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BENEX

Benex Masonry Installation Manual

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Contents

Benex Products/Trim and Accessories

There are a number of different products/trims and accessories in the Benex Block range, some of these are:

Products/Trim and Accessories	
2.1	H600R Series
2.2	Benex Capping Blocks
2.3	Bond Beam Plates
2.4	Benex Column Connectors
2.5	Benex 100mm Solid Infill Blocks
2.6	Benex Mix Adhesive
2.7	Benex Beams/Lintels

Refer overleaf for product particulars.

2.1 H600R (Regular) Series – Hollow Block

This block is the most versatile and economical. The face and sides have an off white cement finish with some minor pin holes. The finish is suitable for all wall applications.

The H600R should also be specified for all composite walls where the face is either rendered or covered with gyprock and or painted. The rear face of the H600R is ideal for texture paint and rendered applications.

While all the testing that has resulted in the outstanding fire rating, thermal, acoustic and impervious to water properties of BenexBlock™ walls has been done on non- core filled walls, it is easy and practical to reinforce and core fill them.

Core filled BenexBlock™ walls are ideal for retaining walls in landscaping applications.

It is also possible to fill the walls selectively to provide concealed columns and beams, thereby solving many structural challenges.

Clever engineering will enable BenexBlock™ walls to be used in multi-storey construction as the primary floor can eliminate the need for steel reinforced columns, at the same time reducing the trades on site.

A BenexBlock™ wall built in accordance with the BenexBlock™ approved standard details performs very differently from more traditional forms of masonry. Because the blocks are laid with an adhesive, once cured they act more like a monolithic concrete wall — you can cut openings and form penetrations in BenexBlock™ walls that are not possible in other masonry walls. Consequently the need for reinforcing BenexBlock™ walls is not as critical. However, we are producing a H600R block that has a notch to enable the installation of standard horizontal reinforcing bars.

When core-filling the Benex wall there is no need to vibrate the core filling. In fact this could damage the wall.

Always consult your structural engineer prior to commencing on the site.

2.2 Benex Capping Block

The Benex capping blocks have been designed to be used either horizontally, vertically or any other angle. When used in conjunction with a Benex retaining wall, for example, the capping blocks finish the wall with clean sharp lines. Unlike most other masonry capping blocks, when the BenexMix Adhesive is completely dry the capping blocks are virtually impossible to dislodge. However for high traffic areas polyurethane adhesives will provide more flexibility.

When the capping blocks are used vertically they should be fixed with a good quality polyurethane adhesive and treated pine or class 4 coated Tek screws (Similar to Chip Bond Screws). There is no need to pre-drill the Benex products —Tek screws will easily drill into the Benex products and hold fast.

2.3 Bond Beam Plates

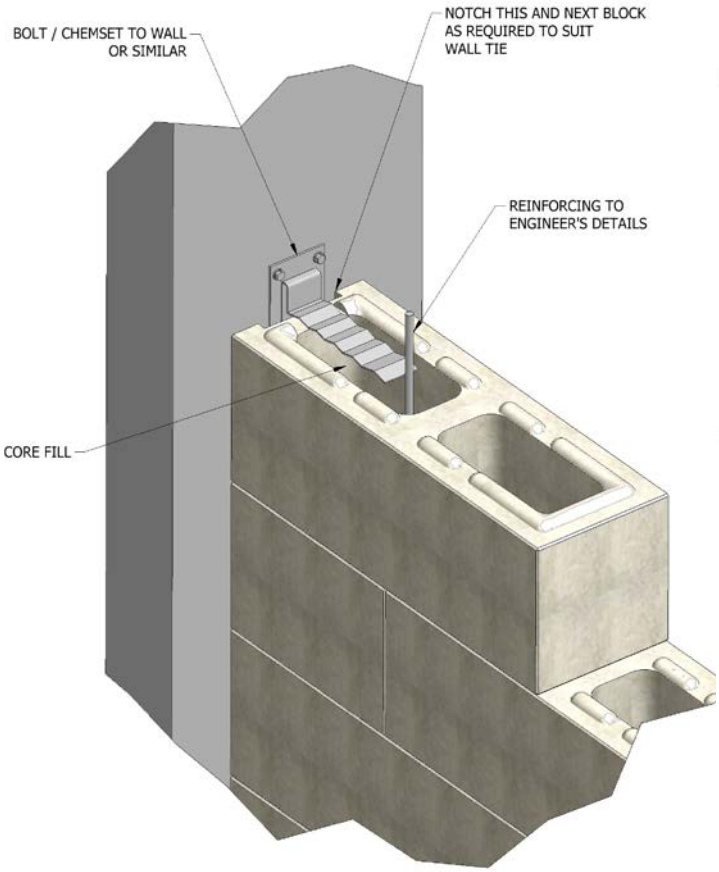
It has always been difficult to install bond beams into a hollow block wall. The main reason for this is standard concrete blocks require a special bond beam block. These blocks are easily damaged on site and require specific ordering. The Benex bond beam plates are light weight so that hundreds can be packed into a cardboard box and carried onto site.

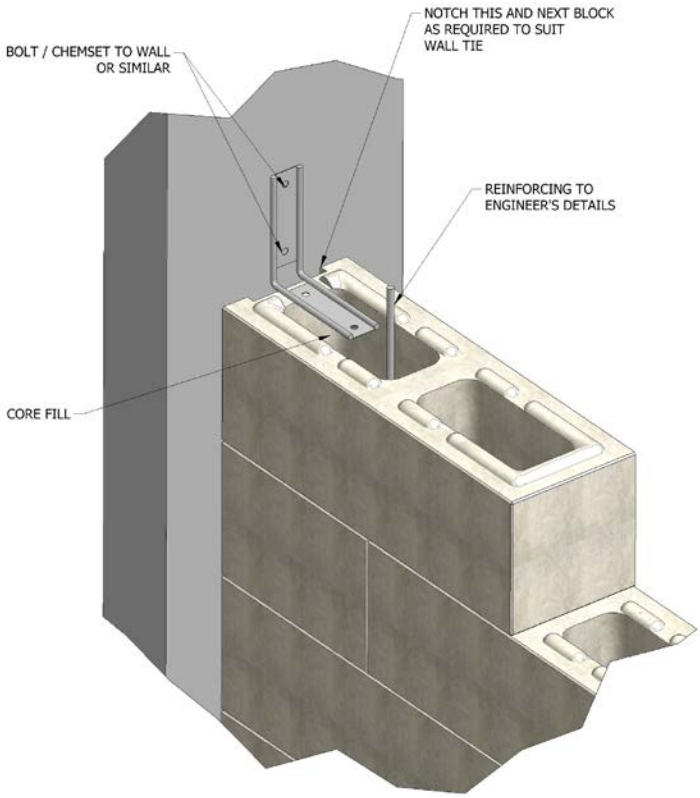
The Benex bond beam plates allow Benex installation crews to install a bond beam wherever they need to. They also eliminate the need for different types of blocks on site, thus saving confusion at the ordering stage and making for a very simple but effective solution.

2.4 Benex Column Connectors

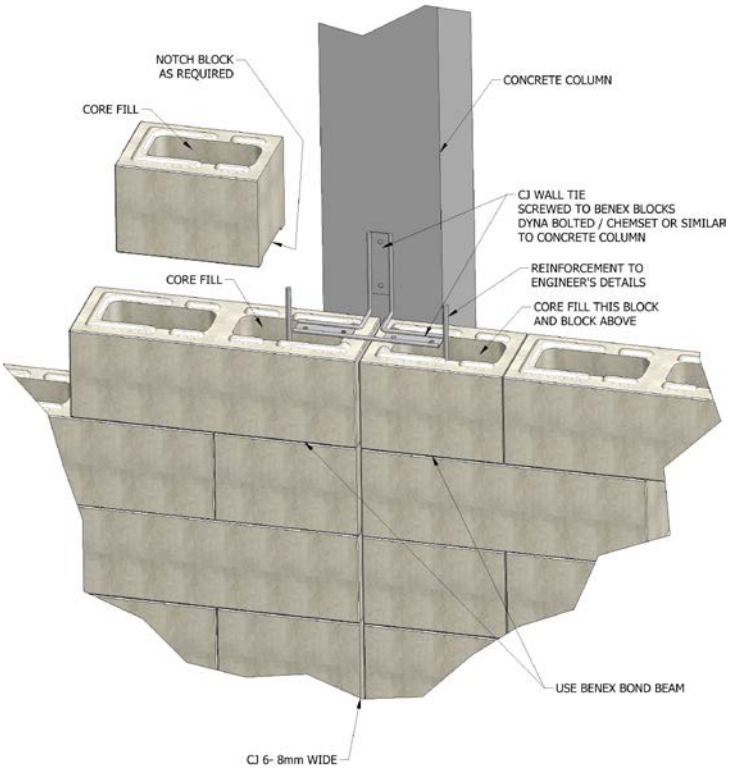
All masonry walls must be securely fixed to steel or concrete columns. Benex have developed connections that are very effective, affordable, and unique.

For example, when fixing to concrete columns, a 6mm hole is drilled though the Benex block and into the concrete column, then the rod is simply hammered into the column. The rod is then cranked upwards. Once the core filling adjacent to the column is complete, the rod is completely encased in the concrete mix and provides a perfect lock to the column.

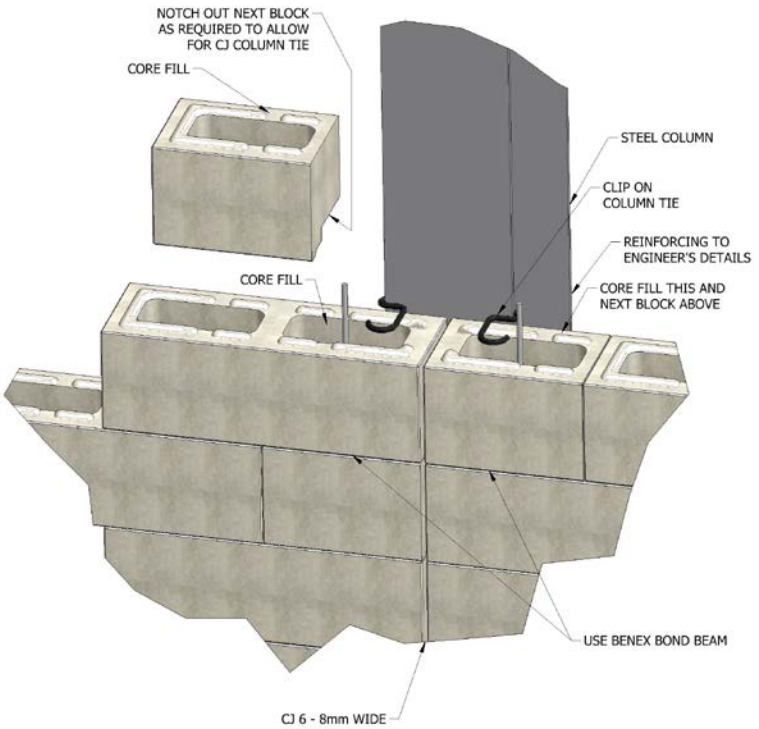




CJ CONCRETE WALL TIE



TIE TO A STEEL COLUMN



2.5 Benex 100mm Solid Infill Block

Because the Benex blocks are 600mm long and 200mm wide it is necessary to use an infill block on 90 degree corners. These infill blocks are easily installed and complete the wall structure and keep the bond of the Benex wall running correctly.

2.6 Benex Mix Adhesive

The BenexMix Adhesive is water based, water resistant after installation, and has been designed to be the same colour as the Benex blocks and trims when dry. It has also been thoroughly tested by the CSIRO for use with the Benex blocks. The test results concluded that the BenexMix Adhesive outperformed virtually every other type of mortar used in the masonry industry and the "bond wrench" test results were outstanding. It is essential to use only BenexMix Adhesive when installing Benex products. A 20kg bag of BenexMix Adhesive is enough adhesive to finish more than 6m2of the wall. There is virtually no mess on site with the BenexMix Adhesive and seldom any waste. Wash up can be completed in minutes. BenexMix eliminates huge piles of sand and cement and significantly reduces water when compared to traditional brick or block laying.

Residential Footing System

The selection of the foundation type for use with the Benex Block is based on AS2870-1996 "Residential Slabs and Footings".

This standard covers the selection of footing designs for the usual range of site conditions, i.e. soil types and slopes. Where unusual site or load conditions are considered, advice should be obtained from a Structural Engineer.

The recommended approach in foundation design is to first classify the foundation soil, then assess the topography and select the appropriate footing design to be used.

1. **Classify the Foundation Soil**

The foundation soil provides support for the building. If there is reactive clay in the soil it may swell on wetting and shrink on drying, causing foundation movement to an extent that may cause cracking of the walls.
The appropriate soil classification for a particular site may be obtained from the following sources:

- Advice from a Geotechnical Engineer
- Local Council or other local authority for their information on the locality
- A local builder or engineer familiar with the site classification

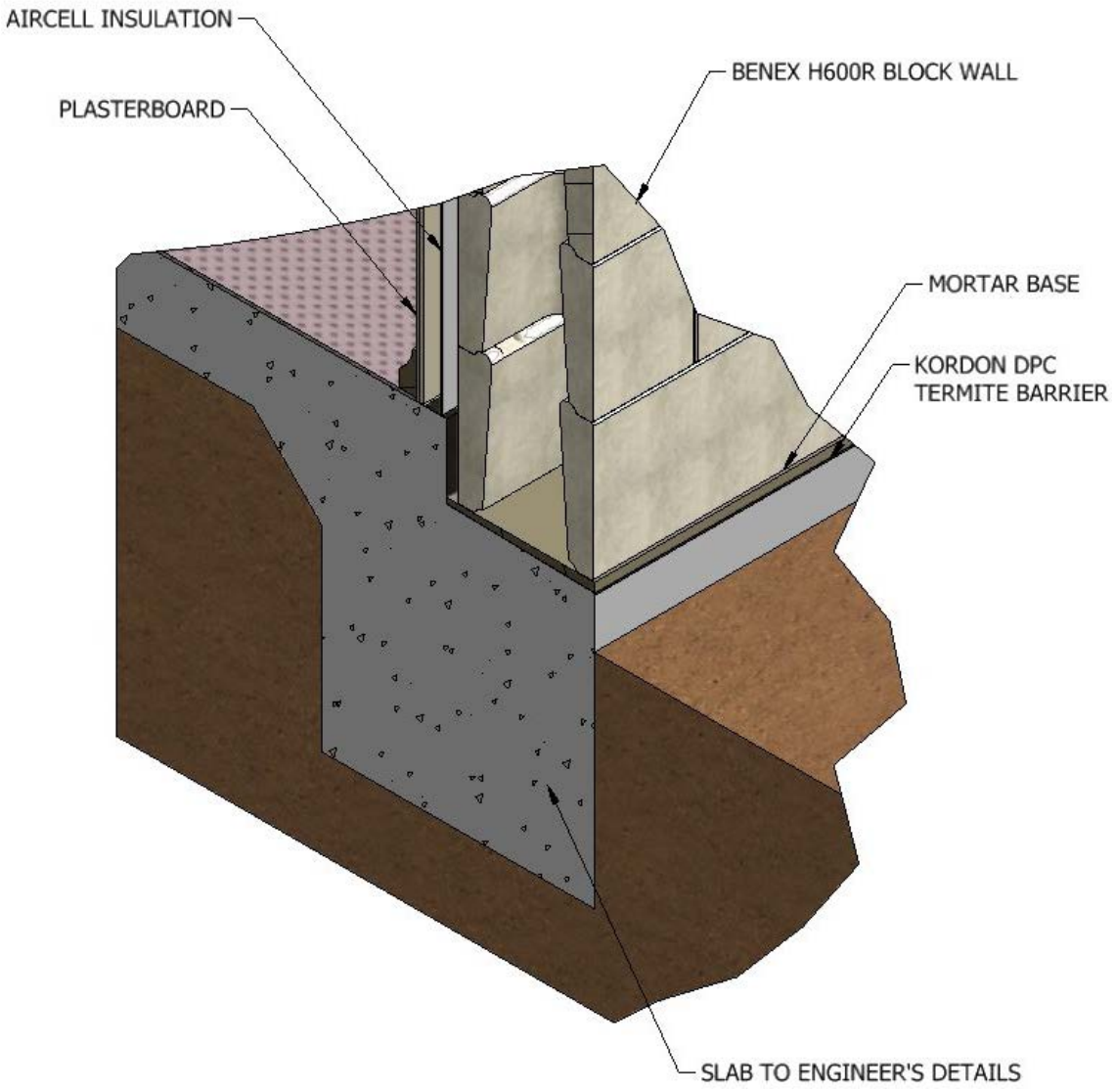
2. **Select the footing Type.**

It is recommended that all walls constructed using Benex Blocks are classified as full masonry. This requires a stiff footing system when used as either masonry, veneer or a single skin. Unless articulated, all walls built in Benex Blocks should be classified as full masonry for the purposes of footing selection.

