

**PARTICULAR SPECIFICATION
APPENDIX V
MANPOWER PRODUCTIVITY DATA**

Submission Of Manpower Section Of The Productivity Data

Types of Manpower to be included in Each Trade

The list of trades below corresponds to Manpower section of the Productivity Data Submission form.

Item	Trades	Types of Manpower to be Included
1	Site Management Team	
1.0	Site Management Team	Site Management Team refers to the members of the project team such as project manager, site engineer, project supervisor, WSH officers, WSH coordinators etc who main role is to manage the construction site and daily activities.
2	ERSS/Excavation (Station/Viaduct/Cut and cover tunnels/Depot)	
2.1	Site Clearance & Mobilisation	Workers who are involved at the beginning of the new project where existing structures or articles are cleared before commencement of the excavation work. Includes preliminaries, site preparation, setting up of site office, signboard & hoarding, etc)
2.2	Machine Operator	Workers who operate excavators, cranes, etc. during the ERSS/Excavation stage.
2.3	Demolition Works	Workers who are involved in demolition works.
2.4	Ground Improvement Works	Workers who are involved in ground improvement works such as JGP, WSM, TAM, etc.
2.5	Ground Freezing	Workers who are involved in specialised ground freezing techniques.
2.6	Retaining Structures	Workers who are involved in the construction of cofferdams and retaining structures , such as Dwall, SBP,CBP, cassions, etc.
2.7	Vertical Elements (e.g. King Posts, Deck Posts, etc.)	Workers who are involved in the construction of vertical elements, such as King Posts and Deck Posts, etc.
2.8	Under-pinning Works	Workers who are involved in under-pinning works to existing buildings and structures.
2.9	Formwork Installation	Workers who are involved in the erection and dismantling of any traditional timber formwork, system formwork or metal formwork.
2.10	Steel Reinforcement Fixing	Works include on-site re-bar benders/cutters and any workers who are involved in the placing of the re-bars or welded mesh. Drilling works for planting of anchors/bolts for skin wall reinforcement shall be recorded under this category.
2.11	Concrete Placement	Workers who are involved in the concreting process including the helper, vibrator, concrete pump operator, concrete truck operator but excludes the crane or hoisting operator.
2.12	Waterproofing	Workers who are involved in the waterproofing system during the ERSS/Excavation stage.
2.13	Temporary Strutting/Sheet piling/Propping Works	Workers who are involved in the erection, maintenance and dismantling of any temporary retaining structure. (i.e: strutting, sheet piling)

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2.14	Shotcreting Works	Workers who are involved in shotcreting works to support open excavations and for shotcreting to provide face/ tunnel roof support for mined tunnel
2.15	Mining Works	Workers who are involved in mined tunnel excavation, rock bolting, grouting for rock support, reinforcement for SCL and ground stability works in shafts and mined tunnel works
2.16	Micro-tunnelling	Workers who are involved in micro-tunnelling for pipe roof support.
2.17	Recharge Well/Passive Relief Well	Workers who are involved in the erection, maintenance and dismantling of recharge wells or passive relief wells for ground water control.
2.18	Rock Blasting	Workers who are involved in blasting techniques with the use of special chemicals or explosives for rock blasting.
2.19	Excavation Work	Workers who are involved in the excavation work, including the breaking of hard surface as well as removing the excavated earth or hardcore and backfilling, but excluding the excavator operators.
3	Permanent Structure Works (Station/Viaduct/Cut and cover tunnels/Depot)	
3.1	Machine Operator	Workers who operate excavators, cranes, etc. during the Permanent Structure Works stage.
3.2	Piling Works	Workers who are involved in piling works during the permanent stage.
3.3	Formwork Installation	Workers who are involved in the erection and dismantling of any traditional timber formwork, system formwork or metal formwork.
3.4	Steel Reinforcement Fixing	Works include on-site re-bar benders/cutters and any workers who are involved in the placing of the re-bars or welded mesh.
3.5	Concrete Placement	Workers who are involved in the concreting process including the helper, vibrator, concrete pump operator, concrete truck operator but excludes the crane or hoisting operator.
3.6	Pre-stressing work	Workers who perform pre-tensioning / post-tensioning work.
3.7	Precast structural concrete component installation	Workers who are involved in the assembling of the precast structural components such as RC column, beam or slab on-site but excluding the lifting machine operator.
3.8	Structural Steel Work	Workers who are involved in structural steel installation and assembly (i.e U-beam, I-beam, RHS, SHS, etc) including bolting and welding of the steel members.
3.9	Waterproofing	Workers who are involved in the waterproofing system during the Permanent Structure Works stage.
3.10	Viaduct Segment Casting	Workers who are involved in the casting of viaduct segments on site.
3.11	Viaduct Segment Handling	Workers who are involved in the handling of viaduct segments on site.
3.12	Viaduct Segment Launching	Workers who are involved in the launching of viaduct segments on site.
3.13	Viaduct Deck Furnitures	Workers who are involved in the installation of deck furnitures on the viaduct.

