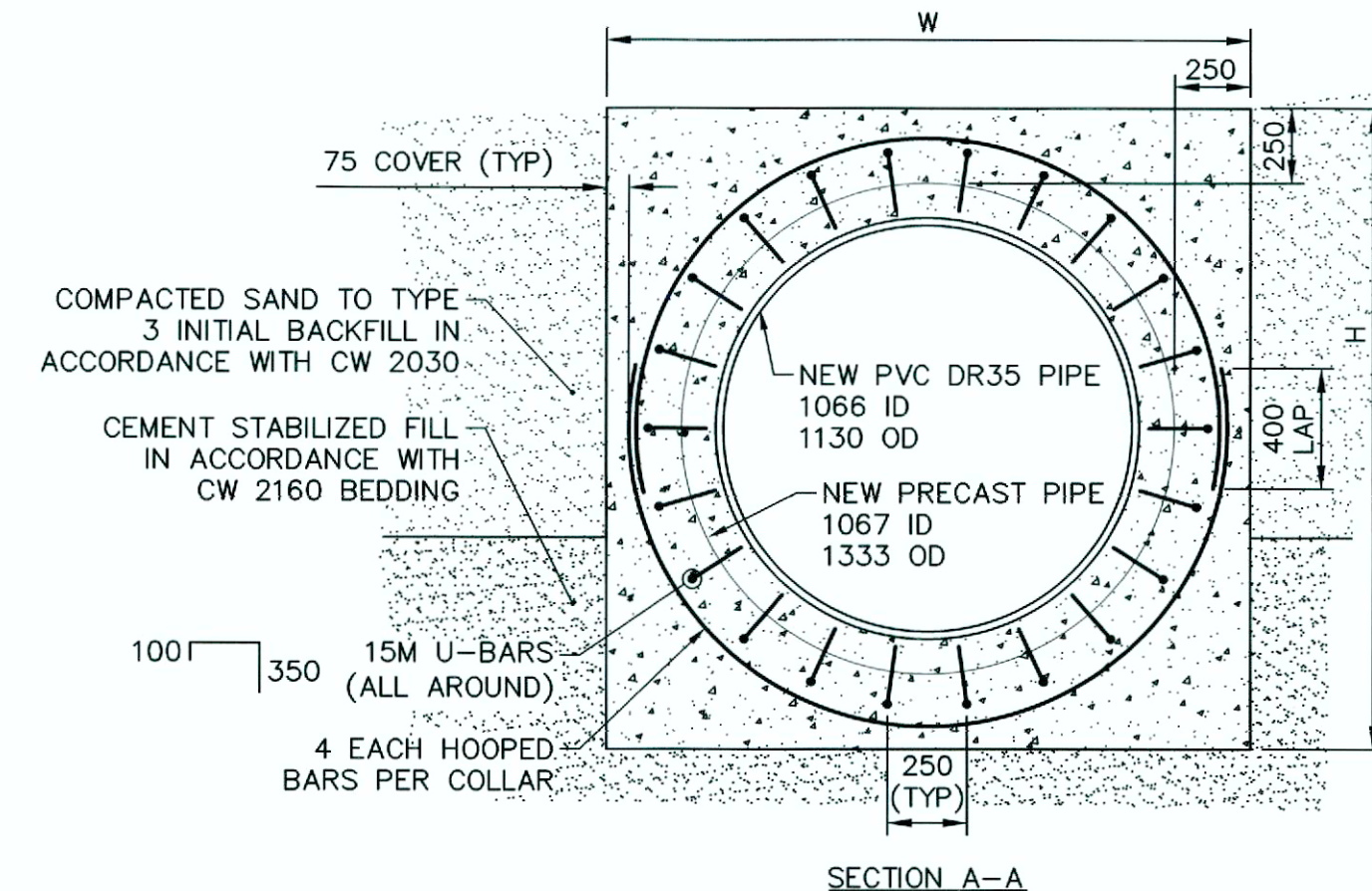


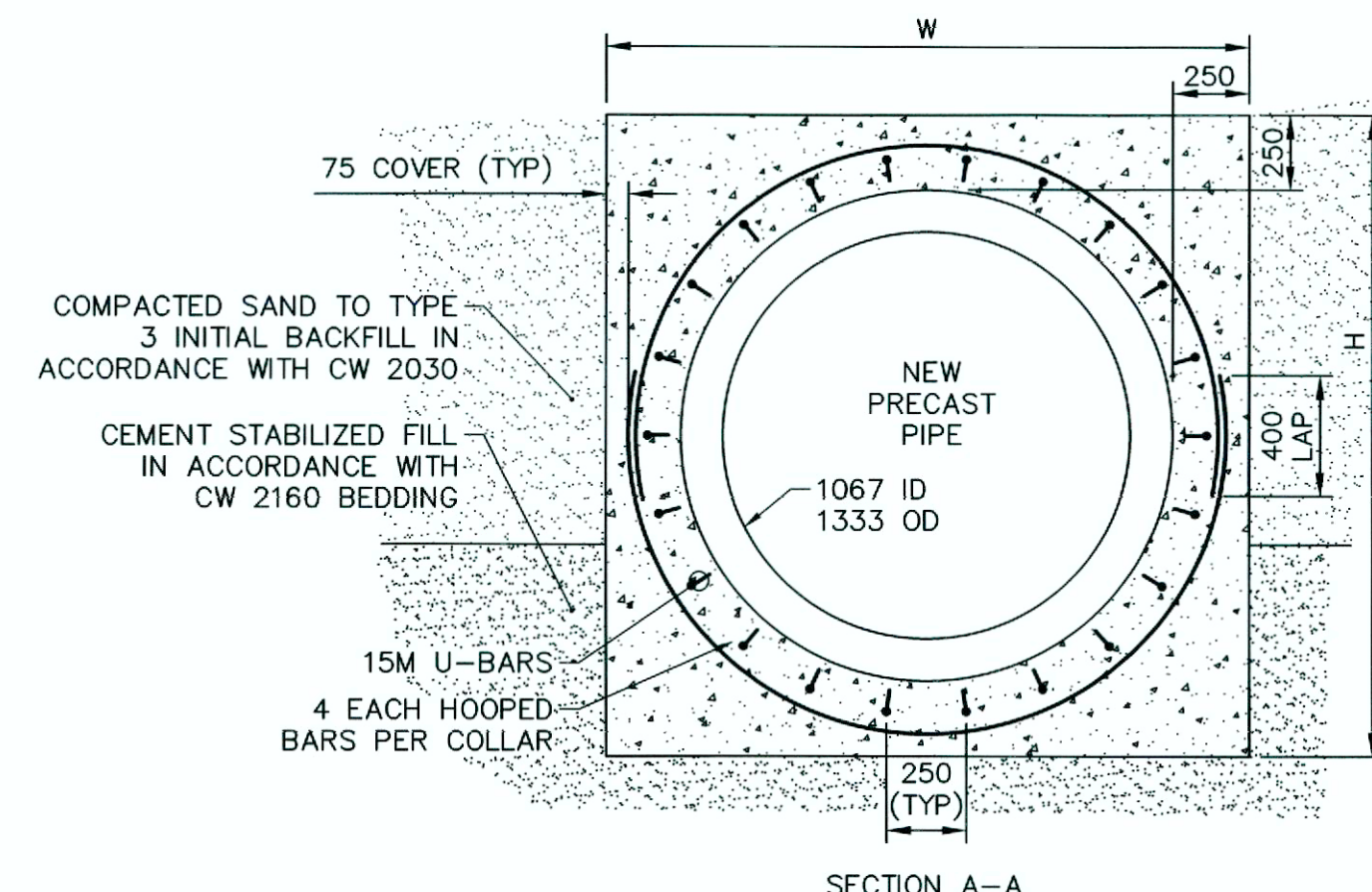
- NOTES:**
1. ALL 45° VERTICAL BENDS TO BE INSTALLED WITH MECHANICAL RESTRAINT JOINTS.
 2. WATER MAIN INSULATION TO BE INSTALLED AS PER CITY OF WINNIPEG STANDARD DETAIL SD-018.

TYPICAL 150Ø WATER MAIN CROSSING DETAIL
SCALE: N.T.S.



