



PSYCHIATRY UNIT SECLUSION ROOM UPGRADE

**ROSCOMMON COUNTY HOSPITAL
SLIGO**

**ARCHITECTURAL
DESIGN SPECIFICATION FOR SECLUSION ROOM**

**ARCHITECTURAL
TECHNICAL SPECIFICATION**

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1. Purpose and Scope

This specification sets out the architectural, structural, mechanical, electrical, and finishes requirements for the design, construction, or refurbishment of a seclusion room and its associated support spaces (anteroom/airlock, ensuite, and observation point) within an adult acute mental health inpatient facility.

A seclusion room provides a safe environment for the physical seclusion of a resident during an acute episode of behavioural disturbance, used only as a last resort, under clinical direction, and in accordance with the Mental Health Act 2001 (as amended) and the rules and codes of practice issued by the Mental Health Commission. It is not intended as a punitive space, a general-purpose isolation room, or a substitute for adequate staffing and de-escalation practice.

This document is intended to be read alongside — and does not replace — the client's clinical and operational policy on seclusion, the project fire safety strategy, and the current editions of the regulatory and reference documents listed in Section 4.

2. Definitions

- Seclusion room: a single-occupancy room in which a resident may be placed alone for their own protection or that of others, under continuous observation, for the shortest time necessary.
- Anteroom / airlock: an intermediate lobby space between the ward corridor and the seclusion room, providing a buffer for staff safety, equipment storage, and de-escalation.
- Ligature point: any fixture, fitting, or building element capable of being used to attach a cord, cable, clothing, or similar material for the purpose of self-harm.
- Anti-barricade door: a door and frame assembly designed so that an occupant cannot obstruct staff entry using furniture or their own body weight.
- Continuous observation: direct or CCTV-assisted staff observation maintained for the duration of a resident's seclusion, as required by clinical policy and regulation.
- Duress alarm: a fixed or personal alarm allowing staff to summon immediate assistance.

3. Design Principles

The room embodies the following principles, in order of priority: safety of the resident and staff; dignity and least-restrictive practice; continuous observability without unnecessary intrusion; resistance to self-harm and damage (anti-ligature, anti-barricade, impact- and fire-resistant); ease of cleaning and decontamination; a calm, low-arousal sensory environment; and, wherever safety allows, access to daylight, fresh air, and a view.

Anti-ligature and anti-barricade measures should be proportionate to a documented clinical risk assessment rather than applied uniformly at the most restrictive level available; over-institutionalising the space can itself be detrimental to de-escalation and recovery.

4. Regulatory and Reference Framework

- Mental Health Act 2001, as amended (including subsequent amendment acts).
- Mental Health Commission (Ireland) — Rules Governing the Use of Seclusion and Mechanical Means of Bodily Restraint (current edition), and associated codes of practice / judgment support framework guidance.
- HIQA — National Standards for Mental Health Services (current edition), where the facility falls within HIQA's inspection remit.
- Building Regulations (Ireland) — Part B (Fire Safety) and Part M (Access and Use), with associated Technical Guidance Documents.
- NHS Health Building Note HBN 03-01, "Adult acute mental health units" (UK) — widely used cross-reference for anti-ligature and seclusion-room detailing in the absence of an Irish design guide of equivalent detail.
- Australasian Health Facility Guidelines, HPU 620 Mental Health Unit — supplementary cross-reference for room layout and fittings.
- BS EN 12600 (glass impact classification) and related glazing and fire-door product standards.
- Requirements of the local Fire Authority and the project's fire safety engineer.

5. Location and Planning

The seclusion suite is:

- Located within or immediately adjacent to the acute admission ward, within direct sightline or short walking distance of the nursing/staff station.
- Positioned away from the ward's primary public or visitor circulation route, and away from other residents' bedrooms where practicable.
- Accessed by staff without needing to pass through other resident-occupied areas, and with a secondary staff escape route that does not rely on the seclusion room door.
- Provided with a dedicated anteroom/airlock so that no single door failure can trap either staff or the resident; the two doors should never be capable of being locked simultaneously against staff egress.
- Provided with an adjoining or immediately accessible single-person ensuite
- access to a secure, overlooked outdoor courtyard or "seclusion garden" with anti-ligature planting and boundary treatment is not available
- Positioned to allow rapid access for emergency services (fire, ambulance) without compromising the security of the wider ward.

6. Room Schedule and Dimensions

Indicative areas are a starting point for briefing and should be confirmed against the client's clinical brief and the current design guidance referenced in Section 4.

Space	Indicative min. area	Min. ceiling height	Key notes
Seclusion room (bedroom)	8.9m ²	3.38m	Single occupant; unobstructed sightline from door/observation panel; no dead corners
Ensuite / sanitary space	5.8 m ²	3.38 m	WC and wash-hand basin as combined anti-ligature unit; shower where clinically specified
Anteroom / airlock lobby	7 m ²	3.38 m	Buffer zone with second door; de-escalation space; staff PPE/equipment store nearby
Outdoor / seclusion garden (where provided)	N/A	N/A	Enclosed, overlooked, anti-ligature planting and boundary treatment

7. Structural Fabric

7.1 Walls

- Solid masonry, reinforced blockwork, or concrete construction; minimum fire resistance REI 60 (confirm against fire strategy).
- Sound reduction to adjoining spaces of at least Rw 45 dB, balanced against the need for staff to hear a resident in distress (see Section 14).
- Impact-resistant lining throughout, uprated or padded in zones identified by clinical risk assessment.
- No accessible voids; all service risers and conduits routed outside the room envelope.
- Internal corners coved or rounded to reduce injury risk and eliminate ligature points; no exposed sharp edges.

7.2 Ceiling

- Solid, flush ceiling; no suspended tiles or accessible ceiling void within the room.
- Any access panels (for services/CCTV maintenance) located and operable from outside the room only.
- Ceiling construction capable of resisting sustained concentrated loading without failure.

7.3 Floor

- Reinforced structural slab; seamless, anti-slip, welded-seam vinyl or rubber floor finish.
- Coved skirting, minimum 100 mm radius, fully sealed to the wall and floor finish with no gaps.

8. Doors, Frames and Ironmongery

- Minimum 1000 mm clear opening width; door leaf opening outward, or single-action anti-barricade sliding door.
- Fire-rated assembly (confirm rating with fire strategy, typically FD60) with solid-core, anti-barricade leaf construction preventing the room being blocked from within.
- Continuous (piano-type) or other tamper-resistant hinge with no exposed, removable pins.
- Concealed door closer; anti-ligature lever handle with staff keyed or coded override.
- Emergency quick-release mechanism operable by staff from outside at all times, including during a fire-alarm activation, in accordance with the agreed fire strategy.
- Door swing and ironmongery arranged so that no blind spot or entrapment point is created for staff entering the room.
- Vision/observation panel integrated into the door — see Section 9.

9. Windows, Glazing and Observation

9.1 Vision panels

- Laminated, anti-ligature glazing to door and any internal screen to the anteroom, minimum 300 × 900 mm, positioned to give staff a full view of the room — including the sleeping/floor area — with no blind spot.
- Impact performance to BS EN 12600 class 1B1 or better (confirm current equivalent standard); frame flush and tamper-proof, with no fixings accessible from inside the room.

9.2 External windows (where provided)

- High-level, laminated safety glazing; fixed shut or with restricted opening (typically under 100 mm) sufficient for ventilation without escape or self-harm risk.
- No external ligature risk within reach or view (drainpipes, flat roofs, adjoining structures).
- Privacy achieved by obscure glazing, manifestation, or a tamper-proof, externally-controlled blind rather than curtains or internal blinds with cords.

9.3 CCTV

- Ceiling- or high-corner-mounted camera(s) in vandal-resistant housings, positioned for complete room coverage with no blind spot (particularly behind the door and at the sleeping area).

- Live feed to the nursing/staff station, recorded in accordance with data-protection and clinical governance requirements.
- Privacy masking applied to the sanitary zone in line with clinical and data-protection policy.

10. Mechanical and Electrical Services

10.1 Heating, ventilation and air conditioning

- Independent, tamper-proof supply and extract ventilation; grilles and diffusers of a narrow-slot, non-graspable, externally-fixed anti-ligature type.
- Extract taken from the ensuite to control odour; fresh-air rate in accordance with applicable healthcare ventilation guidance.
- Temperature control, including any thermostat, located and operable from outside the room only.
- Heating provided via concealed emitters (underfloor or ceiling) or fully enclosed, tamper-proof radiator covers, with no exposed pipework or accessible hot surfaces.

10.2 Lighting and power

- Flush, vandal-resistant luminaire with a shatterproof diffuser; dimmable, with a low-level night setting; controlled from outside the room only.
- Emergency lighting provided in accordance with the fire safety strategy.
- No power sockets or switches accessible within the room; all wiring and containment concealed and routed externally.

10.3 Fire detection

- Independent, tamper-resistant smoke/heat detection linked to the building's central fire alarm and building management system.

10.4 Communications and alarms

- Two-way intercom, flush-mounted and tamper-proof, allowing staff-initiated communication.
- Fixed-point duress/panic alarm for staff use, in addition to personal alarms, tested as part of routine building maintenance.
- All alarm and access-control systems designed to fail safe — defaulting to a state that preserves staff egress — in the event of a power or systems failure.

11. Fixtures, Fittings and Furniture

The schedule below summarises the principal anti-ligature and safety requirements for fittings within the room. All items should be confirmed against a project-specific clinical risk assessment.

Element	Requirement	Notes
Mattress / sleeping surface	Fire-retardant mattress on low plinth or floor level; no metal bed frame	Reduces fall and ligature risk; plinth to be a single monolithic form with no voids
Door and frame	FD60 fire-rated, min. 1000 mm clear opening, anti-barricade leaf, continuous/tamper-resistant hinge	Openable outward or single-action sliding; never lockable against staff egress
Vision / observation panel	Laminated anti-ligature glazing, min. 300 × 900 mm, positioned for full-room sightline	Impact rating per BS EN 12600 class 1B1 or better; flush, tamper-proof frame
Lighting	Flush, vandal-resistant luminaire with shatterproof diffuser; control external only	Dimmable; low-level night setting; emergency lighting per fire strategy
HVAC diffusers/grilles	Narrow-slot, non-graspable, externally-fixed anti-ligature type	Independent, tamper-proof supply/extract; thermostat external only
Heating	Concealed emitters (underfloor/ceiling) or fully enclosed anti-ligature radiator covers	No exposed pipework or accessible hot surfaces
Nurse call / intercom	Two-way, flush, tamper-proof; staff-controlled duress alarm	Fail-safe; tested as part of commissioning
CCTV	Ceiling/high-corner mounted, vandal-resistant housing, full-room coverage	Privacy masking of sanitary zone per policy; recorded per data-protection requirements
WC / wash-hand basin	Combined stainless steel anti-ligature sanitary unit	Tamper-proof flush control; sensor or panel taps; TMV-limited water temperature (max ~43°C)
Shower (if specified)	Recessed, non-removable, drop-away rated shower fitting	No curtain, rail, or removable head; floor-level drainage
Wall/floor finishes	Seamless, washable, anti-graffiti, anti-slip; coved skirting min. 100 mm radius	Neutral, calming colour palette; matte finish to reduce glare
Fixtures generally	No hooks, rails, handles, exposed fixings, or loose fittings	All fixings tamper-proof and accessible for maintenance from outside the room only

12. Finishes, Colour and Sensory Design

- Wall and floor finishes: seamless, washable, anti-graffiti, anti-slip, and easily decontaminated.
- Colour palette: neutral and calming rather than starkly clinical or high-contrast institutional white; matte finishes to reduce glare; avoid busy patterns or textures that may increase agitation.

- Acoustic treatment should reduce harsh reverberation without fully isolating the room from the ward, so that staff remain able to hear a resident in distress — this is a deliberate balance, not solely a sound-insulation maximisation exercise.
- Where safety allows, provide access to daylight and, ideally, an outlook (for example onto a courtyard or landscaped view) for therapeutic benefit.

13. Fire and Life Safety

- Construction, detection, and door ratings coordinated with the project fire safety engineer and the overall building fire strategy.
- Door and access-control hardware arranged so that, on fire-alarm activation, staff retain the ability to release the resident without delay, in a manner agreed with both the fire safety engineer and clinical/security leads.
- Fire-fighting equipment (extinguisher, fire blanket) located immediately outside the room, accessible to staff.
- All furnishings and finishes within the room confirmed as fire-retardant to the standard required for the building's fire strategy.

14. Commissioning, Testing and Maintenance

- Pre-occupancy inspection against an anti-ligature and safety checklist (Section 16), signed off by clinical, estates/facilities, and fire safety representatives.
- Functional testing of every fail-safe mechanism — door release, HVAC and lighting controls, nurse call, duress alarm, and CCTV — prior to handover.
- A documented periodic reinspection regime (commonly at least annually, or per the operator's own policy) to identify wear, tampering, or emerging ligature points.
- Staff training on emergency release procedures and alarm systems as part of building handover and ongoing induction.

15. Compliance Checklist

For use at design review, pre-occupancy inspection, and periodic reinspection.

Checklist item	Confirmed (Y/N)
Room and anteroom located for direct staff observation and rapid access	
Two-door airlock arrangement with fail-safe egress for staff at all times	
No accessible ligature points on walls, ceiling, door, glazing, or services	
All services (HVAC, electrical, lighting) controlled from outside the room only	
Vision panel provides full-room sightline with no blind spot	
CCTV coverage confirmed complete, with sanitary-area privacy masking applied	

Checklist item	Confirmed (Y/N)
Nurse call / duress alarm tested and linked to central monitoring	
Fire detection installed, tamper-resistant, linked to central fire alarm	
Door hardware fails safe on fire-alarm activation, per agreed fire strategy	
Mattress, fittings, and finishes confirmed fire-retardant and anti-ligature	
Water temperature limited by thermostatic mixing valve	
Sign-off obtained from clinical lead, estates/facilities, and fire safety engineer	
Room reviewed against current Mental Health Commission Rules in force at handover	
Staff training on emergency release and alarm systems completed	

C20 DEMOLITION

To be read with Preliminaries/General conditions

GENERAL REQUIREMENTS**120 EXTENT OF DECONSTRUCTION/ DEMOLITION**

- General: Subject to retention requirements specified elsewhere, deconstruct/ demolish structures - refer demolition plans.
- Contaminated material: Remove, and carry out remediation required by the Enforcing Authority.

140 BENCH MARKS

- Unrecorded bench marks and other survey information: Give notice when found. Do not remove marks or destroy the fabric on which they are found.

150 FEATURES TO BE RETAINED

- General: Keep in place and protect the following: existing building, structures and external finishes to be retained.

SERVICES AFFECTED BY DECONSTRUCTION/ DEMOLITION**210 SERVICES REGULATIONS**

- Work carried out to or affecting new and/ or existing services: Carry out in accordance with the byelaws and/ or regulations of the relevant Statutory Authority.

