL DIMENSIONS IN MILLIMETRES. NO DIMENSION IS TO BE SCALED FROM THE DRAWING.
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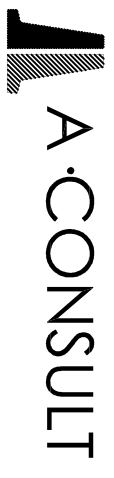
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WALL PANEL - STANDARD	6050
BUTRESS PANEL	5870

THE POST DRILLING OF PRECAST PANELS FOR PIPE CONNECTIONS OR BOLT FIXING IS PERMITTED. HOWEVER THIS WORK MUST BE CARRIED OUT WITH SPECIAL ATTENTION BEING PAID TO THE LOCATION OF THE POST TENSIONING TENDONS WITHIN THE STRUCTURE, ENSURING THAT THE OUTER DIAMETER OF ANY HOLE/APERTURE IS NO LESS 75 MM AWAY FROM THE OUTER DIAMETER OF ANY POST TENSIONING TENDONS.

AS BUILT

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ISSUE	DESCRIPTION	DATE	INIT.
D	STATUS	02.12.2016	SV
C	REVISION	01.12.2016	SV
B	FIRST ISSUE	30.11.2016	SV

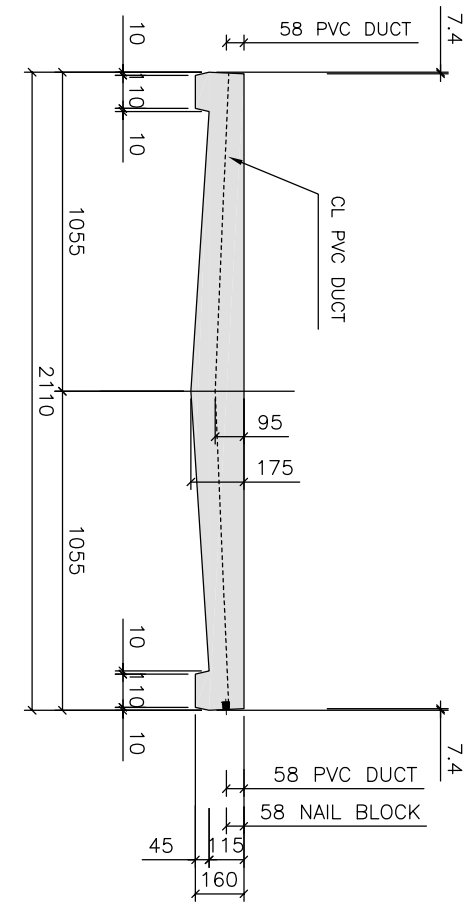


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 E-mail: info@consult.dk

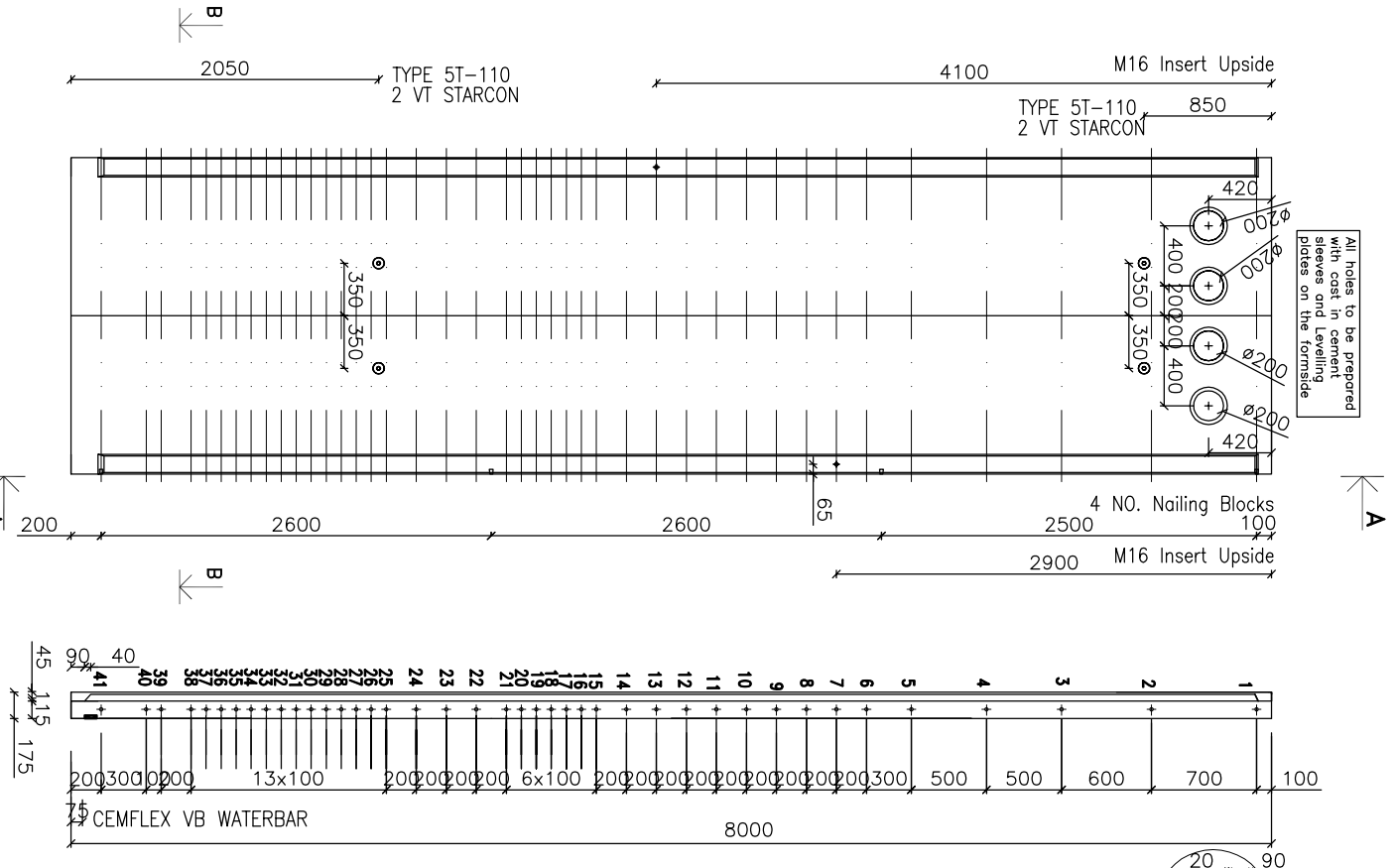
CLIENT
 Bio Dynamic UK Ltd
 Colwick, Nottingham
 Storage Tank

DRAWING DESCRIPTION
 CONCRETE LAYOUT
 WALL PANEL - TYPE 4
 TYPE NB000/48+2B/2

DRAWN: RT
CHECKED: RT
SCALE (A3): 1:50,25
REF. NO.: 430508
DATE: 30.11.2016
STATUS: 01
DRAWING NO.: A0430508-80-48-1104-2 D
ISSUE: D



SECTION B-B 1:25



ELEVATION (FORMSIDE) 1:50

SECTION A-A 1:50

DRAWING NO.: A0430508-80-48-1104-2 D

NOTES:

- 1) ALL DIMENSIONS IN MILLIMETRES. NO DIMENSION IS TO BE SCALED FROM THE DRAWING.
- 2) DUCTS: Ø23/25 mm PVC-TUBES
- 3) STRANDS: 15.3 mm STANDARD PE-SHEATED & GREASE-IMPREGNATED TENDON (BSS5896/3).
- 4) SURFACE FINISH: FORMSIDE: FAIR UPSIDE: STEEL FLOATED
- 5) CONCRETE: WALL PANEL: C35/45.
- 6) EXPOSURE CLASS: XC4, XF3
- 7) PLEASE ALLOW min.75 mm DISTANCE FROM POST BORE-HOLE TO CENTER LINE OF TENDON.

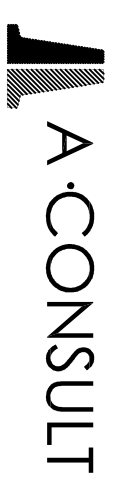
PANEL TYPE	WEIGHT APPROX. [KG]
WALL PANEL - STANDARD	6050
BUTTRESS PANEL	5870

THE POST DRILLING OF PRECAST PANELS FOR PIPE CONNECTIONS OR BOLT FIXING IS PERMITTED. HOWEVER THIS WORK MUST BE CARRIED OUT WITH SPECIAL ATTENTION BEING PAID TO THE LOCATION OF THE POST TENSIONING TENDONS WITHIN THE STRUCTURE, ENSURING THAT THE OUTER DIAMETER OF ANY HOLE/APERTURE IS NO LESS 75 MM AWAY FROM THE OUTER DIAMETER OF ANY POST TENSIONING TENDONS.

