Appendix C

Design Package

B1

GLEBE ISLAND DEPOT
PROPOSED
SILO STRENGTHENING

DRAWING INDEX

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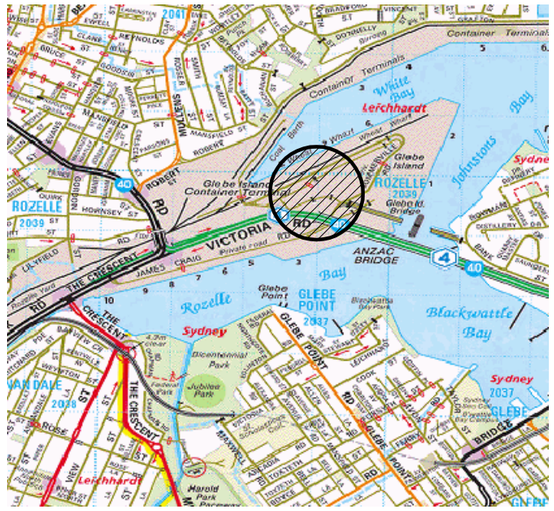

LOCALITY PLAN
NOT TO SCALE

Connell HATCH
Infrastructure for Industry

CEMENT AUSTRALIA

PRELIMINARY
NOT FOR CONSTRUCTION

CW Project No.	Drawing No.	Revision:
HH 26.01	IS 001	03

03/10/00

GENERAL NOTES

GENERAL

G1 THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH THE WORK.

DETAIL NOTES ON THESE DRAWINGS AND THE SPECIFICATION CLAUSES TAKE PRECEDENCE OVER THE GENERAL NOTES.

G2 ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT CURRENT STANDARDS AUSTRALIA CODES AND WITH THE BUILDING CODE OF AUSTRALIA.

G3 ALL DIMENSIONS SHOWN ON THESE DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR ON SITE. THESE DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS.

G4 UNLESS NOTED OTHERWISE ALL LEVELS ARE IN METRES TO AHD AND ALL DIMENSIONS ARE IN MILLIMETRES.

G5 THE STRUCTURAL COMPONENTS DETAILED ON THESE DRAWINGS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE RELEVANT STANDARDS AUSTRALIA CODE AND BUILDING CODE OF AUSTRALIA FOR THE COMPLETE FILLING OF THE BIN CELLS WITH CEMENT

G6 THE STRUCTURE HAS BEEN DESIGNED FOR WIND ACTIONS IN ACCORDANCE WITH AS/NZS1170.2:2002.

G7 THE RELEVANT PROVISIONS OF AS1170.4 HAVE BEEN APPLIED FOR THE EARTHQUAKE DESIGN

G8 THE METHOD OF CONSTRUCTION AND THE MAINTENANCE OF SAFETY DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE CONTRACTOR. IF ANY STRUCTURAL ELEMENT PRESENTS DIFFICULTY IN RESPECT OF CONSTRUCTABILITY OR SAFETY, THE MATTER SHALL BE REFERRED TO THE SUPERINTENDENT FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.

G9 DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERLOADED. TEMPORARY BRACING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR IN ORDER TO KEEP THE BUILDING WORKS AND EXCAVATIONS STABLE AT ALL TIMES.

G10 PRIOR TO CONSTRUCTION OF ALL CONCRETE FLOORS AND WALLS, THE CONTRACTOR SHALL PREPARE CONTRACTORS' WORKS DRAWINGS FOR REVIEW BY THE SUPERINTENDENT COMPRISING CO-ORDINATED FLOOR PLANS AND WALL ELEVATIONS AT 1:100 SCALE SHOWING ALL PROPOSED PENETRATIONS, OPENINGS AND CAST-IN FIXINGS. PREPARATION OF THESE DRAWINGS SHALL INCLUDE THE PLANNING AND CO-ORDINATION OF ALL TRADES WHICH MAY REQUIRE PENETRATIONS, OPENINGS AND FIXINGS. THE DRAWINGS SHALL BE PREPARED IN TIME FOR USE IN THE SCHEDULING OF REINFORCEMENT

G11 SECTION CALL UP:

SECTION NUMBER DRAWING
REFERENCE NUMBER

DETAIL CALL UP

DETAIL LETTER DRAWING
REFERENCE NUMBER

ABBREVIATIONS

GENERAL		UNITS	
&	AND	m^3	CUBIC METRE
ALT.	ALTERNATING BARS	km	KILOMETRE
APPROX.	APPROXIMATE	kN	KILONEWTON
@	AT	kPa	KILOPASCAL
AS	AUSTRALIAN STANDARD	MPa	MEGAPASCAL
C/S	BRICKWORK COURSE	m	METRE
BOT.	BOTTOM	mm	MILLIMETRE
CI	CAST IRON	N	NEWTON
CRS	CENTRES	Pa	PASCAL
CL OR ℄	CENTRE LINE	km^2	SQUARE KILOMETRE
COL	COLUMN	m^2	SQUARE METRE
C.J	CONSTRUCTION JOINT	mm^2	SQUARE MILLIMETRE
CONT.	CONTINUOUS		
CFW	CONTINUOUS FILLET WELD		
DIA. OR ø	DIAMETER		
DN	DIAMETER NOMINAL		
DRG	DRAWING		
EW	EACH WAY		
EF	EACH FACE		
FF	FAR FACE		
FSBW	FULL STRENGTH BUTT WELD		
FW	FILLET WELD		
FFL	FINISH FLOOR LEVEL		
FL OR ℄	FLAT		
FLG.	FLANGE		
GL	GROUND LINE		
HORIZ.	HORIZONTAL		
ID	INTERNAL DIAMETER		
LONG.	LONGITUDINAL		
LV	LENGTH VARIES		
MAX.	MAXIMUM		
MC	MASS CONCRETE		
MS	MILD STEEL		
MIN.	MINIMUM		
NF	NEAR FACE		
NTS	NOT TO SCALE		
NO.	NUMBER		
NSOE	NOT SHOWN ON ELEVATION		
NSOP	NOT SHOWN ON PLAN		
OPP.	OPPOSITE		
OD	OUTSIDE DIAMETER		
OA.	OVERALL		
PL OR ℄	PLATE		
RL	REDUCED LEVEL		
RC	REINFORCED CONCRETE		
REINF.	REINFORCEMENT		
SQ	SQUARE		
STAG.	STAGGERED BARS		
STD	STANDARD		
SSL	STRUCTURAL SLAB LEVEL		
T	TOP		
TYP.	TYPICAL		
U/S	UNDERSIDE		
UNO	UNLESS NOTED OTHERWISE		
VERT.	VERTICAL		

FOOTINGS

F1 FOOTINGS HAVE BEEN DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 3500 kPa. THE FOUNDATION MATERIAL SHALL BE APPROVED BY THE ENGINEER FOR THIS ALLOWABLE BEARING CAPACITY BEFORE PLACING REINFORCEMENT OR CONCRETE.

F2 THE DESIGN IS BASED ON GEOTECHNICAL INVESTIGATION REPORT NO. 4315 PREPARED BY CONNELL WAGNER DATED 23 JANUARY 2002

F3 FOOTINGS SHALL BE LOCATED CENTRALLY UNDER WALLS AND COLUMNS UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS.

F4 FOOTINGS SHALL BE CONSTRUCTED AND BACKFILLED AS SOON AS POSSIBLE FOLLOWING EXCAVATION TO AVOID EITHER SOFTENING OF THE FOUNDING MATERIAL OR DRYING OUT BY EXPOSURE.

F5 EXCAVATE FOR FOOTINGS TO THE NOMINATED SIZE AND DEPTH. FOOTING FOUNDING LEVELS ARE PROVISIONAL SUBJECT TO ACTUAL SITE CONDITIONS AND APPROVAL BY THE ENGINEER.

F6 CONCRETE SHALL BE COMPACTED BY AN IMMERSION VIBRATOR.

FORMWORK

FW1 THE DESIGN, CERTIFICATION, CONSTRUCTION, INSPECTION AND PERFORMANCE OF THE FORMWORK AND FALSE WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, EXCEPT TO THE EXTENT THAT FORMWORK DESIGN IS SHOWN ON THE STRUCTURAL DRAWINGS.

