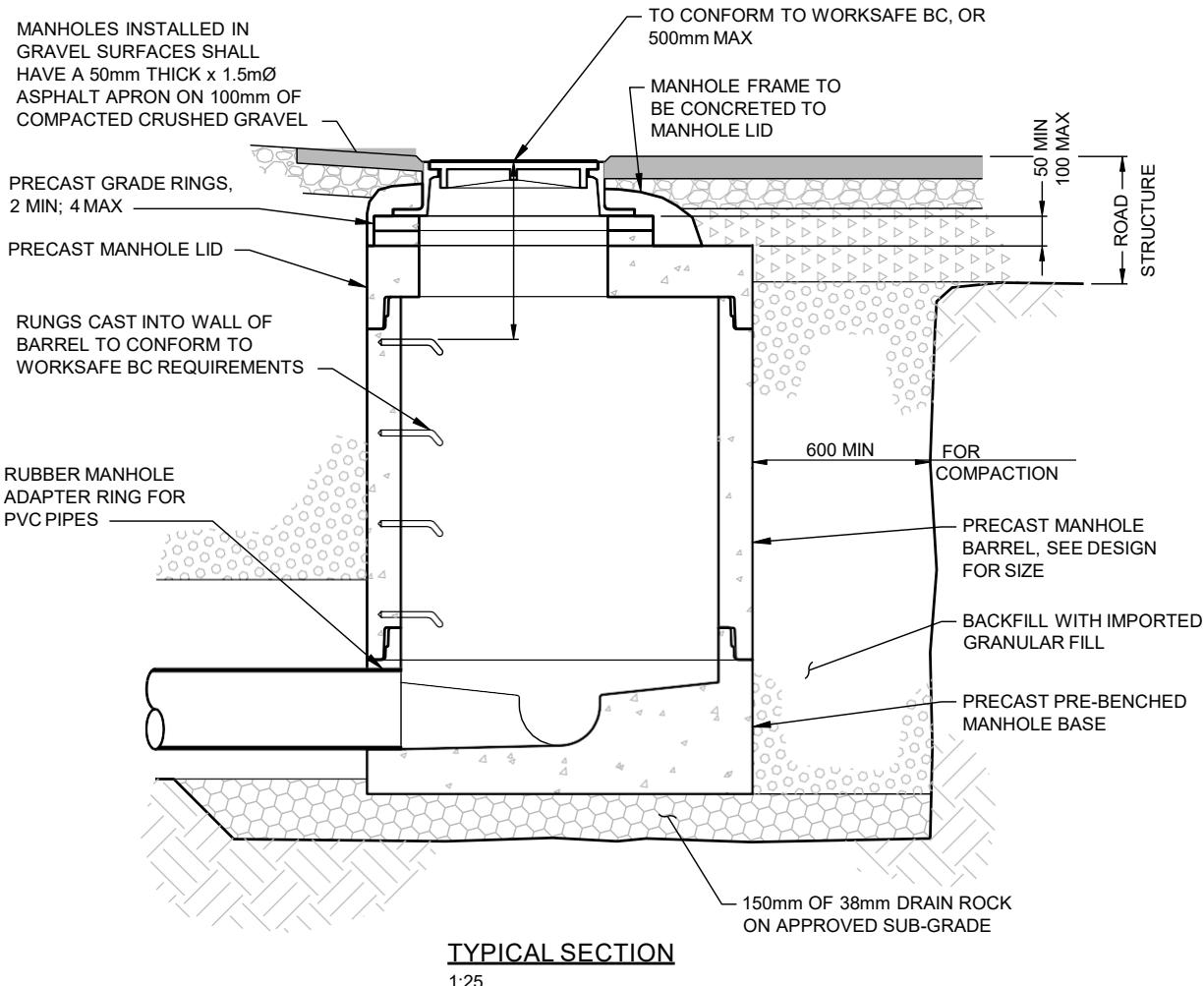
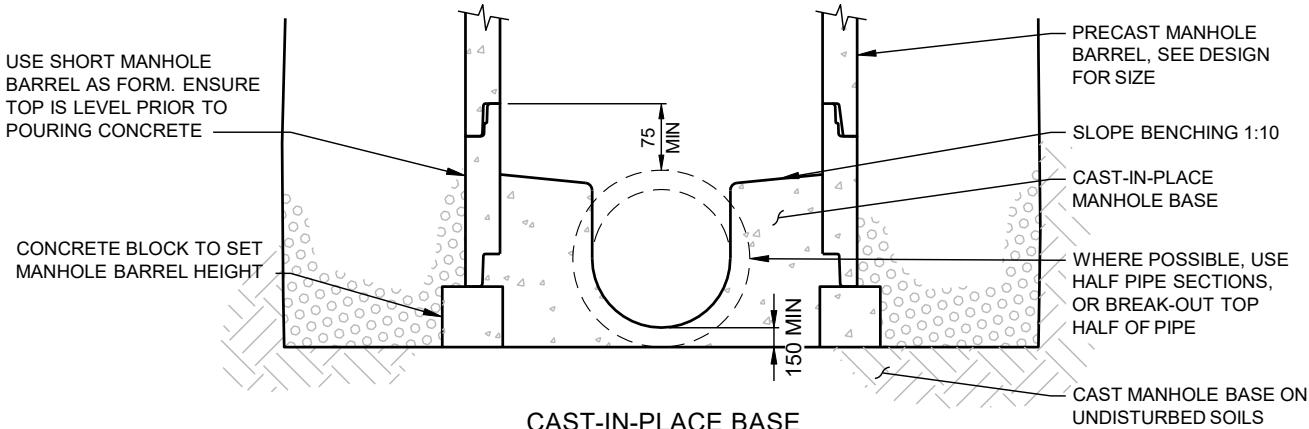


NOTES:

1. THIS DRAWING SHALL BE USED IN ACCORDANCE WITH SECTION 6.0 OF THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST EDITION.
2. FOR MANHOLE CHANNELING, REFER TO SECTION 6.49.
3. ALL CHANNELS SHALL BE FINISHED WITH A STEEL TROWEL. BENCHING (HATCHED AREAS), SHALL BE BROOM FINISHED.
4. MANHOLE COVER AND RUNG LOCATIONS SHALL BE AS SHOWN, UNLESS NOTED OTHERWISE.
5. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
6. ALL DIMENSIONS ARE MILLIMETERS UNLESS NOTED OTHERWISE.

TYPICAL SECTION

1:25

CAST-IN-PLACE BASE

## NOTES:

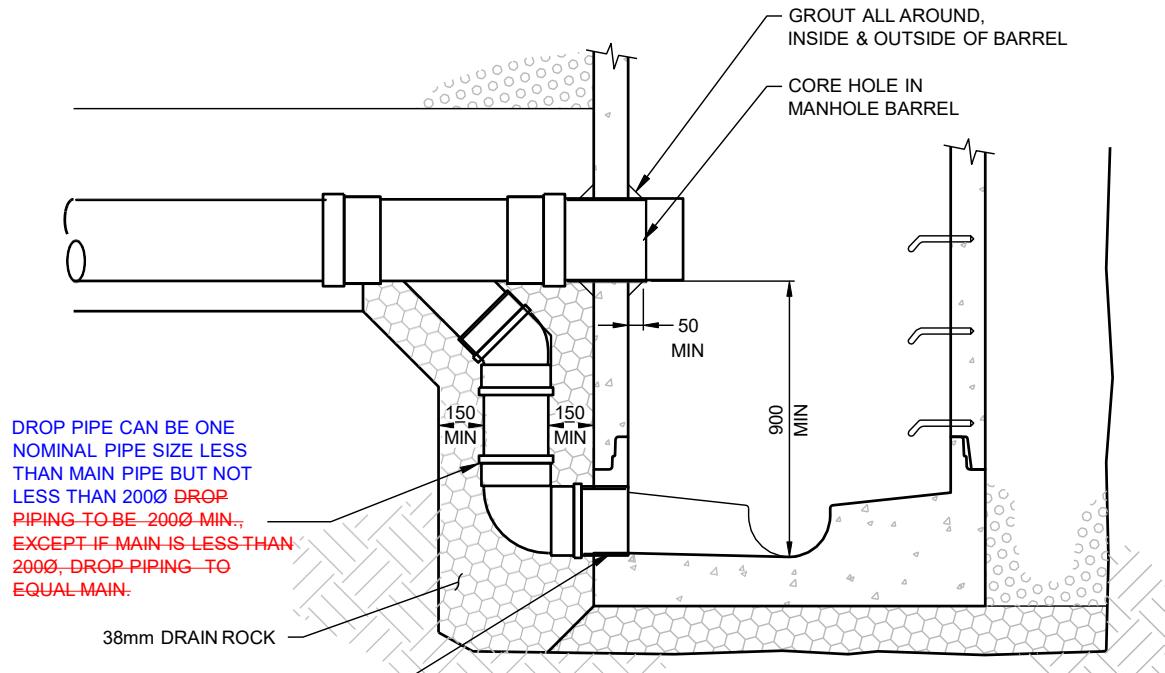
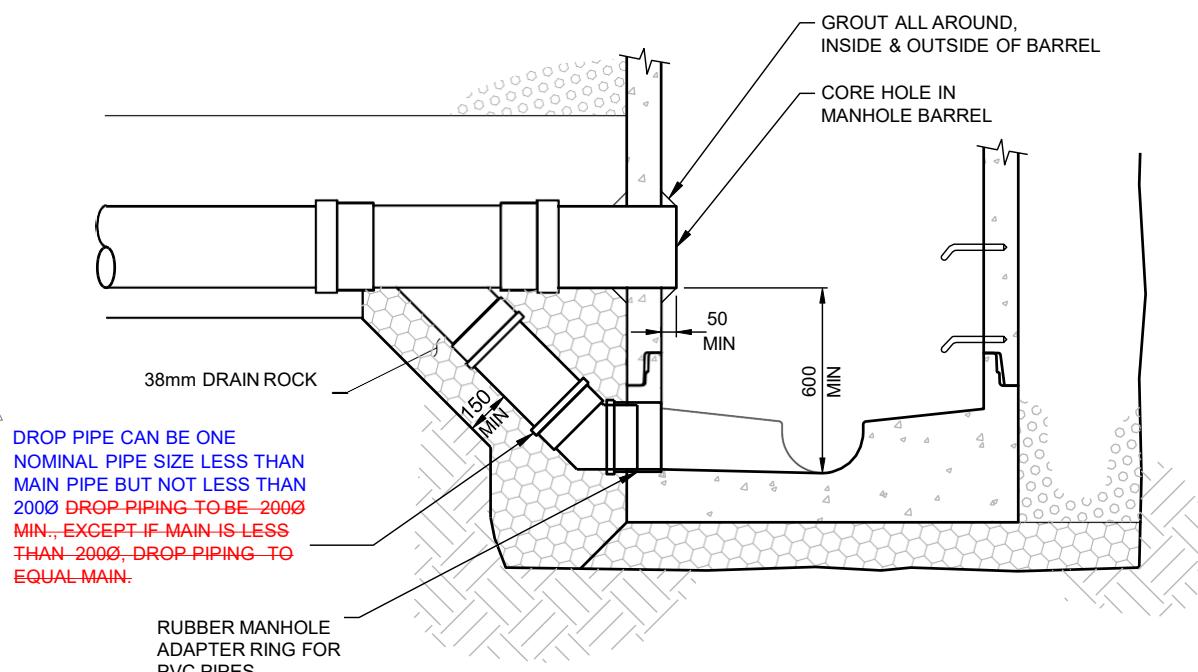
1. THIS DRAWING SHALL BE USED IN ACCORDANCE WITH SECTION 6.0 OF THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST EDITION.
2. FOR MANHOLE BENCHING, SEE STD DWG S-1.
3. **FOR FRAME AND COVER DETAILS, SEE STD DWG S-9. FOR COVER LETTERING AND BOLTING REQUIREMENTS, REFER TO STD. DWG. S-9 OR S-15. FOR FRAME AND RING, REFER TO STD. DWG. S-10.**
4. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
5. ALL DIMENSIONS ARE MILLIMETERS UNLESS NOTED OTHERWISE.
6. LOW PROFILE FRAMES NOT PERMITTED IN ROADS UNLESS APPROVED BY CITY ENGINEER.
7. CASTING TO BE SET FLUSH WITH TRAVELED SURFACE SUCH THAT THERE ARE NO IRREGULARITIES GREATER THAN 6mm WHEN CHECKED WITH A 3m STRAIGHT EDGE IN ANY DIRECTION.

