DEPARTMENT OF EDUCATION AND SKILLS



Specification for 3-Student Workstations in Technology Rooms.

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1. FURNITURE SPECIFICATION AND STANDARDS

1.1 Introduction

This document is intended to set the minimum standards and requirements for 3 Student Technology Workstation. Manufacturers are permitted to use alternative materials and finishes of an equal or higher specification and performance to that in this specification, where alternative materials and finishes are proposed the manufacturers must provide relevant data sheets etc to show these are of an equal or higher specification and performance.

1.2 FURNITURE GENERAL REQUIREMENTS

1.2.1 DETAIL DRAWINGS

This specification should be read in conjunction with the detail drawings included in APPENDIX A: FURNITURE DRAWINGS.

Where copies of the layout drawings are required they should be printed on an A3 size page.

1.2.2 STANDARDS

All materials shall comply with the following standards:

- I.S.EN 622 Dry Process Fibreboard (MDF) (including furniture) for use in dry conditions
- I.S.EN 438 Decorative High Pressure Laminates Sheets based on thermosetting resins
- EN:14322 Melamine coated boards for indoor & outdoor applications
- I.S. 12720, 12721 and 12722 Methods of test for finishes of wooden furniture
- BS 1186 Part 2 Timber for and workmanship in joinery
- I.S.EN 942 Timber in joinery General classification of timber quality
- Dry Fibre Board (MDF) to IS EN 622-5, Class E1 formaldehyde content. Moisture resistant board to IS EN 622-5 MDF.H, class E1 formaldehyde content

It is essential that Furniture for School Use shall:

- (a) Comply fully with the specifications and be durable and safe for School Use.
- (b) Comply fully with the standards as detailed and shall comply fully with current European (EN) standards and future revisions, both established, developing and new standards replacing existing standards.
- (c) Be accompanied by documentation of sufficient detail for full evaluation.
- (d) Include the completed and signed certificate of compliance.

1.2.3 QUALITY

- (a) All materials and workmanship throughout must be of the highest quality. Any inferior materials or practice will not be accepted.
- (b) All items and components shall be soundly constructed in accordance with the best manufacturing process and practice.
- (c) All the dimensions, details, fixings etc shown on drawings must be strictly observed.
- (d) All proprietary materials must be used strictly in accordance with the manufacturers' instructions or recommendations.

1.2.4 ALTERNATIVE MATERIALS

(a) Materials, dimensions and finishes described in this document and on detail drawings are deemed to fulfil the requirements for stability and other performance requirements.

(b) Equivalent materials/design may be considered. Manufacturers are to ensure alternative materials match the performance criteria of typical furniture components and materials listed below and provide documentation to prove this.

1.3 Performance Criteria

1.3.1 ALTERNATIVE MATERIALS:

(a) Materials of equal or higher specification and performance to the typical furniture components and materials listed in Section 4 may be used. A non-exhaustive list of performance criteria is set out below.

1.3.2 WORKTOPS/CARCASSES

(a) Finish to be robust and resistant to impact, scratching, staining and water penetration.

1.3.3 PAINTED FINISHES

(a) They are generally not accepted, except where noted on drawings.

1.4 TYPICAL FURNITURE COMPONENTS, CORE MATERIALS & SURFACING

1.4.1 CORE MATERIALS FOR LAMINATED WORKTOPS & COMPONENTS:

- (a) High Density Fibreboard (HDF) to EN 316 Wood Fibre Boards, definitions, classifications and symbols, and to EN662-1 Fibre Boards specifications & general requirements.
- (b) All the above fibre board products to be tested to EN120 to have less than 8mg/100g free formaldehyde content (Class E1)
- (c) Surface preparation: Prepare surfaces in accordance with decorative coating manufacturer's recommendations. Apply wax finish to all exposed edges.

1.4.2 PLASTIC LAMINATES

- (a) Plastic laminates should comply with BS 4965 and I.S. EN 438, grade HGS/HGP (including vertical panels). Balancing laminate to be used in all cases. Grade VGS allowed only for balancing laminate to underside of worktops or tables.
- (b) Condition materials before fixing and bond in accordance with the manufacturer's recommendations. Chamfer edges at all external angles.
- (c) All edges of the black core to be finished flush and smooth
- (d) Workstation top to selected RAL colours, as specified on drawings.

