

PREAMBLES TO ALL TRADES

1. GENERALLY

- 1.1 The following measurement amplification and pricing factors shall apply to the whole of the Works regardless of the headings under which they have been described and shall be read in conjunction with the accompanying Schedule of Rates and Specification.
- 1.2 The rates for items in this Schedule of Rates are to include the cost effects of the items included in the description of works mentioned in the Standard Method of Measurement (SMM), Second Edition and the amplification and pricing factor contained in these Preambles.
- 1.3 Unless otherwise specifically stated in the Schedule of Rates the following items shall be deemed to be included with all items:-
 - (a) labour and all costs in connection therewith;
 - (b) materials, goods and all costs in connection therewith;
 - (c) fabricating, assembling, fitting, fixing and bedding materials and goods in position;
 - (d) use of plant, machinery, equipment and all costs in connection therewith;
 - (e) temporary works and everything whether of a temporary or permanent nature;
 - (f) all necessary joints and laps unless so required by the Standard Method of Measurement (no allowance for laps has been made in the quantities);
 - (g) all cutting;
 - (h) All wastage including additional quantities required due to the method of measurement, breakages, losses, theft, damages, provision of samples and maintenance of sufficient stock of consistent colour tone for replacement and/or rectification works during the Defects Liability Period and the like.
 - (i) supply, transporting, delivery, unloading, storing and hoisting materials and return of packings;
 - (j) preparing surfaces to receive work;
 - (k) protection, making good and cleaning up;
 - (l) other necessary and usual facilities and documentation; and
 - (m) establishment charges, overhead charges and profit.
- 1.4 Dimensions stated in descriptions are generally in the sequence of length, width and height.

- 1.5 Headings to groups of items shall be read as part of the descriptions of the items to which the headings apply.
- 1.6 These preambles do not purport to repeat any clause which has been specified in the SMM. These preambles are to be read in conjunction with the SMM. Where specific provision is made in the preambles, such provision shall have precedence over the SMM.
- 1.7 Methods of measurement contrary to the SMM are given in these preambles or are inherent in the description of the items concerned.
- 1.8 Items which are measured contrary to the SMM on a lump sum basis (works given as "Item" in the Schedule of Rates) are deemed to include all works shown on the drawings and as specified in the Specification including all works deemed necessary for the proper completion of the works. The Contractor is required to measure and ascertain for himself the quantum and extent of works required and allows all costs in connection therewith in the lump sum price.

2. ABBREVIATIONS

- 2.1 Throughout the Contract Documents the following abbreviations have been used:-

m ³	-	Cubic metre
m ²	-	Square metre
m	-	Linear metre
cm ²	-	Square centimetre
mm	-	Millimetre
mm ²	-	Square millimetre
No.	-	Number
Kg	-	Kilogram
Tonne	-	Metric Ton
Pr	-	Pair
SS	-	The latest "Singapore Standard" for a particular item of material of component, issued by the Singapore Institute of Standards and Industrial Research.
BS	-	The latest "British Standard" for a particular item of material of component, issued by the British Institute of Standards and Industrial Research.

- CP - The latest "British Standard Code of Practice" or "Singapore Standard Code of Practice" issued by the Council for Code of Practice of the British Standards Institution or SISIR respectively.

- SMM - The Standard Method of Measurement of Building Works for use in the Republic of Singapore, Second Edition, June 1986 published by the Singapore Institute of Surveyors and Valuers.

3. DEFINITIONS

The following words or expressions shall have the meanings hereunder assigned to them except where the contract documents specifically otherwise require:

- Supply Only - The Contractor is to provide for everything as defined in Section 1 above in connection with such items except fabricating, fitting and fixing materials and goods in position.

- Fix Only - The Contractor is to provide for everything as defined in Section 1 above in connection with such items except the actual cost of the materials and goods in connection with their delivery to site.

- Provisional Sum - A sum provided for works or costs which cannot be entirely foreseen, defined or detailed at the time the tender documents are issued.

- Prime Cost Sum - A sum provided for works or services to be executed by a nominated sub-contractor or for materials or goods to be obtained from a nominated supplier. Such shall be deemed to be exclusive of any profit required by the Contractor.

4. DEMOLITION AND ALTERATION

Rates for all items described shall be deemed to include for:

- 4.1 engaging a Professional Engineer to prepare and endorse necessary reports and method statements for application of the necessary permits to carry out the demolition works in accordance with the Building Control Regulations and any subsequent amendments thereof;

- 4.2 providing, erecting, altering, adapting and maintaining and removing on completion, to the satisfaction of the Superintending Officer all necessary sheet piling, shoring, bracing, needling, strutting and any other means to ensure stability of the existing and adjoining works;

- 4.3 preparing the demolished works to receive new works, which shall include preparing reinforcement for rc works and the like;

- 4.4 preparing existing works to receive new works such as hacking off wall or floor surface for forming keys to receive new wall and the like;
- 4.5 wetting plaster-work and rubbish;
- 4.6 providing dust sheets, tarpaulins, temporary roof covering, chutes, screens and any other protection necessary to safeguard the existing and adjoining works;
- 4.7 clearing away all rubbish and debris from site and dumping fees;
- 4.8 capping and plugging disused services at boundary and removing such services within the boundary in accordance with the requirements of the Superintending Officer and the relevant Authorities;
- 4.9 carrying out work in accordance with SS 557 : 2010 – Code of Practice for Demolition (formerly CP 11);
- 4.10 providing safety precautions and keeping records in accordance with the Workplace Safety and Health (Construction) Regulations and Workplace Safety and Health (Asbestos) Regulations or any subsequent amendments thereof.
- 4.11 making good all works disturbed, by reinstating to the original condition or adapting to match the proposed works.

5. BAKAU PILES

The rates for bakau piles shall include for:

- 5.1 All labour, materials, plant and tools including supervision.
- 5.2 Driving piles in various soil conditions and at any depth.
- 5.3 Jointing shall be made by using mild steel pipe sleeves if required. The joints and the ends of the piles to be jointed shall be constructed, so that the necessary strength and stiffness are developed at the joint.
- 5.4 Idling time for rigs and equipment due to obstructions of any kind at any depth, testing and the like and/or for whatever reason.
- 5.5 Movement of piling frames and equipment around the Site, centering over positions ready for piling, raising or lowering the frames and any staging, barges or the like required to support the frames.
- 5.6 Cutting, trimming and stripping off pile heads at the required cut-off level and treated with an approved preservative and waterproof coating.
- 5.7 All waste and removal from the Site.
- 5.8 Relocating and standing time for equipment and operatives due to any of the foregoing or other unforeseen circumstances.
- 5.9 Keeping all necessary records as directed by the Superintending Officer.