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 INTERNET: www.aconsult.dk
 E-mail: info@consult.dk

**THE BARN,
 MANOR BUSINESS PARK
 EAST DRAYTON
 DN22 0LG - RETFORD**

PROJECT
 Colwick, Nottingham
 Storage Tank

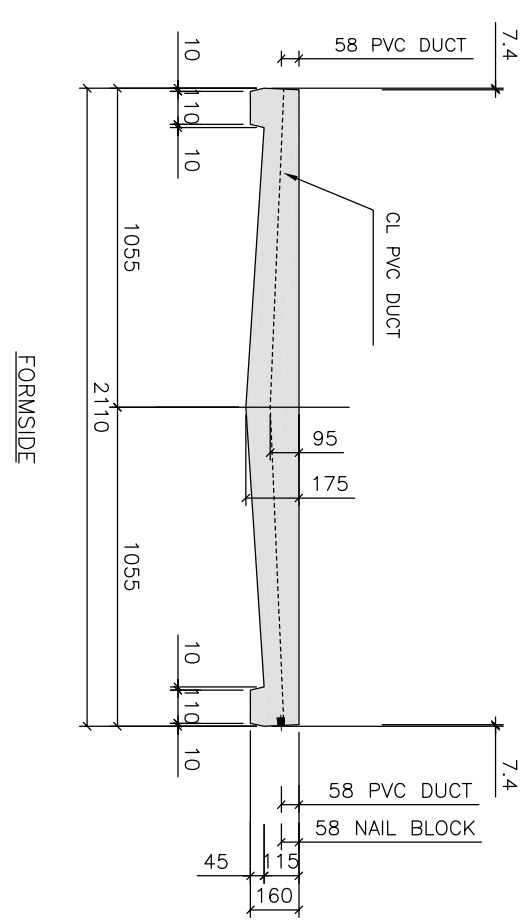
CLIENT
 Bio Dynamic UK Ltd

DRAWING DESCRIPTION
 CONCRETE LAYOUT
 WALL PANEL - TYPE 5
 TYPE NB000/48+2B/2

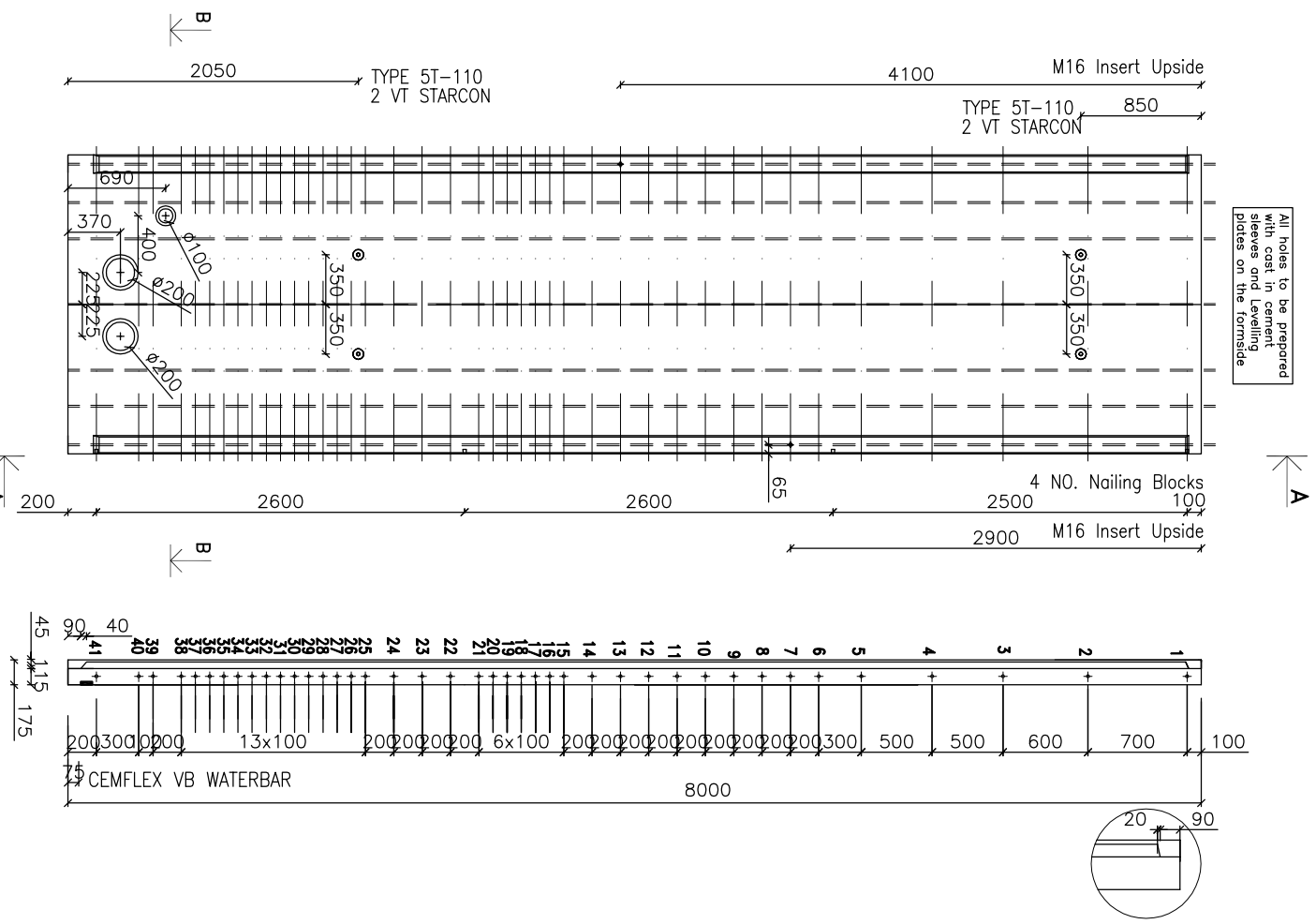
DRAWN: RT
CHECKED: RT
SCALE (A3): 1:50,25

REF. NO.: 430508
DATE: 30.11.2016
STATUS: 01

DRAWING NO.: A0430508-80-48-1105-2
ISSUE: C



SECTION B-B 1:25



ELEVATION (FORMSIDE) 1:50

SECTION A-A 1:50

CLIENT
 Bio Dynamic UK Ltd

DRAWING DESCRIPTION
 CONCRETE LAYOUT
 WALL PANEL - TYPE 5
 TYPE NB000/48+2B/2

DRAWN: RT
CHECKED: RT
SCALE (A3): 1:50,25

REF. NO.: 430508
DATE: 30.11.2016
STATUS: 01

DRAWING NO.: A0430508-80-48-1105-2
ISSUE: C

NOTES:

- 1) ALL DIMENSIONS IN MILLIMETRES. NO DIMENSION IS TO BE SCALED FROM THE DRAWING.
- 2) DUCTS: Ø23/25 mm PVC-TUBES
- 3) STRANDS: 15.3 mm STANDARD PE-SHEATED & GREASE-IMPREGNATED TENDON (BSS5896/3).
- 4) SURFACE FINISH: FORMSIDE: FAIR UPSIDE: STEEL FLOATED
- 5) CONCRETE: WALL PANEL: C35/45.
- 6) EXPOSURE CLASS: XC4, XF3
- 7) PLEASE ALLOW min.75 mm DISTANCE FROM POST BORE-HOLE TO CENTER LINE OF TENDON.

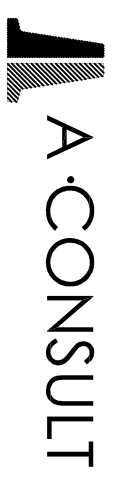
PANEL TYPE	WEIGHT APPROX. [Kg]
WALL PANEL - STANDARD	6050
BUTRESS PANEL	5870

THE POST DRILLING OF PRECAST PANELS FOR PIPE CONNECTIONS OR BOLT FIXING IS PERMITTED. HOWEVER THIS WORK MUST BE CARRIED OUT WITH SPECIAL ATTENTION BEING PAID TO THE LOCATION OF THE POST TENSIONING TENDONS WITHIN THE STRUCTURE, ENSURING THAT THE OUTER DIAMETER OF ANY HOLE/APERTURE IS NO LESS 75 MM AWAY FROM THE OUTER DIAMETER OF ANY POST TENSIONING TENDONS.

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PROJECT
Colwick, Nottingham
Storage Tank