1.4.3 DRY FIBRE BOARD (MDF)

- (a) Moisture resistant board to IS EN 622-5 MDF.H, Class E1 formaldehyde content.
- (b) 2mm Chamfer edges at all exposed edges.
- (c) Surface preparation: Sand all surfaces. Apply grey primer and the finish with RAL 9005 Black AC2 paint spray to exposed underside and all exposed edges.

1.4.4 METAL FRAMES

1.4.4.1 GENERAL

- (a) Use proprietary products to manufacturer's instructions.
- (b) Grades of metals, section dimensions and properties to be to the appropriate Irish Standard.

- (c) When not specified, select grades and sections appropriate for the purpose.
- (d) Prefinished metal may be used if methods of fabrication do not damage or alter appearance of finish, and finish is adequately protected.
- (e) Fasteners to be to the appropriate Irish Standard and, unless specified otherwise, to be of the same metal as the component, with matching coating or finish.

FABRICATION GENERALLY

- (a) Fabricate components carefully and accurately to ensure compliance with design and performance requirements.
- (b) Finished components to be rigid and free from distortion, cracks, burrs and sharp arises which would be visible after fixing or a hazard to the user. Moving parts must move freely and without binding.
- (c) Unless specified otherwise, mitre corner junctions of identical sections.
- (d) Cold formed work: Use brake presses or cold rolling to produce accurate profiles with straight arises.

WELDING/BRAZING GENERALLY

- (a) Thoroughly clean surfaces to be joined.
- (b) Ensure accurate fit using clamps and jigs where practicable. Use tack welds only for temporary attachment.
- (c) Make joints with parent and filler metal fully bonded throughout with no inclusions, holes, porosity or cracks. Prevent weld spatter falling on surfaces of materials which will be self-finished and visible in completed work. Remove all traces of flux residue, slag and weld spatter.
- (d) Welding of steel: Metal arc welding to I.S. EN 1011-1 and I.S EN 1011-2, or other methods subject to approval.

FINISHING WELDED/ BRAZED JOINTS

- (a) Butt joints which will be visible in completed work to be smooth, flush with adjacent surfaces.
- (b) Fillet joints which will be visible in completed work to be executed neatly.
- (c) All welds to be concealed where possible or to be ground smooth where visible. Remove rust, loose scale, welding slag and spatter. Remove oil, grease and dirt. Surfaces to be smooth to touch prior to application of finishing coats.

PREPARATION FOR APPLICATION OF COATINGS

- (a) Before applying coating ensure that fabrication is complete and all fixing holes have been drilled, unless otherwise specified.
- (b) Remove all paint, grease, flux, rust, burrs and sharp arises.

1.4.4.2 POWDER COATING

(a) Metal Coating shall be epoxy powder coated to selected RAL colour, as specified on drawings.

WORKING PROCEDURES

- (a) Requirement: Comply with: BS 6497 for galvanized steel backgrounds.
- (b) British Coatings Federation: Code of safe practice Application of thermosetting powder coatings by electrostatic spraying.

POWDER COATING APPLICATORS

- (a) Applicator requirements:
 - Approved by powder coating manufacturer.

- Currently certified to I.S. EN ISO 9001.
- Comply with quality procedures, guarantee conditions, standards and tests required by powder coating manufacturer.
- Each applicator to use only one plant.

GUARANTEES

- (a) Powder coating manufacturer and applicator guarantees:
 - Submit signed project specific copies on completion of work.

EXTENT OF POWDER COATINGS

- (a) Application: To visible component surfaces, and concealed surfaces requiring protection.
- (b) Coated surfaces will be deemed 'significant surfaces' for relevant BS 6496/ BS 6497 performance requirements.
- (c) Performance and Appearance of Powder Coatings
- (d) Standard: To BS 6496/ BS 6497.