6. CONCRETE BORED PILES

The rates for in-situ concrete bored piles shall include for:

- 6.1 All labour, materials, plant and tools including supervision.
- 6.2 All surplus lengths due to differences between the actual length and pay length.
- 6.3 Driving piles and boring through and/or in various soil conditions and at any depth.
- 6.4 All necessary excavation works incidental to piling works including removal of surplus spoil from Site.
- 6.5 Removal of all obstructions including reinforced concrete, sandstone, shale, rocks and/or boulders at any depth below ground level under piles or other causes. Obstructions shall mean any materials, natural and/or artificial, obstructing the piling works.
- 6.6 Checking alignment of bore holes, keeping bore holes free from ground water, supporting sides of bore hole for reinforcement with temporary works and preparing surface of bore holes to receive reinforced concrete.
- 6.7 Idling time for rigs and equipment due to obstructions of any kind at any depth, testing and the like and/or for whatever reason.
- 6.8 Movement of piling frames and equipment about the Site, centering over positions ready for piling, raising or lowering the frames and any staging, barges or the like required to support the frames.
- 6.9 All unloading, pitching, coring, boring and handling and driving of piles. Coring and bulbing bottoms as required.
- 6.10 Re-boring any heaved piles and subsequently moving, re-centering and standing time for rigs and operatives.
- 6.11 Cutting, trimming and stripping off pile heads to expose reinforcement at the required cut-off level.
- 6.12 All waste and removal from the Site.
- 6.13 Relocating and standing time for equipment and operatives due to any of the foregoing or other unforeseen circumstances.
- 6.14 Keeping all necessary records as directed by the Superintending Officer.
- 6.15 The provision of necessary reinforcement bars cast in piles and required to be left projecting above the cut-off levels of the piles in accordance with the Engineer's requirements and/or specifications which unless otherwise stipulated, shall be allowed at a minimum of forty times the diameter of the rod from the pile head.
- 6.16 Shoring of neighbouring buildings if considered necessary by the Superintending Officer.

- 6.17 All necessary temporary casings and other means of protection to the bored piles.
- 6.18 Supplying and casting insitu concrete including placing concrete by tremie pipes and overcasting of piles as specified.
- 6.19 Deepening or enlarging pile caps, providing tie beams and the like due to eccentricity of piles and/or damaged or incorrectly driven piles including replacing damaged and incorrectly driven piles and piles which fail under tests.
- 6.20 Socketing insitu concrete pile into founding layer.

Prices for instrumentation and monitoring shall include for complying with the specifications for instrumentation and monitoring, preparing and submitting reports or statements that may be requested in complying with the Authorities' requirements and liaising with adjacent building owners to gain access to install instrumentation.

7. EXCAVATION

- 7.1 Where stated,

Stripped Level means the level after the removal of vegetable or topsoil;

Formation Level means the level at the bottom of the hardcore or other specified materials suitable for filling to make up levels; and

Existing Level means the level of the Site (or platform where applicable) before any work under this Contract commences. The Contractor shall allow in his rates for any difference between the specified and actual existing levels of up to a maximum of 150 mm.

- 7.2 The quantities of excavation and filling have been measured on the assumption that the gradient of the existing surfaces between the nearest adjacent spot levels and/or between contours is constant. Rates shall include for any additional excavation or filling required due to the existing surfaces differing from a constant gradient between spot levels.
- 7.3 Rates for excavations shall include for excavating by hand or machine in whatever type of soil met with (except those that which in the opinion of the Superintending Officer requires the use of compressed air plant, blasting or other special method of removal); grubbing up old roots; removing old drains and sealing off connections and filling all holes with hardcore; keeping the excavations clear of all fallen materials and rubbish; cutting out soft spots; keeping excavations free from water and site dry by pumping or baling if required and providing any temporary drains required; return, fill and ram (unless otherwise measured) with approved selected excavated materials, well consolidated in layers not exceeding 150 mm thick and remove surplus excavated materials off site.

- 7.4 Rates for hardcore shall include for all labour in laying to falls or cambers, handpacking vertical edges or haunchings, forming splayed edges and the like.
- 7.5 The area of site to be cleared has been measured flat on plan.
- (a) Flat areas of turfing are to include slight slopes not exceeding 15 degrees from the horizontal and rates are to include for pegging with wooden pegs where necessary, watering and necessary fertilizer and maintaining, rolling and cutting.
- 7.6 Rates for tree and shrub planting shall include for all maintenance.

8 CONCRETE WORK

Rates for concrete work shall include for:

- 8.1 Samples, trial mixes, testing, hoisting, pumping, pouring, packing, rodding and vibrating concrete around reinforcement and completely filling the formwork to the shape required, temperature control measures, protecting, patching-up and curing.
- 8.2 Cutting grooves, chases, mortices, holes and any other sundry items of a like nature and building in all wire ties, bolts, lugs, nailing blocks, anchors and the like.
- 8.3 Continuous pouring of concrete as directed including working beyond normal working hours.
- 8.4 Forming all necessary pour/day/construction joints to the Engineer's approval or design.
- 8.5 All construction and reinforcement details, sealing voids and movement cracks with epoxy premix grout in the case of pre-stressed concrete.

Rates for concrete beds and slabs shall include for thickening to beds and slabs including all reinforcement and formwork and for laying on any type of sub-base, laying to falls or cambers, finishing to falls, preparing surfaces to receive screeds or pavings, laying in bays. All necessary formwork to the joints between bays shall be deemed to be included.

Rates for surface water channels, concrete curbs and the like shall include for formwork, fair finishes, angles, inter-sections, ends, outlets and any other sundry items of a like nature.

Rates for mild steel or high tensile steel rod reinforcement shall include for cutting to lengths, waste, hooked ends, crank and bending as required and for securing with and including annealed iron tying wires at all inter-sections, distance blocks, spacer bars, brushing and cleaning all rods free of rust, dust, mill scale, dirt, oil and any other deleterious matters, fixing in position and supporting whilst concreting.

Rates for steel fabric reinforcement shall include all preparatory work for mild steel rods as described above and shall also include for laps, all bending, welding,

cutting, notching around obstruction, waste, securing with and including annealed iron tying wires, distance blocks and space bar and for brushing, cleaning, fixing in position and supporting whilst concreting.

The weight of steel reinforcement given shall exclude both the weight of tying wires and any rolling margins but the unit rates shall be deemed to include for these items.

Rates for formwork shall include erection, raking and circular cutting, chamfered and splayed edges, notchings, overlaps, wastage, passing at angles, filleting to form chamfered edges and splayed edges, strutting (and in the case of formwork to vertical surfaces like walls, columns and the like, strutting over 3.50m high), cutting around projecting reinforcement bars, dowels, bolts, straps, pipes, ducts, conduits, hangers and the like, bolting, ties, wedging, easing, striking, removal, forming with and including wall and column kickers, all temporary boxings to form openings including all additional strutting and trimmer bars, cutting and fitting rod or fabric reinforcement, lime-washing surfaces in contact with concrete before concreting, provision of battens, making good any honeycombing or unevenness, filling all holes left by ties or inserts with appropriate filler, conferring with and attending upon all trades, accurately setting out and casting in all bolts, sleeves, conduits and the like and preparation of shop drawings, including endorsement from a Professional Engineer.

