NOTES:

1. Refer 4005-20002-01 to 4005-20002-03 for general notes.

2. Water seals:
   - Water seals shall be constructed on branch sewers up to and including DN305, which flow into trunk sewers DN450 and larger.
   - Water seals shall be laid horizontal. The remainder of the sewer shall be laid on the designed grade.
   - Optimum water seal depth shall be pipe diameter + 50 mm for all pipe diameters.
   - Water seals can be factory fabricated from pipe sections (to the configuration shown) particularly where the use of standard bends results in the optimum water seal depth being exceeded.
   - Option 2 shall only be used when riser DN ≤ 50% of trunk sewer DN

3. Junction of sewers:
   - For branch sewers ≤ DN300 the junction of sewers shall be constructed 'top to top'. (In special circumstances and depending on sewage flows, the SA Water representative may direct that the junction be constructed 'flow-line to flow-line'.)
   - For branch sewers larger than DN300 the junction of sewers shall be constructed 'flow-line to flow-line'.

4. Products:
   - Sewer shall be constructed from only approved pipe materials. Refer TS 8502, Clause 3.1.
   - For Option 2, the preferred junction at the riser shall be the maintenance shaft fitted vertically, where levels do not enable the use of the MS fitting the angled junction and bend shall be used.
   - The bend on junction fittings shall be a reinforced fitting where pipe is DN60. Refer TS 8502, Clause 3.1.

5. Maintenance structures:
   - For DN50 and DN100 branch sewers, the maintenance structure may be MS or MS.
   - For ≥ DN300 branch sewers, the maintenance structure shall be MS.

6. Recycled plastic bearers:
   - Where required for support the bearer shall extend beyond the trench into undisturbed soil. Minimum distance 250 each side.

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NOTES:

1. REFER 4005-2000-02 TO 4005-2000-03 FOR GENERAL NOTES.
2. A WATER SEAL SHALL BE CONSTRUCTED ON ALL CONNECTIONS WHICH
FLOW INTO THE SEWERS DN50 AND LARGER.
3. THE WATER SEAL SHALL BE CONSTRUCTED ADJACENT AND
DOWNSTREAM OF THE CONNECTION IP.
4. THE WATER SEAL SHALL BE LAID HORIZONTAL. THE REMAINDER OF THE
CONNECTION SHALL BE LAID AT THE DESIGNED GRADE.
5. REFER 4005-2000-06-03 FOR MINIMUM CONNECTION GRADE.
6. OPTIMUM WATER SEAL DEPTH SHALL BE PIPE DIAMETER + 50 FOR ALL
PIPE DIAMETERS.
7. REFER TABLE 1 FOR APPROVED BEND OPTIONS.
8. CONNECTION LENGTH SHALL NOT EXCEED 30 m.
9. REFER 4005-2000-02 FOR INSPECTION POINT CONSTRUCTION DETAIL.
10. ALL FITTINGS IDENTIFIED BY SHADING SHALL BE A ‘REINFORCED FITTING’
REFER TO 0542, 3.2.11.
11. ALL DIMENSIONS IN MILLIMETERS UNLESS NOTED OTHERWISE.
CERED HOLE:
- All faces of the stub shall be cut flush with the inside face of the trunk sewer, to avoid snagging and to facilitate the installation of possible future linings.
- Hole shall be bored oversize using a diamond tipped cutter (Min 12 - Max 15).
- The drill core shall not be allowed to fall into the sewer.
- Thoroughly clean the vertical cut edges of the bored hole, including a 50 mm band around the bored hole on both the inside and outside surfaces of the trunk sewer, in readiness for the stub.
- The contractor shall retain the drill core for presentation to the inspector.

PREPARATION OF UPVC STUB:
- Thoroughly clean the outside face of the stub at the joint using UPVC cleaner.
- Point the cleaned stub with a thin continuous layer of approved solvent cement, and sprinkle clean coarse dry sand over the freshly painted surface to provide a 'key' for the epoxy binder.
- Leave to dry for 15 minutes before using stub. Ensure the 'key' shall extend for the full depth of the proposed joint.

INSTALLATION OF STUB:
STAGE 1 - PRIMING OPERATION:
- Apply one thick coat of the approved epoxy binder as a primer coat.
  - To the outside face of the UPVC stub over the sand 'key', for the full depth of the proposed joint.
  - To the vertical cut edges of the bored hole. Finish the epoxy flush with the inside face of the trunk sewer and extend to the cleaned outside face as shown.

