

# 8300.C Irrigation Specification

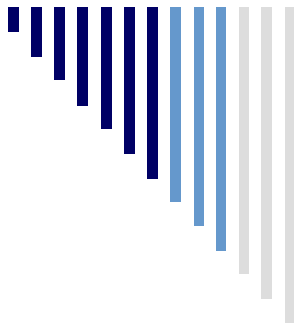
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REVISION 05/08/14

This is an appendix to the Mackay Regional Council Supplementary Specification 8300 "Landscaping and Horticultural Treatment".

This irrigation specification to be read in conjunction with the following additional appendices:

- Supplementary Specification 8300.A "Water Meters"; and
- Supplementary Specification 8300.B "Central Irrigation Control System".



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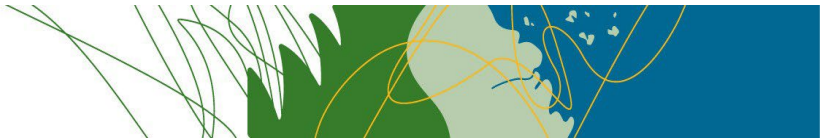
**MASTER GENERAL  
SPECIFICATION  
FOR THE  
SUPPLY AND INSTALLATION OF  
LANDSCAPE AND TURF  
IRRIGATION SYSTEMS FOR  
MACKAY REGIONAL COUNCIL**

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### Typical Installation Drawings

[https://www.mackay.qld.gov.au/business/planning\\_and\\_development/design\\_and\\_construction\\_requirements/standard\\_drawings/irrigation](https://www.mackay.qld.gov.au/business/planning_and_development/design_and_construction_requirements/standard_drawings/irrigation)

- A3-08416 - Main Filter - Underground
- A3-08417 - Main Filter - Aboveground
- A3-08418 - Trenching, Bedding and Backfill
- A3-08419 - Isolation Valve (for manual mainline isolation)
- A3-08420 - Isolation Valve (for manual lateral isolation)
- A3-08421 - Air Valve
- A3-08422 - Pressure Reducing Valve (manual valves)
- A3-08423 - Solenoid Valve (for sprinklers with mainline filter)
- A3-08424 - Solenoid Valve (for sprinklers without mainline filter)
- A3-08425 - Drip Solenoid Valve
- A3-08426 - Quick Coupler Valve
- A3-08427 - Valve Box
- A3-08428 - Articulated Riser
- A3-08429 - Flexible Riser
- A3-08430 - Rigid Riser
- A3-08431 - Pop-Up Sprinkler
- A3-08432 - Subsurface Drip Pipe System
- A3-08433 - Drip Air Vacuum Relief Valve
- A3-08434 - Drip Flush Valve
- A3-00906 - Raised Electrical Switchboard & Irrigation Controller Enclosure
- A3-00907 - RPZ & Main Filter Wire Mesh Caged Enclosure



## SCOPE

The intention of this document is to provide the irrigation designer and installer a guideline for the provision of irrigation systems to Mackay Regional Council (MRC).

By providing a standard for all irrigation works MRC can be assured that all works will be compliant to their existing system.

All works should be carried out to current industry standards and all relevant Australian Standards, including but not limited to:

- Mackay Regional Council By-laws, regulations and policies

- Water and Waste By-laws, regulations and policies

- AS/NZS 3500.1 – Plumbing and Drainage - Water Services

- AS 2033 – Installation of Polyethylene Pipe Systems

- AS 4130 – Polyethylene Pipe for Pressure applications

- AS/NZS 4129 – Fittings for Polyethylene (PE) Pipe for Pressure Applications

- AS/NZS 2053.1 – Conduit and fittings for Electrical installations – General Requirements

- AS/NZS 3000 Electrical Installations

These specifications should be considered a minimum standard.

Any instructions from the manufacturer of specific irrigation components should be followed.

Any instructions from the irrigation designer or relevant MRC staff, for specific work, through extra specifications or drawings, should be followed.

Materials listed under “preferred item” should be used wherever practical. Materials listed under “approved alternative item” can be used without further approval. Any items not listed may not be used unless a request is submitted and approved.

## DESIGN

All designs to be done by Landscape/Turf Certified Irrigation Designers.