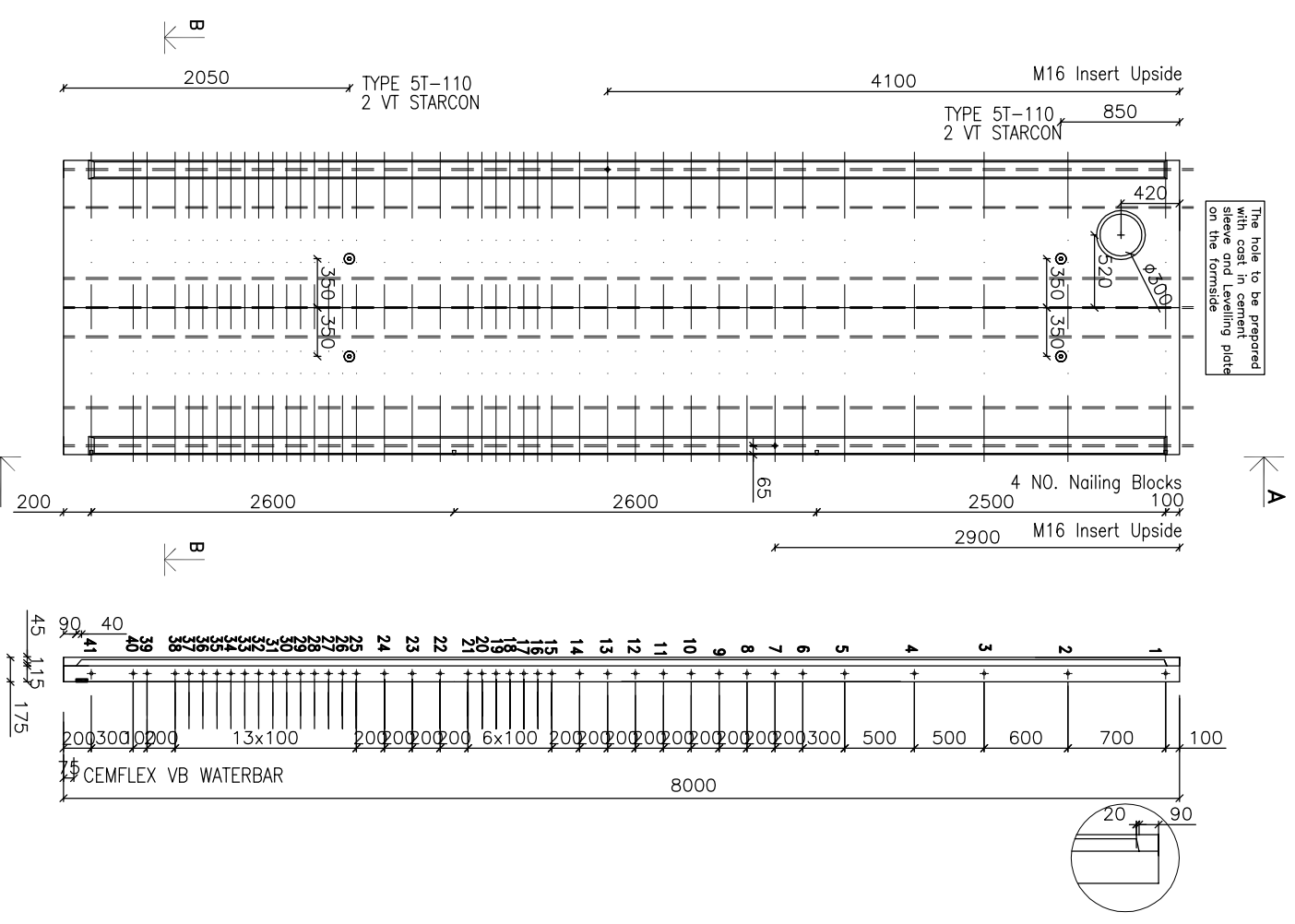
CLIENT
Bio Dynamic UK Ltd

DRAWING DESCRIPTION
CONCRETE LAYOUT
WALL PANEL - TYPE 7
TYPE NB000/48+2B/2

DRAWN: RT
CHECKED: SV
SCALE (A3): 1:50,25

REF. NO.: 430508
DATE: 30.11.2016
STATUS: 01

DRAWING NO.: A0430508-80-48-1107-2
ISSUE: D



ELEVATION (FORMSIDE) 1:50
SECTION A-A 1:50
SECTION B-B 1:25

NOTES:
 1) ALL DIMENSIONS IN MILLIMETRES. NO DIMENSION IS TO BE SCALED FROM THE DRAWING.
 2) DUCTS: Ø23/25 mm PVC-TUBES
 3) STRANDS: 15.3 mm STANDARD PE-SHEATED & GREASE-IMPREGNATED TENDON (BSS5896/3).
 4) SURFACE FINISH: FORMSIDE: FAIR UPSIDE: STEEL FLOATED
 5) CONCRETE: WALL PANEL: C35/45.
 6) EXPOSURE CLASS: XC4, XF3
 7) PLEASE ALLOW min.75 mm DISTANCE FROM POST BORE-HOLE TO CENTER LINE OF TENDON.

PANEL TYPE	WEIGHT APPROX. [kg]
WALL PANEL - STANDARD	6050
BUTRESS PANEL	5870

THE POST DRILLING OF PRECAST PANELS FOR PIPE CONNECTIONS OR BOLT FIXING IS PERMITTED. HOWEVER THIS WORK MUST BE CARRIED OUT WITH SPECIAL ATTENTION BEING PAID TO THE LOCATION OF THE POST TENSIONING TENDONS WITHIN THE STRUCTURE, ENSURING THAT THE OUTER DIAMETER OF ANY HOLE/APERTURE IS NO LESS 75 MM AWAY FROM THE OUTER DIAMETER OF ANY POST TENSIONING TENDONS.

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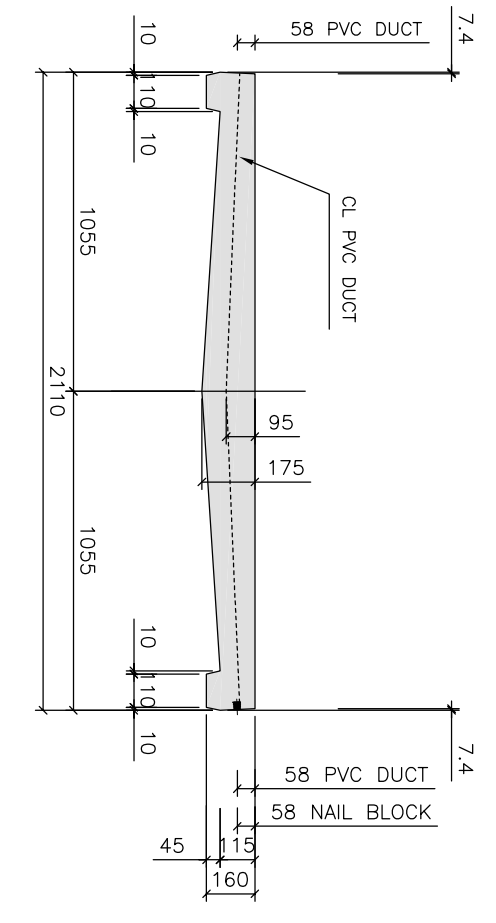
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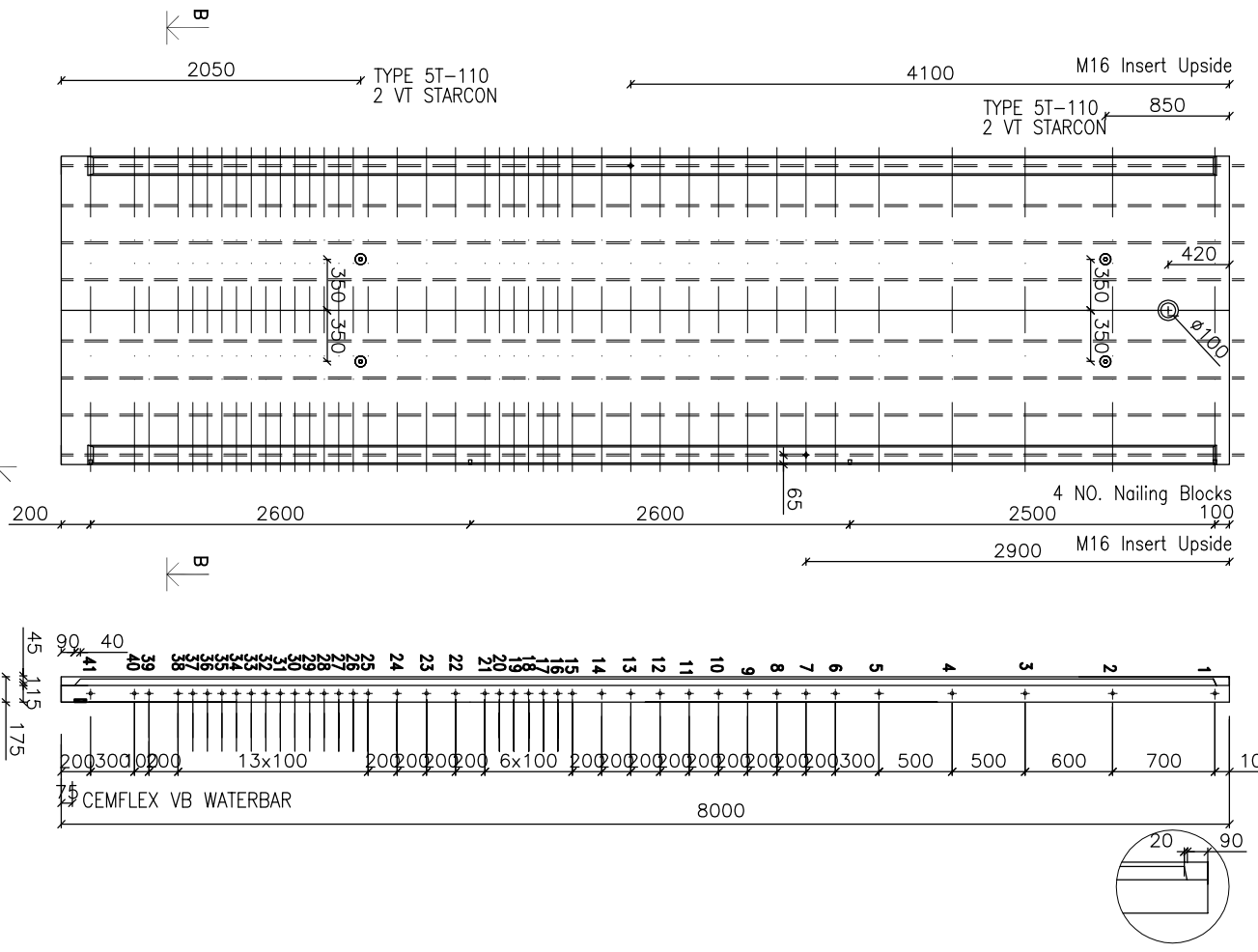
PROJECT
 Colwick, Nottingham
 Storage Tank
 CLIENT
 Bio Dynamic UK Ltd