STAGE 2 - INSTALL PRIMED STUB:
- Install the primed stub centrally (as shown) while the primer coat is still 'tacky' (work time is approx. 30 minutes at 23°C).
- Fill the joint to its full depth with the same epoxy binder.
- Finish the epoxy flush with the inside face of the trunk sewer and extend on to the cleaned outside face as shown. Trowel the finished joint.

NOTE: COVERAGE WITH THE EPOXY IS CRITICAL TO ACHIEVE A JOINT OF ADEQUATE MECHANICAL STRENGTH AND TO PROVIDE PROTECTION FROM CORROSION WHERE REINFORCEMENT HAS BEEN EXPOSED DURING CORING.

RE-LINED TRUNK SEWER:
- For coring of pipe & installation of the UPVC adaptor utilise same procedures as detailed above.
- At the bored hole, integrity of the hole liner shall be preserved by utilisation of a ‘top hat’ or ferroprone protecting the exposed edges.

NOTES:
1. Refer 4.005-20003-01 & 4.005-20003-02 for general notes.
2. Use alternative orientation option where depth is insufficient to achieve the preferred option, and where approved by the SA Water representative.
3. Method shall not be used on plastic-lined pipes.
4. Similar details for VC and RCJ sewers.
5. Temporary isolation of trunk sewer (or diversion of flows) may be necessary during live installations.
6. UPVC connections illustrated DN50 is an optional option.
7. Refer section 4.04 for connection construction.
8. All fittings identified by shading shall be a ‘reinforced fitting’ referred to as 4.005-350.3.1.1.
9. All dimensions in millimetres.

SA WATER STANDARD DRAWINGS
SEWER CONSTRUCTION MANUAL
NEW PROPERTY CONNECTION OFF EXISTING VC & RCJ SEWER DN375 & LARGER

This drawing is the property of the SOUTH AUSTRALIAN WATER CORPORATION and shall not be copied or modified in part or in whole without authorization.
NOTES:

1. REFER 4005-20002-01 & 4005-20002-02 FOR GENERAL NOTES.

2. INDUCT AND EDUCT VENTS:
   - SHALL BE USED ON ALL TRUNK SEWERS DN450 AND LARGER, UNLESS OTHERWISE DIRECTED BY SA WATER REPRESENTATIVE.
   - SHALL BE SITED IN THE LEAST OBTRUSIVE LOCATION, GIVING DUE REGARD TO THE GENERAL STREETScape.

3. INDUCT VENTS (REFER 4005-20007-05):
   - CAN BE SITED ON EITHER SIDE OF THE ROAD RESERVE PROVIDING THEY ARE WELL CLEAR OF ALL UNDERGROUND SERVICES INCLUDING SAPN, GAS, TELESTRAN, OPTUS ETC., TREES, DRIVEWAYS AND ANY OTHER FACILITIES.
   - SHALL BE PREFERABLY AlIGNED WITH THE SIDE BOUNDARY OF ADJACENT ALLOTMENTS, REMOTE FROM DRIVEWAYS.

4. EDUCT VENTS, (REFER 4005-20007-06):
   - SHALL BE SITED ON THE OPPOSITE SIDE OF THE ROAD RESERVE TO SAPN OVERHEAD MAINS (OR UNDERGROUND DISTRIBUTION CABLES).
   - WHERE THIS IS NOT POSSIBLE APPROVAL SHALL BE SOUGHT FROM THE SA WATER REPRESENTATIVE FOR THE VENTS TO BE LOCATED ON THE SAME SIDE AS THE SAPN INFRASTRUCTURE.
   - SHALL ALWAYS BE SITED WELL CLEAR OF ALL OVERHEAD AND UNDERGROUND SERVICES (INCLUDING SAPN, GAS, TELESTRAN, OPTUS ETC.).
   - SHALL BE WELl CLEAR OF ALL TREES, DRIVEWAYS AND ANY OTHER FACILITIES.
   - PREFERABLY THEY SHALL BE ALIGNED WITH THE SIDE BOUNDARY BETWEEN ADJACENT ALLOTMENTS, REMOTE FROM DRIVEWAYS.
   - BOUNDARY OFFSET VARIABLE DEPENDING ON COMMON SERVICE TRENCH AND OTHER SERVICES WITHIN THE FOOTPATH AREA.
4 x M12 BOLTS, 150 LONG, 125 INTO CONCRETE

BEND 90°
SOC - SOC

DN390 UPVC PLAIN WALL PIPES
SOLVENT WELD SN4

MIN GRADE 0.5%

MAX 20000

FOR VC AND RCRJ PIPELINES, THE 'CORED HOLE', 'PREPARATION OF STUB' AND 'INSTALLATION OF STUB' SHALL BE AS DETAILED ON 4405-20007-03.
FOR FLEXIBLE PIPELINE SYSTEMS (PVC, HDPE, HDGAS ETC). SPECIAL FACTORY PREFABRICATED BRANCHES OR SADDLES SHALL BE USED.