CITY OF NANAIMO

THE HARBOUR CITY

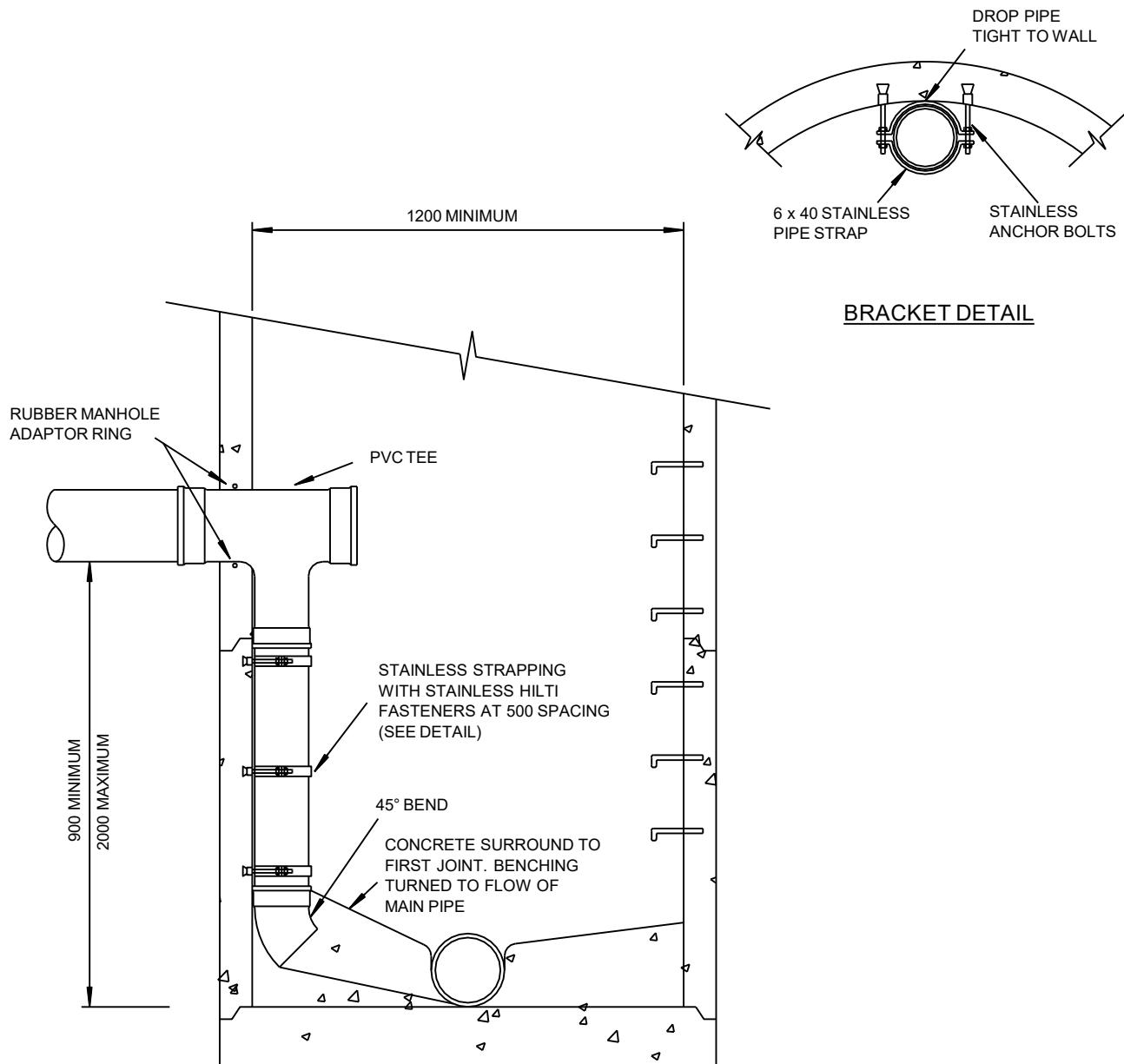
SANITARY MANHOLE

Scale: 1:25  
 Created: MAR 2016  
 Rev Date: MAY 2020  
 Dwg No: S-2

Ed  
15Ed  
15

## NOTES:

1. THIS DRAWING SHALL BE USED IN ACCORDANCE WITH SECTION 6.0 OF THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST EDITION.
2. FOR MANHOLE DETAILS, SEE STD DWG S-2.
3. FOR MANHOLE BENCHING, SEE STD DWG S-1.
4. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
5. ALL DIMENSIONS ARE MILLIMETERS UNLESS NOTED OTHERWISE.



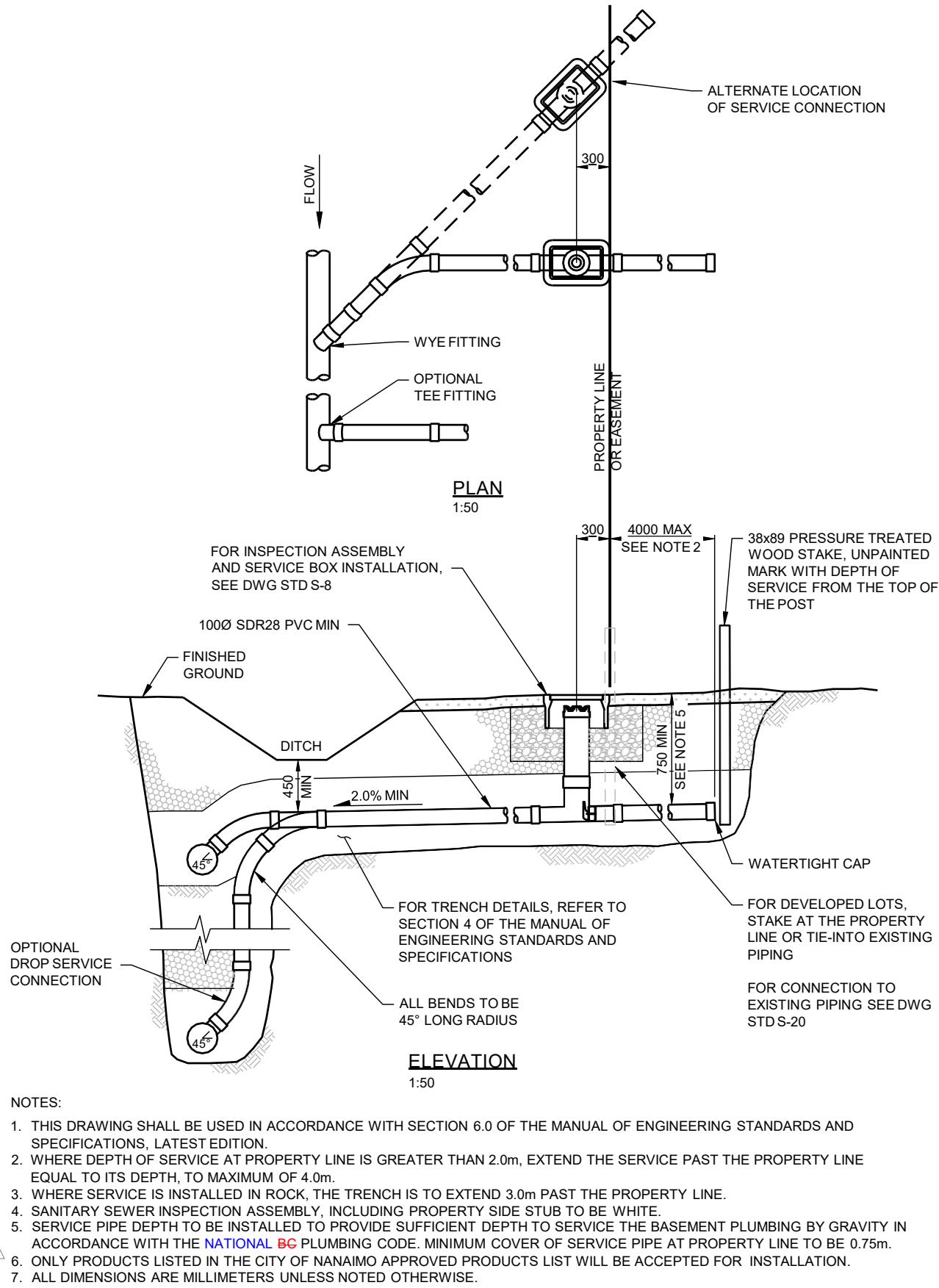
### DROP MANHOLE - TYPE III

#### NOTES:

1. INSIDE DROP TO BE USED ONLY WHERE PERMITTED BY THE CITY ENGINEER.
2. MAXIMUM SIZE OF DROP PIPE TO BE 150Ø DR28 PVC.
3. THIS DRAWING SHOWS INSIDE DROP ONLY. SEE DRAWING S-2 FOR ALL OTHER DETAILS PERTAINING TO MANHOLE REQUIREMENTS.
4. ALL DIMENSIONS IN MILLIMETERS UNLESS SHOWN OTHERWISE
5. ALL MOUNTING & BRACKET HARDWARE, (STRAPS & BOLTS) SHALL BE STAINLESS STEEL
6. DROP PIPE SHALL BE TIGHT TO THE INSIDE FACE OF THE MANHOLE BARREL.