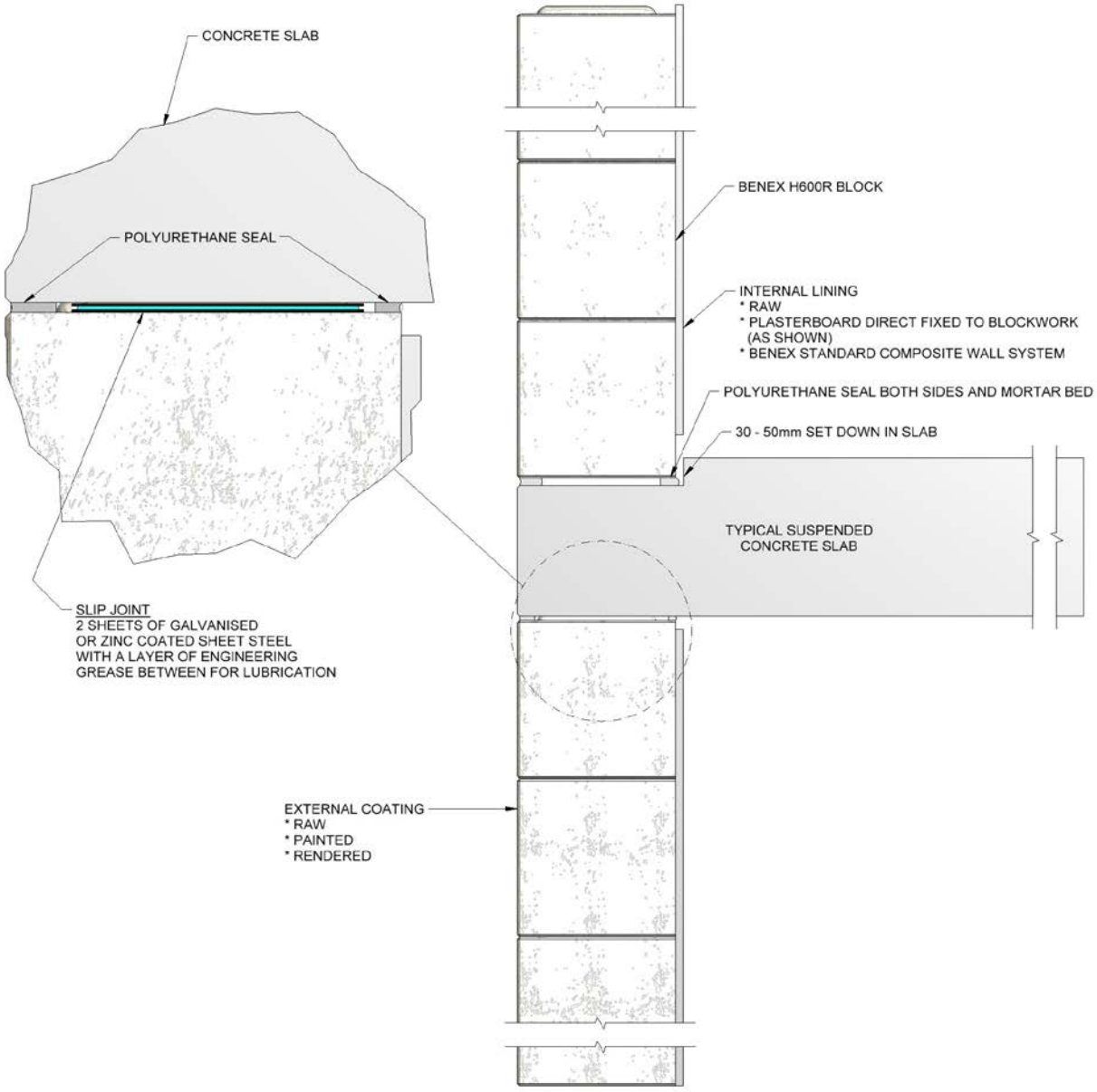
The wall classification may be changed to articulated full masonry where movement joints have been used in the external walls at no more than 6m spacing and internal walls are articulated in accordance with the code. AS3700-1998 Masonry Code recommends all internal openings to be full height.

Use of Damp-proof Course and Slip Joints

We recommend Kordon as a combined DPC and termite barrier for use with Benex Block walls. They are used mainly to prevent damp rising in masonry, however this is not an issue with Benex Masonry. They will also serve to minimize damage by movement due to thermal expansion, shrinkage, creep and foundation movements.



A slip join/bond breaker (DPC) must be installed between the first course and the footing or slab on all internal and external walls to allow for differential movement between the blocks and the support structure.



Walls supporting suspended concrete floors require a suitable slip joint at the interface.

Bracing Walls - Lateral Stability of Benex Block Walls

Free standing Benex Block walls which have no returns or anchorage to a base should not be used in any circumstances.

All temporarily free standing walls should be braced during construction, in accordance with relevant standards or project engineer's instruction. Benex recommends that free standing walls should be braced once they reach a height between 2-3m. As a guide these walls should be propped every 3m for at least the first 8hrs after construction. This distance can be extended to up to 6m post this time dependent on your risk assessment. Remember to account for prevailing weather conditions and conduct an appropriate risk analysis. Eg High wind areas may call for propping of lower wall heights and still areas may allow for maximum distances to be applied from the initial installation of the Benex Wall.

Benex Block walls with returns should be checked for lateral stability. As a rough guide, if a return on a wall is less than 600mm then that end of the wall is without adequate lateral support and requires fixing to a support or bracing.

In some buildings where window openings go all the way to ceiling height the intermediate wall may be free standing. These blades should be carefully checked and braced during construction. Likewise, monolithic Benex Block columns can be used, but should be designed in accordance with AS3700-1998.

Intermediate Benex Block columns in double garages should be a minimum of 600mm x 200mm to provide adequate seating for lintel beams.

Movement Control Joints

To minimize cracking In walls caused by thermal expansion, contraction, foundation movement, drying shrinkage, etc. joints should be located in accordance with the joint spacing in the following table.

Wall/Footing Design	Joint Spacing
Articulated or Non-Articulated	8m Max

Notes:

- Joint width approximately 8mm minimum
- Joints should be included in all walls, both internal and external.

The project architect and engineer should be involved in the locating of control joints. The recommended maximum distance a control joint should be located from a corner or return is shown in the above table.

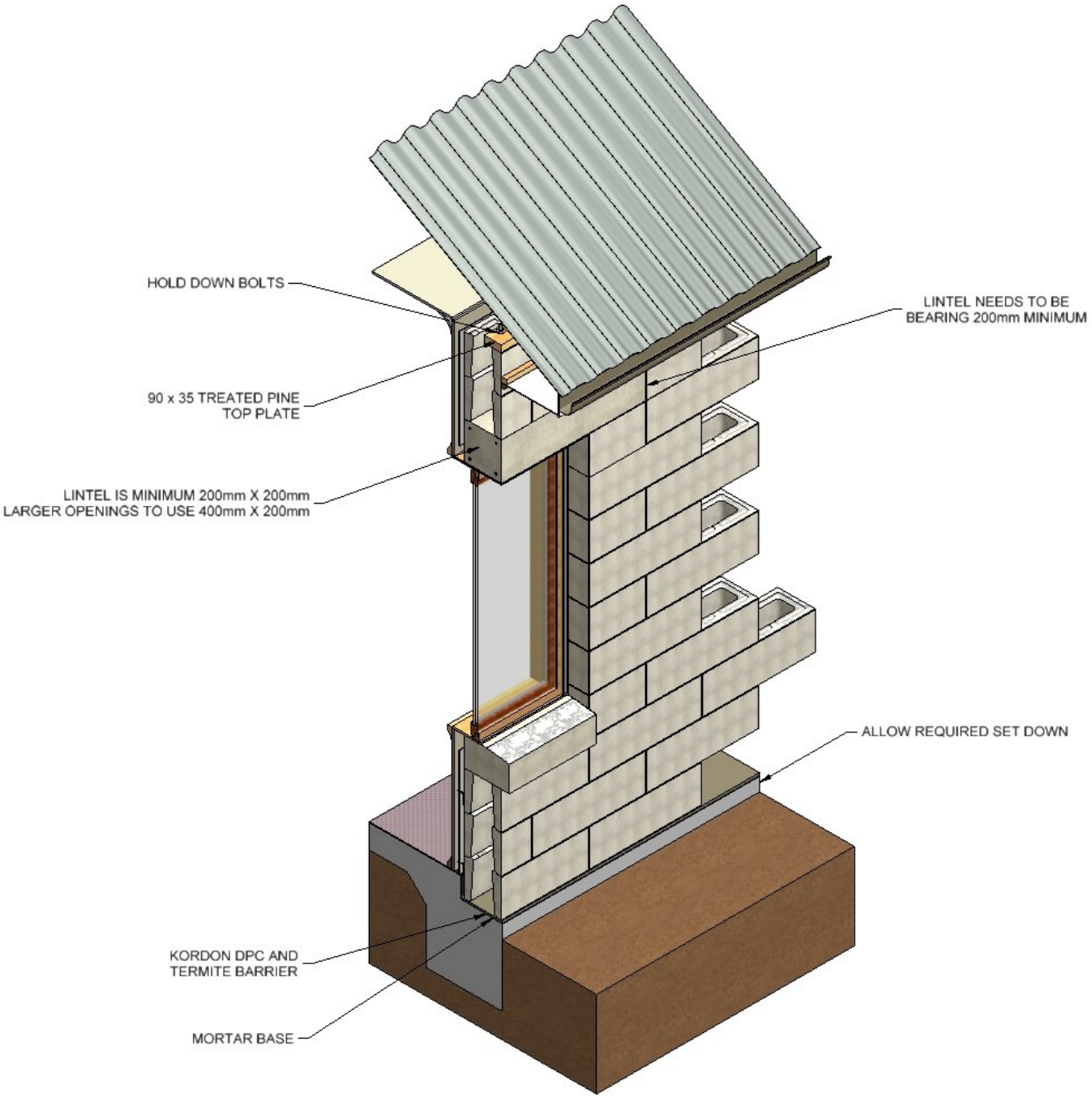
For further guidelines and comprehensive discussion contact your nearest Benex Plant.

Unless otherwise designed by a structural engineer, control joints require shear connectors placed across the joints to maintain stability of the walls. Maximum vertical spacing of connectors is 600mm.

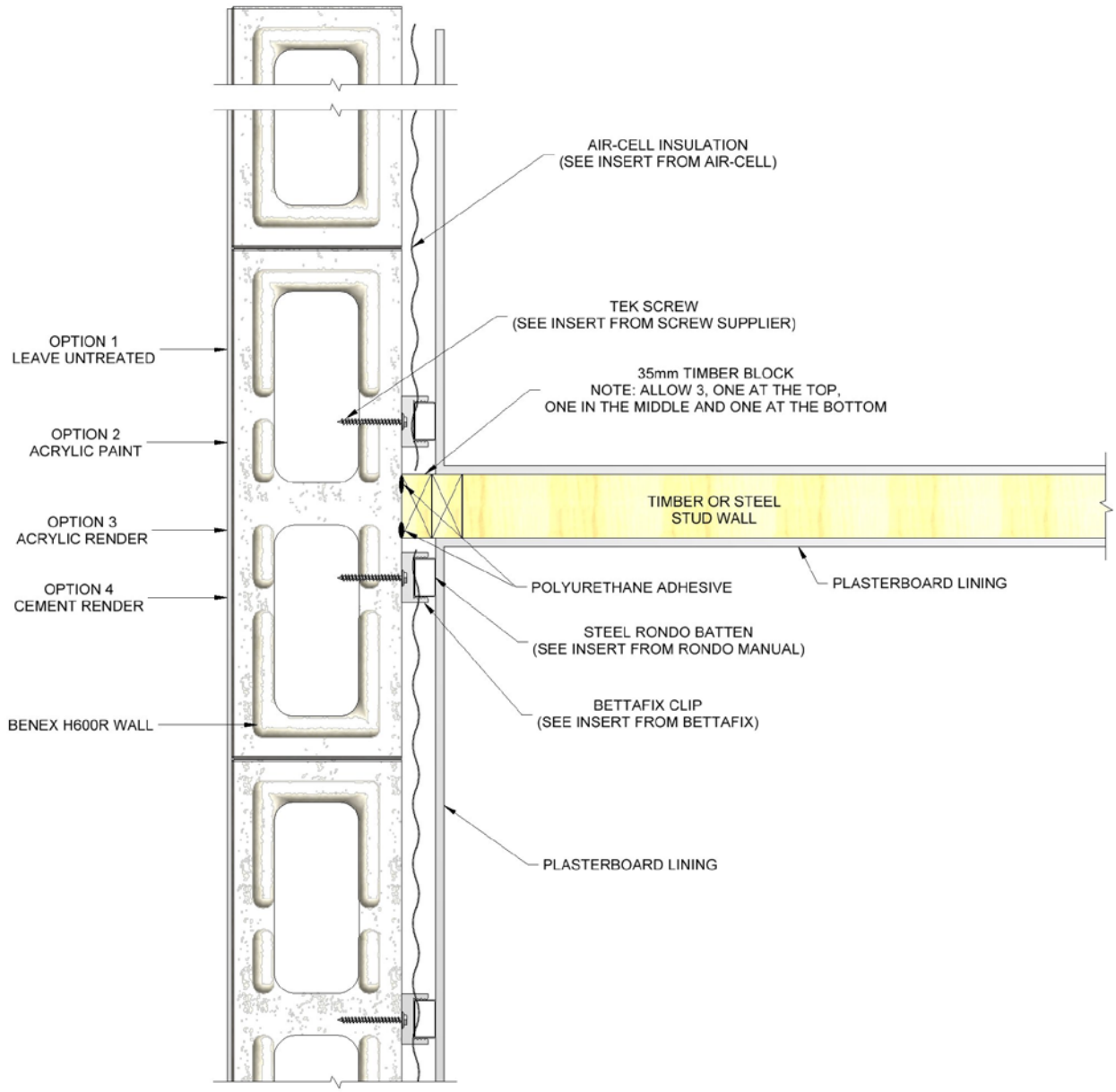
Attention should be given to ensuring that these joints are kept free of all debris. In no circumstances should a movement control joint be rendered across.

