



CLAYCASTLE WATER ACTIVITY CENTRE

ARCHITECTURAL SPECIFICATION

CORK COUNTY COUNCIL
ARCHITECTS DEPARTMENT

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101 INTRODUCTION:

The proposed development comprises the construction of a single-storey, flat-roofed Facility Centre for Water Sports Activities, located entirely within the existing surfaced public car park at Claycastle Beach (also known as Front Strand), Youghal, Co. Cork.

This project involves the provision of a *Water Activity Centre* at Claycastle, Youghal, Co. Cork, Ireland. The development will provide all weather changing facilities with sustainable and accessibly, toilet provision, shower provision, accessible changing provision, secure storage, an induction space, external terrace, equipment washdown facilities, and an orientation point for public usage.

The project is part of a national programme being delivered in partnership with Fáilte Ireland to provide supporting infrastructure for water-based recreational and tourism activity at identified coastal locations throughout Ireland.

102 THE PROJECT:

The time frame for construction is 12 months from start of contract as per the schedule to the form of tender, Volume B at tender stage.

The contractor must provide a programme, incorporating the constraints stated or implied in the contract in the form of a Gant / Bar chart and clearly indicate;

- The activities in all work packages and constraints for each stage of works.
- All activities / events shall be numbered and annotated with earliest and latest event dates.
- The critical path must be clearly shown on the programme.
- A schedule of outputs and resources to support the activities must also be included in the submission.
- The earliest and latest start and finish dated for every activity in each work package. Activities shall include all scope activities and any activities or time durations expected in addition to the scope activities.
- Access dated for each phase or section
- The earliest and latest start and finish dates for each phase or section, including date when the contractor plans to complete works to allow for the Employer and others to do their works.
- Milestone and key dates.

- Holiday periods.
- Dates by which design works or drawings to be produced by the contractor or sub-contractor, or supplier will be submitted to the Employers Representative for acceptance and dates by which acceptance of such design works or drawings will be required by the contractor, allowing time for submittals, re-submittals and review.
- Dates by which samples for approval by the Employers Representative and dates by which approval of such samples will be required by the contractor, allowing time for submittals, resubmittals and reviews.
- Procurement periods and delivery dated for items of goods, plant, materials, labour, works specialists for specialist areas of work, etc.
- Date by which works will be ready for testing by the Employers Representative / Employer
- Details and dates of any information required from the Employers Representative / Employer
- Commissioning periods, Provision of float, time risk allowances, quality control procedures, health and safety requirement, programme contingency, and any other requirement at set out in the contract.

The following list of constraints is not exhaustive and all other suggested or implied constraints by the contract documents or considered prudent by the contractor following his inspection of the site shall be taken into account by the contractor in determining the time frame for construction and in the preparation of the tender / contract programme;

Working hours on site; The normal working hours on site shall be 08:00 am – 6:00pm Monday to Friday and 08:00 am – 1:00pm on Saturdays. No works will be permitted on Sundays and Public Holidays. The Employers Representative consent for work outside these hours may be given after appropriate consultation. The contractor shall prepare a schedule of hours of operation and shall submit this to and agree in writing with the Employers Representative prior to the commencement of works on site.

Public Car Park; Maintaining safe and clear access and egress for members of the public using the adjacent car park, roadways and footpaths.

Beach Access: Maintaining safe and clear access and egress to the Beach & Boardwalk.

Boardwalk Access: Maintaining safe and clear access and egress to the Beach & Boardwalk.

103 WORKS PROPOSALS:

Tenderers will be required to submit the following information, when requested at tender evaluation stage;

Tenderers programme of the works, the programme shall be updated at period not exceeding one month and or when requested by the Employers Representative.

Cash Flow Schedule; Submit a Cash Flow Schedule, which is based on the priced bill of quantities, grouped into the same aggregated work items as are described in the construction programme Gantt / Bar chart, indicating the monthly and accumulated valuation of the works. The cash flow schedule shall be updated monthly by the contractor.

Proposed Equipment: Details of the proposed equipment (type & quantity of plant, resources, etc., proposed for the works, taking into account the site location.

Environmental Controls: Details of the proposed dust, air, noise, vibration, surface & ground water management to minimize impact and damage to the surrounding areas.

Traffic Management Plan: The contractor shall ascertain and provide for complying with all traffic regulations affecting the execution of the works detailing their procedures and proposed arrangements for ensuring that all footpaths and roadways adjacent to the site or near the site are kept open and free from obstruction and that all works are carried out in a manner causing the least possible disturbance and interference the movement of people and flow of traffic, with specific reference to but not limited to the following areas; Providing / maintaining safe access for Emergency Services personnel & vehicles Providing / maintaining safe access for daily deliveries, refuse collection, etc.

Providing / maintaining safe access for members of the public using the adjacent car park and Beach facilities.

Providing / maintaining safe access for Public Utility Companies (ESB, Gas Networks Ireland, Eircom, etc.,) to access and maintain services.

Detailed proposals to ensure that all roadways and footpaths are maintained clean and free from the accumulation of dirt / mud / waste from all plant / equipment / site traffic, etc., Details relating to the management of site traffic entering / existing the site, traversing through the site to delivering materials, removal of spoil, etc.

Parking Arrangements: the contractor's personnel (including sub-contractors) are not permitted to park within the adjacent car park but must use that portion transferred to the contractor for the duration of the works. (see POSSESSION OF SITE PLAN drawing; CCWF-CCC-ZZ-ZZ-DR-A-0020). The contractor shall submit details of the arrangements for contractors personal / sub – contractors parking and their transport to and from site / off campus parking arrangements.

Excavation Methodology: intended to be utilised on site, including a detailed description of the sequence of works, ground water and surface water controls proposed to be employed during with works, taking into account the existing ground conditions and location of the works.

Specific Health & Safety Plan: proposals taking into account the requirements and specifics set down in the Preliminary Health & Safety Plan.

Schedule of Hours of Operation: the contractor shall prepare and submit a schedule of hours of operation for all work activities and shall submit this to and agree in writing with the Employers Representative prior to the commencement of works on site.

Method Statements & Temporary Works: the contractor shall submit to the Employers Representative (ER) for its acceptance a general description of the arrangements and methods of construction and temporary works designs the contractor proposes to adopt for carrying out the works ("the Method Statement"). The Method Statement should be fully cross-referenced to the activities in the programme.

The contractor shall submit to the ER sufficient information as may be considered reasonably necessary by the ER to interpret, evaluate and give acceptance of the Method Statement.

The contractor shall, wherever required by the ER, furnish for its information further and more detailed particulars of the Contractors Method Statement. Should the contractor wish to change a Method Statement, or should the ER subsequently consider it necessary to change a Method Statement to which acceptance has previously been given, then the contractor shall submit a revised Method Statement for the ER for its acceptance.

Acceptance by the ER of the contractor's Method Statement does not make the Method Statement a contract document, the contractor is responsible for the construction of the works in accordance with the condition of contract.

Waste Management Plan: The contractor shall prepare and submit his Waste Management Plan (WMP), detailing the controls and procedures which will be utilized during construction.

Asbestos Containing Materials Method Statement: The contractor shall prepare and submit his plan of works and method statements in relation to all asbestos containing material.

Pollution Protection Plan: The contractor shall prepare and submit his Pollution Protection Plan (PPP), detailing the controls and procedures which will be utilized during construction for the prevention of pollution on site, the PPP shall include for but not be limited to the following, nomination of a site based staff member responsible for pollution prevention during construction, carrying out daily inspections, collation of a daily monitoring log, checking plant / equipment daily for oil / fuel leaks, no refuelling will take place on site. The Incident Response Plan detailing the actions to be taken in the event of a spillage or leakage, location of staff facilities / toilets, removal of waste generated on site from these facilities and construction activities, etc., the method statement will need to be agreed with the Employers Representative prior to works commencing on site.

104 CONTROL OF NOISE:

The contractor shall employ the best practical means to minimize noise produced by his operations, including plant maintenance, and shall comply with the recommendations in BS 5228-1&2 2009 (Code of noise and vibration on construction and open site) as amended.

All vehicles and mechanical plant used on the works shall be fitted with exhaust silencers and shall be maintained in good and efficient working order for the duration of the works in compliance with BS 5228. Machines in intermittent use shall be shut down in the periods between work or throttled down to a minimum. The contractor shall remove from the works any items of plant which in the opinion of the Employers Representative is ineffectively silenced. All compressors shall be "sound reduced" models fitted with properly lined and sealed acoustic covers and shall be kept closed whenever the machines are in use. All ancillary pneumatic percussive tools shall be fitted with mufflers or silencers of the type recommended by the manufacturers. Pumps and mechanical static shall be enclosed by acoustic sheds or screens where directed by the Employers Representative.

Any plant (such as generators and pumps) which is required to work outside the stated hours, shall be surrounded by an acoustic enclosure to the approval of the Employers Representative which shall restrict the noise level to not less than 5dB(A) below the levels stated in Table A Schedule of Noise Levels.

The contractor shall organize his operations with regards to the positioning of plant and the location of haul roads, etc., so it minimizes noise to adjacent wetlands.

The noise levels (see Note (i) below) in Table A Schedule of Noise Levels for periods outside the normal working hours will only be permitted when consent has been given to exceptional working.

The ambient noise level, L_{Aeq} (see Note (ii) below), from all sources measured 2.0m above the ground at noise control stations, located 150 m from the piling location (the Contractor shall provide for a minimum 4 No. Noise Monitoring Stations to be in operation at any one time and their location is to be determined by the Employer's Representative) shall either not exceed the appropriate level given in the Schedule or not exceed by more than 3dB (A) the existing ambient noise level, L_{Aeq} (see note (iii) below), at the control station measured over the same period, whichever level is greater. The maximum sound level at any noise control station shall not exceed the level given in the Schedule. Exceptionally the Contractor may be given permission to carry out works which exceed the noise levels in the Schedule, provided that 14 days' notice of the date and timing of these works is given to the Employer's Representative and the Contractor demonstrates that he intends to take all reasonable measures to mitigate the noise nuisance. After consultations with the Employer and any other interested bodies a decision will be given within 7 days of receipt of the notice. The Contractor shall provide 4 No. noise monitoring stations continuously during the works at each structure location.

Table A: Schedule of Noise Levels

Schedule	Total Noise Levels at Control Stations	
Period	Ambient Noise level, L_{Aeq} measured at Control Station dB(A)	Maximum Sound Level (see Note (iv) below measured at Control Station: dB(A)
Monday to Saturday	70	80
Sundays and Public Holidays	60	65
All unattended plant outside normal working hours	45	55

Notes:

Noise levels relate to free field conditions. Where noise control stations are located 1 metre from façades of buildings, the permitted noise levels can be increased by 3dB (A).

The ambient noise level, L_{Aeq} , at a specific location is the total L_{Aeq} from all the noise sources in the vicinity over the specified period.

The existing ambient noise level, L_{Aeq} , at a specific location is the total L_{Aeq} from all the noise sources in the vicinity over the specified period prior to the commencement of the Works. Maximum sound level is the highest value indicated on the sound level meter which meets the requirements of IS EN 61672.

105 CONTROL OF DUST:

The contractor shall provide, use, maintain and keep available plant and equipment necessary to minimise the formation and accumulation of dust arising from the works, normally in dry weather

conditions. The contractor shall provide a preliminary method statement of the control of dust for approval when requested during the tender evaluation stage. The contractor may be instructed to alter this method statement for the control of dust if it is deemed that they are ineffective by the Employers Representative. The contractor shall bear the cost of all required alterations.

106 SAFETY FILE:

The Contractor / PSCS shall furnish all information necessary to the PSDP on completion of the works to enable a complete safety file to be produced for the entire scheme including site services.

The contractor shall submit a complete draft, amend in the light of any comments and resubmit. The production of the final copies shall not proceed until authorised.

The contractor shall submit 2 number copies to the Employers Representative on completion of the project prior to the issuing of The Certificate of Substantial Completion.

PRESENTATION OF information

- Format: A4 size, plastics covered, loose leaf, four ring binders with hard covers, each indexed, divided and appropriately cover titled.
- Selected drawings needed to illustrate or locate items mentioned: Where larger than A4, to be folded and accommodated in the binders so that they may be unfolded without being detached from the rings.
- As-built drawings: The main sets may form annexes.

CONTENT OF THE FILE

General:

Details of the property, the parties, fire safety strategy, operational requirements and constraints of a general nature.

Building fabric:

- Design criteria.

Maintenance requirements, equipment, facilities and procedures.

- Product details.
- Environmental and trafficking conditions.

Building and site services, systems and utilities:

- Description, location and identification.
- Operation and maintenance procedure.
- Access requirements.
- Product details.
- Equipment settings.
- Emergency procedures.

Obtain or prepare:

- Specification.
- Diagrammatic drawings, record drawings and as built drawings.
- Consumable items and spares.

Maintenance schedules guarantees, warranties, maintenance agreements, test certificates, reports and decommissioning instructions.

107 PROJECT DRAWINGS & OTHER DOCUMENTS:

The following drawings and other documents were used in the preparation of the tender documents.

Architects Drawings (Cork County Council Architects Dept.):

Drawing No.	Drawing Title
CCWF-CCC-ZZ-ZZ-DR-A-0001	SITE LOCATION MAP
CCWF-CCC-ZZ-ZZ-DR-A-0002	EXISTING SITE LAYOUT
CCWF-CCC-ZZ-ZZ-DR-A-0010	PROPOSED SITE PLAN
CCWF-CCC-ZZ-ZZ-DR-A-0020	POSSESSION OF SITE PLAN
CCWF-CCC-ZZ-00-DR-A-1000	PROPOSED GROUND FLOOR PLAN
CCWF-CCC-ZZ-ZZ-DR-A-1001	PROPOSED ROOF PLAN
CCWF-CCC-ZZ-00-DR-A-1020	FITOUT PLAN _WALL & FLOOR FINISHES
CCWF-CCC-ZZ-00-DR-A-1030	WALL TYPES
CCWF-CCC-ZZ-ZZ-DR-A-2000	PROPOSED ELEVATIONS
CCWF-CCC-ZZ-ZZ-DR-A-2010	SECTIONAL ELEVATIONS _WC BLOCK
CCWF-CCC-ZZ-ZZ-DR-A-3000	PROPOSED SECTIONS
CCWF-CCC-ZZ-ZZ-DR-A-3001	PROPOSED SECTIONS
CCWF-CCC-ZZ-ZZ-DR-A-3002	PROPOSED WALL SECTIONS
CCWF-CCC-ZZ-ZZ-DR-A-4000	REFLECTED CEILING PLAN
CCWF-CCC-ZZ-00-DR-A-5000	CHANGING PLACES TOILET
CCWF-CCC-ZZ-00-DR-A-5001	CHANGING PLACES TOILET
CCWF-CCC-ZZ-00-DR-A-5002	ACCESSIBLE WC & SHOWER
CCWF-CCC-ZZ-00-DR-A-5003	TYPICAL UNISEX WC
CCWF-CCC-ZZ-00-DR-A-5004	AMBULANT WC
CCWF-CCC-ZZ-00-DR-A-5005	SHOWER ROOMS
CCWF-CCC-ZZ-00-DR-A-5006	INTERNAL PLANT ROOM
CCWF-CCC-ZZ-00-DR-A-5007	INTERNAL PLANT ROOM
CCWF-CCC-ZZ-00-DR-A-5008	EXTERNAL PLANT ROOM
CCWF-CCC-ZZ-00-DR-A-5009	EXTERNAL PLANT ROOM
CCWF-CCC-ZZ-00-DR-A-5010	ELECTRICAL & CLEANERS
CCWF-CCC-ZZ-ZZ-DR-A-7000	COLUMN DETAILS
CCWF-CCC-ZZ-ZZ-DR-A-7001	HIGH LEVEL GLAZING DETAILS
CCWF-CCC-ZZ-ZZ-DR-A-7002	CORTEN COLUMN DETAILS
CCWF-CCC-ZZ-ZZ-DR-A-7003	LANDSCAPING DETAILS
CCWF-CCC-ZZ-ZZ-DR-A-7004	LANDSCAPING DETAILS

CCWF-CCC-ZZ-ZZ-SC-A- 8000	DOOR SCHEDULE
CCWF-CCC-ZZ-ZZ-SC-A- 8001	DOOR SCHEDULE
CCWF-CCC-ZZ-ZZ-SC-A- 8010	WINDOW SCHEDULE
CCWF-CCC-ZZ-ZZ-SC-A- 8020	SCHEDULE OF CORTEN COLUMNS
CCWF-CCC-ZZ-ZZ-SC-A- 8100	FITOUT SCHEDULES
CCWF-CCC-ZZ-ZZ-M3-A- 0001	ARCHITECTURAL MODEL

Civil & Structural Engineers Drawings & Specification (RKA, Consulting Engineers):

Drawing No.	Drawing Title
CIVILS	
01	Proposed Drainage Layout
02	Proposed Watermain Layout
03	Proposed Local Drainage Layout
04	Proposed Roads & Footpath Layout (1 of 2)
04a	Proposed Roads & Footpath Layout (2 of 2)
05	Proposed Road Marking Layout
07	Proposed Drainage Layout (Foul Outside Site Boundary)
STRUCTURAL	
100	Proposed Piling Layout
101	Proposed Raft Foundation - General Arrangement
102	Proposed Raft Foundation – Reinforcement
103	Proposed External Walls – Reinforcement
104	Proposed Internal Walls & Columns - Reinforcement
105	Proposed Roof Slab – General Arrangement
106	Proposed Roof Slab - Reinforcement
107	Proposed Ground Floor Slab Layout
108	Proposed Ground Floor Structure
109	Proposed External Walls Layout

Mechanical Engineers Drawings & Specification (DKP International, Consulting Engineers):

Drawing No.	Drawing Title
1001	Lighting, fire alarm installation
1002	Power, data, telecoms access installation
1003	Plumbing installation
1005	Ventilation installation
1006	Foul & wastewater installation

1009	Underground services installation
1010	PV installation
2009	Utility Services installation
3400	Main distribution board, Sub distribution board schematic
3401	Access Control schematic
3402	Heating & plumbing mechanical schematic
3403	Heating & plumbing electrical schematic
3404	BMS schematic

108 SCHEDULE TO THE FORM OF CONTRACT:

- | | | |
|-----|---|--|
| (a) | Percentage for Professional fees | CI 10 : xx% |
| (b) | (1) Minimum Sum for Public Liability Insurance | CI 10 : € x,x00,000.00. |
| | (2) Minimum Sum for Employers Liability Insurances | CI 10 : € xx,000,000.00. |
| | (3) Contractors All Risk Insurance | CI 10 : As per clause 3 |
| (c) | Period for Substantial Completion | CI 1.1 : <u>As per schedule</u> |
| (d) | Liquidated and Ascertained damages per month month or part thereof. | CI 2.6 : € xx.00 per |
| (e) | Defects Liability Period | CI 3.15 : 12 months. |
| (f) | Period of Interim Certificates | CI 4.1 : one month. |
| (g) | Time for Receipt of Certificates | CI 4.2 : 10 working days. |
| (h) | Time for Honoring Certificates | CI 4.2 : 10 working days. |
| (i) | Percentage of Certified Value Retained | CI 4.1 : 5% |
| (j) | Period of Final Measurement | CI 4.2 : 30 Working Days. |

109 SUBMISSION OF SAMPLES:

Provide samples of all materials proposed to be used for the works to an extent sufficient to establish a standard approved by the Employers Representative, including the name, address of suppliers, technical specifications, independent quality control certification, testing certificates, etc., including, if necessary, delivery of samples to the Employers Representatives office.

200 SITE CLEARANCE & DEMOLITION:

201	CODES AND STANDARDS
202	SITE CLEARANCE
203	DEMOLITION
204	OWNERSHIP AND DISPOSAL OF MATERIALS
205	EXISTING PUBLIC ROADWAY
206	VISIT SITE
207	EXTENT OF DECONSTRUCTION / DEMOLITION / ALTERATIONS
208	SITE COMPOUND AREA
209	TAKE DOWN
210	DEMOLITIONS & ALTERATIONS

201 CODES AND STANDARDS:

1. **Building Regulations:** The works shall comply with the requirements of Building Regulations & in particular with TGD Part 'C' Site Preparation and Site Moisture Resistance and TGD Part 'D' Materials and Workmanship.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or for recent updated changes.
3. Please note that sections in this specification contain clauses which may not be required or may be covered by Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the Engineer.

202 SITE CLEARANCE: (Refer to Civil/Structural Specification.)

1. **General:** (Refer to Civil/Structural specification.) Demolish walls and other structures and obstructions scheduled for removal. Grub up and remove trees, hedges, bushes and shrubs scheduled for removal from the site. Leave the site ready for excavation work.
2. **Trees:** Cut down trees shown for removal as close as possible to ground level. Remove the trees and stumps from the site and backfill the holes with suitable earth filling.

3. **Old Foundations:** Break out and remove foundations, beds and paving scheduled for removal. Backfill with suitable earth filling.
4. **Materials Discovered:** The owner of minerals, sand, gravel or archaeological objects discovered in the course of excavation shall be deemed to be the Employer. In the event of an archaeological find, stop work in the immediate vicinity and inform the Employers Representative immediately.
5. **Drains, Waterways and Underground Services:** Notify the Employers Representative and obtain instructions when drains, waterways and underground services are encountered.
6. **Reinstate Grounds:** Before Substantial Completion of the Works, remove from gardens (front and rear) and open spaces all rubbish, large stones, builder's debris etc., and leave surfaces generally clean and level to Employers Representative's satisfaction.
7. **Destruction of Noxious weeds:** Provide for the destruction of all noxious weeds on the site, in accordance with the Current Noxious Weeds Act and the Noxious Weed (Thistle, Ragwort and Dock) Order.
8. **Extent Site Works:** Clear and level site in accordance with standard mentioned above, including the removal and carting offsite the following but not limited to; -
 - Hack up and excavate areas of the existing footpath and sub-base as indicated on the drawings, including saw cuttings along perimeter, carting excavated material off site.
 - Carefully remove and cart off site, existing stone and sod hedge along the western boundary of the site.
 - Carefully grub up and cart off site, existing stone walls including grubbing up concrete foundations and infilling voids with suitable filling SR.21:2016 (as amended) material levelled and compacted in layers.
 - Carefully remove and cart off site existing drainage AJs and associated pipework, including grubbing up concrete foundations and infilling voids with suitable filling SR.21:2016 (as amended) material levelled and compacted in layers.
 - Hack up and excavate areas of the existing tarmac and sub-base as indicated on the drawings, including saw cuttings along perimeter, carting excavated material off site.
 - Carefully grub up and cart off site, existing concrete paving including sand and hardcore sub-base, to all areas as indicated on the drawings.
 - Carefully grub up and cart off site existing tree stumps, including excavation, roots, cut up and remove timbers, infilling voids with suitable material SR.21:2016 hardcore compacted in layers, removal of shrubs, plants, weeds, etc., from all landscaped areas and berms.
 - Carefully trim back existing overhanging trees, hedges, bushes, etc., along the perimeter of the existing site boundary, by suitability qualified personnel.

203 DEMOLITION:

1. **Standard:** Carry out all demolition work in accordance with B.S. 6187:2011 *Code of Practice for full and partial demolition*.
2. **Demolition:** Demolish completely the structures indicated on the drawings. Remove foundations.
3. **Safety:** Ensure the safety of the Works and of the public during demolition work. Carry out demolition work in such a manner as to cause the minimum inconvenience to the public and to adjoining owners.

4. **Supervision:** Carry out demolition under the supervision of a responsible person experienced in demolition work who shall ensure that adequate safety precautions are taken.
5. **Explosives Not Permitted:** The use of explosives for demolition shall not be permitted.
6. **Burning:** Do not burn on site materials arising from demolition.
7. **Nuisance:** Take the necessary precautions to minimise nuisance arising from demolition work.
8. **Protection, Adjoining Work:** Take all reasonable precautions to protect adjoining work from damage during demolition work and provide temporary screens and coverings as required.
9. **Protection, Adjoining Structures:** Protect adjoining structures from damage and provide adequate support at each stage of demolition. Do not disturb adjoining structures or their foundations.
10. **Ordnance Survey Marks:** Notify the Employers Representative of Ordnance Survey marks found on structures scheduled for demolition. Do not remove or destroy such marks unless instructed.
11. **Disconnect Services:** Before starting demolition work, arrange with the appropriate authorities to disconnect services to the structures scheduled for demolition. Pay all charges for disconnection of services.
12. **Tanks and Pipes:** Remove tanks and pipes which may have contained inflammable liquids and gases in accordance with B.S. 6187:2011 *Code of Practice for full and partial demolition*.
13. **Report Defects:** Notify the Employers Representative of any apparent structural defects or decay uncovered during demolition work in parts of structures to be retained.
14. **Notify Insurers:** Before commencement, the Contractor shall advise its Insurers as to the nature and extent of all demolition work and shall fully indemnify the Employer accordingly.

204 OWNERSHIP AND DISPOSAL OF MATERIALS:

1. **Notice, Approval and Permit:** The Contractor or his appointed licensed waste recovery sub-contractor shall give prior notice and seek prior approval from the Contracting Authority for the disposal of all waste materials surplus to the requirements of the Contract from the site.
2. **Credit Materials Reused:** The Employer shall be credited with the value of materials arising from demolition, which are reused and as set out in the pricing documents.
3. **Materials Remaining the Property of Employer:** Shall be identified, stored or transported to store off

site.

4. **Notice, Approval and Permit:** The Contractor shall give prior notice and seek prior approval from the Local Authority for tip site to be used for the disposal of materials surplus to the requirements of the Contract.

The Contractor should obtain a current Waste Collection Permit from the Environmental Department, the National Waste Collection Permit Office (NWCPO), Offaly County Council, Aras an Chontae, Charleville Road, Tullamore, Co. Offaly, prior to the removal of any material off site.

205 EXISTING PUBLIC ROADWAY:

The contractor shall ensure that the existing roadways and footpaths are maintained in a clean condition at all times. The contractor is to ensure that all plant and equipment as necessary is available for the duration of the works to ensure that all debris and earth is removed from all site traffic exiting onto to the footpaths and roadways. The contractor will be responsible for making good any damage caused to the existing roadways, footpaths and landscaped areas by his own personnel, sub-contractors, suppliers, etc.

206 VISIT SITE:

The contractor is strongly advised to visit the site to ascertain all local conditions and restrictions likely to affect the execution of the works and the extent of the works involved prior to tendering. No claims from failure to do so will be considered.

207 EXTENT OF DECONSTRUCTION / DEMOLITION / ALTERATIONS:

(Not Applicable / Architect's Description)

208 SITE COMPOUND AREA:

1. **Storage Area:** The contractor will only be allowed to establish a compound within the area of the site indicated on the site layout drawings. The storage of all machinery, vehicles, equipment, materials, including the stockpiling of materials, spoil heaps, etc will only be permitted within the designated compound area.
2. **Fenced Area:** The contractor shall provide all necessary fencing, hoardings, dust screens, planked footpaths, guard lights, lighting, and the like, for the proper execution of the works and for the enclosing and protecting the site against trespass and interference. Include for all necessary alterations and modifications as necessary during the works.
3. **Existing Parking:** The contractor shall be responsible for making good any damage caused to the exiting tarmac car-parking area forming part of the site compound, reinstate all areas disturbed to the satisfaction of the Employers Representative.
4. **Existing Landscaping:** The contractor shall be responsible for maintaining the existing landscaped areas within the confines of the site boundary for the duration of the works, including the upkeep and protection of the existing trees, hedges, shrubs, plants, cutting of grassed areas, etc., Reinstate all areas disturbed during the works to match their original condition including reinstatement of flower beds, trees, etc., removed to facilitate the works.
5. **Public Lighting:** The contractor shall be responsible for providing adequate protection to the existing public lighting lanterns and columns located with the area of the site compound for the duration of the works.
6. **Compound Area:** The contractor will only be allowed to establish a compound within the area of the site indicated on the site layout drawings (Ref: to Proposed Site Compound drawing; CCWF-CCC-ZZ-ZZ-DR-A-0020_POSSESSION OF SITE PLAN). The storage of all machinery,

vehicles, equipment, materials, including the stockpiling of materials, spoil heaps, etc will only be permitted within the designated compound area.

209 TAKE DOWN:

1. **Take Down Items:** Take down carefully all items indicated on the drawings. Carefully remove and cart off site, existing bollards, external signs, etc., including grubbing up concrete foundations and infilling voids with suitable filling clause 804 material levelled and compacted in layers.
2. **Temporary Support:** Provide and maintain all necessary temporary support. Do not remove such support until the new work is capable of supporting the structure. Make good any damage. The Contractor shall be responsible for the design of temporary support.
3. **New Openings:** Form new openings in the existing structures as indicated on the drawings. Include for any additional cutting away and making good that may be required. Provide lintol, where required.
4. **Enlarge Openings:** Enlarge openings in the existing structures as indicated on the drawings. Include for any additional cutting away and making good that may be required. Provide new lintol, where required.
5. **Build Up Openings:** Build up existing openings as indicated on the drawings.

210 DEMOLITIONS & ALTERATIONS:

1. Demolitions / Deconstruction Works Survey

Before commencing deconstruction / demolition works, carefully examine all available information and the structure or structures to be deconstructed / demolished, the site on which the structure or structures stand and the surround area.

Submit reports and method statements describing, Form, condition and details of the structure or structures, the site and the surrounding area. Extent: Marked up drawings indicating the extent of the works involved. Type, location and condition of features of historical, archaeological, geological or ecological importance.

Type, location and condition of adjoining or surrounding premises that might be adversely affected by removal of the structure or structures or by noise, vibration and or dust generated during deconstruction / demolition.

Identify and location of services above and below ground, including those required for the contractor's use, and arrangements for their disconnection and removal.

Form and location of flammable, toxic or hazardous materials, including lead-based paint and proposed methods for their removal and disposal

Form and location of materials identified for reuse or recycling, and proposed methods for removal and temporary storage.

Proposed programme of work, including sequence and methods of deconstruction / demolition.

Details of specific pre-weakening required.

Arrangements for protection of personnel and the public, including exclusion of unauthorized persons. Arrangements for control of site transport and traffic. Special requirements; Disposal methods of gypsum-based products and disposal of asbestos containing material.

2. Services Affected by Deconstruction / Demolition Works

Location of Services

Services affected by deconstruction / demolition works, located and mark positions, arrange with the appropriate authorities for services to be located and marked.

Services Disconnection Arranged by Contractor

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

Disconnection of Drains

Locate, disconnect and permanently seal disused foul and surface water drains.

Live Foul & Surface Water Drains & Watermain

Protect all drains, associated manholes, inspection chambers, gullies, vent pipes, fittings, watermain, etc., and maintain normal flow during deconstruction / demolition works. Make good any damage arising out of the works and leave in drains in a clean and working order at completion of the works.

Service Bypass Connections

Provide as necessary to maintain continuity of services to occupied areas of the site on which the deconstruction / demolition works are taking place and to adjoining sites / properties.

Services to be retained

Give notice of any damage caused to services and notify relevant service authorities, owners, occupiers, etc., regarding damage arising from the works. Complete all repairs to services as directed and to the satisfaction of the service authority / owner at the contractor's own expense.

3. Workmanship

Demolition / Deconstruction works shall be carried out in accordance with the latest edition of BS 6187 Code of practice for demolition (as amended). All operatives shall be appropriately skilled and experienced for the type of works, holding the relevant Safe Pass and Construction Skills Certification Scheme (CSCS) cards of competence. Site staff responsible for supervision and control of works shall be experienced in the assessment of risks involved and methods of deconstruction / demolition used.

4. GAS or Vapour Risks

Prevent fire and / or explosions caused by gas and / or vapours from tanks.

5. Dust Control

Reduce airborne dust by periodically spraying deconstruction / demolition works with an appropriate wetting agent. Keep public roadways and footpaths clear of mud and debris.

6. Health Hazards

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

7. Structures to be Retained

Protect parts of the existing structure which are to be kept in place, cut away and strip out with care to minimize making good the interface between retained structures and deconstruction / demolition works.

8. Partly Demolished Structures

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

9. Dangerous Openings

Provide guarding and secure openings at all times, including outside of working hours and illuminate during hours of darkness.

10. Unforeseen Hazards

Give notice immediately when unforeseen hazards such as unrecorded voids, tanks, chemicals, etc., are discovered to the Employers Representative and provide details of proposed methods for filing, removal off site.

11. Extent of Deconstruction / Demolition / Alterations

Carefully deconstruct / demolish and alter elements of the existing structure including removal from site as works proceed of all debris, clear away and leave site in a tidy condition all items as indicated on the detailed drawings.

Carefully take out and remove from site all electrical equipment, security installations, IT communication systems, wiring, conduit, fittings, cables, supports, etc., including disconnecting existing supplies, electrical supply, make good to all walls and floors, to match existing finishes. Allow for storage of track lighting system.

Carefully take out and remove from site all mechanical fittings, equipment, including but not limited to fire protection systems, associated circuits and controls, etc, including disconnecting existing supplies, make good to all walls and floors, to match existing finishes.

All demolitions as per detailed drawings and pricing document.

12. Removal of Asbestos Containing Materials

Carefully remove all asbestos containing material if present on site, prior to commencement of works in their location. Refer to Asbestos report survey in relation to location and extent of asbestos containing materials.

Planning and execution of the works shall be in accordance with;

The Safety Health and Welfare at Work (Exposure to Asbestos) (Amended) Regulations 2006 – 2010,

Only personnel who have received training (Training requirement as detailed in Regulation 17 of the Health, Safety & Welfare at Work (Exposure to Asbestos) Regulations (Amended) 2006 – 2010) and taken all reasonable steps to prevent exposure to asbestos, will be permitted to work with asbestos containing materials.

HSE publication L 143” Managing and working with asbestos, control of Asbestos Regulations 2012, Approved Code of Practice” HSA publication “Asbestos containing materials (ACM’S) in workplaces, practical guidelines on ACM management and abatement”. Contractor to develop The Plan of Works / Method Statement in relation to all ACM’s.

The collection, transportation and disposal of asbestos waste shall only be undertaken by an authorized waste collection permit holder, who has a valid waste collection permit to collect this type of asbestos waste and the waste should be sent to an appropriately authorized facility for disposal. Documentary evidence of all licenses, permits, transfer dockets, and the Final Disposal shall be provided to the Employers Representative for inclusion in the Safety File. (Note; payment for removal and disposal of ACM’s will be withheld until the Final Disposal Certificate has being provided). On completion of the removal of ACM’s the contractor shall carry out an Asbestos Re-occupation Survey, which shall be carried out by a competent surveyor with industry specific training and experience, with INAB & ISO 17025 accreditations.

