

SITE PLAN

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1636 N BOULDER HWY

Legend



1636 N Boulder Hwy

Ingles Motel

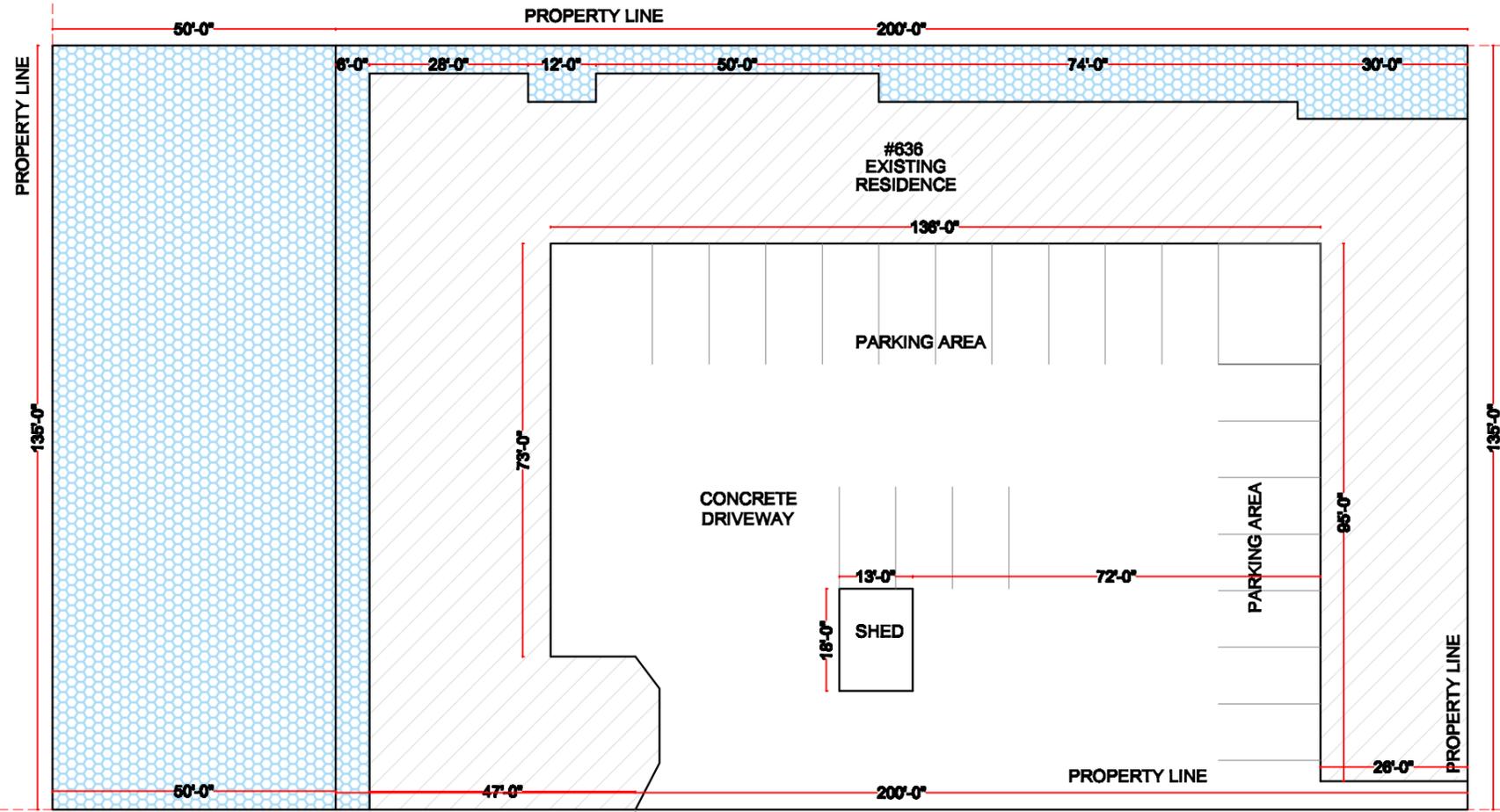
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E COOGAN DR



N BOULDER HWY

SITE PLAN

LIFE SAFETY DRAWING



E COOGAN DR

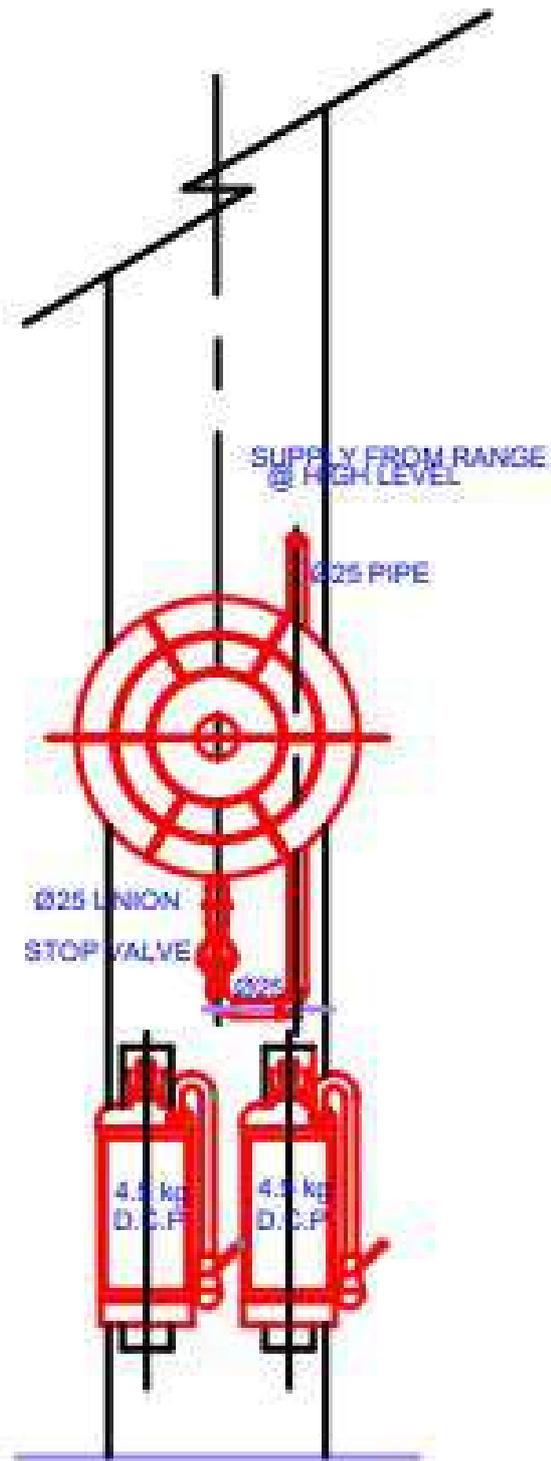
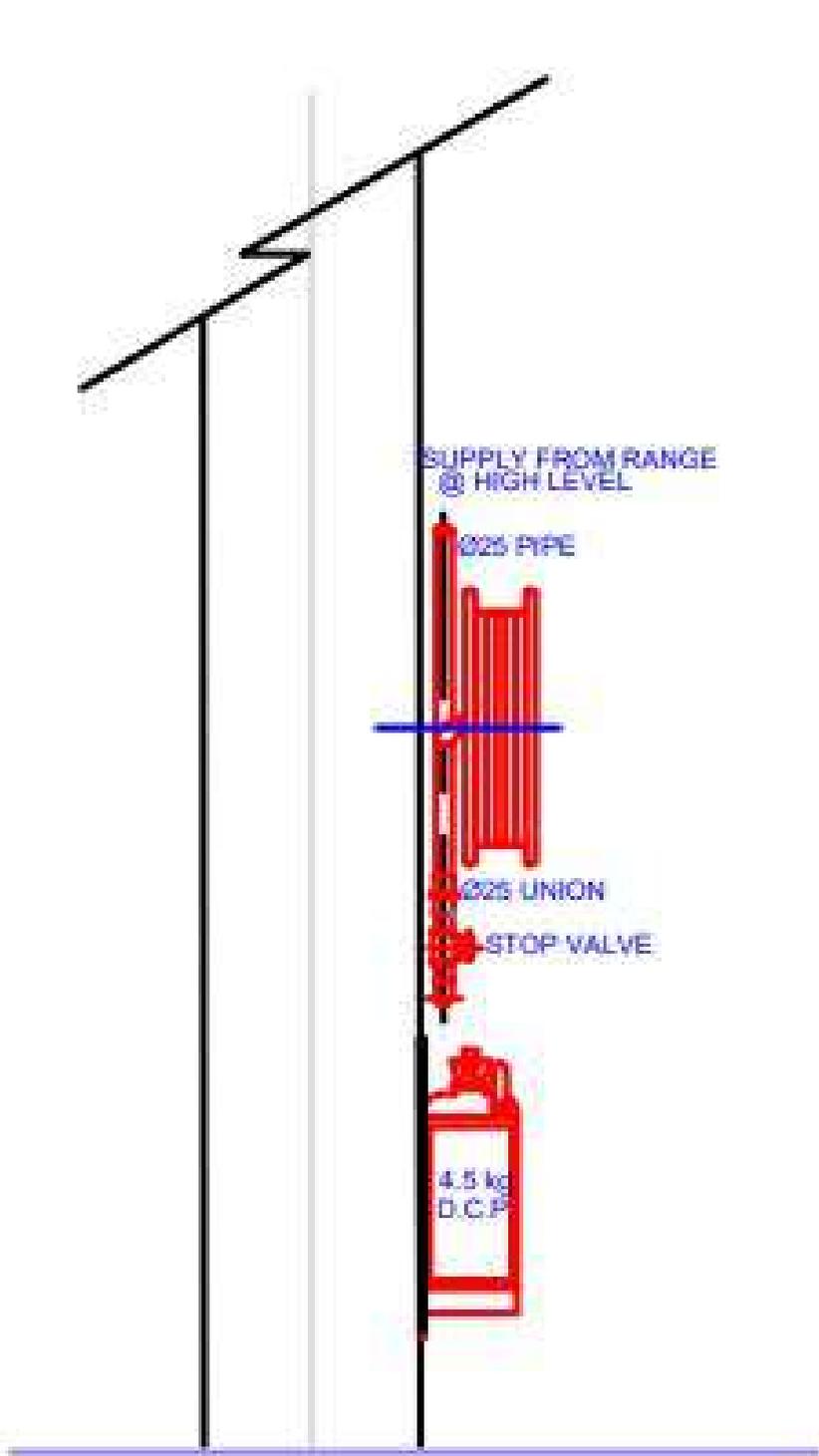


- A) CHECK THAT LEAKAGE OF WATER DOES NOT EXCEED 5ML IN 3MIN FROM THE VALVE GLAND OR DISCHARGE NOZZLE ASSEMBLY
- B) ENSURE THAT THE HOSE CAN BE WITHDRAWN EASILY IN ANY DIRECTION
- C) THE FLOW RATE WITH THE NOZZLE IN THE JET MODE IS OPERATIONAL BY DISCHARGING WATER INTO A CONTAINER.
- D) THE DISCHARGED NOZZLE HAS BEEN OPENED AND THEN CLOSED TO DEPRESSURIZE THE HOSE
- E) IF ANY DEFECTS ARE FOUND THEY ARE TO BE CORRECTED OR REPORTED TO THE MECHANICAL ENGINEER.

| | |
|--------|-------------------|
| --- | PATH OF TRAVEL |
| FEC | FIRE EXTINGUISHER |
| FHR.FH | FIRE HOSE REEL |

N BOULDER HWY

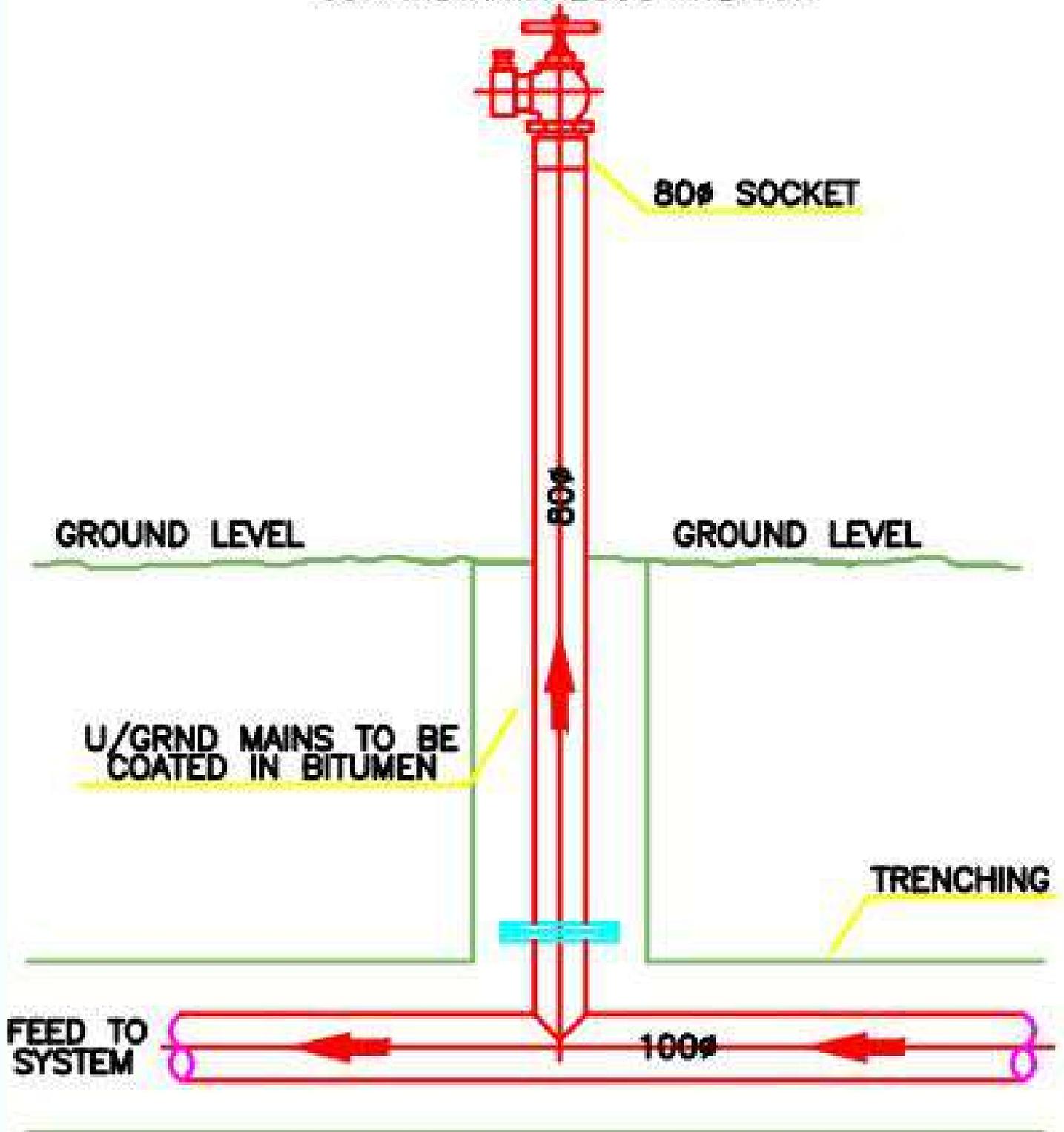
APARTMENTS PLAN 2,3,4,5,6
LIFE SAFETY PLAN



FIRE HOSEREEL DETAIL

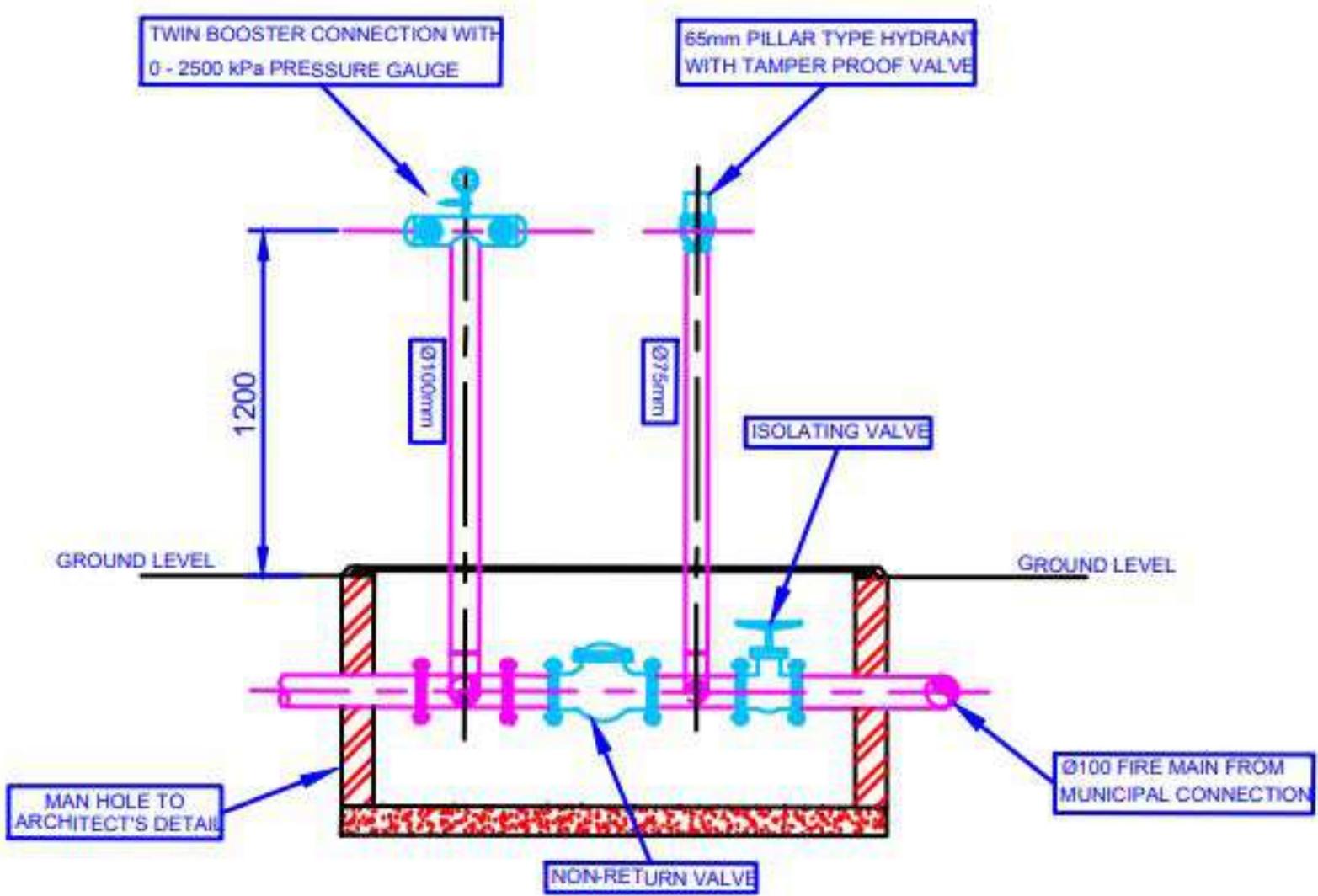
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65Ø INSTANTANEOUS HYDRANT



TYPICAL 65Ø INSTANTANEOUS HYDRANT

NTS



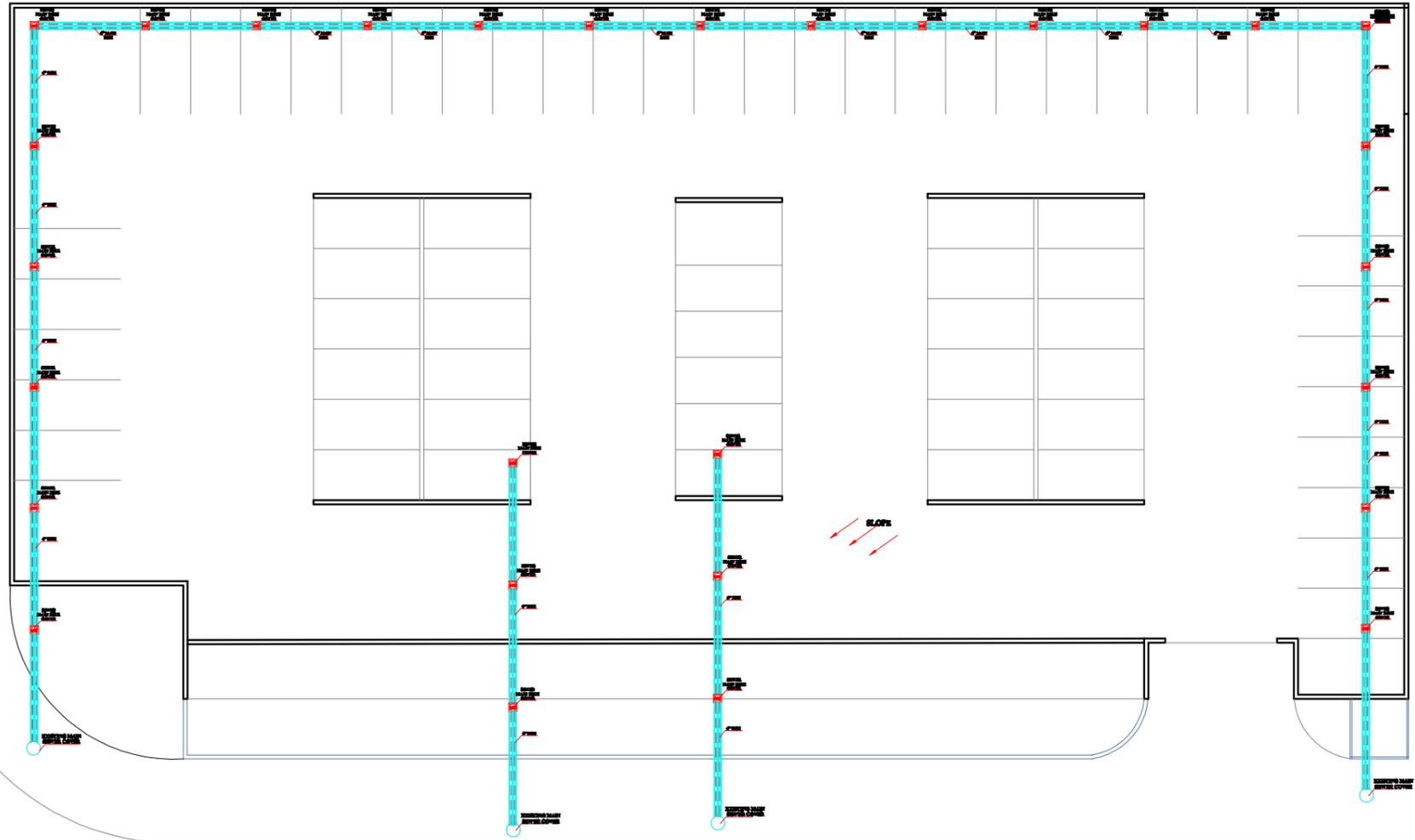
BOOSTER CONNECTION IN A MANHOLE DETAIL

Scale: NTS

SEWERAGE DRAWINGS



E COOGAN DR

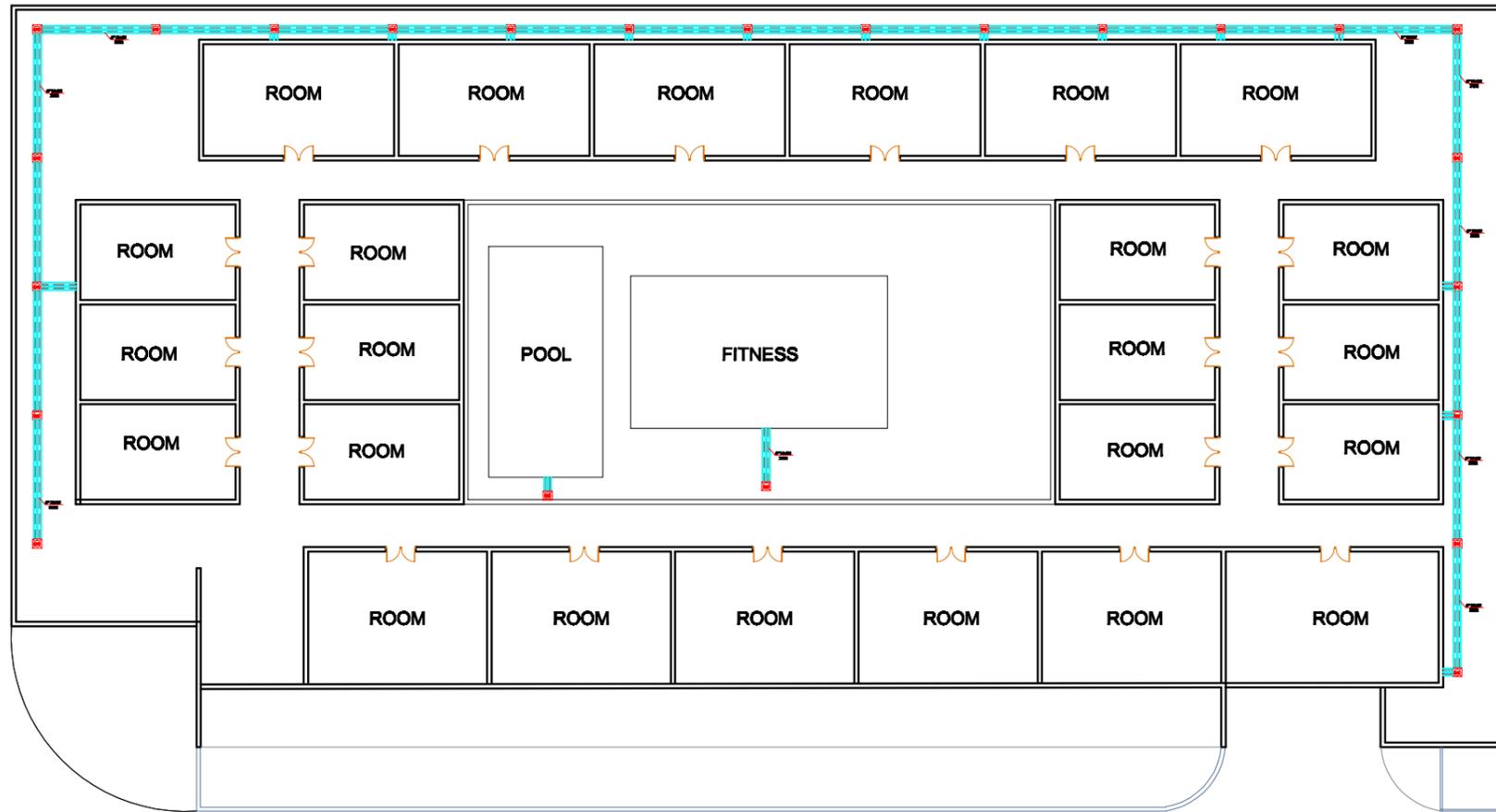


N BOULDER HWY

GROUND FLOOR
SEWER LINES

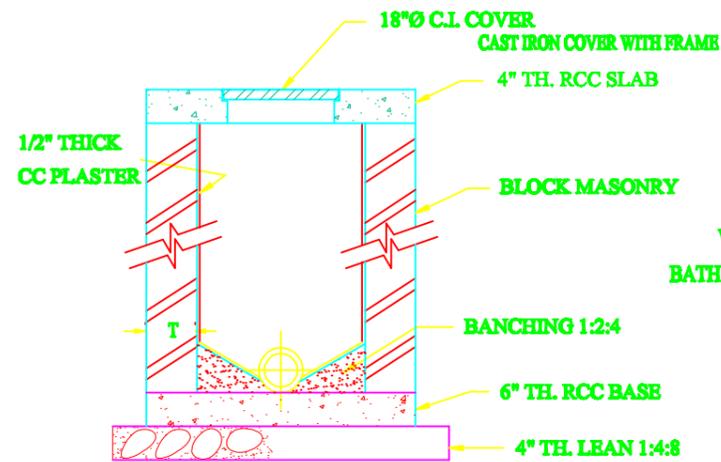


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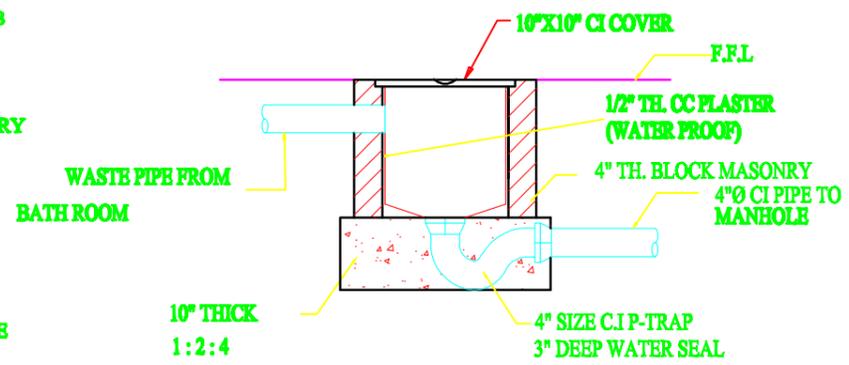


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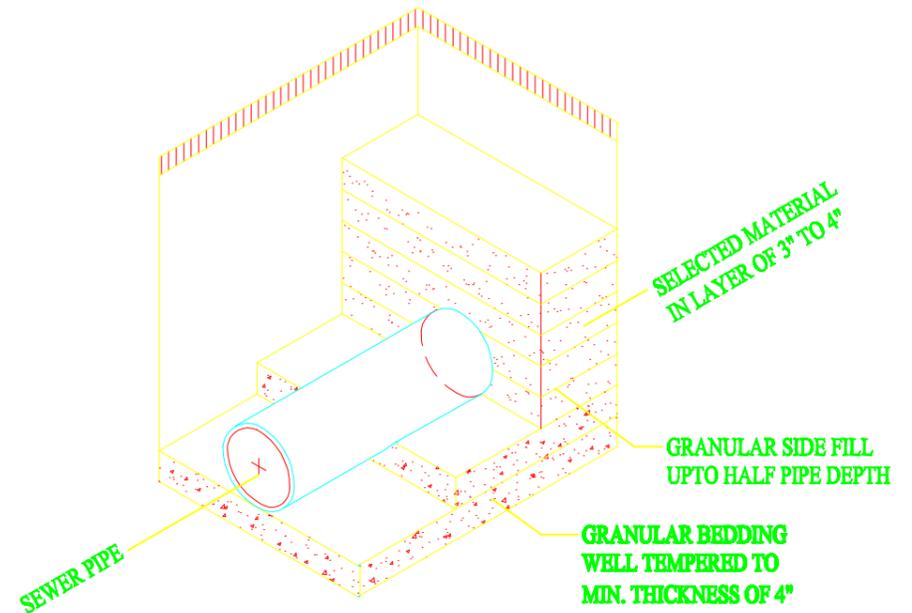
APARTMENTS PLAN 2,3,4,5,6
SEWER LINES



TYPICAL SECTION



TYPICAL SECTION OF
GULLY TRAP (GT)



ISOMETRIC VIEW OF SEWER PIPE

TYPICAL NOTES TO BE INCLUDED WITH DRAWING SET

ENVIRONMENTAL CONDITIONS

PLACE ON YOUR DRAWING NOTES AS RECEIVED IN YOUR APPROVAL LETTER FROM THE ENVIRONMENTAL REGULATOR OR MANAGER. IF NOTES RELEVANT TO THIS ESTATE ARE NOT SPECIFIED IN YOUR APPROVAL LETTER, TYPICAL NOTES AS FOLLOWS SHALL BE PLACED ON ALL DRAWINGS.

VEGETATION PROTECTION

- A. TREES LOCATED ALONG THE FOOTPATH SHALL BE, TRANSPLANTED PRIOR TO CONSTRUCTION, OR REPLACED IF DESTROYED.
- B. WHEN WORKING WITHIN 4 m OF TREES, RUBBER OR HARDWOOD GIRDLES SHALL BE CONSTRUCTED WITH 1.8 m BATTENS CLOSELY SPACED AND ARRANGED VERTICALLY FROM GROUND LEVEL. GIRDLES SHALL BE STRAPPED TO TREES PRIOR TO CONSTRUCTION AND REMAIN UNTIL COMPLETION.
- C. TREE ROOTS SHALL BE TUNNELLED UNDER, RATHER THAN SEVERED. IF ROOTS ARE SEVERED THE DAMAGED AREA SHALL BE TREATED WITH A SUITABLE FUNGICIDE. CONTACT RELEVANT COUNCIL ARBORIST FOR FURTHER ADVICE.
- D. ANY TREE LOPPING REQUIRED SHOULD BE UNDERTAKEN BY AN APPROVED ARBORIST.

SOIL

- A. TOPSOIL AND SUBSOIL SHALL BE STOCKPILED SEPARATELY.
- B. CARE SHALL BE TAKEN TO PREVENT SEDIMENT FROM ENTERING THE STORMWATER SYSTEM. THIS MAY INVOLVE PLACING APPROPRIATE SEDIMENT CONTROLS AROUND STOCKPILES.
- C. ACID SULPHATE SOILS EXIST IN THE WORKS AREA. THE OUTPUTS FROM THE RISK ASSESSMENT BASED ON THE QUEENSLAND ACID SULPHATE SOIL TECHNICAL MANUAL REQUIRES THAT ACID SULPHATE SOILS BE MANAGED AS FOLLOWS: (DELETE IF NO ACID SULPHATE SOILS)

CREEK CROSSINGS

- A. SILTATION CONTROL MEASURES SHALL BE PLACED DOWNSTREAM OF ANY EXCAVATION WORK.
- B. APPROPRIATE SEDIMENT CONTROLS SHALL BE USED TO PREVENT SEDIMENT FROM ENTERING THE CREEK.
- C. NO SOIL SHALL BE STOCKPILED WITHIN 5 m OF THE CREEK.

REHABILITATION

- A. PREDISTURBANCE SOIL PROFILES AND COMPACTION LEVELS SHALL BE REINSTATED.
- B. PREDISTURBANCE VEGETATION PATTERNS SHALL BE RESTORED.

SAFETY

- A. THE DESIGN AND CONSTRUCTION OF THE WORKS SHALL COMPLY WITH ALL QUEENSLAND LEGISLATION.

ALL ENVIRONMENT PROTECTION MEASURES SHOULD BE IMPLEMENTED PRIOR TO ANY CONSTRUCTION WORK, INCLUDING CLEARING, COMMENCING.

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT SOUTH EAST QUEENSLAND SEWERAGE CODE SPECIFICATIONS AND STANDARDS.
2. UNLESS SPECIFIED OTHERWISE ALL MATERIALS AND WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS.
3. THE CONSTRUCTION OF THE SEWERAGE WORK SHOWN ON THIS DRAWING SHALL BE SUPERVISED BY AN ENGINEER WHO HAS RPEQ REGISTRATION. SEWERAGE WORKS NOT COMPLYING WITH THIS REQUIREMENT WILL NOT BE PERMITTED TO CONNECT INTO THE SEQ SERVICE PROVIDER SEWERAGE SYSTEM.
4. ALL WORK ASSOCIATED WITH LIVE SEWERS OR MAINTENANCE HOLES SHALL BE CARRIED OUT BY THE SEQ SERVICE PROVIDER AT THE DEVELOPER'S COST.
5. ALL PIPES AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE "ACCEPTED PRODUCTS AND MATERIALS" LIST.
6. EACH ALLOTMENT SHALL BE SERVED BY A DN110 PE (OR DN100 PVC) PROPERTY CONNECTION. FOR ALLOTMENTS OTHER THAN SINGLE RESIDENTIAL, A DN160 PE (OR DN150 PVC) PROPERTY CONNECTION SHALL BE PROVIDED.
7. PROPERTY CONNECTIONS SHALL BE LOCATED WITHIN THE PROPERTY AS SHOWN IN THE DRAWINGS.
8. PROPERTY CONNECTION BRANCHES SHALL EXTEND INTO THE PROPERTY A MINIMUM OF 300 mm AND A MAXIMUM OF 750 mm. CoGC, LCC, RCC AND UW REQUIRE MINIMUM EXTENSION OF 500 mm AND MAXIMUM OF 1000mm INTO PROPERTY.
9. WHERE PIPES ARE LAID IN FILL, THE FILLING SHALL BE TESTED BY A NATA CERTIFIED TEST LABORATORY IN ACCORDANCE WITH THIS CODE. IN ALL SUCH CASES APPROVAL OF CONSTRUCTED SEWERS WILL NOT BE ISSUED BY THE SEQ SERVICE PROVIDER UNLESS CERTIFICATES ARE PRODUCED CERTIFYING THAT THE REQUIRED COMPACTION HAS BEEN ACHIEVED.
10. WHERE SEWERS HAVE A GRADE OF 1 IN 20 OR STEEPER, BULKHEADS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SEQ SEWER CODE.
11. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING SERVICES WITH RELEVANT AUTHORITIES BEFORE COMMENCING WORKS.
12. SEWERS SHALL BE DISUSED /ABANDONED IN ACCORDANCE WITH PROCEDURES SET OUT IN THE SEQ SEWER CODE.
13. BENCH MARK AND LEVELS TO AHD.
14. THE EXISTING DWELLING ON LOT 3, REFER SEQ-SEW-1100, SERVED BY A SEPTIC SYSTEM, SHALL BE CONNECTED TO THE NEW SEWER BY A LICENCED PLUMBER IN ACCORDANCE WITH THE RELEVANT STATUTORY AND COUNCIL REQUIREMENTS. THE SEPTIC SYSTEM, INCLUDING TRENCHES, SHALL BE REMOVED AT THE DEVELOPER'S COST. ALL FIXTURES SHALL BE UPGRADED IF REQUIRED BY PLUMBING CODE.
15. EXISTING ALLOTMENTS REQUIRING A PROPERTY CONNECTION FROM EXISTING SEWERS SHALL BE PROVIDED BY THE SEQ SERVICE PROVIDER AT THE DEVELOPERS COST.

| NAME OF ESTATE | | SUNRISE ESTATE |
|-------------------|--------|------------------|
| SUBDIVIDER | | JOPET PTY LTD |
| APPLICATION No. | | 253/50/5-CA20/95 |
| SP DELEGATE | | 7.12.94 |
| APPROVAL DATE | | |
| DRAWING/PLAN No. | | |
| No. OF ALLOTMENTS | | 26 |
| AREA IN Ha. | | 2.828 |
| LENGTH | 100 mm | 40.000 |
| OF SEWERS | 150 mm | 327.100 |

MAINTENANCE HOLES

DESIGN REQUIREMENTS

- D1. Design and construction of all sewerage infrastructure shall be RPEQ certified.
- D2. Top slabs have been designed for the following loads and locations.

| Location | Live Load | Access covers to AS 3996 |
|---|-----------|--------------------------|
| Reserves, residential allotments, footpaths and verges | 25 kN | Class Rating B |
| Roadways and driveways; Commercial, industrial and non-residential allotments | 80 kN | Class Rating D |

- Design Life 100 years
- Dead load as determined from SEQ Sewer Code Standard Drawings.
- Live loads to AS 1170.1 and AS 5100-2.

