

EXISTING UNITS RE-LEVEL 41A AND 41B OLLIVIERS ROAD CHRISTCHURCH

STRUCTURAL SKETCH LIST

Job No 26021

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		DATE	05/02/26	05/02/26
REVISION NO:			A	B
SK No:	TITLE			
S0.00	SPECIFICATION		A	B
SK.01	SITE PLAN		A	
SK.02	EXISTING LEVELS		A	B
SK.03	RE-LEVEL PLAN		A	B
SK.04	DETAILS 01		A	B
SK.05	DETAILS 02		A	

- 1.1 All drawings to be read in conjunction with all relevant Structural Engineer's and Specialist's drawings and specifications.
- 1.2 All Work shall comply with the relevant clauses of the New Zealand Building Code, best practice and relevant New Zealand Standards and Codes of Practice.
- 1.3 The Contractor shall be responsible for verifying all dimensions on site and ensuring that all dimensions and levels shown on the drawings are correct and consistent with other relevant drawings. Any discrepancies are to be reported immediately to the Engineer
- 1.4 If at any time prior to Practical Completion, the Contractor should become aware of any signs of distress, excessive settlement or deflection, conflict of components or any other indications whatsoever of actual or potential damage to the Contract Works or any part thereof, they shall forthwith notify the Engineer, and confirm such notice in writing as soon as is practicable.
- 1.5 Materials and components to be appropriate for intended use.
- 1.6 The Contractor shall design temporary propping works and be able to provide a Producer Statement (PS1-design) if requested.
- 1.7 The protection and durability requirements of steel, timber, concrete and masonry materials shall comply with Section 4 NZS 3604:2011. Please refer to Architectural plans and specifications for further details.
- 1.8 All weather tightness details are to be specified by others and are especially excluded from structural details.

2.1 To verify the works have been constructed as per the design the following inspections:

Structural Element	Construction monitoring method
Construction methodology	Submit to RCE before commencing
Asbestos testing to be provided to engineer for review before construction	Submit to RCE before commencing
Subfloor inspection once subfloor access has been provided	By Richards Consulting Engineers
100kPa bearing and excavation for new piles	By RCE
Post re-levelling floor levels (before jacks removed)	By Richards Consulting Engineers
Sub-floor connections	By Richards Consulting Engineers
Epoxy injection of the foundation wall cracking	By PS3 from the contractor

- 2.2 A minimum of 48 hours' notice shall be provided to the Engineer before an inspection is required.
 - 2.3 Failure to have the structural work inspected may result in Richards Consulting Engineers Limited not able to issue a PS4 or destructive testing to expose hidden structural elements.
- 3.0 EXCAVATIONS AND FOUNDATIONS**
- 3.1 All organic material shall be stripped from under the foundations. All soft spots to be fully excavated and backfilled as per the Engineers direction.
 - 3.2 Assumed geotechnical ultimate bearing capacity of 100kPa from a minimum depth of 500mm below ground level (BGL) unless noted otherwise. If the recommended founding stratum is not encountered at the foundation level, the Engineer is to be informed before work proceeds in that area.

- 4.1 Carry out work in accordance with NZS 3109:1997 – Concrete construction.
- 4.2 No additives are to be included in the concrete without the Engineer's approval.
- 4.3 Concrete compressive strengths at 28 days shall be:
 - New timber pile footings – 20 MPa.
 - Site concrete – 17.5 MPa.
- 4.4 The following finishes are required, unless specified by the architect:
 - Unexposed foundations F1.
 - Exposed foundations F3.
- 4.5 The specified finishes are to be in accordance with the standards defined in NZS 3114:1987 – Concrete surface finishes.
- 4.6 Reinforcing shall have the following minimum covers:
 - 50mm to exterior air and protected ground (i.e. DPM).
- 4.25 All post-installed anchor connections shall require the following minimum edge distances, unless specified otherwise:
 - M12 bolt – 65mm.
 - M16 bolt – 90mm.