300 EXCAVATION & LOOSE FILL:

301	CODES AND STANDARDS
302	DEFINITIONS (EXCAVATION WORK):
303	SITE CONDITIONS:
304	EXCAVATIONS:
305	DISPOSAL OF WATER:
306	DISPOSAL OF MATERIALS:
307	DEFINITIONS:
308	TOPSOIL EXCAVATIONS:
309	GENERAL EXCAVATION:
310	FILLING WORK:
311	COMPACTION WORK:
312	NOTICE AND APPROVAL:
313	WASTE COLLECTION PERMITS:
314	FILLING TO MAKE UP LEVELS:
315	EXCAVATIONS ADJACENT TO EXISTING STRUCTURES & SERVICES:
316	ROCK EXCAVATION:

301 CODES AND STANDARDS:

1. **Building Regulations:** The works shall comply with the requirements of Building Regulations & in particular with TGD Part 'D' Materials and Workmanship, TGD part 'H' Drainage and Waste Disposal.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. Please note that sections in this specification contain clauses which may not be required or may be covered by Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the Engineer.

302 DEFINITIONS (EXCAVATION WORK):

(Refer to Civil/Structural Specification.)

303 SITE CONDITIONS:

Refer to Site Investigation Report & tender documentation for nature of ground, extent of existing services and ground water conditions.

304 EXCAVATIONS:

(Refer to Civil/Structural Specification.)

305 DISPOSAL OF WATER:

(Not Applicable)

306 DISPOSAL OF MATERIALS:

(Refer to Site Clearance Clause 204)

1. **Underground Services:** Notify the Employers Representative and the responsible authority and obtain instructions when underground services other than those shown on the drawings are encountered.
 2. **Notice:** Notify the Employers Representative / Clerk of Works when the excavations are ready for inspection and obtain his / her approval before proceeding with construction.
 3. Under no account shall any concrete be placed until the Employers Representative/Clerk of Works is satisfied with the bottom of the trenches.
-
- 307 **DEFINITIONS:**
(Not Applicable)
-
- 308 **TOPSOIL EXCAVATIONS:**
Refer to Civil/Structural Specification.
-
- 309 **GENERAL EXCAVATION:**
Refer to Civil/Structural Specification.
-
- 310 **FILLING WORK:**
Refer to Civil/Structural Specification.
-
- 311 **COMPACTION WORK:**
Refer to Civil/Structural Specification.
-
- 312 **NOTICE AND APPROVAL:**
Refer to Civil/Structural Specification.
1. The Contractor shall give notice and seek approval from the Employers Representative for tip sites, provided by the Contractor, to be used for the disposal of waste and material surplus to the requirements of the Contract. In accordance with foregoing, the Contractor shall provide a waste disposal permit.
-
- 313 **WASTE COLLECTION PERMITS:**
Refer to Site Clearance Clause 204
-
- 314 **FILLING TO MAKE UP LEVELS:**
Refer to Civil/Structural Specification
-
- 315 **EXCAVATIONS ADJACENT TO EXISTING STRUCTURES & SERVICES:**
(Refer to Civil/Structural Specification.)
The contractor is to allow for carrying out all excavations adjacent to existing structures and services by hand. The contractor is to ensure that all existing services are located prior to the commencement of the works, and for protecting the services during the course of the works
-
- 316 **ROCK EXCAVATION:**
(Refer to Civil/Structural Specification.)

400 EXTERNAL, SITE AND DEVELOPMENT WORKS:

401	CODES AND STANDARDS
402	GENERAL REQUIREMENTS
403	GENERAL CLEARANCE AND EARTHWORK
404	OVERSITE STRIP AND GRADING
405	CULTIVATION
406	GRASS SEEDING
407	GRASS TURF
408	PLANTING/ HEDGING/ TREES
409	KERBS AND EDGING
410	CONCRETE PATHS
411	PAVIORS/ PAVING ON SAND BEDDING
412	PAVOIRS/ PAVING SLABS ON CONCRETE BED
413	TACTILE CORDUROY PAVING FLAGS
414	GRAVEL WALKWAYS / AREAS
415	IMPRINTED ASPHALT
416	BITUMEN MACADAM PAVINGS (Where Shown)
417	THERMOPLASTIC ROAD MARKINGS / LININGS
418	HIGH DIVISION WALLS, BOUNDARY WALLS AND SCREEN WALLS
419	FRONT BOUNDARY WALLS, PIERS AND GARDEN DIVISION WALLS
420	RAILINGS AND GATES
421	FENCING

401 CODES AND STANDARDS:

1. **Building Regulations:** The installation shall comply with the requirements of the Building Regulations & in particular with TGD Part 'C' Site Preparation TGD Part 'D' Materials and Workmanship.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. Please note that sections in this specification contain clauses which may not be required or may be covered by Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the Engineer.

402 GENERAL REQUIREMENTS:

1. **Comply with Previous Work Sections:** Work in this section is wholly or partially specified in previous work sections, 200; Site Clearance & Demolition and 300; Excavation & Loose Fill, comply with those sections in respect of similar materials and workmanship subject to any qualifications and additional requirements given hereunder.
2. **Existing Services:** The contractor is to make them-self-aware of the extent of the existing services that may affect the contract area. The contractor is to make good at his own expense

any damage to services damage, due to any cause within their control and shall pay any costs and charges in connection with same.

3. **Debris/ Scrub Areas:** Remove from site any contaminants or debris. All scrub areas shall be grubbed, and all existing perennial weeds shall be removed and disposed of including all root systems unless otherwise specified.
4. **Reinstate Grounds:** On completion, remove all rubbish, stones, Builder's debris and leave site clean and tidy.
5. **Maintenance:** The contractor will be required to mow established grassed areas twice before hand over. Grass areas shall be sufficiently established to recover fully from mowing. At appropriate times treat with a suitable trans-located non-residual herbicide.
6. **Workmanship:** Standard: All works are to be carried out in accordance with BS 4428:1989 – *Code of Practice for General Landscape Operations*.
7. **Locations:** Provide to all areas as indicted on the detailed drawings, imported topsoil. Planting as indicated on site layout drawings.

403 GENERAL CLEARANCE AND EARTHWORK: (Refer to Civil/Structural Specification.)

404 OVERSITE STRIP AND GRADING: (Refer to Civil/Structural Specification.)

405 CULTIVATION:

1. Preparing Existing Ground: (Areas shown for grass or planted areas): Loosen and aerate compacted or undisturbed topsoil for its full depth up to a max. of 300 mm with suitable plant. Fork over by hand in restricted areas. Break up large lumps of soil and remove any material other than soil and stones not exceeding 50mm/75 mm. Leave fallow for not less than two months.
2. Preparing Subsoil: Loosen and aerate compacted or undisturbed sub-soil with a ripper to a depth of 250 mm/500 mm.
3. Spreading and Grading Topsoil: Spread topsoil evenly over the contoured or levelled subsoil to a lightly compacted thickness of not less than 150 mm for grass or 450 mm for Trees/ Hedging/ Planted areas. Avoid over-compaction. Topsoil shall be moved and spread only in dry weather.
4. Uneven Settlement: Reinstate any areas of uneven settlement with specified materials at the end of the maintenance period.

406 GRASS SEEDING:

1. **Grass Seed Mixture:**
Grass seed shall be Department of Agriculture certified as to source, purity and germination, shall be delivered to site in sealed bags and certificates shall be handed to the E.R. The seed mixture shall, unless otherwise specified, be of a utility grade amenity (lawn) grass mixture comprised of the following species: 60% Perennial Rye Grass
20% Chewings Fescue
20% Slender Creeping Red Fescue
2. **Grass Seeding:**
Grass seeding to be used in all open areas, front and rear garden locations, prepare ground and rake level with kerbs or footpaths. Dress with approved fertiliser at 75 g. per sq. m. General Amenity Seed Mix shall be sown at a rate of 35grams/m² and lightly roll.
3. **Grass Seeding Generally:**

Where areas are to be grass seeded it shall be carried out before handover. Where grass has failed, the contractor must rectify by raking over the appropriate area and re-sowing within one month from date of sowing. Where grass seeding is not appropriate due to time of year/weather, the contractor shall ensure that the areas are covered with a suitable alternative such as grass turf as per Clause 407.

407 GRASS TURF:

1. Supply of Grass Turf:

- Turf shall be approved good quality meadow or downland turf, fibrous well rooted, mown, free from matter or dead grass and pernicious weeds, following treatment by selective weedkiller not less than three months previously and shall be cut 900mm x 300mm of regular size and shall be not less than 50mm of regular size even thickness throughout, and generally in accordance with B.S. 3969:1998 (+A1:2013).
- The Contractor shall supply a sample for approval, and all subsequent deliveries shall be equal to the approved sample.
- Any turf brought onto the site, or laid prior to such approval, will be deemed to have been brought on or laid at the Contractor's risk, and he will be instructed to lift and/or cart away such turf off the site and replace and/or relay at his own expense unless instruction in writing to the contrary to be given by the Architect.

2. Laying of Grass Turf:

This clause applies where areas are shown to be turfed. No turf is to be brought on site, or laid, until the top soiling has been approved by the E.R. Prior to the laying of turf, topsoil shall be brought to an even tilth and necessary firmness, and thoroughly watered if dry. A base dressing of approved fertiliser shall be worked into the top 50mm of topsoil, at a rate of 40g/m², as the final tilth is reached. Turfs shall be unloaded on an area clear of that to be turfed. Turf shall be laid in rows, commencing at the rear end of the area, and laid progressively by placing planks over the last row of turf laid and laying subsequent turf there from. The planks shall be moved forward as each line of turf is laid and so on to the end of the area. Turfs shall be laid with half lapped joints, well butted up and evenly beaten, twice over the whole area with wooden turf beaters. No rollers shall be used. Any inequalities in finished levels owing to variation in turf thickness or unequal consolidation of soil shall be adjusted by raking and/or packing fine soil beneath the turfs. The finished level of turf abutting paving must be 25mm above the paving surface after laying and beating operations are completed. The Contractor shall allow for pegging on steep slopes. Turf shall not be laid in exceptionally dry or frosty weather.

408 PLANTING/ HEDGING/ TREES:

Refer To Site Layout for Position, Type and Number of Plants

1. Plants Generally:

All plants shall be well grown, healthy, vigorous, sturdy and bushy, according to type, and free from all disease and defects. All planting operations shall be carried out in accordance with B.S. 4428:1989 – *Code of Practice for General Landscape Operations* and good horticultural practice. Shrubs to B.S. 3936-1:1992, Nursery Stock: Spec for Trees and Shrubs.

2. Pre-planting Inspection:

The landscape contractor shall advise the E.R. at least two days in advance of the date when planting is to take place, so that a site inspection of the plants, spacing etc, can be made before planting takes place. At the time of planting, the soil shall be moist and friable and not frozen, excessively dry, or waterlogged.

The excavated hole shall be of sufficient size to accommodate the root-ball, and the stock shall be planted so that after any settlement it is the same depth as it was grown in the nursery. The sides and base of the planting pit shall be broken up before planting.

The planting hole shall be backfilled around the plant; the soil shall be lightly firmed to ensure that there is good contact between the root ball and soil substrate.

Water plants once planted.

3. Compost and fertilizer:

Supply and mix well rotted manure with approved slow-release compound fertiliser and incorporate it into planting holes/areas.

4. Mulch:

On completion of planting, the total area of the disturbed soil is to be mulched to a depth of 75mm using medium grade bark mulch, free of pests, disease, fungus and weeds. Prior to application a complete clearing through and weeding of the area shall be carried out, leaving the soil weed free and smooth. The soil and the mulch shall be thoroughly wetted prior to application. Finished level of mulch to be 25mm below adjacent grassed or paved areas.

5. Shrubs:

All shrubs shall be pit planted in precise locations as shown in plans. Pits shall be excavated 150mm wider in all directions than the natural root spread of the plant, and the bottom of the pit must be well forked to improve drainage. All plastic and non-degradable wrappings and containers shall be removed before planting. Make four vertical cuts with a sharp knife on the quadrants through the edge of container grown root-balls to sever girdling roots. Back filling of all pits shall be with top-soil and compost in the ratio of 4:1. Finish with mulch as per Clause 408.4

6. Hedging:

Whitethorn Hedging - *Variety: Crataegus monogyna* AKA Hawthorn, May Flower. All hedging to be supplied as bare root plants, with a good root system and bushy and well branched plants. Size: 2 - 3ft (60 - 90cm) Age: 1+2 years.

Photinia fraseri – ‘Red Robin’ Hedging. All hedging to be supplied as bare root plants, with a good root system and bushy and well branched plants. Size: 600 – 900mm) Age: 1+2 years.

Planting Instructions:

Plant all bare root hedging in dormant season - October to March. Avoid frosty conditions, where the ground is frozen. Dig trench approx. 1.5ft wide & 1.5ft deep. Add compost to base of the trench and lightly cover with a layer of topsoil. Space plants 500mm c/c. Stagger / alternate plants to create a double row to create a wider & thicker hedge. Back fill the topsoil. Be sure that the base of each plant is just below soil surface. Compact soil in well and level off

the soil around the plants. Water plants both before & after planting. When plants arrive, plant them straight away. Take care not to damage roots, bark & buds. Finish with mulch as per Clause 408.4

7. Trees:

Note: Refer to site layout drawing for position, number and types of trees.

Typical Tree to be 1.8-2.1m high with a girth of 4-6cm.

The E.R. has the right to reject any tree which does not meet the specification.

Trees, unless otherwise specified shall conform to B.S. 3936: Part 1 with well-formed heads showing vigorous growth and with a sound fibrous root system. The stem shall be clean straight and upright with an evenly balanced head and branches. As trees arrive on site they shall be planted immediately in their respective positions.

Tree Pits (Standards): Tree pits shall be prepared by the excavation and removal from site of 400mm of top-soil and 400mm of sub soil. The tree pit should be excavated to allow adequate clearance between the perimeter of the root-ball and the side of the pit. Nominal tree pit size - 800 x 800 x 800mm deep. Fork the bottom and sides of the pit to break up the subsoil, leaving an open textured face.

The contractor shall import topsoil to replace excavated material. Topsoil for backfilling is to be thoroughly mixed with approved compost or a slow-release fertiliser.

All trees shall have a length of 75mm Ø perforated plastic irrigation pipe installed all around the rootball with an outlet complete with cap at ground level to allow for irrigation.

Tree Staking: Allow one stake per light standard tree. Stakes shall be sufficient to anchor roots firmly while allowing the rest of the plant to move. They shall be at least 1500mm long x80mm Ø pressure treated timber stake. The stakes are to be straight, machine rounded sweet chestnut or peeled larch poles, pointed at one end, preserved to resist rot for their intended life-span, and strong enough to take nails without splitting.

Drive in stakes vertically on the windward side of the tree position and as close as possible to stem before planting so that they are a minimum of 300mm below the bottom of the pit and 750mm above ground level.

Tree Ties: Tree to be secured to stake with 1 no. 50mm x 600mm rubber belt and spacer ties, fixed with 2 no. 40mm galvanised clout nails.

Tree Planting: Trees are to be planted upright at the same depths as grown in the nursery. No part of the stem/trunk is to be in direct contact with the stake. The roots shall be spread evenly round the bottom of the hole and the improved topsoil returned, finely broken down and carefully packed around the roots, with all interstices filled, the soil in the pits lightly consolidated, and the root collar firmly heeled round. The pits shall be backfilled with the topsoil mixture to a depth as necessary, the top surface being slightly cambered with no clumps/stones greater than 35mm diameter visible. No weeds or grass to be permitted within a 750mm radius of the tree trunk. Finish with mulch as per Clause 408.4, for an area of 1.5mØ

Watering trees: Trees are to be watered after planting.

409 KERBS AND EDGING:

(Refer to Civil/Structural Specification.)

1. Laying Kerbs and Garden Edgings: Cut kerbs neat, accurate and without spalling. Form neat junctions. Bed and position true to line and level along top and front faces, in a mortar bed on accurately cast foundations. After bedding has set, secure with a continuous haunching of concrete. Joint with a cement: sand mortar (1:3) as the work proceeds neatly flush pointed. Do not construct if the temperature is below 3°C on a falling thermometer or 1°C on a rising thermometer. Adequately protect foundations, bedding and haunching against frost and rapid drying by sun and wind.
2. Forming Curves: Form curves up to 12.00m radii with standard quadrants and radius units; form curves of greater radii using straight units and angling the joints. Provide for cutting units to suit curves.
3. Pre-cast Concrete Kerbs: Standard: To B.S. 7263-3. Size (width x height x length): 125 x 255 x 915 mm half batter type. Installed to B.S. 7533-6:1999
4. Pre-cast Concrete Garden Edging: To be 180mm x 50mm.
5. Aluminium Edge Restraint for Footpath: Provide 5 mm thick x 100 mm high mill finish extruded aluminium 6063 alloy T6 hardness, edge restraint system along the edge of all paved areas adjacent to all grassed and soft landscaping areas and along the edge of all planter areas adjacent to gravel areas. Paver restraint shall be pinned into compacted ground with 50mm x 50mm x 610mm long chamfered pressure treated hardwood posts at 1.2M centres.

410 CONCRETE PATHS:

(Refer to Civil/Structural Specification.)

1. **Concrete Footpaths:**
100mm exposed aggregate concrete footpaths with 10 - 40mm, rounded, flat, river pebble aggregate. Selected approved aggregate to be evenly seeded into poured concrete, tamped, trowelled and exposed by power-washing having applied suitable surface retarder. See Specification for further information. 1 x 1m Sample panel required. Detailed CEWMPs and RAMs required.
2. **External Plant Rm:** concrete base to Civil/Structural Engineers' detail. Slab to be 150mm thick concrete to Engineers' specification on 50mm sand blinding on 150mm hardcore to SR21:2016 Annex E. To be read in conjunction with Site layout and Civil/ structural drawings/ specification.

411 PAVIORS/ PAVING ON SAND BEDDING:

(As per Detail Drawings)

412 PAVOIRS/ PAVING SLABS ON CONCRETE BED:

(As per Detail Drawings)

413 TACTILE CORDUROY PAVING FLAGS:

1. Provide to all areas as shown on the detailed drawings and as per Building Regulations. 400mm x 400mm x 50mm square edge, corduroy finish concrete paving flags to B.S. EN

1336:2003, strength > 3.5MPa, skid/slip resistance extremely low (> 75 USRV), in selected colour, on 40 mm mortar bed with 5mm joints on 250 mm thick hardcore as per Clause 411.4 hardcore levelled and compacted in layers, laid to falls as shown on detail drawings.

414 GRAVEL WALKWAYS / AREAS:

1. Supply lay and compact 100 mm depth of 10 – 12mm wash, rounded pea gravel, on geotextile membrane, on 150 mm hardcore well compacted as per Clause 411.4, to all areas as indicated on the detailed drawings.

415 IMPRINTED ASPHALT:

1. Imprinted asphalt system to be a rolled single wearing course of dense bitumen tarmacadam to Specification for Road Works Series 900-Road Paving-Bituminous Materials (TII Publication) with an approved texturing process to the upper surface on and including 100mm thick Clause 805 wet mix macadam base course; to falls and cross falls on blinded hardcore; compacted thickness.

416 BITUMEN MACADAM PAVINGS (Where Shown):

(Refer to Civil/Structural Specification.)

Generally: As stated, all materials for coated macadam: To B.S. EN 13108:2016 (as amended) and other relevant Standard referred to therein.

1. Coated Macadam Roadways:

- A. Surface soil shall be cleared off area of carriageways to a depth of 225mm, and surplus material shall be carted off site or subsequently spread on site as required by the Employers Representative.
- B. In areas of cut to the depths required in the Contract, work shall be carried out in accordance with the requirements of Specification for Road Works Series 600-Earthworks (TII Publication).
- C. In areas of fill (only) lay crushed rock base material (hardcore), consisting of 200mm to 37.5mm well graded crushed limestone rock in accordance with Specification for Road Works Series 600Earthworks and Series 700-Road Paving (TII Publication), with a grader to a thickness required to bring levels to formation, i.e. 380mm below finished road levels.
- D. When granted access to the site, to facilitate works access, commencing at Formation Level (in all areas of cut and fill), lay a 225mm thick layer of sub-base material, in accordance with the requirements of Specification for Road Works Series 600-Earthworks and Series 700-Road Paving (TII Publication), and spread with a grader or paving machine.
- E. Prior to laying the road base, similar compacted material shall be added as necessary to bring the surface to the required level (i.e. 55mm below finished road levels).
- F. Wet mix road base shall be laid to a compacted depth of 100mm, in a single pass, by a bituminous paving machine which is fitted with automatic screed levelling controls on both longitudinal and transverse directions, either to piano wire controls or equivalent, to the required lines and levels. Tolerances in sub-base layer shall be made up with road base material. The wet mix macadam is to be compacted, to the maximum dry density, appropriate to the particular grading and moisture content of the material, using a vibrating roller. Wet mix shall comply with RCR RC 342 "Guidelines on Construction Practice with Wet Mix Macadam" and shall be laid and compacted to Specification for Road Works Series 600-Earthworks and Series 700-Road Paving (TII Publication), but shall take account of the following: -
 - i All material passing the 75 micron sieve shall be non-plastic.

- ii The optimum moisture content, for maximum dry density when consolidated, shall be maintained within the range $\pm 0.5\%$ from optimum when the material is being laid on the site of the works.
- G. The whole area of carriageways shall be surfaced with a finished 55mm thickness of 14mm close graded bitumen macadam wearing course to falls and to an even surface.
- H. The supplying and laying of flexible surfacing shall be carried out in accordance with the requirements of B.S. EN 13108 (as amended) and Specification for Road Works Series 700-Road Paving and Series 900-Bituminous Materials (TII Publication).

2 Coated Macadam Driveways and Hard Standings:

- A. Surface soil shall be cleared off area of driveways and hard standings to a depth of 225mm, and surplus material shall be carted off site or subsequently spread on site as required by the Employers Representative.
- B. In areas of cut, to the depths required in the Contract, work shall be carried out in accordance with the requirements of Specification for Road Works Series 600-Earthworks (TII Publication).
- C. Sub-grade shall be rolled to the satisfaction of the Employers Representative. In areas of fill (only) lay crushed rock base material (hardcore) consisting of 200mm - 37.5mm well graded crushed limestone rock in accordance with Specification for Road Works Series 600-Earthworks and Series 700-Road Paving (TII Publication) with approved plant to a thickness required to bring levels to formation, i.e. 270mm below finished surface levels.
- D. Commencing at formation level (in all areas of cut and fill) lay a 225mm thick layer of sub-base material, in accordance with the requirements of Specification for Road Works Series 700-Road Paving and Series 800-Road Pavements-Unbound and Cement Bound Mix (TII Publication) and spread with approved plant.
- E. Prior to laying flexible surfacing similar compacted material shall be added as necessary to bring surface to the required level (i.e. 45mm below finished level).
- F. The whole area of driveways and hard standings shall be surfaced with a finished 45mm thickness of 14mm close graded bitumen macadam wearing course to falls and to an even surface.
- G. The supplying and laying of Flexible surfacing shall be carried out in accordance with the requirements of B.S. EN 13108 (as amended) and Specification for Road Works Series 700-Road Paving and Series 900-Bituminous Materials (TII Publication).

3. WORKMANSHIP - BITUMEN MACADAM PAVINGS:

- A. **Code of Practice:** Comply with Appendix A and B of B.S. EN 13108 (as amended). Recommendations for Laying Coated Macadam subject to any qualifications given hereunder.
- B. **Choice of Specialist Firm:** Ensure that macadam paving road base and sub-bases are laid by Specialists who are experienced in this type of work.
- C. **Compaction for Macadam Paving:** Prepare the ground under paving as follows:
 - If possible, delay excavations until the paving operations can commence and the ground is reasonably dry.
 - Strip/excavate to required levels.

- Grade/level bottom of excavation; remove any obstructions or soft spots and add and compact additional material to provide surfaces of uniform bearing capacity.
 - Compact for footpaths with two passes of min. 2 tonne roller or other plant attaining equivalent compaction.
 - Compact for vehicular paving at least four passes a min. 4 tonne roller or another plan attaining equivalent compaction.
- D. **Bases for Macadam Paving:** Place immediately after compaction of ground and compact in layers.
- E. **Before Laying Macadam Paving:** Ensure the following conditions exist:
- Adequate provisions for removing water at the lowest levels of the macadam to be laid.
 - Kerbs and edge restraints completed.
 - Sub-grade finished and compacted as specified with all levels, falls and chambers correct and outlets ready for the drainage operations.
 - Inspection covers and the like in position with facilities for re-setting if necessary to suit level of wearing course.
- F. **Laying Macadam:** Prepare and lay macadam as follows: -
- (1) Mix surface dry aggregate in the specified gradings for each course and at the correct temperature all in accordance with B.S. EN 13108 (as amended).
 - (2) Keep coated macadam dry until laid and compacted.
 - (3) Lay each course in a manner that prevents segregation and compact without displacement.
 - (4) Lap in the joints of each layer to ensure complete fusion. Joints in different courses shall not coincide. Offset 300 mm in a layout submitted to and approved by the Employer's Representative.
 - (5) Using rollers as specified in Specification for Road Works Series 700-Road Paving (TII Publication) roll each course when the material is at a suitable temperature until no roller marks are left.
 - (6) Lay and compact in restricted areas by methods that produce a compacted finish equivalent to that achieved by the heavy rollers.
 - (7) Brush apply bitumen paint to manhole frames and other items in contact with the paving.
 - (8) If necessary, re-set frames to manholes and gratings, etc. to suit the finished paving levels.
 - (9) In all circumstances, materials used for the construction of road base, base course and wearing course shall be laid by paving machine except as directed by the Employers Representative.

417 THERMOPLASTIC ROAD MARKINGS / LININGS:

1. **Road Markings:** All permanent road markings shall be reflective thermoplastic road marking material conforming to the requirements of I.S. EN 1871 (as amended) Road Marking Materials Physical Properties, shall meet the requirements of the relevant classes of I.S. EN 1436:2007+A1:2008 (as amended) Performance for Road Users, all in accordance with Specification for Road Works Series 1200-Traffic Signs and Road Markings. Disabled parking spaces shall be painted blue with disabled parking symbol in white.
2. **Parking Lines:** Apply continuous/broken line surface markings by extension method to widths as detailed in white thermoplastic marking paint (where shown), to B.S. 3262-3:1989 (as amended). The thickness of application shall be $4 \pm 0.5\text{mm}$ on road surfacing whose average texture depth is greater than or equal to 1.00mm. All markings shall be certified by the Environmental Research Unit and guaranteed for min. 2 years.

418 HIGH DIVISION WALLS, BOUNDARY WALLS AND SCREEN WALLS:
(As per Detail Drawings)

419 FRONT BOUNDARY WALLS, PIERS AND GARDEN DIVISION WALLS:
(As per Detail Drawings)

420 RAILINGS AND GATES:
(As per Detail Drawings)

421 FENCING:
(As per Detail Drawings)

500 CONCRETE WORKS:

501	CODES AND STANDARDS
502	MATERIALS
503	MIXING
504	READY MIXED CONCRETE
505	WORKMANSHIP
506	FORMWORK
507	REINFORCEMENT
508	CONCRETE FLOORS SLAB
509	CONCRETE APRON
510	CONCRETE PATHS – RAMPED
511	TEXTURED CONCRETE STEPS
512	FLOOR AND FOUNDATIONS TO EXTERNAL PLANT ROOM
513	CONCRETE FINISHES
514	COPINGS TO LOW LEVEL AND SCREEN WALLS
515	PRECAST CONCRETE UNITS
516	MOVEMENT JOINTS IN KERBS AND PAVING

501 CODES AND STANDARDS:

1. **Building Regulations:** The installation shall comply with the requirements of the Building Regulations & in particular with TGD Part 'A' Structural, TGD Part 'D' Materials and Workmanship.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. Please note that sections in this specification contain clauses which may not be required or may be covered by Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the Engineer.

502 MATERIALS:

(Refer to Civil/Structural Specification.)

503 MIXING:

(Refer to Civil/Structural Specification.)

504 READY MIXED CONCRETE:

(Refer to Civil/Structural Specification.)

505 WORKMANSHIP:

Inform Employer's Representative: The Employers Representative shall be notified in good time of the intention to pour concrete. Unless otherwise directed the concrete shall not be placed unless the Employer's Representative/Clerk of Works is present on site and has had the opportunity of previously examining and approving the positioning, fixing and condition of the reinforcement, and of any other

items to be embedded in the concrete, and the cleanliness, alignment and suitability of the containing formwork. Concrete shall not be placed in standing water.

Setting out to BS 5964-1.

Accuracy of Instruments to BS 5606

506 FORMWORK:

(Refer to Civil/Structural Specification.)

507 REINFORCEMENT:

(Refer to Civil/Structural Specification.)

508 CONCRETE FLOORS SLAB:

1. **Concrete Floors Slab Generally:**

150mm thick power floated reinforced concrete screed (concrete and reinforcing as per engineer's specification) on 500-gauge polythene separation layer on 50mm Sand Blinding on 225mm Granular Fill (Hardcore) to SR 21:2014 "Annex E" (or depth required to bring from formation/ reduced levels to underside of blinding).

LOGGIA & SERVICE ROOMS Floor Finish FF-01

High-performance, HONED CONCRETE FLOOR FINISH with high performance a two-part, clear polyaspartic resin anti-slip COATING to ensure PTV 36+ wet with slider 55 rating. Grind to a 60-grit or 100-grit level, creating micro-scratches on the surface to ensure high traction prior to application of sealer.

A 1x1m Control Sample panel required.

Level of polish, aggregate and mix to be agreed prior to pour with specialist concrete screed subcontractor. Allow for finished floor to be sealed with selected approved industrial grade clear epoxy sealer applied as per recommended application (submit proposal). The timing of the finishing operation is important in achieving the finish and must be considered in the detailed programming of the works. Contractor to forward proposals for consideration and approval with examples where a similar standard and finish has been achieved.

A 1x1m Control Sample should be submitted by the contractor for approval by the architects as an acceptable match in terms of colour and finish to an agreed original sample. Control samples shall be accompanied by all relevant material such as source of constituent materials: details of mix design and materials proportions and any other information requested in the Drawings and Specifications. The samples, when approved will be the performance standard for approval for all subsequent work. The contractor should ensure samples are presented for inspection in good time to allow for approval and for resubmission of rejected samples if requested. The following sample shall be made available for approval before proceeding with any additional work: sealer

FLOATING CONSTRUCTION**A. Separating layer:**

- Type: Polyethylene sheet minimum 125 micrometres thick (500 gauge).
- Installation: Lay over insulation and turn up at perimeter abutments. Lap 100 mm at joints.

B. Installation: Set securely into screed to exact finished level of floor. Extend joints through to substrate.

- Secure fixing to substrate: To manufacturer's recommendation.

SLIP RESISTANCE TESTING OF WEARING SCREEDS**1. Test:**

- To BS 7976-1, -2 and -3 using a TRL Pendulum.
 - Make arrangements for test to be witnessed/ certified by: Contract Administrator •
- Report: Submit. Include slip resistance values in the wet and dry states.

2. Components:

150mm thick power floated concrete screed (concrete and reinforcing as per engineer's specification) as per Concrete Clause 509.

500-gauge polythene separation layer. Polythene sheet not less than 125 micron/500 gauge.

50mm Sand Blinding as per Concrete Clause 509

225mm Granular Fill (Hardcore) to SR 21:2016 Annex E (or depth required to bring from formation/ reduced levels to underside of blinding) as per excavation and Loose Fill Clause 307.

509 CONCRETE APRON: Floor Finish FF-05

Exposed Aggregate Apron, 10 - 40mm, rounded, flat, river pebble aggregate. Selected approved aggregate to be evenly seeded into poured concrete, tamped, trowelled and exposed by power-washing having applied suitable surface retarder. See Specification for further information. A 1x1m Control Sample panel is required. Detailed CEWMPs and RAMs required.

510 CONCRETE PATHS – RAMPED: Floor Finish FF-05

Exposed Aggregate, 10 - 40mm, rounded, flat, river pebble aggregate. Selected approved aggregate to be evenly seeded into poured concrete, tamped, trowelled and exposed by power-washing having applied suitable surface retarder. See Specification for further information. A 1x1m Control Sample panel is required. Detailed CEWMPs and RAMs required

511 TEXTURED CONCRETE STEPS:

Fiamma Alba with Milazzo Visibility Contrast Strip or similar approved 600x400x50mm 3 no. thick square edged precast concrete flagstone (tread and riser) on Steintec mortar or similar approved on concrete substrate to engineer's specification. steps to the southern & eastern perimeters of the building. A 1x1m Control Sample panel is required.

512 FLOOR AND FOUNDATIONS TO EXTERNAL PLANT ROOM:

150mm Concrete Slab with Exposed Aggregate, 10 - 40mm, rounded, flat, river pebble aggregate. Selected approved aggregate to be evenly seeded into poured concrete, tamped, trowelled and exposed by power-washing having applied suitable surface retarder. See Specification for further information. Sample panel required. Detailed CEWMPs and RAMs required.

As per layout and detail drawings and built as per External Site Development Works Clause 407. Concrete type as per Engineer's specification and Architects Detailed Drawings. Finish to correspond to SR3 Utility Standard.

513 CONCRETE FINISHES:

513.01 CONCRETE FINISH: CON-01

Exposed Aggregate Concrete Wall Finish (Vertical) Specification

Cast-in-situ concrete walls with an exposed aggregate finish achieved via form-applied chemical retarder and high-pressure water washing.

Concrete Mix: Minimum strength C30/37 (as per structural engineers' specification). Use a consistent source of cement and aggregates to avoid colour banding.

Aggregate: 10–20mm Rounded River Stone. Aggregate should be well-graded to ensure a "dense" look once exposed.

Surface Retarder: A high-tack, Medium Etch chemical retarder designed specifically for vertical formwork

Formwork: New, clean, non-absorptive phenolic-faced plywood or steel shutters. All joints must be sealed with foam tape to prevent grout leakage

Retarder Application: Apply the retarder evenly to the internal face of the shutters using a roller or spray at the manufacturer's recommended rate. Allow to dry completely (typically 1–4 hours) before fixing reinforcement or pouring concrete.

Pouring: Place concrete in 300mm–500mm layers. Vibrate thoroughly to ensure aggregate is pushed against the shutter face but avoid touching the shutter with the vibrator poker to prevent "scouring" the retarder.

Striking: Remove shutters between 12 and 24 hours after the pour, depending on ambient temperature. Do not leave shutters on too long, or the retarder will lose effectiveness.

Power Washing: Immediately upon striking the shutters, wash the "soft" surface paste away using a high-pressure water jet (minimum 2,000–3,000 PSI).

Consistency: Work from the top down. Keep the nozzle at a consistent distance (approx. 300mm) and angle to ensure an even depth of exposure across the entire wall.