220 LOCATION OF SERVICES

- Services affected by deconstruction/ demolition work: Locate and mark positions.
- Mains services marking: Arrange with the appropriate authorities for services to be located and marked.
 - Marking standard: In accordance with National Joint Utilities Group 'Guidelines on the positioning and colour coding of underground utilities' apparatus'.
 -

230 SERVICES DISCONNECTION ARRANGED BY CONTRACTOR

- General: Arrange with the appropriate authorities for disconnection of services and removal of fittings and equipment owned by those authorities prior to starting deconstruction/ demolition.

240 DISCONNECTION OF DRAINS

- General: Locate, disconnect and seal disused foul and surface water drains
Sealing Permanently.

250 LIVE FOUL AND SURFACE WATER DRAINS

- Drains and associated manholes, inspection chambers, gullies, vent pipes and fittings:
 - Protect; maintain normal flow during deconstruction/ demolition.
 - Make good any damage arising from deconstruction/ demolition work.
 - Leave clean and in working order at completion of deconstruction/ demolition work.
- Other requirements: Post completion camera survey; extent; from existing building to main sewer manhole.

260 SERVICE BYPASS CONNECTIONS

- General: Provide as necessary to maintain continuity of services to occupied areas of the site on which the deconstruction/ demolition is taking place and to adjoining sites/ properties.
- Minimum notice to adjoining owners and all affected occupiers: 72 hours, if shutdown is necessary during changeover.

270 SERVICES TO BE RETAINED

- Damage to services: Give notice, and notify relevant service authorities and/ or owner/ occupier regarding damage arising from deconstruction/ demolition.
- Repairs to services: Complete as directed, and to the satisfaction of the service authority or owner.

DECONSTRUCTION/ DEMOLITION WORK**310 WORKMANSHIP**

- Standard: Demolish structures in accordance with BS 6187.
- Operatives:
 - Appropriately skilled and experienced for the type of work.
 - Holding, or in training to obtain, relevant CITB Certificates of Competence.
- Site staff responsible for supervision and control of work: Experienced in the assessment of risks involved and methods of deconstruction/ demolition to be used.

320 GAS OR VAPOUR RISKS

- Precautions: Prevent fire and/ or explosion caused by gas and/ or vapour from tanks, pipes, etc.

330 DUST CONTROL

- General: Reduce airborne dust by periodically spraying deconstruction/ demolition works with an appropriate wetting agent. Keep public roadways and footpaths clear of mud and debris.
- Lead dust: Submit method statement for control, containment and clean-up regimes.

340 HEALTH HAZARDS

- Precautions: Protect site operatives and general public from hazards associated with vibration, dangerous fumes and dust arising during the course of the Works.

350 ADJOINING PROPERTY

- Temporary support and protection: Provide. Maintain and alter, as necessary, as work proceeds. Do not leave unnecessary or unstable projections.
- Defects: Report immediately on discovery.
- Damage: Minimize. Repair promptly to ensure safety, stability, weather protection and security.
- Support to foundations: Do not disturb.

360 STRUCTURES TO BE RETAINED

- Extent: refer demolition plans.
- Parts which are to be kept in place: Protect.
- Interface between retained structures and deconstruction/ demolition: Cut away and strip out with care to minimize making good.

370 PARTLY DEMOLISHED STRUCTURES

- General: Leave in a stable condition, with adequate temporary support at each stage to prevent risk of uncontrolled collapse. Make secure outside working hours.
- Temporary works: Prevent overloading due to debris.
- Access: Prevent access by unauthorized persons.

380 DANGEROUS OPENINGS

- General: Provide guarding at all times, including outside of working hours. Illuminate during hours of darkness.
- Access: Prevent access by unauthorized persons.

390 ASBESTOS-CONTAINING MATERIALS – KNOWN OCCURRENCES

- General: Materials containing asbestos are known to be present in: refer client asbestos register.
- Removal: By contractor licensed by the Health and Safety Authority, and prior to other works starting in these locations.

391 ASBESTOS-CONTAINING MATERIALS – UNKNOWN OCCURRENCES

- Discovery: Give notice immediately of suspected asbestos-containing materials when discovered during deconstruction/ demolition work. Avoid disturbing such materials.
- Removal: Submit statutory risk assessments and details of proposed methods for safe removal.
-

410 UNFORESEEN HAZARDS

- Discovery: Give notice immediately when hazards such as unrecorded voids, tanks, chemicals, are discovered during deconstruction/ demolition.

- Removal: Submit details of proposed methods for filling, removal, etc.

MATERIALS ARISING**510 CONTRACTOR'S PROPERTY**

- Components and materials arising from the deconstruction/ demolition work: Property of the Contractor except where otherwise provided.
- Action: Remove from site as work proceeds where not to be reused or recycled for site use.

511 EMPLOYER'S PROPERTY

- Components and materials to remain the property of the Employer: all components required for reuse.
- Protection: Maintain until these items are removed by the Employer or reused in the Works, or until the end of the Contract.

520 RECYCLED MATERIALS

- Materials arising from deconstruction/ demolition work: Can be recycled or reused elsewhere in the project, subject to compliance with the appropriate specification and in accordance with any site waste management plan.
- Evidence of compliance: Submit full details and supporting documentation.
 - Verification: Allow adequate time in programme for verification of compliance.
 -

GENERALLY/ THE SITE**110 SITE INVESTIGATION**

- Refer to drawings 10001 Site Plan & 11001 Survey plan

150 EXISTING SERVICES/ FEATURES/ STRUCTURES

- Refer to drawings 11001 Survey plan & 51001 Room Elevations

CLEARANCE/ EXCAVATING**168 SITE CLEARANCE**

- work area is located on ground floor of Hospital refer to hospital overview located in info package. There is a lower floor level under part of the ground floor

E60 PRECAST/ COMPOSITE CONCRETE FLOORS/ ROOF DECKS

To be read with Preliminaries/ General conditions.

G20 CARPENTRY/ TIMBER FRAMING/ FIRST FIXING

To be read with Preliminaries/ General conditions.

GENERAL**105 TIMBER PROCUREMENT**

- Timber (including timber for wood based products): Obtained from well managed forests/ plantations in accordance with:
 - The laws governing forest management in the producer country or countries.
 - International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
- Documentation: Provide either:
 - Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied, or
 - Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood based products.

150 STRENGTH GRADING OF TIMBER

- Grader: A company currently registered under a third party quality assurance scheme operated by a certification body approved by the UK Timber Grading Committee.

160 GRADING AND MARKING OF SOFTWOOD

- Timber of a target/ finished thickness less than 100 mm and not specified for wet exposure: Graded at an average moisture content not exceeding 20% with no reading being in excess of 24% and clearly marked as 'DRY' or 'KD' (kiln dried).
- Timber graded undried (green) and specified for installation at higher moisture contents: Clearly marked as 'WET' or 'GRN'.
- Structural timber members cut from large graded sections: Regraded to approval and marked accordingly.

PRODUCTS**210 STRUCTURAL SOFTWOOD (GRADED DIRECT TO STRENGTH CLASS)
FOR STRUCTURAL USE GENERALLY**

- Grading standard: To BS 4978, BS EN 14081-1, or other national equivalent and so marked.
- Strength class to BS EN 338: to engineers specification.
- Treatment:
 - Preservative treatment: Organic solvent impregnation to NBS section Z12 and Wood Protection Association Commodity Specification C8..
 - Design service life:40 years for all external timber.
 - Fire retardant treatment: Fire retardant impregnation to NBS section Z12 and Wood Protection Association Commodity Specification FR2, Type HR.

270 UNGRADED SOFTWOOD FOR INTERNAL NONSTRUCTURAL USE

- Quality of timber: Free from decay, insect attack (except pinhole borers) and with no knots wider than half the width of the section.
- Surface finish: Planed all round, or regularized - refer to drawings.
- Treatment:
 - Preservative treatment: Organic solvent impregnation to NBS section Z12 and Wood Protection Association Commodity Specification C8.
 - Design service life:40 years.
 - Fire retardant treatment: Fire retardant impregnation to NBS section Z12 and Wood

Protection Association Commodity Specification FR3, Type HR where supporting timber cladding.

311 NONSTRUCTURAL PLYWOOD EXTERNALLY/INTERNALLY

- Standard: To an approved national standard.
- Thickness: 18 mm.
- Appearance class to BS EN 635: I.
- Bond quality to BS EN 314-2: Class 3 (external), class 2 (internal).
- Finish: Sanded where exposed to view.
- Treatment:
 - Preservative treatment: Organic solvent impregnation to NBS section Z12 and Wood Protection Association Commodity Specification C8.
 - Design service life: 40 years.
 - Fire retardant treatment: None required.

WORKMANSHIP GENERALLY

401 CROSS SECTION DIMENSIONS OF STRUCTURAL SOFTWOOD AND HARDWOOD

- Dimensions: Dimensions in this specification and shown on drawings are target sizes as defined in BS EN 336.
- Tolerances: The tolerance indicators (T1) and (T2) specify the maximum permitted deviations from target sizes as stated in BS EN 336, clause 4.3:
 - Tolerance class 1 (T1) for sawn surfaces.
 - Tolerance class 2 (T2) for further processed surfaces.

402 CROSS SECTION DIMENSIONS OF NONSTRUCTURAL SOFTWOOD

- Dimensions: Dimensions in this specification and shown on drawings are finished sizes.
- Maximum permitted deviations from finished sizes: As stated in BS EN 1313-1:
 - Clause 6 for sawn sections.
 - Clause NA.2 for further processed sections.

403 CROSS SECTION DIMENSIONS OF NONSTRUCTURAL HARDWOOD

- Dimensions: Dimensions in this specification and shown on drawings are finished sizes.
- Maximum permitted deviations from finished sizes: As stated in BS EN 1313-2:
 - Clause 6 for sawn sections.
 - Clause NA.3 for further processed sections.

420 WARPING OF TIMBER

- Bow, spring, twist and cup: Not greater than the limits set down in BS 4978 or BS EN 14081-1 for softwood, or BS 5756 for hardwood.

430 SELECTION AND USE OF TIMBER

- Timber members damaged, crushed or split beyond the limits permitted by their grading: Do not use.

435 NOTCHES, HOLES AND JOINTS IN TIMBER

- Notches and holes: Position in relation to knots or other defects such that the strength of members will not be reduced.
- Scarf joints, finger joints and splice plates: Do not use without approval.

440 PROCESSING TREATED TIMBER

- Cutting and machining: Carry out as much as possible before treatment.
- Extensively processed timber: Retreat timber sawn lengthways, thickness, planed, ploughed, etc.
- Surfaces exposed by minor cutting/ drilling: Treat with two flood coats of a solution recommended by main treatment solution manufacturer.

450 MOISTURE CONTENT

- Moisture content of wood and wood based products at time of installation: Not more than:
 - Covered in generally unheated spaces: 24%.
 - Covered in generally heated spaces: 20%.
 - Internal in continuously heated spaces: 20%.

510 PROTECTION

- Generally: Keep timber dry and do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing.
- Timber and components: Store under cover, clear of the ground and with good ventilation. Support on regularly spaced, level bearers on a dry, firm base. Open pile to ensure free movement of air through the stack.
- Trussed rafters: Keep vertical during handling and storage.

520 EXPOSED END GRAIN

- Components: Seal exposed end grain of the following before delivery to site: external timber joists to canopies.
- Sealer: Aluminium primer for concealed timber. Boron for exposed timer.

530 PAINTED FINISHES

- Structural timber to be painted: Primed as specified before delivery to site.

540 CLEAR FINISHES

- Structural timber to be clear finished: Keep clean and apply first coat of specified finish before delivery to site.

550 EXPOSED TIMBER

- Planed structural timber exposed to view in completed work: Prevent damage to and marking of surfaces and arrises.

JOINTING TIMBER**570 JOINTING/FIXING GENERALLY**

- Generally: Where not specified precisely, select methods of jointing and fixing and types, sizes and spacings of fasteners in compliance with section Z20.

580 FRAMING ANCHORS

- Manufacturer: submit proposals.
- Product reference: n/a.
- Material/ finish: Galvanized low carbon steel.
- Fasteners: Galvanized or sherardized square twist nails.
- Size: Not less than size recommended by anchor manufacturer.
- Fixing: Secure using not less than the number of nails recommended by anchor manufacturer.

630 BOLTED JOINTS

- Bolt spacings (minimum): To BS 5268-2, table 81.
- Holes for bolts: Located accurately and drilled to diameters as close as practical to the nominal bolt diameter and not more than 2 mm larger.
- Washers: Placed under bolt heads and nuts that would otherwise bear directly on timber. Use spring washers in locations which will be hidden or inaccessible in the completed building.

- Bolt tightening: So that washers just bite the surface of the timber. Ensure that at least one complete thread protrudes from the nut.
- Checking: At agreed regular intervals up to Completion. Tighten as necessary.

670 ANTICORROSION FINISHES FOR FASTENERS

- Galvanizing: To BS 7371-6, with internal threads tapped and lightly oiled following treatment.
- Sherardizing: To BS 7371-8, Class 1.
- Zinc plating: To BS EN ISO 4042 and passivated.

ERECTION AND INSTALLATION**760 TEMPORARY BRACING**

- Provision: As necessary to maintain structural timber components in position and to ensure complete stability during construction.

770 ADDITIONAL SUPPORTS

- Provision: Position and fix additional studs, noggings and/ or battens to support edges of sheet materials, and wall/ floor/ ceiling mounted appliances, fixtures, etc. shown on drawings.
- Material properties: Additional studs, noggings and battens to be of adequate size and have the same treatment, if any, as adjacent timber supports.

K10 GYPSUM BOARD DRY LININGS/ PARTITIONS/ CEILINGS**TYPES OF CEILINGS****215 SUSPENDED CEILING SYSTEM Plasterboard**

- Standard: To BS EN 13964.
- Evidence of compliance: All ceilings kits to be CE marked. Submit Declaration of Performance (DoP).
- Lining board: 1 layer clause 401.
 - Finishing: Skim coat plaster.
Primer/ Sealer: Primer to painted areas.
 - Accessories: Metal beads/ stops recommended by lining board manufacturer.
- Suspension system: As recommended by lining manufacturer to complete the ceiling system and achieve specified performance.
 - Grid type: Suspended directly from soffit.
 - Hangers: Type recommended by board manufacturer.
Length: to suit existing soffit heights and proposed ceiling heights - instances differ, refer ceiling plans.
 - Top fixing: To suit structural soffit of existing soffit conditions vary, refer structural engineer's information for new soffits.
- Insulation: Not required.
 - Recycled content: Not applicable.
 - Thickness: -.

- Access units: locking panels with metal door. Perimeter to suit tape and jointing finish. Size and location in accordance with service engineer's information.
- Integrated services fittings: refer service engineer's information and service engineer's coordinated ceiling plans.
- Other requirements: -.
- System performance:
 - Standard: To BS EN 13964.
 - Structural: The ceiling system must safely support all anticipated loads including services fittings.
 - Uniformly distributed load (maximum): refer service engineer's information.
 - Additional loads/ pressures: refer service engineer's information.
 - Deflection of grid between points of support (maximum): 0.0025 x span.
 - Fire performance:
 - Reaction to fire: Not required.
 - Fire resistance: Not required.
 - Airborne sound insulation (complete floor and ceiling assembly):
 - Weighted sound reduction index, R_w (minimum), to BS EN ISO 717-1: Not applicable.
 - Other requirements: None.
 - Electrical continuity and earth bonding: Required.
 - Other BS EN 13964 characteristics: None.