- 5.1 All timber shall be a minimum of H3.2 unless noted otherwise. All timber that is in direct contact with either concrete or soil shall be H5.
- 5.2 Timber shall be treated as set out in NZS 3602:2003 – Timber and Wood-based Products for use in Buildings.
- 5.3 All timber screw and nail connections (pre-bored to 0.8d) shall have the following minimum spacings, unless specified otherwise:

	<i>Perpendicular to timber grain</i>	<i>Parallel to timber grain</i>
Edge Distance	5d	10d
Spacing	5d	10d

- | | Perpendicular to timber grain | | Parallel to timber grain | |
|---------------|-------------------------------|-----------|--------------------------|-----------|
| | SG8 | Otherwise | SG8 | Otherwise |
| Edge Distance | 5d | | 12d | 20d |
| Spacing | 5d | 10d | 10d | 20d |

- 5.5 DPC shall be installed between H5 timber piles and H3.2 timber bearers or joists.
- 5.6 All external timber fixings (i.e. sub-floor or deck framing) shall be stainless steel. All other fixings shall be galvanised.
- 5.7 Where “epoxy” has been specified use HILTI HY 200 epoxy, or similar epoxy suitable for Seismic C2 loadings as assessed by EOTA TR 049, designed as per EN 1992-4:2018. Ensure the following minimum embedment depths (unless specifically specified otherwise):
 - M12 bolt – 110mm embedment.
 - M16 bolt – 125mm embedment.
- 5.8 Post-installed “epoxy” bolts must be installed as per the relevant supplier guidelines as applicable for specified anchor and epoxy systems. Contractor to determine, by review of supplier specifications, the minimum working and curing times for all systems prior to construction.
- 5.9 Plywood bracing shall be installed as per the Ecoply Specification & Installation Site Guide. The Contractor shall verify any substitutions with the Engineer prior to placing an order.

- 6.1 The Contractor shall inspect the house sub-floor before submitting a tender to confirm access and levelling methodology.
- 6.2 The Contractor shall make allowance for lateral stability when lifting the house.
- 6.3 The floors shall be measured with a laser level while re-levelling.
- 6.4 The objective of the re-levelling is to remove earthquake-related foundation settlement. Note the following points:
 - Ensure floor slopes less than 0.3% between any two points further than 2 metres apart. However, if door and window frames are significantly deformed as a result of the levelling, then this criterion may need to be relaxed to match the pre-settlement levels. Note that the levels of the two units can be considered separate and localised to the single unit
 - Create a planar floor with a maximum 30mm variation. Note that the levels of the two units can be considered separate and localised to the single unit
 - Where window frames, bay windows and other structures have been built out of level then these structures should be levelled to match the pre-

- earthquake levels as far as reasonably practicable without damaging the claddings and structure.
- 6.5 Pack the piles with H5 timber packers. The packer shall consist of a maximum of two solid pieces and a DPC placed between the pile and packers.
- 6.6 The connection of the pile to the bearer shall be re-established using new stainless-steel fixings. The fixings shall consist of either of the following:
- Fixings outlined in section 6 of NZS 3604:2011.
 - Two lumberlok CT 200 ceiling ties.
 - Steel plates with a minimum of 2M12 bolts epoxied into concrete piles or foundation walls and 6-3.15dia. FH nails into timber.
- 6.7 When blocking on top of concrete piles a DPC layer shall be placed between the piles and blocking.