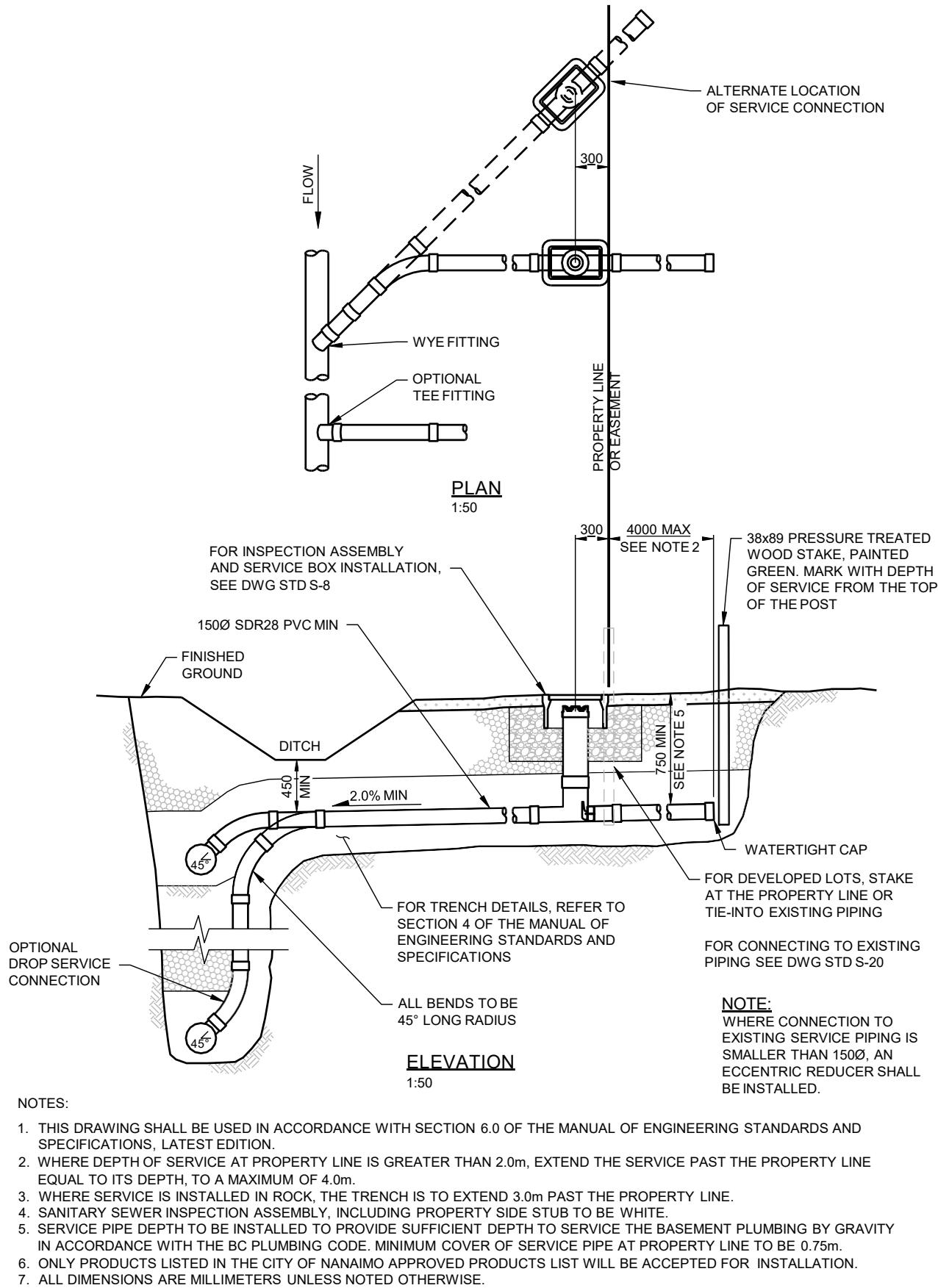
INSIDE DROP MANHOLE  
DETAIL FOR 200Ø SEWERS



## GENERAL SANITARY SERVICE CONNECTION DETAIL RISER AND NON-RISER TYPES

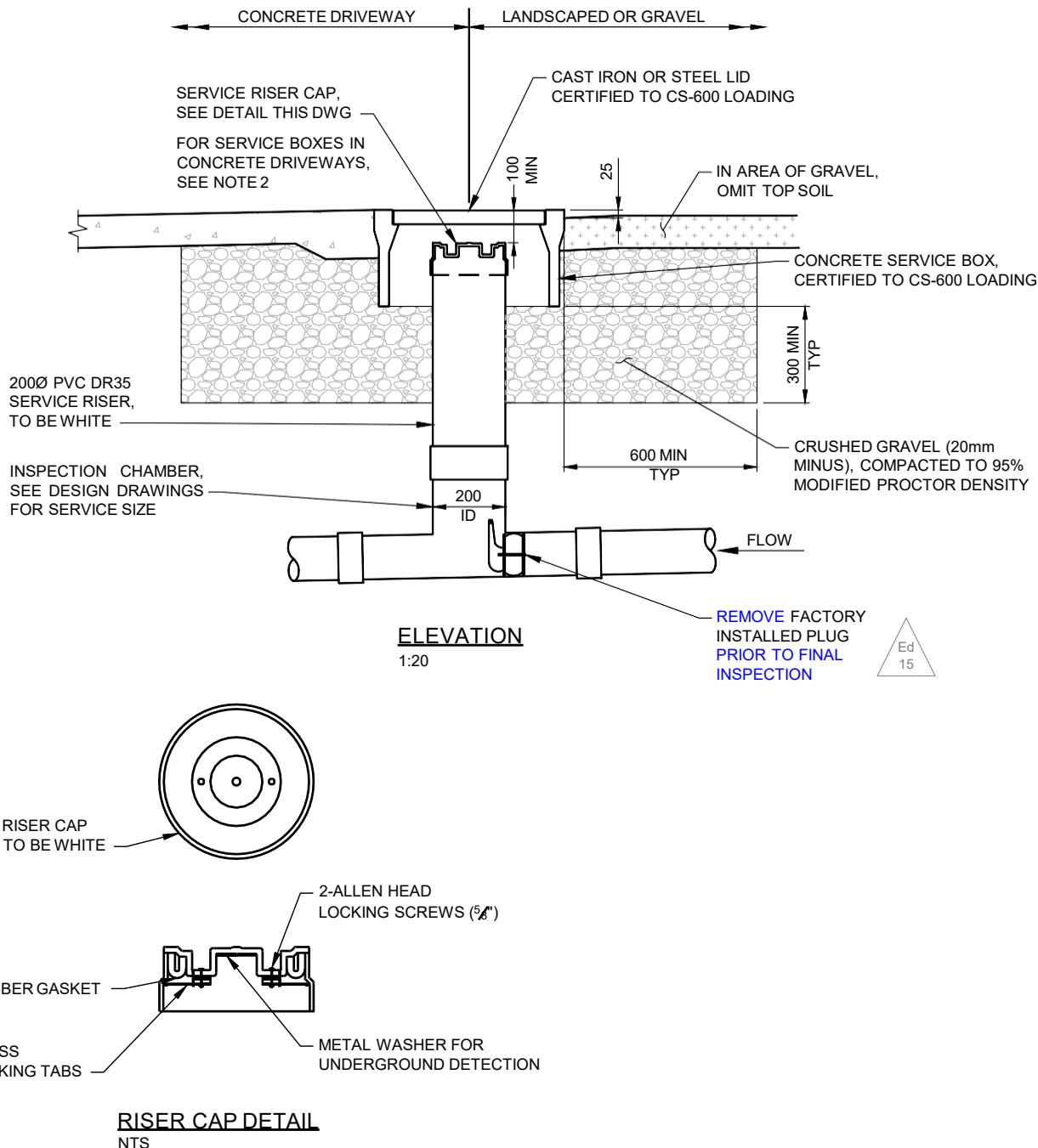
Scale: 1:50  
Created: MAR 2015  
Rev Date: MAY-2020  
Dwg No: S-5





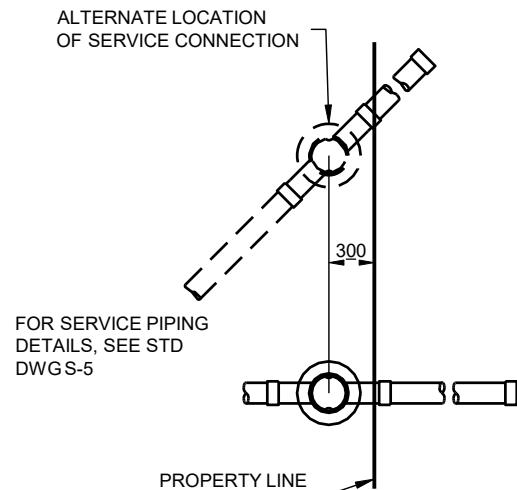
## COMMERCIAL AREAS SANITARY SERVICE CONNECTION DETAILS RISER AND NON-RISER TYPES

