

# Hydraulic Services

## CABONNE HOME SUPPORT REFURBISHMENT

70 GASKILL STREET CANOWINDRA, NSW 2804

### About Marline Engineering Newcastle

At Marline, we take a comprehensive approach when designing your new development.

With in-house electrical, mechanical and hydraulic engineers, Marline Engineering makes your engineering design needs a breeze. We are able to adjust, implement and create designs on AutoCAD and REVIT which makes it easy for contractors and builders to build our designs.

We advise you on the most affordable, practical and effective solutions and systems based on the site and legal factors.

As consulting engineers, Marline has also expanded the range of services to provide a wide range of building services disciplines including Air-conditioning, Electrical, Hydraulics, Fire Protection and Lift Services.

Marline has seen a huge amount of growth in the Energy sector. We provide services that go above and beyond the standard regulatory requirements and offer unique solutions to your Section J or JV3 Alternative solution reports. We also offer a fast NABERS and BEEC certification that ensures advertising for commercial properties are fully compliant with the CBD advertising rules and regulations.

With engineering consulting experience that dates back as far as 1975, we're one of the best engineering companies in Australia, and have developed the kind of projects that residential and commercial property developers benefit from.

Our Newcastle engineering firm continues to grow, however our team prides itself on every customer receiving the kind of high quality workmanship and personalised service that our company is known for.

To accommodate the expansion and demand for engineering services within Newcastle and throughout New South Wales, Marline Engineering has almost doubled the number of highly trained employees in the last five years.

Our engineering firm currently employs ten engineers, eight technical assistants and an office administrator. As a result, we continue to be leaders amongst engineering companies in Australia, with a large portfolio and a positive attitude.

PROJECT No:  
MN15171

CLIENT:  
CABONNE COUNCIL

ARCHITECT:

### DRAWING SCHEDULE

HY-00-000	COVER SHEET
HY-00-001	LEGEND & NOTES
HY-00-002	SITE SERVICES
HY-10-001	GROUND FLOOR - WATER & GAS LAYOUT
HY-20-001	GROUND FLOOR - SANITARY DRAINAGE LAYOUT
HY-20-002	ROOF - DRAINAGE LAYOUT
HY-30-001	DETAILS

**100% ISSUE**

HYDRAULIC SERVICES

HY-00-000 3



NOTE: SOME ITEMS MAY NOT BE USED

### LINETYPES - EXISTING

	eCW	COLD WATER
	eHW	HOT WATER
	eWW	WARM WATER
	eFH	FIRE HYDRANT
	eSP	FIRE SPRINKLER
	eG	GAS
	eNP	NON POTABLE
	eRW	RAINWATER REUSE
	eS	SANITARY
	eVP	VENT PIPE OFFSET
	eTW	TRADE WASTE
	eSW	STORMWATER
	eDP	STORMWATER TO RWT
	eOF	STORMWATER OVERFLOW
	eSS	SUBSOIL DRAIN
		DISUSE PIPE

### LINETYPES - NEW

	COLD WATER	
	HOT WATER	
	HWF	HOT WATER FLOW
	HWR	HOT WATER RETURN
	WARM WATER	
	T	TEMPERED WATER
	HEAT TRACE	
	FIRE HYDRANT	
	SP	FIRE SPRINKLER
	GAS	
	NP	NON POTABLE
	RW	RAINWATER REUSE
	SANITARY	
	VENT PIPE OFFSET	
	TW	TRADE WASTE
	PD	PUMP DISCHARGE
	SW	STORMWATER
	DP	STORMWATER TO RWT
	BD	BALCONY DRAIN TO STORMWATER
	RC	RECYCLED/RECLAIMED WATER
	OF	STORMWATER OVERFLOW
	SS	SUBSOIL DRAIN

### SYMBOLS - OTHER

	PIPEWORK CAP
	EXPANSION LOOP
	PIPEWORK PENETRATION TEE
	PIPEWORK PENETRATION RISER
	PIPEWORK PENETRATION DROPPER
	PIPEWORK DROP DOWN
	FIXTURE UNITS
	LOADING UNITS
	MEGA JOULES
	LITRES/SECOND
	FLOW ARROW
	PIPEWORK RISES
	PIPEWORK DROPS
	PIPEWORK RISES & DROPS
	SURFACE LEVEL
	PIPEWORK REDUCER

### SYMBOLS - WATER

	ISOLATION VALVE
	BALANCING VALVE
	CHECK VALVE
	REFLUX VALVE IN SHAFT WITH INSPECTION OPENING
	WATER VALVE IN PATH BOX
	CIRCULATING PUMP
	DUAL CHECK VALVES
	REDUCES PRESSURE ZONE DEVICE
	THERMOSTATIC MIXING VALVE
	TEMPERING VALVE
	THERMOSTATIC MIXING VALVE IN WALL BOX
	TEMPERING VALVE IN WALL BOX
	MAIN WATER METER
	PRIVATE WATER METER
	MICRON FILTER
	HOT WATER STORAGE UNIT

### SYMBOLS - FIRE

	BOOSTER ASSEMBLY
	PUMP SET
	VALVE SET
	TEST POINT
	ALARM STROBE
	SINGLE PILLAR HYDRANT (INTERNAL)
	DOUBLE PILLAR HYDRANT (EXTERNAL)
	STREET HYDRANT
	FIRE HOSE REEL
	THRUST BLOCK
	FIRE INDICATOR PANEL

### SYMBOLS - STORMWATER

	GRATED DRAIN
	GRATED PIT
	SEALED PIT
	DOWNPIPE WITH SPREADER

### SYMBOLS - SANITARY

	AIR ADMITTANCE VALVE
	FLOOR WASTE
	BASKET FLOOR WASTE
	CHROME PLATED BRASS SCREWED CAP
	SEALED FLOOR WASTE
	OVERFLOW GULLY
	CLEAR OUT/INSPECTION OPENING
	SANITARY FIXTURE
	INSPECTION SHAFT
	INSPECTION SHAFT WITH BOUNDARY TRAP
	INDUCT PIPE MICA FLAP
	TUNDISH ON WALL
	TUNDISH INWALL
	SEWER ACCESS CHAMBER
	SEWER MAINTENANCE SHAFT
	PLASTER TRAP
	SWIVEL EXPANSION JOINT
	PIPEWORK CAST IN BEAM
	BUNDED AREA