Technical Drawings

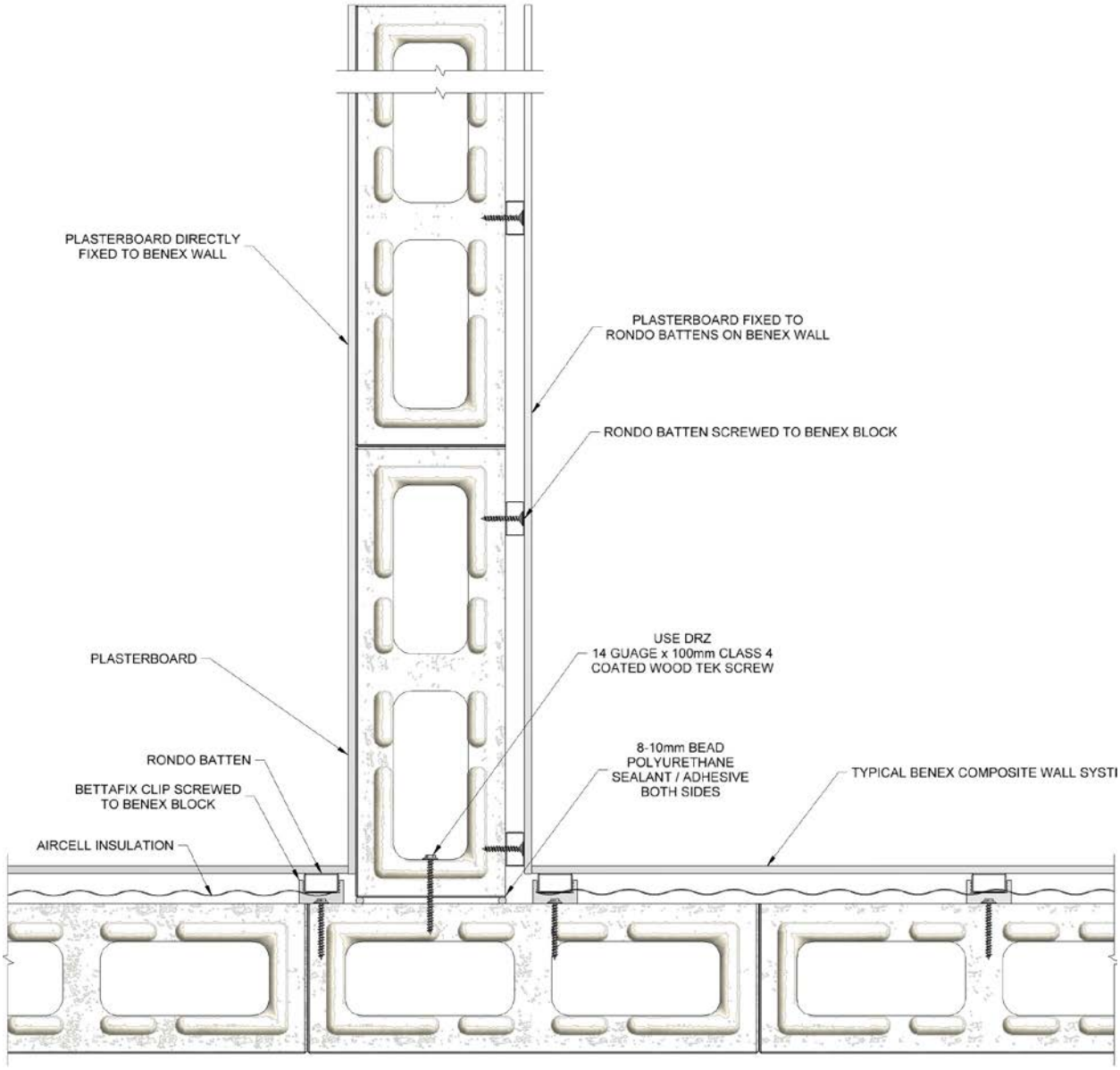
BENEX COMPOSITE WALL SYSTEM



BENEX COMPOSITE WALL SYSTEM



TYPICAL DETAIL FOR
INTERSECTING BENEX WALLS
INCLUDING INTERIOR LINING



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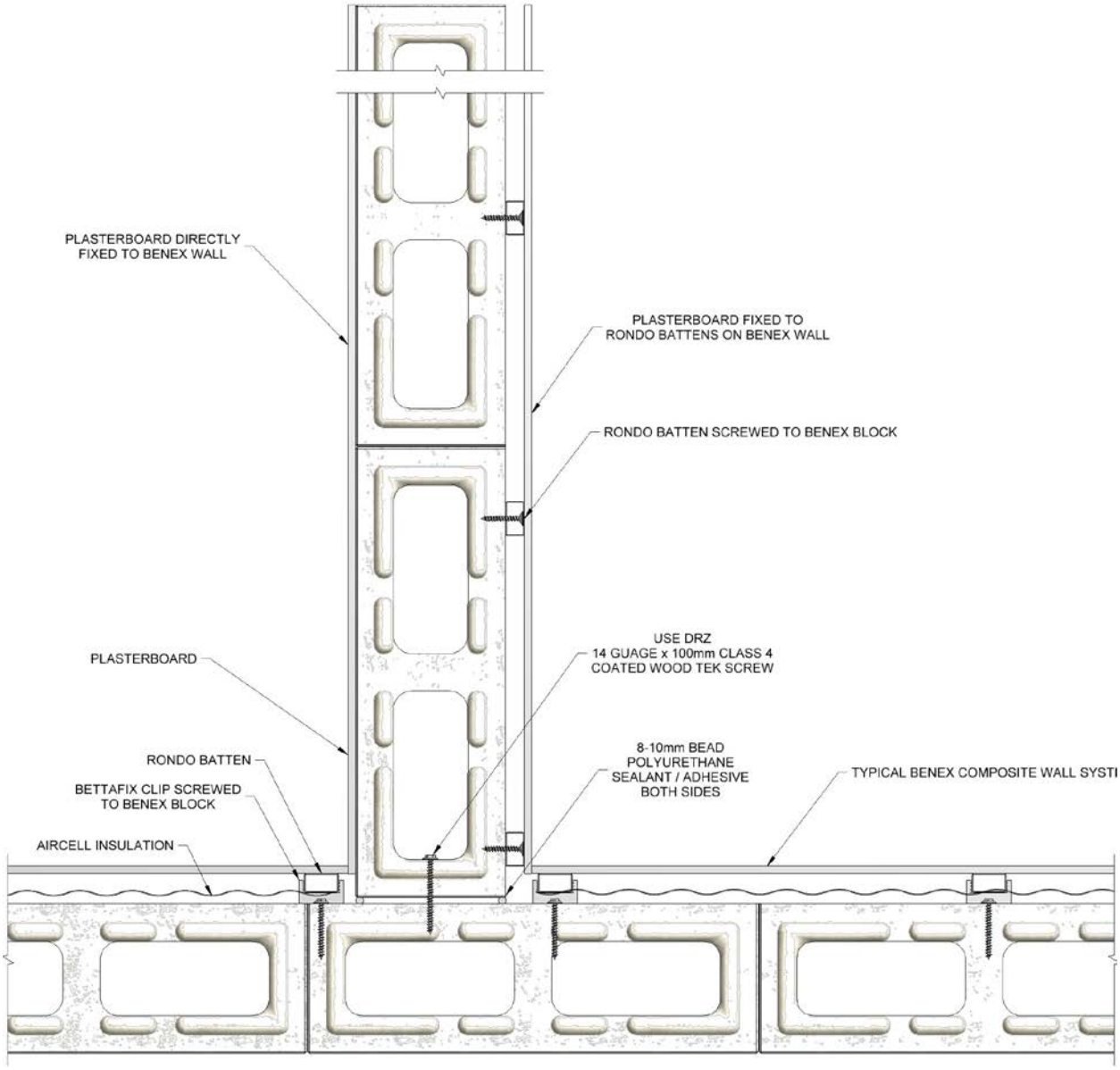

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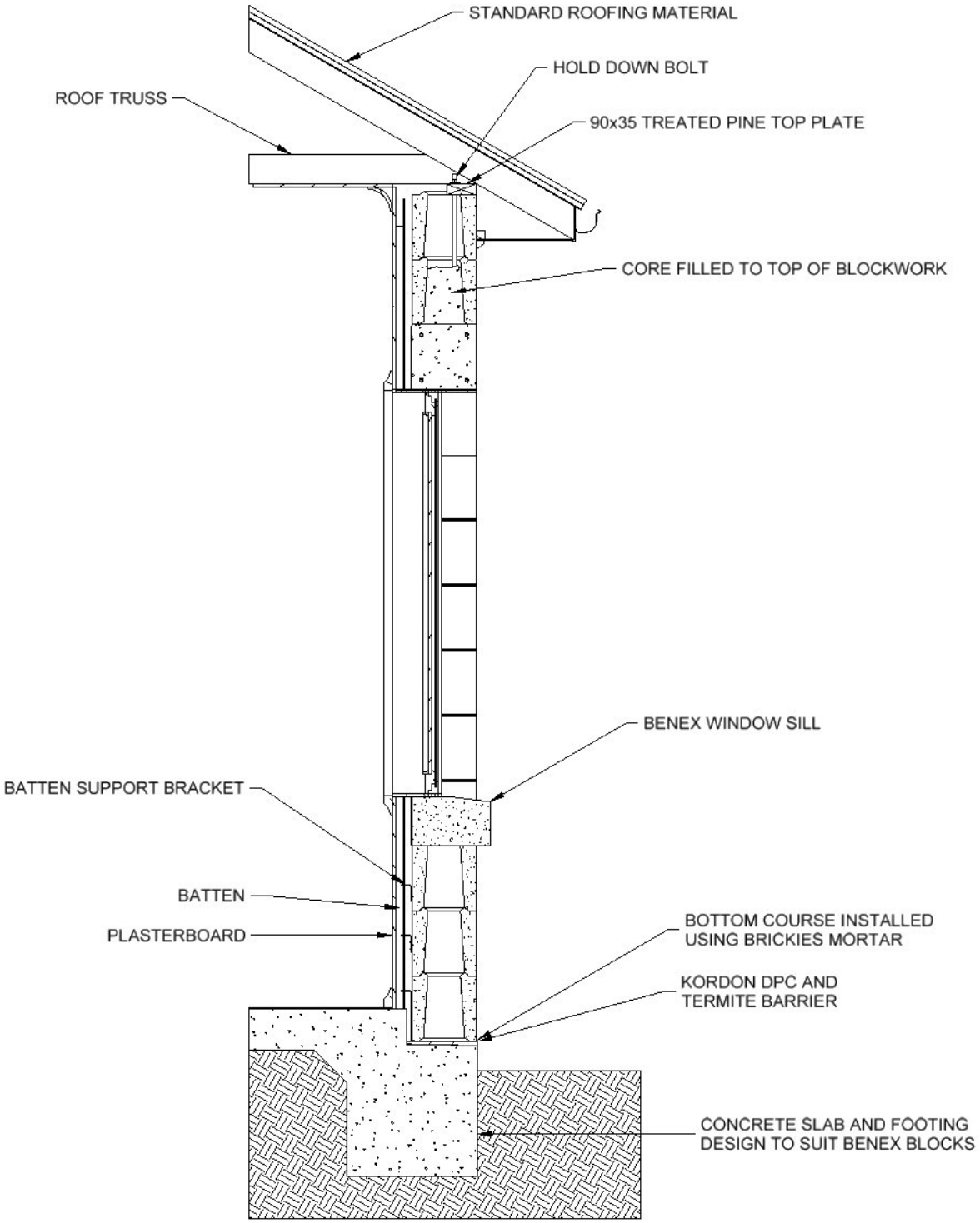
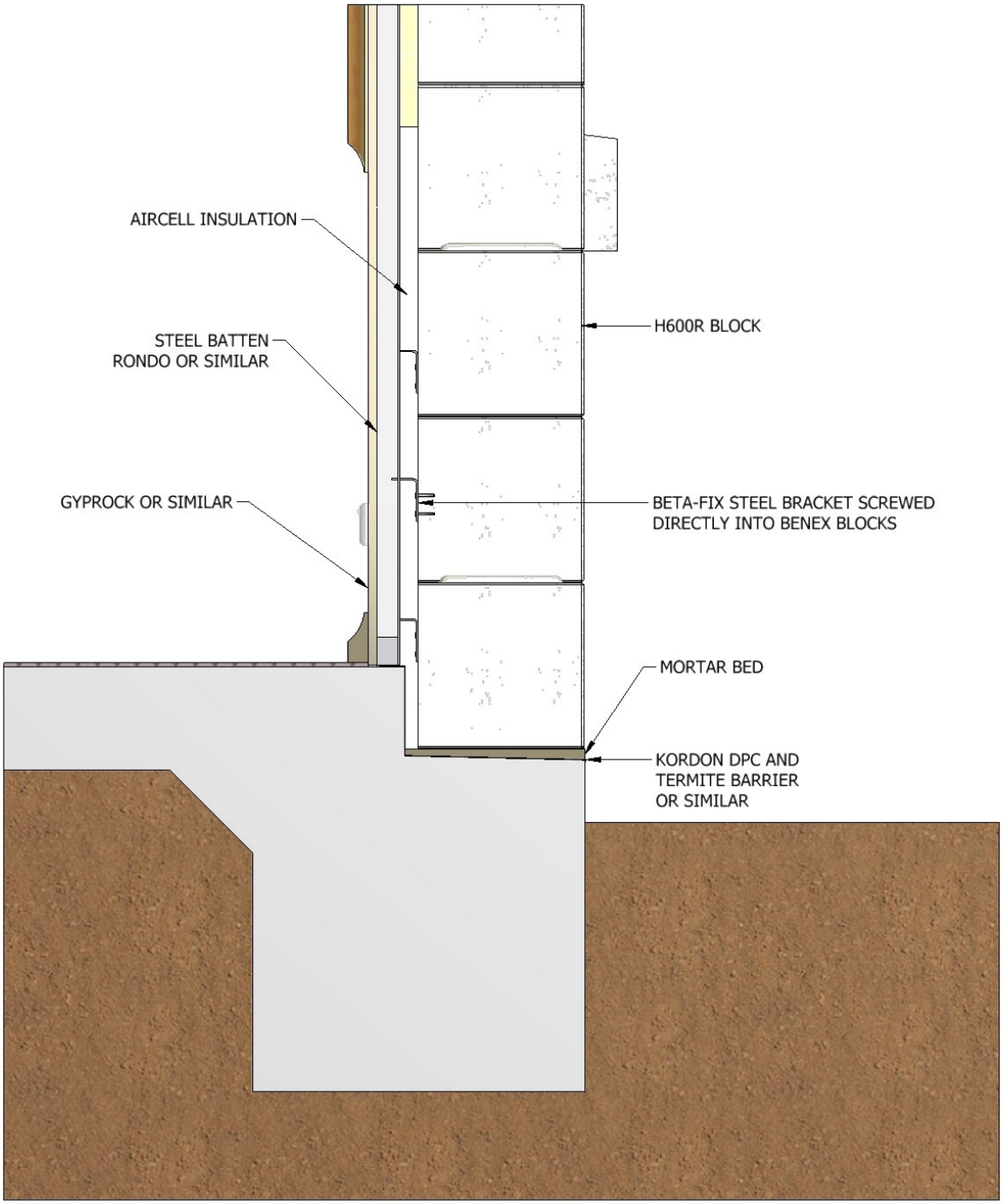