Scale: 1:50  
Created: MAR 2016  
Rev Date: MAY 2020  
Dwg No: S-7

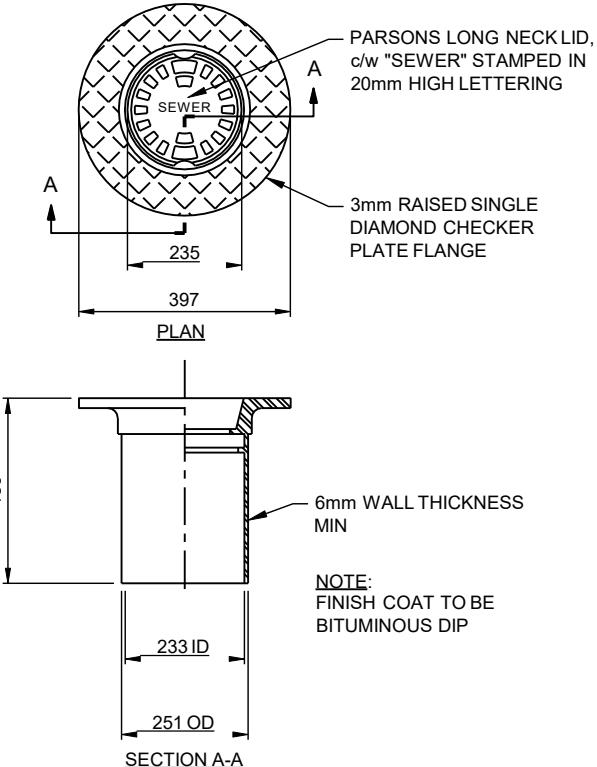


## NOTES:

1. THIS DRAWING SHALL BE USED IN ACCORDANCE WITH SECTION 6.0 OF THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST EDITION.
2. WHEN SERVICE BOX IS WITHIN A CONCRETE DRIVEWAY, CONCRETE ADJACENT TO THE SERVICE BOX MUST BE A MINIMUM OF 150mm THICK FOR A MINIMUM DISTANCE OF 150mm AROUND THE OUTSIDE EDGES OF THE SERVICE BOX.
3. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
4. ALL DIMENSIONS ARE MILLIMETERS UNLESS NOTED OTHERWISE.

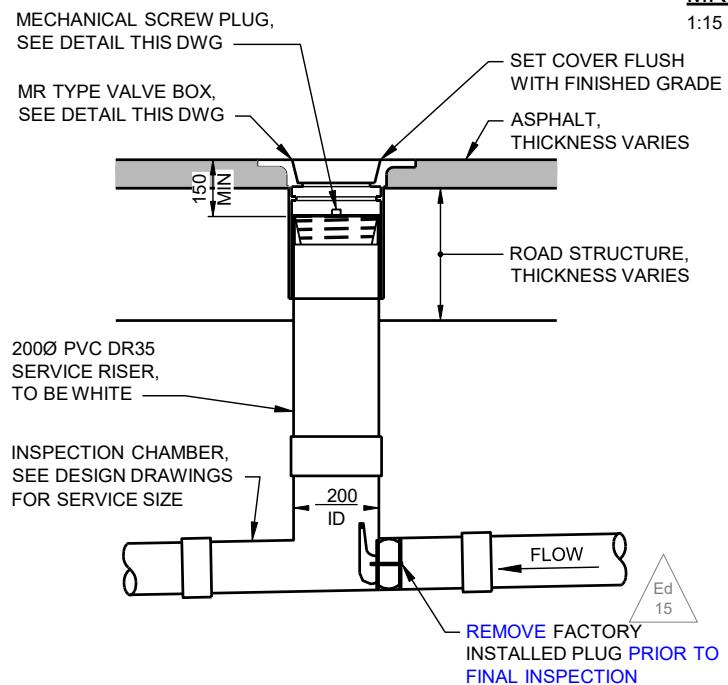


**PLAN - VALVE BOX LOCATIONS**  
NTS



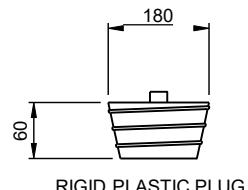
**MR STYLE VALVE BOX**

1:15

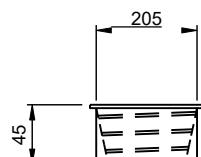


**INSPECTION ASSEMBLY ELEVATION**

1:20



**RIGID PLASTIC PLUG**



**RUBBER SEALING COLLAR**

**MECHANICAL SCREW PLUGS**

1:10

**NOTES:**

1. THIS DRAWING SHALL BE USED IN ACCORDANCE WITH SECTION 6.0 OF THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST EDITION.
2. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
3. ALL DIMENSIONS ARE MILLIMETERS UNLESS NOTED OTHERWISE.



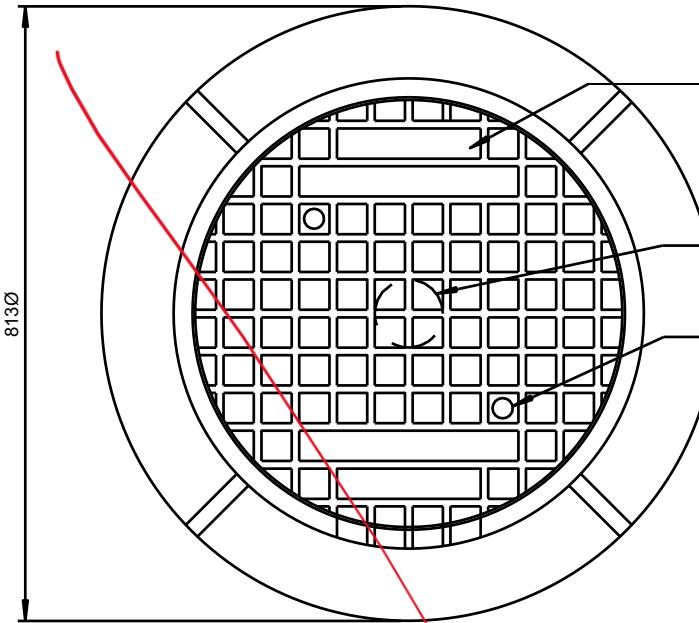
**SANITARY SERVICE BOX AND INSPECTION ASSEMBLY  
INSTALLATION IN PAVED LANES AND ROADWAYS**

Scale: ASNOTED

Created: MAR 2016

Rev Date: NOV 2016

Dwg No: S-8A

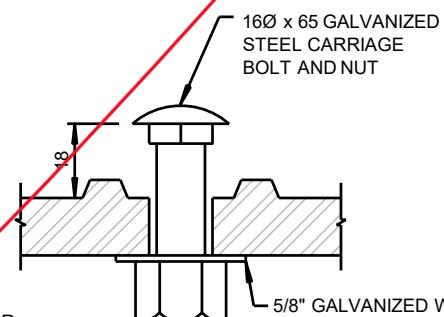


PLAN

REFERRING TO "CITY OF NANAIMO SANITARY SEWER",  
LETTERING SHALL BE 25 FLATTENED FACE  
GOTHIC WITH FACE OF LETTERS RAISED TO THE  
SAME LEVELS AS THE TOP OF THE RIBS  
(IN STATUTORY RIGHTS-OF-WAY INCLUDE THE  
WORDING "DO NOT COVER" ON THE MANHOLE LID)

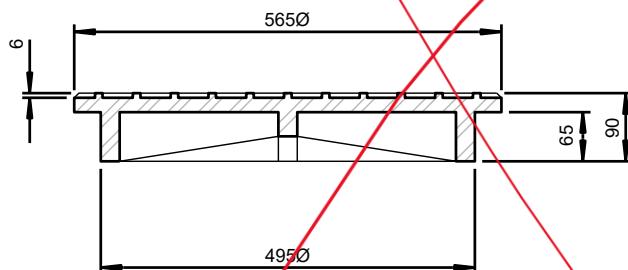
MANUFACTURER'S SYMBOL 90 MAXIMUM DIMENSION,  
CIRCLE OR SQUARE

2-21Ø HOLES



16Ø x 65 GALVANIZED  
STEEL CARRIAGE  
BOLT AND NUT

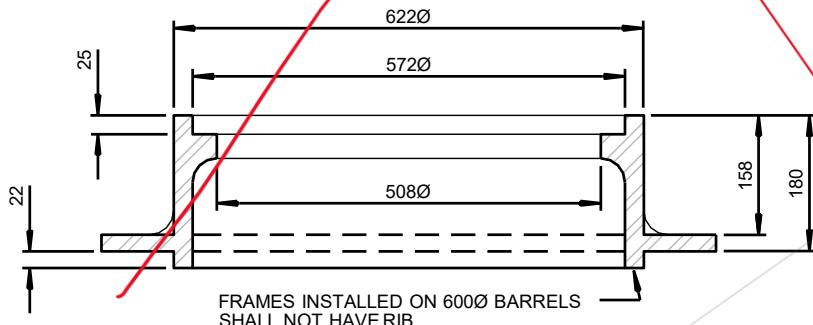
5/8" GALVANIZED WASHER  
REQUIRED ON CARRIAGE  
BOLT WHEN NUT  
PENETRATES INTO CASTING.