255 ENCASEMENT SYSTEM (METAL FRAMING) Refer partition details

- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Structural members: refer structural engineers information.
 - Extent of protection: Columns 4 sides, Beams: Three sides, refer detail drawings.
- Fire performance:
 - Protection to structural steel: NFR.
- Framing system: Sizes and spacing of framing and fixings as recommended by the board manufacturer.
- Linings: linings to suit walling either side.
- Finishing: Skim coat plaster.
 - Primer/ Sealer: Primer to painted areas.
 - Accessories: Metal beads/ stops recommended by board manufacturer .
- Other requirements: -.

GENERAL/ PREPARATION

325 PREPARATION OF MASONRY TO RECEIVE WALL LININGS

- General: Suitable to receive lining system. Redundant fixtures and services removed. Cutting, chasing and making good completed.
- Holes, gaps, service penetrations, perimeter junctions and around openings: Seal.
- Adhesive fixings: Prepare substrate to achieve effective bonding.
 - Contaminants: Remove loose material, dirt, grease, oil, paper, etc.
 - Absorption: Control by dampening, priming or applying bonding agents as necessary.

335 ADDITIONAL SUPPORTS

- Framing: Accurately position and securely fix to give full support to:
 - Partition heads running parallel with, but offset from main structural supports.
 - Fixtures, fittings and service outlets. Mark framing positions clearly and accurately on linings.
 - Board edges and lining perimeters, as recommended by board manufacturer to suit type and performance of lining.

375 NEW WET LAID BASES

- Dpcs: Install under full width of partitions/ freestanding wall linings.
 - Material: Bituminous sheet or plastics.

COMPONENTS**400 GYPSUM BOARDS GENERALLY**

- Standard:
 - Gypsum plasterboard to BS EN 520.
 - Gypsum fibre board to BS EN 15283-2.
 - Evidence of compliance: All sheets to be CE marked. Submit Declaration of Performance (DoP).

401 GYPSUM PLASTERBOARD STANDARD

- Type: To BS EN 520, type A.
- Core density (minimum): 650 kg/m³.
- Reaction to fire: Class A2-s1, d0.
- Water vapour resistance factor: Manufacturer's standard.
- Thermal conductivity: 0.19W/mK.
- Other BS EN 520 characteristics: None.
- Recycled content: Contractor's choice.
- Exposed surface and edge profiles: Suitable to receive specified finish.

403 GYPSUM PLASTERBOARD (MOISTURE RESISTANT)

- Type: To BS EN 520, type H1.
- Core: Moisture resistant.
 - Density (minimum): 710 kg/m³.
- Paper facings: Moisture resistant.
- Reaction to fire: Class A2-s1, d0.
- Water vapour resistance factor: Manufacturer's standard.
- Thermal conductivity: 0.19W/mK.
- Other BS EN 520 characteristics: None.
- Recycled content: Contractor's choice.
- Exposed surface and edge profiles: Suitable to receive specified finish.

404 GYPSUM PLASTERBOARD (IMPROVED FIRE PROTECTION)

- Type: To BS EN 520, type F.
- Core: Including fibres and/ or other additives for improved cohesion.
 - Density (minimum): 800 kg/m³.
- Reaction to fire: Class A2-s1, d0.
- Water vapour resistance factor: Manufacturer's standard.
- Thermal conductivity: 0.24W/mK.
- Other BS EN 520 characteristics: None.
- Recycled content: Contractor's choice.
- Exposed surface and edge profiles: Suitable to receive specified finish.

409 GYPSUM PLASTERBOARD (IMPROVED SOUND INSULATION)

- Type: To BS EN 520, type D.
- Core density (minimum): 820 kg/m³.
- Reaction to fire: Class A2-s1, d0.
- Water vapour resistance factor: Manufacturer's standard.
- Thermal conductivity: 0.25 W/(m·K).
- Other BS EN 520 characteristics: None.
- Recycled content: Contractor's choice.
- Exposed surface and edge profiles: Suitable to receive specified finish.

410 GYPSUM PLASTERBOARD (IMPROVED SOUND INSULATION AND MOISTURE RESISTANT)

- Type: To BS EN 520, type H1.
- Core: Moisture resistant.
 - Density (minimum): 820 kg/m³.
- Paper facings: Moisture resistant.
- Reaction to fire: Class A2-s1, d0.
- Water vapour resistance factor: Manufacturer's standard.
- Thermal conductivity: 0.25 W/(m·K).

- Other BS EN 520 characteristics: None.
- Recycled content: Contractor's choice.
- Exposed surface and edge profiles: Suitable to receive specified finish.

430 ACCESS PANELS IN PARTITIONS AND PLASTERBOARD CEILINGS

- Type: Metal, lockable.
 - Sizes and Locations: to be advised by service engineers.
- Frame: Bead for taping and jointing.
- Panel: Metal with powder coated factory finish.
- Lock: Tamper proof and operated by castellated key.

432 METAL STUDS

- Manufacturer: Contractor's choice .
 - Product reference: 70mm, contractor's choice .

INSTALLATION**435 DRY LININGS GENERALLY**

- General: Use fixing, jointing, sealing and finishing materials, components and installation methods recommended by board manufacturer.
- Cutting gypsum boards: Neatly and accurately without damaging core or tearing paper facing.
 - Cut edges: Minimize and position at internal angles wherever possible. Mask with bound edges of adjacent boards at external corners.
- Fixings boards: Securely and firmly to suitably prepared and accurately levelled backgrounds.
- Finishing: Neatly to give flush, smooth, flat surfaces free from bowing and abrupt changes of level.

445 CEILINGS

- Sequence: Fix boards to ceilings before installing dry lined walls and partitions.
- Orientation of boards: Fix with bound edges at right angles to supports and with ends staggered in adjacent rows.
- Two layer boarding: Stagger joints between layers.

455 METAL FRAMING FOR PARTITIONS/ WALL LININGS

- Setting out: Accurately aligned and plumb.
 - Frame/ Stud positions: Equal centres to suit specified linings, maintaining sequence across openings.
 - Additional studs: To support vertical edges of boards.
- Fixing centres at perimeters (maximum): 600 mm.
- Openings: Form accurately.
 - Doorsets: Use sleeved or boxed metal studs and/ or suitable timber framing to achieve strength grade requirements for framing assembly and adequately support weight of door.
 - Services penetrations: Allow for associated fire stopping.

485 SUSPENDED CEILING GRIDS

- Setting out: Accurately aligned and level.
 - Grid members and hangers: Centres to suit specified linings and imposed loads.
 - Additional grid members: Provide bracing and stiffening at upstands, partition heads, access hatches, etc.
- Fixing: Securely at perimeters, grid joints, top and bottom hanger fixings.

505 INSTALLING MINERAL WOOL INSULATION

- Fitting insulation: Closely butted joints and no gaps. Use fasteners to prevent slumping or displacement.
- Services:
 - Electrical cables overlaid by insulation: Sized accordingly.
 - Ceilings: Cut insulation around electrical fittings, etc.

510 SEALING GAPS AND AIR PATHS

- Location of sealant: To perimeter abutments and around openings.
 - Pressurized shafts and ducts: At board-to-board and board-to-metal frame junctions.
- Application: To clean, dry and dust free surfaces as a continuous bead with no gaps.

- Gaps greater than 6 mm between floor and underside of gypsum board: After sealing, fill with jointing compound.

530 CAVITY FIRE BARRIERS WITHIN PARTITIONS/ WALL LININGS

- Metal framed systems:
 - Material: Wire reinforced mineral wool 50 mm (minimum) thick.
 - Installation: Form accurately and fix securely with no gaps to provide a complete barrier to smoke and flame.
- Adhesive fixed wall lining systems:
 - Material: Adhesive compound.
 - Installation: Form in a continuous line with no gaps to provide a complete barrier to smoke and flame.

545 CAVITY FIRE BARRIERS WITHIN SUSPENDED CEILINGS

- Type: mineral wool wire reinforced mattress.
- Fire resistance: To BS EN 13501-2, EI 60.
- Ceiling void subdivision: Fix barriers not more than 20 m apart in any direction.
- Fixing at perimeters and joints: Secure, stable and continuous with no gaps, to provide a complete barrier to smoke and flame.
- Service penetrations: Cut and pack to maintain barrier integrity. Sleeve flexible materials. Adequately support services passing through barrier.
- Ceiling systems for fire protection: Do not impair fire resisting performance of ceiling system.

555 FIRE STOPPING AT PERIMETERS OF DRY LINING SYSTEMS

- Material: Tightly packed mineral wool or intumescent mastic/ sealant.
- Application: To perimeter abutments to provide a complete barrier to smoke and flame.

560 JOINTS BETWEEN BOARDS

- Tapered edged gypsum boards:
 - Bound edges: Lightly butted.
 - Cut/ unbound edges: 3 mm gap.
- Square edged plasterboards: 3 mm gap.
- Square edged gypsum fibre boards: 5 mm gap.

565 VERTICAL JOINTS

- Joints: Centre on studs.
 - Partitions: Stagger joints on opposite sides of studs.
 - Two layer boarding: Stagger joints between layers.

570 HORIZONTAL JOINTS

- Surfaces exposed to view: Horizontal joints not permitted. Seek instructions where height of partition/ lining exceeds maximum available length of board.
- Two layer boarding: Stagger joints between layers by at least 600 mm.
- Edges of boards: Support using additional framing.
 - Two layer boarding: Support edges of outer layer.

590 FIXING GYPSUM BOARD TO METAL FRAMING/ FURRINGS

- Partitions/ Wall linings: Fix securely and firmly at the following centres (maximum):
 - Single layer boarding: To all framing at 300 mm centres. Reduce to 200 mm centres at external angles.
 - Multi-layer boarding: Face layer at 300 mm centres, and previous layers around perimeters at 300 mm centres.
- Ceilings: 230 mm. Reduce to 150 mm at board ends and at lining perimeters.
- Position of screws from edges of boards (minimum): 10 mm.
 - Screw heads: Set in a depression. Do not break paper or gypsum core.

595 DEFLECTION HEADS

- Fixing boards: Do not fix to head channels.

610 FIXING GYPSUM BOARD TO TIMBER

- Fixing to timber: Securely at the following centres (maximum):
 - Nails: 150 mm.
 - Screws to partitions/ wall linings: 300 mm. Reduce to 200 mm at external angles.

- Screws to ceilings: 230 mm.
- Position of nails/ screws from edges of boards (minimum):
 - Bound edges: 10 mm.
 - Cut/ unbound edges: 13 mm.
- Position of nails/ screws from edges of timber supports (minimum): 6 mm.

620 FIXING GYPSUM BOARD WITH ADHESIVE DABS

- Setting out boards: Accurately aligned and plumb.
- Fixing to substrates: Securely using adhesive dabs.
- Adhesive dab spacings for each board:
 - Horizontally: One row along top edge and one continuous dab along bottom edge.
 - Vertically: One row along each edge and thereafter at intermediate spacings to suit size of board:

Thickness (mm)	Width (mm)	Dab centres (mm)
9.5	1200	400
9.5/12.5	900	450
12.5	1200	600

- Adhesive dab dimensions (width x length): At least 50-75 mm x 250 mm.
 - Position of dabs from edges/ ends of boards (minimum): 25 mm.

625 FIXING INSULATION BACKED PLASTERBOARD WITH ADHESIVE DABS

- Fixing to substrates: In addition to adhesive dab fixings, secure boards with nailable plugs in locations recommended by board manufacturer.

FINISHING**650 LEVEL OF DRY LINING ACROSS JOINTS**

- Sudden irregularities: Not permitted.
- Joint deviations: Measure from faces of adjacent boards using methods and straightedges (450 mm long with feet/ pads) to BS 8212, clause 3.3.5.
 - Tapered edge joints:
 - Permissible deviation (maximum) across joints when measured with feet resting on boards: 3 mm.
 - External angles:
 - Permissible deviation (maximum) for both faces: 4 mm.
 - Internal angles:
 - Permissible deviation (maximum) for both faces: 5 mm.

670 SEAMLESS JOINTING TO GYPSUM BOARDS

- Cut edges of boards: Lightly sand to remove paper burrs.
- Filling and taping: Fill joints, gaps and internal angles with jointing compound and cover with continuous lengths of paper tape, fully bedded.
- Protection of edges/ corners: Reinforce external angles, stop ends, etc. with specified edge/ angle bead.
- Finishing: Apply jointing compound. Feather out each application beyond previous application to give a flush, smooth, seamless surface.
- Nail/ screw depressions: Fill with jointing compound to give a flush surface.
- Minor imperfections: Remove by light sanding.

680 SKIM COAT PLASTER FINISH

- Plaster type As recommended by board manufacturer..
 - Thickness: 2-3 mm.
- Joints: Fill and tape except where coincident with metal beads.
- Finish: Tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks.

692 RIGID BEADS/STOPS

- Internal: To BS EN 13658-1.
- External: To BS EN 13658-2.

695 INSTALLING BEADS/ STOPS

- Cutting: Neatly using mitres at return angles.
- Fixing: Securely using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate.

- Finishing: After joint compounds/ plasters have been applied, remove surplus material while still wet from surfaces of beads exposed to view.

725 REPAIRS TO EXISTING GYPSUM BOARD

- Filling small areas with broken cores: Cut away paper facing, remove loose core material and fill with jointing compound.
 - Finish: Flush, smooth surface suitable for redecoration.
- Large patch repairs: Cut out damaged area and form neat hole with rectangular sides. Replace with matching gypsum board.
 - Fixing: Use methods to suit type of dry lining, ensuring full support to all edges of existing and new gypsum board.
 - Finishing: Fill joints, tape and apply jointing compound to give a flush, smooth surface suitable for redecoration.

K11 RIGID SHEET FLOORING/ SHEATHING/ DECKING/ LININGS/ CASINGS

To be read with Preliminaries/ General Conditions.

K40 DEMOUNTABLE SUSPENDED CEILINGS

To be read with Preliminaries/General conditions.

TYPES OF CEILING SYSTEM**113 UNIT SUSPENDED CEILING SYSTEMS HTM-60-2**

- **Drawing references:**
- **Structural soffits:** existing plasterboard ceiling
- **Product reference:** Moisture resistant board
- **Ceiling type:** high density ceramic and mineral composite, washable and Scrubbable ceiling tile, resistant to growth of mould, mildew and bacteria.
- **Grid form:** Corrosive Resistant Suspension System comprising of 24mm universal main runner with 600mm Cross tees
- **Grid exposure:** Exposed 24mm Corrosive resistant Grid
- **Grid spacings:** 1200 x 600mm.
- **Access:** Infill Units Fully Demountable
- **Ceiling module:** 1200 x 600 mm.
- **Ceiling soffit above finished floor level:** 2700mm.
- **Components:**
 - Suspension system: As clause 217
 - Perimeter trim: As clause 219
 - Timber edge battens: As clause 218 (if required)
 - Infill units: As clause 221

- Access units: As clause Not Required
- Insulation: As clause 226 (if required)
- Air plenum barriers: As clause 227 (if required)
- Accessories: As clause 228 (If Required)
- **Integrated services fittings:** _____.
- **Other requirements: *Main Runners to be installed at 600mm centres with fixing at 600mm centres**

GENERAL/ PERFORMANCE

205 COMPLIANCE WITH PERFORMANCE REQUIREMENTS

- Testing/ assessment: Submit UKAS accredited laboratory reports for the following: Electrical continuity and earth bonding.
- Materials, components and details: Use those used in the test and identified in the assessment reports. If discrepancies arise, give notice.

