REGULATED DESIGN RECORD		REV	DATE	DESCRIPTION	DP FULL NAME	REG NO
PROJECT ADDRESS:	30 DIGGINGS TERRACE, THREDBO	1	29.11.2021	ISSUED FOR CC2	THOMAS WILLIAMS	PRE0001122
PROJECT TITLE:	BLACK BEAR INN					
CONSENT NUMBER:						

DRAWING TITLE
STRUCTURAL NOTES

JOB NUMBER
PMI-2021-053

DRAWING NUMBER **S02-A** REVISION **1**

SCALE AT B1: 1 : 10

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ALL SETOUT TO ARCHITECT'S DRAWINGS. DIMENSIONS TO BE VERIFIED WITH ARCHITECT AND BUILDER BEFORE COMMENCING SHOP DRAWINGS OR SITE WORK. ENGINEER ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.

NSW Department of Planning and Environment
Issued under the Environmental Planning and Assessment Act 1979
Approved Application No DA 22/4825
Granted on the 1 August 2022
Signed M Brown
Sheet No 2 of 18

STRUCTURAL NOTES BLACK BEAR INN

GENERAL

G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH SPECIFICATIONS AND OTHER CONSULTANT'S DRAWINGS.

G2. THE WEATHER PROOFING OF THE BUILDING IS THE ARCHITECT'S/BUILDER'S RESPONSIBILITY. THIS INCLUDES (BUT IS NOT LIMITED TO) THE SPECIFICATION AND FIXING DETAILS OF CLADDINGS, SHEETING, FLASHING, MEMBRANES, STEPS, SETDOWNS & RECESSES.

G3. ALL DISCREPANCIES SHALL BE REFERRED TO THE (PROJECT MANAGER) AND RESOLVED BEFORE PROCEEDING WITH THE WORK.

G4. ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE BUILDER ON SITE. THESE STRUCTURAL DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS. THE RL's SHOWN ON THESE DRAWINGS ARE APPROXIMATE AND ARE FOR THE SOLE PURPOSE OF ASSISTING THE STRUCTURAL DOCUMENTATION. THEY ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES. REFER TO ARCHITECTURAL DRAWINGS FOR CONFIRMATION OF ALL RL's, ALL LEVELS ARE IN METRES (m) AND DIMENSIONS ARE IN MILLIMETRES (mm)

G5. ALL WORKMANSHIP, TESTING, MATERIALS AND SUPERVISION ARE TO BE IN ACCORDANCE WITH THESE SPECIFICATIONS, THE WORK HEALTH AND SAFETY ACT 2011. ENFORCED BY THE WORKCOVER AUTHORITY AND CURRENT RELEVANT AUSTRALIAN STANDARDS.

G6. PROPRIETARY ITEMS SPECIFIED SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN RECOMMENDATIONS. DO NOT VARY SPECIFIED PROPRIETARY PRODUCTS WITHOUT WRITTEN APPROVAL FROM THE ENGINEER.

G7. THESE DRAWINGS AND ISSUED WRITTEN INSTRUCTIONS DURING THE COURSE OF THE CONTRACT DEPICT THE COMPLETE STRUCTURE. THEY DO NOT DESCRIBE A WORK METHOD. THE ARRANGEMENT, DESIGN AND INSTALLATION OF TEMPORARY WORKS REMAINS THE RESPONSIBILITY OF THE CONTRACTOR.

G8. THE DETERMINATION OF A SAFE WORK METHOD REMAINS THE RESPONSIBILITY OF THE CONTRACTOR. ANY ELEMENT WHICH POSES AN UNACCEPTABLE LEVEL OF SAFETY RISK TO CONSTRUCT SHALL BE REFERRED TO THE STRUCTURAL ENGINEER. TEMPORARY BRACING AND SUPPORT OF STRUCTURE IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE MAINTAINED DURING ALL STAGES OF CONSTRUCTION.

G9. NOTES ON ANY DRAWING APPLY TO ALL DRAWINGS IN THE SET UNLESS NOTED OTHERWISE

G10. ALL ARCHITECTURAL FITMENTS SUCH AS GLAZING, PARTITIONS, CEILINGS ETC. SHOULD ALLOW FOR THE SHORT AND LONG TERM MOVEMENT OF STRUCTURAL ELEMENTS. FOR BEAMS AND SLABS SPANNING LESS THAN 8m AN ALLOWANCE OF AT LEAST 20mm SHOULD BE MADE (CONSULT ENGINEER WHERE SPANS EXCEED 8m).

G11. THE BUILDER SHALL PROVIDE CERTIFICATION ON ANY DESIGN AND CONSTRUCT COMPONENT BY A CHARTERED PROFESSIONAL ENGINEER (NPER).

G12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL SERVICES IN THE VICINITY OF THE WORKS. ANY SERVICES SHOWN ARE PROVIDED FOR INFORMATION ONLY. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL SERVICES PRIOR TO COMMENCING AND SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGE CAUSED TO SERVICES, AS WELL AS ANY LOSS INCURRED AS A RESULT OF THE DAMAGE TO ANY SERVICE.

G13. THE STRUCTURAL COMPONENTS DETAILED ON THESE STRUCTURAL DRAWINGS ARE JOB SPECIFIC AND HAVE BEEN DESIGNED IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA FOR THE FOLLOWING FIRE RATINGS, WIND LOADS, FLOOR USAGE AND EARTHQUAKE LOADS.

WIND LOADS:
- REGION = A
- ANNUAL PROBABILITY OF EXCEEDANCE = 0.02
- TERRAIN CATEGORY = 2.5
- SITE WIND SPEED = 45 m/s

FLOOR LIVE LOADS:
- GENERAL = 1.5 kPa
- STORES = 5.0 kPa
- GARAGE = 2.5 kPa
- STAIRS = 2.0 kPa
- BALCONY = 2.0 kPa

ROOF LIVE LOADS:
- ROOF = 0.25 kPa

SNOW LOADS:
- ROOF = [4.40] kPa
- GROUND = [2.30] kPa
- PROBABILITY FACTOR = 1 (SERV) 1.5 (STR)

BUSHFIRES : = DESIGN STRUCTURE TO COMPLY WITH THE REQUIREMENTS OF AS3959-2009.

