

## GENERAL

DO NOT SCALE DRAWINGS.  
UNLESS OTHERWISE NOTED ALL LEVELS ARE IN METRES AND ALL DIMENSIONS IN MILLIMETRES.  
THE BUILDER SHALL BE RESPONSIBLE FOR MAINTAINING THE STABILITY OF THE STRUCTURE UNTIL ITS COMPLETION AND SHALL ENSURE THAT NO PART OF THE STRUCTURE IS OVERSTRESSED BY EXCESSIVE LOADING.  
ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT CODES OF PRACTICE EXCEPT WHERE VARIED BY THE SPECIFICATION AND / OR DRAWINGS.

AS 3600 CONCRETE STRUCTURES CODE.  
AS/NZS 4671 STEEL REINFORCING MATERIALS  
AS 1170 (Pt 1-4) SAA LOADING CODE  
AS 1170 (Pt 0) STRUCTURAL DESIGN ACTION  
AS/NZS 3679 HOT ROLLED AND WELDED SECTIONS  
AS 4100 STEEL STRUCTURES CODE.  
AS/NZS 1163 STRUCTURAL STEEL HOLLOW SECTIONS.  
AS/NZS 1554 STRUCTURAL STEEL WELDING  
AS 1684 NATIONAL TIMBER FRAMING CODES  
AS 1720 TIMBER STRUCTURES CODE.  
AS 1289 METHODS OF TESTING SOILS FOR ENGINEERING PURPOSES.  
AS 3700 MASONRY CODE.  
AS/NZS 4600 COLD FORMED STEEL STRUCTURES  
AS 1657 FIXED PLATFORMS, WALKWAYS, STAIRWAYS AND LADDERS CODE  
AS/NZS 4455 MASONRY UNITS AND SEGMENTAL PAVERS

### ABBREVIATIONS:

NTS - NOT TO SCALE  
UNO - UNLESS NOTED OTHERWISE  
EF - EACH FACE  
FF - FAR FACE

PROVIDE CLAY 'PLUG' TO ALL SERVICE TRENCHES WHERE ANY PIPE, DUCT OR CABLE ENTERS THE BUILDING TO PREVENT INGRESS OF WATER UNDER BUILDING  
UNDER PART 4 OF THE BUILDING ACT 1993 THE BUILDER IS REQUIRED TO NOTIFY THE RELEVANT BUILDING SURVEYOR OF EACH MANDATORY INSPECTION STAGE. PLEASE ENSURE THAT THEY ARE NOTIFIED.

THE BUILDER SHALL GIVE AT LEAST 48 HOURS NOTICE PRIOR TO INSPECTION OF ALL STRUCTURAL WORKS.  
BUILDER TO ALLOW IN HIS TENDER FOR ALL ADDITIONAL COST ASSOCIATED WITH THE PROPOSED LOCATION OF CRANE(S) AND RELATED SUPPORT STRUCTURES.

### FIXING POINTS & SUPPORTS FOR BUILDING MAINTENANCE EQUIPMENT:

BUILDER TO MAKE DUE ALLOWANCE IN HIS TENDER FOR ALL CAST-IN INSERTS, STEEL CONNECTION PLATES, ACCESS HOOKS, SAFETY HARNESS PLATES, STATIC LINE SUPPORTS ETC. REQUIRED AS ABSEILING FIXING POINTS TO THE PERIMETER OF THE ROOF, EXTERNAL WALLS AND GROUND SLABS.

WHERE IT IS PROPOSED TO ALSO USE A SWING-STAGE THE BUILDER IS TO MAKE ADDITIONAL ALLOWANCE FOR DAVIT ARMS, NEEDLES AND ASSOCIATED RESTRAINT SYSTEMS ETC. TO THE PERIMETER OF THE ROOF AND ALSO ANY FIXING POINTS REQUIRED ALONG THE EXTERNAL WALLS AND GROUND SLAB.

ALL STRUCTURAL FIXING REQUIREMENTS ASSOCIATED WITH BUILDING MAINTENANCE ARE TO BE DESIGNED AND DOCUMENTED BY A SPECIALIST ENGINEER ENGAGED BY THE BUILDER. BUILDER TO ALLOW IN HIS TENDER FOR ALL COSTS AND FEES ASSOCIATED WITH THIS ENGINEERING WORK. BUILDER TO MAKE THE ABOVE ALLOWANCES FOR ALL BUILDINGS.

SUBSTITUTION SHALL NOT BE PERMITTED WITHOUT THE APPROVAL OF THE ENGINEER.

### EXTERNAL INSULATION

FMG ENGINEERING HAS NOT CARRIED OUT A REVIEW WITH RESPECT TO COMBUSTIBILITY, FIRE RESISTANCE OR FIRE SAFETY PROVISIONS OF THE EXTERNAL INSULATION

## DEMOLITION

ALL DEMOLITION WORK IS TO BE IN ACCORDANCE WITH AS2601. THE CONTRACTOR IS TO ENGAGE A COMPETENT PERSON TO PREPARE A DEMOLITION WORK PLAN IN ACCORDANCE WITH AS 2601.

THE CONTRACTOR IS TO ENSURE THE STRUCTURE IS IN A STABLE CONDITION AT ALL TIMES.

REFER TO SECTIONS AND PLANS ON DRAWINGS FOR SUGGESTED DEMOLITION PROCEDURES FOR CERTAIN AREAS.

WHERE TEMPORARY PROPPING IS SPECIFIED, PROPS ARE TO BE TIGHTENED SUFFICIENTLY TO SUPPORT DEAD LOADS FROM ABOVE. TRANSFER ALL PROPPING FORCES INTO THE GROUND AND PROVIDE ADEQUATE SOLEPLATES OR FOOTINGS TO SAFELY SUPPORT THESE FORCES WITHOUT EXCESSIVE SETTLEMENT UNLESS CALCULATIONS ARE PROVIDED TO SHOW THE STRUCTURE IS CAPABLE OF SUPPORTING THE LOADS.

## HEALTH AND SAFETY

IT IS THE RESPONSIBILITY OF THE BUILDER TO ENSURE ALL WORKS ARE CARRIED OUT IN A SAFE MANNER.

THE WORKS SHALL COMPLY WITH ALL APPLICABLE HEALTH AND SAFETY LEGISLATION INCLUDING CODES OF PRACTICE, AUSTRALIAN STANDARDS, GUIDANCE NOTES AND WORKSAFE REQUIREMENTS.

