

DESIGN NOTES:

- WALLS HAVE BEEN DESIGNED IN ACCORDANCE WITH AS4778 EARTH RETAINING STRUCTURES FOR THE FOLLOWING PARAMETERS
- DESIGN TEMPERATURE = 20 DEGREES C
- STRUCTURE CLASSIFICATION = A
- DESIGN LIFE = 60 YEARS
- EARTHQUAKE CATEGORY - Bse
- DESIGNS ARE PROVIDED AS A GUIDE ONLY
- THE SUITABILITY OF THESE DESIGNS FOR SPECIFIC SITES SHOULD BE ASSESSED BY A CHARTERED PROFESSIONAL ENGINEER.

CONSTRUCTION NOTES:

- 1. RECONSTITUTED LIMESTONE BLOCKS**
 - A) RECONSTITUTED LIMESTONE BLOCKS SHALL BE DESIGNED AND MANUFACTURED FOR A 100 YEAR DESIGN LIFE IN ACCORDANCE WITH AS 4797 - APPROPRIATE FOR THE EXPOSURE CONDITIONS. AS A MINIMUM THE FOLLOWING SHALL BE COMPLIED WITH:
 - MINIMUM U.C. DENSITY = 1800kg/m³
 - MINIMUM U.C. STRENGTH = 7MPa AT 28 DAYS
 - 30mm ±10/0mm THICK MORTAR TO BE M4 CLASSIFICATION TO AS3710 BUT NOT LESS THAN UCS 7MPa AT 28 DAYS
 - B) ALL JOINTS TO BE FULLY MORTARED INCLUDING VERTICAL GAPS BETWEEN BLOCKS
 - C) DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STRUCTURE IN A STABLE CONDITION AND ENSURING NO PART IS OVERSTRESSED UNDER CONSTRUCTION ACTIVITIES.
- 2. FOUNDATION OF WALLS AND FOOTING**
 - A) ENSURE ALL LOOSE AND DISTURBED MATERIAL IS REMOVED FROM THE BASE OF TRENCH EXCAVATION
 - B) ENSURE THAT BASE OF WALL IS FOUNDED ON UNDISTURBED, NATURAL GROUND
 - C) THE FOUNDATION SHALL BE CLEAN COMPACT NATURAL SOIL WITH A MINIMUM COMPACTION LEVEL OF 100% STANDARD DRY DENSITY TO A DEPTH OF 1m. SUITABILITY OF FOUNDATION TO BE CONFIRMED BY GEOTECHNICAL ENGINEER. COMPACTION TESTS TO BE PERFORMED AT 1.5m INTERVALS UNTO
 - D) FOUNDING STABILITY FOR ALL MATERIALS TO BE CLASSIFIED AS 4 AND 5 SITES CLASSIFIED IN ACCORDANCE WITH AS 2710.1 WHERE FOUNDING STABILITY FOR ALL MATERIALS IS PRESENT. ADDITIONAL ADVICE SHOULD BE SOUGHT FROM A GEOTECHNICAL ENGINEER
 - E) FOOTINGS TO BE FOUNDED ABOVE WATER TABLE. IF GROUND WATER IS ENCOUNTERED DURING EXCAVATION, FURTHER ADVICE SHALL BE SOUGHT AS AN ALTERNATIVE FOOTING DESIGN WILL BE REQUIRED.
- 3. COMPACTION BEHIND WALLS**
 - A) BACKFILL MATERIAL SHALL BE CLEAN SAND (Ø<30° MINI. FREE FROM LARGE PIECES OF ROCK, CLAY, ORGANIC MATTER, TOPSOIL OR OTHER DELETERIOUS MATERIAL. SAND SHALL MEET THE FOLLOWING GRADING REQUIREMENTS