G14. THE METHOD OF CONSTRUCTION AND THE MAINTENANCE OF SAFETY DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE BUILDER. IF ANY STRUCTURAL ELEMENT PRESENTS DIFFICULTY IN RESPECT TO SAFETY THE MATTER SHALL BE REFERRED TO PMI ENGINEERS FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.

G15. NO CHANGES IN ANY STRUCTURAL ELEMENT SHALL BE MADE WITHOUT WRITTEN APPROVAL FROM PMI ENGINEERS. IF THERE IS A DISCREPANCY THEN FOR TENDER PURPOSES ALLOW FOR THE MOST EXPENSIVE OPTION. PMI ENGINEERS SHALL BE CONTACTED TO CONFIRM PRIOR TO CONSTRUCTION.

G16. CONSTRUCTION USING THESE DRAWINGS SHALL NOT COMMENCE UNTIL A CONSTRUCTION CERTIFICATE HAS BEEN ISSUED AND ONLY IF THE DRAWINGS ARE DESIGNATED "ISSUED FOR CONSTRUCTION".

G17. PMI ENGINEERS ACCEPTS NO RESPONSIBILITY FOR ANY WORK NOT INSPECTED OR NOT APPROVED BY PMI ENGINEERS DURING CONSTRUCTION.

FOUNDATIONS

F1. ASSUMED ALLOWABLE BEARING CAPACITY:
- PAD FOOTINGS = [500] kPa
- STRIP FOOTINGS = [500] kPa
- SLABS ON GROUND = [500] kPa
- BORED PIERS = [1500]kPa END BEARING, [150] kPa SKIN FRICTION

F2. A GEOTECHNICAL REPORT HAS BEEN CARRIED OUT REFER TO ALLIANCE REPORT 13526-GR-1-1 REV A DATED 15th SEPTEMBER,

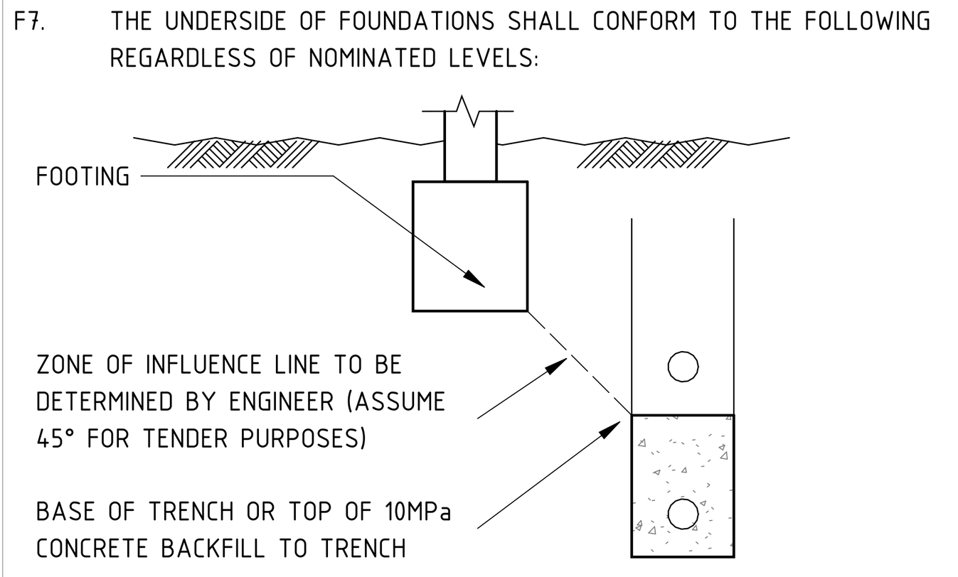
F3. THE SLAB AND FOOTINGS HAVE BEEN DESIGNED IN ACCORDANCE WITH AS2870-2011 FOR CLASS [A] SITE. A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER TO BE CONTACTED DURING EXCAVATION TO CONFIRM THE SITE CLASSIFICATION.

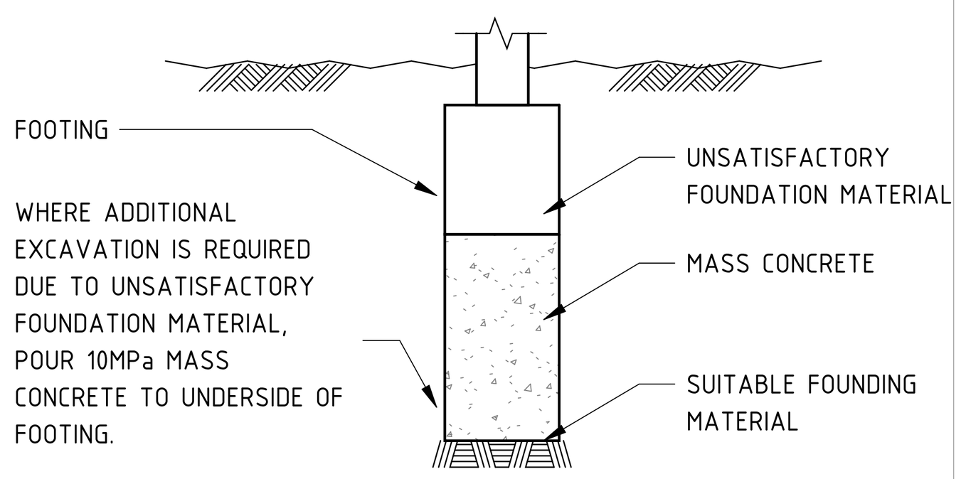
F4. THE CONTRACTOR SHALL ALLOW TO ENGAGE A QUALIFIED (NPER) GEOTECHNICAL ENGINEER TO APPROVE THE FOUNDATION MATERIAL. OBTAIN GEOTECHNICAL ENGINEERS APPROVAL AND SUBMIT CERTIFICATE IN WRITING TO PMI ENGINEERS PRIOR TO CONCRETING FOUNDATIONS.

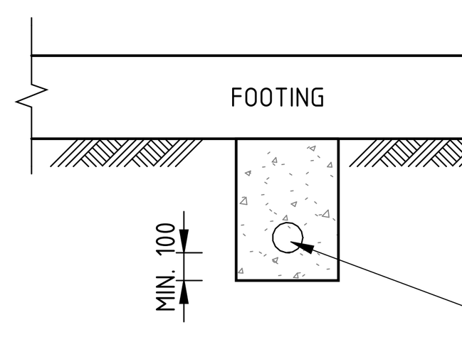
F5. ENSURE STABILITY OF ADJACENT BUILDINGS AND PATHS IS MAINTAINED DURING ALL STAGES OF CONSTRUCTION.