DRAWING DESCRIPTION
 CONCRETE LAYOUT
 WALL PANEL - TYPE 9
 TYPE NB000/48+2B/2

DRAWN: RT
 CHECKED: SV
 REF. NO.: 430508
 DATE: 30.11.2016
 STATUS: 01
 SCALE (A3): 1:50.25
 DRAWING NO.: A0430508-80-48-1109-2 C
 ISSUE:



SECTION B-B 1:25



ELEVATION (FORMSIDE) 1:50

SECTION A-A 1:50

The hole to be prepared with cast in cement with a nailing plate on the formside

A

B

A

B

A

NOTES:

- 1) ALL DIMENSIONS IN MILLIMETRES. NO DIMENSION IS TO BE SCALED FROM THE DRAWING.
- 2) DUCTS: Ø23/25 mm PVC-TUBES
- 3) STRANDS: 15.3 mm STANDARD PE-SHEATED & GREASE-IMPREGNATED TENDON (BSS5896/3).
- 4) SURFACE FINISH: FORMSIDE: FAIR UPSIDE: STEEL FLOATED
- 5) CONCRETE: WALL PANEL: C35/45.
- 6) EXPOSURE CLASS: XC4, XF3
- 7) PLEASE ALLOW min.75 mm DISTANCE FROM POST BORE-HOLE TO CENTER LINE OF TENDON.

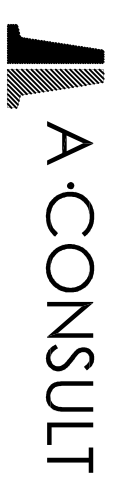
PANEL TYPE	WEIGHT APPROX. [kg]
WALL PANEL - STANDARD	6050
BUTRESS PANEL	5870

THE POST DRILLING OF PRECAST PANELS FOR PIPE CONNECTIONS OR BOLT FIXING IS PERMITTED. HOWEVER THIS WORK MUST BE CARRIED OUT WITH SPECIAL ATTENTION BEING PAID TO THE LOCATION OF THE POST TENSIONING TENDONS WITHIN THE STRUCTURE, ENSURING THAT THE OUTER DIAMETER OF ANY HOLE/APERTURE IS NO LESS 75 MM AWAY FROM THE OUTER DIAMETER OF ANY POST TENSIONING TENDONS.

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2	REVISION	01.12.2016	SV
1	FIRST ISSUE	30.11.2016	SV



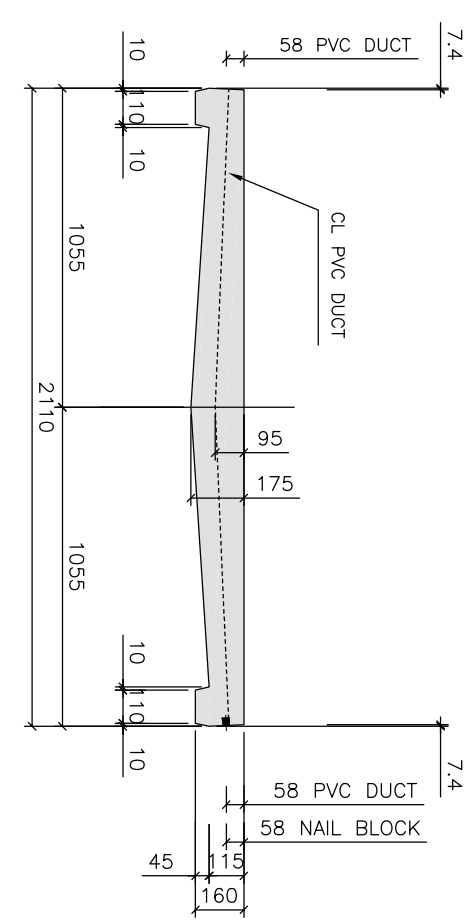
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 DN22 0LG - RETFORD
 E-mail: info@consult.dk

PROJECT
 Colwick, Nottingham
 Storage Tank

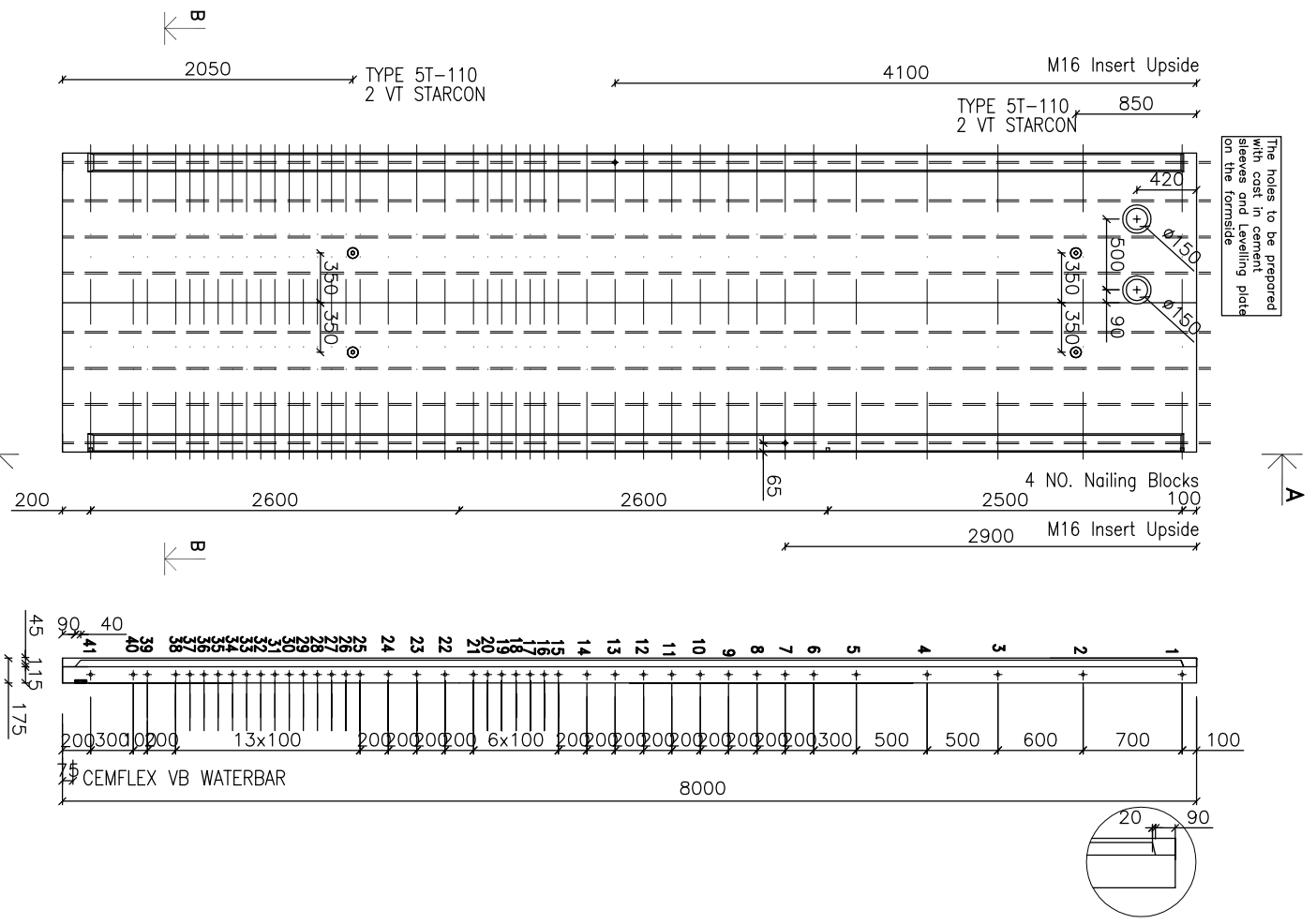
CLIENT
 Bio Dynamic UK Ltd

DRAWING DESCRIPTION
 CONCRETE LAYOUT
 WALL PANEL - TYPE 10
 TYPE NB000/48+2B/2

DRAWN: RT
CHECKED: RT
SCALE (A3): 1:50,25
REF. NO.: 430508
DATE: 30.11.2016
STATUS: 01
DRAWING NO.: A0430508-80-48-11010-2 C
ISSUE:

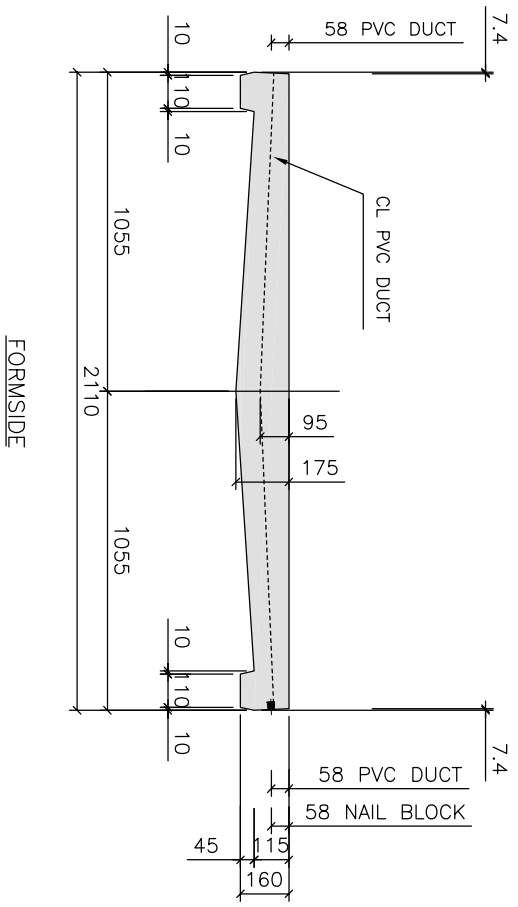
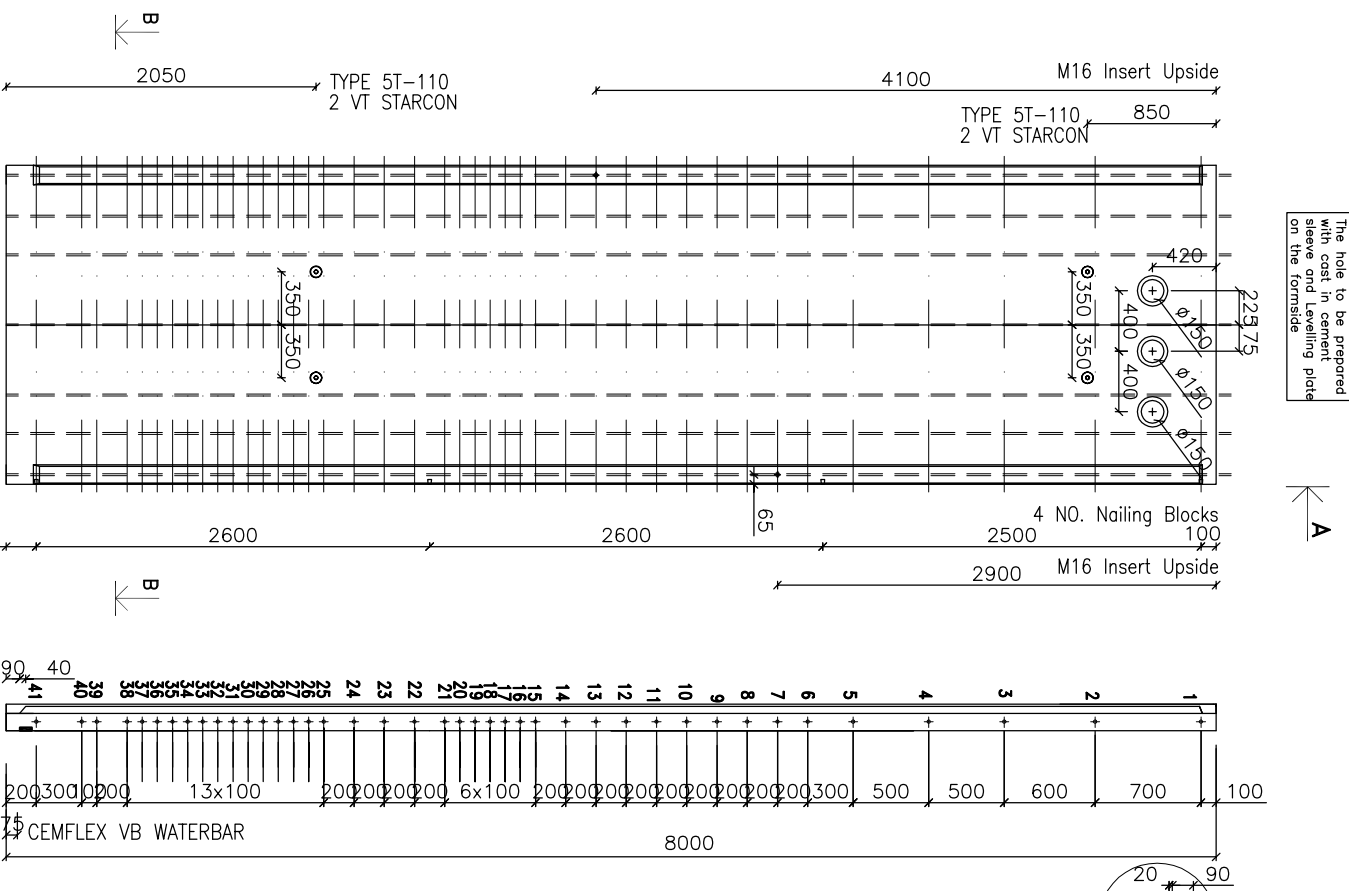


SECTION B-B 1:25



ELEVATION (FORMSIDE) 1:50

SECTION A-A 1:50



- NOTES:**
- 1) ALL DIMENSIONS IN MILLIMETRES. NO DIMENSION IS TO BE SCALED FROM THE DRAWING.
 - 2) DUCTS: Ø23/25 mm PVC-TUBES
 - 3) STRANDS: 15.3 mm STANDARD PE-SHEATED & GREASE-IMPREGNATED TENDON (BSS5896/3).
 - 4) SURFACE FINISH: FORMSIDE: FAIR UPSIDE: STEEL FLOATED
 - 5) CONCRETE: WALL PANEL: C35/45.
 - 6) EXPOSURE CLASS: XC4, XF3
 - 7) PLEASE ALLOW min.75 mm DISTANCE FROM POST BORE-HOLE TO CENTER LINE OF TENDON.

PANEL TYPE	WEIGHT APPROX. [kg]
WALL PANEL - STANDARD	6050
BUTTRESS PANEL	5870

THE POST DRILLING OF PRECAST PANELS FOR PIPE CONNECTIONS OR BOLT FIXING IS PERMITTED. HOWEVER THIS WORK MUST BE CARRIED OUT WITH SPECIAL ATTENTION BEING PAID TO THE LOCATION OF THE POST TENSIONING TENDONS WITHIN THE STRUCTURE, ENSURING THAT THE OUTER DIAMETER OF ANY HOLE/APERTURE IS NO LESS 75 MM AWAY FROM THE OUTER DIAMETER OF ANY POST TENSIONING TENDONS.

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INTERNET: www.aconsult.dk
E-mail: info@consult.dk

**THE BARN,
MANOR BUSINESS PARK
EAST DRAYTON
DN22 0LG - RETFORD**

CLIENT
Bio Dynamic UK Ltd
Colwick, Nottingham
Storage Tank

DRAWING DESCRIPTION
CONCRETE LAYOUT
WALL PANEL - TYPE 11
TYPE NB000/48+2B/2

DRAWN: RT
CHECKED: RT
SCALE (A3): 1:50,25

REF. NO.: 430508
DATE: 30.11.2016
STATUS: 01

DRAWING NO.: A0430508-80-48-11011-2C
ISSUE:

NOTES:

- 1) ALL DIMENSIONS IN MILLIMETRES. NO DIMENSION IS TO BE SCALED FROM THE DRAWING.
- 2) DUCTS: Ø23/25 mm PVC-TUBES
- 3) STRANDS: 15.3 mm STANDARD PE-SHEATED & GREASE-IMPREGNATED TENDON (BSS5896/3).
- 4) SURFACE FINISH: FORMSIDE: FAIR UPSIDE: STEEL FLOATED
- 5) CONCRETE: WALL PANEL: C35/45.
- 6) EXPOSURE CLASS: XC4, XF3
- 7) PLEASE ALLOW min.75 mm DISTANCE FROM POST BORE-HOLE TO CENTER LINE OF TENDON.

PANEL TYPE	WEIGHT APPROX. [kg]
WALL PANEL - STANDARD	6050
BUTRESS PANEL	5870

THE POST DRILLING OF PRECAST PANELS FOR PIPE CONNECTIONS OR BOLT FIXING IS PERMITTED. HOWEVER THIS WORK MUST BE CARRIED OUT WITH SPECIAL ATTENTION BEING PAID TO THE LOCATION OF THE POST TENSIONING TENDONS WITHIN THE STRUCTURE, ENSURING THAT THE OUTER DIAMETER OF ANY HOLE/APERTURE IS NO LESS 75 MM AWAY FROM THE OUTER DIAMETER OF ANY POST TENSIONING TENDONS.

STANDARD STATUS
AS BUILT

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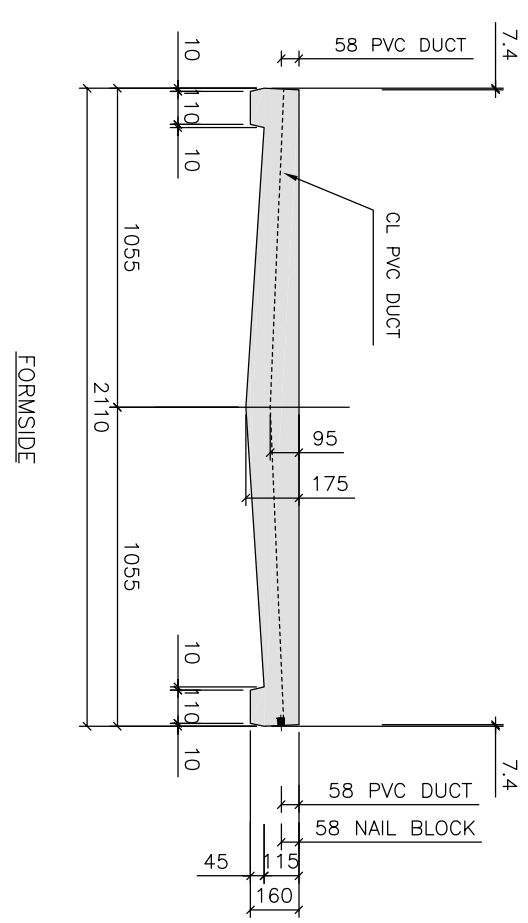
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EAST DRAYTON E-mail: info@consult.dk
DN22 0LG - RETFORD