210 ENVIRONMENT

- Environmental classification to BS EN 13964: Class A.
- Release of Formaldehyde to BS EN 13964: Class E1.
- Susceptibility to growth of harmful micro-organisms to BS EN 13964: Level A.

225 FIRE PERFORMANCE GENERALLY

- Completed ceiling system: Not intended for fire protection.
- Reaction to fire ratings:
 - Ceiling soffit surfaces: To BS EN 13501-1, Class B.
 - Ceiling void surfaces: To BS EN 13501-1, Class B.
- Fire resistance:
 - Overall fire resistance: -.
 - Ceiling resistance: -.
 - Other protection: -.
- Test reports or assessments: Include details of performance related to the particular elements of construction.
 - Ceilings with integrated luminaires: Test/ assess with luminaires in place.

COMPONENTS

245 STANDARDS

- Steel panels: To BS EN 10346.
- Aluminium sheet, strip and plate: To BS EN 485-1 and -2.
- Aluminium bars, tubes and sections: To relevant parts of BS EN 515, BS EN 573, BS EN 755 and BS EN 12020.

250 SUSPENSION SYSTEM GENERALLY

- Manufacturer: Contractor's choice.

- Product reference: suitable for systems noted above.
- Extent of system: Include all hangers, fixings, main runners, cross members, primary channels, perimeter trims, splines, noggings, clips, bracing, bridging, etc. necessary to complete the ceiling system and achieve specified performance.
- Top fixings: as recommended by supplier.
- Hangers: as recommended by supplier.
- Grid type: as noted above.
 - Finish: powder coated.
 - Colour: white.

260 PERIMETER TRIMS GENERALLY

- Type: shadow gap steel angle trim, colour and finish to match exposed grid.
- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Fixings:
 - Fasteners: BZP raised head screws.
 - Fixing centres (maximum): 450 mm.

EXECUTION

305 SETTING OUT

- General: Completed ceiling should present, over the whole of its surface exposed to the room below, a continuous and even surface, jointed (where applicable) at regular intervals.
- Infill and access units, integrated services: Fitted correctly and aligned.
- Edge/ perimeter infill units size (minimum): Half standard width or length.
- Corner infill units size (minimum): Half standard width and length.
- Grid: Position to suit infill unit sizes. Allow for permitted deviations from nominal sizes of infill unit.
- Infill joints and exposed suspension members: Straight, aligned and parallel to walls, unless specified otherwise.
- Suitability of construction: Give notice where building elements and features to which the ceiling systems relate are not square, straight or level.

310 BRACING

- General: Secure, with additional bracing and stiffening to give a stable ceiling system resistant to design loads and pressures.

315 PROTECTION

- Loading: Do not apply loads for which the suspension system is not designed.
- Ceiling materials: When necessary, remove and replace correctly using special tools and clean gloves, etc. as appropriate.

320 TOP FIXING

- Building structure: Verify suitability.
- Structural soffit: refer structural engineer's information and to sections and details.

- Suitability to receive specified fixings: Evaluate and confirm.
- Fixing generally: In accordance with BS EN 13964.
- Fixing to:
 - Concrete: Drill and insert suitable expanding anchors.
 - Aerated concrete: Fix through from the top of concrete units and provide a system of primary support channels.
 - Structural steel: Drill, or use suitable proprietary clips/ adaptors.
 - Metal roof decking: Fix to sides of liner tray corrugations.
 - Timber: Fix to side of joists at least 50 mm from bottom edge. If ceiling system is intended for fire protection, fix into top third of joists.
 - Hollow structural members: Submit fixing proposals.

325 INSTALLING HANGERS

- Wire hangers: Straighten and tension before use.
- Installation: Install vertical or near vertical, without bends or kinks. Do not allow hangers to press against fittings, services, or insulation covering ducts/ pipes.
- Obstructions: Where obstructions prevent vertical installation, either brace diagonal hangers against lateral movement, or hang ceiling system on an appropriate rigid sub-grid bridging across obstructions and supported to prevent lateral movement.
- Extra hangers: Provide as necessary to carry additional loads.
- Fixing:
 - Wire hangers: Tie securely at top with tight bends to loops to prevent vertical movement.
 - Angle/ strap hangers: Do not use rivets for top fixing.
- Spacings: as recommended by supplier.

335 INSTALLING PERIMETER TRIMS

- Jointing: Neat and accurate, without lipping or twisting.
 - External and internal corners: Mitre joints generally. Overlap joints at internal corners are acceptable.
 - Intermediate butt joints: Minimize. Use longest available lengths of trim. Align adjacent lengths.
- Fixing: Fix firmly to perimeter wall, edge battens or other building structure.
 - Fasteners: as recommended by supplier.
 - Fixing centres: 450 mm.

340 EXPOSED GRIDS

- Grid fixings: as recommended by supplier.
- Main runners: Install level. Do not kink or bend hangers.
 - Spliced joints: Stagger.
 - Wire hangers passing through main runners: Use sharp bends and tightly wrapped loops.
 - Angle/ strap hangers: Do not use rivets for bottom fixing.
 - Angular displacement of long axis of one runner in relation to next runner in line with it: Not visually apparent.

- Cross members supported by main runners or other cross members: Install perpendicular to intersecting runners.
- Cross tees: Flat and coplanar with flanges of main runners after panel insertion.
 - Cross tees over 600 mm long, cut and resting on perimeter trim: Provide an additional hanger.
- Holding down clips: Locate to manufacturer's recommendations.
 - Fire protecting/ resisting ceiling systems: Use clip type featured in the fire test/ assessment.

355 INSTALLING INFILL UNITS

- General:
 - Perimeter infill units: Trimmed, as necessary, to fully fill space between last grid member and perimeter trim. Prevent subsequent movement.
 - Deeply textured infill units: Minimize variations in apparent texture and colour. In particular, avoid patchiness.
- Concealed grids: Install infill units uniformly, straight and aligned. Avoid dimension creep.
 - Infill units around recessed luminaires and similar openings: Prevent movement and displacement.

385 UPSTANDS AND BULKHEADS

- Vertical ceiling systems: Support and brace to provide alignment and stability.
- High upstands: Provide support at base of upstand.

390 OPENINGS IN CEILING MATERIALS

- General: Neat and accurate. To suit sizes and edge details of fittings. Do not distort ceiling system.

395 INTEGRATED SERVICES

- General: Position services accurately, support adequately. Align and level in relation to the ceiling and suspension system. Do not diminish performance of ceiling system.
- Small fittings: Support with rigid backing boards or other suitable means. Do not damage or distort the ceiling.
 - Surface spread of flame rating of additional supporting material: Not less than ceiling material.
- Services outlets:
 - Supported by ceiling system: Provide additional hangers.
 - Independently supported: Provide flanges to support ceiling system.

401 CEILING-MOUNTED LUMINAIRES

- Support: Independent.
 - Independently supported luminaires: Suspension adjusted to line and level of ceiling.
 - Ceiling supported luminaires: Modifications and/ or extra support required: To each luminaire.
- Surface mounted luminaires: Units installed so that in event of a fire the designed grid expansion provision is not affected.

- Modular fluorescent recessed luminaires: Compatible with ceiling module. Extension boxes must not foul ceiling system.
- Recessed rows of luminaires: Provide flanges for support of grid and infill units, unless mounted above grid flanges. Retain in position with lateral restraint.
- Fire protecting/ resisting ceiling systems: Luminaires must not diminish protection integrity of ceiling system.
- Access: Provide access for maintenance of luminaires.

406 TRUNKING

- Recessed trunking: Provide flanges for support of grid and infill units, unless mounted above grid flanges. Retain in position with lateral restraint.

411 MECHANICAL SERVICES

- Fan coil units:
 - Inlet/ Outlet grilles: Trim ceiling grid and infill units to suit.
 - Space beneath: Sufficient for ceiling system components.
 - Suspension and connections: Permit accurate setting out and levelling of fan coil units.
- Air grilles and diffusers:
 - Setting out: Accurate and level.
 - Linear air diffusers: Retain in place with lateral restraint. Provide flanges for support of grid and infill units.
 - Grille/ Diffuser ceiling joints: Provide smudge rings and edge seals.
- Smoke detectors and PA speakers:
 - Ceiling infill units: Scribe and trim to suit.
 - Independent suspension: Required.
 - Flexible connections: Required.
- Sprinkler heads: Carefully set out and level.

500 ELECTRICAL CONTINUITY AND EARTH BONDING

- Inclusion in finished work: Required.

COMPLETION**520 USER INSTRUCTIONS**

- Contents: Include the following:
 - Correct methods for removing and replacing infill units and other components.
 - Cleaning methods and materials.
 - Recommendations for redecoration.
 - Ceiling systems intended for fire protection: Limitations placed on subsequent alterations and maintenance procedures, to ensure that their fire performance is not impaired.
 - Maximum number, position and value of point loads that can be applied to ceiling system after installation.

L10 WINDOWS/ ROOFLIGHTS/ SCREENS/ LOUVRES**GENERAL****110 EVIDENCE OF PERFORMANCE**

- Certification: Provide independently certified evidence that all incorporated components comply with specified performance requirements.

120 SITE DIMENSIONS

- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
- Designated items: all.

335A ALUMINIUM WINDOWS

- Refit existing window upon completion of works
- Install screens to Seclusion room and anti -room as detailed

EXECUTION**765 WINDOW INSTALLATION GENERALLY**

- Installation: Into prepared openings.
- Gap between frame edge and surrounding construction:
 - Minimum: 5MM
 - Maximum: 10MM
- Distortion: Install windows without twist or diagonal racking.

782 FIXING OF ALUMINIUM FRAMES

- Standard: As section Z20.
- Fasteners: As required.
 - Spacing: When not predrilled or specified otherwise, position fasteners not more than 250 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 600 mm centres.

790 FIRE RESISTING FRAMES

- Gap between back of frame and reveal: Completely fill with FIRE FOAM 60MIN

810 SEALANT JOINTS

- Sealant:
 - Manufacturer: _as recommended by glazing specialist
 - Product reference: n/a
 - Colour: to match
 - Application: As section Z22 to prepared joints. Finish triangular fillets to a flat or slightly convex profile

L20 DOORS/ SHUTTERS/ HATCHES

To be read with Preliminaries/ General conditions.

GENERAL**110 EVIDENCE OF PERFORMANCE**

Certification: Provide independently certified evidence that all incorporated components comply with specified performance requirements.

112 TIMBER PROCUREMENT

Timber (including timber for wood-based products): Obtained from well-managed forests and/ or plantations in accordance with:

The laws governing forest management in the producer country or countries.

International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).

Documentation: Provide either:

Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied.

Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood-based products.

Certification scheme: Sustainable Forestry Initiative (SFI), with Chain of Custody/ Programme for the Endorsement of Forest Certification (PEFC) .

Other evidence: CPET Category B evidence: Completed supply chain information.

115 FIRE RESISTING DOORS/ DOORSETS/ ASSEMBLIES Test Certs to BS 476: Parts 20-23 (1987) or EN 1634: Part 1 (2000)

The following details for all fire doors must be included in the O+M/safety file and also presented as a method statement to demonstrate compliance with the performance specification prior to manufacture. Full details to be presented for each door type to the Architect at least 4 weeks for approval prior to fabrication. No fabrication work must be undertaken until the contractor's proposal is approved in writing.

Evidence of fire performance: Provide certified evidence, in the form of a product conformity certificate, directly relevant fire test report or engineering assessment, that each door/ doorset/ assembly supplied will comply with the specified requirements for fire resistance if tested to BS 476-22, BS EN 1634-1 or BS EN 1634-3. Such certification must cover door and frame materials, glass and glazing materials and their installation, essential and ancillary ironmongery, hinges and seals.

1. Each "Test Evidence" or "Assessment" report to be accompanied by a list of the door numbers to which it applies. List dates, reference numbers and advise current status of each - (valid or otherwise).
2. Any differences between the door-set design and that covered by the test evidence should be assessed via assessment report by a qualified third party (i.e. Chiltern, Warrington, Laminar or similar)
3. The third party assessment report (outlined in 2 above) should determine the feasibility of the specification difference from the original test evidence report. All opinions and justifications will be based on primary test evidence and/or experience by the suitable third party.
4. Supporting certification for each component must be included for each door type such as; glazing, intumescent seals, ironmongery, transfer grilles, etc.
5. Certify compliance of installation of complete door-set(s) (leaves, frames, hardware etc) – Where a proven door blank is manufactured to achieve the final design, the door-set should be installed in accordance with the door blank manufacturer's instructions. If these are not available the door-set should be installed using the guidance of BS 8214 (2008).
6. Ironmongery: Where the ironmongery specified differs from that stated in the test evidence, the third party assessment report (outlined in 2 above) should determine the suitability of the specification difference from the original test evidence report. All opinions and justifications will be based on primary test evidence (for the ironmongery and door-set) and/or experience by the suitable third party.

7. In accordance with building regulations each door manufactured should have the following details discreetly marked on the door-leaf (i.e. the head of the leaf or inside the hanging edge) using a non-transferable label system:

- The period of fire rating (i.e. FD30, FD30s, FD60, FD60s)
- The year that the door leaf was manufactured
- The manufactures name and details
- The test evidence or assessment report reference number as well as the details of the third party from which the report originated

Method Statement requirements prior to fabrication:

The contractor must provide a comprehensive submission for each door type to demonstrate compliance with the specification and items listed above.

The specific details and specifications proposed must be clearly outlined to suit the requirements of the performance specification. Submitting the door test report without a project specific commentary is not acceptable.

Also refer clause 170 for bedroom door sample for approval.

120 NON FIRE RESISTING DOORS/ DOORSETS/ ASSEMBLIES

Provide certified evidence, in the form of a product conformity certificate or engineering assessment, that each door/ doorset/ assembly supplied will comply with the specified requirements to BS EN 14351-1. Such certification must cover door and frame materials, glass and glazing materials and their installation, essential and ancillary ironmongery, hinges and seals.

150 SITE DIMENSIONS

Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.

Designated items: all.

170 SAMPLE FOR APPROVAL

Procedure:

Finalize component details.

Agree location and Install full doorset, complete with all ironmongery and closers, etc.

Obtain approval of appearance and quality before proceeding with manufacture of the remaining quantity.