SEIVE SIZE	% PASSING
75MM	100%
26.5MM	50-100%
9.5MM	25-100%
4.75MM	15-100%
0.6MM	10-100%
0.075	0-10%

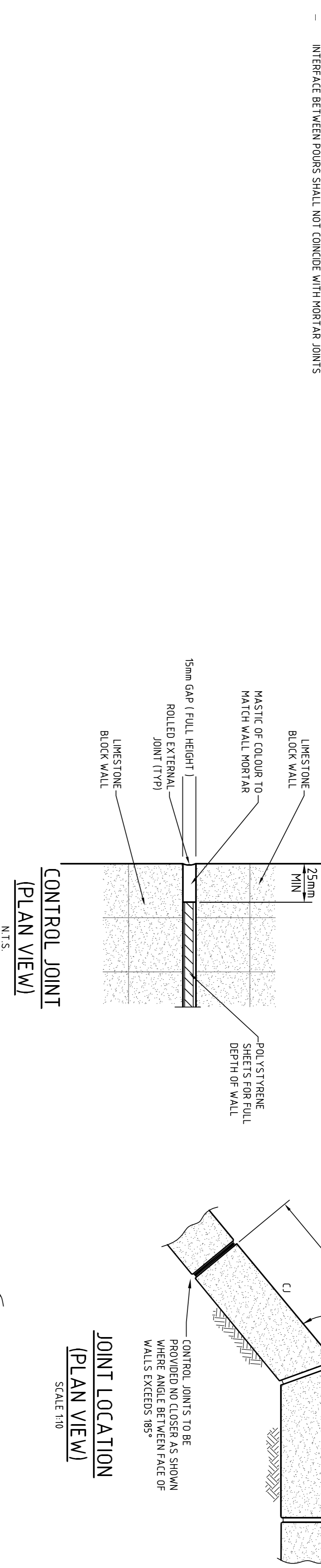
 - B) THE MATERIAL SHALL BE CAPABLE OF BEING BROUGHT TO OPTIMUM MOISTURE CONTENT (OMC) ± 2% TO ALLOW COMPACTION TO BE PERFORMED TO THE REQUIRED DENSITY
 - C) BACKFILL MATERIAL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 250mm THICK TO 95% STD. HEAVY FARTHOVING OR COMPACTION EQUIPMENT MASS EXCEEDING 9000G SHALL NOT BE USED WITHIN 1m OR A DISTANCE EQUAL TO THE TOTAL HEIGHT OF THE WALL, WHICHEVER IS GREATER.
 - D) APPROPRIATE RECORDS OF TESTING SHOWING COMPLIANCE WITH RESPECT TO COMPACTION REQUIREMENTS SHALL BE KEPT.
 - E) THE FREQUENCY OF COMPACTION TESTING SHALL BE ONE TEST PER LAYER PER 500m² OF PLACED MATERIAL. THE FREQUENCY OF COMPACTION TESTING CANNOT BE VARIED WITHOUT APPROVAL FROM THE ENGINEER.
- 4. CONTROL JOINTS**
 - A) CONTROL JOINTS(CJ) SHALL BE CONSTRUCTED WITHIN THE RETAINING WALL WHEN THE ANGLE BETWEEN FACES OF TWO WALLS EXCEEDS 95 DEGREES. THE CJ IS TO BE LOCATED ON ONE SIDE OF THE CHANGE IN DIRECTION AT A DISTANCE AWAY FROM THE DIRECTION CHANGE EQUAL TO THE WIDTH OF THE WALL AND SHALL BE 150mm WIDE AND FILLED WITH POLYSTYRENE SHEETING OR EXPANDED POLYTHYRENE COVERED WITH A 25mm DEEP MASTIC OF COLOUR TO MATCH WALL MORTAR. REFER TO DETAIL ALL WALLS EXCEEDING A STRAIGHT LENGTH OF 20m SHALL HAVE CONTROL JOINTS SPACED AT DISTANCES NO GREATER THAN 20m
- 5. GEOGRID**
 - A) GEOGRID TO BE GEORABRICKS TENSAR OR APPROVED EQUIVALENT
 - B) GEOGRID TO BE INSTALLED IN ACCORDANCE WITH GEORABRICKS MANUFACTURERS SPECIFICATIONS
 - C) GEOS TO BE BUTTED TOGETHER AND NOT OVERLAPPED WHERE GRID IS ON TOP OF BLOCK WORK
- 6. DRAINAGE**
 - A) DRAINAGE TO BE PROVIDED BEHIND BASE OF EACH WALL (REFER TO SECTION DETAILS)
 - B) NO FINES OPTION REQUIRES AG DRAIN CONNECTION TO EXISTING S/W SYSTEM
- 7. CONCRETE**
 - A) ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH AS3600
 - B) COMPACT CONCRETE USING APPROVED INTERNAL VIBRATORS
 - C) THE CONCRETE MANUFACTURER REPORTS SHALL BE FORWARDED TO THE ENGINEER
 - D) AS 1379. THE ASSESSMENT REPORTS SHALL SATISFY THE FOLLOWING PERFORMANCE CRITERIA.