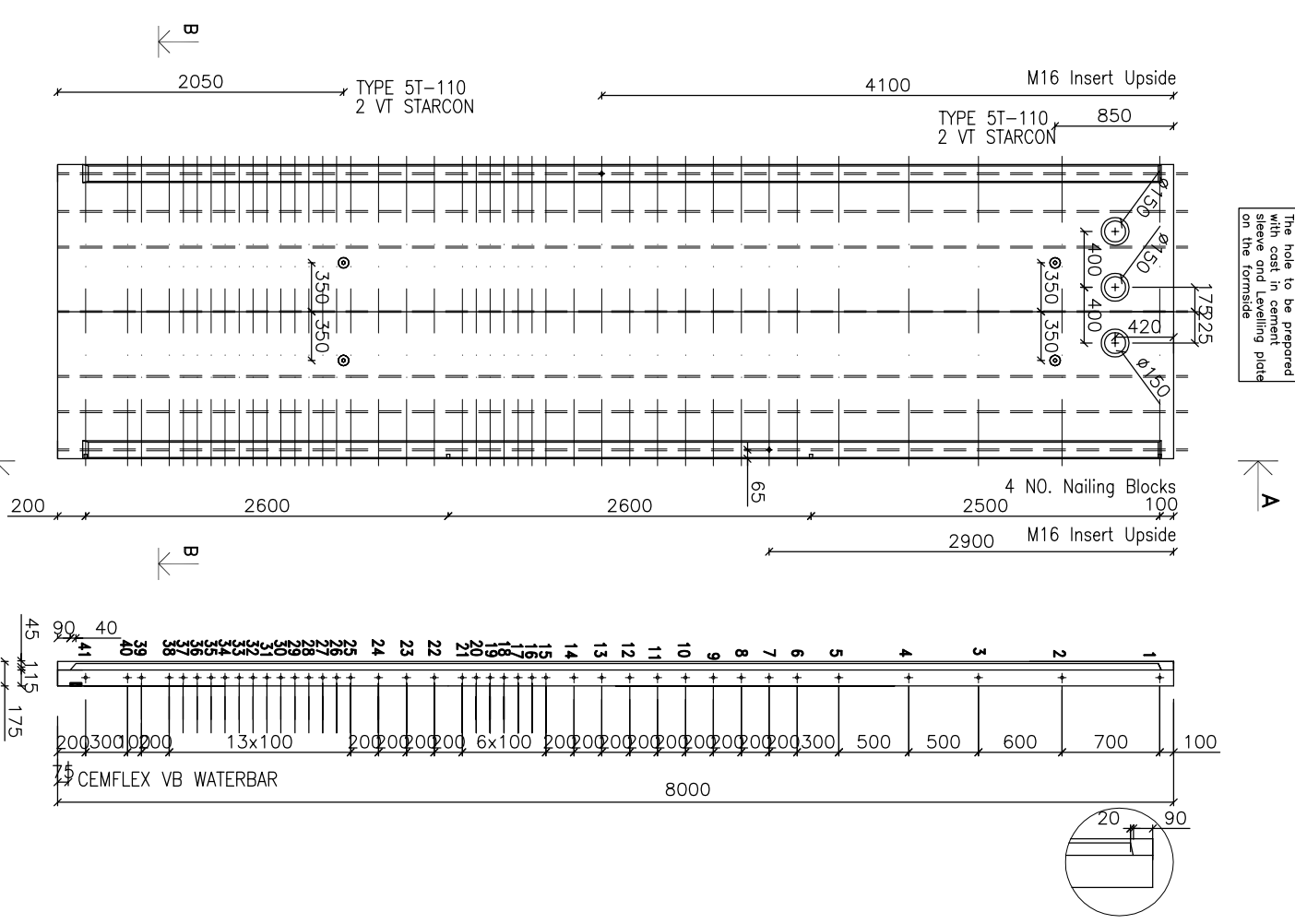
CLIENT
Bio Dynamic UK Ltd
Colwick, Nottingham
Storage Tank

DRAWING DESCRIPTION
CONCRETE LAYOUT
WALL PANEL - TYPE 12
TYPE NB000/48+2B/2

DRAWN: RT **CHECKED:** SV **SCALE (A3):** 1:50,25
REF. NO.: 430508 **DATE:** 30.11.2016 **STATUS:** 01
DRAWING NO.: A0430508-80-48-11012-2C **ISSUE:**