PRODUCTS

410 WOOD INTERNAL DOORSETS LAMINATE FACED

REFER TO:

Refer to Door Component drawings for door elevations

Layout Plans for door location and handing

Manufacturer: Sample section of door core, sample of frame & test certification to be submitted to Architect for approval

Product: Doors generally including 30 & 60min Fire Rated Laminate Faced Doorset

Doorleaf

Core: Internally framed door design, 50mm MDF (720kg/m³) internal stiles and rails framework with composite chipboard (650kg/m³) infill & 4mm MDF sheets bonded to both sides of framework & composite infill – (chipboard door blanks are not an acceptable alternative)

Facings: 0.7mm American Oak Veneer to be confirmed by Architect from full range of Woodgrain options.

Lippings: 10mm concealed American White Oak lipping with 5mm chamfer to all four edges of the door leaf

Submit cross cut sample of door to Architect for review prior to procurement.

Frame & Architrave:

Wood Species: American White Oak Rebated Frame & Architrave timber species tbc by Architect. Refer to Door Component Drawings for Details.

Door Stop:

Continuous removable door stops (Bedroom doors)

- Material: Aluminium
- Finish: Lacquered oak veneer
- Features: Keylock and quick release handle
- Fire tested to 1hr

EXECUTION

710 PROTECTION OF COMPONENTS

General: Do not deliver to site components that cannot be installed immediately or placed in clean, dry, floored and covered storage.

Stored components: Stacked on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.

730 PRIMING/ SEALING

Wood surfaces inaccessible after installation: Primed or sealed as specified before fixing components.

750 FIXING DOORSETS

Timing: After associated rooms have been made weathertight and the work of wet trades is finished and dried out.

760 BUILDING IN

General: Not permitted unless indicated on drawings.

780 DAMP PROOF COURSES IN PREPARED OPENINGS

Location: Correctly positioned in relation to door frames. Do not displace during fixing operations.

790 FIXING OF WOOD FRAMES

Spacing of fixings (frames not predrilled): Maximum 150 mm from ends of each jamb and at 600 mm maximum centres.

820 SEALANT JOINTS

Sealant:

Manufacturer: Contractor's choice .

Product reference: external quality one part Low Modulus Neutral Cure Silicone sealant .

Colour: Colour to approval .

Application: As section Z22 to prepared joints. Triangular fillets finished to a flat or slightly convex profile.

830 FIXING IRONMONGERY GENERALLY

Fasteners: Supplied by ironmongery manufacturer.

Finish/ Corrosion resistance: To match ironmongery.

Holes for components: No larger than required for satisfactory fit/ operation.

Adjacent surfaces: Undamaged.

Moving parts: Adjusted, lubricated and functioning correctly at completion.

840 FIXING IRONMONGERY TO FIRE RESISTING DOOR ASSEMBLIES

General: All items fixed in accordance with door leaf manufacturer's recommendations ensuring that integrity of the assembly, as established by testing, is not compromised.

Holes for through fixings and components: Accurately cut.

Clearances: Not more than 8 mm unless protected by intumescent paste or similar.

Lock/ Latch cases for fire doors requiring > 60 minutes integrity performance: Coated with intumescent paint or paste before installation.

850 LOCATION OF HINGES

Primary hinges: Where not specified otherwise, positioned with centre lines 250 mm from top and bottom of door leaf.

Third hinge: Where specified, positioned with centre line 250 mm below centre line of top hinge .

Hinges for fire resisting doors: Positioned in accordance with door leaf manufacturer's recommendations.

860 INSTALLATION OF EMERGENCY EXIT DEVICES

Standard: Unless specified otherwise, install panic bolts/ latches in accordance with BS EN 1125.

L40 GENERAL GLAZING

To be read with Preliminaries/ General conditions.

GENERAL REQUIREMENTS

111 PREGLAZING

- Preglazing of components: Permitted.
- Prevention of displacement: Submit details of precautions to be taken to protect glazing and compound/ seals during delivery and installation.
- Defective/ displaced glazing/ compound/ seals: Reglaze components in situ.

150 WORKMANSHIP GENERALLY

- Glazing generally: To BS 6262.

- Integrity: Glazing must be wind and watertight under all conditions with full allowance made for deflections and other movements.
- Dimensional tolerances: Panes/ sheets to be within ± 2 mm of specified dimensions.
- Materials:
 - Compatibility: Glass/ plastics, surround materials, sealers, primers and paints/ clear finishes to be used together to be compatible. Avoid contact between glazing panes/ units and alkaline materials such as cement and lime.
 - Protection: Keep materials dry until fixed. Protect insulating glass units and plastics glazing sheets from the sun and other heat sources.

151 PREPARATION

- Surrounds, rebates, grooves and beads: Cleaned and prepared by others.

152 PREPARATION

- Surrounds, rebates, grooves and beads: Clean and prepare before installing glazing.

310 BEAD FIXED SINGLE GLAZING 30 and 60 mins INSULATION AND INTEGRITY

- Pane material: clear, laminated fully insulating fire-protection and impact-resistant glass to fire rated glazing to achieve 30/30 or 60/60 (refer fire plan). CE Marked and DoP (Declaration of Performance). Certifire certification required .
- Surround/ bead: Hardwood .
 - Preparation: Sealant primer .
 - Bead location: Inside.
 - Bead fixing: 40mm stainless steel woodscrews .
- Glazing system:
 - Tape: Pre-formed butyl strip .
 - Heel bead sealant: One-part, fire rated intumescent acrylic sealant .
 - Internal trim: Pre-formed butyl strip .
- Glazing installation:
 - Glass: Located centrally in surround using setting and location blocks.
 - Loadbearing glazing tape: Applied to rebate upstand allowing minimum 3 mm contact of heel bead sealant onto external face of glazing. Top edge flush with sight line on external side of glazing. Corners butt jointed with no gaps.
 - Thickness of glazing tape bed after compression (minimum): 3 mm.
 - Sealant: Applied to fill void between tape and rebate platform, and edge clearance between glazing and rebate platform.
 - Beads: Bedded in sealant and fixed securely.
 - Internal trim: Inserted under compression between glazing and beads in continuous lengths leaving no gaps.

GOLD MEDAL SAFETY PADDING**SAFETY PADDING****PART 1 – GENERAL CONDITIONS****1.1 Scope**

(A) Provide all labor and material required to furnish and install protection padding (walls, floors, doors, frames) in safety cells, seclusion rooms, and time-out rooms as indicated in drawings and specified herein.

(B) Submit typical shop drawings showing details, thickness of materials and typical requirements.

(C) Submit three (3) samples – minimum of 3"x3" in size – for approval and acceptance of protective padding system for use in safety cells, seclusion rooms and time-out rooms.

(D) Submit two (2) copies of the manufacturer's maintenance instructions.

1.2 Guarantees

(A) Protective Padding Contractor shall agree to repair or replace any defective material or work for a period of one (1) year from the date of project completion. This guarantee shall also include any loss of adhesion, resiliency or delaminating. This guarantee does not cover the damage caused by sharp or burning objects. This product is not intended to replace established management practices, but to supplement them in order to provide a safe environment for the end user, owner and client. Guarantee for this work shall be signed by both the Sub-Contractor and the General Contractor.

1.3 Qualifications

(A) Because of the special nature of the work specified within this section, persons, firms or corporations desiring to bid on this section of work must meet the following requirements:

(1) Have a minimum of five (5) years experience in the fabrication and installation of protective padding or work similar to that which is described herein.

(2) Have ten (10) successful installations of protective padding.

PART 2 – MATERIALS AND PRODUCTS**2.1 General**

(A) Protective padding material shall be a synthetic resinous material. Substitutions of a closed cell polyvinyl chloride or other types of polyvinyl chloride surfacing material will not be permitted. Protective padding meeting the following requirements and approved for use is *Gold Medal Safety Padding as manufactured by Marathon Engineering Corporation and supplied in Europe by Fitness Functions Ltd.*

(B) All vertical panels shall be prefabricated. The panels are to be 25mm nominal thickness on Oriented Strand Board 12mm thickness, making the wall panels a total of 40mm thick.

(C) The door jambs shall be 12mm thickness for a total of 25mm thickness on door jambs.

(D) All floor panels shall be prefabricated. The panels are bonded on Oriented Strand Board 12mm thickness, for a nominal thickness of 30mm (tolerance of +/- 5mm).

2.2 Properties

(A) In addition to meeting the minimum physical properties when cured, protective padding must contain a flame spread and smoke index which when tested in accordance with ASTM E84 is given a CLASS A FIRE RATING.

(1) Flame Spread: 5

(2) Smoke Development: ≤ 20

(B) Padding must also conform to the following criteria:

(1) Weight is approximately 5 pounds per square foot

(2) Tensile strength range 300 P.S.I. minimum ASTM D412

(3) Temperature stability – unaffected from 20 degrees F to 120 degrees F

(4) Moisture absorption 0.8% to 1.05% by weight

(5) Compression set 90% recovery after 72 hours

(6) Compression properties 30 PSI to 70 PSI at 50% modulus

(7) Elongation at break ASTM D412: 150% typical

(8) Critical Radiant Flux of Floor Covering Systems ASTM E684: >0.99 (W/cm²) (Class I)

(9) Acute Oral Toxicity Test: Non Toxic

(10) Hardness: Durometer reading shall be 60 (plus or minus 5).

(11) Fungus Resistance MIL-I-531-D – Completely Resistant Rating (0.0.0)

(C) Fasteners for use in attachment of vertical panels shall be recommended by manufacturer.

PART 3 - EXECUTION

3.1 Installation of Protective Padding

(A) Inspect surface(s) to receive work under this section. Notify the architect in writing if surface(s) is not satisfactory for application of materials. Commencement of work constitutes acceptance of surface.

(B) All vertical panels will be mechanically fastened to walls.

(C) The number of fasteners per panel will be determined by the installers and is based on type of substrate.

(D) A gap of 3mm ± 2mm will be left between panels. They will then be filled with a 2-component, solvent free, moisture tolerant, flexible, epoxy control joint sealer/adhesive. When fully cured, it will be sanded to meet adjacent edges.

(E) All fastener holes will be filled with 2-component, solvent free, moisture tolerant, flexible, epoxy control joint sealer/adhesive with and sanded. Upon completion of sanding of all surfaces (walls, doors and floor), all surfaces will receive a finishing topcoat.

3.2 Precautions

(A) The following conditions are required for the installation and storage of materials:

(1) General Contractor or owner shall provide adequate storage of materials.

(2) A minimum temperature of 65 degrees F shall be maintained for the duration of the installation.

(3) The General Contractor shall provide 110-volt electrical service, storage in a safe, warm and dry area, hoisting equipment and on-site waste disposal.

WEARING SCREEDS

To be read with Preliminaries/General conditions.

TYPES OF SCREED

130A PROPRIETARY QUICK DRYING LEVELLING SCREEDS FLOATING

- Substrate: floating as clause 290.
- Screed manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Screed construction: Floating, as clause 290.
 - Reinforcement for crack control: as recommended by supplier.
- Thickness:
 - Nominal: 100mm.
 - Minimum: 100mm.
- Mix:
 - Cement: As recommended by screed manufacturer.
 - Proportions: To manufacturer's recommendations.
- In situ crushing resistance (ISCR) category: A (3 mm maximum indentation).
 - Mass of test weight: 1,800 - 2,000 kg/m³.
- Flatness/ Surface regularity class: SR2.
- Finish: as recommended by manufacturer.
 - To receive: flooring as noted within finishes schedule.
- Other requirements: Screed to ensuite to be dished by 1:80/25mm (whichever greater) to fall to drain outlet in shower area, ensure with the floor within the room to provides a gentle gradient away from the door.

136 STRUCTURAL TOPPING TO CONCRETE PLANK FLOORS GENERALLY

- Generally:
- Flatness/ Surface regularity class: SR2.
- Finish: Trowelled, as clause 540.
 - To receive: adhesive fixed, thin sheet flooring as noted within finishes.

GENERALLY/ PREPARATION**205 DESIGN LIFE OF SCREEDS**

- Duration: 50 years .
 - Subject to reasonable wear and tear.
- Location: all .
- Condition of use: Subject to correct loading and traffic usage throughout duration.

210 SUITABILITY OF SUBSTRATES

- General:
 - Suitable for specified levels and flatness/ regularity of finished surfaces. Consider permissible minimum and maximum thicknesses of screeds.
 - Sound and free from significant cracks and gaps.
- Concrete strength: In accordance with BS 8204-1, Table 2.
- Cleanliness: Remove plaster, debris and dirt.
- Moisture content: To suit screed type. New concrete slabs to receive fully or partially bonded construction must be dried out by exposure to the air for minimum six weeks.

215 SURFACE HARDNESS OF SUBSTRATES TO RECEIVE POLYMER MODIFIED WEARING SCREEDS

- General: Substrates must restrain stresses that occur during setting and hardening of wearing screeds.
- Test for surface hardness: To BS EN 12504-2 using a rebound hammer with compliance values as follows:
 - Rebound hammer value (minimum):
 - Screed thickness 15 mm or less: 25.
 - Screed thickness greater than 15 mm: 30.
- Report: Submit details of areas where substrate surface hardness does not comply with these values.

220 PROPRIETARY LEVELLING/ WEARING SCREEDS

- General: Materials, mix proportions, mixing methods, minimum/ maximum thicknesses and workmanship must be in accordance with recommendations of screed manufacturer.
- Standard: To BS EN 13813.

255 PIPE DUCTS/ TRUNKING

- Preformed access ducts: Before laying screed, fix securely to substrates and level accurately in relation to finished floor surface.

280 BONDED CONSTRUCTION

- SMET LiteFlo® Lightweight (Alpha Hemihydrate) Flowing Screed, pumpable, high-quality screed material based on calcium sulphate. It's supplied to site in pre-mixed 27kg bags or site silos. LiteFlo® is designed for application at thicknesses of between 20 and 70 mm, complies with EN 13813: 2002 and is CE marked.

BATCHING/ MIXING**302 CEMENTS**

- Cement types: In accordance with BS 8204-1, clause 5.1.3.

305 AGGREGATES

- Sand: To BS EN 13139.
 - Grading limits: In accordance with BS 8204-1, Table B.1.
- Coarse aggregates for fine concrete levelling screeds:
 - Standard: To BS EN 12620.
 - Designation: 4/10.
- Lightweight aggregates: In accordance with BS 8204-1, Annex A.

306 PROPRIETARY POLYMER MODIFIED SCREEDS

- Cement types: In accordance with BS 8204-3.
- Sand: To BS EN 13139:
 - Grading limits: 0/4 mm (MP) category 1.
- Aggregates: In accordance with BS 8204-3.

307 ADMIXTURES

- Standard: In accordance with BS 8204-1, Table 1.
- Calcium chloride: Do not use in admixtures.

310 BATCHING WITH DENSE AGGREGATES

- Mix proportions: Specified by weight.
- Batching: Select from:
 - Batch by weight.
 - Batch by volume: Permitted on the basis of previously established weight:volume relationships of the particular materials. Use accurate gauge boxes. Allow for bulking of damp sand.

311 BATCHING WITH LIGHTWEIGHT AGGREGATES

- Standard: In accordance with BS 8204-1, Annex A.
- Mix proportions: Specified by volume.
- Batching: Use accurate gauge boxes.