### ABBREVIATIONS

AT	ART TROUGH.
ACU	AIR CONDITIONING UNIT.
AAV	AIR ADMITTANCE VALVE.
B	BATH.
BFW	BUCKET FLOOR WASTE.
BKS	BUCKET SINK.
BS	BAR SINK.
BID	BIDETTE.
BT	BOUNDARY TRAP.
BWU	BOILING WATER UNIT.
CD	CONDENSATE DRAIN.
CO	CLEAROUT.
CPC	CHROME PLATED BRASS SCREWED CLEAROUT.
CS	CLEANERS SINK.
DCV	DOUBLE CHECK VALVE (TESTABLE).
DE	DIESEL EXHAUST.
DF	DRINKING FOUNTAIN.
DN	DIAMETER NOMINAL.
DG	DISCONNECTOR GULLY.
DP	DOWNPIPE.
DPH	DOUBLE PILLAR HYDRANT.
DT	DRINKING TROUGH.
DUVCV	DUAL CHECK VALVE.
DW	DISHWASHER.
e	EXISTING.
ED	ELEVATED DRAINAGE.
eSAC	EXISTING SEWER ACCESS CHAMBER.
eSWP	EXISTING STORMWATER PIT.
EW	EYE WASH.
FC	FUME CUPBOARD.
FH	FIRE HYDRANT.
FL	FLOOR LEVEL.
FS	FLUSHER SANITIZER.
FSL	FINISHED SURFACE LEVEL.
FU	FIXTURE UNITS.
FW	FLOOR WASTE.
GB	GAS BAYONET.
GCH	GAS CONVECTION HEATER.
GCT	GAS COOK TOP.
GD	GRATED DRAIN.
GW	GLASS WASHER.
Hb	HANDBASIN.
HT	HOSE TAP.
HWC	HUNTER WATER CORPORATION.
HWU	HOT WATER UNIT.
IL	INVERT LEVEL.
IM	ICE MACHINE.
IO	INSPECTION OPENING.
IS	INSPECTION SHAFT.
IPMF	INDUCT PIPE MICA FLAP.
KIP	KERB INLET PIT.
LPG	LIQUID PETROLEUM GAS.
LS	LABORATORY SINK.
NG	NATURAL GAS.
OG	OVERFLOW GULLY.
PA	PLASTER ARRESTOR.
PAT	PRACTICAL ACTIVITIES TROUGH.
PLD	PLANTER DRAIN.
RL	RELATIVE LEVEL.
RPZD	REDUCED PRESSURE ZONE DEVICE.
RWO	RAIN WATER OUTLET.
RV	REFLUX VALVE.
SAC	SEWER ACCESS CHAMBER.
Shr	SHOWER.
SH	SLOP HOPPER.
SFW	SEALED FLOOR WASTE.
SL	SURFACE LEVEL.
SMS	SEWER MAINTENANCE SHAFT.
Snk	KITCHEN SINK.
SPH	SINGLE PILLAR HYDRANT.
SPR	RAINWATER SPREADER.
SPR	RAINWATER SPREADER.
SShr	SAFETY SHOWER.
SS	SOIL STACK.
ST	STERILIZER.
SVS	SPRINKLER VALVE SET.
T	TUBS.
TD	TUNDISH.
TMV	THERMOSTATIC MIXING VALVE.
TWV	TRADE WASTE VENT.
UR	URINAL.
Vb	VANITY BASIN.
VP	VENT PIPE.
Wc	WATER CLOSET.
WD	WINDOW DRENCHER.
WM	WASHING MACHINE.
WS	WASTE STACK.
WT	WASH TROUGH.

### GENERAL NOTES

- IT IS THE CONTRACTORS RESPONSIBILITY TO OBTAIN A DIAL BEFORE YOU DIG TO ASCERTAIN THE FULL EXTENT OF EXISTING SERVICES SURROUNDING THE SUBJECT PROPERTY. PRIOR TO ANY EXCAVATION THE RELEVANT AUTHORITIES eg TELSTRA OPTUS, AGILITY etc. ARE TO BE NOTIFIED OF ALL WORKS.
- ALLOW TO PAY ALL FEES & CHARGES FOR ALL AUTHORITIES RELATING TO ALL WORKS DESIGNED & SPECIFIED.
- IT IS THE HYDRAULIC CONTRACTORS RESPONSIBILITY TO ENGAGE A SUITABLE QUALIFIED CONTRACTOR TO CARRY OUT A THOROUGH GROUND SEARCH FOR EXISTING SERVICES AROUND AND IN THE PROPOSED BUILDING FOOTPRINT. NOTIFY THE SUPERINTENDENT IMMEDIATELY IF ADDITIONAL SERVICES TO THAT DOCUMENTED ARE LOCATED. THIS IS TO BE CARRIED OUT PRIOR TO ANY WORKS BEING COMMENCED.
- ALL HOT, WARM & COLD WATER ISOLATION VALVES SHOWN ARE TO BE LOCATED IN THE CEILING VOID COMPLETE WITH ACCESS PANEL OTHERWISE 300mm DOWN FROM CEILING IN ROOM USING ENWARE VP356 ISOLATION VALVE WITH CHROME COVERPLATE.
- ALL EXPOSED PIPEWORK TO BE CHROME PLATED OR PAINTED AS PER SPECIFICATION.
- ALLOW TO PREPARE & SUPPLY DETAILED 'AS INSTALLED' DRAWINGS & MAINTENANCE MANUALS FOR ALL ASSOCIATED WORKS AS DETAILED IN THE SPECIFICATION.
- SUPPLY & INSTALL FIRE STOP COLLARS etc. TO COMPLY WITH AS4072.1 TO MAINTAIN THE FIRE RATING INTEGRITY OF THE BUILDING ELEMENT BEING PENETRATED. THE COLLARS MUST COMPLY WITH ALL CLAUSES / PARTS OF AS4072.
- CONTRACTOR TO ENSURE THAT HYDRAULIC SERVICE PENETRATIONS THROUGH FIRE RATED WALLS/CEILINGS & OTHER FIRE RATED ELEMENTS ARE PROTECTED AND MEET THE REQUIREMENTS OF SPECIFICATION 13 OF THE NCC 2022
- ALL HYDRAULIC SERVICES PIPEWORK, EQUIPMENT & VALVES SHOULD BE LABELED TO ENABLE THEM TO BE CLEARLY IDENTIFIED. LOCATIONS OF LABELS TO BE APPROVED BY ARCHITECT.
- ALL HOT/WARM WATER PIPEWORK TO BE INSULATED WITH THERMOTEC INSULATION OR EQUIVALENT WITH R-VALUE = 0.6 IN ACCORDANCE WITH AS/NZS 3500.4. REFER TO SPECIFICATION FOR EXACT REQUIREMENTS.
- ALL DISRUPTIONS TO EXISTING SERVICES FOR NEW CONNECTIONS ARE TO BE COORDINATED ON SITE WITH THE PROJECT SUPERINTENDENT.
- ALL INWALL TUNDISH ARE TO BE MODTEC OR EQUIVALENT. REFER TO DETAILS.
- ALL EXTERNAL HOSE TAPS TO BE ENWARE KEY OPERATED HOSE TAPS FITTED WITH VACUUM BREAKERS.
- ALL LEVELS & LOCATIONS SHOWN ON DRAWINGS FOR EXISTING PITS, SERVICES, SEWER ACCESS CHAMBERS & KERB INLET PITS ARE TO BE CONFIRMED ON SITE PRIOR TO ANY WORKS BEING CARRIED OUT.
- ALL SERVICES INSTALLED ADJACENT THE BUILDING ARE TO BE LOCATED OUTSIDE THE ZONE OF INFLUENCE AS PER AS3500.
- ALL LOCATIONS OF WATER POINTS FOR INTERNAL FITOUT SHOWN ON THESE PLANS ARE FOR CLARITY ONLY. FINAL LOCATIONS ARE TO BE DETERMINED USING ARCHITECTURAL 1:50 INTERNAL LAYOUTS & ELEVATIONS.
- EXCAVATE, LOCATE & CONNECT TO EXISTING SEWER JUNCTION SERVING THE SITE.
- SANITARY DRAINAGE OVERFLOW GULLIES TO BE PROVIDED IN ACCORDANCE WITH AS3500.2 REQUIREMENTS. IF HEIGHTS IN ACCORDANCE WITH AS3500.2.4.6.6.6 CANNOT BE ACHIEVED REFLUX VALVES MUST BE INSTALLED.
- WHERE PIPEWORK IS LIKELY TO BE EXPOSED TO FIRE IN AN AREA WITHIN A BUILDING THAT IS NOT PROTECTED BY SPRINKLERS, PIPE-SUPPORTS SHALL BE INSTALLED WITH A MINIMUM FRL NOT LESS THAN 60/-/. THE PIPE-SUPPORTS ARE REQUIRED TO HAVE A TEMPERATURE RESISTANCE OF NOT LESS THAN 500°C WHEN TESTED IN ACCORDANCE WITH AS1530.4.