COVER

**IMPORTANT:**  
**CARRIAGE BOLT TO EXTEND  
EXACTLY 18mm ABOVE CASTING.**

CARRIAGE BOLT DETAIL



FRAME

## NOTES:

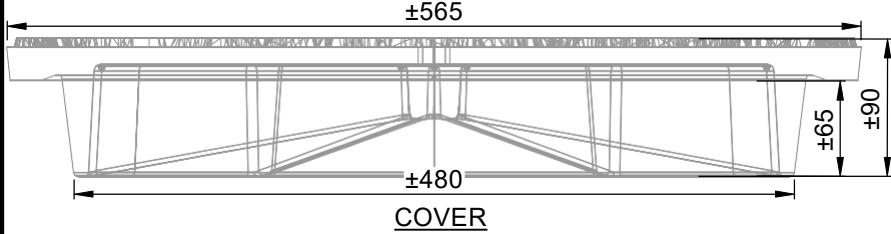
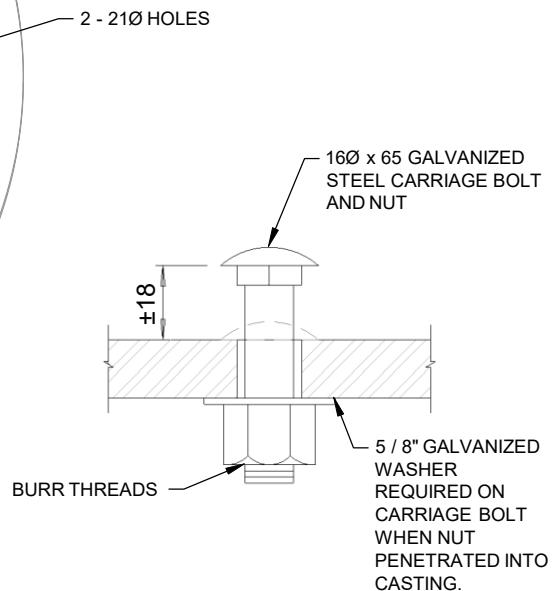
1. THIS DRAWING SHALL BE USED IN ACCORDANCE WITH SECTION 6.0 OF THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST EDITION.
2. CASTINGS SHALL BE CERTIFIED TO MEET CS-600 LOADING.
3. ALL BEARING SURFACES BETWEEN FRAME, COVER AND RISER RINGS SHALL BE MACHINED FOR NON-ROCKING FIT IN ALL POSITIONS. ALLOW 1.5mm RAISED FACE IN CASTINGS FOR MACHINING.
4. PAINT THE INSIDE SURFACE OF THE MANHOLE FRAME IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATION WITH ENAMEL RUST PAINT. COLOUR TO BE YELLOW.
5. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
6. ALL DIMENSIONS ARE MILLIMETERS UNLESS NOTED OTHERWISE.

REPLACED WITH  
FROG PATTERN

Ed  
15

**CITY OF NANAIMO**  
THE HARBOUR CITY

SANITARY MANHOLE  
FRAME AND COVER

PLANCOVER

**IMPORTANT:**  
**CARRIAGE BOLT TO EXTEND EXACTLY 18mm ABOVE CASTING.**

CARRIAGE BOLT DETAILNOTES:

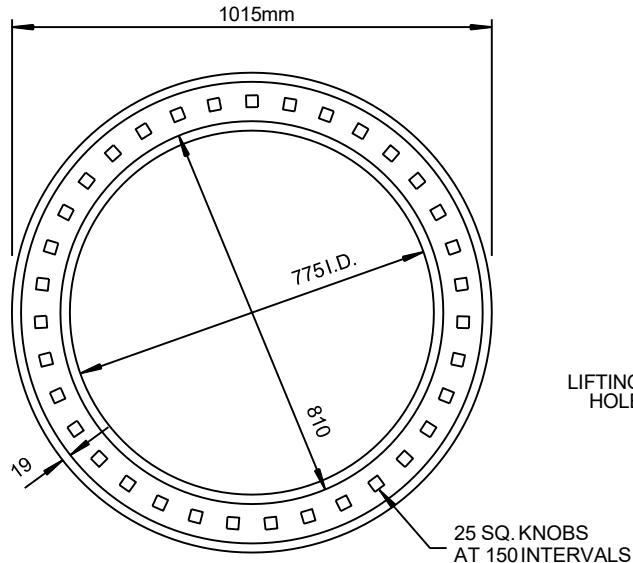
1. THIS DRAWING SHALL BE USED IN ACCORDANCE WITH SECTION 6.0 OF THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST EDITION.
2. CASTINGS SHALL BE CERTIFIED TO MEET CS-600 LOADING.
3. ALL BEARING SURFACES BETWEEN FRAME, COVER AND RISER RINGS SHALL BE MACHINED FOR NON-ROCKING FIT IN ALL POSITIONS. ALLOW 1.5mm RAISED FACE IN CASTINGS FOR MACHINING.
4. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
5. ALL DIMENSIONS ARE MILLIMETERS UNLESS NOTED OTHERWISE.
6. REFERRING TO "CITY OF NANAIMO SANITARY", LETTERING SHALL BE 25 FLATTENED FACE GOTHIC WITH FACE OF LETTERS RAISED TO THE SAME LEVELS AS THE TOP OF THE RIBS.
7. REFER TO STANDARD DRAWING S-10 FOR FRAME

Ed  
15Ed  
15

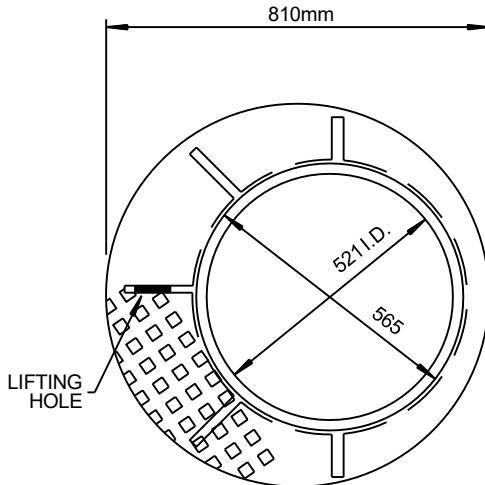
SANITARY MAINTENANCE MANHOLE - UTILITY  
 COVER SNUNEYMUW FROG PATTERN  
 2023 - 2033

Scale: NTS  
 Created: JULY 2023  
 Rev Date:  
 Dwg No: S-9

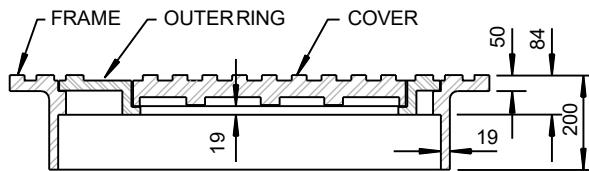
Ed  
15



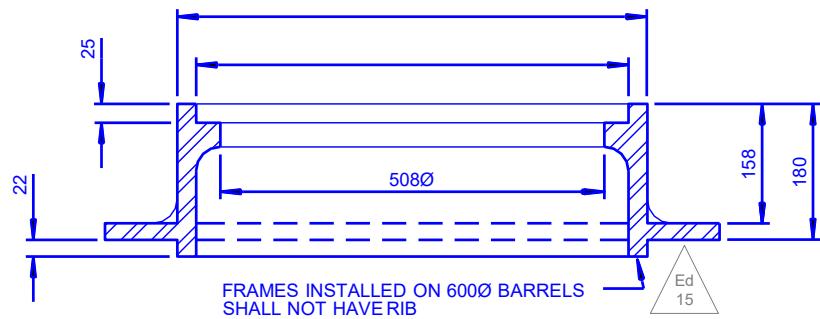
PLAN OF FRAME



PLAN OF OUTER RING



SECTION OF FRAME, RING AND COVER



FRAME

NOTES:

1. THIS DRAWING SHALL BE USED IN ACCORDANCE WITH SECTION 6.0 OF THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST EDITION.
2. CASTINGS SHALL BE CERTIFIED TO MEET CS-600 LOADING.
3. FOR COVER LETTERING AND BOLTING REQUIREMENTS REFER TO STD. DWG. S-9 OR S-15.
4. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
5. ALL DIMENSIONS ARE MILLIMETERS UNLESS NOTED OTHERWISE.