BENEX COMPOSITE WALL SYSTEM



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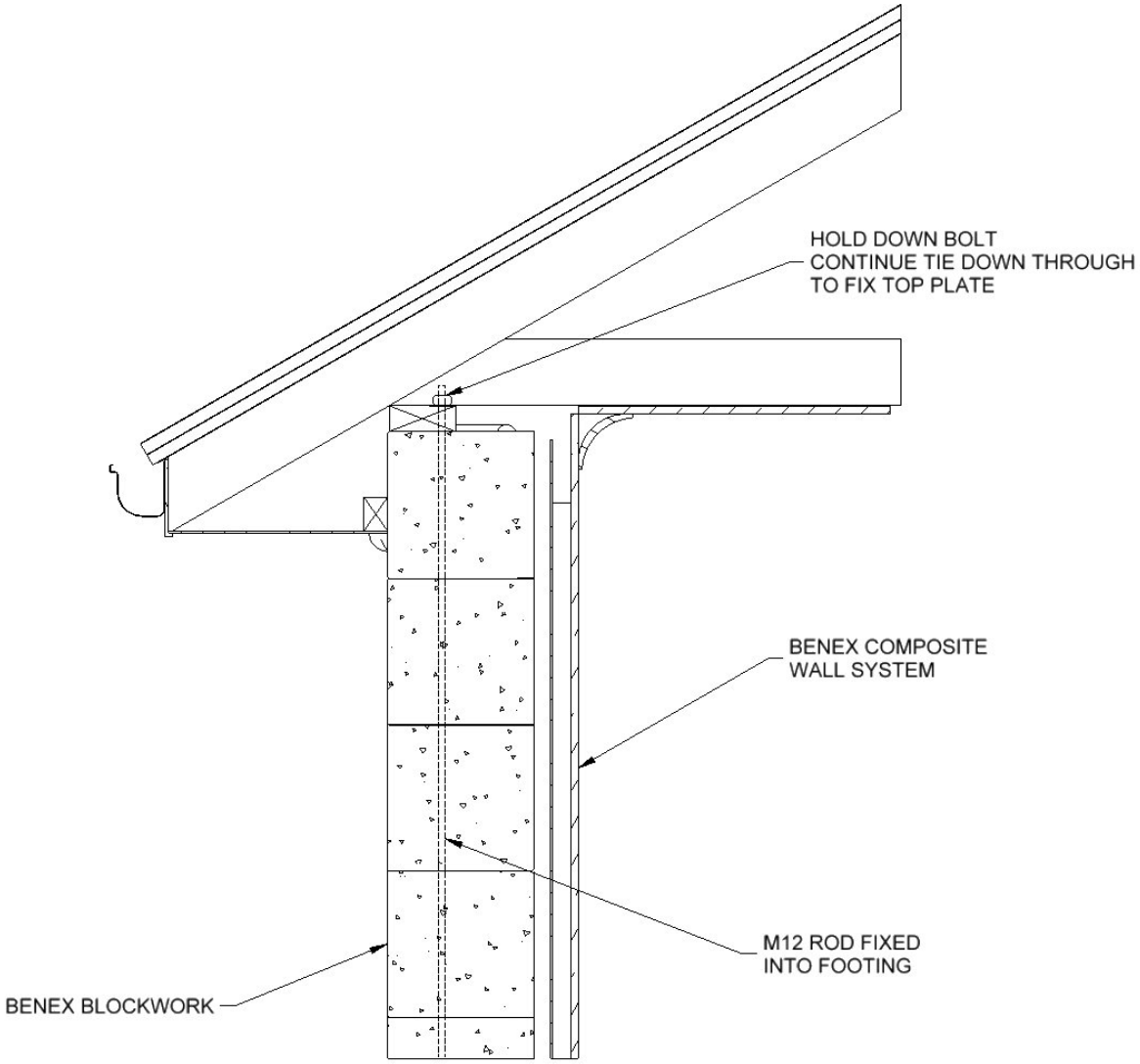
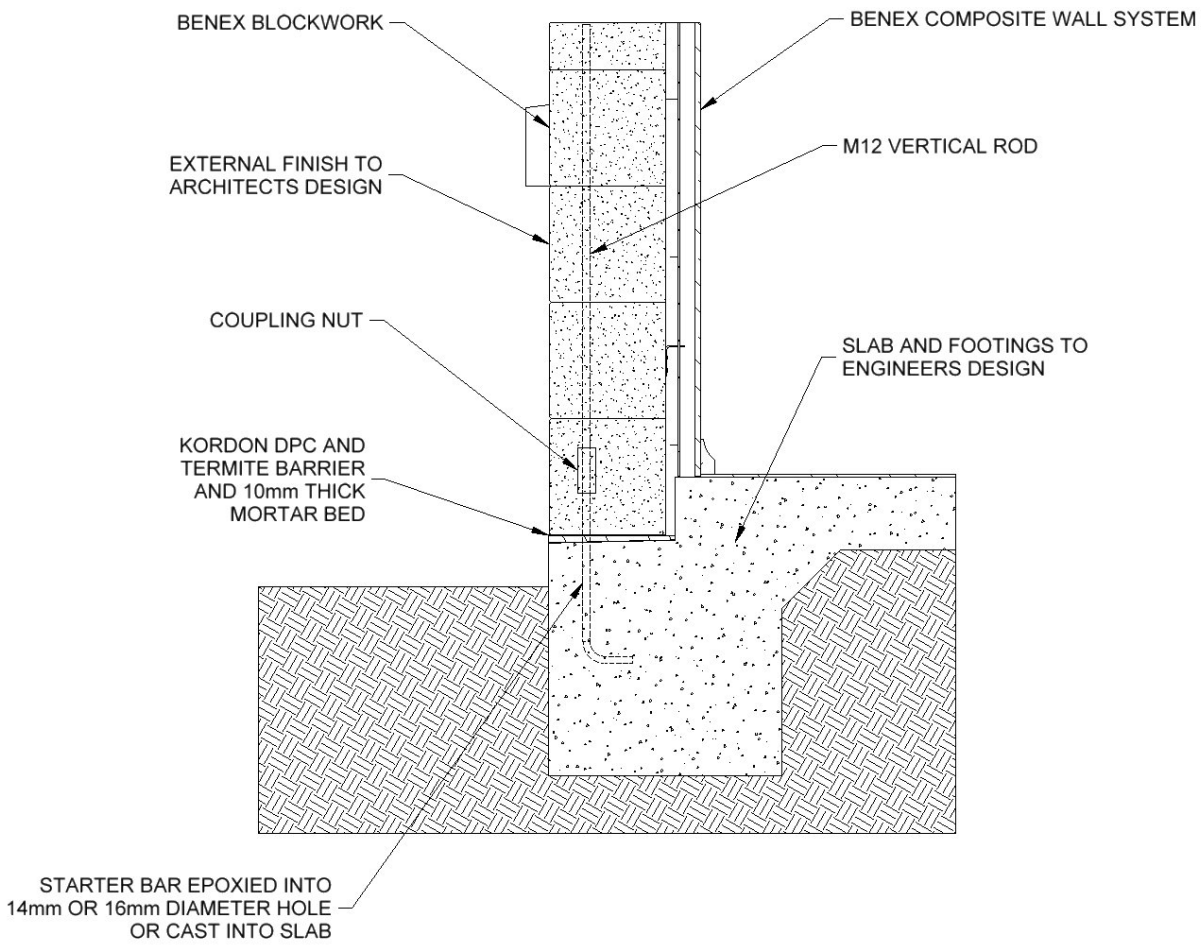