### WATER PRESSURE - CENTRAL TABLELANDS WATER

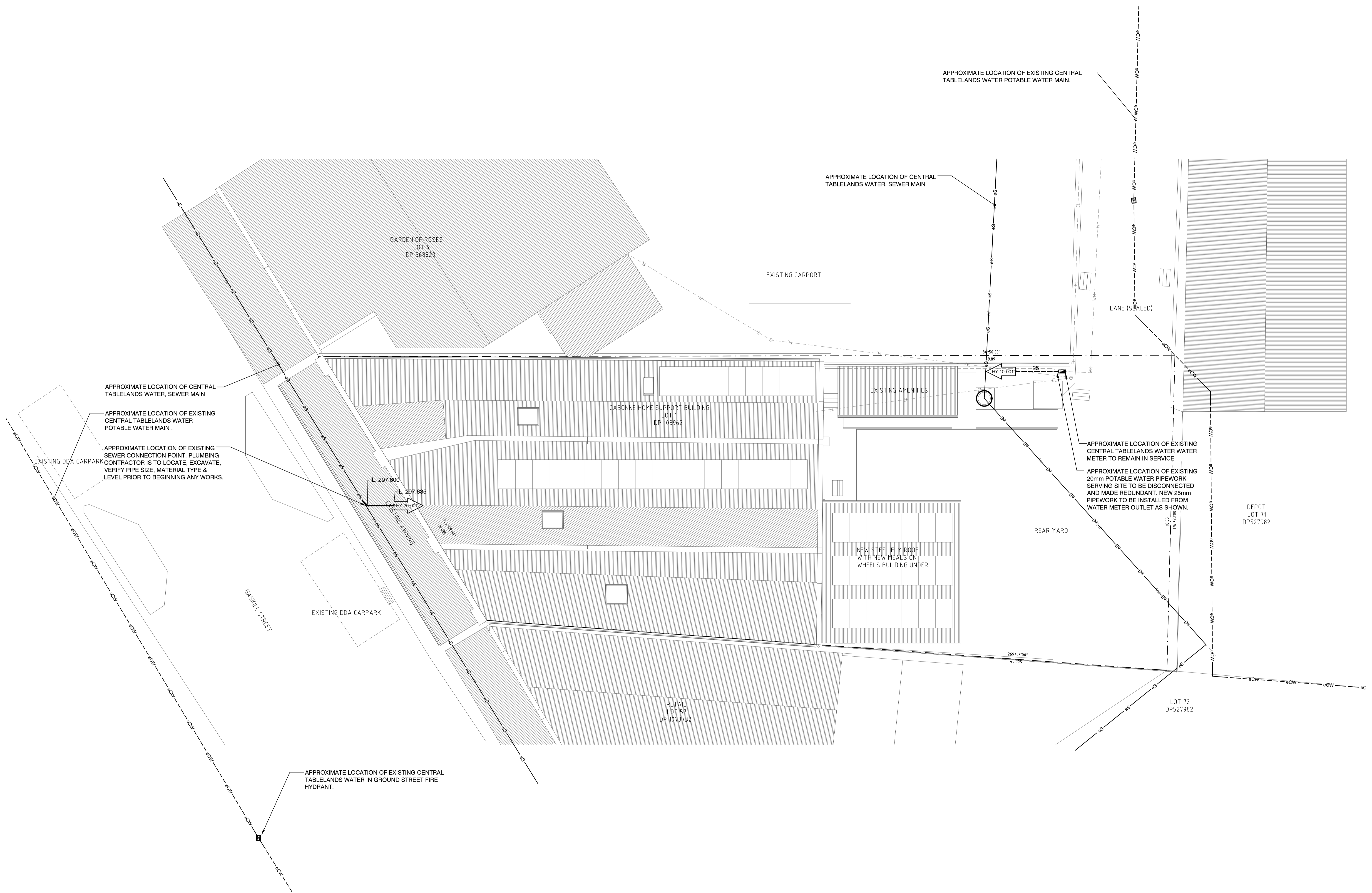
HYDRANT FLOW RATE (controlled) L/S	HYDRANT PRESSURE (corresponding to the controlled flow) kPa
0	330
5	310
10	300
11.5	280
15	250
18.2	230

### FIRE HYDRANT SERVICE DESIGN (STREET HYDRANT)

FIRE HYDRANT COVERAGE IS ACHIEVED COMPLETELY VIA AUTHORITY STREET FEED HYDRANTS.