Formwork to soffit of slab exceeding 300mm thick has not been given separately; but has been included with the general formwork area to soffit of slabs.

Formwork to edges and breaks in wall under 300mm wide has not been given separately but has been included with the general formwork area to sides of walls.

Formwork to pre-stressed concrete shall include for all temporary boxings, forming recesses for anchorages and temporary construction joints and temporary restraints.

In the case of wrot formwork, the rates shall also include for lining the formwork with any suitable material as directed by the Superintending Officer and for cleaning fins remaining on the surface of the concrete after removal of the formwork and for making good any honeycombing or irregularities, filling any holes with hard filler, rubbing down any marks and for leaving the concrete with a true and even surface.

In the case of the use of slipforms or other system formwork, the rates shall include for any additional reinforcement, temporary/permanent fixings, drilling, inserting and grouting of dowel bars and subsequent surface treatment to provide bond/adhesion for finishings.

Rates for precast concrete shall include for all necessary moulds, rebates, notchings, mortices, fixing accessories and the like, finished fair on all faces and for hoisting, centering and temporary supports, bedding, jointing and pointing in waterproofed or plain cement sand mortar (1:3) as specified.

Rates for waterproofing system shall include for laps, mortar fillets, mastic seal, reinforcing strips and working around pipes and the like.

Rates for concrete in water retaining structures and the like shall include for full compliance with the Engineer's specification with regard to any additional works,

site measures and precautions necessary to ensure watertightness.

Rates for forming ducts shall include for fixing sheathing and the like to the required profile, all necessary temporary support, including cones, wedges, anchor plates, spacers and the like, sealing, sleeving and securely taping all joints to provide watertight seal, use of all necessary equipment, forming and grouting all air and observation holes and sealing on completion, provision of samples and testing of materials used where required by the contract documents, and preparation of shop and as-built drawings.

Rates for tensioning cables shall include for provision of jacks and other stressing equipment and cutting ends of tendons at both ends and extra material and waste, live and dead end anchorage assemblies, filling jacking or anchor recess and shear keys with grout as specified, including all necessary formwork to contain the grout and providing a suitable finish to the exposed surfaces, degreasing, straightening, cutting to lengths, assembling, hoisting and fixing, all extra materials such as cones, wedges, anchor plates, spacers including for curved sections and the like, identification marking to each cable, all tests and records as required by the contract documents and submitting method statements with calculations, preliminary drawings, specifications, preparation of shop and as-built drawings.

9. BRICKWORK AND BLOCKWORK

Rates for each item of brickwork and facings shall include for all rough and fair cuttings, oversailing and receding courses, rough relieving and arches, wedging and pinning, raking joints for and pointing flashings, bedding wall plates, bonding ties, bedding and pointing metal/wood frames, labour eaves filling, plumbing angles, forming square and rebated reveals, cut squints or birdsmouths, notches, forming, leaving or cutting chases, holes and mortices, cutting and pinning, all necessary brick reinforcement (including laps, cuttings and waste), making good and other sundry items of a like nature and additional staging or scaffolding.

Rates for each item of blockwork shall include for all special made blocks, all rough and fair cuttings, oversailing and receding courses, free ends, plumbing angles, forming square and rebated reveals, notches, cutting at ends and around openings, cutting and bonding to intersections, angles and irregular angles, raking out joints for and pointing flashings, bedding wall plates, bonding ties, bedding and pointing metal/wood frames, labour eaves filling, forming notches, forming, leaving or cutting chases, holes and mortices, cutting and pinning, all necessary reinforcement (including laps, cuttings and waste) making good and any other sundry items of a like nature and additional staging or scaffolding. In the case of cavity wall, the rates shall include for wall ties and closing cavities at ends of cavity wall.

Rates for damp proof course shall include for all laps, angles, cutting, labour and materials required in laying and pointing exposed edges.

Notwithstanding the requirements of Clause 7.09(c) of the SMM, the description of forming cavity in hollow walls shall include closing cavities at ends of walls, at jambs or sills of openings and the like.

Notwithstanding the requirements of Clause 7.42 of the SMM, the description of blockwork item shall be deemed to include for cutting and bonding to walls of

different construction.

The rates for brick or tile sills, cornices, plinths, cappings, copings and similar shall include for all angles, notches and fitted returned ends and the like.

Rates for brickwork and blockwork shall include the taking delivery of sleeves and the like from nominated sub-contractors and building them in position and for leaving any necessary temporary openings for services and other fittings and fixture required for the Works and for an approved fire stop material to be installed upon completion of the installations of the relevant services, fittings or fixtures so as to ensure a proper fire compartmentalisation.

Rates for brickwork and blockwork shall include for mesh reinforcement.

Rates for blockwork shall include for the use of three-quarter, half and quarter size and other special corner blocks.

Rates for brickwork in manholes are to include for forming openings in walls for drain pipes and turning arches over same where required.

10. ROOFING AND WATERPROOFING MEMBRANE

Rates for roof covering and waterproofing membrane shall include for all necessary plant, labour, equipment, tools, appliances, materials, laps (quantities have been measured nett, no allowance made for laps) and for all straight, skew and circular cutting at eaves, verges, top edges, abutments, valleys, hips, matching coloured mortar and the like, and for cutting holes for pipes and the like, sealing around openings and for subsequent making good.

Rates for waterproofing membrane and roof coverings shall also include narrow widths, small quantities, temporary rules, covering up, protecting after laying and cleaning on completion, internal angles, all labour to form arrises, fair edges, forming grooves, all cutting and waste, jointing between sections, working around pipes and the like, dishing to outlets and gullies, forming collars around pipes, sleeves and the like, sealing and making good, dressing in grooves and edges of walls, openings in slabs, flashing and the like, and for all necessary timber, cement and sand fillets.

Rates for roof covering shall also include for nails, screws, clips, pellets, straps and the like. Primer to receive membrane and slurry protective coating shall also be included in the rates for waterproofing membrane.

Rates for lean concrete, cement and sand bed and protective screed shall include for cleaning and preparing surface to receive subsequent layer of the waterproofing system, temporary and permanent rules, grounds, battens, screeds and all necessary formwork and the like, labour forming internal angles and fillets and scupper drains, expansion joints, contraction joints, isolation joints and similar joints and all necessary sealant, finishing in steel trowelled, wood float and/or sponge finish, laying to cambers, falls and/or cross-falls, making good and working around conduits, pipes, sleeves, outlets and the like and curing.

Rates for profiled sheet roofing/sheet metal covering shall include for all necessary plant, labour, equipment, tool, appliances, materials and waste, works

of narrow width and small quantities, laying to falls, cross-falls and sloping not exceeding 10° from horizontal, laps (quantities are measured nett, no allowance made for laps), straight, skew and circular cuttings at eaves, verges, top edges, abutments, valleys and hips, all labour for bending of sheet and forming arrises, fair edges and the like, cutting holes for pipes and the like, sealing around openings and subsequent making good, nails, screws, clips, pellets, straps and the like, isolating all dissimilar metals by an approved method, dressing into outlet pipes, dishing to gullies and the like, forming collars around pipes, standards and the like and protection and cleaning up upon completion.