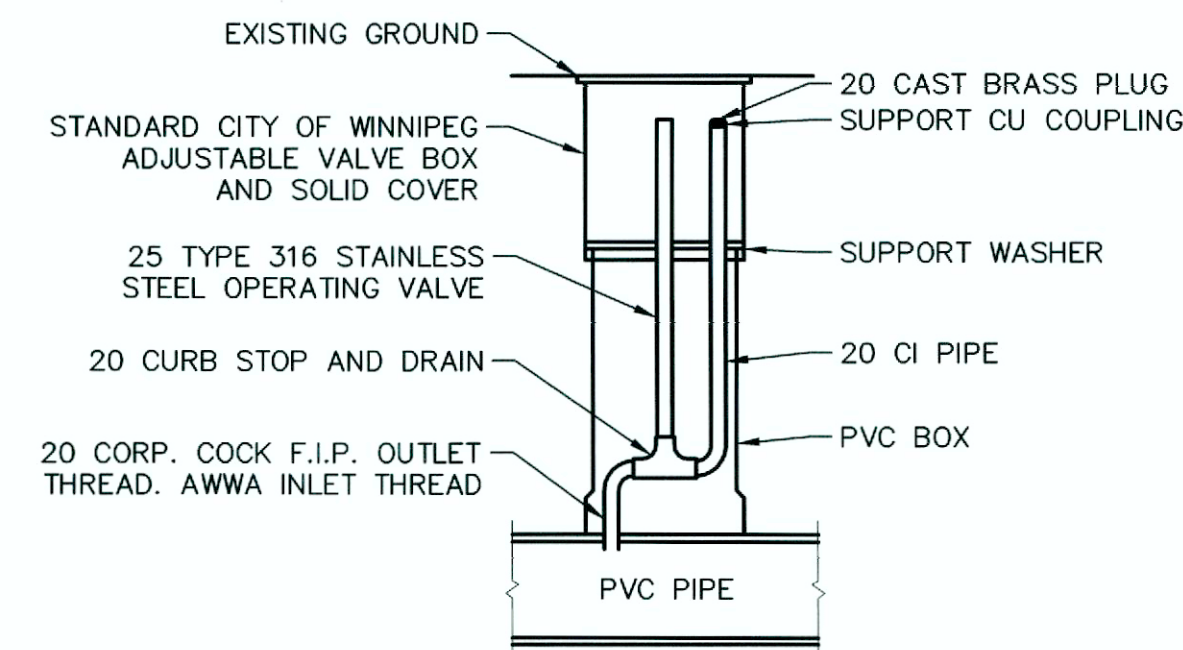
DIMENSIONS:
H=LARGER PIPE OD+500
W=LARGER PIPE OD+500

CONCRETE / PVC PIPE COLLAR DETAIL
SCALE: N.T.S.



DIMENSIONS:
H=LARGER PIPE OD+500
W=LARGER PIPE OD+500

CONCRETE / CONCRETE PIPE COLLAR DETAIL
SCALE: N.T.S.



AIR RELEASE VALVE DETAIL
SCALE: N.T.S.

REINFORCING STEEL:

1. REINFORCING STEEL TO BE NEW DEFORMED BILLET STEEL BARS CONFORMING TO CSA G30.18-09 (R2014). GRADE IS 400 MPa.
2. REINFORCING STEEL TO BE CLEAN, FREE OF RUST, DIRT, LOOSE SCALE, OIL, GREASE OR ANY OTHER MATERIAL WHICH WOULD REDUCE BOND WITH THE CONCRETE.
3. SUBMIT SHOP DRAWINGS WHICH CLEARLY INDICATED BAR SIZES, SPACINGS, LOCATIONS & QUANTITIES OF REINFORCING STEEL, BENDING & CUTTING SCHEDULES, SUPPORTING & SPACING DEVICES, ETC. FOR REVIEW PRIOR TO FABRICATION. DETAIL, FABRICATE AND PLACE REINFORCING IN ACCORDANCE WITH CSA A23.1-09 (R2014), CSA A23.3-14 AND ACI SP-66 (2004) UNLESS NOTED. STEEL TO BE LAPPED 36 BAR DIAMETERS (MINIMUM) UNLESS NOTED.
4. BEND ALL HORIZONTAL REINFORCING 305mm AROUND CORNERS OR PROVIDE IDENTICAL 610mm X 610mm ANGLE BARS.
5. TIE, SUPPORT AND SPACE ALL REINFORCING STEEL WITH PROPER APPROVED DEVICES DESIGNED FOR USE IN REINFORCED CONCRETE, TO PREVENT DISPLACEMENT OF REINFORCING AND ENSURE SPECIFIED CONCRETE COVER.