STEEL FABRICATIONS

- (a) Unit assembly: Wherever practical, before powder coating.
- (b) Exposure of uncoated background metal: Not acceptable.
- (c) Assembly sealants: Compatible with powder coatings.

FIXINGS

(a) Exposed metal fixings: Powder coat together with components, or coat with matching repair paint system applied in accordance with the powder coating manufacturer's recommendations.

PROTECTION

- (a) Powder coated surfaces of components: Protect from damage during handling and installation, or by subsequent site operations.
- (b) Protective tapes in contact with powder coatings: Must be:
 - Low tack, self-adhesive and light in colour.
 - Applied and removed in accordance with tape and powder coating manufacturers' recommendations. Do not use solvents to remove residues.

SITE DAMAGE REPAIR/ REPLACEMENT

(a) Damage to powder coatings: Rectify immediately damage caused during handling and installation, or by subsequent site operations. Submit proposals for extensive repair or replacement.

1.4.5 IRONMONGERY

- (a) Assemble and fix carefully and accurately using fastenings with matching finish supplied by ironmongery manufacturer. Prevent damage to ironmongery and adjacent surfaces. At completion check, adjust and lubricate as necessary to ensure correct functioning.
- (b) Latch lock to be silver chrome plated die-cast zinc Quarter Turn Spring Latch with 8.0mm triangular key. Essentra Components Ref No. 468415 or equal equivalent approved.
- (c) Hinges to be 50 x 50 x 11mm thick silver chrome plated die-cast zinc alloy threaded stud mounted leaf hinges for flush mounted doors with minimum opening of 270°. Essentra Components Ref No. 468155 or equal equivalent approved.
- (d) Feet to be matt stainless steel levelling feet with fixing lug and rubber underlay. Base plate to be 80mm sheet metal matt stainless steel to AISI 304. Threaded stud/stem to be sheet

metal matt stainless steel to AISI 303 with internal hexagonal socket adjustor to the top of the stud/stem and wrench flat at the bottom. Threaded stud/stem to have pivotal movement to allow for extra localised on-site levelling. Rubber underlay to be inlaid 80mm±5mm black Perbunan® (NBR) Shore A. Ganter Griff Ref No. GN-33-80-M16-75-B1-U or equal equivalent approved.

1.5 EXECUTION

1.5.1 MOISTURE CONTENT

- (a) Temperature and humidity: During delivery, storage, fixing and to handover maintain conditions to suit specified moisture contents of timber components.
- (b) Testing: When instructed, test components with approved moisture meter to manufacturer's recommendations.

1.5.2 INSTALLATION GENERALLY

Fixings Generally

- (a) Integrity of supported components: Types, sizes and quantities of fasteners/ packing and spacing of fixings selected to retain supported components without distortion or loss of support.
- (b) Components/ substrates/ fasteners of dissimilar metals: Fixed with isolating washers/ sleeves to avoid bimetallic corrosion.
- (c) General usage: To recommendations of fastener manufacturers and/ or manufacturers of components, products or materials fixed and fixed to.
- (d) Appearance: As approved samples.
- (e) Position accurately, plumb, level and aligned as necessary. Fix securely to prevent pulling away, deflection, or other movement during use.

Distortion

(f) Ensure adequate clearances for opening parts. If necessary adjust packing and fixings to eliminate binding.

Fixings through Finishes

- (g) Penetration of fasteners/ plugs into substrate: To achieve a secure fixing.
 - Powder Actuated Fixing Systems
- (h) Powder actuated fixing tools: To BS 4078-2 and Kitemark certified. Operatives trained and certified as competent by tool manufacturer.
- (i) Types of fastener, accessories and consumables: As recommended by tool manufacturer.
- (j) Protective coating to exposed fasteners used externally or in other locations subject to dampness: Zinc rich primer to fastener heads.

Adhesives

- (k) Storage/ Usage: In accordance with manufacturer's and statutory requirements.
- (I) Surfaces: Clean. Regularity and texture adjusted to suit bonding and gap filling characteristics of adhesive.
- (m) Finished adhesive joints: Fully bonded. Free of surplus adhesive.