Rates for insulation and sarking shall include for straight, skew and circular cuttings, cutting holes for pipes and the like and fixing insulation in position with approved means.

Rates for flashings and gutters shall include for bends, joints, expansion joints, stop ends, mitred corners and the like, bending to curve, straight, skew and circular cuttings, laps (quantities are measured nett, no allowance made for laps), isolating all dissimilar metals by an approved method, fixing or laying gutters to falls or slopes, forming grooves in masonry and dressing into groove and pointing with sealant, protectors, jointing materials, solder brazing materials, rivets, nails, screws, bolts, washers, metal or other plugs, anchors, lugs, power driven fasteners, wedges, clips, holdfasts, holder bats, hangers, brackets and the like, forming outlets, dressing through outlets, dressing into rainwater heads and the like labours; and protection and cleaning up upon completion.

11. CARPENTRY AND JOINERY

11.1 Sizes

All timber sizes are finished sizes unless otherwise stated. Rates shall include for extra material required in planing for wrought faces.

11.2 Fixing

Fixing described as to masonry shall be deemed to include for fixing to either concrete, brickworks, blockwork or stoneworks and rates for masonry anchors shall include for drilling as required.

Items described as "plugged" shall include for plugging with approved proprietary plugs.

11.3 Partitions

Notwithstanding the requirements of Clause 11.27(a) of the SMM, the description for partition shall deem to include the framing to partition.

11.4 Fire-rated Doors

Notwithstanding the requirements of Clause 11.31 of the SMM, frames and transoms for doors of half-hour fire rating and above shall not be measured separately but be included in the item of door.

11.5 Rates

- (a) Rates for sawn grounds, sawn partition and false ceiling framing and similar shall deem to include for planing one or more faces if necessary to obtain a level fixing surface.
- (b) Rates for plywood, soft-board, plastic sheeting etc. are deemed to include for lining up joints, setting out and matching adjoining panels.
- (c) Rates for wallboard, hardboard, plywood and other materials of a like nature where used for lining ceilings and walls, dados, jambs, fittings and the like shall include for narrow widths, small quantities, all cutting and holes for pipes, etc.
- (d) Rates for rockwool and fibreglass blankets shall deem to include for cutting to sizes, stitching up edges, hanging, overlapping and all necessary framing, etc.
- (e) Rates for door and window frames shall include for fixing with concrete nail ramsets, holdfasts, etc.
- (f) Rates for timber doors shall include for making openings/holes for vision panels and the like.
- (g) Rates for timber door frames shall include for making frames to required finished sizes to match thickness of wall or partition.
- (h) Rates for half-hour and above fire rated doors shall include for the provision of specialist design, the preparation of the shop drawings and for obtaining SISIR approval and labelling. Rates shall also include for labour grouting of metal door frames and for priming of steel door and frame with one coat of zincchromate.
- (i) Rates for partitions shall include the following:-
 - (1) Additional supports for securing the partition to rc soffit as shown in the drawings;
 - (2) Cutting and fitting panel around profile of doors, frames and all projections;
 - (3) Additional framing to partitions abutting curtain walls, masonry walls, ceilings and doors and all projections fixed as specified including ends, angles and intersections;
 - (4) Taking delivery of bracing, framing and other inserts from nominated sub-contractors and incorporating these into positions for the purpose of mounting wall shelves, cabinets, etc.

12. IRONMONGERY

12.1 Measurement

Notwithstanding the requirements of Clauses 12.01 and 12.03 of the SMM, ironmongery to windows shall not be measured but be provided for in the window items.

12.2 Rates

The rates for fixing ironmongery shall deem to include the following:-

- (a) fixing with screws of the same finish as the ironmongery.
- (b) oiling, easing and adjusting all moving parts.
- (c) taking off and refixing after painting where necessary.
- (d) leaving in perfect working order.
- (e) handing the keys properly labelled on completion.
- (f) cutting, sinking, boring and morticing as required.

13. STRUCTURAL STEELWORK

Welded, bolted and riveted works have not been given separately but have been grouped together.

Bolts including attachments to bolts (i.e. steel plates, base plates, bearing plates and the like or sections welded or fitted to bolts) including all wedges and grouting in connection are given separately as an item and shall not be included in the rates for steelwork.

Rates for all structural steelwork are to include for rolling margin, welding materials, wastages, and for all shop or site fabrication work (such as welding, bolting, cutting, notching, machining, splicing and the like to the lengths required); forming all holes for connections; delivery to site (including packing, marking, shipping, unloading, checking, handling, stacking, sorting, slinging, craneage and the like); all hoisting to the required levels; erection (including the use of all erection equipment, stays, braces and bolts); and all testing as specified. Rates for all structural steelwork shall also include preparation work, including grit blasting to remove rust, hot-dipped galvanising, priming with appropriate primer before delivery, and all additional touching up to primer after erection.

The Contractor shall:

- 13.1 be responsible for the design, supply and installation of the structural steelwork complete with and including any connections to columns, beams, C-channels, angles, rafters, purlins and the like complete with any detailed connections including nodes, stiffeners, capping plates, splice plates, end plates, base plates, steel caps, neoprene bearings, cleats, gussets and brackets, any rigid groove, wedging, levelling and grouting, short sections and any indispensably necessary works;

- 13.2 appoint an approved registered Professional Engineer, prepare and submit any shop drawings, design calculations and all other technical details arising out of and in connection with the structural steelwork, connections and fixings;
- 13.3 allow and provide for cost and expenses of testing structural steelwork as described and as directed by the Superintending Officer; and
- 13.4 allow and provide in the rates and prices for painting and coatings for all additional areas of connections to steel sections and trusses.

14. CURTAIN WALLING, GLAZING, ALUMINIUM AND METALWORK

Rates shall include for glazing where specified and described with the component, aligning patterned and wired glass, all sealing and glazing sealant, raking and circular cuttings, waste, cleaning all glass inside and out, replacing all cracked, scratched or broken panes, protection and leaving in good condition on completion, jambs, heads, transoms, mullions, sills, fasteners, secondary steelwork, structural steel supports, discharge pipes and outlets, sub-frames, ironmongery, anchor assemblies and attachments, neoprene spacers, grouts, gaskets, bolts, fittings, brackets, sealants, fixing accessories, bedding frames, grouting back and around frames with approved sealant and adhesive, finishes where specified and described with the component, soffit panel, capping, skirting, flashing, architectural edge trims and the like around wall/slab in matching finish.

Drainage system, fire break barriers and fire stop, brackets, anchorage, inserts or cast-in fixings in either concrete structure or brickwork/blockwork for anchoring, hoisting, setting in position, building in, tightening bolts, nuts, washers and fixings, drillings in steel, aluminium, brickwork/blockwork, concrete and timber, forming holes and chases for fixings and making good thereafter shall also be included in the rates.