- D3. Durability Classification

| Structure | Cover Location | Exposure Classification AS 3600, AS 3735 | Reinforcement Cover (mm) |
|-----------|----------------|--|---------------------------------|
| Slabs | Top | B2 to AS 3600 | 40 |
| | Bottom | B2 to AS 3735 | 50 including PE liner thickness |

- D4. SEQ Code Sewer MH Standard Drawings that are applicable to QUU have assumed that a minimum soil bearing pressure of 50 kPa can be achieved. Responsibility for all aspects of the design and construction of sewer infrastructure rests solely with the certifying RPEQ.

GENERAL

- G1. These notes relate to all top slabs and cast-insitu maintenance holes for QUU and Unitywater.
- G2. Maintenance hole top slabs shall be precast elements.
- G3. Dimensions in millimetres.
- G4. Dimensions not to be scaled from drawings.
- G5. Verify all dimensions on site prior to commencing work on site.
- G6. Materials and workmanship to comply with the current Standards Australia codes, Building code of Australia, WSAA Product Specifications, By-laws and ordinances of relevant building authorities.
- G7. Existing structures to be maintained in a stable condition and no part to be over-stressed during construction.

MAINTENANCE HOLES

- MH1. Maintenance Holes shall be located centrally over sewers unless specified otherwise.
Refer Drawings SEQ-SEW-1304-1 and SEQ-SEW-1305-1.
- MH2. Obvert level of the upstream sewer pipe shall always be above the obvert level of the downstream sewer pipe unless approved otherwise.
- MH3. All construction joints shall include hydrophilic seals installed to manufacturer's specifications.
- MH4. Maintenance Hole connectors, including hydrophilic seals and puddle flanges shall be the pre-fabricated type unless approved otherwise.
- MH5. Ends of sewer pipes shall finish flush with the inside face of Maintenance Hole wall.
- MH6. Finished benching shall provide a smooth non-turbulent flow.
- MH7. Safety chains and all connections shall be stainless steel Grade 316.
- MH8. Property connection junctions shall not be constructed on short pipes at Maintenance Holes or bulkheads.

MAINTENANCE HOLE CIRCULAR ACCESS COVERS

- AC1. Circular access covers and frames shall be rated to Class Rating B or Class Rating D to AS 3996.
- AC2. Product certification to AS 3996 shall be supplied for each cover assembly.
- AC3. Covers, frames and riser rings, where required, shall be supplied assembled.
- AC4. Covers shall be solid top. In QUU areas only, Class B concrete infill covers may be used.
- AC5. Covers shall have identification tags detailing, Sewer / Vacuum Sewer / Class Rating B, D / Sealed / Cover pattern detail / SEQ-SP name / Weight.
- AC6. Bolt down covers shall be provided in flood prone areas, storm surge areas, surcharging sewers and where specified in the design.
- AC7. Bolt down cover frames to be fixed to the top slab with 4 M16 stainless steel chemical anchors. Embedment length shall be minimum 110 mm unless approved otherwise.

SAFETY IN DESIGN

- SD1. The Safety in Design, design and risk mitigation measures for these drawings do not necessarily account for all design, construction, operation, maintenance and demolition assessments. It does not reduce or limit the obligations of the constructor, user, operator, maintainer and demolisher to perform their own Safety in Design risk assessment.
- SD2. Develop construction and installation safe work method statements to eliminate and minimise installation risks. The safe method statement shall be reviewed and approved by a suitably qualified structural engineer.

STEP IRONS AND LADDERS (QUU ONLY)

- SL1. Step irons shall comply to AS 1657.
- SL2. Step irons are required where depths of benching from top slab is greater than 850 mm but does not exceed 4.25 m.
- SL3. Step irons shall not be placed closer than 150 mm from the benching.
- SL4. Step irons shall be placed over the downstream outlet.
- SL5. Step irons shall be placed directly under the ladder where step irons are used with a ladder when shown in the Standard Drawings.
- SL6. Ladders shall comply with SEQ-SEW-1301-27.
- SL7. Ladders shall be used in all Maintenance holes where depth from ground level to invert of Sewer exceeds 4.25 m.
- SL8. Ladders shall be placed over downstream outlet for sewer pipes 600 mm or smaller.
- SL9. Ladders shall be placed perpendicular to the downstream outlet for sewer pipes greater than 600 mm.
- SL10. Cages, Extendable handrails and platforms are not to be installed in Maintenance Holes.

MAINTENANCE HOLES

CONCRETE

- C1. Concrete workmanship and materials to comply with AS 3600 and AS 3610.
- C2. Concrete to comply with AS 1379, AS 1478.1, AS 1478.2, AS 3582.1 AS 3582.2, AS 3582.3 and AS 3972.
- C3. Slump to be as required for placement, compaction and finishing. A sample of fresh concrete shall be tested for slump and strength upon arrival on site.
- C4. Water not to be added to concrete after truck has left batching plant unless approved otherwise.
- C5. Test slump of each batch of concrete delivered.
- C6. Design, certification, construction and performance of formwork by contractor.
- C7. Concrete construction tolerances to AS 3610.
- C8. Concrete sizes do not include finishes. Sizes not to be reduced or penetrations added.
- C9. Conduits, pipes, etc. not to be placed in concrete cover to the reinforcement.
- C10. Exposed edges and re-entrant corners to have 25 mm chamfers or fillets unless noted otherwise.
- C11. Construction joints as detailed and located on design drawings.
- C12. Concrete surface finishes to AS 3610.
 - Formed exposed surfaces Class 2
- C13. Concrete temperature not to exceed temperatures stated below.

| Concrete Structure | Concrete Strength f'c | Temperature Limit |
|--|------------------------------|-------------------|
| Concrete sections less than 600 mm thick. | Equal to or more than 40MPa. | 35°C |
| Concrete sections equal to or greater than 600 mm thick. | Equal to or more than 40MPa. | 27°C |

- C14. Concrete curing to AS3600 as soon as possible after placing and finishing.
- C15. Concrete grade S40.

| Type of Aggregate | Calcareous |
|---------------------------------|------------------------|
| Compressive strength at 28 days | 40 MPa |
| Minimum cement content | 380 kg/m ³ |
| Maximum cementitious material | 25% |
| Maximum water/cement ratio | 0.5 |
| Nominal slump | 80 mm ± 15 |
| Drying shrinkage at 21 days | 500 x 10 ⁻⁶ |
| Maximum aggregate size | 20 mm |
| Minimum aggregate size | 10 mm |

- C16. Concrete shall be special class to WSA-PS 358 with calcareous aggregate.
- C17. Benching finish shall consist of equal parts of cement and sand.

REINFORCEMENT

- R1. Reinforcement for the top slabs shall be a pre-fabricated element.
- R2. Reinforcement to comply with AS 4671.
- R3. Symbols on drawings for grade and type of reinforcement are:
 - R - Structural Grade 250 plain round bars
 - N - Hot rolled grade 500 deformed bar, ductility class N
 - L - Hot rolled grade 500 deformed bar, ductility class L
 - SL - Hard drawn wire grade 500 mesh, ductility Class L
 - RL - Hard drawn wire grade 500 mesh, ductility Class L
 - W - Steel reinforcing wire grade 500
- R4. Reinforcement designation as follows (e.g. 14N16-250 EF)
 - 14 - Number of bars
 - N - Bar grade and ductility class
 - 16 - Bar diameter in mm
 - 250 - Spacing of bars in mm
 - EF - Location
- R5. Abbreviations to reinforcement location.
 - EW - Each way
 - EF - Each face
 - B - Bottom
 - T - Top
 - CP - Centrally Placed
- R6. Reinforcement is shown diagrammatically only and not necessarily in true projection.
- R7. Reinforcement to be fixed securely and supported on propriety concrete, metal or plastic supports.
- R8. Reinforcement to be spliced as shown on project drawings. lap lengths to comply with AS 3600 and table below u.n.o.

| Bar Size | Lap Length (mm) |
|----------|-----------------|
| N12 | 350 |
| N16 | 500 |
| N20 | 600 |
| N24 | 700 |
| N28 | 850 |
| N32 | 950 |
- R9. Reinforcement not to be welded unless shown on project drawings or approved otherwise.
- R10. Reinforcement not to be bent, cut or heated on site unless approved otherwise.
- R11. Reinforcement to be clean, free of mill scale, rust, oil, grease etc.
- R12. Dowel location tolerance shall be +/- half the diameter of the dowel. The alignment tolerance shall be 2 mm in 300 mm.

PRECAST CONCRETE - TOP SLABS ONLY

- PC1. Precast concrete members to comply with AS 3850.1 and AS 3850.2
- PC2. Precast members are designed for the final installed conditions only. Precast Manufacturer to design the precast members including connections, fixing details, joints, fire resistance, etc. for stability, serviceability and strength requirements required during manufacture, transport, lifting, erection and installation.
- PC3. Precast manufacturer to provide their shop drawings and RPEQ certification for construction of the precast slab to the designs provided in Maintenance Hole drawings including design and construction certification for connections and fixing required for manufacture, transport, erection and installation. (Form 16)
- PC4. Precast concrete members to be supplied and constructed by a precast concrete constructor.
- PC5. Adequately designed temporary bracing, as required, to be provided during erection and installation.
- PC6. Minimum characteristic compressive strength of concrete at removal from moulds shall be 15MPa.
- PC7. All inserts in precast concrete members to be stainless steel.
- PC8. All structural steelwork connections to precast concrete members to be hot dip galvanised to AS 4680 system designation HDG600.
- PC9. Provide 15 mm chamfers or fillets at edges and corners of precast members except at underside of MH slab access opening unless approved otherwise.
- PC10. Precast concrete members not to be erected on reinforced concrete structures until the reinforced concrete structures have been cured to achieve 28 days strength.
- PC11. Weight of top slab to be stamped on the slab.
- PC12. Concrete to be special class to WSA PS-358 with calcareous aggregate.
- PC13. Approved lifting plan is to be available on request.

MAINTENANCE HOLES

STAINLESS STEEL

- SS1. Stainless steel to comply to ASTM A240/A240M and ASTM A480/ A480M.
- SS2. Fabrication by manufacturers ASSDA Accredited or approved equivalent.
- SS3. Stainless steel to be grade 316 or 316L u.n.o.
- SS4. Storage, fabrication and welding to be in approved dedicated areas.
- SS5. Welding, cleaning, pickling and passivation to comply to AS 1554.6 and WTIA Technical Note 16 Welding or Stainless steel.
- SS6. Surface finish to be 2B or better to ASTM A480.
- SS7. Members to be acid passivated after fabrication.
- SS8. Anti galling compound "Duralac" or SEQ-SP approved equivalent required on all fasteners unless approved otherwise.

POLYETHYLENE LINER (PE LINER)

- PL1. The PE Liner shall form a completely sealed and welded robust continuous membrane system. The PE Liner shall be built to the MH construction tolerances without any defects such as bulging, warping, pinching, overlapping.
- PL2. The PE sheets shall:
- Have a minimum thickness of 2.5 mm.
 - Achieve a mechanical bond between the concrete and liner.
 - Be installed by an accredited applicator approved by the Manufacturer.
 - Be tensioned over the formwork within the yield elongation limit prior to securing to the formwork.
- PL3. Preparation, Application and Installation to comply with the manufacturer's specification.
- PL4. Poured concrete to be at a cooler ambient temperature than the temperature when the PE sheets were attached to the formwork.
- PL5. Extrusion welding and weld testing at seams to be undertaken by the approved applicator to the manufacturer's specification.
- PL6. Encapsulation of anchors to be checked by tapping the surface to detect hollow sounds that indicate voids. Voids to be filled by injection grout and PE sheet repaired by extrusion welding over the injection hole.

STRUCTURAL STEEL

- S1. Structural steel workmanship and materials to comply with AS 4100.
- S2. Steel to comply with:
- AS 1163 Grade C350 for rectangular and hollow sections.
 - AS 3678 for plates and floor plates.
 - AS 3679.1 Grade 300 or BHP Grade 300 Plus for parallel flange channels.
 - AS 3679.2 Grade 300 for welded beams and columns.
 - Other sections to comply with AS 3678 or AS 3679 Grade 250.
- S3. Welds to AS 1554.
- Weld category SP.
 - Butt welds to be full penetration welds.
 - Welds to be 6 mm continuous fillet welds all round interfaces.
 - Electrodes to AS 1554 classification E48XX.
- S4. Bolts to AS 1275. Commercial grade 4.6/s to AS 1111 and AS 1112. High strength structural bolts to AS 1252.
- Bolts, nuts and washers M16 and larger to grade 8.8/s. M12 to be grade 4.6/s.
 - Structural connections to be 2 M16 8.8/s with 10 mm thick cleat plate Unless noted otherwise.
 - Install washers under bolt head and nut. Install tapered washers as required.
 - Bolt projection beyond nut to be minimum two threads and maximum 10 mm.
- S5. Hold down bolts to be Grade 4.6/s unless noted otherwise. Hold down bolts groups to be rigidly tied for correct set-out and location.
- S6. Seal weld hollow sections with 3 mm thick cap plate unless noted otherwise.
- S7. Grout base plates with high strength non-shrink pre-mixed grout before columns are loaded.

STEEL WORK PROTECTIVE COATING

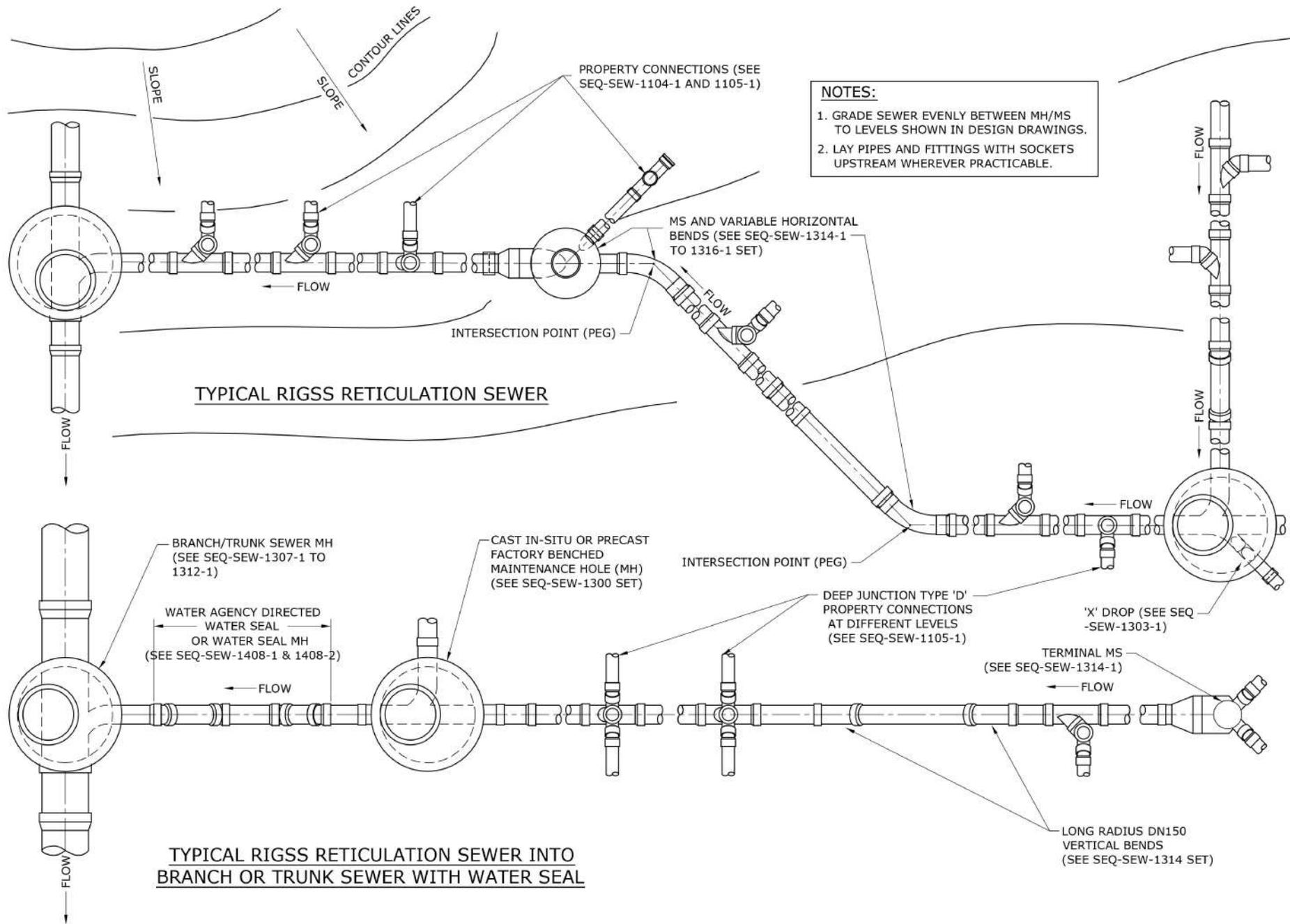
- P1. Steelwork to be hot dip galvanised to AS 4680 system designation HDG600 and threaded fasteners to AS 1214.
- P2. Damaged galvanised coating repair:
- Power clean to AS 1627.2
 - Solvent clean/ degrease to AS 1627.1
 - Apply tin/zinc to pre-heated steel overlapping the galvanising coating.

REPAIR OF EXPOSED REINFORCEMENT AND CONCRETE AROUND NEW PIPE PENETRATION IN EXISTING CONCRETE

- NP1. Exposed reinforcement and concrete repaired as follows:
- Core holes on each corner of area to be cut.
 - Saw cut concrete, perpendicular to concrete surface, 15 mm deep around perimeter of the opening.
 - Breakout remaining concrete around the opening without damaging reinforcement.
 - Cut exposed reinforcement so that is 30 mm clear of the pipe.
 - Clean concrete surface and remove all loose material.
 - Abrasive blast clean exposed reinforcement. If it is corroded and apply "Nitoprime" zinc rich primer unless approved otherwise.
 - Thoroughly soak substrate with clean water for a minimum of two hours.
 - Place N12 circular trimmer on both sides of the pipe flange.
 - Install Hydrotite CJ-07-25 seal on pipe 50 mm from concrete surface unless approved otherwise.
 - Apply "Nitobond HAR" primer to concrete surface unless approved otherwise.
 - Pour concrete/grout under pressure to fill opening.
 - Fill concrete/grout to supplier requirements.

REPAIR OF EXPOSED REINFORCEMENT AND ANCHOR AT CONCRETE SURFACE

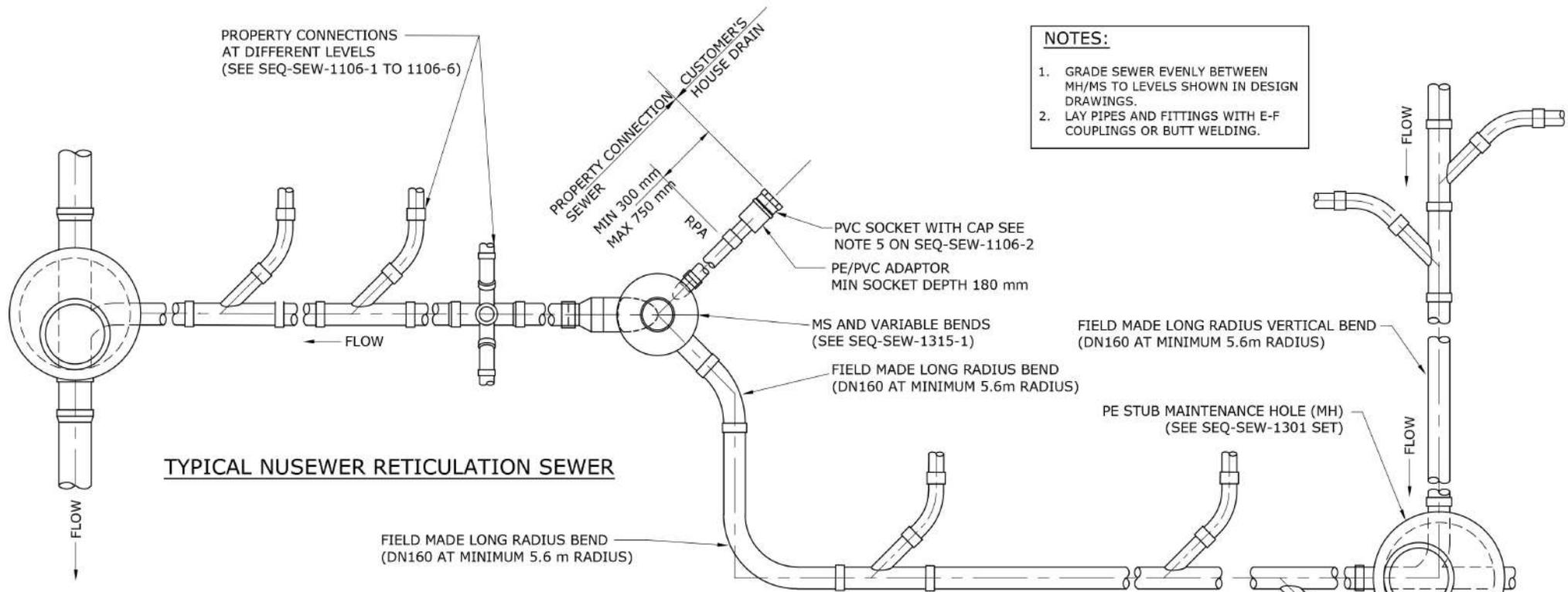
- ES1. All exposed reinforcement and mild steel anchored to be repaired as follows:
- Saw cut or chisel cut concrete, perpendicular to concrete surface, 15 mm deep around reinforcement/anchor.
 - Breakout concrete around reinforcement/anchor to a depth of 60 mm.
 - Cut exposed reinforcement/anchor at a minimum depth of 50 mm from concrete surface.
 - Clean concrete surface and remove all loose material.
 - Abrasive blast clean exposed reinforcement/anchor. Apply "Nitoprime" Zinc rich primer to reinforcement/anchor unless approved otherwise.
 - Thoroughly soak substrate with clean water.
 - Apply "Nitobond HAR" primer to concrete unless approved otherwise.
 - Apply "Renderoc HB40" to fill opening unless approved otherwise.



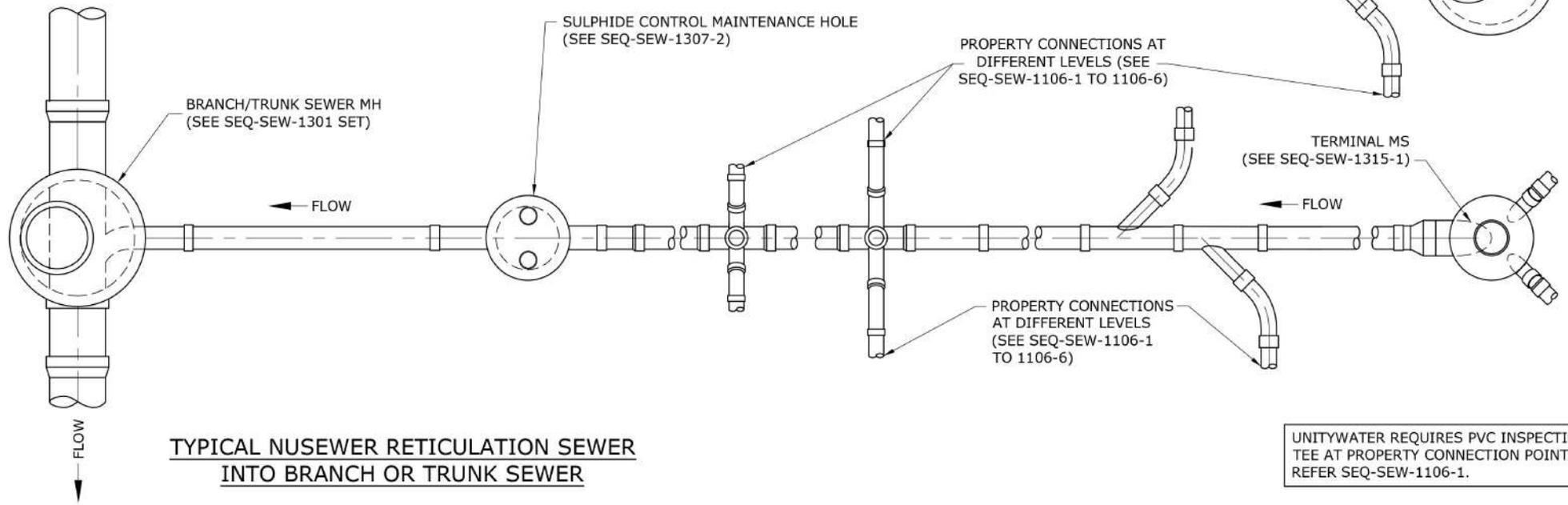
TYPICAL RIGSS RETICULATION SEWER

TYPICAL RIGSS RETICULATION SEWER INTO BRANCH OR TRUNK SEWER WITH WATER SEAL

- NOTES:**
1. GRADE SEWER EVENLY BETWEEN MH/MS TO LEVELS SHOWN IN DESIGN DRAWINGS.
 2. LAY PIPES AND FITTINGS WITH E-F COUPLINGS OR BUTT WELDING.

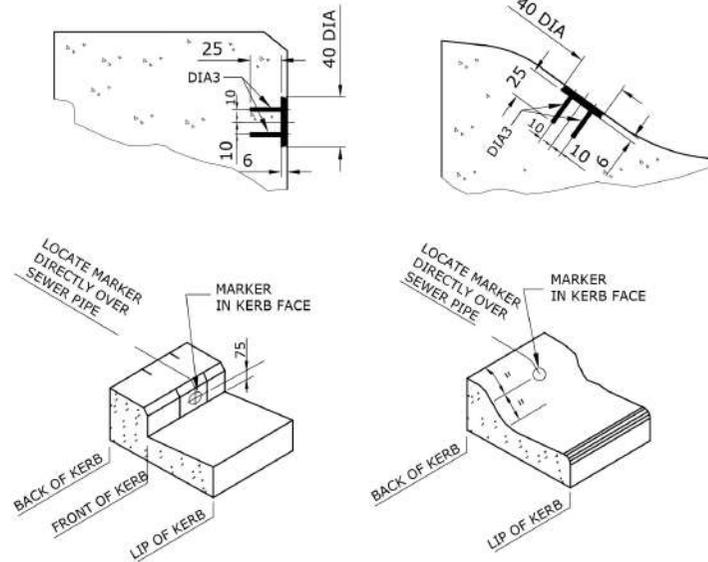
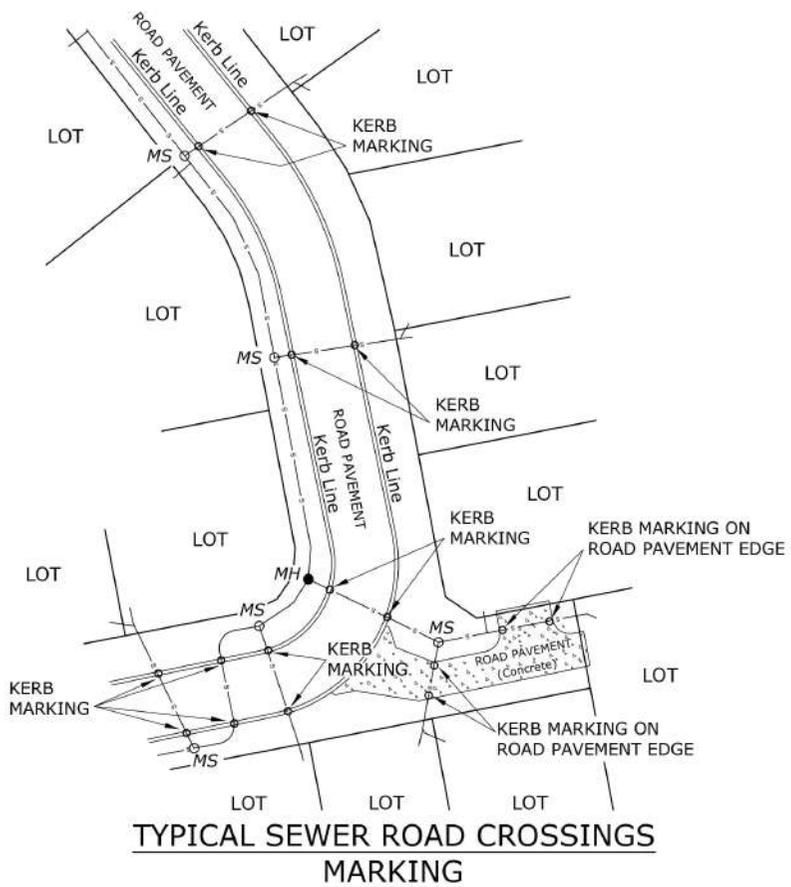


TYPICAL NUSEWER RETICULATION SEWER



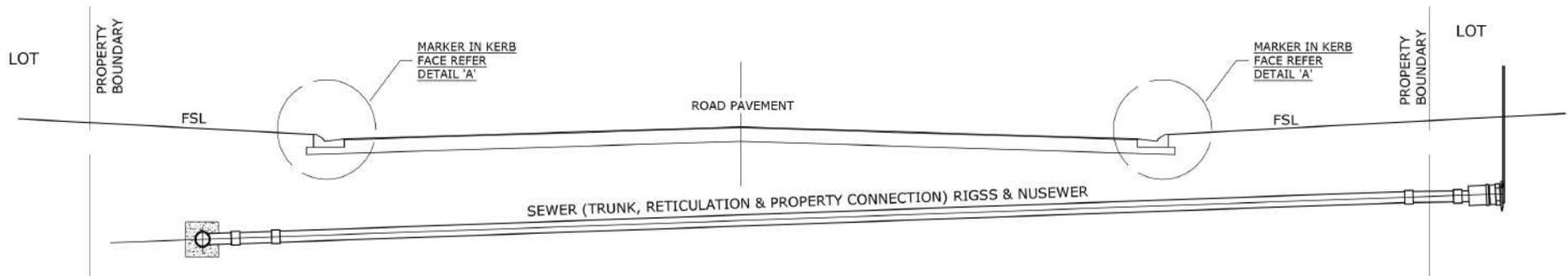
TYPICAL NUSEWER RETICULATION SEWER INTO BRANCH OR TRUNK SEWER

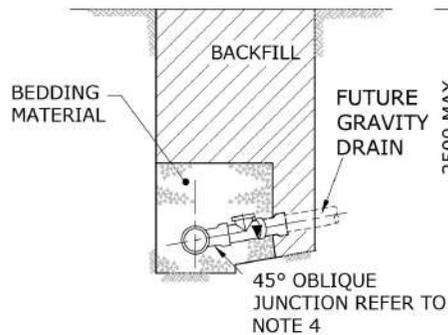
UNITYWATER REQUIRES PVC INSPECTION TEE AT PROPERTY CONNECTION POINTS, REFER SEQ-SEW-1106-1.