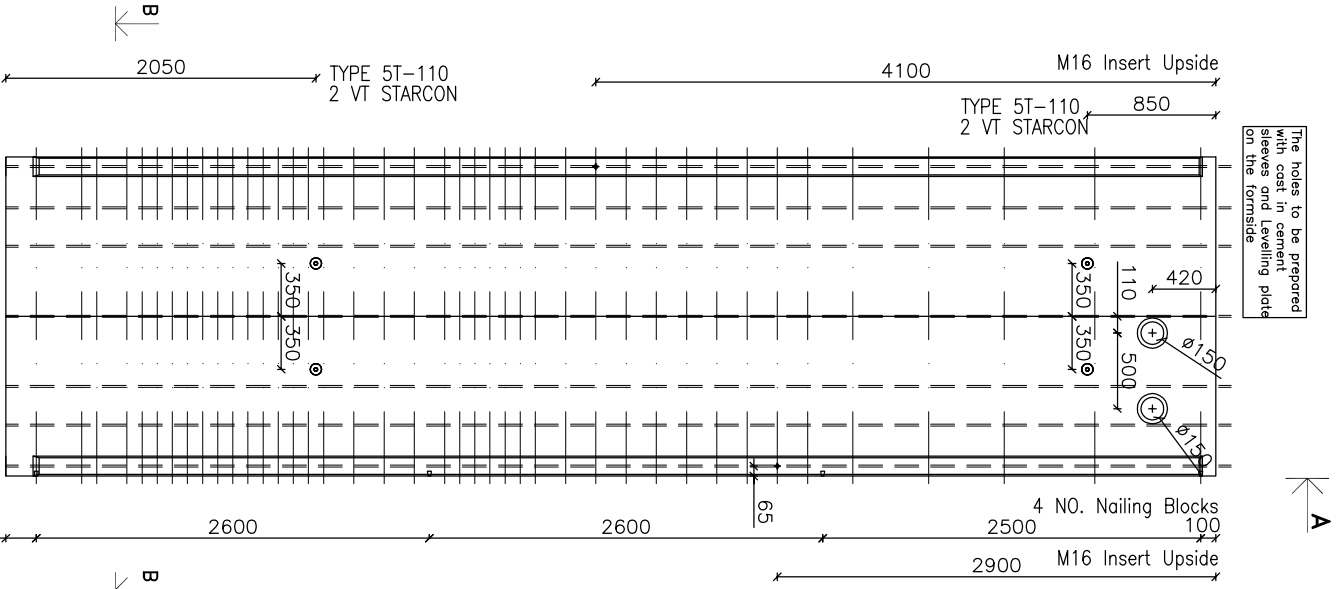
SECTION B-B 1:25



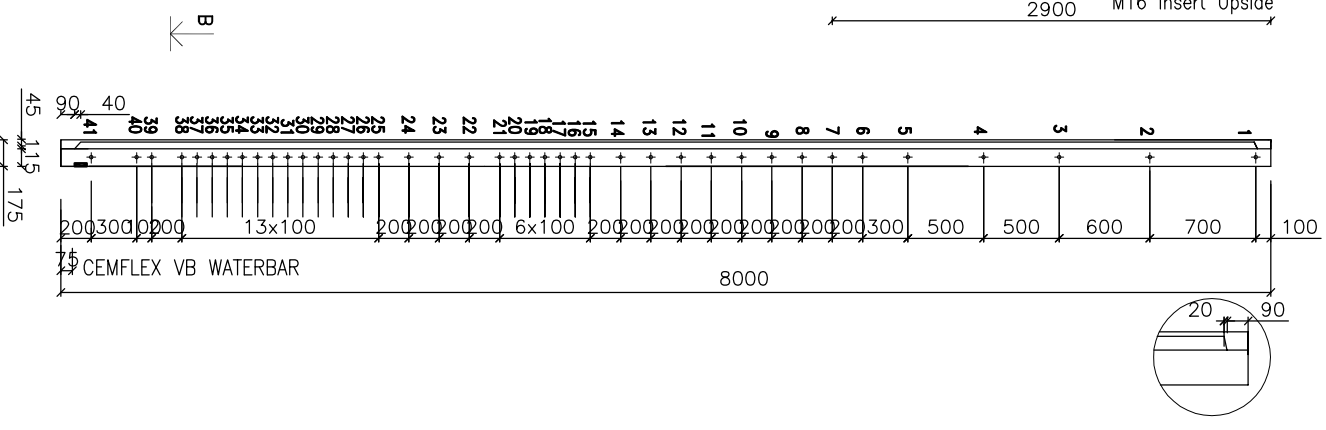
ELEVATION (FORMSIDE) 1:50

SECTION A-A 1:50

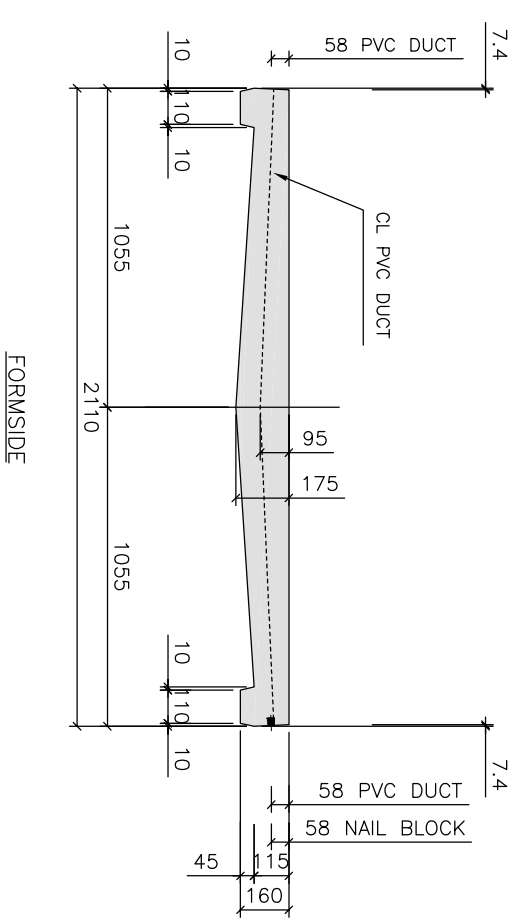
The hole to be prepared with cast in cement steel and leveling plate on the formside



ELEVATION (FORMSIDE) 1:50



SECTION A-A 1:50



SECTION B-B 1:25

- NOTES:**
- 1) ALL DIMENSIONS IN MILLIMETRES. NO DIMENSION IS TO BE SCALED FROM THE DRAWING.
 - 2) DUCTS: Ø23/25 mm PVC-TUBES
 - 3) STRANDS: 15.3 mm STANDARD PE-SHEATED & GREASE-IMPREGNATED TENDON (BSS5896/3).
 - 4) SURFACE FINISH: FORMSIDE: FAIR UPSIDE: STEEL FLOATED
 - 5) CONCRETE: WALL PANEL: C35/45.
 - 6) EXPOSURE CLASS: XC4, XF3
 - 7) PLEASE ALLOW min.75 mm DISTANCE FROM POST BORE-HOLE TO CENTER LINE OF TENDON.

PANEL TYPE	WEIGHT APPROX. [kg]
WALL PANEL - STANDARD	6050
BUTRESS PANEL	5870

THE POST DRILLING OF PRECAST PANELS FOR PIPE CONNECTIONS OR BOLT FIXING IS PERMITTED. HOWEVER THIS WORK MUST BE CARRIED OUT WITH SPECIAL ATTENTION BEING PAID TO THE LOCATION OF THE POST TENSIONING TENDONS WITHIN THE STRUCTURE, ENSURING THAT THE OUTER DIAMETER OF ANY HOLE/APERTURE IS NO LESS 75 MM AWAY FROM THE OUTER DIAMETER OF ANY POST TENSIONING TENDONS.

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INTERNET: www.aconsult.dk
E-mail: info@consult.dk

PROJECT
DN22 OLG - RETFORD

CLIENT
Colwick, Nottingham
Storage Tank

CLIENT
Bio Dynamic UK Ltd

DRAWING DESCRIPTION
CONCRETE LAYOUT
WALL PANEL - TYPE 13
TYPE NB000/48+2B/2

DRAWN: RT
CHECKED: RT
SCALE (A3): 1:50,25
REF. NO.: 430508
DATE: 30.11.2016
STATUS: 01
ISSUE: A0430508-80-48-11013-2C

NOTES:
 1) ALL DIMENSIONS IN MILLIMETRES. NO DIMENSION IS TO BE SCALED FROM THE DRAWING.

- 2) DUCTS: Ø23/25 mm PVC-TUBES
- 3) STRANDS: 15.3 mm STANDARD PE-SHEATED & GREASE-IMPREGNATED TENDON (BSS5896/3).
- 4) SURFACE FINISH:
 FORMSIDE: FAIR
 UPSIDE: STEEL FLOATED
- 5) CONCRETE: WALL PANEL: C35/45.
- 6) EXPOSURE CLASS: XC4, XF3
- 7) PLEASE ALLOW min.75 mm DISTANCE FROM POST BORE-HOLE TO CENTER LINE OF TENDON.

PANEL TYPE	WEIGHT APPROX. [kg]
WALL PANEL - STANDARD	6050
BUTRESS PANEL	5870

THE POST DRILLING OF PRECAST PANELS FOR PIPE CONNECTIONS OR BOLT FIXING IS PERMITTED. HOWEVER THIS WORK MUST BE CARRIED OUT WITH SPECIAL ATTENTION BEING PAID TO THE LOCATION OF THE POST TENSIONING TENDONS WITHIN THE STRUCTURE, ENSURING THAT THE OUTER DIAMETER OF ANY HOLE/APERTURE IS NO LESS 75 MM AWAY FROM THE OUTER DIAMETER OF ANY POST TENSIONING TENDONS.

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A	FIRST ISSUE	01.12.2016	SV

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 EAST DRAYTON
 DN22 0LG - RETFORD

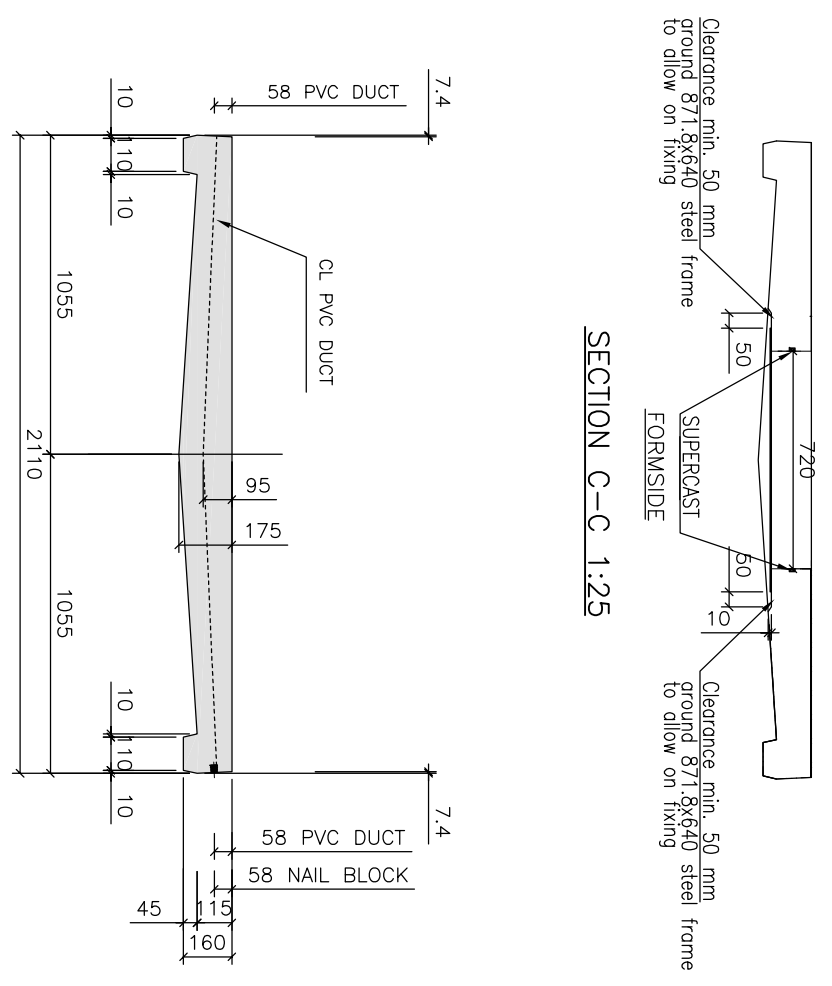
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 FAX: +44(0)1777 248452
 INTERNET: www.aconsult.dk
 E-mail: info@acconsult.dk