In addition, the rates shall also include for filling and pointing smooth joints between frames and structural opening with approved sealants, patent weather stripping and glazing bars and beads system, fittings, accessories, clips, gaskets, backer rods and weather strip, fibrous plaster backing, integral insulation panel (where applicable), all insulation and sound proofing materials, ironmongery and locking devices, mechanical and automatic operating equipment and all fixing accessories, shop and site works, protective cover or coating before delivery to prevent damage during transportation, handling and installation, removal of all protective materials and cleaning all finished surfaces thoroughly, including adjusting or readjusting all working mechanism and fittings, any cutting to enlarge size of opening and filleting, bonding to lightning protection system including ensuring continuity of earthing system and all supplementary parts, auxiliary materials and indispensably necessary fixings and accessories for the complete assembly and installation of the component.

Rates for balustrades and handrails shall include for bending and moulding to required shape and profile, all raised kerbs, nailing or screwing down at edges, cutting, notching, drilling and dressing around openings; cutting to length and shapes required, mitring, scribing, welding, grinding and polishing of weldings, shop priming before delivery and all necessary cleaning and touching up surface coatings and the like.

Rates for coverings and sheetings shall include for bending, raised kerbs, nailing or screwing at edges; cutting, notching, drilling and dressing around openings.

Rates for all items, where applicable, shall include for cutting to length and shapes required, mitring, scribing, welding, grinding and polishing of welding, hot-dipped galvanising, shop priming before delivery and all necessary cleaning and touching up surface coatings and the like.

Tie rods, bolts and anchors including attachments in connection (i.e. steel plates, base plates, bearing plates and the like or sections welded or fitted to) including all wedges and grouting have not been given separately; but rates for metalwork shall be deemed to include for these items.

Rates for all items where applicable shall include for setting in position, building in, tightening nuts and fixing as described.

Louvre frames and blades are not measured separately but are measured as a composite item.

Rates for windows, doors, skylight and trellis, shall include ironmongery, fittings, fixing accessories, opening lights where required, sealants and grouting between wall openings and frames to fill up voids and gaps.

Rates for manual and/or electrically operated roller shutters shall include door, frame, intermediate frames, guide rails, fixing clamps, structural steel supports, ironmongery and all fixing accessories.

Where required, the Contractor shall allow in his rates and prices for the appointment of an approved registered Professional Engineer to endorse and make any necessary submissions to the relevant Authorities and for the submission of all test certificates, reports and endorsements or certificates from the respective manufacturers and the approved registered Professional Engineer (where necessary) for all works described herein.

15. FLOOR, WALL AND CEILING FINISHES

Rates for each item of finishes shall include for protecting surfaces from weather and damage by building operations including the provision and fixing of polythene sheets, plywood or the like coverings where necessary.

Insitu Finishings and Tiles

Rates for all types of in-situ and tiling works shall include, as applicable, for cleaning, hacking or slurring sub-base to form key, wetting surfaces or soaking tiles before laying, ponding test where required, for narrow widths and small quantities and temporary rules, for all raking and circular cutting, mitred joints, working, dressings, dishing or fitting up to and around frames, grilles, air bricks, pipes, traps, gratings, brackets, sanitary and other fittings and any other sundry items of a like nature and for making good to this and other trades. The provisions in SMM Clauses 16.02 (c), 16.05 (e), 16.05 (f), 16.12 (c) and 16.12 (d) shall be deemed to be included.

Rates for in-situ work shall include for all rounded edges, arrises, narrow widths, small quantities, temporary rules and making good and other sundry items of a like nature.

Rates for each linear item of in-situ and tiling works such as risers, moulded or rounded edges (for tiles), channels and the like shall include for short lengths, formed, cut and purpose-made angles, junctions, ends and the like and for making good up to and around pipes, fittings and the like and any other sundry items of a like nature.

Plastering

Rates for plastering shall include for additional raking out joints of brickwork or hacking concrete surfaces, as applicable, to form key, wetting surfaces before application, for narrow widths, small nibs, projections and small quantities, temporary rules, expanded metal lathing at joints between different types of plastering, 'Expamet' or other equal and approved metal lathing at all junctions between concrete or brick and such other dissimilar backgrounds, metal or PVC beads for forming internal angles and arrises. Rates shall also include for forming quirks, throats, grooves, V-joints, intersections, curved surfaces, rounded coves, external angles, mitres, stops. Plastering for cornices, mouldings, enrichments and the like shall include for all additional labour, templates, setting out and the like. In addition, rates shall also include for forming of groove lines and the like complete with steel or aluminium angles and filling with filler and/or sealant as specified.

Rates for linear items of plastering such as skirtings, risers, coves, cornices, channels and the like shall include for all short lengths, stops, angles, ends, junctions, arrises, throats, fair edges and any other sundry items of a like nature.

Rates for metal lathing (except as plastering mesh) shall include for all cutting, holes, notching and any other sundry items of a like nature.

Tiles, Stone, Marble and Granite

The quantities for the tiles, stone, marble and granite shall be deemed to be nett (viz, as fixed or laid in place), measured over all joints in accordance with the Standard Method of Measurement (SMM) as amended.

Fix or Lay only of Tiles, Stone, Marble and Granite

Rates for fixing and for items described as "fix or lay only" shall include for:

- 15.1 Providing shop drawings to the Superintending Officer for approval, including any subsequent amendments, resubmissions and re-inspection as necessary until such drawings have been finally approved by the Superintending Officer.
- 15.2 Furnishing approved shop drawings, cutting lists and templates (for pre-cut stone, marble and granite which are cut to sizes and shapes prior to delivery) any domestic or directly engaged supplier.

- 15.3 Surface preparation including bonding agent, cleaning, hacking or slurring of sub-base to form key and wetting surfaces before fixing or laying.
- 15.4 Provision of mechanical fixings in Stainless Steel Grade 316 or such specified or approved materials for the main frame and/or sub-frame support systems including all necessary fasteners, anchors, brackets, pins, bolts, nuts, all fixing accessories, sealant, site drilling, silicon filling and the like, all as approved by the Superintending Officer.
- 15.5 All professional fees and charges arising from any endorsements and/or certifications from a Professional Engineer and ensuring that all consents, approvals and permits are obtained from the relevant Authorities in connection with the approved fixing methods.
- 15.6 Any further preparation works to materials (that are already prepared / pre-cut, profiled and finished by any domestic or directly engaged supplier in accordance with the specifications and the cutting lists (in the case of stone, marble and granite)), which are either indispensably necessary to carry out and bring to completion the work or which may be contingently become necessary to overcome difficulties. Such further preparation works shall include but not limited to dry laying on site, cutting to shape and size, forming chamfers, splays, mitres, rounded and eased edges, bevelled edges, bull nose and other forms of edge finishes, forming grooves, holes, mortices, chases and the like, including polishing all exposed edges and sealing with special sealer coatings as specified.
- 15.7 Narrow widths and small quantities.
- 15.8 Cutting and fitting up to or around frames, grilles, airbricks, sanitary and other fittings, pipes, brackets and any other sundry items of like nature.
- 15.9 Joints between the same materials and at junctions between adjoining materials, including provision of dividing strips, grouting, pointing, fillers or sealants of specified or approved types.
- 15.10 Compatibility tests of the tile adhesives, bonding agents, sealer coatings (where specified).
- 15.11 Quantifying, placing of orders, all wastages, scheduling delivery sequences, taking delivery on site at ground level and in an area accessible by vehicles including using fork-lift trucks if necessary in the event container delivery vehicles are unable to enter the site, unloading, carrying in, sorting, storing, stripping or clearing off protective wrapping or covering, checking, assembling, returning packing, handling, distributing at various levels and locations, hoisting and placing or lowering in positions, fitting and fixing materials and goods in position, adjusting, refixing and for cutting away and making good, levelling, packing, grouting and pointing with approved materials, providing templates and the like, all in accordance with the generally accepted attendance requirements relating to the specific item, including safeguarding and protection of the works until the issue of the Certificate of Substantial Completion and/or handing over.