F6. DO NOT ALLOW EXCAVATED MATERIAL TO BE STOCKPILED WITHIN 1500mm OF FOOTING TRENCHES OR PITS. NO EARTH OR DETRITUS IS TO FALL INTO THE FOOTING TRENCHES BEFORE OR DURING CONCRETE PLACEMENT.

F7. THE UNDERSIDE OF FOUNDATIONS SHALL CONFORM TO THE FOLLOWING REGARDLESS OF NOMINATED LEVELS:







F8. FOOTINGS SHALL BE CENTRALLY LOCATED UNDER WALLS AND COLUMNS UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS.

F9. FOOTINGS SHALL BE EXCAVATED TO THE DETAILED DEPTH AND WIDTH. FOOTINGS SHALL BE INSPECTED AND FILLED WITH CONCRETE AS SOON AS POSSIBLE TO AVOID EITHER SOFTENING OF THE FOUNDATION MATERIAL OR DRYING OUT BY EXPOSURE.

F10. THE BASE OF ALL PIER HOLES SHALL BE FREE OF WATER AND CLEANED OF LOOSE MATERIAL OR DEBRIS PRIOR TO PLACEMENT OF CONCRETE. ALLOW TO PROVIDE TEMPORARY LINERS AS DEEMED NECESSARY.

CONSTRUCTION PHASE SERVICES - WITNESS POINTS

WP1. OBTAIN PMI ENGINEERS WRITTEN INSTRUCTION AT THE FOLLOWING HOLD POINTS:
- PREPARATION OF FOUNDING MATERIAL, INCLUDING PIER BORE HOLES.
- REINFORCEMENT PRIOR TO PLACEMENT OF CONCRETE or COREFILLING OF BLOCKWORK.
- STEEL AND TIMBER FRAME INSPECTION PRIOR TO SHEETING.

WP2. PROVIDE MINIMUM 48 HOURS NOTICE FOR ANY REQUIRED INSPECTIONS.

TEMPORARY WORKS

TW1. THESE DRAWINGS DEPICT THE "PERMANENT" STRUCTURE, TEMPORARY WORKS REMAIN THE RESPONSIBILITY OF THE CONTRACTOR.

TW2. BUILDER MUST ENGAGE (NPER) QUALIFIED STRUCTURAL ENGINEER FOR THE DESIGN OF ALL TEMPORARY WORKS NECESSARY TO SAFELY ERECT THIS STRUCTURE. AS A MINIMUM THE FOLLOWING WORKS REQUIRE ATTENTION;
- FORMWORK / TEMPORARY PROPPING / NEEDLE BEAMS / SCAFFOLDING / UNDERPINNING

TW3. BUILDER SHALL CONTACT PMI ENGINEERS IF THEY CONSIDER ANY PART OF THIS STRUCTURE IS UNSAFE TO ERECT

STEELWORK

S1. FABRICATE AND ERECT STRUCTURAL STEELWORK IN ACCORDANCE WITH AS4100-1998.

S2. PROVIDE HOLES, CLEATS AND FIXING FOR LIGHT STEEL/TIMBER FRAMING, FINISHES, ETC. SHOWN ON ARCHITECTURAL DRAWINGS.

S3. THESE DRAWINGS HAVE BEEN PREPARED TO INDICATE THE STRUCTURAL INTENT. THE SHOP DETAILER IS TO USE THESE DRAWINGS AS A BASIS FOR DIMENSIONAL COORDINATION WITH OTHER CONSULTANT'S DRAWINGS AND IS TO PREPARE DETAILED SHOP DRAWINGS. WHERE NECESSARY, THE SHOP DETAILER IS TO MAKE ASSUMPTIONS AND SUBMIT TO PMI ENGINEERS FOR RESOLUTION. SHOP DETAILER IS TO ALLOW TO RE- WORK SHOP DRAWINGS AS NECESSARY. FABRICATOR SHALL PREPARE SHOP DRAWINGS AND SUBMIT THEM TO THE BUILDER FOR THEIR APPROVAL. BUILDER SHALL LODGE TWO HARD COPIES OF APPROVED DRAWINGS TO PMI ENGINEERS FOR REVIEW PRIOR TO FABRICATION, (ALLOW 5 WORKING DAYS FOR REVIEW).

S4. TYPICAL STEELWORK CONNECTIONS (UNLESS NOTED OTHERWISE)
- COLUMN BASE PLATES: 10 BASE PLATE, 4/M16 HILTI HIT-HY 150 MAX CHEMICAL INJECTION ANCHORS
- BEAM TO TOP OF COLUMN: CAP PLATE, 2 BOLTS TO CHANNELS, 4 BOLTS TO RHS/CHS/SHS/UB/UC
- BEAM TO SIDE OF COLUMN: FIN PLATE, 2 BOLTS
- BEAM TO SIDE OF BEAM: END OR FIN PLATE, 2 BOLTS
- COLUMNS TO TOP OF BEAM: BASE PLATE, 2 BOLTS TO CHANNELS, 4 BOLTS TO UB/UC SECTIONS
- ALL ROOF & WALL BRACING: CLEAT PLATES, 2 BOLTS
- PURLINS/WALL GIRTS: 8 CLEAT PLATES, 2 PURLIN BOLTS

UNLESS NOTED OTHERWISE, USE:
- 10mm BASE, CAP, GUSSET, FIN AND END PLATES.
- M20 8.8/S BOLTS. (4.6/S GRADE TO BE USED FOR HOLD DOWN BOLTS)
- 6mm CONTINUOUS FILLET WELDS MADE WITH E4818 MILD STEEL ELECTRODES.
- ALL WELDS SP CATEGORY

S5. NO PAINT ON MATING SURFACES WITH TF OR TB BOLTING UNLESS APPROVED BY PMI ENGINEERS.

S6. TF or TB BOLTS TO BE INSTALLED WITH ONE HARDENED WASHER UNDER THE TURNED PART.

S7. TF AND TB BOLTING BY "PART TURN" METHOD WITH LOAD INDICATING WASHERS.