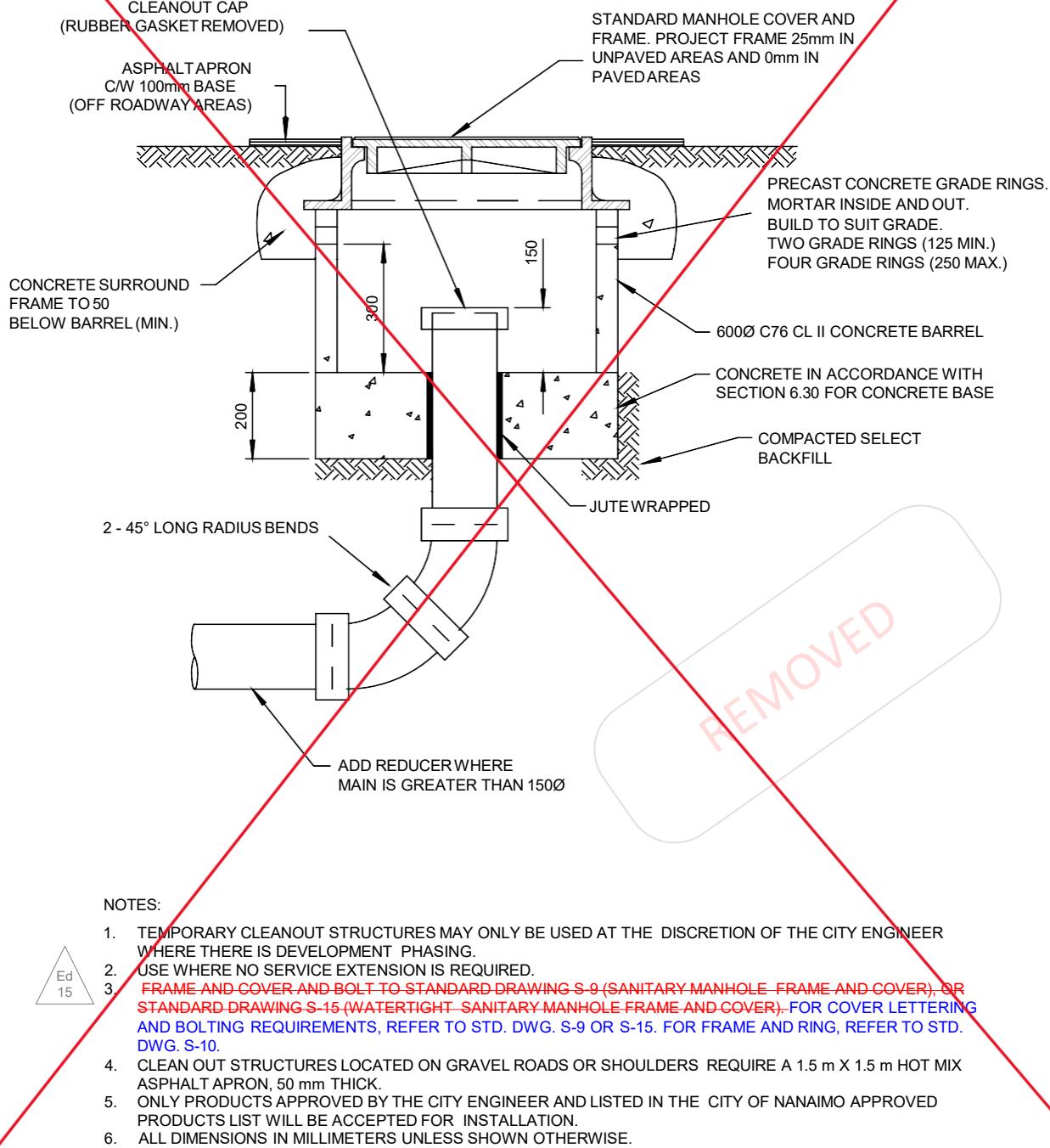
UTILITY CHAMBER SANITARY MANHOLE  
FRAME, RING AND COVER  
FRAME AND RING

Scale: NTS

Created: MAR 2016

Rev Date: NOV 2016

Dwg No: S-10

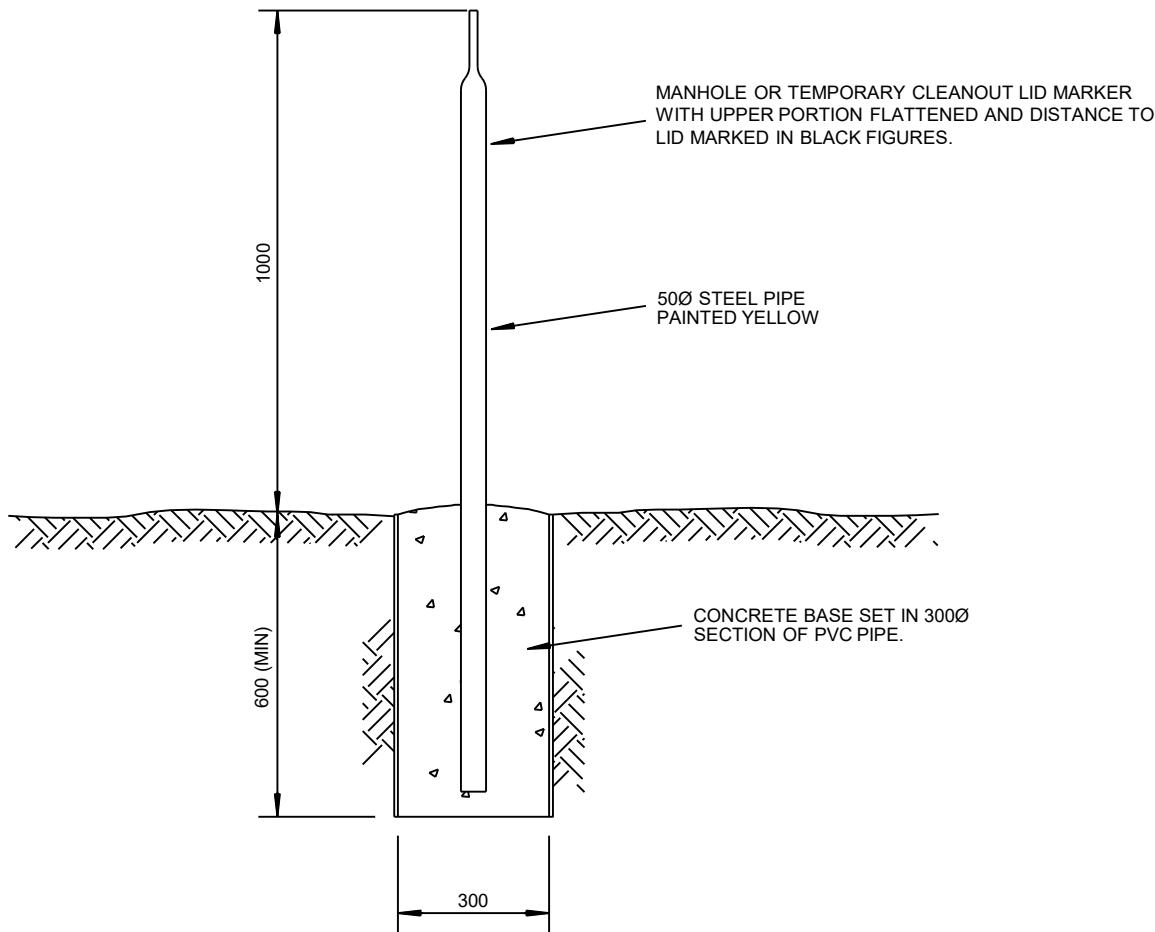


Ed  
15

CITY OF NANAIMO  
THE HARBOUR CITY

TEMPORARY SANITARY  
CLEANOUT STRUCTURE

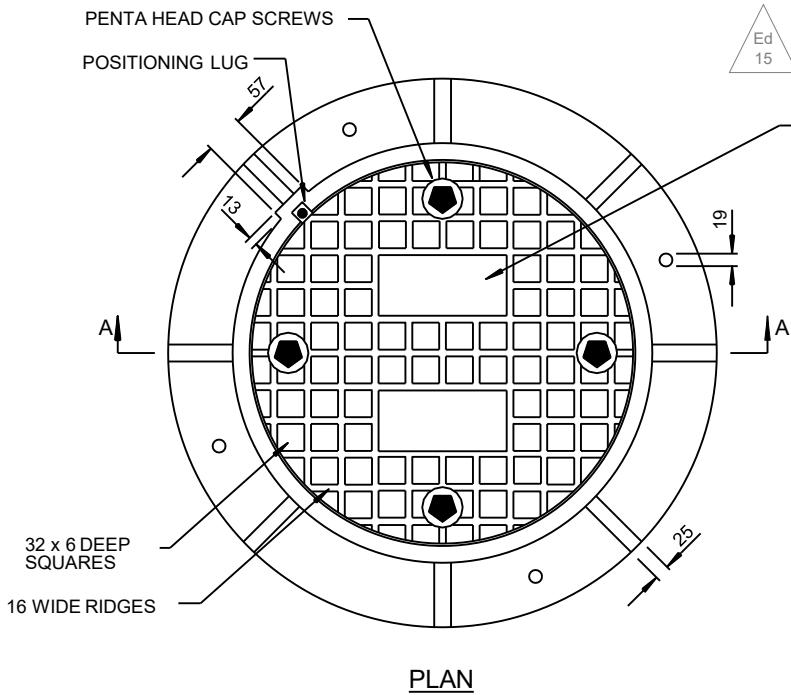
Scale: NTS  
Created: JUNE 2013  
Rev Date: NOV 2016  
Dwg No: S-12



NOTES:

1. FOR USE ONLY WHERE MANHOLE OR TEMPORARY CLEANOUT LIDS ARE LOCATED OUTSIDE THE PAVED PORTION OF A STREET.
2. THE MARKER SHALL BE LOCATED ON SITE BY THE ENGINEER WITH THE FLATTENED END AND MARKED DISTANCE FACING THE LID.
3. ALL DIMENSIONS IN MILLIMETERS UNLESS SHOWN OTHERWISE.

APPLICATION: UNITS ARE FOR USE IN AREAS WHERE FLOODING OR HIGH TIDES ARE POSSIBLE. THIS UNIT SHALL HAVE A POSITIONING LUG IN COVER FOR EASY REPLACEMENT OF CAP SCREWS AND SHALL BE EQUIPPED WITH FOUR ONLY 19Ø HOLES IN FRAME FOR ANCHOR BOLTS AS SHOWN.

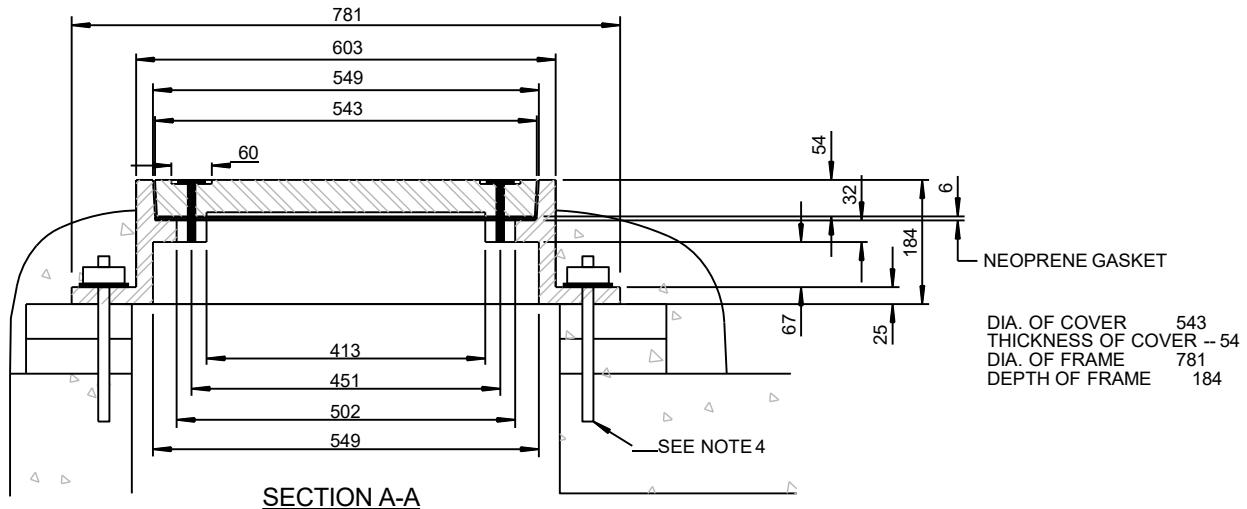


PLAN

WEIGHT OF UNIT SHOWN IS  
FRAME = 113.4 kg  
COVER = 56.7 kg

FURNISHED WITH:

- FOUR 13x57 PENTA HEAD STAINLESS STEEL CAP SCREWS TO DISCOURAGE VANDALISM.
- A 6mm THICK NEOPRENE GASKET FULLY ENCOMPASSING BOLT HOLES.
- METAL SURFACES BETWEEN FRAME AND COVER MACHINED TO ENSURE NON ROCKING FIT IN ALL POSITIONS. ALLOW 1.5 RAISED FACE IN CASTING FOR MACHINING.
- MANUFACTURE BOLT HOLES TO PERMIT INTERCHANGING OF COVERS BETWEEN FRAME UNITS.