Clean Up: Wash all slurry away from the base of the wall before it hardens to prevent staining the footing or surrounding pavement. Ensure fully detailed CWMP in place to prevent any runoff into water courses.

Wash down with a 10% muriatic acid wash to remove any residual cement film from the surface. Apply a clear, breathable UV-stable silane/siloxane sealer once the concrete has cured (min. 28 days) to protect against freeze-thaw and organic growth.

Mock-up: A Reference Panel (minimum 1m x 1m) must be produced using the exact mix, retarder, and washing pressure intended for the final work. This sample panel shall serve as the Benchmark Standard for colour, aggregate density, and depth of etch.

513.02 CONCRETE FINISH: CON-02**Polished Concrete Wall Finish (Horizontal & Chamfered) Specification**

Horizontal and chamfered elements of cast-in-situ concrete walls, benches and planters to be mechanically diamond ground and polished to achieve a smooth, high lustre matt sheen and durable finish.

Mix Design: Minimum C30/37 (or 4,000 PSI) with a high cement content to ensure a dense matrix.

Consistency: The wall top must be cast monolithically with the wall or and be perfectly level.

Compaction: High-frequency vibration is critical at the top of the pour to eliminate "bug holes" and air pockets that would appear as pits after grinding.

Initial Finish: Trowel the surface to a smooth, flat finish. Do not "over-trowel" or burnish.

Mechanical Grinding & Polishing Sequence

The contractor shall use planetary or hand-held diamond grinders with integrated HEPA vacuum dust extraction.

Step 1: Initial Grind (Coarse)

Grit: 30/40 grit metal-bond diamonds.

Goal: Remove the surface laitance (cream) to expose the desired level of aggregate i.e "Salt and Pepper"

Step 2: Transitional Grind (Medium)

Grit: 80 grit metal-bond followed by 120 grit ceramic/hybrid bond.

Goal: Remove the visible scratches left by the coarse diamonds.

Step 3: Grouting (Pore Filling)

Apply a polyvinyl acetate (PVA) or epoxy-based grout over the entire surface. Work the grout into all pinholes and micro-pits using a steel trowel. Allow to cure before proceeding.

Step 4: Honing (Fine)

Grit: 200 grit resin-bond diamonds.

Goal: Remove excess grout and begin the "honing" process for a matte sheen.

Chemical Treatment & Sealing

Densification: Apply a Lithium Silicate densifier (e.g., PROSOCO LS or Husqvarna Hiperhard) after the 200-grit stage. This reacts with the free lime to harden the surface and increase stain resistance.

Stain Protection (Sealer):

Apply two coats of a solvent-based penetrating micro-sealer (e.g., SR2 or Pentreat 244).

Finish: Natural/Matte

Requirement: The sealer must be UV-stable and non-yellowing for outdoor/exposed applications.

Edges and Details

Arris/Chamfer: All external edges must be ground to a 2mm–5mm chamfer or "pencil round" to prevent chipping.

Mock-up: A Reference Panel (minimum 1m x 1m) must be cast on-site using the approved mix and formwork. Once approved, this serves as the "Control Sample" for all subsequent pours

513.03 CONCRETE FINISH: CON-03

Architectural Grade Visual Quality Concrete**1. Scope & Finish Standard**

- **Surface Class: con-03 (Architectural).** The surface must be dense, uniform in colour, and free from grout loss, honeycombing, or physical damage.
- **Physical Characteristics:**
- **Blowholes:** Maximum diameter 3mm; frequency not to exceed 0.1% of the surface area.
- **Step/Abrupt Changes:** Maximum 3mm at formwork joints.
- **Flatness:** Maximum 3mm deviation over a 3m straight edge.

2. Mix Design (Coastal Exposure XS1/XS3)

To prevent chloride ingress while maintaining a high-end visual tone:

- **Binder:** Use a blend of **CEM I + 50% GGBS** (Ground Granulated Blast-furnace Slag). This provides a lighter "off-white" aesthetic and superior resistance to sea-salt corrosion compared to pure OPC.
- **W/C Ratio:** Strictly capped at **0.40** to ensure a low porosity, "closed" surface.
- **Aggregates:** Non-reactive, well-graded crushed limestone or granite. Marine-dredged aggregates are **prohibited** to avoid chloride contamination.
- **Admixtures:** High-range water reducers (polycarboxylates) to ensure high workability without increasing water content.

3. Formwork & Liners

- **Panel Material:** New, non-absorptive, **film-faced birch plywood** or steel shutters. Reused panels must be inspected for "ghosting" or scarring.
- **Jointing:** All joints must be sealed with **compressed foam gaskets** or structural tape to prevent grout leakage, which causes "sandy" edges.
- **Tie-Holes:** Symmetrical grid layout. Use **stainless steel tie-cones** or architectural plastic plugs, recessed 20mm and patched with a matching mortar.
- **Release Agent:** Clear, non-staining **chemical release agent** applied in a thin, uniform film. Avoid oil-based agents that cause yellowing or surface mottling.

4. Execution & Protection

- **Compaction:** High-frequency internal vibration. "Re-vibration" of the top 500mm is required to eliminate air pockets (bug holes) that migrate to the surface.
- **Curing:** Use clear, non-degradable curing membranes or polythene sheeting for at least **7 days**. Rapid drying in coastal winds will cause "crazing" (fine surface cracks).
- **Post-Stripping Treatment:** Apply a **Silane/Siloxane hydrophobic impregnation** (invisible) to the cured surface. This creates a "beading" effect against sea spray without changing the concrete's matte appearance.

5. Benchmarking

- **Mock-up: A Reference Panel (minimum 1m x 1m)** must be cast on-site using the approved mix and formwork. Once approved, this serves as the "Control Sample" for all subsequent pours

CAST IN ITEMS:

As the building is to be constructed with exposed concrete walls and soffit, with no ceilings/ceiling voids, all building services installations, fittings and containment are to be cast into the walls and soffit. Their installation will therefore require particular attention to neatness and workmanship. Any exposed external and internal metallic parts are to be made of marine 316 stainless steel or any other

material that has been approved in writing by the ER and has been confirmed as appropriate for a seaside location. (Marine-Grade)

There are no surface mounted cabling or pipe work apart from the plant rooms. All services are to be installed prior to pouring concrete walls/soffits/slabs with wiring being run through PVC conduit to allow for future upgrading / removal and replacement of damaged wires. All conduits, pipes, ducting to be securely capped where the exit the face concrete element they are contained in order to prevent concrete entering and blocking same. All spurs, sockets and other items that are located on exposed concrete finishes are to be flush mounted with allowances made for casting in of all required back boxes.

514 COPINGS TO LOW LEVEL AND SCREEN WALLS:

(As per detail drawings)

515 PRECAST CONCRETE UNITS:

1. **Precast Concrete Units:** Precast units as hereunder as per Engineer's drawings and Specification to be concrete waterproofed in the case of thresholds, cills, headsets, copings, etc. cast in well-oiled moulds and finished fine on exposed faces with 20 mm homogeneous cast facing of 2½:1 washed sand and cement except where specified "rough finish" where facing is to be omitted and surface left rough for plastering. Cover to reinforcement to be 40 mm.
2. **Copings:** Include for returned ends to copings. Finished surfaces to be free from air or water voids and all arises to be true and even. The Detailed Drawings are to be followed accurately. Copings to be feathered edge waterproofed pre-cast pigmented concrete. Pigmentation to match mortar in associated wall. Samples to be submitted to ER for approval prior to fabrication proceeding. ER to provide colour range for samples. A Control Sample should be submitted by the contractor for approval by the architects as an acceptable match in terms of colour and finish to an agreed original sample. Control samples shall be accompanied by all relevant material such as source of constituent materials: details of mix design and materials proportions and any other information requested in the Drawings and Specifications. The samples, when approved will be the performance standard for approval for all subsequent work. The contractor should ensure samples are presented for inspection in good time to allow for approval and for resubmission of rejected samples if requested.
3. **Window and Door Lintels:** As per Engineer's drawings and Blockwork Clause 602.22 Precast prestressed concrete lintols shall comply with IS EN 845-2:2013+NA: 2013 (as amended).

516 MOVEMENT JOINTS IN KERBS AND PAVING:

1. Movement joints in kerbs and paving shall be formed centres not exceeding 3600mm in either direction.
2. The joints shall comprise a double thickness of bituminous roofing felt. The jointing material shall be laid straight, set truly vertical at right angles to the kerbing and shall extend the full depth of the concrete. It shall be neatly cut off at surface level, and the surface of the concrete shall be carefully finished to the same level on each side of the joints.

600 BLOCKWORK AND BRICKWORK:

601	CODES AND STANDARDS
602	MATERIALS
603	BLOCKWORK AND BRICKWORK STANDARDS
604	QUALITY CONTROL
605	PREPARATIONS – STORAGE
606	MORTAR MIXES
607	MIXING
608	LAYING BLOCKS AND BRICKS GENERALLY
609	RISING WALLS GENERALLY
610	CAVITY WALLS
611	BUILT IN COMPONENTS
612	DAMP PROOF
613	MOVEMENT JOINTS
614	ELECTRICITY, TELECOMS AND GAS SUPPLY METER BOXES

601 CODES AND STANDARDS:

1. **Building Regulations:** The installation shall comply with the requirements of the Building Regulations & in particular with TGD Part 'A' Structural, TGD Part 'D' Materials and Workmanship.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. Please note that sections in this specification contain clauses which may not be required or may be covered by Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the Engineer.

602 MATERIALS

1. **Slate Cavity Closer at Eaves:** Close tops of cavities with a course of fibre cement slates firmly bedded in mortar (Slate as per Roof Coverings Clause: 902.1)
2. **Proprietary Cavity Closer:** Propriety insulated cavity closers shall be constructed from fire resisting materials and comply with B.S. 476-20:1987: *Fire tests on Building Materials and Structures* and must achieve a minimum of 1 hour fire resistance before failure. All Insulated cavity closers/barriers shall allow for the complete closing of cavity wall voids at areas shown on the general detail drawings, leaving no passage for fire and smoke to travel past. Cutting and storage of all insulated cavity closers/barriers shall be to the manufacturer's recommendations. Cavity closer to have a core of premium performance rigid thermoset modified resin insulant with a thermal conductivity (λ) value of 0.022 W/mk and a thermal resistance "R" of not less than 0.45 (m² K/W).
3. **Proprietary Movement Joint-External:** As per detail drawings. SS movement bead suitable for use with 22mm render as per Finishes Clause 1202.7.1. Application and installation of plaster movement beads should be in accordance with B.S. EN 13914-1:2016, *Design Preparation and Application of external rendering and Internal Plastering*. Fixed using stainless steel nails (complying with BS 12021:2002, Specification for Nails: Steel Nails) @ a maximum of 600mm apart. 10mm vertical joint in blockwork to be filled with expansion joint filler as per Clause 602.36, and finished with a exterior flexible sealant as per Clause 602.32.

4. **Exterior Sealant for Expansion Joints:** A two-component gun grade, cross linking polysulphide based elastic sealant for vertical expansion joints. Conforms to B.S. EN ISO 11600:2003 (+A1:2011) Type F, *Building Construction Jointing Products*. Excellent adhesion non-sag in vertical joints. Good chemical resistance. Permanently elastic – Movement capacity $\pm 25\%$ (ASTM C719) Shore–A Hardness ~ 25 (ASTM C661). To be applied to vertical movement joints as per Manufacturer's instructions where required use masking tape to protect surfaces tool off with a spatula to form a slightly concave profile. Filler as per Clause 602.36. Colour to be selected by Architect.
5. **Joint Sealant for Pointing:** Joint sealant for pointing around frames shall be a one-part gun applied silicone sealant complying with B.S. EN 11600:2003(+A1:2011) Type F, *Building Construction Jointing Products* and Clause 602.35. Colour to be selected by Architect and the sealant shall be suitable for over-painting.
6. **Bedding Mastic:** Mastic for bedding of frames shall be gun applied synthetic rubber mastic with gap filling properties of approved manufacture and shall be compatible with the pointing sealant as per Clause 602.33.
7. **Sealants Generally:** All sealants shall be suitable for the purpose and location and shall be compatible with adjoining substrates and surface finishes shall be in accordance with B.S. 6213:2000 (+A1:2010), *Selection of Construction Sealants* and be in compliance with B.S. 6093:2006 (+A1:2013), *Design of Joints and Jointing in Building Construction*. Ensure that surfaces are dry, clean and free from dust, dirt and loose material. Where necessary provide sealant manufacturers recommended primer. Install all joint fillers, back-up strips and bond breakers as required as per Clause 602.36. The sealant shall be applied evenly to the joints/ junctions ensuring proper adhesion and finished neatly.
8. **Expansion Joint Filler:** Expansion joint filler shall be 13x100mm thick bitumen impregnated fibre board or 15 x 100mm - Easily compressible material – flexible cellular polyethylene unless otherwise shown on drawings and installed as per Clause 602.35.
9. **Rockwool Fire Barrier Systems to Party Walls:** As per Clause 613, Roof Coverings Clause 908 and Energy Clause 1003.7.
10. **Proprietary Fire / Acoustic Barrier System to Party Walls:** Proprietary fire barrier systems to party walls shall be of approved design and manufacture and shall carry an appropriate Agreement Certificate or a Certificate issued by the Fire Research Establishment (U.K.). To consist of a strip of semi-rigid mineral wool insulation, size 1200mm long x 520/ 260mm wide x 150mm thick (to suit cavity) bonded to black polyethylene D.P.C. and installed vertically at party wall junction for full height of cavity to provide an acoustic, smoke and fire seal. Fire properties of Euroclass A1. Qualified acoustic performance to meet Regulation E1 of Building Regs Part E. Tested utilizing the principles of B.S. 476-20 and B.S. EN 1266-4. Thermal conductivity (λ) – 0.035 W/mk.

603 BLOCKWORK AND BRICKWORK STANDARDS

(Refer To Civil/ Structural Specification)

604 QUALITY CONTROL

(Refer To Civil/ Structural Specification)

605 PREPARATIONS – STORAGE

(Refer To Civil/ Structural Specification)

606 MORTAR MIXES

(Refer To Civil/ Structural Specification)

607 MIXING

(Refer To Civil/ Structural Specification)

608 LAYING BLOCKS AND BRICKS GENERALLY

(Refer To Civil/ Structural Specification)

1. **New North Gable:** Selected approved brick (215x65x102.5mm) in Flemish bond as shown with queen closers to allow for quoins as shown. Brick to form outer leaf of new cavity wall (to engineer's detail). Brick to be supported on relieving angle to engineer's detail. Brick to be laid in lime mortar with a mortar mix of 1-part Secil or equivalent NHL 3.5 to 2.5 parts washed sharp 5mm down sand. Joints to be bag rubbed as per rubblestone facing at ground floor level and existing rubblestone east and south facades.
2. **Wall Type 6: Selected approved stackbonded brick:** Staffordshire Blue Brindle smooth lbstock or equivalent with horizontal bullnosed specials to all corners as shown. Flush, precast capping stones to parapet over to match selected approved colour of chosen mortar. Ist course to be set out such that there are no cut bricks. Contractor to submit 3no. sample panels for approval.
3. **Fire Resistance:** Cavities to be closed and party walls to be fire-proofed as per Clause 613.
4. **Acoustic Resistance:** Plaster thickness as per Finishes Clause 1206.4. Proprietary fire/ acoustic barrier system to party walls as per Clause 602.38.

609 RISING WALLS GENERALLY

(Shall be built as per Architects & Engineers drawings and Civil/ Structural Specification)

610 CAVITY WALLS

(Shall be built as per Architects & Engineers drawings and Civil/ Structural Specification)

1. **Weep Holes:** Form weep holes at intervals not exceeding 900 mm in vertical joints at the base of the cavity.
2. **Wall Ties:** As per Clause 602. Fit universal insulation retaining clip, diameter 85mm /polypropylene to ties to keep insulation batts in position. Wall ties to be installed with drip downward. Wall ties to be installed as work progresses.
3. **Insulation:** As per Energy Clause 1003.3. Insulation to be installed in accordance with manufacturer's instructions. Fixed firmly against inner leaf of blockwork and held in place with wall ties as per Clause 602. Insulation should be laid with a broken joint and close butted with no gaps (where used, tongue and grooves shall be fully engaged). First rows of insulation board to be supported on minimum of two wall ties per board. All insulation shall be fixed true and vertical. Ensure that a minimum 40mm residual cavity width remains. Care to be taken to ensure cavity is maintained and kept free of debris, mortar, etc as work progresses.
4. **General Labours:** (Refer To Civil/ Structural Specification)
5. **Jambs with Open Cavity:** Close cavity with Insulated cavity closer as per Clause 602.30 and vertical D.P.C. as shown on drawings.
6. **Finishes:** See Finishes Clause 1206 – Internal Plastering, Finishes Clause 1207 – External Plastering and Energy Clause 1005 for Airtightness.

611 BUILT IN COMPONENTS

1. **Built in Components:** (Refer to Civil/ Structural Specification)

2. **Window Cills:** As per detailed drawings and Clause 602.
3. **Lintels:** As per detailed drawings and Clause 602 and 602.
4. **Concrete Threshold – Level Access:** As per detail drawings and Concrete Clause 511.1. Level access platform/ path to finish flush with F.F.L. and incorporating a drainage channel as per Clause 611.5.
5. **Level Access Threshold Drain:** Level threshold drainage system, stainless steel brushed finish gratings suitable for pedestrian traffic. Up to 1000mm wide suitable for use as multiple units. Manufactured from Polypropylene. To be supplied with end caps and outlet connectors, 100mmØ PVC-U vertical outlet connector to allow for connecting via a 100mmØ rod-able PVC-U foul air-trap to main drainage pipework. To be compliant with Part M of Building Regulations and system to be certified to load Class A 15. To I.S. EN 1433:2002, *Drainage Channels for Vehicular and Pedestrian Areas*. To be installed as per Manufacturer's instructions.
6. **Concrete Threshold – Stepped:** As per detail drawings and Concrete Clause 511.2. Concrete path to be minimum 150mm/ 225mm below F.F.L.
7. **Concrete Threshold – Full Height Window:** As per detail drawings and Concrete Clause 511.3. Concrete path to be maximum 150mm/ 225mm below F.F.L.

612 DAMP PROOF COURSES

Shall be built as per Architects & Engineers drawings and Civil / Structural Specification

613 MOVEMENT JOINTS

Shall be built as per Architects & Engineers drawings and Civil / Structural Specification

1. **Formation of Vertical Joints:** As per detail drawings and Clause 600.31,32 and 600.34,35. Movement joints in walls shall be vertical on internal and external leafs. Where terraces exceed three houses, provide a movement joint to front and rear walls at the party wall of every second house or 12m c/c whichever is less.
2. **Sealing Joints:** Seal joints as per Clause 602.35. Fit compressible material as per Clause 602.36. Seal joints with approved sealing compound as per Clause 602.32. Provide uPVC external render expansion joint as per Clause 602.31 and all in accordance with the Manufacturer's written instructions.

614 ELECTRICITY, TELECOMS AND GAS SUPPLY METER BOXES

1. **Electric Supply Cabinet:**
As per drawings and Electricity Supply Board Networks recommendations/ specifications.
2. **Telecoms Supply Cabinet:**
As per drawings and 'Eir' recommendations/ specifications.
3. **Gas Supply Cabinet:**
As per drawings and Gas Networks Ireland recommendations/ specifications.

700 WOODWORK & PARTITIONS:

701	CODES AND STANDARDS
702	MATERIALS: ALL TIMBER GENERALLY FOR CARPENTRY AND JOINERY
703	NATIVE TIMBERS
704	QUALITY CONTROL
705	MOISTURE CONTENT OF TIMBER
706	DIMENSIONS
707	TOLERANCES
708	PREPARATION
709	PRESERVATION TREATMENT
710	CARPENTRY – ERECTING AND FIXING TIMBER
711	EXTERNAL TIMBER CLADDING
712	JOINERY – GENERALLY
713	JOINERY – COMPONENTS

701 CODES AND STANDARDS:

1. **Building Regulations:** The installation shall comply with the requirements of the Building Regulations & in particular with TGD Part 'A' Structural, TGD Part 'D' Materials and Workmanship.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. Please note that sections in this specification contain clauses which may not be required or may be covered by Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the Engineer.

702 MATERIALS: ALL TIMBER GENERALLY FOR CARPENTRY AND JOINERY:

1. **Timber / Glulam timber for Carpentry:** (Refer to Civil/ Structural Specification)
2. **Timber for Joinery:** To be first quality kiln dried timber free from sap, large, loose or dead knots, shakes, waney edges or other imperfections in accordance with B.S. EN 942:2007 – *Timber in Joinery, General Requirements* and to B.S. 1186-2:1988 B.S. 1186-3:1990 – *Timber for and Workmanship in Joinery*.
 - Softwood for Joinery: To be first quality kiln dried Red Deal (Scots Pine).
 - Softwood for Flooring: To be first quality kiln dried White Deal.
 - Hardwood for Joinery: To be first quality kiln dried Iroko/ Teak.
 - 12mm Burnblock or equivalent approved Class O Fire Rated Grade BB Birch
3. **Other Wood Products:**
(Refer To Civil/ Structural Specification)

- A. **Plywood:** Exterior Grade (Refer to Civil/ Structural Specification)

Plywood for internal and external use shall comply with B.S. EN 636:2012+A1:2015-Class 3 - *Plywood for use in exterior conditions*. Plywood to have a bonded quality according to the requirements in B.S. EN 314-2:1993 – *Plywood bonding quality requirements*.

- Individual plies are fire treated prior to being dried, bonded and pressed into plywood. Panels to be certified structural and CE stamped at original point of manufacture. Panels to be tested and certified for both resistance and reaction to fire (K1 and K2 test). Certification to include:

- EN 13501-1 Class B – s1, d0 K1 K2 10 EN 14135 Resistant's to Fire K1 K2 K10

EN 45545 – 2 R10, HL1/HL2/HL3 Hazard Level Flooring

EN 45545 – 2 R1, HL1 / HL2 Hazard Level Vertical Surfaces

ISO 5659 – 2 Smoke Generation

ISO 9239 – 1 Radiant Heat

BS 476 Part 6 1989 + A1 209 (Fire Propagation)

BS 476 Part 7 1997 (Surface Spread of Flame)

BS 6853 Annex 3.2 1999 + Amd 1 (Toxic Fume)

BS 6853 Annex D.8.4 1999 + Amd 1 (Smoke Density Panels) BS 6853 Annex D.8.4 1999 + Amd 1 (Smoke Density Flooring)

- Plywood panels to comply with Fire Certificate.
- Visible surfaces to receive 3 x no.s coats of selected Osmo Polyx-Oil or equivalent approved. Allow for first two coats to be tinted as selected and a final clear matt finishing coat as per suppliers' recommendations and architects' approval. 3 x no.s sample panels to be provided.

4. External Timber:

- External Timber - Iroko/ Teak (Not Applicable).

A. **Oriented Strand Board (OSB3):** (Refer to Civil/ Structural Specification)

A highly engineered, moisture resistant load bearing Oriented Strand Board for external use, complying with B.S. EN 300 - *Oriented Strand Boards (OSB) – Definitions, Classification and Specification*.

B. Medium Density Fibre Board (MDF):

Medium Density Fibre Board (MDF) shall comply with B.S. EN 622-1:2003 – *Fibreboard Specifications*. Moisture resistant Medium Density Fibreboard (MDF.H1) shall be used internally as defined in B.S. EN 622-5:2009 – *Fibreboard Specifications*.

C. **Blockboard and Chipboard:** Blockboard and Chipboard shall not be used unless specified.

703 NATIVE TIMBERS:

Refer To Civil/ Structural Specification

704 QUALITY CONTROL:

Refer To Civil/ Structural Specification

705 MOISTURE CONTENT OF TIMBER:

Refer To Civil/ Structural Specification

Moisture Content:

1. Structural/ Glulaminate / Carcassing Timber: (Refer to Civil/ Structural Specification)
2. External Joinery: 17% (+/- 2%)

3. Internal Joinery: 13% (+/- 2%)

All timber shall be free from surface moisture at time of treatment with preservative. All timber on site shall be subject to inspection for moisture content by the E.R., Clerk of works.

706 DIMENSIONS:

Refer To Civil/ Structural Specification

707 TOLERANCES:

Refer To Civil/ Structural Specification

708 PREPARATION:

N/A

709 PRESERVATION TREATMENT:

Refer To Civil/ Structural Specification

710 CARPENTRY – ERECTING AND FIXING TIMBER SECTIONS:

Refer To Civil/ Structural Specification

711 EXTERNAL TIMBER CLADDING:

External Timber Cladding to the exterior of The Pumphouse building to be:

50 X 50mm treated ACCOYA horizontal battens with stained finish to er approval & samples on

35mm X 50mm treated ACCOYA Vertical Battens at 300mm centres on

Bituminous / Waterproof Layer applied To

25mm Sand & Cement with Trowelled Smooth Finish On

215mm Blockwork wall with

25mm Sand & Cement with trowelled smooth finish to the internal side

All battening is to be secret fixed using stainless steel slim line torx head screws all screws to align vertically. All Vertical timber battens to be painted black (3 no coats high quality external grade timber paint). On site sample panel 1 x 1m to be available for ers approval

712 JOINERY – GENERALLY:

Refer To Civil/ Structural Specification

1. **Timber for Joinery:** As per Clause 702.2

2. **Quality of Workmanship:**

- Workmanship shall generally be in accordance with B.S. 1186-2:1988 – Timber for and Workmanship in Joinery, Specification for Workmanship and B.S. 1186-3:19901988 – Timber for and Workmanship in Joinery, Specification for Wood trim and its fixing and tolerances to be generally in accordance with B.S. 4787-1:1980 – Internal and External Doorsets, Door Leaves and Frames.

- Any timber splitting or opening to the extent of one millimetre within the Contract Maintenance Period shall be replaced. All joinery work is to be properly wrought and framed together and finished in a workmanlike manner. All framing to have mortise and tenon joints. Tonguing to be cross-grained. Work is to be prepared and framed up as soon as possible after the order to commence work is given and stored dry under cover, so that the air will circulate freely around it. No work is to be glued or wedged up until required for use, unless otherwise

specified or directed. All joinery is to be finished die square, and when in work is to hold the full dimensions shown on drawings. No piecing, lengthening or unnecessary joining will be permitted. Work exposed to view is to be wrought and that exposed to weather is to be put together with an approved silicone sealant.

3. **Construction as Shown:** Construct joinery as shown on the drawings unless otherwise approved. Where details of joints are not shown, use the same details shown for similar position of use. The drawings show the final appearance of the work in outline rather than the complete construction. Obtain approval of proposed construction details before starting fabrication.
4. **Arises:** Slightly round sharp arises on exposed and semi-concealed surfaces.
5. **Angle Joints:** Mitre exposed angle joints unless otherwise indicated.
6. **Trim Work Generally:** Install trims where possible in un-jointed lengths between angles or in straight runs. Mitre exposed angle joints unless otherwise indicated.
7. **Scribing:** Scribe timber sections to adjoining uneven surfaces unless other treatment is approved.
8. **Screw Fixing/ Heads:** Provide matching clearance holes in addition to lead holes for screws. Countersink screw heads not less than 2mm below surfaces of timber sections in trim work to allow for stopping.
9. **Pelleting:** Countersink screw heads or bolts not less than 5mm below timber surfaces which are to be clear finished. Cut pellets from similar grained matching timber and glue in place with grain aligned. Finish flush with surfaces.
10. **Adhesives:** Apply adhesive in accordance with the manufacturers' written instructions, and within any stated shelf life. Maintain mating surfaces in intimate contact to ensure adhesion within the setting time.
11. **Adhesive Staining:** Where work is not to be painted, prevent discolouration of exposed surfaces due to staining by adhesives.
12. **Dowels:** Use dowels of hardwood other than beech, grooved for adhesive and sized for a driving fit.
13. **Protection:** Provide temporary protective covering for joinery during the construction period, as necessary

713 JOINERY – COMPONENTS:

1. **Skirting:**
150mm high primed and painted MDF to BS EN 622-5:2009 or equivalent with square sealed and polished exposed edges in the running length, plugged, screwed and pelleted to recess at the base of drylined walls and slabbed partitions, flush with projecting plaster slab to show a 10mm shadow gap as per Sheet No's 510 & 550
2. **Internal Doors:** See Door Schedule and Clause 803.
3. **Window Boards:**
40mm thick white oiled hardwood window board with pencil rounded edges on and including 3 No. galvanised steel angles screwed to existing masonry. Include for notching insulated drylining / lime rendered cork board over same in the running length; complete with 25mm thick "Kingspan" or equivalent high-density foil backed insulation or 25mm lime plastered cork board; scribe all to reveals and seal to window and plastered reveals with double sided foam draft excluding tape and silicone mastic.

800 DOORS, WINDOWS, GLAZING AND IRONMONGERY:

- 801 CODES AND STANDARDS
- 802 DOORS
- 803 HIGH LEVEL PARTITION GLAZING

801 CODES AND STANDARDS:

1. **Building Regulations:** The installation shall comply with the requirements of the Building Regulations.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. Please note that sections in this specification contain clauses which may not be required or may be covered by Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the Engineer.
4. EVIDENCE OF PERFORMANCE:

Provide independently certified test evidence that all specified windows (High Level Partition Glazing), Doors and sealants along with other variants of components comply with specified performance requirements.

SITE DIMENSIONS

Allow for site dimensions to be taken and incorporated into fabrication drawings before starting production of the windows and associated fittings. Screen sizes shown on drawings are based upon the assumption that main steel frame and block work to the building is set out to a high degree of accuracy. To take account of building tolerances it may be necessary to re-size screen and fittings and it is the Contractor's responsibility to ensure these revisions are agreed with the Employers Representative before shop drawings are produced.

SHOP DRAWINGS

A full set of shop drawings are to be completed and issued to the design team for approval, which show all interfacing details with the building structure. These details should indicate what aluminium system is being used and the location where it is being used and that no risk of cold bridging exists. Thermal analysis software such as Bisco or Flixo is to be used to confirm the thermal efficiency of all interfacing details, aluminium profiles and glazing materials. All isolators and barriers are to be called up on these drawings, which are being used to prevent bimetallic corrosion. All the details are to be fully labelled, dated and revisions noted and approval of the design team should be received prior to works commencing.

CONTROL SAMPLES:

After finalizing all details, prepare a sample Glazed Panel as part of the quantity required for the project, and obtain approval of appearance, detailing and workmanship by the Employers Representative before proceeding with manufacture of the remaining quantity.

802 DOORS:

Refer To Door Schedule DRW 8000 & 8001 & 8002

General:

External Doors: 14No.

Accoya SHEATED DOOR & FRAME mortice and tenon construction. Stained sealed and varnished to selected finish. Door leafs to be minimum 44mm thick. Doors shall be fixed in accordance with manufacturer instructions and the standard specification section B with a min 4 no.100 mm x 76 mm x 3 mm stainless steel ball bearing butt hinges, Hi Load 120 kg weight capacity, tested to BS EN 1935 class 13 grade 304 / certifier - CE Certified / Grade 316 c/w 25-year guarantee. Selected Internal doors are to be ½ hour fire rated to comply with BS 476, including intumescent strips and smoke seals; Joinery manufacturer shall produce a relevant Fire Test Certificate acceptable to the fire officer and in accordance with the Fire Report requirements for the full door assembly (including ironmongery and associated sidelights where applicable).

All internal doors to be ½ hour fire doors certified as complying with requirements of B.S. 47622:1987 – *Fire tests on Buildings and Structures*. A sample of each different type of door set shall be submitted to the Architect for approval prior to any being delivered to the site. For Ironmongery refer to Doors/ Ironmongery Clause 803.

The above specification is to be read in conjunction with the M&E specification.

Glazing:

- 20mm single glazed unit with frosted opaque glazing.
- Safety glass to meet the requirements of part K of the building regulations.
- All glazing units certified to B.S. EN 1279 Parts 2 & 3.
- Security PAS24:2012
- Operation and Strength B.S.6375-2:2009
- CE Marking

Hinges: 1½ pairs of medium duty stainless steel butt hinges per internal door. 100mm double pressed steel butt hinge, self-colour steel finish, fixed with 32mm x 12mm gauge countersunk SS. steel wood screws.

Handles: Provide with all mortise sash locks one set of sprung lever action handles and lock plates for front fixings complete with spindle per internal door. Lever locks to be in accordance with the requirements of IS EN 1906:2012. Lock to have a minimum 16 Differs and 2 keys (minimum).

803 HIGH LEVEL PARTITION GLAZING

- To be read in conjunction with Window Schedule DRW 8010 & DRW 7001

A mullion free HIGH LEVEL GLAZING SYSTEM. To be manufactured from 30X30mm extruded Aluminium channel anodised (BLACK), fixed at the top to the underside of the formed channel in the soffit and at the bottom to the blockwork wall, as per manufactures spec & details. Glazing to be Mullion free on either end of each screen with all vertical joints between glazed panels to be frameless with proprietary clear silicone seal / gasket, as per window schedule drw. 8010 and as per manufactures spec & details.

- 12.7mm toughened, single glazed, frosted opaque glazing units
- Glass to meet the requirements of the building regulations.
- All glazing units certified to B.S. EN 1279 Parts 2 & 3.
- Security PAS24:2012
- Operation and Strength B.S.6375-2:2009
- CE Marking
- Declaration of Performance DPI05 gives the essential characteristics of the window in accordance with harmonised standard EN 14351-1:200r + A1:2010

Corrosion resistance testing to meet the requirements of B.S. EN 1670 Class 4 (*Building Hardware Corrosion Resistance Requirements*). Durability 50,000 cycles.

Glazing shall be fully finished, factory assembled in anodized aluminium all as indicated on the drawings and shall be suitable for purpose.

A performance test certificate report or Agrément Certificate shall be supplied for the Glazing detailing the results for air infiltration, water penetration and wind resistance against the required criteria of 300 Pa, 200 Pa and 2000 Pa respectively for compliance with B.S. 6375-1:2009, I.S. EN 12211:2000, I.S. EN 1026:2000 AND I.S. EN 1027:2000.

A Reference Panel (minimum 1m x 1m) Prior to the commencement of manufacture, the Contractor shall submit a sample panel and shop drawings showing detail of sections, assembly and fixings for approval by the Architect / ER. The sample shall in all respects, including finish, be representative of all deliveries and shall be fitted with any and all required ironmongery.

Glazing shall be factory-finished (with frosted opaque glazing, with the approval of the Architect).

The Contractor shall also submit proposals from the manufacturer concerning the continuing availability of spare and replacement items for the purposes of maintenance.

803.01 Test Performance

The glazing system offered must have been fully independently tested for air permeability, water tightness, wind resistance and structural stability to minimum standards.

Reports to be made available upon request.