330 MIXING

- Water content: Minimum necessary to achieve full compaction, low enough to prevent excessive water being brought to surface during compaction.
- Mixing: Mix materials thoroughly to uniform consistency. Mixes other than no-fines must be mixed in a suitable forced action mechanical mixer. Do not use a free fall drum type mixer.
- Consistency: Use while sufficiently plastic for full compaction.
- Ready-mixed retarded screed mortar: Use within working time and site temperatures recommended by manufacturer. Do not retemper.

335 IN SITU CRUSHING RESISTANCE (ISCR)

- Standards and category: In accordance with BS 8204-1, table 4.
 - Testing of bonded and unbonded screeds: To Annex D.
 - Testing of floating levelling screeds: To Annex E.

340 ADVERSE WEATHER

- Screeds surface temperature: Maintain above 5°C for a minimum of four days after laying.
- Hot weather: Prevent premature setting or drying out.

LAYING

345 LEVEL OF SCREED SURFACES

- Permissible deviation: (allowing for thickness of coverings) ± 5 mm from datum.

355 FLATNESS/ SURFACE REGULARITY OF FLOOR SCREEDS

- Standard: In accordance with BS 8204-1, Table 5.
- Test: In accordance with BS 8204-1, Annex C.
- Sudden irregularities: Not permitted.

375 COMPACTION OF SCREEDS

- General: Compact thoroughly over entire area.
- Screeds over 50 mm thick: Lay in two layers of approximately equal thickness. Roughen surface of compacted lower layer then immediately lay upper layer.

392 GENERAL REINFORCEMENT

- Steel fabric: To BS 4483.
 - Type: D49.
- Installation: In accordance with BS 8204-1.

395 STRIP REINFORCEMENT

- Location: Across day joints.
- Steel fabric: To BS 4483.
 - Type D49.
 - Width of strips: 400 mm.
- Installation: In accordance with BS 8204-1.

405 JOINTS IN LEVELLING SCREEDS GENERALLY

- Laying screeds: Lay continuously using 'wet screeds' between strips or bays. Minimize defined joints.
- Daywork joints: Form with vertical edge.

406 BAY JOINTS IN LEVELLING SCREEDS

- Screed type: 130/135.
- Bay sizes:
 - Area (maximum): 20 m².
 - Length (maximum): 6 m.
- Location of bay joints: Coordinate with those required for substrate slab and floor covering.

415 BAY JOINTS BONDED WEARING SCREEDS

- Bay sizes:
 - Area (maximum): BREAK AT DOOR TO EACH ROOM
 - Length: breadth ratio (maximum): 3:2.
- Location of bay joints: DOOR THRESHOLDS

440 CRACK INDUCING GROOVES IN LEVELLING SCREEDS

- Groove depth: At least half the depth of screed.
- Cutting grooves: Straight, vertical and accurately positioned. Select from the following:
 - Trowel cut as screed is laid.
 - Saw cut sufficiently early after laying to prevent random cracking.

460 STRIP MOVEMENT JOINTS where required

- Manufacturer: Contractor's choice.
 - Product reference: adjustable, surface mounted aluminium cover.
 - Size: to suit construction joints between new and existing floor slabs.
- Installation: Set securely into screed to exact finished level of floor. Extend joints through to substrate.
 - Secure fixing to substrate: To manufacturer's recommendation.

FINISHING/CURING

510 FINISHING GENERALLY

- Timing: Carry out all finishing operations at optimum times in relation to setting and hardening of screed material.
- Prohibited treatments to screed surfaces:
 - Wetting to assist surface working.

- Sprinkling cement.

540 TROWELLED FINISH TO LEVELLING SCREEDS

- Floating: To an even texture with no ridges or steps.
- Trowelling: To a uniform, smooth but not polished surface, free from trowel marks and other blemishes, and suitable to receive specified flooring material.

650 CURING

- General: Prevent premature drying. Immediately after laying, protect surface from wind, draughts and strong sunlight. As soon as screed has set sufficiently, closely cover with polyethylene sheeting.
- Curing period (minimum): Keep polyethylene sheeting in position for: period recommended by screed manufacturer.
- Drying after curing: Allow screeds to dry gradually. Do not subject screeds to artificial drying conditions that will cause cracking or other shrinkage related problems.

M50 RUBBER/ PLASTICS/ CORK/ LINO/ CARPET TILING/ SHEETING

To be read with Preliminaries/ General conditions.

TYPES OF COVERING**150 PADDED SHEET FLOORING**

Refer to 'Gold Medal' data sheets for flooring details

151 SHEETING MARMOLEUM SHEET FLOORING

Location: Refer finishes schedule.

Base: Screed/concrete.

Preparation: allow levelling compound and boarding to suit.

Forbo Marmoleum sheet flooring (Standard 2.5 mm) is made from 97–98% natural raw materials (linseed oil, wood flour, rosin, jute). With a Topshield pro surface finish, a total weight of 2900 g/m², a roll width of 2.0 m, and achieves heavy commercial (Class 34) and light industrial (Class 43) rating

Width: 2000 mm.

Thickness: 2.5mm.

Colour/ pattern: Refer finishes schedule.

Adhesive (and primer if recommended by manufacturer): As clause 640.

Seam welding: Hot welding with complimentary coloured rod.

Accessories: Edging trim for thresholds as clause 740 former and capping strip. refer finishes schedule and clauses 770-772 for skirting type.

Finishing: Refer M50/820A. Wash and test electrical resistance.

Other requirements: Refer finishes schedule for required LRV values.

GENERAL REQUIREMENTS

210 WORKMANSHIP GENERALLY

Base condition after preparation: Rigid, dry, sound, smooth and free from grease, dirt and other contaminants.

Finished coverings: Accurately fitted, tightly jointed, securely bonded, smooth and free from air bubbles, rippling, adhesive marks and stains.

220 SAMPLES

Covering samples: Before placing orders, submit representative sample of each type.

330 COMMENCEMENT

Required condition of works prior to laying materials:

Building is weathertight and well dried out.

Wet trades have finished work.

Paintwork is finished and dry.

Conflicting overhead work is complete.

Floor service outlets, duct covers and other fixtures around which materials are to be cut are fixed.

Notification: Submit not less than 48 hours before commencing laying.

340 CONDITIONING

Prior to laying: Condition materials by unpacking and separating in spaces where they are to be laid. Maintain resilient flooring rolls in an upright position. Unroll carpet and keep flat on a supporting surface.

Conditioning time and temperature (minimum): As recommended by manufacturer with time extended by a factor of two for materials stored or transported at a temperature of less than 10°C immediately prior to laying.

350 ENVIRONMENT

Temperature and humidity: Before, during and after laying, maintain approximately at levels which will prevail after building is occupied.

Ventilation: Before during and after laying, maintain adequate provision.

PREPARING BASES**410 NEW BASES**

Suitability of bases and conditions within any area: Commencement of laying of coverings will be taken as acceptance of suitability.

430 NEW WET LAID BASES

Base drying aids: Not used for at least four days prior to moisture content testing.

Base moisture content test: Carry out in accordance with BS 5325, Annex A or BS 8203, Annex A.

Locations for readings: In all corners, along edges, and at various points over area being tested.

Commencement of laying coverings: Not until all readings show 75% relative humidity or less.

440 SUBSTRATES TO RECEIVE THIN COVERINGS

Trowelled finishes: Uniform, smooth surface free from trowel marks and other blemishes. Abrade suitably to receive specified floor covering material.

460 SMOOTHING/ LEVELLING UNDERLAYMENT COMPOUND

Type: Contractor's choice.

Manufacturer: Contractor's choice.

Product reference: Contractor's choice.

LAYING COVERINGS**610 SETTING OUT TILES**

Method: Set out from centre of area/ room, so that wherever possible:

Tiles along opposite edges are of equal size.
Edge tiles are more than 50% of full tile width.

620 COLOUR CONSISTENCY

Finished work in any one area/ room: Free from banding or patchiness.

640 ADHESIVE FIXING GENERALLY

Adhesive type: As specified, as recommended by covering/ underlay, manufacturer or as approved.

Primer: Type and usage as recommended by adhesive manufacturer.

Application: As necessary to achieve good bond.

Finished surface: Free from trowel ridges, high spots caused by particles on the substrate, and other irregularities.

650 SEAMS

Patterns: Matched.

Joints: Tight without gaps.

670 BORDERS/ AND FEATURE STRIPS IN SHEET MATERIAL

Curl: Not acceptable.

Corners: Mitre joints.

680 SEAM WELDING COVERINGS

Commencement: At least 24 hours after laying, or after adhesive has set.

Joints: Neat, smooth, strongly bonded, flush with finished surface.

720 DOORWAYS

Joint location: On centre line of door leaf.

740 EDGINGS AND COVER STRIPS

Manufacturer: Contractor's choice .

Product reference: to suit carpet to vinyl threshold junctions .

Material/ finish: aluminium .

Fixing: Secure with edge of covering gripped. Use matching fasteners where exposed to view

750 STAIR NOSINGS AND TRIMS

Manufacturer: Contractor's choice.

Product reference: Contractor's choice - stair nosing and side trims where step sides are exposed.

Material/ finish: aluminium with colour non slip inserts.

Fixing: Secure, level and with mitred joints. Adjusted to suit thickness of covering with continuous packing strips of hardboard or plywood. Nosings and packing strips bedded in gap-filling adhesive recommended by nosing manufacturer.

Screw fixing with matching plugs: Required.

772 SKIRTINGS TYPE - Set In Skirting

Types: as flooring.

Manufacturer: refer finishes schedule.

Product reference: refer finishes schedule.

Colour: refer finishes schedule

Fixing: Secure with top edge straight and parallel with floor.

Corners: Accurately mitre at corners except where pre-formed angles are used. All mitred and horizontal joints to be hot seam welded using matching Marmoweld weld cable (except where pre-formed angles are used). Vertical joints may be either hot seam welded or sealed with clear silicone sealant applied to the exposed edge of each section of skirting prior to sticking the next section of coving – contact Forbo Nairn for further details if required.

780 TRAFFICKING AFTER LAYING

Covering types: Vinyl.

Traffic free period: Until adhesive is set.

COMPLETION

820A FINISHING SHEET FLOORING

Initial Cleaning operations:

As the manufacturer's recommendations for each type of floor finish. Advise the CA of the manufacturer's recommendations before cleaning operations begin.

Following cleaning, ensure only clean footwear or overshoes traffic the floor, the wheels of equipment or trolleys are clean or protected and the flooring protected from inadvertent indentations.

Emulsion polish: linoleum flooring should have a factory applied finish and should not require polishing. Slip resistant flooring will not require coatings or polish.

880 WASTE

Spare covering material: Retain suitable material for patching. On completion submit pieces for selection. Hand over selected pieces to Employer.

M60 PAINTING/CLEAR FINISHING

To be read with Preliminaries/General conditions.

COATING SYSTEMS

115 EMULSION PAINT (HEAVY DUTY/ ANTI-MICROBIAL) TYPE 1, refer finishes schedule

- Manufacturer: refer finishes schedule.
 - Product reference: refer finishes schedule.
- Surfaces: refer finishes schedule.
 - Preparation: as clause 400.
- Initial coats: 10% max thinning with water for priming bare surfaces.
- Number of coats: 1.
- Undercoats: Acrylic Emulsion.
 - Number of coats: 1.
- Finishing coats: Acrylic Emulsion.
 - Number of coats: 2.

130 GLOSS PAINT TO ALL NEW TIMBER - Refer finishes schedule

- Manufacturer: refer finishes schedule.
 - Product reference: refer finishes schedule.
- Surfaces: Uncoated.
 - Preparation: as clause 400/440.
- Initial coats: As recommended by manufacturer.
 - Number of coats: 1.
- Undercoats: As recommended by manufacturer.
 - Number of coats: 1.
- Finishing coats: Full gloss.
 - Number of coats: 2.
 -

- 160 DECORATIVE CLEAR LACQUER
- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Surfaces: TIMBER SKIRTINGS, ARCHITRAVES ETC
 - Preparation: see clauses 400-651
 - Initial coats: As recommended by manufacturer.
 - Number of coats: Min 1
 - Finishing coats: As recommended by manufacturer.
 - Number of coats: Min 2

GENERALLY

215 HANDLING AND STORAGE

- Coating materials: Deliver in sealed containers, labelled clearly with brand name, type of material and manufacturer's batch number.
- Materials from more than one batch: Store separately. Allocate to distinct parts or areas of the work.

220 COMPATIBILITY

- Coating materials selected by contractor:
 - Recommended by their manufacturers for the particular surface and conditions of exposure.
 - Compatible with each other.
 - Compatible with and not inhibiting performance of preservative/fire retardant pretreatments.

280 PROTECTION

- 'Wet paint' signs and barriers: Provide where necessary to protect other operatives and general public, and to prevent damage to freshly applied coatings.

PREPARATION

400 PREPARATION GENERALLY

- Standard: In accordance with BS 6150.
- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
- Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
- Substrates: Sufficiently dry in depth to suit coating.
- Efflorescence salts: Remove.
- Dirt, grease and oil: Remove. Give notice if contamination of surfaces/ substrates has occurred.
- Surface irregularities: Remove.
- Joints, cracks, holes and other depressions: Fill flush with surface, to provide smooth finish.

- Dust, particles and residues from preparation: Remove and dispose of safely.
- Water based stoppers and fillers:
 - Apply before priming unless recommended otherwise by manufacturer.
 - If applied after priming: Patch prime.
- Oil based stoppers and fillers: Apply after priming.
- Doors, opening windows and other moving parts:
 - Ease, if necessary, before coating.
 - Prime resulting bare areas.

420 FIXTURES AND FITTINGS

- Removal: Before commencing work remove: Coverplates, grilles, wall clocks, and other surface mounted fixtures.
- Replacement: Refurbish as necessary, refit when coating is dry.

425 IRONMONGERY

- Removal: Before commencing work: Remove ironmongery from surfaces to be coated.
- Hinges: Remove.
- Replacement: Refurbishment as necessary; refit when coating is dry.

440 PREVIOUSLY COATED SURFACES GENERALLY

- Preparation: In accordance with BS 6150, clause 11.5.
- Contaminated or hazardous surfaces: Give notice of:
 - Coatings suspected of containing lead.
 - Substrates suspected of containing asbestos or other hazardous materials.
 - Significant rot, corrosion or other degradation of substrates.
- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
- Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.
- Loose, flaking or otherwise defective areas: Carefully remove to a firm edge.
- Alkali affected coatings: Completely remove.
- Retained coatings:
 - Thoroughly clean to remove dirt, grease and contaminants.
 - Gloss coated surfaces: Provide key.
- Partly removed coatings:
 - Additional preparatory coats: Apply to restore original coating thicknesses.
 - Junctions: Provide flush surface.
- Completely stripped surfaces: Prepare as for uncoated surfaces.

461 PREVIOUSLY COATED WOOD

- Degraded or weathered surface wood: Take back to provide suitable substrate.
- Degraded substrate wood: Repair with sound material of same species.

- Exposed resinous areas and knots: Apply two coats of knotting.