THE BUILDER SHALL ENSURE A RISK ASSESSMENT HAS BEEN CARRIED OUT AND DOCUMENTED FOR ALL ACTIVITIES PERFORMED ON THE SITE. SAFE WORK PROCEDURES MUST BE DOCUMENTED AS REQUIRED BY LEGISLATION AND RELEVANT AUTHORITIES. THE BUILDER MAY NEED TO ENGAGE SUITABLY EXPERIENCED CONSULTANTS TO PREPARE A SAFE WORK PROCEDURE IF THE BUILDER IS INEXPERIENCED IN THIS FIELD OR IF THEY ARE NOT SATISFIED WITH THE METHOD PROPOSED BY THE CONTRACTOR.

## CONCRETE

CONCRETE SHALL CONFORM TO THE FOLLOWING:  
a) CEMENT TYPE GP COMPLYING TO / WITH AS 1379 AND AS 3600

### SHRINKAGE:

MAXIMUM DRYING SHRINKAGE STRAIN MEASURED IN ACCORDANCE WITH AS 1012 PART 13 SHALL NOT EXCEED 650 x 10-6/ AT 8 WEEKS

CONCRETE TESTING SHALL BE IN ACCORDANCE WITH AS 1379, METHOD OF TESTING AND ASSESSMENT SHALL BE "PROJECT ASSESSMENT" METHOD.

## REINFORCEMENT

ALL REINFORCEMENT SHALL BE AS FOLLOWS:

SYMBOL	STRUCTURAL GRADE	DUCTILITY CLASS
R	STRUCTURAL GRADE PLAIN BARS TO AS 1302 (250 MPa)	N
S	STRUCTURAL GRADE DEFORMED BARS TO AS 1302 (250 MPa)	N
Y	DEFORMED BARS GRADE 400 Y TO AS 1302 (400MPa)	N
N	DEFORMED BARS GRADE 500 Y TO AS/NZS 4671 (500MPa)	N
RN SN	FABRIC TO AS/NZS 4671 (500MPa)	N
RL SL	FABRIC TO AS/NZS 4671 (500MPa)	L

NOTE: THE NUMBER FOLLOWING R,S,Y,N AND RL/SL IS THE BAR DIAMETER IN MILLIMETRES

LOW DUCTILITY DEFORMED BARS (DUCTILITY CLASS L) SHALL NOT BE USED UNDER ANY CIRCUMSTANCES (EXCEPT FOR FABRIC)

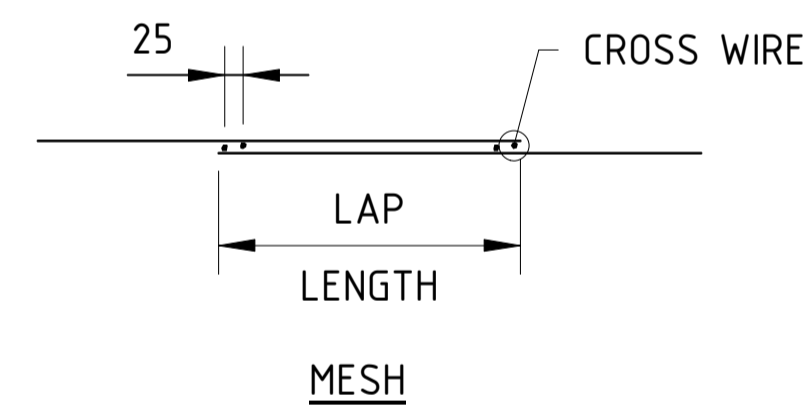
NO REINFORCEMENT SPLICES SHALL BE MADE, OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS, WITHOUT THE PRIOR APPROVAL OF THE SUPERINTENDENT/ ENGINEER. MINIMUM LAP FOR FABRIC SHALL BE ONE SQUARE OF MESH PLUS 25mm.

WELDING OF REINFORCEMENT IS NOT PERMITTED UNLESS SHOWN ON THE DRAWINGS OR APPROVED BY THE SUPERINTENDENT/ENGINEER. DEFORMED BARS SHALL BE COLD ROLLED ONLY.

ALL REINFORCEMENT BARS SHALL BE HANDLED ON SITE INCLUDING STORAGE, FIXING AND WELDING STRICTLY IN ACCORDANCE WITH RELEVANT MANUFACTURERS REQUIREMENTS AND RECOMMENDATIONS. BUILDER AND HIS CONTRACTORS TO OBTAIN ALL RELEVANT INFORMATION FROM MANUFACTURERS AND FAMILIARIZE WITH SUCH REQUIREMENTS.

REINFORCEMENT LAP LENGTHS

BAR SIZE	LAP LENGTH
MESH	2 x CROSS WIRES + 25mm



## DRAWING INDEX

S01 GENERAL NOTES AND INDEX  
S10 PLAN, SECTION AND DETAILS  
S11 DETAILS  
S12 DETAILS

**ISSUED FOR CONSTRUCTION**  
UPON APPROVAL FROM STATUTORY AUTHORITIES

REV	DESCRIPTION	DATE	INIT	APP
B	FOR CONSTRUCTION	16.12.2022	EM	HC
A	PRELIMINARY ISSUE	22.11.2022	EM	HC
T2	TENDER ISSUE	30.09.2022	EM	HC
T1	TENDER ISSUE	26.08.2022	EM	MS

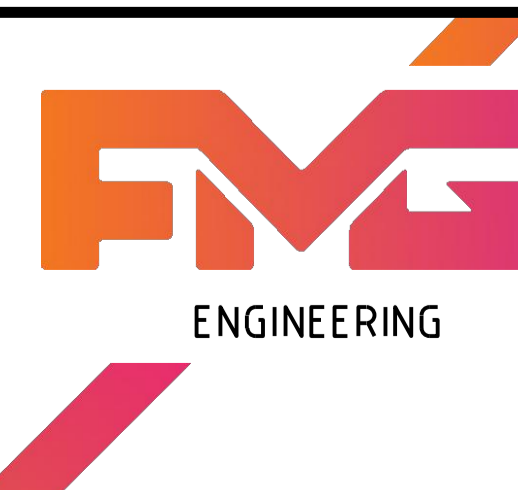
**Engineering**  
your success.