Extruded aluminium profiles are to be of aluminium alloy 6063 T5 and T6 complying with BS 1474-- BS EN1202-2:2001 / BS EN 755-9:2001

The total installation to be designed to meet the prevailing weather conditions and to be to the Employers Representative approval.

Metallic materials used for bearing devices and hardware shall have at least the equivalent corrosion resistance to BS EN 1670:1998, class 3 when subject to a neutral salt spray test as specified in BS EN 1670.

Glass & Glazing

All glazing Gaskets to be EPDM to BS 4255.

Glazed units unless otherwise specified to be 12.7mm Toughened Laminate Frosted Glass. The glazed units to be manufactured to BS 5713

Safety glass to be to BS 6262 Part 1-7 & BS 6201-Glass in Buildings as well as Building Document N (UK)

All glazing units must comply with the current Building Regulations Document N, BS6262 and systems supplier's instructions.

All vertical joints between glazed panels to be frameless with proprietary clear silicone seal / gasket To comply with BS 5713.

Installation

Glazing and doors must be fixed, plumb and square to the building using fixing lugs or expansion bolts which are corrosion resistant all in accordance with the manufacture's recommendations, Including for all necessary fixing brackets, Flashings, airtight seals, gaskets, fittings etc. Glazing is to be fixed in such a manner so as to transfer all loads back to the building structure. Expansion joints should be constructed so as to take into account movement due to thermal expansion and movement of the building. The total installation to be designed to meet the prevailing weather conditions and to be to the Employers Representative approval. All to be in accordance with BS 8213-4-2007

Drawings

The drawings and details accompanying the tender documents are illustrative only with nominal dimensions. The Contractor shall check all site dimensions and perimeter profiling of existing opes. The manufacturer to prepare complete details for approval by the Employers Representative of the overall design (excluding performance) prior to fabrication.

804 ROOF ACCESS HATCH

Refer Architects DRW 1001

General:

Colour	Black
Finish	Anodized
Material	Aluminium
Shape	Square
Length	900 mm
Width	900 mm
Height	300 mm

Warranty description	Ten year
Fire resistance	Available up to 60+ minutes. Guidance for specification option: For combined Integrity and Insulation (EI), refer to Fire Rated Roof Hatch SRHTB/FR.
Operation	-
Mode	Gas springs - manual.
Control	Gas spring assisted: manual opening, designed to be opened smoothly and easily with secure stay hold-open arm.

The standard roof hatch is suitable for installation on flat and pitched roofs across commercial, industrial, residential, and public sector buildings. To provide safe and compliant means of access and escape to rooftop for routine maintenance, plant servicing, inspection, and emergency egress.

- Safe means of escape and emergency egress in accordance with Approved Document B and BS 9991:2024
- Access to roof terraces, green roofs, and amenity spaces
- Inspection and maintenance access for solar panel arrays
- Personnel access for building envelope maintenance and cleaning
- Access to telecommunications equipment and antenna installations
- Roof access for water treatment facilities, data centres, hospitals, schools, transport hubs, and entertainment venues

The hatch is to be compatible with ladder access (fixed vertical, companionway, and ZIP retractable systems)

Description

Key Specification Highlights:

- Thermally broken aluminium lid and upstand with 75 mm PIR polyisocyanurate insulation achieving 0.26 W/m²K (or 75 mm non-combustible mineral wool at 0.43 W/m²K)
- Gas spring assisted opening to 85° with secure hold-open stay arm and pull handle
- 300 mm insulated kerb upstand with external curb liner and cap flashing fitted as standard
- BRE independently tested: IPX6 water ingress, IP6X dust ingress (UKAS accredited)
- Weathertightness rated to Class A7 per BS EN 12208
- Unbroken double seal to lid for superior air permeability performance
- Acoustic performance available up to 45 dB (consult Surespan for project-specific requirements)
- Fire integrity performance available up to E240 (240 minutes) — consult manufacturer
- Available in mill finish aluminium, anodised, or polyester powder coated (single or twin colour to any RAL)
- Manufactured in the UK to BS EN ISO 9001 certified processes
- Standard sizes from 600 x 600 mm up to 3300 x 1200 mm, plus fully bespoke sizing to any dimension
- Compatible with fixed vertical ladders, companionway ladders, and ZIP retractable ladder systems

Product Overview

To be a premium aluminium roof access hatch engineered for safe, convenient, and compliant rooftop access on flat roof applications. Designed for exceptional thermal performance, weathertightness, and durability as standard — with the flexibility of fully bespoke manufacturing to suit any project requirement.

Construction and Materials

To be manufactured entirely from aluminium and be exceptionally robust. To have 300 mm kerb upstand with an external curb liner and cap flashing, enabling straightforward integration with hot or cold applied roofing membranes on site. All corner joints are fully welded and reinforced for long-term structural integrity. The lid to feature an unbroken double seal system, providing superior resistance to air infiltration and water penetration.

Performance and Testing

To be independently tested by BRE (Building Research Establishment), one of the UK's most respected testing authorities. To achieve IPX6 water ingress protection (tested under UKAS accreditation), confirming robust resistance to heavy rain and powerful water jets. Also to have passed IP6X dust ingress testing, providing complete protection against fine particulate matter — critical for installations in dusty industrial or construction environments. Weathertightness to be tested and rated to Class A7 in accordance with BS EN 12208, representing the highest classification for resistance to wind-driven rain.

Acoustic performance is available up to 45 dB for projects requiring sound attenuation, and fire integrity rating— 60 minutes required

Operation and Safety

The roof hatch to open to 85° via a gas spring assisted operation, providing smooth, controlled opening with minimal user effort. To have a secure hold-open stay arm prevents unintended closure during roof access operations. To have locking options including padlockable external handles (LO4), European deadlocks with thumb turn internal mechanism (LO6), and European deadlocks with dual internal and external key operation (LO7).

The hatch is to integrate seamlessly with the manufacturers range of fixed vertical ladders.

Sizes and Finishes

900 x 900 mm structural Ope in Roof Slabe.

To be Black Aodised aluminium to ERs specified RAL colour.

Compliance and Specification Support

To support compliance with TDG Part B (fire safety),

Part L (conservation of fuel and power),

Part K (protection from falling),

BS 9991:2024 (fire safety in residential buildings), and the Construction (Design and Management) Regulations 2015.

900 ROOF COVERINGS:

- 901 CODES AND STANDARDS
- 902 GREEN ROOF
- 903 TYPE OF COVERINGS

901 CODES AND STANDARDS:

1. **Building Regulations:** The installation shall comply with the requirements of the Building Regulations & in particular with TGD Part 'A' Structural, TGD Part 'D' Materials and Workmanship.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. Please note that sections in this specification contain clauses which may not be required or may be covered by Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the Engineer.

902 GREEN ROOF:

MOY Extensive Green Roof System – or equivalent

1. Description: Extensive Green Roof System.
2. Roof type: Cold Roof
 - 2.1. Substrate: Insitu Concrete designed and constructed strictly in accordance with the specifiers and/or manufacturer's instructions (by others).
 - 2.2. Slope: Finished fall of 1:80.
3. Waterproofing System: Moy Materials Ltd, Unit K, South City Business Park, Whitestown Way, Tallaght, Dublin 24, D24 PE83. T: (0)1 463 3900 / E: info@moymaterials.com.
Refer to applicable MOY NBS/J41 Paralon Antiroot Specification for details on the waterproofing system specified.
4. Thermal insulation: Refer to applicable MOY NBS Specification for details.
5. Protection: Refer to applicable MOY NBS Specification for details.
6. Moisture control layers: MOY 25mm Drainage & Reservoir Layer.
7. Growing medium: MOY Extensive Green Roof Substrate.
 - 7.1. Depth (minimum): 60mm.
8. Vegetation: MOY Pre-cultivated sedum blanket or MOY Wild/meadow flower.
9. Accessories:
 - MOY Aluminium Edge Trims as Clause 420.
 - MOY Inspection Chamber as Clause 430.
 - MOY Non-Penetrating DiaSafe Fall Protection System.
 - Fire Breaks as Clause 440. Performance

902.01 General Design:

1. **Green Roof and Associated features:** Complete the detailed design.
2. **Proposals:** Submit drawings, technical information, calculations and manufacturers literature.

902.02 Maximum permitted green roof loads:

1. **Dead Loads:** Maximum 130 Kg/m².
2. **Requirement:** Restrict site activities to ensure that design loads are not exceeded or submit proposals for temporary supports.

902.03 Root Barrier:

1. **Description:** A polyester reinforced APP modified bitumen waterproofing membrane manufactured using special chemical additives intended for waterproofing green roofs. Manufactured with a sanded upper surface. The lower face is coated with Termotene fusible film which aids unrolling and facilitates torch bonding to various substrates.
2. **Manufacturer:** Moy Materials Ltd.
 - 2.1. **Product reference:** Paralon Antirroot cap sheet.
3. **Material:** Modified bitumen polymer.
 - 3.1. **Thickness:** 4mm

902.04 Protection Layer:

1. **Description:** MOY Protection & Water Storage Fleece is a rotproof multicoloured mechanical protection layer made of 100% synthetic fibres and thermally treated on both sides. A loose laid layer, which can be used in some applications as a separation/cushion layer, or for the protection of the waterproofing layers.
2. **Manufacturer:** Moy Materials Ltd.
3. **Product reference:** MOY Protection & Water Storage Fleece
4. **Material:** Synthetic polyester fibres (PES)
5. **Weight:** 300g.

902.05 Drainage Layer:

1. **Description:** Flow-delay retention board, stepped barrier form, with deep-drawn recessed evaporation vents and water channel system on the underside.
2. **Manufacturer:** Moy Materials Ltd.
 - 2.1. **Product reference:** MOY 25mm Drainage & Reservoir Layer.
3. **Material:** Recycled high-impact polystyrene.
 - 3.1. **Depth:** 25mm.
4. **Infill:** N/A

902.06 Filter Membrane:

1. **Description:** A needle-punched fleece, non-woven polypropylene geotextile used to filter run-off and keep sediments and fine particles from washing out.
2. **Manufacturer:** Moy Materials Ltd.
 - 2.1. **Product reference:** MOY Filtration Fleece.
3. **Material:** Polypropylene.
 - 3.1. **Weight:** 150g.

902.07 Extensive Growing Medium:

1. **Description:** Inert sedum plant growing media, corresponding to requirement from FLL guidelines, supplied in slung bags of 1m³. Spread evenly to a depth of 60mm.
2. **Manufacturer:** Moy Materials Ltd.
 - 2.1. **Product reference:** Extensive growing medium.
3. **Material:** Lightweight extensive roof garden growing media composed of Leca, Sand and Compost to FLL requirements.
 - 3.1. **Depth:** 60mm.
4. **Vegetation coverage (minimum):** 75%.
5. **Range of use:** Extensive lightweight roof soil is a specially tailored mix designed for use on roof gardens.
6. **Porosity:** 25 – 35%.
7. **Dry weight:** approx. $\leq 0.75 \text{ g/cm}^3$.
8. **Saturated weight:** $\leq 1.25 \text{ g/cm}^3$.
9. **Organic matter (LOI):** 3 – 10%w/w.
10. **pH value:** 6 – 8.5.
11. **Water permeability:** $\geq 0.3 \text{ mm/min}$.
12. **Compression factor:** 1.3

902.08 Vegetation Blanket:

1. **Description:** Sedum-mix blankets are grown with 13 different types of Sedum. The plants grow on a coconut fibre carrier and a cultivation substrate.
2. **Manufacturer:** Moy Materials Ltd.
 - 2.1. **Product reference:** MOY Sedum Blanket.
3. **Planting mix:** To be decided by Client/Project Architect.
 - 3.1. **Thickness:** 25-40mm
4. **Vegetation coverage (minimum):** 75%.

902.09 Edge-Retaining Profile:

2. **Description:** Length-adjustable and lockable green roof edge profile and separation board with perforation for drainage, constructed from aluminium.
3. **Manufacturer:** Moy Materials Ltd.
 - 2.1. **Product reference:** MOY Aluminium Edge Trim.
4. **Material:** Aluminium.
5. **Height:** 80mm or 120mm.

902.10 Inspection Chambers:

1. **Description:** To be installed at each rainwater outlet position, with lockable cover, featuring rainwater overflow screen. Wrapped in filtration fleece to prevent fines entering the drainage system. Surrounded by a 300mm band of rounded washed gravel nominal diameter 20mm in accordance with FLL guidelines.

2. **Manufacturer:** Moy Materials Ltd.
3. **Product reference:** MOY Inspection Chamber.
4. **Material:** Recycled Polypropylene.
5. **Size:** 300mm x 300mm. / 400mm x 400mm.
6. **Depth:** 150mm (Extension element available).
7. **Access covers:** with central grating.
8. **Features:** Lockable lid.

902.11 Fire Breaks:

1. **Description:** Rounded washed pebbles nominal diameter 20mm-50mm (fines free), or minimum 40mm thick concrete paving slabs all in accordance with FLL & GRO guidelines. 2. **Material:** Stone pebbles / Concrete paving slabs
2. **Submit proposals:**
3. **Depth (minimum):** 50mm stone pebbles / 40mm concrete paving.
4. **Width (minimum):** 300mm to all perimeters & penetrations, increasing to 500mm at openings (doors, windows, opening rooflights). On large roofs, a 1m wide fire break should be installed at 40 metre intervals across the roof. See GRO guidelines for full details.

902.12 Roof Drainage Outlets:

1. **Description:** Moy Materials Ltd. Cast Aluminium Anti Vortex Outlets
2. **Manufacturer:** MOY Materials Ltd
 - 2.1. **Product reference:** Gravity Outlet AV400.
3. **Material:** Cast Aluminium.
4. **Size:** As specified in drainage calculation.
5. **Fixing:** Mechanically.

902.13 Support Pedestals:

1. **Manufacturer:** MOY Materials Ltd.
 - 1.1. **Product reference:** MOY Adjustable Paving Supports.
2. **Type:** Adjustable.
3. **Material:**
4. **Dimensions:** Various sizes available.
5. **Additional pedestals:** Fixed height paving supports available.
 6. **Accessories:** MOY Paving Slab Levellers.

Execution

902.14 Installation Generally:

1. **Preparation:** Clear all surfaces of debris.
2. **Timing:** After certification of waterproof membrane integrity.
3. **Surface condition:** Visually inspect waterproof membrane, report any damage.
4. **Faults in waterproof membrane:** Report.
5. **Contamination:** Do not use materials detrimental to healthy plant growth.
6. **Storage:** Do not overload.
7. **Point loads:** Avoid.
8. **Outlets:** Do not block.
9. **Outlet grilles:** Installed.

902.15 Adverse Weather:

1. Unfinished work: Secure from damage and wind uplift.
2. Conditions: Do not install or work with frozen materials.

902.16 Installation Generally:

902.16.01 Root Barrier Installation:

1. Joints: Minimize.
 - 1.1. Overlaps (minimum):
2. Upstands: Extend to top of growing medium.

902.16.02 Protection Layer Installation:

1. Joints: Minimize.
 - 1.1. Overlaps (minimum):
2. Upstands: Extend to top of growing medium.

902.16.03 Drainage Layer Installation:

1. Extent: Continuous over entire roof area.
2. Fitting: Loose.
3. Upstands: Fit closely around penetrations and outlets.

902.16.04 Filter Membrane Installation:

1. Joints: Minimize.
 - 1.1. Overlaps (minimum): 200mm.
2. Fitting: Loose.
3. Upstands: Extend to top of growing medium.

902.16.05 Growing Medium Installation:

1. Handling: Minimize.
 - 1.1. Conditions: Handle in the driest condition possible. Do not handle or install when wet or frozen.
2. Layers
 - 2.1. Depth (maximum): Min. 50mm.
 - 2.2. Sequence: Gently firm each layer before spreading the next.

902.16.06 Vegetation Blanket Installation:

1. Handling blankets
 - 1.1. Timing: Lay within 36 hours of lifting from growing position.
 - 1.2. Excessive stacking: Not permitted.
 - 1.3. Material loss (maximum): 3% of total surface area.
2. Growing medium condition: Thoroughly watered.
3. Laying blankets
 - 3.1. Installation: Install rolls butt joined, staggered and loose laid.
 - 3.2. Dry, damaged, frosty or waterlogged blankets: Do not lay.

- 3.3. **Orientation:** Diagonal or perpendicular to slope of roof.
- 3.4. **Joints:** Stagger. Butt together or slightly overlap to prevent gaps. Do not stretch blankets. Secure with biodegradable pegs.
- 3.5. **Edges:** Finish with whole blankets.
- 3.6. **Consolidation:** Firm as laying proceeds to ensure full contact with the growing medium. Do not use rollers.
4. **Dressing:**
 - 4.1. **Application:** Brush in to fill joints.
5. **Watering:** Thorough, immediately after laying and dressing.

Following Trades: Do not allow foot traffic other than routine maintenance.

902.16.07 *Edge-retaining Profile Installation:*

1. **Cutting:** Neat, accurate and without spalling.
 - 1.1. **Junctions:** vertical, secured using proprietary connectors.
 2. **Position:** True to line and level. Smooth continuous lines.
3. **Fixing:**

902.16.08 *Inspection Chamber Installation:*

1. **Location:** Install centrally over drain outlet.
 - 1.1. **Orientation:** Align parallel with adjacent features.
2. **Bedding:**
3. **Backfill:** With Filter fleece & Nominal diameter 20mm washed rounded stone pebbles.
Surround: With washed rounded stone pebbles

902.16.09 *Pedestal Installation:*

1. Ensure that surface to accept pedestals is clean and free of debris.
2. **Setting out:** Mark centre-point of pedestal on substrate surface, with perpendicular guidelines to ensure square layout.
 - 2.1. **Orientation:** Align parallel with adjacent features.
 - 2.2. **Spacing:** To match paving type
3. **Overall movement tolerance (maximum):** 3 mm.

902.17 Completion:

902.17.1 *Installation:*

1. **Timing:** Before handover.
 - 1.1. **Give notice (minimum):** Three days.

902.17.2 *Completion:*

1. **General:** Leave the works in a clean, tidy condition.
2. **Surfaces:** Clean immediately before handover.
3. **Outlets:** Clean and clear of obstructions.
4. **Completed green roof:** Protect from adjacent or high-level working.

902.17.3 Documentation:

1. Timing: Submit at handover.
2. Contents
 - 2.1. Growing medium declaration of analysis.
 - 2.2. Manufacturers' guarantees and warranties.
 - 2.3. Procedures for maintenance of the green roof.
 - 2.4. Record drawings showing the location of planting and associated features.

902.17.4 Quality Control:

1. Samples:

Before work is commenced provide samples of materials for approval by Architect as follows:

 - Samples of underlay.
 - Samples of all accessories and fittings.
2. **Weather Resistance:** The roof covering shall be weatherproof and so constructed as not to transmit moisture due to rain, sleet or snow to any part of the building which would be adversely affected by such moisture.
3. **Storage Generally:** Store roofing materials so as to avoid deterioration in quality and appearance, breakage or distortion.

902.18 Reinforced bitumen membrane roof coverings Moy J41 (OR EQUIVALENT):**Built-up reinforced bitumen membrane cold deck roof covering**

1. **Description:** Paralon Total Green Roof polyester-reinforced, modified bitumen waterproofing membrane system in accordance with British Board of Agrément, BBA Certificate Number 09/4688 (Product Sheet 2).
2. **New substrate:**

Precast Concrete designed and constructed strictly in accordance with the specifiers and/or manufacturer's instructions (by others).

Where falls are achieved within structural deck. Drainage falls must achieve a finish of 1:80 in accordance with BS 6229: 2018, be free from deflection, without back-falls and in full compliance with the manufacturer's guidance, third party certification and British Standard documentation.

Where the deck is laid to zero falls, tapered insulation must be introduced to conform to BS 6229: 2018 and provide a minimum roof falls of 1:80. The deck must be laid flat with no deflections or back falls and a site level survey is required in line with current British Standards.

 - 2.1. **Preparation:**

Substrate as 610 and primers as 320 & 530.
3. **Waterproof covering**
 - 3.1. **System manufacturer/supplier:** **Moy Materials Ltd**, Unit K, South City Business Park, Whitestown Way, Tallaght, Dublin 24, D24 PE83. T: (0)1 463 3900 / E: info@moymaterials.com
 - 3.2. **First layer:** Imper Paralon Top S polyester reinforced APP modified bitumen membrane as 400.
 - 3.2.1. **Attachment:** Torch-on as 710 & 740.

- 3.3. **Top layer / Capsheet:** Imper Paralon Antiroot as 400
 - 3.3.1. **Finish:** Sanded.
 - 3.3.2. **Attachment:** Torch-on as 710, 740 & 750
- 3.4. **Flashings and detail work:** For exposed flashings see 400. Installation 710-790 as applicable. Refer to MOY installation instructions, BS 8217:2005 and BS 6229:2018.
- 3.5. **Upper protection layer (loose laid):** MOY VLU 300 Polyester fleece.
4. **Surface protection:** Extensive Green Roof as NBS / Q37.
5. **Accessories:**
 - Moy Materials Ltd. Cast Aluminium Anti Vortex Outlets, sized in accordance with project specific rainwater design calculations to BS EN 12056, cast in LM6 Aluminium Silicone Alloy to BS 1490:1988. Complete with clamping ring & leaf grille, sized and supplied by waterproofing system manufacturer and incorporated in total roof system warranty. Supply with continuously welded 600mm vertical spigot pipe. Flange must be recessed into the insulation board or sumped by a minimum of 30mm.
 - Moy Flexjoint EP20 / EP40 Expansion joint strip to any expansion joints.
 - Moy Lite Anchor lightning tape clips.
 - Moy PP3 and Roof Nek Cable penetration devices.
 - Moy Walkway Roll and / or Moy 30mm Interlocking dowel jointed rubber tile to walkways and high traffic zones and ladder stepdown points.

902.18.01 Roof Performance:

General: Secure, free draining and weathertight.

902.18.02 Avoidance of interstitial condensation: Cold roofs

1. **Interstitial condensation within roof construction:** Determine risk as recommended in BS 5250 and BS EN ISO 13788.
2. **Ventilation:** In modern construction with higher insulation levels being required this form of construction is best avoided due to the higher risks of condensation. This type of roof is no longer recommended because of the difficulty of forming and maintaining an effective AVCL below the insulation and providing sufficient cross-ventilation above the insulation. Where this type of roof build-up cannot be avoided, the cross-ventilated opening width should not exceed 5 metres apart. Mushroom vents have proven to be ineffective in providing sufficient ventilation to prevent surface and interstitial condensation.
3. **Air and vapour control layer / Breather membrane:** Provide a suitable air & vapour control layer and breather membrane so that damage and nuisance from interstitial condensation does not occur. Refer to latest best practice guidance and British Standards (BS 6229:2018) for detailed guidance. The insulation and ventilated void should be inspected regularly in order to ensure that they are performing correctly.
4. It is the responsibility of the specifier to ensure that the level of suitable insulation and the ventilation requirements is sufficient to comply with Building Regulations and to negate any risk of condensation. Failure to the roof construction deemed to be caused by condensation is not be covered by the MOY Materials (UK) Ltd Warranty.

902.18.03 *Products:***Primer**

1. Type: Solvent based bituminous primer.
2. Manufacturer/supplier: MOY Materials Ltd.
3. Product reference: Impertene Bitumen Primer.
4. Characteristics when tested to BS EN 12846-2
5. Viscosity (maximum) (STV at 25°C, 4 mm orifice): Refer to data sheet.

Bonding compound

1. Type: High performance single component polyurethane (PU), cold applied roofing adhesive.
2. Manufacturer/supplier: MOY Materials Ltd.
 - 2.1. Product reference: MOY Bond PU (spray or roller) Insulation Adhesive.
3. Restriction: Use in temperatures > 5°C only. For heat sensitive insulation materials, use cold bonding compounds.

Angle fillets

1. Material: MOY PIR Insulated Angle Fillets.
 - 1.1. Size (minimum):
2. Restriction: Non-combustible fillets to be used where applicable.

902.18.04 *Preformed Sleeves:*

1. Type: Pipe Detail.
2. Manufacturer/supplier: MOY Materials Ltd.
 - 2.1. Product reference: MOY Art.114 Vent Pipe/Wrap Fitting.
3. Colour: Black.
4. Size: Refer to data sheet.
1. Type: GRP Trims.
2. Manufacturer/supplier: MOY Materials Ltd.
 - 2.1. Product reference: MOY GRP Trims.
 3. Colour: Black.
 4. Size: Various profile sizes.
- 4.1. Lengths (maximum): 3m.

902.18.05 *Cover strips to joints in rigid board substrates:*

1. Bitumen membrane: To BS 8747, class S2P3.
2. Width: 150mm.

902.18.06 *Minor movement joints in substrates:*

1. Manufacturer/supplier: MOY Flex Joint EP20 / EP40 Expansion joint strip to any expansion joints all as per MOY requirements.

902.18.07 *Protection layer:*

1. Type: Polyester fleece protection layer.
2. Manufacturer/supplier: MOY Materials Ltd.
 - 2.1. Product reference: MOY VLU 300 Polyester fleece.
3. Grade: 300g/m².

902.18.08 *Built-up reinforced bitumen waterproof covering:*

1. System manufacturer/supplier: MOY Materials Ltd.

- 1.1. Product reference: Imper Paralon Total Green Roof.
2. First layer: Imper Paralon Top S polyester reinforced APP modified bitumen membrane.
 - 2.1. Attachment: Torch-on as 710 & 740.
3. Top layer / Capsheet: Imper Paralon Antiroot.
 - 3.1. Finish: Sanded.
** Variations in colour may be observed from differing batches of materials. Weathering can take approximately 12 months or more dependent on site conditions.*
 - 3.2. Attachment: Torch-on as 710, 740 & 750.
4. Flashings and detail work: At all upstands, perimeters and all other locations where the finished membrane will be exposed to UV light, install Imper Paralon ARD/HS Plus waterproofing capsheet as clause 740. All as per MOY installation instructions and BS 8217: 2005.
 - 4.1. Colour: Charcoal Grey.
5. Guarantee: See 950 for details.

902.18.09 *Stone Ballast:*

1. Type: Well rounded, ovoid shaped river washed pebbles.
2. Supplier:
3. Size: Graded 20-40mm dia. Free from sharps and fines.
4. Colour:
5. Recycled content:
 1. Manufacturer:
 - 1.1. Product reference:
 2. Standard: To BS EN 1339, hydraulically pressed.
 - 2.1. Size (minimum): 50mm thick.
 - 2.2. Water absorption:
 - 2.3. Resistance to freeze thaw:
 - 2.4. Breaking load (minimum):
 - 2.5. Colour:
 - 2.6. Finish:
 - 2.7. Other BS EN 1339 characteristics:
3. Recycled content:

902.18.10 *Support system for precast concrete paving slabs:*

1. Manufacturer/supplier: MOY Materials Ltd.
 - 1.1. Product reference: MOY Adjustable Paving Supports.
2. Size: Various sizes available.
3. Accessories: MOY Paving Slab Levellers.

902.18.11 *Pipe collars:*

Manufacturer/supplier: MOY Materials Ltd.

- 1.1. Product reference: MOY Art.54 (Grey) / Art.55 (Brown) Anti-Condense Extractor Flexible Collar.
1. Size: Refer to data sheet.

902.19 Execution Generally:**902.19.1 Adverse Weather:**

1. **General:** Do not lay coverings in high winds, wet or damp conditions or in extremes of temperature unless effective temporary cover is provided over working area.
2. **Unfinished areas of roof:** Keep dry. Protect edges of laid membrane from wind action.

902.19.2 Incomplete Work:

1. **End of working day:** Provide temporary seal to prevent water infiltration.
2. **On resumption of work:** Cut away tail of membrane from completed area and remove from roof.

902.19.3 Protection and storage of materials:

1. **Membrane storage:**
 - 1.1. Store rolls of reinforced modified bitumen membrane and associated products in clean, dry, well ventilated and cool conditions. Rolls should be stored upright, raised off the ground and suitably covered.
 - 1.2. Store materials designated by the manufacturers as temperature sensitive in facilities where temperature can be maintained at the recommended level.
2. **Insulation protection:** Insulation products must be kept dry and protected from wet weather during storage and installation.
1. **Ensure that from completion of the roof until practical completion:**
 - 1.1. The roof is not used as a working platform, unless fully protected to the satisfaction of the CA.
 - 1.2. No paints, solvents or other volatile substances harmful to the membrane are allowed to come into contact with the roof surface.
 - 1.3. No building materials stored on the roof.
2. **Finished roof areas** must be adequately protected from damage by subsequent building operations. This may require the installation of suitable protection layers subject to the nature of the risk concerned. Consult MOY Technical Services.

902.19.4 Applying primers:

1. **Coverage per coat (minimum):** Refer to product data sheets & MOY installation guidelines.
2. **Surface coverage:** Even and full.
3. **Coats:** Fully bond. Allow volatiles to dry off thoroughly between coats.

902.19.5 Applying bonding compounds:

1. **Roof sited boilers:** N/a
2. **Temperature of compound:** Suitable to achieve bond over whole surface. Do not overheat or use in temperatures below 5°C.
3. **Heat sensitive insulation materials:** Use cold applied adhesives or overlays recommended by the insulation manufacturer.
4. **Application:** As 680.

902.19.6 Control samples:

1. **Type of covering:**

2. Sample area (minimum):
 - 2.1. Location:
 - 2.2. Features:
3. Approval of appearance: Obtain before proceeding with remaining work.

902.20 General workmanship requirements:

902.20.1 *Workmanship Requirements:*

- 1.1. Installation of the MOY Waterproofing System may only be carried out by trained and certified operatives approved by MOY Materials Ltd.
- 1.2. Workmanship must comply with Codes of Practice BS 8217:2005 and BS 6229:2018 (or alternatively MOY specification where otherwise stated). Noncompliant workmanship will not be permitted, even if the system is watertight. The client will be told that all such faults must be remedied, before the Guarantee is issued.
- 1.3. All waterproofing materials and system components must be supplied by MOY, unless otherwise stated. Any sub-standard materials or un-authorised alternatives will be rejected. Any building work, which is the responsibility of the roofing contractor and has a bearing on the life of the MOY waterproofing system, must be carried out by properly trained and qualified tradesmen.
- 1.4. Any structural damage, peculiarities or details discovered that might affect the performance of the MOY waterproofing system, should be reported immediately to the client's representative and MOY Materials Ltd in order that they may assist in overcoming the problem.
- 1.5. The contractor is to ensure water tightness of the roof at all times. Proper day joints must be formed at the end of each working day to provide a temporary seal. No mopping or loose covers will be permitted.
- 1.6. Where building works are to be carried out by other trades, following completion of the waterproofing, the contractor must make adequate provision for supplying protection to prevent damage to the new membranes. The final inspection will not be carried out by the MOY Site Technician until all associated trades are complete and the roof areas are clear from all debris and protection layers.
- 1.7. It is imperative that the MOY Approved Contractor conforms to the workmanship criteria as listed above. Any deviation will result in the contract being considered non-warrantable.
- 1.8. Where building works are to be carried out by other trades, following completion of the waterproofing, the contractor must make adequate provision for supplying protection to prevent damage to the new waterproofing.
- 1.9. If any items of plant/equipment are to be situated on the finished roof, a sacrificial layer of an appropriate MOY capsheet is to be loose laid beneath. This is to extend a minimum 25mm past the point of contact on all sides. In the case of heavy items, it may be necessary to introduce load-spreading supports, please contact MOY Technical Services for further advice.
- 1.10. All lead work to be carried out by skilled tradesmen and in accordance with current codes of practice and the recommendations of the Lead Development Association.

902.21 Substrates / air and vapour control layers / warm deck roof insulation**902.21.1 *Suitability of Substrates:***

1. Substrates generally: Secure, clean, dry, smooth, fully cured and free from frost, contaminants, voids and protrusions.
2. Preliminary work: Complete including:
 - 2.1. Grading to correct falls.
 - 2.2. Formation of upstands, kerbs, box gutters, sumps, grooves, chases and expansion joints.
 - 2.3. Fixing of battens, fillets and anchoring plugs/ strips.
3. Moisture content and stability of substrate: Must not impair roof integrity.

902.21.2 *Joints in rigid board Substrates:*

1. Cover strip: Lay centrally over substrate joints before laying air and vapour control layers or coverings. Adhere to substrate with bonding compound along edges only.

902.22 Waterproof membranes / accessories**902.22.1 *Laying reinforced bitumen membranes generally:***

1. Direction of laying: Unrolled up the slope.
 - 1.1. Where practicable, install so that water drains over and not into laps.
2. Side and end laps: 100mm side laps and 150mm end laps.
3. Head and side laps: Offset.
4. Intermediate and top layer / capsheet: Fully bond.
5. Successive layers: Apply without delay. Do not trap moisture.
6. Strips of bitumen membrane for 'linear' details: Cut from length of roll.
7. Completed coverings: Firmly attached, fully sealed, smooth, weatherproof and free draining.

902.22.2 *Laying reinforced bitumen membranes on roofs pitched more than 5°:*

1. Timber battens: Fix flush with surface in substrates that will not securely accept nails.
 - 1.1. Locations: To BS 8217, Table 5 or equivalent IBA.
 - 1.2. Size: As recommended.
2. Setting out: Parallel to roof slope, with successive layers carried over ridges.
 - 2.1. Lengths (maximum): As recommended by bitumen membrane manufacturer.
 - 2.2. End laps: Half stagger and align on alternate bitumen membranes.
3. Additional fixing of bitumen membranes:

902.22.3 *Torch-on bonding of reinforced bitumen membranes:*

1. Bond: Full over whole surface, with no air pockets.
2. Excess compound at laps of top layer/ capsheet: Leave as continuous bead.

902.22.4 *Laying mineral faced reinforced bitumen membranes:*

1. Lap positions and detailing of ridges, eaves, verges, hips, abutments, etc: Submit proposals.
2. Setting out: Neat, with carefully formed junctions.
3. Lap bonding: Carry out only at prefinished margins or prepared 'black to black' edges.
4. Excess bonding compound at laps: Leave as a **5mm - 10mm** continuous bitumen bead extrusion.
Remove excess whilst still warm.

902.22.5 *Skirtings and upstands:*

1. Angle fillets: Fix by bitumen bonding or nailing.
2. Other layers of bitumen membrane: Carry in staggered formation up upstand, with each layer fully bonded. Where practicable, carry top layer over top of upstand.
Upstands
 - 3.1. At ends of rolls: Form with bitumen membrane carried up without using separate strip.
 - 3.2. Elsewhere: Form with matching strips of bitumen membrane, maintaining laps.
 - 3.3. Additional fixing of bitumen membranes: Flashings over 250mm may require additional fixings all as recommended by MOY.