CORE FILLED BLOCKWORK ONLY WHERE REQUIRED BY STRUCTURAL ENGINEER

TYPICAL DESIGN FOR HIGH WIND AREAS

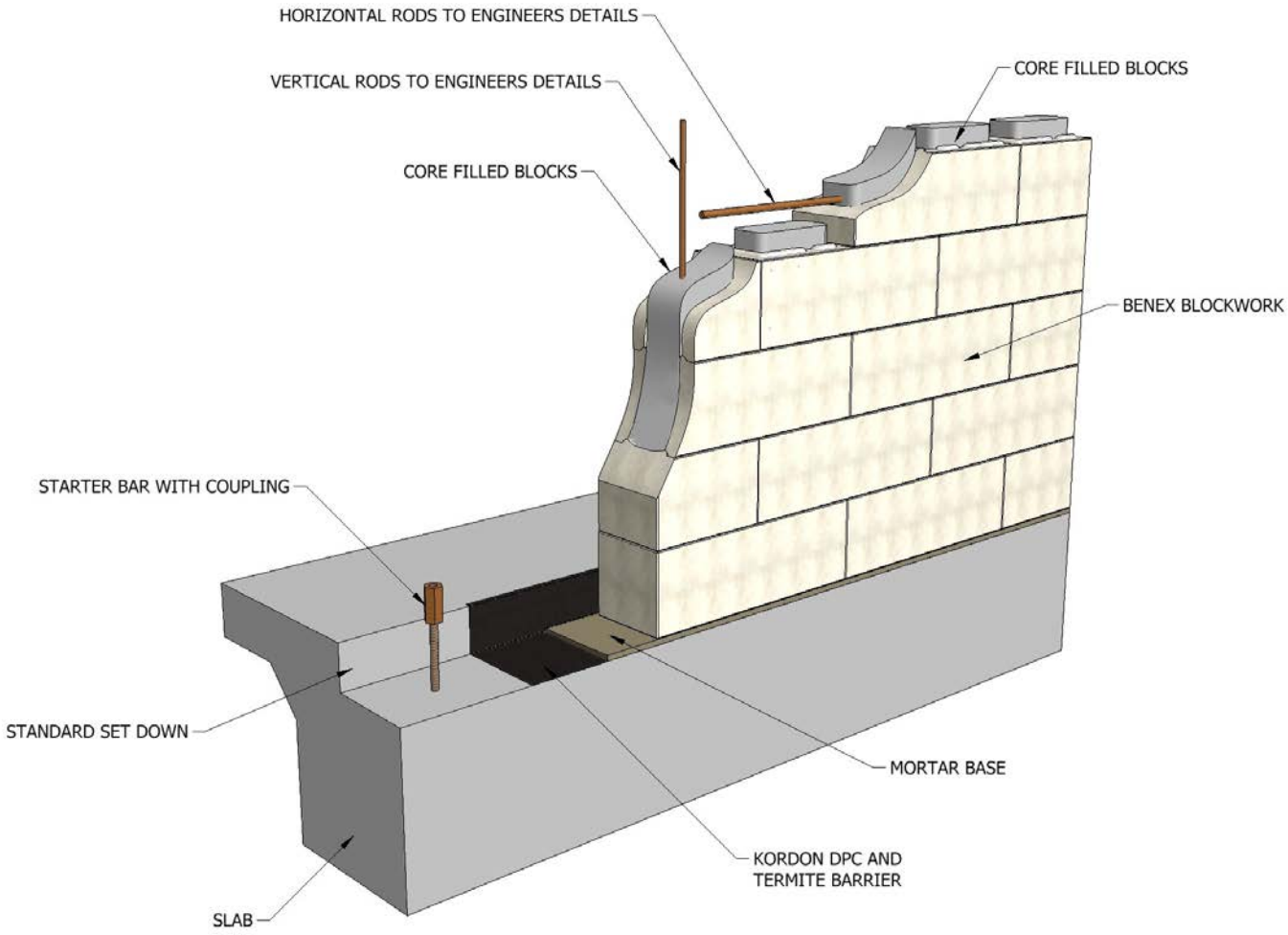
BENEX COMPOSITE WALL SYSTEM



CORE FILLED BLOCKWORK ONLY REQUIRED WHEN SPECIFICED BY STRUCTURAL ENGINEER

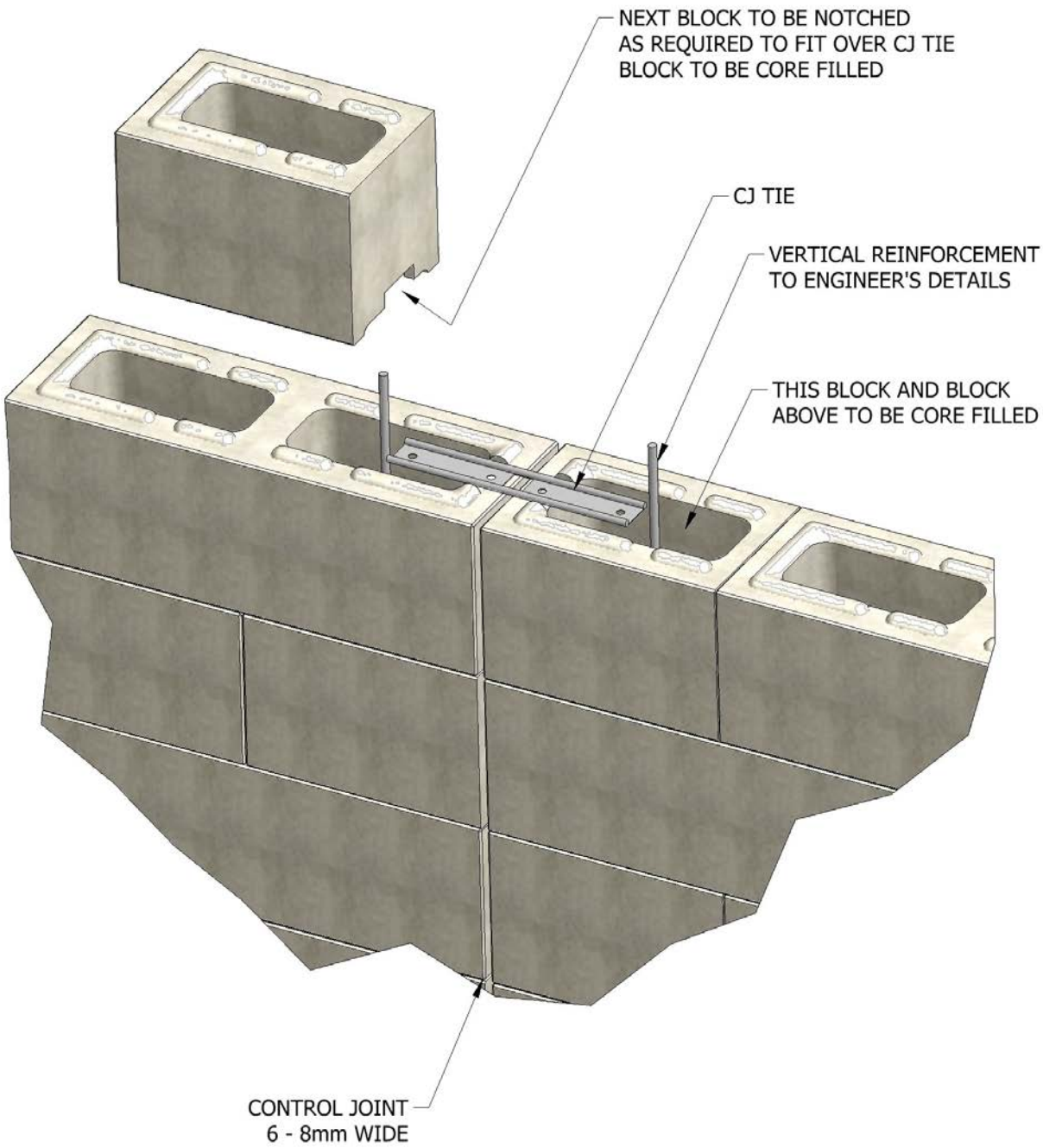
TYPICAL DESIGN FOR HIGH WIND AREAS

BOND BEAM FOR BENEX BLOCK WALLS

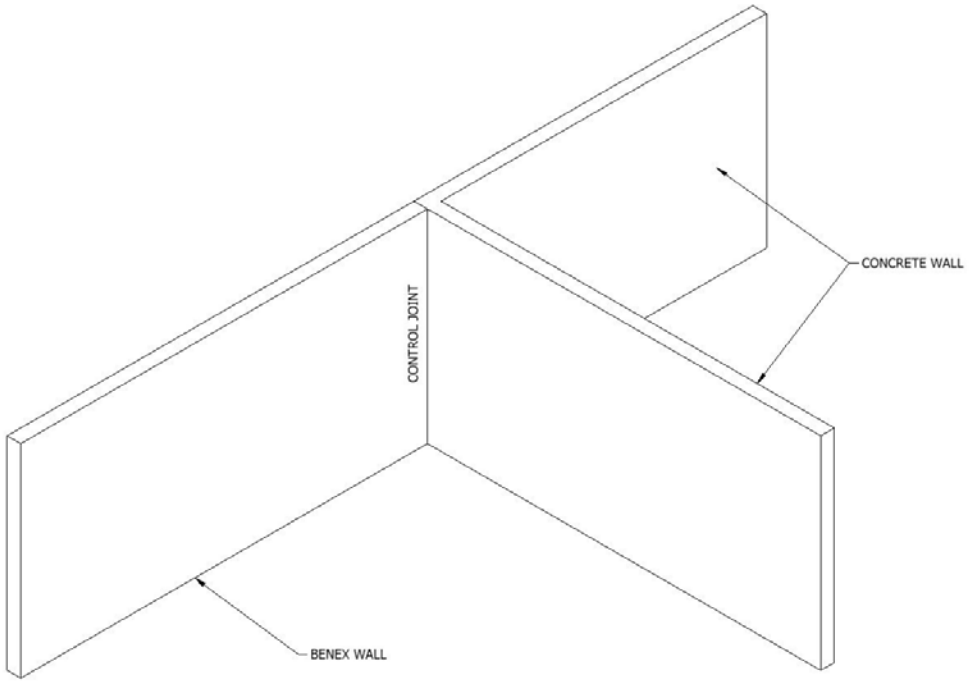


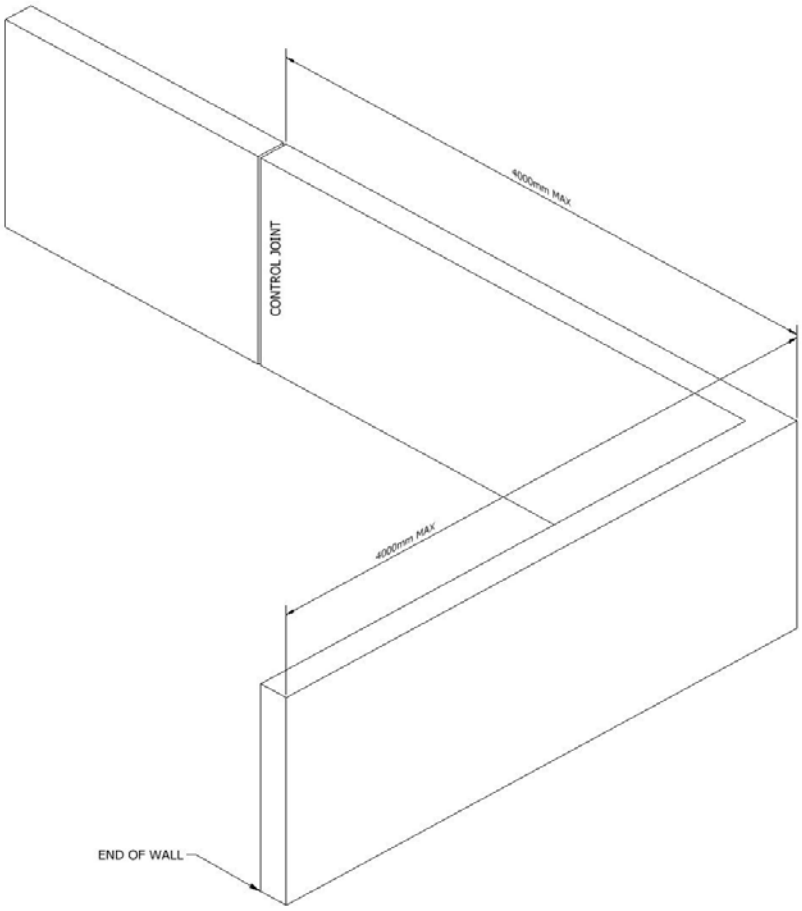
TYPICAL DESIGN FOR HIGH WIND AREAS

CJ TIE

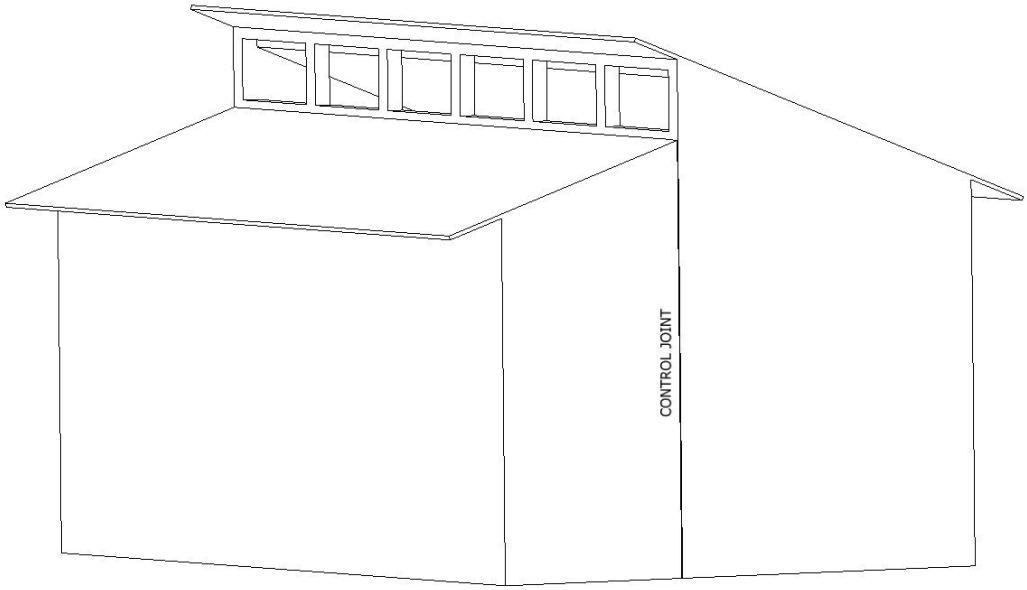

NEXT BLOCK TO BE NOTCHED
AS REQUIRED TO FIT OVER CJ TIE
BLOCK TO BE CORE FILLED
CJ TIE
VERTICAL REINFORCEMENT
TO ENGINEER'S DETAILS
THIS BLOCK AND BLOCK
ABOVE TO BE CORE FILLED
CONTROL JOINT
6 - 8mm WIDE

WALL CONSTRUCTION
CONTROL JOINT DETAIL





WALL CONSTRUCTION
CONTROL JOINT DETAIL



Uses for Benex Products

The BenexBlock™ offers an alternate wall construction method that will achieve significant results for designers, builders, and developers. Its patented interlocking design and mix produce exceptional performance properties. In addition, its competitive pricing sets it apart from other products available.

3.1 Basements

BenexBlock™ H600 is ideally suited for many applications in commercial construction. BenexBlock™ is ideal for use in basements as the perimeter wall. As the BenexBlock™ H600 is impervious to water; it is possible to reduce the size of typical basement excavations. For dry basement construction, the only safe method of constructing the perimeter wall is to over excavate and bench the excavation to allow the application of liquid membrane, and install core drainage and drainage gravel.

With BenexBlock™ H600 there is virtually no need to apply the external waterproof membrane, so significant saving on excavation can be achieved.

The BenexBlock™ wall can be built from the basement interior either directly on the footings or on the basement slab. BenexBlock™ retaining wall construction methodology will ensure the wall achieves the desired structural performance, is impervious to water, and is aesthetically pleasing. The saving in tanking alone can be in excess of $50/m^2$ — add to this the saving on excavation and you will find there is no logical alternative to the H600 series for basement construction.

3.2 Spandrel Walls

BenexBlock™ is also ideal for the construction of Spandrel walls to commercial office buildings. All commercial buildings need fire and smoke separation between floors of 900mm to comply with the current BCA requirements.

Using BenexBlock™ alone achieves this. Spandrel walls are typically a composite built of timber or metal stud, insulation, and sisolation, fire check, or masonry with battens and gyprock.

The exterior of the spandrel can be colour back glass as is typical for curtain wall façade, or aluminium or compressed sheet and render as is typical for floor by floor façade systems. Using BenexBlock™ as spandrel structure eliminates several building elements. Externally it is possible to fix the curtain wall frame directly to the BenexBlock™ wall (no need to drill).

and plug), fix the aluminium directly to the Benex block as it is easy to lay straight and there is no need for any battens or packing, or simply render to the Benex block face. Internally, the acoustic and thermal properties of BenexBlock™ walls ensure that the requirements for insulation is reduced or eliminated (depending on the climate zone of the building). It is possible to fix gyprock directly to the internal face.

Spandrel wall construction is so much easier now that BenexBlock™ has arrived.

3.3 Shaft Rises and Lift Shafts

Because of BenexBlock™ superior acoustic properties and fire rating properties, the product is ideal for service risers required in all multi-level commercial buildings. The wall can be constructed from outside the shaft at a much quicker rate than standard masonry or stud work, and because the blocks are glued together and do not use mortar there is minimum cleanup on the floor or in the shaft.

With lift shafts the walls can be selectively or completely core filled allowing for the installation of the rails or openings at any location. The BenexBlock™ wall acts as a monolithic structure once cured, thus performing like a solid concrete wall--not traditional masonry. This is because of the interlocking lugs and patented BenexMix adhesive. The advantages of this property in lift shaft construction are significant and will become another major recognised advantage as BenexBlock™ is used in the industry.

3.4 Wet Areas Walls

Toilet and showers blocks in commercial buildings are typically constructed from concrete masonry. Using BenexBlock™ H600 has many advantages over the alternative. As each block weighs only 13kgs and covers an area of 600mm x 200mm, there is a 50% decrease in the cost and time hoisting & handling the material for each square metre of wall constructed. Add to this the fact that there is no need for sand, cement, concrete mixers (other than the first course), and all the associated floor area and mess that normal masonry has, and it is clear BenexBlock™ is the only logical choice for wet area construction in commercial buildings. Additionally, because BenexBlock™ is impervious to water, there is a reduction in the risk of water intrusion issues to office areas in the life cycle of the building. The excellent acoustic properties of BenexBlock™ over alternative masonry properties are also an added benefit.

3.5 Secure Rooms

Many commercial office installations require secure facilities built within their tenancies for the security of in-house and client documents and files. BenexBlock™ can be reinforced both vertically and horizontally and then core filled. The structural integrity of the completed wall will achieve any security endorsed criteria.

3.6 Inter-tenancy Walls

BenexBlock™ H600 is ideal for inter- tenancy walls between retail use applications. The four-hour fire rating properties of the block enable a simple solution to tenancy separation between different uses and occupancy classes of retail, office, and restaurant tenancies. The blocks can be built to heights of up to 12 metres with the appropriate column integration providing a one- trade solution for all inter- tenancy wall needs. The BenexBlock™ also provides a secure barrier between tenants.

3.7 Party Wall Construction

BenexBlock™ H600 composite wall type A1 will achieve RW + C+R 50.
The type A1 wall detail has a wall width minimum of 300mm. For high- rise and quality apartments with full concrete slabs and columns, the column width minimum is typically 300mm, a width which ideally suits the Benex type A1 composite wall. It also provides a quality finish with either a render finish to one side or direct stick gyprock.

3.8 Industrial Buildings

The choice for industrial building wall cladding has mostly been metal cladding, tilt up, or precast, though recently some new products such as plastic formed concrete and aerated concrete-filled metal planks have come onto the market. BenexBlock™ H600 performs equally to or better than all these alternative systems at less cost.

With the current price of steel rapidly escalating, the cost of steel girts and metal cladding will soon significantly exceed $100/m². Tilt up and precast concrete range from $150/m² to $300/m², and the new products are not suitable as exterior wall finishes and are also significantly more than the built cost of a BenexBlock™ H600 wall.

Because BenexBlock™ does not use mortar it is possible to lay the walls to their full height in one day. We have developed a system using an EWP that allows BenexBlock™ wall panels to be built in bays and easily laid from concrete slabs. The onsite time is significantly less than

tilt up and while precast may appear to go quickly, the offsite time and caulking and rectifications works often involved with precast ensure BenexBlock™ walls will soon be the finish of choice on all industrial buildings.

Another significant advantage of BenexBlock™ H600 in industrial application is the architectural finishes achieved with the beveled edge face.

This feature was not an original design intent, but a serendipitous occurrence. By using off-white cement and aris's on the blocks combined within the steel model for the block forms a finish that is very pleasing aesthetically. To achieve an architectural finish in precast would cost well over $300/m².

3.9 Housing

One of the most exciting opportunities with BenexBlock™ H600 is its potential as an alternative to standard brick veneer construction. We have undertaken numerous modeling exercises and are convinced that using BenexBlock™ H600 will save at least 15% of the cost on the external skin of a masonry building yet still deliver this within a 250mm wall thickness, achieve significantly better thermal and acoustic properties, and provide a waterproof façade with the added benefit of a fire rated enclosure. With the external skin (including internal lining) making up approximately 20% of the cost of a house this is a saving of all least $6,000 on a standard house using BenexBlock™ in the external facade.

BenexBlock™ H600 composite walls type H1 will become the standard external wall finish for housing.

3.10 Landscaping

Using BenexBlock™ H600 in landscaping applications will solve many current design and construction issues. BenexBlock™ H600 is an ideal retaining wall solution. The walls can be reinforced both vertically and horizontally and core filled to act as retaining walls in many situations. Because of the lugs the blocks are easy to lay, eliminating the need for additional trades and the consequential delays that occur in waiting for resources. BenexBlock™ T Series provides a simple capping profile that enables the retaining or feature wall to be capped. The wall can be left raw, painted, bagged, or rendered.

Another unique property of BenexBlock™ products is the ability to screw fix directly into the block. This allows the landscape designer and constructor to install seating, steps, and decks easily, without relying on carpenters.

3.11 Other

Because BenexBlock™ H600 is structural, lightweight, and easily cut and laid on site by hand, they are ideal for mine shaft support walls.

There is also significant potential to use the BenexBlock™ in severe marine environments as they are resistant to salt attack. The potential of BenexBlock™ in all other building and construction activities is unlimited, including shopping centres, hospitals, schools, airports, age care facilities and the like.