FW2 FORMWORK SHALL BE DESIGNED TO ACCOMMODATE MOVEMENTS AND LOAD RE-DISTRIBUTION DUE TO ANY POST TENSIONING.

FW3 THE FORMWORK SHALL NOT BE DESIGNED TO RELY ON RESTRAINT OR SUPPORT FROM THE PERMANENT STRUCTURE.

FW4 DESIGN INFORMATION FOR THE FOUNDATIONS UNDER THE FORMWORK SHALL BE DETERMINED BY THE CONTRACTOR FROM THE CONDITIONS EXISTING ON SITE AT THE TIME OF CONSTRUCTION.

FW5 FORMWORK CONSTRUCTION TOLERANCES AND STRIPPING TIMES SHALL COMPLY WITH AS3610 AND AS3600.

FW6 FORMED CONCRETE SURFACES SHALL HAVE FINISHES IN ACCORDANCE WITH AS3610, AS SPECIFIED.

FW7 BEFORE PLACING REINFORCEMENT IN THE FORMWORK, APPLY A RELEASE AGENT TO THE FACE OF THE FORMWORK COMPATIBLE WITH THE REQUIRED SURFACE FINISH.

FW8 DIMENSIONAL TOLERANCES SHALL COMPLY WITH AS3610 FOR THE APPROPRIATE FINISH CLASS.

FW9 CHAMFER RE-ENTRANT ANGLES AND FILLET AT CORNERS BY 25mm UNO.

FW10 BEFORE PLACING CONCRETE, REMOVE ALL WATER, DUST, AND DEBRIS FROM THE FORMWORK.

FW11 FILL ALL HOLES LEFT BY FORM TIE BOLTS WITH MORTAR MATCHING THE SURFACE COLOUR OF THE FINISHED SURFACE.

CONCRETE

C1 ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF AS3600 INCLUDING AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

C2 READYMIX CONCRETE SUPPLY SHALL COMPLY WITH AS1379.

C3 CONCRETE QUALITY - REFER SPECIFICATION

C4 PROJECT CONTROL TESTING SHALL BE CARRIED OUT ON ALL SPECIAL CLASS CONCRETE IN ACCORDANCE WITH AS1379, CLAUSE 6.5.

C5 NO ADMIXTURES CONTAINING CHLORIDES SHALL BE USED.

C6 CLEAR CONCRETE COVER TO ALL REINFORCEMENT FOR DURABILITY AND FIRE RESISTANCE SHALL BE AS SHOWN ON THE DRAWINGS.

C7 CONCRETE SIZES SHOWN DO NOT INCLUDE THICKNESSES OF APPLIED FINISHES.

C8 NO HOLES, CHASES OR EMBEDMENT OF PIPES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE SUPERINTENDENT.

C9 WHERE NOT SHOWN ON THE STRUCTURAL DRAWINGS CONSTRUCTION JOINTS SHALL BE LOCATED TO THE APPROVAL OF THE SUPERINTENDENT.

C10 REINFORCEMENT SHALL BE SUPPORTED ON PURPOSE MADE CONCRETE, STEEL OR PLASTIC SUPPORTS DEPENDING ON THE EXPOSURE CONDITION TO PROVIDE THE SPECIFIED CLEAR COVER.
AT EXTERNAL SURFACES EITHER ALL PLASTIC OR CONCRETE SUPPORTS SHALL BE USED.

SUPPORTS SHALL BE LOCATED AT NOT MORE THAN 60 BAR DIAMETERS EACH WAY FOR BARS AND NOT MORE THAN 750mm EACH WAY FOR MESH.

C11 REINFORCEMENT SYMBOLS - BARS
R - ROUND
D - DEFORMED
I - INDENTED
250, 300, 500 - STRENGTH GRADE IN MPa
L - LOW DUCTILITY
N - NORMAL DUCTILITY
E - EARTHQUAKE DUCTILITY

e.g. D500N16
- DEFORMED BAR, GRADE 500 MPa, NORMAL DUCTILITY, 16mm DIAMETER

REINFORCEMENT SYMBOLS - WELDED MESH
R, D, I AS FOR BARS
500 - STRENGTH GRADE
S - SQUARE MESH
R - RECTANGULAR MESH
L, N, E - DUCTILITY AS FOR BARS

C12 BARS DENOTED N SHALL BE TYPE D500N.

BARS DENOTED R SHALL BE TYPE R250N.

CONCRETE (cont')

C13 REINFORCEMENT NOTATION

N12-300 — N = TYPE OF BAR; 12 = BAR DIAMETER (mm); 300 = SPACING (mm)

3N28 — 3 = NUMBER OF BARS; N = TYPE OF BAR; 28 = BAR DIAMETER (mm)

THE FIGURE FOLLOWING THE MESH SYMBOLS RL....., SL..... OR L..... IS THE REFERENCE NUMBER FOR MESH IN ACCORDANCE WITH AS4671.

C14 PULL OUT BARS OR OTHER BARS WHICH ARE SHOWN ON THE DRAWINGS TO BE RE-BENT ON SITE SHALL BE MADE FROM QUENCHED AND SELF TEMPERED STEEL. THE BARS SHALL BE POSITIONED WITH THE INITIAL BEND CLEAR OF THE CONCRETE FACE.

C15 SITE BENDING OF REINFORCEMENT BARS SHALL BE DONE WITHOUT HEATING USING A RE-BENDING TOOL. THE BARS SHALL BE RE-BENT AGAINST A FLAT SURFACE OR A PIN WITH A DIAMETER NOT LESS THAN THE MINIMUM PIN SIZE PRESCRIBED IN AS3600-2001.

C16 REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION.

C17 WHERE TRANSVERSE TIE BARS ARE NOT SHOWN PROVIDE N12-250 SPLICED WHERE NECESSARY AND LAP WITH MAIN BARS 400mm UNLESS NOTED OTHERWISE.

C18 SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN POSITIONS SHOWN ON THE STRUCTURAL DRAWINGS OR IN POSITIONS OTHERWISE APPROVED IN WRITING BY THE SUPERINTENDENT. LAPS SHALL BE IN ACCORDANCE WITH AS3600 AND NOT LESS THAN THE DEVELOPMENT LENGTH FOR EACH BAR.

C19 WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE SUPERINTENDENT.

AT JOGGLES IN BARS, THE MAXIMUM OFFSET SHALL BE 1 BAR DIAMETER OVER A LENGTH OF 12 BAR DIAMETERS.

C20 REINFORCEMENT COUPLERS, UNLESS SHOWN ON THE DRAWINGS, SHALL NOT BE USED WITHOUT APPROVAL BY THE SUPERINTENDENT.

C21 ALL DOWELS PLACED IN DOWEL JOINTS AND IN EXPANSION JOINTS IN CONCRETE SLABS SHALL BE PLACED WITHIN THE FOLLOWING TOLERANCES.
VERTICAL ALIGNMENT ± 2 DEGREES FROM LEVEL
HORIZONTAL ALIGNMENT ± 2 DEGREES FROM A LINE PERPENDICULAR TO THE FACE OF THE JOINT.
POSITION ± 5 mm

C22 GIVE A MINIMUM OF 24 HOURS NOTICE FOR INSPECTION OF REINFORCEMENT BY THE SUPERINTENDENT AS REQUIRED BY THE SPECIFICATION.

C23 THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE SHALL BE COMPACTED WITH MECHANICAL VIBRATORS.

C24 CURING OF ALL CONCRETE IS TO BE ACHIEVED BY KEEPING SURFACES CONTINUOUSLY WET FOR A PERIOD OF 7 DAYS, UNLESS SPECIFIED OTHERWISE. APPROVED SPRAY ON CURING COMPOUNDS THAT COMPLY WITH AS3799 MAY BE USED WHERE FLOOR FINISHES WILL NOT BE AFFECTED. POLYTHENE SHEETING OR WET HESSIAN MAY BE USED TO RETAIN CONCRETE MOISTURE WHERE PROTECTED FROM WIND AND TRAFFIC. CURING IS TO COMMENCE IMMEDIATELY AFTER CONCRETE PLACEMENT.