902.22.6 *Fixing perimeter trims:*

1. First/ Intermediate layers bitumen membrane: Lay over roof edge upstand. Project free edge 25 mm from wall or fascia.
2. Trim
 - 2.1. Setting out (minimum): 3 mm clear from wall or fascia.
 - 2.2. Fasteners: As appropriate by MOY Materials Ltd.
 - 2.3. Fixing: 30 mm from ends and at 300 mm (maximum) centres.
 - 2.4. Jointing sleeves: Fix one side only.
 - 2.5. Corner pieces: Purpose made.
3. Completion
 - 3.1. Contact surfaces: Prime.
 - 3.2. Joints: Cover with 150 mm long pads of bitumen membrane, bonded to trim.
4. Completion of bitumen membrane
 - 4.1. Top layer/ Capsheet: Butt joint to rear edge of trim.
 - 4.2. Cover strip: Fully bond to trim and top layer/ capsheet of bitumen membrane. Carry over roof edge upstand and lap 75 mm onto roof.
 - 4.2.1. Cover strip material: As per specified capsheet.

902.23 Surfacing:**902.23.1 *Laying stone ballast:***

1. Condition of substrate: Clean.
2. Gravel guards: Fit to outlets.
3. Previously laid materials: Protect during laying of ballast.
4. Laying: Spread evenly. Do not pile to excessive heights.
 - 4.1. Depth (minimum): 50mm.

902.23.2 *Laying precast concrete paving slabs:*

1. Condition of substrate: Clean.
2. Setting out: Minimize cutting.
3. Joints: Open.
 - 3.1. Width: As MOY Adjustable Paving Supports.
 - 3.2. Perimeter / Upstands margins: Minimum 150mm wide ballast margin or movement gap is recommended to the perimeter of the building and around all roof penetrations to accommodate the thermal movement of the precast concrete paving slabs. Line ballast margin with a MOY VLU 300 Polyester fleece protection layer.
4. Completion: Slabs must be level and stable.

902.23.3 *Completion:*

Inspection

1. Interim and final roof inspections: Submit reports.

Completion

1. Roof areas: Clean.
2. Outlets: Clear.
3. Work necessary to provide a weathertight finish: Complete.
4. Storage of materials on finished surface: Not permitted.
5. Completed membrane: Do not damage. Protect from chemicals, traffic and adjacent or high-level working.

903 TYPE OF COVERING:

903.01 WARM DECK ROOF COVERING

- Substrate: Concrete
 - PLYWOOD Standard: To BS EN 636, section 7 (plywood for use in humid conditions)
 - Thickness: 18mm – 21mm (for all access types)
 - ORIENTED STRAND BOARD (OSB) Standard: To BS EN 300, type OSB/3
 - Thickness: 18mm – 22mm (for all access types)
 - Preparation: Remove any debris and sweep clean/ Make good existing bitumous roof/ Timber board overlay/ Remove any existing waterproof covering
- Roof Covering System: RubberBond FleeceBack EPDM calendared/extruded and vulcanised EPDM membrane with polyester fleece backing.
- Manufacturer and reference: Flex-R Ltd. Sandwood House, Sands Industrial Estate, Hillbottom Rd, High Wycombe. HP12 4HJ. Tel. 01494 448792. Fax. 01494 858433. Email enq@flex-r.co.uk.
 - Vapour Control Layer: Aluminium cored bitumous membrane
 - Insulation: As insulation manufacturers recommendations for loading-traffic to correspond with detailed drawings
 - Attachment: Strip bond / mechanical fix
 - Separation layer: Not required
 - Waterproof membrane: Ethylene Propylene Diene Monomer (EPDM) with polyester fleece backing.
 - **Reference:** RubberBond FleeceBack
 - Width: 3.05m / 1.52m / Determined by contractor
 - Thickness: 2.6mm including fleece
 - Colour: Grey/Black
 - Attachment: Fully Adhered as clause 720
 - **Seaming** as clause 730
 - Upper protection layer: polyester fleece
 - Surface protection: Stone ballast
 - Accessories: Pressure Sensitive Elastoform 225mm / Overlayment Strip 150mm / SecurTape / Deck Adhesive / Pressure Sensitive Products / HP-250 Primer / Lap Sealant / Edge Trims / Pipe collars / Determined by contractor / As drawing??

903.02 GENERAL REQUIREMENTS

MANUFACTURERS GUARANTEE

In order to comply with the guarantee, the work must be undertaken by a RubberBond FleeceBack EPDM approved and registered contractor. Guarantees must be applied for before commencement of project.

903.03 PERFORMANCE

ROOF PERFORMANCE:

- Lay roof covering to provide a secure, free draining and completely weather tight roof, with membrane free from wrinkles and other blemishes.

Ancillary products and accessories, where not specified, to be types recommended for the purpose by the Flex-R Ltd. Use operatives trained in the application of RubberBond FleeceBack membranes and

who have attended the Flex-R Ltd training scheme. Submit evidence of training on request. Maintain a minimum of 50 % fully trained operatives on site throughout the installation period.

AVOIDANCE OF INTERSTITIAL CONDENSATION: WARM AND INVERTED ROOFS

- Determine: Interstitial condensation risk of roof construction as recommended in BS 6229.
- Basic design data:
 - Outdoor notional psychometric conditions, winter;
 - Temperature: -5°C
 - Relative humidity: 90%
 - Vapour Pressure: 0.36 kPa
 - Duration 60 Days
 - Outdoor notional psychometric conditions, summer
 - Temperature: 18°C
 - Relative humidity: 65%
 - Vapour Pressure: 1.34 kPa
 - Duration 60 Days
 - Indoor notional psychometric conditions,
 - Temperature: 20°C
 - Relative humidity: 35% / 40% / 50% / 55% / 60%
 - Vapour Pressure: 0.6 kPa / 0.93 kPa / 1.17 kPa / 1.28 kPa / 2.54 kPa
- Winter interstitial condensation (warm roof):
 - Calculated amount (max): 0.35kg/m²
 - Calculated annual net retention: Nil
- Vapour control layer: if necessary, provide a suitable membrane or sealed deck so that damage and nuisance from interstitial condensation do not occur.

INSULATION:

- Requirement: Determine type and thickness of insulation and integral or separate overlay to satisfy the following criteria:
 - Thermal transmittance of the roof (maximum): as specified
 - 2

Compressive strength of Insulation (minimum) at 10% compression: min 140kN/m - Finished surface: Suitable even, stable and robust to receive the covering.

- Insulation compliance: to a relevant British Standard or Agrément certified.

ATTACHMENT:

• Requirement: Determine method(s) of attachment of the RubberBond FleeceBack. Ensure that method(s) of attachment make sufficient provision for relative movement of materials and effects of vapour pressure, and do not reduce performance of the vapour control layer.

- Wind loads calculated in accordance with BS 6399:Part 2, Standard Method:
 - Basic wind speed (V_b): To be advised m/s
 - Altitude factor (S_a): To be advised
 - Direction factor (S_d): To be advised - Seasonal factor (S_s): 1.
 - Probability factor (S_p): 1.
 - Terrain and building factor (S_b): To be advised - Size effect factor (C_a): 1.
 - External pressure coefficients (C_{pe}): To be advised
 - Internal pressure coefficients (C_{pi}): To be advised

903.04 PRODUCTS**ANCILLIARY PRODUCTS AND ACCESSORIES**

- Types: Recommended by Flex-R Ltd.

PRIMER for all Pressure Sensitive accessories

- Type: As membrane manufacturers recommendation.
- Manufacturer and reference: Flex-R Ltd. Sandwood House, Sands Industrial Estate, Hillbottom Rd, High Wycombe. HP12 4HJ. Tel. 01494 448792. Fax. 01494 858433. Email enq@flex-r.co.uk. - Product Reference: HP-250 Primer

ADHESIVE for waterproof membrane

- Type: Synthetic bonding adhesive / Water based deck adhesive / Polyurethane deck adhesive / As membrane manufacturers recommendations for conditions and surface
- Manufacturer and reference: Flex-R Ltd. Sandwood House, Sands Industrial Estate, Hillbottom Rd, High Wycombe. HP12 4HJ. Tel. 01494 448792. Fax. 01494 858433. Email enq@flex-r.co.uk.
 - Product Reference: RubberBond Contact Adhesive / RubberBond WBA / RubberBond PU adhesive

TIMBER FOR TRIMS, ETC.

- Quality: Planed. Free from wane, pitch pockets, decay and insect attack except ambrosia beetle damage.
- Moisture content at time of covering: Not exceeding 22% at time of covering.
- Preservative treatment: CCA as section Z12 and British Wood Preserving and Damp Proofing Association Commodity Specification C8.

PERIMETER TRIMS

- Type: SureEdge PVC edge trims.
- Manufacturer and reference: Flex-R Ltd.
 - Product Reference: SureEdge
 - Colour: Black
 - Size: 75mm / 105mm
- Type: Hot dipped galvanised or aluminium zinc coated steel sheet coated with primer, reverse side painted and a plastisol based topcoat.
- Manufacturer and reference: As membrane manufacturer / contractors' choice - Product Reference: RubberBond Edge Trims / RubberBond Wall Trims - Colour: Determined by contractor / As drawing??
 - Size: 50mm x 75mm-100mm-125mm-150mm / Determined by contractor / As drawing??

MECHANICAL FASTENINGS, WASHERS, PRESSURE PLATES ETC.

- Type: As membrane manufacturer's recommendation for use / Perimeter fasteners / Wall fasteners / Insulation Plates / Insulation Fasteners
- Manufacturer: Flex-R Ltd. Sandwood House, Sands Industrial Estate, Hillbottom Rd, High Wycombe.

HP12 4HJ. Tel. 01494 448792. Fax. 01494 858433. Email enq@flex-r.co.uk. - Product reference: RB Fasteners / HP Fasteners / Insulation Plates

RIGID URETHANE FOAM WARM DECK ROOF INSULATION

- Standard: Rigid polyisocyanurate foam (PIR) roofboard to BS4841-3

Rigid polyurethane foam (PUR) roofboard to BS EN 13165

- Manufacturer: Contractor's choice / As specified
- Thickness: 100mm / 125mm / As specified
- Facing: Glass Tissue / 6mm WBP plywood

SUPPORT SYSTEM FOR PRECAST CONCRETE PAVING SLABS

- Manufacturer: Flex-R Ltd. Sandswood House, Sands Industrial Estate, Hillbottom Rd, High Wycombe.

HP12 4HJ. Tel. 01494 448792. Fax. 01494 858433. Email enq@flex-r.co.uk.

- Product reference: RubberBond Paving Support pads
- Size: 15mm x 150mm

PIPE COLLARS.

- Manufacturer: Flex-R Ltd. Sandswood House, Sands Industrial Estate, Hillbottom Rd, High Wycombe.

HP12 4HJ. Tel. 01494 448792. Fax. 01494 858433. Email enq@flex-r.co.uk.

- Product reference: RubberBond EPDM Pipe Boots - Colour: Slate grey.
- Size: 25mm to 150mm.
- Attachment: Pressure Sensitive.

MEMBRANE WALKWAY

- Manufacturer: Flex-R Ltd. Sandswood House, Sands Industrial Estate, Hillbottom Rd, High Wycombe.

HP12 4HJ. Tel. 01494 448792. Fax. 01494 858433. Email enq@flex-r.co.uk.

- Product reference: RubberBond EPDM Pressure Sensitive Walkway Pads
- Size: 760mm x 760mm
- Thickness: 9mm
- Colour: Black
- Finish: Raised dimples

903.05 EXECUTION GENERALLY

ADVERSE WEATHER:

- The membrane must not be laid in wet or damp conditions or at temperatures below 5 °C unless suitable precautions/measures are taken.
- Provide temporary covers and drainage as required to keep unfinished areas of the roof dry. Suspend work in severe or continuously wet weather unless an effective temporary roof is provided over the working area.
- If unavoidable wetting of the construction does occur, take prompt action to minimise and make

good any damage. Temporarily ballast incomplete areas of membrane as necessary to protect from wind action.

INCOMPLETE WORK:

At the end of the working day:

- Temporarily seal the membrane to the deck to prevent any water infiltration.

Protect overlay board with temporary seal.

- Ensure that the sequence of laying enables temporary sealing of loose membrane edges to be down the slope and not against the flow of water.

- On resumption of work cut away the tail of the membrane from completed area and remove from roof.

PROTECTION AND STORAGE OF MATERIALS:

- Store rolls of membrane and associated products in clean, dry, well-ventilated and cool conditions.
- Store materials designated by their manufacturers as temperature sensitive in facilities where the temperature can be maintained at the recommended level.
- Insulation products must be kept dry and protected from wet weather during storage and installation.

PROTECTION OF WORK:

- Ensure that from completion of the roof until Practical Completion:
 - The roof is not used as a working platform unless fully protected.
 - No paint, solvents or other volatile substances harmful to the membrane are allowed to come into contact with the roof surface.
 - No building materials are stored on the roof.

903.06 SUBSTRATES/VAPOUR CONTROL LAYERS/WARM DECK INSULATION

SUITABILITY OF SUBSTRATE:

- Before installing roof covering ensure that: Surfaces to be covered are firmly fixed, clean, dry, smooth, and free from frost, contaminants, voids and protrusions.
- All preliminary work including formation of upstands, kerbs, box gutters, sumps, grooves, chases, expansion joints, etc. and fixing of battens, fillets, anchoring plugs/strips, etc. is complete and satisfactory.
- Moisture content and stability of substrate: must not impair the integrity of the roof.

LAYING VAPOUR CONTROL LAYER

- Laying: Fully bonded, flat and smooth / Loose laid flat and smooth
- Side and head laps: Seal using materials and method as recommendations / Fully sealed
- Upstands, kerbs and penetrations. Fully enclose edges of insulation and seal at abutments by bonding or taping

LAYING OF WARM DECK ROOF BOARDS

- Setting Out
 - Long Edges: Fully supported.
 - End Edges: Suitably supported.
 - Joints: Lightly butted.
 - End Joints: Staggered.
- Attachment: Professional high foaming polyurethane roofing adhesive
- Mechanical Fix: Quantity of screws, washers and pattern as membrane manufacturers recommendation
- On completion of laying ensure that boards are in good condition, well-fitting and with no springing, flexing or rocking.

903.07 WATERPROOF COVERING / ACCESSORIES

ADHESIVE BONDING:

- Lay sheets on a continuous even coating of adhesive.
 - Avoid wrinkles and any stretching of the membrane.
 - Ensure there is a full bond over the whole surface.
 - With no air pockets.

FULLY ADHERED MEMBRANE

- Verify that the surfaces to receive the RubberBond FleeceBack adhered membrane are:
 - Clean, dry, smooth and free from defects.
 - During membrane installation, inspect and correct the substrate where necessary to avoid gaps between insulation boards, uneven or step off conditions.
 - Position the membrane and allow for a minimum 75mm overlap.
 - Apply deck adhesive to the substrate with a medium nap roller ensuring continuous and even distribution of the adhesive, avoiding puddles.
- Do not apply adhesive to lap areas.
- Roll the membrane into the adhesive coated substrate avoiding wrinkles in the sheet. Immediately smooth in with a squeegee to achieve maximum contact.

TAPE JOINTING OF WATERPROOFING MEMBRANE:

- Side joints using HP-250 Primer and SecurTape
 - Laps (minimum): 75mm
- End joints using HP-250 Primer and 150mm Overlayment strip. - Butted together maximum gap 10mm.
 - Preparation: Clean and dry surfaces beyond full width of joint.
 - Sealing: Prime surfaces, allow curing, installing Pressure Sensitive tape (PS) and rolling seam with steel hand roller. Do not wrinkle or stretch membrane.
- Condition at completion: Fully sealed, smooth weatherproof and free draining.

PERIMETER DETAILS

- Upstands, edge trims, drips, kerbs, etc. to be formed from RubberBond FleeceBack membrane in accordance with project details and approved installation technique.

TERMINATIONS

- Install metal cover flashings to abutment walls, dress membrane up the vertical, under the cover flashing and fasten at the top.
- Remove copings, install membrane and re-secure copings.

RAINWATER OUTLETS:

- Recess into the roof and firmly secure with no lip preventing the free flow of water. Install suitably sized clamping ring outlet in accordance with the current fixing instructions.

ROOF PENETRATION THROUGH MEMBRANE

- Roof membrane: Cut around penetration
 - Type: Preformed Pressure Sensitive flange - Installation: Dress over and around the penetration - Seating: Flush to membrane.
 - Overlap to penetration: Minimum 75mm
 - Sealing: Pressure Sensitive materials to be used with HP-250 Primer.

903.07.01 SURFACING/COMPLETION

LAYING OF CONCRETE PAVING SLABS

- Condition of substrate: Clean
 - Setting Out: Minimise cutting
 - Joints: Open
- Width: Determined by paving support system

LAYING MEMBRANE WALKWAYS:

- Material: Walkway Pads
- Method of securement: Pressure Sensitive & HP 250 primer
- Defects are to be repaired without delay to minimise damage and nuisance.
- 25-year warranty to be provide with contractor's submittal

903 FALL PREVENTION SYSTEM - ACCESS AND SAFETY EQUIPMENT SPECIFICATION CLAUSES:

903.01 Fall Prevention Cable Systems

To be read with The Main Contract Preliminaries, General Conditions, Sub-Contract Preliminaries.

903.01.01 Minimum Contractor Standard

This equipment is highly specialised, and the Tendering Sub-Contractor must provide the following information with the Tender – failure to provide this information will disqualify the Tenderer.

- Evidence of subcontractor's Professional Indemnity Insurance, €6.5 million minimum. Professional Indemnity Insurance provided by third parties will not suffice.
- Evidence of ISO9001 & OHSAS 18001 Quality Systems Accreditation.
- The name of the Health & Safety Manager within the organisation and evidence of qualifications.
- Confirmation that the Tenderer's Cable Support Posts are strictly as per Clause 210 below.
- Confirmation that the Tendering company has been in the fall prevention industry for at least 10 years.

On request of the architect / design team the Tenderer must forward confirmation of the following:

- Employers Liability Insurance to €13m.
- Public Liability Insurance to €13m.
- Products Liability Insurance to €13m.
- Appropriate Professional Indemnity Insurance to €6.5m as above.
- Membership of CIRI
- Membership of Irish Health and Safety associations like NISO, ISHA etc.
- Membership of an Irish based Trade Union.
- Membership of the CFOPS pension / CIF sick pay scheme.
- Names of the proposed installation crew and proof that they are trained as banksmen and have training in Work at Height, particularly Rescue from Height.
- Name of company Safety Representative along with copies of their certification / qualifications.
- Name and qualifications of the company's FETAC Level 6 Trainer on staff to undertake handover training.

- Names of three projects of equal size completed in Ireland in the last 3 years along with contact names and numbers for reference checks.
- Contact names and telephone numbers for the facilities manager in charge of each of the above three projects, (to check that on-going maintenance contracts are in place and that the installations are fit-for-purpose).

Reference Documents

The schedule of references is not exhaustive and shall also be supplemented by those listed under each related work section. Note that where a standard comprises a number of parts, the latest issues and amendments of each part shall apply.

The Sub-contractor must comply with all relevant standards, etc. at the time of supply.

EN and B.S. Documents Referred to in this Section Include:

EN 795 2012 Personal Protective Equipment against Falls from a Height -Anchor Devices - Requirements and Testing.

BS7883 2005: Application and Use of Anchor Devices Conforming to BS EN 795.

EN 354 2002: Personal Protective Equipment against Falls from a Height - Lanyards.

EN 355 2002: Personal Protective Equipment against Falls from a Height - Energy Absorbers.

EN 358 2000: Personal Protective Equipment against Falls from a Height - Work Positioning Systems.

EN 361 2002: Personal Protective Equipment against Falls from a Height - Full Body Harnesses.

EN 363 2008: Personal Protective Equipment against Falls from a Height - Fall Arrest Systems.

EN 365 2004: Personal Protective Equipment against Falls from a Height - General Requirements for Instructions for Use and for Marking.

BS8437 2005: Code of Practice for Selection, Use and Maintenance of Personal Fall Protection Systems and Equipment for use in the Workplace.

EN970 1997: Non-destructive Examination of Fusion Welds. Visual Examination.

HSA documents referred to in work section N25 are:

Health, Safety and Welfare at Work Act 2005 and Regulations as follows;

Construction Regulations 2013

General Applications Regulations 2007; Part 4 Working at Height.

RELATED WORK SECTIONS

X20: Fixings/adhesives

903.01.02 TYPE(S) OF SYSTEM/EQUIPMENT

GUIDED TYPE FALL PREVENTION SYSTEM FOR: PITCHED AND FLAT ROOF AREAS

- Drawing reference(s) see Architect's Roof Plan drawing
- Anchorage device: 8mm Stainless steel cable.
- Overall system length: as sub-contractors design.
- Anti-Pendulum Anchors as required by the design to prevent swing-fall.
- Intermediate support spacing: as sub-contractors design.
- Accessories/other requirements: as subcontractors design.
- System to be installed in accordance with the BS 7883 and EN 795 by the system manufacturer or a contractor approved by the system manufacturer.
- System must be continuous at all intermediate and corner brackets – users must not have to detach from the system to bypass brackets.

- Cable system to be supported on posts as below. Sub-contractor to prove the roof can take the loads from the posts. Posts may deform in the event of a fall but must not come apart – i.e. must be fully welded with no internal spring or other active mechanisms.
-

903.01.03 DESIGN / LAYOUT OF SYSTEMS

- The Tenderer's submission must allow for 100% safe access to all roof areas unless strictly specified otherwise by the Client.
- The Tenderer must, if necessary, advise that equipment is required in areas where the architect or design team may have missed potentially hazardous areas.
- Furthermore, the Tenderer must highlight on a drawing or in writing any areas of the roof that are not covered by the Tenderer's design with a reason why these areas are not included.
- AutoCAD Drawings must be submitted to the design team for approval. However, note that the architect is not an approving authority. The architect may comment on drawings as submitted for approval, but it remains the responsibility of the Tenderer to meet the design requirements of all Health & Safety Regulations and Standards as listed above.

903.01.03 TESTING OF CABLE SYSTEMS

- Tenderer to provide a copy of their in-house policies and procedures document on proof testing of the swage joints on site using Hydrajaws Cable Test Equipment.
- No less than 8 swages or a minimum of 50% of all swages, whichever is greater, including splices must be proof tested on site to 10kN.
- At least one test must be witnessed by the contractor / client.

903.01.03 PERSONAL FALL PROTECTION EQUIPMENT (PFPE)

- Unless specified otherwise in the Bill of Quantities supply the following for storage on site and used by trained personnel only:
 - Full Body Harness
 - 2 Standard 2m shock absorbing lanyards
 - 2 10m Rope & Grabs
 - 2 Cable Shuttles.
 - Accessories/Other requirements: as per Bill of Quantities Description.

Note all PFPE must be CE marked – however CE marking does not apply to the elements fixed to the building (posts, cables etc).

903.01.03 INFORMATION TO BE PROVIDED WITH TENDER

Submit the following:

- General arrangements drawing(s) at suitable scales showing the proposed layout of access/safety equipment.
- Proposed details of all necessary fixings and abutments with the building fabric.
- Location, direction and magnitude of all significant loads imposed on the building structure/fabric by the equipment.
- Schedule of builder's work, with drawings as necessary, showing extent and details of all work associated with the installation for which the equipment manufacturer/supplier is not contractually responsible.
- Schedule of special provisions and special attendances by others.

- Confirmation that 100% of the roof areas are covered – if this is not the case the reasons why must be highlighted. Refer to Clause 215 above. No extra work/variations will be entertained by the client/design team at a later stage.

903.01.04 INFORMATION TO BE PROVIDED AFTER ACCEPTANCE OF TENDER

Detailed AutoCAD drawings to fully describe fabrication and installation as follows:

Drawing content:

Contractor's name and contact number.

- If third party manufacturers are used provide their name along with model numbers of equipment proposed.
- General arrangement of the complete installation.
- Detailed description on how initial access to the roof is achieved.
- Restricted areas/ other areas not covered by the design and reasons why.
- Proposed details on how each element (posts etc) are attached to the building.
- Full Design Notes with design loads (as applied to the building), notes on use, installation and certification of the systems.

903.01.05 DESIGN/ PERFORMANCE REQUIREMENTS

WIND LOADING

- General: Design the access/ safety system to withstand specified wind loads with equipment in position of maximum exposure and in parked position.
- Wind loads: Severe.

FINISHING

- General: The equipment as installed must have no irregularities/ projections capable of inflicting personal injury.
- Finished surfaces and edges of all accessible parts: Regular and smooth.

DESIGN LIFE/ MAINTENANCE PROGRAMME

- Design life of access/ safety system: Not less than 25 years.
- Schedule for maintenance and for replacement of components: Submit.

ASSESSMENT/ TESTING OF FIXING POINTS FOR ANCHOR DEVICES

- Design and installation of fixings in steelwork or timber: Verified by calculation to be capable of sustaining the relevant static and dynamic test forces specified in BS EN 795, clause 4.3.
- Fixings in other materials: Verify suitability by carrying out a test in a sample of the material. The sample must be capable of sustaining the relevant static and dynamic test forces specified in BS EN 795, clause 4.3. Thereafter, each structural anchor installed in that material must be subjected to an axial pull out force of 6 kN to confirm the soundness of the fixing. The structural anchor must sustain the force for a minimum of 15 seconds.

903.01.05 FABRICATION, ASSEMBLY AND INSTALLATION

FABRICATION AND ASSEMBLY GENERALLY

- Machine cutting, drilling and assembly: Carry out as much as possible in the workshop. Obtain approval for any reassembly on site.

- Dissimilar metal surfaces of assembly components/ supports/ fixings: Isolate to prevent electrolytic or bi-metallic corrosion.

PROTECTION

- General: Do not deliver to site any components or assemblies that cannot be installed immediately or unloaded into a suitable well protected storage area.

SUITABILITY OF STRUCTURE/ FABRIC

- Visual, geometric and structural survey of supporting structure and fabric: Carry out before commencing installation of access/ safety system. Report immediately if structure/ fabric will not allow required accuracy or structural adequacy or security of fixing.

MECHANICAL FIXINGS

- Materials: Unless otherwise recommended by equipment manufacturer:
 - Connecting bolts and other fixings fully accessible for inspection: Mild steel hot dip galvanized to BS 7371-6.
 - Nuts: Tapped after galvanizing.
 - Cast-in anchors and other fixings not accessible for routine inspection: Zinc plated or austenitic stainless steel, grade 1.4401 (316) to BS EN 10088-1.

FIXINGS FOR SECURING EQUIPMENT

- Adjustment capability: Adequate three-dimensional adjustments to accommodate building structure/ fabric irregularities.

FIXING ANCHOR INSTALLATION

- Site drilling or cutting into structure/ fabric: Permitted only in approved locations.
- Distance between all fixing devices and edges of supporting material: Not less than recommended by fixing manufacturer.

IDENTIFICATION AND REGISTRATION LABELS FOR FALL PREVENTION SYSTEMS

- Provision: Provide and fix to each piece of equipment a permanent label giving:
 - Manufacturer's name, address and telephone number.
- Name and/ or reference code of installation/project.
- Maximum number of users that may be sustained by the equipment.
- Confirmation if Fall Arrest or Fall Restraint system.
- Name of certifying engineer and date of certification.
- Indicate restriction of use by pictogram or other suitable marking.
- Any other special features or restrictions.
- Location: In positions such that labels can be easily read prior to attachment to the system.

SERVICE/ MAINTENANCE OF FALL PREVENTION SYSTEM

- General: Following acceptance of the completed installation, service and maintain the equipment for the period stated below as and at intervals recommended by the manufacturer. Such maintenance to include a 'call-out' service during normal working hours to maintain the equipment in an acceptable and safe condition.
- Service/ Maintenance period: As recommended by manufacturer but not more than 12 months between certification visits.

OPERATING INSTRUCTIONS

- Equipment and accessories: Where appropriate, mark in such a way that it is possible to identify the correct mode of operation for their safe use.
- General: Before Completion provide, for inclusion in the Building Manual/Safety File, printed instructions and recommended procedures to be established by the Employer for operating and routinely maintaining the equipment. Provide diagrams where appropriate.

Content:

- As-built drawings
- Instructions for pre-use inspections and attachment to equipment.
- Comprehensive operating/use instructions, including training required and safety/emergency procedures.
- Certificates showing that all equipment is certified to governing standards and is fit for use.
- Servicing and planned maintenance procedures, including assembly instructions where maintenance necessitates dismantling of parts.
- List of replacement parts, with references if necessary.
- Recommended procedures for testing / recertifying equipment.

General: After commissioning/testing of the equipment and before Completion provide As-Built drawings for inclusion in the Safety File - Number of sets: 2.

Drawing Content:

- Contractor's name and contact number.
- Date of Certification/As-Built.
- Equipment Manufacturer's name, model and type numbers.
- General arrangement of the complete installation.
- Detailed description on how initial access to the roof is achieved.
- Restricted areas/ other areas not covered by the design.
- Accurate details on how each element (posts etc) are attached to the building.
- Full Design Notes with design loads (as applied to the building), notes on use, installation and certification of the system
- Allow for one free training session for the client / facility manager / building owner as follows:
 - Company to have at least one FETAC Level 6 Trainer on staff to oversee training.
 - Training plan to be submitted to the client for approval prior to training session.
- Training to include initial classroom session on the correct storage, inspection and use of PFPE

SERVICE/ MAINTENANCE OF FALL PREVENTION SYSTEM

- General: Following acceptance of the completed installation, service and maintain the equipment for the period stated below as and at intervals recommended by the manufacturer. Such maintenance to include a 'call-out' service during normal working hours to maintain the equipment in an acceptable and safe condition.
- Service/ Maintenance period: As recommended by manufacturer but not more than 12 months between certification visits.

OPERATING INSTRUCTIONS

- Equipment and accessories: Where appropriate, mark in such a way that it is possible to identify the correct mode of operation for their safe use.

OPERATING AND MAINTENANCE MANUAL (SAFETY FILE)

- General: Before Completion provide, for inclusion in the Building Manual/Safety File, printed instructions and recommended procedures to be established by the Employer for operating and routinely maintaining the equipment. Provide diagrams where appropriate.
- Content: As-built drawings as per clause 840 below.
- Instructions for pre-use inspections and attachment to equipment.
- Comprehensive operating/use instructions, including training required and safety/emergency procedures.
- Certificates showing that all equipment is certified to governing standards and is fit for use.
- Servicing and planned maintenance procedures, including assembly instructions where maintenance necessitates dismantling of parts.
- List of replacement parts, with references if necessary.
- Recommended procedures for testing / recertifying equipment.
- General: After commissioning/testing of the equipment and before Completion provide As-Built drawings for inclusion in the Safety File - Number of sets: 2. Contractor's name and contact number.
- Date of Certification/As-Built.
- Equipment Manufacturer's name, model and type numbers.
- General arrangement of the complete installation.
- Detailed description on how initial access to the roof is achieved.
- Restricted areas/ other areas not covered by the design.
- Accurate details on how each element (posts etc) are attached to the building.
- Full Design Notes with design loads (as applied to the building), notes on use, installation and certification of the system
- Allow for one free training session for the client / facility manager / building owner as follows:
- Company to have at least one FETAC Level 6 Trainer on staff to oversee training.
- Training plan to be submitted to the client for approval prior to training session.
- Training to include initial classroom session on the correct storage, inspection and use of PFPE
- All trainees to demonstrate competency in the use of PFPE before going out on the roof.
- All trainees to be shown how to use the fixed equipment on the roof and demonstrate competency in use of same.
- Training to be assessed by the trainer using standard bank of questions and feedback forms.
- Training certificates to be issued within 24 hours of completion of training

1000 ENERGY PERFORMANCE:

1001 CODES AND STANDARDS

1002 GENERAL

1001 CODES AND STANDARDS:

1. **Building Regulations:** The installation shall comply with the requirements of the Building Regulations & in particular with TGD Part 'L' Conservation of Fuel and Energy for Dwellings & Part 'F' Ventilation.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. **Note:** to be read in conjunction with M&E Drawings. Please note that sections in this specification contain clauses which may not be required or may be covered by M&E Specifications. Please clarify any discrepancies between the two specifications with both Architect and the Engineer.

1002 GENERAL:

This building does not have any form of insulation and is an unheated, unoccupied building.

Energy Performance:

New buildings shall achieve a set standard of energy performance set out by the latest building regulations. A Building Energy Rating test shall be conducted by an accredited SEAI BER Assessor and shall carry out the BER test in a competent and professional manner.

1100 METALWORK:

- 1101 CODES AND STANDARDS:
- 1102 CORTEN (EFFECT) CLADDING PANELS
- 1103 MATERIALS
- 1104 COATINGS
- 1105 GENERAL

1101 CODES AND STANDARDS:

1. **Building Regulations:** The installation shall comply with the requirements of the Building Regulations.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. Please note that sections in this specification contain clauses which may not be required or may be covered by Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the Engineer.

1102 CORTEN (EFFECT) RAINSCREEN CLADDING SYSTEM:

1102.01 Application

RAINSCREEN CLADDING PANELS TO COLUMNS:

3mm Corten effect Anodised Aluminium cladding panels secret fixed back onto horizontal support rails fixed back to RC. columns to Architect's drawings and manufacturer's details and spec.

Detailed shop drawing required by Contractor's specialist supplier and to be agreed with Architect/ER.

Rainscreen cladding system and associated features:

- Complete detailed design in accordance with this specification and preliminary design drawings.
- Submit detailed drawings prior to fabrication

Related works: Co-ordinate detailed design with other trades wherever interfaces occur.

1102.02 Description

Cassette Panel to be a secret-fix hook-on cassette solution that can offer a range of large format cassettes and can be installed in both portrait and landscape format. Hook-on cassette façade system supported by vertical mullions directly fixed to panels or alternatively supported by a built-up helping hand bracket and rail system.

1. Primary support structure reinforced concrete.
2. Rainscreen cladding system:
 - A. Type: Hook-on cassette façade system
 - B. Manufacturer: Kingspan or similar approved
 - C. Requirement: Include all elements of the system such as interfaces necessary for the completion of the installation. Include all mullions, gaskets, bracketry, bracket isolator pads, fixings, infill strips, perimeter flashings and closers.
3. Rainscreen Panels:
 - A. Type: Hook-on cassette

- B. Manufacturer: Kingspan or similar approved
 - C. Thickness: Nominal 3mm (Panel range generally 2-5mm to be determined by spans and load requirements as advised by supplier/manufacturer)
 - D. Material: Anodised Aluminium (Corten effect finish) manufactured using 2.0 mm to 3.0 mm solid aluminium (1050-H14 or J57S grade). Aluminium Alloy Grade to BS EN 573-3, grade EN AW-5005. Temper to BS EN 515, H14.
 - E. Width: Bespoke
 - F. Height: Bespoke
 - G. Joint Widths: Nominal 20mm between panel edges, with recessed closed joint 18 mm horizontally. 18 mm vertically. Joint type: To match panel face.
 - H. Air Gap: Not less than 38mm between rear of panel and substrate
 - I. Closer Panels: Continuous closer panels at openings, where reveal
4. Finish on Panels:
Anodised Aluminium: Anodised Corten effect finish to offer durability and a high level of corrosion resistance. 60 µm standard coating thickness, subject to verification on a project specific basis.
5. Flashings, Fabrication & Ancillaries:
Anodised Aluminium façade systems to be supplied with a range of standard flashings and specialist to complete the façade envelope.
To be included with the system specification is a range of ancillary components essential to ensure the system performs as designed and tested. This includes mullions, locator clips, gasket tape and fasteners.