GRADE	SLUMP	MAX. AGG.	MIN. CEMENT CONTENT
BLINDING BACKFILL	N15	20mm	210kg/m ³
CONCRETE FOOTING	N20	80mm	210kg/m ³

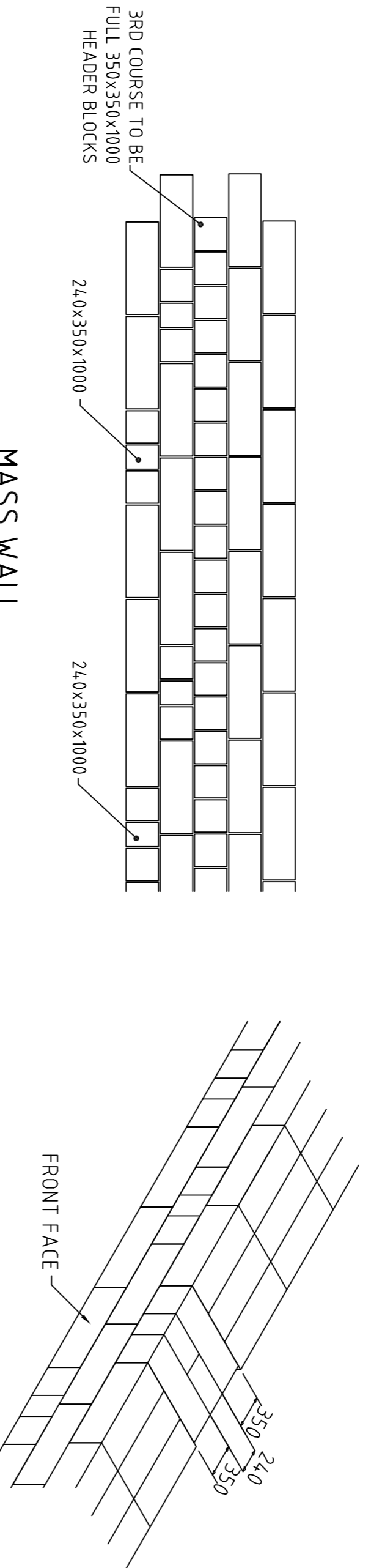
 - WATER CEMENT RATIO OF 0.40
 - MINIMUM COVER TO ALL REINFORCEMENT SHALL BE 50mm UNDO
 - CONCRETE MIX DESIGN SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL
 - NO CONCRETE ADMIXTURES OR ADDITIVES SHALL BE USED WITHOUT WRITTEN APPROVAL FROM THE ENGINEER. AIR WATER REDUCERS ARE PERMITTED
 - THE LOCATION OF CONSTRUCTION JOINTS SHALL NOT BE USED
 - CONCRETE SHALL BE CONTINUOUSLY CURED FOR AT LEAST 7 DAYS USING A METHOD APPROVED BY THE ENGINEER.
 - FORMWORK AND FASTENERS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH AS 3610
 - THE CONTRACTOR SHALL EMPLOY CONCRETE PLACEMENT METHOD SO AS TO:
 - PREVENT SEGREGATION OR LOSS OF MATERIALS.
 - PREVENT PREHATURE STRENGTHENING.
 - PREVENT NONCONFORMING DISPLACEMENT OF REINFORCEMENT LIGATURES OR EMBEDMENTS.
 - PRODUCE A DENSE HOMOGENEOUS PRODUCT WHICH IS MONOLITHIC BETWEEN PLANNED JOINTS AND/OR THE EXTREMITIES OF UNITS OR BOTH.
 - COMPLETELY FILL THE FORMWORK TO THE INTENDED LEVEL, EXPEL ENTRAPPED AIR AND SURROUNDING REINFORCEMENT AND EMBEDMENTS.
 - CONTROL CRACKING INCLUDING THAT CAUSED BY PLASTIC DRYING SHRINKAGE, CONCRETE SLUMPING AND PLASTIC SETTLEMENT
 - UNDER NO CIRCUMSTANCES SHALL FORMWORK OR PROTECTING REINFORCEMENT BE SHAKEN, DISPLACED OR DISTURBED MORE THAN TWENTY MINUTES AFTER PLACING THE CONCRETE.