NOTES:
1. REFER 4405-20002-01 & 4405-20002-02 FOR GENERAL NOTES.
2. VENT PENETRATIONS NOT PERMITTED INTO PLASTILINED AND HDPE PIPES.
3. HOLDING DOWN BOLTS AND NUTS SHALL BE HOT DIP GALVANISED.
4. REFER 4405-20007-04 FOR POSITIONING OF VENTS.
5. ALL DIMENSIONS IN MILLIETERS.

SA WATER STANDARD DRAWINGS
SEWER CONSTRUCTION MANUAL
INDUCT VENT
GENERAL ARRANGEMENT

REV
DATE
DRN
DETAILS
APR
CURRENT REV
AUTHORISED
SIGNATURE

03/08/15
RJP

T.GALIK

25/09/15
MS

27/09/16
TG

2016 STANDARDS REVIEW

This drawing is the property of the SOUTH AUSTRALIAN WATER CORPORATION and shall not be copied or modified in part or in whole without authorization.
LONG LIFE POLYURETHANE OR BUTYLSealANT (GRAY)
COMPACTED LEAD WOOL
EDUCT VENT BASE
25 HIGH STRENGTH NON STICK GROUT BENEATH BASE PLATE
CONCRETE FOOTING
UPVC PIPE
VENT STACK TO BE CENTERED FIRMLY INTO THE TAPER PRIOR TO COMPACTING LEAD WOOL
HOLDING DOWN BOLT
DETAI L
STEE L OR GRP VENT TUBE #300 X 15 IN. HIGH
DETAI L
STEE L VENT BASE REFER TS 54
DETAI L
FINISHED SURFACE LEVEL
DETAI L
DN600 BEND 90° GR - 50C
DETAI L
MN 0.5%
DETAI L
TRUNK SEWER MAINTENANCE HOLE OR PUMPING STATION SUMP
DETAI L
1 2
3
4
5
6
7
8
9
10

NOTES:
1. THIS DRAWING SHOULD BE CONSIDERED TOGETHER WITH THE DETAILED NOTES PROVIDED ON 4005-20007-07.
2. THE DESIGN ASSUMPTIONS ARE:
   a. THE VERTICAL BEARING CAPACITY OF THE SOIL AT THE BOTTOM OF THE EXCAVATION IS ASSESSED TO BE ≥ 100 kPa,
   b. NO GROUNDWATER ENCOUNTERED HIGHER THAN 500 ABOVE THE BOTTOM OF THE FOOTING,
   c. MAXIMUM FILL COVER ABOVE THE CONCRETE FOOTING SHALL BE 500.
3. WHERE THE SOIL VERTICAL BEARING CAPACITY = 100 kPa, A QUALIFIED GEOTECHNICAL ENGINEER SHALL BE ENGAGED.
4. THE ENGINEER SHALL:
   a. ASSESS THE BEARING CAPACITY OF THE FOUNDING SOIL AT THE FOOTING OF THE EXCAVATION,
   b. DESIGN THE CONCRETE FOOTING SIZE, REINFORCEMENT DETAIL AND ANY SITE SPECIFIC REQUIREMENTS
   c. THIS INFORMATION SHALL BE PROVIDED TO THE DESIGNER TOGETHER WITH ANY CALCULATIONS.
5. THE DESIGNER SHALL PROVIDE A DRAWING DETAILING THE CONCRETE FOOTING AND ENGINEER’S REQUIREMENTS.
6. REFER 4005-20002-01 TO 4005-20002-03 FOR GENERAL NOTES.
7. PIPE DEPTH TO CLEAR EXISTING OR PROPOSED SERVICES:
   a. MN 750 COVER IN EXISTING ROAD AND PUMPING STATION SITE,
   b. MN 450 COVER IN EASEMENT.
8. REFER 4005-20005-03 FOR PIPE SEALING & CORING DETAILS, BOTH INSITU & PRECAST STRUCTURES.
9. THE MAXIMUM DISTANCE OF THE VENT FROM THE VENTED PIPE OR STRUCTURE SHALL BE 20 METRES.
10. REFER TS 0500 FOR VENT BASE & STACK SUPPLIER DETAILS.
11. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.