7.1 Outlined below is a summary of the re-levelling methodology:

- The Contractor is to confirm the methodology with the engineer before commencing.
- Asbestos inspections shall take place to locate and remove asbestos as required.
- Allow to remove and reinstate services.
- All connections between the timber subfloor, foundation walls, concrete bases and piles are to be removed or severed.
- Timber framing or flooring identified to have significant moisture or borer damage is replaced.
- The subfloor framing and internal bearers shall then be lifted using mechanical jacks on dunnage.
- The existing bottom-bottom plate and timber packers shall be removed.
- Engineer to verify floor levels before connecting any subfloor or pouring overpinning grout.
- The perimeter foundation wall shall have a structural repair micro-concrete installed as an overpinning layer. Refer to the section below for overpinning methodology.
- Install new subfloor connections to piles.
- Install new bottom bottom plate and new epoxy anchors from the subfloor framing to the foundation wall.
- At the completion of the re-levelling, the contractor shall ease and adjust all doors, sashes and cupboard doors, drawers and other openable or moving parts.
- The contractor shall make good any cracked linings, claddings, windows, flooring and trims as a result of the re-levelling. This is outside the scope of this re-level design and will be managed by others.

- After re-leveling, cracks in the perimeter concrete foundation will be repaired using epoxy resin injection. Note that this includes the rest of the structure and is not limited to the re-level area. This shall be completed by an approved concrete applicator, ensuring full penetration of the crack.
- 7.2 Over-pinning Mortar Methodology:
- Install a new DPC layer to subfloor framing and replace moisture or insect-damaged timber.
 - Break out and remove all defective/unsound concrete, using a wire brush.
 - Allow to adjust vent heights as required to make vents all level with each other.
 - All surfaces must be clean and free from loosely adhering particles or any surface contamination such as dirt, dust, grease, oil etc.
 - Form boxing at the top of the foundation wall in line with Sika guidance.
 - Wet down the prepared surface until the concrete is fully saturated with water. Once the surface has returned to a matt damp appearance, apply 1 coat of Sika MonoTop Primer, nominally 1mm thick, to the repair interface. Work the material well into the surface using a brush or broom.
 - The subsequent micro-concrete must be applied whilst the Sika MonoTop Primer bonding bridge is still wet. If the bond coat does dry before application of the repair mortar, then Sika MonoTop Primer must be reapplied.
 - While the bonding coat is still tacky, pour Sika MonoTop Micro Concrete into the cavity to restore line and level.
 - Trowel the final surface to achieve a smooth, tight finish to the foundation wall.

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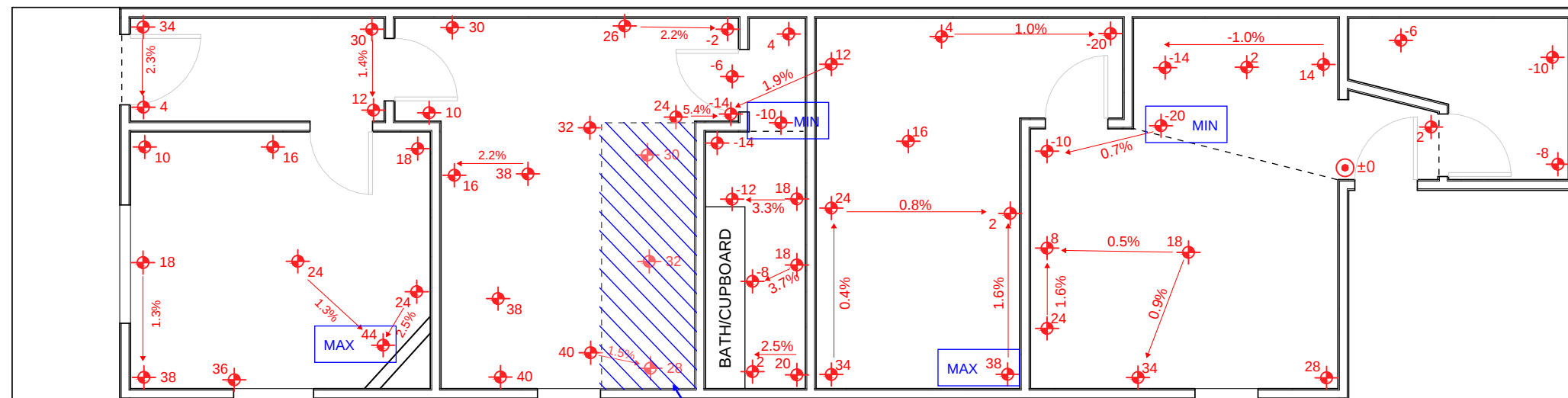