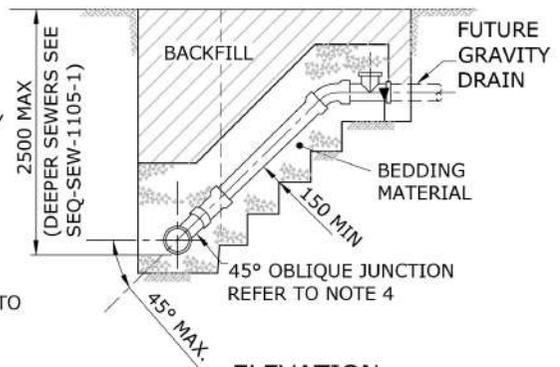
NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. KERB MARKERS SHALL BE LOCATED DIRECTLY OVER THE CENTRE-LINE OF THE SEWER.
3. REFER SEQ IPAM FOR APPROVED KERB MARKERS

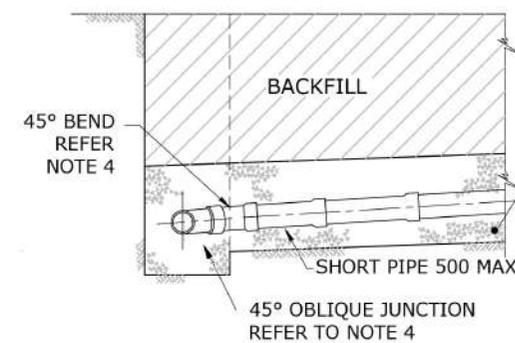




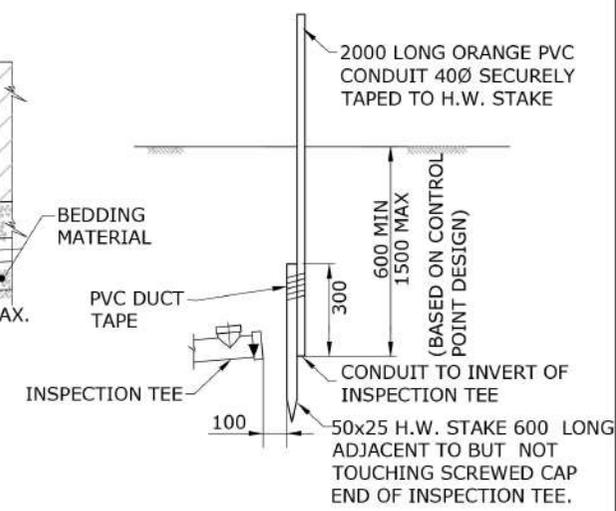
ELEVATION



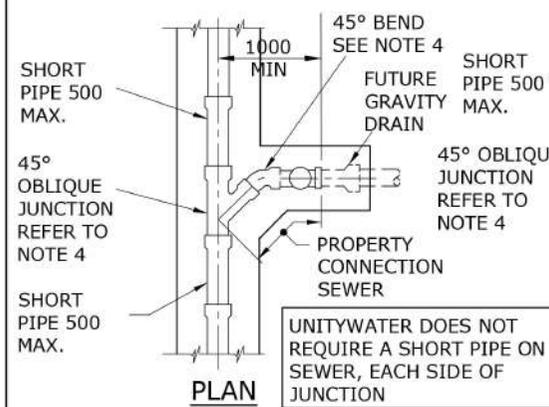
ELEVATION



ELEVATION

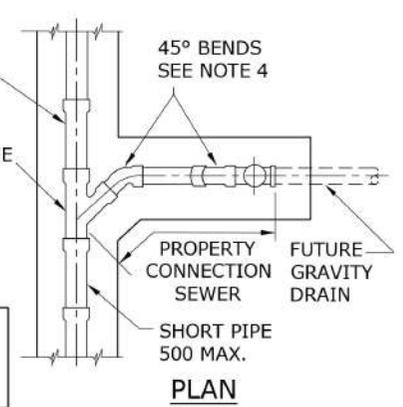


SP HOUSE CONNECTION INSPECTION TEE LOCATION MARKER ARRANGEMENT



TYPE A PROPERTY CONNECTION

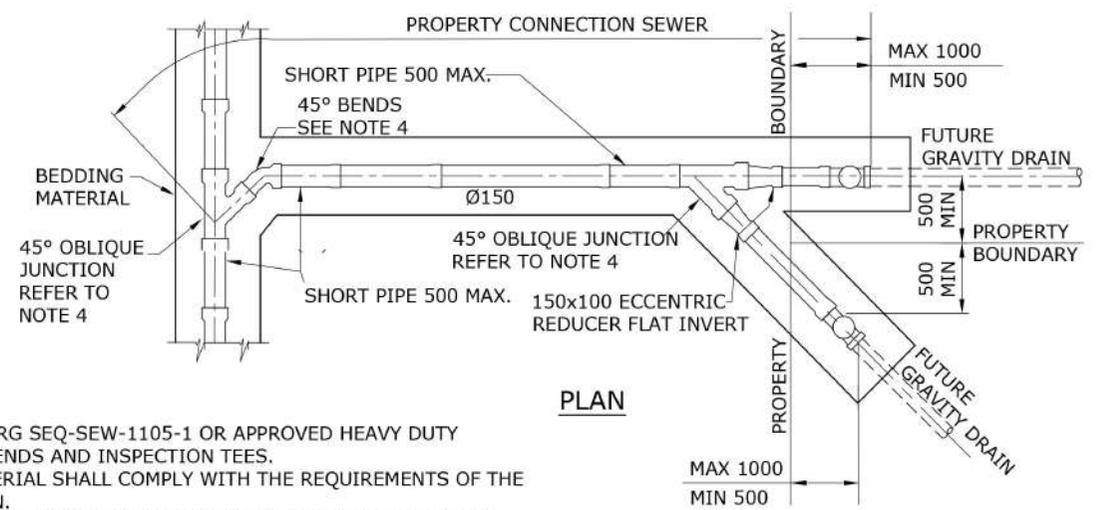
FOR ROAD CROSSING REFER TO NOTE 3



TYPE B PROPERTY CONNECTION SLOPE UP TYPE

FOR ROAD CROSSING REFER TO NOTE 3

CONNECTION POINT INVERT LEVEL, REFER SEQ-SEW-1100-2 AND SEQ-SEW-1101-2 FOR DESIGN FORMAT



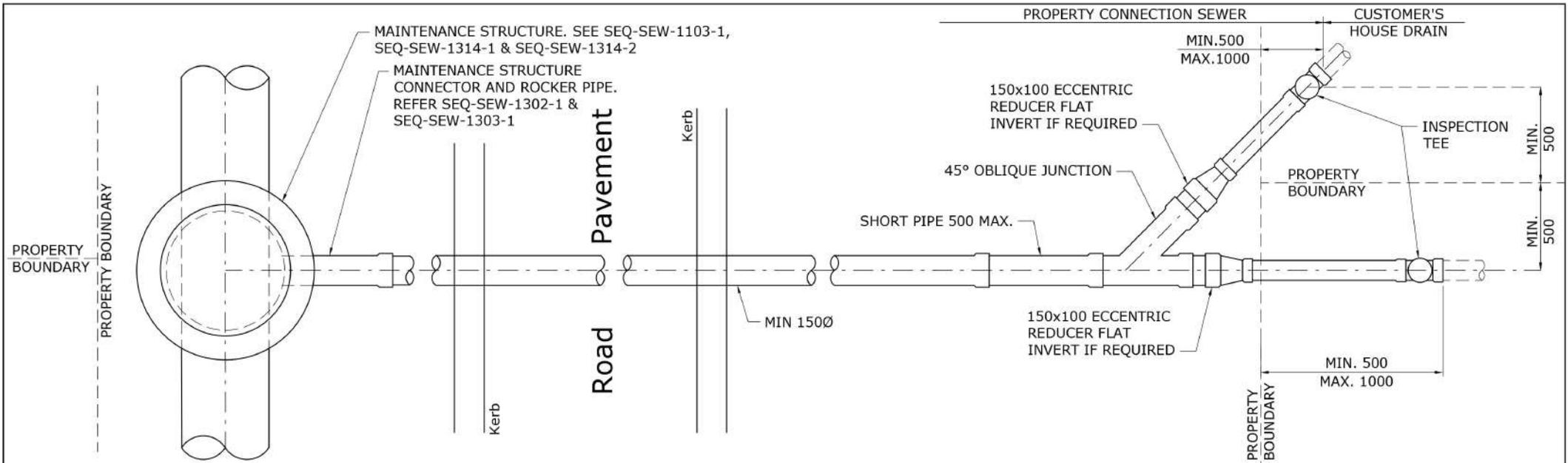
PLAN

DUAL PROPERTY CONNECTION TYPE A SHOWN

FOR ROAD CROSSING REFER TO NOTE 3

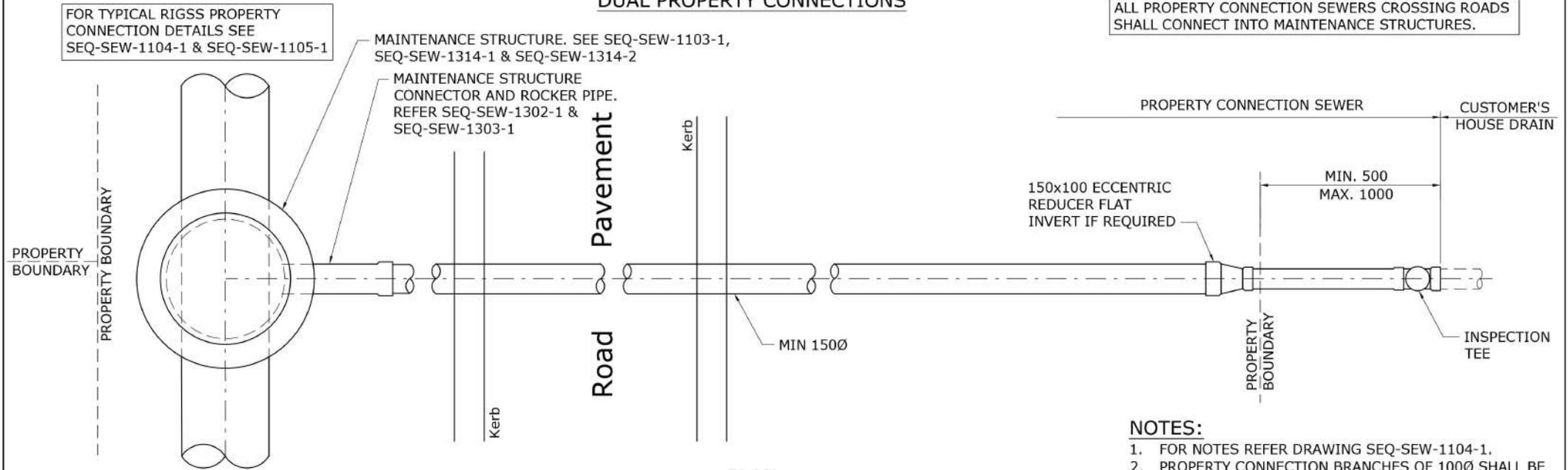
NOTES:

1. ALL PROPERTY CONNECTION SEWERS SHALL HAVE A MINIMUM GRADE OF 1 IN 60 FOR Ø100 AND 1 IN 100 FOR Ø150.
2. LIMIT OF WORKS - ALL PROPERTY CONNECTION SEWERS SHALL FINISH WITH AN INSPECTION TEE WITH THE END AND INSPECTION OPENING SCREW CAPPED. INSPECTION TEE INSTALLED TO THE INVERT LEVEL SHOWN ON THE DRAWINGS.
3. ALL PROPERTY CONNECTION SEWERS CROSSING ROADS SHALL CONNECT TO SEWER MAINS VIA A MAINTENANCE STRUCTURE, SEE SEQ-SEW-1104-3.
4. ALL PROPERTY CONNECTION SEWER FITTINGS SUCH AS MOULDED OBLIQUE JUNCTIONS, BENDS AND INSPECTION TEES, SHALL BE FIBREGLASS REINFORCED AS DETAILED FOR THE TYPE 'D' JUNCTION WITHIN STD DRG SEQ-SEW-1105-1 OR APPROVED HEAVY DUTY JUNCTIONS, BENDS AND INSPECTION TEES.
5. BEDDING MATERIAL SHALL COMPLY WITH THE REQUIREMENTS OF THE SPECIFICATION.
6. ALL PIPE JOINTS SHALL CONFORM WITH CODE SPECIFICATION AND THE MANUFACTURERS RECOMMENDATIONS.
7. FOR RESPONSIBILITY LIMITS OF CONSTRUCTED WORKS, REFER STD DRG SEQ-SEW-1105-1.
8. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
9. FOR RCC AND LCC, PROVIDE AT LEAST ONE MAINTENANCE SHAFT ON THE PROPERTY CONNECTION SEWER IF IT TRAVERSES A LOT OTHER THAN THE LOT IT IS SERVICING FOR MORE THAN 10 METRES.



PLAN
DUAL PROPERTY CONNECTIONS

ALL PROPERTY CONNECTION SEWERS CROSSING ROADS SHALL CONNECT INTO MAINTENANCE STRUCTURES.



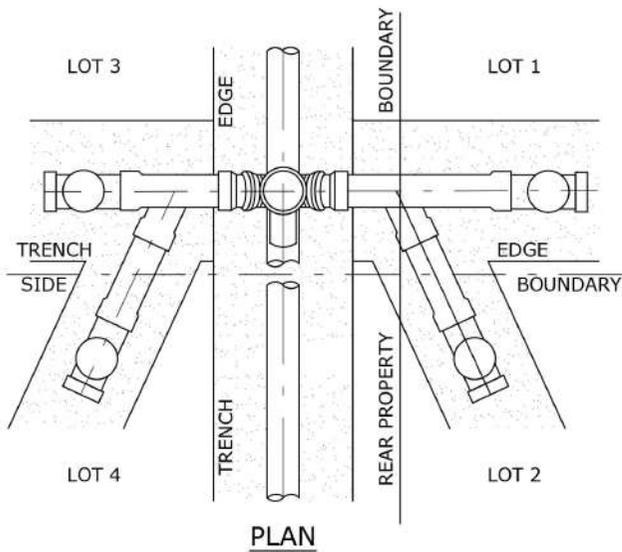
PLAN
SINGLE PROPERTY CONNECTION

- NOTES:**
- FOR NOTES REFER DRAWING SEQ-SEW-1104-1.
 - PROPERTY CONNECTION BRANCHES OF 100Ø SHALL BE GRADED AT A MIN OF 1 IN 60. FOR 150Ø BRANCHES THE GRADE SHALL BE MIN 1 IN 100.

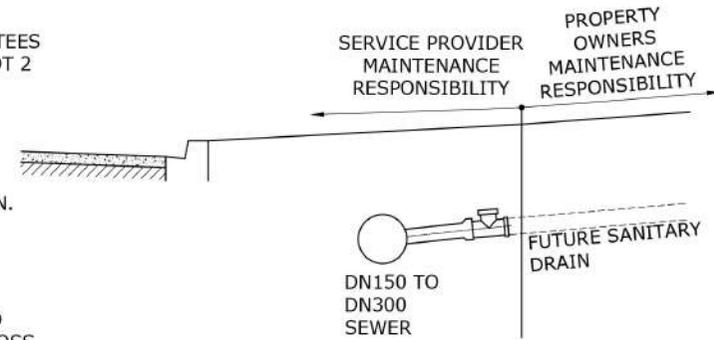
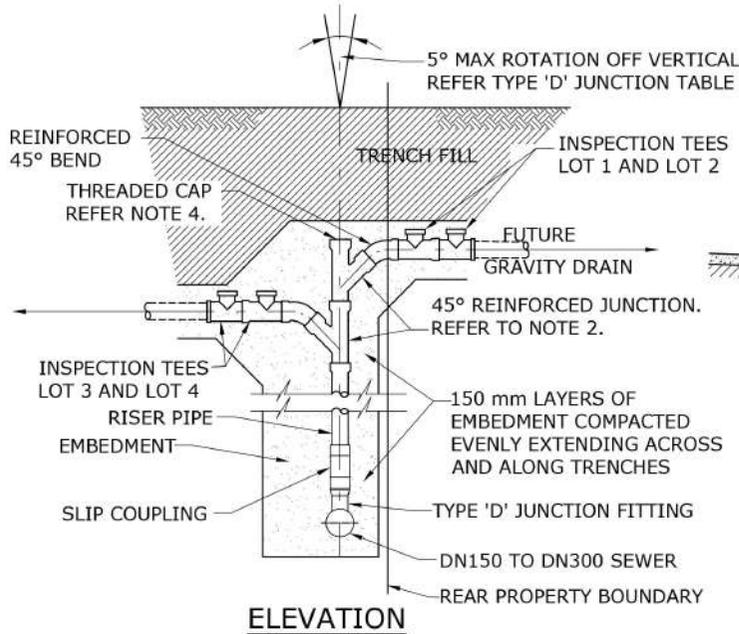
FOR TYPICAL RIGSS PROPERTY CONNECTION DETAILS SEE SEQ-SEW-1104-1 & SEQ-SEW-1105-1

MAINTENANCE STRUCTURE. SEE SEQ-SEW-1103-1, SEQ-SEW-1314-1 & SEQ-SEW-1314-2
 MAINTENANCE STRUCTURE CONNECTOR AND ROCKER PIPE. REFER SEQ-SEW-1302-1 & SEQ-SEW-1303-1

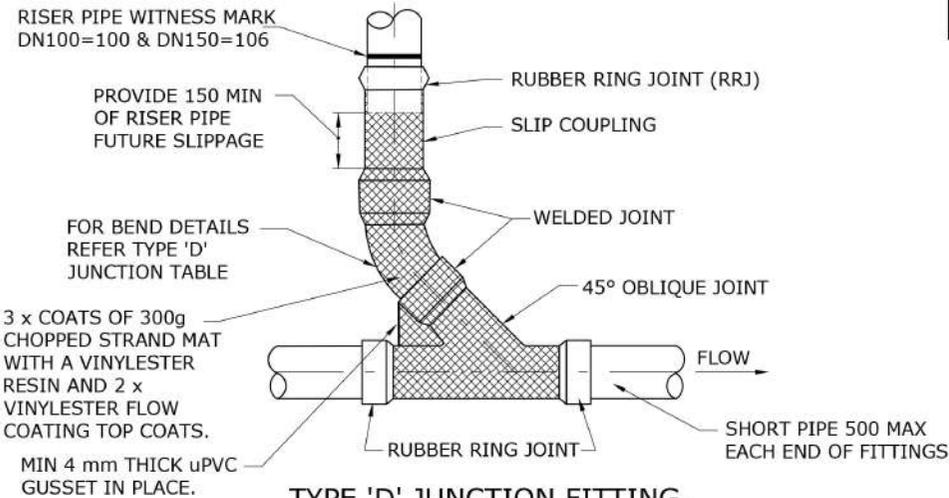
MAINTENANCE STRUCTURE. SEE SEQ-SEW-1103-1, SEQ-SEW-1314-1 & SEQ-SEW-1314-2
 MAINTENANCE STRUCTURE CONNECTOR AND ROCKER PIPE. REFER SEQ-SEW-1302-1 & SEQ-SEW-1303-1



**TYPE D
PROPERTY CONNECTION**
(MINIMUM OF 1 MAXIMUM OF 4)



**TYPICAL CONNECTION
MAINTENANCE RESPONSIBILITY**
(TYPE A SHOWN)



TYPE 'D' JUNCTION FITTING.
(150 x 150 COMPONENTS SHOWN)(SERVING 2 OR MORE PREMISES)

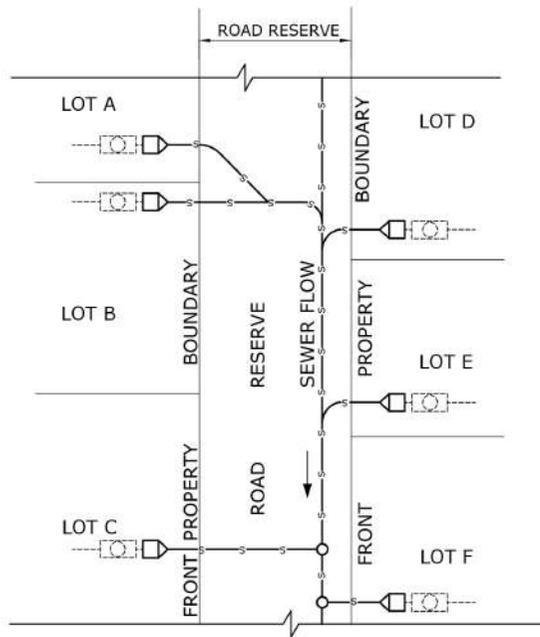
TYPE D JUNCTIONS USED FOR SEWERS DEEPER THAN 2500

TYPE 'D' JUNCTION TABLE

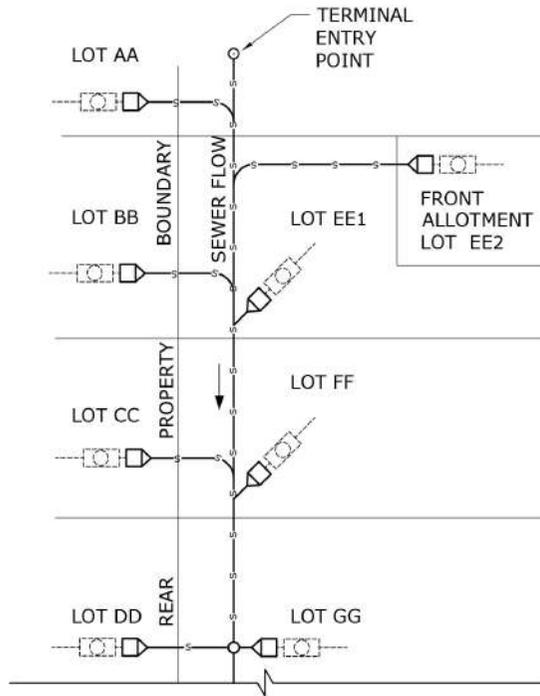
| OPTIONS | BEND | SEWER GRADE |
|---------|-------------|---------------|
| D-1 | 45° | 1:150 TO 1:20 |
| D-2 | 40° | 1:20 TO 1:10 |
| D-3 | 35° | 1:10 TO 1:6 |
| D-4 | AS REQUIRED | 1:5 TO 1:1 |

NOTES:

1. BEDDING MATERIAL AND GENERAL COMPONENTRY SHALL COMPLY WITH THE REQUIREMENTS OF THE CODE SPECIFICATION AND ANY ADDENDUMS.
2. TYPE "D" JUNCTION FITTINGS SHALL BE FACTORY ASSEMBLED AND CERTIFIED uPVC SEWER FITTINGS COMPLYING WITH AS/NZS 1260 THAT HAVE BEEN ASSEMBLED AND REINFORCED WITH FIBREGLASS AS SHOWN IN THE DRAWING. OBLIQUE JUNCTIONS AND 45° BENDS SHALL BE REINFORCED WITH FIBREGLASS AS SHOWN FOR A TYPE D JUNCTION.
3. THE SLIP COUPLING COMPONENT OF TYPE "D" JUNCTION FITTING SHALL BE MARKED TO IDENTIFY THE INSTALLATION REQUIREMENTS OF THE FITTING AND THE VERTICAL RISER PIPE, SEE TABLE ABOVE.
4. THREADED LOCK DOWN QUICK RELEASE END CAPS SHALL BE SEALED BY A RUBBER RING, SCREW DOWN CAPS THAT UTILISE STAINLESS STEEL SCREWS ARE NOT PERMITTED.
5. FOR TYPICAL INSTALLATION DETAILS OF PROPERTY CONNECTION OPTIONS AND THE INSPECTION TEES AND FOR THE CONNECTION POINT DEPTH CONTROL, REFER SEQ-SEW-1104-1.
6. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.



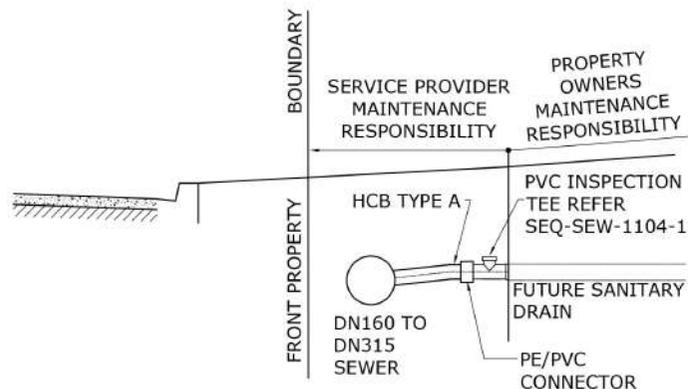
**PROPERTY CONNECTIONS
SEWER IN ROAD RESERVE**



**PROPERTY CONNECTIONS
SEWER AT REAR OF LOTS**

LEGEND

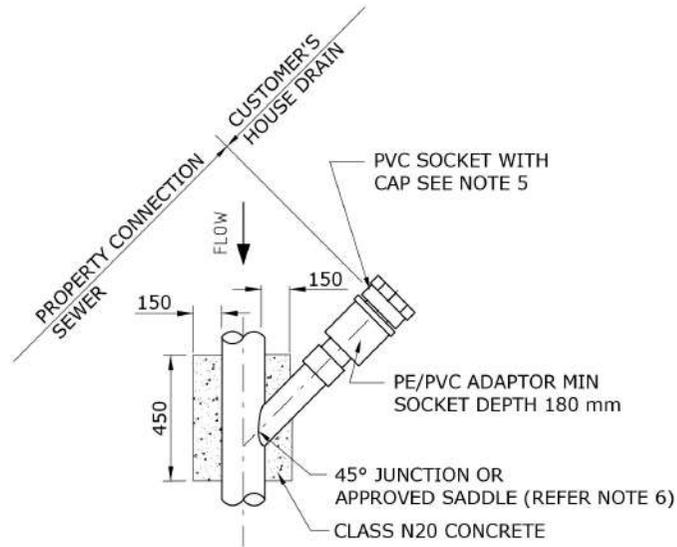
-  PE/PVC ADAPTOR
-  VERTICAL RISER
-  CUSTOMER'S HOUSE DRAIN - INSPECTION SHAFT RISER TO COMPLY WITH AS/NZS 3500.2



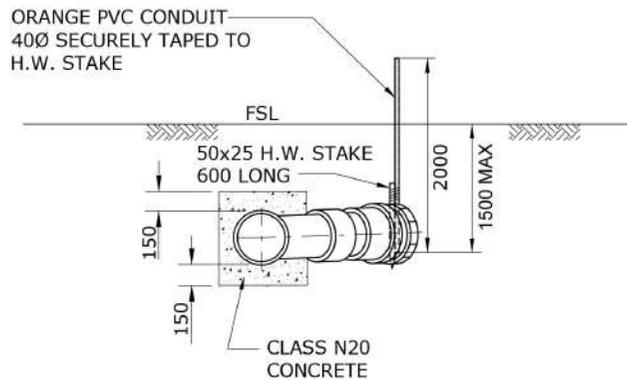
**UNITYWATER TYPICAL CONNECTION
MAINTENANCE RESPONSIBILITY**

NOTES

1. MAXIMUM DEPTH TO PROPERTY CONNECTION INVERT SHALL BE 1500 mm.
2. CONCRETE SHALL BE CLASS N20 TO WSA PS-357 EXCEPT FOR MAINTENANCE HOLES WHICH ARE SPECIAL CLASS TO WSA PS-358.
3. EACH SINGLE RESIDENTIAL ALLOTMENT SHALL BE SERVED BY A MINIMUM DN110 PROPERTY CONNECTION. FOR OTHER PREMISES, THE DIAMETER OF PROPERTY CONNECTIONS SHALL BE PROVIDED AS SPECIFIED IN THIS CODE.
4. PROPERTY CONNECTION JUNCTIONS SHALL BE LOCATED 1.2 m FROM THE DOWNSTREAM ALIGNMENT. IF THIS IS NOT POSSIBLE PROPERTY CONNECTION JUNCTIONS SHALL NOT BE GREATER THAN 3.5 m FROM THE DOWNSTREAM ALIGNMENT.
5. THE CENTRE OF THE OPENING OF PROPERTY CONNECTION BRANCHES SHALL EXTEND INTO THE PROPERTY A MINIMUM OF 300 mm AND A MAXIMUM OF 750 mm. UNITYWATER REQUIRES MINIMUM EXTENSION OF 500 mm INTO PROPERTY AND A MAXIMUM OF 1000 mm.
6. PROPERTY CONNECTION BRANCHES OF DN110 SHALL BE GRADED AT A MIN OF 1 IN 60. FOR DN160 PC BRANCHES THE GRADE SHALL BE MIN 1 IN 100.
7. THE OVERT LEVEL OF THE PROPERTY CONNECTION JUNCTION SHALL NOT BE LOWER THAN THE OVERT LEVEL OF THE SEWER AT THE JUNCTION.
8. ALL PIPES, FITTINGS AND CONCRETE SHALL HAVE A MINIMUM COVER OF 1150 mm IN FOOTPATHS AND ROADWAYS.
9. LOCATE SEWERS AND PROPERTY CONNECTIONS AS SHOWN ON THE DRAWINGS.
10. REFER DRAWING No SEQ-SEW-1106-2 TO SEQ-SEW-1106-6 FOR PROPERTY CONNECTION DETAILS.
11. UNITYWATER REQUIRES INSTALLATION OF A FIBREGLASS REINFORCED uPVC INSPECTION TEE AT ALL PROPERTY CONNECTION POINTS DOWNSTREAM OF CUSTOMER DRAINS, REFER SEQ-SEW-1104-1 NOTE 2.

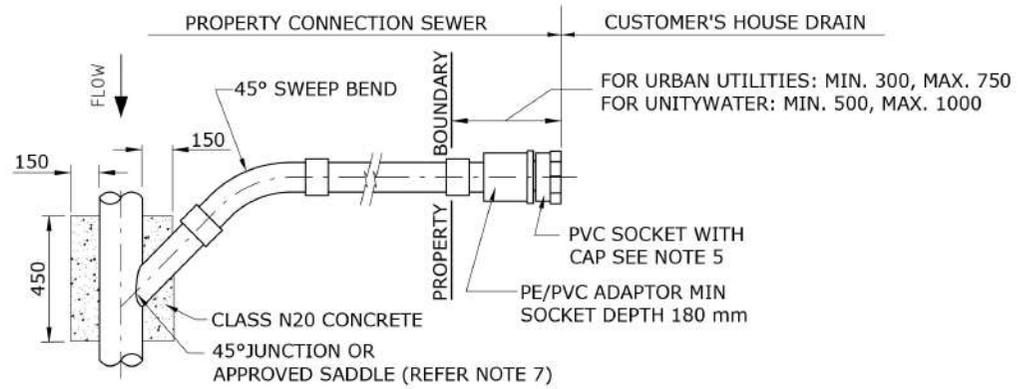


PLAN - TYPE A1

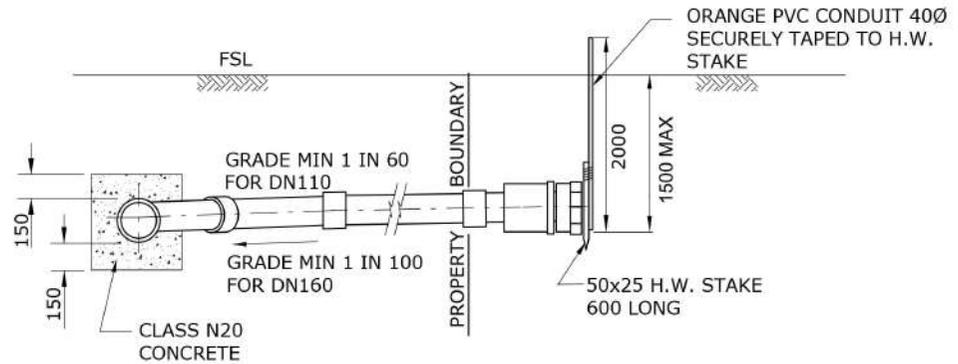


ELEVATION - TYPE A1

UNITYWATER REQUIRES INSPECTION TEE AT PROPERTY CONNECTION POINTS, REFER SEQ-SEW-1106-1 NOTE 11



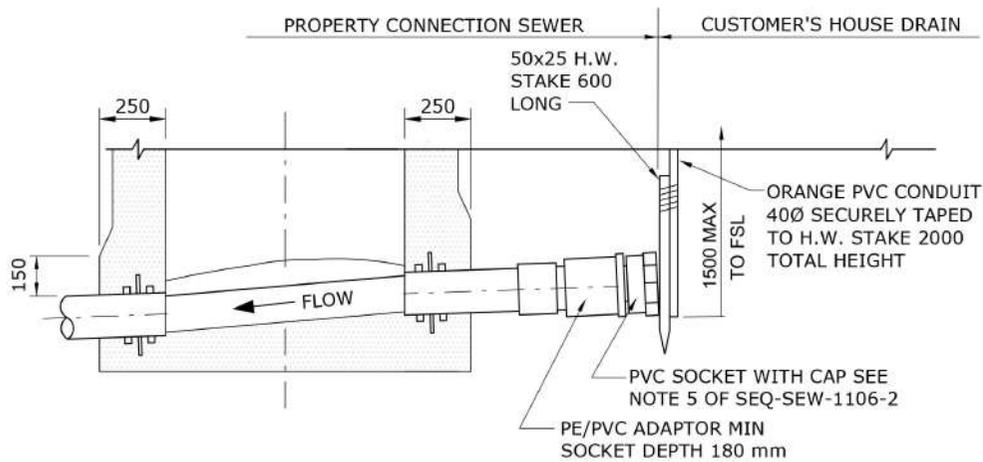
PLAN - TYPE A2



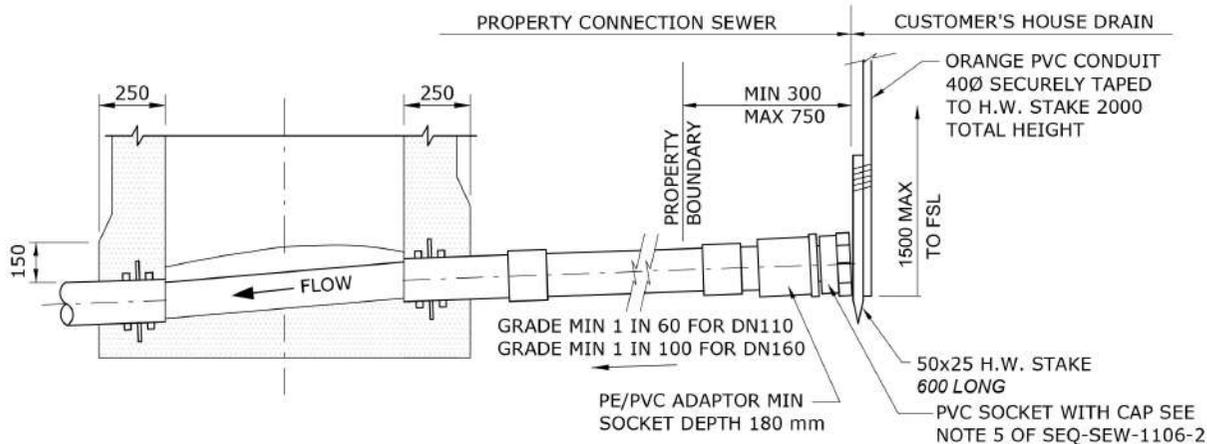
ELEVATION - TYPE A2

NOTES

1. ALL PROPERTY CONNECTION SEWERS SHALL HAVE A PE/PVC ADAPTOR.
2. ORANGE PVC CONDUIT AND HARDWOOD STAKE SHALL BE INSTALLED AT THE END OF EACH PROPERTY CONNECTION AS SHOWN.
3. PROVIDE MIN 150mm CLASS N20 CONCRETE SURROUND TO JUNCTIONS WHERE SHOWN ON DRAWINGS. THE CONCRETE SURROUND SHALL BE MIN 450mm IN LENGTH OR TO SUIT THE JUNCTION LENGTH
4. FOR MORE NOTES REFER DRAWING SEQ-SEW-1106-1.
5. A PVC SOCKET WITH RUBBER SEALED SCREWED CAP IS REQUIRED BEFORE HOUSE DRAIN PLUMBING IS CONNECTED INTO THE PE/PVC ADAPTOR.
6. FOR RADIUS OF A SWEEP BEND REFER TO CLAUSE 5.3.8.1 OF SEQ SEWERAGE CODE.
7. AN 88° SWEEP JUNCTION MAY BE USED IN LIEU OF A 45° JUNCTION AND 45° SWEEP BEND.
8. AN 88° SWEEP JUNCTION MAY BE USED IN LIEU OF A 45° JUNCTION.



ELEVATION - TYPE A3



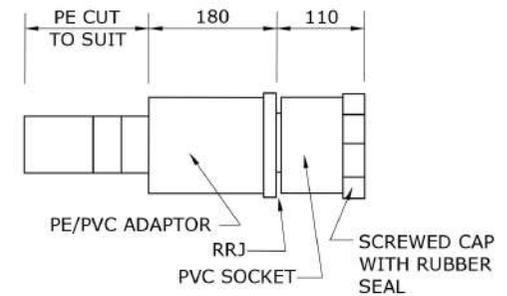
ELEVATION - TYPE A4

PROPERTY CONNECTION TABLE

| | 1 | 2 | 3** | | 4** | |
|-------------------------------------|---|---|-----|--|-----|--|
| TYPE A FULL DEPTH SEWER DEPTH <1500 | | | | | | |

* PB STANDS FOR PROPERTY BOUNDARY.

** THIS DRAWING SHALL BE USED IN CONJUNCTION WITH SEQ-SEW-1301-2 & 4 AND SEQ-SEW-1315-1 FOR TYPES A3 & A4.



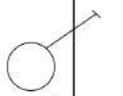
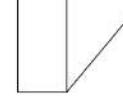
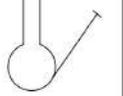
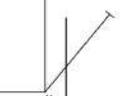
PE/PVC ADAPTOR AND PVC SOCKET WITH CAP

NOTES

1. REFER DWG No SEQ-SEW-1106-1 & 2 FOR NOTES.

UNITY WATER REQUIRES INSPECTION TEE AT PROPERTY CONNECTION POINTS, REFER SEQ-SEW-1106-1 NOTE 11

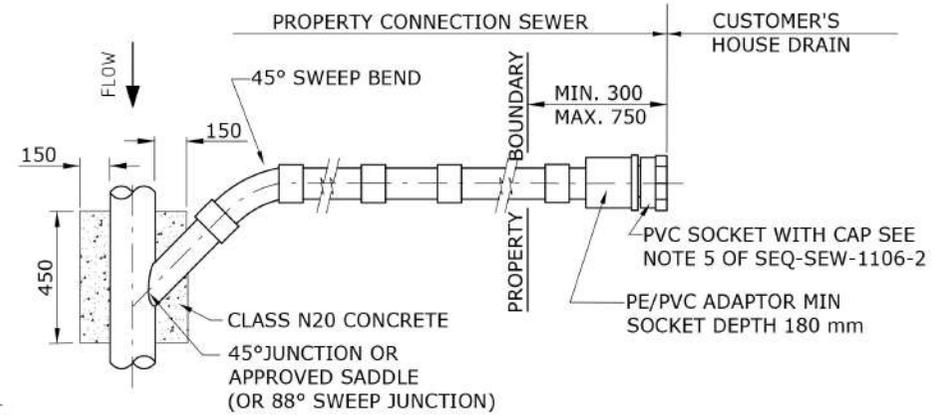
PROPERTY CONNECTION TABLE

| | 1** | 2** | 3*** | 4*** |
|---|---|---|---|--|
| <p>TYPE B SLOPED CONNECTION SEWER DEPTH > 1500</p>  |  |  | <p>MH</p>  | <p>MH</p>  |

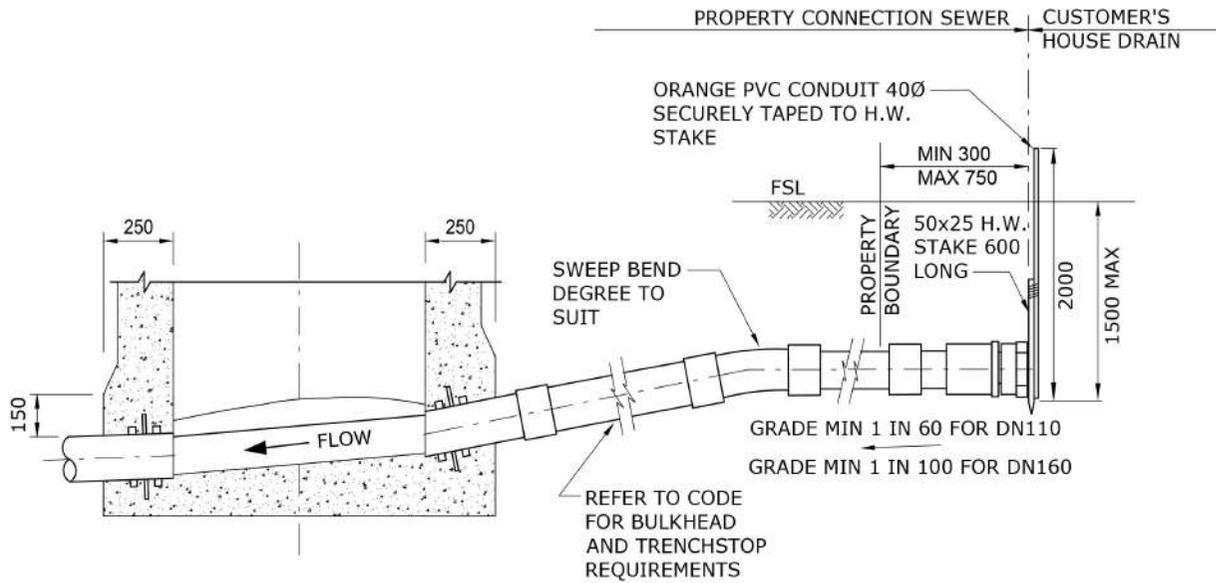
* PB STANDS FOR PROPERTY BOUNDARY.