1102.03 Appearance and Fit

Requirement:

- To ensure the position and alignment of all parts and features as shown on the Architectural design drawings.
- To accommodate deviations in the primary support structure, provided always that the latter is within stated design tolerances for the element of structure

Primary support structure:

- Before commencing installation of the rainscreen cladding system, carry out survey sufficient to verify that required accuracy of erection can be achieved.
- Give notice: If the structure will not allow the required accuracy or security of erection.
- Design tolerances to include allowance for panel manufacturing tolerances of +/- of adjustment, cladding zone on majority of constructions allow +/- 10mm adjustment

General Movement

Requirement:

Rainscreen cladding must accommodate anticipated building movements as calculated and specified by the structural engineer

1102.04 Certification and Testing

Reaction to Fire:

To be manufactured from solid aluminium, all stiffeners are attached via a welded stud and bolt arrangement.

Anodised Aluminium is an aluminium alloy with an inorganic coating and therefore classified as A1 in accordance with EN 13501-1 without further testing as outlined in EU Commission Decision 96/603/EC.

Performance Testing:

System testing to CWCT standards for water tightness & wind resistance.

System testing for wind resistance, 2400pa Serviceability & 3600pa Safety. - (Proteus SR® Test by UL International UK Ltd).

Deflection Under Wind Load:

Requirement: For listed components, at positive pressure & negative applications of the design wind pressure, normal deflections are not to exceed:

- Framing Members: L/200
- Panels: L/90 or L/65 (*delete as appropriate*)

1102.05 Quality and Durability

To be manufactured from the highest quality materials to rigorous quality control standards, complying with

- BS EN ISO 14001. Cassettes are manufactured under Environmental Management System Certification.
- BS EN ISO 9001 standard, ensuring long term reliability and service life.
- BS EN ISO 50001 Energy Management System Certification.
- BS EN ISO 45001 Occupational Health and Safety Certification.
- BS EN ISO 37301 Compliance Management Systems.
- CE marked to BS EN 14782: 2006.

1102.06 Warranty

Up to 25 years Anodized finish warranty.

1102.07 Environmental

- Cassette Panel to be certified to BES 6001 (Framework Standard for the Responsible Sourcing of Construction Products) 'Good'.
- Cassette Panel systems have Environmental Product Declarations in accordance with the requirements of EN 15804 + A2: 2019.
- Panels to be fabricated from steel that is made from 15 – 25% recycled content.

Cassettes to be manufactured from the highest quality materials, using state of the art production equipment to rigorous quality control standards, complying with:

BS EN ISO 14001. Cassettes are manufactured under Environmental Management System Certification.

BS EN ISO 9001 standard, ensuring long term reliability and service life.

BS EN ISO 50001 Energy Management System Certification.

BS EN ISO 45001 Occupational Health and Safety Certification.

BS EN ISO 37301 Compliance Management Systems.

CE marked to BS EN 14782: 2006.

Certification and Testing:

Classified A1 to BS EN 13501-1 without further testing as outlined in EU Commission Decision 96/603/EC.

1102.08 Packing and Transport

Packing

Cassettes are to be flat packed on a timber pallet and sealed with a shrink wrap polythene to protect the contents from moisture ingress – Waterproofing measures to be censured by contractor during storage on site to protect against rain, penetration of moisture and condensation.

Each pallet to be labelled clearly to indicate the cassette references for each item in line with the project schedule references.

Each pallet to be put through a quality control procedure ensuring:

- Each cassette to have final quality checks to ensure no damage has occurred during manufacture;
- All cassettes to be packed back-to-back with polystyrene packers to restrict movement during transit;
- Cassettes that are packed face-to-face to have a layer of foam over the external facing to protect the coating; and
- All cassettes must have identification numbers marked on the rear of each cassette.

Long term on-site storage (exceeding six months) should be avoided as it may be difficult to remove any protective films that may have been applied. When removing from the pallets and stacking nothing should be placed between them as this may result in surface damage.

Transport

All deliveries (unless indicated otherwise) are by road transport to project site. Off-loading is the responsibility of the contractor.

1102.09 Information to be provided by Contractor

Information to be provided before commencement of manufacture of cladding system

- Detailed drawings to fully describe the installation of the rainscreen cladding system
- Project specific fabrication, handling and installation method statements
- Certification for incorporated components manufactured by others confirming their suitability for proposed locations in the rainscreen cladding
- Recommendations for spare parts for future repairs or replacements
- Recommendations for safe dismantling, recycling or disposal of products

Contractor to submit the following cladding particulars:

- A schedule of detailed design drawings and dates for submission for comment
- A schedule of dead loads that will be transmitted from the rainscreen cladding to the primary support structure
- Proposed fixing details

- A detailed fabrication and installation programme in compliance with the main contract master programme.
- Proposals to support outstanding applications for building regulations approval
- Maintenance procedures in accordance with manufactures standard maintenance guidelines
- Certification that completed works complies with specification
- Checklists register to ensure all items have been inspected and non-compliances discharged

Product Samples

General: Before commencing detailed shop drawings, submit labelled samples of panels, external facing. 1 x 1m sample panel to be present on site for ER's inspection. A sample of interface details with other trades such as corners and fold backs in panels to RC Columns is also to be made available on site for ER's inspection.

Mock-Up

All 1 x 1m sample panels and mock ups to be retained undisturbed until completion of cladding works or until otherwise agreed.

Identify scale and purpose of mock-up, e.g. to agree interface details with other trades, etc

1103 MATERIALS:

Lead: (where used)

Lead Sheet/ Strip: Lead sheet/ strip shall comply with I.S. EN 12588:2006 – Rolled Lead Sheet for Building Purposes and fitted in accordance with B.S. 6915:2001(+A1:2014) – Code of Practice, design and Construction of Lead Sheet Roof and Wall Coverings.

Lead Thickness: 2.24 mm (Code 5) – 25.4kg – Colour Code Red.

Note: Patination oil should be applied immediately to all lead surfaces in contact with fibre cement slates to reduce the possibility of staining of slates. See Painting Clause 1403.25

Zinc: Not Applicable

1104 COATINGS:

Metalic Paints: (where used)

- All surfaces of metalwork shall be clean, free from loose millscale and loose rust.
- Ferrous metalwork not protected by a metallic coating and which is to be protected at works shall be painted with a High Build Zinc Rich Primer as

1105 GENERAL:

(Refer To Civil/ Structural Specification)

1200 FINISHES - WALL, CEILING & FLOORS:

- 1201 CODES AND STANDARDS:
- 1202 MATERIALS
- 1203 PLASTERING GENERALLY
- 1204 FIXING ACCESSORIES – GENERALLY
- 1205 FIXING PLASTERBOARD – GENERALLY
- 1206 INTERNAL PLASTERING – GYPSUM
- 1207 EXTERNAL RENDERING – SAND/ CEMENT
- 1208 RENDERING APPLICATION
- 1209 ASSORTED PLASTER/ RENDER APPLICATIONS
- 1210 AIRTIGHTNESS
- 1211 WALL TILING
- 1212 WALL VENTS
- 1213 MIRRORS
- 1214 SHOWER SCREEN
- 1215 SCHEDULE OF FLOOR AREAS
- 1216 FLOORING MATERIALS

1201 CODES AND STANDARDS:

1. **Building Regulations:** The installation shall comply with the requirements of the Building Regulations.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. Please note that sections in this specification contain clauses which may not be required or may be covered by Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the Engineer.

1202 MATERIALS:

1. **Gypsum:** Materials for plastering should be in accordance with B.S. 8481:2006 – Design, preparation and application of internal gypsum, cement, cement and lime plastering systems.
2. **Gypsum Plasters:** To B.S. EN 13279-1:2008 – *Gypsum binders and gypsum plasters* and to manufacturer's instructions.
3. **Gypsum Hardwall Plaster:** A quick drying undercoat plaster with high damage resistance for use on a masonry background. A lightweight, retarded hemihydrates, pre-mixed gypsum plaster incorporating special aggregates and additives to comply with B.S. EN 13279-1:2008 types B4/20/2 and C3/20. Fire protection to achieve Euroclass A1 satisfying the requirements for Class 0 surfaces. Thermal Resistance of 0.04m² k/W for a combination of 11mm undercoat and 2mm final float finish. Air tightness – A combination of undercoat and finish coat plaster finish over 100mm concrete blocks, laid on edge, to offer an air permeability performance of 0.03m³ / h.m² (50Pa).
4. **Gypsum Finish Coat Plaster:** A quick drying finish coat plaster with a high-quality finish and with high damage resistance for use on a plasterboard or undercoat background. A lightweight, retarded hemihydrates, pre-mixed gypsum plaster incorporating special aggregates and additives to comply with B.S. EN 13279-1:2008 types B1/20/2.

5. **Plasterboard:** To B.S. EN 520:2004+A1:2009 Type A, Type D, Type F & Type H1–*Gypsum Plasterboards*
 - A. **Standard - 12.5mm:** shall be greyboard or Ivory faced, 12.5mm plasterboard consisting of a gypsum core encased in, and firmly bonded to, strong paper liners, one a face suitable for direct decoration or skim plaster finish. Thermal conductivity (λ) – 0.19 W/mK. Edge profile to be tapered. Where a vapour check or insulating grade is required, the plasterboard shall be supplied with a veneer of Metalized Polyester film.
 - B. **Standard - 15.0mm:** shall be greyboard or Ivory faced, 15.0mm plasterboard consisting of a gypsum core encased in, and firmly bonded to, strong paper liners, one a face suitable for direct decoration or skim plaster finish. Thermal conductivity (λ) – 0.19 W/mK. Edge profile to be tapered. Where a vapour check or insulating grade is required, the plasterboard shall be supplied with a veneer of Metalized Polyester film.
 - C. **Standard - 9.5mm: (to be used only at window/ door reveals):** shall be greyboard or Ivory faced, 9.5mm plasterboard consisting of a gypsum core encased in, and firmly bonded to, strong paper liners, one a face suitable for direct decoration or skim plaster finish
 - D. **Moisture Resistant- 12.5mm:** (Green), 12.5mm plasterboard consisting of a gypsum core with water repellent additives to increase moisture resistance encased in, and firmly bonded to, strong paper liners, one a face suitable for skim plaster finish and tiling. Thermal conductivity (λ) – 0.19 W/mK. Edge profile to be tapered.
 - E. **Fire Board - 15.0mm:** (Pink), shall be pink faced, 15mm plasterboard consisting of an aerated gypsum core with glass fibre and other additives encased in, and firmly bonded to, strong paper liners. The boards have mineral fibres and/or other additives in the gypsum core to improve core cohesion at high temperatures. If a VCL is required, the fire board is backed with a vapour control membrane that is designed to be used where warm and cold elements of walls and ceilings interact, such as in external wall and roof scenarios. Board should be suitable for skim coat plaster application. Thermal Conductivity: 0.24W/mK, certified to BES 6001 achieving a rating of 'Very Good', Class 0 fire protection on the surface.
 - F. **Insulated Composite Plasterboard:** A high-performance insulated plasterboard consisting of; a front face of a tapered edge gypsum-based plasterboard, a core of a high-performance CFC/ HCFC free rigid urethane insulant of typical density 32kg/m³ and a reverse face of a composite foil bonded to the insulation core during manufacture. Typical Slab Size – 2.44m x 1.2m x 52.5mm thick. Plasterboard thickness – 12.5mm. Insulation thickness – 40mm. Thermal conductivity (λ) of plasterboard - 0.18W/mK. Thermal conductivity (λ) of insulation - 0.023W/mK.
 1. Plasterboard Fixings:
 1. **Nails:** 2.65mm $\varnothing$ galvanised clout nails with a 7.5mm $\varnothing$ Head, 40mm long and complying with requirements of B.S. 8212:1995 – *Code of practice for drylining and partitioning using gypsum plasterboard*.
 2. **Screws:** 42mm x 3.5mm $\varnothing$ Zinc plated screws or 50mm x 3.9mm $\varnothing$ self-tapping screws, black phosphate with Ph2 countersunk heads all to B.S. EN 14566:2008 + A1:2009 – *Mechanical fasteners for plasterboard systems*.
 2. **Gypsum Filler Compound:** Joint filler for plasterboard jointing and pre-filling gaps and holes to B.S. EN 13963:2014 – *Jointing Materials for gypsum boards* and to manufacturer's instructions.
 3. Joint Tape and Scrims:
 1. 75mm paper jointing tape as supplied by board manufacturer. To BS EN 13963, Type.
 2. Min. 50mm wide paper/ fibreglass tape for reinforcing flat joints and internal angles.
 3. 100mm wide plasterer's jute scrim for reinforcing internal angles.
 4. Plastering Accessories:

1. Exterior Use:

- Stainless Steel plastering accessories, ie. angle bead with 53mm wing size, render stop (bellcast), movement bead, etc. all to suit render thickness of 22mm. SS Steel profiles extruded to B.S. EN 12608-1:2016 and profiles suitable for rendering and plastering to B.S. EN 13914-1:2016 – *Design, preparation and application of external rendering.*
- Rib-Lath: herringbone patterned mesh with 'V' profiled ribs for exterior use. A stainless-steel carrier for all rendered finishes 3mm – thick

1.16 kg/m² - Normal weight

8mm – rib depth

600mm maximum support centres

2500 x 600mm sheet size Manufactured in accordance with B.S. EN 13658-2:2005–*metal lath and beads: external rendering.*

2. Interior Use: Galvanised steel products, expanded metal lath, plaster stops, thin coat angle bead with

53mm wing size, etc. all to suit selected plaster thickness, are for interior use only using galvanised steel to B.S. EN 10346:2015 – DX51 + Z275 and manufactured in accordance with B.S. EN 136581:2005 – *metal lath and beads: internal rendering.*

3. Sand and Cement Render: To B.S. EN 13914-1:2016 – Design, preparation and application of external rendering and internal plastering.

- Cement shall be in accordance with Blockwork Clause 602.
- Lime shall be in accordance with Blockwork Clause 602.
- Aggregates/ sand for rendering shall be in accordance with I.S. EN 12620:2013 and Blockwork Clause 602.

-For rough cast finish use 10mm single sized aggregate.

-For dry dash finish shall be 10mm graded aggregate of white spar.

-For pebble dash finish shall be 10mm graded aggregate.

- Sand and sand/ lime mixes shall be in accordance with B.S. EN 998-1:2016 – *Specification for mortar in masonry, Rendering and Plastering Mortar.*
- Water shall be in accordance with Blockwork Clause 602.8

4. Plasticisers: An air-entraining admixture that improves the workability of renders to comply to comply with B.S. EN 934-2/ 3:2009 +A1:2012 – *Admixtures for masonry mortar.* Do not use without specific Employers Representative's approval.**5. Waterproofing Agent:** To be suitable for use intended, approved by Employers Representative and used in accordance with manufacturers' instructions.**6. Bonding Agents:** Bonding agents for internal use shall be P.V.A. (Polyvinyl Acetate) emulsion complying with B.S. 5270-1:1989 – *Bonding agents for use with gypsum plasters and cement* and used in accordance with B.S. EN 13914-2:2016 and B.S. 8481:2006 and the manufacturer's instructions.**7. Building Paper:** Grade A1F Building Paper. A reinforced bitumen bonded building paper laminate to B.S. 1521:1972 – *Specification for waterproof building papers.***1203 PLASTERING GENERALLY:**

1. Storage of Materials: Plasters, plasterboards, lime and cement shall be kept dry. Plasters, lime and cement shall be stored separately and used in rotation of deliveries, and no plaster shall be used after three months from its date of manufacture unless tested and approved. All sands

shall be stored separately, according to type, on clean hard, dry standings and shall be protected from contamination.

2. **Cleanliness:** Keep plant and tools clean and free from contamination by previous mixes.
3. **Weather Protection:** Do not commence internal plastering in any area until it is protected at all times from the adverse effects of weather.
4. **Premature Drying Out:** Avoid premature or localised drying of coatings.
5. **Cold Weather Application:** Do not work while the air shade temperature is below 2°C on a rising thermometer or below 5°C on a falling thermometer. Ensure that temperature of coatings remains above 4°C for at least 24 hours after setting.
6. **Embedded Metal:** Ensure that all metal items to be embedded in plaster and cement rendering are non-corrosive.
7. **Mechanical Application Not Permitted:** Do not use mechanical methods for the application of plastering or cement rendering coats.
8. **Mixing Thoroughly:** Mix plastering and rendering materials thoroughly in the proportions described to incorporate all the constituents of the mix.
9. **Mixer Washing:** Wash out mixer after each batch has been discharged if the mixer is not in continuous use.
10. **Clean Bankers and Gauge Boxes/Mixing Buckets/ Tubs:** Mix materials on clean bankers or in clean mixing buckets/ tubs, which shall be washed out after each mixing.
11. **Backgrounds/ Preparation:** All backgrounds should be free of loose particles, dust, etc. and deleterious substances such as mould, oil and grease and be adequately prepared to accommodate the finished surface. Surfaces shall be wetted as required before first coat of plaster is applied. Where wetting is unsuitable or inappropriate to ensure adequate adhesion apply a bonding agent as per Clause 1202.11

1204 **FIXING ACCESSORIES – GENERALLY:**

1. **Fixing Beads and Stops:** Fix beads and stops; plumb square and level, unless otherwise indicated. Secure with plaster dabs, 38mm long clout nails, masonry nails or tying wire as required by background, at not more than 600mm centres. Fix corner beads/ angles by pairing fastenings at each side of angle, ensuring they are of correct depth for the finishing thickness of plaster.
2. **Expansion Beads:** Fix expansion beads centred over background expansion joints with stainless steel nails at not more than 600mm centres on each side in accordance with the manufacturers' written instructions.
3. **Dissimilar Backgrounds:** At junction between dissimilar backgrounds in the same plane and to receive the same coating, fix metal lathing over building paper with suitable fastenings for each background. At single junctions lathing shall be not less than 300mm wide, fixed each edge at 100mm centres.
4. **Rib-lath:** Fix to background using combined stainless-steel screws and plugs (screw size – 6x50mm). Fix with ribs running vertically, fixings should be made through all ribs at 600mm centres. Building paper to be used behind expanded metal 'Rib-Lath' where indicated to prevent render bonding to dissimilar backgrounds behind.
5. **Plastering over conduits/ service chases:** To prevent cracking where services are chased into walls. Cover with galvanised metal lathing, fixed with galvanised nails at staggered centres along both edges. When plastering, work undercoat well into interstices to obtain maximum key.

1205 FIXING PLASTERBOARD – GENERALLY:

B.S. 8212:1995 – Code of practice for dry lining and partitioning using gypsum plasterboard.

B.S. EN 13964:2014 – Suspended Ceilings

1. **Plasterboard:** shall be aligned plumb and level, fixed lightly butted, with bound edges running at right angles to the joists/ studwork and should be staggered so as to avoid a continuous end joint. Stagger joints between layers by at least 600 mm. Boards to be butt jointed with max 3mm gap. Fix the boards to every support at, for screws; at approx. 200mm c/c (5no. screws per metre). Reduce to 150 mm at board ends and around room perimeter or for nails; at approx. 150mm c/c (8no. nails per metre). Set heads of screws [fasteners] below board surface and fill flush with surface prior to decoration. Nails should not project above board surface. Fixings located not less than 10mm from board edges or 13mm from cut edges and not less than 6mm from edge of timber. Damaged boards should not be used. Cuts on boards to be neat and accurate. Do not damage core or tear paper facing. Fix face side out, appropriate for plastering/ finishing. All edges to be fully supported. Cut edge should finish over a noggin. There should be adequate support for light points, socket outlets and service installations. Opening for services and electrical outlets should be accurately cut. Ceiling boards should be staggered to minimise cracking. Fix plasterboard to ceilings before fixing to walls or partitions. Before fixing ensure all services are in place. Where required provide timber noggins at unsupported joints/ edges to ensure plasterboard is fully supported at all edges. Tape and fill and skim as per Clause 1206.3.

2. **Joint Treatment:** Joints between boards should be neatly formed, flush and suitably finished. Reinforce all joints and internal and external corners to all plasterboard prior to receiving gypsum plaster skim coating as follows: -

Taping: Reinforce joints and internal angles using jointing tape. When lining internal angles creasetape down the centre to aid application. Spread plaster filler along each joint, press joint tape firmly into the plaster filler and immediately cover with a further application. Leave sufficient plaster filler beneath the tape to ensure adhesion. Remove any air bubbles.

Scrimming: Reinforce junctions such as wall to ceiling junction, with 100mm jute scrim. Caulk all joints with board finish plaster. Press scrim in well, trowel smooth and allow to dry.

Angle Beads: Use galvanised thin coat angle beads at external corners and any downstand beams fixed as per 1204.1. Avoid damage to coating due to excessive trowelling or scraping.

3. **Plastering on Plasterboard, Generally:**

Do not wet plasterboards before plastering, nor allow lime, mixes containing lime or cement-sand mixes, to come in contact with plasterboard.

Pre-fill with gypsum joint filler any gaps/ holes in plasterboard and any protruding screw heads/ nails should be driven home prior to spotting.

NOTE:

CEILINGS REQUIRING 30min. FIRE RESISTANCE IE. GROUND FLOOR CEILING OF TWO STOREY HOUSE/ SOFFIT TO STAIRS/ ENCASMENT OF STEELWORK

I.S. EN 1365-2:1999 – loadbearing: Floors & Roofs. (Previously - BS 476)

Note: As of July 1st, 2017 new building regulations require fire protection of structural building elements to be assessed under EN standards instead of British Standards (B.S.)

15mm thick standard plasterboard as per Clause 1202.3.2.(to give a ceiling fire resistance of 30 minutes) fixed with screws as per Clause 1202.4.2. Drywall screws installed at maximum 230mm centres. Drywall screws must maintain a minimum 25mm penetration through into timber supports.

Minimum timber joist width: 38mm. Maximum timber joist centres: 600mm

Timber noggings required between primary joists; minimum 38mm x 38mm sections required to support all face layer plasterboard edges at perimeter and within the field of the ceiling membrane.

All board joints installed staggered and joints in face layer boards treated with paper joint tape. 2mm skim coat plaster applied with a steel trowel smooth finish as per Clause 1206.3.

All materials unless otherwise indicated shall be supplied by one manufacturer and shall be installed in accordance with their current published instructions and generally in accordance with all relevant Standards. Systems to come with building lifetime system warranty.

Refer to Energy Clause 1004.8 – Sound Insulation.

Refer to Energy Clause 1005 - Air Tightness.

Note: where steelwork is within floor structure, 15mm thick 'Fire Board' plasterboard as per Clause 1202.3.5 is to be used. Installed as above.

1206 INTERNAL PLASTERING – GYPSUM:

B.S. 8481:2006 – Design, preparation and application of internal gypsum, cement, cement and lime plastering systems and BS EN 13914-2:2016 – Design, preparation and application of internal plastering.

1. **Gypsum Plaster Storage:** Store gypsum plaster on a raised floor under dry ventilated conditions and protected from the weather. Do not use air-set plaster or plaster aged more than three months from its date of manufacture.
2. **Mixing Lightweight Gypsum Plasters:** Do not add materials other than water to premixed lightweight plasters and mix in accordance with the manufacturers' written instructions.
3. **Skimmed Gypsum Plaster on Plasterboard** (1 skimcoat – 2-3mm):
 - 12.5mm standard plasterboard with skimmed gypsum plaster finish to all stud partitions and ceilings unless otherwise specified on drawings.
 - Complete all fixings, taping, scrimming as per Clause 1205.2.
 - Prepare surface to receive single coat finish plaster by filling defects as described.
 - Apply a 2-3mm coat of gypsum board finish plaster as per manufacturer's instructions, steel trowelled to avoid loose patches and to form a smooth finish, ensuring all reveals are accurately formed.
 - Avoid damage to the galvanised coating of plastering beads and other metal accessories due to excessive steel trowelling.
4. **Hardwall Gypsum Plaster on Masonry Walls** (2 coats – 13mm max.):
 - Blockwork to be well brushed down to remove any dust or loose particles. Remove nails or other metal objects.
 - Face of blockwork to be well wetted to off set any suction.
 - Apply gypsum undercoat as per manufacturer's instructions to a minimum thickness of 9mm for standard walls and 11mm for party walls. Bring to a true level surface by means of a straight edge or darby. The surface to be hand floated and thoroughly scratched to provide a key for the finishing coat. The undercoat must never be re-tempered after the set has commenced.
 - Apply a gypsum finishing coat as per manufacturer's instructions to a minimum thickness of 2mm and trowelled to a smooth even finish.
 - **NOTE:** Plaster thickness of 11mm for standard walls and 13mm for party walls.

1207 EXTERNAL RENDERING – SAND/ CEMENT:

Fire rated mineralistic insulation system built up of mineral fibre insulation boards mechanically fixed to substrate with a selected decorative pigmented finish FOR A COMBINED THICKNESS OF 115MM. System to be Sto Therm mineral K or equivalent approved incorporating an outer layer of Sto-Sheild mesh AES or equivalent and an inner layer of Sto-Armour or equivalent suitable for high impact ground

floor areas. Boards to be fixed as per system suppliers approved details. All mechanical fixings to be suitably thermally broken to mitigate against thermal spotting. Reinforcing coat to be applied at ground floor level to consist of 10mm minimum Stoamat Novo or equivalent in 2 no coats. Decorative finish to selected colour and pattern to include Sto Primer (putzgrund) or equivalent and 2mm StoSiclo QS or equivalent all in accordance with manufacturers recommendations.

The system has an A2-s1, d0, A2-s2, d0 or B-s2, d0 classification in accordance with BS EN 13501-1:2007 and can generally be installed without height restriction but in certain configurations may be restricted to buildings up to 18 m in height. Refer to local Building Regulations / Technical Handbooks/ Technical Booklets.

Sto mineral fibre boards: Dual density rock mineral fibre, A1 noncombustible. Thermal Conductivity (to BS 3958-5: 1986 & DIN 52 612): 0.036 W/Mk. Minimum compressive strength: 20 kN/m² at 10% compression. Thickness: 30–250 mm in 10 mm increments - consult Sto Ltd for details and recommendations

StoLevell Duo Plus adhesive and fixing dowels

Sto perforated aluminium (flexicurve) starter track Sto-Armour Angle - To internal angles. Sto-Clip-on Profile Novo Sto-Mesh Angle Flexibead Ideal - To variable external angles. Sto-PVC Mesh Angle Bead - To 90° external angles. StoSeal Bead Perfekt - Head and reveal profile with telescopic mechanism and integrated glass fibre mesh. StoSeal Bead Supra - Head and reveal profile with integrated sealing tape and glass fibre mesh. StoSeal Joint Sealing Tape Lento - Pre-compressed joint sealing tape for use at interfaces. Sto-Starter Track Connectors Sto-Stop Bead Standard - Head and reveal profile

Reinforcing base coat StoArmat Classic Plus cement free reinforcing plaster StoArmat Novo reinforcing plaster StoLevell Duo Plus reinforcing plaster - Reinforcing mesh Sto-Armour Mesh - Robust reinforcing mesh applied prior to standard mesh for increased impact resistance. Sto Glass Fibre Mesh applied into base coat - Standard reinforcement.

Intermediate coat Sto-Primer vapour-permeable preparation coat - Finish coat Stolit Effect - Acrylic resin bound render finish used to achieve special render effects. Stolit K - Acrylic resin bound render Sto Ltd with stippled texture. Stolit Milano - Acrylic resin bound render finish with fine grain used either alone or with Stolit K/ Stolit Effect to achieve special render effects. Stolit MP - Acrylic resin bound render with rustic texture. Stolit R - Acrylic resin bound render with rilled texture. StoLotusan K - Superhydrophobic render finish with stippled texture and Lotus Effect. StoLotusan MP - Superhydrophobic render finish with rustic texture and Lotus Effect. StoSilco K - Silicone resin bound hydrophobic render with stippled texture. StoSilco MP - Silicone resin bound hydrophobic render with rustic texture. StoSilco R - Silicone resin bound hydrophobic render with rilled texture. StoSuperlit K - Acrylic bound render finish with exposed natural stone aggregate.

1207.01 BS EN 13914-1:2016 – Design, preparation and application of external plastering

1. **Samples:** Provide sample panels of External finishes and obtain Employers Representative's approval before proceeding.
2. **Window Reveals and Bands:** Not Applicable

1208 RENDERING APPLICATION:

1. **Time Restriction:** Use mixes containing cement within two hours in warm weather, and three hours in cold weather, after adding the cement.
2. **Cement-Lime-Sand Mix:** For cement-lime-sand coating, mix cement and coarse stuff (lime-sand mix). Add water and mix to a workable consistency.
3. **Cement-Sand-Plasticiser Mix:** For cement-sand-plasticiser mix, the proportions and method of adding plasticiser shall be in accordance with the manufacturers' written instructions. Mix cement, sand, plasticiser and water to a workable consistency.
4. **Cement Based Undercoats, Drying Out:** Allow each cement-based undercoat to dry out thoroughly and so ensure that drying shrinkage is substantially complete before applying subsequent coat.
5. **Finishing:** If area is too extensive to complete in a day, finish to an approved line.

1209 AIRTIGHTNESS:

As per Energy Clause 1005

1210 WALL TILING:

1. **Schedule Of Wall Tiling Areas:**
2. **Wall Tiling - Generally:**
 - Standards for tiling:
 - Internal wall tiling to B.S. 5385-1:2009 – Internal wall and floor tiling, normal conditions.
 - Wall tiling to shower and bath areas to B.S. 5385-4:2015 – *Internal wall and floor tiling, special conditions*
 - B.S. EN 14411:2016 – *Porcelain Tiles*
 - B.S. EN 12004-1:2017 – *Adhesive for Tiles*
 - B.S. EN 13888:2009 – *Grouts for Tiles*
 - Colours to be selected by Architect
 - Tiles should be fixed as per manufacturer's instructions.
 - Their weight on lightweight plaster should not exceed 20kg/ m².
 - When tiles are to be fixed to gypsum plaster or equivalent backgrounds a minimum period of 4 weeks shall elapse between completion of plastering and commencement of tiling.
 - Gypsum plaster or equivalent, and other backgrounds, if necessary, shall be primed with a primer recommended by the adhesive manufacturer.
 - Contractor shall submit samples of all tiles for Architects/ E.R. approval before ordering.
3. **Wall Tiles:**
Selected 100x100x10mm square porcelain tile, tile finish on 12.5mm tile backer board with selected approved allow for 10x10mm brushed aluminium box trim to the perimeter of all external corners, door jamb junctions and full perimeter of top of tiled surface i.e along high level datum 2-4mm joint size to be determined on site to eliminate / minimize cut tiles in horizontal dimension. setting out to provide for no cut tiles in vertical dimension. selected approved high quality coloured epoxy grout for wall tiles to en 13888. detailed submittal for all component parts and 1mx1m sample panel required.
4. **Stainless Steel Trim:** Stainless steel tile trims, (304 grade stainless steel), thickness to match selected tiles
5. **Primer:**
Acrylic Primer: Water based polymer emulsion to improve adhesion, to seal surfaces eg. Gypsum Plaster. Apply first coat diluted 1:1 with water and allow to dry, before applying a

second coat neat to the wall surface. Tiling Adhesive to be applied when primer dries clear but remains tacky.

6. Waterproof Tanking Kit: (For First Floor Bathrooms)

A versatile, multi component system to provide secondary protection in tiling installations. The system comprises a water-based liquid applied flexible membrane, a roll of flexible joint sealing tape and an acrylic primer.

Ensure substrate is dry, clean and sound

Prime Gypsum plaster wall with acrylic primer. Allow primer to dry before applying membrane. Mix tanking membrane as per manufacturer's instructions. Apply a first coating of the liquid applied membrane to the entire surface around the Bath/ Shower. Immediately embed the flexible joint sealing tape over corner joints into the wet first coat of membrane. After the first coat has touch dried, apply a second coat of membrane to entire surface and overlapping tape edges. Allow to dry for at least 24 hours before tiling.

7. PVC Strip Seal for Bath/ Wall Tile Junction: A rigid P.V.C. strip trim containing a bond breaker laid on a bed of silicone sealant. The sealant is to be concealed and protected inside the trim. To be fitted as per manufacturer's instructions.

8. Silicone Sealant: Sealant shall be a gun applied silicone sealant to I.S. EN ISO 11600:2007 (+A1:2012) – *Building Construction, Jointing Products*, Type F. A versatile one component sanitary silicone sealant, White, with high movement accommodation and with a neutral cure/ non acetox. Surfaces must be clean, dry and sound. To be used as per manufacturer's instructions.

9. Wall Tile Adhesive:

- To B.S. EN 12004-1:2017 – *Adhesive for Tiles*, Type C2TE
- Powder Form
- Standard Setting, Cement based Adhesive
- Suitable for Beds Up to 3-6mm for Wall Applications
- Polymer Modified/ Non-Slip
- Flexible
- Pot Life – Approx. 5 Hours @ 20°C
- White Adhesive – Application:
- All substrates must be dry, clean and sound. Plaster should not be dusty or polished and should be primed as described. Tile adhesive should be added to clean water as per manufacturer's instructions. Apply to walls using a suitably notched trowel. Ensure maximum contact between adhesive, tile and substrate. Only grout when tile adhesive has set.

10. Tiling:

When tiling courses should be straight and even to form a flat, true and regular surface, especially around fixtures and fittings. There should be no cut or unfinished tiles at exposed edges or external corners. Joints should be regular, even and cut neatly. Spacing should be sufficient to allow for expansion. Average joint size to be 5mm. Joint sizes to vary between 4-6mm as required to ensure no cut tiles across the wall surface in either dimension.

11. Wall Tile Grouting:

Grout:

- To B.S. EN 13888:2009 – *Grouts for Tiles*, Type CG2W
- Powder Form
- Stain Resistant
- Up to 2mm Joint
- Water Resistant

- Resists Fungal and Mould Growth
- Flexible
- White

Grout – Application:

- Ensure tile adhesive is sufficiently cured prior to commencing grouting. Allow a minimum 12-18 hours when using standard setting adhesive. Ensure joints are clean and dust free and are max 6mm wide. Mix Grout as per manufacturer's instructions. Apply grout to joints, ensuring joints are completely filled. Compact the grout in the joints and clean off excess as grouting progresses. Allow grout to harden. Clean face of tiles.