4.1 Manual Handling

A. Planning the lift

Check start and finish heights and ensure clear pathways

For weights in excess of your comfortable limits use mechanical aids

Consider your own capacity after extended leave or illness

B. Performing the lift

Use hip and knee joints to bend to the object rather than bending the spine in exaggerated curves

Do not twist or bend the back sideways

Note: When using mechanical aids such as forklifts and cranes etc always check for overhead power lines.

Dust

Dust created when the product is cut, abraded, or crushed contains crystalline silica and cement particulate that are classified as Hazardous substances according to the criteria of the Australian Safety and Compensation Council ASCC - Approved Criteria for Classifying Hazardous Substances 3rd Edition.

It is vital to the health and safety of workers that dust generation be kept to a minimum throughout the building process.

4.3 MSDS

A copy of the Benex Block and Benex Mix Adhesive MSDS should be kept onsite at all times. Please refer to Appendix A for a copy of the BenexBlock and BenexMix Adhesive MSDS. Anyone working with Benex Products is required to read and understand the hazards associated with using these materials.

Anyone using Benex Products must read thoroughly and sign off on the MSDS provided. It is then up to the Authorised Installer to provide all of his staff with the suitable PPE in accordance with the MSDS.

Laying the first course

The correct installation of the first course of Benex blocks is crucial. It must be installed level along the length of the wall and across each Benex block.

Unlike most other masonry products that use brickies mortar between every course of blocks or bricks, Benex Blocks are installed with a strong, impervious to water adhesive with brickies mortar only used on the first course. The only down side of using this adhesive is the loss of adjustment.
Anyone who has ever tried to install traditional blocks or bricks would understand why adjustment is normally required. Fundamentally all masonry products, other than Benex are not accurate enough to be installed with adhesive. Benex blocks have been designed to be accurate (within .2mm)

The accuracy ensures the entire wall is virtually perfectly plumb and level in every direction, PROVIDED THE FIRST COURSE IS INSTALLED CORRECTLY.
Therefore, time needs to be taken to get the first course right!!

Firstly establish how far out of level the concrete slab or footings might be. This can be done with a dumby level or laser level. Be prepared to cut Benex blocks if required, as previously mentioned, the first course must be level along the length of the wall, this also means straight.
The brickies mortar for the first course should be slightly stiffer than normal brickies mortar. The reason for this is the Benex blocks are impervious to water and will not absorb any water out of the brickies mud.

Make sure no brickies mortar works its way into the vertical joint between the Benex blocks. Use BenexMix Adhesive on the end vertical face of each Benex block.

The gap between each Benex block should never exceed 1-1.5mm. Always work from one end to the other. Use a brickies string line to ensure every Benex block is correctly aligned. As each Benex block is installed, use a good quality short level across the Benex block. Remember every Benex block must be level in both directions. Unless the wall has been designed to suit Benex bocks, it will nearly always be necessary to cut a block to length to achieve the required wall length.
Cut blocks can only be located at the ends of the wall. Benex blocks are interlocking and any cut near the middle of the wall will make it impossible to install the next course. It will be necessary to remove the “male lug” from the cut block so as the next block on top can be installed.

Adhesive Use

The BenexMix Adhesive has been designed to match the strength and colour of the Benex blocks. It is also impervious to water, fireproof, and has been tested extensively by the CSIRO in conjunction with the Benex block.

Prior to mixing the adhesive, it is important to have clean drinking water and a clean bucket (Benex supply 15L bucket with lids). Always use the correct safety equipment when mixing. BenexMix adhesive is to be mixed in a ratio of 20kg of powder to 5L of water.

To start the mixing process, place the recommended quantity of drinking water into the clean bucket.

Gradually add the BenexMix adhesive while constantly mixing with an electric drill and paint agitator attachment. It is important to not have lumps in the adhesive mix, therefore add the BenexMix Adhesive slowly and evenly. If the adhesive has not been stored correctly in a cool dry place lumps can form that will make the mixing process much more difficult.

When the BenexMix adhesive is thoroughly mixed with the constancy of wet tooth paste place the lid on the bucket and leave standing for approximately 5 minutes.

After the BenexMix has been left standing for the required time, remove the lid and mix again for approximately 30 seconds. The BenexMix is now ready for use.

Remember to always place the lid back on the bucket after the BenexMix adhesive gun has been filled. This will reduce the chance of the adhesive "skinning".

If the BenexMix adhesive skins you should remove the adhesive.

Never use BenexMix adhesive that has not been mixed correctly or might have "skinned".

Building a Benex Wall

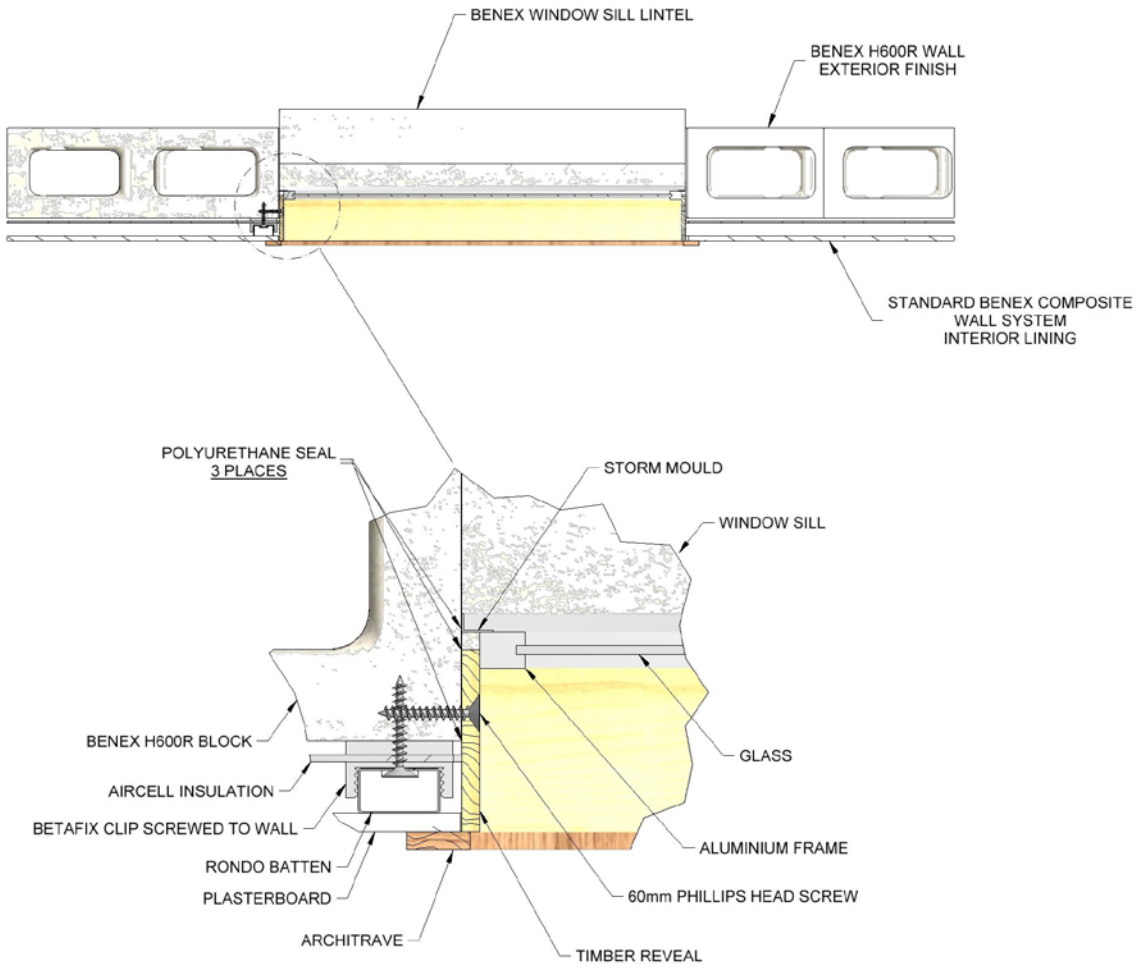
The entire philosophy behind the Benex blocks is to be easy for almost anyone to install. Not only are the Benex blocks fast and easy to install, they are impervious to water, have a 4 hour load bearing fire rating, can be cut easily and fixed to with standard screws without pre-drilling.
We have described the installation of the first course and once this course is installed, the rest of the wall is very easy. There are some basic rules that must be followed though.

Never place too much adhesive on the Benex blocks, both along the horizontal and the vertical. The hotter and windier the day, the faster the BenexMix adhesive will "skin".
Typically, only place enough adhesive for 3-5 (maximum of 10) Benex blocks at a time. It the outside temperature exceeds 40°C or it begins to rain, stop installation.

Make sure you have buckets with water and sponges to clean the excess adhesive off as the blocks are being installed. Do not let the adhesive dry.

Only use the BenexMix adhesive gun. It is designed to provide a 8-10mm bead of adhesive

ALUMINIUM WINDOW FRAME DETAILS



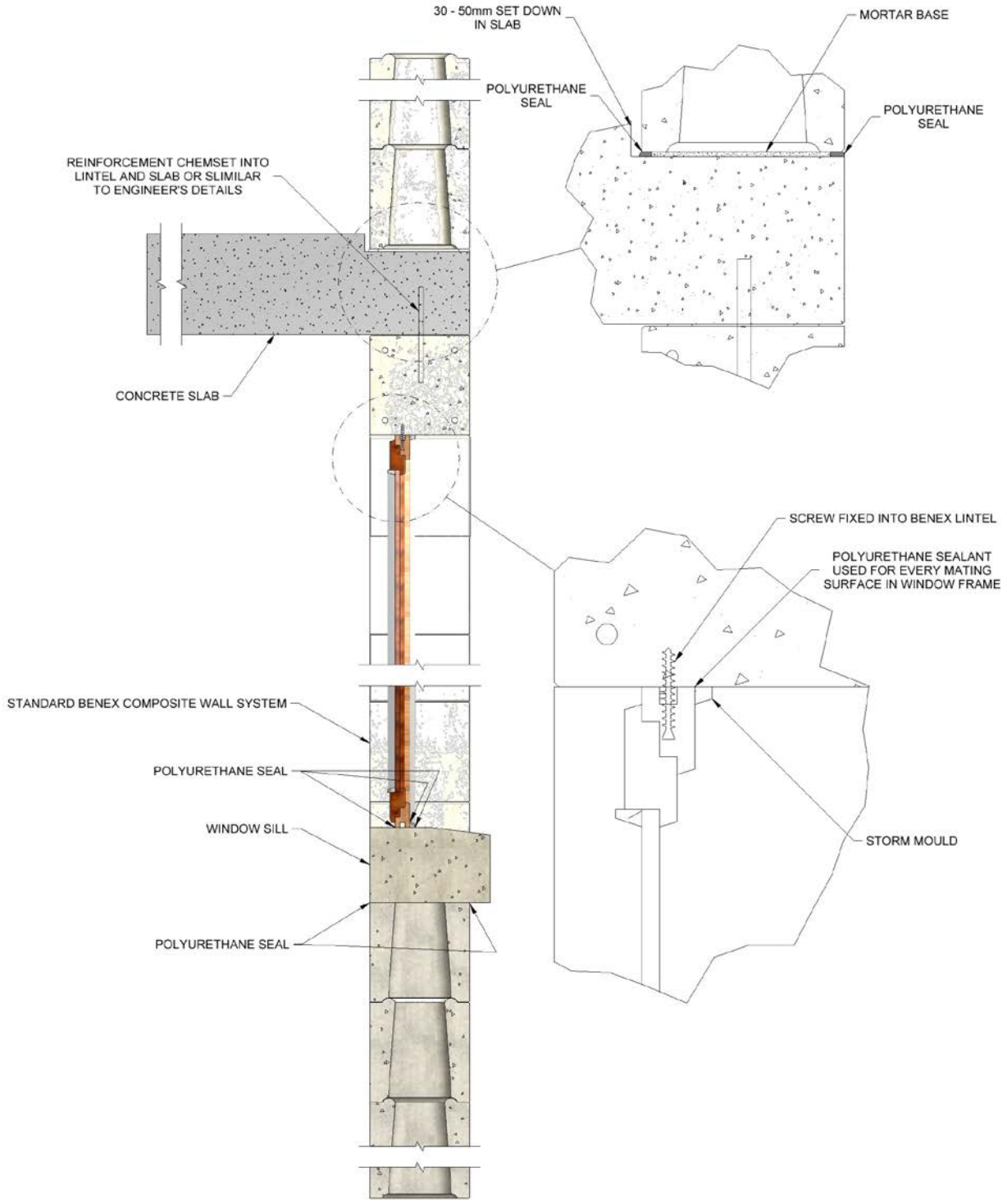
When installing windows or door frames in a Benex wall, firstly determine the position of the window or door and mark the area out on the slab in the case of a door, or one course lower than the sill in the case of the window.

Continue to build the wall vertically making sure that any cut blocks have their good side on the side of the opening.

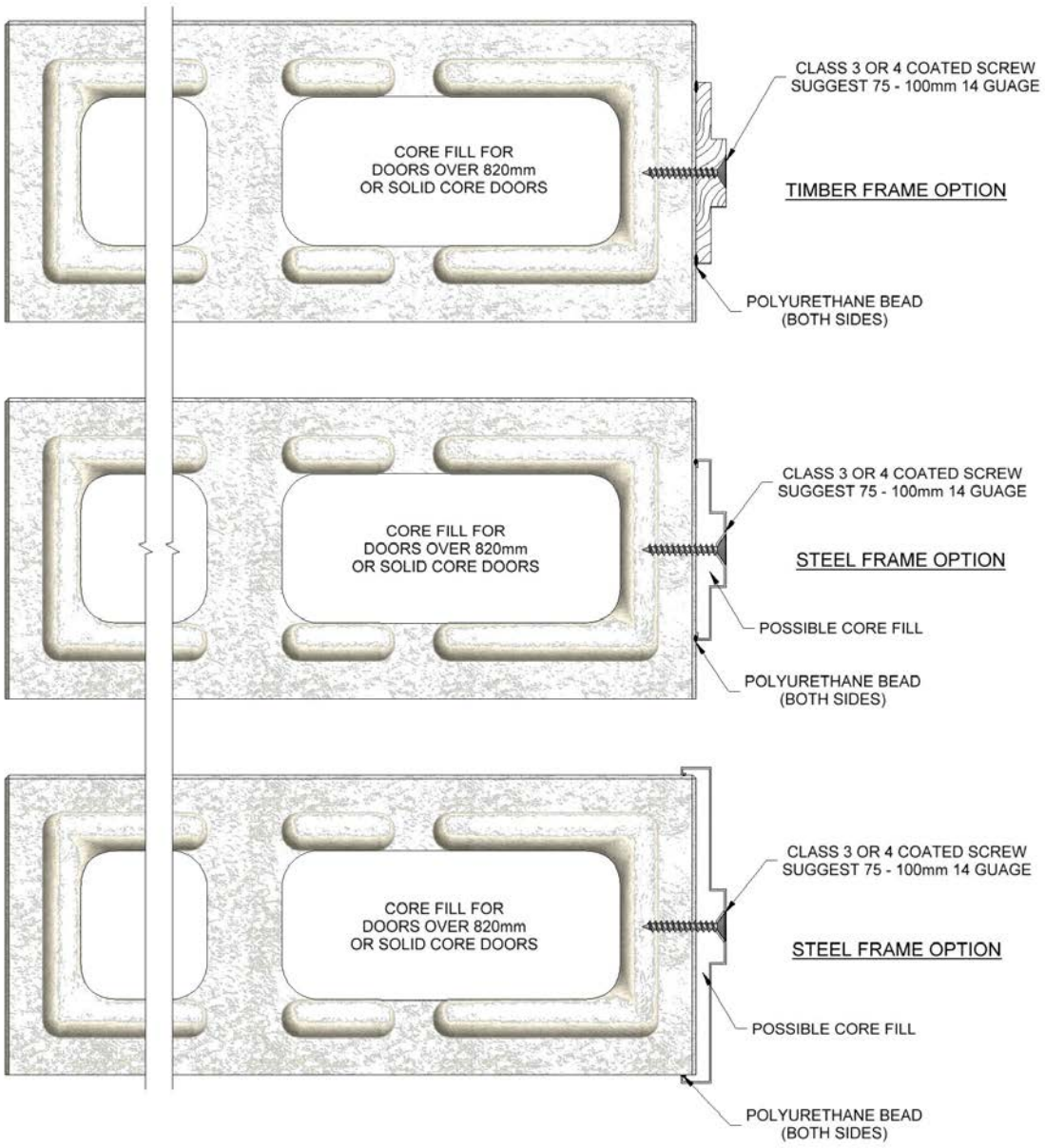
When the top of the opening is reached, install a Benex Lintel if required.