** TYPES B1 & B2 MAY ONLY BE USED FOR SEWER DEPTHS UP TO 3 METRES.

*** THIS DRAWING SHALL BE USED IN CONJUNCTION WITH SEQ-SEW-1301-2 & 4 AND SEQ-SEW-1315-1 FOR TYPES B3 & B4.

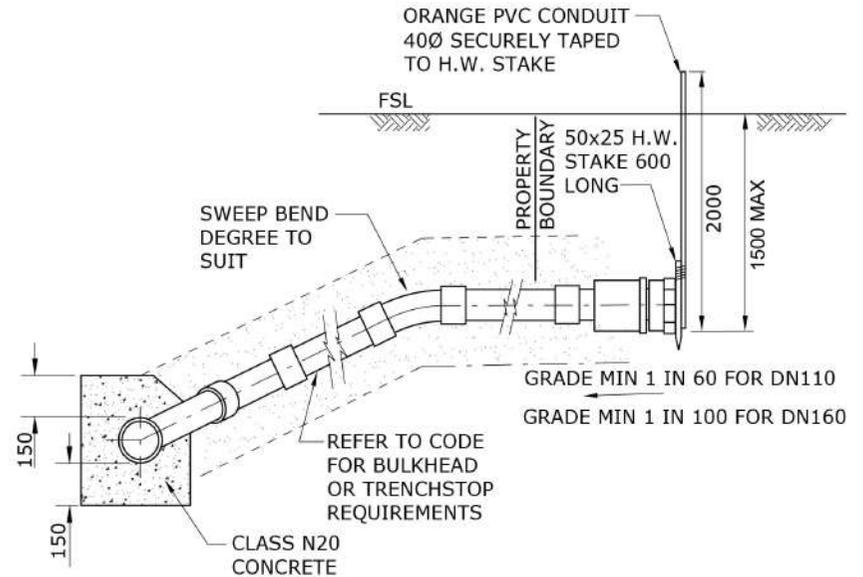


**PLAN - TYPE B2
(B1 SIMILAR)**



**ELEVATION - TYPE B4
(B3 SIMILAR)**

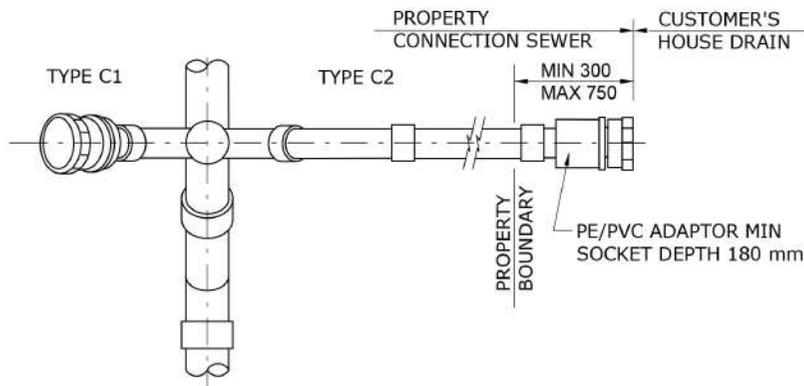
UNITYWATER REQUIRES INSPECTION TEE AT PROPERTY CONNECTION POINTS, REFER SEQ-SEW-1106-1 NOTE 11



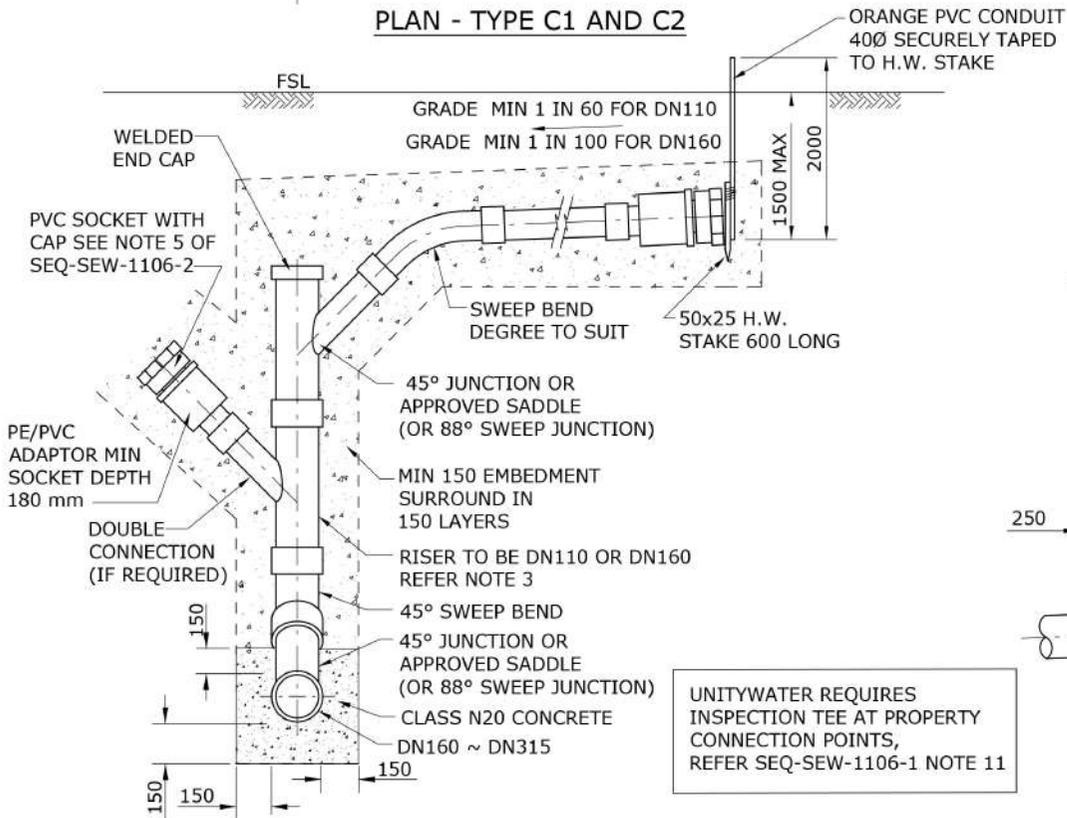
**ELEVATION - TYPE B2
(B1 SIMILAR)**

NOTES

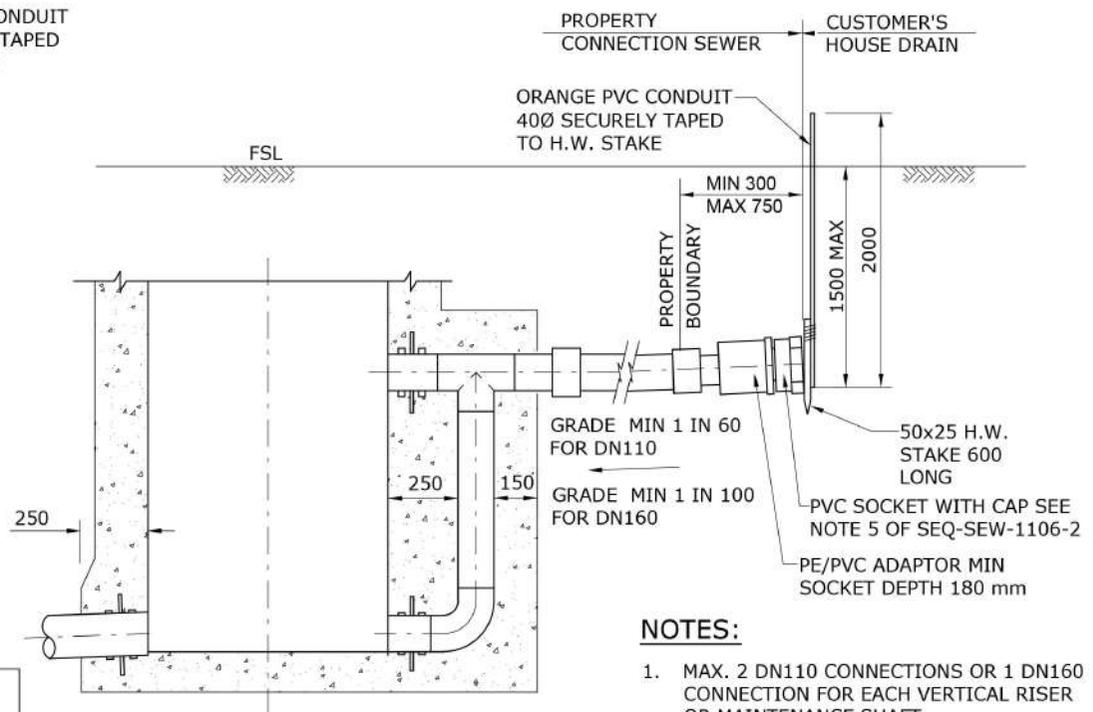
1. REFER DRAWING No. SEQ-SEW-1106-1 & 2 FOR NOTES.



PLAN - TYPE C1 AND C2



**ELEVATION - TYPE C1 AND C2
VERTICAL RISER SINGLE OR DOUBLE CONNECTIONS**



**SECTION - TYPE C4
(C3 SIMILAR)**

PROPERTY CONNECTION TABLE

| | 1** | 2** | 3*** | 4*** |
|--|-----|-----|------|------|
| TYPE C VERTICAL RISER AND MH/MS DROP | | | | |
| SEWER DEPTH > 1500 | | | | |

* PB STANDS FOR PROPERTY BOUNDARY.

** TYPES C1 & C2 MAY ONLY BE USED FOR SEWER DEPTHS UP TO 3 METRES.

*** THIS DRAWING SHALL BE USED IN CONJUNCTION WITH SEQ-SEW-1301-2 & 4 AND SEQ-SEW-1315-1 FOR TYPES C3 & C4.

NOTES:

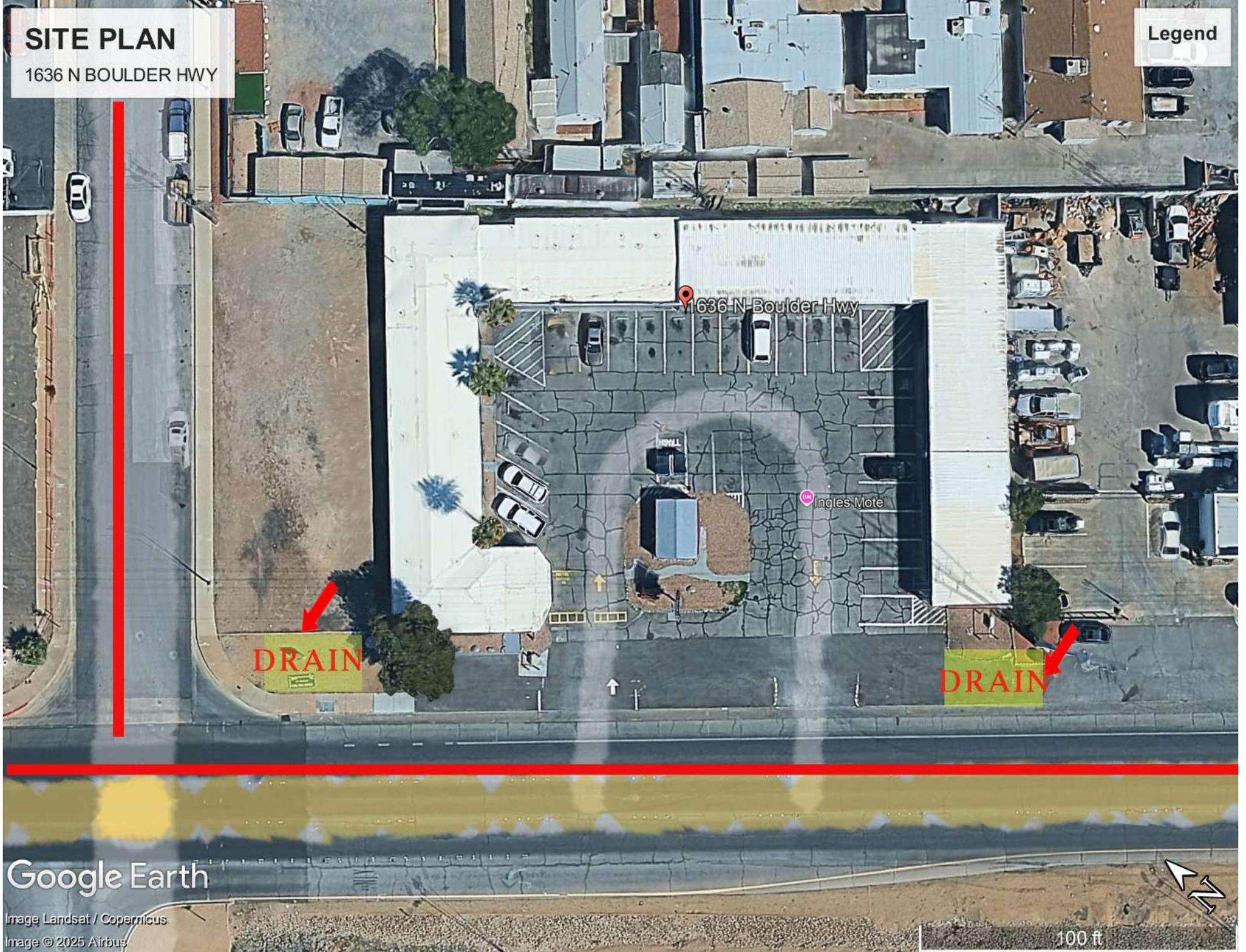
1. MAX. 2 DN110 CONNECTIONS OR 1 DN160 CONNECTION FOR EACH VERTICAL RISER OR MAINTENANCE SHAFT.
2. REFER SEQ-SEW-1106-1 & 2 FOR MORE NOTES.
3. DIAMETER OF RISER IS NOT TO BE LESS THAN THE LARGEST CONNECTED PROPERTY SEWER.
4. UW PREFERS INTERNAL DROP INSTEAD OF EXTERNAL DROP FOR BOTH EXISTING AND NEW CONCRETE MH. REFER SEQ-SEW-1301-8 NOTE 8.

DRAIN DRAWINGS

SITE PLAN

1636 N BOULDER HWY

Legend



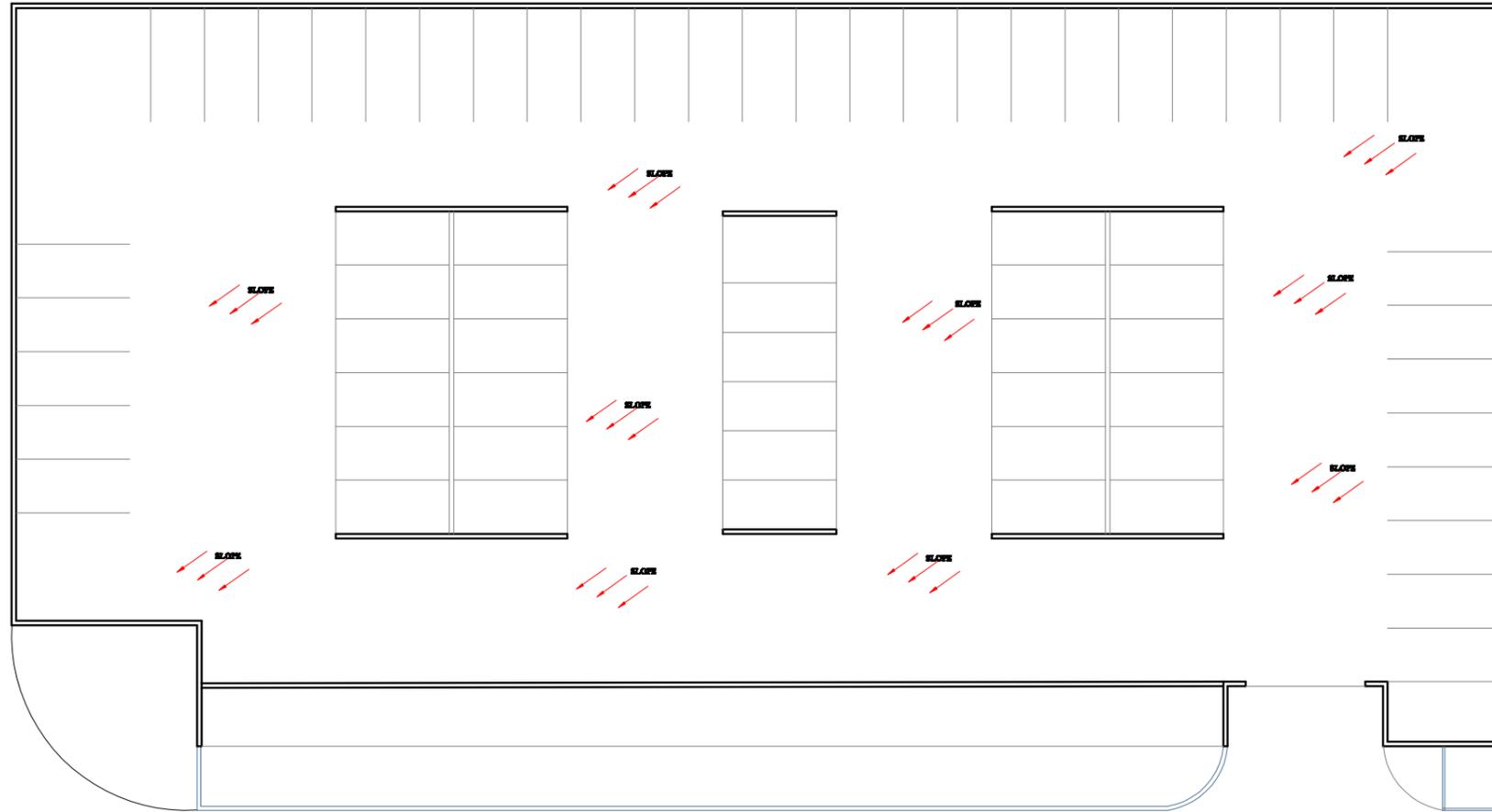
Google Earth

Image Landsat / Copernicus
Image © 2025 Airbus

100 ft

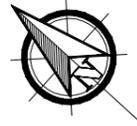


E COOGAN DR

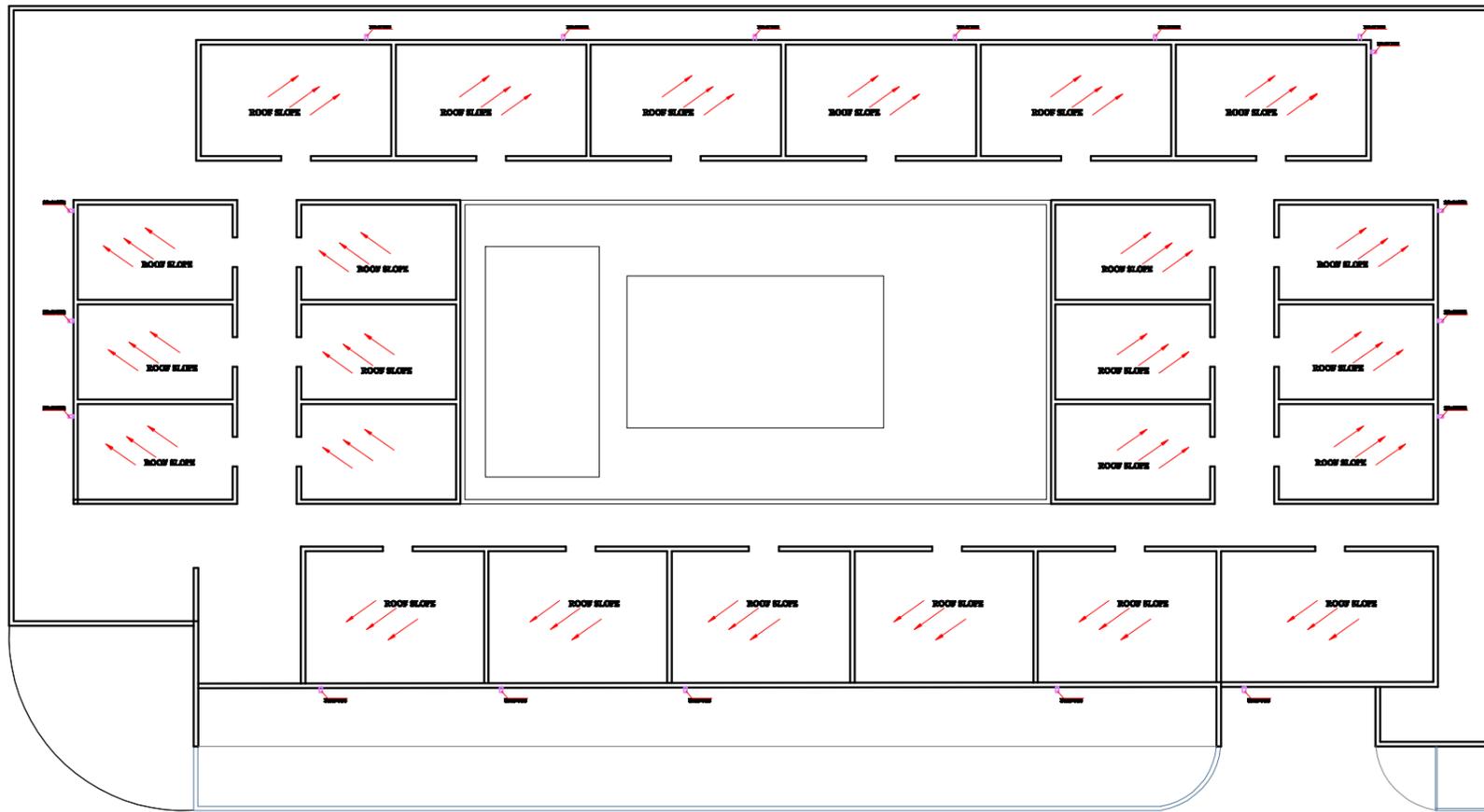


N BOULDER HWY

GROUND FLOOR
DRAIN SLOPE



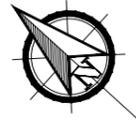
E COOGAN DR



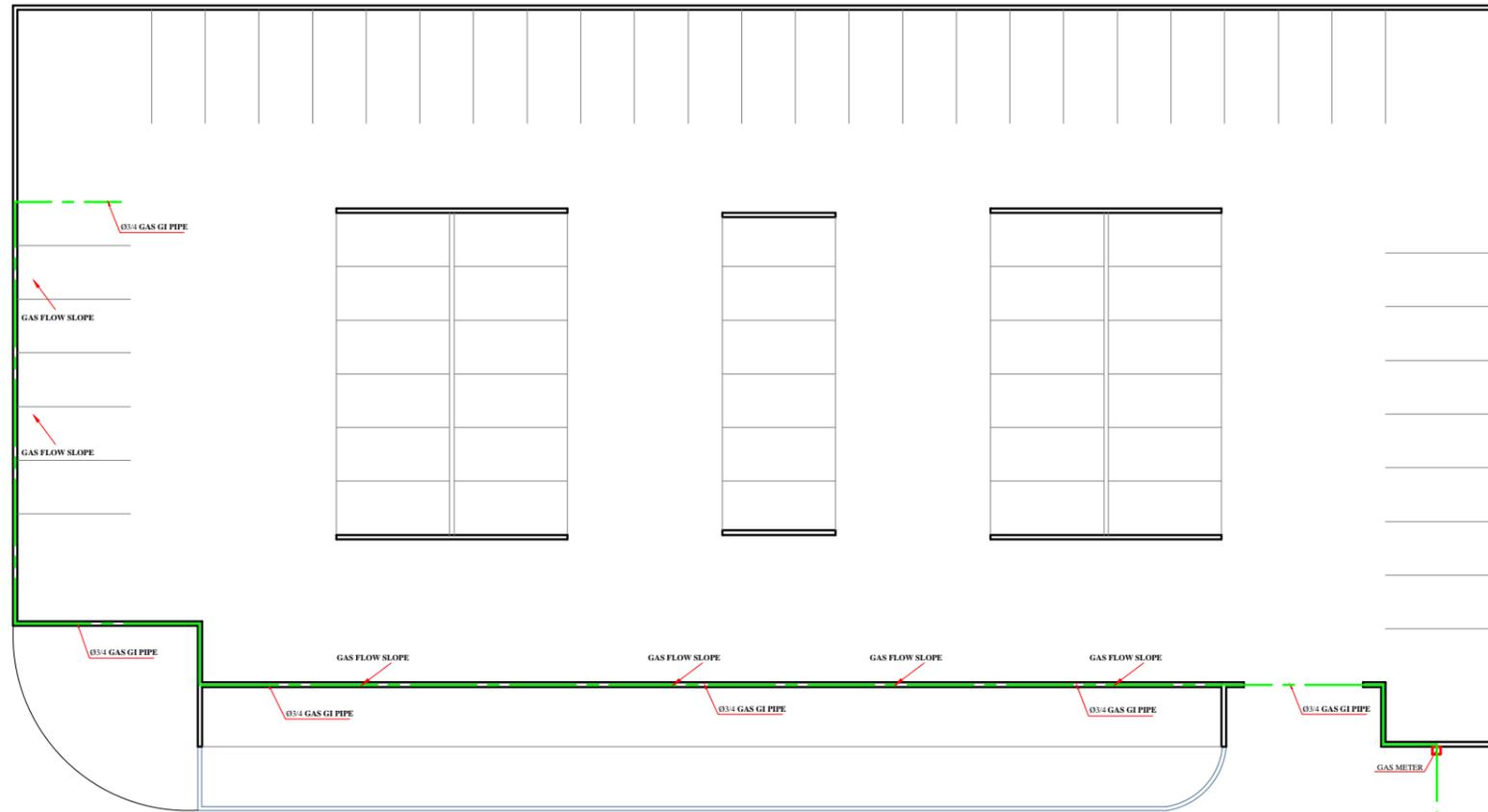
N BOULDER HWY

APARTMENTS PLAN 2,3,4,5,6
DRAIN PIPE & SLOPE

GAS DRAWINGS



E COOGAN DR



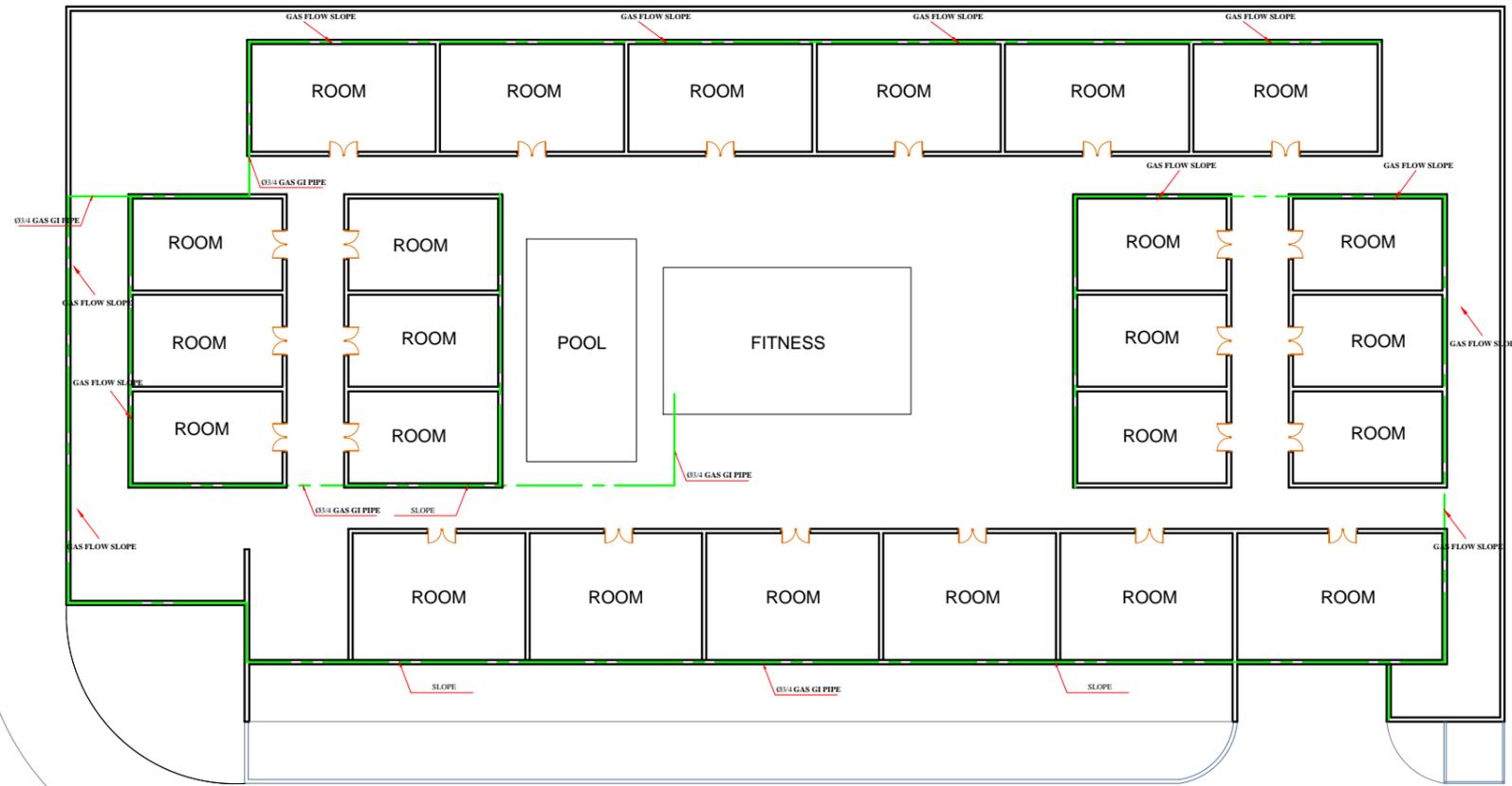
N BOULDER HWY

MAIN GAS LINE

GROUND FLOOR
GAS LINE DWG



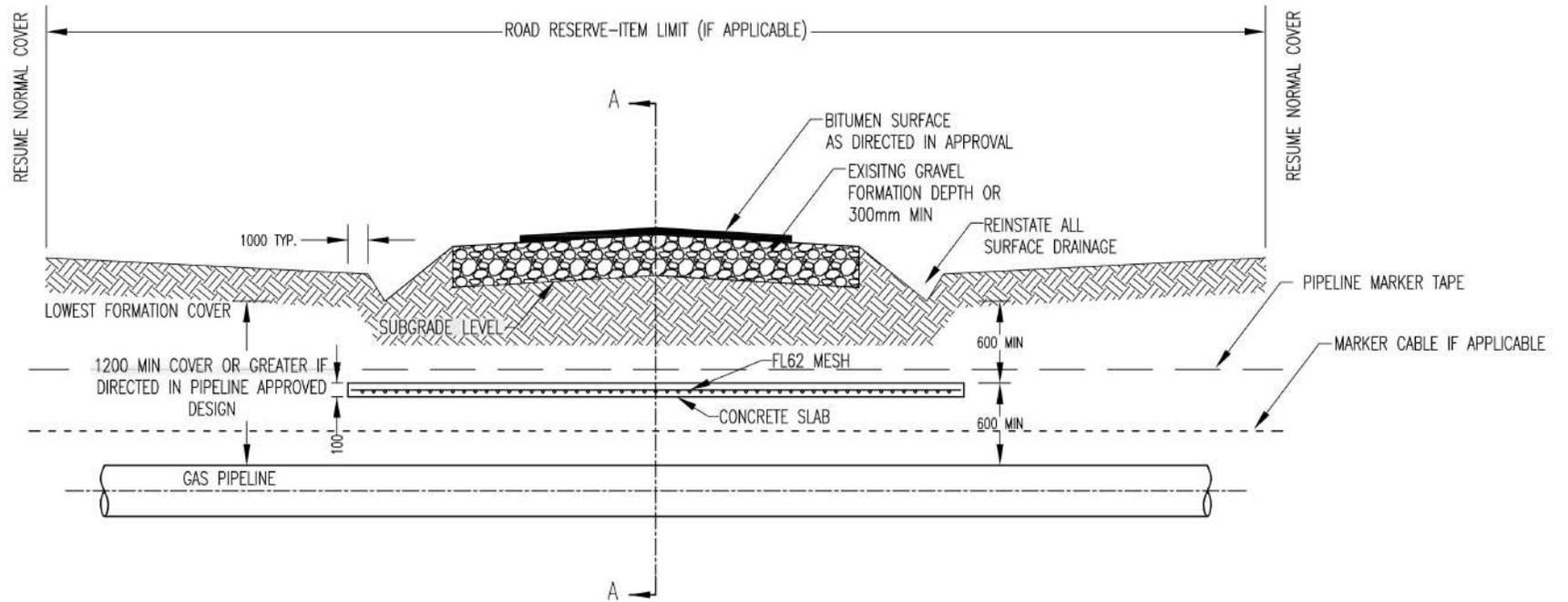
E COOGAN DR



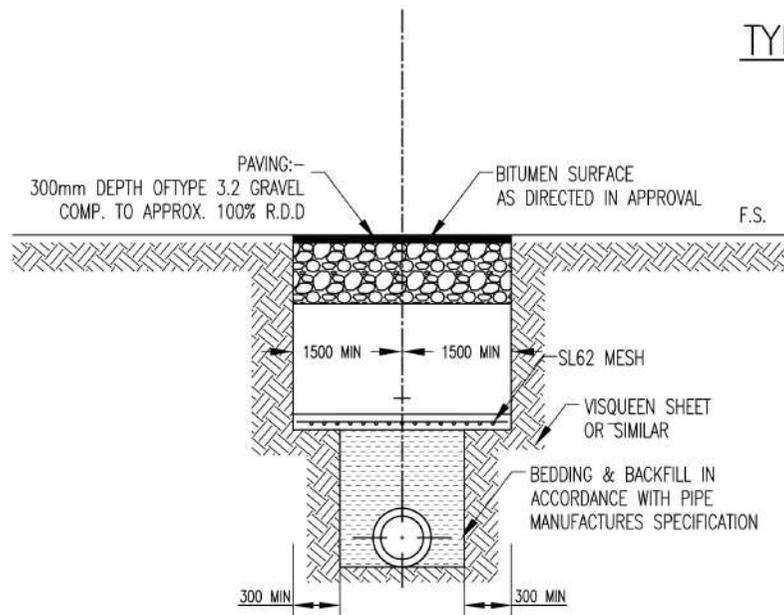
N BOULDER HWY

APARTMENTS PLAN 2,3,4,5,6
GAS LINE DWG

| | STD. DWG. NO. | DESCRIPTIONS |
|--|---------------|---|
| | | GAS UNDER ROADS |
| | G-002 | GAS PIPELINE CROSSING UNDER RURAL ROAD |
| | G-003 | GAS GENERAL CONSTRUCTIONS PE GAS MAINS IN ROADWAYS |
| | | SERVICE CONNECTIONS |
| | G-004 | SINGLE PROPERTY SERVICE MAIN TO METER |
| | G-005 | SPLIT PROPERTY SERVICE MAIN TO METER |
| | G-006 | GAS METER INSTALLATION REQUIREMENTS |
| | G-007 | GAS GENERAL CONSTRUCTION DOMESTIC GAS METER INSTALLATION REQUIREMENTS |
| | G-008 | GAS SUPPLY NETWORK PE BALL VALVE |
| | G-009 | GAS SUPPLY NETWORK SINGLE PE SERVICE |
| | G-010 | GAS SUPPLY NETWORK SPLIT SERVICE MAIN TO METER |
| | G-011 | GAS MAIN DOMESTIC SERVICE RISER |
| | G-012 | GAS MAIN MARKER POST, LABEL AND PLATE |
| | G-013 | PE GAS MAINS |
| | G-014 | PE GAS PIPE MINIMUM BEND RADIUS |
| | G-015 | DOMESTIC GAS SERVICE INSTALLATION DETAILS |
| | G-016 | GAS RETICULATION MAINS, FITTINGS & CONDUITS |
| | G-017 | GAS GENERAL CONSTRUCTIONS PE GAS MAIN |



TYPE CROSS SECTION



SECTION A-A

NOTES

SURFACE LEVEL TOLERANCE

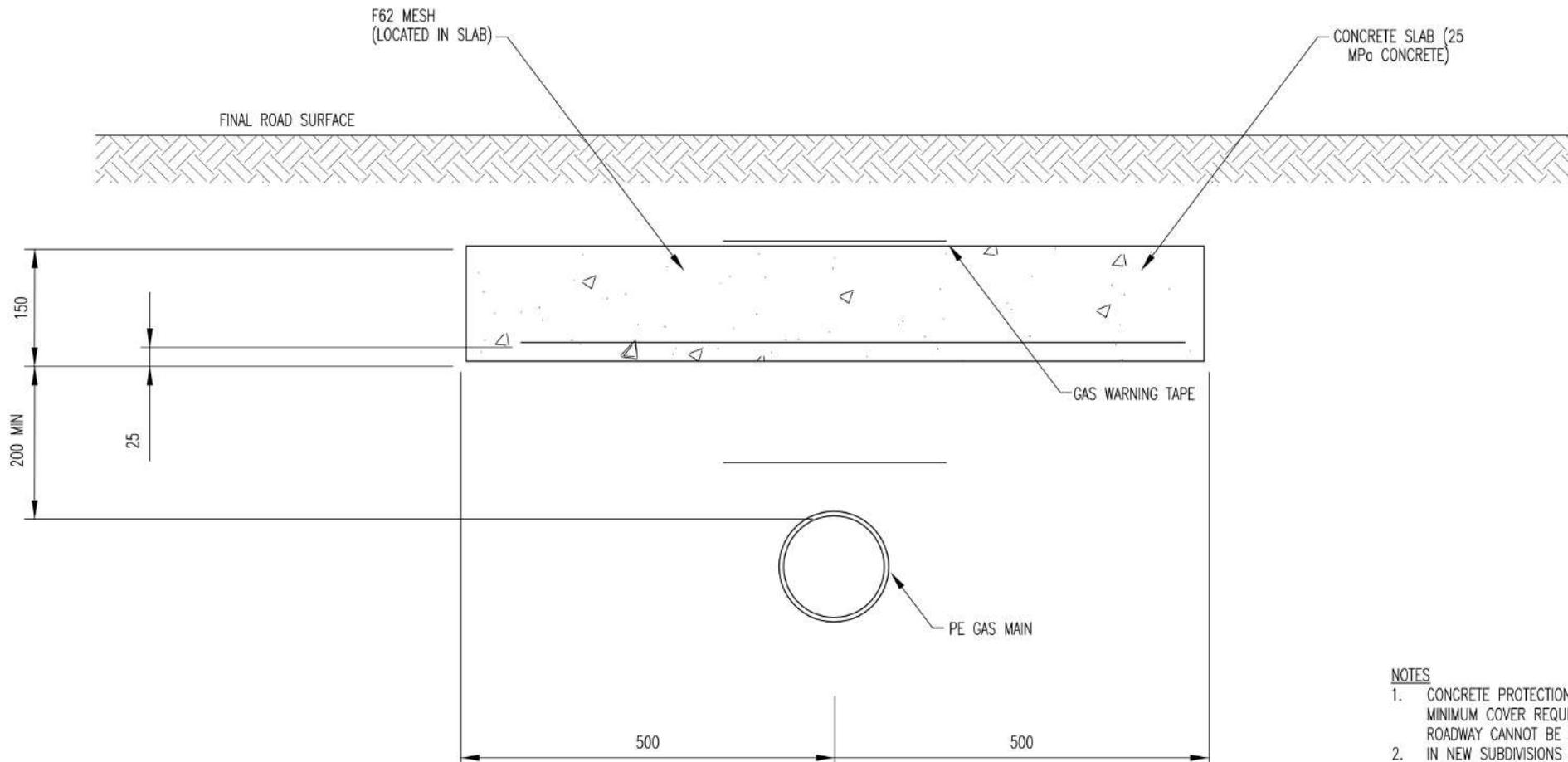
THE DEVIATION FROM A STRAIGHT EDGE LAID AT RIGHT ANGLES TO THE TRENCH OF THE EXISTING ROAD AS SHOWN ON THE DRAWING SHALL NOT EXCEED 5mm.