NOTES:

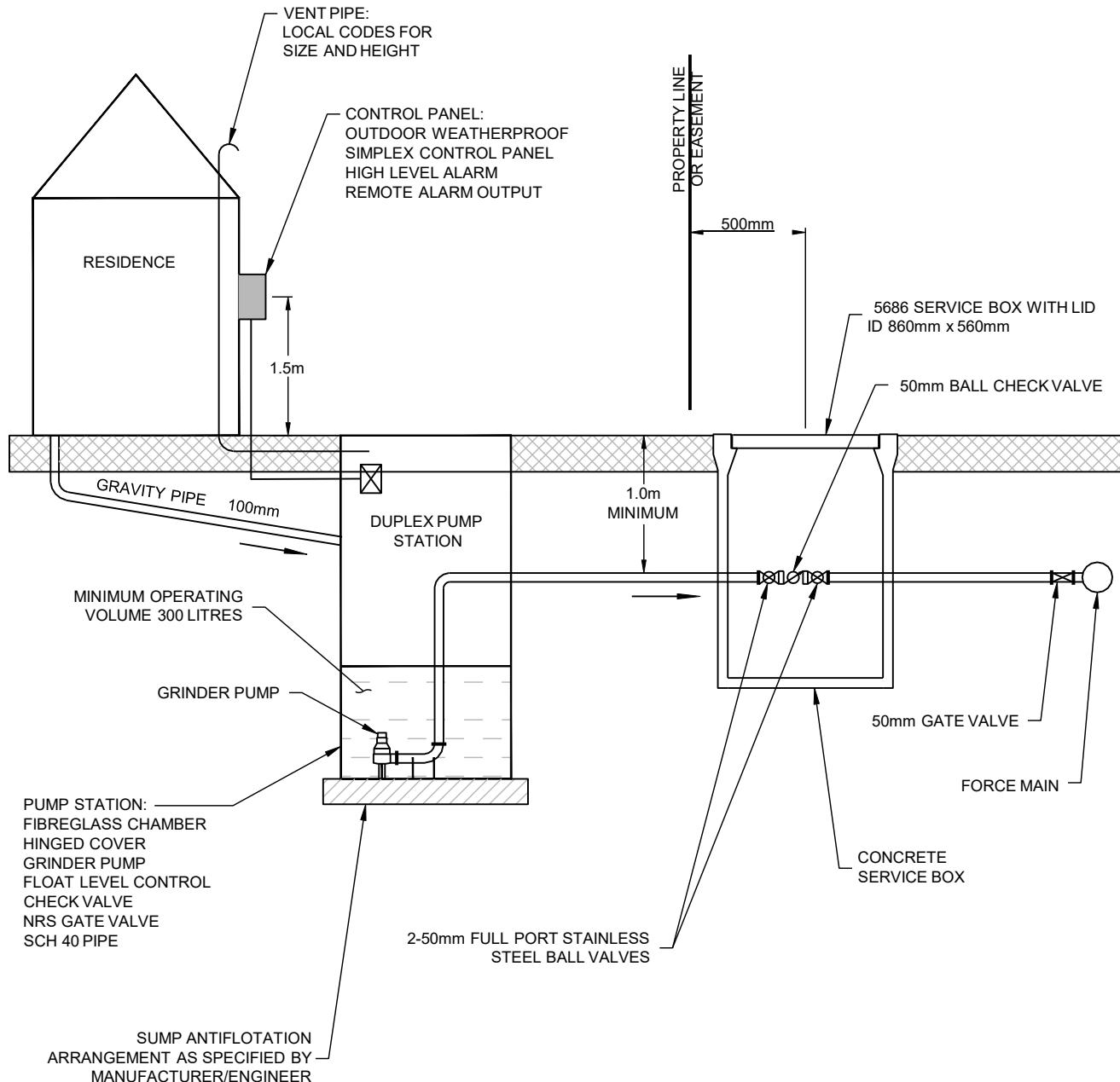
- THIS DRAWING SHALL BE USED IN ACCORDANCE WITH SECTION 6.0 OF THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST EDITION.
- CASTINGS SHALL BE CERTIFIED TO MEET CS-600 LOADING.
- PAINT THE INSIDE SURFACE OF THE MANHOLE FRAME IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATION WITH ENAMEL RUST PAINT. COLOUR TO BE YELLOW.
- FRAME SHALL BE SET IN MORTAR AND BOLTED TO THE MANHOLE SLAB WITH 19Ø STAINLESS STEEL BOLTS, WASHERS AND NUTS.
- THIS DRAWING TO BE READ IN ACCORDANCE WITH DRAWING S-2.
- ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
- ALL DIMENSIONS ARE MILLIMETERS UNLESS NOTED OTHERWISE.

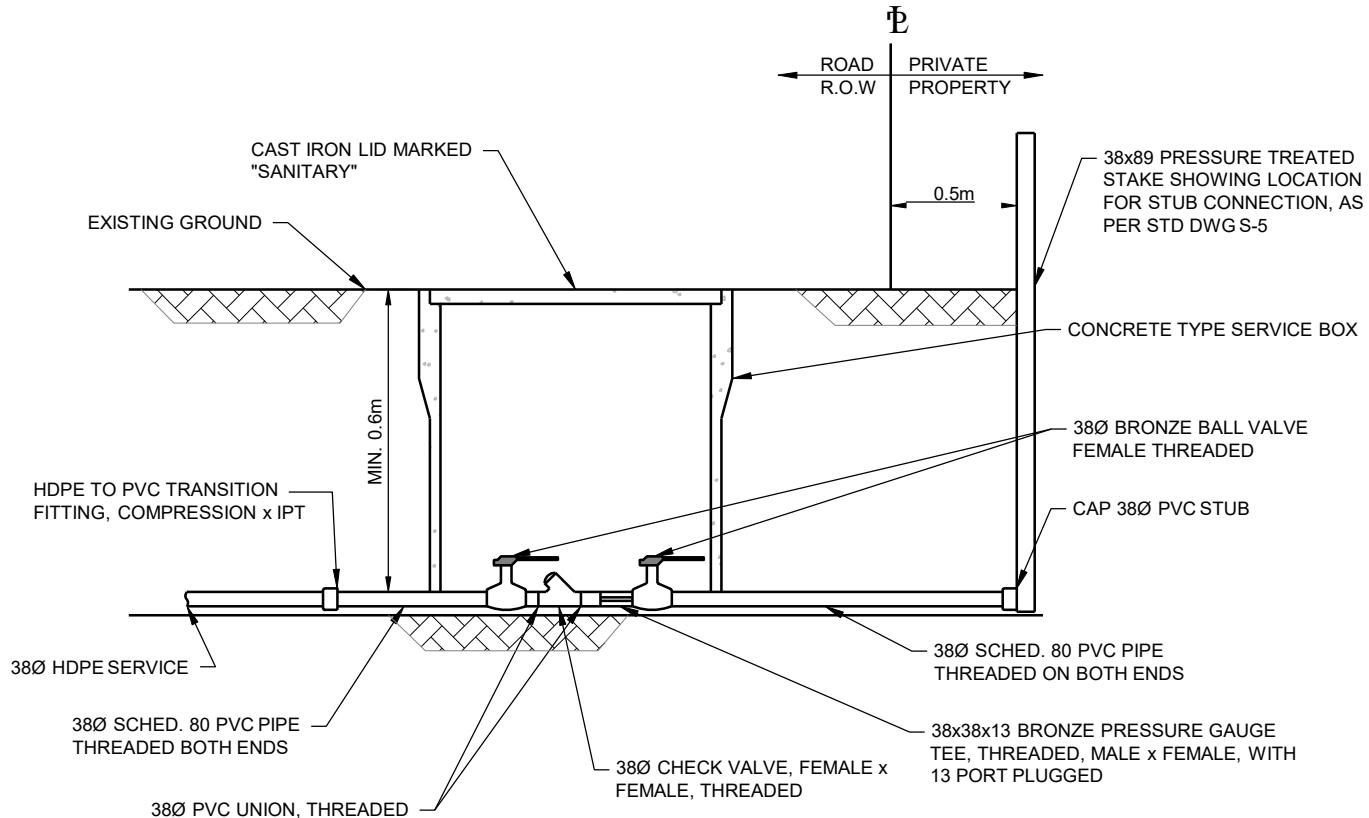
G:\INFRASTRUCTURE\PLANNING\STANDARDS & PRODUCTS\MOSES\EDITION NO13\2020\2019-09-15\REDLINE INCORPORATION - WORKING\2020 DRAWING SECTIONS\FINAL DRAFT\SECTION S DWGSS-15