Refer to the attached images for installation details.

TIMBER WINDOW INSTALLATION DETAIL



TYPICAL DOOR FRAME CONNECTION DETAILS



A variety of timber and steel door jambs can be fitted directly to a Benex block wall. As noted in the diagram above, the steel jamb can be core filled if required.

Door jambs should be secured in position, firstly by applying a layer of polyurethane to both bond and seal the jamb against the Benex block wall. Once the position is correct, the jamb should be screwed permanently into the wall.

Composite Walls

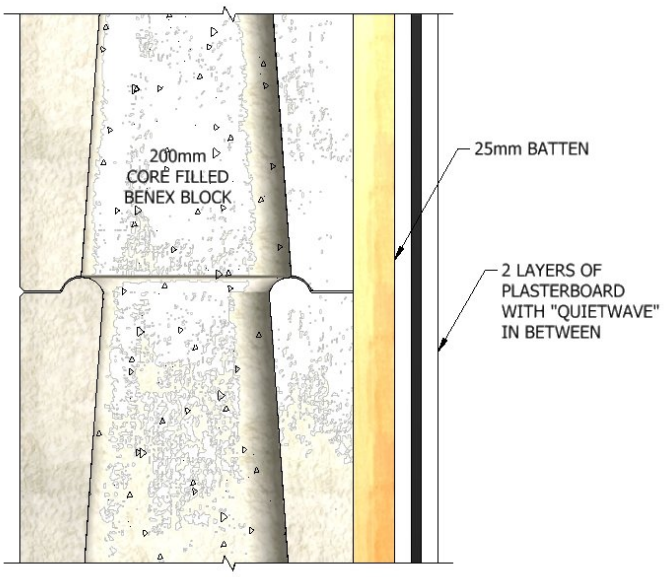
Composite walls are generally expensive. A typical brick wall, brick veneer, or any of the elaborate walls developed for multi-story residential buildings, (See drawings on next page)

The Benex Composite Wall System replaces all types of composite walls. They are fast to build, offer many additional features, e.g. Four hour fire rating, impervious to water, excellent thermals, etc. with substantial savings in time and money

The Benex Composite Wall System is simple. We simply build a standard H600 wall (sometimes requiring core filling) screw Bettafix brackets (or similar) to the inside side of the wall, install insulation (we prefer Air-Cell) over the brackets and clip steel battons into the brackets.

Some clients may wish to render or bag the outside of the wall or use a variety of render or paint finishes, but it is not required for any reason other than aesthetics.

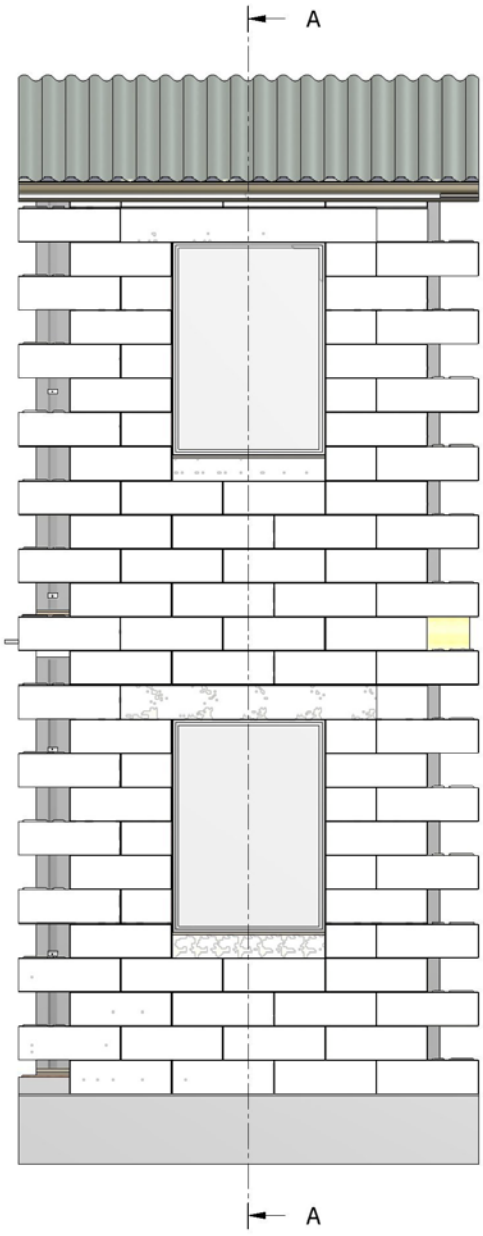
ACOUSTIC WALL / INTERTENNANCY WALL

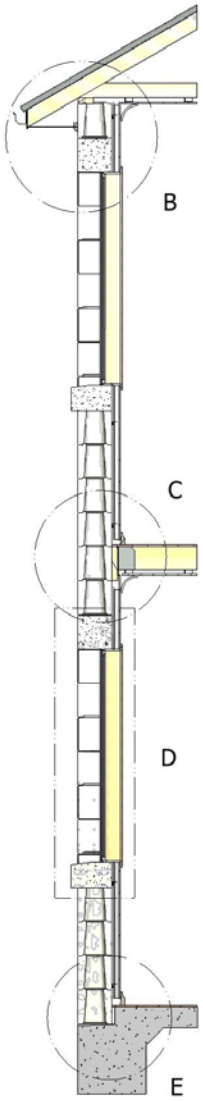


Other walls may need additional treatment to achieve a specific acoustic requirement, again we have a simple design that is fast to install and very cost effective.

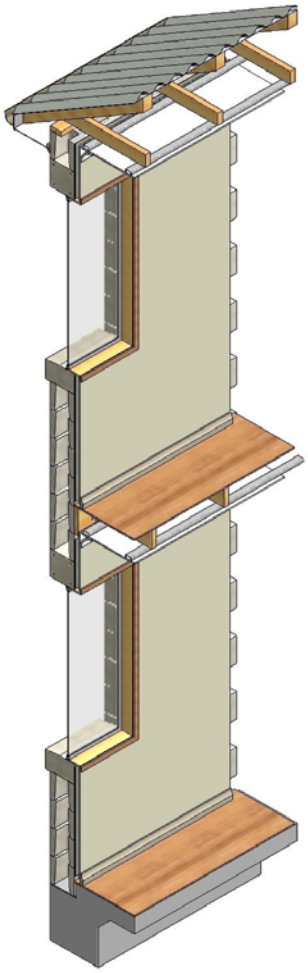
EXAMPLE 2 STOREY CONSTRUCTION

PAGE 1 OF 2



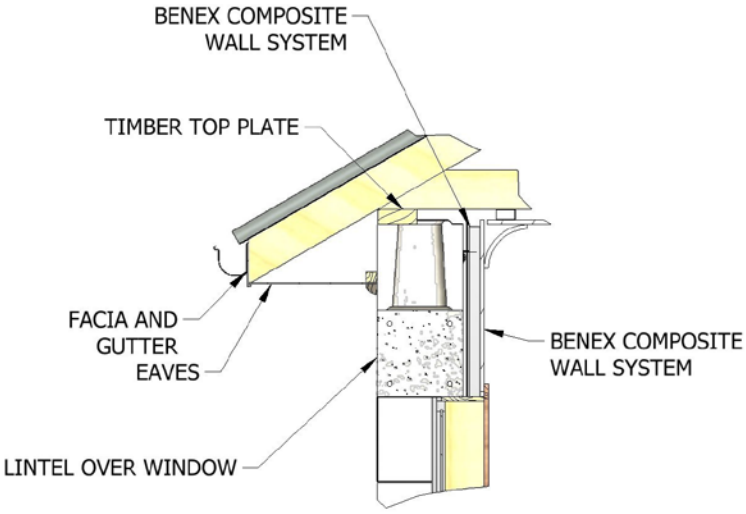


Section A-A

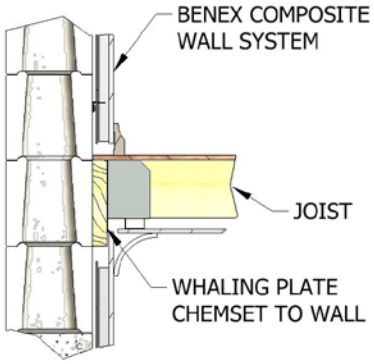


EXAMPLE 2 STOREY CONSTRUCTION

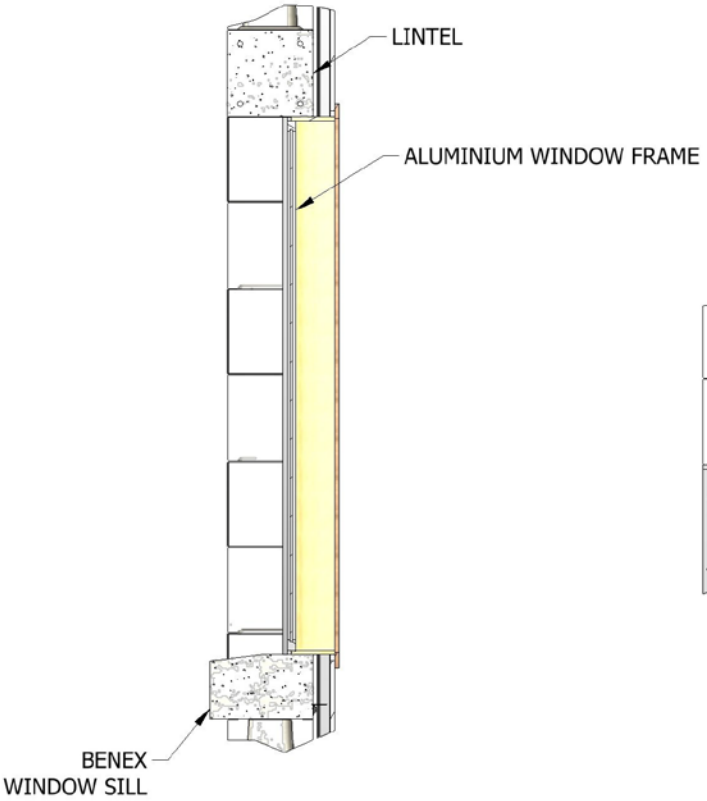
PAGE 2 OF 2



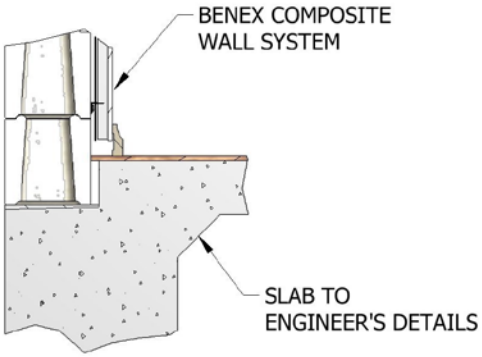
Detail B
ROOF CONNECTION



Detail C
JOIST CONNECTION



Detail D
WINDOW DETAIL



Detail E
SLAB DETAIL

Clean Up (Keep it Clean)

15.1 - Site

Maintaining a clean and safe working environment is one of the key responsibilities of the Benex Authorised Installers. Or anyone installing Benex Blocks

It is important to clean up your designated work area at least once or twice a day. Clearing away excess building materials, putting away tools, and sweeping regularly will make your site safer, easier to work in and won't leave you with a huge mess that takes days to clean up at the end of the job.

15.2 – Benex Blocks

The tolerance involved when laying Benex Blocks is so fine that even small debris between the blocks during the laying process can affect the entire wall. It is vital that the Blocks are kept clean at all times and that the unglued areas of the blocks are wiped over by hand before laying. This is a simple and easy way to save you the time, effort and expense fixing the issue later.

Additionally, during the laying process by quickly sponging off the excess adhesive before it dries you will create a far superior looking wall, as well as it being quicker and easier than chipping off the dried adhesive later.

BENEXGROUP

MATERIAL SAFETY DATA SHEET

FILE NO.: 1 – R3

H600 Series Benex Block

MSDS DATE: 1/08/08

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:	**Benex Block**
PRODUCT CODES:	**H600 and S600**
MANUFACTURER:	**Benex Bathurst Pty Ltd**
ADDRESS:	**22 Michigan Rd, Bathurst, NSW, 2795**
PHONE:	**02 6331 0155**
FAX:	**02 6331 0255**
EMERGENCY PHONE:	**Poisons Information Centre 13 11 26**
PRODUCT USE:	**Construction**
PREPARED BY:	**Benex Group Pty Ltd**
SECTION 1 NOTES:	**This Material Safety Data Sheet (MSDS) is issued by the Supplier in accordance with the Code and guidelines from the Australian Safety and Compensation Council (ASCC, formerly National Occupational Health and Safety Commission – NOHSC). The information in it must not be altered, deleted or added to. The Supplier will not accept any responsibility for any changes made to its MSDS by any other person or organization. The Supplier will issue a new MSDS when there is a change in product specifications and/or ASCC standards, guidelines, or regulations.**

SECTION 2: HAZARDS IDENTIFICATION

STATEMENT OF HAZARD: **Dust created when the product is cut, abraded, or crushed contains crystalline silica and cement particulate that are classified as Hazardous substances according to the criteria of the Australian Safety and Compensation Council ASCC - Approved Criteria For Classifying Hazardous Substances 3rd Edition.**
H600 Benex Blocks are classified as Non-Dangerous goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.

Risk Phrases	Safety Phrases
R20: Harmful by Inhalation (Applies to dust)	**S22:** Do not breathe dust
R21: Harmful in contact with skin. (Applies to dust)	**S24:** Avoid contact with Skin
R22: Harmful if Swallowed	**S25:** Avoid contact with Eyes
R48: Danger of serious damage to health by prolonged exposure through inhalation (Applies to dust)	

Appendix A – BenexBlock MSDS

BENEXGROUP

MATERIAL SAFETY DATA SHEET

FILE NO.: 1 – R3

H600 Series Benex Block

MSDS DATE: 1/08/08

HEALTH EFFECTS

ACUTE **(**effects may occur immediately or shortly after a single exposure)

Swallowed: Corrosive to the mouth, throat and stomach. May cause abdominal discomfort and burning sensation.