Designs to include any additional specifications relating to the work above and beyond this general specification.

Designs to include scaled working drawings suitable for the installer to work from.

Drawings are to be adhered to; however minor variations may be considered appropriate due to site conditions. Any proposed changes should be submitted for approval to MRC before implementing the change.



Designers are to incorporate correctly selected pipe and wire sizing to suit the design and as per current industry standards.

Maximum velocities in mainline pipes not to exceed 1.0 metres/second.

Maximum velocities in lateral pipes not to exceed 1.5 metres/second.

The maximum pressure difference between any two outlets on a lateral is not to exceed 10% of the highest pressure.

Maximum voltage drop from controller to valves is not to exceed 2.4 volts.

Due to the large variation in available pressures in Mackay, all designs must have a flow and pressure test done on the site before commencement of installation.

Designs must include a maximum flow and minimum pressure required.

The installation contractor is to verify the available flow and pressure on site and report if the design parameters are exceeded.

Areas of different irrigation requirements should be separated into separate zones. Lawns and gardens should not be irrigated on the same zone.

Overspray onto surrounding areas is undesirable and should not occur on paths, roads, fences, and buildings. Part circle sprinklers should be used on these edges to ensure even coverage of all the irrigation area without overspray.

Sprinklers are to be placed to provide a minimum of head to head coverage.

## **APPROVED CONTRACTORS**

All work to be carried out by suitably qualified irrigation installers.

Irrigation installers should have a minimum of 5 years experience in urban irrigation.

All work should be performed under the supervision of a competent person acceptable to MRC.

All work should be carried out according to the relevant Australian Standard, manufacturer's instructions, this specification and any other job specific specifications issued.



## **CONTROLS**

Refer Appendix 8300.B “Central Irrigation Control System”.



## BACKFLOW PROTECTION DEVICES

- Submission and approval of applications to Mackay Water for backflow device installation.
- All systems to incorporate necessary backflow protection device as per Council specifications.
- Refer Mackay Water Policies Policy No. MW03.
- Backflow devices to be mounted above ground, painted black and typically housed in the same galvanised steel mesh enclosure with top opening, lockable panel as the main connection and main filters. Refer to Drawing A3-08417 & A3-00907 for indicative detail.

## MAIN FILTERS

### USE

- To avoid contaminants entering an irrigation system at the main connection point

### DESCRIPTION

- Plastic construction.
- Stainless steel woven screen.
- Sized to suit attached system flow.
- 130 micron screen unless specified otherwise.
- 1000 KPa rating.

### PREFERRED ITEM

- Amiad Super screen filter.

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- One filter should be installed at each potable water connection point immediately after the backflow protection device and prior to the master valve.
- Filters 40 mm and larger to be installed above ground with sufficient clearance from ground and nearby pipe to allow filter element to be removed for cleaning.
- Above ground filters to be housed in a top opening, lockable, galvanised steel mesh enclosure as per MRC Standard Drawing A3-08417 & A3-00907.
- Filters installed underground the filter to be housed in rectangular valve box.
- Swivel unions either side of filter for maintenance.
- Filter element housing to be pointing downwards to avoid contaminants falling back into body when filter is removed.
- Refer to Drawing A3-08416 & A3-08417 for typical installation details.



## BACK-UP FILTERS

### USE

- To avoid contaminants entering an individual irrigation zone.
- To be used on micro and drip zones (main filter required) or on sprinkler lines where no main filter is installed.

### DESCRIPTION

- Polypropylene construction.
- Stainless steel woven screen.
- Sized to suit attached system flow.
- 130 micron screen unless specified otherwise.
- 800 KPa rating.

### PREFERRED ITEM

- Amiad polypropylene screen filter.

### APPROVED ALTERNATIVE ITEM

- PPI threaded screen filter.

### INSTALLATION

- One filter should be installed immediately before each solenoid valve operating drip irrigation and prior to the inlet manifold.
- One filter should be installed immediately before each solenoid valve operating micro irrigation or sprinklers prior to the first outlet.
- Filter to be installed underground and housed in rectangular valve box.
- Swivel unions either side of filter for maintenance.
- Filter element housing to be pointing downwards to avoid contaminants falling back into body when filter is removed.
- Refer to Drawing A3-08423 & A3-08425 for typical underground installation details.