SITE LAYOUT PLAN

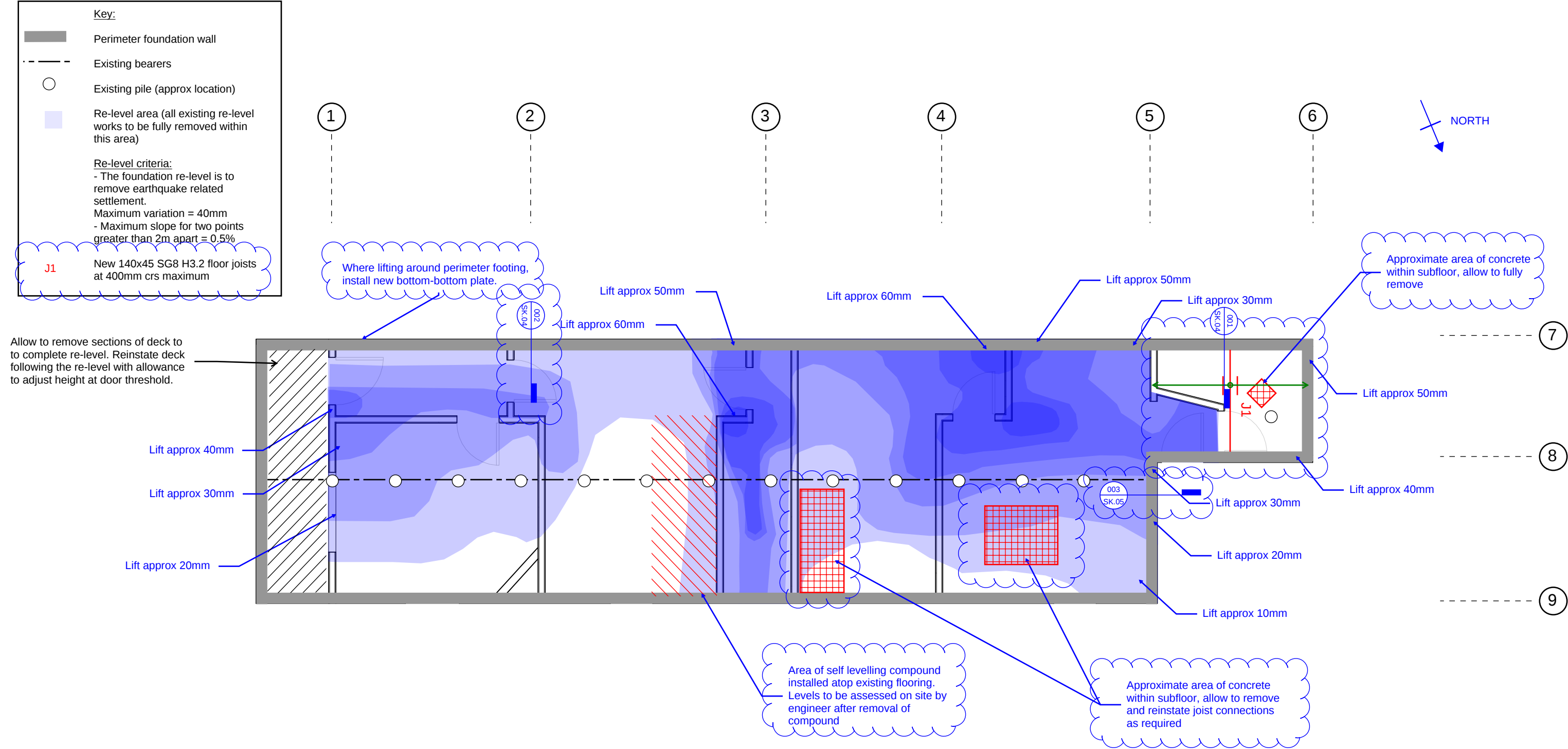
SEDIMENT CONTROL

- 1. Sediment to be controlled where foundation area to be removed.
- 2. All sediment control to comply with NZBC E1 and contractor to oversee all sediment control.
- 3. Surplus gravel to be contained behind sediment fences.