C25 CONSTRUCTION SUPPORT PROPPING IS TO BE LEFT IN PLACE WHERE NEEDED TO AVOID OVERSTRESSING THE STRUCTURE DUE TO CONSTRUCTION LOADING. BACKPROPPING IS SUBJECT TO APPROVAL BY THE SUPERINTENDENT.

STRUCTURAL STEEL

S1 ALL WORKMANSHIP AND MATERIAL SHALL BE IN ACCORDANCE WITH AS4100 AND AS1554 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

S2 UNLESS NOTED OTHERWISE, ALL STEEL SHALL BE OF THE FOLLOWING GRADE IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARD.

TYPE OF STEEL	GRADE
UNIVERSAL BEAMS AND COLUMNS, PARALLEL FLANGE CHANNELS, LARGE ANGLES TO AS/NZS3679.1	300 PLUS
FLATS, SMALL ANGLES, TAPER FLANGE BEAMS AND COLUMNS TO AS/NZS3679.1	250
WELDED SECTIONS TO AS/NZS3679.2	300
HOT ROLLED PLATES, FLOOR PLATES AND SLABS TO AS/NZS3678	250
HOLLOW SECTIONS TO AS1163 - CIRCULAR SECTIONS LESS THAN 265mm OUTSIDE DIAMETER - SECTIONS OTHER THAN THE ABOVE	C250 C350
COLD FORMED PURLINS AND GIRTS TO AS1397	G450 Z350

S3 WORKSHOP FABRICATION DRAWINGS SHALL BE SUBMITTED TO THE SUPERINTENDENT IN ACCORDANCE WITH THE SPECIFICATION FOR REVIEW AT LEAST 7 DAYS PRIOR TO COMMENCEMENT OF FABRICATION. FABRICATION SHALL NOT COMMENCE WITHOUT THE SUPERINTENDENT'S APPROVAL OF THE WORKSHOP DRAWINGS.

S4 THE CONTRACTOR SHALL ENSURE THAT FIXINGS BETWEEN STEELWORK AND OTHER BUILDING ELEMENTS ARE COORDINATED AND INSTALLED. WHERE POSSIBLE THE FIXINGS SHALL BE SHOWN ON THE WORKSHOP FABRICATION DRAWINGS.

S5 THE FABRICATION AND ERECTION OF THE STRUCTURAL STEELWORK SHALL BE SUPERVISED BY A QUALIFIED PERSON EXPERIENCED IN SUCH SUPERVISION, IN ORDER TO ENSURE THAT ALL REQUIREMENTS OF THE DESIGN ARE MET.

S6 ALL MEMBERS SHALL BE SUPPLIED IN SINGLE LENGTHS. SPLICES SHALL ONLY BE PERMITTED IN LOCATIONS SHOWN ON THE STRUCTURAL DRAWINGS.

S7 ALL STEELWORK SHALL BE SECURELY TEMPORARILY BRACED BY THE CONTRACTOR AS NECESSARY TO STABILISE THE STRUCTURE DURING ERECTION.

S8 BOLTING:
BOLTING CATEGORIES ARE IDENTIFIED ON THE STRUCTURAL DRAWINGS IN THE FOLLOWING MANNER.

BOLT CATEGORY COMMENTS:
4.6/S COMMERCIAL BOLTS OF GRADE 4.6 TO AS1111 SNUG TIGHTENED
8.8/S HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS1252 SNUG TIGHTENED
8.8/TB HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS1252 FULLY TENSIONED TO AS4100 AS A BEARING TYPE JOINT
8.8/TF HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS1252 FULLY TENSIONED TO AS4100 AS A FRICTION TYPE JOINT WITH FAYING SURFACES LEFT UNCOATED U.N.O.

S9 UNLESS NOTED OTHERWISE ALL BOLTS SHALL BE M20 CATEGORY 8.8/S. NO CONNECTION SHALL HAVE LESS THAN 2 BOLTS. ALL BOLTS AND WASHERS SHALL BE GALVANISED. ALL HOLES SHALL BE 2MM LARGER THAN THE BOLT DIAMETER UNLESS NOTED OTHERWISE.

S10 /TB AND /TF BOLT CATEGORIES SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 15 OF AS4100, USING EITHER THE PART-TURN METHOD OR THE DIRECT-TENSION INDICATOR METHOD.

S11 WELDING:
ALL WELDING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS1554.1. ELECTRODES SHALL BE EITHER TO AS1553, AS1858, AS2203 OR AS2717, AS APPROPRIATE

UNLESS NOTED OTHERWISE, ALL FILLET WELDS SHALL BE 6mm CONTINUOUS CATEGORY SP USING E48XX ELECTRODES OR EQUIVALENT. ALL BUTT WELDS SHALL BE COMPLETE PENETRATION BUTT WELDS CATEGORY SP TO AS1554.1 UNO.

THE EXTENT OF NON-DESTRUCTIVE WELD EXAMINATION SHALL BE AS NOTED BELOW UNLESS OTHERWISE NOTED.

RADIOGRAPHIC OR ULTRASONIC EXAMINATION SHALL BE TO AS1554.1, AS2177.1 AND AS2207 AS APPROPRIATE.

TYPE OF WELD AND CATEGORY	EXAMINATION METHOD	EXTENT (% OF TOTAL LENGTH OF WELD TYPE)
FILLET WELDS, GP + SP	VISUAL INSPECTION	100
BUTT WELDS, GP	VISUAL INSPECTION	100
BUTT WELDS, SP	VISUAL INSPECTION	100
BUTT WELDS, SP	ULTRASONIC TESTING	10

S12 GROUT ALL STEEL BASES BY DRY PACKING USING GROUT WHICH IS NON-SHRINK AND HAS A MINIMUM COMPRESSIVE STRENGTH AT 7 DAYS OF 40 Mpa.

S13 PROTECTIVE COATING:
STRUCTURAL STEELWORK NOT ENCASED IN CONCRETE SHALL HAVE THE FOLLOWING PROTECTIVE COATING UNLESS STATED OTHERWISE IN THE SPECIFICATION.

INTERNAL MEMBERS - ALL SURFACES
PRIMER: HIGH BUILD ZINC PHOSPHATE TO GPC - C- 29/2 A
SURFACE PREPARATION: POWER TOOL CLEAN TO AS1627.2 OR ABRASIVE BLAST CLEAN TO AS1627.4 CLASS 2
DRY FILM THICKNESS: MINIMUM 75 MICRONS
EXTERNAL MEMBERS: REFER TO SPECIFICATION

S14 STEELWORK INTENDED TO BE CONCRETE ENCASED SHALL BE UNPAINTED. ENCASING CONCRETE SHALL BE GRADE N32 UNLESS NOTED OTHERWISE PROVIDING A COVER ADEQUATE TO SUIT FIRE RATING OR EXPOSURE CONDITIONS. CONCRETE ENCASEMENT SHALL BE CENTRALLY REINFORCED WITH 5mm WIRE TO AS4617 OR 6mm STRUCTURAL GRADE BARS TO AS4617 AT 150mm PITCH.

CARBON FRP APPLICATION GUIDELINES

FR1 THE FOLLOWING GUIDELINES MUST BE CONFIRMED WITH THE MANUFACTURER OF THE FRP AND ITS BONDING SYSTEM AND ITS REQUIREMENTS COMPLIED WITH IN ALL RESPECTS. SUBMIT A FULL METHOD STATEMENT FOR COMMENT PRIOR TO EXECUTING THIS WORK
FRP SYSTEM TO BE MBT 'MBRACE' FRP COMPOSITE STRENGTHENING SYSTEM OR SIKA WRAP OR APPROVED EQUIVALENT.
THE INSTALLATION OF THE STRENGTHENING SYSTEM SHALL BE PERFORMED BY SUITABLY QUALIFIED AND TRAINED WORKERS, WITHOUT EXCEPTION, THE SYSTEM MANUFACTURER OR A RECOGNISED INDEPENDENT BODY WILL HAVE CERTIFIED THESE WORKERS.