12. Sample Panels:

A mock-up Reference Panel (minimum 1m x 1m) must be produced using the exact mix of Grout and tile adhesive. This sample shall serve as the Benchmark Standard for all tiling on site.

1211 WALL VENTS:

(Refer to Mechanical/Electrical Specification.)

Ventilation to B.S. 5250:2011 (+A1;2016) – Code of practice for control of condensation in buildings.

1212 MIRRORS:

Heavy-duty high-level mirrors: surface mounted above tiling datum to be manufactured from 8 mm thick 18/10 stainless steel, surface high polished, revolving overturned, thief-proofed hidden mounting system with underlying polystyrene plate.

Location: All room accessible for public usage, refer to drawings. Cut to match width of tiling.

WC/Shower Mirror material: Class C safety glass to BS6206 glass with smoothed edges float glass, silvered to give maximum reflection, free from tarnishing, discoloration, scratches and other defects visible in the designed viewing conditions.

Thickness: 8mm/ Edge treatment: 6mm polished bevel

Fixing method: double sided self-adhesive pads at 400mm centres and continuous stainless-steel head and base supports. Fix accurately and securely, but without overtightening fastenings, to provide a flat surface giving a distortion free reflection. Position accurately with sides vertical and fix securely, adjusting as necessary to ensure a true undistorted reflection.

1213 SHOWER SCREEN:

As per Fitout Schedule

1214 SCHEDULE OF FLOOR AREAS:

To be read in conjunction with Preparation and Application Descriptions.

1215 FLOORING MATERIALS:

1215.01 FLOOR FINISH FF-01 (approx 120m²)

LOGGIA & SERVICE ROOMS

High-performance, R11 slip-resistant external HONED CONCRETE FLOOR FINISH with high performance breathable, penetrating, UV and salt resistant silane-siloxane sealer with anti-slip additive microscopic beads to ensure R11 rating. Grind to a 60-grit or 100-grit level, creating micro-

scratches on the surface to ensure high traction prior to application of sealer. All to EN 206-1 (Coastal Exposure Class XF4/XS3) DIN 51130 (R11), AS 4586 (Class P4/P5). Sample panel required.

1215.02 FLOOR FINISH FF-02 (approx 42m²)

FLOOR TILE:

300x300x10mm selected approved rectified porcelain tile (ALLOW FOR MATCHING 400X400mm TILES TO ROOMS R.08, R.09 & R.10)

on selected approved waterproof tile adhesive. Tiles to be set out from the centre of the room. Where cut tiles are unavoidable, cut tiles are to be symmetric and/or visually balanced. Setting out to be agreed with ER. 2-4mm joint size to be agreed at setting out. Selected approved high quality coloured epoxy grout for floor tiles to EN 13888. Allow for grout to be colour matched to tile as may be required. Submittal for all component parts required.

1215.03 FLOOR FINISH FF-03 (approx 22m²)

CONCRETE SETTS:

150x150x40mm selected approved coloured / textured 40mm thick concrete permeable setts with widened joints - no fines (type a) on subbase to engineer's specification. Perimeter blocks to be haunched in concrete

1215.04 FLOOR FINISH FF-04 (approx 20m²)

TEXTURED CONCRETE STEPS:

Fiamma Alba with Milazzo Visibility Contrast Strip or similar approved 600x400x50mm thick square edged precast concrete flagstone (tread and riser) on Steintec mortar or similar approved on concrete substrate to engineer's specification. STEPS TO THE SOUTHERN & eastern PERIMETERS OF THE BUILDING

1215.05 FLOOR FINISH FF-05 (approx 400m²)

EXPOSED AGGREGATE APRON

Exposed aggregate concrete footpaths with 10 - 40mm, rounded, flat, river pebble aggregate. Selected approved aggregate to be evenly seeded into poured concrete, tamped, troweled and exposed by power-washing having applied suitable surface retarder. See Specification for further information. Sample panel required. Detailed CEWMPs and RAMs required.

NOTE:

Sample Panel required for all Floor Finishes

Contractor to supply 3 no samples of finished board samples for approval. ER to provide reference sample to contractor in relation to finish required on request.

Contractor to supply and fix on site a sample of timber flooring at least 4m² at a location to be agreed.

1300 FASCIA, SOFFIT & RAINWATER GOODS:

1301 CODES AND STANDARDS:

1302 RAINWATER GOODS

1301 CODES AND STANDARDS:

1. **Building Regulations:** The installation shall comply with the requirements of the Building Regulations & in particular with TGD Part 'D' Materials and Workmanship and TGD Part 'H' Drainage and Wastewater Disposal.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. Please note that sections in this specification contain clauses which may not be required or may be covered by Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the Engineer.

1302 RAINWATER GOODS:

110mm PVC-U rainwater and downpipe and associated outlets:

1302.01 Design:

Complete the design of the rainwater drainage system to B.S. EN 12056:2000 – *gravity drainage systems*, clauses 3-7 Complete, and without leakage or noise nuisance

Outside Diameter (OD): 110mmØ (nominal) unplasticized Polyvinyl Chloride (PVC-U) for corrosion resistance, lightweight handling, and durability.

Pipes and fittings typically conform to BS EN 12200 (Rainwater), BS EN 1329 (Soil/Waste), or BS EN 1401 (Underground Drainage).

Brackets, union clips, stop ends, running outlets, to BS1474. Bracket fix at 900 ctrs with extra support at outlets.

1302.02 Installation Generally:

- Install pipework to ensure the complete discharge of rainwater from the building without leaking.
- Obtain all components for each type of pipework from the same manufacturer unless specified otherwise.
- Provide access fittings and rodding eyes as necessary in convenient locations to permit adequate cleaning and testing of pipework.
- Adequately protect pipework from damage, bending and distortion during construction. Fit purpose made temporary caps to prevent ingress of debris. Fit all access covers, cleaning eyes and blanking plates as the work proceeds.
 - Where not specified otherwise use plated, sherardized, galvanized fastenings, suitable for the purpose and background, & compatible with the material being fixed.

1302.03 Gutters:

- Gutters formed in roof covering refer to Claus 902.12 Roof Drainage Outlets

1302.04 Setting Out Eaves Gutters to Falls:

- Set out to a true line and even gradient towards gutters to ensure no ponding or backfall. Position high points of gutters as close as practical to the roof and low points not more than 50 mm below the roof.
- Position outlets to align with connections to below ground drainage, unless shown otherwise on drawings.
- Ensure that: Outlets are securely fixed before connecting pipework and junctions between outlets and pipework can accommodate all movement in the structure and pipework.

1302.05 Fixing Downpipes:

- Fix securely at specified centres plumb and/or true to line.
- Make changes in direction of pipe runs only where shown on drawings unless otherwise approved.
- Fix branches and low gradient sections with uniform and adequate falls to drain efficiently.
- Fix externally socketed pipes/ fittings with sockets facing upstream.
- Provide additional supports as necessary to support junctions and changes in direction.
- Fix every length of pipe at or close below the socket collar or coupling.
- Provide a load bearing support for vertical pipes at not less than every storey level. Tighten fixings as the work proceeds so that every storey is self-supporting and undue weight is not imposed on fixings at the base of the pipe.
- Provide for thermal and building movement when fixing and jointing and ensure that clearances are not reduced as fixing proceeds.
- Fix expansion joint pipe sockets rigidly to the building and elsewhere use fixings that allow the pipe to slide.

1302.06 Jointing Downpipes/ Gutters:

- Joint using materials, fittings and techniques which will make effective and durable connections.
- Joint differing pipework/gutter systems with adaptors recommended by manufacturer(s).
- Cut ends of pipes to be clean and square with burrs and swarf removed. Chamfer pipe ends before inserting into ring seal sockets.
- Ensure that jointing or mating surfaces are clean, and where necessary lubricated, immediately before assembly.
- Form junctions using fittings intended for the purpose ensuring that jointing material does not project into bore of pipes, fittings and appliances.
- Remove surplus flux/solvent/cement/sealant from joints.

1302.07 Access:

- Install pipework and gutters with adequate clearance to permit testing, cleaning and maintenance.
- Position access fittings and rodding eyes so that they are not obstructed by other pipework, framing, etc.

1302.08 Testing:

- Inform Architect/ E.R. sufficiently in advance to give him a reasonable opportunity to observe tests.
- Check that all sections of installation are free from obstruction and debris before testing.
- Provide clean water, assistance and apparatus for testing as required.

- Carry out tests as specified. After testing, locate and remedy all defects without delay and retest as instructed.
- Keep a record of all tests and provide a copy of each to the Architect/ ER
- GUTTER TEST: Block all outlets, fill gutters to overflow level and after 5 minutes closely inspect for leakage.

1302.09 Maintenance:

- At completion, submit printed instructions recommending procedures for maintenance of the rainwater installation including full details of the recommended inspection, cleaning and repair procedures.

1302.10 Handover:

- Remove construction rubbish and debris from all roofs and gutters. Where possible, sweep and remove fine dust which may enter rainwater systems. Do not sweep or flush dust or debris into the rainwater system.
- Remove swarf, debris and temporary caps from the entire rainwater installation.
- Ensure that all access covers, rodding eyes, outlet gratings, etc. are secured complete with all fixings.

1400 PAINTING:

- 1401 CODES AND STANDARDS:
- 1402 PAINTING – SCHEDULE OF AREAS
- 1403 MATERIALS
- 1404 PAINTING – GENERAL REQUIREMENTS
- 1405 PREPARATION GENERALLY
- 1406 PREPARATION OF PLASTER, RENDER BLOCKWORK SURFACES
- 1407 PREPARATION OF WOOD SURFACES
- 1408 PREPARATION OF METAL SURFACES
- 1409 APPLICATION - GENERAL REQUIREMENTS
- 1410 APPLICATION FOR ALL AREAS
- 1411 CLEANING
- 1412 CONCRETE SEALANT TO EXPOSED FLOORS

1401 CODES AND STANDARDS:

1. **Building Regulations:** The installation shall comply with the requirements of the Building Regulations.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. Please note that sections in this specification contain clauses which may not be required or may be covered by Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the Engineer.

1402 PAINTING – SCHEDULE OF AREAS:

Complete painting in accordance with the following schedule: -

To be read in conjunction with Preparation and Application Descriptions.

1402.01 TABLES OF PAINTING AND DECORATINGS

Ref.	Surface	Preparation	Primer	Undercoats	Finishing Coat
01	Internal Plastered Wall	Filler as required	-	2 No. Undercoats (first coat thinned) Emulsion Paint Vinyl Matt 1403.9	1 No. Finish coat Emulsion Paint Vinyl Matt 1403.9
02	Internal Plastered Walls in high moisture generating areas –	Filler as required	-	2 No. Undercoats (first coat thinned) Emulsion Paint Vinyl Matt 1403.10	1 No. Finish coat Washable Emulsion Paint Vinyl Matt 1403.10
03	External Woodwork –	Knot and stop as required	-	2 No. Undercoats 1403.12	1 No. Finish Coat

	Hardwood Door And Cladding				Stained with selected wood stain to ERs approval
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1403 MATERIALS:

1. **Preparation Materials:** Paint removers, cleaning agents, rust inhibitors, glues, knotting solutions, stopping, fillers and other preparation materials for painting work shall be types recommend by the manufacturer for the coating to be used.
2. **White Spirit:** White spirit shall comply with B.S. 245:1976 – *Specification for mineral solvents*.
3. **Knotting Solution:** Knotting shall comply with I.S. 16:1958, BS 1336:1971 – *Specification for knotting*. Knotting solution is a quick drying solution suitable for preventing resinous sap bleeding through knots in wood and discolouring paint or other finishes. Suitable for interior and exterior use. Ensure wood to be treated is thoroughly clean and dry and free from resinous matter and loose particles. Rub down with abrasive paper to provide a key. Apply as per manufacturer's instructions. Use a brush or lint free cloth. Apply a liberal coat and leave to dry.
4. **Interior Wood filler/ stopping:** A paste consisting of fillers, pigments and binders to fill nail holes, dents and cracks in wood. For interior and exterior use. Colour to suit softwood or hardwood on which it is to be used. Wood should be sanded smooth, clean and dry, free from wax. If wood is to be painted, it should be primed before stopper/ filler is applied. For clear varnish, apply the correct colour wood filler to suit. Apply as per manufacturer's instructions. Apply using a putty knife, forcing into cracks and holes. Leave slightly proud of surface to allow for shrinkage. Allow to dry and sand smooth. For deeper holes, fill in stages. Leave to dry before applying undercoat or varnish.
5. **Interior Filler:** An interior plaster-based filler reinforced by cellulose to reduce shrinking and cracking. For filling holes and cracks in plasterboard, plaster and masonry. Surfaces should be clean, dry and free from loose material. Apply as per manufacturer's instructions. Mix powder to water to a smooth paste. Fill repair slightly proud of the surface. Level to surrounding area when filler is firm but not set.
6. **Exterior Filler:** A powder filler based on high strength cement and special resins to promote powerful adhesion, toughness and impact resistance. Binder - Portland Cement. Water resistant for exterior use. Surfaces should be clean, dry and free from loose material. Apply as per manufacturer's instructions. Mix powder to water to a smooth paste. Fill repair slightly proud of the surface. Level to surrounding area when filler is firmer not set.
7. **Primer for Concrete/ Alkali Resisting:** A solvent based primer and sealer formulated for interior and exterior use on new or bare concrete, cement, plaster, render. To be obtained from the maker of the undercoat and finishing coat. Used as a primer on unpainted surfaces and as a sealer on powdery substrates. To provide exceptional resistance to alkali attack. Suitable for interior and exterior use. Volume by solids – 57%. Film thickness-wet:50µm, dry:28µm. Preparation and Application as per manufacturer's instructions.
8. **Exterior Smooth Masonry Paint:** A premium quality acrylic resin-based paint formulated for exterior use on cement rendering. To provide a durable smooth finish that resists dirt accumulation and algal growth and offers excellent weather resistance. Finish - Matt. Volume solids - 39% nominal. Pigmentlightfast non lead. Binder-acrylic emulsion. Solvent-water. Colour to be selected by architect. Expected life in excess of 15 years. Contains

a fungicide to inhibit mould growth. All surfaces to be painted should be clean, dry and free from loose and flaking material. Repair cracks and defective areas. Stir well. Apply by brush or roller. If more than one can of a colour is to be used in the same area, intermix before use. Seal absorbent surfaces (bare walls) with a coat of paint diluted 1 part water to 5 parts paint. Normal use (not to be exceeded, 1 part water to 10 parts paint) Apply 2 no. coats in Total.

9. Emulsion - vinyl soft sheen: Emulsion paint for interior use in houses shall be vinyl matt emulsion complying with I.S. 129:1964. The first coat shall be thinned in accordance with the manufacturer's instructions. A premium quality vinyl mid sheen emulsion formulated for interior use on plastered walls and ceilings. To withstand normal humidity and can be wiped clean. Finish - mid sheen. Volume solids - 28%. Pigment-lightfast non lead. Binder - water based emulsion. Solvent-water. Colour to be selected by architect. All surfaces to be painted should be clean, dry and free from loose and flaking material. Stir well. Apply by brush or roller. Seal absorbent surfaces (bare walls and ceilings) with a coat of soft sheen thinned up to 10% with clean water. Apply 2 more full coats (3 no. Total). If more than one can of a colour is to be used in the same area, intermix before use.

10. Emulsion - washable matt: Washable Emulsion paint for interior use in high moisture generating areas of houses shall be washable matt emulsion complying with I.S. 129:1964. The first coat shall be thinned in accordance with the manufacturer's instructions. A premium quality washable emulsion formulated for interior use on plastered walls and ceilings. To withstand high humidity and moderate washing. Finish - mid sheen. Volume solids - 38%. Pigment-lightfast non lead. Binder – acrylic copolymer emulsion. Solvent-water. Colour to be selected by architect. All surfaces to be painted should be clean, dry and free from loose and flaking material. Stir well. Apply by brush or roller. Seal absorbent surfaces (bare walls and ceilings) with a coat of soft sheen thinned up to 10% with clean water. Apply 2 more full coats (3 no. Total). If more than one can of a colour is to be used in the same area, intermix before use.

11. Wood – Primer: Primer for interior and exterior woodwork to be painted shall be aluminium wood primer complying with B.S. 4756:1998. An oil-based wood primer containing aluminium pigment, to be applied directly to bare wood. Seals surface and provide adhesion for subsequent coats of paint. Suitable for interior and exterior use. Prepare as per manufacturer's instructions. Wooden surfaces to be primed must be dry, clean, smooth and free from dust, oil, grease, wax and any other contaminants likely to affect adhesion. All knots should be sealed with a knotting solution as per Clause 1403.3. Apply as per manufacturer's instructions. Stir thoroughly before and during use. The first coat may be thinned with 10% white spirit if necessary. Apply one or two coats as required. After priming, holes and cracks may be filled with wood filler as per Clause 1403.4 Allow 12-16 hours to fully dry before applying undercoat.

12. Interior Wood – Undercoat: An Alkyd oil solvent based undercoat for used on primed surfaces. For interior and exterior use. The surface must be clean, smooth, sound, dry and free from contaminants. To be used on primed surface. Apply evenly with a good quality brush. Apply one coat. Allow to dry for up to 16 hours before applying high gloss finish coat. Untreated interior woodwork shall be rubbed down with a fine abrasive paper and remove all dust from the surface. Then apply 2 coats of undercoat.

13. Interior Wood – High Gloss Finish Coat: Oil paints for interior use in houses shall be hard gloss and undercoats complying with I.S. 32:1963. An Alkyd oil solvent based high gloss finish suitable for protection and decoration of surfaces. For interior and exterior use. The surface must be clean, smooth, sound dry and free from contaminants. To be used on undercoated surface. Apply evenly with a good quality brush. Apply two coats. Allow to dry for up to 16 hours before applying second coat. Sand lightly between coats. Solvent based

paint. Pigment-lightfast non lead pigments. Binderalkyd. Solvent-white spirit. Volume solids-64% nominal.

14. Interior Wood – Satin Finish Coat: A solvent based mid-sheen satin finish formulated for interior use on wood suitable for protection and decoration of surfaces. The surface must be clean, smooth, sound dry and free from contaminants. To be used on undercoated surface. Apply evenly with a good quality brush. Apply two coats. Allow to dry for up to 16 hours before applying second coat. Sand lightly between coats. Water based, low odour, non-yellowing. Volume solids-61% nominal.

15. Interior Wood - Polurethane Varnish: A tough, hard wearing, durable varnish for use on interior hardwood. A polyurethane/ acrylic resin dispersed in water. Finish - clear - gloss/ satin/ Matt. Volume solids - 25%. Timber surfaces must be clean, sound and dry. Knotting agents should not be used. Apply as per manufacturer's instructions. For new timber; resinous deposits should be removed with a scraper. De-grease with a clean, lint free cloth dampened with white spirits. Lightly abrade along the grain with a suitable abrasive paper. Remove all dust. Finish with 3 no. Full coats. Do not thin. Stir well before use. Lightly sand and clean between use.

16. Exterior Wood – High Gloss Finish Coat: External woodwork and steelwork, where specified, shall be painted with a high-performance gloss paint system giving a minimum 5 year life expectancy. The system shall be suitable for application to both woodwork and steelwork. Where used on steelwork the primer shall be as per Clause 1403.21 or as otherwise recommended by the manufacturer. The system shall be applied as a complete system, including primer, and the manufacturer's recommendations shall be strictly adhered to in all cases. The Contractor shall ensure that the appropriate primer is applied, if necessary, in the workshop or before installation of components.

17. Exterior Timber Varnish: A clear water based acrylic varnish for use on exterior timber allowing natural grain to show through. To resist cracking, peeling and blistering. Surfaces must be clean, dry and sound. Fill large cracks, open joints, damaged areas with a high-quality flexible filler as per Clause 1403.6. Wash oily woods, knots, resinous areas with white spirits. Apply as per manufacturer's instructions. Stir well before use. Apply liberally with a brush, finishing with the grain. Apply 3 no. Coats and lightly sand after 1st coat.

18. Exterior Timber Stain Finish: Exterior stain finish for hardwood/softwood shall be a high build two-part system consisting of a preservative basecoat and 2 coats of solvent based acrylic wood stain. The preservative basecoat is a water-based timber preservative for use on new and bare wood, providing excellent protection against blue stain, decay fungi and UV rays. It is to produce a sound base for the wood stain finish coat. The finish coats are to be a high-performance solvent-based acrylic exterior wood stain which produces a water-repellent satin finish. To provide exterior joinery with protection from extreme weather for up to 10 years. Suitable for hardwoods and softwoods. The system shall be approved by the Architect, and the Contractor shall provide samples in the selected colours on the appropriate substrates.

19. Cleaner and Degreaser: An alkaline, non-caustic detergent based in water to be used as a degreasing pre-treatment of metal surfaces prior to painting. Apply as per manufacturer's instructions.

20. Primer For Non-Ferrous Metals: Primer coat for untreated non-ferrous metals such as copper, aluminium etc shall be a one coat Shellac-based primer/ sealer. Solids by weight - 49%. Solids by volume - 29%. Density - 1.2 kg/l. Viscosity range - 53-65 ku. Preparation and application as per manufacturer's instructions.

21. Primer For Iron & Steel, Galvanised Steel - High build zinc rich Primer: A single pack rust inhibiting primer for use on iron, steel, galvanized steel, ferrous metal. Colour- grey. Finish- Matt. Volume solid 40%. Film thickness-wet:100um, dry:40um. Grit blast steel to SIS-Sa 2 ½.

Wire brush galvanised steel to remove corrosion and degrease with a cleaner and degreaser. Preparation and application as per manufacturer's instructions. Stir thoroughly before use. Apply by brush.

22. Primer For Plastic Components: Primer for Plastic Components shall be a 2-part etching primer suitable for the type of substrate on which it is to be used and obtained from the manufacturer of the finishing and undercoats.

23. Bituminous Paint: Black bituminous paint shall comply with B.S. 3416:1991 – *Specification for bitumen-based coatings for cold application*, type 1, General purpose solvent-based bitumen paint for use on iron, steel, zinc, concrete, blockwork, brickwork, fibre cement, felt and wood to protect against water. Waterproof, weatherproof, corrosion resistant. Substrate to be sound, clean, dry and free of dust. Prime iron, steel and zinc with a rust inhibiting Primer as per Clause 1403.21. Apply by brush, a minimum of two coats as per manufacturer's instructions.

24. Timber Treatment - Wood Preserver: A coloured penetrating, fungicidal and insecticidal wood preservative. To give long lasting protection against weather and rot. Suitable for smooth planed and rough sawn timber. Water repellent. Colour – green. Composition: Pigment-synthetic pigments and dyes. Binder-none. Solvent-aliphatic hydrocarbon solvent. Wood should be bare, dry, free from paint, etc. Preparation of all timber should be completed before treatment i.e. Cutting, planning, drilling, etc. Apply as per manufacturer's instructions. Apply liberally with a brush. Do not thin. Drying time: 2 to 5 days at average temperature/ good ventilation. Re-coat as necessary after previous coat has soaked into timber.

25. Patination Oil: A white spirit-based surface treatment that prevents lead carbonate from forming on the surface of newly fitted lead sheet and ultimately helps prevent staining to adjacent materials. Apply as per Clause 1410.13.

26. External Hardwood – UV Protected Oil Coat: Clear, satin wood finish based on natural oil for wood in outdoor areas. Water-repellent, will not crack, peel or flake. Clean old microporous wood finishes thoroughly. Wood surface must be clean, dry and frost-free (moisture content max. 20%). Do not thin. Stir well before use. Apply the coat to all sides before installation. With Flat Brush or Microfibre Roller, apply thinly along the wood grain and spread well. Allow to dry for approx. 12 hours under good ventilation. Then apply the second coat. Cedar new or sanded, requires at least approx. 12 weeks exposure to the exterior elements before installation.

27. Interior Timber Flooring - Polurethane Varnish for Floors: A tough, hard wearing, durable varnish for use on interior timber flooring. A polyurethane/ acrylic resin dispersed in water. Finish - clear satin/ Matt. Volume solids - 35%. Timber surfaces must be clean, sound and dry. Knotting agents should not be used. Apply as per manufacturer's instructions. For new timber; resinous deposits should be removed with a scraper. De-grease with a clean, lint free cloth dampened with white spirits. Lightly abrade along the grain with a suitable abrasive paper. Remove all dust. Finish with 3 no. Full coats. Do not thin. Stir well before use. Lightly sand and clean between use.

28. Interior Concrete Flooring – Dustproofer and Concrete Sealer for Floors: solvent-free dustproofer and concrete sealer for floors. Apply as per manufacturer's instructions by sprayer, roller, paint brush or airless sprayer, direct from drum, NOT to be diluted. Apply 2nd coat before 1st coat has completely dried. Produced to BS5750/ISO9001 manufacturing standard.

1404 PAINTING – GENERAL REQUIREMENTS:

1. Manufacturers: First quality products shall be used in all painting work.

2. **Approval of Products:** Approval shall be sought from the Architect/ Employer's Representative for all paint brands and systems to be used.
3. **Single Source:** All materials for a particular surface shall be the products of one manufacturer, (i.e. Unless otherwise specified, use sealers, priming coats, undercoats and finish coats by the same manufacturer where possible).
4. **Manufacturer's Instructions:** Obtain the Manufacturer's Instructions and recommendations. Keep a copy on site. Comply with all aspects of these instructions (even if not specifically specified herein). In the event of a conflict between manufacturer's instructions and the specification, bring to Employers Representative's attention and ask for clarification.
5. **Material Identification:** Ensure materials are delivered in original containers with labels identifying the manufacturer, the type of product, the brand name, the use for which it is to be intended, the manufacturer's batch number and the appropriate standard references.
6. **Material order sheets** for all paints and accessories shall be included in the safety file.
7. **Colours:** Painting and decorative schemes shall be carried out in colours selected by the Architect.
8. **Samples:** Provide samples in alternative colours for each paint type. Approximately three samples, each 1m² in each colour. After approval of the quality of the finishes, these areas shall be used as a standard for the work.
9. **Storage:** Store and mix materials in a clean, dry and ventilated area protected from extreme temperatures (i.e. Frost). Remove empty containers, waste and rags from the building as they accumulate.
10. **Use of Materials:** The materials are to be used exactly as received from the maker in accordance with the maker's instructions and the addition of thinners, driers or other materials will only be permitted when specially required by the maker and the procedure approved by the Employer's Representative. Adequate supervision during painting work must be given by the Contractor to ensure that the paint is not adulterated in any way.
11. **Remedying Defects Due to Defective Materials:** All unsatisfactory materials shall be immediately removed from the site, and any work executed with such defective materials shall be made good by the Contractor at this own expense.

1405 PREPARATION GENERALLY:

1. **Inspection:** The preparation of all surfaces must be inspected by the Architect before any coatings are applied.
2. **Surfaces:** Prepare surfaces in accordance with the coating manufacturer's written instruction.
3. **Responsibility for Surfaces:** The contractor is to ensure that the surfaces are in proper condition to accept and assist in the adhesion and proper functioning of the coating specified.
4. **Materials for Preparation:** Use paint removers, cleaning agents, rust inhibitors, glues, knotting solutions, stopping, fillers and other materials for the preparation of surfaces to be coated, in accordance with the manufacturer's written instructions.
5. **Drying Out:** Ensure that surfaces are suitably dry before applying coatings.
6. **Cleaning:** Remove dust, dirt and loose material from surfaces before applying coatings.
7. **Degreasing Generally:** Remove surface oil and grease from surfaces to be coated using white spirit or other suitable solvent.
8. **Defects:** Ensure that surface defects are repaired and made good before applying coatings.

9. **Splashes:** Remove plaster and mortar splashes from surfaces before applying coatings.
10. **Stopping Generally:** Stop all minor holes, cracks and imperfections with a suitable filler and finish flush with surrounding surfaces.
11. **Matching of Stopping:** Use a stopping for clear and non-opaque coatings of a colour to match the finished colour of adjoining surfaces.
12. **Anti-Fungus Wash:** Where necessary in Renovation Projects apply anti-fungus wash to surfaces in accordance with the Manufacturer's written instructions.
13. **Sealer:** Remove any loose or flaking material from surfaces to be coated and apply sealer in accordance with the manufacturer's written instructions.
14. **Surface Roughening:** Roughen smooth surfaces with fine abrasive paper and remove dust and loose materials before coating.
15. **Hardware:** Remove surface fixed hardware, except hinges, from surfaces to be coated and re-fix on completion.

1406 PREPARATION OF PLASTER, RENDER BLOCKWORK SURFACES:

1. **Preparation:** All plaster or mortar splashes etc., shall be removed from plaster, rendering, concrete and blockwork by careful scraping, all holes, cracks etc., shall be stopped and the whole of the surfaces shall be brushed down to remove dust and loose material. Internal plaster to be filled with a cellulose/ gypsum-based filler and external render to be filled with a similar material to background and finished with a similar texture. All traces of mould shall be removed from concrete surfaces by scrubbing with water and detergent and rinsing with clean water to remove all detergent. Surfaces must be clean, dry and free from rust or loose material prior to painting.
2. **Efflorescence:** Remove with a stiff fibre brush any surface salts resulting from efflorescence and leave for 48 hours. Repeat this treatment if instructed to do so until the efflorescence ceases before applying any coating.

1407 PREPARATION OF WOOD SURFACES:

1. **Surface Finish:** Finish surfaces to a smooth even finish with abrasive paper and remove sharp arises.
2. **Knotting:** Remove surface resin from knots and other resinous wood and apply two coats of knotting solution to extend beyond the affected areas.
3. **Stopping for Painting:** Stop nail holes and other local depressions or cavities after priming coat has dried. Finish off flush with adjoining surface, dust off and apply primer.
4. **Stopping for Clear or Stained Finish:** Stop nail holes and other local depressions or cavities in surfaces to have a clear/ stained finish with stopping to match the colour of the coated/ stained woodwork when finished. Finish off flush with the adjoining surface.
5. **Plywood Filling:** Plywood surfaces to be finished with oil paint shall be filled with a cellulose/gypsum-based filler, rubbed down and dusted off and re-primed.

1408 PREPARATION OF METAL SURFACES:

1. **Degreasing Metal Surfaces:** Remove oil, grease and dirt from metal surfaces immediately before coating by using an emulsion cleaner followed by thorough rinsing with clean water. Where a solvent is necessary use white spirit before the use of the emulsion cleaner. Dry surfaces and apply primer without delay.
2. **Iron and Steel:** All rust, millscale, welding slag and flux residue, shall be removed from iron and steel surfaces by wire-brushing, scraping, hammering, flame cleaning etc. All steel

visual surface inspections will comply with B.S. EN ISO 8501-1&2:2007 - *Preparation of steel substrates before application of paints and related products.*

3. Galvanised Steel, Zinc Sprayed Steel, and Non-Ferrous Metals: Surfaces of galvanised steel, zinc sprayed steel and non-ferrous metals shall be steam washed to remove all zinc salts, dirt dust and other surface contamination and allowed to dry. After ensuring that any rust or dirt is removed, touch up any breaks in the galvanised film caused by welds etc. Apply a cold galvanising material with a zinc content of not less than 92% at a thickness 10% higher than the galvanised zinc. Painting should be carried out within 48 hours of cleaning.

1409 APPLICATION - GENERAL REQUIREMENTS:

1. **Surface Preparation:** Do not apply coatings to any surface until that surface has been prepared and cleaned as specified.
2. **Protection:** Protect all floors, equipment, fittings and surfaces not to be coated by the use of drop cloths or other approved methods.
3. **Weather Protection:** Protect painting work and surfaces from any harmful effects of the weather immediately before and during application and after application until drying is sufficiently advanced to withstand deposition of moisture or wind-borne dirt or dust.
4. **Air Conditions:** Do not carry out painting work when the air shade temperature is less than 5°C or the relative humidity is such that condensation is present, or may be expected, in the surfaces or that it will affect the application and/or drying of the coating. Provide adequate ventilation for all painting work. Do not apply coatings when heat is likely to cause blistering or other defects.
5. **Thinning:** Do not thin or reduce any product in excess of 5% by volume unless specified by the Manufacturer.
6. **Shade Variation:** Vary the shade of each succeeding coat of primer and undercoat paint to make it readily distinguishable, but not so as to affect the finish coat.
7. **Moisture Content:** Do not apply coatings when moisture content of surfaces exceeds 19% when measured with an electrical meter.
8. **Work Excluded:** Unless otherwise noted, the following surfaces shall not be painted:
 - Natural finish non-ferrous metals such as aluminium, stainless steel, bronze, etc. and plated metals.
 - Factory finished equipment and surfaces.
 - Surfaces not normally exposed.
 - Ceramic and glazed surfaces.
 - Floor and floor coverings.
 - Radiator valves, Radiators.
9. **Cabinet Interiors:** Paint interiors of cabinets as for exteriors, unless otherwise indicated.
10. **Moving Parts:** Ensure that the function of any moving parts of components or hardware is not impaired by paint.
11. **Inspection:** Permit paint manufacturers to inspect the work and take samples to ensure correct use and application of materials.
12. **Wet Paint:** Protect surfaces while still wet by the use of barriers and "Wet Paint" signs where necessary.

1410 APPLICATION FOR ALL AREAS:

1. **Workmanship Generally:** Workmanship generally shall be in accordance with the requirements of B.S. 6150:2006 (+A1:2014) – *Code of practice for painting houses*.
2. **Stirring:** Stir thoroughly the contents of all cans and containers before and during use and strain where necessary
3. **Application Generally:** All materials shall be used in accordance with the manufacturer's written instructions and at the intervals recommended between successive coats.
4. **Damage to Adjoining Surfaces:** Care must be taken when storing materials, preparing surfaces or painting, etc., not to damage or stain other work. The Contractor shall remove all such stains, make good and touch up or replace as required by the Architect.
5. **Brush Painting:** Apply all coatings by brush unless otherwise specified or approved.
6. **Priming Generally:** Thoroughly brush primers on to surfaces and work into joints, angles and end grain of woodwork. Ensure that sharp edges are adequately coated. Rub down any lead-based primers with wet abrasive paper and remove any debris produced before it becomes dry.
7. **Shop Priming – Joinery Components:** Prime joinery components at the joinery shop where possible. Knot the surfaces to be exposed and then prime all surfaces. Re-prime any surfaces subsequently cut.
8. **Priming to Concealed Surfaces:** Backs of timber frames and linings shall be primed.
9. **Priming Unsealed Joinery Components:** Store joinery components delivered unsealed under dry conditions. Immediately after delivery to site knot surfaces that are to be exposed and prime all surfaces of items to be painted. Re-prime before fixing any surfaces subsequently cut or planed.
10. **Priming Treated Woodwork:** Check that priming materials are compatible with any preservatives used for treatment of woodwork and that the preservative has dried sufficiently to allow the safe application of coatings.
11. **Conditions of Priming:** If, by the time that the work is to receive the succeeding coat, the priming coat has in any way deteriorated or has been damaged, the affected portions, or the whole, if necessary, shall be cleaned to remove all dirt, grease and loose matter, rubbed down and re-primed. Primer for re-priming items primed at works shall be similar to that used at works.
12. **Priming Metal:** Apply primer in dry, dust-free and unpolluted conditions to freshly prepared bare steel or iron surfaces before any deterioration of the cleaned surfaces has taken place and not later than four hours after preparation. Provide an even coating over all surfaces. Rub down with abrasive paper and remove dust before applying next coat.
13. **Patination Oil:** Should be applied to lead flashings to give a uniform attractive appearance where lead is visible and where lead comes in contact with other materials e.g. slate. Apply immediately after fixing, before lead gets wet apply in straight lines with a clean, soft cloth. The leading edge and underside of the sheet should be coated to a depth of 75mm.
14. **Undercoats:** Provide an even coating over all surfaces. Rub down with abrasive paper and remove dust before applying next coat.
15. **Finish Coats:** Provide an even coating over all surfaces free from brush marks, runs and other defects.
16. **Drying:** Do not apply any coating until the previous coat has dried or cured sufficiently to receive it.
17. **Finish Coat Over Water Thinned Primers:** Ensure that moisture content of woodwork is not above 17% at the time of applying finish coats over water-thinned primers.