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4	Bored Tunnelling Works	
4.1	TBM Operator	Workers who operate the tunnel boring machines.
4.2	Ring Builder/grouter (including surface ops.)	Workers who are involved in Ring Building/grouting (including surface ops.).
4.3	Segment and service handling	Workers who are involved in Segment and service handling .
4.4	Locomotive driver	Workers who operate the locomotives.
4.5	Bridge/Mobile crane operator	Workers who operate the Bridge/Mobile crane for the tunnelling operations.
4.6	Rigger/signal worker	Riggers/signalling workers for the tunnelling operations.
4.7	Segment gasket installer	Workers who install gaskets for the segments.
4.8	Mechanical and electrical workers	Workers who are involved in electrical and mechanical installation and maintenance for the tunnelling operations.
4.9	Storemen and general workers	Other workers involved in the tunnelling operations, including watchman, storeman, general wokers, etc.
5	Architectural Works	
	General Work	
5.1	Waterproofing	Workers who prepare and apply waterproofing to all wet areas.
5.2	Fire Stopping	Workers who prepare and lay fire stopping materials on site.
5.3	Sprayed mineral fire protection	Workers who prepare and spray mineral fire protection for fire protection.
	Structural Carcass Work	
5.4	Concrete Finishes and precast concrete panels	Workers who are involved in the installing of concrete finishes products and precast concrete wall panels including the sealing up of the joint between panels. Workers who are involved in the assembling of the precast components on-site but excluding the lifting machine operator.
5.5	Brick and Block Construction	Workers who are involved in the erection of the brickwall or blockwall including the mixing of cement mortar.
5.6	Stone Masonry	Workers who prepare and lay stone masonry on site.
	Enclosure Work	
5.7	Roofing	Workers who are involved in roofing system over the roof structure, such as: 1. Waterproofing the RC flat roof and the laying of the secondary slab. 2. Installation of insulation forms, laying of metal roofing sheet or roof tiles. 3. Installation of skylight including sealing around the edge.
5.8	External Cladding	Workers who are involved in the installation of the external cladding including sealing of joints.
5.9	Stone Cladding	Workers who are involved in the installation of stone cladding.