## TRENCHING

### USE

- For underground installation of pipes and wiring.

### DESCRIPTION

- Trenches can be dug by hand, trencher, backhoe, excavator etc.

### PREFERRED ITEM

-

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- Unless specified otherwise, turf and/or mulch removal is not required before trenching.
- All nearby services to be identified and located prior to commencement of trenching.
- Trenches to be in straight lines and uniform grades.
- Pipe to be surrounded in minimum 50 mm of sand in all directions.
- A minimum of 50 mm clearance is required between pipe and trench wall.
- A minimum of 50 mm is required between pipes in shared trenches.
- A minimum of 50 mm is required between pipes and control wiring.
- Detectable marker tape to be placed above pipes at approx. 200 mm below grade.
- Original material to be used for final backfill over sand bedding providing that it is free of all rocks and debris larger than 25 mm.
- Trenches to be compacted to the same density as adjacent soil to eliminate any subsequent subsidence.
- Final level of compacted material to be on same grade as surrounding surface.
- Any excess material to be removed from site.
- Unless specified otherwise, turf and/or mulch reinstatement is not required after trenching.
- Refer to Drawing A3-08418 for typical installation details.



## ACCESS SLEEVES

### USE

- To allow irrigation pipes and wiring to pass under roads, paths, etc.

### DESCRIPTION

- Sleeves to be uPVC PN9 pipe.
- Sleeves to be large enough to accommodate expected irrigation components plus 50% (eg 63 mm poly requires a 95 mm sleeve or larger).

### PREFERRED ITEM

-

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- Installed with maximum 450 mm cover under paths, 600 mm cover under roads.
- Sleeves to be surrounded in minimum 50 mm sand.
- Sleeves to protrude a minimum of 300 mm from edge of path or road.



## MAINLINE PIPE

### USE

- To distribute water from supply connection to valves.

### DESCRIPTION

- PE80 or PE100 blue line polyethylene pipe with minimum pressure rating of PN12.5 (lilac striped if effluent water is used).
- PVC pipe will not be accepted.

### PREFERRED ITEM

-

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- To be installed as per manufacturer's instructions.
- Elbows and bends to be used (rather than bending pipe) where a change in direction is required.
- Use thread tape and sealing compound on threads.
- All mains to be installed in trenches with minimum cover of 400 mm.
- Installed in trench as per trenching details (Refer A3-08418).
- Pipes to be flushed from ends furthest from source.
- Pipe ends left over night to be covered to avoid mud, rocks and vermin entering.
- Mainlines to be pressure tested to 175% of nominal operating pressure.



## LATERAL PIPE

### USE

- To distribute water from solenoid valves to sprinklers and drip manifolds.

### DESCRIPTION

- PE80 or PE100 blue line polyethylene pipe with minimum pressure rating of PN12.5 (lilac striped if effluent water is used).
- PVC pipe will not be accepted.

### PREFERRED ITEM

-

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- To be installed as per manufacturer's instructions.
- Elbows and bends to be used (rather than bending pipe) where a change in direction is required.
- Use thread tape and sealing compound on threads.
- All laterals to be installed in trenches with minimum cover of 300 mm.
- Installed in trench as per trenching details (Refer A3-08418).
- Pipes to be flushed from ends furthest from source.
- Pipe ends left over night to be covered to avoid mud, rocks and vermin entering.



## **POLY PIPE FITTINGS**

### **USE**

- For all poly pipe joints.

### **DESCRIPTION**

- Metric compression fittings for sizes 16-110 mm.
- Electrofusion fittings for all sizes.
- 1600 KPa pressure rating.
- Tapping saddles will not be accepted.

### **PREFERRED ITEM**

- Philmac metric compression fittings.
- Plasson electrofusion fittings.

### **APPROVED ALTERNATIVE ITEM**

- Plasson metric compression fittings.
- Philmac electrofusion fittings.

### **INSTALLATION**

- To be installed as per manufacturer's instructions.



## ISOLATION VALVES

### USE

- To isolate sections of pipe or irrigation items for maintenance.
- For manual control of irrigation systems.