S8. ALL BOLTS, SCREWS, HOLD DOWN BOLTS, MASONRY ANCHORS SHALL BE HOT DIP GALVANISED TO AS1214-2016, AS/NZS 4534-2006, AS/NZS 4680-2006 & AS/NZS 4792-2006. 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.

S9. MINIMUM YIELD STRESS:
- HOT ROLLED SECTIONS = 300MPa
- SQUARE HOLLOW SECTIONS = 350MPa
- RECTANGULAR HOLLOW SECTIONS = 350MPa
- CIRCULAR HOLLOW SECTION = 250MPa
- HOT ROLLED PLATE = 250MPa

S10. COLD FORMED SECTIONS TO CONFORM WITH:
- AS/NZS 1594-2002, AS/NZS 1595-1998, AS/NZS 4600-2018 AND AS 1397-2011, AS1397, AS/NZS1594 AND AS/NZS1595.
- MINIMUM YIELD STRESSES SECTIONS 450MPa.

S11. SURFACE TREATMENT UNLESS NOTED OTHERWISE:
- PROTECTED FROM WEATHER = AS/NZS 2312-IZS2
- EXPOSED TO WEATHER = AS/NZS 2312-HDG600P3
- BUILT INTO THE INTERNAL SKIN OF EXTERNAL WALLS = AS/NZS 2312-HDG600P3

REFER TO PURLIN & GIRTS NOTES FOR SURFACE TREATMENT OF THESE ITEMS

S12. FIX CROSS BRACING TO PURLINS AT 3000 MAXIMUM CTS WITH M10 BOLTS OR M6 HOOKS.

S13. STEELWORK TO BE CONCRETE ENCASED SHALL BE FREE FROM ALL LOOSE RUST, LOOSE MILL SCALE, DIRT, OIL, GREASE, ETC. AND REINFORCED WITH SL41 FABRIC OR EQUIVALENT BLACK IRON WIRE, 3mm DIA.

S13.a ALL BURIED STEELWORK TO BE PAINTED FIRST USING 'EXPOSED TO WEATHER' TREATMENT SYSTEM FOLLOWED BY THE APPLICATION OF A TWO PART EPOXY SUCH AS 'SIKAGUARD-63N' OR APPROVED EQUIVALENT. ALTERNATIVELY, ENCASE BURIED STEELWORK IN CONCRETE WITH A MINIMUM COVER OF 75mm TO STEELWORK.

S14. BOLT SYMBOLS:
- 4.6/S = GRADE 4.6 BOLT / SNUG TIGHTENED.
- 8.8/S = GRADE 8.8 BOLT / SNUG TIGHTENED.
- 8.8/TF = GRADE 8.8 BOLT / FULLY TENSIONED FRICTION TYPE (USE LOAD INDICATOR WASHERS)
- 8.8/TB - GRADE 8.8 BOLT / FULLY TENSIONED BEARING TYPE (USE LOAD INDICATOR WASHERS)

S15. THE CONTRACTOR SHALL SUPPLY WRITTEN CERTIFICATION TO THE STRUCTURAL ENGINEER PRIOR TO THE ERECTION OF ANY STRUCTURAL STEEL STATING THAT THE BOLTS PROPOSED TO BE USED COMPLY WITH AS/NZS 1252.1-1996. HIGH STRENGTH BOLTS (8.8) ARE NOT TO BE WELDED.

S16. THE FABRICATION AND ERECTION OF THE STRUCTURAL STEEL WORK SHALL BE SUPERVISED BY A QUALIFIED PERSON EXPERIENCED IN SUCH SUPERVISION, IN ORDER TO ENSURE THAT ALL REQUIREMENTS OF THE DESIGN ARE MET.

S17. ALL MEMBERS SHALL BE SUPPLIED IN SINGLE LENGTHS. SPLICES SHALL ONLY BE PERMITTED IN LOCATIONS SHOWN ON THE STRUCTURAL DRAWINGS.

STEELWORK CONT.

S18. ALL BUTT WELDS SHALL BE COMPLETE PENETRATION BUTT WELDS CATEGORY SP TO AS1554.1-2004 U.N.O THE EXTENT ON NON-DESTRUCTIVE WELD EXAMINATION SHALL BE AS NOTED BELOW:
- RADIOGRAPHIC OR ULTRASONIC EXAMINATION SHALL BE TO AS/NZS 1554.1-2014, AS 2177-2006 AND AS2207-2007 AS APPROPRIATE.

S19. GROUT ALL STEEL BASES BY DRY PACKING USING GROUT WHICH IS NON-SHRINK AND HAS A MINIMUM COMPRESSIVE STRENGTH AT 7 DAYS OF 40MPa

S20. PROVIDE SEAL PLATES TO THE ENDS OF ALL HOLLOW SECTIONS, WITH 'BREATHER' HOLES IF MEMBERS ARE TO BE HOT DIP GALVANISED.

S21. THESE DRAWINGS MAY NOT IDENTIFY ALL SECONDARY STEELWORK ELEMENTS THAT ARE REQUIRED FOR SUPPORT, FIXING AND FINISHING OF GLAZING, CLADDING AND LINING. THE TENDERER IS RESPONSIBLE FOR THE INCLUSION OF SUCH STEELWORK ELEMENTS TO THE EXTENT REQUIRED ON THE ARCHITECT'S DRAWINGS.

S22. IMPORTED STRUCTURAL STEEL MATERIAL
ALL STRUCTURAL STEELWORK USED ON THIS PROJECT SHALL BE COMPLIANT WITH AS4100, AND IN PARTICULAR:
- CERTIFIED MILL TEST REPORTS, OR TEST CERTIFICATES SHALL BE PROVIDED AS EVIDENCE OF COMPLIANCE WITH THE STANDARDS REFERRED TO IN AS4100. THESE CERTIFICATES SHALL BE SUBMITTED TO PMI ENGINEERS FOR APPROVAL PRIOR TO COMMENCEMENT OF FABRICATION.
- PROVIDE TEST CERTIFICATED FOR COMPLIANCE FOR ALL FASTENERS. THESE CERTIFICATES SHALL BE SUBMITTED TO PMI ENGINEERS FOR APPROVAL PRIOR TO FABRICATION.
- FOR COLD FORMED SECTIONS A "CERTIFICATE OF CONFORMITY TO AS1163-1991" SHALL BE SUBMITTED TO PMI ENGINEERS FOR APPROVAL PRIOR TO FABRICATION.
- CERTIFICATES SHALL ONLY BE ACCEPTED FROM TESTING COMPANIES ACCREDITED BY A TESTING AUTHORITY RECOGNISED IN AUSTRALIA, EG NATA or JAS-ANZ CERTIFIED.
- UNIDENTIFIED STEEL ie. ANY STEEL THAT IS NOT ACCOMPANIED WITH EVIDENCE STATING COMPLIANCE WITH THE REQUIREMENT OF AS4100 SHALL ONLY BE USED STRICTLY IN ACCORDANCE WITH CLAUSE 2.2.3 OF AS4100.