FR2 PREPARATION OF THE SUBSTRATE:
ANY UNSOUND MATERIAL ON THE SUBSTRATE TO BE REMOVED AND REPLACED USING APPROPRIATE EPOXY MORTAR. PREPARE SUBSTRATE BY SHOTBLASING, NEEDLE GUN OR GRINDING, TO REMOVE THE CONCRETE LAITENCE. ALL CRACKS, BLOW HOLES AND SURFACE DEFECTS SHALL BE REPAIRED PRIOR TO PLACING THE FRP STRIPS. WHERE REPAIR OF THE CONCRETE SUBSTRATE IS REQUIRED. THE PREPARED SURFACE SHOULD NOT DEVIATE MORE THAN 5mm OVER 2m OR 1mm OVER 0.3m. THE PREPARED SURFACE SHALL RESEMBLE COARSE SANDPAPER (APPROX. 60 GRIT) WITH MINOR EXPOSURE OF AGGREGATES. ANY FILLING PUTTY SHALL MEET ALL REQUIREMENTS CONCERNING CONCRETE REPAIR PRODUCTS. THE APPLICATION SHALL BE ACCORDING TO THE SPECIFICATIONS OF THE MANUFACTURER AND THE COMPATIBILTY OF THE PUTTY AND RESIN FOR THE SHEET APPLICATION SHALL BE PROVED.
THE PREPARED SURFACE SHALL BE DUST FREE BEFORE FURTHER APPLICATION OF THE STRENGTHENING TECHNIQUE. THIS CAN BE ACHIEVED BY CLEANING BY MEANS OF VACUUM OR OIL FREE COMPRESSED AIR.
ANY PRIMER APPLIED SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS GIVEN BY THE MANUFACTURER.
ANY SHARP CORNERS OF COLUMNS SHALL BE CHAMFERED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS

FR3 HANDLING OF FRP FABRIC:
CARE SHALL BE TAKEN TO AVOID UNRAVELLING OF THE FABRIC ENDS.

FR4 CUTTING THE FRP FABRIC:
CUTTING SHALL BE DONE BY SHARP SCISSORS OR KNIFE

FR5 CARBON FRP INSTALLATION:
THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATION
THE AMBIENT AIR TEMPERATURE WILL LIE WITHIN THE RANGE OF 5°C TO 35°C WHEN ADHESIVELY BONDING OR LAMINATING. UNDER NO CIUMSTANCES SHOULD THIS WORK BE PERFORMED WHEN RAINING OR IN FOGGY OR OTHER HIGH HUMIDITY CONDITIONS. THE CONCRETE MUST BE DRY AND FREE OF SURFACE MOISTURE WITH A MEASURED MAXIMUM CONCRETE WATER CONTENT BELOW 4.5% IN ANY INSTANCE, THE TEMPERATURE OF THE CONCRETE SUBSTRATE SHALL BE AT LEAST 8°C.

FR6. ALL TESTING SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS

CARBON FRP PROPERTIES

CF1 PERFORMANCE REQUIREMENTS FOR FRP FABRIC

FIBRE WEIGHT	- 300g/m^2 (IN PRINCIPAL DIRECTION)
ULTIMATE FIBRE TENSILE STRENGTH	- 3500 MPa
MODULUS OF ELASTICITY	- 230 GPa
ULTIMATE STRAIN	- 1.5 %

PRELIMINARY
NOT FOR CONSTRUCTION

Rev.	Date	Revision Details	Drn	Ver.	App.
03	30.05.05	D. A. ISSUE	RAS		
02	16.05.05	TENDER ISSUE	DML		
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Client: CEMENT AUSTRALIA

Project: GLEBE ISLAND DEPOT PROPOSED SILO STRENGTHENING

Drawn DML	Signed	Date
Designed PHHS	Signed	Date
Verified	Signed	Date
Approved	Signed	Date

Drawing Title: GENERAL NOTES

Project No. HH 26.01
Scale
Sheet Size B1
Drawing No. IS 002
Rev. 03 00/00/00

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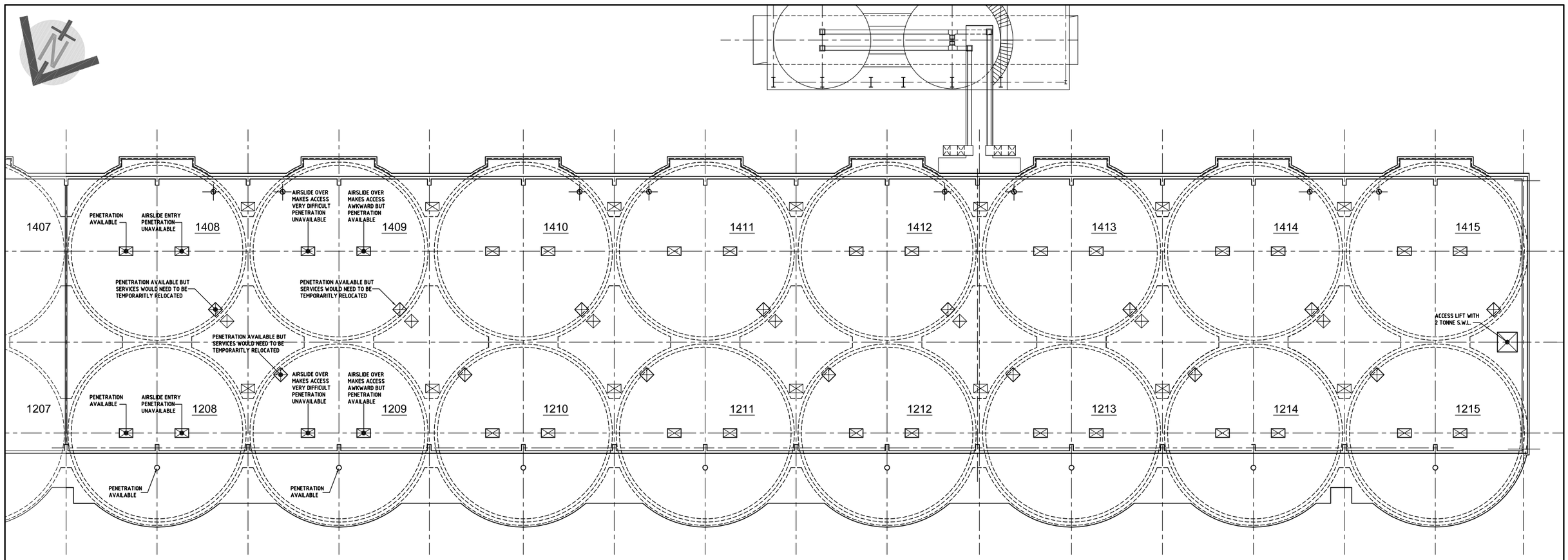

SILO ROOF PLAN
CONSTRUCTION ACCESS PENETRATIONS
SCALE 1:100

PRELIMINARY
NOT FOR CONSTRUCTION

Rev.	Date	Revision Details	Drn	Ver.	App.	Rev.	Date	Revision Details	Drn	Ver.	App.
03	30.05.05	D. A. ISSUE	RAS								
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Project: GLEBE ISLAND DEPOT
PROPOSED
SILO STRENGTHENING

Drawn	DML	Signed	Date
Designed	PHHS	Signed	Date
Verified		Signed	Date
Approved		Signed	Date