### DESCRIPTION

- Chrome plated brass construction.
- Ball valve operation.
- Full through bore.
- 20, 25, 40, 50 & 80 mm FBSP inlet and outlet.

### PREFERRED ITEM

- Dixon

### APPROVED ALTERNATIVE ITEM

- Maxiflo

### INSTALLATION

- Sizing to be identical to matched irrigation item or pipe.
- Housed underground in round valve box if independent of other irrigation items.
- Housed underground in rectangular valve box if installed with other irrigation items.
- The handle of the valve must maintain a minimum of 50 mm clearance from the valve box, gravel layer and other irrigation components in all positions from fully shut to fully open.
- Typical installation as per drawing A3-08419 for mainline valves and A3-08420 for lateral valves.



## AIR VALVES

### USE

- To remove air from pipes.

### DESCRIPTION

- Reinforced nylon body construction.
- 25 mm inlet.

### PREFERRED ITEM

- Ari Segev S-050 automatic air release valve.

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- To be installed at high points in main line pipes.
- Isolating ball valve installed prior to air valve.
- Housed underground in round valve box.
- Typical installation as per drawing A3-08421.



## PRESSURE REGULATORS

### USE

- To reduce downstream pressure of solenoid valve to optimum operating pressure of attached irrigation system.
- To be included on all solenoid valves operating drip irrigation where upstream pressure is above 300 KPa.
- To be included on all solenoid valves operating any other irrigation where upstream pressure is more than 200 KPa higher than the nominal operating pressure of the irrigation outlets.

### DESCRIPTION

- Glass filled nylon body.
- Stainless steel and brass internals.
- Attaches to solenoid valve so valve acts as pressure reducing valve.

### PREFERRED ITEM

- Irritrol OMNI-REG pressure regulator.

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- Installed on solenoid valve as per manufacturer's instructions.





## PRESSURE REDUCING VALVES

### USE

- To reduce downstream pressure on manually controlled irrigation system to optimum operating pressure.
- To be included on all drip irrigation where inlet pressure is above 300 KPa.
- To be included on any other irrigation where inlet pressure is more than 200 KPa higher than the nominal operating pressure of the irrigation outlets.

### DESCRIPTION

- Plastic and/or plastic/brass construction.
- 20, 25 or 40 mm inlet and outlet.
- Sizing to be identical to preceding valve and suitable for nominal system flow and pressure.

### PREFERRED ITEM

- Bermad pressure regulator.

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- To be installed after manual ball/gate valves as per manufacturer's instructions
- Typical installation as per drawing A3-08422.



## SOLENOID VALVES

### USE

- To automatically operate irrigation via a 24VAC signal from a controller.

### DESCRIPTION

- 25, 40, 50 or 80 mm inlet and outlet.
- 1400 KPa rating.
- Glass reinforced nylon body.
- Nylon reinforced Buna-N diaphragm.
- Stainless steel metering system.
- Captive plunger in solenoid coil.
- Moulded in studs for bonnet attachment.
- Brass flow control stem on 50 & 80 mm.

### PREFERRED ITEM

- Irritrol Century Plus 24 VAC solenoid valve.

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

#### VALVES CONTROLLING SPRINKLERS

- Mounted on double o-ring riser attached to mainline pipe.
- Isolating ball valve (and filter if required) installed prior to solenoid valve.
- Back-up filter required where there is no main filter at the main irrigation connection point.
- Swivel unions installed either side of solenoid valve.
- Housed underground in rectangular valve box.
- Identified with attached laser etched plastic tag.
- Typical installation for valves without back-up filters as per drawing A3-08424.
- Typical installation for valves with back-up filters as per drawing A3-08423.

#### VALVES CONTROLLING MICRO OR DRIP

- Mounted on double o-ring riser attached to mainline pipe.
- Isolating ball valve and filter installed prior to solenoid valve.
- Swivel unions installed either side of solenoid valve.
- Housed underground in rectangular valve box.
- Identified with attached laser etched plastic tag.
- Typical installation for as per drawing A3-08425



## PLASTIC TAG

### USE

- To identify solenoid valves, master valves, water meters, filters, controllers, ball valves, quick coupler valves and any other irrigation components.