ADELAIDE  
MELBOURNE  
SYDNEY

fmgengineering.com.au

P 03 9815 7600 | 2 Domville Ave, Hawthorn VIC 3122

ABN 58 083 071 185  
Quality Management Systems ISO 9001 Certified



SIGNATURE

CLIENT

City of Darebin

PROJECT TITLE

PERMANENT BATTER REINSTATEMENT DETAIL

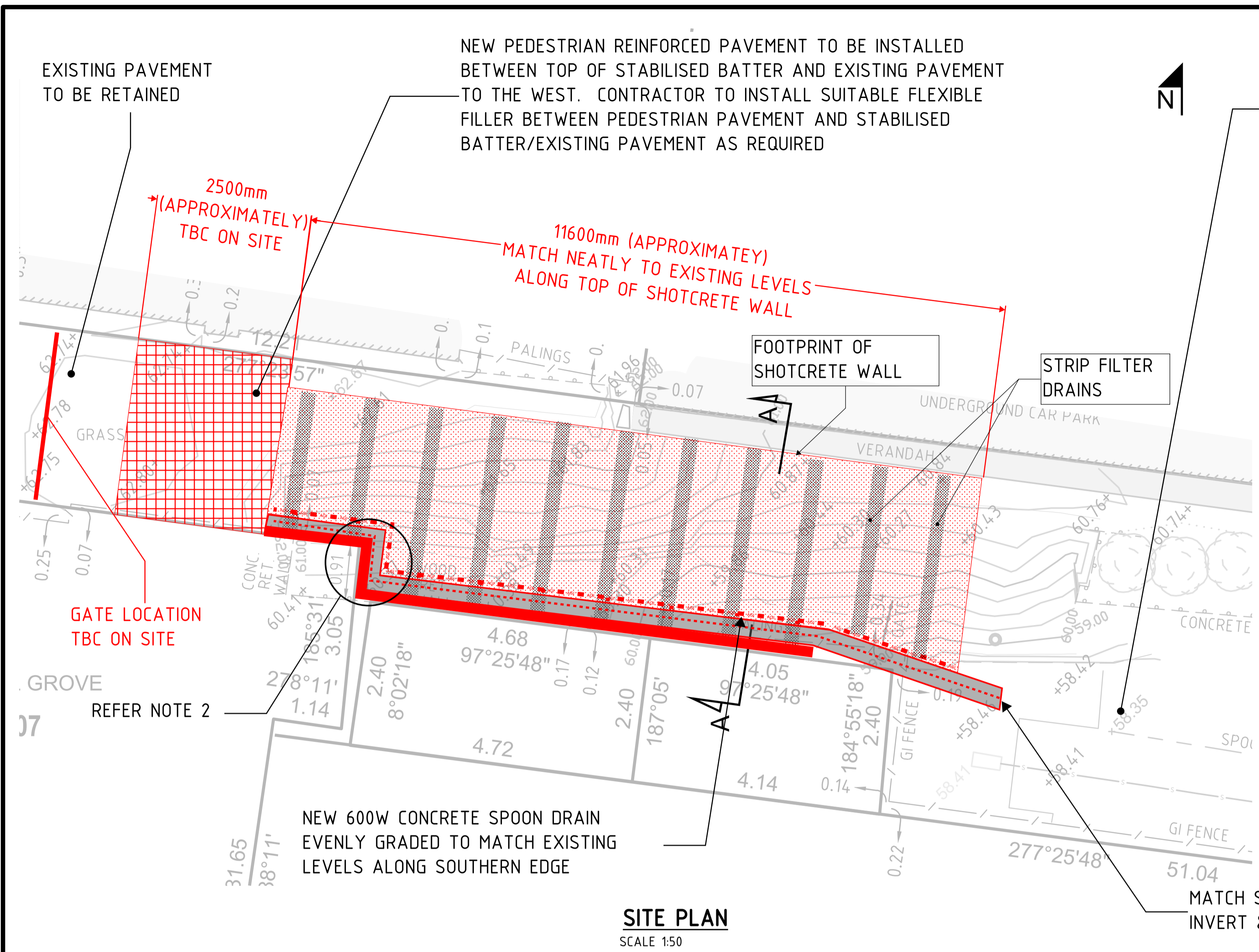
SITE ADDRESS

42 James Street, NORTHCOTE, VIC 3070

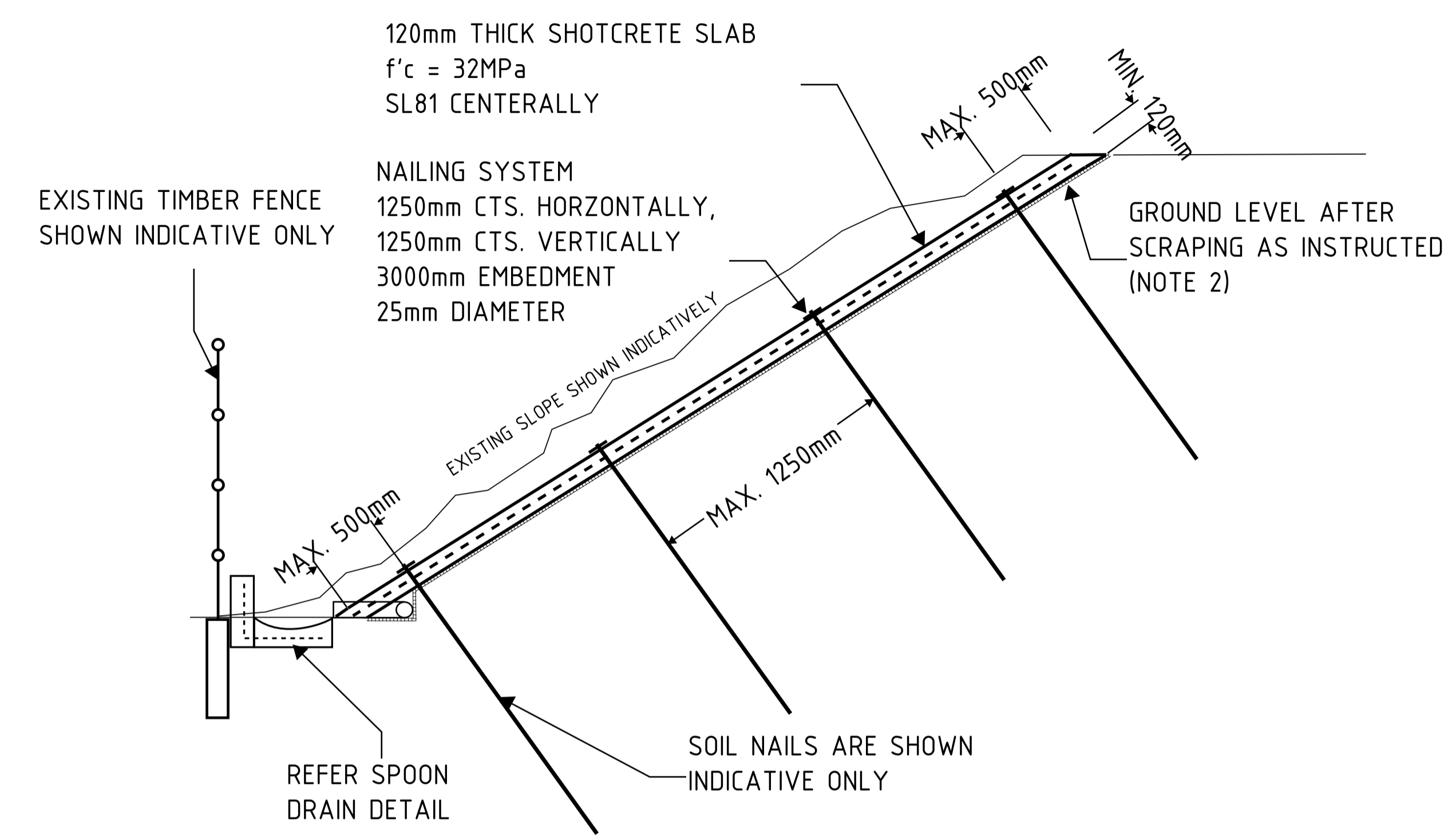
DRAWING TITLE

GENERAL NOTES AND INDEX

DESIGNED	EM	DRAWN	EM
CHECKED	HC	No. OF SHEETS	
SCALE	N.T.S @ A1	DATE STARTED	
SITE ID & JOB No.	S44580-281686	REV.	
DRAWING No.	S01		B



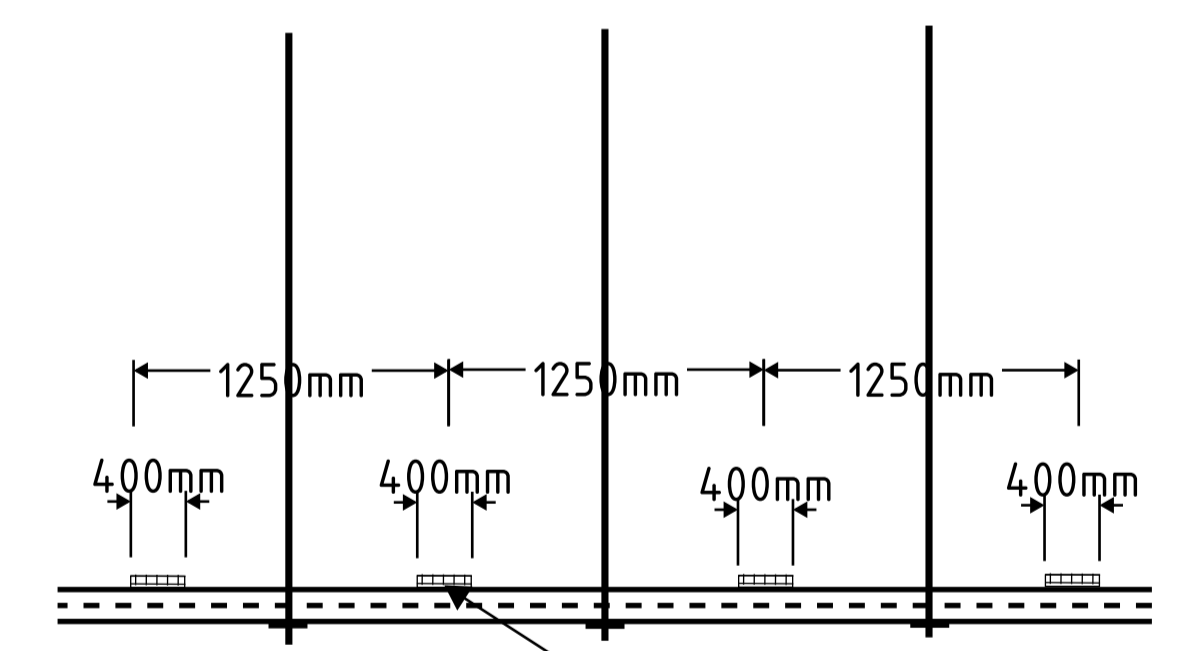
CLEAN ALL DEBRIS FROM EXISTING LANEWAY AND SPOON DRAIN TO ENSURE THAT WATER FROM NEW SPOON DRAIN CAN BE ADEQUATELY DISCHARGED VIA EXISTING SURFACE DRAINAGE SYSTEM IN THE LANEWAY



SECTION A-A TYPICAL RETAINING NAILING WALL SECTION

- NOTE 1** - REFER GEOTECHNICAL REPORT PREPARED BY FMG No. 281686 DATED 30.09.2022  
**NOTE 2** - ALL FILL MATERIAL IN THE AREA CIRCLED ABOVE TO BE COMPACTED CLASS 3 20mm SIZE CRUSHED ROCK COMPACTED IN 150mm LAYERS.  
**NOTE 3** - BEDDING UNDER SPOON DRAIN TO BE 120mm MINIMUM DEPTH CLASS 3 20mm CRUSHED ROCK, IN ACCORDANCE WITH CITY OF DAREBIN STANDARD DETAILS.  
**NOTE 4** - SOIL NAILING RETAINING SYSTEM IS DESIGNED IN ACCORDANCE WITH FHWA AND AS 4678-2002.  
**NOTE 5** - A WATERPROOFING ADMIXTURE SHALL BE ADDED TO THE SHOTCRETE MIXTURE ACCORDING TO THE SUPPLIER'S INSTRUCTION.