Drawing Title: SILO
ROOF PLAN
FOR BIN CONSTRUCTION ACCESS

Project No. HH 26.01
Scale 1:100
Sheet Size B1
Drawing No. IS 007
Rev. 03

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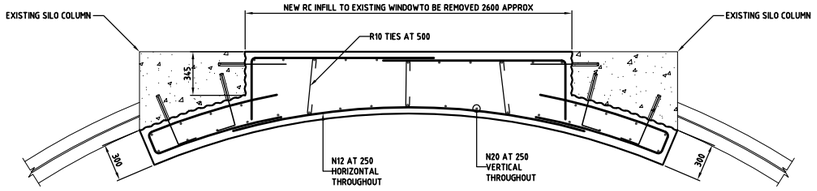
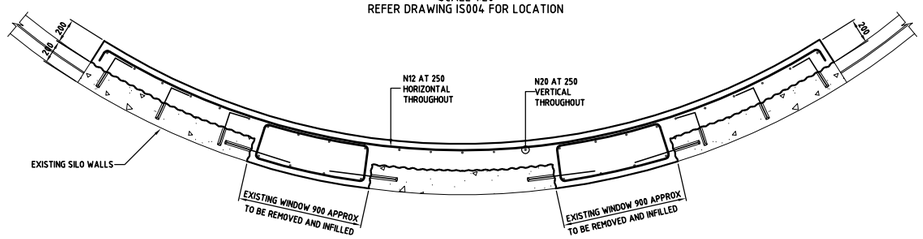


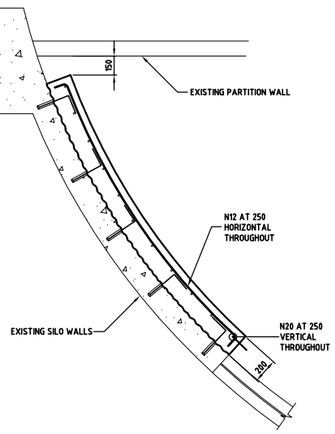
TYPICAL PLAN ON WALL STRENGTHENING TYPE WS1

SCALE 1:20
REFER DRAWING IS004 FOR LOCATION



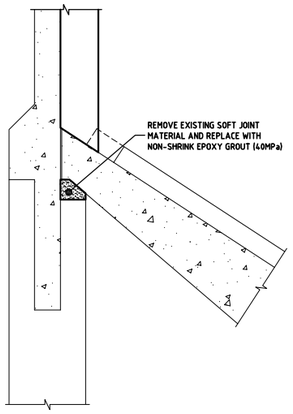
TYPICAL PLAN ON WALL STRENGTHENING TYPE WS2

SCALE 1:20
REFER DRAWING IS004 FOR LOCATION



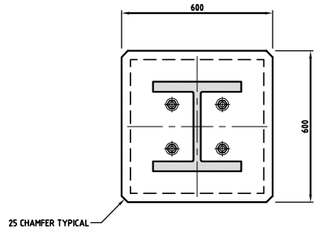
TYPICAL PLAN ON WALL STRENGTHENING TYPE WS3

SCALE 1:20
REFER DRAWING IS004 FOR LOCATION



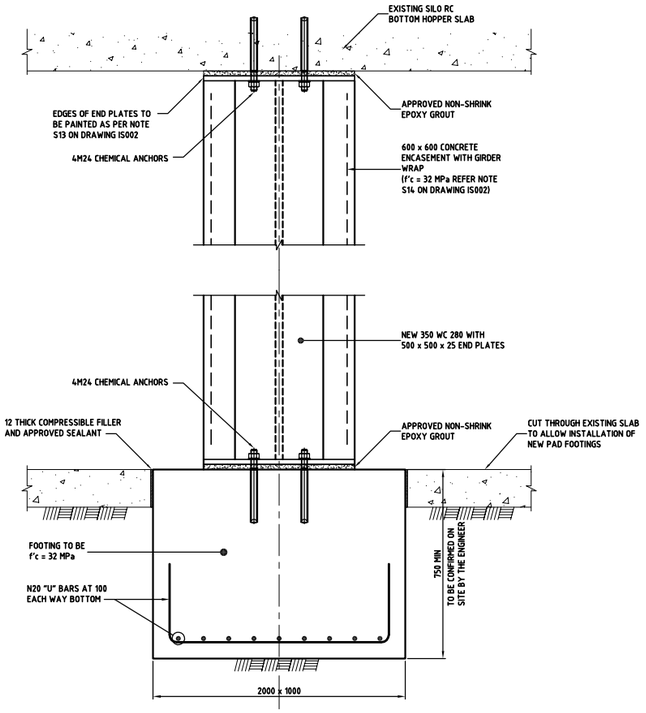
TYPICAL SECTION THROUGH EXISTING COLUMN SOFT JOINT

SCALE 1:20
CONFIRM LOCATIONS ON SITE
REQUIRED ON ALL EXISTING COLUMNS



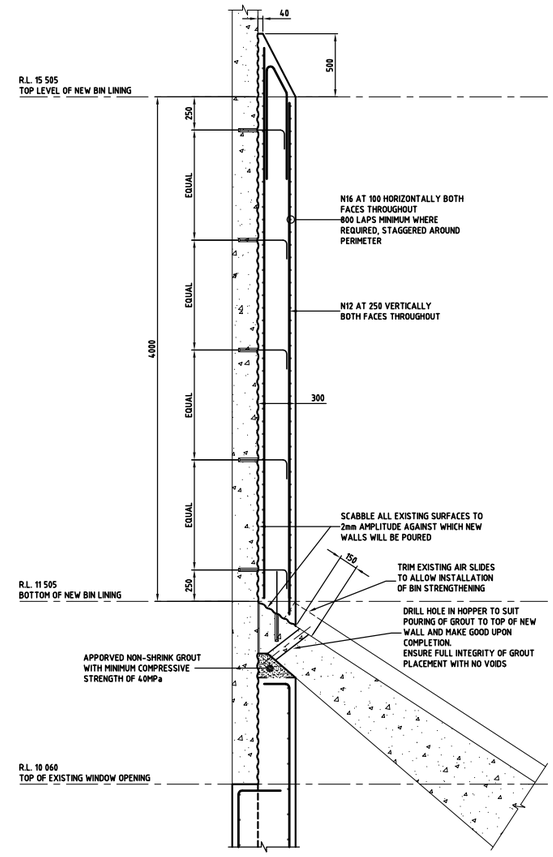
TYPICAL SECTION THROUGH NEW STEEL ENCASED COLUMN TYPE SC1

SCALE 1:10

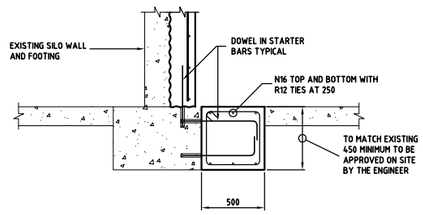


TYPICAL ELEVATION ON NEW STEEL ENCASED COLUMN TYPE SC1

SCALE 1:10
REFER DRAWING IS004 FOR LOCATION



DETAIL A (IS005)
SCALE 1:20



DETAIL B (IS005)
SCALE 1:20

NOTE
FOR THE LOCATION OF COLUMN AND WALL STRENGTHENING REFER TO DRAWING IS004

SCABBLE ALL EXISTING CONCRETE SURFACES TO 2mm AMPLITUDE WHICH NEW CONCRETE WILL BE POURED AGAINST

DOWELLED BARS
N20 DOWELS AT 1000 CTS, 140 MINIMUM EMBEDMENT INTO EXISTING CONCRETE USING LOKFIX S40 FOR VERTICAL HOLES AND LOKFIX P40 FOR HORIZONTAL HOLES (OR APPROVED EQUIVALENT) ALL INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS

IMPORTANT
ALL SILO, WALL AND COLUMN STRENGTHENING WORK TO BE DONE ONLY WHEN THE SILO BIN IS EMPTY

NON-SHRINK GROUT
WHERE NOTED ON THE DRAWINGS, ALL NON-SHRINK GROUT SHALL BE EPIREZ 380C OR APPROVED EQUIVALENT

PRELIMINARY
NOT FOR CONSTRUCTION

Rev.	Date	Revision Details	Drn	Ver.	App.	Rev.	Date	Revision Details	Drn	Ver.	App.
03	30.05.05	D. A. ISSUE	RAS								
02	16.05.05	TENDER ISSUE	DML								
01	10.05.05	PRELIMINARY ISSUE	DML								

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Email: cwsyd@connellhatch.com