- 15.12 Preparing and submitting PC Supply Rate Items Tracking Sheets (including base quantities) to the Superintending Officer upon award of each sub-contract for PC Supply Rate Items. Prior to the first monthly payment claim, incorporating all PC Supply Rate Items supplied by each individual domestic or directly engaged supplier, and agreeing with the Superintending Officer on the base quantities.
- 15.13 Providing PC Supply Rate Items Tracking Sheets for each individual domestic or directly engaged supplier (where appropriate) with each payment claim stating the agreed base quantities (with updates to include quantities agreed with the Superintending Officer for variation works) and updating the delivered quantities for each and every payment claim for PC Supply Rate Items.
- 15.14 Checking all materials delivered to the Site with regard to quality, quantities, the accuracy of sizes and compliance with the specifications and cutting lists. Upon taking delivery, the Contractor shall be responsible for any discrepancy, loss of or damage to the materials or damages by inferior workmanship of either the original fixing or of the subsequent taking-down and refixing thereof.
- 15.15 The amount payable by the Employer to the Contractor in respect of Supply items and Prime Cost Supply Rate items shall be calculated based on the value of the nett quantities incorporated into the Works. Breakages, wastages, damages or losses shall be matters to be settled solely between the Contractor and the supplier concerned, neither of who shall have any claims in respect of same against the Employer.
- 15.16 Any other attendance not specifically described above but is required on [any Nominated Sub-Contractors' Works and/or]* works of any domestic or directly engaged supplier.

Where stone, marble, granite or similar finishes are specified as polished, the rates for fixing or laying shall include for final wet and/or dry polishing on site after laying, by an approved method, before handing over.

Rates for fixing linear items of tiles, stone, marble and granite such as skirtings, angles, cappings, mouldings and the like are to include for short lengths, junctions, ends and for any other sundry items of a like nature.

Supply only of Tiles, Stone, Marble and Granite

Any domestic or directly engaged supplier shall be deemed to have included in their Sub-Contract Sum for the costs in connection with the following:

- 15.17 Any landing dues or charges, wharf labour costs, storage charges, stamp duties, bank charges, commission, taxes, fees, tariffs, levies and/or duties (including customs fees) and all other costs and charges payable, save for the applicable goods and services tax.
- 15.18 Dry laying of the slab finishing materials (in the case of stone, marble and granite) to ensure matching of colour, tonality and vein patterns in the finished work, at either the Factory or Warehouse as directed by the

Superintending Officer for his selection and approval, prior to packing and delivery to the Site and/or fixing or laying.

- 15.19 Cutting to shape and size, forming chamfers, splays, mitres, rounded and eased edges, bevelled edges, bull nose and other forms of edge finishes, forming grooves, holes, mortices, chases and the like, including polishing all exposed edges all in accordance with the specifications and cutting lists provided by the Contractor (in the case of stone, marble and granite) and sealing with special sealer coatings as specified.
- 15.20 Cost of packing, packaging, marking, protection and handling.
- 15.21 Freight, carriage, transportation and delivery to the Site, unloading at the designated areas and locations at ground level and handing over to the Contractor.
- 15.22 Storage of materials off-site in the event of premature arrival of the materials in Singapore and the Contractor is unable to take delivery immediately.
- 15.23 Provision of all samples and mock-ups as required by the Superintending Officer.
- 15.24 Conducting Quality, Pullout and Performance tests or any other tests as required by the Superintending Officer including supplying sufficient quantities for such purpose.
- 15.25 All insurances in connection with the import, transportation and delivery of the materials to the Site and the like.
- 15.26 Provision of Maintenance Manual and Procedures as required by the Superintending Officer.

16. PAINING AND DECORATING

Rates for painting shall include for all necessary preparation of surfaces including cleaning off, sand-papering woodwork, wire-brushing metal, rubbing down, scraping, stopping and leaving all surfaces free from dust, rust, grease and oil before painting, making good painting after installation of other works and removing splash and spray marks. The rates shall also include for additional scaffolding required, all extra labour involved in external or internal work and all narrow widths and girths which are included in superficial items.

Rates for painting shall include for the use of different colours to walls, doors, frames and the like and protection and masking of floors, fittings and the like, removing and refixing door and window ironmongery as required.

Rates for painting pipes and gutters (where such painting is measured separately) shall include for painting all cover plates, fittings, hangers, wall hooks, holderbats, brackets and the like.

Rates shall include for sample areas showing colours of all paint to be used as and when directed by the Superintending Officer for his approval.

17. DRAINAGE

Excavating trenches for drains has not been measured separately but has been described as a composite item with the drain. The rates for drains shall be deemed to include for such excavation (in whatever material as found), planking, strutting, backfilling upon completion and disposal of surplus excavated materials.

Rates for drains shall be deemed to include for all cutting, jointing and other incidental materials, junctions, bends, stop ends, reducers and the like, short lengths and joints in the running lengths, all connectors, sockets, loose collars and the like, expansion joints, cleaning out pipework as the work proceeds and protection on completion and diverting water.

18. ROADWORKS

18.1 Rates are to include all necessary disposal of material off site.

18.2 Rates for roadworks are to include all labour, materials, necessary equipment.

18.3 Rates for removing of existing road markings in cold state are to include all necessary equipment and machineries required and cleaning of shavings after removal.

18.4 Rates for applying thermoplastic road markings are to include all necessary equipment, preparation of road surface, primer coat at the rate of 220gm per sq m, apply drop on ballotini glass beads as the rate of 450 + or – 50gm/sqm for surface reflectorization and everything else as described in the specifications and other related documents of the contract.etc.

18.5 Rates for laying of road marking painting are to include working methodology specified on the contract specification and other related contract documents.

18.6 All paint used for carriageway marking shall be quick drying, chlorinated rubber based and shall comply in all respects with the requirements specified in the Singapore standard for road marking painting.

19. SIGNCRAFT

19.1 The rates for all signcraft is for fabricate, supply and install at specified locations. The rates are to include labour, plant, materials and other necessary equipment.

19.2 The rates for plastic letterings and plastic sheets are to include cutting, smooth finishing and wastages to approval.