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5.10	Glazing	Workers who are involved in the installation of glass and glazing works.
5.11	Doors and Hatches	Workers who are involved in the installation of all doors, including access hatches.
5.12	Roller Shutters and Grilles	Workers who are involved in the installation of all proprietary and non-proprietary roller shutters and grilles.
5.13	Door and Window Hardware	Workers who are involved in the installation of all door and window hardware including, hinges, locksets, latches, door controllers and other associated hardware.
5.14	Louvres	Workers who are involved in the installation of all louvres and screens, including performance louvres for ventilation shafts and buildings.
5.15	Internal Cladding	Workers who are involved in the installation of internal cladding, including subframes, channels and pannelling for the cladding.
5.16	Vitreous Enamel Panels	Workers who are involved in the installation of Vitreous Enamel Panels.
5.17	Partitions	Workers who are involved in the installing of partition walls (e.g. gypsum board, calcium silicate board) including skimming of the joints between panels.
Finishing Work		
5.18	Suspended Ceiling	Workers who are involved in the installation of suspended false ceiling.
5.19	Cementitious Toppings	Workers who are involved in the construction of cementitious toppings.
5.20	Granite Flooring	Workers who lay granite floor tiles.
5.21	Tactile Paving	Workers who are involved in the construction of tactile paving.
5.22	Access Floor	Workers who are involved in the construction of any access or raised floor system.
5.23	Plastering	Workers who are involved in the plastering process including transporting and mixing of the materials. (eg cement, sand and water)
5.24	Tiling	Workers who lay any type of tiles on wall and/or floor.
5.25	Resilient Finishes	Workers who prepare and lay resilient floor finishes.
5.26	Gratings	Workers who prepare and lay gratings on site.
5.27	Painting	Workers who prepare and perform painting work.
5.28	Metal Fixtures	Workers who are involved in the installation of metal fixtures such as Handrails & Balustrades, Service Gates, Stairs and Ladders, etc.
Commissioning Work		
5.29	Furniture and Fittings	Workers who install furniture and fittings including all accessories and ironmongery items.
5.30	Signs, advertising and displays	Workers who install Signs, advertising and displays panels.

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6	Building Service and M&E Works (For Civil Contracts only)	
6.1	Plumbing and Sanitary	Workers who install plumbing, and sanitary systems.
6.2	Fire Prevention and Protection System	Workers who install fires prevention and protection systems such as alarm, sprinkler, hose reel, fire hydrant, emergency light, dry/wet riser, etc.
6.3	Electrical system	Workers who install electrical systems.
6.4	ACMV/HVAC system	Workers who install air-conditioning and/or mechanical ventilation systems.
6.5	Lift /Escalator	Workers who install lifts and / or escalators.
6.6	Earth Mat/ Touch Voltage Protection	Workers who install Earth Mat/ Touch Voltage Protection systems.
6.7	Cable ducts/pits	Workers who install cable ducts, cable pits and cable bridge, etc.
6.8	Waste water treatment	Workers who install waste water treatment plants at the Depot.
7	General	
7.1	Machine Operator	Operators of on-site machinery or equipment including temporary hoists (eg: passenger/material hoists), transportation equipment (eg: dumper, telescopic handler, forklift), lifting equipment (eg: tower/mobile crane) and excavator for external work but exclude excavator for ERSS/Excavation stage.
7.2	Quality Assurance	Workers who perform quality control and rectification works before handover of project to operator (eg: quality mark and rectification of defects after final inspection)
7.3	Scaffold	Workers who erect or dismantle external scaffolding including safety screen and working platform
7.4	Safety and Health	Workers who are appointed to ensure on-site safety and health such as signaller, rigger and workers (eg: erecting hoarding, housekeeping, safety barricade, etc.) which include security, cleaning and maintenance of site but exclude external scaffold, safety screen and platform.
8	External Works	
8.1	Trial Trench/Utility Detection	Workers who are involved in carrying out Trial Trench/Utility Detection Works
8.2	Underground Obstruction	Workers who are involved in underground obstruction investigation and detection, including pile detection, pile extraction and subsequent pile removal.
8.3	Utilities Diversion	Workers who are involved in carrying out work for the diversion of utilities.
8.4	Drain Diversion/Drainage Works	Workers who are involved in carrying out diversion and reinstatement of drainage and the construction of new drains on site, including the construction of sub-ballast and sub-soil drains at the Depot.
8.5	Traffic Diversion	Workers who are involved in carrying out traffic diversion works.
8.6	External Paving	Workers who are involved in external paving works.

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8.7	Roads and Driveways	Workers who are involved in the construction/paving of roads, driveways. The various trades involved such as concreting for such external works shall be recorded under this category.
8.8	Bus Shelters, Linkways, Taxi Stands, Drop-off Bays, Road Ancillaries	Workers who are involved in the construction of Bus Shelters, Covered Linkways, Taxi Stands, Drop-off Bays, including road ancillaries within the project site. The various trades involved such as concreting for such external works shall be recorded under this category.
8.9	Fencing	Workers who are involved in the construction of fencing on site.
8.10	Landscape	Workers who are involved in landscaping works such as tree planting, landscaping and turfing.