8. NO FINES CONCRETE

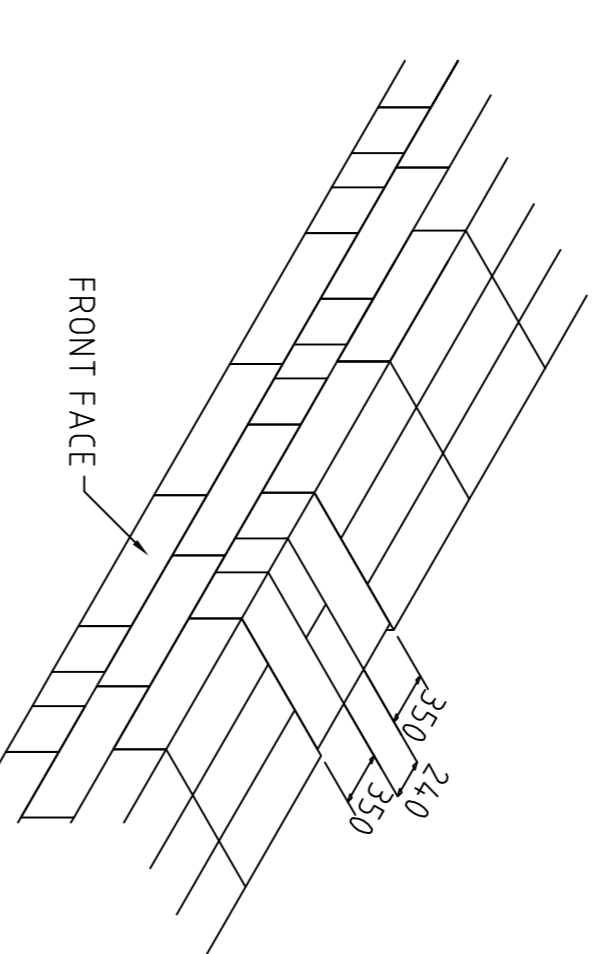
NO FINES CONCRETE SHALL CONSIST OF CEMENT, WATER AND COARSE AGGREGATE. CEMENT WILL COMPLY WITH THE DEFINITIONS FOR CEMENT PER AS3902-1991 - PORTLAND AND BLENDED CEMENTS. THE QUANTITY OF CEMENT IS SPECIFIED AS 280kg/m³ WITH A TOTAL WATER/CEMENT RATIO OF BETWEEN 0.45 AND 0.55. THE PARTICLE SIZE DISTRIBUTION OF THE AGGREGATE SHALL COMPLY WITH THE LIMITATIONS OF THE NORMAL SINGLE SIZED 20mm AGGREGATE SPECIFIED IN AS2758.1. COMPRESSIVE STRENGTH OF NO-FINES CONCRETE SHALL EXCEED 5MPa. VERTICAL HEIGHT OF EACH POUR SHALL NOT EXCEED 600mm. INTERFACE BETWEEN POURS SHALL NOT CONCLUDE WITH MORTAR JOINTS