EXTENT OF REINSTATEMENT

THE REINSTATEMENT OF THE PIPE CROSSING IS TO EXTEND OVER THE FULL WIDTH OF THE ROAD FORMATION AS SHOWN. REINSTATEMENT SHALL BE WITH NATURAL MATERIALS FOR THE REMAINING AREA OF ROAD RESERVE. REFERENCES TO GRAVEL TYPES AND TEST METHODS IS IN ACCORDANCE WITH QUEENSLAND TRANSPORT SPECIFICATION MRS 11.05 (12/99).

CONCRETE

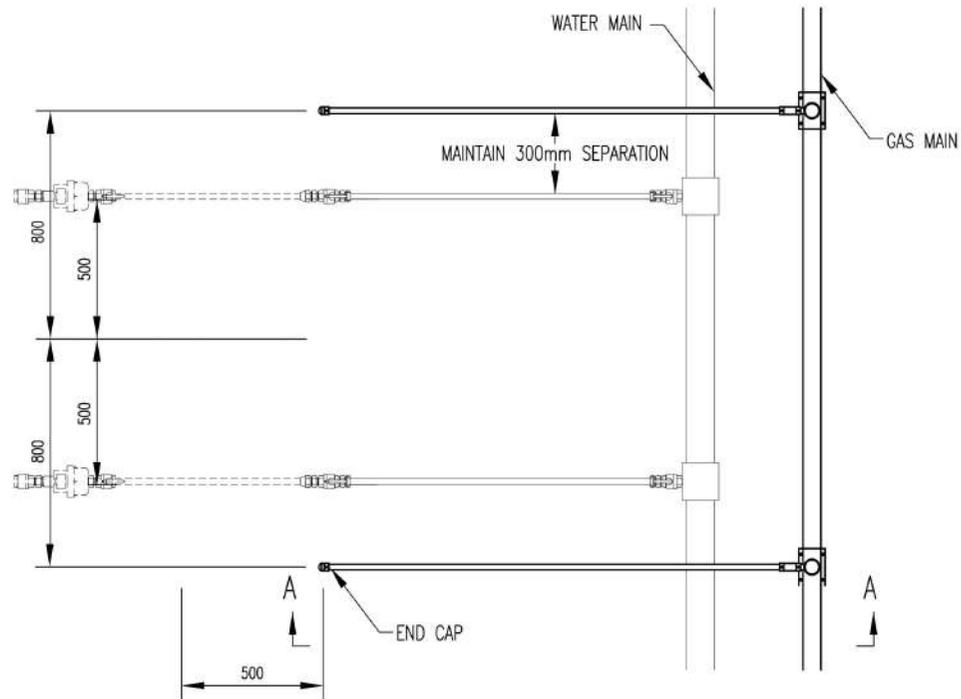
CONCRETE SLAB TO BE 100mm THICK N32\25AGG, OR AN APPROVED EQUIVALENT PRECAST SLAB AS APPROVED BY THE DIRECTOR OF ENGINEERING. STEEL REINFORCEMENT FABRIC TO BE D500L IN ACCORDANCE WITH AS 4671. PLACED CENTRAL WITH 50mm EDGE COVER. STEEL PLACEMENT TO BE INSPECTED BY WDRC REPRESENTATIVE PRIOR TO PLACEMENT OF CONCRETE IF CAST-IN-SITU.



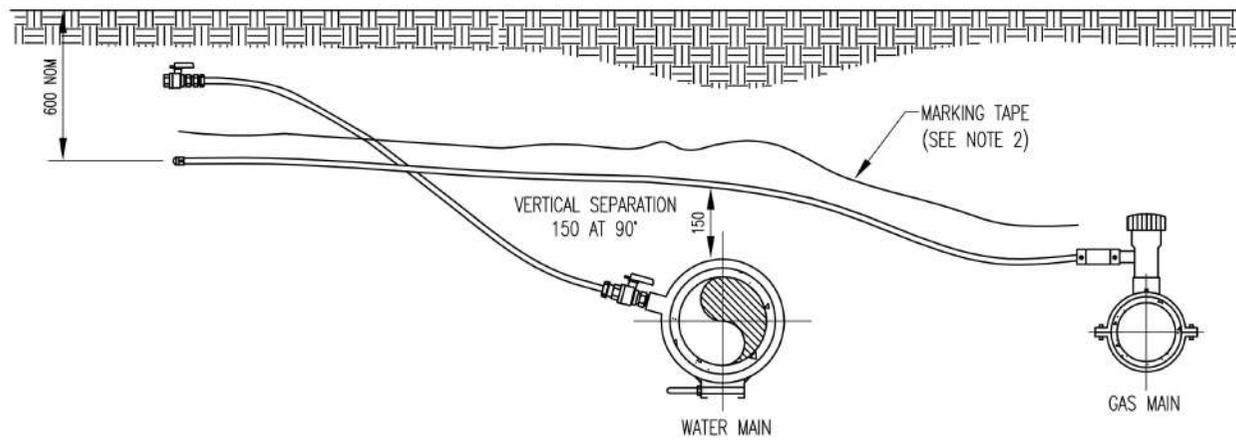
PE GAS MAINS IN ROADWAYS
MAIN PROTECTION – REDUCED DEPTH

NOTES

1. CONCRETE PROTECTION TO BE USED IF MINIMUM COVER REQUIREMENT UNDER ROADWAY CANNOT BE OBTAINED.
2. IN NEW SUBDIVISIONS ADDITIONAL PROTECTION IS TYPICALLY NOT REQUIRED. DESIGN AND CONSTRUCTION OF THE GAS MAIN AND OTHER UTILITIES SHOULD BE COORDINATED TO AVOID INSUFFICIENT COVER. IF CONCRETE PROTECTION IS REQUIRED, PRIOR APPROVAL SHALL BE OBTAINED FROM THE ENERGEX OFFICER.



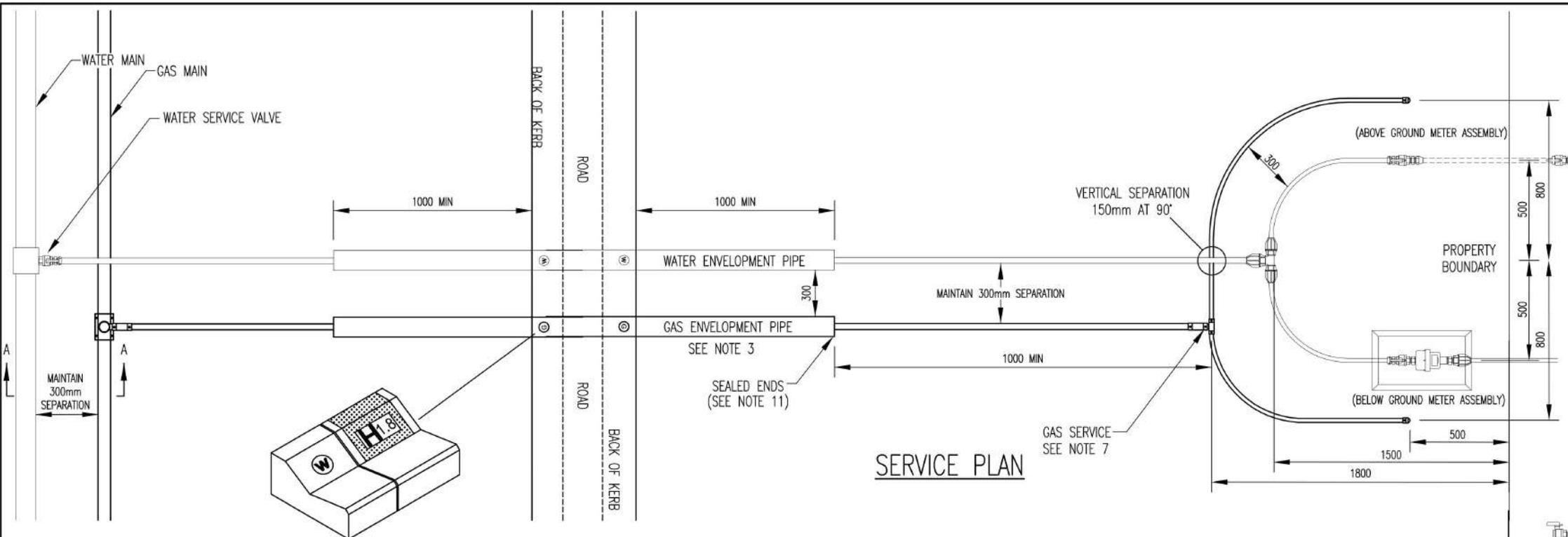
SERVICE PLAN



SECTION A-A TYPICAL SERVICE CONNECTION

NOTES

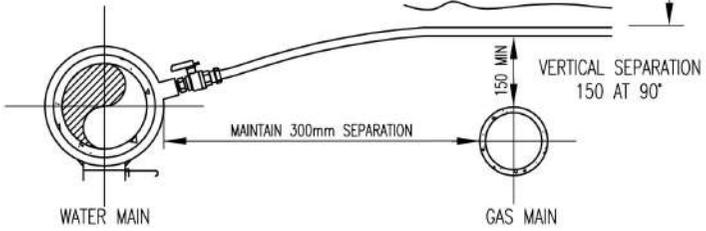
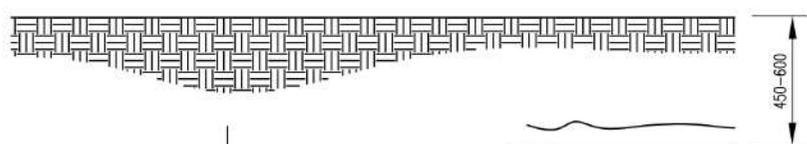
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. MARKING TAPE IS REQUIRED FOR ALL SERVICE CONNECTIONS
3. GAS SERVICE ASSEMBLY AS PER STANDARD DRAWING.



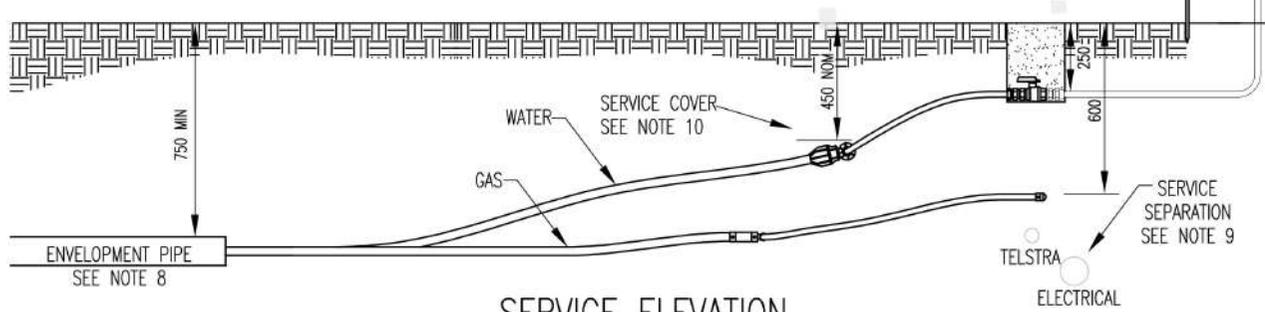
SERVICE PLAN

KERB MARKING

SEE NOTE 4



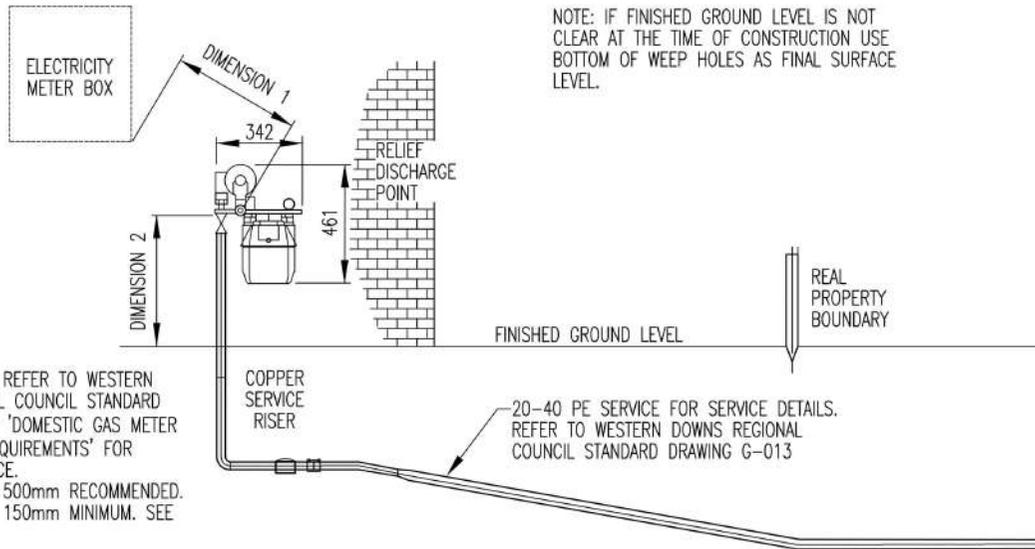
**SECTION A-A
TYPICAL SERVICE CONNECTION**



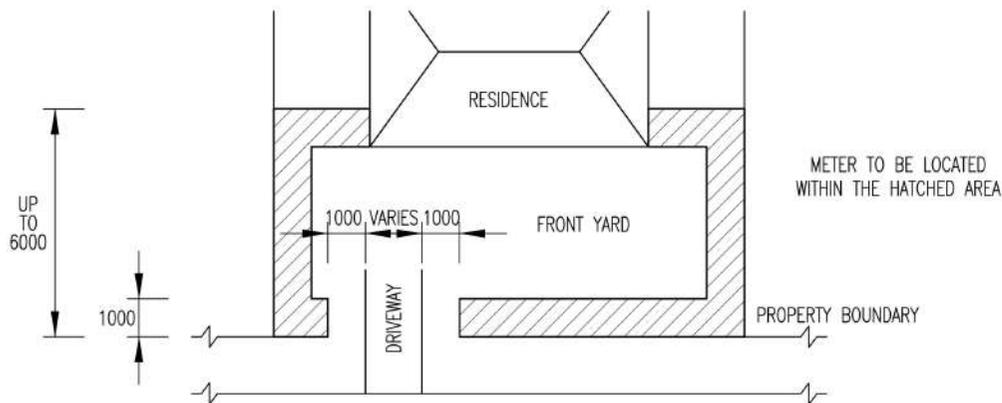
SERVICE ELEVATION

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. WATER ENVELOPMENT PIPE PN16 100mm MINIMUM.
3. GAS ENVELOPMENT PIPE PN16 100mm MINIMUM.
4. PERMANENTLY MARK CONCRETE KERBING IN LINE WITH THE SERVICE ENVELOPMENT PIPE.
5. MARKING TAPE IS REQUIRED FOR ALL SERVICE CONNECTIONS.
6. INSTALL SERVICE BRASS ISOLATION INLINE BALL VALVE FI/POLY.
7. GAS MAIN AND SERVICES TO INCLUDE A 1mm TRACE WIRE TO COUNCIL SPECIFICATION.
8. WATER & GAS ENVELOPMENT PIPES 750 MINIMUM COVER.
9. TELSTRA TO MAINTAIN 100mm MIN AND ELECTRICITY CONDUITS 300mm MIN VERTICAL SEPARATION BETWEEN SERVICES.
10. WATER SERVICES TO MAINTAIN A MINIMUM 450mm COVER 1m PRIOR TO SERVICE VALVE. GAS SERVICE TO MAINTAIN 600mm COVER.
11. ENDS OF ENVELOPMENT PIPES TO BE SEALED WITH FULLAFOAM.



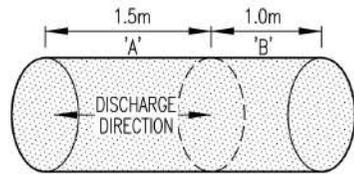
GENERAL ARRANGEMENT



METER LOCALITY PLAN

NOTES

1. **METER SET LOCATION:** THE LOCATION OF A GAS METER IS DETERMINED BY THE NETWORK OPERATOR AFTER CONSULTATION WITH THE CONSUMER OR THE CONSUMER'S REPRESENTATIVE. THE METER LOCATION MUST ENSURE COMPLIANCE WITH THE FOLLOWING:
 - a. THE METER IS TO BE EXTERNAL TO ANY BUILDING OR STRUCTURE.
 - b. THE SERVICE LINE ROUTE IS TO BE A STRAIGHT LINE BETWEEN THE TAPPING POINT AND THE METER, AND THE SERVICE IS NOT TO PASS UNDER THE BUILDING.
 - c. WHERE THE DISTANCE BETWEEN THE BUILDING AND THE FRONT PROPERTY LINE IS 50 METRES (d) FOR DOMESTIC ESTATES WITH ROAD CROSSING CONDUITS THE PREFERRED METER LOCATION IS ADJACENT TO THE CROSSING.
 - d. METERS MUST NOT BE LOCATED ON WALLS WHERE THE BUILDING IS ON THE BOUNDARY LINE.
2. **READING THE METER INDEX:** WHERE A METER IS TO BE LOCATED BEHIND A BARRIER WHICH WILL PREVENT ACCESS FOR INDEX READING, THE FOLLOWING IS TO APPLY:
 - a. THE METER IS TO BE LOCATED ADJACENT TO THE BARRIER.
 - b. THE BARRIER, IF OF CLOSED CONSTRUCTION, IS TO INCLUDE PROVISION FOR METER READING. SUCH PROVISION SHALL BE AN OPENING DIRECTLY IN LINE WITH THE METER INDEX. THE MINIMUM DIMENSIONS OF THE OPENING ARE 100mm x 100mm.
 - c. WHERE THE BARRIER IS OF OPEN CONSTRUCTION THE METER INDEX NEEDS TO BE VISIBLE FROM THE ACCESSIBLE SIDE OF THE BARRIER.
3. **METER SET CLEARANCES:** THE RELIEF DISCHARGE POINT SHALL HAVE MINIMUM CLEARANCES AS SHOWN ON WESTERN DOWNS REGIONAL COUNCIL STANDARD DRAWING "G-007: DOMESTIC GAS METER INSTALLATION REQUIREMENTS"
4. **METER SET PROTECTION:**
 - a. A LOCATION SHALL BE CHOSEN THAT PREVENTS THE METER SET BEING STRUCK BY VEHICLES OR BEING EXPOSED TO OTHER PHYSICAL DAMAGE.
 - b. THE METER SET SHALL BE IN A LOCATION THAT IS NOT SUBJECT TO FLOODING.
5. **METER SET TESTING & COMMISSIONING:** TESTING & COMMISSIONING OF DOMESTIC METER SETS MUST COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS.
6. ALL DIMENSIONS IN MILLIMETRES.
7. REFER TO WESTERN DOWNS REGIONAL COUNCIL STANDARD DRAWING G-004 FOR MORE INFORMATION.



RELIEF TERMINAL
DISCHARGE POINT

NOTE:

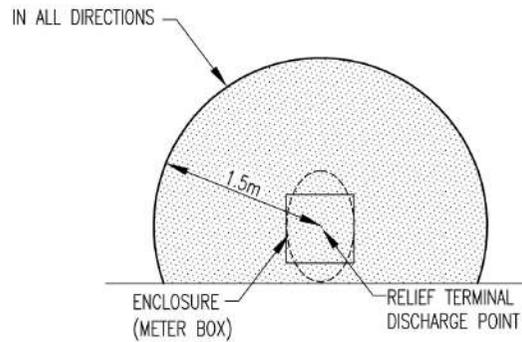
THE EXCLUSION ZONE SHOWN ABOVE DEPICTS A CYLINDER IN THE DIRECTION OF DISCHARGE AND BEHIND THE DISCHARGE POINT.

'A' = NO PHYSICAL OBSTRUCTIONS OR SOURCES OF IGNITION PERMITTED. IF AN OBSTRUCTION EXISTS SEE DIAGRAM 2 OR 3 FOR MODIFIED HAZARDOUS AREA.

'B' = NO SOURCES OF IGNITION PERMITTED.

DIAGRAM 1

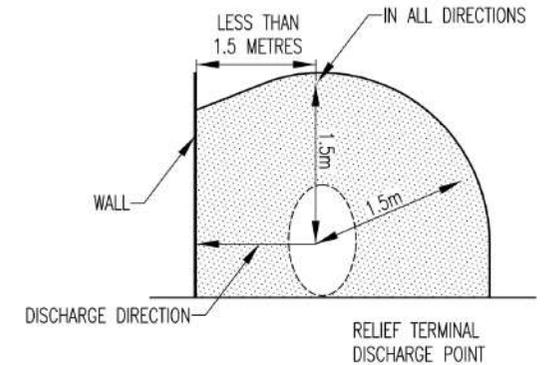
HAZARDOUS ZONE WITHOUT OBSTRUCTION OF RELIEF



ENCLOSURE (METER BOX) RELIEF TERMINAL DISCHARGE POINT

DIAGRAM 2

HAZARDOUS ZONE WITH RELIEF OBSTRUCTION



WALL DISCHARGE DIRECTION RELIEF TERMINAL DISCHARGE POINT

DIAGRAM 3

HAZARDOUS ZONE WITH RELIEF OBSTRUCTION

METER SET CLEARANCES

DISTANCES FOR POINTS (A) AND (B) APPLY IN ALL DIRECTIONS AND ARE MINIMUM DISTANCES. NO ELECTRICAL EQUIPMENT OR SOURCES OF IGNITION ARE TO BE LOCATED WITHIN THE GAS HAZARDOUS ZONE AS PER DIAGRAM 1, 2 OR 3, OR THE FOLLOWING - WHICHEVER IS GREATER.

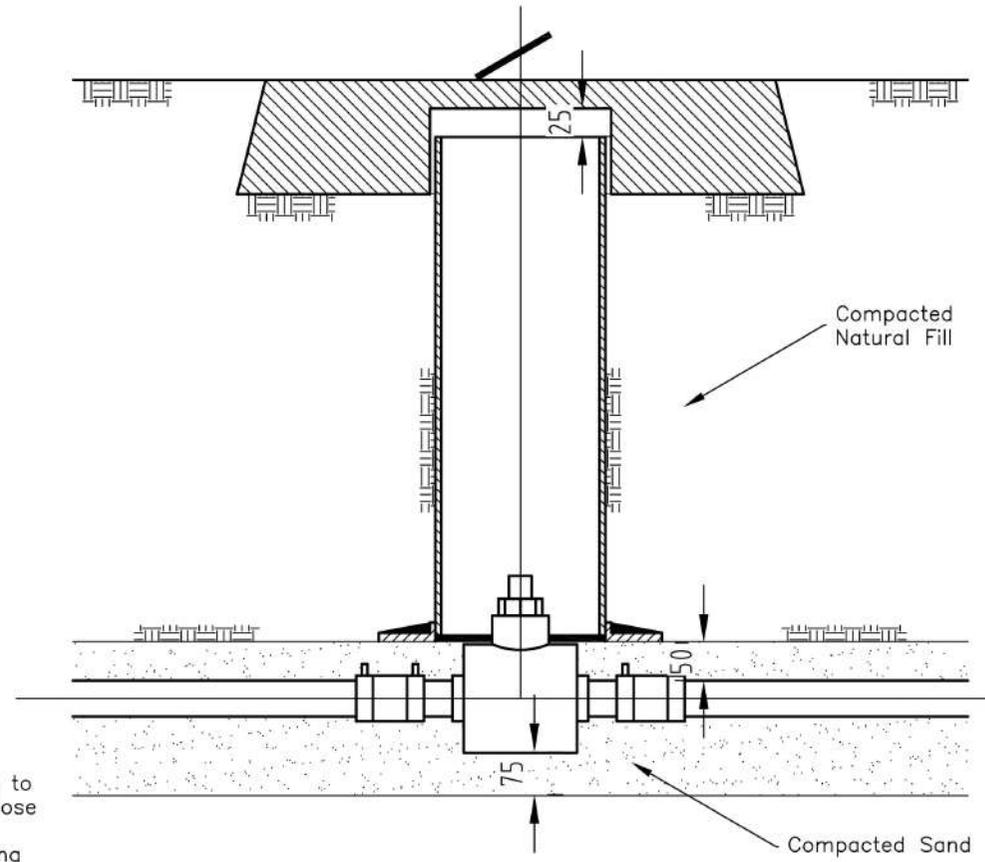
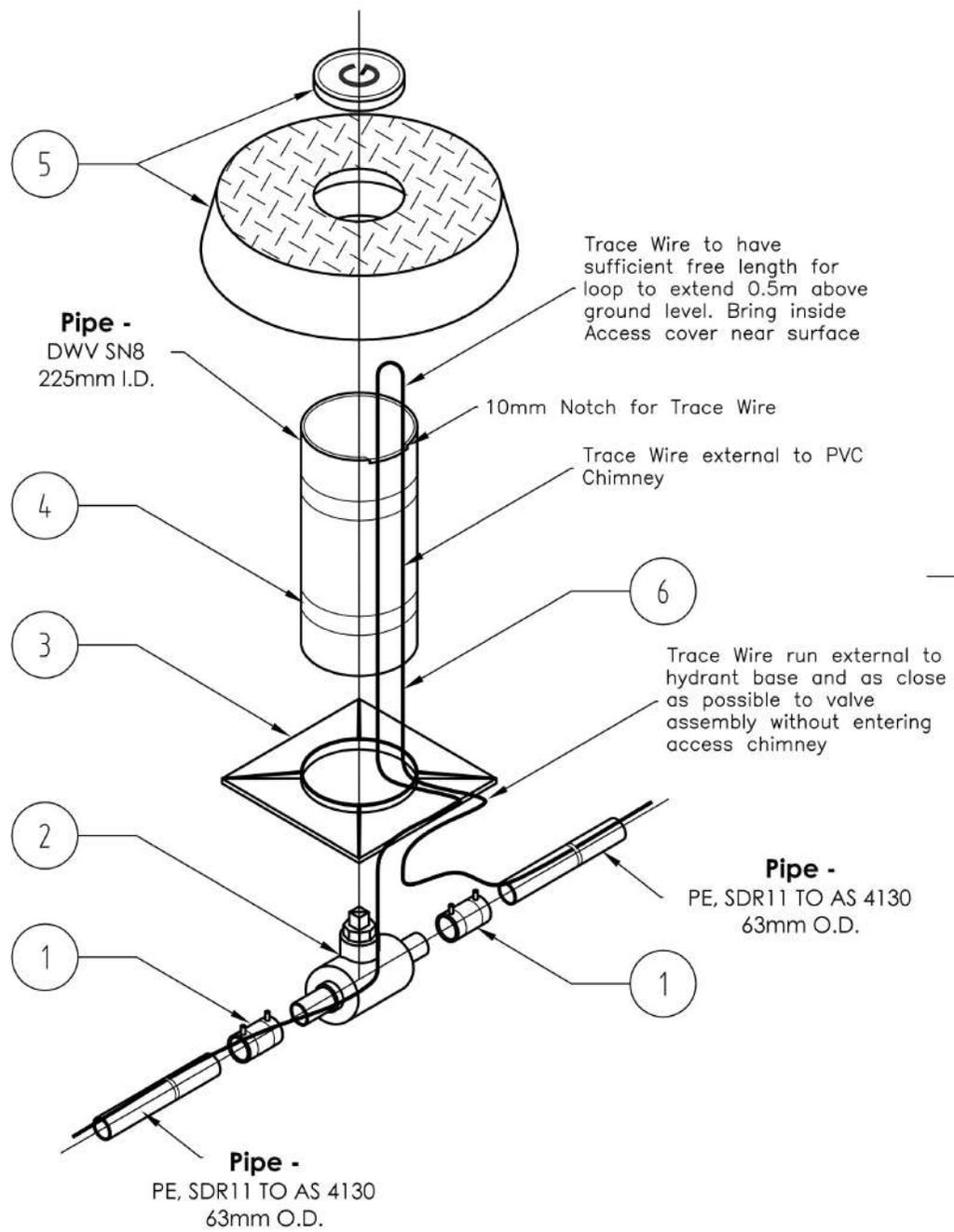
- (a) 1000mm FROM ANY DOOR, WINDOW OR ANY OTHER OPENING INTO THE BUILDING OR ENCLOSED SPACE (EXCLUDING SUB-FLOOR VENTILATION OPENINGS).
- (b) 3000mm FROM ANY MECHANICAL AIR INLET.
- (c) 1000mm FROM A FLUE TERMINAL.
- (d) 1000mm FROM ELECTRICAL EQUIPMENT OTHER THAN PERMITTED IN (e).
- (e) 500mm FROM AN ELECTRICITY METER BOX.

THE POSITION OF THE RELIEF DISCHARGE POINT CAN BE ALTERED BY RUNNING PIPEWORK FROM THE RELIEF VENT IF REQUIRED. THE DIRECTION OF DISCHARGE MAY BE ALTERED BY ROTATING THE ELBOW ON THE REGULATOR RELIEF VENT.

NOTES

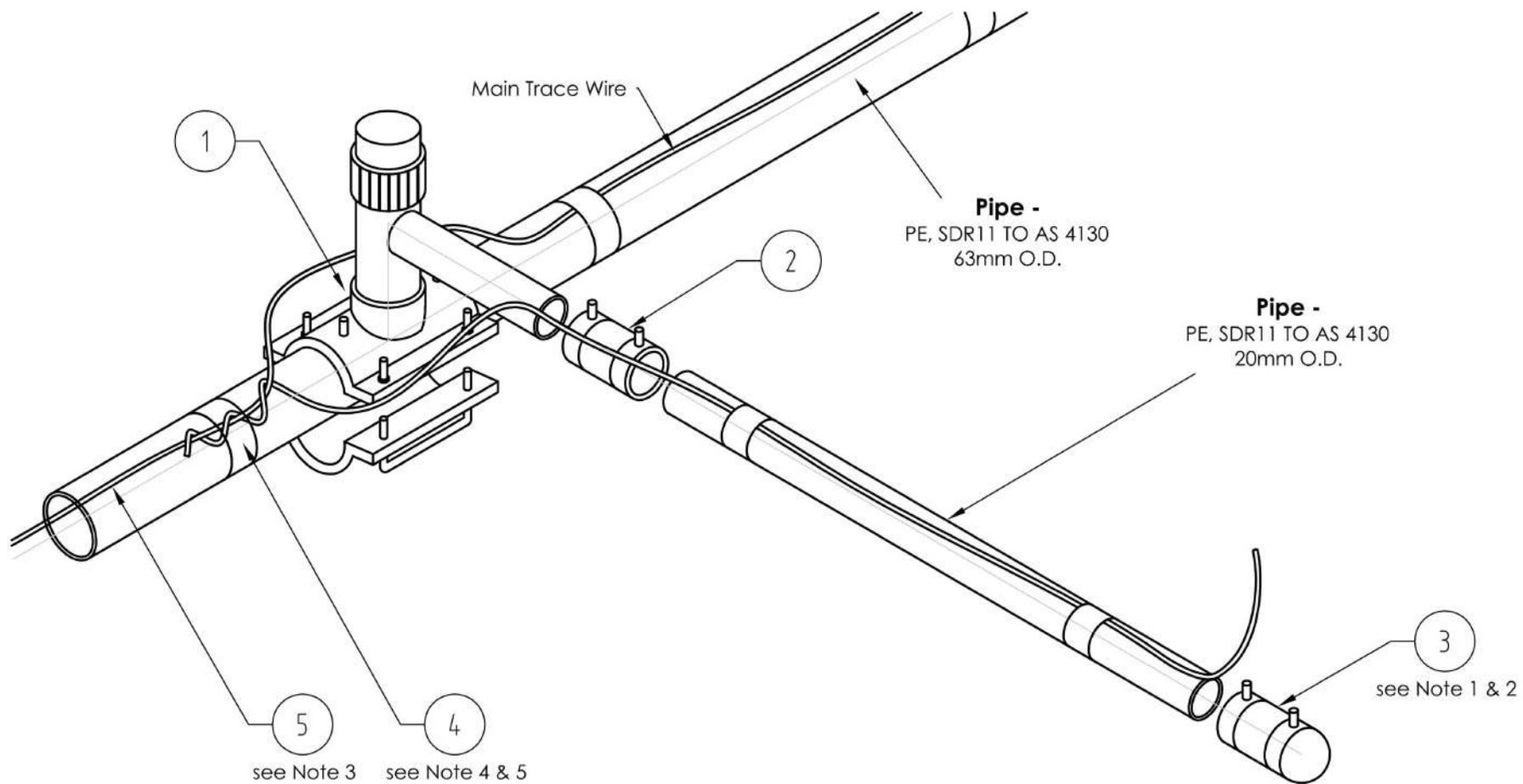
1. SEE WESTERN DOWNS REGIONAL COUNCIL STANDARD DRAWING G-006 - 'DOMESTIC GAS METER INSTALLATION REQUIREMENTS' FOR TYPICAL LOCATION OF RELIEF DISCHARGE POINT ON METER SET.
2. METER BOX ENCLOSURES ARE CLASSIFIED AS A RELIEF IMPEDEMENT. EXAMPLE: DIAGRAM 2 TO ENABLE USE OF DIAGRAM 1A 50mm DIAMETER HOLE IS TO BE CUT IN THE METER BOX DOOR IN LINE WITH THE RELIEF DISCHARGE POINT.
3. EXAMPLES OF SOURCES OF IGNITION ARE, ELECTRICAL METERS & EQUIPMENT, FLUE TERMINALS, HOT WATER SYSTEMS, AIR CONDITIONING UNITS, ETC.