REV NO.	REVISION	DATE	APPROVED	PROJECT NO.	26021	DESIGNED	JB
A.	BUILDING OCNSSENT	05/02/26	CB	SCALE @ A3	N/A	DRAWN	
				REV NO.	A	SHEET NO.	SK.01

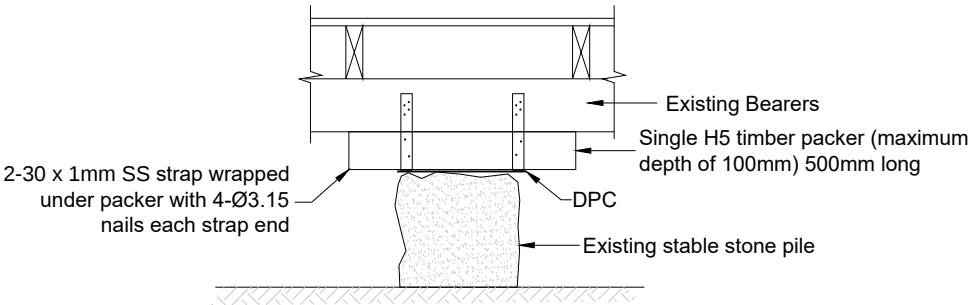
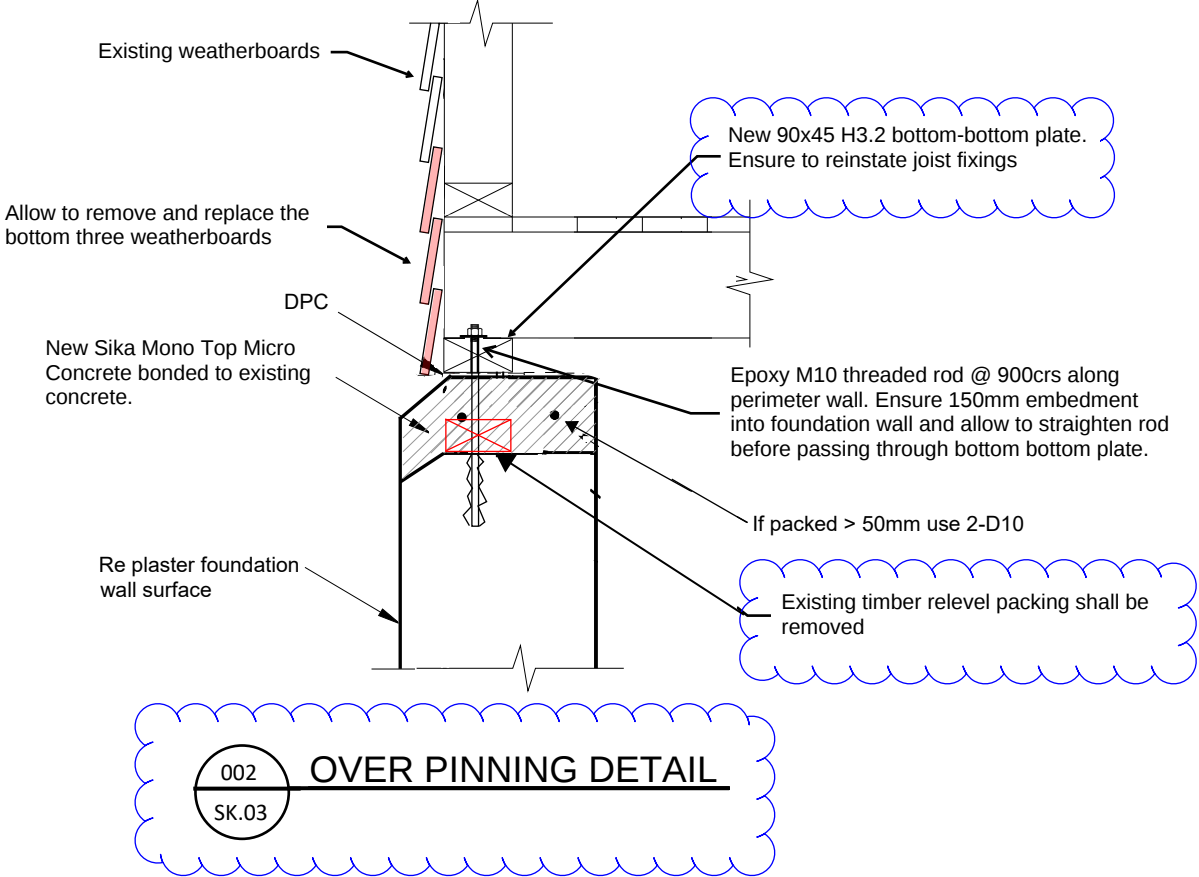
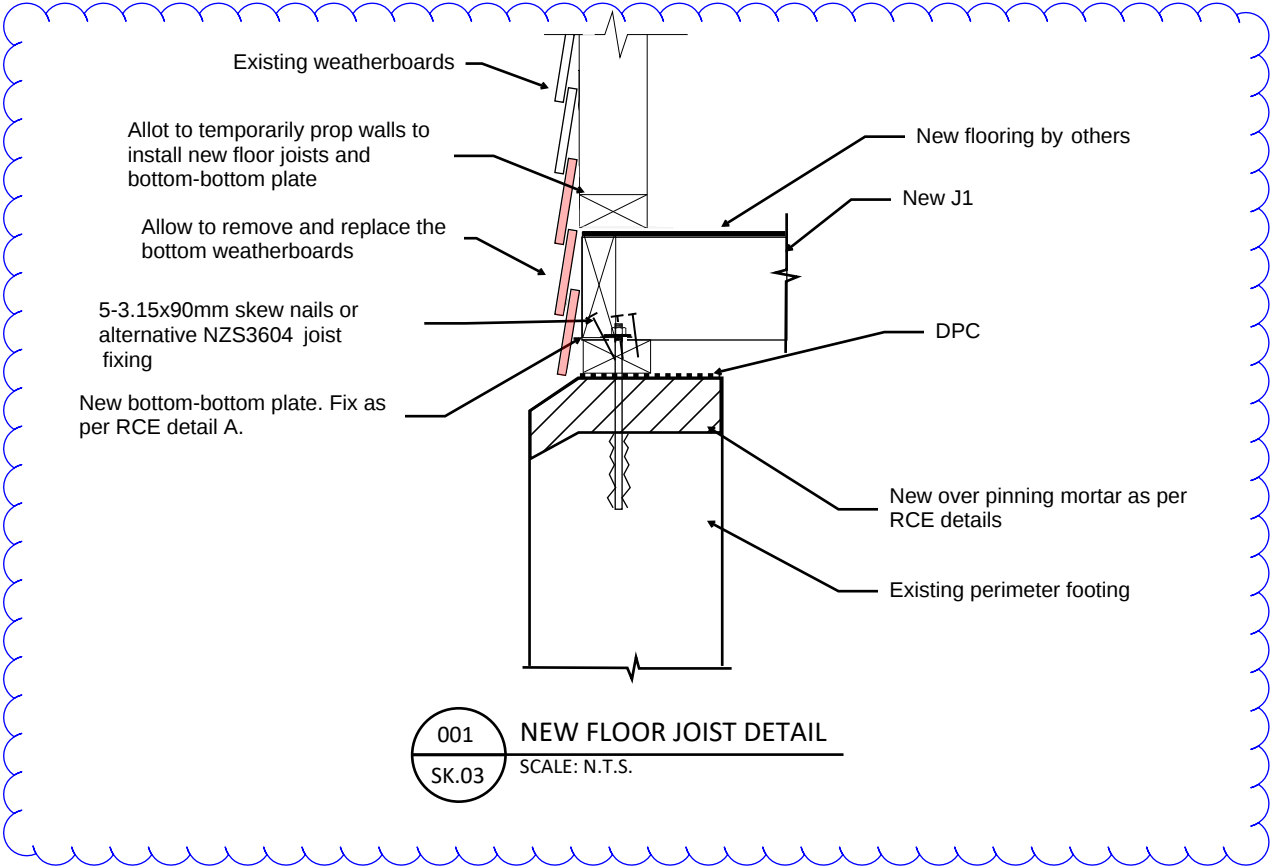