19.3 The rates for regulatory signs are to include concrete footing, excavation and disposal of excavated materials from site.

19.4 The rates for silkscreened traffic signs are to include appropriate diagrams, alphabets and numerals, all as specified in the specifications.

- 19.5 The rates for mild steel double posts are to include excavation, concrete footings and cart away debris.

20. LANDSCAPING

- 20.1 The rates for all landscaping works shall include for maintaining the landscaping to the satisfaction of the Superintending Officer and the relevant Authorities until the Certificate of Statutory Completion is obtained.
- 20.2 All items are to be measured nett and the description shall be deemed fully to represent the whole works to be executed under the item/s in complete conformity.
- 20.3 Dimensions used in calculating quantities shall be taken to the nearest 10mm (i.e. 5mm and over shall be regarded as 10mm and less than 5 mm shall be disregarded.) This rule shall not apply to any dimensions stated in description.
- 20.4 Quantities measured in tonnes and quantities less than half of a unit shall be given to two decimals. Other quantities shall be given to the nearest whole unit (i.e. 0.5 and over shall be regarded as 1).
- 20.5 Unless otherwise described, spot turf and close turfing refer to laying grass with gaps not exceeding 100mm and 30mm respectively.
- 20.6 Rates for top soil shall include for removing debris, large stones and the like, grading to correct falls, cross-falls and cambers and weeding and preparing surface for seeding, turfing and the like.
- 20.7 Rates for turfing and seeding shall include for tamping or rolling and filling joints with top dressing, spreading a light layer of top dressing over turf, wood pegs to hold turf in place as necessary and fertilizing, watering in, rolling weeding, tending and cutting until satisfactorily established within the duration of the contract.
- 20.8 Rates for planting shall include for excavating holes and breaking up base of holes, backfilling, fertilizing, watering by deep soaking, staking and careful removal of pot or bag.
- 20.9 Rates for mulching shall include for working around plants, watering in and weeding and maintaining in a clean and tidy condition.

21. AIR-CONDITIONING, ELECTRICAL, MECHANICAL, FIRE PROTECTION INSTALLATION

- 21.1 The prices and rates quoted in this schedule of rates shall be fixed and used interchangeably across various system types where applicable and shall include for all fees, duties and other charges payable to the authorities including testing and commission. The rates quoted shall be for the supply, delivery, installation, testing and commissioning, warranty for the stated defects liability period and all other requirements as per

specification, drawings and conditions of contract.

- 21.2 The rates quote shall deem to cover all associated items necessary for the completeness of works inclusive of any wastage, builder's work in connection, etc.
- 21.3 The rates for electrical installation are to include for:
- a) Cable termination and all necessary accessories for electrical cabling.
 - b) Colour band and colour identification work.
 - c) Lettering for identification, signs, labels in English.
 - d) Priming or painting off site and proprietary finishes or surfaces treatment applied as part of the production process whether applied before or after fabrication and assembly.
 - e) All painting work, apart from the finishing paint for surface conduit or cable trunking exposed to view, shall be held to be included in the items in which they occur.
 - f) Any kind of fixing method.
 - g) Single Line Drawings, As-Built Drawings
 - h) Cables, trunking, conduits, wood battens, flexible conduit, connection to equipment, wiring accessories, cutting and making good of chases.
- 21.4 Components for supporting cables including combination system cable supports, two piece cleats, trefoil cleats, multiway cleats, hangers, channels etc. will not be given in the description of the cables or enumerated separately but are deemed to be included in the unit rates.
- 21.5 The rates for mechanical installation are to include for:
- a) Colour bands and colour identification work.
 - b) Lettering for identification, signs, labels in English, arrow indication (flow).
 - c) Priming or painting off site and proprietary finishes or surface treatment applied as part of the production process whether applied before or after fabrication and assembly.
 - d) All painting work.
 - e) Any kind of fixing.
 - f) Support frames.
 - g) Connections including flexible joints between pipe work and equipment.

- h) Flexible connections between ductwork and equipment.
 - i) Unloading of equipment and deliver to site.
- 21.6 The rates for all equipment are held to include for anti-vibration mountings for plant, machinery and the like, anti-vibration materials and sound- insulating materials in plant and machinery bases.
- 21.7 The rates for pumping system are to include for:
- a) Stainless steel housing
 - b) Stainless steel 316 impellar including pumpbase, reducer, coupling
 - c) Dismantling and remove off site making good work disturbed.
 - d) Installation shall comply to manufacturer's recommendation and specification
- 21.8 The rates for control panel for pumping system are to include for:
- a) Double enclosure weather proof IP 65.
 - b) Control modules, voltmeter, ammeter, relays, indicating LED lights for incoming, outgoing pump run, pump stop, tripped, contactors, main MCCB, individual pump MCB's, overloads, selector switches.
 - c) Tank selector switch, mute switch, siren, warning light, PL light fitting and BAS provision terminal.
 - d) Circuit shall be endorsed by LEW.
 - e) Any other necessary components for the satisfactory workings for the associated pumping system.
- 21.9 The rates for installation of condensing unit, fan coil unit, exhaust fan, etc. are to include for:
- a) All wiring, PVC trunking, refrigerant, pipe works and insulation to no more than 25 meters.
 - b) Stainless steel bracket or cement casting for condensing unit at any height.
 - c) Remote control panel.
 - d) Testing and commissioning with minimum gross cooling capacity not less than what is specific.
- 21.10 The rates for chemical cleaning shall include use of approved chemical or brush including replacement of gaskets and anti-corrosive protection painting of rusty parts.

21.11 The rates for relocation or replacement of equipments for VAV box, Fans, AHU, FCU are to include for:

- a) Supply labour, tools, material, transport, hoisting and etc. for the dismantling.
- b) Removing and reinstalling of existing equipment split unit (cost inclusive remove old refrigerant pipes, drain pipes, changing new refrigerant pipes, drain pipes, supporting rods, checking of leaks, charging of gas, commissioning, labour, tools and transportation).
- c) Changing filter dryer.
- d) Flushing and vacuuming system.
- e) Recharging gas.
- f) Re-commissioning.
- g) Removal and disposal of faulty unit.

21.12 The rates for installation of computer room air-conditioning unit (CRAC) system are to include for:

- a) All wiring, PVC trunking, refrigerant, drainage, pipe works and insulation to no more than 25 meters.
- b) Remote control panel
- c) Testing and commissioning with minimum gross cooling capacity not less than what is specific.

21.13 The rates for all pipework are to include for:

- a) Cutting to length, all short lengths, joints in the running lengths and joints to all bends, junctions, tees and other pipe fittings and heads, roof and floor outlets and the like provision of loose collars, couplings and similar items where required and jointing materials including gaskets and nuts and bolts for flanged pipes.
- b) All expansion joints not specifically shown on the contract drawings.
- c) All pipe work brackets and support and alternative method of jointing and fixing as described in the specification/ general specification/ particular specification (if any).
- d) Fixing to any surface including all necessary screws, rivets, nails, sockets, and all pipe fixings or supporting clips, saddles, brackets, clamps, straps, holdfasts, hangers (fixed or adjustable) anchors, charge pins, gaskets, metal anchor devices and the like. Fixing to any surface including providing all clips, brackets, hangers, tacks, screws, bolts, gaskets and similar required, and making good.