<b>BUILDING CLASSIFICATION</b>	5/9b
<b>RISE IN STOREY</b>	<2
<b>FIRE COMPARTMENT FLOOR AREA</b>	426m2
<b>PRESSURE REQUIRED</b>	150kPa
<b>WATER REQUIRED</b>	10L/s
<b>MINIMUM PRESSURE IN MAIN</b>	300kPa





Rev	Date	Reason for Issue
3	21.11.24	100% ISSUE
2	21.10.24	75% ISSUE FOR REVIEW
1	23.09.24	50% ISSUE FOR REVIEW

Drawn	Design	Verify
CM	CB	DW
CH	CB	
CM	CB	

Project  
**CABONNE HOME SUPPORT REFURBISHMENT**  
70 GASKILL STREET  
CANOWINDRA, NSW 2804

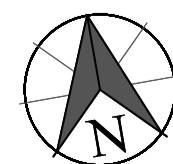
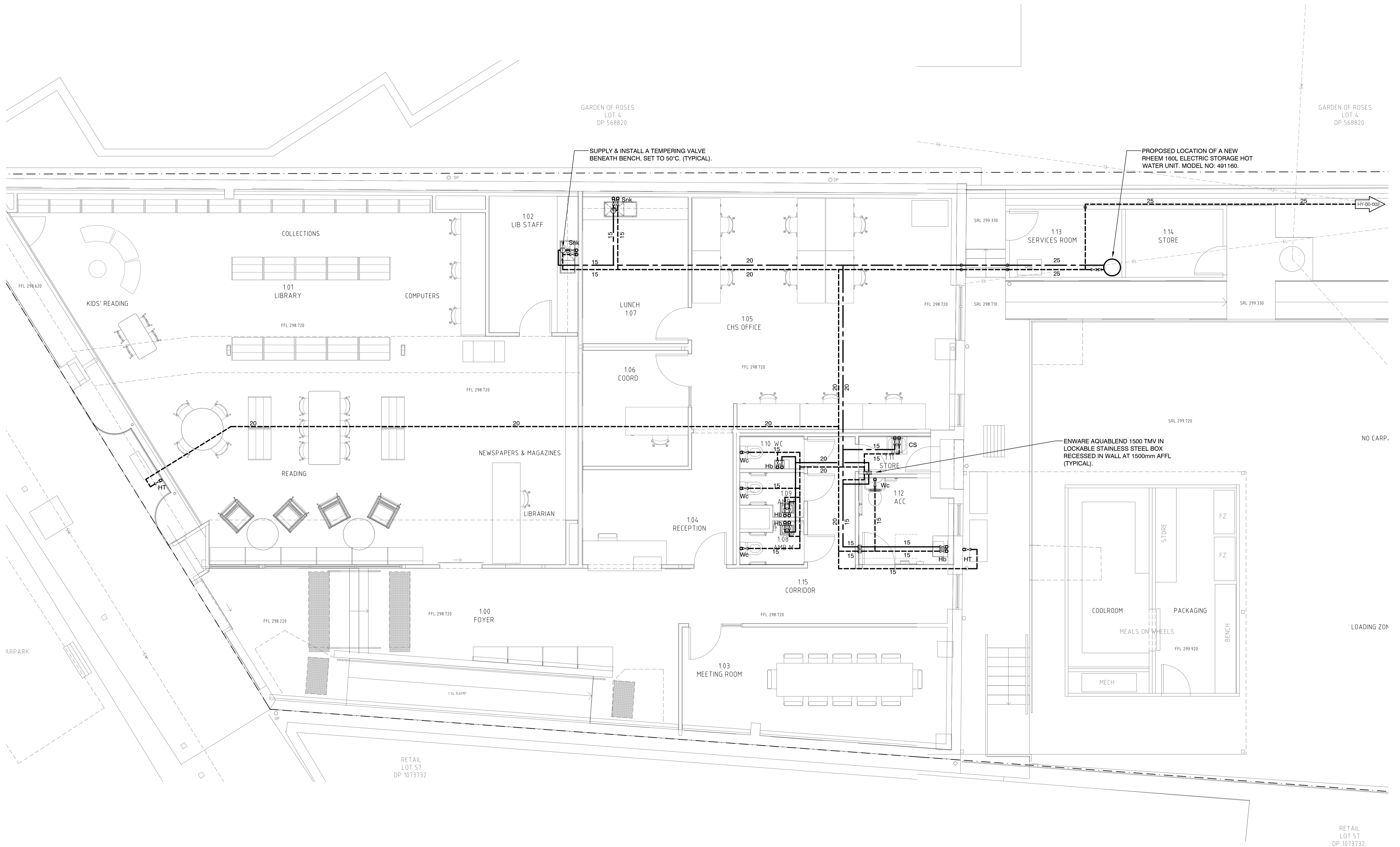
Drawing Title  
**SITE SERVICES**

Discipline  
**HYDRAULIC SERVICES**

Job No. Drawing No. Rev  
MN15171 HY-00-002 3

Scale 1:100 @ A1





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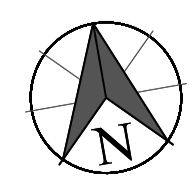
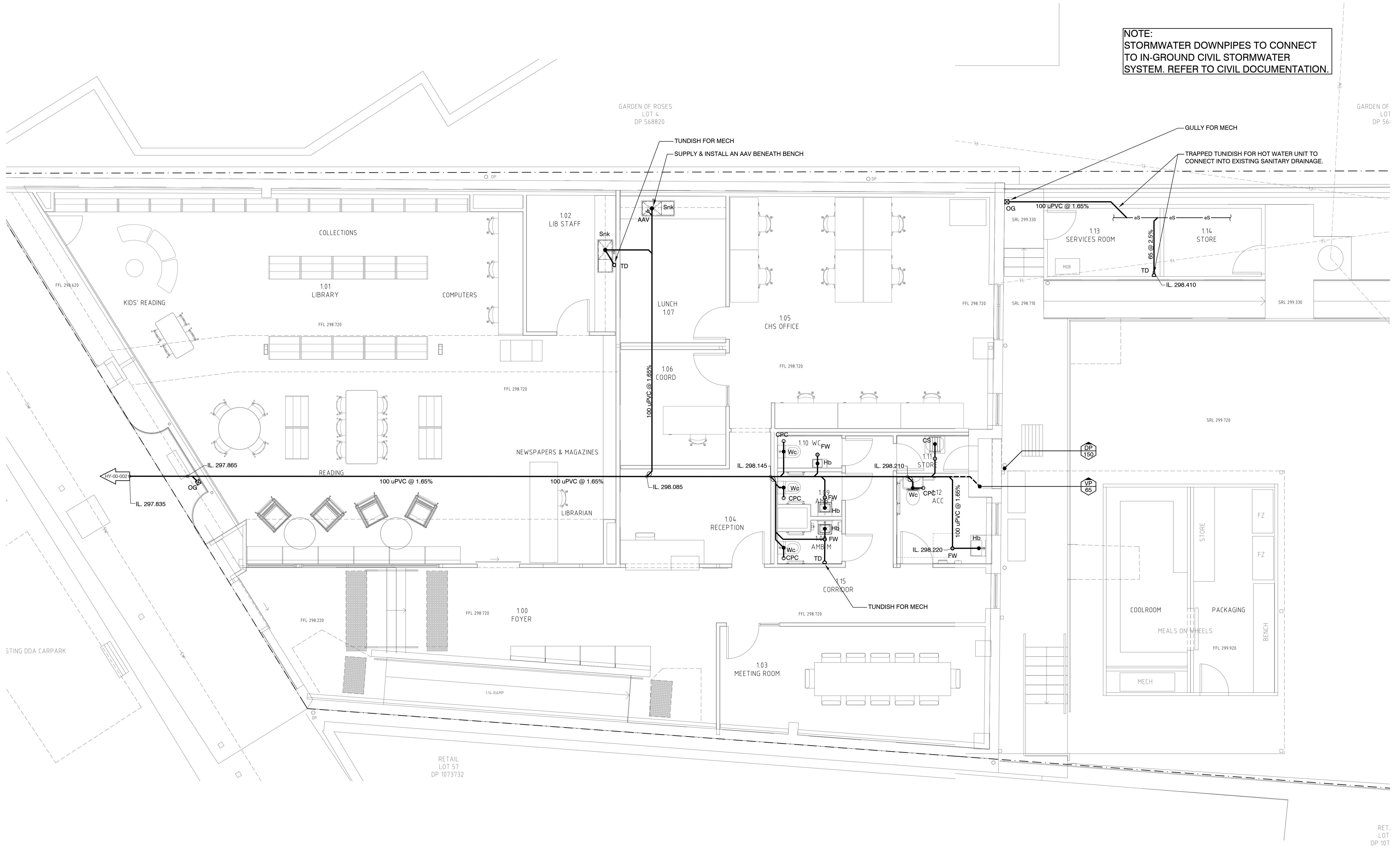
CM	CB	DW
CM	CB	DW
CH	CB	
CM	CB	