LEGEND	
	DATUM
	SPOT LEVEL (mm)
	DIRECTION OF LOCAL FLOOR SLOPES
	CHANGE IN FLOORING/STEP (NOTE FLOOR LEVELS HAVE BEEN ADJUSTED TO ACCOUNT FOR THIS)
	UNIT SPECIFIC MINIMUM LEVEL (mm)
	UNIT SPECIFIC MAXIMUM LEVEL (mm)

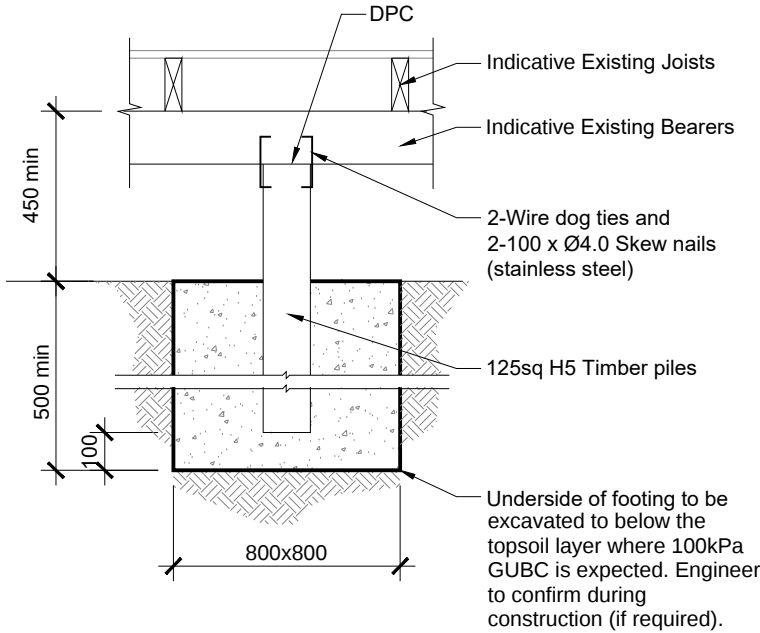


NOTES:

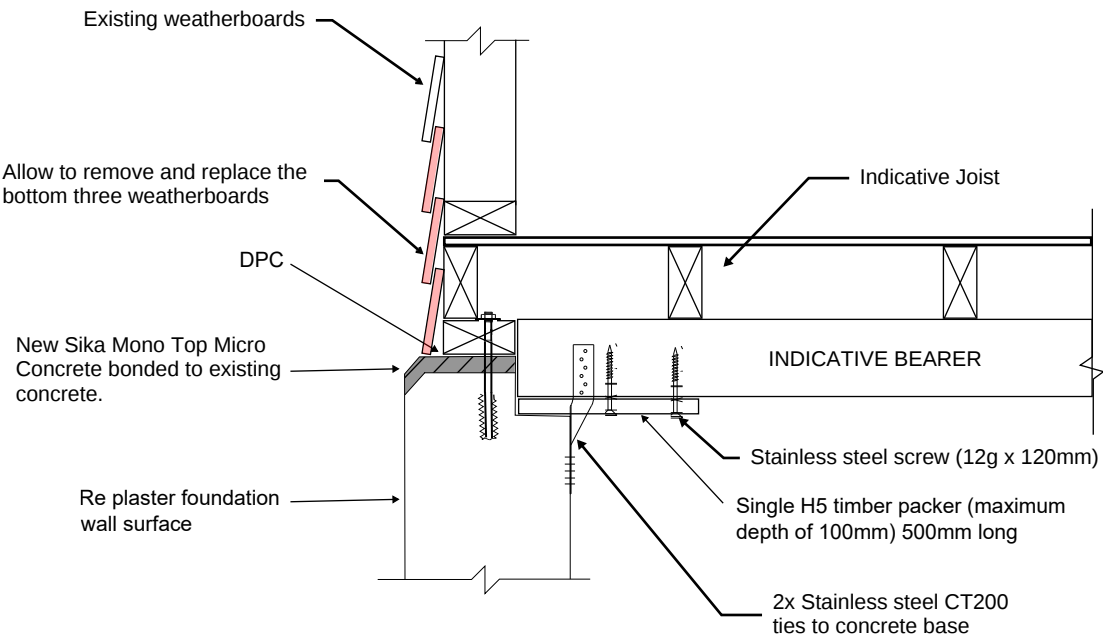
1. Detach all affected services prior to relevelling
2. All timber framing to be detached from concrete bases before relevelling.
3. Where existing framing or flooring has significant moisture damage or borer damage we recommend replacement of this framing as part of the relevelling works.
4. At vents in foundation wall, allow to form/box the mortar overpinning to match existing.
5. If pile packing will exceed 100 mm pile to be replaced.
6. DPM to be installed between pile and bearer (existing and new)



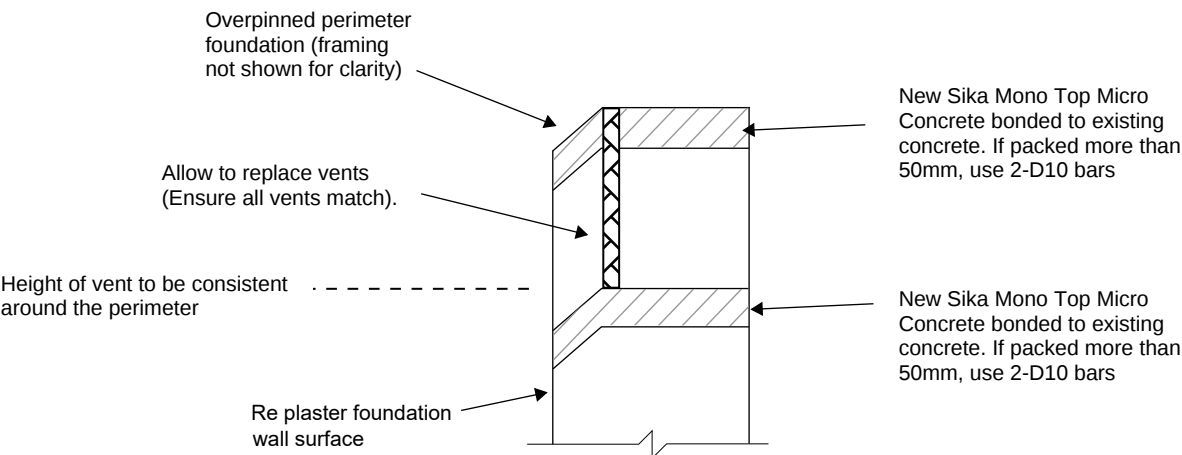
TYPICAL PILE PACKING DETAIL



TYPICAL NEW PILE DETAIL



003 BEARER PACKING AT CONCRETE PERIMETER/BASE
SK.03



TYPICAL VENT DEATAIL