DOMESTIC GAS METER INSTALLATION REQUIREMENTS



| BILL OF MATERIALS | | | |
|-------------------|----------|--|-----|
| ITEM No. | PART No. | DESCRIPTION | QTY |
| 1 | | Coupling E/F SDR11 63mm OD PE | 2 |
| 2 | | Valve, Ball, Full Bore, Class 500 E/F 63mm OD PE | 1 |
| 3 | | Hydrant Base Plate | 1 |
| 4 | | Adhesive Tape as available | n/a |
| 5 | | Access Surround & Access Cover | 1 |
| 6 | | Trace Wire Single Core, 0.7mm ² SS or PVC insulated copper 1mm ² | n/a |

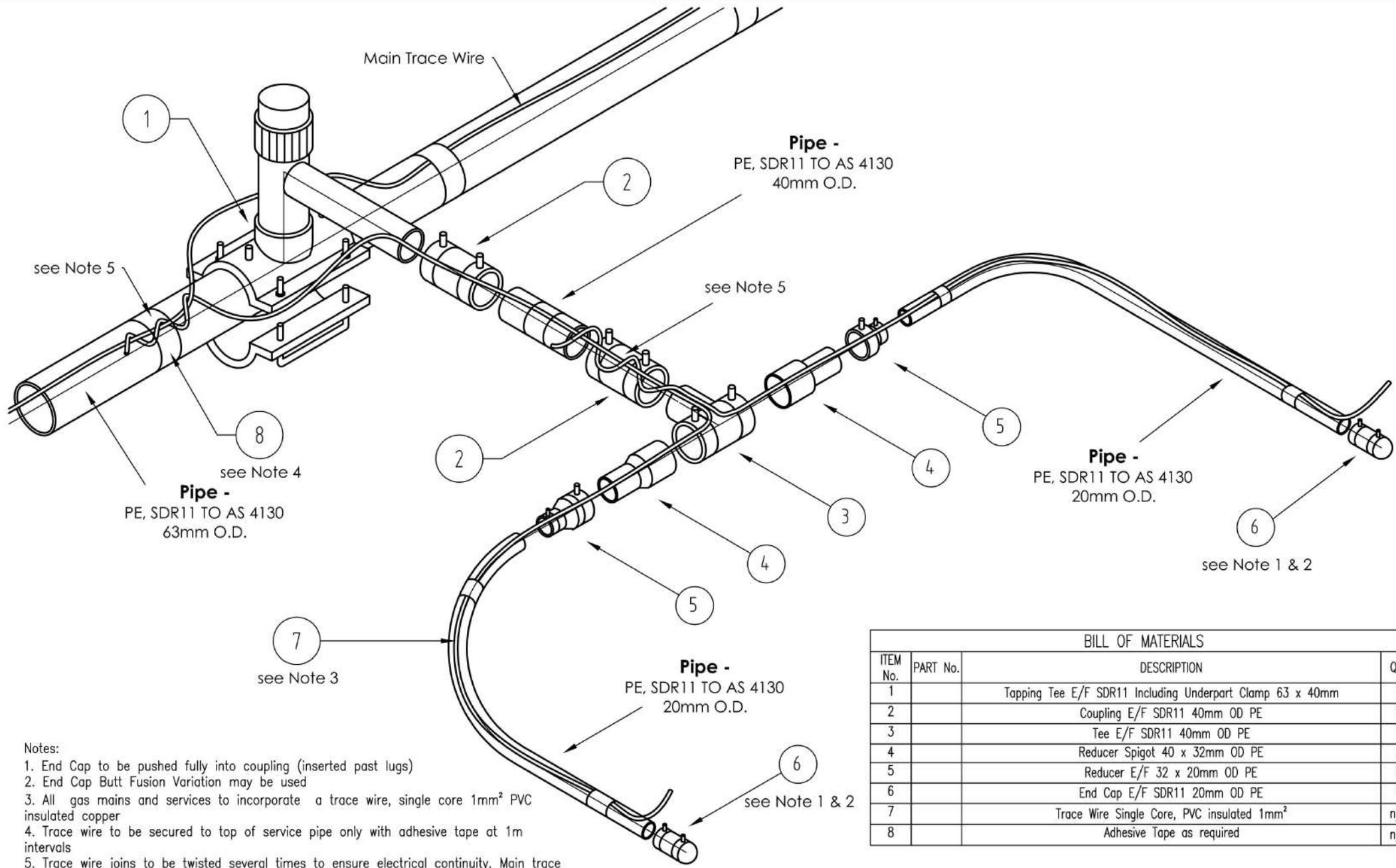
- Notes:
1. All dimensions are in millimetres
 2. Must not be subjected to vehicular traffic
 3. UPVC pipe chimney to be of sufficient length to allow insertion into hydrant base and access surround as per dimensions



Notes:

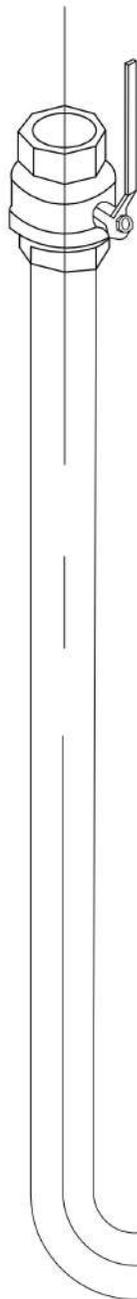
1. End Cap to be pushed fully into coupling (inserted past lugs)
2. End Cap Butt Fusion Variation may be used
3. All gas mains and services to incorporate 1mm single core pvc insulated trace wire at 1m intervals
4. Trace wire to be secured to top of pipe only with adhesive tape
5. Trace wire to be bared and twisted. Main trace wire not to be cut.
6. All gas mains and services are required to have gas warning tape placed typically 300mm above pipe

| BILL OF MATERIALS | | | |
|-------------------|----------|---|-----|
| ITEM No. | PART No. | DESCRIPTION | QTY |
| 1 | | Tapping Tee E/F SDR11 Including Underpart Clamp 63 x 20mm | 1 |
| 2 | | Coupling E/F SDR11 20mm OD PE | 1 |
| 3 | | End Cap E/F SDR11 20mm OD PE | 1 |
| 4 | | Adhesive Tape as required | n/a |
| 5 | | Trace Wire Single Core, PVC insulated 1mm ² | n/a |



- Notes:
1. End Cap to be pushed fully into coupling (inserted past lugs)
 2. End Cap Butt Fusion Variation may be used
 3. All gas mains and services to incorporate a trace wire, single core 1mm² PVC insulated copper
 4. Trace wire to be secured to top of service pipe only with adhesive tape at 1m intervals
 5. Trace wire joins to be twisted several times to ensure electrical continuity. Main trace wire not is to be cut.
 6. All gas mains and services are required to have gas warning tape placed typically 300mm above pipe

| BILL OF MATERIALS | | | |
|-------------------|----------|---|-----|
| ITEM No. | PART No. | DESCRIPTION | QTY |
| 1 | | Tapping Tee E/F SDR11 Including Underpart Clamp 63 x 40mm | 1 |
| 2 | | Coupling E/F SDR11 40mm OD PE | 2 |
| 3 | | Tee E/F SDR11 40mm OD PE | 1 |
| 4 | | Reducer Spigot 40 x 32mm OD PE | 2 |
| 5 | | Reducer E/F 32 x 20mm OD PE | 2 |
| 6 | | End Cap E/F SDR11 20mm OD PE | 2 |
| 7 | | Trace Wire Single Core, PVC insulated 1mm ² | n/a |
| 8 | | Adhesive Tape as required | n/a |



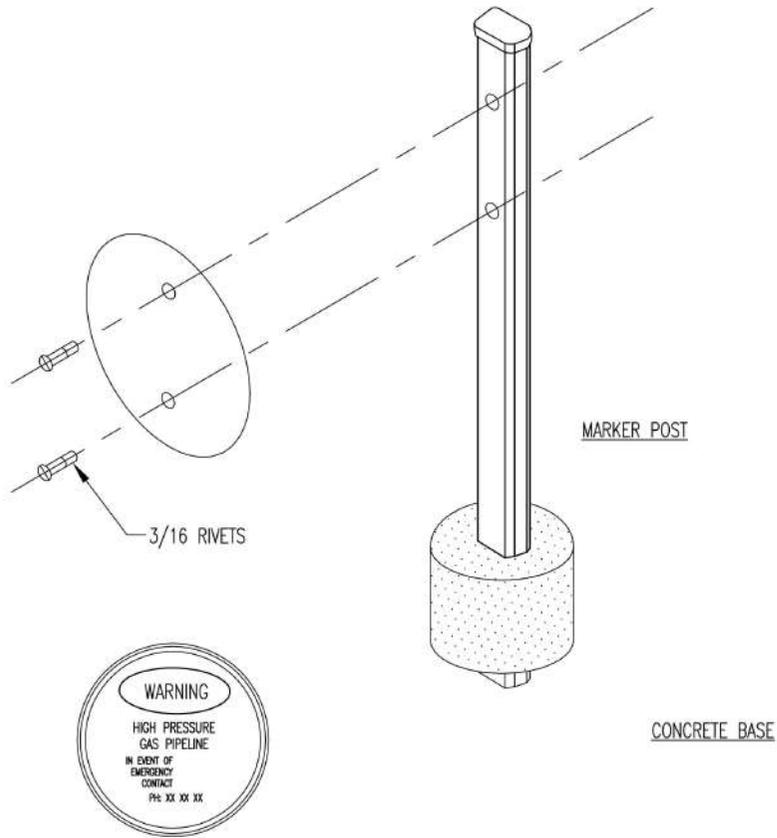
20mm PIPE BENDERS TO BE USED TO FORM 90 DEGREE BEND IN COPPER PIPE RISER
INSULATION TO BE REMOVED AT BEND LOCATION TO ENABLE INSPECTION FOR ANY
EXCESSIVE MATERIAL DEFORMATION. AREA TO BE RE-WRAPED AFTER INSPECTION.

PIPE -
SDR11 TO AS 4130
20mm O.D

COUPLING -
CLASS 500 E/F, 39.5 V
20mm O.D.

PIPE RISER -
INSULATED COPPER, ANNEALED
TYPE B, 1500mm 19.05mm O.D
WITH 20NS BALL VALVE.

ASSEMBLY 2011-1 DOMESTIC RISER -20mm



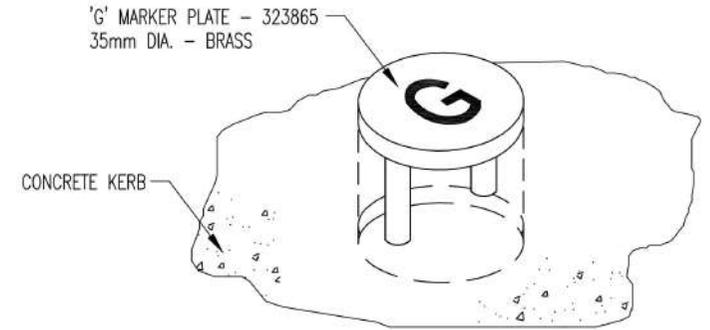
GAS WARNING SIGN - 397539
 HIGH PRESSURE GAS PIPELINE
 200mm DIA. x 4mm THICK -
 STEEL OR ALLOY

GAS MARKER POST

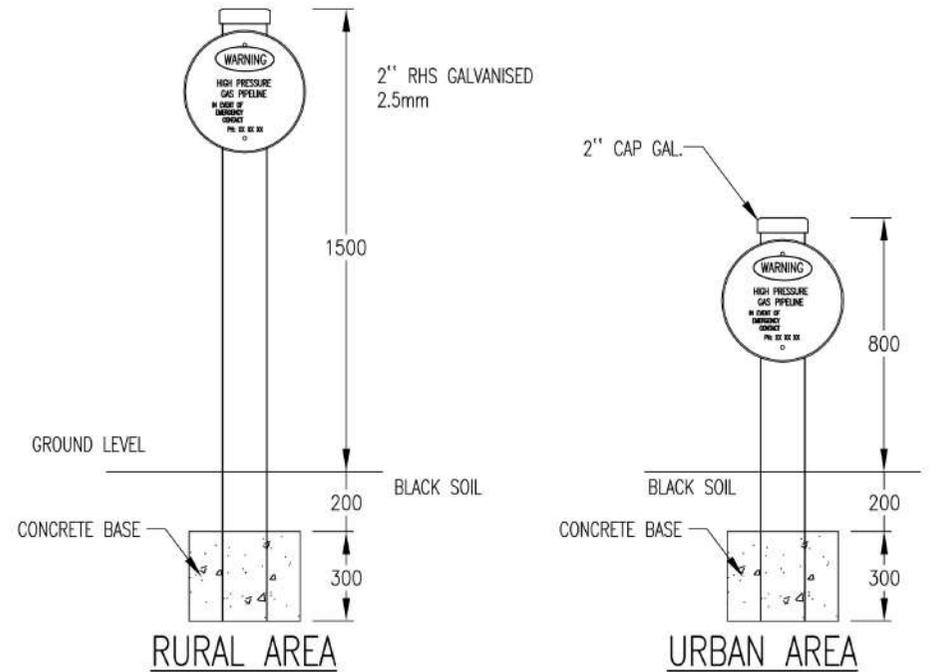
MARKER POST ASSEMBLY TO BE INSTALLED ON THE PROPERTY
 BOUNDARY IN A VISIBLE AND SAFE LOCATION

ASSEMBLY 2012-2 - GAS MARKER POST - 2000mm LONG

ASSEMBLY 2012-2 - GAS MARKER POST - 2000mm LONG



ASSEMBLY 2012-3 - 'G' MARKER PLATE



RURAL AREA

URBAN AREA

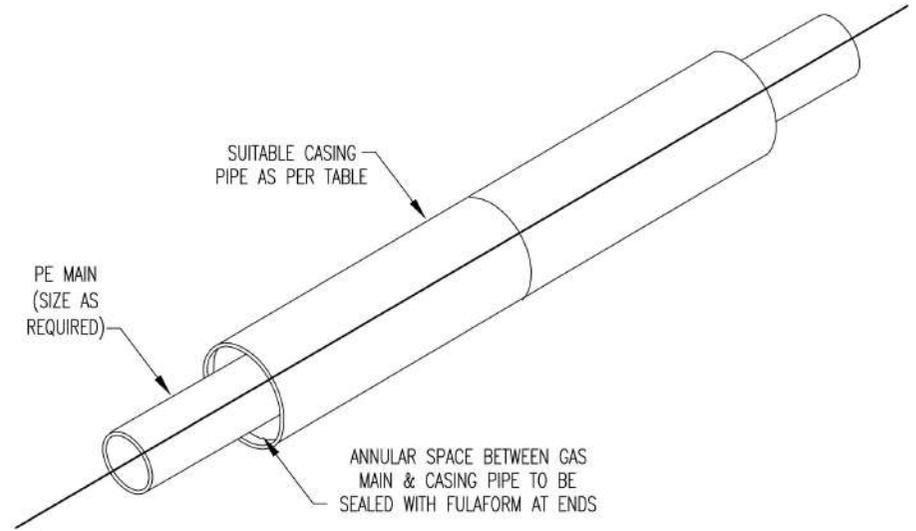
PE MAINS

| | | | | |
|--------------|-------------|--------------|--------------|--------------|
| MAIN (PE) | 40mm O.D PE | 63mm O.D PE | 90mm O.D PE | 110mm O.D PE |
| CONDUIT (PE) | 63mm O.D PE | 110mm O.D PE | 160mm O.D PE | N/A |

PVC FOR CASINGS SHALL BE PN16 UPVC PIPE
PE FOR CASINGS SHALL BE SDR11 TO AS 4130

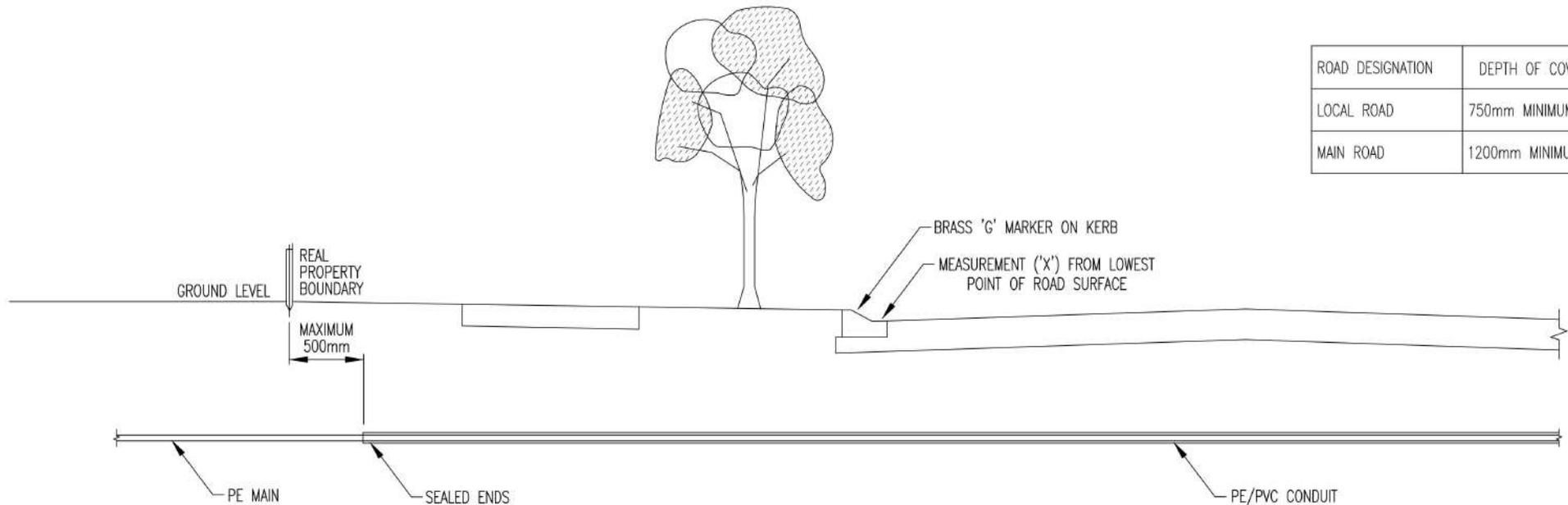
NOTE:

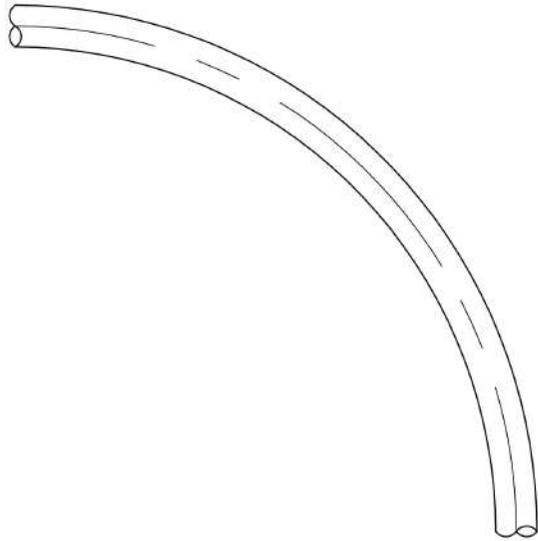
- PVC IS THE PREFERRED CONDUIT MATERIAL
- JOINTS & FITTINGS IN ROAD CROSSING CASINGS ARE NOT PERMITTED



100Ø UPVC WITH XXX TAPE

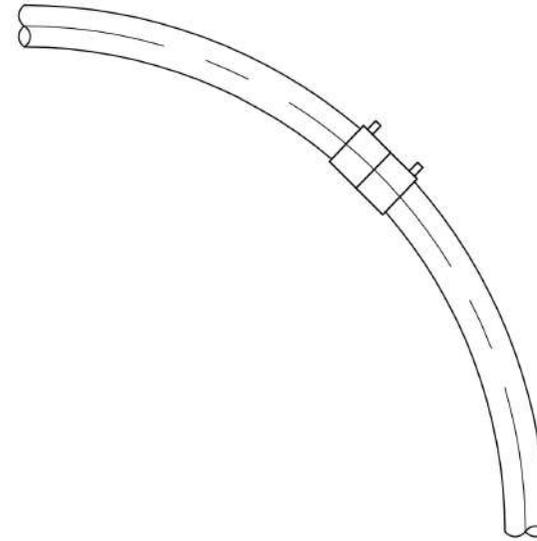
| ROAD DESIGNATION | DEPTH OF COVER - 'X' |
|------------------|----------------------|
| LOCAL ROAD | 750mm MINIMUM |
| MAIN ROAD | 1200mm MINIMUM |





VARIANT 1
CONTINUOUS LENGTH OF PIPE

| 'D' | 'R' MIN (mm) |
|------------------|--------------|
| 20 PE CLASS 500 | 300 |
| 32 PE CLASS 500 | 480 |
| 40 PE CLASS 500 | 600 |
| 63 PE CLASS 500 | 945 |
| 90 PE CLASS 500 | 1350 |
| 110 PE CLASS 500 | 1650 |
| 160 PE CLASS 500 | 2400 |

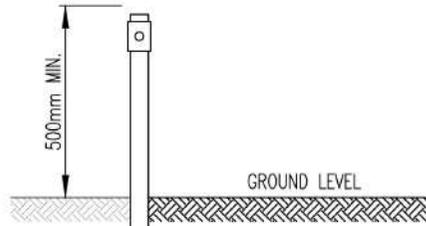
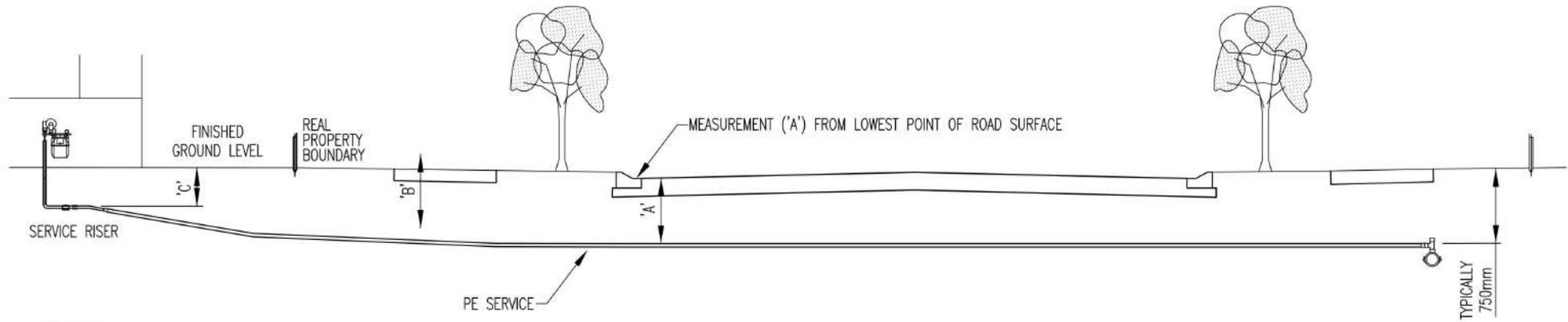


VARIANT 2
PIPE JOINED WITH FITTING

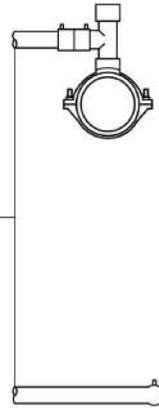
| 'D' | 'R' MIN (mm) |
|------------------|--------------|
| 20 PE CLASS 500 | 500 |
| 32 PE CLASS 500 | 800 |
| 40 PE CLASS 500 | 1000 |
| 63 PE CLASS 500 | 1575 |
| 90 PE CLASS 500 | 2250 |
| 110 PE CLASS 500 | 2750 |
| 160 PE CLASS 500 | 4000 |

NOTE: IF THE MINIMUM RADIUS ('R' MIN) OR LARGER CANNOT BE ACHIEVED USE ELECTROFUSION ELBOWS

IF FINISHED GROUND LEVEL IS NOT CLEAR AT THE TIME OF CONSTRUCTION USE BOTTOM OF WEEP HOLES AS FINAL SURFACE LEVEL.



DOMESTIC SERVICE RISER
(ASSEMBLY 2011-1)



(1)
CONNECTION TO PE MAIN
(ASSEMBLY 2009-1, 2, 4, 7 & 10)

(3)
SERVICE CONNECTION TO TEE

| PIPE LOCATION | PIPE DEPTH |
|--|--------------|
| MAIN ROADWAY | 1200mm - 'A' |
| LOCAL ROADWAY | 750mm - 'A' |
| FOOTPATH | 750mm - 'B' |
| PRIVATE PROPERTY (SUBJECTED TO TRAFFIC) | 600mm - 'C' |
| PRIVATE PROPERTY (NOT SUBJECTED TO TRAFFIC) | 450mm - 'C' |

NOTES

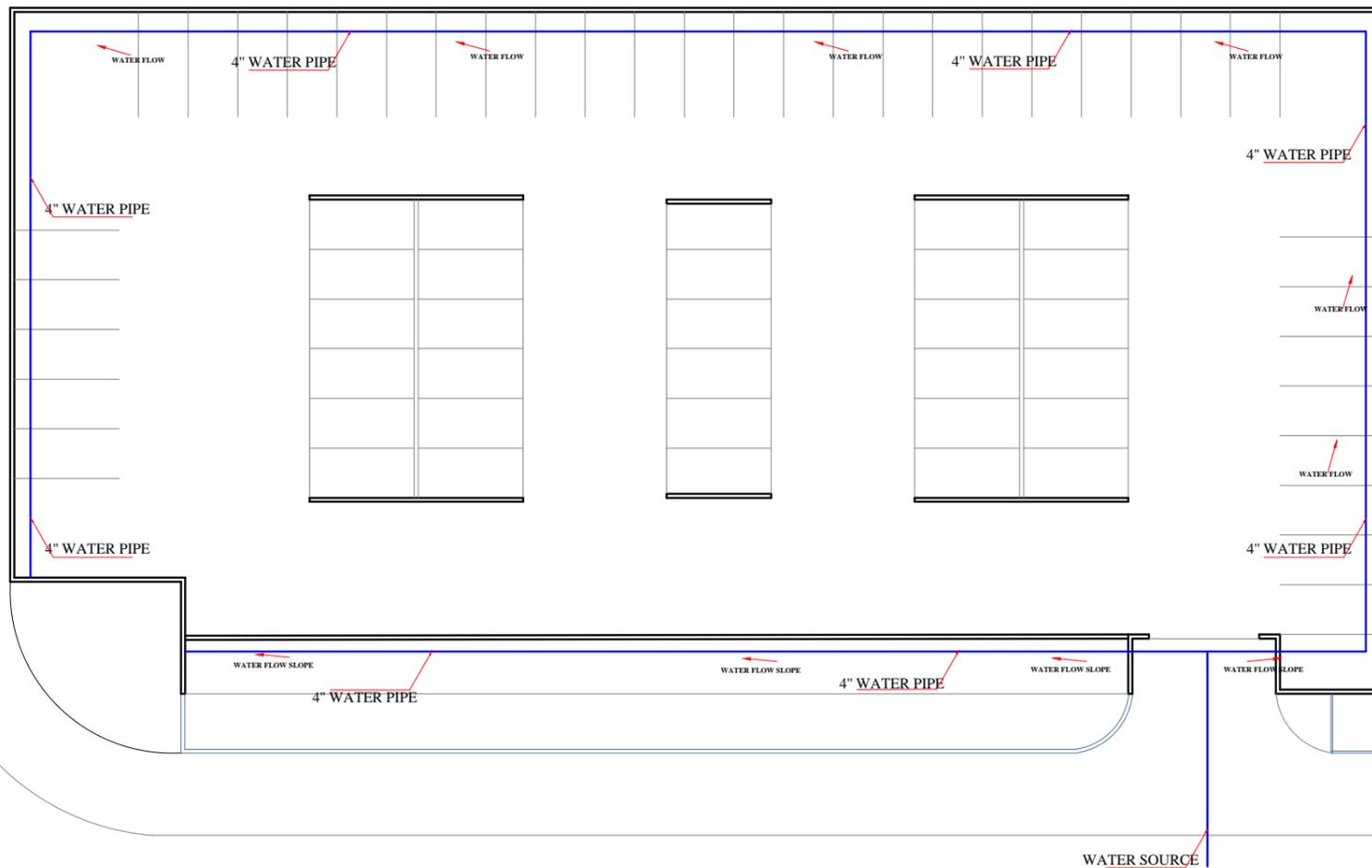
1. ALL PE AND COPPER COMPONENTS TO BE PRESSURE TESTED TO 700kPa.
2. ALL MECHANICAL JOINTS TO BE SOAPY WATER TESTED AT OPERATING PRESSURE.
3. TRACE WIRE WILL BE LAID WITH THE SERVICE AND BOUGHT TO THE SURFACE AT THE RISER. SERVICE TRACE WIRE IS TO BE ATTACHED TO THE TRACE WIRE AT THE MAIN.

DOMESTIC GAS SERVICE INSTALLATION DETAILS

WATER LINE
DRAWINGS



E COOGAN DR



N BOULDER HWY

GROUND FLOOR
WATER LINES

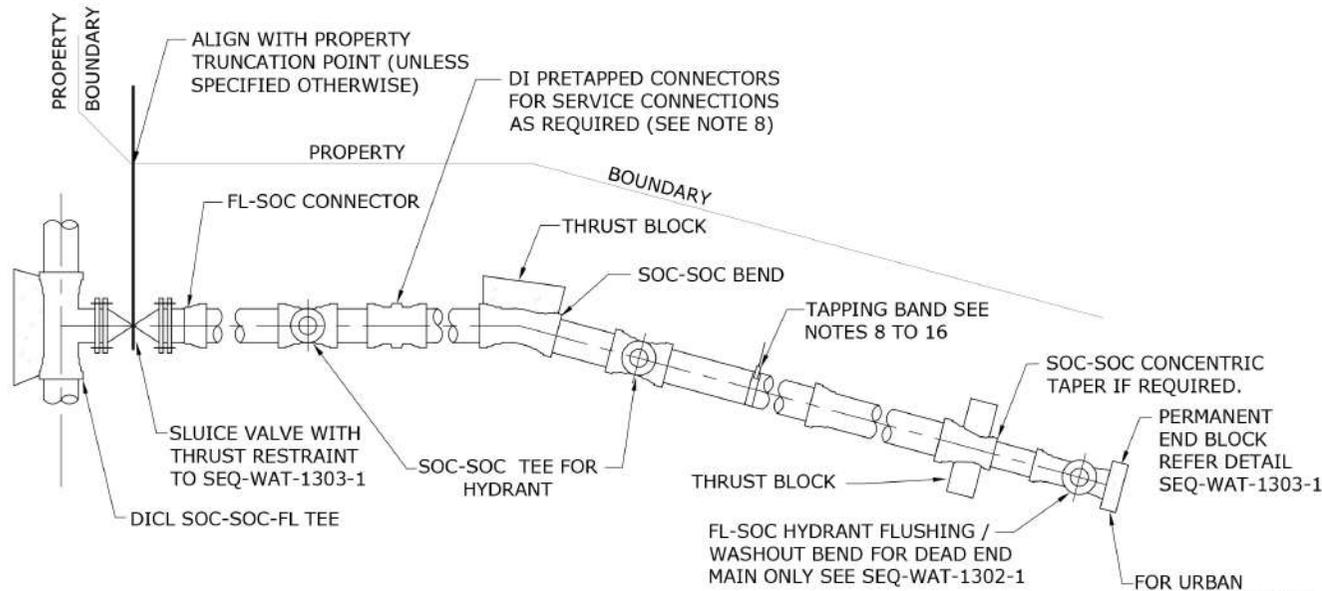


E COOGAN DR

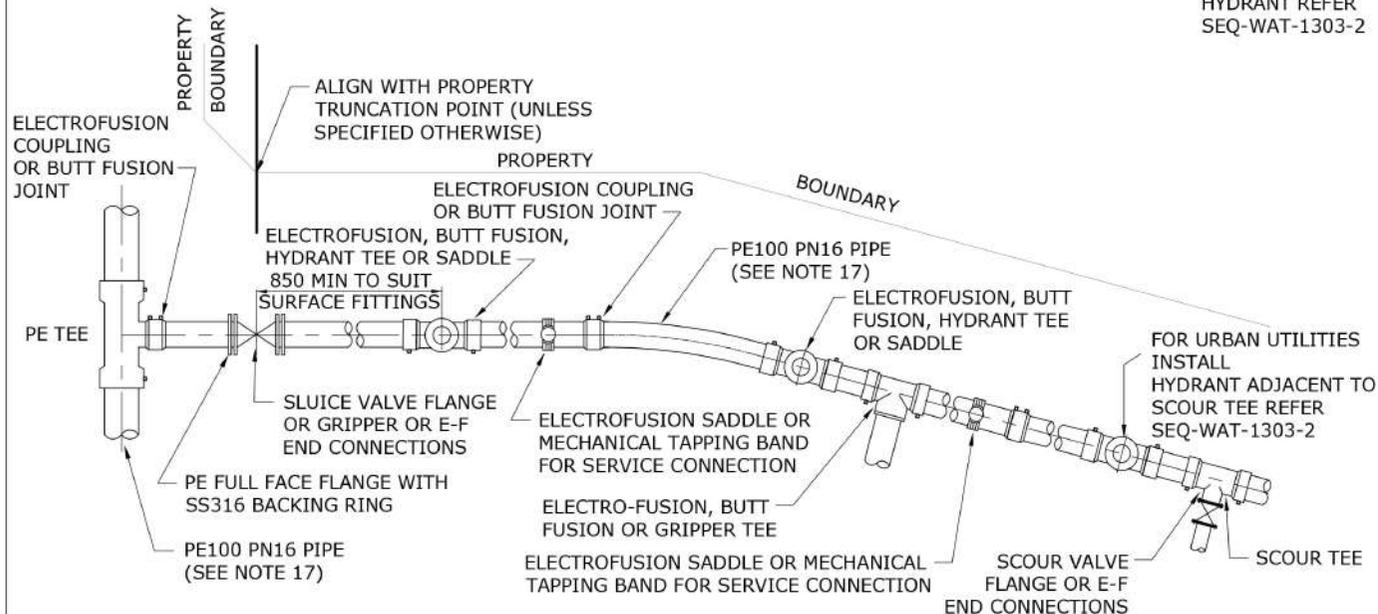


N BOULDER HWY

APARTMENTS PLAN 2,3,4,5,6
WATER LINES



TYPICAL INSTALLATION OF PVC & DI PIPES & FITTINGS



TYPICAL INSTALLATION OF PE PIPES & FITTINGS

(FOR CUT-IN DETAILS SEE SEQ-WAT-1105-1)

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. INSTALL PIPEWORK PARALLEL TO PROPERTY BOUNDARIES.
3. MAIN, SERVICE AND METER SHALL BE INSTALLED BY THE DEVELOPER.
4. WRAP FLANGES AND BOLTS, WITH A PETROLATUM TAPE SYSTEM IN ACCORDANCE WITH SEQ-WAT-1313.
5. DEFLECTION DETAILS I.E. PIPE LENGTH AND OFFSET SHALL BE DETAILED ON DESIGN DRAWING.

DI & PVC PIPE

6. DUCTILE IRON FITTINGS MAY BE USED WITH DI & PVC PIPE. FITTINGS SHALL BE FBE COATED AND LINED. CEMENT LINED WITH A BITUMINOUS EXTERNAL COATING MAY BE USED WITH APPROVAL. DO NOT USE PVC FITTINGS.
7. PE SLEEVING, COLOURED FOR THE PRODUCT IS REQUIRED ON ALL DI PIPE AND FITTINGS APPLIED IN ACCORDANCE WITH AS 3681. TWO THICKNESS REQUIRED BETWEEN FITTINGS AND THRUST BLOCK. REINSTATE ANY DAMAGED SLEEVING AS PER MANUFACTURER'S SPECIFICATIONS.
8. USE PRE-TAPPED CONNECTORS ON DN100 TO DN300 NEW MAIN INSTALLATIONS.
9. USE TAPPING BANDS FOR CONNECTIONS TO EXISTING MAINS.

PVC PIPE

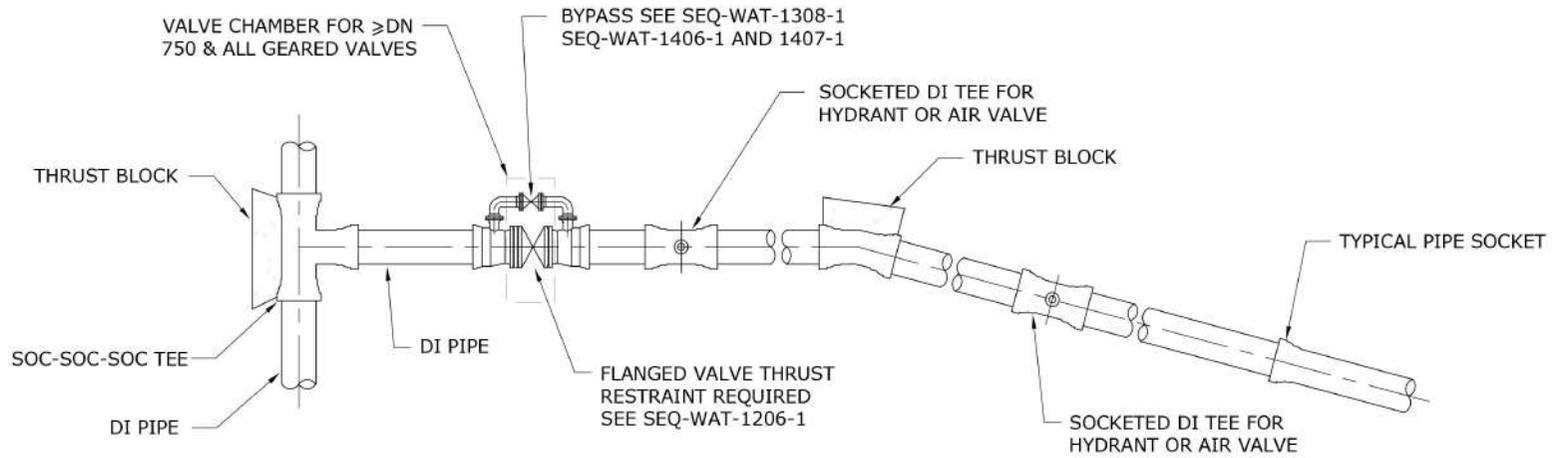
10. USE PRE-TAPPED CONNECTORS, REFER NOTE 8.
11. PVC PIPE SHALL NOT BE IN CONTACT WITH THRUST BLOCK CONCRETE.
12. MAXIMUM SIZE OF DRILLED HOLES FOR SERVICE CONNECTIONS IN PVC PIPE TO BE 30% OF DN OR 50 (LOWER VALUE TO BE USED).
13. DI SPIGOTS SHALL NOT BE FITTED INTO PVC SOCKETS.
14. PVC PIPE SHALL NOT BE BENT OR CURVED.