### DESCRIPTION

- Exterior grade plastic label.
- Blue background colour with white writing.
- Writing to be laser engraved into tag.
- Minimum size 70 x 45 x 1.6 mm.

### PREFERRED ITEM

-

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- Attached to irrigation component with plastic (underground) or stainless steel (above ground) zip tie.
- Label to show component type, active controller and input/output number.
- Quick couplers and manual valves to also show relevant master valve.
- Components without a master valve or controller to show location (eg Two sticks Park).
- Labelling of irrigation components on tags to match information on as built drawings.



## QUICK COUPLER VALVES

### USE

- To provide manual water access points along mainlines.
- To be included in all new works – one immediately after backflow protection device and prior to master valve – one every 50 metres of mainline – one at other strategic points as required (eg near BBQ's, tables, playgrounds).

### DESCRIPTION

- Brass construction.
- Single lug.
- Brass spring loaded lid.

### PREFERRED ITEM

- TR 25mm MBSP brass quick coupler valve.

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- Mounted on double o-ring riser attached to mainline pipe.
- Housed underground in round valve box.
- Identified with attached laser etched plastic tag.
- Typical installation as per drawing A3-08426.



## QUICK COUPLER KEYS

### USE

- To allow access to water via quick coupler valves.
- To be included in all new works – one supplied to MRC upon hand-over.

### DESCRIPTION

- Brass construction.
- Single lug.
- Key to include swivel elbow on outlet.

### PREFERRED ITEM

- TR 25mm MBSP brass quick coupler valve key.

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- Supplied to MRC upon hand-over.



## **SWIVEL ELBOW**

### **USE**

- To allow free movement of hoses attached to quick coupler keys.
- To be included in all new works – one supplied, attached to QC key, to MRC upon hand-over.

### **DESCRIPTION**

- Brass construction.
- Swivel to allow full 360 degree rotation of elbow when fully tight.

### **PREFERRED ITEM**

- Rainspray 25 mm F x M swivel elbow.

### **APPROVED ALTERNATIVE ITEM**

-

### **INSTALLATION**

- Supplied, attached to QC key, to MRC upon hand-over.



## VALVE BOXES

### USE

- To house irrigation components such as valves and wire joints underground.

### DESCRIPTION

- Green high density polyethylene (HDPE) base and lid construction.
- Stainless steel locking bolt.
- Overlay lids.
- Lavender lids installed when effluent water is used.
- Various sizes available.

### PREFERRED ITEM

- DURA 910
- DURA 1419-12
- DURA 1723-12
- NDS 809

### APPROVED ALTERNATIVE ITEM

- HR Products
- Carson

### SIZES

- 16 x 230 mm round boxes (809) to house drip vacuum relief and flush valves.
- 250 mm round boxes (910) to house quick couplers, air valves, single gate or ball valves, wire joints.
- 475 x 350 x 300 mm rectangular boxes (1419-12) to house ball and solenoid valve combinations, filters etc.
- 575 x 425 x 300 mm rectangular boxes (1723-12) to house larger items as required.

### INSTALLATION

- Boxes supported on all sides by bricks or pavers.
- Boxes lined with geo textile fabric to avoid ingress of soil.
- Base of box lined with min 50mm gravel for drainage.
- Minimum 50 mm clearance between gravel layer and irrigation item (eg valve).
- Minimum 50 mm clearance between bottom of lid and irrigation item (eg valve).
- Final height of top of box to be flush with soil surface in lawn areas and 50 mm higher than finished grade in gardens.
- Horizontal alignment to be parallel with surrounding ground.
- Box not to come in contact with irrigation item or pipe.
- Typical installation as per drawing A3-08427.



## **DOUBLE O-RING ARTICULATED RISERS**

### **USE**

- To allow connection of valves and valve-in-head sprinklers to mainline.
- To allow valve to be set at serviceable depth irrespective of mainline depth.
- To allow alignment of valve irrespective of mainline direction.

### **DESCRIPTION**

- Schedule 80 PVC construction.
- 1800 KPa rating.
- Double o-ring seal per swivel.
- 25 or 40 mm MBSP ends x 300 mm long.
- Single swivel elbow at one end and double elbow at other.