Client: CEMENT AUSTRALIA

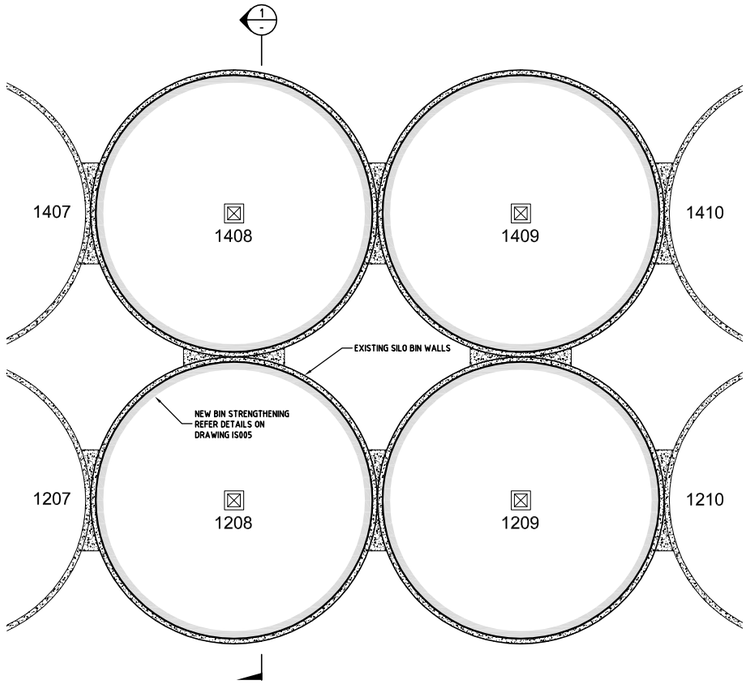
Project: GLEBE ISLAND DEPOT
PROPOSED
SILO STRENGTHENING

Drawn	DML	Signed	Date
Designed	PHHS	Signed	Date
Verified		Signed	Date
Approved		Signed	Date

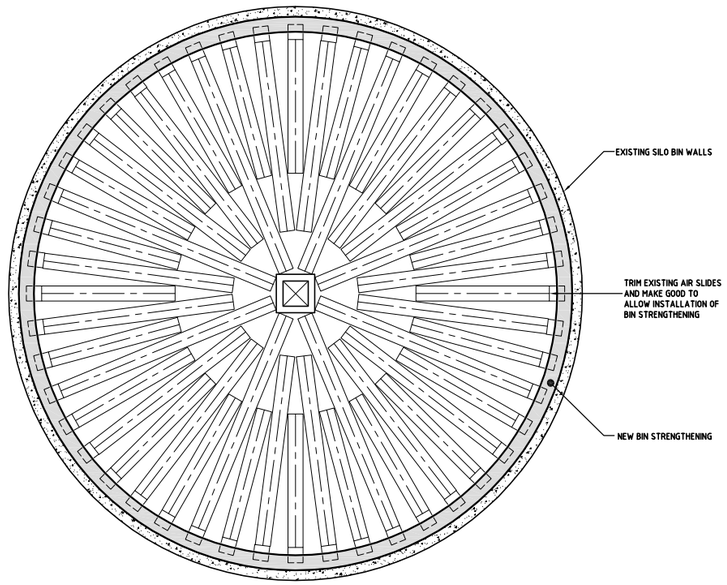
Drawing Title: SILO
BIN STRENGTHENING DETAILS

Project No. HH 26.01
Scale 1:10, 1:20
Sheet Size B1
Drawing No. IS 006
Rev. 03

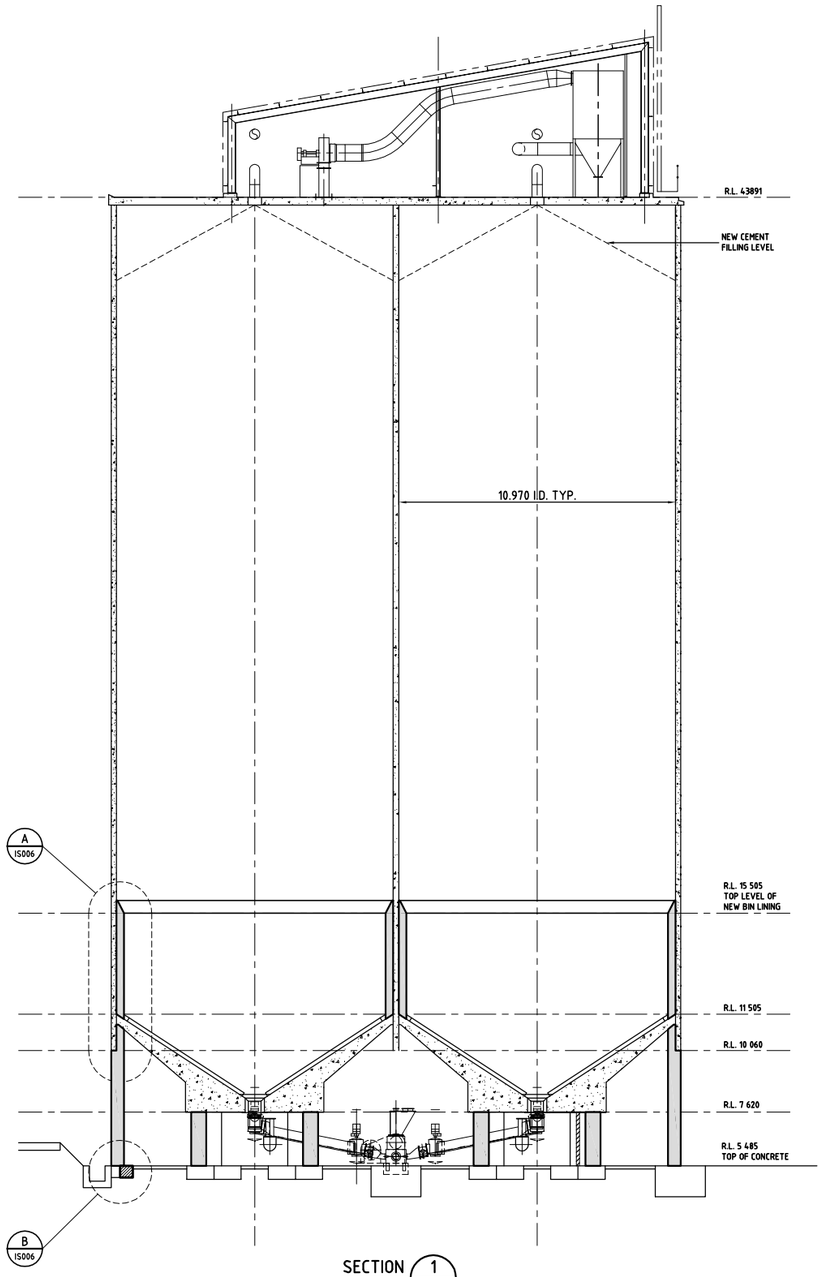
20 10 0 10 20 30 40 50 100mm
00/00/00



SILO BIN STRENGTHENING PLAN
SCALE 1:100



PLAN ON SILO BIN
TYPICAL EXISTING AIR SLIDES LAYOUT
SCALE 1:50
FOR SILOS 1208, 1209, 1408 and 1409 ONLY



SECTION 1
SCALE 1:100

PRELIMINARY
NOT FOR CONSTRUCTION

Rev.	Date	Revision Details	Drn	Ver.	App.
04	30.05.05	D. A. ISSUE	RAS		
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PROPOSED
SILO STRENGTHENING

Drawn DML	Signed	Date	
Designed PHHS	Signed	Date	
Verified	Signed	Date	
Approved	Signed	Date	