IF MATERIALS SUPPLIED AND INSTALLED ARE SUBSEQUENTLY PROVEN TO BE NON COMPLIANT WITH THE SPECIFIED AUSTRALIAN STANDARDS IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND COST TO UNDERTAKE NATA OR EQUIVALENT CERTIFIED TESTING TO PROVE CONFORMANCE TO THE AUSTRALIAN STANDARDS AND DESIGN SPECIFICATIONS. SIMILARLY ANY RECTIFICATION WORKS THAT MAY SUBSEQUENTLY BE REQUIRED TO SATISFY AUSTRALIAN CODE REQUIREMENT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR..

FIRE PROTECTION OF STEELWORK

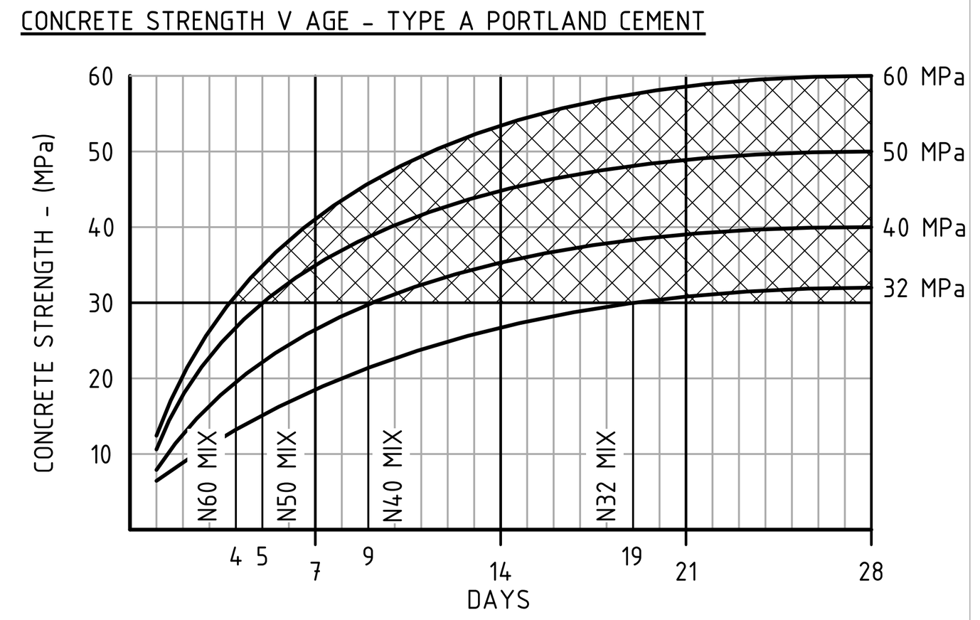
FP1. PROVIDE 120/120/120 FIRE PROTECTION TO ALL PERMANENT STRUCTURAL STEEL MEMBERS AND CONNECTIONS.

FP2. REINSTATE ANY FIRE PROTECTION REMOVED FROM EXISTING STRUCTURAL STEELWORK.

FP3. INSTALL FIRE PROTECTION MATERIALS IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN SPECIFICATIONS.

FP4. PROVIDE CERTIFICATION OF FIRE PROTECTION ON COMPLETION.

CONCRETE STRENGTH V AGE - TYPE A PORTLAND CEMENT



CS1. CONCRETE TO BE SAMPLED AND TESTED IN ACCORDANCE WITH AS1012.2

CS2. CHART TO BE USED AS A GUIDE ONLY AND SHOULD BE CONFIRMED WITH SUPPLIER

CS3. BUILDER TO OBTAIN WRITTEN CONFIRMATION OF CONCRETE STRENGTH FROM SUPPLIER

CONCRETE

C1. CARRY OUT ALL CONCRETE WORK IN ACCORDANCE WITH AS3600-2018 AND NATSPEC CONCRETE STANDARDS.

C2. CONCRETE PROPERTIES AND COVER TO REINFORCING :

COVER TO REINFORCEMENT

ELEMENT		CONCRETE STRENGTH f'c (MPa)	MAXIMUM 56 DAY DRY SHRINKAGE	COVER (mm)	
BORED PIERS		40	650 um	45	
SLABS ON GROUND	EXPOSED	40	650 um	TOP 30	BTM 20
	COVERED	40		TOP 20	BTM 20
STRIP FOOTING		40	650 um	45	
PAD FOOTING		40	650 um	45	
SUSPENDED SLABS	EXPOSED	40	650 um	TOP 30	BTM 30
	COVERED	40		20	
BEAMS	EXPOSED	40	650 um	TOP 30	BTM 30
	COVERED	40		20	
COLUMNS	EXPOSED	40	650 um	30	
	COVERED	40		20	
WALLS	EXPOSED	40	650 um	30	
	COVERED	40		20	

MAXIMUM AGGREGATE SIZE = 20mm U.N.O.
SLUMP DURING PLACING = 75mm ±10mm
EXPOSURE CLASSIFICATION = A2 (INTERNAL CONCRETE ELEMENTS)
= A2 (EXTERNAL CONCRETE ELEMENTS)

NO ADMIXTURES SHALL BE USED IN THE CONCRETE MIX UNLESS APPROVED BY PMI ENGINEERS IN WRITING.

C3. CONCRETE PROPERTIES FOR SLABS AND BEAMS SHALL BE VARIED FROM NORMAL CLASS AS FOLLOWS :
- MINIMUM CEMENT CONTENT 250kg/m3/
- MAXIMUM 56 DAY SHRINKAGE STRAIN = AS NOMINATED ABOVE
- PRIOR TO COMMENCEMENT CONCRETE SUPPLIER TO PROVIDE DRYING SHRINKAGE TEST RESULTS FROM PRODUCTION ASSESSMENT AS EVIDENCE THAT SPECIFIED DRYING SHRINKAGE LIMITS CAN BE ACHIEVED USING NORMAL MIX DESIGN.