- METHODOLOGY:**  
 NAILING SYSTEM FOR STABILISING THE SLOPE IN ACCORDANCE WITH THE FOLLOWING METHODOLOGY:  
 1) PROVIDE THE TEMPORARY ACCESS AS REQUIRED.  
 2) UNDERTAKE BULK EARTHWORKS AS REQUIRED TO THE SLOPE OF THE PREPARED GROUND LEVEL. PROVIDE AN EVEN GRADE BETWEEN EXISTING LEVELS AT TOP AND AT BOTTOM OF BASE (MAX. 1V:2H)  
 3) PROVIDE STRIP DRAIN 1250mm CTS.(GEOCOMPOSITE CUSPATED STRIP FILTER DRAINS OR SIMILAR PRODUCT).  
 4) INSTALL STEEL MESH (SL81) TO BE PLACED CENTRALLY.  
 5) APPLY SHOTCRETE (F'c=32 MPa) TO THE SURFACE OF REINFORCED AREA (120 mm THICK).  
 6) DRILL HOLES WITH A DEPTH OF AROUND 3000mm IN THE SOIL WITH 25 DEGREES DOWNWARD TO THE HORIZON IN A PATTERN OF 1250mm CTS. HORIZONTALLY, 1250mm CTS. VERTICALLY.  
 7) INSTALL THE PREPARED NAILS, INJECT THE CEMENT GROUT TO THE ANNULUS BETWEEN THE NAILS AND THE HOLE.  
 8) APPLY STEEL END PLATES TO THE NAIL HEADS AND APPLY THE PROTECTIVE CONCRETE ON IT.  
 9) PROVIDE A CONNECTION AT THE BOTTON FROM THE STRIP DRAIN TO A SPOON DRAIN.



400mm GEOCOMPOSITE CUSPATED STRIP FILTER DRAINS (40mm PVC DOUBLE DIMPLE STRIP FILTER DRAIN) OR SIMILAR PRODUC. AT 1250 CTS.

TYPICAL DRAINAGE SYSTEM PLAN VIEW

**ISSUED FOR CONSTRUCTION**  
 UPON APPROVAL FROM STATUTORY AUTHORITIES

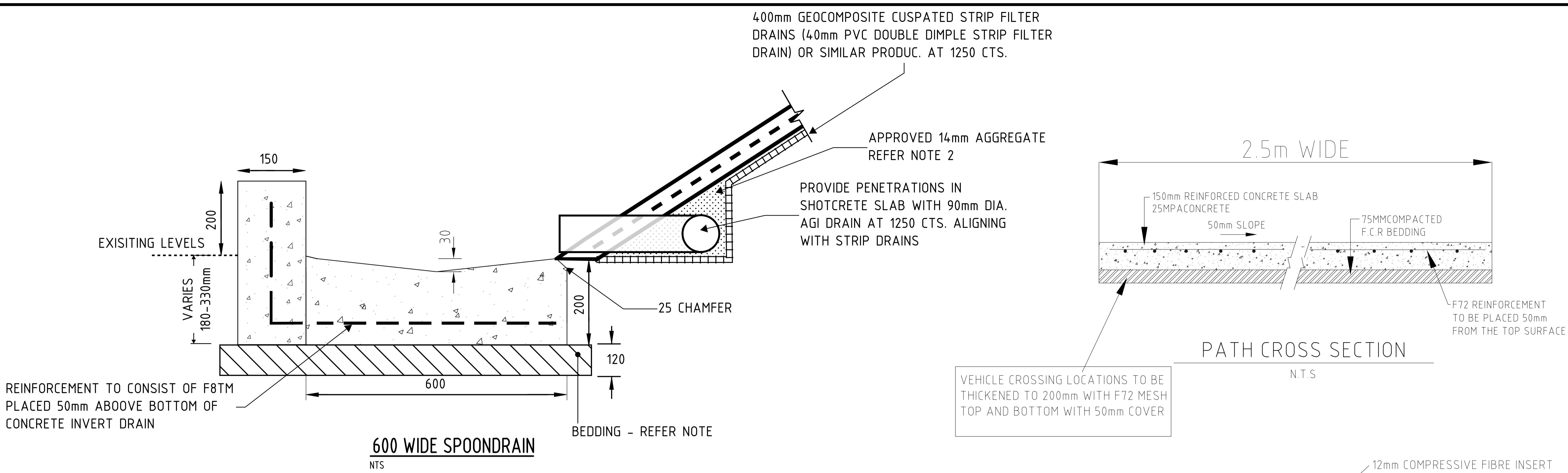
REV	DESCRIPTION	DATE	INIT	APP
B	FOR CONSTRUCTION	16.12.2022	EM	HC
A	PRELIMINARY ISSUE	22.11.2022	EM	HC
T2	TENDER ISSUE	30.09.2022	EM	HC
T1	TENDER ISSUE	26.08.2022	EM	MS

**Engineering your success.** | ADELAIDE MELBOURNE SYDNEY  
 fmgengineering.com.au  
 P 03 9815 7600 | 2 Domville Ave, Hawthorn VIC 3122  
 ABN 58 083 071 185  
 Quality Management Systems ISO 9001 Certified

ENGINEERING

CLIENT: City of Darebin  
 PROJECT TITLE: PERMANENT BATTER REINSTATEMENT DETAIL  
 SITE ADDRESS: 42 James Street, NORTHCOTE, VIC 3070  
 DRAWING TITLE: PLAN, SECTION AND DETAIL

DESIGNED	EM	DRAWN	EM
CHECKED	HC	No. OF SHEETS	
SCALE	N.T.S @ A1	DATE STARTED	
SITE ID & JOB No.	S44580-281686	REV.	
DRAWING No.	S10		B