### **PREFERRED ITEM**

- Dura double o-ring articulated riser.

### **APPROVED ALTERNATIVE ITEM**

- Spears double o-ring articulated riser.

### **INSTALLATION**

- Installed prior to solenoid valves, quick coupler valves, valve-in-head sprinklers.
- Refer typical installation drawings A3-08420, A3-08423, A3-08424, A3-08425, A3-08426





## ARTICULATED RISERS

### USE

- To allow connection of pop-up sprinklers to lateral pipes.
- To allow sprinkler to be set at serviceable depth irrespective of pipe depth.
- To allow vertical alignment of sprinkler irrespective of pipe direction.
- To minimise damage to sprinklers and pipe from vehicles.

### DESCRIPTION

- 15 or 20 mm Rigid grey PVC risers 200 long.
- 25 mm Rigid grey PVC risers 300 long.
- 15, 20 or 25 mm Polypropylene MF elbows x 3

### PREFERRED ITEM

-

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- Installed prior to sprinklers.
- Riser should be installed less than 45 degrees to horizontal.
- Thread tape to be used on riser ends.
- Typical installation as per drawing A3-08428



## FLEXIBLE RISERS

### USE

- To allow connection of pop-up sprinklers to lateral pipes.
- To allow sprinkler to be set at serviceable depth irrespective of pipe depth.
- To allow vertical alignment of sprinkler irrespective of pipe direction.
- To allow positioning of sprinkler irrespective of pipe location.
- To minimise damage to sprinklers and pipe from vehicles.

### DESCRIPTION

- 12.5 ID 17.3 OD flexible polyethylene tube 300- 1000 mm long.
- 15 or 20 mm MBSP x twist elbows x 2.
- 15 or 20 mm Polypropylene MF elbows x 1 (Note: This elbow is in addition to normally recommended manufacturer's installation instructions).

### PREFERRED ITEM

- Olson EZ-EL tube and elbows.

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- Installed prior to sprinklers.
- Thread tape to be used on all threads.
- Typical installation as per drawing A3-08429



## **RIGID RISERS**

### **USE**

- To allow connection of shrub head sprinklers to lateral pipes.
- To allow shrub head sprinklers to be set at required height above surrounding vegetation.

### **DESCRIPTION**

- 50 mm galvanised steel pipe x 3 metres long.
- All pipe and galvanised fittings above ground to be etched and painted black.
- 50 mm galvanised bend at base.
- Pipe concreted at base.

### **PREFERRED ITEM**

-

### **APPROVED ALTERNATIVE ITEM**

-

### **INSTALLATION**

- Installed prior to sprinklers.
- Thread tape to be used on all threads.
- Typical installation as per drawing A3-08430.



## SWIVEL UNIONS

### USE

- To allow easy removal of valves, filters or other items for maintenance.

### DESCRIPTION

- Polypropylene body and swivel.
- EPDM o-ring seals.
- 25, 40 or 50 mm MBSP x F swivel union ends.

### PREFERRED ITEM

- Tavit swivel adaptor.

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- Installed either side of solenoid valves and filters.
- Thread tape used on male threads only.



## SPRINKLERS

### FIXED SPRAY SPRINKLERS

#### USE

- To irrigate areas with overhead watering.
- Mainly used in areas up to 5 metres wide.

#### DESCRIPTION

- Zero flush on pop-up.
- Flushing on pop-down.
- In built check valve.
- In built flow shut off valve to restrict water loss if nozzle is removed.
- Spray pattern dependent on nozzle selected.
- 15 mm FBSP inlet.
- Ratcheting riser for easy arc adjustment.

#### PREFERRED ITEM

- Toro 570 XF series sprinklers.
- Toro 570 MPR PLUS fixed arc nozzles.
- Toro 570 TVAN variable arc nozzles.
- Nelson MP Rotator nozzles.

#### APPROVED ALTERNATIVE ITEM

- Toro 570 PRX series sprinklers.