Protection

- (n) Prevent distortion of components during transit, handling, storage and fixing.
- (o) Keep components clean and dry before fixing. Retain coverings in position for as long as practicable.

- (p) Prevent damage to components and marking of surfaces which will be visible in completed work.
- (q) Provide additional protection as necessary until practical completion and remove all temporary coverings on completion.

Storage

(r) Do not deliver to site any components which cannot be immediately unloaded into suitable conditions of storage.

Serviced Units

(s) Before fixing serviced units ensure that all provision has been made for connection of electrical services as outlined in Section 2 ELECTRICAL SPECIFICATION below.

1.5.3 COMPLETION

Doors: Accurately aligned, not binding. Adjusted to ensure smooth operation.

Ironmongery: Checked, adjusted and lubricated to ensure correct functioning.

1.5.4 CLEANING

Cleaning all items of fitted furniture is the responsibility of the fitted furniture contractor. All units to be thoroughly cleaned inside and out for Practical Completion.

1.6 CERTIFICATES OF COMPLIANCE

Certificate of Compliance must certify that materials and finished fully comply with the minimum Standards described in this document and on the drawings. It is the responsibility of the manufacturer to ensure that the materials/items used meet these Standards. Part of this quality assurance will involve obtaining copy of certificate of testing or other supporting documentations. Where further evidence is required then the supplier may be required to submit sample(s) to the NSAI, or another competent body for independent testing.

The following certificates are to be obtained from the contractor and handed to the client on completion of the project:

- Certificate of compliance with standards drafted and issued by the manufacturer
- FSC/PEFC: chain of custody certification in relation to all timber products used
- Evidence of less than 8mg/100g free formaldehyde content (Class E1) EN120 of all fibre board materials used
- Certification to demonstrate compliance with performance criteria for solid core laminate products.
- Guarantees for powder coating of metal frames.

1.7 ACCESSORIES:

The following accessories should be supplied with/ fixed to each workstation:

- 3 No. 7" plain screw woodworking vice with 20mm thick solid oak jaw piece. Irwin Record or equal equivalent approved.
- 3 No. 3" mechanics vice, Irwin Record or equal equivalent approved.
- 3 No. 12mm birch plywood mechanics vice tray as detailed in Drawing Nos. 3S-TECH-WS/19 & 3S-TECH-WS/20.

2. ELECTRICAL SPECIFICATION:

2.1 OVERVIEW

- (a) The following power points will be provided at each of the three student bases on the workstation:
 - One 230 volt twin switched socket outlet
 - One 110 volt socket outlet
 - Three Low Voltage outlets providing 3 volt, 6 volt & 9 volt DC supplies
- (b) The scope and extent of the electrical works involved will include the supply and installation of all pieces of electrical equipment and accessories as well as all associated wiring.
- (c) Refer to APPENDIX B: ELECTRICAL SCHEMATIC DRAWING below for further guidance on the layout of the electrical installation in the workstation.
- (d) The final connection to the workstation may be on the ceiling or in the floor in the room.
- (e) Where a ceiling connection is required i.e. in an existing school, a tail incorporating a plug as outlined below shall be provided on the workstation to facilitate final connection to the electrical installation in the school.
- (f) The onus will be on the Contracting Authority ordering the workstations to nominate which type of connection is required for a particular project.

2.2 IN-COMING ELECTRICAL SUPPLIES:

- (a) In new schools or extensions to schools power supplies to the workstation shall be provided as part of the building contract and run in suitably sized plastic ducts in the floor and terminated in the junction boxes in the base of the workstation.
- (b) In existing schools:
 - The school authority will be responsible for procuring the workstations and providing power supplies for them
 - The preferred arrangement for feeding work stations where the TECHNOLOGY ROOM is located on a ground floor is from ceiling mounted socket outlets as outlined In SECTION 2.2. CONNECTION ON CEILING. Running cables in existing floors on the ground floor in a school is not an option and should be avoided
 - In this scenario the school authority should ensure that the workstations come with tails and plug to facilitate final connection
 - Where the TECHNOLOGY ROOM is located on an upper floor in a school the power supplies
 to each work station shall be run as outlined In Section 2.2. Connection in Floor i.e. in
 the ceiling of the floor below.
 - School authorities should also refer to DoES TGD-003 MECHANICAL & ELECTRICAL BUILDING SERVICES ENGINEERING GUIDELINES FOR POST PRIMARY SCHOOLS, SECOND EDITION and the DoES TECHNOLOGY ROOM layout drawings for further guidance on the provision of the 240volt and 110 volt supplies
- (c) Refer also to APPENDIX B: ELECTRICAL SCHEMATIC DRAWING below.