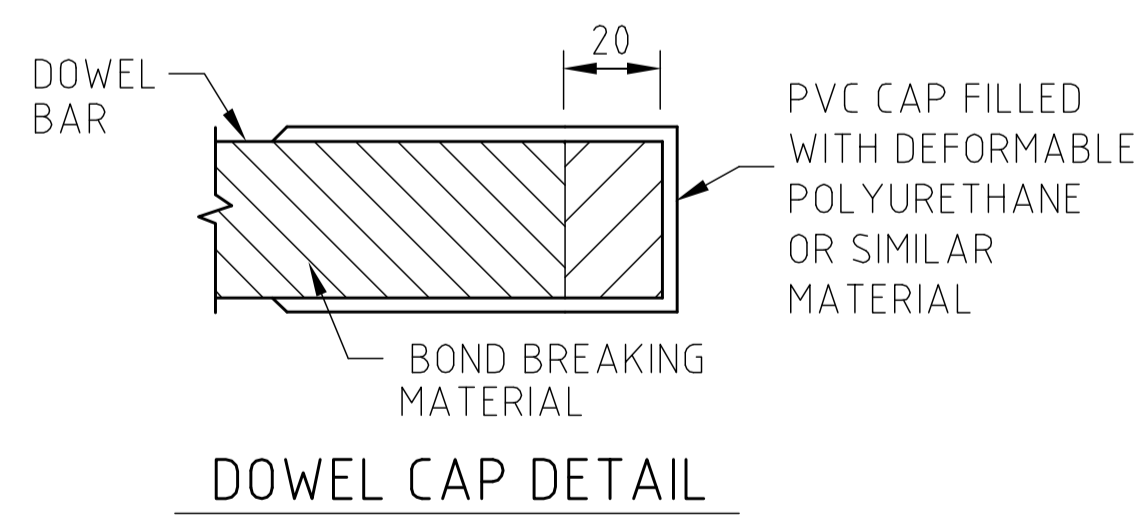
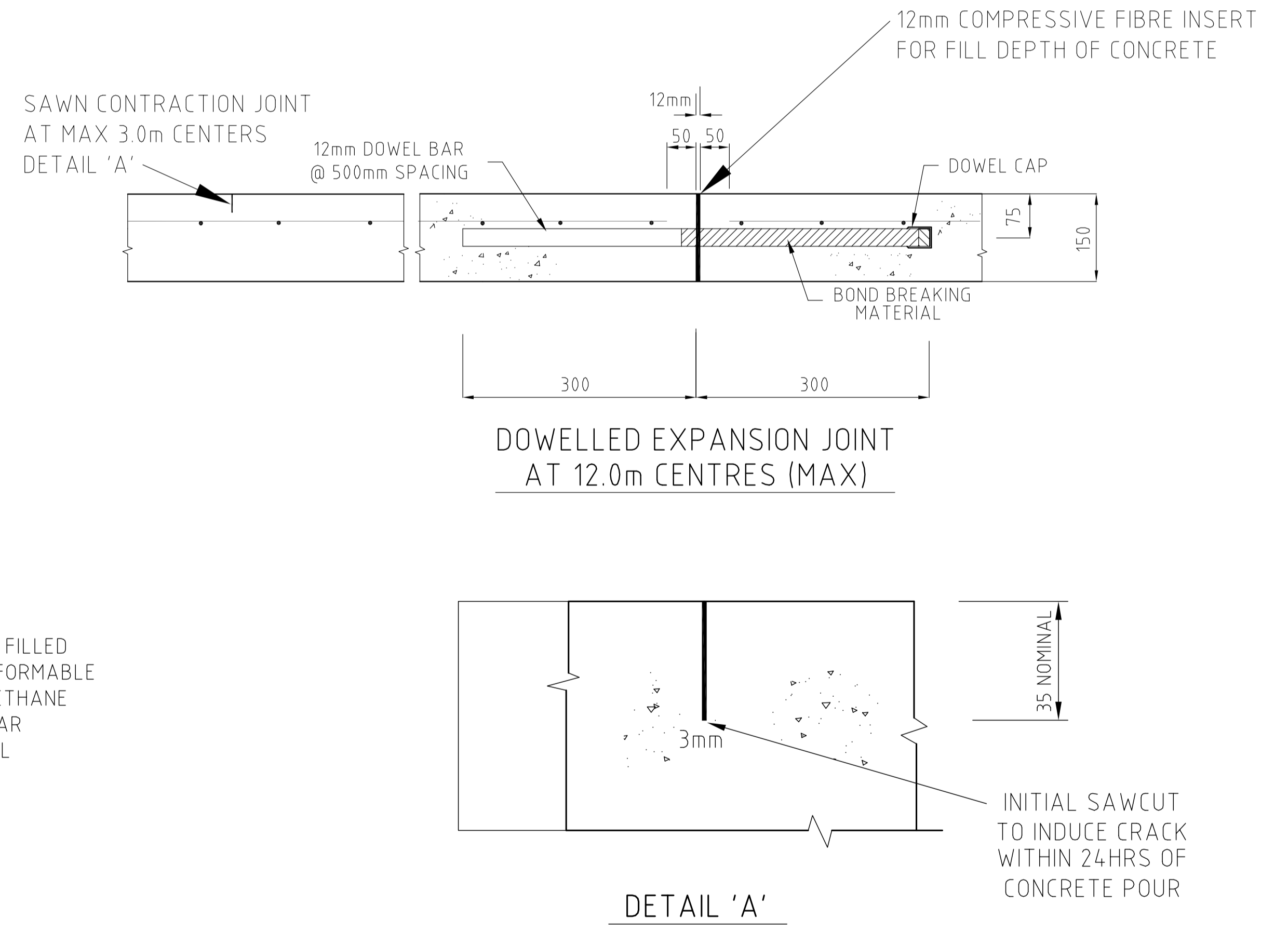
**NOTE 1** - BEDDING UNDER SPOON DRAIN TO BE 120mm MINIMUM DEPTH CLASS 3 20mm CRUSHED ROCK, IN ACCORDANCE WITH CITY OF DAREBIN STANDARD DETAILS.

**NOTE 2** - APPROVED 14 mm CRUSHED ROCK AGGREGATE (FINE MATERIAL PORTION LESS THAN 3 PERCENT)

REFER B2 MATERIAL FROM TABLE BELOW AS ACCEPTABLE PARTICLE SIZE RANGE FOR DRAINAGE MATERIAL

**Grading Requirements for Granular Filter Material**

Sieve Size AS (mm)	Limits of Grading (% passing by mass)									
	Single and First Stage Filters					Second Stage Filters				
	A2	A3	A4	A5	A6	B1	B2	B3	B4	
37.5	-	-	-	-	100	-	-	-	-	
26.5	-	-	-	-	-	-	-	-	100	
19.0	-	-	-	100	85-100	-	100	100	70-100	
13.2	-	-	-	90-100	-	-	90-100	90-100	0-70	
9.50	100	100	100	70-100	65-100	100	70-100	40-70	0-25	
4.75	90-100	90-100	70-100	28-100	48-82	70-100	28-100	0-15	-	
2.36	75-100	70-100	0-50	0-28	30-60	0-50	0-28	0-5	0-5	
1.18	50-98	40-65	0-10	0-8	15-40	0-10	0-8	-	-	
0.600	30-80	12-40	-	-	5-25	-	-	-	-	
0.300	10-40	0-16	0-5	0-5	0-10	0-5	0-5	-	-	
0.150	0-7	0-4	-	-	0-5	-	-	-	-	
0.075	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	