C4. SUBMIT FOR APPROVAL THE FOLLOWING TO THE ENGINEER :
- CURING PROCEDURE (PVA MEMBRANES NOT PERMITTED)
- STRIPPING AND BACK PROPPING PROCEDURE
- DETAILS AND LOCATION OF CONDUITS AND PENETRATIONS
- CONSTRUCTION JOINT LOCATIONS

C5. FOR TENDER PURPOSES ASSUME MINIMUM STRIPPING TIMES AND EXTENT OF BACK PROPPING AS PER AS3610-1995 SECTION 5.0 AND AS PER GENERAL NOTES FOR FORMWORK AND PROPPING.

C6. FORMWORK FINISH CLASSIFICATION TO AS3610.1-2010 :

ELEMENT	CLASS
INGROUND FOOTINGS	5
RETAINING WALLS	5 EARTH FACE
RETAINING WALLS	2 EXPOSED FACE
COLUMNS	2
LIFT WALLS	2
BEAMS & SLABS	2
STAIRS	2
GRANO TREATED SURFACES	2

(UNLESS NOTED OTHERWISE BY ARCHITECTURAL DOCUMENTATION)

C7. SURFACE FINISHES :
- COLUMNS & WALLS OFF FORM
- FLOOR SLABS (U.N.O.) MACHINE FLOAT
- SLABS TO BE TILED WOOD FLOAT
- STAIRS STEEL TROWEL

(UNLESS NOTED OTHERWISE BY ARCHITECTURAL DOCUMENTATION)

C8. COMPACT ALL CONCRETE, INCLUDING FOOTINGS AND SLABS USING MECHANICAL VIBRATORS.

C9. PLACE CONCRETE CONTINUOUSLY BETWEEN CONSTRUCTION JOINTS SHOWN ON PLAN. DO NOT BREAK OR INTERRUPT SUCCESSIVE POURS SUCH THAT COLD JOINTS OCCUR. ANY REVISIONS OR ADDITIONS TO CONSTRUCTION JOINTS SHOWN ON PLAN REQUIRE APPROVAL FROM PMI ENGINEERS.

C10. CONCRETE PROFILES :
- BEAM DEPTHS ARE WRITTEN FIRST AND INCLUDE THE SLAB THICKNESS.
- SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.
- NO HOLES, CHASES OR EMBEDMENT OF PIPES OTHER THAN SHOWN IN THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR WRITTEN APPROVAL OF PMI ENGINEERS.
- PROVIDE DRIP GROOVES AT ALL EXPOSED EDGES. CHAMFERS, DRIP GROOVES, REGLETS ETC TO ARCHITECT'S DETAILS.

C11. ALL PENETRATIONS TO HAVE 2/N16 TRIMMER BARS TOP AND BOTTOM TO EACH FACE. U.N.O. EXTEND TRIMMERS 600 BEYOND PENETRATION.

C12. SETDOWNS OR FALLS IN FLOOR SURFACES ARE NOT PERMITTED UNLESS SHOWN ON DRAWINGS. MAINTAIN MINIMUM SLAB THICKNESS SHOWN ON PLAN WHERE FALLS OCCUR.

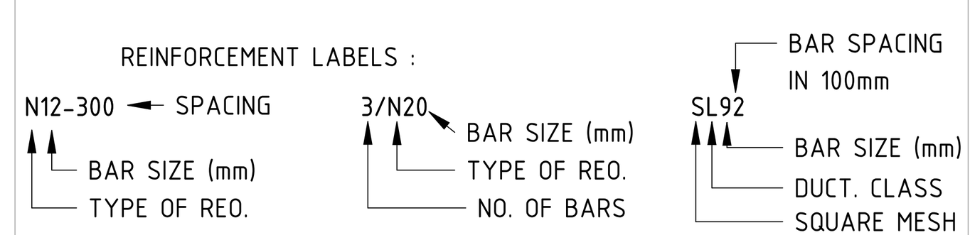
C13. CONCRETE IS INCLINED TO CRACK, AND SURFACE FINISH QUALITY IS LARGELY DEPENDENT UPON FINISHING AND PLACEMENT METHODOLOGY. AS SUCH PMI ENGINEERS TAKES NO RESPONSIBILITY FOR THE QUALITY OF CONCRETE FINISH.

C14. REINFORCEMENT QUALITY AND NOTATION :
ALL REINFORCING BAR SHALL BE GRADE D500N TO AS/NZS 4671-2001 AND ALL MESH SHALL BE GRADE 500L TO AS/NZS 4671-2001. UNLESS NOTED OTHERWISE CLASS L REINFORCEMENT SHALL NOT BE USED.

REINFORCEMENT NOTATION

SYMBOL	BAR TYPE	STRENGTH GRADE (MPa)	DUCTILITY CLASS	TO COMPLY WITH AUSTRALIAN STANDARD
S	STRUCTURAL GRADE DEFORMED RIB BAR	250	NORMAL	AS/NZS 4671-2001
N	STRUCTURAL GRADE DEFORMED RIB BAR	500	NORMAL	AS/NZS 4671-2001
R	PLAIN ROUND BAR	250	NORMAL	AS/NZS 4671-2001
RL	RECTANGULAR MESH DEFORMED RIB BAR	500	LOW	AS/NZS 4671-2001
SL	SQUARE MESH DEFORMED RIB BAR	500	LOW	AS/NZS 4671-2001
L-TM	TRENCH MESH	500	LOW	AS/NZS 4671-2001

REINFORCEMENT LABELS :



C15. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY, AND NOT NECESSARILY IN TRUE PROJECTION. BARS SHOWN ARE INDICATIVE ONLY AND LENGTHS MAY VARY. BEAM ELEVATIONS TAKE PRECEDENCE OVER SECTIONS. SLAB PLANS TAKE PRECEDENCE OVER SECTIONS. REFER TO SECTIONS FOR EXTRA BARS THAT MAY BE REQUIRED.

C16. USE ONLY PLASTIC OR CONCRETE CHAIRS AT EXTERNAL SURFACES.

C17. 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 AS3600-2009.