18. **Second Gloss Coat:** Where two gloss finish coats are specified, apply the second coat within 48 hours of applying the first coat, unless otherwise recommended by the paint manufacturer.

19. **Wood Stain:** Apply wood stains to prepared surfaces in accordance with manufacturer's instructions.

20. **Cleanliness:** All brushes, tools and equipment shall be kept in a clean condition, and surfaces shall be clean and free from dust during painting. Painting shall not be carried out in the vicinity of other operations which might cause dust. The Contractor shall provide a suitable moveable receptacle, into which are to be placed all the liquids, slop washings, etc., which are on no account to be thrown down any of the gullies, manholes, sinks, lavatories, w.c.'s or any other sanitary fittings. All solid refuse or flammable residue must be removed from the site or burned.

1411 CLEANING:

Upon completion ensure that all spots and blemishes have been removed from glass, sanitary fittings, light fittings, tiles, flooring and other surfaces and remove from the site empty containers and debris resulting from painting.

1412 CONCRETE SEALANT TO EXPOSED FLOORS:

1. Single pack moisture curing polyurethane solution with excellent chemical and abrasion resistance, ideal for concrete floors and sand/ cement screeds.
2. Attributes:
 - Lacquer finish; clear glossy
 - Apply by brush or roller to manufacturer's instructions
 - Quick drying: Touch dry in three hours, Hard dry in eight hours. Drying/ curing times will be shortened by higher temperatures and lengthened by lower temperatures.
- Coverage: Approximately 40–45 m² per 5 L pack per coat. Allow for 2no. coats.
- Substrate temperature: 20°C

1500 DRAINAGE AND SEWERS:

- 1501 CODES AND STANDARDS:
- 1502 MATERIALS
- 1503 QUALITY CONTROL
- 1504 PREPARATIONS
- 1505 EXCAVATION WORK
- 1506 PIPE LAYING GENERALLY
- 1507 JOINTING
- 1508 PIPE LAYING - FLEXIBLE PIPES
- 1509 BACKFILLING
- 1510 MANHOLES
- 1511 TESTING
- 1512 WASTEWATER TREATMENT SYSTEMS (SEPTIC TANKS)
- 1513 SOAKPITS

1501 CODES AND STANDARDS:

1. **Building Regulations:** The installation shall comply with the requirements of Building Regulations & in particular with TGD Part 'H' Drainage and Wastewater Disposal.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. Please note that sections in this specification contain clauses which may not be required or may be covered by Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the Engineer.

1502 MATERIALS:

NOTE: (Refer to Civil & Structural Specification.)

1. **Plastic Pipes:** U.P.V.C. pipes shall comply with IS EN 13598-1:2010 (as amended) and IS EN 14011:2009 (as amended). Pipes shall have a nominal size of 110 mm. (or as shown on drawings) Sockets may be Rigid Seal, rubber seal rings or Solvent cement type. All pipes, fittings and accessories to be obtained from one manufacturer. Obtain the Employer's Representative's approval of the manufacturer proposed. Obtain the manufacturer's full set of instructions and comply with these even if they are additional to the requirements of this Specification.
2. **Concrete Pipes:** Concrete Pipes shall be spigot and socket drainpipes of approved manufacture. All pipes to be laid and sealed in accordance with the manufacturers' instructions. The pipes must be accurately aligned to get a proper seal.
3. **Granular Bedding:** Granular bedding shall comply with IS EN 1610:2015 (as amended) and be nominal size of 10mm.
4. **Manhole Covers in Gardens of Houses:** To be approved precast, size 525mm x 450mm (size to be approved) set in concrete roof. Fit similar 300mm x 300mm covers and frames to Armstrong junctions if show on site plan.
5. **Cast Iron Manhole Covers:** All covers in roads, open areas, etc. to be Cast Iron. Cast Iron Manhole Covers and frames shall comply with IS EN 124 (as amended) and have minimum clear opening of 600 x 600 (rectangular) or 600mm diameter. Classes shall be as follows: -

- In Tarmac Areas: Loading requirement of Class D400.
- In Grassed Areas: Loading requirement of Class B125.
- Cast Iron Road Gully Gratings: All Road Gully gratings to be cast iron Corporation type hinged and lockable and to be opened by an Allen Key. Gully grating and frame in accordance with IS EN 1242:2015 (as amended) Class D400.
- U.P.V.C. Gully Traps: U.P.V.C. Gully Traps to be back inlet type and in accordance with IS EN 1246:2015 (as amended), approved by the Employers Representative and with a metal cover.

1503 QUALITY CONTROL:

1. Provide for subjecting all runs of drains to hydraulic test as carried out by County Council Drain Testing Staff and provide all necessary attendance during testing. No drains to be benched up or covered in until satisfactory tests have been carried out in the presence of the Employers Representative or Clerk of Works.

1504 PREPARATIONS:

1. **Storage:** Store pipes by stacking parallel to one another on a reasonably level surface free from stones and sharp objects and avoid overloading the bottom layers. Secure end pipes in the bottom row to prevent collapse of the stack. Stack pipes of different sizes separately.
2. **Jointing Rings:** Store rubber jointing rings in a cool, dry, dark place and avoid contamination by oils, petrol or greases.

1505 EXCAVATION WORK:

1. **Excavation Generally:** Excavate for drainage work in accordance with the requirements of Work Section 300 - Excavation Work also see IS EN 1610:2015.
2. **Excavation Start:** Do not excavate for any drain until all the materials necessary for that section are available.
3. **Trench Width and Sides:** Trench width shall be as narrow as is practicable but not less than the outside diameter of the pipe plus 150mm on each side and with the bottom section, where possible, having vertical sides to a height not less than 300mm above the top of the pipe, unless otherwise shown on the drawings.
4. **Surface Material:** Remove topsoil, turf or other surface material and set aside for use in reinstatement.
5. **Excavated Material:** Deposit excavated material not less than 500mm from the edge of trenches and avoid endangering the stability of the excavation.
6. **Existing Services:** Avoid damaging existing pipes, ducts, cables or other services exposed by excavation and provide temporary support as is necessary. Provide a minimum clearance of 150mm between any existing services and new pipework.
7. **Warning Tiles:** Place warning tiles or slabs over and close to pipelines at their points of intersection with other services.
8. **Trench Walls Support:** Provide temporary support to trench walls as is necessary to maintain a safe working area.
9. **Land Drains, Disruption:** Restore any land drains disrupted during excavation work.
10. **Trench Excavation:** Excavate trenches immediately before laying bedding material or pipes. Stabilise local soft spots in trench bottoms by tamping in granular material. Remove large hard objects, such as, boulders or large roots and replace by tamped granular material.
11. **Surface Water:** Keep excavation free from surface water.
12. **Ground Water:** Keep excavations below ground water level free from water.

1506 PIPE LAYING GENERALLY:

1. **Levels:** Before laying new drains, check the invert levels of existing drains and sewers with the levels shown on the drawings.
2. **Installation:** Install pipes, fittings and accessories in accordance with the manufacturer's written instructions.
3. **Sealing Open Ends:** During construction, provide a temporary seal to the open ends of pipework and maintain in position until completion of work.
4. **Main Sewer Connection:** Connect new drains to the existing sewer as directed by, and to the satisfaction of, the Council's Engineer.
5. **Laying:** Lay pipes straight to line and true to gradient on a firm and even foundation for the full length of the barrel. Form joints in the trench.
6. **Low Temperature Laying, UPVC:** Do not lay UPVC pipes when the temperature of the pipes is below 0°C.
7. **Sockets:** Lay pipes with sockets facing up the gradient. Form depressions under sockets to avoid pipes resting on the sockets and re-pack after pipe-laying.
8. **Pipes Through Walls:** Where pipes pass through walls, or other rigid structures other than manholes, provide a minimum clearance of 25mm around the pipes in accordance with TGD Part 'H' and fill with a suitable compressible packing.
9. **Pipes Through Walls, Fixed:** Where pipes are rigidly fixed to structures, provide flexible joints, as close to the structures as possible, in adjoining short length pipes. Lengths shall not exceed 600mm for 100mm and 150mm nominal bore pipes and 900mm for 225mm and 300mm nominal bore pipes accordance with TGD Part 'H'.
10. **Hard Packing:** Do not rest pipes in trenches on blocks or similar hard non-resilient permanent packings.
11. **Compaction:** Remove trench sheeting and other temporary obstructions to an extent sufficient to allow compaction of bedding and surrounding fill while maintaining trench support as the work proceeds.
12. **Bridges:** Provide temporary bridges over trenches after backfilling to prevent damage to pipes by heavy construction traffic.
13. **Manhole Branches:** Arrange branch drain connections at manholes so that discharge is in the direction of the main drain and that interference with the main flow is avoided.
14. **Benching:** Bed channels in sand and cement mix to engineers' detail on manhole bottoms and form a benching in concrete to rise vertically from both sides of channel to a height equal to top of outlet pipe and then slope upwards at 1 in 10 to walls. Finish with a steel trowel to a smooth surface.
15. **Prefabricated Manholes:** Precast concrete manholes shall only be used if they are approved in advance by the Employers Representative or indicated on the drainage drawings otherwise block manholes shall be used in all cases.
16. **UPVC Channels:** Anchor uPVC channels in sand and cement mix to engineers' detail by using suitable built-in retaining clips or by providing a mechanical key on the surface by roughening and then coating with solvent cement into which clean dry sharp sand has been sprinkled.
17. **Step Irons:** Build in step irons in manhole walls at 300mm vertical centres and staggered 300mm horizontally in accordance with IS EN 13101:2002.
18. **Step Irons, Ring Type:** Build in ring type step irons to a depth of 125mm into manhole walls and space in line vertically and at 300mm centres.
19. **Manhole Covers:** Manhole covers and frames shall be ductile iron complying with IS EN 124:1994. Covers and frames shall have the following requirements: -

- The covers must meet the loading requirements of class D400 of IS EN 752:2008 when tested with their frames.
- Seatings shall be neoprene seatings (unless stated otherwise).
- Opening size shall be 600 x 600 min., and frame shall have a minimum depth of 100mm.
- The cover shall be a single part and fitted tight in frame with opposed wedge seatings or other positive device and shall have 2 no. keyholes in accordance with IS 261:2013.

1507 JOINTING:

1. **Flexible Jointing:** Form flexible joints in pipes in accordance with the manufacturer's written instructions. Use only the lubricant recommended, if any, and ensure that the components are clean.
2. **Solvent-Welded Joints:** Form Solvent-welded joints in plastic pipes in accordance with the pipe manufacturer's written instructions. Ensure that the surfaces to be joined are clean and avoid an excessive accumulation of solvent-cement on the joint. Remove any spilled solvent from the vicinity of the pipe.

1508 PIPE LAYING - FLEXIBLE PIPES:

2. **Granular Bedding and Support:** Lay a bed of granular material not less than 100mm thick on trench bottom and on it sit pipes to rest uniformly on their barrels to the required levels and gradient. After testing for water tightness, lay and compact granular material to the full width of the trench at both sides of and over the crowns of pipes to a depth of 100mm for 110mm pipes and 150mm for larger pipes. Compact granular material with hand rammers or light plate vibrators as necessary.

1509 BACKFILLING:

1. **Initial Selected Backfill:** Fill up to a level 300mm above the pipes with selected backfill free from large stones (over 40mm), building rubbish, tree roots, vegetable matter and large lumps of clay (over 75mm). Compact by hand or light plate vibrator in 100mm layers. All granular fill for under buildings, paths and roads shall comply with approved standard IS EN 13242:2002+A1:2007 (see Work Section 300 - Excavation Work).
2. **Main Backfill:** Lay the main backfilling consisting of suitable earth filling in layers of not more than 300mm thick and with each layer thoroughly compacted before the next layer is placed. Do not use heavy compactors until there is a minimum of 600mm cover over the pipes. Remove any trench sheeting as the work proceeds to permit compacted filling of all spaces. All granular fill for under buildings, paths and roads shall comply with approved standard IS EN 13242:2002+A1:2007 (see Work Section 300 - Excavation Work).

1510 MANHOLES:

1. **Armstrong Junctions:** Before use, the manufacturer and details shall be approved by the Employers Representative. All work (sizes, type, depths, bedding, backfilling etc.) to be in accordance with manufacturer's instructions.
2. **Manhole Construction:** Construct manholes having walls not less than 215mm thick of solid concrete blocks laid in flat stretcher bond in sand: cement mortar, to engineers' specification in accordance with IS EN 998-2:2010 (as amended) with all joints fully filled and in accordance with Section 600 - Blockwork and Brickwork. Form a concrete base slab the same size as the external dimensions of the manhole and not less than 150mm thick of

concrete to Engineer Specification. Cast a 150mm thick concrete slab over the chamber in a similar mix, suitably reinforced to carry all probable superimposed loads and with an opening for the metal cover and frame. Render the insides of walls in accordance with IS EN 998-1 (as amended).

3. **Manhole Channels:** Where appropriate sizes are available preformed PVC bases should be used in concrete chambers (in lieu of channels and benching). Where this is not possible, channels to be PVC of appropriate section with proper taper channels where drain sizes change. Lay main and branch channels to extra fall of 25mm over and above general fall of drain. All branches to enter main channel about invert level, culvert branches being used in all cases where angle of junction exceeds 130°. Bench strike wall of manhole and finish fine with a steel trowel. Branches carrying rainwater or surface water only may enter manholes above benching level.

1511 TESTING:

1. **Testing Generally:** Test drains after laying and jointing, but before placing of surrounds or concrete beds in accordance with IS EN 1610:2015. Re-test after completion of backfilling.
2. **Drainage Authority:** Carry out tests of the drainage installation to the approval of the Local Authority.
3. **Water Test:** Form temporary seals at low ends of drains and fill the system with water. Erect a standpipe to provide a head of 1200mm at high end and not more than 2400mm at low end. Allow for initial absorption and top up before starting the test. Measure loss of water over a period of 30 minutes by adding water from a measuring vessel at 10-minute intervals to maintain the original level in the standpipe. The loss of water for drains up to 300mm nominal bore shall not exceed 0.06 litre per hour per 100 linear metres per millimetre of nominal bore.
4. **Cleaning:** Remove any accumulated deposits and debris from inside of drains and thoroughly flush out with clean water before handing over.

1512 WASTEWATER TREATMENT SYSTEMS (SEPTIC TANKS):

1. **Wastewater Treatment System:** Constructed to be in accordance with SR 66:2015-IS EN 12566. All prefabricated water treatment systems installed and setup as per manufactures specifications.
2. Where required to service scheme and where shown on site plans shall be constructed to the dimensions and as shown on detail drawings, using concrete per Engineers Specification or as per manufacture specification.

1513 SOAKPITS:

1. **Soakpits:** Position as shown on drawings and fill with a minimum of 1m³ of approved fill to take single connections and a minimum of 4m³ of fill for in excess of one connection.

1600 SITE WATER SUPPLY:

1601 CODES AND STANDARDS:

1. **Building Regulations:** The installation shall comply with the requirements of Building Regulations & with Irish Water Document IW-CDS-5020-01 Water Infrastructure Standard Details.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. Please note that sections in this specification contain clauses which may not be required or may be covered by Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the Engineer.

NOTE:

(Refer to Mechanical & Electrical and Civil & Structural Specification.)

1700 PLUMBING, HEATING & SANITARY:

1701 CODES AND STANDARDS:

1. **Building Regulations:** The works shall comply with the requirements of Building Regulations & in particular with TGD Part 'J' Heat Producing Appliances and TGD Part 'L' Conservation of Fuel & Energy - Dwellings
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. Please note that sections in this specification contain clauses which may not be appropriate or may be covered by M&E Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the M&E Engineer.

NOTE:

(Refer to Mechanical & Electrical Specification.)

1800 ELECTRICAL

1801 CODES AND STANDARDS:

1. **Building Regulations:** The works shall comply with the requirements of Building Regulations & in particular with TGD Part 'J' Heat Producing Appliances and TGD Part 'L' Conservation of Fuel & Energy – Dwellings.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. Please note that sections in this specification contain clauses which may not be appropriate or may be covered by M&E Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the M&E Engineer.

NOTE:

(Refer to Mechanical & Electrical Specification.)

1900 SITE SERVICES

- 1901 CODES AND STANDARDS:
- 1902 MATERIALS
- 1903 QUALITY CONTROL
- 1904 PREPARATIONS
- 1905 EXCAVATION WORK
- 1906 PIPE LAYING GENERALLY
- 1907 JOINTING
- 1908 PIPE LAYING - FLEXIBLE PIPES
- 1909 BACKFILLING
- 1910 MANHOLES
- 1911 TESTING
- 1912 THRESHOLD DRAIN 1913 SLOT DRAINS
- 1914 DRAINAGE SURVEY
- 1915 CONNECTION TO MAIN SERVICES
- 1916 RECESSED MANHOLE COVERS
- 1917 SOIL STACK

1901 CODES AND STANDARDS:

1. **Building Regulations:** The installation shall comply with the requirements of Building Regulations & in particular with TGD Part 'H' Drainage and Wastewater Disposal.
2. **IS and BS:** Where IS (Irish Standard) and BS (British Standard) are quoted check for amended EN (European Standard) or recent updated changes.
3. Please note that sections in this specification contain clauses which may not be required or may be covered by Engineer's Specifications. Please clarify any discrepancies between the two specifications with both Architect and the Engineer.

NOTE:

(Refer to Mechanical & Electrical Specification.)

1902 MATERIALS:

1. **Plastic Pipes:** uPVC pipes shall comply with I.S. EN 13598-1:2010 (as amended) and I.S. EN 14011:2009 (as amended). Pipes shall have a nominal size of 110 mm. (or as shown on drawings) Sockets may be Rigid Seal, rubber seal rings or Solvent cement type. All pipes, fittings and accessories to be obtained from one manufacturer. Obtain the Employer's Representative's approval of the manufacturer proposed. Obtain the manufacturer's full set of instructions and comply with these even if they are additional to the requirements of this Specification.
2. **Granular Bedding:** Granular bedding shall comply with I.S. EN 1610:2015 (as amended) and be nominal size of 10mm.
3. **Gullies:** Waste and rainwater gullies to units shall be uPVC back inlet gullies, complying with Clause 1502.5, fitted with cast aluminium, hinged lockable covers.
4. **Armstrong Junctions:** Armstrong junctions (AJ's) to be moulded uPVC and fitted with cast iron screw down or lockable covers. The AJ shall come complete, where necessary with standard riser pieces to adjust for depth of drain. Installation and fitting as per manufacturer's instructions.

5. **Gully Gratings:** Gully gratings and frames for the yard gullies shall be ductile iron to comply with I.S. EN 124. Opening size shall be 350x280 min and frame shall have a minimum depth of 100 min.

1903 QUALITY CONTROL:

Provide for subjecting all runs of drains to hydraulic test as carried out by County Council Drain Testing Staff and provide all necessary attendance during testing. No drains to be benched up or covered in until satisfactory tests have been carried out in the presence of the Employers Representative or Clerk of Works.

1904 PREPARATIONS:

1. **Storage:** Store pipes by stacking parallel to one another on a reasonably level surface free from stones and sharp objects and avoid overloading the bottom layers. Secure end pipes in the bottom row to prevent collapse of the stack. Stack pipes of different sizes separately.
2. **Joining Rings:** Store rubber joining rings in a cool, dry, dark place and avoid contamination by oils, petrol or greases.

1905 EXCAVATION WORK:

1. **Excavation Generally:** Excavate for drainage work in accordance with the requirements of Work Section 300 - Excavation Work also see I.S. EN 1610:2015.
2. **Excavation Start:** Do not excavate for any drain until all the materials necessary for that section are available.
3. **Trench Width and Sides:** Trench width shall be as narrow as is practicable but not less than the outside diameter of the pipe plus 150mm on each side and with the bottom section, where possible, having vertical sides to a height not less than 300mm above the top of the pipe, unless otherwise shown on the drawings.
4. **Surface Material:** Remove topsoil, turf or other surface material and set aside for use in reinstatement.
5. **Excavated Material:** Deposit excavated material not less than 500mm from the edge of trenches and avoid endangering the stability of the excavation.
6. **Existing Services:** Avoid damaging existing pipes, ducts, cables or other services exposed by excavation and provide temporary support as is necessary. Provide a minimum clearance of 150mm between any existing services and new pipework.
7. **Warning Tiles:** Place warning tiles or slabs over and close to pipelines at their points of intersection with other services.
8. **Trench Walls Support:** Provide temporary support to trench walls as is necessary to maintain a safe working area.
9. **Land Drains, Disruption:** Restore any land drains disrupted during excavation work.
10. **Trench Excavation:** Excavate trenches immediately before laying bedding material or pipes. Stabilise local soft spots in trench bottoms by tamping in granular material. Remove large hard objects, such as, boulders or large roots and replace by tamped granular material.
11. **Surface Water:** Keep excavation free from surface water.
12. **Ground Water:** Keep excavations below ground water level free from water.

1906 PIPE LAYING GENERALLY:

1. **Levels:** Before laying new drains, check the invert levels of existing drains and sewers with the levels shown on the drawings.
2. **Installation:** Install pipes, fittings and accessories in accordance with the manufacturer's written instructions.
3. **Sealing Open Ends:** During construction, provide a temporary seal to the open ends of pipework and maintain in position until completion of work.
4. **Main Sewer Connection:** Connect new drains to the existing sewer as directed by, and to the satisfaction of, the Council's Engineer.
5. **Laying:** Lay pipes straight to line and true to gradient on a firm and even foundation for the full length of the barrel. Form joints in the trench.
6. **Low Temperature Laying, uPVC:** Do not lay uPVC pipes when the temperature of the pipes is below 0°C.
7. **Sockets:** Lay pipes with sockets facing up the gradient. Form depressions under sockets to avoid pipes resting on the sockets and re-pack after pipe-laying.
8. **Pipes Through Walls:** Where pipes pass through walls, or other rigid structures other than manholes, provide a minimum clearance of 25mm around the pipes in accordance with TGD Part 'H' and fill with a suitable compressible packing.
9. **Pipes Through Walls, Fixed:** Where pipes are rigidly fixed to structures, provide flexible joints, as close to the structures as possible, in adjoining short length pipes. Lengths shall not exceed 600mm for 100mm and 150mm nominal bore pipes and 900mm for 225mm and 300mm nominal bore pipes accordance with TGD Part 'H'.
10. **Hard Packing:** Do not rest pipes in trenches on blocks or similar hard non-resilient permanent packings.
11. **Compaction:** Remove trench sheeting and other temporary obstructions to an extent sufficient to allow compaction of bedding and surrounding fill while maintaining trench support as the work proceeds.
12. **Bridges:** Provide temporary bridges over trenches after backfilling to prevent damage to pipes by heavy construction traffic.
13. **Manhole Branches:** Arrange branch drain connections at manholes so that discharge is in the direction of the main drain and that interference with the main flow is avoided.
14. **uPVC Channels:** Anchor uPVC channels in sand and cement mortar by using suitable built-in retaining clips or by providing a mechanical key on the surface by roughening and then coating with solvent cement into which clean dry sharp sand has been sprinkled.
15. **Gullies and Gratings:** Gully pots shall be laid on a 150mm concrete bed with a concrete surround 150mm thick. Road gully gratings and frames shall be laid in cement mortar (1:3). Where surfacing is to be delayed, the gratings shall be set to finished levels, and a ramp of fine textured bitumen macadam shall be placed and maintained around the gratings until the surfacing is carried out.
16. **Bedding of Armstrong Junction:** Armstrong junctions to be laid on 600 x 600 x 150 mm thick concrete bed and cradled up around same. Ensure that covers are parallel to adjoining buildings.
17. **Bedding of Boundary Box:** Irish Water approved boundary box with a minimum depth of 600mm, on 100mm depth of C 12/15 concrete and surrounded with clause 808 granular materials. With a 25mm PE connection pipe from the water mains and a 25mm pipe for customer distribution system beyond Irish Water approved boundary box. All fittings to be approved by Boundary Box manufacture.

1907 JOINTING:

1. **Flexible Jointing:** Form flexible joints in pipes in accordance with the manufacturer's written instructions. Use only the lubricant recommended, if any, and ensure that the components are clean.
2. **Solvent-Welded Joints:** Form Solvent-welded joints in plastic pipes in accordance with the pipe manufacturer's written instructions. Ensure that the surfaces to be joined are clean and avoid an excessive accumulation of solvent-cement on the joint. Remove any spilled solvent from the vicinity of the pipe.

1908 PIPE LAYING - FLEXIBLE PIPES:

1. **Granular Bedding and Support:** Lay a bed of granular material not less than 100mm thick on trench bottom and on it sit pipes to rest uniformly on their barrels to the required levels and gradient. After testing for water tightness, lay and compact granular material to the full width of the trench at both sides of and over the crowns of pipes to a depth of 100mm for 110mm pipes and 150mm for larger pipes. Compact granular material with hand rammers or light plate vibrators as necessary.

1909 BACKFILLING:

1. **Initial Selected Backfill:** Fill up to a level 300mm above the pipes with selected backfill free from large stones (over 40mm), building rubbish, tree roots, vegetable matter and large lumps of clay (over 75mm). Compact by hand or light plate vibrator in 100mm layers. All granular fill for under buildings, paths and roads shall comply with approved standard I.S. EN 13242:2002+A1:2007 (see Work Section 300 - Excavation Work).
2. **Main Backfill:** Lay the main backfilling consisting of suitable earth filling in layers of not more than 300mm thick and with each layer thoroughly compacted before the next layer is placed. Do not use heavy compactors until there is a minimum of 600mm cover over the pipes. Remove any trench sheeting as the work proceeds to permit compacted filling of all spaces. All granular fill for under buildings, paths and roads shall comply with approved standard I.S. EN 13242:2002+A1:2007 (see Work Section 300 - Excavation Work).

1910 MANHOLES:

1. **Armstrong Junctions:** Before use, the manufacturer and details shall be approved by the Employers Representative. All work (sizes, type, depths, bedding, backfilling etc.) to be in accordance with manufacturer's instructions.
2. Manhole Construction: (N/A.)
3. Manhole Channels: (N/A.)

1911 TESTING:

1. **Testing Generally:** Test drains after laying and jointing, but before placing of surrounds or concrete beds in accordance with I.S. EN 1610:2015. Re-test after completion of backfilling.
2. **Drainage Authority:** Carry out tests of the drainage installation to the approval of the Local Authority.
3. **Water Test:** Form temporary seals at low ends of drains and fill the system with water. Erect a standpipe to provide a head of 1200mm at high end and not more than 2400mm at low end. Allow for initial absorption and top up before starting the test. Measure loss of water

over a period of 30 minutes by adding water from a measuring vessel at 10-minute intervals to maintain the original level in the standpipe. The loss of water for drains up to 300mm nominal bore shall not exceed 0.06 litre per hour per 100 linear metres per millimetre of nominal bore.

4. **Cleaning:** Remove any accumulated deposits and debris from inside of drains and thoroughly flush out with clean water before handing over.

1912 THRESHOLD DRAIN:

A modular grated trench drain shall be provided to external doors of all buildings and shall be connected to the nearest surface water system with 100mm-outlet pipe, laid to the Manufacturer's Instruction. Refer to detailed threshold drawings.

1913 SLOT DRAINS:

Provide offset drainage channels to all areas as indicted on the detailed drawings, 10mm inlet, continuous hot-dip galvanised and cold rolled steel, load class C250, 2-point locking bar and 2 screws per metre, 330 mm x 110 mm hunched concrete bedding (c 20/25), connecting to the nearest surface water system via gully trap, all in accordance with the manufacturer's instructions.

1914 DRAINAGE SURVEY:

The contractor is to allow for carrying out a CCTV drainage surveys of existing drainage system to works commencing on site and of new drainage systems prior to issuing of the Certificate of Substantial Completion

1915 CONNECTION TO MAIN SERVICES:

Tenderers should allow for connecting new sewers to existing as shown. All restoration of roads, paths, etc shall be carried out to the satisfaction of the Local Engineer and Employers Representative to Cork County Council requirements.

1916 RECESSED MANHOLE COVERS:

Refer to Civil/Structural Specification

1917 SOIL STACK:

Stack to be a 100mmØ uPVC pipe. Internal stack, including a flexi-pipe and associated fixings, to have a roof vent tile connected as per architectural details.

2000 FITOUT:**2001 BATHROOM ACCESSORIES:****1216 BATHROOM ACCESSORIES:****Toilet Roll Dispenser:**

Stainless Steel 316, 310X130X330mm wall mounted, lockable, toilet roll dispenser, chrome finish, concealed fixings, brackets and fixings supplied, one year guarantee

Enlarged Toilet Roll Holders:

For use in Changing Places Toilet and Accessible Shower Room. "Franke Sissons Jumbo Roll Holder (Model CHRX 670)" or equivalent type in stainless steel surface sating finish, material thickness 0.9 mm closed round casing with inspection window, to all toilet cubicles and fixed in accordance with manufactures instructions.

WC Pans:**A. Changing Places Toilet**

360 x 750 x 870mm Accessible Porcelain WC pan, Close coupled pack. 75mm projection with raised seat 450-480 seat height, 4.5 cistern, spatula lever, wc seat and cover, flat topped cistern doubles as shelf. Fixings as per manufacturer's instructions. Seal all joints with waterproof sealant in selected colour. Doc M "Contour 21" close coupled pack left hand or equivalent, with CDoc M "Contour 21" close coupled left hand corner pack or equivalent, WC pan, water saving delay fill cistern with spatula lever, basin, waste 1 ¼" plastic strainer, dished pattern 80 mm unslotted tail, hangers concealed steel, trap 1 ¼" plastic bottle, 75 mm seal, grab rails, hinged support rail, with toilet roll holder, white plastic seat and cover with retaining buffer, copper tails, on TMV3 mixer tap, (with white plastic coat hook affixed to toilet door).

B. ACCESSIBLE SHOWER ROOM

360x750 x 460mm Accessible Porcelain WC pan, 75mm projection, raised seat 460 seat height, supply with seat. Fixings as per manufacturer's instructions. Seal all joints with waterproof sealant in selected colour. Doc M "Contour 21" close coupled pack left hand or equivalent, with Doc M "Contour 21" close coupled left hand corner pack or equivalent, WC pan, water saving delay fill cistern with spatula lever, basin, waste 1 ¼" plastic strainer, dished pattern 80 mm unslotted tail, hangers concealed steel, trap 1 ¼" plastic bottle, 75 mm seal, grab rails, hinged support rail, with toilet roll holder, white plastic seat and cover with retaining buffer, copper tails, on TMV3 mixer tap, (with white plastic coat hook affixed to toilet door).

C. STANDARD & AMBULANT WC

365x515x400mm Wall Hung Porcelain WC Pan with Concealed Cistern, 420 seat Height. Vitreous china to BS 3402, back to wall rimless standard height dual flush, horizontal outlet, "Armitage Shanks – Contour 21" or equivalent type, Conceala 2 cistern or equivalent universal height 6 / 4 litre dual flush valve top inlet and internal overflow, stainless steel finger pneumatic push button dual flush plate. Soft closing white toilet seat and cover with top fixing hinges.

Taps to wash hand basins:

Tonic II single lever one hole basin mixer with pop up waste or equivalent, chrome plated metal, flow rate of 5 litres per minute, at 3 bar pressure.

Heavy duty Mirrors:

Surface mounted mirrors manufactured from 8 mm thick 18/10 stainless steel, surface high polished, revolving overturned, thief proofed hidden mounting system with underlying polystyrene plate.

Soap Dispensators:

Soap dispenser with a 0.8 litre capacity in a chrome finish, fixed in accordance with manufacturer's instructions.

Hand Dryers:**Hand Dryer for use in Changing Places Toilet and Accessible Shower Room**

Stainless steel finished housing dryer assembly, universal brush type motor operating at 3,4000 RPM, thermally protected; high speed, fast 12 second dry time; 53 CFM (10,500 LFM) air velocity; extremely low power consumption at 1,100 watts, activated by an automatic infrared sensor controlled by a circuit board with one second run – on time and 30 second vandal shut off; provide a 40°F temperature rise and PC/ABS internal housing components to be V0 or V5 flame retardant; automatic infrared activation ensuring optimum hygiene levels, control board to have conformal coating, compact sleek design, sound level of 83 dB.

Hand Dryer

Stainless steel finished housing dryer assembly Operation: Touch-free infra-red activation; Hand dry time: 10 seconds (measured to method defined by National Sanitation Foundation protocol P335); Operation lock-out period: 30 seconds; Airspeed at apertures: 400 mph Operating airflow: 37 l/s; Rated operating noise power: 85 dB(A); Casing construction: Polycarbonate – ABS; Filtration: Lifetime anti-microbial HEPA H12 filter; Particulate removal tested to 99.5% at 0.15 µ MPPS according to EN1822.; Bacteria removal 99.9%; Electrical supply: 230-240 V AC, single phase 50 Hz Rated power: 1600 W
Motor type: digital motor. Switched reluctance brushless
Motor speed: 88,000 rpm
Heater type: None
Standby power consumption: 1 W
Energy consumption per dry: 0.0044 kWh
Unit dimensions (h/w/d mm) 663mm x 307mm x 247mm
Standard warranty
5-year (or 350,000 uses) parts, 1 year labour
Product Certification
BEAB approved to IEC/EN60335-1 and IEC/EN60335-2-23
Compliant to EMC directive according to EN55014-1, EN55014-2, EN61000-3-2, EN61000-3-3