PROJECT
 Colwick, Nottingham
 Storage Tank

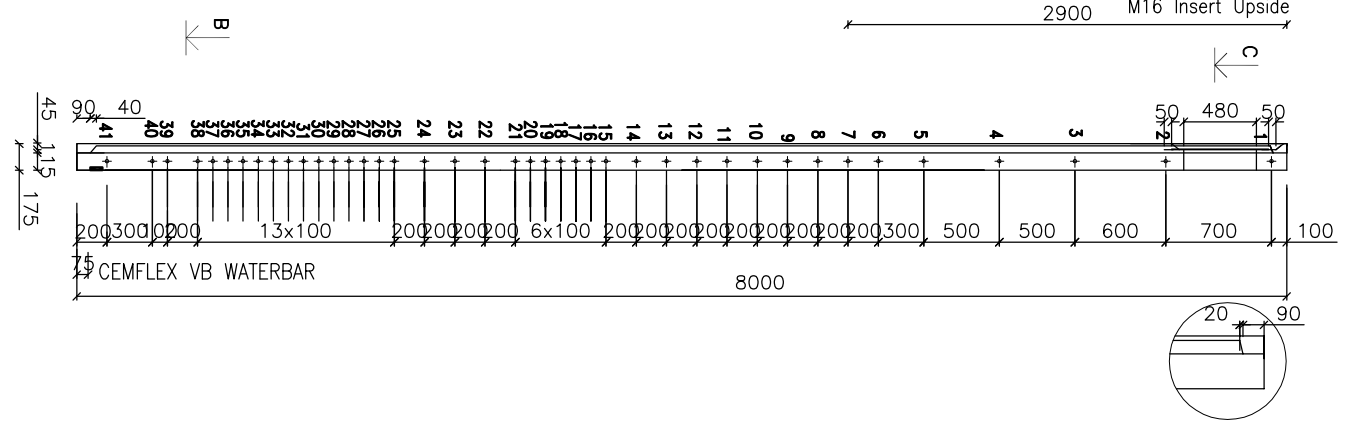
CLIENT
 Bio Dynamic UK Ltd

DRAWING DESCRIPTION
 CONCRETE LAYOUT
 WALL PANEL - TYPE 14
 TYPE NB8000/48+2B/2

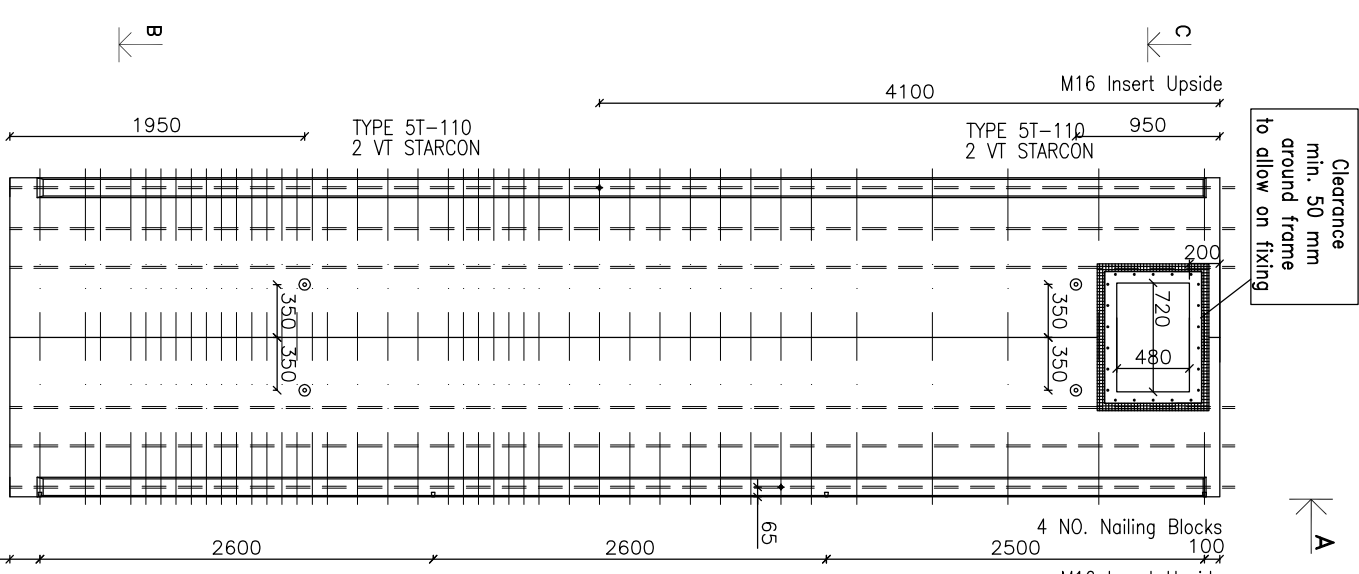
DRAWN: RT
 CHECKED: RT
 SCALE (A3): 1:50.25
 REF. NO.: 430508
 DATE: 30.11.2016
 STATUS: 01
 DRAWING NO.: A0430508-80-48-11014-2B
 ISSUE:



SECTION C-C 1:25



SECTION A-A 1:50



ELEVATION (FORMSIDE) 1:50

DRAWING NO.: A0430508-80-48-11014-2B
 ISSUE:

NOTES:

- 1) ALL DIMENSIONS IN MILLIMETRES. NO DIMENSION IS TO BE SCALED FROM THE DRAWING.
- 2) DUCTS: Ø23/25 mm PVC-TUBES
- 3) STRANDS: 15.3 mm STANDARD PE-SHEATED & GREASE-IMPREGNATED TENDON (BSS5896/3).
- 4) SURFACE FINISH: FORMSIDE: FAIR UPSIDE: STEEL FLOATED
- 5) CONCRETE: WALL PANEL: C35/45.
- 6) EXPOSURE CLASS: XC4, XF3
- 7) PLEASE ALLOW min.75 mm DISTANCE FROM POST BORE-HOLE TO CENTER LINE OF TENDON.

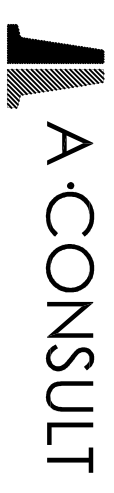
PANEL TYPE	WEIGHT APPROX. [KG]
WALL PANEL - STANDARD	6050
BUTRESS PANEL	5870

THE POST DRILLING OF PRECAST PANELS FOR PIPE CONNECTIONS OR BOLT FIXING IS PERMITTED, HOWEVER THIS WORK MUST BE CARRIED OUT WITH SPECIAL ATTENTION BEING PAID TO THE LOCATION OF THE POST TENSIONING TENDONS WITHIN THE STRUCTURE, ENSURING THAT THE OUTER DIAMETER OF ANY HOLE/APERTURE IS NO LESS 75 MM AWAY FROM THE OUTER DIAMETER OF ANY POST TENSIONING TENDONS.

AS BUILT

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ISSUE	DESCRIPTION	DATE	INIT.
A	FIRST ISSUE	01.12.2016	SV

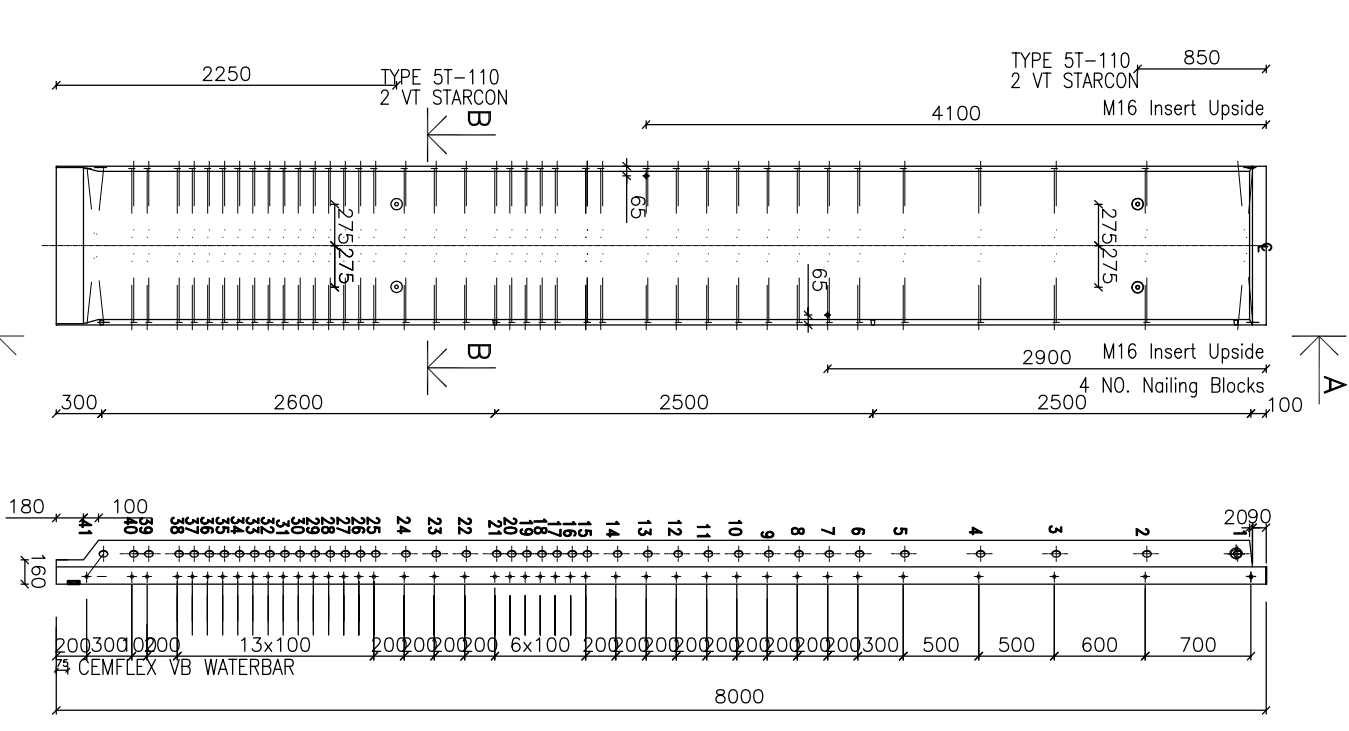


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PROJECT
 Colwick, Nottingham
 Storage Tank
CLIENT
 Bio Dynamic UK Ltd

DRAWING DESCRIPTION
 CONCRETE LAYOUT
 BUTRESS PANEL
 TYPE NB000/48+2B/2

DRAWN: RT
CHECKED: RT
SCALE (A3):
REF. NO.: 430508
DATE: 01.12.2016
STATUS: 01
DRAWING NO.: A0430508-80-48-4101-2 A
ISSUE:



ELEVATION (FORMSIDE) 1:50 SECTION A-A 1:50

SECTION B-B 1:25 FORMSIDE