The Quality Pathway – Defect Avoidance

Brickwork

MORGAN SINDALL CONSTRUCTION

To facilitate this ambition of getting brickwork right, these checks should take place:

- Ensure mortar mixes are suitable for brick / block strength. Mortar strength should generally be less than brick / block strength. Check source of materials
- Beware specifications that require maximum strengths for mortar. These cannot be complied with, especially using ready mixed mortars
- Check bricks and blocks are to specification including colour (blocks normally colour coded). Do not use dense concrete blocks 190mm and above due to Health and Safety restrictions on weight of blocks
- Has the work been detailed to 'brick' size?
- Beware details of flashings in same joint as DPC (Damp Proof Course). Seek advice
- If mortar site mixed, sand and cement must be (bucket / box) gauged for consistency
- Take mortar cubes note special requirements for retarded mortars
- DPC / tray to be laid on full bed min 4mm below and above
- DPC / tray to be correctly fixed / jointed. Bitumen DPC with torched joint is best
- Support must be provided to all DPC trays
- Special for trays cloaking around columns etc should be made up on site
- Trays above window heads to turn up beyond window
- Weep holes above trays at 900mm generally
- Ties to be embedded 50mm minimum. Do not slope inwards and downwards
- Are the ties the right way up?
- Ensure inner and outer skin gauge correctly, use gauge rods / datums
- Ties at reveals / movement joint at 22mm centres, vertically and within 225mm of edge
- Ties required within 300mm of stainless steel support angles
- If stainless steel support angles are not continuous, ensure there is a vertical movement joint where it stops
- Check tie centres required for insulation
- Do not shot fire into concrete. Plug and screw for any missing ties
- For partial cavity fill, build inner leaf first and leave inner leaf below top of insulation
- For full cavity fill, build outer leave first and fully flush all joints on inner face before fixing insulation. Leave inner leaf below top of insulation
- Ensure insulation starts at least 225mm below ground level to avoid condensation
- All cavities and edge of insulation to be kept clean. Use battens or other system. It may be difficult but is very important
- Ensure perps are fully fitted and do not lay bricks with frogs down
- Ensure type of tie is suitable for height of masonry
- Ensure correct type of tie at movement joints

Our Quality vision:

We will get it right first time on all our projects
by delivering exceptional customer service

Get it right!

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- Do lintels need propping? Load from new masonry may overload. Check that lintels are installed correct way up (if applicable)
- If catnic-type lintels are specified and they are also acting as DPC trays, ensure proprietary stop ends are used
- Where possible always screw-fix ties to steelwork but shot firing may be acceptable. Obtain 'gun' suppliers advice and carry out tests
- Any brickwork on a support must not overhang by more than one third. Beware concrete tolerances or out-of-line substructures affecting support design
- Ensure stainless steel support angles are continuously supported behind the heel, with mechanically or epoxy resin fixed shims
- Where able, seek to have proprietary masonry support angle systems specified
- Avoid blockwork getting wet before and during construction
- Protect new brickwork from rain to avoid lime staining
- Ensure procedures for hot and cold weather working are detailed
- Establish max height of list in one day (normally 1.5m) but beware effects of wind on new work and take precautions against collapse
- Ensure padstones have been properly specified
- Ensure that onsite mixing equipment has been approved
- Check spacing of movement joints
- If masonry joints need to be ground or raked out to allow something like a single-ply membrane to be point into the joint, take care around the DPM to prevent damage
- Try to ensure the joint is created by the bricklayer rather than raking out later
- What measures are required to ensure walls' stability in their temporary state during construction?
- If building internal walls prior to completion of the external envelope has wind loading be allowed for?
- Check the location of any ancillary items such as bat boxes are coordinated with other masonry components and on elevation with designer
- Ensure any penetrations from inner leaf are fully air-sealed and weathered ahead of outer leaf being constructed
- If building outer leaf of timber kit, have building vapour barrier inspected for rips and check that layers overlap correctly shedding moisture correctly
- Have substructures applied DPM to steelwork and concrete checked as appropriate for compatibility with fire protection products which will interface at either basement or ground floor level
- Ensure tanking is fully lapped and sealed, primer applied to provide full adhesion correctly to masonry below ground. Once at ground floor slab level ensure substructure areas are fully lapped to under slab DPM. Inspect vertical DPM before backfill
- Check concrete slab edge setting out against architect's section threshold detail to ensure correct concrete scarcement to make sure fixing point for doors, threshold correctly. Relates to slip cill details
- Check lightning protection detail from specialist and get tapes in early before substructure masonry and DPM works. Also check detail at wall head with interfacing trades. Need to look at any penetration within cavity trays to ensure fully sealed if passing through them

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- If proprietary masonry supports are used, ensure structure / slab edges have been designed to take them, ensure the location of posts etc. are coordinated with the rest of structural / architectural components such as window reveals etc. Check masonry supports do not protrude into the cavity as to restrict the use of the specified insulation etc
- If building external leaf of steel frame / timber infill panels, have engineer check alignment so that outer leaf can be set out to suit and cavity ties / cavity sundry items sized to suit
- Consider leaving window frame final position until outer leaf masonry is constructed to accommodate any final masonry tolerance issues for sizing cills etc
- Make arrangements for brick specials to be submitted and agreed and ordered early as not to affect programme
- Make sure any steelwork within external cavities has DPM applied as per spec. If not on drawings, raise the question. Note often at balconies cavities become open at both sides hence why it's needed
- Check concrete edge at columns to make sure encasure does not protrude into cavity at sub structure level. Will need cut back to allow insulation to be fitted to stop cold bridging
- Need to coordinate any services on masonry so the cable routes are reduced coming through any cavity trays or cavity accessories. If puncturing cavity tray is unavoidable will need to check this is sealed before progressing outer leaf
- Double check that any cavity closers / fire stops are suitably sized to accommodate tolerance envelope masonry especially if steel / timber kit behind. May vary more and to keep tight fit may need varying sizes with longer ties to suit. Site specific issue
- If proprietary fixings to be installed to backing structure and built around such as scaffold / cradle tie points ensure they are fixed / if not S/S coated with DPM as appropriate
- Make sure your steelwork contractor is providing masonry support angles with steel structure as part of package / architect will coordinate with contractor as part of signoff process
- Make sure scaffold is set out properly to suit bricklayers as well as other envelope trades access needs and attendance is provided for hop-up moves. Need to review gate type in relation to pallet height to save removing top layer of brick every time
- Concentrate on interface details particularly with cladding and curtain walling to ensure weathering / cavity closers / air tightness details are bottomed out. Pay particular attention to slab edges at floor levels and abutments
- If there are building lift shafts make sure strength of block has been agreed with lift manufacturer and mortar strength to suit by engineer. If proprietary Halfen channels or anchors to fit supplied by lift manufacturer make sure setting out information provided by lift manufacturer and bricklayers work closely to information. Need to work in courses where possible to suit
- Make sure correct space allowed between structure and masonry for deflection at wall head. Ensure correct wall head restraints are fitted and proprietary filler used
- Agree with bricklayer how they will manage the mixing of deliveries as to help reduce banding of batches
- If rendering make sure block work / brickwork masonry is checked for weep setting out and position of expansion joints. Perps and beds fully filled

Note: Sample panels required to establish the standard and quality of workmanship, and brickwork / blockwork bonding details / joint specification etc.