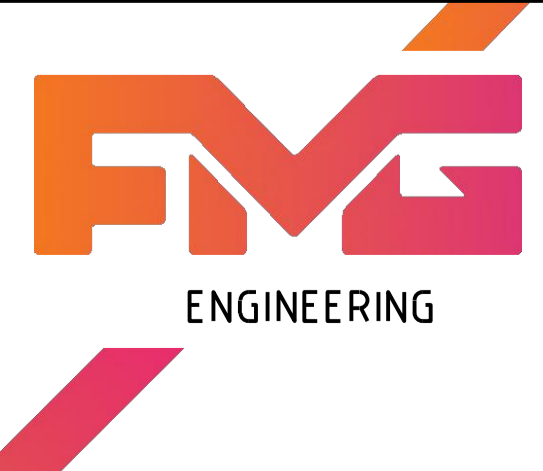
**ISSUED FOR CONSTRUCTION**  
UPON APPROVAL FROM STATUTORY AUTHORITIES

REV	DESCRIPTION	DATE	INIT	APP
B	FOR CONSTRUCTION	16.12.2022	EM	HC
A	PRELIMINARY ISSUE	22.11.2022	EM	HC
T2	TENDER ISSUE	30.09.2022	EM	HC
T1	TENDER ISSUE	26.08.2022	EM	MS