DI PIPE

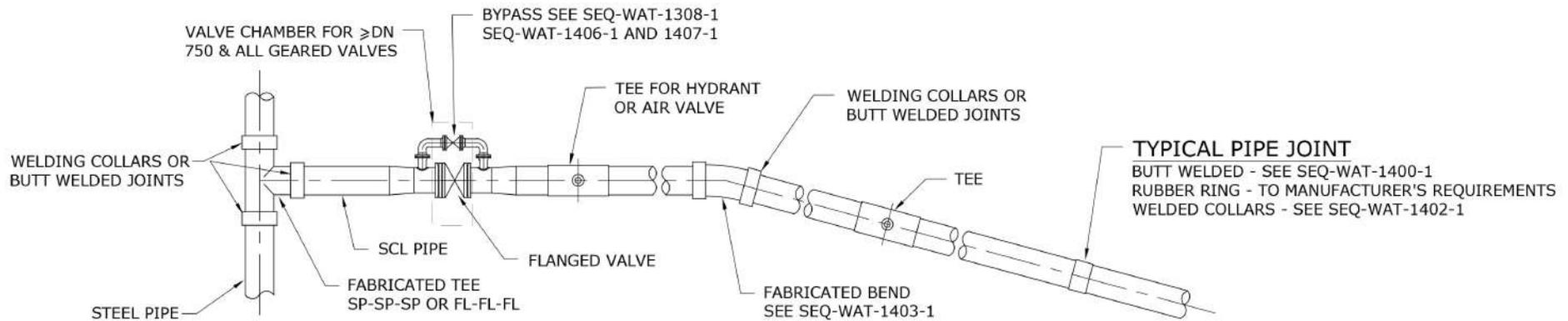
15. DIRECT TAPPING OF DICL PIPE IS PROHIBITED.
16. ELECTRICALLY ISOLATE COPPER SERVICES FROM DI PIPE.

PE PIPE

17. PE PIPE MAY BE COLD BENT TO MAXIMUM RADIUS AS PER POP 202, STAKES OR OTHER SOURCES OF POINT LOADS SHALL NOT BE USED TO ASSIST IN BENDING THE PIPE.
18. MAKE ALLOWANCE DURING CONSTRUCTION FOR EXPANSION AND CONTRACTION OF PE PIPE DUE TO TEMPERATURE CHANGES.
19. ELECTROFUSION AND BUTT WELDING TO BE IN ACCORDANCE WITH WSA-01 (POLYETHYLENE CODE), BUTT WELDING IN TRENCHES IS NOT PERMITTED.
20. ALL MECHANICAL COUPLINGS TO BE SELF-RESTRAINING.
21. REFER SEQ-WAT-1409-1 FOR TYPICAL PE ARRANGEMENTS.



TYPICAL INSTALLATION OF DI MAINS

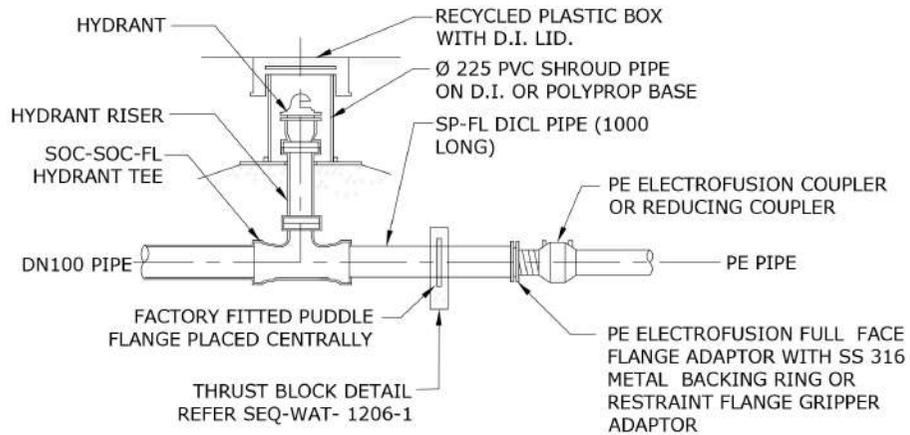


TYPICAL INSTALLATION OF STEEL MAINS

(THRUST BLOCKS REQUIRED WHERE NON-RESTRAINING RUBBER RING JOINTS USED)

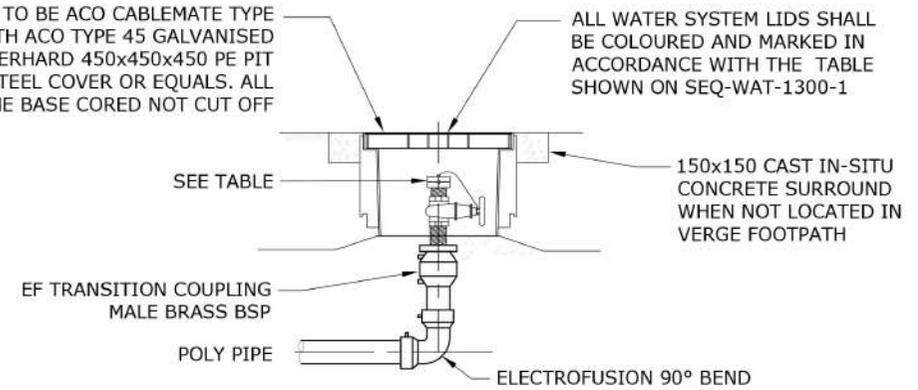
NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. PROVIDE CORROSION PROTECTION FOR ALL MAINS AND FITTINGS IN ACCORDANCE WITH CODE.
3. SERVICE CONNECTIONS NOT PERMITTED ON DN375 AND LARGER MAINS. (REFER SEQ-SP CONNECTIONS POLICY).
4. CONTACT SEQ-SP FOR PREFERRED TRUNK MAIN AND VALVE LAYOUT AND DESIGN



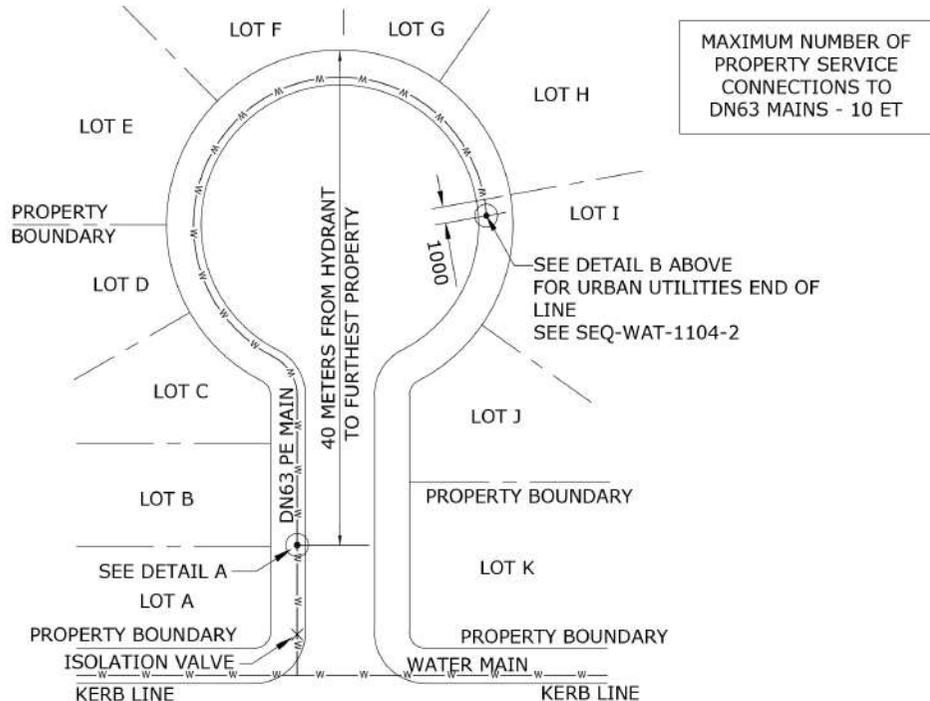
DETAIL A
IN-LINE CONNECTION

FLUSHING POINT BOX TO BE ACO CABLEMATE TYPE 45 POLYCRETE PIT WITH ACO TYPE 45 GALVANISED STEEL COVER OR EVERHARD 450x450x450 PE PIT WITH GALVANISED STEEL COVER OR EQUALS. ALL PITS ARE TO HAVE THE BASE CORED NOT CUT OFF



DETAIL B
FLUSHING POINT AT END OF LINE
AND HEAD OF CUL-DE-SAC

(FOR URBAN UTILITIES END OF LINE SEE SEQ-WAT-1104-2)



TERMINAL END OF CUL-DE-SAC

| FLUSHING POINT FITTINGS TABLE | | | |
|-------------------------------|---|--|----------|
| | VALVE F-F | COUPLING-M | DUST CAP |
| POTABLE | 1 1/2" BRASS GATE VALVE WITH BRASS HAND WHEEL (SEE NOTE 13) | 38 mm BRASS STORZ X 1 1/2" BSP (SEE NOTE 13) | YES |

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. PIPE MATERIAL TO BE IN ACCORDANCE WITH ACCEPTED PRODUCTS AND MATERIALS LIST.
3. PE ELECTROFUSION (EF) FITTINGS TO BE CLASS PN16.
4. WHERE POSSIBLE USE A SINGLE LENGTH OF PE PIPE.
5. DO NOT CURVE PE PIPES TO A RADIUS OF LESS THAN 25 TIMES PIPE OD.
6. BACKING FLANGES, NUTS, BOLTS AND WASHERS TO BE MANUFACTURED FROM GRADE 316 STAINLESS STEEL.
7. THRUST BLOCKS TO BE IN ACCORDANCE WITH SEQ-WAT-1205-1.
8. PVC PIPE MAY BE USED AS SHROUD PIPE, CUT AS REQUIRED TO CLEAR HYDRANT FLANGE.
9. FOR HYDRANT COVERS AND SURROUNDS DETAILS SEE SEQ-WAT-1302.
10. FIT THE FLUSHING POINT VALVE IN SUCH A WAY AS TO PREVENT MOVEMENT OR ROTATION OF THE VALVE BODY. PROVIDE A SUITABLE DUST CAP TO KEEP OUT DIRT AND GRAVEL. DRILL DUST CAP WITH 4 DIA DRILL.
11. FOR CONNECTION TO EXISTING MAINS SEE ALSO SEQ-WAT-1105-1.
12. TYPICAL HYDRANT PIPEWORK ASSEMBLIES ARE DETAILED IN SEQ-WAT-1302-1.
13. UNITYWATER REQUIRES STAINLESS STEEL BALL VALVE AND STAINLESS STEEL STORZ FITTING

LOCATE MARKER DISCS DIRECTLY OVER SERVICE CONDUITS

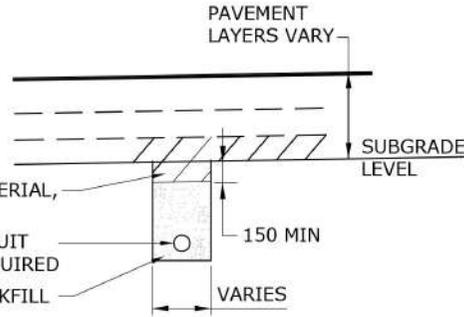
LOCATION OF MARKERS

(SEE SEQ-WAT-1300-1 FOR MARKER LOCATION DETAIL)

COMPACTED PAVEMENT MATERIAL, REFER SEQ-WAT-1200-2

UTILITY SERVICE CONDUIT COMBINATIONS AS REQUIRED

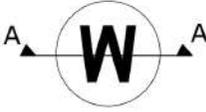
APPROVED TRENCH BACKFILL MATERIAL, REFER CODE SPECIFICATION



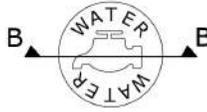
TYPICAL SECTION C-C - SERVICE CONDUIT



• DRINKING WATER SERVICE PIPE (STAINLESS STEEL)



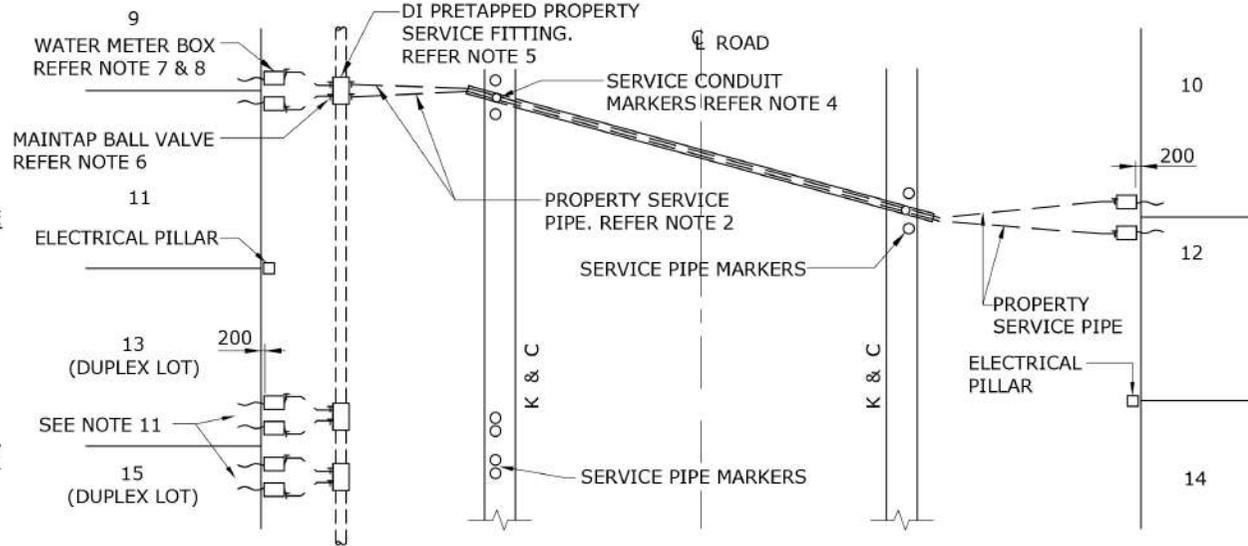
• SERVICE CONDUIT (BRASS)



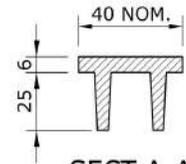
• DRINKING WATER SERVICE PIPE (STAINLESS STEEL)

WATER SERVICE PIPE AND CONDUIT MARKERS

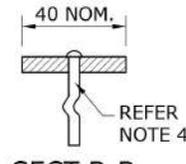
(SERVICE PIPE MARKER ONLY ON KERB OF VERGE WITH METERS)



PLAN



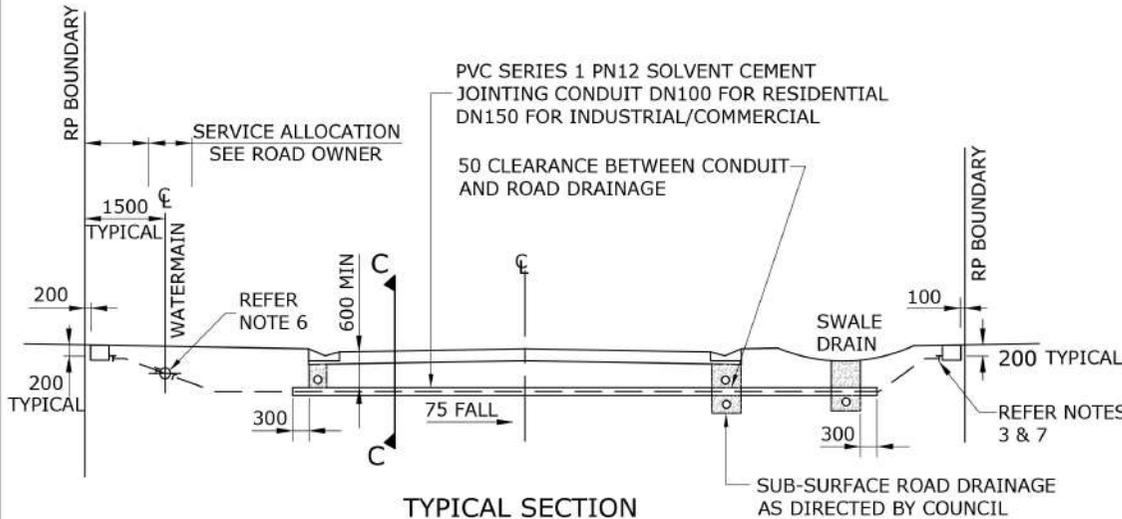
SECT A-A (BRASS)



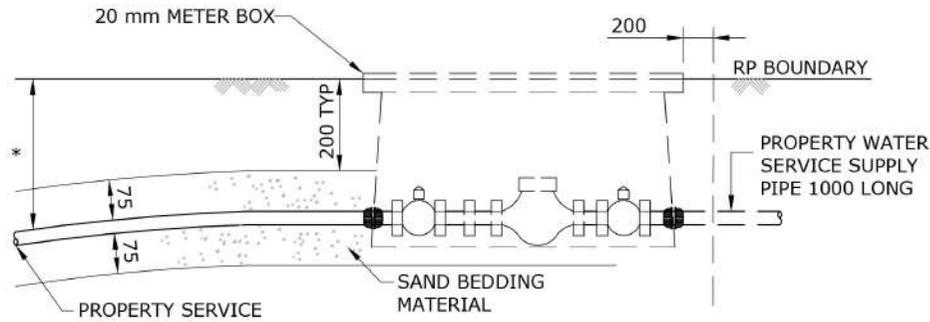
SECT B-B (STAINLESS STEEL)

NOTES

1. PROPERTY SERVICE PIPE SHALL BE POLYETHYLENE PIPE TO AS/NZS4130 SERIES1 PN16 SDR11 PE100 COLOURED BLACK WITH BLUE STRIPES.
2. SINGLE PROPERTY SERVICE PIPE TO 20 m IN LENGTH IS DN25. SINGLE PROPERTY SERVICE PIPE OVER 20 m IN LENGTH IS DN32. TWIN PROPERTY SERVICE PIPE TO 20 m IN LENGTH SHALL BE DN32.
3. METER BOX INSTALLATION REFER TO SEQ-WAT-1106-2. METER INSTALLATION APPLICATION TO BE PROVIDED TO COUNCIL BY THE CONTRACTOR AFTER THE CONTRACTOR INSTALLS METER BOX.
4. PROPERTY SERVICE PIPE MARKERS (35 MIN DIA) SHALL BE STAINLESS STEEL RETAINED BY A STAINLESS STEEL PIN WHEREAS SERVICE CONDUIT MARKERS SHALL BE BRASS, AS SHOWN.
5. PROPERTY SERVICE PIPE, BALL VALVES, DUCTILE IRON PRE-TAPPED PROPERTY SERVICE FITTING AND ASSOCIATED FITTINGS SHALL BE JOINED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
6. THE MAIN TAP BALL VALVE SHALL BE LEFT IN THE FULLY OPEN POSITION.
7. THE WATER METER BALL VALVES WITHIN BOX SHALL BE LEFT IN THE FULLY CLOSED POSITION.
8. THE PROPERTY SERVICE PIPE SHALL BE PERPENDICULAR TO THE FRONT RP BOUNDARY FOR THE LAST 300 OF THE PIPE.
9. PROVIDE PROPERTY SERVICE MARKER TAPE FOR BURIED PIPE.
10. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
11. REFER METERING TECHNICAL SPECIFICATIONS FOR DETAILED LOCATIONS OF METER BOX SERVICING DUPLEX LOT.
12. SERVICE CONDUITS TO BE FROM BOUNDARY TO BOUNDARY ACROSS ROADWAY AS SHOWN.

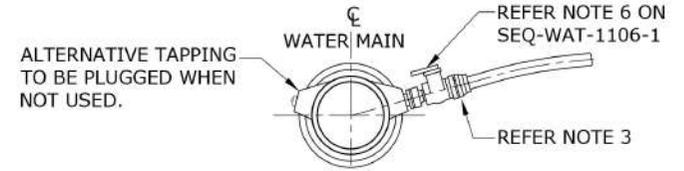


TYPICAL SECTION



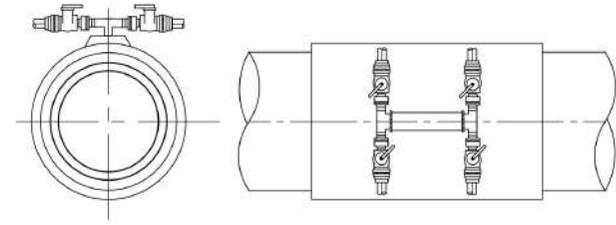
TYPICAL 20 mm WATER METER

* GRADE DOWN TO MAIN



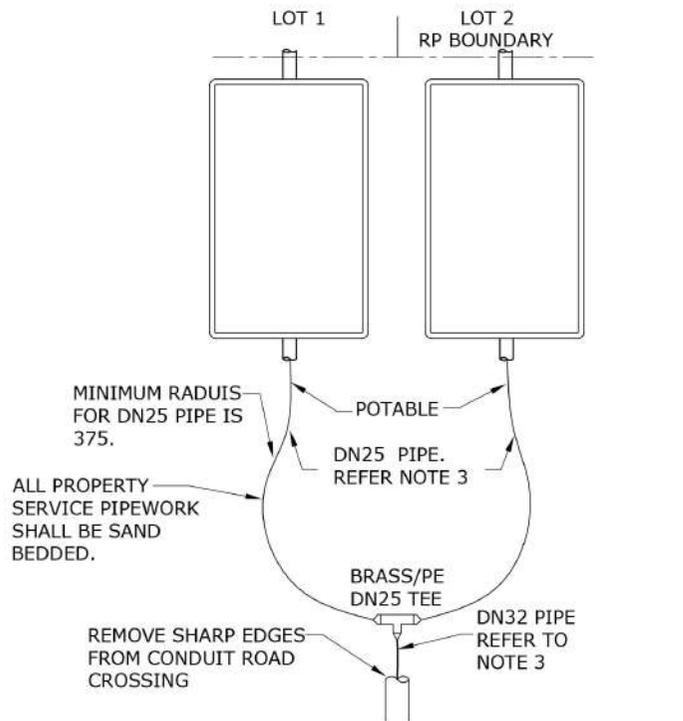
PRETAPPED CONNECTOR (DI)

(FOR DN100 - DN150 PVC & DI PIPES)



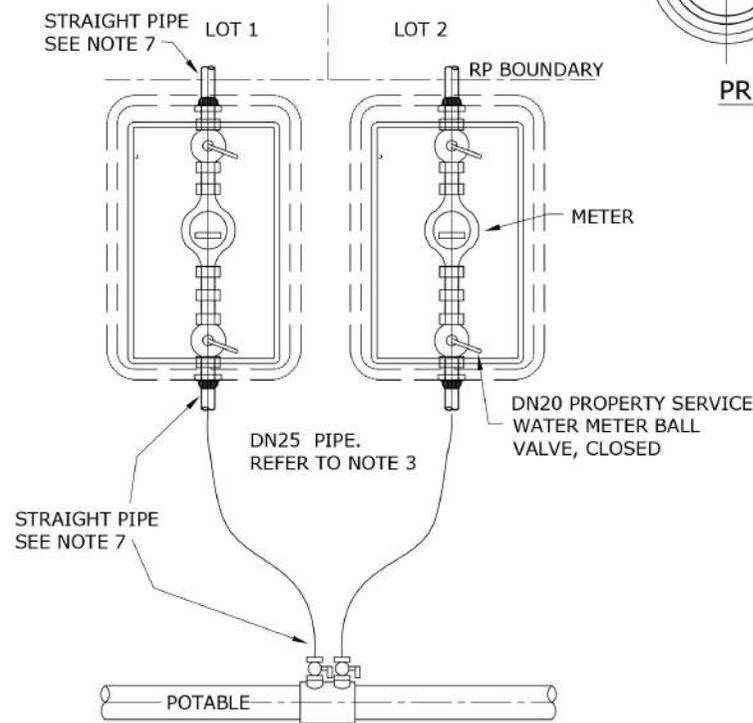
PRETAPPED TWIN CONNECTOR (DI)

(FOR DN 200+ PIPES SINGLE PORT)



LONG SERVICES - COMBINED OR SEPARATE

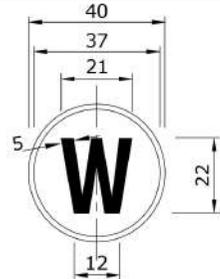
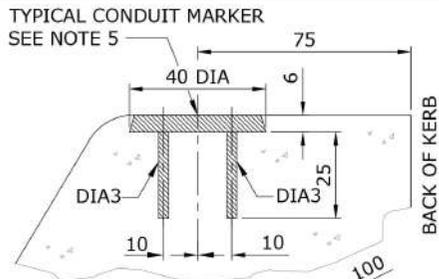
(COMBINED LONG SERVICES SHOWN)



SHORT SERVICES - SEPARATE PREFERRED

NOTES

1. FOR SINGLE PROPERTY SERVICE AND GENERAL PROPERTY SERVICE INSTALLATION DETAILS REFER TO SEQ-WAT-1106-1.
2. FOR DUAL RETICULATION WATER SERVICE TYPICAL INSTALLATION DETAILS REFER TO SEQ-NDW-23## DRAWING SET.
3. FOR PROPERTY SERVICE PIPE DETAILS REFER TO NOTE 2 & 5 AND THE GENERAL DETAILS ON SEQ-WAT-1106-1.
4. FOR POTABLE WATER SERVICE PRESSURE PIPE COLOURS AND MARKING DETAILS REFER TO SEQ-WAT-1106-1.
5. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
6. REFER METERING TECHNICAL SPECIFICATIONS FOR DETAILS OF METER BOX AND COMPONENTS ARRANGEMENT.
7. A LENGTH OF MINIMUM 100MM SERVICE PIPES IMMEDIATELY OUTSIDE METER BOXES AS WELL AS NEXT TO MAINTAP BALL VALVES SHALL BE INSTALLED STRAIGHT FOR EITHER SIDE OF A BOX.



CONDUIT MARKER
SEE NOTE 5

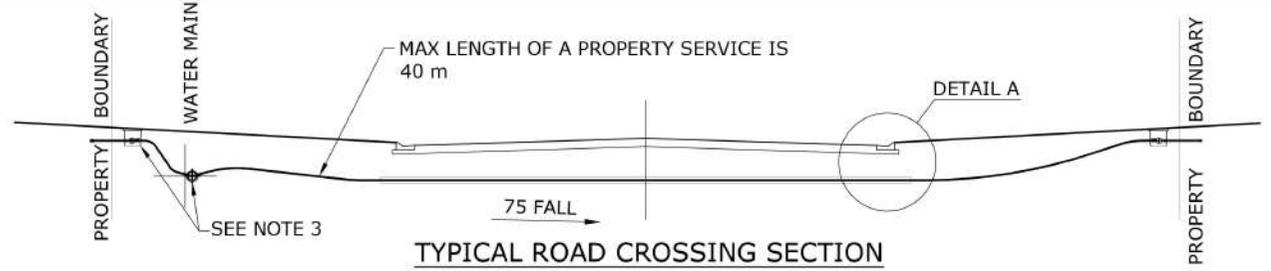
CONDUIT MARKER
SEE NOTE 5

BACK OF KERB

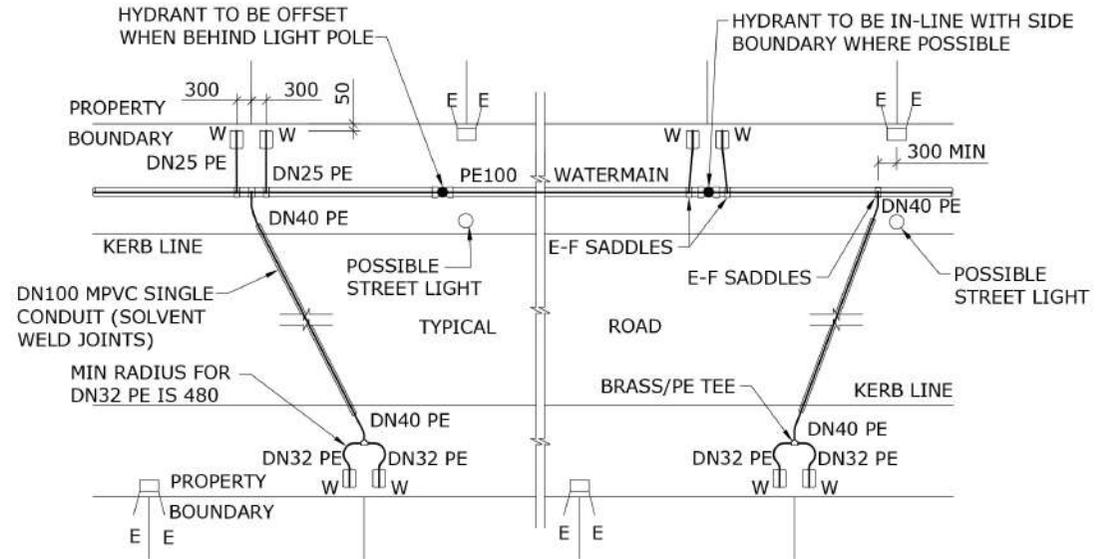
BACK OF KERB

CONDUIT MARKER DETAILS

| SERVICE CONFIGURATION | NOMINAL SERVICE SIZE | ROAD CROSSING PIPE SIZE | INDIVIDUAL SERVICE PIPE SIZE | METER SIZE |
|---|----------------------|-------------------------|------------------------------|------------|
| Single service, no road crossing, non-hatchet block | DN20 | Not applicable | DN25 PE (DN20 Cu) | DN20 |
| Single service, no road crossing, hatchet block | DN25 | Not applicable | DN32 PE (DN25 Cu) | DN20 |
| Single service, across road, all block shapes | DN25 | DN32 PE (DN25 Cu) | DN32 PE (DN25 Cu) | DN20 |
| Dual service, across road, all block shapes | DN25 | DN40 PE (DN32 Cu) | DN32 PE (DN25 Cu) | DN20 |



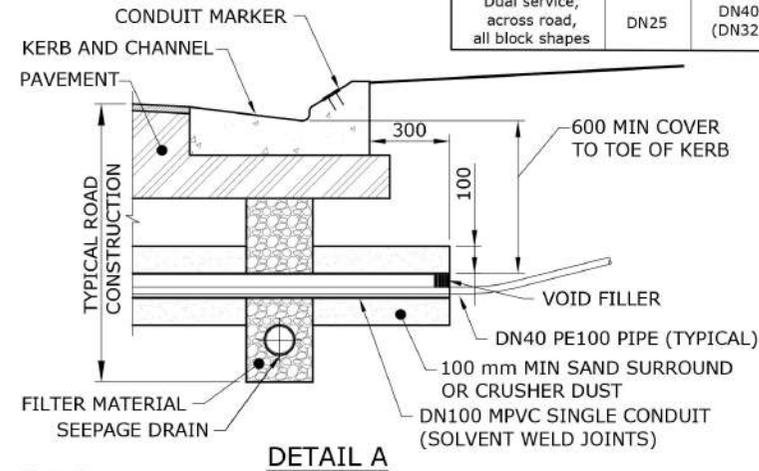
TYPICAL ROAD CROSSING SECTION



TYPICAL MAIN CONNECTIONS

LEGEND

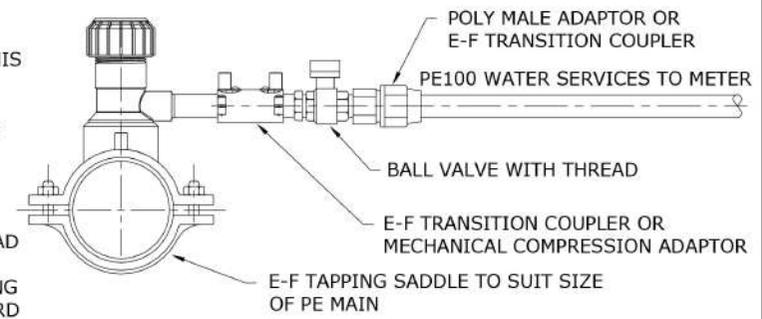
E - ELECTRICITY CONNECTION POINT
W - WATER CONNECTION & METER POINT



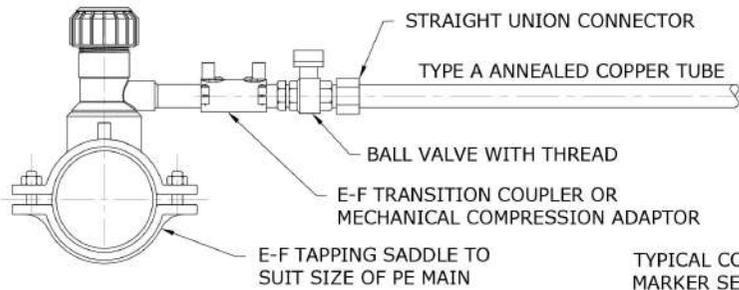
DETAIL A

- NOTES**
- ALL WORK SHALL BE IN ACCORDANCE WITH QUEENSLAND CODES, SPECIFICATIONS AND STANDARDS.
 - UNLESS SPECIFIED OTHERWISE ALL MATERIALS AND WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARD.
 - THE MAIN TAP BALL VALVE SHALL BE LEFT IN THE FULLY OPEN POSITION. THE WATER METER BALL VALVE WITHIN METER BOX SHALL BE LEFT IN THE FULLY CLOSED POSITION.
 - WATER CONNECTION AND CONDUIT LAYOUT TO BE DESIGNED SO THAT WATER METERS ARE NOT ADJACENT TO ELECTRICITY CONNECTION POINTS.
 - CONDUIT MARKERS SHALL BE INSTALLED AS DETAILED WITH "W" MARKING FOR WATER SERVICES AND "I" MARKING FOR IRRIGATION SYSTEMS. KERB MARKERS TO BE INSTALLED ON TOP OF KERB WHERE POSSIBLE.

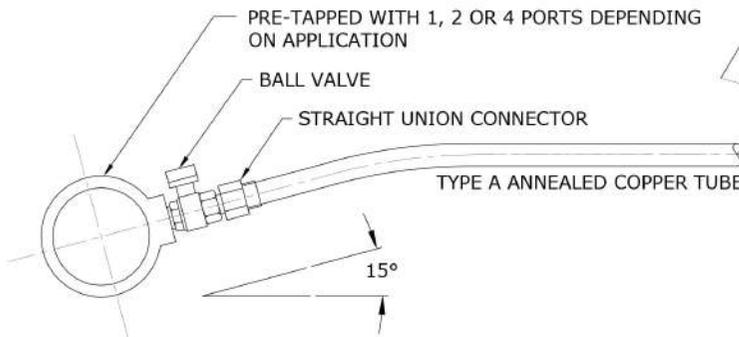
- E-F TAPPING SADDLES SHALL BE USED FOR ALL NEW PE MAINS. FOR EXISTING PE PIPE, E-F FITTINGS SHALL BE USED UNLESS THIS IS IMPRACTICABLE, IN WHICH CASE MECHANICAL TAPPING SADDLES/BANDS MAY BE USED.
- PE SERVICES SHALL HAVE APPROVED DETECTABLE MARKER TAPE LAID ON TOP OF THE BEDDING, EXTENDING FROM THE WATER MAIN TO THE METER. WHERE CONDUITS ARE USED THE MARKER TAPE SHALL BE ATTACHED TO THE WATER SERVICES AND PASS THROUGH THE CONDUIT.
- BACKFILLING IN ROADWAYS SHALL COMPLY WITH RELEVANT ROAD AUTHORITY REQUIREMENTS.
- SERVICE CONDUITS SHALL EXTEND 300mm BEYOND ALL EXISTING OR PLANNED CONCRETE FOOTPATHS, BIKEWAYS AND OTHER HARD STANDING AREAS.
- ALL DIMENSIONS ARE IN MILLIMETRES.
- ALSO SEE NOTES ON SEQ-WAT-1107-3.