Drawing Title: SILO
BIN STRENGTHENING PLAN
AND SECTION

Project No. HH 26.01
Scale 1:100
Sheet Size B1
Drawing No. IS 005
Rev. 04

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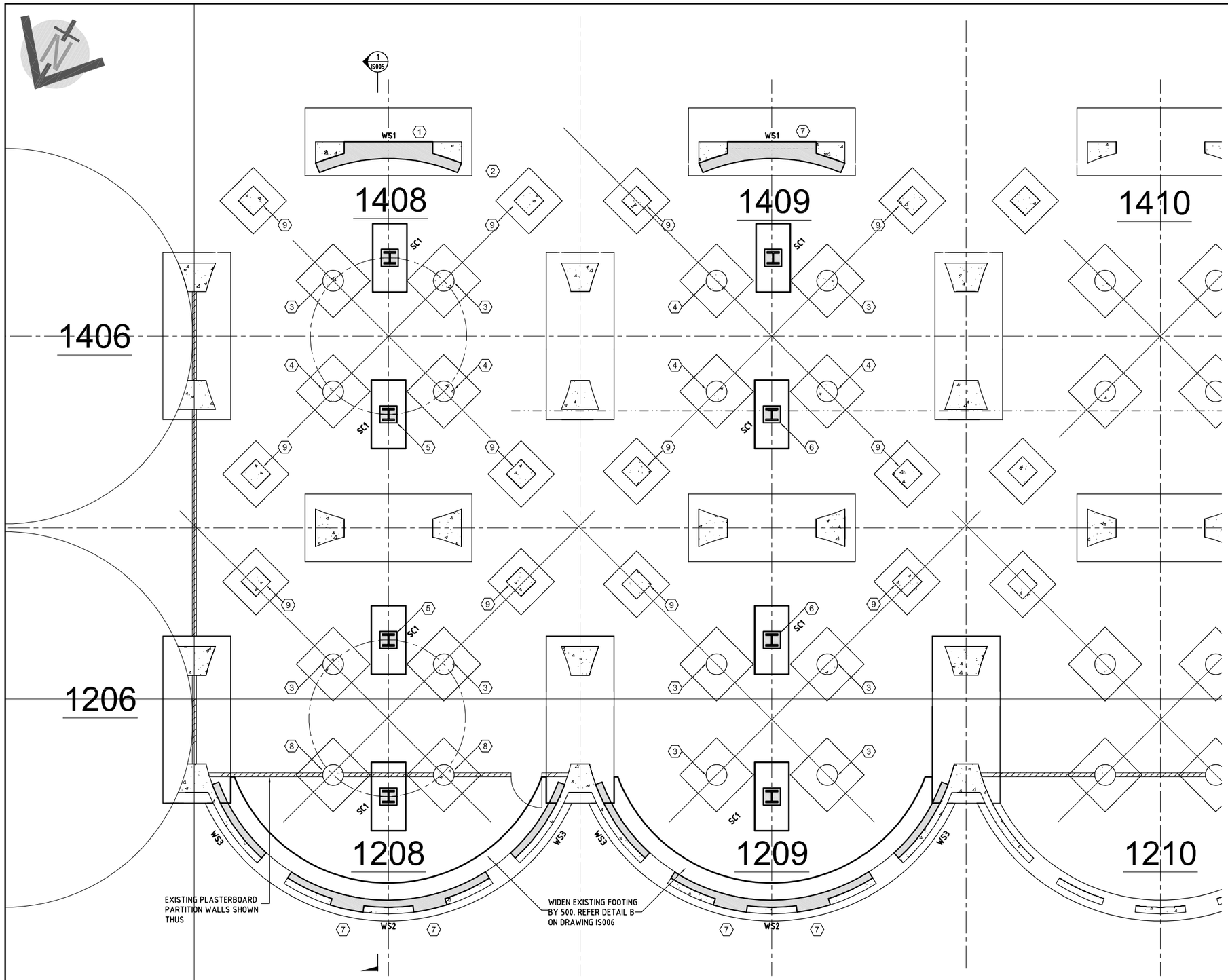
00/00/00



DEMOLITION AND REMEDIAL WORKS NOTES

1. REMOVE EXISTING DOUBLE DOORS WITH WINDOWS OVER
   REMOVE EXISTING SIGNAGE AND EMERGENCY LIGHTING AND RELOCATE TO NEW DOOR LOCATION
   INSTALL NEW WALL STRENGTHENING AS PER DETAILS ON DRAWING IS006
2. REMOVE EXISTING WINDOWS.
   INSTALL NEW DOUBLE DOORS WITH WINDOWS OVER TO MATCH EXISTING BUT TO SUIT OPENING.
   RELOCATE EXISTING SIGNAGE AND EMERGENCY LIGHTING TO NEW DOOR LOCATION
3. INSTALL 6 LAYERS OF CARBON FRP WRAP TO CIRCULAR COLUMN IN ACCORDANCE WITH NOTES ON DRAWING IS002
4. REMOVE EXISTING SERVICES ON COLUMN
   INSTALL 6 LAYERS OF CARBON FRP WRAP TO CIRCULAR COLUMN IN ACCORDANCE WITH NOTES ON DRAWING IS002
   RECONNECT EXISTING SERVICES
5. RELOCATE THE EXISTING FLURO LIGHT, WHICH IS ON THE UNDERSIDE OF THE HOPPER SLAB, TO MISS THE NEW CONCRETE ENCASED STEEL COLUMN
6. REDIRECT THE EXISTING SERVICES AND RELOCATE THE EXISTING FLURO LIGHT, WHICH ARE ON THE UNDERSIDE OF THE HOPPER SLAB, TO MISS THE NEW CONCRETE ENCASED STEEL COLUMN
7. REMOVE EXISTING WINDOWS
   INSTALL NEW WALL STRENGTHENING AS PER DETAILS ON DRAWING IS006
8. LOCALLY DEMOLISH EXISTING PARTITION WALL
   INSTALL 6 LAYERS OF CARBON FRP WRAP TO CIRCULAR COLUMN IN ACCORDANCE WITH NOTES ON DRAWING IS002
   MAKE GOOD PARTITION WALL
9. REMOVE EXISTING SERVICES ON COLUMN
   INSTALL 2 LAYERS OF CARBON FRP WRAP TO COLUMN IN ACCORDANCE WITH NOTES ON DRAWING IS002
   RECONNECT EXISTING SERVICES

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PROPOSED
SILO STRENGTHENING

Drawn	DML	Signed	Date
Designed	PHHS	Signed	Date
Verified		Signed	Date
Approved		Signed	Date

Drawing Title: SILO
FOOTING PLAN
BIN STRENGTHENING PLAN
AND SECTION

Project No. HH 26.01
Scale 1:50
Sheet Size B1
Drawing No. IS 004
Rev. 03
03/10/30