**Engineering your success.** ADELAIDE MELBOURNE SYDNEY

**fmgengineering.com.au**  
P 03 9815 7600 | 2 Domville Ave, Hawthorn VIC 3122

ABN 58 083 071 185  
Quality Management Systems ISO 9001 Certified



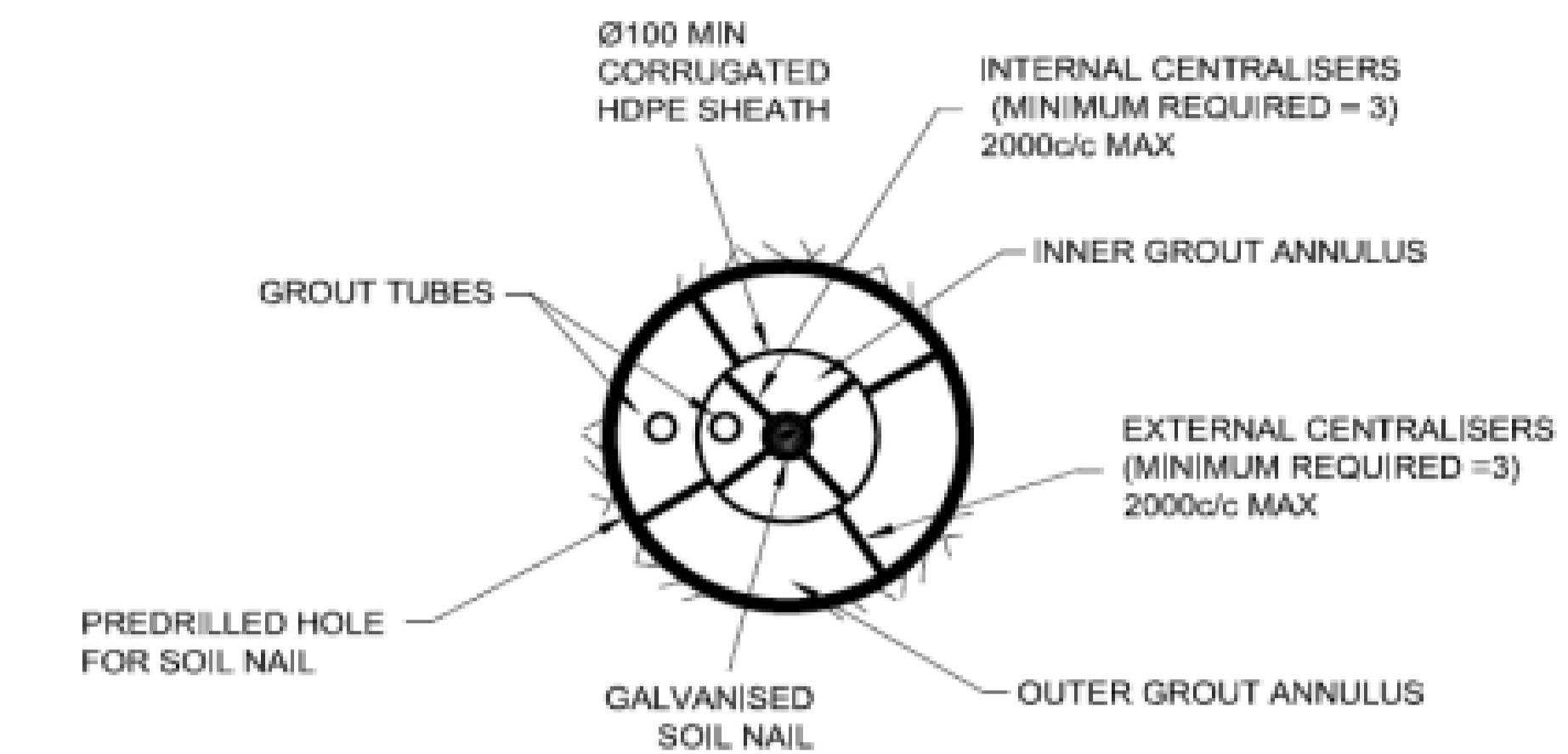
CLIENT  
**City of Darebin**

PROJECT TITLE  
**PERMANENT BATTER REINSTATEMENT DETAIL**

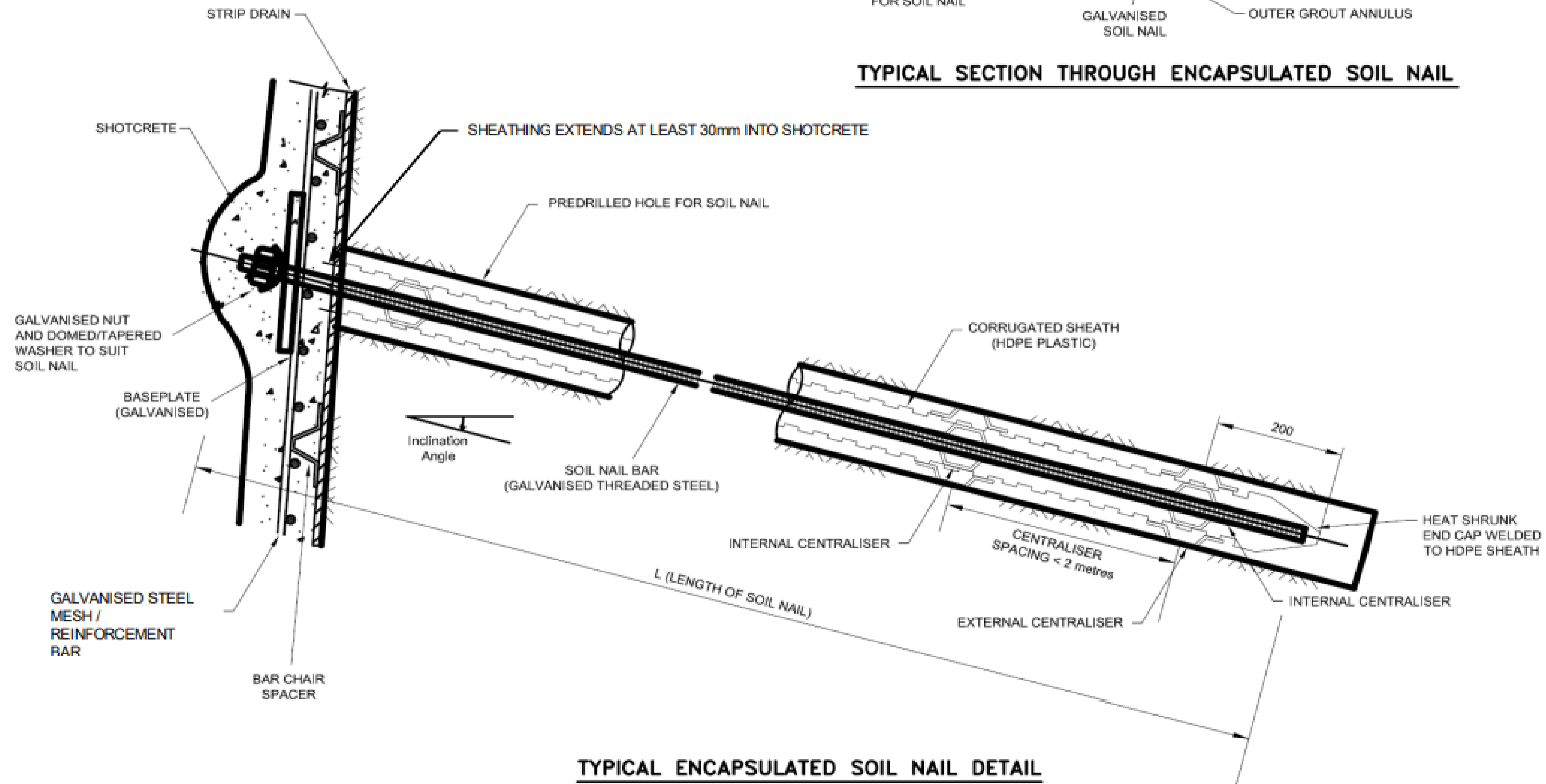
SITE ADDRESS  
**42 James Street, NORTHCOTE, VIC 3070**

DRAWING TITLE  
**DETAILS**

DESIGNED	EM	DRAWN	EM
CHECKED	HC	No. OF SHEETS	
SCALE	N.T.S @ A1	DATE STARTED	
SITE ID & JOB No.	S44580-281686	REV.	
DRAWING No.	S11		B



**TYPICAL SECTION THROUGH ENCAPSULATED SOIL NAIL**

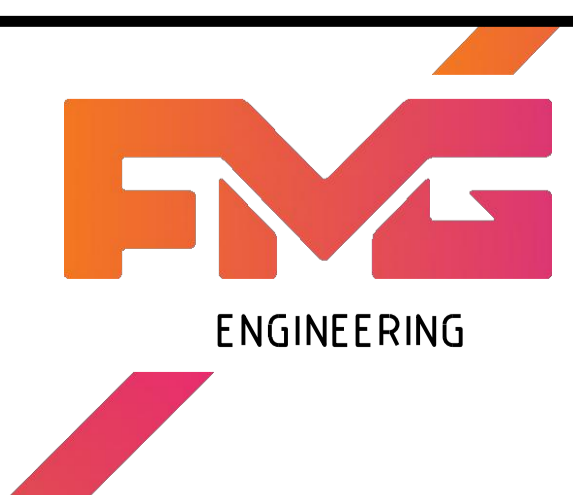


**TYPICAL ENCAPSULATED SOIL NAIL DETAIL**

**ISSUED FOR CONSTRUCTION**  
UPON APPROVAL FROM STATUTORY AUTHORITIES

REV	DESCRIPTION	DATE	INIT	APP
B	FOR CONSTRUCTION	16.12.2022	EM	HC
A	PRELIMINARY ISSUE	22.11.2022	EM	HC
T2	TENDER ISSUE	30.09.2022	EM	HC
T1	TENDER ISSUE	26.08.2022	EM	MS

**Engineering your success.** | ADELAIDE MELBOURNE SYDNEY  
**fmgengineering.com.au**  
 P 03 9815 7600 | 2 Domville Ave, Hawthorn VIC 3122  
 ABN 58 083 071 185  
 Quality Management Systems ISO 9001 Certified



CLIENT: **City of Darebin**  
 PROJECT TITLE: **PERMANENT BATTER REINSTATEMENT DETAIL**  
 SITE ADDRESS: **42 James Street, NORTHCOTE, VIC 3070**  
 DRAWING TITLE: **DETAILS**

DESIGNED	EM	DRAWN	EM
CHECKED	HC	No. OF SHEETS	
SCALE	N.T.S @ A1	DATE STARTED	
SITE ID & JOB No.	S44580-281686	REV.	
DRAWING No.	S12		B