Drawn Design Verify

Project  
**CABONNE HOME SUPPORT REFURBISHMENT**  
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Drawing Title  
**GROUND FLOOR WATER & GAS LAYOUT**

**NOTE:**  
STORMWATER DOWNPIPES TO CONNECT TO IN-GROUND CIVIL STORMWATER SYSTEM. REFER TO CIVIL DOCUMENTATION.



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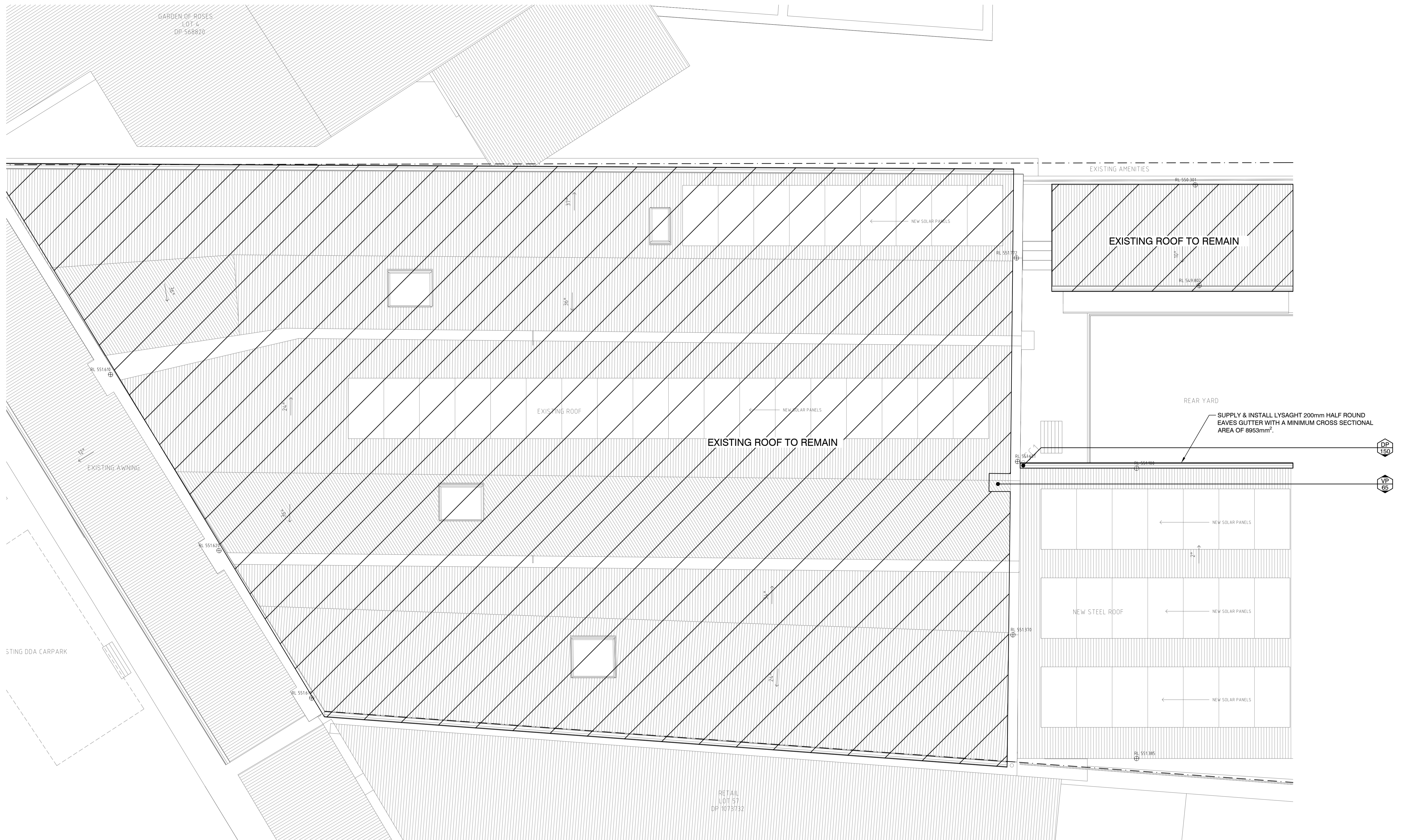
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CM	CB	DW
CH	CB	
CM	CB	

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**CABONNE HOME SUPPORT REFRUBISHMENT**  
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Drawing Title  
**GROUND FLOOR SANITARY DRAINAGE LAYOUT**

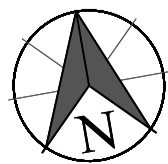
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**HYDRAULIC SERVICES**  
Job No. MN15171  
Drawing No. HY-20-001  
Scale 1:50 @ A1  
Rev 3