C18. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN POSITIONS SHOWN ON THE STRUCTURAL DRAWINGS OR IN POSITIONS OTHERWISE APPROVED IN WRITING BY PMI ENGINEERS. LAPS SHALL NOT BE LESS THAN THE DEVELOPMENT LENGTH FOR EACH BAR AND IN ACCORDANCE WITH AS3600-2018 SECTION 13.

C19. LAPS IN MESH IN ACCORDANCE WITH AS3600-2018 SECTION 13.

C20. WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY PMI ENGINEERS.

C21. AT EXTERNALLY EXPOSED SURFACES NO METALLIC ITEMS INCLUDING FORM BOLTS, FORM SPACERS, METALLIC BAR CHAIRS AND TIE-WIRE ARE TO BE PLACED IN THE COVER ZONE.

C22. ALL REINFORCEMENT, ANCHOR BOLTS AND OTHER CONCRETE INSERTS SHALL BE WELL SECURED IN POSITION AND INSPECTED BY PMI ENGINEERS PRIOR TO PLACING CONCRETE.

C23. HOLD DOWN BOLTS SHALL BE HOT DIPPED GALVANISED.

C24. U.N.O., ALL MASONRY ANCHORS INTO CONCRETE SHALL BE RAMSET TRUBOLTS (LONGEST VERSION) OR APPROVED EQUIVALENT. BOLTS SHALL BE GALVANISED WHERE THEY ARE ADJOINING NON FERROUS OR PREPAINTED MEMBERS. PROVIDE STAINLESS STEEL BOLTS FOR ALL EXTERNAL CONDITIONS, OR WHERE EXPOSED TO THE WEATHER.

C25. ALL CONCRETE MIXES SHALL BE DESIGNED BY A RECOGNISED TESTING LAB AND SUBMITTED FOR REVIEW BY PMI ENGINEERS.

C26. ALL COMPRESSIVE STRENGTH TEST REPORTS SHALL BE SUBMITTED TO PMI ENGINEERS FOR REVIEW.

C27. TESTING SHALL BE CARRIED OUT ON ALL CONCRETE IN ACCORDANCE WITH AS1379-2007. TEST CYLINDERS ARE TO BE KEPT ON SITE.

C28. 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 AS3799-1998 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.

C29. FOR ELAPSED TIME BETWEEN THE WETTING OF THE MIX AND THE DISCHARGE OF THE MIX, REFER TO CONCRETE - ELAPSED DELIVERY TIMES NOTE.

CONCRETE - ELAPSED DELIVERY TIMES

CE1. ELAPSED TIME BETWEEN THE WETTING OF THE MIX AND THE DISCHARGE OF THE MIX AT THE SITE MUST NOT EXCEED THE CRITERIA IN THE ELAPSED DELIVERY TIMETABLE BELOW

ELAPSED DELIVERLY TIME TABLE

CONC. TEMP. AT DISCHARGE (°C)	MAXIMUM ELAPSED TIME (HOURS)
≤ 24	2.00
24 to 27	1.50
27 to 30	1.00
30 to 32	0.75
32 to 35	0.50

IF THE ELAPSED TIME IS LONGER THAN THE CORRESPONDING TIME IN THE TABLE ABOVE, OR THE TEMPERATURE IS GREATER THAN 35°C, EITHER PMI ENGINEERS OR THE CONCRETE MIX DESIGN ENGINEER ARE TO BE CONTACTED TO CONFIRM WHETHER PLACEMENT IS TO PROCEED OR IF THE POUR IS TO BE STOPPED. IF THE POUR IS STOPPED, PRIOR TO ANY FURTHER CONCRETE PLACEMENT PMI ENGINEERS ARE TO BE CONTACTED TO INSPECT THE WORKS AND DETERMINE WHAT, IF ANY, RECTIFICATION WORKS ARE REQUIRED.

SLAB ON GROUND - RESIDENTIAL

RSG1. RESIDENTIAL SLABS ON GROUND SHALL BE IN ACCORDANCE WITH AS2870-2011.

RSG2. THE SITE OF THE WORKS SHALL BE STRIPPED OF ALL GRASS, ROOTS, VEGETABLE MATTER AND COMPRESSIBLE TOPSOIL.

RSG3. THE GROUND BELOW SLABS SHALL BE PROOF ROLLED WITH AN APPROVED HEAVY COMPACTOR. ALL "SOFT SPOTS" ENCOUNTERED SHALL BE REMOVED AND REPLACED WITH COMPACTED CRUSHED ROCK OR APPROVED FILL IN ACCORDANCE WITH AS2870-2011 & AS3798-2007.

RSG4. CLEAN GRANULAR FILLING UP TO 600mm MAY BE PLACED UNDER THE SLAB IN ACCORDANCE WITH THE PROVISIONS OF AS2870-2011 PART 6.4. FILLING SHALL BE COMPACTED IN 150mm THICK LAYERS BY MECHANICAL ROLLER.

RSG5. TERMITE PROTECTION SHALL BE PROVIDED AS REQUIRED BY AS3660.1-2000 AND THE LOCAL STATUTORY AUTHORITY.

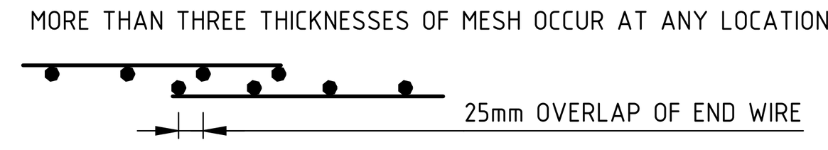
RSG6. SLABS SHALL BE LAID ON A 0.2mm POLYTHENE MEMBRANE, CONTINUOUS, LAPPED 20mm MINIMUM AND TAPED AT JOINTS, PUNCTURES AND SERVICE PIPE PENETRATIONS.

RSG7. BEAM AND STRIP FOOTING REINFORCEMENT SHALL ACHIEVE THE REQUIRED COVER AS NOTED IN CONCRETE SPECIFICATIONS

RSG8. TRENCH MESH SHALL BE LAID CONTINUOUSLY AND SHALL BE SPLICED WHERE NECESSARY WITH A LAP OF 600mm.

RSG9. TRENCH MESH SHALL BE OVERLAPPED BY THE WIDTH OF MESH AT CORNERS AND INTERSECTIONS AND THE ENDS OF TRENCH MESH SHALL TERMINATE WITH A CROSSBAR.