CONCRETE:

1. CONCRETE MATERIALS AND WORKMANSHIP TO BE IN ACCORDANCE WITH CSA A23.1-09 (R2014). SEE BELOW FOR MIX REQUIREMENTS.
2. ADMIXTURES ARE NOT TO BE USED UNLESS SPECIFIED HEREIN OR APPROVED BY THE DESIGN ENGINEER. CALCIUM CHLORIDE NOT TO BE USED.
3. MIX WATER TO BE POTABLE.
4. DESIGN, FABRICATE AND ERECT FORMWORK/SHORING IN ACCORDANCE WITH CAN/CSA-S269.1-16. ALLOW SUFFICIENT CONCRETE CURING TIME PRIOR TO REMOVAL.
5. CONCRETE FINISHING TO MEET THE REQUIREMENTS OF CSA A23.1-09 (R2014).
6. FORM RELEASE AGENT TO BE BIODEGRADABLE, NON-STAINING AND NON-VOLATILE.
7. PROVIDE ADEQUATE COLD/HOT WEATHER PROTECTION AS REQUIRED DURING CURING PERIOD.
8. THE CONCRETE SUPPLIER MUST BE CERTIFIED TO MEET THE REQUIREMENTS OF CSA A23.1-09 (R2014).
9. THE CONCRETE SUPPLIER MUST SUBMIT CONCRETE MIX DATA SUBMISSION FORMS FOR EACH TYPE OF CONCRETE SPECIFIED FOR REVIEW PRIOR TO BATCHING ANY CONCRETE.

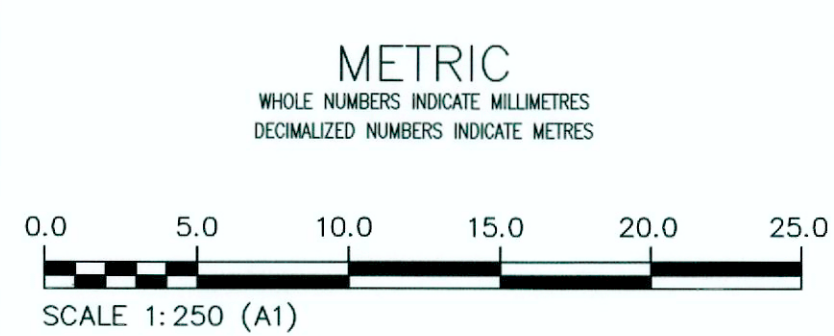
CONCRETE MIX DESIGNS:

CONCRETE MIX DESIGN TO BE PROPORTIONED TO MEET THE FOLLOWING PERFORMANCE REQUIREMENTS:

EXPOSURE CLASS	S-2
MIN. 28 DAY COMP. STRENGTH	30 MPa
MIN. 56 DAY COMP. STRENGTH	32 MPa
CEMENT TYPE	HS
MAX. W/C RATIO	0.45
MAX. AGGREGATE SIZE	20mm
ENTRAINED AIR CONTENT	4%-7%



FOR INDEX SEE LD-12996



PROPERTY LIMITS DELINEATION
DELINEATION OF PROPERTY LIMITS AS SHOWN ON THIS DWG DOES NOT REPRESENT A "LEGAL SURVEY". KGS GROUP MAKES NO REPRESENTATION OR WARRANTY AS TO THE ACCURACY OF PROPERTY LIMITS DELINEATED ON THIS DWG, NOR ON THE DIMENSIONAL ACCURACY OF DWG FEATURES RELATIVE TO THOSE PROPERTY LIMITS.

WARNING
IF POWER EQUIPMENT OR EXPLOSIVES ARE TO BE USED FOR EXCAVATION ON THIS PROJECT THE CONTRACTOR MUST:
1) NOTIFY THE GAS COMPANY OF THE PROPOSED LOCATION OF EXCAVATION.
2) TAKE PRECAUTION TO AVOID DAMAGE TO GAS COMPANY INSTALLATIONS.
SEE PROVINCIAL REGULATION 210/72 FOR DETAILS

LOCATION APPROVED UNDERGROUND STRUCTURES
DATE: _____
DATE: _____
SUPV. U/G STRUCTURES COMMITTEE
NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL UTILITIES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

B.M. ELEV.	NO.	REVISIONS	DATE	BY
	0	ISSUED FOR CONSTRUCTION	2024/06/18	MLD

DESIGNED BY	MID	CHECKED BY	Jm
DRAWN BY	MID	APPROVED BY	RBo
SCALE:	HORIZONTAL 1:250	RELEASED FOR CONSTRUCTION	2024/06/18
	VERTICAL 1:50		
DATE	2024 06 18		

ENGINEER'S SEAL
CONSULTANT DRAWING NUMBER
11-0107-18-C13-1-C09

THE CITY OF WINNIPEG
Winnipeg
WATER AND WASTE DEPARTMENT
ENGINEERING DIVISION
COCKBURN & CALROSSIE SEWER RELIEF WORKS
CONTRACT 13
MISCELLANEOUS DETAILS
SHEET 22 OF 22
CITY DRAWING NUMBER
LD-13016