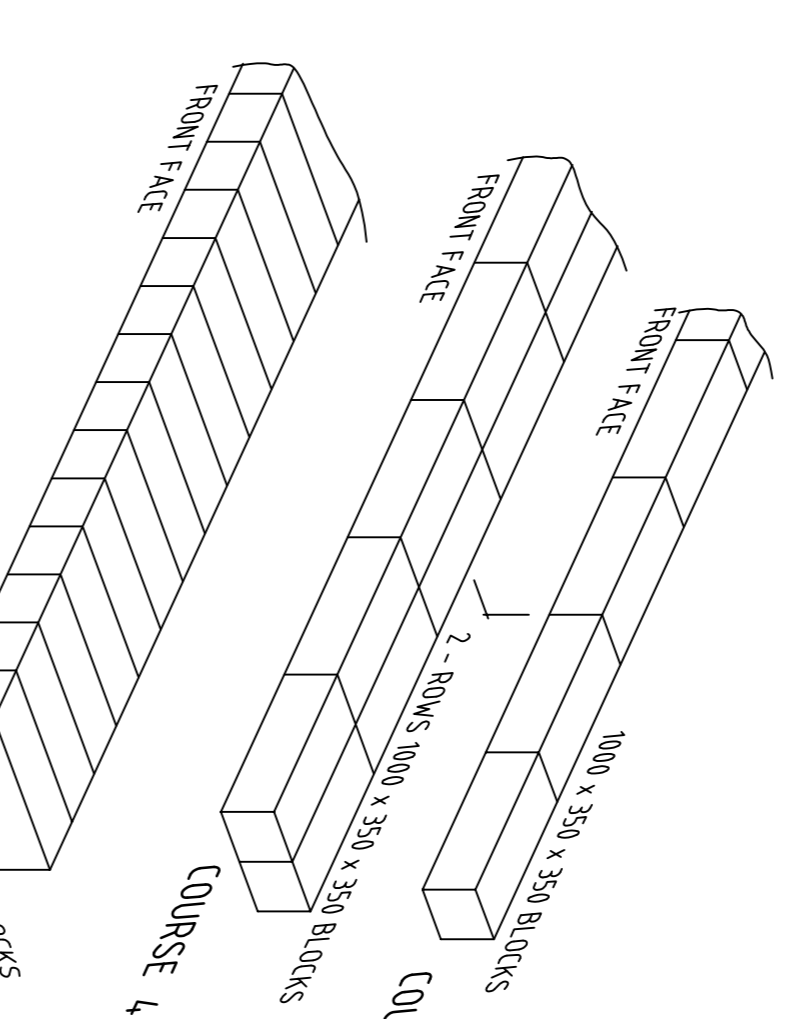
JOINT LOCATION (PLAN VIEW)
SCALE 1:10



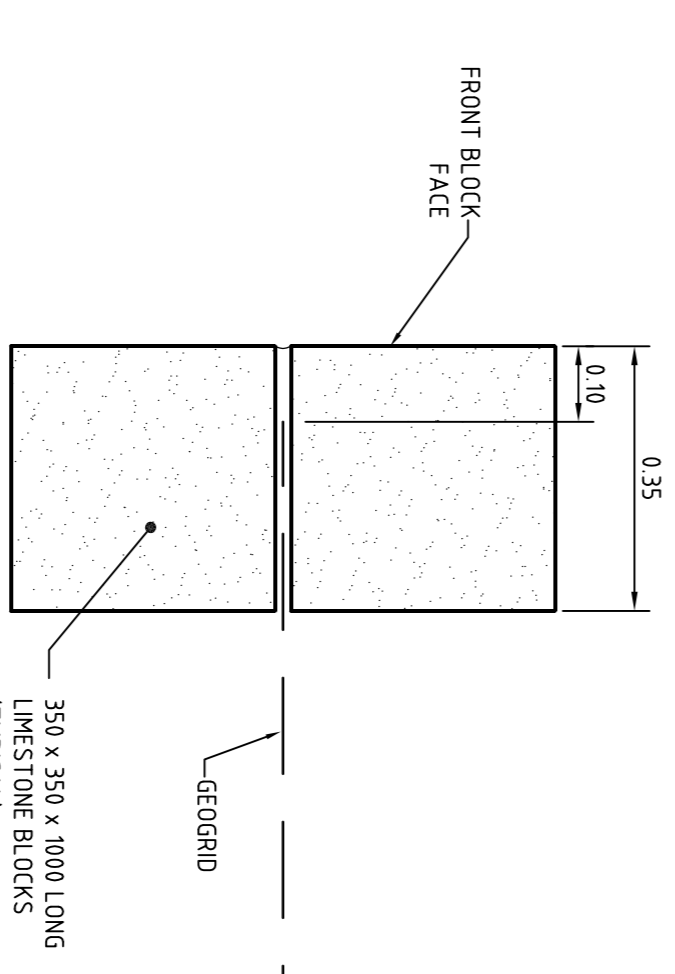
MASS WALL FRONT ELEVATION
SCALE 1:50