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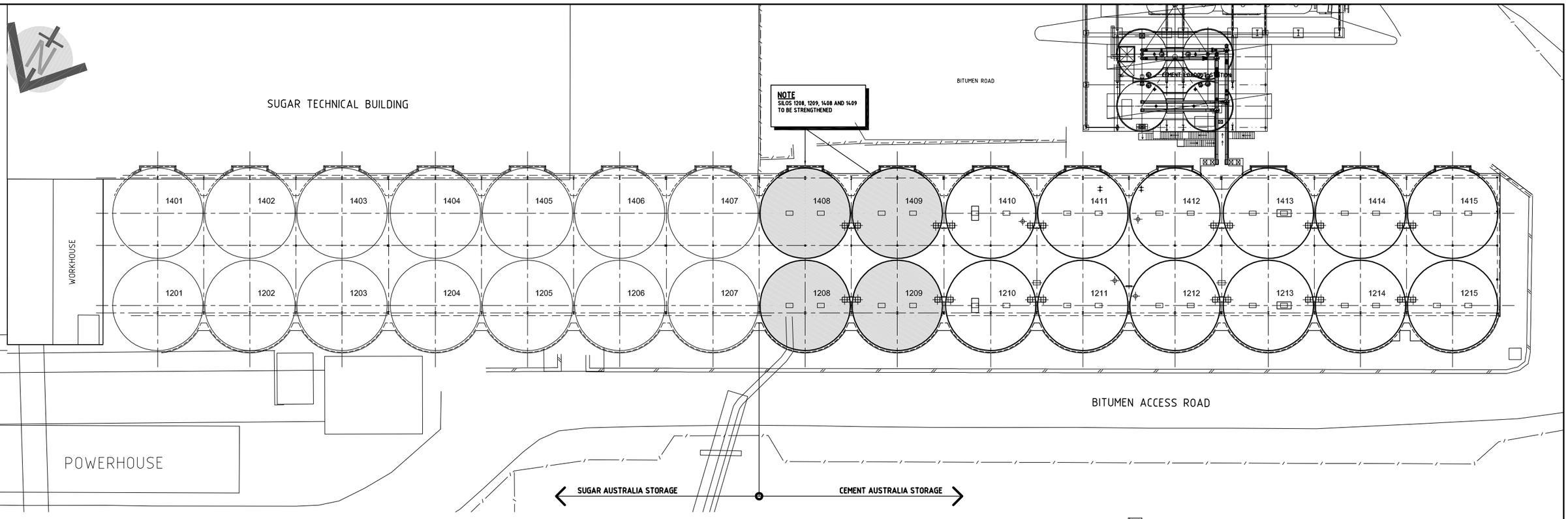
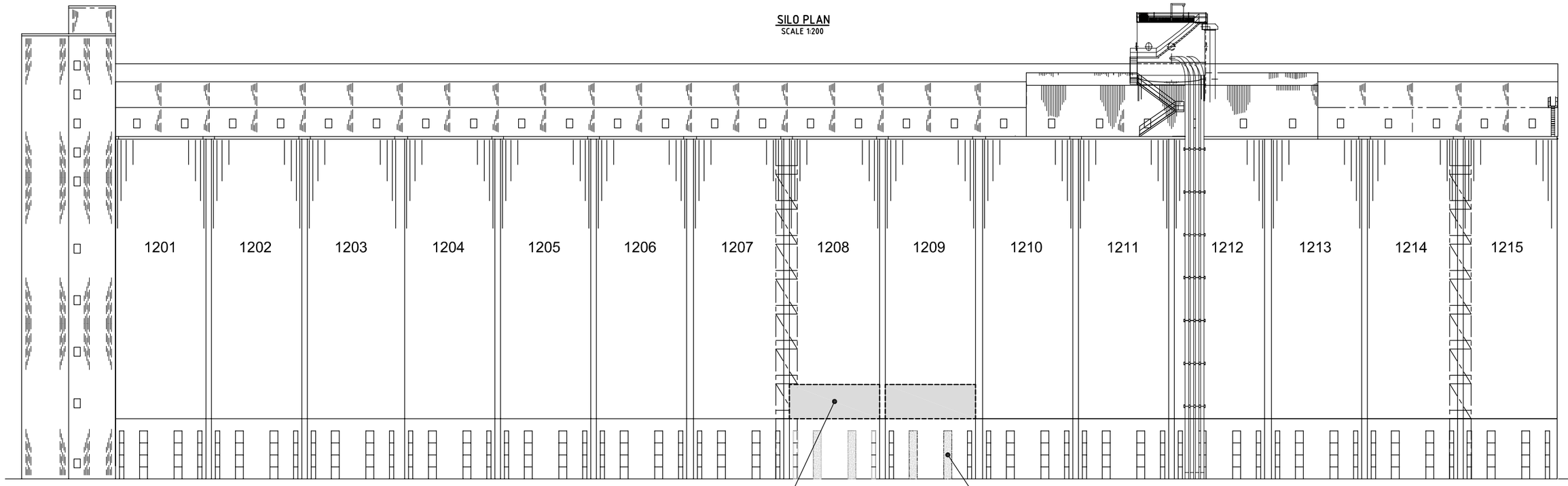


SILO PLAN
SCALE 1:200



NORTH ELEVATION
SCALE 1:200

PRELIMINARY
NOT FOR CONSTRUCTION

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03	30.05.05	D. A. ISSUE	RAS		
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PROPOSED
SILO STRENGTHENING

Drawn	DML	Signed	Date
Designed	PHHS	Signed	Date
Verified		Signed	Date
Approved		Signed	Date

Drawing Title: SITE PLAN
AND SILO ELEVATION

Project No. HH 26.01
Scale 1:200
Sheet Size B1
Drawing No. IS 003
Rev. 03
02/05/05

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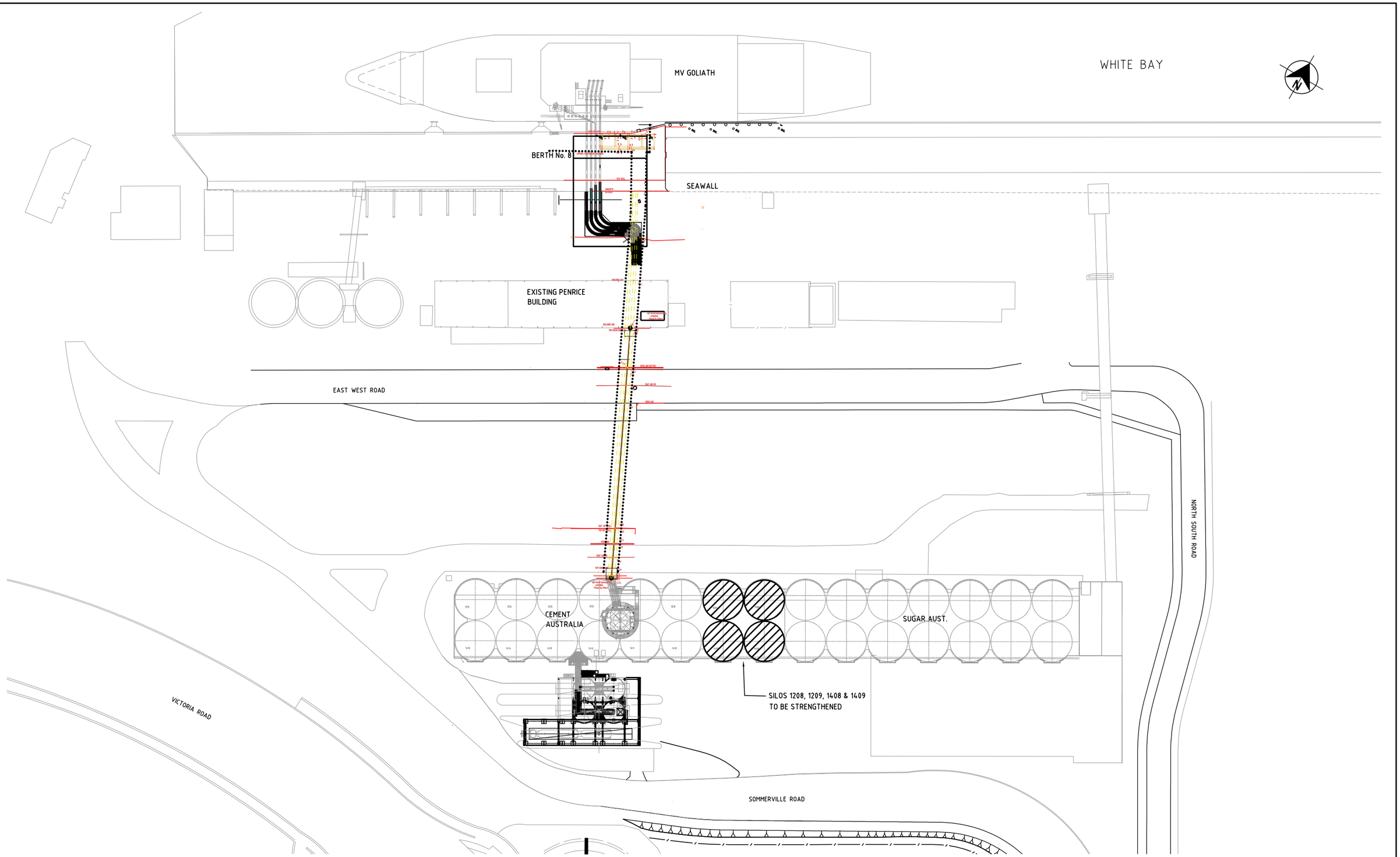
100mm



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01	30.05.05	D. A. ISSUE	RAS		

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Drawn	RAS	Signed RAS	Date 30.5.05
Designed	PHHS	Signed PHHS	Date 30.5.05
Verified		Signed	Date
Approved		Signed	Date

Drawing Title: GENERAL SITE PLAN

Project No. HH 26.01
Scale 1:400
Sheet Size B1
Drawing No. IS 008
Rev. 01

20 10 0 10 20 30 40 50 100mm
02/10/00