471 PREPRIMED WOOD

- Areas of defective primer: Take back to bare wood and reprime.

481 UNCOATED WOOD

- General: Provide smooth, even finish with arrises and moulding edges lightly rounded or eased.
- Heads of fasteners: Countersink sufficient to hold stoppers/fillers.
- Resinous areas and knots: Apply two coats of knotting.

570 UNCOATED MASONRY/ RENDERING

- Loose and flaking material: remove.

580 UNCOATED PLASTER

- Nibs, trowel marks and plaster splashes: Scrape off.
- Overtrowelled 'polished' areas: Key lightly.

590 UNCOATED PLASTERBOARD

- Depressions around fixings: Fill with stoppers/ fillers

622 ORGANIC GROWTHS

- Dead and loose growths and infected coatings: Scrape off and remove from site.
- Treatment biocide: Apply appropriate solution to growth areas and surrounding surfaces.
- Residual effect biocide: Apply appropriate solution to inhibit re-establishment of growths.

APPLICATION**711 COATING GENERALLY**

- Application standard: In accordance with BS 6150, clause 9.
- Conditions: Maintain suitable temperature, humidity and air quality during application and drying.
- Surfaces: Clean and dry at time of application.
- Thinning and intermixing of coatings: Not permitted unless recommended by manufacturer.
- Overpainting: Do not paint over intumescent strips or silicone mastics.
- Priming coats:
 - Thickness: To suit surface porosity.
 - Application: As soon as possible on same day as preparation is completed.
- Finish:
 - Even, smooth and of uniform colour.
 - Free from brush marks, sags, runs and other defects.
 - Cut in neatly.

- Doors, opening windows and other moving parts: Ease before coating and between coats.

720 PRIMING JOINERY

- Preservative treated timber: Retreat cut surfaces with two flood coats of a suitable preservative before priming.
- End grain: Coat liberally allow to soak in, and recoat.

730 WORKSHOP COATING OF CONCEALED JOINERY SURFACES

- General: Apply coatings to all surfaces of components.

800 GLAZING

- Etched, sand blasted and ground glass: Treat or mask edges before coating to protect from contamination by oily constituents of coating materials.

810 WATER REPELLENT

- Application: Liberally flood surface, giving complete and even coverage.

P10 SUNDRY INSULATION/ PROOFING WORK

To be read with Preliminaries/ General conditions.

TYPES OF INSULATION**190 INSULATION FITTED BETWEEN STUDS**

- Location: Insert Between studs.
- Manufacturer: Contractor's choice.
- Product reference: Contractor's choice.
- Material: Earthwool Acoustic Roll
- Recycled content: Not applicable.
- Thickness: 25 mm.
- Installation requirements:
 - Joints: Butted, no gaps.
 - Fasteners: Use where necessary to retain insulation and/ or prevent slumping.

432A FIRE STOPS

- Manufacturer: Contractors choice.
- Performance: 60 minutes
- Width: To suit cavity widths as shown on drawings.

P12 FIRE STOPPING SYSTEMS

To be read with Preliminaries/ General conditions.

GENERAL

100 CERTIFICATION OF FIRE STOPPING GENERALLY

- Provide certification that fire stopping has been completed to fulfill the requirements of the Fire Safety Certificate and with Part B of the Building Regulations.

130 FIRE STOPPING SYSTEM TO INDIVIDUAL SERVICES PENETRATIONS THROUGH CORRIDOR WALLS

- Fire resistance: As clause 240.
- Penetration seal: Contractor's choice .
 - Size: To match wall thickness.
- Capping sealant: Submit proposals.
- Colour: Not applicable.

135 FIRE STOPPING SYSTEM TO INDIVIDUAL SERVICES PENETRATIONS AS INDICATED WITHIN SERVICE ENGINEER'S INFORMATION

- Fire resistance: in accordance with BS EN12101 and refer fire plan drawings.
- Penetration seal: Pipe collar - concealed intumescent.
 - Size: to suit services as indicated within service engineer's information and to rainwater pipework as indicated within key plan information.
- Capping sealant: Contractor's choice .
 - Colour: Contractor's choice .

140 FIRE STOPPING SYSTEM TO MULTIPLE SERVICES PENETRATIONS WITHIN PLASTERBOARD PARTITIONS, CONCRETE FLOOR AND MASONRY - System 01

- Fire resistance: in accordance with BS EN12101 and refer fire plans.
- Board barrier:
 - Material: high density mineral wool .
Thickness: to full thickness of partition.
Number of layers: 1.
 - Framing: opening to be framed within partition system - refer detail drawing.
 - Finish: endothermic, ablative coating, white.
- Capping sealant: Not required.
 - Colour: - .

140 FIRE STOPPING SYSTEM TO MULTIPLE SERVICES PENETRATIONS WITHIN PLASTERBOARD PARTITIONS, CONCRETE FLOOR AND MASONRY - System 02

- Fire resistance: in accordance with BS EN12101 and refer fire plans.
- Board barrier:
 - Material: Intumescent Pillows.
Thickness: to full thickness of partition.
Number of layers: to suit.
 - Framing: opening to be framed within partition system - refer detail drawing.
 - Finish: - .
- Capping sealant: Submit proposals.
 - Colour: - .

160 LINEAR GAP SEALING TOPS OF INTERNAL MASONRY COMPARTMENT WALLS

- Fire resistance: As clause 240.
- Gap width or height (nominal): 25 mm.
- Gap filler: Contractor's choice .
- Capping sealant: Contractor's choice .
- Colour: Not applicable.

SYSTEM PERFORMANCE

210 DESIGN

- Design: Complete the design of the fire stopping system.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

240 FIRE PERFORMANCE OF COMPARTMENT FLOORS

- Resistance to fire: In accordance with Building Regulations, Class 0.
- Reaction to fire: In accordance with Building Regulations, Class 0.
- Smoke resistance:
 - Air leakage rate (maximum): 3 m³/m²·hr.

260 DESIGN LIFE

- Effective design life: 25 years.

PRODUCTS

305 PRODUCT CERTIFICATION

- Certification: For products specified generically, submit evidence of compliance with the specification.
- Acceptable evidence: Agrément certificate.

338 INTUMESCENT MASTIC

- Manufacturer: Contractor's choice.
 - Product reference: Fire resistance: EN 1366-3 EI 120, EN 1366-4 EI 240 and BS 476 300 mins. Fire Classification to EN 13501-2..

340 INTUMESCENT MORTAR

- Manufacturer: Contractors choice
- Product reference: High Strength Fire Stop Compound.

355 MINERAL WOOL RIGID BATTS

- Standard: To BS 3958-5.
- Manufacturer: Contractors choice

360 MINERAL WOOL RIGID BATTS

- Standard: To BS EN 13162.
- Manufacturer: Contractor's choice.
- Product reference: coated fire rated mineral fire slabs.
- Recycled content: Contractor's choice.
- Tested: to EN 1364-6:2016

370 PIPE COLLAR - CONCEALED INTUMESCENT

- Manufacturer: Contractor's choice.
 - Product reference: in accordance with BS EN12101 and submit proposals.

375 PIPE COLLARS – INSULATED WRAP

- Manufacturer: Contractors choice

395 SEALANT - ONE-PART FIRE RESISTING ACRYLIC

- Manufacturer: Contractors choice
- Product reference: Intumescent and Acoustic Mastic.

EXECUTION**620 WORKMANSHIP GENERALLY**

- Gaps: Seal gaps between building elements and services, to provide fire resistance and resist the passage of smoke.
- Adjacent surfaces: Prevent overrun of sealant or mortar on to finished surfaces.

640 INSTALLING FIRE STOP LAMINATE

- Strip width: Wider than joint width.
- Fitting of strips: Compress strips and fit into joint, so that as they decompress the strips wedge themselves in the void.
- Shrink wrapping: N/A.
- Joints:
 - Ends of strips: Fit intumescent 'end piece' at the end of joints.
 - Joints in strips: Fit two intumescent 'end pieces' at each butt joint.

650 APPLYING INTUMESCENT FOAM

- New joints: Remove builder's debris, mortar droppings, grease, and the like.
- Old joints: Clean and remove existing sealant from the joint.
- Priming: Lightly moisten substrate with water.
- Application: Fill joint to approximately half its depth, allowing foam to expand to face of joint.
- Trimming: Do not trim or cut the face of the cured foam.

660 APPLYING INTUMESCENT MORTAR

- Sequence: Install mortar after services are permanently installed.
- Loose dust and combustible materials: Remove from the opening.
- Shuttering: Install suitable shuttering panels to the faces of the opening.
- Temperature: Do not apply mortar when it could be damaged by frost.
- Powder:water ratio: As recommended.
- Mortar cure: Do not disturb mortar before final set has taken place.
- Shuttering: Remove after mortar has cured.

680 INSTALLING BATTS

- Installing batts: Fit tight into void between the floor or wall and the penetrating services.
- Face of batts: Flush with the surface of wall, floor or soffit.
- Joints: Overlap.
- Gaps between services and bulkhead: Seal with fire resisting sealant.

710 INSTALLING MINERAL WOOL BATTS

- Installing batts: Fit tight into void between the penetrating services and the surrounding construction to form a solid barrier.
 - Brackets: Impale batts on proprietary pressed steel brackets at 500 mm maximum centres and not greater than 250 mm from ends of batts..
 - Bracket fixing: to manufacturer's instructions.
- Face of batts: Flush with the surface of wall, floor or soffit.

- Joints between batts: Close butt joints, seal with fire resisting sealant.
- Gaps between services and barrier: Seal with fire resisting sealant.

730 FIXING PIPE COLLARS

- Collar fixing: to supplier's standard.
- Gap around collar: Seal with gap filler and sealant.
- Length of wraps: Not applicable.

745 APPLYING SEALANTS GENERALLY

- Application: As section Z22.

COMPLETION**910 CLEANING**

- Masking tapes: Remove.
- Cleaning: Clean off splashes and droppings. Wipe down finishes.

920 INSPECTION

- Notice for inspection (minimum): 5 working days.

P21 DOOR/ WINDOW IRONMONGERY

To be read with Preliminaries/ General conditions.

GENERAL**120 IRONMONGERY INCLUDED IN SPECILEST DOOR SETS AS INDICATED****P31 HOLES, CHASES, COVERS AND SUPPORTS FOR SERVICES**

To be read with Preliminaries/ General conditions.

PRODUCTS**EXECUTION****610 COORDINATION**

- Locations and dimensions of holes and chases for services: Submit details _____ .

620 HOLES AND CHASES IN IN SITU CONCRETE

- Cast in: Holes larger than 10 mm diameter and chases.
- Cutting and drilling:
 - Permitted for holes not larger than 10 mm diameter.
 - Not permitted for holes larger than 10 mm diameter except as indicated on drawings.

640 HOLES IN STRUCTURAL STEELWORK

- Cutting and drilling: Not permitted except as indicated on drawings.

650 HOLES, RECESSES AND CHASES IN MASONRY

- Locations: To maintain integrity of strength, stability and sound resistance of construction.
 - Sizes: Minimum needed to accommodate services.
 - Holes (maximum): 300 x 300 mm.
 - Walls of hollow or cellular blocks: Do not chase.
 - Walls of other materials:
 - Vertical chases: No deeper than one third of single leaf thickness, excluding finishes.
 - Horizontal or raking chases: No longer than 1 m. No deeper than one sixth of the single leaf thickness, excluding finishes.
 - Chases and recesses: Do not set back to back. Offset by a clear distance at least equal to the wall thickness.
 - Cutting: Do not cut until mortar is fully set. Cut carefully and neatly. Avoid spalling, cracking and other damage to surrounding structure.
- 670 NOTCHES AND HOLES IN STRUCTURAL TIMBER
- General: Avoid if possible.
 - Sizes: Minimum needed to accommodate services.
 - Position: Do not locate near knots or other defects.
 - Notches and holes in same joist: Minimum 100 mm apart horizontally.
 - Notches in joists: Locate at top. Form by sawing down to a drilled hole.
 - Depth (maximum): 0.125 x joist depth.
 - Distance from supports: Between 0.07 and 0.25 x span.
 - Holes in joists: Locate on neutral axis.
 - Diameter (maximum): 0.25 x joist depth.
 - Centres (minimum): 3 x diameter of largest hole.
 - Distance from supports: Between 0.25 and 0.4 of span.
 - Notches in roof rafters, struts and truss members: Not permitted.
 - Holes in struts and columns: Locate on neutral axis.
 - Diameter (maximum): 0.25 x minimum width of member.
 - Centres (minimum): 3 x diameter of largest hole.
 - Distance from ends: Between 0.25 and 0.4 of span.
- 690 INSTALLING PIPE SLEEVES
- Sleeves: Fit to pipes passing through building fabric.
 - Material: Match pipeline.
 - Size: One or two sizes larger than pipe to allow clearance.
 - Finish: Install sleeves flush with building finish. In areas where floors are washed down, install protruding 100 mm above floor finish.
 - Masking plates: Fit at visible penetrations, including through false ceilings of occupied rooms.
- 730 INSTALLING ACCESS COVERS/ GRATINGS AND FRAMES
- Seating: _____ .
 - Bedding and haunching of frames: Continuously.
 - Material: _____ .
 - Top of haunching: 30 mm below surrounding surfaces.
 - Horizontal positioning of frames:
 - Centred over openings.
 - Install square with joints in surrounding surfaces: _____ .
 - Vertical positioning of frames:
 - Level; or
 - Marry in with levels of surrounding surfaces.
 - Permissible deviation in level of external covers and frames: +0 to -6 mm.

R11 ABOVE GROUND FOUL DRAINAGE SYSTEMS

To be read with Preliminaries/ General conditions.

Refer to Mechanical specification**SYSTEM PERFORMANCE****210 DESIGN**

- Design: Complete the design of the above ground foul drainage system.
- Standards: To BS EN 12056-1 and BS EN 12056-2, and in accordance with BS EN 12056-2 National Annexes NA-NG.
 - System type to BS EN 12056-2: System III.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

220 COLLECTION AND DISTRIBUTION OF FOUL WATER

- General: Quick, quiet and complete, self-cleansing in normal use, without blockage, crossflow, backfall, leakage, odours, noise nuisance or risk to health.
- Pressure fluctuations in pipework (maximum): ± 38 mm water gauge.
- Water seal retained in traps (minimum): 25 mm.