MECHANICAL — ELECTRICAL — HYDRAULIC — FIRE — ENERGY — NABERS — STORMWATER — SECTION J — BEEC

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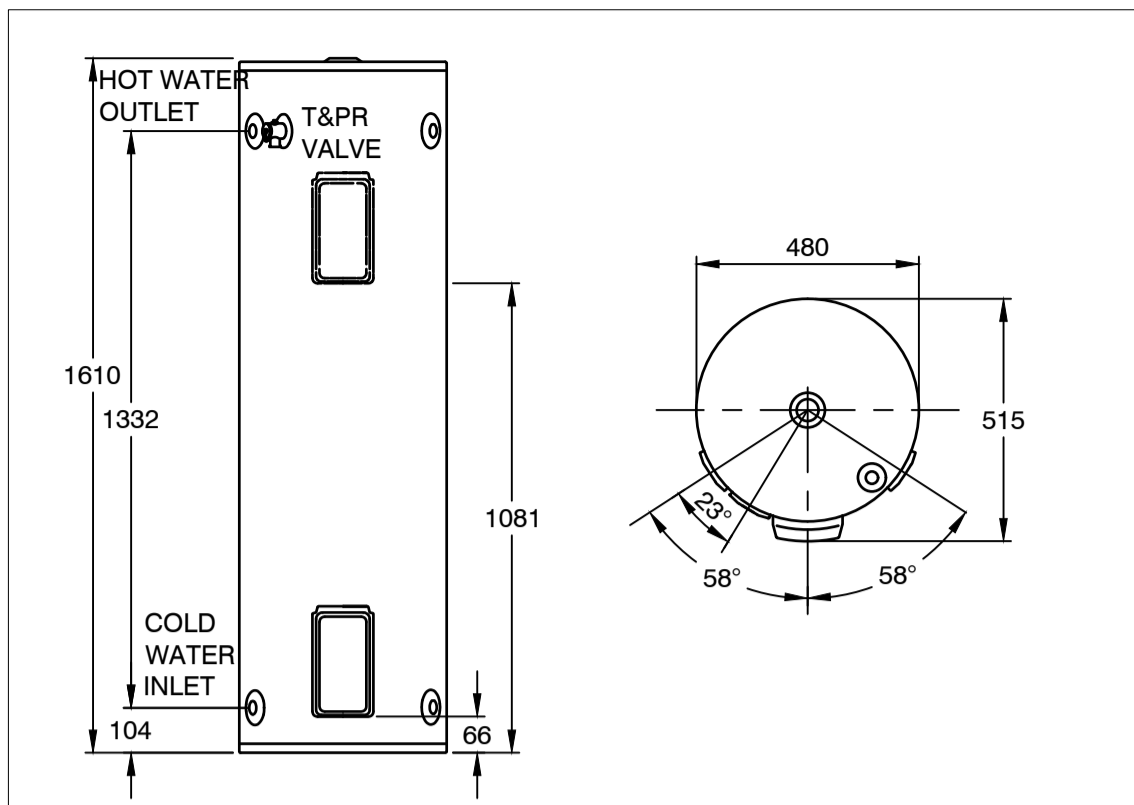
Drawing Title  
**ROOF DRAINAGE LAYOUT**

