



Australian Government

Assessment Requirements for CPCPPS5028 Design trade waste pre-treatment systems

Release: 2

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Modification History

- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 6.5.
Change to Performance Criteria 4.1.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
Supersedes and is equivalent to CPCPPS5028A Design trade waste pre-treatment systems. Updated to meet the Standards for Training Packages 2012.

Performance Evidence

To demonstrate competency, a candidate must meet the performance criteria for this unit by:

- designing, sizing and documenting the installation and layout details for two trade waste pre-treatment systems from the following:
 - chemical facilities
 - commercial kitchen
 - commercial and industrial facilities that produce a liquid waste stream
 - commercial and industrial laundry
 - food preparation facilities
 - laboratories
 - motor vehicle workshops
 - photography development facilities
 - commercial swimming pool
 - wash-down facilities
- preparing plans and specifications to industry standards for both selections
- documenting the evaluation of design parameters including client, regulatory, manufacturer and relevant Australian Standard requirements for each design.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- hazards associated with devices and systems used in the hydraulic sector
- design of the options for the pre-treatment of trade waste

- approved installation methods for trade waste pre-treatment systems
- key features of work plans and specifications
- nature of materials and effect of their performance in a variety of conditions
- organisational quality procedures and processes
- terminology and definitions used in hydraulic design
- work health and safety (WHS) requirements, including relevant statutory regulations, codes and standards
- scope of work:
 - interpreting plans and specifications
 - sizing and documenting layout of trade waste pre-treatment systems for commercial and industrial applications
- design requirements:
 - architectural plans
 - building specifications
 - cleaning and maintenance procedures
 - installation requirements
 - odour control
 - owner requirements
 - pipework identification
 - sizing
 - trade waste treatment
 - ventilation
- statutory and regulatory requirements and relevant Australian Standards and codes which may include:
 - AS/NZS 3500 Plumbing and drainage set
 - AS 2200 Design charts for water supply and sewerage
 - Commonwealth, state or territory and local governments requirements
 - National Construction Code (NCC)
 - utility provider's trade waste regulations
 - other relevant Australian Standards and codes
- trade waste applications:
 - chemical facilities
 - commercial kitchen
 - commercial and industrial facilities that produce a liquid waste stream
 - commercial and industrial laundry
 - food preparation facilities
 - laboratories
 - motor vehicle workshops
 - photography development facilities
 - commercial swimming pool
 - wash-down facilities

- cost-benefit analysis comparisons:
 - design styles
 - energy costs
 - expected design life
 - labour costs
 - material costs
 - safety factors
 - speed of installation
 - suitable materials
 - authorities' requirements
- manufacturer requirements:
 - containment
 - design and installation
 - installation space
 - material specifications
 - pipe sizing
 - pump installation
 - storage systems
 - technical and trade manuals
 - ventilation
- information gathered through desk top study to support design purposes:
 - architectural and building plans
 - developer plans
 - manufacturer data
 - building applications
 - brochures
 - forms
 - policies
 - reports
- performance requirements to:
 - establish acceptable discharge standards for the relevant authority
 - comply with relevant Australian Standards, codes and local authorities' requirements
- layout of pipework systems:
 - location of pipework (fire rating of enclosure)
 - trade waste plumbing and drainage
 - pumped systems
 - accessibility
 - designing to not unduly affect building integrity and aesthetic appeal
 - designing to include principles of economy, serviceability, durability and fit for use
- fittings:

- bends
- junctions
- reflux valves
- inspection openings
- expansion joints
- solid removal systems which remove:
 - bone
 - dirt
 - grit
 - metal
 - paper
 - plastic
 - rubbish
 - sand
 - silt
 - wood
 - other solid contaminants
- grease and oil interceptors:
 - coalescing plate separators (CPS)
 - vertical gravity separators (VGS)
 - dissolved air flotation (DAF)
 - grease arrestors
 - skimmers
- neutralising chambers which neutralise:
 - acid
 - alkaline
 - chemicals
- wash-down areas:
 - bin
 - commercial and industrial wash-down processes that may or may not require stormwater diversion
 - floor
 - vehicle
 - machinery
- bacterial treatment processes:
 - aerobic
 - anaerobic
 - facultative and specialised bacteria for the removal of grease and other contaminants
- combined and specialised treatment processes:
 - bacterial treatment

- cooling pits
- diffused air flotation systems
- neutralising chambers
- solid removal systems
- specialised treatment
- system calculations:
 - calculating gradient
 - interpreting design charts and tables
 - calculating pipe sizing
 - calculating reduced level
 - determining flow and fixture loadings
 - sizing treatment system
 - storage tank capacity
- pump well, pumps, controls and equipment requirements:
 - access covers
 - automatic controls
 - capacity
 - chains
 - corrosion-resistant materials
 - detailing
 - emergency storage
 - high and low-level water controls and alarms
 - impeller sizing
 - inlet and outlet design requirements
 - installation and mounting requirements
 - ladder access
 - odour control
 - macerator requirements
 - pump selection
 - pump sizing
 - pump well sizing
 - space requirements
 - step irons
 - valve requirements
 - ventilation
 - warning system
- pipe supports:
 - anchors
 - bedding
 - bracket spacing

- concrete support
- corrosion protection
- cover
- hanging brackets
- manufacturer-recommended specific fixings
- material requirements
- saddles
- provision for expansion
- wall and ceiling brackets
- materials:
 - pipes:
 - cast iron or epoxy lined
 - earthenware or vitrified clay pipe (VCP)
 - polyethylene (PE)
 - polypropylene (PP)
 - other approved material
 - fittings and fixtures, including sound attenuation requirements
- jointing methods:
 - electrofusion welding
 - mechanical joints
 - rubber ring
 - threading
- installation requirements:
 - bedding
 - fire rating
 - level of workmanship
 - manufacturer-recommended specific fixings
 - pipe support
 - provision for expansion
 - serviceability and access
 - pipe protection:
 - cover
 - corrosion
 - impact
- computer software packages including:
 - proprietary design software
 - manufacturer software
- methods of applying sustainability principles and concepts:
 - selecting appropriate material to ensure minimal environmental impact
 - efficient use of material

- efficient energy usage/capital outlay comparison
- effect on the environment due to overflow or leakage
- material selected to convey the type of discharge
- water efficiency
- types of plans:
 - axonometrics
 - cross-sections
 - details
 - elevations
 - isometrics
 - sections
 - schematics produced using:
 - computer generation
 - drawing equipment
- specification:
 - access chambers (manholes)
 - bedding
 - commissioning
 - concrete support and detailing specialised components
 - jointing
 - manufacturer requirements
 - materials
 - pumps
 - WHS
 - support
 - testing
 - workmanship
- testing for:
 - air pressure
 - compliance with authorities' discharge requirements
 - drainage inspection
 - hydrostatic
 - performance
 - quality assurance (QA) audit
- commissioning schedule information:
 - checking for foreign material
 - checking system defects
 - checking that system functions as per design
 - containment
 - leak check

- operational commissioning
- pump commissioning
- system certification
- treatment system commissioning
- operation and maintenance manual information:
 - as installed drawings
 - certification documentation
 - results of commissioning test
 - maintenance schedules
 - manufacturer brochures and technical information
 - odour control
 - regular treatment system maintenance
 - regular water quality testing
 - ventilation
 - water auditing.

Assessment Conditions

Assessors must meet the requirements for assessors contained in the Standards for Registered Training Organisations.

This unit must be assessed in the workplace or a close simulation using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>