- e) Wrapping with bituminous felts or polyurethane sheet as required where passing through floor or cast into structure.
 - f) Sleeves for pipes passing through walls, slabs, beams and roofs and for caulking with sealant between pipes and sleeves as required.
 - g) Cover flanges as required where passing through walls.
 - h) All fittings are to include for any necessary reducers.
 - i) Cast iron or steel gratings are to include for painting with approved paint.
 - j) Screwed sockets, trappings, bosses and welding- necks welded to pipes or flanges including perforating the pipe work or flanges.
 - k) Connections between pipe work of differing materials, and differing grades of the same material; the cost is deemed to be shared equally between the concerned items.
 - l) Spring compensated components of pipe work support.
 - m) Wall floor and ceiling plates.
 - n) Trapping sets.
 - o) Flexible joints, flexible hoses if required.
 - p) All pipe fittings (e.g. Bends, elbows, branches, reducers, tees, caps and the like) unless described separately.
- 21.14 The rates for all pipe work fittings (e.g. Bends, elbows, branches, reducers, tees, caps and the like) for where described separately are to include for:
- a) Provision of necessary separate reducers of reducing tees and the like of the required sizes are not available.
 - b) Provision of bends or elbows as appropriate where “bends” are specified.
 - c) Correct type and angle of any bend, tee junction, cross and the like as required.
- 21.15 Insulation to in-line pipe work fittings (e.g. Bends, elbows, branches, reducers, tees, caps and the like), flanged joints and blank flanges together with valves shall be deemed to be included in the insulation to the pipe work in which they occur.
- 21.16 The rates for all valves are to include for connection, adjustment to pipes and fittings, brackets, gaskets, painting etc.

- 21.17 The rates for all ductwork (rectangular in section or circular or oval in section) are to include for:
- a) Alternative method of jointing and fixing as described in the specification/ general specification/ particular specification (if any).
 - b) Access panels.
 - c) Connections between ductwork of differing material; the cost is deemed to be shared equally between the concerned items.
 - d) All bends, fittings, transformation pieces, shoes etc. unless described separately.
 - e) Splitter damper and cleaning points.
- 21.18 The rate for the insulation to ductwork shall be deemed to include working insulation around access panels.
- 21.19 The rate for insulation to ductwork fittings (e.g. Bends, transformation pieces, reducers, shoes etc.) shall be deemed to be included in the insulation to the ductwork in which they occur.
- 21.20 The rate for item of works for CCTV system shall include transport, labour and tools to execute work.
- 21.21 The rate for installation of switch socket outlet shall include cables, trunking, conduit, wood battens, switch socket outlets and wiring.

22. PLUMBING AND SANITARY

- 22.1 The rates are to include all necessary preparatory works unless otherwise stated.
- 22.2 The rates for prices for lead, zinc and copper work are to include for:
- a) Wedging, solder, brazing.
 - b) All labours connected with the item described
- 22.3 The rates are to include for all necessary dismantling, cleaning of area/housing, removal of defective items and debris of site, alignment, adjustment and connections of new components to the existing pipes/ systems unless otherwise specified.
- 22.4 The rates for pipes in the ground are to include fro excavation in any material whatsoever, all planking and strutting, removal of all tree roots, stones and other obstructions, grading bottoms, filling of voids with weak concrete, back-filling and ramming in layers and for carting away surplus excavated materials.

- 22.5 The rates for UPVC pipes laid underground or chased into structure are to include for wrapping with appropriate felt.
- 22.6 The rates for galvanised steel pipes encased in concrete or buried in walls or trenches are to include for coating of bituminous solution and wrapping with appropriate felt.
- 22.7 The rates for insulation to pipes and equipment are to include for cutting and fitting or working around, supports, joints, elbows, tees, valves, access doors, gauges, connections etc.
- 22.8 The rates for all pipe work (including rainwater downpipes), valves and fittings are to include for:
- a) Cutting to length, all short lengths, joints in the running lengths and joints to all bends, junctions, tees and other pipe fittings and heads, roof and floor outlets and the like provision of loose collars, couplings and similar items where required and jointing materials including gaskets and nuts and bolts for flanged pipes.
 - b) Painting to pipes and fittings (unless such painting is measured separately).
 - c) Fixing to any surface including all necessary screws, rivets, nails, sockets and all pipe fixings or supporting clips, saddles, brackets, clamps, straps, holdfasts, hangers (fixed or adjustable) anchors, charge pins, gaskets, metal anchor devices and the like. Fixing to any surface including providing all clips, brackets, hangers, tacks, screws, bolts, gaskets and similar required and making good.
 - d) Wrapping with bituminous felt or polyurethane sheet as required where passing through floor or cast into structure.
 - e) Sleeves for pipes passing through walls, slabs, beams and roofs and for caulking with sealant between pipes and sleeves as required.
 - f) Cover flanges as required where passing through walls.
 - g) All fittings are to include for any necessary reducers.
 - h) Cast iron or steel gratings are to include for painting with approved paint.
 - i) All expansion joints not specifically shown on the contract drawings.
- 22.9 The rates for fixing sanitary fittings are to include for:
- a) Take delivery / collect from supplier's shop and assembling all component parts.
 - b) Jointing and pointing including supply of materials.

- c) Joints to service waste and overflow pipes including supply of materials.
- 22.10 The rates for sanitary, electrical appliances etc. include all accessories like thermostat, heating element, mounting bracket, pressure relief valve etc.
- 22.11 The rates for valves and fittings shall include excavation, concrete base and brickwork where necessary.
- 22.12 The rates for storage heater shall include adjustment, connection to pipes and fitting complete with heavy duty hot dipped galvanized iron bracket mounted by raw bolts, check valves, pressure relief valve, drain valves, microswitch, thermostat, flow control switch, heating element and other necessary accessories strictly complying to Authority requirement. Checking operation of storage heater, thermostat and testing of pressure relief upon completion.
- 22.13 The rates for copper pipes shall include taking out existing copper pipe fixed to wall in any position or chased in concrete or laid in trench including removing holderbats and debris off site making good work disturbed including touch up painting where necessary. Hacking and trench excavation will be measured separately.
- 22.14 The rates for DPPI and DPUI pipes shall include spigot socket joint or flange complete with gaskets, stainless steel bolts and nuts or hot dipped galvanized GI bolts and nuts of at least 25 microM, hot dipped brackets. Other extra overs shall include hot dipped galvanized fittings for hubless epoxy coated cast iron pipes.
- 22.15 The rates for sink shall include 40mm waste fittings and one chromium plated bottle trap and fixed to the wall with angle brackets.
- 22.16 The rates for trough 40mm dia waste fittings and one chromium plated bottle trap and fixed to the wall with angle brackets.