Discipline  
**HYDRAULIC SERVICES**

Job No. Drawing No. Rev  
 MN15171 HY-20-002 3

Scale 1:50 @ A1

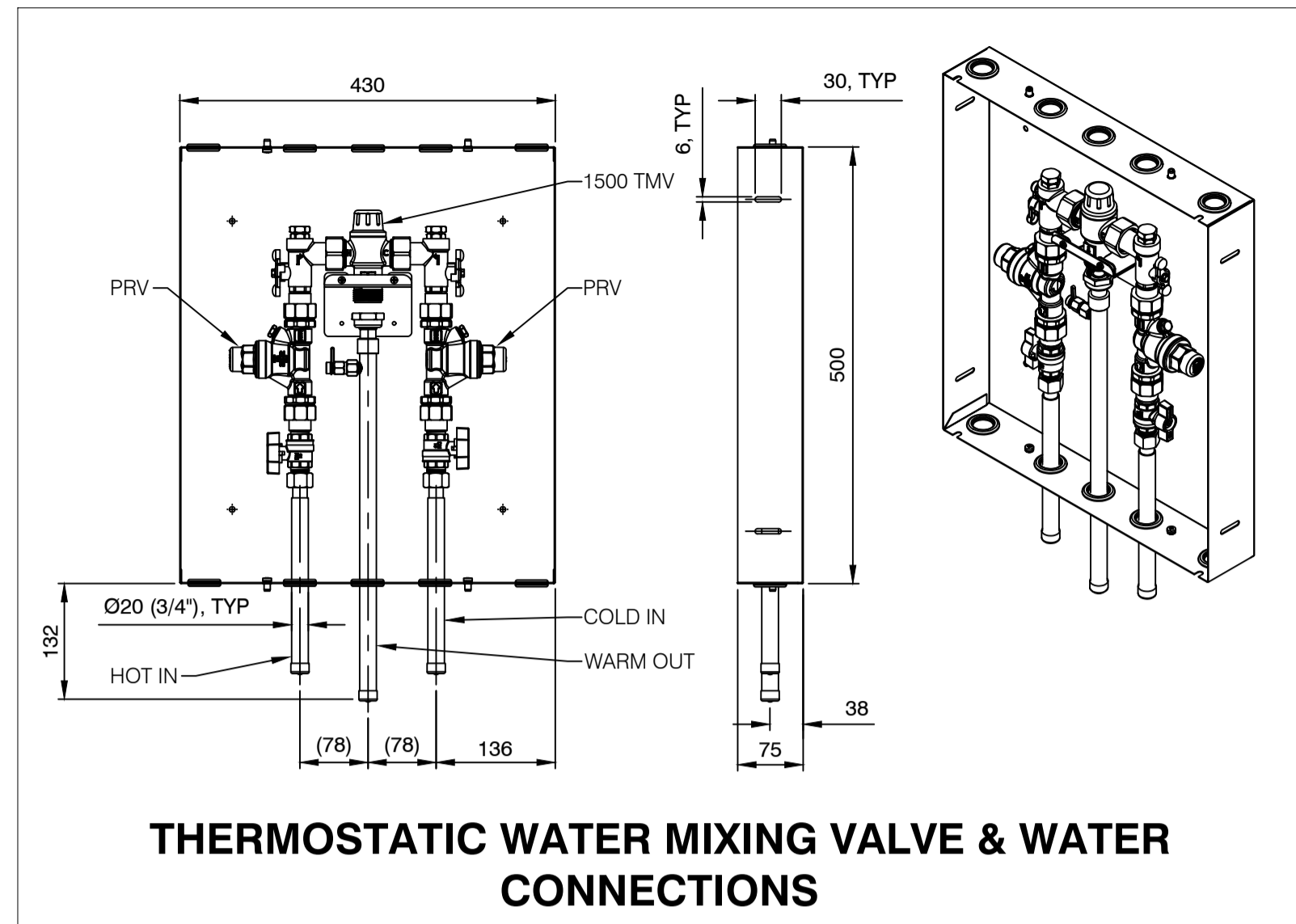




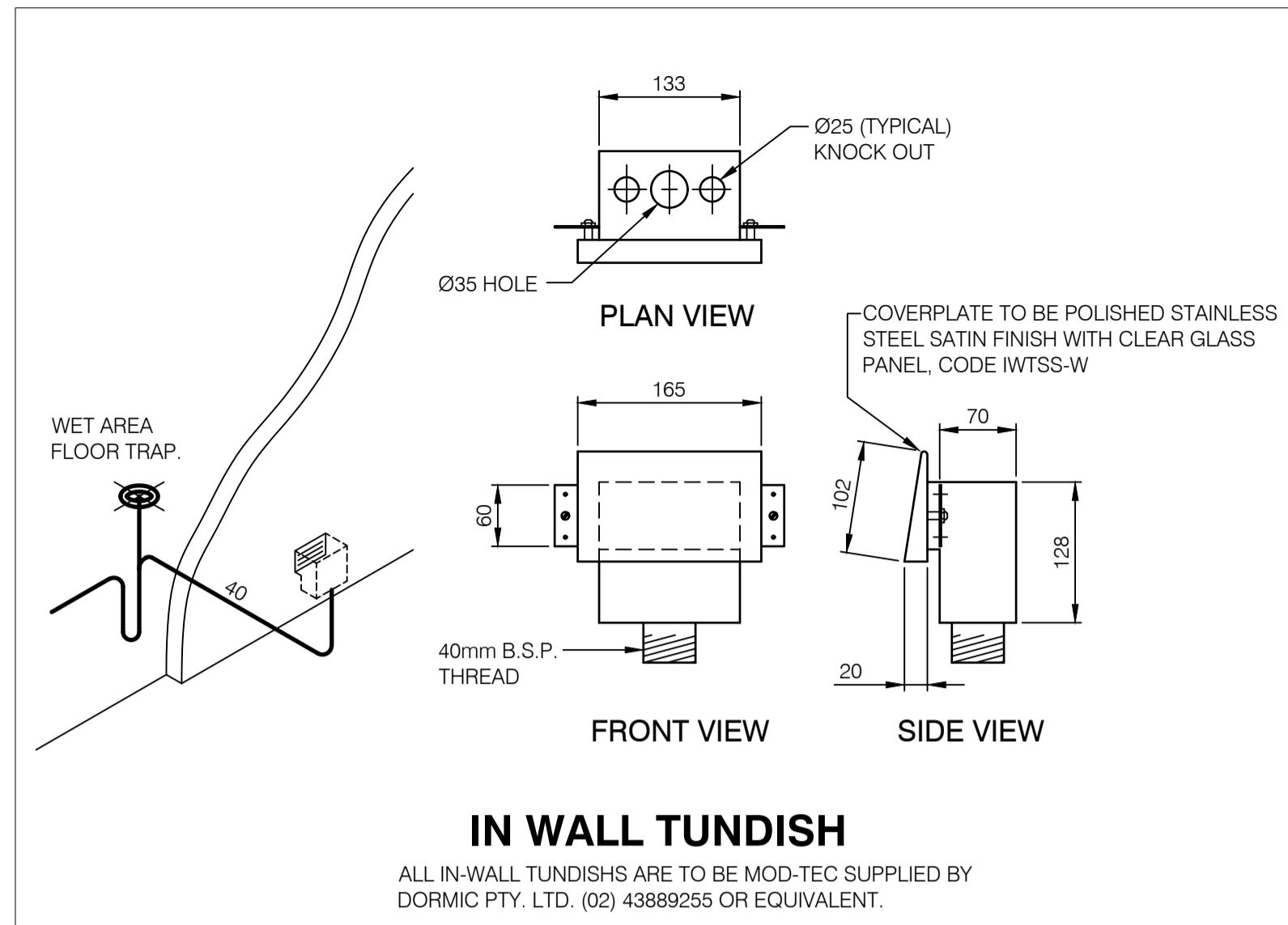
MODEL	491160 492160
Hot Water Delivery (L)	160
kW Rating	1.8, 2.4, 3.6
Relief Valve Pressure (kPa)	1400
Expansion Control Valve (kPa)	1200
Max Water Supply Pressure:	
with ECV (kPa)	960
without ECV (kPa)	1120
Water Connections	Rp 3/4
Approx. Weight (packaged) kg	60

- FEATURES & BENEFITS**
- Fast, easy like-for-like replacement
  - Dual handed inlet and outlet fittings
  - Exclusive Rheem Ultraname<sup>®</sup>
  - Twin element model - 492160
  - All models suit connection to concessional (off-peak) tariffs
  - Mains pressure water delivery
  - Australian made
  - 12 year cylinder warranty<sup>1</sup>