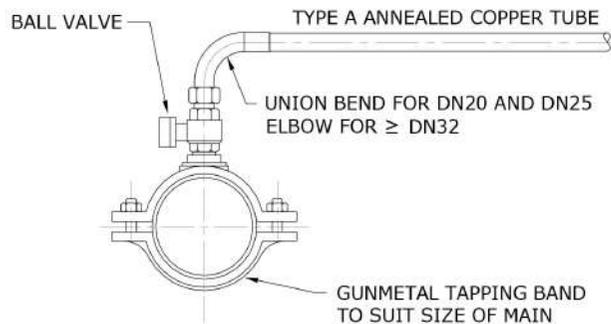
E-F SADDLE DETAILS (SEE NOTE 6)



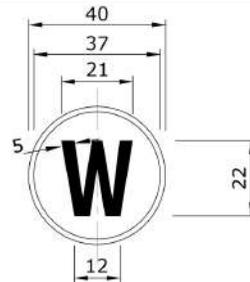
E-F TAPPING SADDLE - PE MAINS
(SEE NOTE 1)



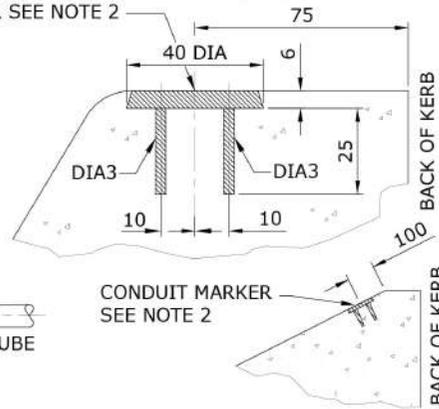
PRE-TAPPED ARRANGEMENT - DI/CL OR PVC MAINS



TAPPING BAND ARRANGEMENT



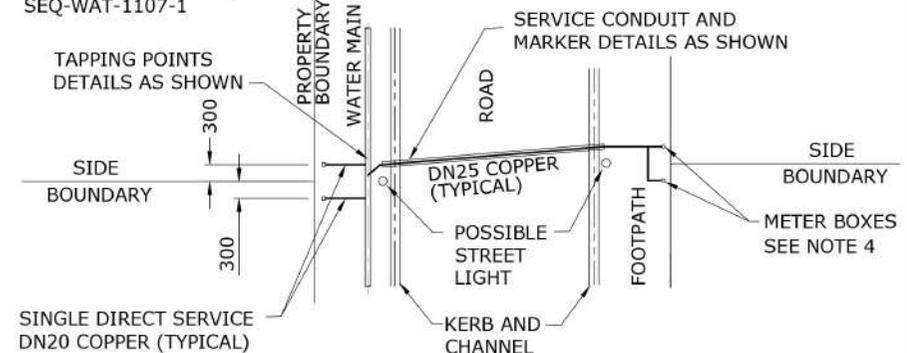
TYPICAL CONDUIT MARKER SEE NOTE 2



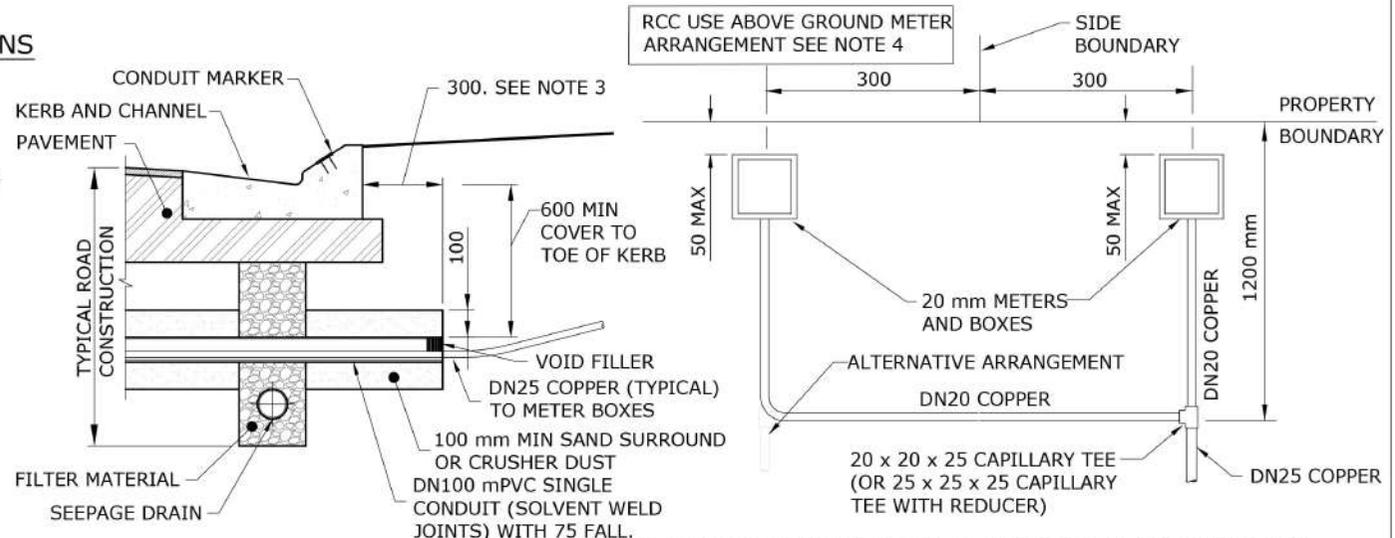
CONDUIT MARKER DETAILS

NOTES

1. E-F TAPPING SADDLES SHALL BE USED FOR ALL NEW PE MAINS. FOR EXISTING PE PIPE, E-F FITTINGS SHALL BE USED UNLESS THIS IS IMPRACTICABLE, IN WHICH CASE MECHANICAL TAPPING BANDS/SADDLES (ONLY BANDS IN LCC) MAY BE USED.
2. CONDUIT MARKERS SHALL BE INSTALLED AS DETAILED WITH "W" MARKING FOR WATER SERVICES AND "I" MARKING FOR IRRIGATION SYSTEMS.
3. SERVICE CONDUITS SHALL EXTEND 300mm BEYOND ALL EXISTING FOOTPATHS, BIKEWAYS AND OTHER HARD STANDING AREAS.
4. FOR URBAN UTILITIES METER ARRANGEMENTS REFER SEQ-WAT-1107-3 AND FOR RCC METER ARRANGEMENTS REFER SEQ-WAT-1109-1 AND SEQ-WAT-1109-2.
5. ALSO REFER NOTES ON SEQ-WAT-1107-3 FOR URBAN UTILITIES AND SEQ-WAT-1109-1 AND SEQ-WAT-1109-2 FOR RCC.
6. THE MAIN TAP BALL VALVE SHALL BE LEFT IN THE FULLY OPEN POSITION. THE WATER METER BALL VALVE WITHIN METER BOX SHALL BE LEFT IN THE FULLY CLOSED POSITION.
7. URBAN UTILITIES REQUIRES PROPERTY SERVICES TO BE SIZED IN ACCORDANCE WITH SEQ-WAT-1107-1



COPPER SERVICES



CONDUITS DETAILS

MULTIPLE SERVICE DETAILS AT PROPERTY BOUNDARY

RCC USE ABOVE GROUND METER ARRANGEMENT SEE NOTE 4

SIDE BOUNDARY 300

PROPERTY BOUNDARY

50 MAX

50 MAX

1200 mm

20 mm METERS AND BOXES

ALTERNATIVE ARRANGEMENT

DN20 COPPER

20 x 20 x 25 CAPILLARY TEE (OR 25 x 25 x 25 CAPILLARY TEE WITH REDUCER)

DN25 COPPER

DN20 COPPER

DN25 COPPER

SIDE BOUNDARY

SIDE BOUNDARY

300

SINGLE DIRECT SERVICE DN20 COPPER (TYPICAL)

PROPERTY BOUNDARY

WATER MAIN

ROAD

FOOTPATH

300

300

KERB AND CHANNEL

DN25 COPPER (TYPICAL)

POSSIBLE STREET LIGHT

METER BOXES SEE NOTE 4

PROPERTY BOUNDARY

300

300

300

300

300

300

300

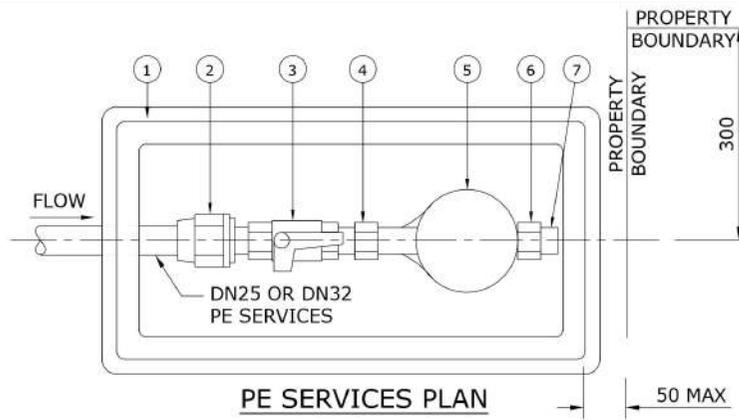
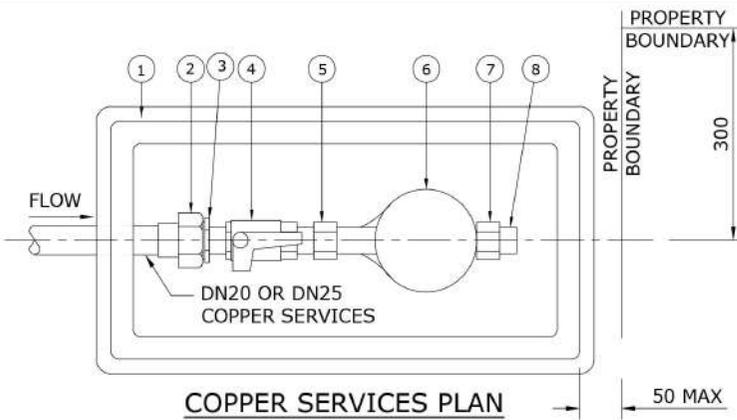
300

300

300

300

300



FITTINGS REQUIRED FOR DN20 COPPER SERVICES

| ITEM No | DESCRIPTION |
|---------|--|
| 1 | PE METER BOX WITH LID (APPROVED HDPE TYPE) |
| 2 | STRAIGHT CONNECTOR - 20mm CAPILLARY TO 3/4" BSP, F |
| 3 | NOT USED |
| 4 | DN20 BALL VALVE 3/4" BSP, M-F |
| 5 | DN20 WATER METER COUPLING 3/4" BSP, M TO 3/4" METER THREAD x 14 TPI, F |
| 6 | 20mm INLINE WATER METER (APPROVED) |
| 7 | DN20 WATER METER COUPLING - 3/4" METER THREAD x 14 TPI, F TO 3/4" BSP, M |
| 8 | PLASTIC CAP |

FITTINGS REQUIRED FOR DN25 COPPER SERVICES

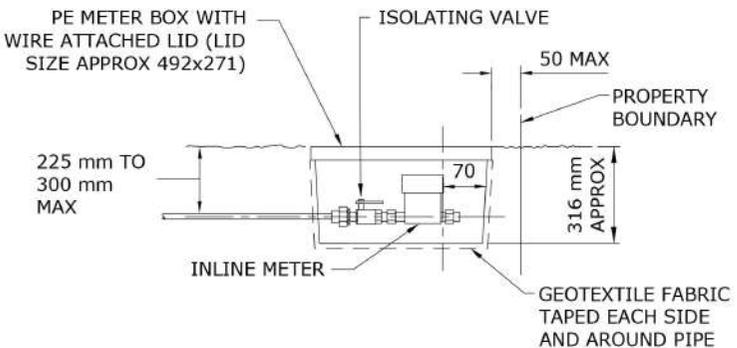
| ITEM No | DESCRIPTION |
|---------|--|
| 1 | PE METER BOX WITH LID (APPROVED HDPE TYPE) |
| 2 | STRAIGHT CONNECTOR - 25mm CAPILLARY TO 1" BSP, F |
| 3 | ADAPTOR - 1" BSP, M TO 3/4" BSP, F |
| 4 | DN20 BALL VALVE - 3/4" BSP, M-F |
| 5 | DN20 WATER METER COUPLING - 3/4" BSP, M TO 3/4" METER THREAD x 14 TPI, F |
| 6 | 20mm INLINE WATER METER (APPROVED) |
| 7 | DN20 WATER METER COUPLING - 3/4" METER THREAD x 14 TPI, F TO 3/4" BSP, M |
| 8 | PLASTIC CAP |

FITTINGS REQUIRED FOR DN25 PE SERVICES

| ITEM No | DESCRIPTION |
|---------|--|
| 1 | PE METER BOX WITH LID (APPROVED HDPE TYPE) |
| 2 | PE ADAPTOR - DN25 COMPRESSION TO 3/4" BSP, M |
| 3 | DN20 BALL VALVE - 3/4" BSP, F-F |
| 4 | DN20 WATER METER COUPLING - 3/4" BSP, M TO 3/4" METER THREAD x 14 TPI, F |
| 5 | 20mm INLINE WATER METER (APPROVED) |
| 6 | DN20 WATER METER COUPLING - 3/4" METER THREAD x 14 TPI, F TO 3/4" BSP, M |
| 7 | PLASTIC CAP |

FITTINGS REQUIRED FOR DN32 PE SERVICES

| ITEM No | DESCRIPTION |
|---------|--|
| 1 | PE METER BOX WITH LID (APPROVED HDPE TYPE) |
| 2 | PE ADAPTOR - DN32 COMPRESSION TO 3/4" BSP, M |
| 3 | DN20 BALL VALVE - 3/4" BSP, F-F |
| 4 | DN20 WATER METER COUPLING - 3/4" BSP, M TO 3/4" METER THREAD x 14 TPI, F |
| 5 | 20mm INLINE WATER METER (APPROVED) |
| 6 | DN20 WATER METER COUPLING - 3/4" METER THREAD x 14 TPI, F TO 3/4" BSP, M |
| 7 | PLASTIC CAP |



SECTION VIEW

19. ALL POLY TO METAL CONNECTIONS SHALL BE EITHER MALE TO FEMALE CONFIGURATION ie. METAL FEMALE FITTINGS WITH POLY MALE FITTINGS, OR E-F TRANSITION COUPLERS.
20. DN25 AND DN32 PE SERVICES ARE EQUIVALENT TO DN20 AND DN25 COPPER SERVICES.
21. PE PIPE SHALL BE LAID WITH 100 mm MINIMUM SURROUND OF SAND.
22. ALL CAPILLARY JOINTED FITTINGS SHALL BE LONG ENGAGEMENT SOCKET TYPE.
23. ALL CAPILLARY JOINTS SHALL BE SOLDERED WITH 15% SILVER SOLDER TO AS 1515.3.
24. BRASS SEATED BARRELL UNIONS SHALL BE USED IN ALL INSTANCES EXCEPT FOR UNION CONNECTORS AT 25 mm METERS, WHICH SHALL BE FLAT SEATED WITH A 3 mm x 25 mm RUBBER GASKET.
25. COMPRESSION FITTINGS SHALL NOT BE USED WITH COPPER SERVICES. MARKER TAPE
26. PE SERVICES SHALL HAVE APPROVED DETECTABLE MARKER TAPE LAID ON TOP OF THE BEDDING, EXTENDING FROM THE WATER MAIN TO THE METER. WHERE CONDUITS ARE USED THE MARKER TAPE SHALL PASS THROUGH THE CONDUIT WITH THE WATER SERVICE.
- METER BOX
27. METER BOX LIDS SHALL HAVE A NON SLIP PATTERN.
28. LETTERING INDICATING "WATER METER" SHALL BE CAST INTO LIDS OF METER BOXES.

NOTES

GENERAL

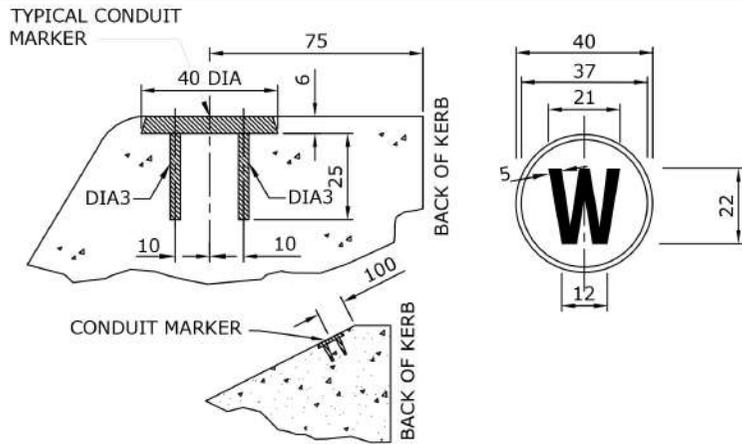
1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT QUEENSLAND CODES, SPECIFICATIONS AND STANDARDS.
2. UNLESS SPECIFIED OTHERWISE ALL MATERIALS AND WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS.
3. ALL DIMENSIONS ARE IN MILLIMETERS.
4. 20 mm METERS SHALL BE INSTALLED ON ALL DN25 PE AND DN32 PE SERVICES UNLESS OTHERWISE SPECIFIED.
5. 25 mm METERS SHALL ONLY BE INSTALLED WHERE REQUIRED BY THE OWNER AND AGREED BY SEQ-SPS.
6. SERVICES LARGER THAN DN32 PE ARE SUBJECT TO APPROVAL BY SEQ-SPS.
7. SERVICES SHALL BE LAID ACROSS FOOTPATHS PERPENDICULAR TO THE FRONT PROPERTY BOUNDARY OF THE PROPERTY BEING SERVED.
8. MULTIPLE SERVICES MAY ONLY BE USED WHERE THE SERVICE CROSSES A ROADWAY AND THE SERVICE SHALL BE ONE SIZE UP WHERE CROSSES A ROADWAY.
9. BACKFILLING IN ROADWAYS SHALL COMPLY WITH RELEVANT ROAD AUTHORITIES REQUIREMENTS.

TAPPING

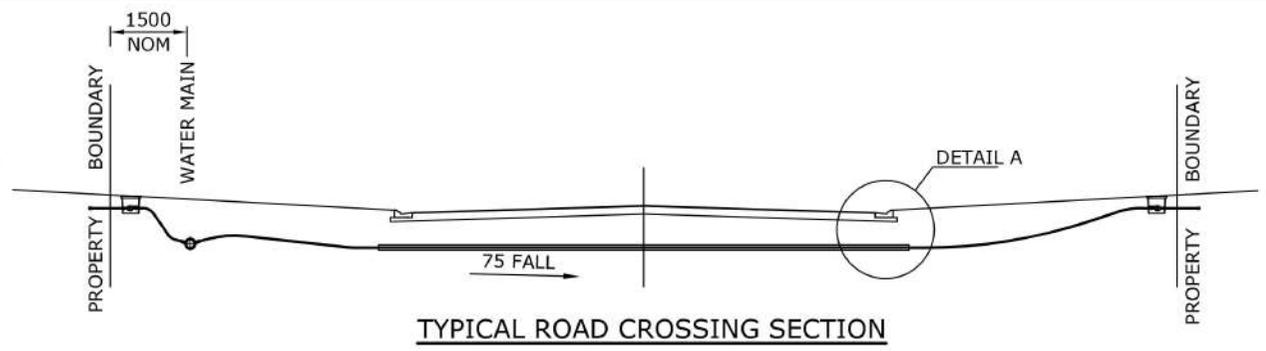
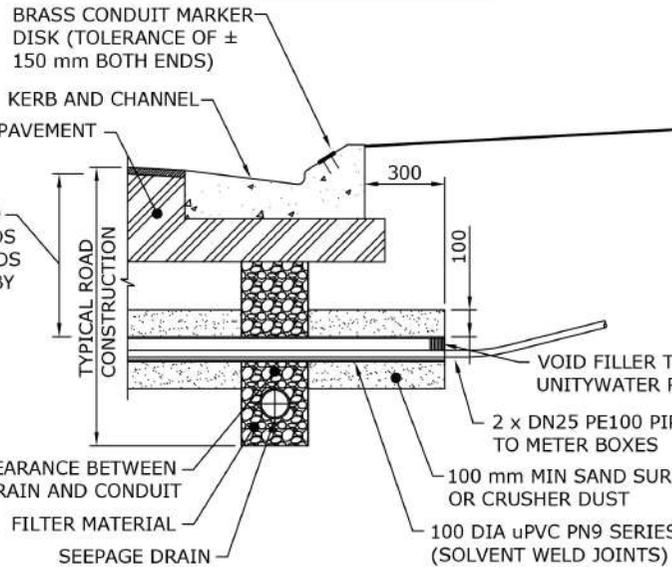
10. INDIVIDUAL TAPPING POINTS SHALL BE USED FOR SERVICES WHERE THE MAIN IS ON THE SAME SIDE OF THE ROADWAY AS THE PROPERTIES BEING SERVED.
11. APPROVED PRE-TAPPED DI FITTINGS SHALL BE USED TO ON ALL NEW DI CL OR PVC MAINS PROVIDED THEY COMPLY WITH THE REQUIREMENTS ON THIS WATER CODE AND AS/NZ 2280.
12. WHERE REQUIRED APPROVED TAPPING BANDS WITH POSITIVE STOPS SHALL BE USED ON ALL PVC AND PE PIPES.
13. WHERE TAPPING BANDS ARE INSTALLED ON DI CL PIPE, THE SECTION OF THE MAIN AT THE PROPOSED TAPPING POINT, SHALL BE FIRST CLEANED AND WRAPPED WITH A MINIMUM OF TWO LAYERS OF SELF-ADHESIVE POLYVINYLCHLORIDE WRAPPING. POLYETHYLENE SLEEVING SHALL BE REPLACED AROUND PIPE AND TAPPING BAND.

MATERIAL

14. COPPER SERVICES SHALL BE ANNEALED TYPE "A" AND CONFORM WITH AS 1432. POLYETHYLENE SERVICES SHALL BE CLASS PN16 PE100 AND CONFORM WITH AS 4130.
15. POLYETHYLENE SERVICES SHALL BE CONTINUOUS WITHOUT JOINTS.
16. ALL COPPER ALLOY FITTINGS SHALL BE DEZINCIFICATION RESISTANT AND COMPLY WITH AS 3688.
17. ALL BALL VALVES INCLUDING HANDLES SHALL BE EITHER STAINLESS STEEL OR DEZINCIFICATION RESISTANT COPPER ALLOY.
18. ALL FITTINGS FOR POLYETHYLENE PIPE SHALL COMPLY WITH AS 4129.

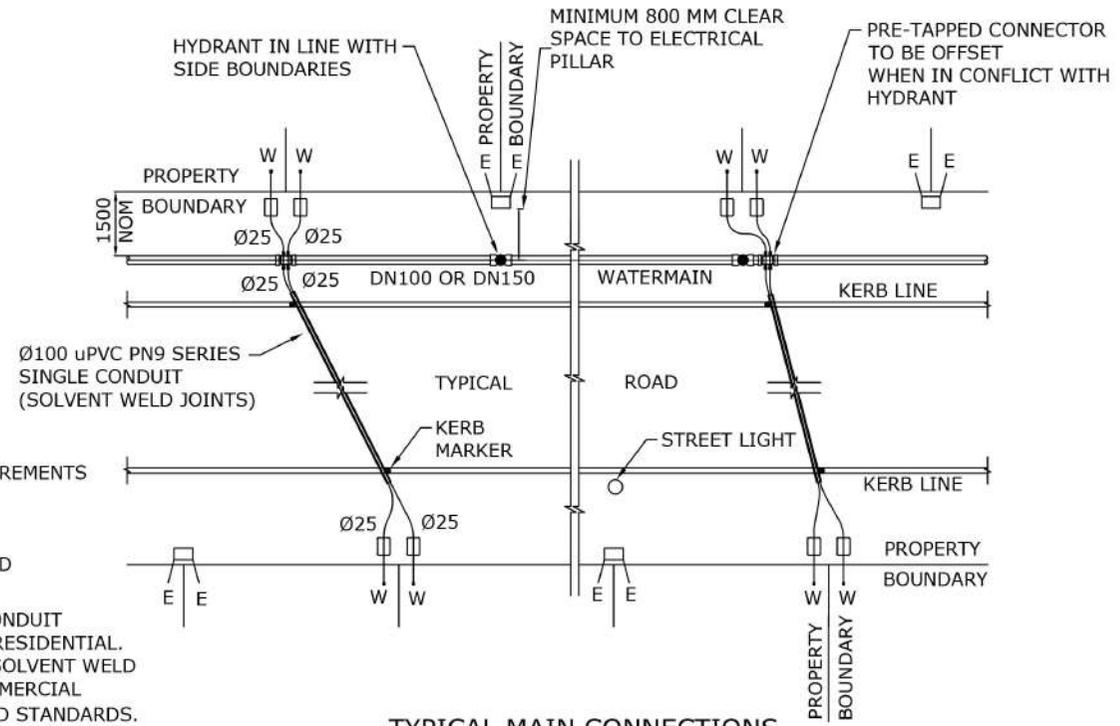


BRASS SERVICE CONDUIT MARKER



TYPICAL ROAD CROSSING SECTION

600 MIN URBAN AND UNCLASSIFIED ROADS
850 MIN STATE ROADS
OR AS NOMINATED BY RELEVANT ROAD AUTHORITY



TYPICAL MAIN CONNECTIONS

NOTES

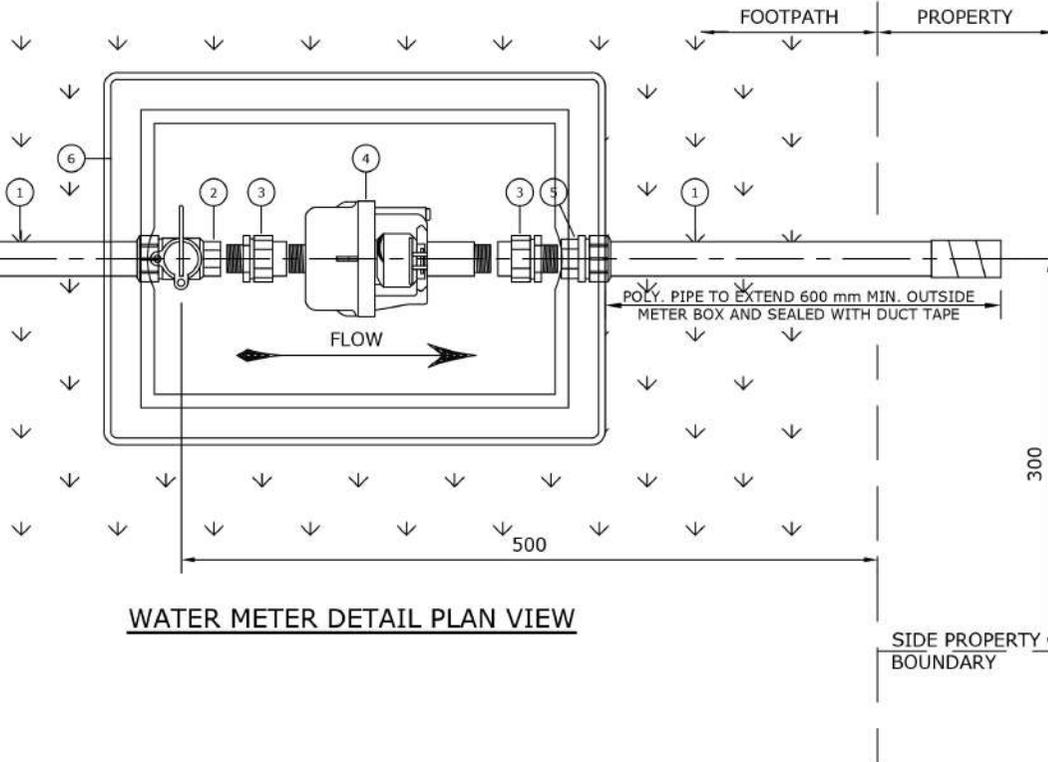
1. ALL WORK SHALL BE IN ACCORDANCE WITH QUEENSLAND CODES, SPECIFICATIONS AND STANDARDS.
2. UNLESS SPECIFIED OTHERWISE ALL MATERIALS AND WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARD.
3. BACKFILLING IN ROADWAYS SHALL COMPLY WITH RELEVANT ROAD AUTHORITY REQUIREMENTS.
4. WATER CONNECTION AND CONDUIT LAYOUT TO BE DESIGNED SO THAT WATER METERS ARE NOT ADJACENT TO ELECTRICITY CONNECTION POINT.
5. ALL DIMENSIONS ARE IN MILLIMETRES.
6. SERVICE CONDUITS TO BE ANGLED ACROSS ROADWAY WITH KERB MARKERS PERPENDICULAR TO COMMON PROPERTY BOUNDARY.
7. HYDRANTS MUST BE 10 M CLEAR OF PAD MOUNT TRANSFORMERS AND RMU'S.
8. DN100 CONDUIT ROAD CROSSING TO BE INSTALLED FOR WATER SERVICE.

DETAIL A

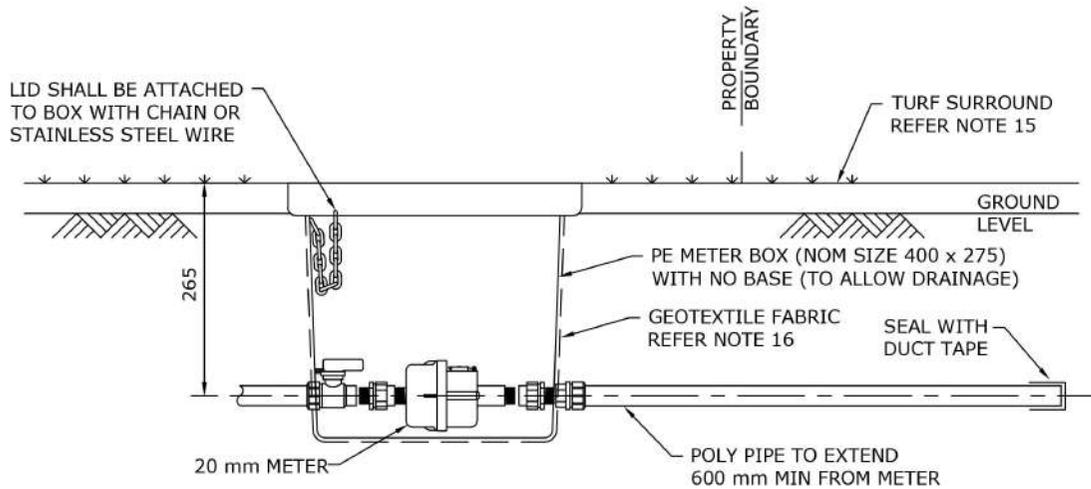
LEGEND

- E - ELECTRICITY CONNECTION POINT
- W - WATER CONNECTION & METER POINT

REFER STD. DWG.
SEQ-WAT-1108-2 FOR
CONTINUATION



WATER METER DETAIL PLAN VIEW



WATER METER DETAIL SECTIONAL VIEW

NOTES

1. METERS SHALL BE APPROVED BY UNITYWATER AND MEET THE REQUIREMENTS AND PERFORMANCE REQUIREMENTS OF AS 3565.1 METERS FOR WATER SUPPLY PART 1: COLD WATER METERS.
2. METERS SHALL BE FACTORY FITTED WITH 2 INDEPENDENTLY ACTING NON-RETURN VALVES IN SERIES AT THE DOWNSTREAM END OF THE METER IN COMPLIANCE WITH AS 3565.3 METERS FOR WATER SUPPLY PART 3: WATER METERS WITH INTEGRAL DUAL CHECK VALVES.
3. METERS CONSTRUCTED FROM COPPER ALLOYS SHALL BE DEZINCIFICATION RESISTANT AND COMPLY WITH AS 2345.
4. ALL MATERIALS IN CONTACT WITH POTABLE WATER SHALL COMPLY WITH AS/NZS 4020.
5. SERVICE PIPEWORK SHALL BE DN25 PE100 PN16 BLACK POLYETHYLENE PIPE WITH BLUE STRIPE IN ACCORDANCE WITH AS/NZS 4130.
6. ALL CONNECTIONS TO POLYETHYLENE PIPE SHALL BE APPROVED BRASS OR PLASTIC MECHANICAL FITTINGS.
7. ALL WATER INSTALLATIONS SHALL BE CARRIED OUT BY A LICENSED PLUMBER AND SHALL BE IN ACCORDANCE WITH RELEVANT BY-LAWS OF PLUMBING AND DRAINAGE ACT.
8. ALL PLUMBING FITTINGS SHALL BE GUNMETAL OR BRASS - DEZINCIFIED RESISTANT "DR" AND APPROVED TO AS 3855.
9. ALL BRASS FITTINGS SHALL HAVE MAKERS NAME OR MARK AND WATERMARK IMPRINTED ON SURFACE OF FITTING TO PROVE COMPLIANCE WITH AS 3855.
10. VALVES AT THE METER SHALL BE LEFT IN THE CLOSED POSITION AFTER CONSTRUCTION.
11. WATER SERVICES SHALL BE INSPECTED BY UNITYWATER INSPECTOR PRIOR TO BACKFILL.
12. BALL VALVE, WATER METER AND METER BOX SHALL BE IPAM APPROVED.
13. METER BOX LID SHALL HAVE NON SLIP PATTERN, LETTERING CAST INTO LID INDICATING "WATER METER" AND BE BLACK OR GREEN IN COLOUR.
14. METER BOX LID SHALL BE LEFT SO THAT IT SITS FLUSH WITH TURF SURROUND.
15. FOR NEW INSTALLATIONS, TURF SURROUND SHALL EXTEND A MINIMUM OF 600 mm AROUND SIDES OF METER BOX.
16. GEOTEXTILE FABRIC SHALL BE LAID UNDERNEATH METER BOX TAPED EACH SIDE AND AROUND PIPE TO PREVENT INGRESS OF SAND AND SOIL.

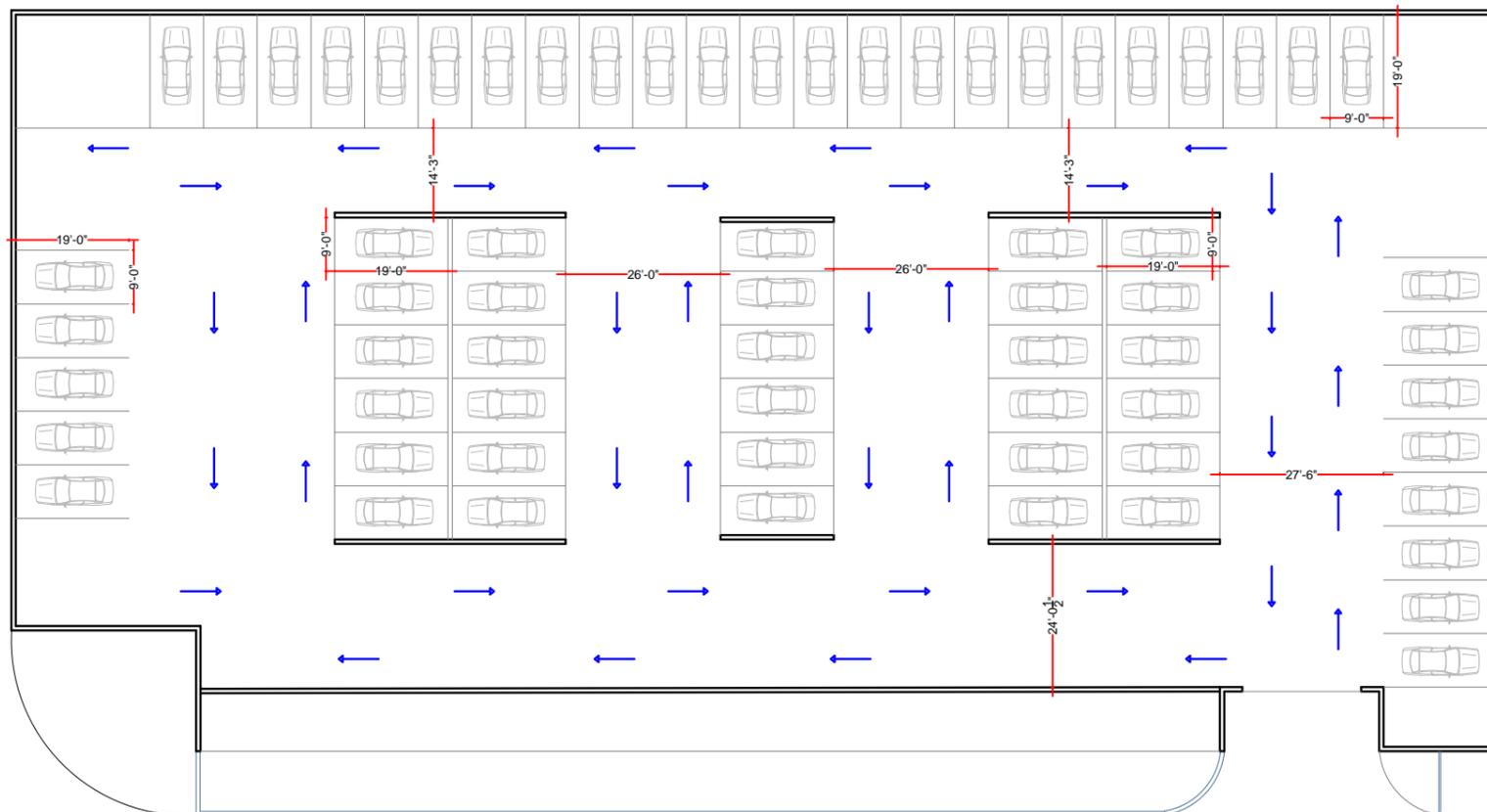
FITTINGS SCHEDULE

| ITEM | DESCRIPTION | No OFF |
|------|--|---------|
| 1 | DN25 PE100 PN16 PIPE WITH BLUE STRIPE | AS REQ. |
| 2 | 20 mm x 25 mm FEMALE/PE BRASS LOCKABLE BALL VALVE WITH HANDLE (REFER NOTE 9) | 1 |
| 3 | CONNECTION KIT (COMPRISES OF 2xDN20 BSP M/F BRASS UNIONS) | 1 |
| 4 | DN20 METER WITH DUAL CHECK VALVES (REFER NOTE 1) | 1 |
| 5 | OD25 PE TO DN20 MALE BRASS OR PLASTIC MECHANICAL CONNECTOR | 1 |
| 6 | PE METER BOX WITH LID (REFER NOTES 12 & 13) | 1 |

PARKING STANDARD



E COOGAN DR



N BOULDER HWY

GROUND FLOOR
PARKING DWG
CAR PARK SIZE 9' X 19'