#### INSTALLATION

- 15 mm articulated or flexible risers to connect sprinklers to pipe on pop-up sprinklers.
- Shrub head sprinklers mounted on rigid risers.
- Pop-up sprinklers mounted with tops (with riser retracted) flush with ground level in lawn areas.
- Pop-up sprinklers mounted with tops (with riser retracted) flush with mulch level in garden areas.
- Sprinkler spacings not to exceed sprinkler throw (minimum head to head coverage).
- Typical Installation as per drawings A3-08431, A3-08428, A3-08429, A3-08430.

### MID RANGE GEAR DRIVEN SPRINKLERS

#### USE

- To irrigate areas with overhead watering.
- Mainly used in areas between 5 - 9 metres wide.



## DESCRIPTION

- Adjustable arc setting.
- 15 mm FBSP inlet.
- Ratcheting riser for easy arc adjustment.
- 95 mm pop-up riser.

## PREFERRED ITEM

- Toro Mini 8 series sprinklers.

## APPROVED ALTERNATIVE ITEM

-

## INSTALLATION

- 15 mm articulated or flexible risers to connect sprinklers to pipe on pop-up sprinklers.
- Pop-up sprinklers mounted with tops (with riser retracted) flush with ground level in lawn areas.
- Pop-up sprinklers mounted with tops (with riser retracted) flush with mulch level in garden areas.
- Sprinkler spacings not to exceed sprinkler throw (minimum head to head coverage).
- Typical Installation as per drawing A3-08431, A3-08428, A3-08429.



## **LONG RANGE GEAR DRIVEN SPRINKLERS**

### **USE**

- To irrigate areas with overhead watering.
- Mainly used in areas larger than 9 metres wide.

### **DESCRIPTION**

- Adjustable arc setting.
- In built check valve.
- 20 mm FBSP inlet.
- Automatic arc return to pre-sep arc if tampered with.
- Heavy duty retraction spring.
- Continuous rotation provides even coverage when set at 360 degree.
- 125 mm pop-up riser.

### **PREFERRED ITEM**

- Toro 800 series sprinklers.

### **APPROVED ALTERNATIVE ITEM**

- Toro TR50 series sprinklers.
- Toro TR50XT series sprinklers.
- Hunter PGP sprinklers.
- Hunter I21 sprinklers.

### **INSTALLATION**

- 20 mm articulated or flexible risers to connect sprinklers to pipe on pop-up sprinklers.
- Shrub head sprinklers mounted on rigid risers.
- Pop-up sprinklers mounted with tops (with riser retracted) flush with ground level in lawn areas.
- Pop-up sprinklers mounted with tops (with riser retracted) flush with mulch level in garden areas.
- Sprinkler spacings not to exceed sprinkler throw (minimum head to head coverage).
- Typical Installation as per drawing A3-08431, A3-08428, A3-08429, A3-08430.



## DRIP PIPE

### USE

- To irrigate gardens and lawns with a network of sub-surface in-line drippers.

### DESCRIPTION

- 14 mm ID 16 mm OD polyethylene tubing.
- In-built root intrusion protection impregnated in drip emitter.
- 2.4 l/hr pressure compensated emitters.
- Standard spacings of 0.4 metres between emitters unless design requires closer spacing.

### PREFERRED ITEM

- Toro DRIP-IN with ROOTGUARD 16 mm 2.4 l/hr PC 0.4 m spacing.

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- Installed with 100 mm soil coverage in lawns.
- Installed on soil surface and covered with 100 mm of mulch in garden beds.
- Drip pipe in gardens to be held in place with stakes at minimum of 5 metre intervals and at every fitting.
- All fittings to be multi barbed fittings with stainless steel clips.
- Typical row spacings of 0.4 m unless specified otherwise by designer.
- Installed as per manufacturer's specifications.
- Typical installation as per drawing A3-08432.





## DRIP PIPE MANIFOLDS

### USE

- To distribute water from the source to the drip pipe network.
- To collect water from the drip pipe network for flushing.
- To ensure even pressures throughout the drip network.

### DESCRIPTION

- 32 or 25 mm low density polyethylene LDPE.

### PREFERRED ITEM

-

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- Installed at same level as drip pipe in lawns.
- Installed with 50 mm soil coverage in garden areas.
- All fittings to be multibarbed fittings with stainless steel clips.
- Fittings from manifold to drip pipe to be multi barbed start connectors with stainless steel clamps.