**RHEEM ELECTRIC 160L 491160, 492160**



**THERMOSTATIC WATER MIXING VALVE & WATER CONNECTIONS**

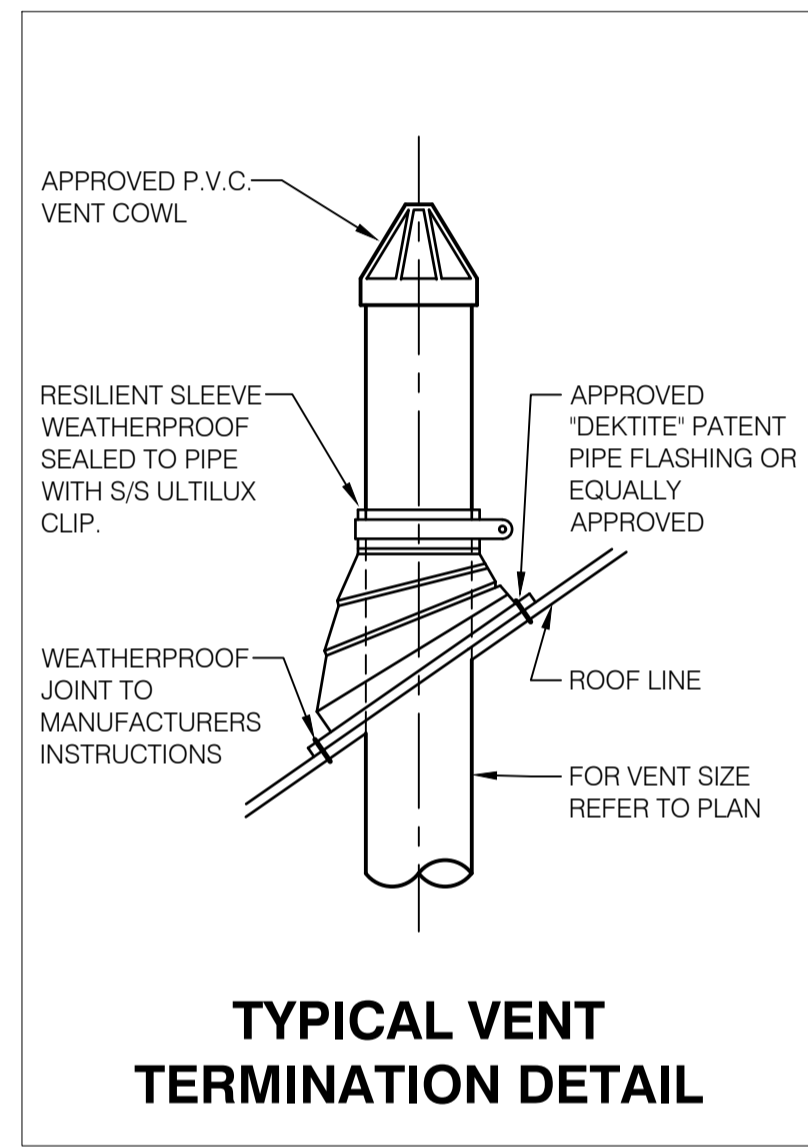


**IN WALL TUNDISH**

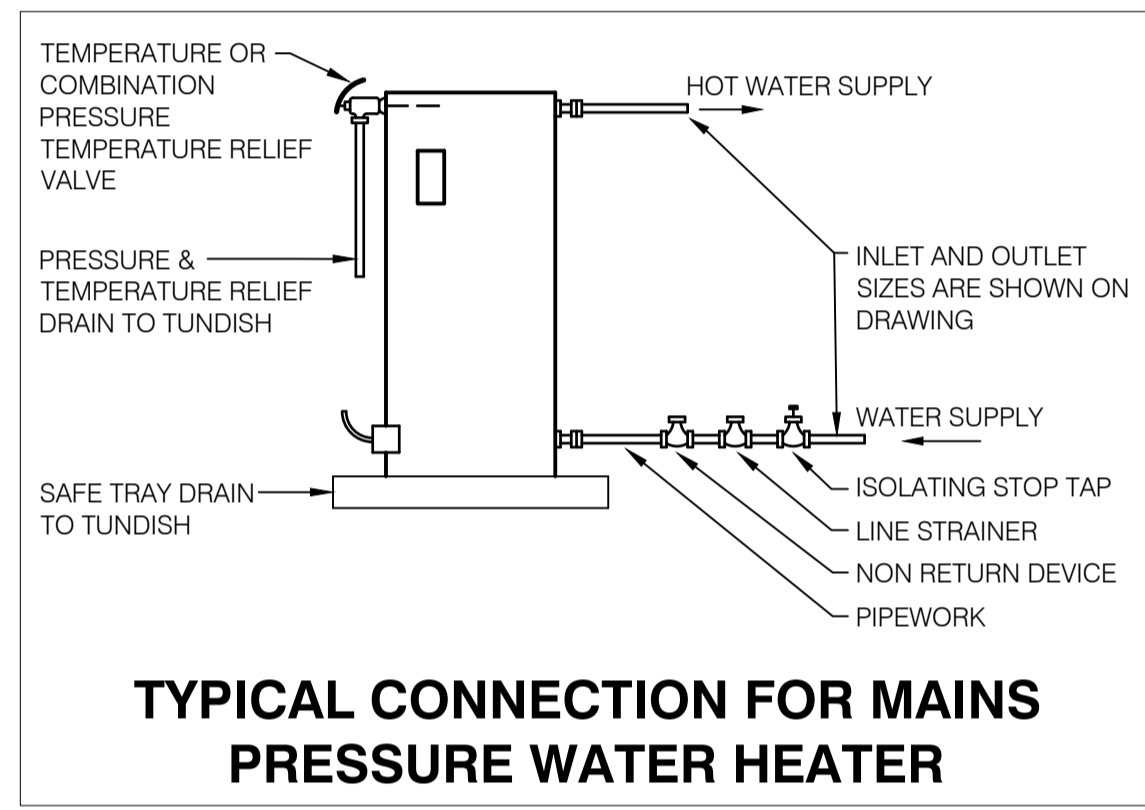
ALL IN-WALL TUNDISHS ARE TO BE MOD-TEC SUPPLIED BY DORMIC PTY. LTD. (02) 43889255 OR EQUIVALENT.

GUTTER	X	HALF ROUND GUTTER CROSS SECTIONAL AREA mm <sup>2</sup>
HALF ROUND	100	4300mm <sup>2</sup>
HALF ROUND	125	6300mm <sup>2</sup>
HALF ROUND	150	9200mm <sup>2</sup>
HALF ROUND	200	14500mm <sup>2</sup>
HALF ROUND	250	24500mm <sup>2</sup>
HALF ROUND	300	35300mm <sup>2</sup>

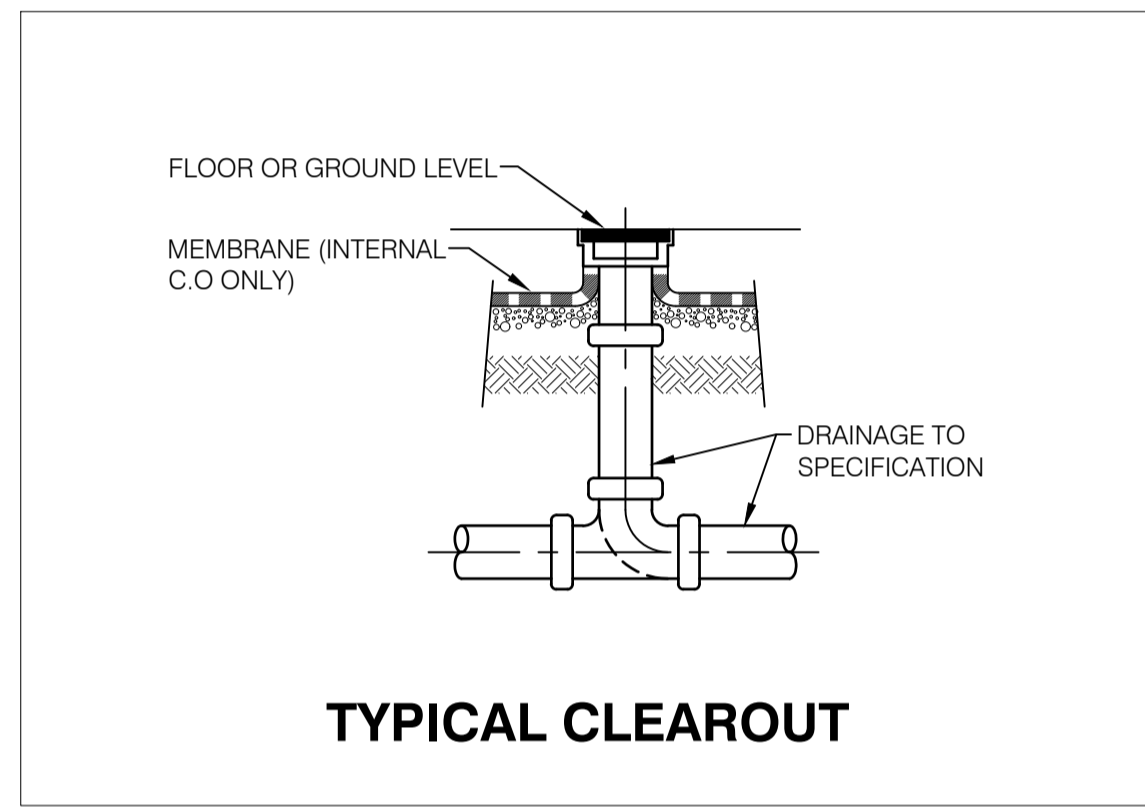
**LYSAGHT HALF ROUND GUTTER**



**TYPICAL VENT TERMINATION DETAIL**



**TYPICAL CONNECTION FOR MAINS PRESSURE WATER HEATER**



**TYPICAL CLEAROUT**

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