PRODUCTS**315 FLOOR DRAINS TO PLANT ROOMS**

- Manufacturer: CONTRACTORS CHOICE
 - Product reference: Direct connection gratings, stainless steel, trapped
- Floor finish: RESIN FINISH AS PER CLAUSE M12
- Body type: Stainless steel body, removable bottle trap.
 - Material: • Polished finish,
- Grating/ cover:
 - Type: circular grating - With removable bottle trap.
 - Material: • Polished finish,
- Outlet: Type and direction to suit pipework.
- Accessories: AS REQUIRED

320 ABS PIPEWORK FOR WASTES

- Standard:
 - To BS 5255 and Kitemark certified; or
 - To BS EN 1455-1 and Kitemark certified.
- Application area code: B.
Opening dimensions of access fittings, design of swept fittings, stand off dimensions of pipe and fitting brackets and requirements for adaptors and plugs: To BS 4514.
- Manufacturer: WAVIN or equal and approved
 - Product reference: WAVIN WHITE WASTE
- Nominal sizes: 32mm, 40mm, 50mm AS REQUIRED
- Colour: WHITE
- Brackets: PLASTIC PIPE CLIPS
 - Fixings: SHERARDIZED STEEL SCREWS
 - Size: 40X4mm min.
- Accessories: as required

- 365 PVC-U PIPEWORK to soil stacks, wc outlets, etc.
- Standard: To BS EN 1329-1, Kitemark certified.
 - Weather resistance, connectors to WC pans, opening dimensions of access fittings, design of swept fittings, stand off dimensions of pipe and fitting brackets and requirements for adaptors and plugs: To BS 4514.
 - Manufacturer: Wavin or equal and approved
 - Product reference: waving soil.
 - Nominal size: 110mm or 160mm as required.
 - Colour: white
 - Brackets: pipe and socket brackets as required
 - Fixings: SHERARDIZED STEEL SCREWS
 - Size: 40X4mm
 - Accessories: vent cowls, sw/w roof cowls, access branches etc as required.
- 375 AIR ADMITTANCE VALVES
- Standard: To BS EN 12380 or Agrément certified.
 - Minimum air flow rate: To BS EN 12056-2.
 - Manufacturer: waving or equal
 - Product reference: C8303

EXECUTION

- 601 INSTALLATION GENERALLY
- Standard: To BS EN 12056-5.
 - Components: From the same manufacturer for each type of pipework.
 - Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.
 - Plastics and galvanized steel pipes: Do not bend.
 - Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.
 - Concealed or inaccessible surfaces: Decorate before starting work specified in this section.
 - Protection:
 - Purpose made temporary caps: Fit to prevent ingress of debris.
 - Access covers, cleaning eyes and blanking plates: Fit as the work proceeds.
- 605 PIPE ROUTES
- General: The shortest practical, with as few bends as possible.
 - Bends in wet portion of soil stacks: Not permitted.
 - Routes not shown on drawings: Submit proposals before commencing work.
- 610 FIXING PIPEWORK
- Pipework: Fix securely plumb and/ or true to line. Fix discharge stack pipes at or close below socket collar or coupling.
 - Branches and low gradient sections: Fix with uniform and adequate falls to drain efficiently.
 - Externally socketed pipes and fittings: Fix with sockets facing upstream.
 - Additional supports: Provide as necessary to support junctions and changes in direction.
 - Vertical pipes: Provide a load bearing support not less than every storey level. Tighten fixings as work proceeds so that every storey is self supporting.
 - Wall and floor penetrations: Isolate pipework from structure, e.g. with pipe sleeves.
 - Masking plates: Fix at penetrations if visible in the finished work.
 - Expansion joint sockets: Fix rigidly to the building.
 - Fixings: Allow the pipe to slide.

630 JOINTING PIPEWORK – GENERALLY

- General: Joint with materials, fittings and techniques that will make effective and durable connections.
- Jointing differing pipework systems: With adaptors intended for the purpose.
- Cut ends of pipes: Clean and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets.
- Jointing or mating surfaces: Clean and, where necessary, lubricate immediately before assembly.
- Junctions: Form with fittings intended for the purpose.
- Jointing material: Do not allow it to project into bore of pipes and fittings.
- Surplus flux, solvent jointing materials and cement: Remove from joints.

680 ELECTRICAL CONTINUITY

- Joints in metal pipes with flexible couplings: Make with clips (or suitable standard pipe couplings) supplied for earth bonding by pipework manufacturer to ensure electrical continuity.

700 INSTALLING AIR ADMITTANCE VALVES

- Position: Vertical, above flood level of highest appliance served and clear of insulation materials (other than the manufacturer's insulating cover).
- Connection to discharge stack: Allow removal for rodding, e.g. ring seal.
- Roof spaces and other unheated locations: Fit manufacturer's insulating cover.

COMPLETION

905 PIPEWORK AIRTIGHTNESS TEST

- Preparation:
 - Open ends of pipework: Temporarily seal using plugs.
 - Test apparatus: Connect a 'U' tube water gauge and air pump to pipework via a plug or through trap of an appliance.
- Testing: Pump air into pipework until gauge registers 38 mm.
- Required performance: Pressure of 38 mm is to be maintained without loss for at least three minutes.

915 PREHANDOVER CHECKS

- Temporary caps: Remove.
- Permanent blanking caps, access covers, rodding eyes, floor gratings and the like: Secure complete with fixings.

920 SUBMITTALS

- Manufacturer's instructions for grease traps: Handover at completion.

Z10 PURPOSE MADE JOINERY

To be read with Preliminaries/ General conditions.

110 FABRICATION

- Standard: To BS 1186-2.
- Sections: Accurate in profile and length, and free from twist and bowing. Formed out of solid unless shown otherwise.
 - Machined surfaces: Smooth and free from tearing, wooliness, chip bruising and other machining defects.
- Joints: Tight and close fitting.
- Assembled components: Rigid. Free from distortion.
- Screws: Provide pilot holes.
 - Screws of 8 gauge (4 mm diameter) or more and screws into hardwood: Provide clearance holes.
 - Countersink screws: Heads sunk at least 2 mm below surfaces visible in completed work.
- Adhesives: Compatible with wood preservatives applied and end uses of timber.

120 CROSS SECTION DIMENSIONS OF TIMBER

- General: Dimensions on drawings are finished sizes.
- Maximum permitted deviations from finished sizes:
 - Softwood sections: To BS EN 1313-1:-
Clause 6 for sawn sections.
 - Hardwood sections: To BS EN 1313-2:-
Clause 6 for sawn sections.
Clause NA.3 for further processed sections.

130 PRESERVATIVE TREATED WOOD

- Cutting and machining: Completed as far as possible before treatment.
- Extensively processed timber: Retreat timber sawn lengthways, thickened, planed, ploughed, etc.
- Surfaces exposed by minor cutting and/ or drilling: Treat as recommended by main treatment solution manufacturer.

140 MOISTURE CONTENT

- Wood and wood based products: Maintained within range specified for the component during manufacture and storage.

210 LAMINATED PLASTICS VENEERED BOARDS/ PANELS

- Fabrication: To British Laminated Plastics Fabricators Association Ltd (BLF) fabricating standards.
- Balancing veneer: From decorative veneer manufacturer and of similar composition. Applied to reverse side of core material.
- Finished components: Free from defects, including bow, twist, scratches, chipping, cracks, pimpling, indentations, glue marks, staining and variations in colour and pattern.
- Joints visible in completed work: Tight butted, true and flush.

220 WOOD VENEERED BOARDS/ PANELS

- Core material and veneers: Conditioned before bonding.
- Setting out: Veneer features and grain pattern aligned regularly and symmetrically unless instructed otherwise.
- Balancing veneer: Applied to reverse side of core material.

- Moisture and temperature movement characteristics: As facing veneer.
- Veneer edges: Tight butted and flush, with no gaps.
- Tolerance of veneer thickness (maximum): ± 0.5 mm.
- Finished components: Free from defects, including bow, twist, scratches, chipping, splits, blebs, indentations, glue marks and staining.
- Surface finish: Fine, smooth, free from sanding marks.

250 FINISHING

- Surfaces: Smooth, even and suitable to receive finishes.
 - Arrises: Eased unless shown otherwise on drawings.
- End grain in external components: Sealed with primer or sealer as section M60 and allowed to dry before assembly.

212 PRESERVATIVE/ FIRE RETARDANT TREATMENT

To be read with Preliminaries/ General conditions.

110 TREATMENT APPLICATION

- Timing: After cutting and machining timber, and before assembling components.
- Processor: Licensed by manufacturer of specified treatment solution.
- Certification: For each batch of timber provide a certificate of assurance that treatment has been carried out as specified.

120 COMMODITY SPECIFICATIONS

- Standard: Current edition of the British Wood Preserving and Damp-proofing Association (BWPDA) Manual.

130 PRESERVATIVE TREATMENT SOLUTION STRENGTHS/ TREATMENT CYCLES

- General: Select to achieve specified service life and to suit treatability of specified wood species.

140 COPPER-ORGANIC PRESERVATIVE TREATMENT

- Solution:
 - Manufacturer: contractors choice
 - Product reference: _____ .
- Application: High pressure impregnation.
- Moisture content of wood at time of treatment: Not more than 28%. After treatment, allow timber to dry before using.

160 ORGANIC SOLVENT PRESERVATIVE TREATMENT

- Solution:
 - Manufacturer: contractors choice
 - Product reference: _____ .
- Application: Double vacuum + low pressure impregnation, or immersion.
- Moisture content of wood at time of treatment: Not more than 28%. After treatment, allow timber to dry before using.

210 FIRE RETARDANT TREATMENT

- Solution type: contractors choice
 - Manufacturer: _____ .
 - Product reference: _____ .
- Application: Vacuum + pressure impregnation.

- Moisture content of wood at time of treatment: As specified for the timber/ component at time of fixing. After treatment, timber to be redried slowly at temperatures not exceeding 65°C to minimize distortion and degradation.

Z20 FIXINGS AND ADHESIVES

To be read with Preliminaries/ General conditions.

PRODUCTS**310 FASTENERS GENERALLY**

- Materials: To have:
 - Bimetallic corrosion resistance appropriate to items being fixed.
 - Atmospheric corrosion resistance appropriate to fixing location.
- Appearance: Submit samples on request.

320 PACKINGS

- Materials: Noncompressible, corrosion proof.
- Area of packings: Sufficient to transfer loads.

330 NAILED TIMBER FASTENERS

- Nails:
 - Steel: To BS 1202-1 or BS EN 10230-1.
 - Copper: To BS EN 1202-2.
 - Aluminium: To BS 1202-3.

340 MASONRY FIXINGS

- Light duty: Plugs and screws.
- Heavy duty: Expansion anchors or chemical anchors.

350 PLUGS

- Type: Proprietary types to suit substrate, loads to be supported and conditions expected in use.

360 ANCHORS

- Types:
 - Expansion: For use in substrate strong enough to resist forces generated by expansion of anchor.
 - Adhesive or chemical:
 - For use in substrate where expansion of anchor would fracture substrate.
 - For use in irregular substrate where expansion anchors cannot transfer load on anchor.
 - Cavity: For use where the anchor is retained by toggles of the plug locking onto the inside face of the cavity.

370 WOOD SCREWS

- Type:
 - Wood screws (traditional pattern).
 - Standard: To BS 1210.
 - Wood screws.
 - Pattern: Parallel, fully threaded shank or twin thread types.

- Washers and screw cups: Where required are to be of same material as screw.

380 MISCELLANEOUS SCREWS

- Type: To suit the fixing requirement of the components and substrate.
 - Pattern: Self-tapping, metallic drive screws, or power driven screws.
- Washers and screw cups: Where required to be of same material as screw.

390 ADHESIVES GENERALLY

- Standards:
 - Hot-setting phenolic and aminoplastic: To BS 1203.
 - Thermosetting wood adhesives: To BS EN 12765.
 - Thermoplastic adhesives: To BS EN 204.

410 POWDER ACTUATED FIXING SYSTEMS

- Types of fastener, accessories and consumables: As recommended by tool manufacturer.

EXECUTION**610 FIXING GENERALLY**

- Integrity of supported components: Select types, sizes, quantities and spacings of fixings, fasteners and packings to retain supported components without distortion or loss of support.
- Components, substrates, fixings and fasteners of dissimilar metals: Isolate with washers/sleeves to avoid bimetallic corrosion.
- Appearance: Fixings to be in straight lines at regular centres.

620 FIXING THROUGH FINISHES

- Penetration of fasteners and plugs into substrate: To achieve a secure fixing.

630 FIXING PACKINGS

- Function: To take up tolerances and prevent distortion of materials and components.
- Limits: Do not use packings beyond thicknesses recommended by fixings and fasteners manufacturer.
- Locations: Not within zones to be filled with sealant.

640 FIXING CRAMPS

- Cramp positions: Maximum 150 mm from each end of frame sections and at 600 mm maximum centres.
- Fasteners: Fix cramps to frames with screws of same material as cramps.
- Fixings in masonry work: Fully bed in mortar.

650 NAILED TIMBER FIXING

- Penetration: Drive fully in without splitting or crushing timber.
- Surfaces visible in completed work: Punch nail heads below wrot surfaces.
- Nailed timber joints: Two nails per joint (minimum), opposed skew driven.

660 SCREW FIXING

- Finished level of countersunk screw heads:
 - Exposed: Flush with timber surface.
 - Concealed (holes filled or stopped): Sink minimum 2 mm below surface.

670 PELLETTED COUNTERSUNK SCREW FIXING

- Finished level of countersunk screw heads: Minimum 6 mm below timber surface.

- Pellets: Cut from matching timber, match grain and glue in to full depth of hole.
- Finished level of pellets: Flush with surface.

680 PLUGGED COUNTERSUNK SCREW FIXING

- Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
- Plugs: Glue in to full depth of hole.
- Finished level of plugs: Projecting above surface.

690 USING POWDER ACTUATED FIXING SYSTEMS

- Powder actuated fixing tools: To BS 4078-2 and Kitemark certified.
- Operatives: Trained and certified as competent by tool manufacturer.

700 APPLYING ADHESIVES

- Surfaces: Clean. Adjust regularity and texture to suit bonding and gap filling characteristics of adhesive.
- Support and clamping during setting: Provide as necessary. Do not mark surfaces of or distort components being fixed.
- Finished adhesive joints: Fully bonded. Free of surplus adhesive.

Z22 SEALANTS

To be read with Preliminaries/General conditions.

PRODUCTS**310 JOINTS Generally**

- Primer, backing strip, bond breaker: Types recommended by sealant manufacturer.

EXECUTION**610 SUITABILITY OF JOINTS**

- Presealing checks:
 - Joint dimensions: Within limits specified for the sealant.
 - Substrate quality: Surfaces regular, undamaged and stable.
- Joints not fit to receive sealant: Submit proposals for rectification.

620 PREPARING JOINTS

- Surfaces to which sealant must adhere:
 - Remove temporary coatings, tapes, loosely adhering material, dust, oil, grease, surface water and contaminants that may affect bond.
 - Clean using materials and methods recommended by sealant manufacturer.
- Vulnerable surfaces adjacent to joints: Mask to prevent staining or smearing with primer or sealant.
- Backing strip and/ or bond breaker installation: Insert into joint to correct depth, without stretching or twisting, leaving no gaps.
- Protection: Keep joints clean and protect from damage until sealant is applied.

630 APPLYING SEALANTS

- Substrate: Dry (unless recommended otherwise) and unaffected by frost, ice or snow.
- Environmental conditions: Do not dry or raise temperature of joints by heating.
- Sealant application: Fill joints completely and neatly, ensuring firm adhesion to substrates.
- Sealant profiles:
 - Butt and lap joints: Slightly concave.
 - Fillet joints: Flat or slightly convex.
- Protection: Protect finished joints from contamination or damage until sealant has cured.

END