## DRIP PIPE FITTINGS

### USE

- To join manifold pipe and drip pipe.

### DESCRIPTION

- Black polypropylene fitting construction.
- Minimum of 2 barbs on each connection.
- Grade 304 stainless steel clamp construction.

### PREFERRED ITEM

- Philmac rural compression fittings.
- Toro Drip-In 16 mm triple barbed fittings.
- Netafim 16 mm double barbed fittings.
- Cobra 16.5-18.0 mm stainless steel clamps.
- Netafim landscape stakes.

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- Compression fittings used on manifold pipes.
- Multi barbed fittings used on manifold to drip, and drip pipe.
- Stainless steel clamps used on all multi barbed fittings.
- Installed as per manufacturer's specifications.



## DRIP VACUUM RELIEF VALVES

### USE

- To relieve air from drip systems on start up.
- To avoid vacuum forming in drip systems on shut down.

### DESCRIPTION

- 15 mm MBSP inlet.
- Plastic body construction.

### PREFERRED ITEM

- Netafim 15 mm air release valve.

### APPROVED ALTERNATIVE ITEM

- Bermad 15 mm vacuum air release valve.
- Toro 15 mm air vacuum breaker.

### INSTALLATION

- Located at high points in drip system.
- Installed in round valve box.
- Installed as per manufacturer's specifications.
- Typical installation as per drawing A3-08432 & A3-08433.



## DRIP FLUSH VALVES

### USE

- To automatically flush drip systems on start up and shut down.

### DESCRIPTION

- 15 mm MBSP inlet.
- Plastic body construction.

### PREFERRED ITEM

- Netafim 15 mm flush valve.

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- Located in drip system flush manifold at furthest point from source.
- Installed in round valve box.
- Installed as per manufacturer's specifications.
- Typical installation as per drawing A3-08432 & A3-08434.



## **MAINTENANCE**

### **USE**

- To ensure irrigation system and components are working as expected.

### **DESCRIPTION**

- Regularly visit site and maintain irrigation system.
- Test each station for controller operation and programming, valve operation, sprinkler operation, height adjustment of sprinklers, valve boxes, and subsidence of trenches.
- Repair any defects found.
- Defects to be fixed by the irrigation installer.

### **PREFERRED ITEM**

-

### **APPROVED ALTERNATIVE ITEM**

-

### **INSTALLATION**

- Maintenance period and number of visits to be determined as stated in individual contracts.



## **WARRANTY**

### **USE**

- To ensure irrigation components and workmanship are covered against defects.

### **DESCRIPTION**

- Any materials found to be faulty during the warranty period will be repaired or replaced.
- Any workmanship found to be faulty during the warranty period will be repaired or replaced.

### **PREFERRED ITEM**

-

### **APPROVED ALTERNATIVE ITEM**

-

### **INSTALLATION**

- Warranty period will be as per manufacturer's warranty for materials and 12 months for workmanship.
- The warranty period will commence from the date of final practical completion of the total contract.



## **AS CONSTRUCTED DRAWINGS**

### **USE**

- To provide detailed drawings of as constructed services

### **DESCRIPTION**

- Drawings to show position of all valves, controllers, pipes, sprinklers and any other irrigation components.

### **PREFERRED ITEM**

-

### **APPROVED ALTERNATIVE ITEM**

-

### **INSTALLATION**

- All as constructed drawings shall be drawn and provided in accordance with specification D20 – Drawings and documentation.
- Presented in paper and transparency format of size A1 to allow reasonable interpretation.
- Supplied electronically in AUTOCAD .dwg format in accordance with Specification D20.
- Labelling of irrigation components on drawings to match information on plastic tags.



## MANUALS

### USE

- To provide a binder of all relevant information of the irrigation system for future reference

### DESCRIPTION

- Binder to include the following for all equipment used;
- Operating and installation manuals.
- Product brochures.
- List of all equipment installed.
- As constructed drawings on paper and CD.

### PREFERRED ITEM

-

### APPROVED ALTERNATIVE ITEM

-

### INSTALLATION

- Presented in A4 3 ring binder.
- Binder to have site description, contractors name and date of installation included on front cover and spine.
- Provide 2 copies.