Eyes: Irritating to the eyes. May cause redness, swelling, burning sensation and chemical conjunctivitis. May damage the cornea.

Skin: Irritating to the skin. Water soluble hexavalent chromium may sensitise individuals and cause contact dermatitis. May cause alkaline burns.

Inhaled: Irritating to nose, throat and respiratory system causing coughing and sneezing

CHRONIC (effect may occur after repeated or prolonged exposure)

Inhaled: Prolonged inhalation of dust can cause silicosis, scleroderma, bronchitis and lung cancer.

Skin: Prolonged exposure to wet cement products may cause dermatitis due to water soluble hexavalent chromium.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

All significant ingredients are listed below:

Chemical Name:	CAS Number	Proportion
Portland Cement	65997-15-1	10-60%
Sand containing Crystalline Silica	14828-60-7	20-40%
Hexavalent Chromium	18540-29-9	< 10ppm
Non-Hazardous Additives	-	20-40%

SECTION 4: FIRST AID MEASURES

The following applies to dust from this product:

EYES: Flush thoroughly with water for at least 15 minutes. If symptoms persist seek medical attention.

SKIN: Wash off skin thoroughly with water, using soap if available. Seek medical attention irritation or burning sensation persists.

INGESTION: Do not induce vomiting. Rinse mouth thoroughly with water. Seek medical attention.

INHALATION: Remove to clean, fresh air away from dusty area. If symptoms persist seek medical attention.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: Treat symptomatically.

BENEXGROUP

MATERIAL SAFETY DATA SHEET

FILE NO.: 1 – R3

H600 Series Benex Block

MSDS DATE: 1/08/08

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABLILITY: This product is non-flammable

EXTINGUISHING MEDIA: Use appropriate extinguishing media as required for surrounding materials

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

HAZARDOUS DECOMPOSITION PRODUCTS: May evolve toxic gases if heated to decomposition (sustained heat above 1000°C)

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES: Collect and reuse where possible. Avoid creating dust during clean up. Wetting down before sweeping will help reduce airborne dust

SECTION 7: HANDLING AND STORAGE

HANDLING: When handling Benex Blocks ensure appropriate manual handling techniques and aids are used at all times

STORAGE: Store in a cool, dry, well ventilated area.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

The following applies to dust from this product

ENGINEERING CONTROLS: Keep exposure to dust as low as possible using local ventilation.

VENTILATION: Work in the open air or external openings (doors, windows, etc) open to provide adequate ventilation. Local mechanical ventilation or extraction may be required in areas where dust could escape into the working environment.

RESPIRATORY PROTECTION: Respiratory protection should be worn at all times when Benex Blocks are being cut, abraded, crushed or drilled. A suitable P1 or P2 particulate respirator chosen and used in accordance with AS/NZS 1715 and AS/NZS 1716 may be sufficient for many situations, but where high levels of dust are encountered, more efficient cartridge-type or powered respirators may be necessary.

EYE PROTECTION: Ventilated non-fogging goggles should be worn when working in a dusty environment.

SKIN PROTECTION: Direct skin contact should be avoided by wearing long sleeved shirts and long trousers, a cap or hat, and gloves. Wash all clothing regularly and wash hands before eating or smoking.

BENEXGROUP

MATERIAL SAFETY DATA SHEET

FILE NO.: 1 – R3

H600 Series Benex Block

MSDS DATE: 1/08/08

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	**Off White Blocks**
ODOUR:	**None**
PHYSICAL STATE:	**Solid**
pH AS SUPPLIED:	**Not Available**
BOILING POINT:	**Not Available**
MELTING POINT:	**> 1000°C**
FREEZING POINT:	**Not Applicable**
VAPOR PRESSURE:	**Not Available**
VAPOR DENSITY:	**Not Available**
SPECIFIC GRAVITY:	**1**
EVAPORATION RATE:	**Not Applicable**
FLASH POINT:	**Not Applicable**
EXPLOSIVE PROPERTIES:	**Not Applicable**
SOLUBILITY IN WATER:	**Not Applicable**

SECTION 10: STABILITY AND REACTIVITY

STABILITY: **Stable**

CONDITIONS TO AVOID: **Dust generation**

INCOMPATIBILITY: **None**

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: **None**

HAZARDOUS POLYMERIZATION: **None**

BENEXGROUP

MATERIAL SAFETY DATA SHEET

FILE NO.: 1 – R3

H600 Series Benex Block

MSDS DATE: 1/08/08

SECTION 11: TOXICOLOGICAL INFORMATION

HEALTH EFFECTS:

ACUTE (short term)

SWALLOWED: Unlikely under normal use, but swallowing the dust from this product may result in abdominal discomfort.

EYE: Dust is irritating to the eyes causing watering and redness. Exposure to the dust may aggravate pre-existing eye conditions.

SKIN: The dust from this product, particularly in association with heat and sweat, may cause irritation. The dust from this product is not absorbed through the skin but may mildly irritate and dry the skin.

INHALED: Dust is mildly irritating to the nose, throat, and respiratory tract and may cause coughing and sneezing. Pre-existing upper respiratory and lung diseases including asthma and bronchitis may be aggravated.

CHRONIC (long term)

EYES: Dust may cause irritation and inflammation of the eyes and aggravate pre-existing eye conditions.

SKIN: Repeated heavy contact with the dust may cause drying of the skin and can result in skin rash (dermatitis) typically affecting the hands. Over time this may become chronic and can also become infected.

INHALED: Repeated exposure to the dust may result in increased nasal and respiratory secretions and coughing. Inflammation of lining tissue of the respiratory system may follow repeated exposure to high levels of dust with increased risk of bronchitis and pneumonia.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICITY: Benex Blocks are not toxic to aquatic or terrestrial life.

DEGRADABILITY: This product is persistent and is expected to have a low degradability.

MOBILITY: In landfill this product is expected to have low mobility.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Benex Blocks are to be disposed of in accordance with the relevant authority guidelines for common waste.
All efforts should be made to ensure that dust generation is kept to a minimum while disposing of Benex Block waste.

BENEXGROUP

MATERIAL SAFETY DATA SHEET

FILE NO.: 1 – R3

H600 Series Benex Block

MSDS DATE: 1/08/08

SECTION 14: TRANSPORT INFORMATION

TRANSPORT:	**No special transport requirements are required.**
UN NUMBER:	**Not Applicable**
PROPER SHIPPING NAME:	**Not Applicable**
CLASS:	**Not Applicable**
SUBSIDIARY RISK:	**Not Applicable**
PACKING GROUP:	**Not Applicable**
SPECIAL PRECAUTIONS:	**Observe safe manual handling practices.**
HAZCHEM CODE:	**Not Applicable**

SECTION 15: REGULATORY INFORMATION

POISONS SCHEDULE:	**None Scheduled**
STATE REGULATIONS:	**Exposure to high levels of dust may be covered under the State and Territory Hazardous Substances Regulations as they apply to Respirable Crystalline Silica.**

SECTION 16: OTHER INFORMATION

EMERGENCY CONTACT NUMBER:	**Poisons Information Centre – 13 11 26**
PREPARATION INFORMATION:	**Prepared on 1/8/08 by Benex Group Pty Ltd.**

BENEXGROUP

MATERIAL SAFETY DATA SHEET

FILE NO.: 2 – R1

BenexMix Adhesive

MSDS DATE: 1/09/08

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: BenexMix Adhesive

PRODUCT CODES: Not Applicable

MANUFACTURER: Benex Bathurst Pty Ltd

ADDRESS: 22 Michigan Rd, Bathurst, NSW, 2795
PHONE: 02 6331 0155
FAX: 02 6331 0255

EMERGENCY PHONE: Poisons Information Centre 13 11 26
PRODUCT USE: Construction

PREPARED BY: Benex Group Pty Ltd

SECTION 1 NOTES: This Material Safety Data Sheet (MSDS) is issued by the Supplier in accordance with the Code and guidelines from the Australian Safety and Compensation Council (ASCC, formerly National Occupational Health and Safety Commission – NOHSC). The information in it must not be altered, deleted or added to. The Supplier will not accept any responsibility for any changes made to its MSDS by any other person or organization. The Supplier will issue a new MSDS when there is a change in product specifications and/or ASCC standards, guidelines, or regulations.

SECTION 2: HAZARDS IDENTIFICATION

STATEMENT OF HAZARD: This product is hazardous according to the criteria of the ASCC.
BenexMix Adhesive is classified as a Non-Dangerous good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.

Risk Phrases
R20: Harmful by Inhalation (Applies to dust)
R36: Irritating to the eyes
R37: Irritating to the respiratory system
R38: Irritating to the skin
R41: Risk of serious damage to eyes
R48: Danger of serious damage to health by prolonged exposure through inhalation (Applies to dust)
R66: Repeated exposure may cause skin dryness and cracking

Safety Phrases
S22: Do not breathe dust
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S27: Take off immediately all contaiminated clothing
S28: After contact with skin wash immediately plenty of soap
S36: Wear suitable protective clothing
S37: Wear suitable gloves
S39: Wear eye/face protection

Appendix A – BenexMix Adhesive MSDS

MATERIAL SAFETY DATA SHEET

FILE NO.: 2 – R1

BenexMix Adhesive

MSDS DATE: 1/09/08

HEALTH EFFECTS

ACUTE **(effects may occur immediately or shortly after a single exposure)**

Swallowed: **Corrosive to the mouth, throat and stomach. May cause abdominal discomfort and burning sensation.**

Eyes: **Irritating to the eyes. Will cause moderate to severe irritation to the eyes. Rubbing the eye after exposure may cause severe irritation or damage to the eye by manual abrasion.**

Skin: **Irritating to the skin. May cause alkaline burns to damp skin.**

Inhaled: **Irritating to nose, throat and respiratory system causing coughing and sneezing**

CHRONIC **(effect may occur after repeated or prolonged exposure)**

Inhaled: **Prolonged inhalation of dust can lead to lung disorders and cancer**

Skin: **Prolonged exposure to wet cement products may cause dermatitis.**

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

All significant ingredients are listed below:

Chemical Name:	CAS Number	Proportion
Crysalline Silica	14828-60-7	30-60%
Portland Cement	65997-15-1	30-60%
Bentonite	1302-78-9	< 1%
Non-Hazardous Additives	-	To 100%

SECTION 4: FIRST AID MEASURES

EYES: **Flush thoroughly with water for at least 15 minutes. If symptoms persist seek medical attention.**

SKIN: **Wash off skin thoroughly with water, using soap if available. Seek medical attention irritation or burning sensation persists.**

INGESTION: **Do not induce vomiting. Rinse mouth thoroughly first and then drink at least 500mL of water. Seek medical attention.**

INHALATION: **Remove to clean, fresh air. Seek medical attention if symtoms don't ease immeditately.**

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: Treat symptomatically.

MATERIAL SAFETY DATA SHEET

FILE NO.: 2 – R1

BenexMix Adhesive

MSDS DATE: 1/09/08

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABLILITY: This product is non-flammable

EXTINGUISHING MEDIA: Use appropriate extinguishing media as required for surrounding materials

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

HAZARDOUS DECOMPOSITION PRODUCTS: None known to the manufacturer

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES: Prevent product from entering drains or waterways. Wear dust mask or respirator. Without creating dust clouds sweep or shovel up and place in plastic drums or buckets, fit lids, label and place in a safe area to await disposal or recovery. Thoughly ventilate area before continuing normal work.

SECTION 7: HANDLING AND STORAGE

HANDLING: Wear suitable protective clothing. Do not inhale dust.

STORAGE: Store in a cool, dry, well ventilated area.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Keep exposure to dust as low as possible using local ventilation. Minimise contact with skin by using clothing and protective equipment.

VENTILATION: Work in the open air or external openings (doors, windows, etc) open to provide adequate ventilation. Local mechanical ventilation or extraction may be required in areas where dust could escape into the working environment.

RESPIRATORY PROTECTION: Respiratory protection should be worn at all times when using BenexMix Adhesive. A suitable P1 or P2 particulate respirator chosen and used in accordance with AS/NZS 1715 and AS/NZS 1716 may be sufficient for many situations, but where high levels of dust are encountered, more efficient cartridge-type or powered respirators may be necessary.

EYE PROTECTION: Safety glasses with side shields or googles to AS 1337

SKIN PROTECTION: Direct skin contact should be avoided by wearing long sleeved shirts and long trousers, a cap or hat, and PVC or rubber gloves. Wear PVC apron where BenexMix Adhesive will come in contact with clothing. Wash all clothing regularly and wash hands before eating.

BENEXGROUP

MATERIAL SAFETY DATA SHEET

FILE NO.: 2 – R1

BenexMix Adhesive

MSDS DATE: 1/09/08

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	**Off-white grayish powder**
ODOUR:	**Cement-like**
PHYSICAL STATE:	**Solid powder**
pH AS SUPPLIED:	**Not Available**
BOILING POINT:	**Not Available**
MELTING POINT:	**> 1200°C**
FREEZING POINT:	**Not Available**
VAPOR PRESSURE:	**Not Available**
VAPOR DENSITY:	**Not Available**
SPECIFIC GRAVITY:	**1.3**
EVAPORATION RATE:	**Not Applicable**
FLASH POINT:	**Not Applicable**
EXPLOSIVE PROPERTIES:	**Not Applicable**
SOLUBILITY IN WATER:	**Insoluble (Miscible)**

SECTION 10: STABILITY AND REACTIVITY

STABILITY: **Stable**

CONDITIONS TO AVOID: **Dust generation**

INCOMPATIBILITY: **None**

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: **None**

HAZARDOUS POLYMERIZATION: **None**

MATERIAL SAFETY DATA SHEET

FILE NO.: 2 – R1

BenexMix Adhesive

MSDS DATE: 1/09/08

SECTION 11: TOXICOLOGICAL INFORMATION

No data beyond health effects mentioned already have been found.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICITY: **BenexMix Adhesive is not toxic to aquatic life.**

DEGRADABILITY: **This product is persistent and is expected to have a low degradability.**

MOBILITY: **Will block drains or small waterways as product cures in contact with water.**

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: **BenexMix Adhesive is to be disposed of in accordance with the relevant authority guidelines for hazardous wastes.**

SECTION 14: TRANSPORT INFORMATION

TRANSPORT: **No special transport requirements are required.**

UN NUMBER: **Not Applicable**

PROPER SHIPPING NAME: **Not Applicable**

CLASS: **Not Applicable**

SUBSIDIARY RISK: **Not Applicable**

PACKING GROUP: **Not Applicable**

SPECIAL PRECAUTIONS: **Observe safe manual handling practices. Ensure appropriate precautions to avoid the product from getting wet.**

HAZCHEM CODE: **Not Applicable**

SECTION 15: REGULATORY INFORMATION

POISONS SCHEDULE: **None Scheduled**

STATE REGULATIONS: **The labelling requirements under the *Code of Practice for the labelling of Workplace Substances (ASCC:2012[1994])* are applicable to this product, and the word HAZARDOUS must be prominently displayed in red on a white background with letters twice the height of the general text, the safety and risk phrases shown on page 1 should be repeated on the packages. The *ADG Code* or the *SUSDP* do not apply to this product.**

SECTION 16: OTHER INFORMATION

EMERGENCY CONTACT NUMBER: **Poisons Information Centre – 13 11 26**

PREPARATION INFORMATION: **Prepared on 1/9/08 by Benex Group Pty Ltd.**

Appendix A – BenexMix Adhesive MSDS