WATERTIGHT SANITARY MANHOLE  
FRAME AND COVER

Scale:	NTS
Created:	MAR 2016
Rev Date:	NOV 2016
Dwg No:	S-15



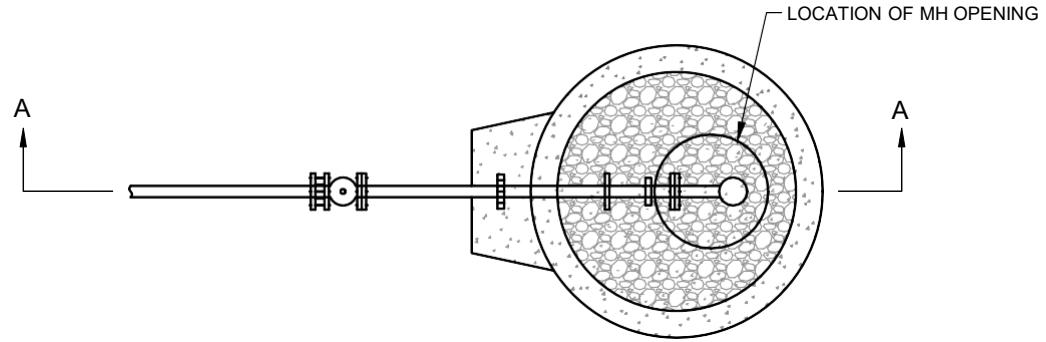


ELEVATION  
NTS

CITY OF NANAIMO

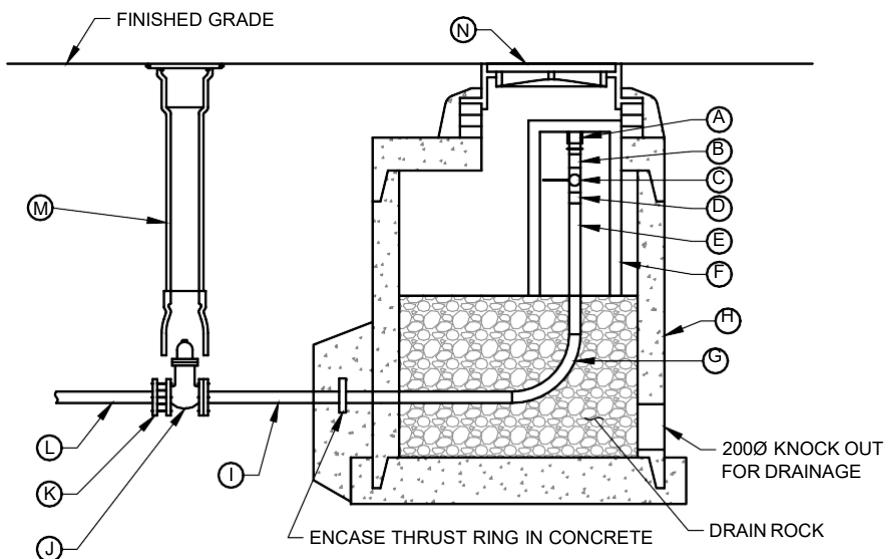
THE HARBOUR CITY

LOW PRESSURE SEWER  
SERVICE BOX



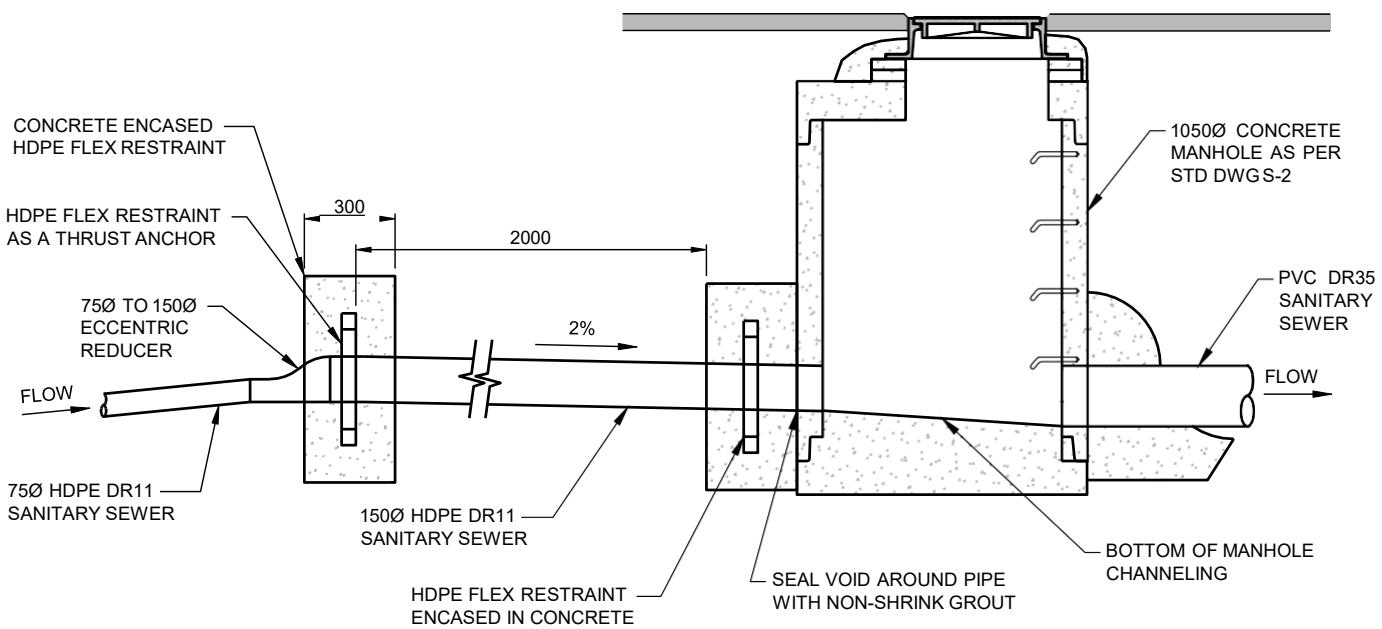
PLAN VIEW

LPS END OF LINE FLUSHOUT MH LIST OF MATERIALS	
ITEM	DESCRIPTION
A	65Ø FIRE HOSE CONNECTION PER C.O.N. SPECIFICATIONS
B	65X50 REDUCER, MALE x MALE IPT
C	50Ø BRONZE BALL VALVE, FEMALE x FEMALE IPT
D	50Ø PVC SCHED. 80 ADAPTER, MALE x MALE IPT
E	50Ø S.S. PIPE, THREADED TO FIT BEND AND PVC ADAPTER
F	50mm THICK HIGH DENSITY STYROFOAM INSULATION
G	50Ø S.S. LONG RADIUS 90° BEND, IPTxIPT
H	1050Ø MANHOLE TO C.O.N. SPECIFICATIONS
I	50Ø S.S. SPOOL PIECE c/w 100Ø x 13mm THRUST RING, FxIPT
J	50Ø BALL VALVE, FxF
K	50Ø HDPE STUB END WITH METAL BACKING FLANGE
L	50Ø HDPE DR11 PIPE
M	150x200 VALVE HOOD, 150Ø PVC RISER & 150Ø MR VALVE BOX
N	HEAVY DUTY MH FRAME AND COVER AS PER C.O.N. STD. DWG. No. S-9

SECTION A  
NTS

## NOTES:

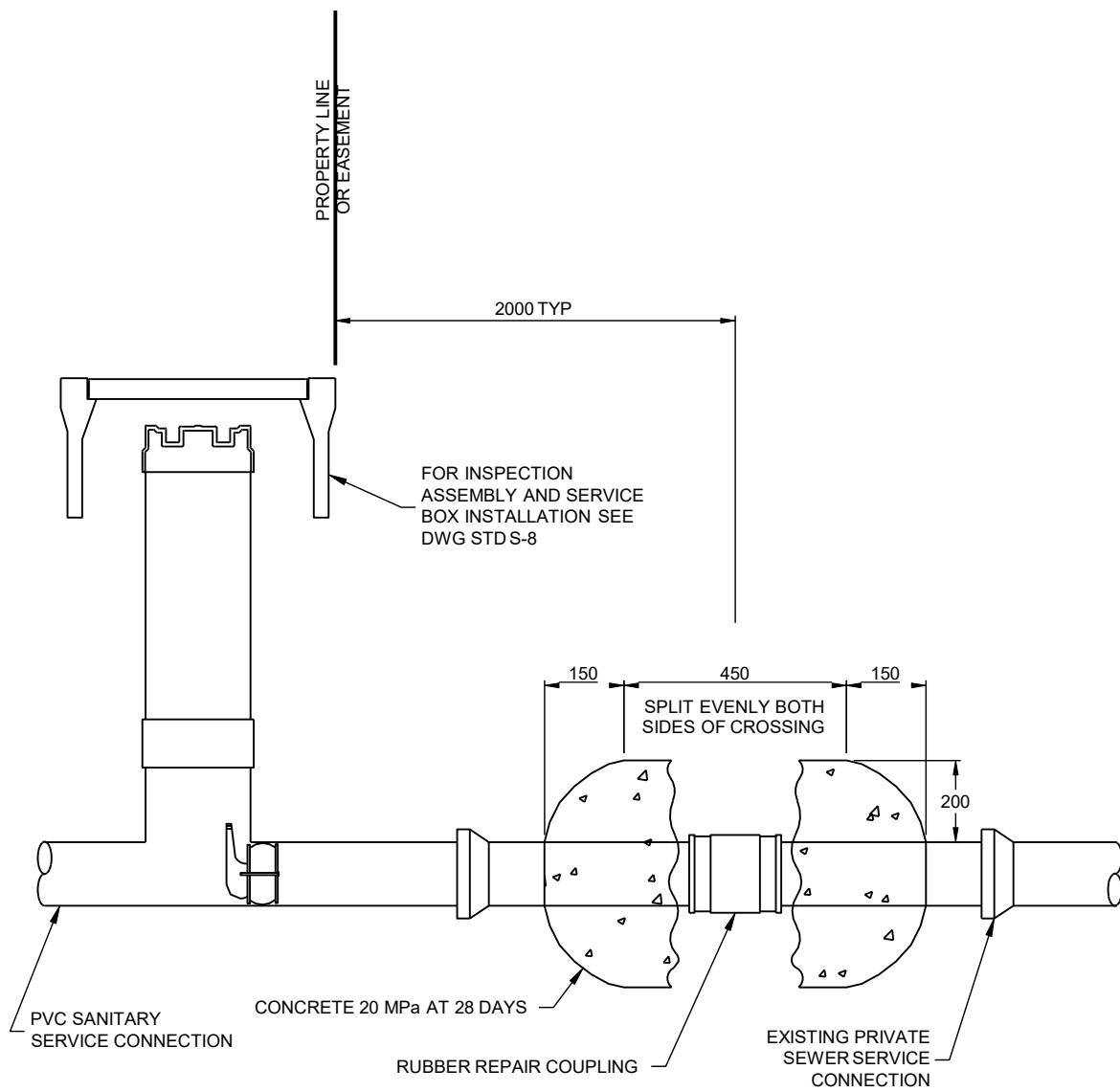
1. S.S. = STAINLESS STEEL TYPE 316 SCHEDULE 40.
2. FIRE HOSE EQUIPMENT CONNECTION TO BE DIRECTLY ACCESSIBLE THROUGH MANHOLE ACCESS.



SCALE: NTS

NOTES:

1. REFER TO STD DWG S-2 FOR GENERAL NOTES AND CONCRETE REQUIREMENTS.
2. ALL HDPE JOINTS TO BE HEAT BUTT FUSED.



ELEVATION

NOTES:

1. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
2. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE SHOWN.
3. SPIGOTS IF PRESENT SHALL BE REMOVED BEFORE COUPLING IS INSTALLED.