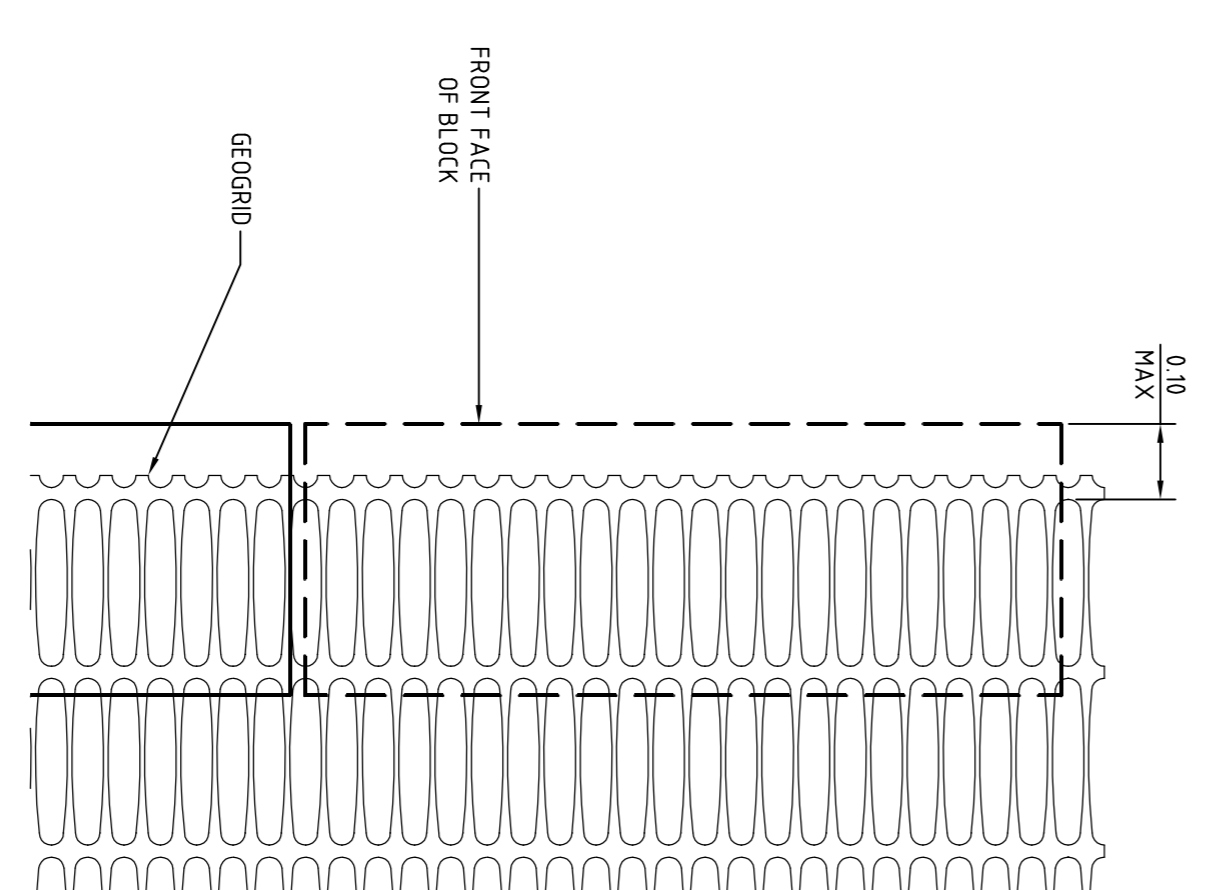
MASS WALL TYPICAL HEADER BLOCK DETAIL BELOW 3RD COURSE
SCALE 1:50



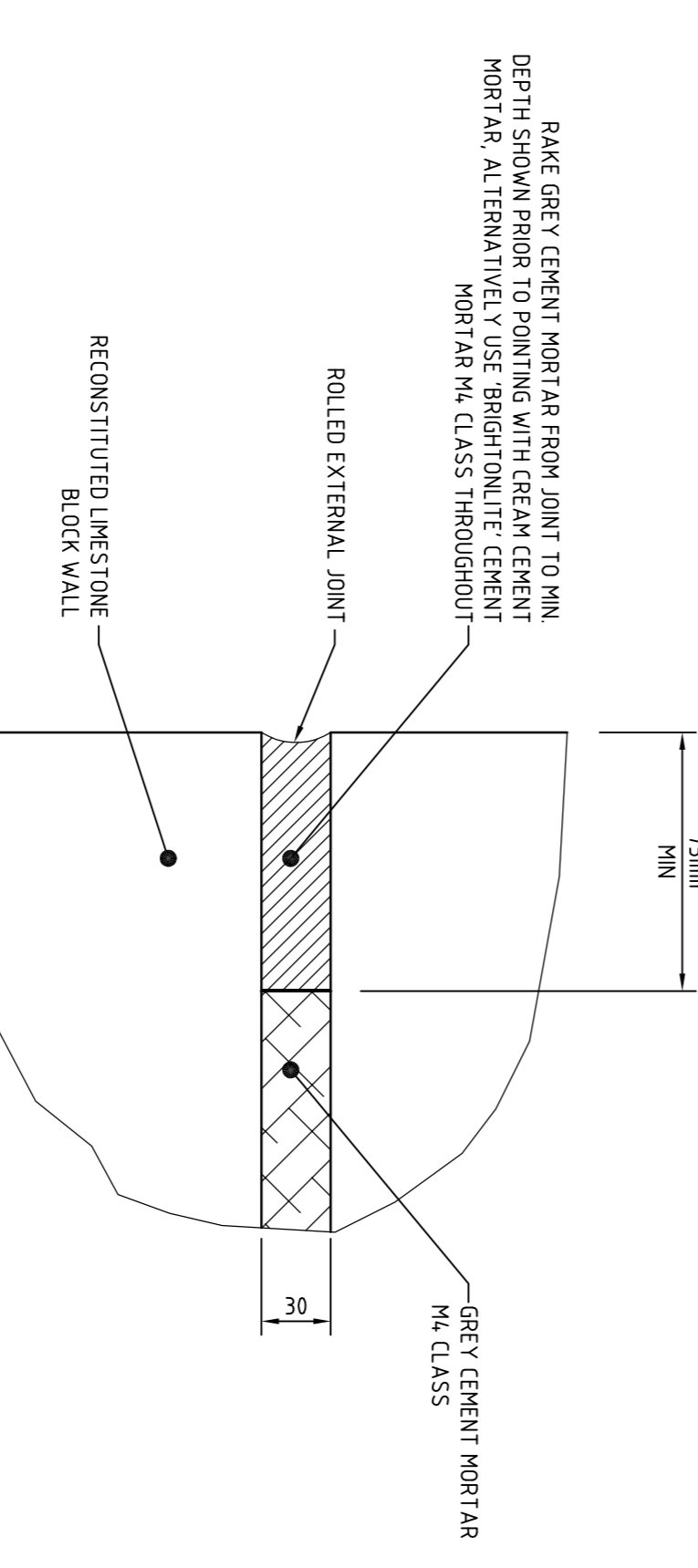
MASS WALL TYPICAL BLOCK LAYOUTS FOR COURSES 3-5 OF 5 COURSE WALL
SCALE 1:50



TYPICAL GEOGRID FIXING DETAIL (SECTION)
SCALE 1:10



TYPICAL GEOGRID FIXING DETAIL (PLAN VIEW)
SCALE 1:10



TYPICAL WALL MORTAR JOINT DETAIL
SCALE 1:2