2.2.1 CONNECTION IN FLOOR

- (a) In new schools and extensions to schools the electrical supplies feeding the workstation shall be via a cable duct in the floor as outlined In DoES TGD-031 MECHANICAL & ELECTRICAL BUILDING SERVICES ENGINEERING GUIDELINES FOR POST PRIMARY SCHOOLS, SECOND EDITION and as outlined on the DoES TECHNOLOGY ROOM layout drawings.
- (b) The workstation shall be located directly above the cable duct.

(c) In the case of a new school or extension to a school the Main Contractor will be responsible for organising the final connection between the workstation and the electrical installation.

2.2.2 CONNECTION ON CEILING

- (a) The electrical supplies to feed the workstation will be taken from a blue MK Commando 240 volt socket outlet (Cat No: K9194BLU) and a yellow MK Commando 110 volt socket outlet (Cat No: K9193YEL) or equivalent on the ceiling and fed through the top cover on the work station to the junction boxes in the base of the workstation.
- (b) They shall be via a Neoprene retractile coiled cable having good chemical and abrasion qualities, shall be rated at a minimum of 16Amp and should be capable of being extended to 3.5m.
- (c) The supply end of the cables shall be terminated in a MK Commando 230volt 16 Amp blue waterproof plug (Cat. No: K9024BLU) and a MK Commando 110volt 16Amp yellow waterproof plug (Cat No: K9023YEL) or equivalent to facilitate connections to the Commando socket outlets on the ceiling.
- (d) The other end of each coiled cable shall be terminated via a cable gland in a suitably sized junction box or galvanised metal enclosure.
- (e) The galvanised metal enclosures will be the main distribution point for supplies to the various power points on the workstation.
- (f) This coiled cable and plug top shall be supplied with the workstation.
- (g) The ceiling socket will be provided by others i.e. school authority.
- (h) Refer to APPENDIX B: SCHEMATIC WIRING DIAGRAM below.

2.3 230 VOLT SUPPLY:

- (a) A MK Metalclad Plus twin switched socket outlets (Cat. No: K2946ALM) or equivalent shall be provided at each student base as detailed on the drawings. Provide a 2 gang dry lining box, 134x74x35mm at each socket outlet. Dry lining box to be tested in Accordance with EN 60670-1 EN 60695-2-1.
- (b) These shall be wired in parallel in 2.5mm² PVC/PVC cable or Butyl flex from the main distribution point in the base of the workstation.
- (c) Refer also to APPENDIX B: ELECTRICAL SCHEMATIC DRAWING for guidance.

2.4 110 VOLT SUPPLY:

- (a) A yellow MK Commando 110 volt socket out (Cat. No: K9200YEL) or equivalent shall be provided adjacent to each student base. Refer to the drawings for guidance on the exact locations of these.
- (b) These shall be wired radially in 3-core 1.5mm² (minimum) flex from the 110volt junction box in the base.
- (c) Refer also to APPENDIX B: SCHEMATIC WIRING DIAGRAM for guidance.
- (d) A 110 volt supply shall be provided to each of the 3 Student Workstations in Technology Rooms from a suitably rated 110 volt wall mounted transformer in the teaching space.
- (e) The transformer shall be located adjacent to the local sub-distribution board.
- (f) The islands shall be wired in a suitably sized cable in sequence i.e. daisy chain, from the transformer.
- (g) Wiring shall be run in floor ducts as outlined in Section 12.1 Electrical Installation TGD003 M&E Building Services Engineering Guidelines for Post Primary Schools.
- (h) A suitably rated DP switch incorporating a pilot light shall be provided at the teacher's base in the space to control the power supply to the transformer.