RSG10. MESH SHALL BE PLACED NEAR THE TOP OF THE SLAB AND SHALL ACHIEVE THE REQUIRED COVER. MESH SHALL BE LAPPED A MINIMUM OF TWO WIRES PLUS 25mm AND SHALL BE SET OUT SUCH THAT NO MORE THAN THREE THICKNESSES OF MESH OCCUR AT ANY LOCATION.



RSG11. HOT WATER HEATING PIPES MAY BE EMBEDDED IN THE SLAB IF THE THICKNESS IS INCREASED BY 25mm AND LAID ON SL52 MESH, OR IF THE SLAB THICKNESS IS INCREASED BY 25mm AND THE MESH SIZE IS INCREASED BY ONE SIZE (eg FROM SL82 MESH TO SL92 MESH).

RSG12. THE GROUND SURROUNDING THE SLAB SHALL HAVE ITS SURFACE AT LEAST 150mm LOWER THAN THE SLAB SURFACE AND BE GRADED AWAY FROM THE SLAB EDGE TO THE SITE DRAINAGE SYSTEM.

RSG13. ADDITIONAL PLUMBING REQUIREMENTS FOR CLASS M, H & E SITES.
CLASS M H or E SITES: THE BASE OF TRENCHES SHALL BE SLOPED AWAY FROM THE BUILDING. TRENCHES SHALL BE BACKFILLED WITH CLAY IN THE TOP 300mm WITHIN 1.5m OF THE BUILDING AND THE CLAY COMPACTED. WHERE PIPES PASS UNDER THE FOOTING SYSTEM THE FULL DEPTH OF THE TRENCH SHALL BE BACKFILLED WITH CLAY or CONCRETE. SUBSURFACE DRAINS TO REMOVE GROUNDWATER SHALL NOT BE USED WITHIN 1.5m OF THE BUILDING UNLESS NOTED OTHERWISE.
ADDITIONAL REQUIREMENTS FOR CLASS H & E SITES: THESE REQUIREMENTS APPLY TO ALL STORMWATER, SANITARY PLUMBING DRAINS & DISCHARGE PIPES.
- CLOSED-CELL POLYETHYLENE LAGGING SHALL BE USED AROUND PIPE PENETRATIONS THROUGH FOOTINGS. THE LAGGING SHALL BE A MINIMUM OF 20mm THICK ON CLASS H1 SITES & 40mm THICK ON CLASS H2 & CLASS E SITES. VERTICAL PENETRATIONS DO NOT REQUIRE LAGGING.
- DRAINS ATTACHED TO or EMERGING FROM UNDERNEATH THE BUILDING SHALL INCORPORATE FLEXIBLE JOINTS IMMEDIATELY OUTSIDE THE FOOTING AND COMMENCING WITHIN 1m OF THE BUILDING PERIMETER TO ACCOMMODATE A TOTAL RANGE OF DIFFERENTIAL MOVEMENT IN ANY DIRECTION EQUAL TO THE ESTIMATED CHARACTERISTIC SURFACE MOVEMENT ON THE SITE (ys). ys = ???, (IN THE ABSENCE OF THE SPECIFIC DESIGN GUIDANCE, THE FITTINGS or OTHER DEVICES TO ALLOW FOR THE MOVEMENT SHALL BE SET AT THE MID POSITION OF THEIR RANGE OF POSSIBLE MOVEMENT AT THE TIME OF INSTALLATION).
- PIPES MAY BE ENCASED IN CONCRETE or IN RECESSES IN THE SLAB WHEN PROVIDED WITH FLEXIBLE JOINTS AT THE EXTERIOR OF THE SLAB. METHODS USED SHOULD COMPLY WITH THE AS/NZS 3500 SERIES.
- COLD WATER PIPES AND HEATED or HOT WATER PIPES SHALL NOT BE INSTALLED UNDER A SLAB UNLESS THE PIPES ARE INSTALLED WITHIN A CONDUIT SO THAT IF THE PIPE LEAKS WATER IT WILL BE NOTICED ABOVE THE SLAB or OUTSIDE THE SLAB AND WILL NOT LEAK UNNOTICED UNDER THE SLAB. WATER SERVICE PIPES INSTALL UNDER CONCRETE SLABS SHOULD COMPLY WITH THE RELEVANT REQUIREMENTS OF AS/NZS 3500.1. HEATED WATER SERVICE PIPES INSTALLED UNDER CONCRETE SLABS SHOULD COMPLY WITH THE RELEVANT REQUIREMENTS OF AS/NZS 3500.4.

STEEL DECK SLABS (BONDEK or CONDECK)

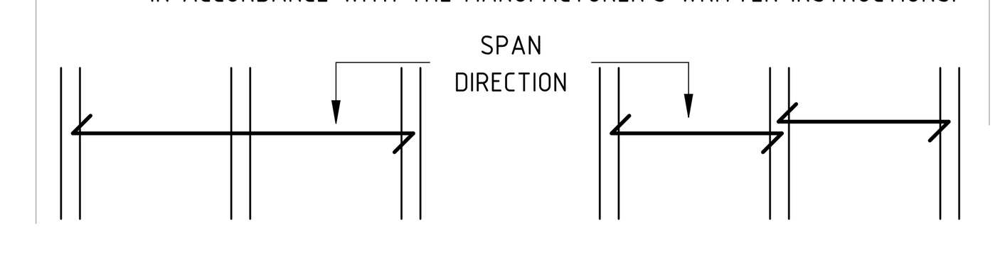
BS1. STEEL DECKING TO BE INSTALLED STRICTLY IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.

BS2. REFER TO PLAN FOR STEEL DECKING SPECIFICATION. CONTRACTOR MAY SUBMIT FOR APPROVAL EQUIVALENT DECKING PRODUCTS.

BS3. PROVIDE 40mm MINIMUM BEARING AT SUPPORTS.

BS4 AT ALL RE-ENTRANT CORNERS PROVIDE 3/N12 TRIMMERS 2000 LONG TIED TO UNDERSIDE OF MESH.

BS5. UNLESS NOTED OTHERWISE, PROVIDE TEMPORARY PROPPING OF DECK IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.



CONTINUOUS DECK SLAB SIMPLY SUPPORTED DECK SLAB