SA WATER STANDARD DRAWINGS
SEWER CONSTRUCTION MANUAL
EDUCT VENT
VENT FOOTING AND FIXING DETAILS
SHEET 1 OF 2

SUPERSEDES: 94-0168-03 (13)
DRAWING NUMBER 4005-20007-06
PREFIX REV
A3
2

TOTAL SHEETS: 7
REVISION SHEET
NOTES:

GENERAL
1. REFER 4005-20007-06 FOR DESIGN ASSUMPTIONS, CONCRETE FOOTING SIZE AND FIXING DETAILS.
2. REFER 4005-20007-06 FOR POSITIONING OF VENTS ALONG TRUNK SEWER MAINS.
3. CORROSION PROTECTION:
   - ALL NUTS SHALL BE COATED WITH MASTIC AND SEALED WITH RAODIO CAPS FILLED WITH MASTIC.
   - WHERE PORTION OF THE STEEL VENT BASE IS BELOW NS LEVEL, IT SHALL BE PROTECTED USING PETROLATUM ANTI CORROSION SYSTEM IN ACCORDANCE WITH TS 19.
4. REFER 4005-20001-01 TO 4005-20002-03 FOR GENERAL NOTES.
5. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.

SITE PREPARATION FOR THE EXCAVATION
6. ALL VEGETATION, ORGANIC TOP SOIL, DISTURBED NATURAL SOIL, SOFT, WET OR WEAK SOIL SHALL BE EXCAVATED OUT.
   - IF ENCOUNTERED AT FOUNDING LEVEL, THE EXCAVATION SHALL BE DEEPENED.
7. SURPLUS EXCAVATED MATERIAL SHALL BE DISPOSED OFF SITE UNLESS OTHERWISE APPROVED.
8. THE SIDES OF THE EXCAVATION SHALL BE SHORED OR SLOPED TO THE SOIL ANGLE OF REPOSE TO PREVENT SIDE COLLAPSE.
9. EXCAVATION AND BACKFILL:
   - THE EXCAVATION SHALL:
     a. BE HORIZONTAL & LEVEL.
     b. BE CLEAN AND FREE OF ALL LOOSE MATERIAL.
     c. HAVE A BASE COURSE OF QUARRY RUBBLE, MN. 100T.
     d. BE COMPACTED, (APPROVED ALTERNATIVE IS LEAN MIX CONCRETE).
   - ANY BACKFILL BETWEEN CONCRETE FOOTING AND SIDE SUPPORT/SHORING SHALL BE COMPACTED.
   - BE DRY PRIOR TO PLACING CONCRETE.
   - ALL COMPACTED MATERIALS SHALL BE MIN. 95% SMDD.
10. OVER EXCAVATION SHALL BE FILLED WITH CLEAN FILL MATERIAL COMPACTED TO 95% SMDD. ALTERNATIVELY IT MAY BE FILLED WITH LEAN MIX CONCRETE.
11. FLOW OF WATER INTO THE EXCAVATION SHALL BE PREVENTED. ANY WATER COLLECTING IN THE EXCAVATION SHALL BE PUMPED OUT.
    - Dewatering shall continue to the end of the curving period (17 days) to prevent damage to the base course or concrete footing by erosion or percolation.

CONCRETE NOTES
1. GENERALLY CONCRETE POURED IN SITU SHALL BE:
   - MIN. GRADE N10, WITH NOMINAL MAXIMUM AGGREGATE SIZE OF 20 TO 40, SLUMP BETWEEN 80 - 100.
   - CLEAR COVER TO REINFORCEMENT MIN. 65.
2. FOR SANDY/AGGRESSIVE SOILS
   - WITH SULPHATE CONTENT > 20,000 PPM OR SULPHATE IN GROUNDWATER > 10,000 PPM OR PH < 4.
   - CONCRETE SHALL BE:
     a. MIN. GRADE N65 WITH
     b. CLEAR COVER TO REINFORCEMENT MIN. 65.
3. CONCRETE SHALL BE CONTINUOUSLY CURED FOR MIN. 7 DAYS.
4. FOR REINFORCEMENT DETAILS REFER 4005-20007-06.
5. ALL WORKSHIPS SHALL BE IN ACCORDANCE WITH AS 3600 AND TS 9710.

VENT STACK REPLACEMENT PROCEDURE
1. FOR ALL REPLACEMENTS THE CONDITION OF THE EXISTING FOOTING AND VENT BASE SHALL BE ASSESSED PRIOR TO ANY WORK PROCEEDING.
2. THE FOOTING SIZE SHALL BE CONFIRMED AS MINIMUM 1500 x 1500 x 1500.

ISOMETRIC VIEW OF VENT BASE AND CONCRETE FOOTING