- (i) It shall be properly labelled to indicate what it controls.
- (j) Refer also to the DoES Technology Room layout drawings available on the DoES website www.education.ie for further guidance.

2.5 Low Voltage DC Supplies:

- (a) An MK Metalclad Plus twin socket outlet blank plate (Cat. No: K3369ALM) or equivalent incorporating three pairs of terminals to provided 3 separate DC power supplies with local pilot light i.e. 3 volt, 6 volt and 9 volt, shall be provided as outlined on the drawings at each student base on the workstation. Provide a 2 gang dry lining box, 134x74x35mm at each socket outlet. Dry lining box to be tested in Accordance with EN 60670-1 EN 60695-2-1.
- (b) The terminals shall be by 4mm instrumentation sockets coloured Red for Positive and Black for Negative.
- (c) A local pilot light shall be provided at each pair of terminals to indicate when there is power in the terminals.
- (d) Each pair of terminals shall be clearly labelled to indicate the voltage present.
- (e) Separate 3 volt, 6 volt and 9 volt plug-in type DC power adaptors incorporating only one voltage per power adaptor shall be connected to the terminals on each plate.
- (f) Each power adaptor shall:
 - · Be isolated from earth
 - Be stabilised at one of the voltages above and rated at not less than 1 Amp continuous with low ripple component.
 - Have thermal and over-current protection built in
 - Have full load efficiency not less than 80% to minimise heat dissipation.
- (g) A total number of 9 plug-in type DC power adaptors i.e. 3 x 3volt, 3 x 6volt & 3 x 9volt will be required in the workstation.
- (h) Power for the DC power adaptors shall be provided via a total of nine 230volt sockets outlets i.e. 3 groups of 3 socket outlets each, located in the base of the workstation.
- (i) Each group of socket outlets shall accommodate DC power adaptors of the same voltage.
- (j) The socket outlets shall be wired in parallel in 2.5mm² PVC/PVC cable or Butyl flex from the junction box in the base of the workstation.
- (k) Refer also to APPENDIX B: ELECTRICAL SCHEMATIC DRAWING for guidance.

APPENDIX A: FURNITURE DRAWINGS

SCHEDULE OF DRAWINGS

DRAWING NUMBER	DESCRIPTION
3S-TECH-WS/01	Workstation – Assembled
3S-TECH-WS/02	Workstation – Assembly
3S-TECH-WS/03	Workstation – Door
3S-TECH-WS/04	Workstation – Main Upright Support - Assembly
3S-TECH-WS/05	Workstation – Main Upright Support – Parts 2 & 4 & Item No 11
3S-TECH-WS/06	Workstation – Main Upright Support – Part No 3
3S-TECH-WS/07	Workstation – Central Core – Weld Assembly
3S-TECH-WS/08	Workstation – Central Core – Part No 001
3S-TECH-WS/09	Workstation – Central Core – Part No 002
3S-TECH-WS/10	Workstation – Central Core – Parts 003, 004, 006, 007, 008 & 009
3S-TECH-WS/11	Workstation – Central core – Part No 005 & Items 25 & 26
3S-TECH-WS/12	Workstation – Toolbox Assembly
3S-TECH-WS/13	Workstation - Toolbox - 001, 002, 003, 004, 005, 006 & 007
3S-TECH-WS/14	Workstation – Central Core Top - Assembly
3S-TECH-WS/15	Workstation – Central Core Top
3S-TECH-WS/16	Workstation – Counter Top – Base Support
3S-TECH-WS/17	Workstation – Counter Top – Piece 001
3S-TECH-WS/18	Workstation – Counter Top – Piece 002
3S-TECH-WS/19	Workstation – Mechanic's Vice Tray
3S-TECH-WS/20	Workstation – Mechanic's Vice Tray

APPENDIX B: SCHEMATIC WIRING DIAGRAM

